MOVING SOUTHERN NH FORWARD VOLUME 1



2015-2035

Regional Comprehensive Plan 2015



Southern New Hampshire Planning Commission works to make our region a better place 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.

Adopted by the Planning Commission on December 16, 2014

Telling the Story and Plan Implementation

Volume 1

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TELLING THE STORY

INTRODUCTION

The Southern New Hampshire Planning Commission (SNHPC) is nearing completion of a major two-year effort to prepare the commission's **Regional Comprehensive Plan 2015**: **Moving Southern New Hampshire Forward**. This work has been funded by the Granite State Future project, a U.S. Department of Housing and Urban Development (HUD) Sustainable Communities Grant, awarded through the Nashua Regional Planning Commission to all nine regional planning commissions in New Hampshire.¹

The planning process in developing the **Regional Comprehensive Plan 2015**: Moving **Southern New Hampshire Forward** included an ambitious one-year campaign to reach out and involve the public – all ages, abilities, races and incomes - in seeking and obtaining public opinions, viewpoints and recommendations for how to improve and enhance the region's quality of life. This significant public outreach process took place during 2013 and involved face-to-face and online discussions via social media, as well as neighborhood conversations, community events, and public visioning and listening sessions. A project website was also developed, which included interactive tools for public engagement, including Facebook and Twitter. Media blasts, blog posts, press releases, newsletter articles, and Textizen (a texting/website tool), were also used to gather public input.

In addition, many "listening boxes" were physically distributed in key locations around the region where comment cards could be completed and submitted by the public. Flyers and posters were also distributed to community bulletin boards, and many community events and open houses were held on the project. The University of New Hampshire Survey Center also conducted a comprehensive statewide telephone survey among residents within each region of the state.

In all of this public outreach, the SNHPC and its project partners strove to ensure that as many voices as possible in the community and the region were heard, including the voices of the underserved, underrepresented, and marginalized populations (including refugees/immigrants, the homeless, working poor/low income, minorities, disabled/handicapped, veterans, youth and the elderly). A complete overview of these public outreach efforts and all the feedback and public input received is summarized in a

¹ For more information about Granite State Future see websites: <u>www.snhpc.org</u> and <u>www.granitestatefuture.org</u>

Public Outreach Report: Part 2 of the Public Outreach Strategy, available on the SNHPC website at <u>www.snhpc.org</u>.

The development of this plan also reflects the hard work of SNHPC staff and a volunteer Project Leadership Team made up of planning commissioners, town planners, and community representatives including residents and businesses from around the region (see Acknowledgement page). SNHPC staff and the Project Leadership Team worked together to prepare and review all the written technical components and chapters of the plan. The Project Leadership Team held a total of 13 advisory committee meetings between 2013 and 2014 in guiding and overseeing the development of these chapters and the completion of this plan. All of the meetings of the Leadership Team were advertised and open to the public.

The final steps in the planning process involved publishing the DRAFT plan, issuing a Press Release, and holding a 30-day public review period held during the month of July 2014. Copies of the DRAFT plan were also posted on SNHPC's Granite State Future webpage (see <u>www.snhpc.org</u>). As part of the public review process, CDs of the DRAFT plan were also distributed to every public library, municipality and county in the region. All written public comments received were also recorded in a summary report and a written response was prepared by SNHPC staff. Between September and November, 2014, the Planning Commission also reviewed three chapters of the plan at each meeting and offered suggestions in finalizing the document. The Final plan is now complete and was adopted at the December 16, 2014 Planning Commission meeting.

The primary purpose of this plan is (1) to take a comprehensive look at the SNHPC Region, considering its land use and transportation needs, as well as the overall condition of the region's economic growth and vitality, health, and natural and cultural resources; and (2) to present a new vision for the region based upon what the community values, including setting forth new goals and recommendations for what the planning commission can do in continuing to help improve the SNHPC Region in the years ahead. The **Regional Comprehensive Plan 2015: Moving the Southern New Hampshire Forward** also provides a centralized resource of information and data about the region and the region's communities. All of this information is important and can be used by the public and local government in developing and updating master plans, conducting local and regional studies, generating reports, and preparing grant applications.

The plan is divided into two volumes: Volume I containing this introduction, a brief summary of each chapter of the plan, and the plan's key goals and action recommendations; and, Volume 2 containing all nine chapters of the plan. These chapters provide a wealth of information about the following topic areas:

- 1. Land Use: Existing and Future
- 2. Housing
- 3. Transportation
- 4. Community Infrastructure and Facilities
- 5. Environment, Open Space and Agriculture
- 6. Economic Development
- 7. Cultural (Arts and Culture) & Historic Resources
- 8. Climate Change Impacts Assessment
- 9. Energy Efficiency

It is important to note that SNHPC's **Regional Comprehensive Plan 2015**: Moving the **Southern New Hampshire Forward** has no legal authority or binding requirement upon any local, regional or state agency, organization, municipality or county. All of the goals and recommendations contained in the plan are advisory only and local government "may consider" these goals and recommendations in making decisions and in carrying out various projects, activities and planning programs as they see fit. As such, this plan serves primarily as an educational tool offering guidance to the public and communities about a variety of concepts, tools and planning studies which can aid in enhancing the region's quality of life, economy and environment.

THE SNHPC REGION

The SNHPC Region is located within what is commonly known as the Merrimack River Valley of the state. The Merrimack River, one of the region's most important natural resources, flows north to south through the center of the region provides a natural geographic and political boundary between Hillsborough and Merrimack counties to the north and west, and Rockingham County to the east. The Merrimack River is the largest single river basin in New Hampshire and as such it has a major influence on the topography and natural landscape of the region.

Cumulatively, the SNHPC Region is roughly 520 square miles in size.² Residential and commercial development is the largest land use, and historically the region has evolved from an agricultural and industrial base to what many consider today as a service and high tech manufacturing economy. Like much of New Hampshire, the SNHPC Region currently enjoys four seasons and shares a climate similar to most of southern New England. Located within an hour drive of the City of Boston to the south, the White Mountains to the north, and the seacoast to the east, the SNHPC Region is centrally positioned in a desirable location with convenient highway access to almost any part of the state.

² NH GRANIT

This central location and convenient access is a driving force behind the region's economic growth and its quality of life – both of which are key factors influencing the people and businesses that choose to live or move here. Currently, the SNHPC Region is home to roughly 274,854 people, 6,959 businesses, and 119,405 private and public sector jobs (2010 U.S. Census and NH Employment Security Labor Market Information Bureau, 2011, Annual Averages). The majority of the SNHPC Region's population resides within the City of Manchester, the largest city and center of employment in the state.

In addition to the City of Manchester, the SNHPC Region includes portions of three counties (Hillsborough, Merrimack and Rockingham) and 13 municipalities ranging in size from as small as 3,909 to as large as 35,000 people (2010 U.S. Census). These municipalities include the towns of Auburn, Bedford, Candia, Chester, Deerfield, Derry, Goffstown, Hooksett, Londonderry, New Boston, Raymond, Weare and Windham (see following map of the SNHPC Region). The Town of Francestown was added in 2014 after the development of this plan.



THE REGION'S FUTURE

As documented in this plan, the SNHPC Region is projected to experience increased population growth, reaching a total of roughly 320,000 people by the year 2035. Much of this growth is anticipated to occur due to new business growth and development and

related in-migration attracted to the region as a result of the widening of I-93 from two to three paved lanes in both directions between the Massachusetts state line and the City of Manchester. This improved major highway will make it much easier for commuters and interstate commerce to travel between the two states, thus attracting more businesses and people to the region.

The City of Manchester and the towns of Bedford, Derry, Hooksett, Londonderry and Windham, which have direct or convenient access to the I-93 corridor, are anticipated to experience the majority of the region's future growth by the year 2035. Many of the smaller towns within the region, including Auburn, Candia, Chester, Deerfield, Goffstown, New Boston, Raymond and Weare, will also experience increased growth, but this growth will be primarily related to the outward movement of people and goods beyond the economic center of the region and the I-93 corridor. As more people move to the region over the next 20 years, some people and businesses will choose to live in smaller communities which have convenient highway access, good schools, adequate public facilities and resources, and most importantly, a sense of community and a rural lifestyle.

With this increase in growth, additional pressures will be placed on local government to expand services, improve public facilities and roads, and provide adequate schools and recreational facilities, including providing necessary services to support an aging population. These pressures will raise the importance and role of local and state government to plan and prepare for the future. This will also include institutionalizing effective leadership in local planning and decision-making, and maintaining an adequate tax base to pay for the new services and facilities that will be required by the public.

In addition to these growth pressures, the SNHPC Region, the state, nation and the world will be facing a major challenge in the 21st century: Climate Change. If the impacts of burning fossil fuels continue to go unchecked without measureable reductions in emissions, it is projected that around 2035 climate change will have very serious implications and impacts on New Hampshire's and the SNHPC Region's economy, environment, and health. Whether we accept this premise or not, we all have an obligation to work together to address the serious threats to our physical environment, public health and food systems imposed by warmer temperatures and droughts; and increased storms, rainfall events and flooding.

We have an opportunity today to address these significant challenges by working together in transitioning to new and innovative ways of doing things. We cannot continue to plan and build our communities as we did in the past. We must take advantage of new forms of renewable energy, build energy efficient buildings and transportation systems, and incorporate low impact and sustainable development practices in planning and constructing our communities. We must continue to grow our

economy and protect our environment, and most importantly prepare our children as they approach a future which will be significantly challenged by forces and events beyond their control, but within ours.

While this plan cannot possibly address the consequences of climate change alone; the plan helps to define the issues and offer ideas, suggestions and approaches which can be embraced now to prepare for a changing world. By working together on climate change, we will also be enhancing the character of our communities and our region – e.g. the core values and characteristics which make our region an attractive place and environment to live and work. All of this will require that we have a good understanding of who we are as a region and what our region values and desires in moving Southern NH forward and building a better future.

WHAT THE REGION VALUES MOST

In preparing this plan, we have learned the SNHPC Region contains a diversity of people, places and communities – a diversity that continues to change daily with new buildings and new people relocating to the region. Yet, among all the people, places and communities in the region, it is clear from the results of our public outreach efforts and campaign, there are many people and places in the region that share similar needs and similar values. Specifically, there are three core themes or values have been identified. These include:

- 1. Strong Sense of Community
- 2. Embrace and Preserve Diverse Settlement Patterns
- 3. Transportation Choices

Strong Sense of Community

One of the major themes reflected among all the different public outreach efforts in developing this plan is that the SNHPC Region has a strong sense of community. Families have deep roots and strong social networks and maintaining these support systems is highly valued. This common value is shared by many throughout the region and many residents agree it is one of the most important characteristics which make the SNHPC Region a great place to live, work and play.

Because many municipalities in the region are relatively small in population (e.g. even the City of Manchester is comparably small when looking at other larger cities throughout the nation), this sense of belonging to a community allows everyone to feel they are part of the fabric and environment where they live, work and play. Along with this strong sense of community, many residents and businesses in the region also strongly value being a part of the local decision-making process. When decisions are made at the local level, people feel they are heard and valued more so than when those decisions are made at the state or federal level. The local decision-making process is an important characteristic of what makes for a strong sense of community in the region.

From all the results of the public outreach efforts, it was also noted that the region's population is aging; youth are leaving the state; and long-time residents are being outnumbered by newcomers. The ramifications of these changes are concerning to many residents living in the region. There is widespread agreement that we need to plan appropriately for our changing demographics and consider how we can retain our younger generations in order to maintain the region's economic vitality in the future.



Embrace and Preserve Diverse Settlement Patterns



Another major theme emerging out of the public outreach efforts conducted for this

plan is a widely held recognition that there are distinct differences in settlement patterns between the many communities of the SNHPC Region and that we should embrace and preserve these differences. In addition, it is clear that many of the small, rural communities in the region value their historical and scenic character and would like to keep their communities on this path.

"I live away, but Manchester will always be home. I've loved watching its revitalization over the last 15 years or so, as the downtown and Millyard have taken off and I can't think of anywhere else in NH – maybe New England – where the natural landscape and urban space co-exist so dramatically, as when I see Saint Marie's lit against the sunset behind Uncanoonuc, or when the Merrimack roars past hulking, 150-year old mills." A public comment received at PeopleFest held in downtown Manchester on August 25, 2013. In the City of Manchester and the more densely settled communities of the region, residents value the convenience, services and options for housing, transportation, and other amenities and attractions that urban life provides. Those who live in the rural areas of the region also value access to these services, amenities and attractions with relative ease, while still living in a small town setting.

Conversely, residents in the more densely-settled communities appreciate that they can access the open space, forests and natural beauty located in the rural areas of the region. While all the region's communities are diverse in terms of their historical settlement patterns, it is this diversity in settlement patterns and land use that those residents who live, work and play in the region value the most.

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Transportation Choices

In addition to embracing a strong sense of community and valuing the region's diversity in settlement patterns and land use, it is clear that the SNHPC Region also appreciates having more than one choice for transportation. Specifically many residents feel the region could be doing a better job of expanding and making more transportation options available. Residents in the SNHPC Region would like to see better and more transportation infrastructure provided, not just for motorized vehicles, but improved infrastructure for all modes of transportation, including bicycles, walking and public transit. While expanding transportation choices may be limited by the infrastructure that currently exists, everyone agrees more work is needed in developing and finding creative solutions for improving the region's existing infrastructure and expanding alternative transportation options for all modes of travel.

A VISION FOR FUTURE

The three themes discussed above – a strong sense of community and local identify; maintaining diverse settlement and land use patterns; and expanding local transportation choices and opportunities are reflected in the following Value and Vision Statements for the SNHPC Region.

These Value and Vision Statements for the region have been reviewed and endorsed by the Project Leadership Team and as such, they provide important guiding principles that are integrated throughout the plan and the plan's key goals/objectives and top actions recommendations.

Values Held Within the Southern New **Hampshire Region**



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



Housing Choices: Residents demonstrate a preference for a range of different housing types and neighborhoods, but everyone values housing choices that are safe and affordable for all.



Transportation Choices: Expanding and improving upon our local and regional transportation choices for all modes of travel, including bicycling, walking and public transit; choice needs to be a priority to enhance our region.



Natural Resource Functions and Quality: 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.



Community and Economic Vitality: Residents treasure the strong bonds in their communities and want to ensure 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.



Climate Change and Energy Efficiency: Residents support renewable energy choices such as solar, wind, and geothermal that are climate-friendly. They support policies for higher energy efficiency standards in new buildings and incentives for home energy efficiency improvements. Many residents are also concerned about various weather-related events.



Local Decision-Making: Residents believe that equity is found in local decisionmaking and strongly value being involved in their communities as well as collaborating regionally.

Vision Statement for the Southern New Hampshire Region

In the SNHPC Region, we place a high value on our strong sense of community, our local identity and our local decision making; however, we also recognize that all fourteen (14) municipalities within the region benefit through regional collaboration and cooperation. As we plan for the future, we must continue to value and protect our built and natural environment, prepare for climate change impacts, and increase renewable energy initiatives and choices. We need to take into account the diversity in age and income of the population; respect the distinct differences, settlement patterns and historic characteristics of our communities; and ensure a variety of affordable housing options. Expanding and improving upon our local and regional transportation choices for all modes of travel, including bicycle, walking and public transit, needs to be a priority to enhance our region. Quality education, enhanced job creation, and expanded economic development opportunities will ensure that the region attracts and retains residents and businesses. We believe that through strong communities and local decision-making, the SNHPC Region will continue to grow and prosper in the coming years.

CHAPTER SUMMARIES

Land Use – Existing and Future

Introduction: The SNHPC Region is by far the largest populated region of New Hampshire. While population growth over the past ten years or so has been slow (0.5% annual growth since 2000), economic conditions are improving in the region and signs of new growth and new development can be found in almost every community. The SNHPC is projecting that by 2035, the SNHPC Region will add more than 50,000 new residents. What does this mean for the region's existing and future land use patterns? Will current land use trends continue? Will residential and commercial development continue to expand as industrial and agricultural land decline? Where will the region's new business and industrial growth occur? These are key questions and issues that are explored in the Land Use – Existing and Future Chapter of this plan (see Volume 2).

Community Input: In developing this plan, residents and businesses in the region indicated they highly value the geographic location of the SNHPC Region. Being close to Boston and other urban areas in the state with convenient access to recreational opportunities, such as the mountains and beaches, including the opportunity of living in smaller and rural communities is an advantage. Many residents also expressed strong support for mixed use development, as well as living in compact, walkable urban centers with easy access between home, work and cultural activities.

When asked the question "where should future development occur?" More than two-thirds (67 percent) of residents think that future development should occur in areas that are already developed.

Fewer residents (26 percent) support development in undeveloped areas and 7 percent did not know where future development should occur.

67% want future development to occur in areas that are already developed

89% want local agriculture to be encouraged in the community In addition, a majority of residents (90 percent) responding to the public outreach surveys say that protecting historic buildings and neighborhoods is a priority. Also a large percentage of residents (89 percent) agree that promoting local agriculture should be actively encouraged in the community as well as promoting safe places to walk or bike. Another 85 percent say expanding or promoting current businesses is equally important.

Key Issues:

- Between 2000 and 2010, the SNHPC Region grew at a slow rate of 0.5 percent per year, reflecting a total increase of only 12,424 people. The towns of Bedford, Hooksett, New Boston, Weare, Windham and the City of Manchester experienced the majority of this population increase while several towns, Candia and Derry, actually lost population.
- Despite this slow population growth, the region is consuming land at a steady and constant rate. In 1995, 30 percent of the region was developed. By 2010, the total amount of developed land increased to 44.5 percent.
- As of 2010, about 26 percent of the region is residential, 3.2 percent is commercial, 1.3 percent industrial, 9.10 percent semi-public and public, and 4.9 percent are utilities and streets.
- The total amount of industrial land decreased by 11.5 percent between 2000 and 2010, while commercial land increased by 145.2 percent.
- Prior to 2010, growth management was the focus of planning activity for many communities. Today, community and economic development is one of the largest concerns, including creating jobs and improving the local and regional economy.
- Maintaining and promoting compatible zoning along the borders between communities and along major highway corridors also continues to be an ongoing need in the region.
- Other important land use issues include promoting agricultural zoning; encouraging growth and development within areas served or planned to be served by public water and sewer; and promoting livable, walkable and mixed use development.

Key Goals/Objectives:

- 1. Support existing municipal and traditional village centers, and compact growth patterns.
- 2. Guide growth to existing developed areas with available public infrastructure and services.
- 3. Promote a diversity of land uses to support and strengthen local tax base.
- 4. Make zoning more agriculturally friendly.
- 5. Reduce development pressures on existing agricultural lands and agriculturally important soils.
- 6. Encourage infill development within existing commercial and industrial areas, including downtowns, commercial centers and industrial parks.
- 7. Provide communities with planning tools needed for successful mixed use.

Top Action Recommendations:

- 1. Continue to monitor and map the region's land use.
- 2. Continue to provide land use and zoning ordinance assistance to communities, including master planning.
- 3. Provide assistance to communities in community development, including preparing and administering community development block grants for infrastructure, housing and other community needs.

- 4. Assist communities in developing village center overlay zoning districts, site plan and subdivision regulations which are in keeping with the historic character of the community.
- 5. Assist planning boards in evaluating land use regulations within existing and projected future water and sewer service areas to achieve higher levels of density and mixed use.
- 6. Assist communities in conducting Cost of Community Services Studies (COCS) that can be used as planning and policy tools to balance land use and strengthen the local tax base.



Introduction: Over the past decade and following the "Great Recession", numerous housing changes have taken place in the SNHPC Region. The number of dwelling units in the region has increased by 11,577 from 2000 through 2010, an increase of 11.53 percent There are now approximately 111,993 dwelling units in the SNHPC Region (2010 U.S. Census). New Boston had the greatest unit increase (34.54 percent); Derry had the least (4.26 percent). In 2013 and 2014, the New Hampshire Housing market began to experience a slow, steady recovery with foreclosures declining and home prices on the upswing. The National Bureau of Economic Research declared the end of the Great Recession in June 2009, and the U.S. economy and housing market is continuing to recover.

Single-family homes are the predominant housing type in the region. The average purchase price of a new home in the region during the first half of 2013 was \$312,713, indicating that purchase prices are trending

upward. Median home values range from a high of \$391,500 (Windham) to a low of \$212,000 (Raymond). The cost of renting an apartment in the region has also increased. The highest median gross rents can be found in Bedford, Candia and Windham, all over \$1,300 per month. The low availability of rental units in many communities may be contributing to high rents.

Housing Choice tied with Community & Economic Vitality

as the 3rd most important way to improve the Region

It is estimated there are 27,339 households paying 30 percent or more

of their monthly income for housing in the SNHPC Region. Looking ahead to 2020, it is estimated there will be 40,276 workforce households with this financial burden. These and many other related housing and economic statistics can be found in the **Housing Chapter** of this plan (see Volume 2).

Ownership Affordability: Very Affordable-9% Somewhat Affordable-56% Not Very Affordable-24% Not Affordable-5% Don't Know-6% **Community Input:** While only a few written public comments were received on the topic of housing affordability among the surveys performed for this plan, 65 percent of the residents responding feel that housing affordability is not a major issue within the SNHPC Region. Roughly 29 percent in total, however, believe it is an issue and

6 percent do not know. More information on these survey results is in the Housing Chapter in Volume 2.

Key Issues:

- The SNHPC Region and the state's population is aging. This demographic trend is and will continue to place increased pressures on local and state government to provide necessary social, health, transportation, emergency and other community services in the future.
- New housing development is expanding, but not equally among all communities within the region.
- Most of the region's workforce housing opportunities are located in the City of Manchester and the towns of Derry and Raymond. Outside of these communities, options are limited and less clear.
- Most of the region's affordable rental units are becoming scarce in some communities as rental costs rise across the region.
- New home and apartment construction is not keeping pace with trends prior to the recession recovery continues to be very slow.
- Housing affordability and cost burden for workforce households continues to be an issue in the region.
- Housing affordability is further challenged by high per capita property tax collections in the region and the state.
- More education, training and information is needed on fair housing rights and improving fair housing choices within the region.
- Racially concentrated areas of poverty exist within the SNHPC Region, mostly in the City of Manchester.
- Many of the region's younger population and families (20 to 30 years of age) cannot afford to purchase a home due to large college debts and low wages.

Key Goals/Objectives:

- 1. Continue to encourage a variety of housing choices in every community in the region.
- 2. Support comprehensive public outreach campaigns to increase education and training opportunities for workforce housing, fair housing, rental and elderly housing needs in the region.
- 3. Work to address statewide housing issues that impact the Southern New Hampshire region.
- 4. Continue to monitor statewide, regional and local trends to ensure that housing needs are being met.

Top Action Recommendations:

- 1. Support incentives for investment in reuse and redevelopment of existing structures.
- 2. Encourage cluster housing to provide affordable housing and to protect the environment.
- 3. Encourage walkable and "village neighborhood" development to enhance employment and housing opportunities.
- 4. Seek CDBG funding to improve affordable housing opportunities.
- 5. Encourage broader zoning definitions of "single-family housing" which would permit multigenerational living arrangements, including accessory and in-law apartments.
- 6. Conduct zoning ordinance reviews; develop recommendations to provide workforce housing.



Introduction: It is clear that many residents of the SNHPC Region would like to see improved transportation infrastructure for all modes of transportation; not only for the automobile, but also for bicycles, pedestrians and public transit. According to the NH Department of Health and Human Services, many residents report their communities do not have sidewalks or bicycle lanes. While 24 percent report having paved streets that include sidewalks, only 4 percent report having paved streets with bike lanes (NH Obesity Program). Federal funding sources are increasing opportunities to expand multi-modal transportation networks to incorporate alternate forms of transportation at state, regional and local levels.

Transportation is also a major contributor to climate change. The Environmental Protection Agency (EPA) identifies transportation in the United State as the second of five major fuel consuming sectors contributing to carbon dioxide (CO₂) emissions from fossil fuel combustion. Between 1990 and 2011, transportation was responsible on average for 39 percent of New Hampshire carbon emissions. Most recently in 2011, transportation accounted for a notable 43 percent of emissions. The data suggests that reducing carbon emissions from transportation is an important climate change mitigation strategy (EPA). How can the transportation systems in the SNHPC Region reduce our reliance on fossil fuels? What is the existing infrastructure and what are its problems? How can public safety and mobility be improved? These and other questions are explored in the **Transportation Chapter** of this plan (see Volume 2).

Community Input: The results of the public surveys prepared for this plan indicate that many residents want more choices in their transportation systems. With regard to walking and biking, a large majority of residents (89 percent) said they want their community to promote safe places to walk or bicycle when asked

89 percent of residents want their community to promote safe places to walk and bicycle "What should be actively encouraged in your community?" This suggests broad support for Complete Streets that provide accommodation for not only automobiles, but also for

73 percent of residents want policy makers to invest more money maintaining roads, highways and bridges

pedestrians and bicyclists. Public transportation is the most frequently

requested transportation improvement with over one third (35 percent) of comments associated with this general outreach question.

Nearly three-fourths (73 percent) of residents think policy makers should invest more money in maintaining roads, highways and bridges (with 55 percent willing to pay more in taxes to do so). About half of residents want investments in expanding bus service between major cities (52 percent). Investing in reduced congestion on major roads is desired by nearly half of residents (45 percent).

Key Issues:

- Many residents of the SNHPC Region want more mobility choices in transportation then currently available within the region.
- Safety is always a goal at the forefront of transportation planning. The SNHPC Region experiences, on average, 20.5 transportation-related fatalities per year (2002-2011) compared to over 100 fatalities per year statewide.
- Rates of obesity and overweight individuals are increasing in the state; healthy transportation choices that allow physical activity to be incorporated into daily routines are needed.
- Many residents in the SNHPC Region spend more than 15 percent of their income on transportation.
- Transportation has large impacts upon the environment and human health. Over a quarter of greenhouse gas (GHG) emissions in the US are attributed to the transportation sector.
- Critical lack of funding at the state level results in continuing deterioration of existing road/bridge infrastructure, as well as a shortage of innovation/new funding for transit and other modes. Economic sustainability for funding the transportation system is challenged by uncertain federal budgets and limited municipal resources as well.
- Transportation plays a central role in economic development. The transportation system needs to not only ensure the mobility of people and goods, but also maximize accessibility to businesses and employment centers that contribute to vibrant downtown and commercial areas.
- Youth need affordable transportation choices, but owning and maintain a car is expensive.
- The region needs increase funding and investment in public transit, both in rural and urban areas.
- The total number of highways (highway sections) currently operating at or near capacity will increase if no improvements are made by the year 2040.
- Transportation infrastructure often bears the brunt of weather-related disasters, such as severe storms and flooding. With climate change, there is a need for investment in infrastructure and adaptation, as well as greater transportation choices.

Key Goals/Objectives:

- 1. Achieve safer transportation for all users.
- 2. Work to reduce trips made by single occupancy-vehicles.
- 3. Promote increased availability of pedestrian and bicycle facilities.
- 4. Provide increased availability of public transportation.
- 5. Develop passenger rail to improve access and mobility and improve the economic vitality of the region.
- 6. Promote smart growth land use and transportation policies.
- 7. Identify and promote climate change adaptation in transportation planning and infrastructure.
- 8. Promote increased education about the region's transportation issues and alternatives.
- 9. Seek sustainable funding for transportation infrastructure.

Top Action Recommendations:

- 1. Develop Bike/Pedestrian plans for the region and communities.
- 2. Encourage/adopt land use policies to provide for transportation options and alternatives.

- 3. Prepare guidelines for Complete Streets; prepare a handbook for municipalities to adopt policies.
- 4. Encourage Bicycle-Friendly Communities. Work with League of American Bicyclists for local designation.
- 5. Expand and support additional transportation funding sources for municipalities.
- 6. Expand local bus transit services and make this system more efficient both within and outside the city.
- 7. Conduct a feasibility study to expand I-93 commuter/inter-city bus services throughout the region, including regional connections to Concord and Portsmouth.
- 8. Support efforts to establish a passenger rail system in the region.
- 9. Incorporate CART recommendations into local transportation planning work.

Community Infrastructure & Facilities

Introduction: With the continued growth and development of the region, there will be greater demands placed on local services and facilities, stretching them 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 these needs is an important responsibility.

Successful economic development in municipalities and the region requires reliable public utilities and communication infrastructure, and, in some areas, community or municipal water and sewer services. 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.

While the region has multiple providers 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 in order to promote these markets and expand services and improve availability.

67%

of residents favor using municipal funds to provide water lines to existing & potential development

Other ongoing public utility issues among the region's communities include recycling and solid waste collection and disposal. With increasing tonnage and fees, solid waste disposal expenses, in general, are continuing to escalate. Another large need facing communities is installing and maintaining sidewalks. Paying for these capital improvements is expensive and typically requires state and federal funding to supplement local bonds

TopPrioritiesforPublicInvestment:Environmental Protection -24%Energy Efficiency-18%Safe/Affordable Housing-15%Economic Development-14%

and user fees. Typically, these costs are difficult to overcome. These and other concerns are some of the key issues explored in the **Community Infrastructure & Facilities Chapter** of this plan (see Volume 2). **Community Input:** In developing this plan, many residents indicated their top priority for investing public dollars: the highest priority is environmental protection (24%), followed by energy efficiency (18%), safe and affordable housing (15%), and economic development (14%). More than two-thirds (70%) of the residents responding to our surveys think that future development should occur in areas that are already developed; 23 percent support development in undeveloped area; and (7%) do not know.

Key Issues:

- Financing municipal water and sewer projects is a top priority for many municipalities and requires significant local and state investment.
- Broadband internet infrastructure and connectivity offers many communities enhanced economic development opportunities, but how to pay for broadband improvements remains an issue.
- Stormwater facilities and maintenance is an increasing cost and burden on municipalities.
- Recycling and solid waste disposal are an important, but costly public service.
- Installing and maintaining community sidewalk infrastructure is an ongoing issue in many communities, both urban and rural.
- New England has significant energy/utility supply challenges and natural gas prices have skyrocketed over the past year due to limited supplies. Existing natural gas pipelines in NH and the SNHPC Region are limited and no expansion is imminent.
- Major public utilities such, as water and sewer are not available in many parts of the region.
- School funding, enrollment and capacity issues continue to be an ongoing local issue and regional challenge.
- Local Capital Improvement Programs (CIPs) continue to go unfunded among many towns.
- Volunteer Fire and EMS departments in smaller municipalities are experiencing staffing shortages as the population ages.
- Despite increasing department budgets, police staffing ratios remain low throughout the region.
- Local property taxes, user fees and licenses continue to be the primary source of funding for municipal, county and local infrastructure. Funding sources are limited and many communities face continuing local funding issues for basic services and programs.

Key Goals/Objectives:

- 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 Tax Increment Financing Districts (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 series including participating in group purchasing programs and opportunities to allow municipalities, counties and schools to save money and improve services.

Top Action Recommendations:

- 1. Support efforts to improve and expand public water and sewer infrastructure and services.
- 2. Encourage/support Tax Increment Financing Districts (TIFD), impact fees and bonds to fund necessary infrastructure and capital facilities.
- 3. Support/promote continued and improved funding for public education at state and local levels.
- 4. Support/enhance local recycling as a means to reduce solid waste disposal costs.
- 5. Support/assist municipalities in capital improvement programming and public facility planning and financing.
- 6. Support local, regional and statewide efforts to maintain adequate funding for public facilities and services at all levels of government through:
 - Increased mutual sharing and group purchasing of services and equipment;
 - CDBG funding for economic/housing and public infrastructure; and
- 7. Continue to encourage and support municipalities in local drinking water supply protection.



Environment, Open Space and Agriculture

Introduction: Many municipalities in the SNHPC Region are working to preserve large tracts of open space knowing there are both cost saving benefits and advantages to water supply and quality, wetlands, wildlife, flood prevention and overall quality of life to its residents. However, with increasing development trends roughly 10 percent of the region's forest land is projected to be lost by the year 2025. The Society for the Protection of New Hampshire Forests (SPNHF) predicts about 60,000 acres of open space will also be lost in Rockingham, Hillsborough, and Strafford Counties. 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.

Farmland preservation is also closely related to open space preservation as it shares similar environmental benefits including

89 and 95 percent support making clean air and clean water higher priorities

protected wildlife habitat, clean air and water, flood control, groundwater recharge, and carbon sequestration. However, many acres of productive farmland soils in the region remains unprotected and lands that are desirable for agriculture are also the easiest to develop. What are the remaining largest existing forested or agricultural tracts of land in the region and how can these lands be best protected? What are the regulatory means and funding sources communities need to know about to acquire open space and protect farmland? What are the economic and social benefits to preserving open space and protecting land from development? These and many more issues are addressed in the **Environment, Open Space and Agriculture Chapter** of this plan (see Volume 2).

Community Input: In the public outreach and surveys conducted for this plan, many residents indicate that they appreciate living in a beautiful, quality environment and enjoy the region's opportunities for rural living. They want to protect the functions and quality of the natural environment. From the Visual Public Space Preferences survey, there was overwhelming support for making clean air (89 percent) and clean water (95 percent) higher priorities. Maintaining and expanding local food sources is another issue that many residents

77 percent feel that farms and agricultural land preservation should be prioritized identified as important. 77 percent of respondents feel that farms and agricultural land preservation should be prioritized in the next ten years, while 75 percent said protecting aquatic habitats are important issues in the near future. Overall, an overwhelming majority of residents in the Southern New Hampshire Region feel that new development should be restricted to areas that are already developed in order to preserve natural resources.

Key Issues:

- The region's natural resources are not limitless and are under continuous development pressures.
- Staffing and program cutbacks at federal and state environmental agencies means that non-profit organizations, local conservation commissions, 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.
- With continued growth and development 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.
- Researchers estimate that within the next 25 years, southeastern New Hampshire will be virtually builtout, meaning that all the available land not conserved will be developed. This will place tremendous strains on local budgets, community resources, and natural resources.
- Planning Boards and Conservation Commissions have a responsibility to ensure important open space is protected and recreational opportunities are made available to the public.
- The NH DRED cannot do it alone. Monitoring state parks and lands is also becoming a financial burden as costs continue to rise, ridership and user fees are not able to keep pace with demands, and public use of state facilities continues to climb.

• The lack of agriculture-specific zoning and other protections also contributes to the rapidly diminishing supply of farmland and important farm soils.

Key Goals/Objectives:

Natural Resources

- 1. 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.
- 2. Protect and improve the quality of the natural environment while developing a complementary manmade environment.
- 3. Facilitate greater collaboration and discussion between local planning boards and conservation commissions regarding land use regulations and natural resource conservation.

Goals for Open Space & Recreation

- 1. Improve use of and access to public spaces, parks, playgrounds, and recreation facilities, including afterhour access to school facilities for public use.
- 2. Provide a community public space map on the town website, in town offices and in the town annual report to promote the use of public parks and recreational facilities.
- 3. Establish or enhance recreation programs for all age groups in the community.

Goals for Agriculture

- 1. 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 small scale agriculture in inner-city and suburban areas.
- 2. 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.

Top Action Recommendations:

- **1.** Provide support to communities in the use and adoption of innovative land use controls and environmental characteristics zoning techniques.
- 2. Assist conservation commissions in developing comprehensive science-based natural resources inventories and conservation plans.
- 3. Support and offer training to planning boards and conservation commissions in developing local and regional master plans for parks and recreation facilities, open space protection and agricultural development.
- 4. Continue to educate and raise public awareness and benefits of open space, conservation and recreation, and agriculture.
- 5. Encourage and provide support to communities developing local agricultural commissions as well as local and regional networks to support local farmer markets, community service agriculture, food to table, and other agricultural educational programs.



Economic Development

Introduction: The SNHPC Region's economy is growing stronger every year since the great recession of 2008/09. The region's economic diversity of businesses and industries and its highly educated and skilled workforce helps to sustain the region's economic resiliency. With the widening of I-93 and natural population growth, there will be an expected influx of 50,000 new residents between 2010 and 2035. This will present numerous challenges to the region, but also opportunities for economic growth, workforce development and an improved standard of living.

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 existing 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.

89% of respondents favored fostering local employment

The core goals and strategic initiatives highlighted in this chapter can be used to help maximize the region's economic development potential. Continued collaboration between the SNHPC, Access Greater Manchester and all the communities in the region on economic development measures can achieve these goals. This collaboration also includes working together with state and federal government to obtain funding, develop and implement collaborative projects, and generate ideas for economic growth and development. 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. These elements and many more economic issues and strategies are explored in the **Economic Development Chapter** of this plan (see Volume 2).

What Could Make Communities Better? Community & Economic Vitality-47%

Transportation Choices-45%

Housing Choices-3%

Community Input: It is clear that many residents in the region (47%) value community and economic vitality, more so that expanding opportunities and choices for transportation and housing. Community and economic vitality comes from quality schools, strong communities, job creation and expanded economic opportunities,

including small business growth and local and regional investment.

Key Issues:

- The region's economy is currently showing signs of improvement, but growth is still slow.
- Unemployment in the state and region is decreasing, but region still has few high-pay jobs.
- Many workers in the region have to commute to work out of the region and state.
- Property values are showing signs of improvement and are increasing again.
- Building permits and development is improving, but not back to pre-2008 levels.
- Population growth in the state/region is slow some towns in the region are losing people.
- Limited municipal funding is available for services and improvements. Federal and state aid is also declining and constraining local budgets and capital improvement needs.
- Wages and incomes are up and the region continues to remain economically diverse and resilient.
- There is a continuing widening of the income gap squeezing the middle class.
- Region's overall cost of living is relatively higher than nationally, but better than Boston.
- Forty eight percent of NH high school students leave the state for college.
- NH and the SNHPC Region's population and workforce are continuing to grow older.

Key Goals/Objectives:

- 1. Transportation Strengthen and expand aviation capacity; place high priority on highway improvements; develop multi-modal transportation strategies; encourage reliable, efficient passenger and freight rail service along NH Capitol Corridor.
- 2. Infrastructure Place high priority on expanded public water/sewer systems; enhance telecommunication and broadband services.
- 3. Land Use Smart Growth Seek balanced growth and development to broaden tax base and improve quality of life, community character and environment.
- 4. Labor/Workforce Development Strengthen region's workforce and vocation training programs; improve integration of apprenticeships and education in the workplace.
- 5. Education Strengthen region's colleges, universities and professional schools; place priority on increasing number of graduates to stay/work/play within region.
- 6. Energy Explore and encourage development of renewable, environmentally friendly and lower cost forms of energy.
- 7. Economic Development Promote economic development opportunities.
- 8. Entrepreneurship Implement programs to support start-ups, incubators, innovative businesses, creative arts and sustainable/agricultural businesses.
- 9. Real Estate Development Site Readiness Work to promote available sites and buildings for economic development and redevelopment purposes.
- 10. Funding Resources Work with key groups to promote region nationally/internationally.

Top Action Recommendations:

- 1. Continue to support and market the strengths of the region statewide and nationally.
- 2. Promote local business growth and support efforts to help advance start-up companies, business incubators, arts and culture, and local agricultural economies.
- 3. Continue to support and foster regional collaboration in economic development through Access Greater Manchester and other regional initiatives.
- 4. Support and foster improvements in transportation, public works, water and sewer and broadband.
- 5. Encourage and promote renewable, environmentally friendly and lower cost forms of energy and fuels.
- 6. Continue to explore funding opportunities to sustain regional and local economic development efforts.
- 7. Provide assistance to communities in establishing and maintaining local economic development committees and councils, and preparing local economic development plans and chapters in community master plans.
- 8. Continue to work to implement and expand SNHPC's Certified Site Program both within and outside of the region.
- 9. Continue to work with and expand the Comprehensive Economic Development Strategy (CEDS) planning process in cooperation with Central Regional Planning Commission and adjacent communities in Hillsborough and Merrimack counties.
- 10. Continue to support and seek state and federal funding for Brownfields Assessments and Clean Up programs.

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Culture and Historic Preservation

Introduction: Historic resources are vulnerable to loss. Many municipalities in the region recognize the importance of preserving the historic character and recommend the establishment of Historic District Commissions or Heritage Commissions, who can utilize tools for preservation, such as the historic resources survey and inventory; historic district overlay zoning; preservation easements; including grants and loans.

Established organizations may find it easier to apply for a variety of state and federal designations to aid in protecting historic resources. Despite the advantages of designation, it is important to note that communities need to continuingly educate themselves and their citizenry about the advantages and disadvantages of historic preservation and implement historic preservation techniques that are most suited to their historic resources.

Historic preservation designations and policies geared toward bolstering arts and cultural resources can help boost economic development and provide education, attract visitors and add dollars to the community's bottom line. Historic preservation and the Arts

Main Art/Cultural Themes: Reinstate arts programs that have been cut.

Protect remaining arts programs in public schools.

Raise awareness of the importance of arts and culture.

and Culture are further explored in the Culture and Historic Preservation Chapter of this plan (see Volume 2).

Community Input: In July 2013, the Survey Center of the University of New Hampshire conducted a telephone survey through the Granite State Future project seeking public input across the state of New

Key Priorities: Protect local agriculture - 91% Protect Historic Buildings/Neighborhoods - 86% Promote Safe Places to Bike & Walk - 86% Hampshire on a variety of planning related topics, including the arts, culture and historic preservation. The survey results indicate that 86 percent of New Hampshire residents value protecting historic buildings and neighborhoods; the second highest scoring response among 13 categories. When asked

"what should actively be encouraged in your community?" 68 percent of respondents indicated their community should sponsor cultural and sporting events. Other public outreach efforts showed many residents also value a variety of cultural events, activities and recreational opportunities.

Key Issues:

- Greater public attention is needed at both the regional and local level to actively promote and preserve the region's historic and cultural resources today and in the future. Specifically, more communities in the region need to be better positioned to achieve Certified Local Government status, which opens more doors for preservation funding and success.
- Many communities within the region need a comprehensive vision, as well as a plan to effectively protect and promote historic resources and cultural qualities and assets.
- In addition, a greater emphasis is needed at both the region and local levels to include and expand the arts and promote cultural activities as an economic development tool.

Key Goals/Objectives:

- 1. Promote greater collaboration between the public and private sector in historic preservation and the arts and culture.
- 2. The SNHPC should work with the region's communities to collaborate in establishing historic, arts and cultural commissions and developing local arts and historic preservation plans, visions and goals and recommendations that can advance historic preservation and the arts and culture.
- 3. Developing a "sense of place" within the region's communities through urban design principles such as "place-making" can and should be a centerpiece of local historic, arts and cultural plans. Development of these plans must involve the public and key stakeholders within each community.
- 4. Specifically, it is important that communities keep the arts in local budgets; promote businesses and organizations that can provide the leadership skills necessary to build and maintain public and private support; conduct comprehensive inventories of the historic and cultural infrastructure; obtain and provide planning grants and training to communities to promote the arts; establish cultural and mixed use zoning districts; seek legislative authority to create and implement new tools such as cultural

enterprise zones; and most importantly create and foster an environment, places, amenities and events that can stimulate investment, create new jobs and business opportunities, attract young workers, and build a talented workforce.

- 5. Artistic talent and historic preservation are essential for revitalization and economic growth. Artists need places to live, work, perform and to exhibit their work.
- 6. Communities need historic buildings and places to sustain community character and place. Reuse of existing older industrial space and historic properties for artists, cultural events and organizations will improve quality of life, attract creative industries and businesses and promote economic growth and development.

Top Action Recommendations:

- 1. Create land use regulations that support historic preservation and the arts and culture to sustain community character and place.
- 2. Assist planning boards in authorizing local historic preservation ordinances, inventory and mapping historic properties and sites, and developing local arts and cultural plans.
- 3. Promote greater collaboration between public and private sector in local arts and cultural planning.
- 4. Foster traditional village and neighborhood centers and walkable downtowns rich in cultural arts and history.
- 5. Support funding for historic preservation and the arts/culture in local and state budgets.
- 6. Help to restore and protect arts programs in local schools.
- 7. Encourage and support the establishment of local historic districts and heritage commissions.
- 8. Assist communities in achieving local certified government status through the NH Office of Historic Resources.
- 9. Support and promote the establishment of coordinated and organized leadership networks for the arts and culture.



Introduction: Temperatures in southern New Hampshire have been increasing since 1970 (the region's annual average temperature has increased 1.1 to 2.6°F) and by 2100, it is projected that the region's annual average temperatures may increase as much as 4 to 8°F. The region's annual average precipitation has also increased during the same time period (12-20 percent) with more extreme precipitation events occurring (*Climate Solutions New England*, 2014).

It is projected that the climate in New Hampshire in 2040 will be more like that currently in Maryland, and the New Hampshire of 2070 could be more like North Carolina (New England Climate Impact Assessment, 2007). Warmer temperatures will increase many natural hazards, such as flooding, erosion, extreme heat, etc. as well as the frequency and severity of storms and storm related damage. Over \$68 million in FEMA public assistance grants were given to the State of New Hampshire between 2007 and 2011 alone.

The SNHPC Region will experience negative economic impacts from the timber and maple industries, as the forest industry migrates northward. Agriculture will be challenged with droughts and warmer weather impacting apples and blueberries. Higher food costs will have an impact on people living in poverty in the region. What are the strategies to work towards more renewable energy sources and a long-term reduction in greenhouse gases? How can the region prepare itself for increased heat-related illnesses including more mosquito and tick-borne illnesses? What can be done to prepare towns in the region for the global warming impacts? These questions and other global warming impacts are some issues are explored in the **Climate Change Impacts Assessment Chapter** of this plan (see Volume 2).

Community Input: This chapter is based on a Value Statement made by residents stating how they support renewable energy choices such as solar, wind, and geothermal that are climate-friendly. They support policies

for higher energy efficiency standards in new buildings and incentives for home energy efficiency improvements. Many residents are also

57 percent of residents are concerned about their community's level of preparedness concerned about various weather-related events. Over half (57 percent) of residents in the region are concerned about their **72 percent** of Americans want more research funding for renewable energy

community's level of preparedness in weather-related situations (13 percent are very concerned and 44 percent are somewhat concerned). The majority of Americans (83 percent) want the country to make an

effort to reduce global warming, even if it has economic costs. Two-thirds (72 percent) want more research funding for renewable energy and 71 percent support providing tax rebates for people who purchase energy-efficient vehicles or solar panels. Over half (67 percent) want to regulate carbon dioxide as a pollutant.

Key Issues:

- It is important the region's communities recognize and politically support local, regional, state and federal efforts to address climate change to secure a sustainable future.
- There is a general overall lack of knowledge about climate change among both among elected officials and the public.
- The complexity of climate change science often complicates educational efforts to inform the public.
- There are continuing challenges in our society in transitioning from fossil fuels to alternative and renewable forms of energy which can lower emissions and improve the environment.
- Recognizing and making choices now to improve the region's infrastructure and prepare for the future requires public investment and commitment.
- Developing local, state, and national climate change leadership is an important step in addressing and adapting to the consequences of climate change and increasing natural disasters.

• Municipalities in the region are not leading and working together to adopt lower emissions goals. These goals and actions could be developed through local and regional sustainability plans and policies as part of the community's master plan.

Key Goals/Objectives:

- 1. Work to increase understanding, education, and training opportunities for adapting to and preparing for climate change.
- 2. Reduce greenhouse gas emissions and other environmental impacts in order to lessen the impacts of climate change on the SNHPC Region.
- 3. Work toward climate change impact adaptation; prepare for and mitigate hazards associated with climate change.
- 4. Increase leadership and cooperation on climate change issues throughout and beyond the region at all levels of government.
- 5. Develop and identity funding sources and innovative financing tools and programs for climate change mitigation and adaptation.

Top Action Recommendations:

- 1. Encourage developers to locate structures in suitable areas less prone to natural disasters
- 2. Support public transportation and local and state fleets which utilize alternative fuels which generate less greenhouse gas emissions.
- 3. Establish and promote climate change training programs for municipal employees to prepare for increased natural disasters.
- 4. Encourage greater participation and support for mutual aid among all levels of government.
- 5. Support climate change education and sustainability programs in public schools.
- 6. Increase public awareness of the health implications of climate change, including emergency preparedness.
- 7. Work with all levels of government to decrease stormwater runoff and flooding and promote and implement low impact development practices, standards and ordinances.
- 8. Support use of higher frequency design standards in designing drainage structures and improving the region's infrastructure.



Introduction: New Hampshire's average electricity price in 2012 was 16.47 cents per KWh, which is the sixth highest in the country. This is an economic challenge for residents, municipalities and businesses in the state and the SNHPC Region. Energy efficiency and energy conservation can be the most sustainable, cost-

effective and least polluting means of reducing our demand for energy. Almost all existing buildings have the potential to reduce energy use by up to 60 percent with relatively simple and low cost practices. With climate change there is a strong interest in reducing our use of fossil fuels so renewable energy sources, such as solar, wind and biomass, are being seriously considered. The state's renewable portfolio standard, a regulation that requires the increased production of energy from renewable energy sources, calls for 24.8 percent of electricity from renewable energy by 2025. There are some solar arrays in the SNHPC Region, including the largest in New Hampshire, a 525kW solar array installed on the top level of the Manchester Airport parking garage, as well as a 51kW solar array on the PSNH roof, and a 50kW array on the Stonyfield Farm Yogurt Factory roof. Biomass is another feasible option for the region. What are the best resources available to improve energy efficiency and reduce our reliance on fossil fuels? What funding sources are available to support renewable energy and achieve the state's energy goals? This and other energy related information is addressed in the **Energy Efficiency Chapter** of this plan (see Volume 2).

Community Input: Many residents in the region view energy efficiency and energy choices as the second most important priority for investing public dollars.

77 percent support incentives for home energy efficiency improvements Three in four residents (77 percent) support expanding incentives for home energy efficiency improvements (with 52 percent who "strongly

support"), followed by higher energy efficiency standards in new buildings (74 percent), and promoting renewable energy

sources such as solar, wind and geothermal (73 percent). Meanwhile, only 34 percent were in support of public charging stations for electric vehicles. Half of residents (49 percent) think local governments should **49 percent** residents want local governments involved in guidelines for renewable energy

be very involved in guidelines for renewable energy (such as large wind farms. Half of residents (49 percent) think local governments should be very involved in guidelines for renewable energy (such as large wind farms).

Key Issues:

- Although cost-effective in the long run, many building efficiency and renewable energy projects require significant up-front costs that municipalities, businesses and homeowners cannot afford.
- Many energy efficiency and renewable energy programs in New Hampshire are complex and difficult for the general public to understand.
- Having a mix of energy supplies can reduce disruptions and mitigate the price volatility of fossil fuel and improve local energy security. The Southern New Hampshire region will face many decisions related to energy security in the future and will need to assess the pros and cons of government intervention to achieve diversity goals.
- There is a need for close coordination between energy and environmental policy to more effectively achieve common goals and to ensure respective development and implementation does not inadvertently work at cross purposes.

- Current zoning regulations and disperse patterns of development are not always conducive to reductions in energy consumption.
- Transportation is an activity that consumes a great deal of fossil fuels and public transportation options in the Southern New Hampshire region are lacking.
- The Northern Pass project projected to bring 1,200 megawatts (MW) of clean, low-cost energy from Hydro-Québec's hydroelectric plants in Canada to New Hampshire and New England continues to be a major issue confronting the state and the SNHPC Region.

Key Goals/Objectives:

- 1. Promote and support greater collaboration among all levels of government in implementing effective energy efficiency practices and renewable forms of energy within the state and region.
- 2. Promote greater deployment of renewable energy sources, such as solar, wind and biomass within the region's communities through local tax exemptions and streamlining local approval processes.
- 3. Support and provide assistance to local energy commissions in helping municipalities set local energy policies, achieve greater energy efficiency, and reduce energy costs.
- 4. Provide assistance to municipalities and local energy commissions in developing and updating municipal energy plans and master plan chapters, and measuring energy use and building performance.
- 5. Support smart growth and green building and infrastructure practices to reduce energy costs and improve energy efficient development.

Top Action Recommendations:

- 1. Assist communities in developing and updating local energy plans/master plan chapters and measuring energy use and building performance.
- 2. Carry out solarize program for the region's communities to decrease system and installation costs and expand residential solar deployment.
- 3. Develop a region-wide Energy Plan based on state's energy strategies and local needs.
- 4. Promote and encourage standardized and flexible zoning, site plan and subdivision regulations to allow for greater deployment of renewable energy installations.
- 5. Promote land use and tax policies that allow for efficient and renewable energy opportunities.
- 6. Promote coordination between energy and environmental policy-makers to achieve common goals.
- 7. Encourage state building codes to increase energy efficiency in new buildings and reduce fossil fuels.
IMPLEMENTING THE PLAN

Roles and Responsibilities

The SNHPC has the primary responsibility in implementing this plan and working with the region's municipalities and the state to address the issues raised, as well as the identified goals and key action recommendations contained in the plan. Other partners, including federal agencies, local and nonprofit organizations, and the private sector can also play an important part in carrying out the plan.

Funding is a key part of implementation and the SNHPC will have to continue to work cooperatively with the region's municipalities and other partners to identify grant opportunities, raise monies and generate funds to implement the top action recommendations of the plan.

Given the projected future growth of the region as outlined in this plan, the need for community and regional planning will continue to grow in importance as an important activity to help move Southern New Hampshire forward to 2035.

Summary of Top Action Recommendations

All of the Top Action Recommendations and priority projects of the Leadership Team are identified in the following two tables. These recommendations and projects, while advisory only, help to set a roadmap for the SNHPC in its future planning work for the region and the region's communities.

Moving Southern New Hampshire Forward Top Action Recommendations										
Prepared June	2014									
Priority Rating	Recommended Actions	Level of Action*	Relevant Sectors*						Potential Partners	Notes*
			Economic	Education	Government	Health	Public Safety	Residential		
Land Use	 * Continue to assist planning boards with Master Plans and land use regulations * Assist planning boards in mapping/evaluating existing/potential areas for mixed-use development 	Local			x				Planning Boards	Continuous planning and special projects
Housing	 * Support incentives for investment in reuse and redevelopment of existing structures * Encourage cluster housing to provide affordable housing and protect the environment 	Local and Regional	x		x				Planning Boards	Continuous planning and special projects
Transportation	 * Develop bike/pedestrian plans for the region and communities * Encourage/adopt land use policies to expand transportation options and alternatives, including passenger rail 	Local and Regional	x		x	x			Municipalities and State	Special Projects and Transportation Alternative Funding
Community Infrastructure & Facilities	 * Support efforts to improve and expand public water and sewer infrastructure * Encourage/support TIFDs, impact fees and bonds to fund necessary infrastructure and capital facilities 	Local and Regional	x		x	x	x	x	Municipalities and State	Special Projects and CDBG Funding
Environment, Open Space & Agriculture	 * Promote/encourage adoption of innovative land use controls and environmental characteristics zoning * Develop comprehensive science-based natural resource and conservation plans region 	Local and Regional	x		x	x			Municipalities and State	Special Projects

Economic Development	 Continue to support and market the strengths of the region and state, statewide/nationally Promote local business/support development to help advance start-ups/incubators/arts/agriculture 	Local and Regional	x	x	x	x			Municipalities and State	Continuing assistance to Access Greater Manchester Economic Development Alliance; CEDS planning with Concord and Manchester; EDA Grants
Cultural & Historic Resources	 * Support use of historic locations for arts and culture to sustain community character/place * Assist planning boards to enable the creation/coordination/enhancement of historic preservation and cultural opportunities 	Local and Regional	x		x			x	Municipalities and State	Increased level of participation will be required; Seek Funding Sources
Climate Change	 * Encourage developers to locate new development in suitable areas; cluster with open space where appropriate * Establish training program for key municipal employees 	Local and Regional	x	x	x	x	x	x	Municipalities and State	Increased level of participation will be required; Seek Funding Sources
Energy	 * Assist communities in developing and updating local energy plans/master plan chapters * Develop region-wide renewable energy plans and programs 	Local and Regional	x	x	x	x	x	x	Municipalities and State	Increased level of participation will be required; Seek Funding Sources

Top Action Recommendations					
Planning Chapters	Potential Projects	Potential Funding Source(s)			
Land Use	Master Plan Updates; Land Use Regulations Update and New Ordinances; Cost of Community Services Studies; Zoning Studies	Local funding & community planning grants			
Housing	Housing Plan Updates; Fair Housing Assessment; Regional Housing Needs Assessment	Community Development Block Grants (CDBG); State OEP Block Grant funding; Local Funding			
Transportation	Bicycle/Pedestrian Master Plans & Regional Plans; Special Corridor Studies; Passenger Rail Studies; Scenic and Historic Byways Plans	Community and Foundation Funding; Transportation Alternatives Funding; Federal Transportation Funding			
Community Infrastructure & Facilities	TIFD Plans and Assistance; Capital Improvement Program Updates; Impact Fee Feasibility and Assessment Reports; Broadband Plans; Mutual Sharing; Group Purchasing	Local funding & community planning grants			
Environment, Open Space & Agriculture	Natural Resources Inventories; Open Space Plans; Master Plan Chapters; Local, Regional State studies and special projects; Recreation Plans; Local Agricultural Plans; Food Desert Mapping	Local and state funding and grants			
Economic Development	CEDES planning; regional economic development cooperation; Economic Development Plans and Master Plan chapters	Local and state funding; EDA planning and infrastructure grants			
Cultural & Historic Resources	Local and Regional Historic Preservation Surveys, Mapping and Planning Studies; Historic District Commission assistance; Land Use Regulations	Local and state funding; private funding			
Climate Change	Local and Regional Climate Adaption Plans; Public Infrastructure Upgrades - culvert assessment and vulnerability; public health mapping	Local, state and federal funding; private funding			
Energy	Update local energy plans & master plans; assistance to Energy Committees, including energy monitoring and performance; solarizing campaigns and local permitting	Local, state and federal funding; private funding			

MOVING SOUTHERN NH FORWARD VOLUME 2



2015-2035

Regional Comprehensive Plan 2015



Southern New Hampshire Planning Commission works to make our region a better place 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.

Adopted by the Planning Commission on December 16, 2014

Telling the Story and Plan Implementation

Volume 2

Prepared by the Southern New Hampshire Planning Commission

Adopted on

December 16, 2014

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2015-2035

Regional Comprehensive Plan 2015



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PURPOSE

The purpose of this report is to provide the public and decision makers with a strategic analysis and evaluation of the region's land use. This includes existing and future land use conditions as well as key land use issues and needs as identified through the public outreach efforts of this plan; and the key goals and recommendations of the plan. This chapter is not meant to serve as a comprehensive land use plan. Rather, it is a strategic evaluation of land use, taking into consideration the sustainability and livability principles and themes outlined in Volume 1 of the Plan.

The type, intensity and distribution of current land use activities have a significant influence on future development patterns. Transportation, water and sewer services, utilities and other infrastructure play an important role in shaping land use. Natural resources and environmental constraints also directly influence where growth and development can and cannot occur. In addition, the marketplace, economic conditions, local zoning policies, as well as the availability of developable land are all important factors in where and how land use patterns emerge.

VISION



The Land Use Chapter is founded upon the following value statement:

Historical settlement patterns, such as downtowns, villages, and neighborhoods, vary from city to country and regional values reflect appreciation for this diversity; residents want future development to largely occur in areas that are already developed, such as renewing or redeveloping downtown areas, villages and neighborhoods.

PUBLIC INPUT FROM SNHPC OUTREACH

Public input from across the region was collected through various public outreach efforts, such as regional visioning workshops, comments submitted online, and a telephone survey conducted by the University of New Hampshire. The public responses received through these efforts all demonstrate widespread public support for community development, environmental protection, energy policies and emergency preparedness.

As captured in SNHPC's Public Outreach Report, Traditional Settlement Patterns and Development Design, preservation of New Hampshire's downtowns, villages, and neighborhoods, as well as protection of farm land, forest land and other rural resource lands is highly valued by all New Hampshire residents.

The "Traditional Settlement Patterns & Development Design" livability principle received only positive feedback. See **Figure 1** for the three categories of comments on what the public feels is best and most important.







The proximity and location of the SNHPC's region received the highest public responses. Respondents said they enjoyed being close to Boston and other urban areas while living in a rural area. The location of cultural resources and community services was also cited, including nearby oceans and beaches, mountains and ski slopes, and places for fishing and woodland recreation. Downtown Manchester also received praise, with one comment highlighting its unique features, such as the old mill buildings and nearby Merrimack River. See a selection of some of the specific public comments regarding "what's best" about the SNHPC Region, as summarized in **Table 1**.

Categories	Comments
	Proximity to Boston, but still away from the rat race
	Close to everything — Beach, snow skiing, and urban areas too
	Proximity to outdoor, recreational and cultural resources
1 Proximity/location	CommentsProximity to Boston, but still away from the rat raceClose to everything — Beach, snow skiing, and urban areas tooProximity to outdoor, recreational and cultural resourcesRural yet close to culture and servicesI love it here. In an hour I can get to the ocean, the mountains, or the city of Boston.The variety available within a few hours — ocean, mountains, fishing, woodlandsManchester — great downtown area!I live away, but Manchester will always be home. I've loved watching its revitalization over the last 15 years or so, as the downtown and Millyard have taken off. And I can't think of anywhere else in New Hampshire—maybe even New England— where the natural landscape and urban space coexist so dramatically, as when I see Ste. Marie's lit against the sunset behind Uncanoonuc, or when the Merrimack roars past hulking, 150-year-old mills.Not too big and not too small: No traffic
	I love it here. In an hour I can get to the ocean, the mountains, or the city of Boston.
	The variety available within a few hours — ocean, mountains, fishing, woodlands
	Manchester — great downtown area!
2. Downtown Manchester/ city	I live away, but Manchester will always be home. I've loved watching its revitalization over the last 15 years or so, as the downtown and Millyard have taken off. And I can't think of anywhere else in New Hampshire—maybe even New England— where the natural landscape and urban space coexist so dramatically, as when I see Ste. Marie's lit against the sunset behind Uncanoonuc, or when the Merrimack roars past hulking, 150-year-old mills.
3. Size – geographical/	Not too big and not too small; No traffic
population	Good size city, Upper West Side (Rimmon Heights) is a nice part of town. Rail trail is a nice addition.
	1

TABLE 1 LAND USE: WHAT'S BEST

Source: SNHPC

REGIONAL VISIONING WORKSHOPS

The SNHPC held three regional visioning workshops throughout the region. The first workshop focused on the towns of New Boston, Weare, Goffstown and Bedford. The second workshop addressed the towns of Candia, Deerfield, Hooksett, Chester, Raymond and the City of Manchester. The third workshop focused on the towns of Derry, Londonderry and Windham. A summary of the public comments received at these workshops, as related to existing and future land use, is provided below.

NEW BOSTON WORKSHOP:

Workshop participants mentioned their strong preference for preserving rural character and a desire to keep Southern New Hampshire rural. Participants also spoke about how Southern New Hampshire is changing as the population has grown and newcomers from other states continue to move to the area. Farms have disappeared over the years, and the amount of traffic has increased. One comment noted that "none of us like regulations, but as we get denser, [we] need control." Participants suggested cluster zoning be considered for conserving green space. Other participants wanted to avoid building multi-family structures in concentrated areas. The public also expressed fear that if development is more and more automobile dependent, communities will lose social opportunities for connection with each other.

CANDIA WORKSHOP:

Workshop participants emphasized that their communities are rural and they want to keep them that way. Comments suggested there are differences between communities in the region, such as between Manchester and rural communities, and these differences should be embraced. Participants talked about finding a balance between preserving rural character and encouraging development, and there being a conflict between economic interests and residential values. Workshop participants also identified quality schools as a spur for growth, while uncertainty regarding school funding as a detriment to growth.

Conversations focused on how some communities allow cluster development, while others do not and may have a tendency toward sprawl. While some were in favor of cluster development and didn't think that "bowling alley" style lots are wise, others were opposed to cluster development. One participant noted that Candia may not be legally able to keep their large lot sizes under state law because of an obligation to provide housing to police, teachers, firefighters, etc. One comment suggested perhaps adopting agricultural zones, and another advised reconsidering permitted uses in the zoning districts, such as Rt. 28 Bypass and used cars dealerships. The link between road system design and land use was noted as well.

DERRY WORKSHOP:

Workshop participants identified three different kinds of communities in the SNHPC Region: urban communities such as Manchester, commuter towns, and rural towns. When asked if their communities were using land wisely, some participants said they are trying, while multiple others answered no- there is development that doesn't fit or doesn't work in their communities. Some participants noted not everybody wants to live on a large lot, but in Windham the minimum lot size is one acre. A person in another group commented that subdivisions with large houses are cut off from the rest of an area and not sustainable. Zoning, as guided by master plans, was identified by one group as a key determinant of a town's characteristics. Some comments were that zoning needs to consider the surrounding neighborhoods and that flexible zoning causes difficultly with abutter issues. Participants also do not want sprawl.

In addition, many participants at the Derry workshops wanted to see increased mixed-use development within the Southern New Hampshire Region. These participants named a variety of reasons why they are in

favor of mixed-use development, or recreating a downtown-style area. With the aging population especially they see walkability, accessibility, and livability as important characteristics; additionally, they consider mixed-use development as a solution to transportation challenges and a wise way to use the land. However, participants noted that even though zoning for mixed-use development has already been in place for years, it has not yet been built and incentives are needed.

Table 2 provides a summary of the major public comments received from the three workshops.

Livability Principles	Comments
Traditional Settlement	People coming from Massachusetts –[there is development pressure on the region from as far away as Boston]
Patterns & Development Design	Cluster zoning can be considered for conserving green space – [may cause] increase(d) school children population– should be a town decision/ vote
	Avoid building multi-family structures in concentrated areas
	Should we have agricultural zones?
Traditional Settlement	As neighboring towns are built out, will there be increased pressure on our community, Candia, to build?
Design	Long range, I don't think that "bowling alley" [style] lots with a small frontage and far back is wise in Candia
	l don't want clusters, [l] want a rural feel
	Some [people] don't want to live on big lots
Traditional Settlement	[We should] increase mixed-use, especially with the aging population- walkability, livability
Design	[The] zoning is there, but nobody builds mixed-use—need incentives

TABLE 2 NEW BOSTON, CANDIA, AND DERRY WORKSHOP COMMENTS

PUBLIC INPUT FROM UNH SURVEY

The UNH Telephone Survey results specific to the SNHPC Region provide further insight into residents' land use preferences:

- When asked "where should future development occur in your part of the state?" More than two-thirds (67 percent) of residents think that future development should occur in areas that are already developed. This suggests residents are in favor of revitalizing their communities.
- 67% want future development to occur in areas that are already developed
- Fewer residents (26 percent) support development in undeveloped areas and 7 percent did not know where future development should occur.
- A majority of residents (90 percent) want to protect historic buildings & neighborhoods; (89 percent) want local agriculture to be actively encouraged in their community as well as promoting safe places to walk or bike; and (85 percent) want to see existing businesses promoting and expanded.

90% want to protect historic buildings and neighborhoods

- About four-fifths of residents (82 percent) stated that promoting other recreational activities, attracting more non-polluting light industry (74%) and increasing access to forests and trails (76 percent) should be encouraged in the community.
- About half of SNHPC residents (51 percent) think tourism and attracting more stores and shops (48 percent) should be promoted in the community. Those who are non-white and households earning less than \$20,000 are more likely to say communities should actively encourage attracting more stores and shops. Residents who live or work in Northern and Central NH are *more* likely to say communities should actively encourage promoting tourism.

KEY ISSUES & CONCERNS

Key Issues and Concerns

- 1. The SNHPC Region is the largest populated region of the state and is now home to 261,262 residents as recently reported by the 2010 U.S. Census. This is slightly less than the 263,389 residents reported by the NH Office of Energy and Planning for the region in 2009.
- 2. Between 2000 and 2010, the SNHPC region experienced a slow overall rate of growth of 0.5 percent, reflecting a total increase of only 12,424 people. The towns of Bedford, Manchester, Hooksett, New Boston and Weare experienced the majority of this population increase while several towns, such as Derry and Candia, actually lost population. The balance of the region's towns experienced only modest population gains, except the Town of Windham, which experienced the highest rate of growth given its proximity to MA.
- 3. By 2035, the SNHPC Region is projected to add more than 40,000 people.¹ Despite the social, fiscal and economic impacts resulting from the last recession and economic downturn, the region is consuming land at a steady and constant rate.
- 4. In 1995, approximately 38 percent of the region was developed. By 2009, the total amount of developed acres increased to 44 percent. At this rate, it is estimated that roughly 156,487 acres, or approximately 50 percent of the region, will be developed by 2015. Of this total, there will be approximately 63,000 acres of non-residential developed land and 102,821 acres of residential developed land. This will leave roughly 145,973 acres, or 50 percent of the region, as open/undeveloped lands.
- 5. The total amount of industrial developed land continues to experience a steady decline. Between 2000 and 2009 there was a large decrease of 11.5 percent.
- 6. The total amount of commercially developed lands experienced the greatest percentage increase over this nine-year period (141.1 percent) of any land use classification, jumping from 4,050 acres in 2000 to 9,766.5 acres in 2009.

POPULATION PROJECTIONS: 2015-2035

Both the SNHPC and the NH Office of Energy and Planning (OEP) have prepared population projections for the municipalities within the region. Both SNHPC and OEP projections are based on the cohortcomponent method, which takes into account births, deaths and in and out migration rates. The difference between the two projections is that OEP uses county level data as part of a shift-share method to allocate

¹ SNHPC Population Projections 2035

the county population projections to the municipalities. The projections are prepared in five-year intervals between 2015 and 2035 as shown in the Appendix to this Chapter. While growth rates are roughly 0.57 percent annually in the region between 2000 and 2010, historically the region added 15,307 people between 2000 and 2010, and it is not unreasonable to anticipate that the region will grow by 44,871 between 2010 and 2035.

EXISTING CONDITIONS

The type, intensity and distribution of existing land use activity have a significant influence on future development patterns. Transportation, water and sewer services, utilities and infrastructure play an important role in shaping land use. Natural resources and environmental constraints also directly influence where growth and development can and cannot occur. In addition, the marketplace, economic conditions, local zoning policies, as well as the availability of developable land and utilities are all important factors in where and how existing and future land use patterns emerge.

This chapter examines the major land use changes that have taken place within the SNHPC Region since 2000 and describes and analyzes the existing residential, commercial, industrial and public land use patterns that have emerged. Additionally, it compares the land use and zoning patterns that have developed in each of the region's communities.

HISTORICAL PERSPECTIVE

Founded as agricultural communities, the existing land use distribution we see today in the SNHPC Region does not illustrate a predictable pattern of development. Why did some communities shift rapidly from rural to urban and, more importantly, why did others transition from urban to suburban and rural? The patterns of existing land use seen today can be explained by the region's economic development and historic events.

In the early 19th century, the SNHPC Region was poised to develop in a different direction, with communities such as Weare and Derry emerging potential centers for urban expansion. In 1820, the communities with the greatest populations were Londonderry/Derry, 3,127, Weare, 2,781, Chester, 2,262, and Deerfield, 2,133. The town with the lowest population at this time was Manchester, with 761 residents.

The opening of the Amoskeag Mills in Manchester in 1830 signaled a dramatic population shift and land use development changes. In 1830, Auburn, Bedford, Candia, Goffstown, Manchester, and Raymond all experienced population increases. The population landscape of the region was vastly different from today. In the 1820s, many of the smaller towns in the region were growing. Surprisingly, these towns had total populations and larger growth rates than Manchester, the largest city in the region today.

While the population changes were not immediately evident in 1830, by 1840, significant changes were taking place. Manchester's population grew by 269 percent from 1830 to 1840. The following decade it grew by an additional 331 percent. In fact, Manchester experienced population increases every decade from 1820 to 1920. Furthermore, towns that were population leaders in 1820, or were at least experiencing population increases between 1820 and 1830, experienced regular declines over the same 100-year period, indicating a migration to the growing urban center of Manchester.

Widespread population decreases over much of the region are evident during war years, from 1860 to 1870, and from 1910 to 1920. Bedford, Hooksett and Manchester, however, still experienced growth during the Civil War decade. Bedford, Hooksett, Derry and Manchester all experienced growth during

the decade marked by World War I and the 1918 influenza pandemic. The town of Derry experienced regular population increases from 1870 to 1920, with increases between 5 and 43 percent each decade.

Auburn, Bedford, and Candia are described in the New Hampshire Municipal Abstracts of 1944 as agricultural communities whose residents commute to Manchester for work. Chester and New Boston are described as agricultural communities with up to 25 percent seasonal residences. Weare is also described as agricultural with a small summer colony. Deerfield is described as agricultural and Londonderry as 25 percent agricultural. Raymond is described as a manufacturing town, while Hooksett's residents are believed to commute to either Manchester or Suncook since Hooksett is contiguous to Manchester. Goffstown is described as urban with an important agricultural area. Derry and Manchester are the only towns to be described as urban. These descriptions from 1944 more approximate what the region looks like today, but still are not compatible with today's existing land use.

Agriculture has declined in importance to the region's communities since 1944. There are fewer seasonal residences now also. Existing land use today is predominantly residential. These patterns of existing land use are evidence of the historic legacy of economic growth and decline in the region, as well as the expanding urban center of Boston and the resultant bedroom communities in the SNHPC region. With the expansion of Interstate 93, the region can expect more growth in both residential and non-residential uses. With good planning and land use tools, the communities in the SNHPC Region can help to guide this growth in the best way possible.

The existing land use patterns of today will shape the future land use of the region. Continued population growth will require still more acres to be devoted to residential and non-residential uses. Additional acres will be consumed for expanded utilities and streets. More and more communities are creeping ever closer to tipping the scale and having more developed acres than vacant acres. By examining the existing land use patterns in the region, we can identify potential imbalances of use ahead of time and plan for future land use issues.

LAND USE CHANGES, 2000-2010

There are two sources of information documenting existing land use within the SNHPC Region. These include a land use map which was created and digitized utilizing 2010 aerial photography of the region (see Map 1-1: Generalized Land Use in the SNHPC Region) and SNHPC's Land Use Report – 2010 Update.

<u>Generalized 2010 Land Use Map</u>: The existing land use of the region as depicted on Map 1-2 is summarized in Table 3 below.

Land Use Category	Acres	Total Regional Acreage	Percentage
Residential	55676.2	332414.1	16.70%
Commercial	6649.5	332414.1	2.00%
Industrial	1763.6	332414.1	0.50%
Transportation, Communications, Utilities	13100.3	332414.1	3.90%
Industrial and Commercial Complexes	1035.2	332414.1	0.30%
Mixed Developed Uses	193.0	332414.1	0.10%
Outdoor, other Urban Built-up land	3375.0	332414.1	1.00%
Vacant	91.1	332414.1	0.10%
Agriculture	10266.5	332414.1	3.20%
Transitional	7452.0	332414.1	2.10%
Forest	199610.0	332414.1	60.00%
Water	12491.1	332414.1	3.80%
Barren	16610.5	332414.1	5.10%
Tundra	4100.1	332414.1	1.20%
	332414.1	332414.1	100.00%

TABLE 3 EXISTING LAND USE DATA FROM 2010 GENERALIZED LAND USE MAP, SNHPC REGION

Source: SNHPC



SNHPC Land Use Report – 2010: The SNHPC relies on reported land use for the region as reported by the municipality on an annual basis. This data is based on actual building permit data collected by each municipality in the region on a cumulative basis.

As documented in the SNHPC Land Use Report – 2010 Update, there have been substantial changes in the total land use profile of the region over the past ten years. Overall, the amount of developed land in the region increased 16.4 percent between 2000 and 2010 (see Table 4). Out of the total 314,003 acres of land area in the SNHPC Region, approximately 139,011.6 (44 percent) were developed by 2010. The term "developed" means land in use for residential, public, commercial, or industrial purposes, as well as land used for utilities and streets.

Between 2000-2010, all land use categories in the region except for industrial, increased. The largest amount of developed acreage in 2010 is residential, makes up approximately 81,138.7 acres and represents an increase of 18.7 percent since 2000. Public and Semi-Public land, in both 2000 and 2010, comprised the second largest category; in 2000 - 27,469 acres were developed and by 2010, approximately 28,606.5 acres were developed. The third largest amount of land, both in 2000 and 2010, is dedicated to streets and utilities and in 2010 totaled 15,482 acres.

Industrial land use has experienced a steady decline since 1995 and the numbers from 2000 to 2010 follow this trend showing an 11.5 percent decrease in total acres. Commercial development recorded the greatest increase since 2000 (14.1 percent) of any other land use category, jumping from 4,050 acres in 2000 to 97,66.5 acres in 2010 (Land Use Report Update – 2010).

Category	2000		2010		2000 to 2010	
	Acres	% of Region	Acres	% of Region	Absolute Change	% Change
Residential	68,366.90	21.80%	81,491.80	26.00%	13,124.90	19.20%
Commercial	4,050.00	1.30%	9,932.50	3.20%	5,882.50	145.20%
Industrial	4,542.00	1.40%	4,017.80	1.30%	-524.2	-11.50%
Semi-Public and Public	27,469.00	8.70%	28,635.70	9.10%	11,66.70	4.20%
Utilities and Streets	14,965.00	4.80%	15,510.80	4.90%	545.8	3.60%
Total Undeveloped Land	194,609.70	62.00%	174,413.90	55.50%	-20,195.70	-10.40%
Total Developed Land	119,392.9	38.00%	139,588.70	44.50%	20,195.80	14.50%
SNHPC Region	314,002.60	100.00%	314,002.60	100.00%	-	0.00%

TABLE 4 SNHPC REGION LAND USE AS A PERCENT OF TOTAL ACREAGE, 2000-2010²

Source: SNHPC Annual Land Use Updates³

Undeveloped land is defined as vacant land left in its natural, un-built state. Undeveloped land made up 62 percent of the region, totaling 194,609.7 acres in 2000. Since then, however, undeveloped land has dropped to 55.7 percent within the region, at a total of approximately 174,991 acres. This represents an

² SNHPC in the process of adding the Town of Windham to the 2012 and 2013 Update to the SNHPC Land Use Report. This data is not yet available and is not reported in this table.

³ Land Use totals based on 1) building permits (new structures, conversions and demolitions); and 2) lot sizes (acreage) associated with new, converted or demolished structures. Data is annually entered into a Microsoft Access database that has been maintained since 1996.

overall decrease of 10.1 percent. As of 2010, the percentage of undeveloped land (55.7 percent) is gradually becoming equal to the percentage of developed land (44.2 percent). It is a very real possibility that these numbers will cross each other, meaning that developed land, not undeveloped land, will be the most common land use in the SNHPC Region in the very near future.

Active agricultural lands are areas without physical structures, but are actively used as agricultural land. While agricultural land is considered an active land use, it is not considered developed land when considering future development possibilities.

The region as a whole, however, is the sum of its parts. A better understanding of the regional land use picture can be obtained by the individual communities' land use profiles. The region's more rural communities, currently experiencing increased growth, can benefit from examining land use changes in the more developed neighboring communities. An understanding of these patterns would help the growing municipalities anticipate and plan for their own future.

The towns of Weare (38,464.3 acres) and Deerfield (33,347.7 acres) are the largest towns in the region and have the greatest total land area (see Figure 1). Conversely, the towns of Windham (17,772.4 acres) and Chester (16,618 acres) are the region's two smallest communities in terms of total land area. However, total land area alone is not enough to get an accurate feel for what the community is like. Even though the Town of Weare has the largest total land area in the region, 26,579.3; approximately 70 percent of those acres are undeveloped. The Town of Bedford (21,156.13 acres) on the other hand is one of the smaller communities in the region in terms of total land area, but it is approximately 75.5 percent developed at 15,970.1 acres.

The City of Manchester is the region's leader in overall developed land area with approximately 17,456.6 acres. The Town of Bedford has grown substantially in recent years containing a total of approximately 15,970.1 developed acres. Manchester and Bedford are the only two municipalities in the region with fewer than 5,200 undeveloped acres. Other than Auburn, which has approximately 9,983 undeveloped acres, no other municipality has fewer than 10,000 undeveloped acres.

The Town of Bedford had the highest regional share of developed commercial square footage in 2009 (36.4 percent) while Manchester posted the highest percentage of semi-public development (62.5 percent). New Boston accounted for 59 percent of the region's positive public development growth (Manchester recorded a loss of public square footage). No SNHPC region municipality recorded any completions in industrial development. Auburn, Hooksett and Raymond all recorded no appreciable non-residential growth in 2009.

Manchester is the leader in land used for utilities and streets, with approximately 3,567.5 acres. This is slightly less than half the utilities and streets area in Londonderry, whose approximately 1,847.0 acres ranks second in the region. Goffstown is barely behind Londonderry in this category, with approximately 1,538.6 acres.



FIGURE 2 TOTAL LAND AREA DEVELOPED AND VACANT BY MUNICIPALITY

Source: SNHPC

LAND USE AND ZONING

Local governments employ their zoning powers as a means of accommodating various land use activities within their borders and controlling the growth and development of the community for the public good. Specifically, these zoning powers are used to minimize the impact of conflicting land uses on adjacent property; to limit unplanned, premature and scattered development; and to protect sensitive natural and cultural resources. These public objectives are achieved through a variety of land use regulations, including site plan, subdivision and zoning ordinances.

All 14 communities in the SNHPC Region have adopted a Zoning Ordinance of one form or another. Most communities in the region are concerned with balancing residential growth with economic development efforts. New Hampshire RSA 674:21 Innovative Land Use Controls and RSA 674:22 Growth Management; Timing of Development also permit municipalities to enact ordinances to regulate and manage growth. Innovative Land Use Controls also provide municipalities with a number of tools to encourage economic development.

Zoning tools used to manage growth include growth management ordinances, impact fees, and phased development. A growth management ordinance limits the number of building permits in any given year to a predetermined number and must be based on statistical data that demonstrates the municipality is growing faster than it can provide municipal services to serve its population. Impact fees allow municipalities to assess new development for its share in the cost or increase in new capital facilities and services necessary to serve new growth. The fees must be used to build new facilities that are directly proportional and have a direct rational nexus to new development. Phased development is a tool that allows new development to occur in phases over time, but in manageable stages and not all at once. Municipalities in the SNHPC Region that have enacted a growth management ordinance, impact fees, or require phased development are shown in **Table 5**.

Municipality	Growth Management Ordinance	Impact Fees	Phased Development
Auburn	Yes	No	No
Bedford	No	Yes, School & Yes, Not requ Recreation but allowed	
Candia	No	Yes	No
Chester	Yes	Yes	Yes
Deerfield	No	Yes	No
Derry	Yes	No	Yes
Goffstown	No	Yes	Yes
Hooksett	No	Yes Yes	
Londonderry	Yes	No Yes	
Manchester	No	Yes No	
New Boston	No	No	Not mandatory
Raymond	No	Yes	No
Weare	No	No	Yes
Windham	No	Yes No	

TABLE 5 GROWTH MANAGEMENT ORDINANCES BY MUNICIPALITY

Source: Municipal Zoning Ordinances

Growth management ordinances, impact fees and phased development can also be used to help preserve the rural character of communities along with other land use regulations. There are also additional nongrowth management tools available to communities help preserve rural character. Some of these tools include, but are not limited to, the village plan alternative subdivision, historic district zoning, and establishing historic and site plan design standards.

The village plan alternative is a unique land use control that can be used to accomplish many public objectives. It promotes more efficient and economical development, which minimizes sprawl, preserves open space and retains village character. Any application under the village plan alternative is required to devote 80 percent of the total site area to conservation or open space purposes.

Designated historic districts and historic district zoning can help to both preserve and revitalize areas of historic significance within a community. Development and/or demolitions within a historic district may be required to be reviewed by a design committee to ensure that historic preservation interests are met. Additionally, permitted uses within a historic district could be adjusted to allow historic homes to be used for commercial or office space rather than solely as residential. Currently, the towns of Bedford, Goffstown, Londonderry, Raymond, Weare, Windham and the City of Manchester have designated historic districts (also see the Cultural and Historic Resources chapter of this plan).

Design standards range from providing a general clause requiring the preservation and protection of historic features to location specific guidelines for new development. The guidelines can specify locally desired architectural styles, construction materials, building scale, window and door design, sign size and design, awnings and canopies, lighting fixtures, landscaping, fencing, and screening methods. In the SNHPC Region, the towns of Chester, Goffstown, Hooksett, Londonderry, Windham and the City of Manchester have established design guidelines to ensure future growth and development in their historic

centers is compatible with its surroundings. Often these standards or guidelines are found in the Site Plan Review or Subdivision Regulations rather than the municipal Zoning Ordinance.

While growth and development is essential for economic vitality; the consequences of haphazard commercial and industrial development are undesirable and have a negative impact on growth. Some of the zoning tools available to attract economic growth and ensure that growth is compatible with the goals of the municipality include performance zoning, tax increment financing (TIF) districts, planned unit development and mixed-use development shown in **Table 6**.

Rather than listing permitted uses, performance zoning focuses on the intensity of land use allowed. Additionally, performance zoning looks at the performance of the parcel and how it impacts nearby community services and other parcels, rather than the specific land use. Since variances, appeals and rezoning are not needed, it can help landowners and developers obtain faster approvals with less additional local review. However, there can also be a larger learning curve because it is less rigid than traditional zoning.

Economic development districts – or TIF districts - are allowed under NH RSA 162. In such a district, the incremental taxes - or the difference in property tax resulting from an increase in property value on new, expanded or renovated development - are given to the municipality to use for infrastructure or other community services improvements within the district. The tax revenues associated with increased property values for existing buildings will continue to be allocated as normal for all community assets outside the TIF district.

Planned unit development is a combination of open space or conservation subdivisions and mixed-use development on a larger scale. A planned unit development is a return to the neighborhood concept, with all types of residential uses in close proximity to one another and to community services such as schools, hospitals, businesses and shopping facilities. Planned unit developments are very similar to the village plan alternative, with the exception of the required conservation land set aside. Certainly planned unit development offers an effective means to developing pedestrian friendly neighborhood centers.

Mixed-use zoning allows for commercial and residential uses on the same building or lot. By allowing mixed use zones, vehicle trips are reduced because residents can access services right in their neighborhood. Design standards within the mixed-use zone can ensure the desired image of the town remains despite any new development.

Municipality	icipality Performance Zoning		Planned Unit Development	Mixed-Use Development	
Auburn	No	No	No	No	
Bedford	Yes	Yes	No	Yes*	
Candia	No	No	No	No	
Chester	No	No	No	No	
Deerfield	No	No	No	No	
Derry	No	Yes	No	Yes	
Goffstown	No	No	No	Yes	
Hooksett	Yes	Yes	No	Yes	
Londonderry	Yes	Yes	Yes	Yes	
Manchester	nester No No Yes		Yes		
New Boston	New Boston No		No	No	
Raymond No		Yes	No	Yes	
Weare	Yes	No	No	Yes	
Windham	No	No	No	Yes	

TABLE 6 ECONOMIC DEVELOPMENT TOOLS AND ZONING ORDINANCES

*No specific zoning but it is allowed

Source: Municipal Zoning Ordinances

Environmental characteristics zoning focuses on protecting natural resources by limiting development within critical natural areas. Additionally, some ordinances, such as floodplain regulations, serve not only to protect natural resources, but to protect property.

Open space or cluster development is a popular choice for communities concerned about maintaining rural character and open space. In this type of development, the number of homes that would fit on a parcel of land in a traditional subdivision is built on a smaller portion of the same land, with the remaining land protected as common open space. The communities employing environmental characteristics zoning are outlined in **Table 7**.

Wetlands protection provisions may range from an established overlay district based on a prime wetlands study the community completed to just a buffer around any wetlands established in the community's dimensional standards. These standards can be implemented through Zoning Ordinances, Site Plan Review and Subdivision Regulations. Incorporating wetland protections into all three sets of regulations improves consistency in implementation.

Steep slopes protections are often implemented much like wetland protections and within many communities in the SNHPC Region these provisions are more often found in Subdivision and Site Plan Review Regulations rather than in Zoning. Steep slope provisions target land over a certain gradient, typically 25 percent but sometimes 15 percent. The most common and straightforward mechanism for regulating steep slopes is to remove the defined slopes from the calculation of buildable area.

Floodplain regulations must strictly follow state and national standards to ensure compliance with the National Flood Insurance Program. Floodplain regulations prohibit development in the floodway or from creating an increased risk of flooding, such as raising flood water heights, in the 100-year floodplain. The

regulations not only serve to protect the floodplain, but to protect property and reduce communities' risk to flood related disasters.

Aquifer and watershed protections work to protect groundwater supplies from adverse development and minimize the hazards related to the storage or disposal of solid and hazardous waste. They may review and inspect on site drainage systems and their associated groundwater impacts. They are designed to encourage uses that can be safely located within the direct and indirect aquifer recharge areas.

Soil based lot sizing establishes a minimum lot size based a site specific analysis of soil capacity to support development. The lot size is determined by the type of soil, its development potential as determined by drainage or erosion capabilities, or the presence of steep slopes. When combined, these factors establish the soil classification for which lot sizes are assigned to allow the least detrimental impact to the environment. Soil based lot sizing also is connected to septic design standards and ensuring adequate land area is available to provide a system that will not contaminate drinking water supplies.

There are a number of incentive based zoning techniques that communities can employ to achieve their defined Master Plan goals. Timing incentives, impact zoning, performance standards, dimensional incentives, transfer of density or development rights, flexible or discretionary zoning, inclusionary zoning, and accessory dwelling unit standards can all be used by municipalities to encourage preservation of open space or historic resources and the creation of workforce housing, among many other objectives. The primary function of these tools is to induce developers and the free market to carry out a community's vision without a direct mandate. **Table 8** lists the communities that carry out incentive based zoning.

Timing incentives typically involve expediting the permitting process. In New Hampshire, timing incentives are unlikely because towns are bound to a 65 day clock and faster review periods are unrealistic. Impact zoning is a form of zoning that regulates the consequential impacts of development. Rather than defining a zone as commercial, industrial, residential, or some mixture, impact zoning defines standards development must meet within the zone such as noise, traffic, and visual appearance. Currently no communities in the SNHPC Region utilize timing incentives or impact zoning.

Performance standards are used to control development while minimizing impacts to the natural or surrounding environment. Many uses may be allowed, provided developers can meet certain standards relating to density, impervious surface coverage, open space, noise level, or other defined criteria.

Dimensional incentives are typically bonuses in the form of increased density; reduced minimum lot sizes, frontage, or setback requirements; or impervious surface coverage. Density bonuses can be given in return for a certain percentage of dwelling units being reserved as affordable or a certain percentage of land preserved as open space. Some towns allow an impervious surface bonus in return for easements in certain areas of the property.

Municipality	Wetlands Protection Provisions	Steep Slope Protection Provisions	Floodplain Regulations	Aquifer or Watershed Protection District	Soil Based Lot Sizing	Open Space or Cluster Development
Auburn	Yes	No	Yes	Yes	No	Yes
Bedford	Yes	Yes	Yes	No	Yes	Yes
Candia	Yes	Yes	Yes	Yes	Yes	No
Chester	Yes	No	Yes	No	No	Yes
Deerfield	Yes	No	Yes	Yes	No	Yes
Derry	Yes	Yes	Yes	Yes	Yes	No
Goffstown	Yes	Yes	Yes	Yes	No	Yes
Hooksett	Yes	Yes	Yes	Yes	No	Yes
Londonderry	Yes	Yes	Yes	No	Yes	Yes
Manchester	Yes	Yes	Yes	Yes	Yes*	No
New Boston	Yes	Yes	Yes	Yes	No	Yes
Raymond	Yes	Yes	Yes	Yes	no	Yes
Weare	Yes	No	Yes	Yes	Yes	Yes
Windham	Yes	No	Yes	Yes	Yes	Yes

TABLE 7 ENVIRONMENTAL CHARACTERISTICS ZONING

* For lots on septic systems

Source: Municipal Zoning Ordinances

Transfer of development rights (TDR) allows owners to separate the right to develop land from the land itself and re-allocate the development right of one parcel to another parcel of land. TDRs are similar to the provisions of a cluster development ordinance, where a developer forgoes the right to develop the entire parcel in return to higher density on a portion of the parcel with the remaining portion preserved as open space. In a TDR, however, the right to develop a parcel of land can be transferred to a different parcel, which could be non-contiguous and far apart, rather than the transaction being confined to one parcel as in cluster development. TDRs generally define "sending" and "receiving" sites in the ordinance.

Flexible or discretionary zoning is generally the same. This type of zoning can take a variety of forms including many of the things NH RSA 674:21 allows as innovative land use controls such as planned unit development and transfer of development rights. Flexible or discretionary zoning may also take shape as special permits, floating zones, conditional rezoning, and subdivision exactions, but most commonly is known as overlay zoning. With overlay zoning, communities can protect, encourage development, or discourage certain types of development within certain areas. Typically flexible zoning is applied to the entire community and not just to certain districts. It can also allow for mixed-use and densities. The discretionary portion provides for more negotiation between the developer and the community.

Inclusionary zoning provides incentives to developers that create housing for moderate, low, and very lowincome households. Incentives could be zoning exemptions and/or density bonuses if a portion of the proposed development is reserved for elderly, handicapped, or targeted lower-income households. Accessory dwelling units, while not an incentive for affordable housing, can help provide a more diverse and affordable housing stock in a community. Most communities in the SNHPC Region define standards for accessory dwelling units.

Municipality	Performance Standards	Dimensional Incentives	Transfer of Density or Develop- ment Rights	Flexible and Discretionary Zoning	Inclusion -ary Zoning	Accessory Dwelling Unit Standards
Auburn	No	No	No	No	No	Yes
Bedford	Yes	Yes	No	No	Yes	Yes
Candia	Yes	No	No	No	No	Yes
Chester	No	No	No	No	No	No
Deerfield	Yes	No	No	No	No	Yes
Derry	No	No	No	Yes	Yes	Yes
Goffstown	No	No	No	Yes	No	Yes
Hooksett	Yes	No	No	PZ	Yes	Yes
Londonderry	Yes	Yes	No	No	No	Yes
Manchester	No	No	No	No	No	Yes
New Boston	No	No	No	No	No	Yes
Raymond	No	No	No	No	No	No
Weare	Yes	No	No	No	Yes	Yes
Windham	Yes	Yes	No	No	Yes	Yes

TABLE 8 INCENTIVE BASED ZONING

Source: Municipal zoning ordinances

An additional form of zoning that has not taken hold in our region but should be evaluated for future master plans is form based codes. Form-based codes use the physical form to establish predictable built results and a high-quality public, rather than separation of uses, as the organizing method for the code. Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. They are regulations, not mere guidelines that would need to be adopted into municipal law.

While there are similarities between most ordinances, almost every community within the SNHPC region has adopted a zoning ordinance that is uniquely crafted to address the particular land use issues and concerns confronting their jurisdiction. At first glance, there is very little cross over or regional zoning consistency. However, there are pockets visible on the regional composite zoning map that illustrates instances of regional consistency. In particular, there are some industrially zoned areas that combine across municipal lines to form larger zones, such as on the borders of Derry and Londonderry and the border between Auburn and Hooksett. These areas might give the impression of a large regional industrial zone, but dimension, design, permitted uses and a host of other considerations could differ between each town's ordinance resulting in developers preferring one town over another.

An additional situation that might result in uneven development patterns along municipal boundaries includes differences in residential zoning types along borders. For instance, the border between Chester and Derry and portions of Auburn reveals conflicting residential zoning provisions. The zoning in Chester is less restrictive (allows for smaller lot sizes) than that of Auburn or Derry in that area and as a result, development might be forced into Chester. Chester's desire to preserve its outskirts as rural will be challenged by development spilling over into the town along those borders. Similar situations are evident along Weare's borders with New Boston and Goffstown, and again along Candia's border with Auburn.

As the SNHPC Region continues to grow and develop in the future, the need for compatibility between zoning ordinances from one community to the next will increase in importance. Property owners and

developers, as well as the state's legal system demand predictability and consistency in building and land use practices. Additionally, the impacts of development are not limited solely within the boundaries of individual communities – they cross municipal lines, just as transportation networks and natural resources do. Much of the industrial and commercial development in the region follows existing transportation routes, which often follow existing natural features, such as rivers. To better protect these facilities and resources and to provide for greater predictability in building practices, there is a need for zoning compatibility within the region.

CREATING THE GENERALIZED ZONING MAP OF THE REGION

The following Map 1-2 Generalized Existing Zoning in the SNHPC Region is a composite map reflecting all of the current zoning maps of each municipality in the region. It was prepared by developing a best fit set of common zoning categories and inserting the appropriate zoning districts from each municipality into the appropriate zoning category. As a result, the map provides a composite overview of how each municipal zoning is common throughout the region.

The map also may have value to municipalities and planning boards in evaluating the impacts of zoning with their neighbors, as well as considering zoning changes which might have regional impacts. In addition, the map sets up a baseline or framework for considering regional zoning ordinance development. The common zoning categories developed for Map 1-2 and are described as follows.

RESIDENTIAL ZONING CATEGORIES

Rural, Agriculture Residential

This zoning category includes agricultural uses, such as scattered farmland and related activities, and lowdensity residential development, primarily single-family. In comparing the existing land use patterns and zoning ordinances within the region, an overall density or minimum lot size of greater than three acres.

Low Density Residential

This zoning category includes low density, single family residential with a minimum lot size of one-half to three acres of residential uses.

Medium Density Residential

Medium density residential refers to lot sizes ranging from a quarter to one-half acre in size. This type of development may include both detached and attached single-family, duplex and multi-family development.

Medium-High Density Residential

Medium-High density residential includes both detached and attached single-family, duplex and multifamily development much like Medium Density Residential development. However, lot sizes are typically less than a quarter acre. Medium-High density residential is restricted to areas that have access to municipal water and sewer systems.

High Urban Density Residential

Found primarily within the City of Manchester, high urban residential development consists of walkable areas that are urban in character with high density residential densities (including one-family, two-family and multi-family housing) which allow for a mix of uses such as limited retail and services that support the area.

Manufactured Housing Zone

A Manufactured Housing zone includes those homes as defined in RSA 674:31.

COMMERCIAL ZONING CATEGORIES

Neighborhood Commercial

This zone typically represents many existing smaller villages or centers located throughout the region where, locally, smaller commercial growth should be focused and encouraged. These areas are typically mixed-use in nature with commercial, residential, and occasionally public uses side by side.

Central Business District

This zone represents larger areas that include a mix of office and commercial, most notably located within the hub/core of the municipality. Often times these areas are also served by higher density housing. Infill, redevelopment and adaptive reuse are desirable within these areas.

Commercial

This generalized designation includes all types of commercial and business land uses including limited commercial areas to more intensive highway commercial corridors and shopping centers. Generally, areas identified are near municipal centers or along major corridors.

Business Parks

This zone represents separate large office, research parks that do not incorporate heavy industrial.

PUBLIC, INSTITUTIONAL, SEMI-PUBLIC ZONING CATEGORIES

This generalized grouping of public uses represents significant existing features, such as municipal lands, colleges and universities, arts and civic centers, airport, medical centers and nursing facilities.

INDUSTRIAL/RESEARCH & DEVELOPMENT ZONING CATEGORIES

All types of industrial land use, from light industrial, manufacturing, research and technology development to heavy industrial development are included in this generalized land use classification.

MIXED-USE ZONING CATEGORIES

Mixed Use

This category reflects a mix of commercial, light industrial, and residential land uses commonly found along a major corridor, such as a rail corridor, a central business district, or transitional areas between predominantly commercial and residential areas. Mixed use zoning may also include the preservation of historic districts.

<u>Rural/Agriculture</u>

This category reflects a mix of light commercial, light industrial, residential and agricultural uses commonly found in rural communities with predominantly commercial, agricultural and residential uses.

CONSERVATION ZONING CATEGORY

This zone allows for increased protection to the natural landscape, and discourages development that would be contrary to the character of the property with limited development purposes that support conservation.



ngton	Map # 1 - 2 Granite State Future Land Use Generalized Existing Zoning** in Southern NH Region
	Generalized Zoning Rural, Agriculture, Mixed-Use Rural, Agriculture, Residential Low Density Residential Medium Density Residential
ing	 Medium-High Density Residential High Urban Density Residential Manufactured Housing Zone Neighborhood Commercial Commercial
	 Central Business District Business Parks Industrial Mixed-Use Public, Institutional, Semi-Public
ł	 Conservation Interstates State and US Routes Town Boundary Rivers
X	Data Sources: Granit Digital Data (1:24,000) NH Department of Transportation All SNHPC Communities The id-idial emission is to a filtered
rs	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. Image: Constant of the second of the sec
FUTURE CONDITIONS

To gain a better understanding of the future growth and land use patterns of the SNHPC Region several planning tools have been created for this plan. These tools include a composite Future Land Use Map for the region (see Maps 3: Generalized Future Land Use in the SNHPC Region); identified future growth areas by municipality (see Maps 4: Identified High Growth Areas in the SNHPC Region); and scenario planning (see Map : Scenario 1 Current Rate of Growth (0.5 percent); Map 7: Scenario 2 Moderate Rate of Growth (1.0 percent); and Map : Scenario 3 Moderate Rate of Growth with Build Out of Four Large Proposed Mixed Use Developments Projects).

CREATING THE FUTURE LAND USE MAP

The Future Land Use Map represents a composite summary of all the future land use maps prepared and adopted by the Planning Boards, as part of each municipality's master plan (see Table 9 Master Plans in the SNHPC Region). As such, it is a visionary and an advisory tool that can be used to help guide future growth and development. In addition, it offers municipalities and planning boards a view of the broader future land use vision of adjacent municipalities.

Master Plans in the SNHPC Region											
Town	Year Adopted	Produced By									
Auburn	2007	SNHPC									
Bedford	2010	VHB									
Candia	2004	Burnt Rock Inc.									
Chester	2006	SNHPC									
Deerfield	2008	SNHPC									
Derry	2010	SNHPC									
Goffstown	2006	Wilbur Engineering									
Hooksett	2004	Fougere Planning & Development, Inc., Keach–Nordstrom Associates, Inc. and Dufresne-Henry.									
Londonderry	2013	Town Planning and Urban Design Collaborative LLC									
Manchester	2009	Manchester Planning Board									
New Boston	2006	SNHPC									
Raymond	2009	SNHPC									
Weare	2005	SNHPC									
Windham	2005	Taintor & Associates Inc.									

TABLE 9 MASTER PLANS IN THE SNHPC REGION



<u>Future Land Use Categories</u>: Every municipality (with the exception of the towns of Londonderry and Windham) included a future land use map as part of their town master plan. The Town of Londonderry developed a vision map that highlighted specific goals for selected areas of the community. This vision map was converted to a future land use map by SNHPC staff working with Londonderry planners. SNHPC also worked with Windham staff to generate a future land use map of the town for use in this plan. For all other municipalities, SNHPC was able to obtain the GIS files used to create their future land map. These files were then combined to create the composite future land use map used in this plan.

A total of 12 generalized land use categories are shown on the Future Land Use map. These categories are described in detail below. By aggregating similar land use categories from each municipality's future land use map common categories have emerged across municipal boundaries in certain areas throughout the region. While these categories are not meant to be all-inclusive, they attempt to identify the range, type and intensity of the possible arrangement and distribution of future land use patterns for the region.

RURAL, AGRICULTURE RESIDENTIAL

This land use category includes agricultural uses, such as scattered farmland and related activities, and low-density residential development, primarily single-family. In comparing the existing land use patterns and zoning ordinances within the region, an overall density or minimum lot size of greater than two acres.

LOW DENSITY RESIDENTIAL

This land use category includes low density, single family residential with an overall density or minimum lot size of one to two acres of residential uses. This density is common throughout the communities in the region.

LOW DENSITY URBAN RESIDENTIAL

Located primarily within the City of Manchester this land use category consists of and provides for a higher urban residential density than typically found in surrounding communities.

MEDIUM DENSITY RESIDENTIAL

Medium density residential refers to lot sizes ranging from one-half acre to one acre in size. This type of development can include both detached and attached single-family, duplex and multi-family development. Most medium density residential is located in the communities and land surrounding I-93 and Manchester. Limited medium density residential is found within Manchester, but outside the I-93 and 293 loops.

MEDIUM DENSITY URBAN RESIDENTIAL

Located primarily within the City of Manchester this land use category consists of and provides for a higher medium urban residential density than typically found in surrounding communities.

MEDIUM-HIGH DENSITY RESIDENTIAL

Medium-High density residential includes both detached and attached single-family, duplex and multifamily development much like Medium Density Residential development. However, lot sizes are typically less than one-half acre. Medium-High density residential is restricted to areas that have access to municipal water and sewer systems. This land use classification is primarily located in more densely populated communities such as Bedford, Derry, Hooksett and Londonderry.

HIGH DENSITY URBAN RESIDENTIAL

Located primarily within the City of Manchester this land use category consists of and provides for a higher density urban residential development than typically found in surrounding communities.

CORE URBAN RESIDENTIAL

Located primarily within the City of Manchester, core urban residential development consists of walkable areas that are urban in character with high residential densities (including one-family, two-family and multi-family housing), which allow for a mix of uses such as limited retail and services that support the area.

COMMERCIAL

This generalized designation includes all types of commercial and business land uses ranging from neighborhood and limited commercial areas to more intensive highway commercial corridors and shopping centers. All communities in the region have some area designated as commercial. Generally, areas identified are near municipal centers or along major corridors.

INDUSTRIAL/RESEARCH & DEVELOPMENT

All types of industrial land use from light industrial, manufacturing, research and technology development to heavy industrial development are included in this generalized land use classification. Not all of the 14 communities in the region have designated future industrial areas. The areas designated as industrial are consistent with existing industrial areas and include some expansions or plans for future industrial development based on infrastructure developments, such as the Airport Connector Road and the proposed Exit 4A in Derry and Londonderry.

MIXED-USE

This category reflects a mix of commercial, industrial, and residential land uses commonly found along a major corridor, a central business district, or transitional areas between predominantly commercial and residential areas. These areas typically feature small lots with mixed residential and commercial uses, allowing for a very livable, walkable, close-knit environment.

VILLAGE/NEIGHBORHOOD CENTERS (SMALL CENTERS)

Village and Neighborhood Centers represents many of the existing smaller villages or centers located throughout the region where, locally, growth in general should be focused and encouraged. Containing or encouraging growth in or around these village or neighborhood centers represents one of the smart growth principles of this plan. Manchester has identified four neighborhood centers and Goffstown has its Grasmere Village that are all planned to be neighborhood scale community centers. These centers are typically mixed-use in nature with commercial, residential, and occasionally public uses side by side.

TOWN AND CITY CENTERS (LARGER CENTERS)

The larger centers include existing and planned major town and city centers, which are much larger centers of development activity. These centers may already host municipal offices and other public facilities such as schools, but also function as the local downtown or central business district. Often times these areas are also served by higher density housing. Infill, redevelopment and adaptive reuse are desirable within these areas.

POTENTIAL CONSERVATION ZONE

This category represents areas designated by a municipality's master plan as either existing and/or potential conservation or protected lands. This category, however, does not depict any or all future conservation and/or protection priorities of any one community or the region as a whole.

PUBLIC, INSTITUTIONAL, AND SEMI-PUBLIC

This generalized grouping of public uses represents significant existing features, such as municipal lands, colleges and universities, arts and civic centers, airport, medical centers and nursing facilities, as well as future lands devoted to the development of new municipal services. While most future public areas are contained within the community centers and other mixed-use districts, there are a few isolated locations across the region that will exist exclusively as public lands and are large enough to be identified on a regional scale.

IDENTIFIED FUTURE GROWTH AREAS BY MUNICIPALITY

The second planning tool used in this plan is a description and map of each municipality's identified future growth areas (see description and following Map 4 Identified High Growth Areas in the SNHPC Region identifies geographic areas, corridors, districts or parts of the community which have experienced growth in the past and/or are anticipated to continue to experience increased growth and development in the future. In identifying these areas, draft copies of a previously prepared future growth map was distributed to planning boards and town planners in the region to review and update. Map 4 reflects the most current revisions which received from the towns identified below. This information is useful in helping to identify where the region's future growth will occur and what may need to occur to prepare and manage this growth. Municipalities can also benefit from this information in relationship with neighboring communities.

TOWN OF AUBURN

The Town of Auburn is divided into six planning areas. These areas are: Northwest Planning Area; Route 28 Bypass Planning Area; Village Center Planning Area; Residential Planning Area; Rural Planning Area; and Watershed Protection Planning Area.

The Northwest Planning Area is intended to allow for continued industrial and commercial expansion. However, the area should continue to allow single-family housing within the commercial zones.

The Route 28 Bypass Area supports current industrial and commercial zoning. While there is interest in expanding the extents of the zone, doing so would threaten the watershed it lies within. The Master Plan recommends that the Town investigate and pursue the installation of water and sewer service.

The Village Center Area is intended to build upon the few existing public and commercial facilities in the historic center of Auburn to create a central focus in town for social and community activities. The Village Center Area could also serve as a viable location to accommodate affordable or more moderately priced forms of housing, in addition to other small-scale retail and professional establishments.

The Residential Planning Area are those areas currently zoned as Residential 1 and Residential 2 and predominantly is the area adjacent to Lake Massabesic, Little Lake Massabesic and the proposed Village Center area. While there are no changes proposed to the zoning in this area, the Town would like to explore planning tools and design techniques that would reduce the visual and environmental impacts of development and maintain the natural and rural character of the area.

The Rural Planning Area generally includes areas in the southeast and northeast corners of Town. The Master Plan recommends that techniques encouraging preservation of the Town's rural character, encourage cluster subdivision and discourage rural sprawl be pursued in this area. However, the primary intent for this area is to retain the natural environment, fields and wooded areas.

The Watershed Protection Area is an overlay that covers much of the Town. Manchester Water Works owns a significant portion of the land in the watershed and surrounding Lake Massabesic and influences land use decisions through policies in the Watershed Protection Plan.

TOWN OF BEDFORD

The Town is broken up into five main development areas: Town Center; Route 101 Corridor; Residential and Agricultural Areas; River Corridor (Route 3); and Route 114 (Donald Street) Area. Also shown are areas with important features, including potential Priority Conservation Parcels; Gateway Entrances; Manchester Airport Connector Road; and Bedford Heritage Trail, which will all impact future land use developments. The Town identified a goal and objectives for each of these development areas.

The Town Center area is ideally a place where residents can come together and meet for social and community events. It should be a "people place," serving the needs of the townspeople.

The Route 101 Corridor needs to be studied and a design developed to propose changes to the corridor that would prevent further division of Bedford into north and south sectors. The new plan will need to create a positive visual image for the area while re-establishing the cohesion of north and south Bedford. Plans for further commercial development are recommended to be at existing traffic lights.

The Residential and Agricultural Areas are recommended by the Master Plan to continue their pattern of low density residential development and agriculture with emphasis on conservation of valued open space, recreational facilities, and pedestrian and bicycle facilities, while working to retain the quality of life in these areas. These areas are approximately 80 percent of Bedford.

The Bedford Master Plan recommends that the River Corridor maximize commercial and industrial development, while upgrading infrastructure plans to ensure adequate capacity to support future growth. Mixed use, higher density development, and form based zoning is recommended for consideration. This area would ideally host economic generators of benefit to the Town supporting residents, businesses, community services, and helping to maintain a stable tax base.

The Route 114 (Donald Street) Area needs to capitalize on the potential for redevelopment opportunities, encourage affordable housing options and advance existing commercial and industrial development. This area, like the Route 3 Corridor, can be another home to economic generators of benefit to the whole town.

TOWN OF CANDIA

In the update of their Master Plan, residents of the Town of Candia participated in numerous public forums in 2003. The last of these forums, held in November of that year, allowed residents to express their visions for the future of Candia. The Candia Master Plan Committee generally agreed that continued population growth and development pressures needed to be managed so future growth could be guided appropriately.

Residents were given the opportunity to identify their own visions for future development in Candia. Nearly half of the land use types desired in this discussion were residential uses. The group was divided evenly three ways, with single-family, senior and work-force or multi-family housing the three top choices. Commercial and Industrial development was identified as needed at Four Corners and the Exit 3 area off of Route 101. The "mom and pop" operations ideally would be focused at Four Corners, and the more "quality retail" developments focused around Exit 3.

The mixed use centers feature excellent vehicle access. Moderate-density residential and limited commercial development will ideally remain concentrated in the four village areas, and be accessible to good-quality roads. The surrounding countryside area is preferably characterized by low-density housing, in addition to a working landscape that features scattered farms and forests. Lastly, the Master Plan recommends that undeveloped fragile areas should remain as such due to their low accessibility.

TOWN OF CHESTER

The Board aimed to create a balance throughout the community, acknowledging that while many would like to stop growth from occurring in Chester, it is not possible. The focus is on where that development should occur, so Chester can remain a rural New England community and protect the natural environment. Chester's draft Future Land Use Map contains five generalized and location based planning themes.

Conservation and Agriculture Corridor – The corridor encompasses many existing conservation lands within the town, connecting them with adjacent areas. By maintaining connections between existing conservation lands, the town can maximize the benefits of this large expanse of un-fragmented land and preserve the natural wildlife corridor. The region selected has many co-occurring natural features, such as steep slopes, floodplains, wetlands, wildlife habitat, and others.

Historic Village – The Historic Village area is identified as a potential future mixed-use area, permitting both commercial and higher density residential development, consistent with the existing town center instead of the current two-acre residential zoning. This new designation would allow for small scale commercial development.

Moderate Density Residential – Three locations were selected where residential development would be consistent with existing development and would not significantly impact the natural or rural qualities of the Town. The intent is to permit enough room for anticipated growth, while preserving rural character. These areas would either function as an extension of the town center or as smaller satellite villages, channeling new growth away from valued open space or rural areas.

Conservation and Agriculture with Low Density Residential – This future land use area matches the efforts and zoning in adjacent portions of Auburn and Derry to create a larger green pocket of land, transcending municipal boundaries that could be retained as rural and lessen potential development pressures.

Commercial and Light Industrial – This area expands the towns existing commercial and light industrial zoning districts, increasing opportunities for such development. Additionally, proximity to Raymond and similar developed uses will allow for a larger pool of potential "customers", making commercial development more viable in this location than in others.

TOWN OF DEERFIELD

In the Town of Deerfield Master Plan, the Town is divided into the following major land use categories: Critical Resource Areas; Sensitive Natural Resources; Conservation and Recreation; Rural Forestry Areas; Agricultural Areas; Shorelands; Rural Residential; Villages; Commercial and Industrial; and Existing Public Lands.

Critical Resource Areas include wetlands, surface waters, steep slopes over 25 percent, and floodplains. These areas should be protected and not developed. Sensitive Natural Resources include slopes 15-25 percent and flood hazard areas. Flood hazard areas (100-year floodplains) are currently protected and need to remain so in the future. Lower density development, however, may take place on slopes of 15-25 percent. The town identifies three goals under slope development guidelines: minimize visual impact, retain woodland features and minimize site disturbance.

The Conservation Commission identified conservation and Recreation lands as areas that should be considered for future open space protection, conservation, and low impact recreation. It is recommended that Rural Forestry areas only be developed at a very low density, as commercial forestry operations are dependent on large tracts of land. Developing these areas could also lead to "scattered and premature" growth problems.

Agricultural land needs to be protected in order to prevent development. This can be done through the purchase of development rights, but more feasible could be the use of innovative land use planning and development practices. The guidelines for protecting agricultural land are to minimize visual impact, retain rural features and to minimize site disturbance. Additional measures are also needed in order to protect the agricultural land, with one option being the creation of an agricultural overlay district.

Shorelands in Deerfield are heavily developed; however the potential remains for further development. The Shoreland Protection Act enables towns to adopt zoning regulations that complement the state law, providing for further protection. The goals for shoreland protection in Deerfield are to minimize visual impact, retain water quality and minimize site disturbance.

The Master Plan recommends that Rural Residential areas only be developed at a density that can support the on-site septic and well. Also, innovative land use planning strategies, such as cluster development, are suggested. Many of the Rural Residential lands abut Agricultural Lands. Villages are ideal for preservation and protection, and if proper land use controls are put into effect, new development can assimilate and the villages can benefit from it. The Master Plan suggests the Town encourage a compatible mix of land uses including residential, commercial, public and surrounding agricultural lands.

Commercial/Industrial development should be allowed, but in a manner that is compatible with a rural setting. The accepted place for this growth is in the current commercial zone. Future development is suggested to take place in certain sections of the village areas.

Existing Public Lands should remain in their current state of use, without any dramatic changes taking place. Creation of additional public lands is encouraged, particularly in areas adjacent to existing public lands. The Town needs to ensure that enough land is available for the expansion of public facilities, if necessary.

TOWN OF DERRY

Rapid population and housing growth during the 1970s and 1980s led to a relatively large imbalance between development, services and the environment in Derry. The overwhelming imbalance of residential development had placed a strain on the Town's municipal resources, leading to a temporary moratorium on growth in Derry in 1994.

A Growth Management Plan emerged following this moratorium, and in 1999, a Growth Management Ordinance (GMO) was adopted by the Town to regulate the timing and phasing of major development proposals. During the development of the 2000 Master Plan, Derry has established four goals for land use and growth in their Master Plan. These goals are:

- Preserve Derry's overall patterns of land use that concentrates development in the Downtown and west-central sections of the Town, with open lands and sparser development in the east section of the community, avoiding the tendency toward suburban sprawl.
- Continue to guide the amount of growth that is sustainable, given Derry's environment, level of service, and to its desired character, as outlined in its growth management ordinance.

- Integrate Town goals for open space, recreation, economic development and downtown revitalization with land use policies and regulatory tools where appropriate.
- Continue to review zoning regulations to assure consistency with Town objectives and evolving policies on land use.

Since that time, Derry worked to implement those goals. Land use patterns have been preserved so development and density are concentrated in the downtown and west central section of the Town and open lands and low density remains in the outlying and mainly in the east sections of Town. The Town strives to integrate goals into land use policies and regulatory tools where appropriate zoning regulations are reviewed and revised as necessary to maintain consistency with Town objectives and evolving land use policies. Additional zoning designations have been added to allow commercial expansion on Route 28 in the area of the Robert Frost Farm, while maintaining the unique character of the area. A zoning change ensured the preservation of character in one of the original neighborhoods in the downtown area, and the town has purchased additional land for open space. Each of these actions implemented goals outlined in the 2000 Master Plan.

TOWN OF GOFFSTOWN

On October 2 and 3, 2009, the Hillsborough County Board of Commissioners held an important Design Charrette to engage public input and discussion regarding the future use and development of the County's large land holdings located between Rt. 114/114A within the Town of Goffstown. An executive summary of the Charrette was prepared and made available to the public and the Town of Goffstown.⁴

The executive summary identifies a number of design principles and recommendations for the future development of this land and as such, this summary and any further planning products to be proposed, should be included in future updates to the Town of Goffstown's Master Plan.

The Town of Goffstown is broken up into eight possible planning districts. These districts are: Parker Station; Pattee Hill; Northeast; Grasmere Village; Goffstown Village; Uncanoonuc Mountains; Bypass Area; and Pinardville Village. While these districts are the ones identified within the Master Plan, it should be noted that these eight districts are just a sample and are not necessarily the end result. Other districts could still emerge, or the districts outlined in the Master Plan could be altered. In any case, each district area would ideally share comparable characteristics or a common history.

The Parker Station area contains mostly conservation subdivisions. These are smaller clustered lots, developed as open space subdivisions. They are high priority areas for preserving natural resources and creating functional open spaces.

Pattee Hill shares conservation subdivision area with suburban residential, which are two-acre lots that are developed as open space subdivisions. These areas have private water and sewer, as well as public recreation facilities.

The Northeast area features a suburban residential area along with conservation open space, which consists of large lots that encourage open space uses. There is a low density of development, and these areas are high priority for conservation easement or public ownership.

Grasmere Village mainly features village residential, which is an area of a village design context. These are small lots with public water and sewer service, and single-family or attached single-family homes that are integrated into the neighborhood. In addition to this, Grasmere Village also contains a small area of village commercial mixed-use. This consists of a village design with small lots, public water and sewer

⁴ http://extension.unh.edu/counties/hillsboro/Docs/CharretteExecutiveSummary.pdf

service with village scaled single-family, single-family attached and apartment uses mixed with village scaled service and retail uses.

Goffstown Village has some village residential uses, as well as some village commercial mixed-use and also a small residential mixed-use area, which is single-family, attached single-family and multi-family homes in small projects mixed with retail or office uses, serviced by public water and sewer.

The Uncanoonuc Mountain area is simply a mixture of conservation open space alongside conservation subdivisions. The Bypass Area features a combination of conservation subdivision area with a village residential mixed-use area, which is an area of village design having small lots served by public water and sewer service. The area features single-family, and single-family attached, and apartment areas that are mixed with village scaled service and retail uses.

Pinardville Village contains a healthy mix of village residential, commercial mixed-use, and also a campus mixed-use area that is comprised of institutional and college uses with compatible commercial and residential areas.

TOWN OF HOOKSETT

The Town of Hooksett is not divided into sectors or planning areas for the Future Land Use map in its Master Plan. Rather, the Town identified a number of goals, strategies and implementation actions that should be pursued in order to attain the greatest success with future land use planning. Recommendations were made in a series of nine specific categories, with each category detailing specific items that should be acted upon as opportunities arise. Areas in which recommendations were made are:

- Potential Preservation of Open Space (passive recreation)
- Potential New Active Recreation Areas
- Potential Zone Changes
- Potential New Public Roadways
- Potential Bridge Locations for Crossing the Merrimack River
- Potential New Public Safety Locations
- Potential New School Sites
- Potential Commercial/Retail Sites
- Potential New Industrial Sites

In addition to these, more specific recommendations were made for an additional eight areas. These were:

- Natural Resources and Conservation Lands
- Community Facilities
- Recreation
- Transportation
- Economic Development
- Housing
- Education
- Population

The Town's Future Land Use map is based upon the recognition of four guiding principles. These are (1) the acquisition and protection of open space lands; (2) location of intensive land uses with access to major arterial highways; (3) implementation of transportation solutions; and (4) formalizing economic

development. Each of these guiding principles is explained, and suggestions provided as to what could be done to set forth each principle.

TOWN OF LONDONDERRY

The Town of Londonderry is divided into seven planning areas. These areas are the Airport Area; Northwest of Route 28 (Jack's Bridge); Exit 4a; Exit 5; Town Center; Exit 4 (Route 102); and the Paige Road Area.

The Airport Area is undeveloped for the most part, however upon completion of the airport connector road, this is likely to change. Completion of the road will open up approximately 800 acres of industrialzoned land to development. The town held an Airport Area Charrette regarding the future use of this land and that vision should be adhered to.

The area northwest of Route 28 (Jack's Bridge) is also a largely undeveloped area. The Master Plan recommends that the Town review their current zoning designations in order to ensure the desired type and amount of development occurs. Incorporating a mix of uses with a low environmental impact could serve this area well.

The completion of Exit 4a off of Interstate 93 will open up new opportunities for the lands that are located in the central portion of Londonderry as planned as part of the proposed Woodmont Commons development. These lands are currently characterized by forests surrounded by pockets of residential development located in the vicinity of nearby apple orchards. Once highway access is provided, the value of these lands will likely increase for commercial and industrial development. As a result, the town should begin to plan and create a vision for this area, as recommended by the Master Plan.

The Exit 5 area is already a commercial hotbed, and is continuing to develop and grow. Currently, this area features a wide array of development that includes light industry, office, warehouse and hotel uses. The Londonderry Master Plan suggests the town should persuade the continuation of mixed-use development in this area.

The Town Center area is likely to remain stable in the future, however it would be wise for Londonderry to add a town center zoning district to their zoning ordinance. Any development that is to occur here ought to maintain and reflect the character of the area.

The Exit 4 (Route 102) area is the primary retail and commercial district in town. As a result, the Master Plan recommends that increased pedestrian measures be explored (sidewalks, crosswalks, benches, lighting, etc.). The Master Plan also recommends the Town should be willing to explore development proposals that utilize compact site designs, integrate mixed-uses and include pedestrian amenities.

The Page Road Area is located just east of Route 28. This area is viewed as a great economic development opportunity for the town to explore. The Master Plan recommends the establishment of a new residential/mixed-use growth center with design elements that are based on traditional New England hamlets be investigated.

To help facilitate future growth along Route 28 within the Jack's Bridge area, the town recently adopted a Tax Increment Financing District (TIFD) to provide necessary public services and utilities. The town is also considering establishing TIFDs in the future for the Exit 5 gateway commercial district and within the airport area at Exit 4a.

CITY OF MANCHESTER

The City of Manchester updated its Master Plan in 2009. While there are not any new visions or goals available in the 2009 update, the City has done an exceptional job at implementing visions from the 1993

plan. These visions included a continued revitalization and transition for the Amoskeag Millyard from manufacturing to mixed-use, core neighborhood revitalization projects and completion of both the Verizon Wireless Arena and the Fisher Cats Ballpark, just to name a few.

The Future Land Use Map for Manchester in 1993 was divided into 12 planning districts. These districts are the Central Business District; Inner-city Transitional Area; Core Residential; Commercial Centers; South Willow Commercial; Medium Density Residential (divided into duplex and single-family districts); Suburban Multi-family; Low Density Residential; Industrial Areas; Special Development Area; Recreation/Open Space and Civic/Institutional. Rather than summarize and describe goals, visions and zoning ideas that are over 20 years old, the few suggested changes that were raised in discussions with the Planning Department will be highlighted here.

A large area located in the northwestern part of the City was previously labeled as a Special Development Area. This location has now been split into three parts. The northernmost part along the Hooksett border has been labeled as Medium Density Residential, as well as Suburban Multi-Family. The area just south of this has been re-designated as Recreational/Open Space, and finally, the remainder of the area will retain the Special Development Area designation.

The Planning Department suggests the Millyard and Elm Street areas continue to be the Central Business District (CBD), with the borders expanding further south to the Queen City Bridge area. Currently, these areas are designated as Inner-city Transitional Areas. The Planning Department is proposing to shift these designations to areas just outside of the newly expanded CBD.

The third innovation is the neighborhood revitalization project areas located on Kelley Street, Second Street, Massabesic Street and Wilson Street. Each of these locations has been identified as Special Development Areas to reflect the revitalization efforts that are taking place. All four areas are planned to strengthen the existing mixed-use neighborhood and neighborhood downtown feel.

The last of the highlighted areas is the location around the Mall of New Hampshire. Previously planned as an Industrial Area, the Planning Department further expanded the South Willow Commercial designation into this area.

TOWN OF NEW BOSTON

The Town of New Boston updated its Master Plan in 2006. The Master Plan Steering Committee identified seven Land Use Districts in the town for the future. These Land Use Districts are: Village District; Residential, Agricultural, Open Space District; Small Scale Planned Commercial District; Scenic Corridor Overlay; Limited Light Industrial; Multi-Family Residential; and Conservation District.

Creation of a Village District would help to regulate development in the Village Center area in order to preserve its rural character. In order to attain this goal, new zoning provisions would have to be established that promote a planned mix of uses in the area. Also, the Steering Committee recommended that the Town seek involvement in the New Hampshire Main Street Program.

The establishment of one Residential, Agricultural, and Open Space District would eliminate the Town's current Residential and Agriculture District, as well as the Residential One District. This new district would encourage development patterns that preserve open space through cluster development, as opposed to large lot zoning practices.

A Small Scale Planned Commercial District would replace the town's existing Commercial District. The purpose of the new district would be to designate specific areas that would be suitable for commercial development. In addition, architectural guidelines would be designed to ensure any new development resembles the traditional rural New England style. The new district area's ideal location is in the same

area as the current district, along Routes 77 and 114. It could also be considered along parts of Route 13, and near the southern entrance to town.

Establishment of a Scenic Corridor Overlay District would preserve the Piscataquog River corridor. Any existing development would be grandfathered, however, no new development would be allowed in this area so that future generations can enjoy the same scenic beauty as residents today.

A Limited Light Industrial District would replace the current Industrial District in the Town. The goal of the new district is to only allow light industry that does not require any additional transportation amenities and that does not compromise the Town's architectural character. A set of guidelines would have to be created to complement this new district.

A Multi-Family Residential Overlay District would provide affordable housing options in New Boston while also preserving open space and wildlife corridors. The Town would have to identify locations where such development could occur. The Town also needs to include incentives for developers to participate in such development within the Town's Cluster Ordinance.

The new Conservation District would replace the existing Forestry and Conservation District. The sole intent of this district would be the protection and preservation of New Boston's natural resources. The Town would need to identify and inventory areas they believe to be of natural, environmental and scenic importance and then an ordinance must be created that would establish this district, thus protecting those areas.

TOWN OF RAYMOND

The Town of Raymond considered existing zoning, topography, developable acreage, roadway corridors, housing diversity and infrastructure, as well as the existing land use pattern, when formulating their Future Land Use map. The result is eight land use categories for the Town's future land use. These categories are: Open Space and Recreation; Rural Residential; Low Density Residential; Medium Density Residential; Commercial and Residential; Highway Commercial; Village Mixed-Use and Industrial.

Open Space and Recreation lands are either town or publicly-owned, and are generally concentrated in the northern half of town, to the north of the Route 27 corridor. Other large open areas can be found to the west of Onway Lake, as well as in the southwest corner of town close to the Candia and Chester borders.

Rural Residential lands are associated with the open space areas in northern Raymond from Route 27 to the borders with Nottingham, Deerfield and Candia. In addition, there is an area in southern Raymond to the west of the current Coastal Materials operation and south to the Chester border.

Low Density Residential areas include much of the existing residential areas that are located outside the village district. Also, this includes areas north of Route 27 in the northeastern quadrant of Town.

Medium Density Residential areas are located to the west of Route 102, just to the south of the intersection of Route 102 and 107. Commercial and Residential areas are located along the major roadway corridors of Route 102 and 107, as well as Route 27. This area would allow for low and medium density residential, as well as low density commercial areas that are compatible with residential used located in the area. Also, these uses would not generate traffic safety concerns.

Highway Commercial areas consist of commercial nodes located both at the junction of Route 102 and Route 107 and the area associated with the Route 102/107 intersection with Route 27 southward to the Exit 5 interchange of Route 101.

The Village Mixed-Use area integrates the current village area. Also, it is proposed to border Route 27 to the north, the Lamprey River to the east, Lamprey River Elementary School to the west and would extend close to Route 101 to the south.

The Industrial area incorporates the Wal-Mart and Coastal Materials sites, current gravel operations along Route 27 (except for the pit currently owned by the Town), an area located to the south and west of the village extending along Route 101 including the Exit 4 area, and also the existing industrial area formerly called the Raymond Industrial Park located to the north of Exit 5 behind the Raymond Shopping Center on Route 107.

TOWN OF WEARE

There are four components on which the Town of Weare's Future Land Use map is based. These are expanding and connecting the villages; protecting the rural character and natural environment of the community; enhancing opportunities for planned future commercial and industrial development; and implementing the principles of smart growth.

There are four main villages identified in the Town. These are the Integrated Town Center, Clinton Grove, Tavern Village and Riverdale Village. The Master Plan recommends that each of these village areas feature several characteristics:

- Walkability
- Civic Core and Mix of Neighborhood Uses
- Interconnected Street Network
- Sensitivity to the Human Scale
- Neighborhoods
- Efficient Land Use
- Encourage Mixed Use
- Address People's Needs
- Promote Good Design
- Enhance Environmental Benefits

The residents of Weare have had a long commitment to protecting their natural environment. As such, the Town would be wise to seek out ways of continuing to promote the protection of their valuable natural resources. Some options for pursuing this effort include completion of the Open Space Plan, acquisition of conservation easements, either through donation or other means, altering the current zoning to better protect the natural areas, or initiating a study to identify and designate prime wetlands in Weare.

The Town also has a need to enhance opportunities for commercial and industrial development. Currently, there is little developable land that is zoned commercially or industrially. Options for addressing this need can include the expansion of existing industrial zones in appropriate locations, creation of a planned business/office park zone, or the creation of a gateway transition overlay district, which would encourage appropriate commercial or small business development.

TOWN OF WINDHAM

The Town of Windham's rapid growth has caused the Town to be vigilant in its planning efforts to adequately provide public services and facilities for its growing population. In some instances, the Town has been hard-pressed to keep pace with increasing demands, which have been the result of direct growth compounded by indirect consequences of growth, regulatory mandates, and changing public expectations.

Windham's Community Development Department, along with its Planning Board, have been active in fine tuning the Town's Zoning Ordinance in response to changing conditions. The 2005 Master Plan land use chapter primarily focused on supporting existing policies that have served the Town well – e.g. open space subdivisions, soil based lot sizing, wetland protection, etc. This plan likewise promotes the preservation of well-regarded policies, but will also address several fundamental issues with regard to future land use:

- Planning for the Development of a village center in Windham, and shaping its development to foster a vibrant place that connects to the existing, nearby built environment (the historic town center, Fellows Road, the post office, the Town Commons);
- Fostering economic development, especially around Exit 3 and Route 28 areas;
- Ensuring that the future of Route 111 will complement the community's character; and
- Managing growth in a manner that will address the need for expanded community facilities and services in a timely manner.⁵

The fundamental issues with regard to future land use, listed above, are based on the Town of Windham's Mater Plan 2005. The Southern New Hampshire Planning Commission and the Town of Windham are currently updating the Master Plan.

⁵ Town of Windham Master Plan (2005)



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SCENARIO PLANNING

The final planning tool included in this chapter is scenario planning. Scenario planning provides communities, public officials and planners with a glimpse of what a community or region's future growth might look like under different sets of assumptions. The scenario planning carried out for this plan is specifically designed to show what the SNHPC Region's future growth, population distribution, and traffic patterns might look like by the year 2035 under three different scenarios. These scenarios build upon the existing 2010 land use, population, housing, and employment data collected within each Traffic Analysis Zone (TAZ) contained within SNHPC's 2010 Travel Demand Model. The population data for each TAZ is shown on **Map 5 Current Condition Population by TAZ in the SNHPC Region**. This map forms the base map for each of the three growth scenarios. These scenarios are described as follows:

Scenario 1: Continued Slow Growth: This scenario assumes the SNHPC Region will continue to grow between 2015 and 2035, but at an average rate of growth of 0.5 percent per year. Historically between 2000 and 2010, the SNHPC Region experienced relatively slow growth averaging only 0.5 percent per year. During this time period, there was a total population increase of only 12,424 people. The towns of Bedford, Hooksett, New Boston, Weare, Windham, and the City of Manchester experienced the majority of this population increase while several towns, such as the towns of Derry and Candia actually lost population. The Town of Windham experienced the highest annual rates of population growth during this time period given its proximity to Massachusetts and a new high school. Under this scenario, the following assumptions are made:

- The SNHPC Region will continue to experience slow population growth between 2015 and 2035 at average rates of growth of 0.5 percent per year;
- All the transportation projects included in the state's proposed FY 2015-2024 Ten Year Improvement Plan (TYP), including the widening of I-93 will be completed by the year 2035/2040; and
- All of the transportation projects identified in SNHPC's Regional Transportation Plan as regionally significant will be completed by the year 2035.

<u>Scenario 2: Improved Growth</u>: This scenario assumes that between 2015 and 2035, the SNHPC Region will experience growth at an average rate of **1.0 percent per year**. Under this scenario, the following assumptions are made:

- The SNHPC Region's population will continue to grow between 2015 and 2035 at an average rate of growth of 1.0 percent per year;
- All of the transportation projects identified in the state's proposed FY 2015-2024 Ten-Year Transportation Improvement Plan (TYP), including widening of I-93 will be completed by the year 2035/2040; and
- All of the transportation projects identified in SNHPC's Regional Transportation Plan as regionally significant will be completed by the year 2035.

<u>Scenario 3:</u> Faster Growth with Build Out of Proposed Developments of Regional Impact; This scenario assumes that between 2015 and 2035, the SNHPC Region will experience faster growth at an average rate of growth of 1.0 percent per year and build out of developments of regional impact. Under this scenario the following assumptions are made:

- The SNHPC Region's population will continue to grow between 2015 and 2035, but at faster rates of growth assuming 1.0 percent per year and build out of the following developments of regional impact:
 - 1. Woodmont Commons Master Plan, Londonderry
 - 2. Pettengill Road Area, Londonderry
 - 3. Manchester Sand and Gravel Master Plan, Hooksett
 - 4. Development at Exit 4, NH 101, Raymond;
- All of the transportation projects identified in the state's proposed FY 2015-2024 Ten Year Transportation Improvement Plan (TYP), including widening of I-93 will be completed by the year 2035; and
- All of the transportation projects identified as regionally significant in SNHPC's Regional Transportation Plan will be completed by the year 2035.

Approach/Methodology:

In developing the three scenarios, SNHPC carried out the following steps:

1. <u>Update SNHPC's Regional Travel Demand Model</u>: SNHPC's travel demand model is used to estimate future traffic growth and traffic distribution within the region based upon future population, housing units and employment growth estimates at the TAZ level. The first step in the scenario planning involved updating SNHPC's 2010 travel demand model to include the Town of Windham; the Town of Windham was added to the SNHPC Region during the development of this plan.

2. <u>Run Updated Travel Demand Model</u>: With the addition of the Town of Windham to the model, SNHPC established the updated 2010 travel demand model for the each of the three growth scenarios utilizing the following two average annual growth rates: 0.5 and 1.0 percent. These rates were applied across the board to all the TAZs in the model to estimate future traffic growth, population and housing increase in each TAZ to the year 2035. The existing employment numbers in the model were held constant, except for the last scenario where future employment data was obtained directly from an economic impact analysis that was conducted for the proposed developments of regional impact (see Scenario Three above).

In running the travel demand model for each of the three scenarios, it was assumed that all the proposed transportation improvements currently included in the proposed FY 2015-2024 statewide Ten Year Transportation Improvement Plan (TYP) would be completed by the year 2035. In addition, all the transportation projects identified in SNHPC's Regional Transportation Plan (see **Table 10 Non-Exempt Transportation Projects SNHPC Region**) were also included and assumed to be built by 2035.

3. <u>REMI Modeling</u>: The final step in the scenario planning methodology involved the economic impact analysis, which was carried out by the NH Employment Security Economic and Labor Market Information Bureau utilizing the New Hampshire's Econometric Model - REMI Policy Insight Model tool. Specifically, this tool was used to estimate future employment and job growth projected to occur by the year 2035 as a result of the build out the proposed developments of regional impact. The estimated number of employees and job growth projected to occur for each development of regional impact was then added to the appropriate TAZs in SNHPC's travel demand model run for the third scenario. SNHPC staff worked directly with town planners and the owners/developers of the proposed developments of regional impact to obtain the input data required to run the REMI model. Because the Manchester Sand and Gravel project is basically all

residential, except for limited commercial development, this project was not included in the REMI modeling. The results of this economic analysis are summarized in the following report available at the SNHPC office: "Economic Impact of Mixed Use/Commercial Developments in Rockingham County, March 2014"⁶, as well as in the Economic Analysis section of this chapter. (See pages 53-56).

4. <u>Population Growth Maps</u>: The last step involved displaying the projected total population increase and distribution by TAZ for each scenario. To obtain consistency in comparing these changes, a total of five population ranges were developed to display the population differences by TAZ throughout the region. The five population ranges used are: 0-720; 721-1,400; 1,401 – 2,425; 2,426-4,344; and 4,345-7,774.

⁶ This report was recently finalized by the NH Employment Security in November 2014.

			Included in	Proposed
Community ¹	Project	Project #	the Model	Completion
				fear
BE	Widen NH 101 to 5 Lanes from NH 114 up to Wallace Rd.	13953	Yes	2017
BE	Widen NH 101 to 5 Lanes from Wallace Rd. up to Amherst TL ²		Yes	2024
BE	Widen US 3 to 5 Lanes from Bridge over FEET to Merrimack TL ²		Yes	2027
BE-ME	Improvement to Bedford mainline toll plaza to institute open road tolling	16100	Yes	2018
BE-NA	Widen existing 2-Lane sections of the turnpike to a 3-Lane typical from Exit 8 in Nashua to I-293 in Bedford		Yes	2024
DE-LO	I-93 - Construction of I-93 Exit 4A	13065	Yes	2024
GO	Improve Two Intersections Along the NH 114 & NH13 Corridor Through Down Town	20246	No	2015
НО	Widen US3/NH28 to 5 Lanes from Martins Ferry Rd to West Alice Ave.		Yes	2024
НО	Construct Southern Segment of US3/NH28 Alternate Bypass ²		Yes	2036
НО	Construct Northern Segment of US3/NH28 Alternate Bypass ²		Yes	2037
НО	Widen US3/NH28 to 5 Lanes from Legends Dr. to Hunt Street ²		Yes	2033
НО	Hackett Hill Road - Reconstruction at NH 3A and Turnpike Ramp	14950	No	2015
НО	Reconstruction of exit 11 ramp tolls to implement all electronic tolling on I- 293	9015	No	2016
НО	Reconstruct and Widen from Commerce Road north to Goona Road		Yes	2017
LO	Widening NH 28 from NH 128 to Page Rd.		Yes	2026
LO	Widen NH 102 to 4 lanes from Hudson Town Line to NH 128 ² - Lower Corridor		Yes	2032
LO	Widen NH 102 to 5 lanes from I-93 East to Londonderry Road ² - Upper Corridor		Yes	2031
LO	Widen NH 102 to 6 lanes from I-93 to NH 128 ³ - Central Corridor		Yes	2028
LO	Intersection Improvements at NH28/NH128 for Safety and Traffic Flow		Yes	2026
LO	Pettengill Rd - Locally Funded Based on Recommendations of Town Study		Yes	2017
MA	Reconstruction of Exit 4 on I-293		Yes	2031
MA	Reconstruction of FEE Turnpike Exit $6/7$ Interchange	16099	Yes	2025

Community ¹	Project	Project #	Included in the Model	Proposed Completion
-				Year
MA	Construct 600 Space Park and Ride Structure	13512	No	2030
MA	Traffic Operation and Safety Improvements to 3 Congested Intersections - US Rt.3 & Campbell Street	20162	No	2013
RA	Dudley Road - Removal of bridge, wings, and pier over Lamprey river	20818	Yes	2016
PO - MA	Bus service between Portsmouth and Manchester, Connecting Portsmouth, Downtown Manchester and BR Airport	20222	No	2013
SA-MA	I-93 Programmatic Mitigation (CTAP, NHDES Land Protection Program) (PE& ROW needs only)	10418	No	2013
SA-MA	I-93- Reconstruct and Widen Mainline, Environmental Impact Study and Final Design From Mass S/L IN Salem to I-293 in Manchester. Capacity Improvements, Reconstruction, and Widening from North of Exit 3 to I-293	10418C	Yes	2014
SA-MA	I-93 - Implement Expanded Bus Service & New Commuter Incentive Program. Purchase 14 Commuter Coaches & Provide 3 Years of Operating Support.	10418L	No	2014
SA-MA	I-93 - Exit 5 Reconstruct Interchange	14633F	Yes	2014
SA-MA	I-93 - NB & SB Mainline Weigh Station to Kendall	14633B	Yes	2018
SA-MA	I-93 - NH 102 Bridge and Approaches	14633C	Yes	2018
SA-MA	I-93 - Exit 4 Ramps + NB & SB Mainline	14633D	Yes	2018
SA-MA	I-93- NB & SB Mainline, Pillsbury to Exit 5	146331	Yes	2019
SA-MA	I-93 - NB & SB Mainline Station 1840 to I-293 Split	14633H	Yes	2020
SA-MA	Phase II Capacity improvements, reconstruction and widening from North of Exit 3 to 1-293	10418C#	Yes	2019
SA-MA	I-93 - Exit 3 NB Mainline, NH 111, and NB on and off ramps	13933H		2016
SA-MA	I-93 - Exit 3 SB mainline construction from Salem town line through Exit 3 area; New Exit 3 NB ramps and SB on-ramp; relocate NH 111; two new SB bridges over NH 111 & 111A	139331	Yes	2016
SA-MA	I-93 - Construction of a new park-and-ride at Exit 3.	10418	No	2016

Source: FY 2013-2016 Transportation Improvement Program, FY 2015-2024 Ten-Year Plan, and 2013-2040 SNHPC Regional Transportation Plan

¹ AU= Auburn, BE= Bedford, CA=Candia, DE=Derry, HO=Hooksett, LO=Londonderry, MA=Manchester, NB=New Boston, NA=Nashua

² These projects are taken from various studies and are part of the Regional Transportation Plan

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Outputs/Results

The primary outputs and results of this future scenario planning are summarized below:

<u>Future Growth Patterns</u>: A total of three maps were generated at the TAZ level depicting future population increases and population distribution under each of the three scenarios (see Map 6; Map 7 and Map 8). By comparing these maps with **Map 5 Current Condition Population by TAZ in the SNHPC Region**, the following changes in population distribution within the region are identified.

Scenario 1: Continued Slow Growth

- Map reveals that under the continued slow growth scenario, the largest population increases projected to occur within the region by 2035 will be concentrated within the I-93 corridor which includes the City of Manchester and the towns of Hooksett to the north and the towns of Derry, Londonderry and Windham to the south;
- Map indicates the region's population will continue to spread out beyond the City of Manchester within the towns of Auburn to the east and the towns of Goffstown and Bedford to the west; and
- Map shows that as the region's population continues to expand outward into the town's rural communities, Chester, New Boston, Weare and Raymond; the towns of Deerfield and Candia will not grow as much as other communities in the region.

Scenario 2: Improved Growth

- Map 7 reveals with improved growth, the region's largest population increases by the year 2035 are projected to continue to be concentrated within the I-93 corridor e.g. the City of Manchester and the towns of Hooksett to the north, and the towns of Derry, Londonderry and Windham to the south. However, overall there will be greater population increases occurring within the corridor and particularly the towns of Derry, Hooksett, Londonderry and Windham;
- Map 7 shows that the region's population is projected to continue to increase and spread out beyond the City of Manchester to the east and west of the city, including the towns of Auburn, Bedford, Goffstown, New Boston, Weare and Raymond; and
- Map 7 also shows there will be increased population growth and expansion outward into the towns of Chester, New Boston, Weare and Raymond, with less population increase and expansion in the towns of Candia and Deerfield.

Scenario 3: Faster Growth with Build Out of Developments of Regional Impact

- Map reveals the largest population increase occurs primarily within the Town of Hooksett (TAZ 78). This is due to the proposed Manchester Sand and Gravel residential master plan development;
- In comparing Map 7 and Map there are very few if any differences in population increase and distribution among the towns between the two scenarios, except for increased population in the towns of Londonderry and Derry. This is due to the proposed Woodmont Commons master plan development; and
- In addition, there is no major difference between the two scenarios, as a result of the proposed Pettengill Road development or the NH 101 Exit 4, Development in Raymond.

Economic Analysis: The economic impact analysis conducted by the NH Employment Security Economic and Labor Market Information Bureau in March 2014 using the REMI Policy Insight model provided the following estimates of both the number of direct jobs added to Rockingham County as well as the indirect and induced jobs gained in the region for the following three developments of regional impact: Woodmont Commons, Londonderry; Pettengill Road Development, Londonderry; and NH 101, Exit 4 Development, Raymond. The Manchester Sand and Gravel Master Plan in Hooksett was not included in the model as it is mostly residential in character.

For all three development scenarios, it was assumed that the anticipated job creation would not displace existing employment in the county or region. Each scenario results include the direct jobs generated at the development, as well as secondary (in-direct and induced) jobs added in Rockingham County, where the three developments of regional impact are located. Indirect jobs are those created from the ripple effect of the direct jobs from inter-industry purchases (business to business services). The induced jobs are those generated from an increase in consumer spending and from the increase in population. Indirect and induced jobs, combined are also referred to as secondary jobs.⁷ The results also include impacts that an expansion would have on the region, in terms of added gross domestic product, personal income, and population.

Woodmont Commons, Londonderry

Jobs:

- A total of 3,776 direct jobs would be created in Rockingham County between 2015 and 2026, if construction on the proposed development started in 2015.
- Of these 3,776 direct jobs, approximately 2,177 (57%) would be in professional and business services; 1,010 (28%) would be in retail trade; 404 (10%) in health care and social assistance; and 185 (3%) in accommodation and food services.
- Approximately 1,558 construction jobs would be created with the start of the project in 2015.
- By 2035 assuming full build out of the residential development, total job creation will be 5,226 jobs above the employment baseline in the county.

Gross Domestic Product:

- If the project started in 2015, the first year of the development, the GDP in Rockingham County would increase by \$97.0 million (in fixed 2005 dollars) above the baseline.
- By 2026, the GDP in the region would grow to \$350.6 million above the baseline and would continue to grow throughout the forecast period.
- The economic activity from the development of Woodmont Commons would account for 1.4 percent of total GDP in Rockingham County by 2035.

Personal Income:

• Total real personal income would increase by \$79.7 million (in fixed 2005 dollars) in 2015. By 2026, the increase in real personal income would grow by \$268.3 million.

⁷ Jobs in the REMI model are based on Bureau of Economic Analysis (BEA) definition of employment. The BEA estimates of employment and wages differ from covered employment data because BEA makes adjustments to account for self-employment. So the employment count in the REMI model is larger than what is reported by the Economic and Labor Market Information Bureau (ELMIB), New Hampshire Employment Security. The REMI model does not distinguish between full-time and part-time jobs.

Population:

Rockingham County's population would gain 247 persons above baseline in 2015. By 2026, the county would gain 3,903 residents above the forecast baseline. By 2035, the population of the county would gain close to 6,000 persons above the projected population baseline (an increase of 1.6 percent above forecasts).

Job Multiplier:

• The multiplier effect on Rockingham County of each job created at Woodmont Commons is, on average, 1.4 jobs – including the direct job created annually over the entire model period.⁸ The impact of construction costs on the region is excluded.

Pettengill Road Development, Londonderry

Jobs:

- A total of 2,250 direct jobs would be created in Rockingham County over a 20-year build out from 2015 to 2035 due to the Pettengill Road development.
- In 2035, at an estimated full build out of the Pettengill Road development, total job creation would be 3,206 jobs above the employment baseline in the region.
- Of these 2,250 jobs, approximately 1,750 (78%) would be in transportation and warehousing; 475 (21%) in professional and business services; and 25 (1%) in accommodation and food services.
- In 2015, assuming construction starts on the development, a total of 685 direct, indirect and induced jobs would be created in the county.

Gross Domestic Product:

- In 2015, the first year of the development, the GDP in the county would increase by \$32.3 million (in fixed 2005 dollars) above the baseline. By 2035, the county GDP would grow to \$191.3 million above baseline.
- Economic activity from the development would account for 0.7 percent of total GDP in the county by 2035.

Personal Income:

• Total real personal income would increase by \$24.5 million (in 2005 fixed dollars) in 2015. By 2034, the increase in real personal income will peak at \$223.9 million above projected baseline.

⁸ A job multiplier of more than one indicates the new job created in the local economy has a ripple effect that generates more employment in the region. A multiplier less than one indicates some of the current employment in the region would be eliminated due to the competition from the expanding businesses.

Population:

• Rockingham County's population would gain 96 persons above baseline in 2015. By 2034, the county would gain 3,876 residents above the forecasted baseline. By 2035, county population would gain close to 4,000 persons above the projected baseline, a 1.1 percent increase above the forecast.

Job Multiplier:

• The multiplier effect on Rockingham County of each job created at Pettengill Road development is on average between 1.3 and 1.4 jobs – including the direct job created annually over the entire forecast period. The impact of construction costs on the region is excluded.

NH 101, Exit 4 Development, Raymond

Jobs:

- A total of 403 direct jobs would be created by this development between 2015 and 2035 if construction started in 2015.
- Of these jobs, approximately 192 (47%) would be administrative and waste management services; 156 (38%) retail trade; and 55 (13%) accommodation and food services.

Gross Domestic Product:

- If the development begins in 2015, the GDP in Rockingham County will increase by \$18.6 million in fixed 2005 dollars above the baseline. By 2035, the GDP in the region will have grown to \$45.8 million above the baseline.
- The economic activity from this development will account for 0.2 percent of total GDP in Rockingham County by 2035.

Personal Income:

• Total real personal income would increase by \$12.7 million (in fixed 2005 dollars) in 2015 and by 2035, the increase in personal income would grow by \$58.1 million.

Population:

• Rockingham County's population would gain 60 persons above baseline in 2015 and by 2035, the population of the county would gain close to 1,124 persons above the projected baseline, a 0.3 percent increase.

Job Multiplier:

• The multiplier effect on Rockingham County of each job created at this development is, on average, between 1.5 and 1.6 jobs – including the direct job created annually over the entire forecast period. The impact of construction costs on the county is excluded.

Future Traffic Patterns: The following tables: Table 11, Table 12, Table 13, Table 14 and **Map 9 Roadway Deficiency Map Based on Scenario 3 SNHPC Region** shows the projected 2035 traffic assignments under the three growth scenarios and existing AADT counts at specified locations along the road networks surrounding the proposed developments of regional impact. Based upon these traffic modeling results, the following general observations can be made:

The surrounding road network has adequate capacity to address the projected increase future traffic growth as a result of the proposed developments, except for the following road segments and continuing roadway deficiencies:

- At Interstate 93 Exit 4 along NH 102 in Derry;
- Londonderry Road between Pillsbury and West Broadway;
- NH 3A Hazelton Avenue between Airport and Manchester/Merrimack town line;
- Rt. 111 in Windham;
- Rt. 114 in Goffstown and Bedford;
- I-293 and I-93 around Manchester;
- South Willow Street in Manchester;
- Bridge Street and Wellington Road in Manchester;
- US 3 Webster Street between Elm and Hooksett Road;
- Rt. 3, Hooksett;
- Rt. 101 east of I-93 in Raymond;
- NH 3A Hazelton Avenue between Airport and Manchester/Merrimack town line.

Woodmont Commons (WC)										
			SNHPC A	2010 Traffic Nodel	203	5 Assignme	ents	% Growth	% CI	nange
Development	Count Location	Location Description	Count	Assignment	Scenario 1	Scenario 2	Scenario 3	\$1 - 2010	S2-S1	\$3- \$2
WC	19	NH 28 at Derry - Londonderry line	1 <i>5,</i> 000	16,196	10,197	11,777	11,622	-1.83%	15.49%	-1.32%
WC	20	NH 102 at Derry - Londonderry line	23,000	15,402	17,106	17,944	19,430	0.42%	4.90%	8.28%
wc	37	I-93 north of Stonehenge Rd; Londonderry	74,000	71,958	122,691	129,382	128,565	2.16%	5.45%	-0.63%
WC	54	NH 28 south of Rollins ST; Derry	14,000	10,272	10,168	11,161	11,160	-0.04%	9.77%	-0.01%
WC	58	NH 28 north of Tsienneto Rd; Derry	22,000	15,813	7,534	8,465	8,283	-2.92%	12.36%	-2.15%
wc	67	NH 102 west of Young Rd (West end); Londonderry	23,000	16,318	20,841	22,277	26,683	0.98%	6.89%	19.78%
WC	72	NH 28 North of Berry RD ; Derry	12,000	14,261	10,553	11,683	11,875	-1.20%	10.71%	1.64%

TABLE 11 PROJECTED 2035 TRAFFIC ASSIGNMENTS WOODMONT COMMON DEVELOPMENT

Pettengill Road (PR)											
			SNHPC 2 N	2010 Traffic Iodel	203	85 Assignme	ents	% Growth	% Ch	ange	
Development	Count Location	Location Description	Count	Assignment	Scenario 1	Scenario 2	Scenario 3	\$1 - 2010	\$2-\$1	\$3-\$2	
PR	4	US 3 at Bedford - Merrimack line	12,000	12,528	14,209	14,901	15,332	0.50%	4.87%	2.89%	
PR	5	F.E.E.T. at Bedford - Tolls	48,000	50,160	51,559	54,045	55,303	0.11%	4.82%	2.33%	
PR	44	US 3 south River Road South of Club Acre Lane; Bedford	30,000	30,885	20,078	22,659	22,763	-1.71%	12.85%	0.46%	
PR	62	NH 28 south of NH 28A at Manchester - Londonderry line	12,000	19,933	11,691	12,736	12,660	-2.11%	8.94%	-0.60%	
PR	69	NH 28 south of Sanborn RD; Londonderry	13,000	18,156	14,720	16,321	16,166	-0.84%	10.88%	-0.95%	

TABLE 12 PROJECTED 2035 TRAFFIC ASSIGNMENTS PETTENGILL ROAD DEVELOPMENT

Raymond Development (RD)										
			SNHP	C 2010 Traffic Model	203	35 Assignme	% Growth	% Ch	ange	
Development	Count Location	Location Description	Count	Assignment	Scenario 1	Scenario 2	Scenario 3	\$1 - 2010	\$2-\$1	\$3-\$2
RD	48	NH 101 at the Raymond-Epping line	41,00 0	43,020	48,700	51,142	52,730	0.50%	5.01%	3.11%
RD	68	NH 101 east of exit 4, Raymond	37,00 0	41,386	47,454	49,400	50,781	0.55%	4.10%	2.80%
RD	91	NH 27 at Raymond - Epping line	4,800	5,851	5,767	6,116	6,379	-0.06%	6.05%	4.30%
RD	92	NH 107 at Raymond - Fremont line	5,700	6,026	6,804	7,229	7,495	0.49%	6.25%	3.68%

TABLE 13 PROJECTED 2035 TRAFFIC ASSIGNMENTS RAYMOND DEVELOPMENT

Manchester Sand & Gravel (MSG)										
			SNHPC 2 N	2010 Traffic Iodel	2035 Assignments			% Growth	% Ch	ange
Development	Count Location	Location Description	Count	Assignment	Scenario 1	Scenario 2	Scenario 3	S1 - 2010	S2-S1	S3-S2
MSG	14	US 3/NH 28 at Hooksett - Allenstown line	14,000	14,741	17,754	18,696	19,312	0.75%	5.31%	3.29%
MSG	33	US 3/ NH 28 north of NH Bypass 28; Hooksett	25,000	25,180	17,827	19,755	20,849	-1.37%	10.82%	5.54%
MSG	42	US 3/ NH 28 south of NH 27 and Martins Ferry RD; Hooksett	18,000	11,760	11,818	14,175	14,827	0.02%	19.94%	4.60%
MSG	43	US 3/NH 28 south of Main St; Hooksett	19,000	15,362	17,772	18,882	19,217	0.58%	6.25%	1.77%
MSG	50	US 3/ NH 28 north of I-93 and south of Alice Ave; Hooksett	18,000	8,129	9,994	12,408	12,754	0.83%	24.15%	2.79%
MSG	57	US 3/ NH 28 south of Granite St; Hooksett	13,000	13,084	15,419	16,253	16,520	0.66%	5.41%	1.64%

TABLE 14 PROJECTED 2035 TRAFFIC ASSIGNMENTS MANCHESTER SAND & GRAVEL DEVELOPMENT

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CONCLUSIONS AND RECOMMENDATIONS

GOALS

Overall Goal:

Promote a cohesive regional land use pattern that is founded on sound planning principles and is regionally diverse, sustainable, and equitable to all communities. Encourage business and residential development patterns that are sustainable and discourage sprawl.

<u>Key Goals</u>:

- 1. Support existing municipal centers, traditional village centers and compact growth patterns.
- 2. Guide growth to existing developed lands and sustainable areas with existing infrastructure.
- 3. Promote a diversity of land uses to support and strengthen local tax base.
- 4. Encourage agricultural uses in zoning.
- 5. Reduce development pressures on existing agricultural lands and agriculturally important soils.
- 6. Encourage redevelopment of existing residential, commercial and industrial areas where there is existing public infrastructure.
- 7. Support regional and local centers by guiding growth and providing the tools needed for successful mixed use.
- 8. Promote inter-community communications through the Regional Planning Commission.

RECOMMENDATIONS

Key Recommendations for SNHPC:

- 1. Continue to monitor and map the region's land use.
- 2. Continue to provide land use and zoning ordinance assistance to communities, including master planning.
- 3. Provide assistance to communities in community development, including preparing and administering community development block grants.
- 4. Support and assist planning boards in developing village center overlay zoning districts, site plan and subdivision regulations which provide for appropriate and traditional growth and walkable development in keeping with the historic character of the community.
- 5. Assist communities and planning boards in evaluating compact walkable development to encourage higher density development to take place within areas where water and sewer infrastructure and services exist or are scheduled in the near future.
- 6. Assist communities in conducting Cost of Community Services Studies (COCS) that can be used as land use planning and policy tools in evaluating local communities' land use and zoning to support and strengthen local tax base.
- 7. Provide assistance among abutting communities in evaluating and developing compatible zoning ordinances and zoning maps between municipal/town lines. Utilize the regional zoning map and regional existing land use maps in this chapter to assist with these efforts.
- 8. Support and assist local agricultural commissions and planning boards in identifying local agricultural needs and opportunities, which can be integrated into local zoning ordinances and site plan regulations. Conduct agricultural zoning audits to identify ways to make local zoning more agriculturally friendly.
- Assist planning boards in mapping and evaluating existing and potential new suitable areas for mixed use development, such as specific highway corridors and transportation centers within the community.

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APPENDIX

POPULATION PROJECTIONS

Municipality	2000	<u>2010</u>	<u>201</u>	<u>5</u>	<u>202</u>	20	<u>202</u>	2 <u>5</u>	<u>2030</u>	_	2035	-
	Census	Census	<u>OEP</u>	<u>SNHPC</u>	<u>OEP</u>	<u>SNHPC</u>	<u>OEP</u>	<u>SNHPC</u>	<u>OEP</u>	<u>SNHPC</u>	<u>OEP</u>	<u>SNHPC</u>
Auburn	4,682	4,953	5,006	5,137	5,117	5,288	5,229	5,519	5,320	5,712	5,366	5,983
Bedford	18,274	21,203	22,449	22,242	23,967	23,243	24,473	24,121	24,859	24,816	25,061	25,409
Candia	3,911	3,909	3,834	4,191	3,799	4,420	3,883	4,601	3,950	4,726	3,985	4,810
Chester	3,792	4,768	5,204	5,097	5,717	5,404	5,842	5,711	5,944	5,982	5,996	6,239
Deerfield	3,678	4,280	4,524	4,571	4,828	4,839	4,935	5,114	5,020	5,344	5,064	5,561
Derry	34,021	33,109	31,991	33,881	31,189	34,400	31,876	34,931	32,429	35,195	32,711	35,416
Goffstown	16,929	17,651	17,774	18,171	18,084	18,663	18,467	19,162	18,757	19,583	18,910	19,942
Hooksett	11,721	13,451	14,028	14,159	14,713	14,809	15,074	15,431	15,381	15,961	15,565	16,432
Londonderry	23,236	24,129	24,154	25,132	24,453	26,082	24,991	27,267	25,425	28,438	25,646	29,925
Manchester	107,006	109,565	109,308	112,395	110,163	114,895	112,493	117,555	114,263	119,351	115,191	120,724
New Boston	4,138	5,321	5,872	5,582	6,502	5,796	6,639	6,120	6,744	6,403	6,799	6,795
Raymond	9,674	10,138	10,197	10,593	10,373	11,424	10,601	11,918	10,785	12,261	10,879	12,705
Weare	7,776	8,785	9,192	9,497	9,708	10,183	9,913	10,857	10,069	11,464	10,151	12,013
Windham	10,709	13,592	14,890	14,502	16,408	15,320	16,769	16,239	17,060	17,061	17,208	17,774
Total	259,547	274,854	278,423	285,151	285,021	294,765	291,185	304,548	296,006	312,296	298,532	319,725

MOVING SOUTHERN NH FORWARD VOLUME 2 Chapter 2: Housing



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.

Adopted by the Planning Commission on December 16, 2014

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PURPOSE

The purpose of the Housing Chapter is to identify and analyze baseline conditions for fair housing, equity, opportunity and housing needs in the Southern New Hampshire Planning Commission region. This housing needs and fair housing equity assessment identifies and outlines key goals and recommendations for addressing housing needs in the region. These goals and recommendations are supported by the issues and needs identified through the Granite State Future public outreach process, in addition to the evaluation and analysis of background information and key data.

VISION

The Housing Chapter is founded upon the following Value Statement, as derived from public input from residents of the region:

Housing Choices

Residents demonstrate a preference for a range of different housing types and neighborhoods, but everyone values housing choices that are safe and affordable for all.

This Value Statement is also in line with New Hampshire's Livability Principles, which provide:



"Housing Choices ensure that everyone, no matter what their income level, has convenient and affordable choices in where they live. This includes a variety of housing options and ownership types that appeal to people at any stage of life and is convenient to where they work, shop, and play."

Public input collected through the Granite State Future (GSF) public outreach efforts, includes: regional visioning workshops; comments submitted online; and a telephone survey conducted by the University of New Hampshire. All of the public input received demonstrates widespread support for expanded housing choices.

PUBLIC INPUT FROM SNHPC OUTREACH

As captured in SNHPC's Public Outreach Report, Housing Choices was an important issue discussed for the region. Input was received during the SNHPC Granite State Future outreach process from various methods, including written comment cards, an online comment portal, focus groups and community events. Although only a few written comments were received for the topic of housing, this issue rose to the top as one of the most important issues the region needs to address when looking at the input received across all of the outreach methods.

WRITTEN COMMENT CARDS

One of the main sources of input for the SNHPC outreach process included responses to the questions, "What is best about the Southern New Hampshire region?" and "What could make it even better?" These responses were received on written comment cards and through the project website and analyzed by livability principles. Responses received centering around housing choices were all under the "What could make it even better?" question. As can be seen in **Figure 1**, housing choices were less of a focus in the input received for this outreach method as opposed to other issues, including Transportation choices and Community and Economic Vitality.



FIGURE 1- PUBLIC COMMENTS ON IMPROVING HOUSING CHOICES

VISUAL PREFERENCES SURVEY

SNHPC undertook a visual preferences survey at the community events attended as part of the SNHPC Granite State Future outreach process. The results of the Visual Housing Preferences survey indicate a preference for rural (37 percent), suburban (26 percent), and in-town single family (21 percent) homes in the region. At the Deerfield Fair nearly half the participants indicated they preferred rural housing. However, at both PeopleFest and Community Harvest Festival, which were located in the City of Manchester, the most participants showed a preference for in-town single family housing (27 percent and 31 percent), with rural housing coming in second (26 percent and 27 percent). The least preferred three housing choices were mixed-use (6 percent), urban townhouse (6 percent), and apartment complex (4 percent). The results of the survey seem to reflect preferences for the rural, suburban and in-town single family housing choices. This survey methodology was not scientific and therefore results should be analyzed within the larger context of the entire outreach and planning process to develop goals and recommendations that encompass a wider range of input and data.



FIGURE 2 – VISUAL PREFERENCES HOUSING CHOICES



FIGURE 3 - HOUSING CHOICES: VISUAL PREFERENCE SURVEY

REGIONAL VISIONING WORKSHOPS AND FORUMS

Public input collected at the regional visioning workshops and forums was more in depth than other outreach methods for issues surrounding housing choices and it was often stated as important. Some mentioned that people have a hard time finding jobs close to where they live. Others noted rental costs did not go down during recent economic downturn and that something needs to be done to address housing costs. There were also some who did not feel that housing costs were a big concern.

Housing choices were mentioned in conjunction with the trend of young people leaving the state and communities. Single family homes were perceived to be the predominant form of housing available, although some communities offer more choices than others. Other comments included there needs to be a balance in housing types – condominiums and apartments, single family, and mixed use. Comments suggested young people are challenged by the lack of apartments they can afford, as well as the cardependent transportation system and thus are attracted to cities where these are not as much of an issue.

Housing Choices was a major topic of discussion at other public forums. In the Neighborhood Conversations, members of Liberty House (a homeless shelter for veterans in Manchester) said there is a lack of community understanding of homelessness, and they want to improve the community's perception of it, as well as end perceived discrimination. Participants want to see housing costs lowered and the availability of affordable housing increased. Housing is also a big problem for refugees in the southern region, who identified a shortage of suitable housing, and trouble working with landlords to make sure their housing is clean, safe, and that they get their security deposits back. Other comments from neighborhood conversations included that investment was needed in affordable housing so housing costs do not keep people from meeting other needs.

PUBLIC INPUT FROM UNH TELEPHONE SURVEY

UNH Telephone survey results provide further insight into residents' housing preferences:

• Residents view safe and affordable housing as the third most important priority for investing public dollars. The development of single family housing and assisted living facilities were particularly favorable to residents, while development of manufactured housing and apartments were the least favorable.

- Residents think that future development should occur in areas that are already developed (70 percent).
- Over a third of residents (37 percent) describe where they live as a neighborhood close to a town center, followed by those in a rural location away from the town center (28 percent), a development away from a town center (27 percent), in downtown or a town center (7 percent) and those who would classify their neighborhood in another way (1 percent).
- A majority of residents (56 percent) would prefer to live in a strictly residential neighborhood while others would prefer a mixed residential/commercial neighborhood (42 percent) and few did not know (1 percent).
- Over three-fourths (78 percent) of residents think their town should encourage single family detached housing, followed by senior housing (74 percent), housing for adults over 55 (66 percent), clusters of single family homes (62 percent), accessory apartments (60 percent), housing in areas with business/residential mix (53 percent), townhouses (51 percent), attached homes (47 percent), apartment buildings (42 percent), and manufactured housing (36 percent).

Households earning less than \$40,000, those aged 18 to 39 and those who are nonwhite are more likely to want their town to encourage <u>apartments</u>.

Only 9 percent of respondents find housing to be very affordable in their town, 56 percent find it somewhat affordable, 24 percent find it not very affordable, 5 percent find it not affordable at all and 6 percent don't know. When it comes to renting, only 7 percent find it very affordable, 39 percent find it somewhat affordable, 19 percent find it not very affordable, 7 percent find it not affordable at all and 27 percent don't know.

INTRODUCTION

The economic downturn of the late 1980s caused residential purchase prices to plummet, rents to stabilize, and vacancy rates to increase. Much of this was due to over speculation and construction levels that exceeded demand. The region's housing market began to recover around 1994, at which time housing costs began to increase and vacancy rates decrease. High levels of in-migration during the 90s further increased housing demand levels. Housing developers, however, continued to build new units at a slower rate than demand required due to the lasting impacts of the 1980's housing crash. The result of this was a shortage of housing units affordable to all income levels, particularly low to moderate-income families.

Following an economic recession in 2001, there was an unprecedented increase in nationwide house prices, which lead to booms in both residential construction and consumption from 2001-2006. This time period, referred to as the "housing bubble," burst at some point between 2006 and 2007. In late 2007 it was determined that the United States economy was having a financial crisis and was in what is now called the "Great Recession." The National Bureau of Economic Research declared the end of the Great Recession in June 2009 and the U.S. economy and housing market recovery continues presently. From 2013-2014 the New Hampshire Housing market has seen a slow and steady recovery with foreclosures declining and home prices on the upswing.

Over the past decade, numerous changes have taken place in the SNHPC region. The number of dwelling units in the region has increased by 11,577 from 2000 through 2010, an approximate 11.53 percent increase. There are now approximately 111,993 dwelling units in the SNHPC region (2010). All communities in the region contributed to this growth, some seeing higher increases than others. New Boston had the greatest percent increase in units (34.54 percent) and Derry had the least (4.26 percent). In comparison, the region's population increased by an estimated 15,171 persons from 2000 to 2010. This is an increase of 5.8 percent.

Single-family residences continue to be the predominant type of units constructed in the region. Of the 11,520 residential building permits issued from 2000 through 2010, 7,542 were for single-family homes. The average purchase price of a new home in the region during the first half of 2013 was \$312,713. This is second only to a high of \$325,958 for a new home in 2005 and indicates that purchase prices are on an upward trend again after a rapid decline during the economic recession. Median home values range from a high of \$391,500 in Windham to a low of \$212,000 in Raymond. The cost of renting an apartment in the region has also increased in the past few years. The median gross rent, across the region, has risen approximately 34 percent from \$744 in 2000 to \$997 in 2012. The highest median gross rents can be found in Bedford, Candia and Windham, all over \$1,300 per month. A number of factors may contribute to high rents in these communities, including low availability of rental units.

For individuals who have difficulty attaining homeownership or affording rent, the number of rent-assisted units in the region has increased slightly since 2010, bringing the total number of units to 3,763 in 2013, up from 3,162 units in 2010. However, it must be noted that 76.85 percent of these rent-assisted units are located in Manchester and 47.7 percent of those units are reserved for elderly or senior households.

Within the SNHPC Region, it is estimated there are 27,339 workforce households paying 30 percent or more of their monthly income for housing. For 2010, it is estimated that of the 103,730 total households in the SNHPC region, there were an estimated 37,963 workforce households, or 36.6 percent of the total households. For 2020, it is estimated there will be 110,048 total households in the region and consistent with the estimated 36.6 percent in 2010, the estimated workforce households will number 40,276. The fair share analysis in **Table 24**, page 58, distributes these households to the 14 communities in the region based on their 2010 share of the region's total housing units.

KEY ISSUES AND CONCERNS

- Our region is showing signs of an aging population, along with trends at the State level, and planning will need to focus on meeting the housing needs of an older population, while also increasing choices and opportunities for the younger population in order to attract and retain them in our region and the State
- New housing development continues to increase in the region, but not equally among all communities
- Affordable housing options for workforce households are largely in the City of Manchester, the Town of Derry and the Town of Raymond. Outside of these communities, the options are limited.
- Affordable rental units are becoming scarce in some communities as rental costs continue to rise in the region
- New home and apartment construction is not keeping pace with trends prior to the recession recovery is and continues to be very slow
- Housing affordability and cost burden for workforce households continues to be an issue in the region (23.1 of owner households earning 100 percent or less of the Median Area Income are paying 30 percent or more for housing, 33.7 percent of renter households earning 60 percent or less of the Median Area Income are paying 30 percent or more for housing)
- Housing affordability is further challenged by high per capita property tax collections in the state
- Analysis reveals there is evidence of discrimination and patterns of segregation; more education, training and information is needed on fair housing rights, as well as increasing housing choices
- Racially concentrated areas of poverty exist within the SNHPC region and regional coordination and cooperation is needed to address this issue
- Opportunities and barriers to fair housing in the Southern New Hampshire region choice include:
 - 1. Housing Costs and Affordability
 - 2. Housing Types (Choices)
 - 3. Local Zoning Ordinances
 - 4. Multi-family Housing Units
 - 5. Minimum lot sizes
 - 6. Age-restricted Housing
 - 7. Cluster Housing
 - 8. Employment Opportunities
 - 9. Economic Factors
 - 10. Educational Opportunities
 - 11. Crime and Perceptions of Safety
 - 12. Discrimination and Patterns of Segregation
 - 13. Physical Infrastructure
 - 14. Water

- 15. Sewer
- 16. Natural Gas
- 17. Transportation/Public Transportation
- 18. Access to Healthy Food
- 19. Access to Services and Civic Infrastructure

ANALYSIS OF EXISTING CONDITIONS AND TRENDS

DEMOGRAPHIC AND SOCIOECONOMIC TRENDS

TOTAL POPULATION

The total population of the SNHPC Region was 274,854 people in 2010. As shown on Table 1, the region grew by close to 22 percent from 1990 to 2010, with an annualized growth rate of 1.09 percent. Communities that experienced the largest population growth over this time period were Chester (77.18 percent change), Bedford (68.77 percent change), New Boston (65.56 percent change), Windham (50.69 percent change) and Hooksett (49.42 percent change). Communities that experienced the least percent population growth were Candia (9.90 percent change), Manchester (10.30 percent change) and Derry (11.84 percent change).

FABLE 1- SNHPC REG	ON TOTAL POPUL	ATION BY MUNICIP	ALITY 1990-2010
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		1990-2010				
Municipality	Census	-	-	Absolute	Percent	Growth
	1990	2000	2010	Change	Change	Rate
Auburn	4,085	4,682	4,953	868	21.25%	1.06%
Bedford	12,563	18,274	21,203	8,640	68.77%	3.44%
Candia	3,557	3,911	3,909	352	9.90%	0.49%
Chester	2,691	3,792	4,768	2,077	77.18%	3.86%
Deerfield	3,124	3,678	4,280	1,156	37.00%	1.85%
Derry	29,603	34,021	33,109	3,506	11.84%	0.59%
Goffstown	14,621	16,929	17,651	3,030	20.72%	1.04%
Hooksett	9,002	11,721	13,451	4,449	49.42%	2.47%
Londonderry	19,781	23,236	24,129	4,348	21.98%	1.10%
Manchester	99,332	107,006	109,565	10,233	10.30%	0.52%
New Boston	3,214	4,138	5,321	2,107	65.56%	3.28%
Raymond	8,713	9,674	10,138	1,425	16.35%	0.82%
Weare	6,193	7,776	8,785	2,592	41.85%	2.09%
Windham	9,020	10,845	13,592	4,572	50.69%	2.53%
Total	225,499	259,683	274,854	49,355	21.89 %	1. 09 %

Source: U.S. Census 1990, 2000, 2010

POPULATION BY RACE

As shown on Figure 4, the SNHPC Region continues to be predominantly white in 2010 at 91.88 percent. This compares to 94.9 percent in 2000 and illustrates that the region is becoming slightly more diverse and the minority population is slowly growing here. The SNHPC minority population was 5.1 percent in 2000 and 8.12 percent in 2010. The Hispanic population (of any race) grew more than any other population in the region, going from 2.69 percent of the population in 2000 to 4.42 percent of the population in 2010.¹ The second largest for population growth in the region was the Black or African American population, going from 1.20 percent of the population in 2000 to 2.05 percent of the population in 2010. The third largest growth rate in the region was the Asian population, going from 1.50 percent of the population in 2010.



FIGURE 4 – SNHPC REGION TOTAL POPULATION BY RACE 2010

Source: U.S. Census Bureau, 2010 Census.

The SNHPC Region's population is slightly more diverse than the state as whole. The white population in the state of New Hampshire comprises 93.89 percent of the population compared to 91.88 percent for the region. Overall the nation is much more diverse than both the state and the region, with every race besides white comprising a much greater percentage of the population (see **Figure 5**). Further analysis on racial distribution within the region is outlined in the following sections: Communities of Interest, Segregation and Concentrations of Poverty.

¹ Note: Hispanic is reported as ethnicity across all races and does not constitute an individual race as reported in the census. Therefore it is not depicted in **Figure 4**.





*The Hispanic population is reported as ethnicity in the US census and does not constitute a percentage of the total population by race. It is reflected in **Figure 5** for comparison purposes only.

POPULATION BY AGE

An analysis of the SNHPC Region population by age group (**Table 2**) 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. All other age cohorts saw modest increases during the same time period. **Figure 6** (on page 12) illustrates the change for each age cohort graphically to show the aging of the region's population.

This is in line with trends seen at the state level, where the 45+ age cohorts have seen large increases in the past 10 years and the young adult cohort has seen a large decrease, after relatively no change in the 1990s. New Hampshire is growing older and the Southern New Hampshire region is in line with that trend. In a state-wide analysis on demographic trends in the 21st century, the Carsey Institute explains that "migration contributes to this situation, but the primary driver is the aging in place of those currently residing in New Hampshire. Age structure changes have important implications for policymakers, as well as for the state's business, service, and nonprofit communities. The state's youngest and oldest residents are big consumers of government services, such as education and health care. In contrast, the working-age population provides human capital and the skilled labor force needed to fuel economic growth, as well as much of the consumer base for goods and services. There is also an ongoing concern in New Hampshire

Source: U.S. Census Bureau, 2010 Census.

about the state's ability to retain and attract young adults and about whether the state has an old population."²

			2000-2010				
			Absolute Change	Percent Change	Growth Rate		
Age Cohort	2000	2010					
Total population	259,547	274,854	15,307	5.90%	0.59%		
Under 5 years	17,840	16,237	-1,603	-8.99%	-0.90%		
5 to 9 years	20,260	17,674	-2,586	-12.76%	-1.28%		
10 to 14 years	20,370	18,952	-1,418	-6.96%	-0.70%		
15 to 19 years	18,078	19,651	1,573	8.70%	0.87%		
20 to 24 years	14,725	17,566	2,841	19.29%	1.93%		
25 to 29 years	36,882	17,066	-19,816	-53.73%	-5.37%		
30 to 34 years	48,619	16,655	-31,964	-65.74%	-6.57%		
35 to 44 years	37,676	39,838	2,162	5.74%	0.57%		
45 to 54 years	11,511	47,457	35,946	312.28%	31.23%		
55 to 64 years	8,212	33,948	25,736	313.40%	31.34%		
65 to 74 years	13,024	16,200	3,176	24.39%	2.44%		
75 to 84 years	9,184	9,244	60	0.65%	0.07%		
85 years and over	3,166	4,366	1,200	37.90%	3.79%		
AGE 65+	25,374	29,810	4,436	17.48%	1.75%		
AGE <65	234,173	257,889	23,716	10.13%	1.01%		

TABLE 2 - POPULATION BY AGE GROUP - SNHPC REGION

Source: U.S. Census Bureau, 2000 and 2010 Census.

² Johnson, K. 2012. New Hampshire Demographic Trends in the Twenty-first Century. *Reports on New England*. Number 4. Carsey Institute, University of New Hampshire.





Source: U.S. Census Bureau, 2000 and 2010 Census.

HOUSEHOLD TRENDS

Total households in 2010 for the SNHPC Region numbered 105,045 with an average household size of 2.56 and an average family size of 3.11. The difference between the household and the family is that a household may consist of only one person but a family must contain at least two members and that the members of a multi-person household need not be related to each other, while the members of a family are related. Households also differ from housing units, where they are defined as occupied housing units. In 2010, Manchester had the highest number of households at 45,766, followed by Derry at 12,537. Chester had the largest average household size at 3.04 and the largest average family size at 3.28. Total households in the SNHPC region have increase just over 31 percent from 80,000 households in 1990.

HOUSEHOLD SIZE	Total households	Average household size	Average family size	Percent Owner Occupied Households	Percent Renter Occupied Households
Auburn	1,765	2.81	3.08	91.8%	8.2%
Bedford	7,364	2.81	3.19	86.6%	13.4%
Candia	1,450	2.70	3.04	92.3%	7.7%
Chester	1,534	3.04	3.28	92.7%	7.3%
Deerfield	1,537	2.78	3.09	87.4%	12.6%
Derry	12,537	2.62	3.10	66.7%	33.3%
Goffstown	6,068	2.56	3.00	80.3%	19.7%
Hooksett	4,926	2.59	3.01	82.7%	17.3%
Londonderry	8,438	2.86	3.21	88.0%	12.0%
Manchester	45,766	2.34	2.99	47.3%	52.7%
New Boston	1,883	2.83	3.15	85.7%	14.3%
Raymond	3,925	2.58	2.98	81.7%	18.3%
Weare	3,128	2.81	3.13	86.2%	13.8%
Windham	4,724	2.87	3.25	91.5%	8.5%
Total SNHPC Region	105,045	2.56	3.11	67.0%	33.0%

TABLE	3 –	SNHPC	2010	HOUSEHOLI	DS
	J —		2010	INCOMENCE	

Source: U.S. Census Bureau, 2010 Census.

In 2010, owner-occupied households in the SNHPC Region totaled 67 percent and renter-occupied households totaled 33 percent. The City of Manchester has more renter-occupied households than owner-occupied at 52.7 percent. Derry also has a large population of renter-occupied households at 33 percent. Chester has the lowest amount of renter-occupied households at 7.3 percent.

The change in households by tenure in the SNHPC Region from 1990 – 2010 is illustrated on **Table 4** (page 15). The region saw a 25.9 percent increase in owner-occupied units from 1990 – 2000 compared to an 11.9 percent increase from 2000-2010. Renter-occupied unit increases saw the same trend with an increase of 12.63 percent from 1990-2000 and 2.4 percent from 2000-2010.

Communities that saw the greatest increase in owner-occupied units from 2000-2010 were New Boston (29.7 percent), Windham (28.9 percent), and Chester (26 percent). Communities that experienced the

greatest increase in renter-occupied units during this time period were Windham (87.4 percent), Deerfield (52 percent) and New Boston (42.1 percent).

In 2014, New Hampshire Housing Finance Authority engaged the New Hampshire Center for Public Policy Studies and Applied Economic Research to conduct a comprehensive Housing Needs study in NH titled *Shifting Demographics Challenge New Hampshire's Housing Market* (for a full copy of the study see <u>www.nhhfa.org</u>). The first part of the study, titled "Big Houses, Small Households: Perceptions, Preferences and Assessment," concludes that the state's current housing stock will not fit the evolving market demands and needs of the state's population if no steps are taken to accommodate these changes.

Specifically, New Hampshire's senior population is expected to nearly double between 2010 and 2015, and they have a strong preference for staying in their current homes and aging in place. However, the character of their New England homes – large, rural, multi-level houses with narrow doors and stairs – will pose a challenge to making this possible. Rural locations will make the delivery of services that help seniors age in place more difficult, while the design of traditional New England homes exacerbate mobility challenges. Most homeowners also lost home equity during the Great Recession, limiting their ability, for now, to downsize.

In addition, the larger, rural homes built and purchased by Baby Boomer residents will appeal to a smaller number of young households. Nationally, members of the Generation Y (also known as Millenials), show a preference for mixed-use communities and housing that fits with a more urban lifestyle. New Hampshire young professionals interviewed for the study showed more interest in rural living, but are concerned about the availability of jobs in those areas and showed an overall wariness toward homeownership. With the highest average level of student debt in the country at \$32,900 and little wage growth, New Hampshire young professionals said they are finding unique strategies, such as doubling up in rentals and leasing out portions of their home, to overcome the financial pinch they are experiencing.

Compounding the challenge of high student debt and stagnant wages are stricter lending requirements for mortgages. Homebuilders reported that starter homes priced at around \$179,000 still are not selling due to financing requirements that prevent first-time homebuyers from entering the market. This impact is felt especially by low to moderate income borrowers as they have fewer financial resources to manage these stricter lending requirements. This lack of financing options is pushing younger generations out of the ownership market. When this coupled with Boomers staying in place rather than downsizing, the result is a housing market where fewer people are looking to buy.

New Hampshire residents, most of who are homeowners, view housing affordability as the third most important priority when it comes to utilizing public funds, but obstacles still stand in the way of meeting the needs. Homebuilders reported in the study that excessive regulations and impact fees often make building affordable apartments prohibitively expensive. In addition, town planners report there are still concerns about the impact of multi-family housing may have on taxes and school systems. Also, public perception remains that a lack of affordable workforce housing is not a problem, despite high rents and low vacancy rates that cause some renters to pay well over 30 percent of their income toward housing costs.

Municipality	1990 Census	2000 Census	2010 Census	Percent Change 1990-2000	Absolute Change 1990-2000	Percent Change 2000-2010	Absolute Change 2000-2010			
Owner Occupied										
Auburn	1,192	1,460	1,620	22.5%	268	11.0%	160			
Bedford	3,720	5,507	6,374	48.0%	1787	15.7%	867			
Candia	1,076	1,255	1,339	16.6%	179	6.7%	84			
Chester	778	1,129	1,422	45.1%	351	26.0%	293			
Deerfield	905	1,098	1,344	21.3%	193	22.4%	246			
Derry	6,761	7,978	8,362	18.0%	1217	4.8%	384			
Goffstown	3,778	4,505	4,874	19.2%	727	8.2%	369			
Hooksett	2,551	3,304	4,073	29.5%	753	23.3%	769			
Londonderry	5,497	6,637	7,426	20.7%	1140	11.9%	789			
Manchester	18,571	20,367	21,661	9.7%	1796	6.4%	1,294			
New Boston	904	1,244	1,613	37.6%	340	29.7%	369			
Raymond	2,314	2,724	3,206	17.7%	410	17.7%	482			
Weare	1,864	2,278	2,697	22.2%	414	18.4%	419			
Windham	2,590	3,353	4,321	29.5%	3353	28.9%	968			
SNHPC Region	49,911	62,839	70,332	25.9 %	12,928	11. 9 %	7,493			
		Re	nter Occupied							
Auburn	110	120	145	9.1%	10	20.8%	25			

TABLE 4 – SNHPC HOUSEHOLDS BY TENURE - 1990-2010

Municipality	1990 Census	2000 Census	2010 Census	Percent Change 1990-2000	Absolute Change 1990-2000	Percent Change 2000-2010	Absolute Change 2000-2010
Bedford	277	744	990	168.59%			246
Candia	84	104	111	23.81%	467	33.1% 6.7%	7
Chester	84	85	112	1.19%	1	31.8%	27
Deerfield	94	127	193	35.11%	33	52.0%	66
Derry	4,006	4,349	4,175	8.56%	343	-4.0%	-174
Goffstown	981	1,136	1,194	15.80%	155	5.1%	58
Hooksett	702	843	853	20.09%	141	1.2%	10
Londonderry	889	986	1,012	10.91%	97	2.6%	26
Manchester	21,767	23,880	24,105	9.71%	2113	0.9%	225
New Boston	150	190	270	26.67%	40	42.1%	80
Raymond	685	769	719	12.26%	84	-6.5%	-50
Weare	260	340	431	30.77%	80	26.8%	91
Windham	240	215	403	-10.42%	215	87.4%	188
SNHPC Region	30,089	33,888	34,713	12.63%	3799	2.4%	825

Sources: 1990 U.S. Census SF1-H12 and 2000 U.S. Census SF1-H16, 2010 U.S Census SF1-DP-1

EMPLOYMENT

Employment and wage data for the SNHPC Region in 2011 reveals a total of 122,472 workers (covered by unemployment insurance laws).³ Of those, 108,131 were in the private sector and 14,341 were in government. The number of workers from 2000-2011 increased by only 2.55 percent. The Southern New Hampshire region felt the effects of the recession during this time period along with the rest of the state and a number of communities saw a large decrease in workers including Deerfield, Derry, Manchester and Raymond.

Municipality		2000					
	Private Sector	Government	Total	Private Sector	Government	Total	2000-2011 change Total
Auburn	870	116	986	1,430	154	1,584	60.65%
Bedford	12,667	611	13,278	12,862	1,162	14,024	5.62%
Candia	494	108	602	641	121	762	26.58%
Chester	249	86	335	464	172	636	89.85%
Deerfield	318	131	449	311	52	363	-19.15%
Derry	7,869	944	8,813	6,528	1,022	7,550	-14.33%
Goffstown	2,523	538	3,061	2,201	1,261	3,462	13.10%
Hooksett	6,264	491	6,755	7,310	624	7,934	17.45%
Londonderry	10,221	987	11,208	12,200	1,146	13,346	19.08%
Manchester	59,386	7,418	66,804	57,777	7,090	64,867	-2.90%
New Boston	369	105	474	462	188	650	37.13%
Raymond	2,771	387	3,158	2,253	406	2,659	-15.80%
Weare	928	305	1,233	1,138	431	1,569	27.25%
Windham	1,936	332	2,268	2,554	512	3,066	35.19%
SNHPC Region	106,865	12,559	119,424	108,131	14,341	122,472	2.55%

TABLE 5 - ANNUAL AVERAGE COVERED EMPLOYMENT - 2000-2011

Source: NH Employment Security, Local, State and County data for 2000 and 2011

³ As part of the Unemployment Insurance compensation system, New Hampshire Employment Security (NHES) collects quarterly data on number of people employed and total wages from those employers subject to the unemployment law. This data is called Quarterly Census of Employment and Wages (QCEW) but is often referred to as covered employment or ES-202 data. The Economic and Labor Market Information Bureau uses QCEW data to benchmark the nonfarm employment estimates produced by the Current Employment Statistics (CES) program.

The labor force in the SNHPC Region increased by 4.16 percent from 2000-2011. Communities that had a decrease in their labor force during this time period were Derry and Raymond. These two communities also have the highest unemployment rates (as of 2011) at 6.3 percent and 6 percent, respectively. The New Hampshire unemployment rate in 2011 was 5.5 percent. Nationally the unemployment rate in 2011 was 8.9 percent. The economy is slowly improving and unemployment rates continue to decrease slowly in the region, the state and the nation.

Municipality		2000			9 *)		
	Civilian Labor Force	Employed	Unemploy- ment Rate	Civilian Labor Force	Employed	Unemploy- ment Rate	2000-2010 change employed
Auburn	2,728	2,667	2.2%	3,180*	3,005*	5.5%*	12.67%*
Bedford	9,466	9,296	1.8%	11,320	10,800	4.6%	16.17%
Candia	2,253	2,197	2.5%	2,626*	2,495*	5.0%*	13.56%*
Chester	2,308	2,249	2.6%	2,706*	2,560*	5.4%*	13.82%*
Deerfield	2,228	2,173	2.5%	2,373*	2,228*	6.1%*	2.53%*
Derry	22,161	21,401	3.4%	19,780	17,040	7.0%	-20.37%
Goffstown	9,263	9,016	2.7%	10,210	9,670	5.3%	7.25%
Hooksett	5,812	5,660	2.6%	7,920	7,470	5.6%	31.97%
Londonderry	13,521	13,142	2.8%	14,220	13,380	5.9%	1.81%
Manchester	58,829	57,385	2.5%	62,120	57,760	7.0%	.65%
New Boston	2,283	2,240	1.9%	3,058*	2,900*	5.2%*	29.46%*
Raymond	6,085	5,869	3.5%	6,140	5,710	7.0%	-2.7%
Weare	4,205	4,104	2.4%	5,080	4,770	6.2%	16.22%
Windham	6,110	5,891	3.6%	7,710	7,280	5.5%	23.57%
Total	147,252	143,290	2.7%	158,443	147,068	7.73%	2.63%

TABLE 6 - LABOR FORCE,	2000-2011
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Source: NHetwork, Labor Force, Employment and Unemployment Data

COMMUTER PATTERNS

Commuting patterns have changed over the past decade along with employment and labor force. The percentage of the labor force commuting out of town (OOT) to work dropped in each of our communities and the total percentage in the region dropped from 66.32 percent in 2000 (**Table 7**) to 58.76 percent in 2010 (**Table 8**). Most of our labor force in the region still commutes to the City of Manchester, the center and hub of employment in the SNHPC region. Mean travel time varies in our communities from 21.3 minutes in the City of Manchester to 35.1 minutes in the Town of Weare.

Municipality	Commuting Out of Town- 2000							
	Total OOT Commuters	% of Labor Force Commuting OOT	Most Common Commute To	2nd Most Common Commute To	3rd Most Common Commute To	Travel Time To Work		
Auburn	2,312	87.44%	Manchester	Londonderry	Hooksett	26.7		
Bedford	6,674	73.62%	Manchester	Nashua	Merrimack	27.2		
Candia	1,960	89.25%	Manchester	Hooksett	Bedford	28.3		
Chester	1,686	83.76%	Manchester	Derry	Salem	32.2		
Deerfield	1,602	83.92%	Manchester	Concord	Raymond	33.9		
Derry	14,515	79.53%	Salem	Manchester	Londonderry	31.1		
Goffstown	6,971	78.22%	Manchester	Bedford	Nashua	26.1		
Hooksett	4,992	79.43%	Manchester	Concord	Bedford	25.7		
Londonderry	9,772	78.08%	Manchester	Nashua	Derry	29.7		
Manchester	26,139	47.69%	Nashua	Bedford	Londonderry	21.3		
New Boston	1,940	83.95%	Manchester	Goffstown	Nashua	32.7		
Raymond	4,344	82.29%	Manchester	Exeter	Londonderry	31.6		
Weare	3,516	85.34%	Manchester	Concord	Goffstown	35.1		
Windham	5,070	87.73%	Salem	Boston, MA	Andover, MA	31.5		
Total	86,423	66.32%						

TABLE 7 – SNHPC REGION COMMUTING PATTERNS 2000

Source: U.S. Census 2000 MCD-to-MCD Worker Flow Files, State of New Hampshire, Residence MCD

Municipality		Commut	ing Out of To	wn- 2010		Mean
	Total OOT Commuters	% of Labor Force Commuting OOT	Most Common Commute To	2nd Most Common Commute To	3rd Most Common Commute To	Travel Time to Work
Auburn	2,455	81.48%	Manchester	Nashua	Londonderry	27.2
Bedford*	7,622	70.18%	Manchester	Nashua	Merrimack	25.6
Candia	1,863	75.52%	Manchester	Salem	Raymond	27.3
Chester*	2,117	79.80%	Manchester	Derry	Salem	33.5
Deerfield	1,941	75.26%	Manchester	Concord	Salem	36.3
Derry	14,064	70.36%	Manchester	Londonderry	Salem	30.7
Goffstown	7,589	72.75%	Manchester	Bedford	Concord	24.1
Hooksett*	5,651	71.26%	Manchester	Concord	Bedford	24.7
Londonderry	9,623	66.27%	Manchester	Nashua	Salem	29.6
Manchester	29,291	47.36%	Bedford	Nashua	Londonderry	22.8
New Boston	2,287	74.11%	Manchester	Bedford	Merrimack	30.1
Raymond	4,110	68.42%	Manchester	Exeter	Epping	33.8
Weare	4,253	79.73%	Manchester	Concord	Nashua	36.2
Windham	5,510	75.12%	Salem	Boston, MA	Manchester	34.3
Total	92,866	58.76%				

	TABLE 8 -	SNHPC	REGION	COMMUTING	PATTERNS	2010
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Source: U.S. Census 2010 MCD-to-MCD Worker Flow Files, State of New Hampshire, Residence MCD

*Most Common Commute stayed the same from 2000-2010

COMMUNITIES OF INTEREST

One of the overall goals for the SNHPC Regional Comprehensive Plan is to engage residents and stakeholders substantively and meaningfully in the development of a shared vision for the region and its implementation. This also includes communities traditionally marginalized from such processes. In order to ensure we are engaging every sector of the community, it is important to identify those populations that have not traditionally been a part of the plan-making and visioning process. The following communities of interest were identified by the SNHPC Granite State Future Leadership Team to ensure the visioning, analysis and recommendations that come out of this process address their needs and concerns as well as the community as a whole.

SENIOR POPULATION

The senior population (75+) in the SNHPC region was 13,610 according to the 2010 U.S. Census. This is a 10.2 percent increase from 2000, where the senior population was 12,350. Almost half of the senior population resides in Manchester (49 percent); another 10 percent resides in Bedford, 8.7 percent in Derry, 8.6 percent in Goffstown and the remaining 23.7 percent is distributed fairly evenly across the remaining SNHPC communities.

PHYSICALLY DISABLED POPULATION

The civilian non-institutionalized population with a disability in the SNHPC Region is 24,234 or approximately 8.9 percent of the population.⁴ Close to 60 percent of the disabled population in the region resides in the City of Manchester currently (14,234 individuals).

VETERANS

Of the civilian population 18 years and older in the region (210,824) there are 20,420 civilian veterans making up 9.69 percent of that population.⁵ The City of Manchester is home to a majority of these veterans (38 percent) and the only Veteran's Administration Medical Center (VAMC) in the State. Outpatient Clinics and Vet Centers are located throughout the State, but veteran services are met in the City of Manchester for a large portion of New Hampshire's veterans. In addition to medical services, the VAMC Manchester provides homeless veterans with housing, employment and recovery services. Several housing programs and transitional homes are located in the City because of the proximity to veteran's services.

YOUTH

From 2000 to 2010 the youth population in the SNHPC Region increased slightly with an 8.7 percent increase in the 15-19 age cohort and a 19.29 percent increase in the 20-24 age cohort. At the same time, there were major decreases in the 25-29 and 30-34 age cohorts, which indicate trends of youth leaving the region (and the state) as they become young adults. At the lower age cohort range, there were also decreases during this time period, which indicate a shift in birth rates/family size and is reflective of the out-migration of young adults/families at the same time.

Overall, youth (ages 15-24) comprises approximately 13.5 percent of the SNHPC population with 37,217 individuals. In terms of housing, issues with youth involve both homeless youth and cases of rental discrimination against households with children and youth.

⁴ Table S1810. 2008-2012 ACS 5 Year Estimates. U.S. Census Bureau.

⁵ Table DP02. 2008-2012 ACS 5 Year Estimates. U.S. Census Bureau.

The New Hampshire Department of Education, which is required under the Federal McKinney-Vento Act to ensure that homeless students have equal access to an education, reported 3,306 homeless students enrolled across the state in New Hampshire public schools for the 2011-2012 school year. This number continues to increase each year and is up over 50 percent from 2008-2009 when it was 2,132.⁶

New Hampshire school districts continue to report many remaining barriers to the education of homeless children and youth. Lack of affordable housing, difficulty identifying homeless students, transportation to the school of origin, and meeting basic needs are the greatest concerns reported by local homeless education liaisons as they try to meet the educational needs of students facing homelessness.⁷

HOMELESS POPULATION

The Manchester, NH Continuum of Care 2013 point-in-time count reports a total of 669 homeless persons in the City of Manchester.⁸ This compares to the state figure of 2,576 homeless persons reported for 2013.⁹ Significant numbers of the homeless individuals counted in the City of Manchester were reported as severely mentally ill and/or challenged with chronic substance abuse. Homeless persons include those who were currently sheltered, unsheltered and temporarily doubled-up. Strategies outlined in the 10-year plan to end homelessness in Manchester include:

- Build more affordable housing and subsidize costs to make it affordable to more people with low incomes;
- Help people increase their incomes through education, training, and employment at housing-wage jobs; and
- Provide permanent housing and intensive case management and supportive services for those with severe mental health and substance use disorders to stabilize them in housing first and then make recovery treatment services available.

FORMERLY INCARCERATED & CONVICTED POPULATION

The prisoner population in the State of New Hampshire for 2013 was 2,799, down slightly from a high of 2,870 in 2007.¹⁰ With a new, larger women's prison set to open in 2016 in the City of Concord and the crime rate increasing in recent years, this number is set to increase even further. Since the 1970s, the prison population in New Hampshire has risen nine fold.

In the SNHPC Region, there are currently two correctional facilities: the State Women's Prison in Goffstown and the Hillsborough County Correctional Facility in Manchester. These facilities located within the region also mean there are many related services and transitional housing programs for the prisoner population. Housing issues for formerly incarcerated or convicted individuals center on housing discrimination which prevents these individuals from easily transitioning back into society; and employment discrimination, which contributes to a lack of housing choices.

⁶ The U.S. Dept. of Education uses a broad definition of homelessness including those who are "doubled up."

⁷ NH DHHS. Homelessness in New Hampshire: A Report. July 1, 2011 – June 30, 2012.

⁸ Manchester NH Continuum of Care. 2013 Manchester Point-in-Time Report. http://www.mcocnh.org/blog/wp-content/uploads/2011/01/MCoC-2013-PIT-Report-UPDATED.pdf. January 28, 2014.

⁹ NH DHHS. 2013 Point-in-Time Count January 23, 2013.

http://www.dhhs.state.nh.us/dcbcs/bhhs/documents/pointintime2013.pdf. January 28, 2014.

¹⁰ NH Dept. of Corrections. http://www.nh.gov/nhdoc/population.html. January 28, 2014.

LOW-MODERATE INCOME HOUSEHOLDS

Low-moderate income households are defined as those whose annual income is at or below 80 percent of the Area Median Family Income (as defined by HUD).¹¹ Almost 34 percent of the households in the SNHPC Region are low-moderate income (34,895 households).¹² This compares to the State where just over 36 percent of the households are considered low-moderate income overall. Census tracts in the SNHPC region where there is a concentration (50 percent or more) of low-moderate income households are shown on **Map 2-1** on page 24. Concentrations of low-moderate income households are mainly in the City of Manchester, with small pockets in both Derry and Raymond as well. Housing affordability is a challenge for these households in the SNHPC Region. The Housing Cost and Affordability Factors section on page 41 outlines these affordability challenges that low-moderate income households face.

¹¹ U.S. Dept. of Housing and Urban Development. Office of Sustainable Housing and Communities. Guidance on Performance Measurement and Flagship Sustainability Indicator Fact Sheets.

¹² 2006-2010 CHAS Data.



RECENT IMMIGRANT AND REFUGEE POPULATIONS

New Hampshire took in more than 3,500 refugees over the past decade, with 61 percent or 2,148 of those being resettled in the City of Manchester. Two national agencies work with refugees through the resettlement process in New Hampshire: Lutheran Social Services and the International Institute of New Hampshire, which resettles most of the newly arriving refugees in Manchester.¹³

Language barriers are cited by recent immigrants and refugees as an issue when it comes to obtaining housing in the region. Approximately 4 percent of the SNHPC Region population (5 years and older) or 10,403 individuals speak English "less than very well." **Table 9** below outlines the primary languages spoken at home for the region, as a whole, and the individuals communities in the SNHPC region. The City of Manchester has the greatest percentage of individuals that speak a language other than English, followed by Hooksett and Bedford. In these communities "other Indo-European languages" are the majority behind English for language spoken at home. This includes languages such as French, Italian, Portuguese, Polish and German, among others.

	Population 5 years and over	English only	Language other than English	Spanish	Other Indo- European Ianguages	Asian and Pacific Islander languages	Other languages
Auburn	4,660	96.52%	3.48%	1.05%	2.42%	0.00%	0.00%
Bedford	20,037	91.86%	8.14%	0.94%	5.27%	0.99%	0.94%
Candia	3,808	94.77%	5.23%	0.60%	4.62%	0.00%	0.00%
Chester	4,486	93.09%	6.91%	4.03%	2.70%	0.18%	0.00%
Deerfield	3,991	93.13%	6.87%	2.31%	4.56%	0.00%	0.00%
Derry	31,592	92.14%	7.86%	2.04%	4.19%	1.26%	0.36%
Goffstown	17,097	95.06%	4.94%	0.57%	4.07%	0.29%	0.00%
Hooksett	12,763	91.69%	8.31%	1.36%	6.54%	0.41%	0.00%
Londonderry	23,101	93.67%	6.33%	1.48%	3.76%	1.02%	0.07%
Manchester	102,992	81.26%	18.74%	5.74%	8.73%	2.32%	1.96%
New Boston	5,036	94.10%	5.90%	0.81%	4.75%	0.34%	0.00%
Raymond	9,436	94.60%	5.40%	2.15%	2.18%	0.55%	0.52%
Weare	8,041	97.94%	2.06%	0.44%	1.63%	0.00%	0.00%
Windham	12,717	92.14%	7.86%	1.22%	3.04%	2.28%	1.32%
SNHPC Region	259,757	88.57%	11.43%	3.13%	5.90%	1.42%	0.98%

TABLE 9 - 2010 SNHPC REGION LANGUAGE SPOKEN AT HOME

Source: Table DP02. 2008-2012 ACS 5 Year Estimates. U.S. Census Bureau.

¹³ Jeff Mucciarone. Unwelcome? Hippo Press. August 25, 2011. Data provided by the City of Manchester Mayor's Office.

MINORITY POPULATION

As outlined in the *Population By Race* section on page 9, the region is becoming more diverse and the minority population is growing. In total, the minority population is 8.12 percent of the SNHPC region population, or 22,309 individuals. The SNHPC region is also more diverse than the state as a whole. The Statewide Analysis of Impediments to Fair Housing Choice found that "racial and ethnic minorities disproportionately reside in Manchester and Nashua, with median family incomes of Blacks and Latinos much lower than Whites or Asians, particularly in Manchester and Nashua." This analysis also found that almost 30 percent of the black population of New Hampshire resides in Manchester and that the difference in racial composition of Nashua and Manchester, as compared to the rest of New Hampshire, is highly statistically significant.¹⁴

Map 2-2 (page 31) highlights areas of minority concentration in the SNHPC region, defined as those census tracts where the minority population (all minority race populations combined) percentage was double or more (16.24 percent or more) that of the overall regional minority population percentage (8.12 percent).

SEGREGATION

Segregation is defined as "the separation or isolation of a race, class, or ethnic group by enforced or voluntary residence in a restricted area, by barriers to social intercourse, by separate educational facilities, or by other discriminatory means."¹⁵ In the early 1900s, American industrialization, along with World Wars I and II created new demands for labor and migration to the Northern United States for industrial jobs. This migration produced a rapid growth in the African American population in the northern states and incited racially motivated communal riots between 1900-1920. Patterns of racial segregation are rooted in this communal violence that took place, pushing African Americans living in White neighborhoods into predominantly African American neighborhoods. After the 1920s, racial segregation patterns were persisted by methods such as collective neighborhood action, and racially discriminatory covenants and real estate practices. In many areas, neighborhood improvement associations organized to prevent African Americans from entering White communities. These associations used various methods to achieve their goal, such as lobbying city councils for zoning restrictions, but their most important function was implementing racially restrictive covenants to prevent property owners from transferring their properties to African Americans. Local real estate boards also encouraged the use of restrictive covenants, and threatened to discipline agents whose practices contravened the preservation of segregated communities. The Federal Housing Administration's racially discriminatory mortgage finance policies further institutionalized residential segregation practices by encouraging the use of restrictive covenants to preserve the value of neighborhood property values until 1950.¹⁶

Shortly after the Civil Rights Act of 1964, the Fair Housing Act of 1968 was passed which aimed to bring equal opportunity in housing choice, and integrated living. Since that time, more laws, presidential orders and court cases have opened the path to integration, but in many places, especially large cities and metropolitan areas, residential segregation patterns still exist.

One measure of analyzing the distribution of racial or ethnic groups across a geographic area is the index of dissimilarity. A dissimilarity index represents a summary measure of the extent to which the distribution

¹⁴ NHHFA. Analysis of Impediments to Fair Housing Choice in New Hampshire. 2010. Comparison of racial composition across Manchester, v. Nashua v. the rest of New Hampshire yields a highly significant chi-square statistic.

¹⁵ "Segregation." *Merriam-Webster.com*. Merriam-Webster, n.d. Web. 21 Feb. 2014. <<u>http://www.merriam-webster.com/dictionary/segregation</u>>.

¹⁶ Natasha M. Trifun. Residential Segregation after the Fair Housing Act. Human Rights Magazine. Vol. 36, No. 4. Fall 2009

of any two groups (frequently racial or ethnic) differs across census tracts or block-groups.¹⁷ A value of 0.40 or less indicates low segregation; 0.41-0.54 indicates moderate segregation and >0.55 indicates high segregation. For the Black/African American population in the SNHPC region segregation is moderate, along with the Hispanic population. For all other races in the region it is low according to the dissimilarity index. **Table 10** outlines the racial share of the population for 2000 and 2010 in the SNHPC region, along with the dissimilarity index for each race. Of particular significance is that the index for the Black/African American population has increased slightly over the past decade, while for all other races it has gone down. The data indicates that 49 percent of the Black/African American Population would have to move to other census blocks in the region for the Black/African American Population and the White Population to match in terms of geographic distribution.

	Share of Population			Dissimilarity Index		
	SNHPC Region (2000)	SNHPC Region (2010)		SNHPC Region (2000)	SNHPC Region (2010)	
	(1)	(2)		(3)	(4)	
Non-White/White	7%	11%		0.36	0.35	
Black-African American/White	1%	2%		0.44	0.49	
Hispanic/White	3%	4%		0.45	0.43	
Asian/White	1%	2%		0.37	0.34	
Pacific-Islander/White	0%	0%		0.00	0.00	
Native-American/White	0%	0%		0.00	0.00	

Source: 2013 HUD FHEA Data Tables, 2010 U.S. Census Race/Income data

DISSIMILARITY INDEX DATA INDICATES THAT SEGREGATION HAS INCREASED SLIGHTLY FOR THE BLACK/AFRICAN AMERICAN POPULATION OVER THE PAST DECADE IN THE SNHPC REGION, WHILE FOR ALL OTHER RACES IT HAS GONE DOWN.

¹⁷ The Dissimilarity Index is a statistic used to measure the overall difference between two percentage distributions. It is calculated by summing the differences between the numbers in each pair of corresponding values and dividing by 2. The result lies in the range 0 to 100; is always positive; and indicates the proportion of cases that would need to be reallocated in order to make the two distributions the same.
Of the five southern-most regions in New Hampshire, the SNHPC Region has the highest segregation for the Black/African American population (rated moderate) according to the dissimilarity index for 2010 (**Table 11**). All other regions in the state rank low for segregation when using this index for quantification.

	2010 Black/African American Population Share	Dissimilarity Index
SNHPC Region	2.00%	0.49
RPC	1.00%	0.38
NRPC	1.00%	0.36
SRPC	1.00%	0.30
SWRPC	0.00%	0.00

TABLE 11 - NH DISSIMILARITY INDEX RANKINGS

Source: 2013 HUD FHEA Data Tables, 2010 U.S. Census Race/Income data

PREDICTED RACIAL/ETHNIC COMPOSITION BY TOWN

Another measure used for analyzing segregation is the "Predicted Racial/Ethnic Composition Ratio." For very small communities, there are generally too few census block-groups or minorities for statistical metrics, such as a dissimilarity index, to be particularly informative. Instead, the predicted racial/ethnic composition ratio calculates a predicted value for the racial/ethnic minority share for a jurisdiction and compares this to the actual composition. Predicted values are based on a region's income distribution by race and ethnicity. For a jurisdiction, the regional racial share for each income category is multiplied by the number of households the jurisdiction. This total is then compared with the actual number of minorities in a jurisdiction. This total is then compared with the actual number of minorities in a community by calculating a ratio of actual to predicted. This measure is useful for determining reasons, other than income, for racial/ethnic segregation. Ratios near 1 (or 100 percent) indicate that the jurisdiction has many fewer minorities than one might expect given income levels.

TABLE 12- PREDICTED RACIAL/ETHNIC COMPOSITION BY TOWN

Town	Actual	Predicted	Actual/
			Predicted
Auburn	5.07%	5.09%	99.67%
Bedford	5.75%	5.08%	113.23%
Candia	2.99%	5.25%	56.98%
Chester	5.34%	4.98%	107.30%
Deerfield	0.97%	5.34%	18.09%
Derry	12.83%	10.57%	121.42%
Goffstown	3.88%	10.36%	37.47%
Hooksett	7.26%	10.58%	68.59%
Londonderry	11.28%	10.35%	108.97%
Manchester	11.95%	5.55%	215.32%
New Boston	2.08%	5.13%	40.58%
Raymond	5.48%	11.05%	49.61%
Weare	2.12%	5.14%	41.22%
Windham	5.12%	5.09%	100.52%

TABLE 13 – PREDICTED RACIAL/ETHNIC COMPOSITION VALUE DESCRIPTION

Values	Description
0-50%	Non-white share extremely below predicted
50-70%	Non-white share moderately below predicted
70-90%	Non-white share slightly below predicted
90-110%	Non-white share approximates predicted
110%+	Non-white share above predicted

Source: 2013 HUD FHEA Data Tables, U.S. Census Race/Income data

Five communities in the SNHPC Region are way below the predicted non-white share of the population (Deerfield, Goffstown, New Boston, Weare and Raymond) and two communities are "moderately below" their predicted non-white share (Candia and Hooksett). The other half of the communities in the SNHPC Region are either at the predicted non-white share or above their predicted share according to the predicted racial/ethnic composition ratio.

RACIAL/ETHNIC CONCENTRATIONS OF POVERTY

Overall levels of poverty in the SNHPC Region are depicted on **Map 2-3**, page 32. The highest concentrations of individuals at or below the poverty level can be seen in the City of Manchester, with some outlying census tracts at low levels. Derry has an area with a poverty level of just under 20 percent and Raymond, Goffstown and Londonderry have some areas where the poverty level is just above five percent, but otherwise the rest of the region is under five percent for individuals at or below the poverty level. Within the SNHPC Region racial/ethnic concentrations of poverty are all located in the City of Manchester. **Map 2-4** on page 33 illustrates those areas where there are racially/ethnically concentrated areas of poverty (RCAP/ECAP). HUD defines an area of racial concentration as census tracts that have a non-white population of 50 percent or more and an area with concentrations of poverty as census tracts with 40 percent or more of individuals living at or below the poverty line. Because overall poverty levels are much lower in many parts of the country, HUD supplements this with an alternate criterion. Thus, a neighborhood can be an RCAP/ECAP if it has a poverty rate that exceeds 40 percent or is three times the average tract poverty rate for the metro/micro area, whichever threshold is lower. Census tracts with this extreme poverty that satisfy the racial/ethnic concentration threshold are deemed RCAPs/ECAPs.

Although the State of New Hampshire and the SNHPC Region are becoming more diverse and the minority population is growing, it is still predominantly a white population (91.88 percent). For this reason there are no census tracts in the State of New Hampshire that have a minority population of 50 percent or more. It has been identified that almost 30 percent of the black/African American population of New Hampshire resides in Manchester¹⁸ and therefore we are aware of a racial concentration within our state. In order to further analyze this issue an alternate definition of racial concentration was determined. For this assessment, areas of racial concentration are defined as any census tract where the non-white population (all minority race populations combined) percentage was double or more (16.24 percent or more) that of the overall regional non-white population percentage (8.12 percent).

A racially concentrated area of poverty (RCAP) is therefore defined as any census tract that meets the non-white population threshold¹⁹ and the poverty level is three times the average tract poverty rate for the region (9.1 percent). In the SNHPC Region there are four census tracts in the center of Manchester that meet this definition. Outside of this area there are also areas of racial concentration with higher levels of poverty, but they don't rise to the level of poverty that exists in these census tracts in Manchester (30.9 percent and above). Ethnically concentrated areas of poverty (ECAP) were also analyzed for this assessment. An ethnically concentrated area of poverty level is three times the average tract poverty rate for the region (9.1 percent). For the SNHPC region the same four census tracts in the City of Manchester identified as RCAPs are also identified as ECAPs. Access to Housing Opportunity (page 49) is analyzed in this assessment as a factor in fair housing equity in the region and the poverty index data shows that there low levels of disparities for the Black and Hispanic populations in terms of families who live in poverty when compared to all other races.

The Affordable and Equitable Housing Choice Opportunities and Barriers section (page 59) attempts to analyze the physical and social infrastructure that may affect fair housing equity and in turn may be perpetuating these areas in Manchester as RCAPs/ECAPs.

¹⁸ 2010 State of New Hampshire Analysis of Impediments to Fair Housing Choice. NHHFA.

¹⁹ Racial concentration is defined as those census tracts where the non-white population (all minority race populations combined) percentage was double or more (16.24 percent or more) that of the overall regional minority population percentage (8.12 percent).

²⁰ Ethnic concentration is defined as those census tracts where the Hispanic population (of any race) percentage was double or more (8.84 percent or more) that of the overall regional Hispanic population percentage (4.42 percent).





ngton	Map # 2 - 3 Granite State Future Housing SNHPC Region Poverty Levels
n	Census Tracts Percentage of Individuals Below the Poverty Level 0 - 5 % 5.1 - 15 %
ng	 15.1 - 25 % 25.1 - 40 % 40.1 - 46.4 % Interstates State and US Routes Town Boundary Rivers Lakes Manchester-Boston Regional Airport
s	Data Sources: Granit Digital Data (1:24,000) NH Department of Transportation US Census Bureau 2010 American Community Survey 2011 5Yr Estimate Image: Community Survey 2011 SYr Estimate 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. Image: Community Survey 2011 SYr Estimate This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes. Image: Community Survey 2014. Map Map Produced by GIS Service SNHPC 2014. Contact: SNHPC, gis@snhpc.org or (603) 669-4664 Image: Community Survey 2014. Map 0 1.25 2.5 5 Image: Community Survey Surve



HOUSING UNIT TRENDS AND CHARACTERISTICS

TOTAL HOUSING UNITS

The 14-community SNHPC Region, as of 2010, hosts 111,993 housing units. These are comprised of single-family, two-family or duplex, or multi-family homes, as well as condominiums and manufactured homes. This is just about 17 percent of the homes in the State of New Hampshire. The region's communities vary in size from Candia, the smallest, with an estimated 1,494 units to Manchester, the largest, with 49,288 units (**Table 14**).

The greatest numerical increase in housing units from 1990 to 2010 occurred in Manchester (+4,927 units), Bedford (+3,478 units), and Londonderry (+2,032 units). The communities with the lowest numerical increase in units were Candia (+302 units), Auburn (+459), and Deerfield (+516 units). Just over 44 percent of the region's housing units were located in Manchester in 2010, compared to 51 percent in 1990. During the 20 years examined here, the communities immediately bordering Manchester – Auburn, Bedford, Goffstown, Hooksett, and Londonderry, in addition to the town of Derry – accounted for approximately 82 percent of the region's housing unit increase. Manchester and the surrounding six towns, listed above, accounted for 71 percent of the regions housing units in 2010. The total increase in housing units for the whole region between 1990 and 2010 was 21,432.

Numl	ber of Housing	Units		Percent change			
Town	1990	2000	2010	1990-2000	2000-2010		
Auburn	1,355	1,622	1,814	19.70%	11.84%		
Bedford	4,156	6,401	7,634	54.02%	19.26%		
Candia	1,192	1,384	1,494	16.11%	7.95%		
Chester	924	1,247	1,596	34.96%	27.99%		
Deerfield	1,227	1,406	1,743	14.59%	23.97%		
Derry	11,869	12,735	13,277	7.30%	4.26%		
Goffstown	5,022	5,798	6,341	15.45%	9.37%		
Hooksett	3,484	4,307	5,184	23.62%	20.36%		
Londonderry	6,739	7,718	8,771	14.53%	13.64%		
Manchester	44,361	45,892	49,288	3.45%	7.40%		
New Boston	1,138	1,462	1,967	28.47%	34.54%		
Raymond	3,350	3,710	4,254	10.75%	14.66%		
Weare	2,417	2,828	3,466	17.00%	22.56%		
Windham	3,327	3,906	5,164	17.40%	32.21%		
Total SNHPC Region	90,561	100,416	111,993	10.88%	11.53%		

TABLE 14 – SNHPC REGION HOUSING UNIT TRENDS

Source: 2010 U.S. Census

HOUSING VACANCY RATES

Average homeowner vacancy rates (HVR) for Hillsborough, Merrimack and Rockingham Counties were 1.2 percent, 1.5 percent and 1.5 percent, respectively for the period 2008-2012.²¹ The HVR is useful for gauging excess housing supply, the higher the number, the greater the excess. The average State HVR was 1.6 percent over this same time period. Average HVR for the 20-year period 1992-2012 in New Hampshire is 1.5 percent, which indicates the State and the counties in this region have maintained a relatively balanced housing market, despite the economic downturn and housing market crash during the mid-2000s. It is important to take into account that foreclosures are not necessarily reflected in the homeowner vacancy rate calculations. Foreclosure deeds peaked in New Hampshire at 3,953 in 2010 and have seen a steady decline to 2,702 in 2013.²²

National HVR increased starting in early 2005 and peaked at 2.9 percent in 2008. Since late 2010, it has been dropping almost as quickly as it shot up in 2005.²³ Most recently, the U.S. Census Bureau reported that the national HVR was 2.1 percent in the fourth quarter of 2013.

Rental vacancy rates for two-bedroom units for all three counties covered in the SNHPC Region (Hillsborough, Merrimack and Rockingham) were all under 4 percent in 2013. NHHFA reports a 2.6 percent vacancy rate for Hillsborough County for 2013, 3.3 percent for Merrimack County and 3.4 percent for Rockingham County.



FIGURE 7 - NEW HAMPSHIRE RENTAL VACANCY RATES BY COUNTY, 2013

Source: NHHFA, 2013 Residential Rental Cost Survey

²¹ 2008-2012 American Community Survey. U.S Census Bureau.

²² NHHFA. Foreclosure and Housing Market Update, February 6, 2014.

²³ Newport, P. November 5, 2012. Homeowner vacancy rate is at a seven-year low. IHS Global Insight.

Vacancy rates are calculated by dividing the number of vacant for sale or for rent units by the total of owner occupied and vacant for sale units or renter occupied and vacant for rent units. Other units, such as those that are awaiting occupancy (rented or sold and unoccupied), seasonal or vacation homes, and other forms of vacant housing, are not calculated in the vacancy rate as they do not contribute to the available year-round housing supply. Vacancy rates under five percent generally indicate a tighter market with fewer options for renters than in a balanced rental market.

HOUSING UNIT TYPES

Figure 8 shows that, overall, single family housing units in the Southern New Hampshire Planning Commission region are the predominant housing type comprising 56.19 percent of the housing units. Duplex and multi-family units account for 41.19 percent of the living accommodations, while manufactured homes and other housing types provide 2.62 percent of all housing units. The SNHPC Region contains 18.2 percent of the total housing units found in the State (614,754 statewide units).



FIGURE 8- NUMBER OF UNITS AUTHORIZED BY BUILDING PERMIT, 2000-2010

Source: 2000 U.S. Census, NH OEP 2009 Housing Estimates and Trends, NH OEP 2010 Building Permit Data

GROUP QUARTERS

Group quarters population for the SNHPC Region in 1990 was 5,109, increasing by 24.8 percent to 6,375 in 2000 and decreasing by 3.2 percent to 6,173 in 2010. A group quarters is a place where people live or stay, in a group living arrangement that is owned or managed by an entity or organization providing housing and/or services for the residents. This is not a typical household-type living arrangement. These services may include custodial or medical care, as well as other types of assistance, and residency is commonly restricted to those receiving these services. People living in group quarters are usually not related to each other. Group quarters include such places as college residence halls, residential treatment centers, skilled nursing facilities, group homes, military barracks, correctional facilities, and workers' dormitories.

AGE OF HOUSING STOCK

The age of residential buildings can help describe the potential housing needs for a region. In general, a large proportion of older residences may serve as an indication of the need for rehabilitation and/or renovation. In addition, an analysis of older units may also reveal that certain community districts have a high degree of historic significance. In order to preserve the housing supply represented by older buildings, municipalities may need to focus on inspections, maintenance, and upgrading of these units throughout the municipality.

Table 15 (page 38) shows tenure and age built for the housing stock in the SNHPC Region. As of 2010, 20.96 percent of the housing units in the SNHPC Region are at least 70 years old (pre-1940). At 35.10 percent, Manchester contains the largest number of units that were built before 1940. Communities having the lowest percentage of housing units constructed before 1940 are Bedford (3.44 percent) and Londonderry (3.81 percent).

Across the SNHPC Region, 9.90 percent of all owner occupied housing units predate 1940. Manchester's greatest percentage of owner occupied housing was built pre-1940, 26.66 percent of all homes in the City, and this is the greatest within the region.

A greater share of renter occupied homes in the SNHPC Region were built prior to 1940, 11.06 percent, compared to owner occupied homes. Candia has the greatest share of its rental stock built pre-1940, 83.78 percent, although they also have a very small total number of rental units (74). Manchester had the second highest share of its stock built before 1940, with 43.75 percent.

	Auburn	Bedford	Candia	Chester	Deerfield	Derry	Goffstown	Hooksett	Londonderry	Manchester	New Boston	Raymond	Weare	Windham
Total:	1,695	7,219	1,505	1,573	1,448	12,542	5,954	4,660	8,374	45,370	1,874	4,014	2,975	4,514
Owner occupied:	1,599	6,275	1,431	1,533	1,283	8,723	4,673	3,962	7,555	22,977	1,664	3,398	2,766	4,249
2005 or later	57	124	10	41	44	183	74	174	356	456	42	216	136	495
2000 to 2004	181	817	105	348	189	276	439	587	454	1,144	292	382	403	639
1990 to 1999	268	1,494	195	393	191	1,147	558	732	1,256	1,781	515	253	529	566
1980 to 1989	379	1,284	228	271	324	2,866	1,224	830	2,226	3,501	328	1,014	828	1,121
1970 to 1979	178	1,178	386	75	175	1,755	724	652	2,282	2,406	139	801	415	710
1960 to 1969	105	418	114	81	89	1,096	450	367	455	1,918	42	251	167	322
1950 to 1959	68	633	84	54	55	467	378	209	131	3,649	9	152	43	68
1940 to 1949	123	159	0	21	31	92	328	118	104	1,996	13	71	0	50
1939 or earlier	240	168	309	249	185	841	498	293	291	6,126	284	258	245	278
Percent Pre-1940	15.01%	2.68%	21.59%	16.24%	14.42%	9.64%	10.66%	7.40%	3.85%	26.66%	17.07%	7.59%	8.86%	6.54%
Renter occupied:	96	944	74	40	165	3,819	1,281	698	819	22,393	210	616	209	265
2005 or later	0	0	0	0	0	71	14	0	40	389	4	68	0	0
2000 to 2004	0	215	0	0	33	72	40	80	62	908	0	0	0	11
1990 to 1999	0	286	0	12	39	190	79	119	63	1,196	9	60	0	29
1980 to 1989	34	65	12	0	29	1,021	183	183	134	2,587	110	177	82	56
1970 to 1979	0	136	0	0	23	1,086	203	102	276	2,734	29	92	28	33
1960 to 1969	0	46	0	0	0	424	141	88	166	2,023	20	86	0	95
1950 to 1959	40	60	0	0	6	184	53	21	50	1,178	0	0	11	14
1940 to 1949	0	56	0	28	18	165	62	13	0	1,580	0	27	0	0
1939 or earlier	22	80	62	0	17	606	506	92	28	9,798	38	106	88	27
Percent Pre-1940	22.92%	8.47%	83.78%	0.00%	10.30%	15.87%	39.50%	13.18%	3.42%	43.75%	18.10%	17.21%	42.11%	10.19%
Total Pre-1940	15.46%	3.44%	24.65%	15.83%	13.95%	11.54%	16.86%	8.26%	3.81%	35.10%	17.18%	9.07%	11.19%	6.76%

TABLE 15 - COUNT OF HOUSING UNITS BY TENURE AND AGE BUILT, 2010

Source: 2006-2010 American Community Survey 5-Year Estimates, B25036: TENURE BY YEAR

SUBSIDIZED HOUSING

An analysis of subsidized housing provides an indication of the existing inventory of designated affordable housing units in the region. Assistance comes in the form of rental subsidies, low-interest loans, vouchers covering all or a portion of the housing allowance, and/or mortgage payment assistance to encourage the development of units for low-income households. **Map 2-5** illustrates the relative density of assisted housing units in the region. These are units that have been financially assisted with public funds to assure that affordable housing units are provided to qualifying households. The primary population served by the housing units is also depicted in **Map 2-5**, page 40.

Of the 14 communities that comprise the Southern New Hampshire Planning Commission region, Bedford, Deerfield, Derry, Goffstown, Hooksett, Manchester, Raymond and Windham have rent-assisted housing facilities. With a total of 3,763 units in 2013, up from 3,162 units in 2010, 76.85 percent of the rent-assisted housing units in the region are located in Manchester. The 442 units available in Derry are split nearly evenly between elderly households (174) and elderly-family units (170) with the remaining units devoted to strictly family (98 units).

All of the rent-assisted units in Bedford (52), Deerfield (20), Raymond (30) and Windham (24) are available exclusively to elderly households. Hooksett has approximately 4.12 percent of the region's rent-assisted housing units, of which 72, or 46 percent, are available to the elderly, while the remaining 83 or 54 percent are available to family households. Assisted units, outside of the City of Manchester, available exclusively to families total 206, or just 17 percent of the 1,192 family units available in the region.

Three hundred and twenty-four, or about 8.6 percent of units, are in place to accommodate elderly handicapped individuals. For handicapped families, there are 239 units, or approximately 6.4 percent of places, available. For Elderly-family units, 30 or 0.8 percent are handicapped accessible and just under 1 percent of the assisted housing units that exist are available to house those who are handicapped and need group home, congregate, transitional, and special needs housing.



HOUSING COST AND AFFORDABILITY FACTORS

HOUSEHOLD INCOME, HOME VALUES AND RENTS

Overall Median Household Incomes range from \$53,278 in Manchester to \$127,208 in Bedford. **Figure 9** (page 42) illustrates median household income ranges for the SNHPC region. Home values in the SNHPC region declined rapidly during the recent economic downturn and housing market crash, but appear to be on the rise again in 2013-2014. Median home values in 2010 ranged from \$212,000 in Raymond to \$391,500 in Windham. Median gross rent ranged from \$895 in Chester to \$1,576 in Bedford. Overall median household incomes reported in the census differ slightly from HUD reported Area Median Family Income (AMFI) or Median Area Income (MAI). **Table 17** (page 42) outlines HUD AMFI for the SNHPC Region.

TABLE 16 - HOUSEHOLD INCOME, HOME VALUE AND COST

Overall Medi Inc	ian Household come	Owner	Occupied H	Renter Occupied Housing		
Municipality	Overall Median Household Income	Median Household Income	Median Home Value	Median Monthly Cost w/ a Mortgage	Median Household Income	Median Gross Rent
Auburn	\$92,938	\$100,929	\$327,400	\$2,188	\$42,344	\$1,095
Bedford	\$127,208	\$133,566	\$386,000	\$2,633	\$67,453	\$1,576
Candia	\$94,755	\$97,227	\$277,600	\$1,970	\$43,420	\$1,619
Chester	\$102,527	\$105,236	\$342,900	\$2,454	\$22,379	\$895
Deerfield	\$85,815	\$92,031	\$296,900	\$2,258	\$46,050	\$1,060
Derry	\$69,477	\$89,767	\$231,400	\$2,109	\$35,273	\$990
Goffstown	\$74,904	\$80,625	\$239,200	\$1,997	\$49,266	\$1,067
Hooksett	\$85,064	\$88,179	\$355,300	\$2,221	\$56,181	\$1,063
Londonderry	\$92,438	\$100,509	\$292,900	\$2,240	\$45,719	\$1,259
Manchester	\$53,278	\$74,926	\$231,200	\$1,892	\$34,653	\$963
New Boston	\$91,367	\$102,986	\$332,700	\$2,305	\$57,009	\$1,119
Raymond	\$66,438	\$71,205	\$212,000	\$1,961	\$48,234	\$1,099
Weare	\$78,810	\$81,943	\$257,300	\$1,855	\$54,493	\$960
Windham	\$117,402	\$120,351	\$391,500	\$2,697	\$77,734	\$1,434

Source: 2010 U.S. Census SF3 Tables P53, H63, H85, H91 and HCT12



FIGURE 9 – SNHPC REGION MEDIAN HOUSEHOLD INCOME

Source: 2010 U.S. Census SF3 Tables P53, H63, H85, H91 and HCT12

1	ABLE 17 – HUD AREA MEDIAN FA	
Community	HUD HMFA Area	100% Area Median Family Income (AMFI)
Auburn	Western Beckingham	\$106 200
Aubum		\$100,300
Bedford	Manchester	\$76,500
Candia	Western Rockingham	\$106,300
Chester	Lawrence MA-NH	\$82,800
Deerfield	Western Rockingham	\$106,300
Derry	Lawrence MA-NH	\$82,800
Goffstown	Manchester	\$76,500
Hooksett	Merrimack Co	\$83,300
Londonderry	Western Rockingham	\$106,300
Manchester	Manchester	\$76,500
New Boston	Hillsborough Co	\$82,600
Raymond	Lawrence MA-NH	\$82,800
Weare	Manchester	\$76,500
Windham	Lawrence MA-NH	\$82,800

Source: HUD FY 2014 Income Limits

Starting in 1998, median gross rental costs started to rise dramatically in the SNHPC Region (**Figure 11**). In the past 10 years median gross rental costs for a 2-bedroom unit peaked in 2006 at \$1,066 and then dipped down again until 2012 when they peaked again at \$1,085. During this same time period median purchase price of primary homes also rose dramatically from 1998 until 2007, when the effects of the housing market crash and economic recession were first seen (**Figure 10**). From 2007 to 2013 median purchase price of all homes fell back to pre-housing bubble levels and have been generally consistent since approximately 2009. For households that can no longer afford the costs of owning a primary home, the consistently high rental costs make for a tough situation in the SNHPC region currently.



Source: NHHFA, 2013 Purchase Price Data. 01-24-14.



Source: NHHFA, 2013 Rental Cost Survey Data. 01-24-14.



FIGURE 12- NHHFA 2013 RENTAL COST SURVEY

In early 2013, the New Hampshire Housing Finance Authority released its annual "Residential Rental Cost Survey." The survey reflects that rental costs across the state have increased and apartment vacancy have rates generally decreased. Vacancy rates have dropped to 3.2 percent statewide for two-bedroom apartments, which represent the largest category of rental units in the state. A balanced rental market would have vacancy rates at between 4-5 percent, thus vacancy rates in the low 3 percent range indicate a situation where available units are becoming more difficult to find. Increased demand and limited availability of two-bedroom units has prompted an increase in rents. The median monthly gross rent has risen just over 3 percent in the past year to \$1,085 per month, including utilities, statewide. The most significant increases appear in Grafton, Carroll and Belknap counties, and in the cities of Manchester and Nashua.

The national apartment vacancy rate fell 0.1 percentage point to 4.2 percent in the third quarter of 2013 from the second quarter. It was the lowest vacancy rate since the third quarter of 2001 when it was 3.9 percent.²⁴

SNHPC REGION HOUSING COST BURDEN

Housing cost burden by tenure is depicted in **Figure 13** for the SNHPC Region. NH RSA 674:58 defines workforce housing as "housing which is intended for sale and which is affordable to a household with an income of no more than 100 percent of the median income for a 4-person household for the metropolitan area or county in which the housing is located as published annually by the United States Department of Housing and Urban Development. "Workforce housing' also means rental housing which is affordable to a household for the metropolitan area or county in which the housing is located as published annually by the United States Department of Household with an income of no more than 60 percent of the median income for a 3-person household for the metropolitan area or county in which the housing is located as published annually by the United States Department of Housing and Urban Development. Affordable is defined as housing with combined rental and utility costs or combined mortgage loan debt services, property taxes, and required insurance that do not exceed 30 percent of a household's gross annual income. Cost burden data has been analyzed using these definitions in **Figure 13** and **Table 18** (page 46).

In the SNHPC Region 23.1 percent of owner households that earn 100 percent or less of the median income are paying 30 percent or more of their income for housing. For renter households that earn 60 percent or less of the median income, 33.7 percent are paying 30 percent or more of their income for housing. Communities that have the greatest number of owner households meeting the income thresholds and paying 30 percent or more of their income for housing are Derry, Goffstown and Manchester. Communities that have the greatest number of renter households meeting the income thresholds and paying 30 percent or more of their income for housing are Derry, Goffstown and Manchester. Communities that have the greatest number of renter households meeting the income thresholds and paying 30 percent or more of their income for housing are Auburn, Candia and Chester. Communities that have the greatest number of workforce households in the region are Derry, Manchester and Raymond. Overall the SNHPC Region has 37,963 households (both renter and owner) that meet the workforce housing definition in New Hampshire.



FIGURE 13 – 2010 SNHPC REGION HOUSEHOLD COST BURDEN BY TENURE

Source: 2006-2010 US Census Bureau ACS, 2006-2010 HUD Comprehensive Housing Affordability Strategy (CHAS)

Municipality				Renter Occup	ied Households					Owner Occupie	ed Households		
	Total Households	Total # of Renter Households	Renter Households earning ≤60% MAI	Renter HH earning ≤60% & Pay 30%+	Percent Renter HH earning ≤60% & Pay 30%+	Renter HH earning ≤60% & Pay 50%+	Percent HH earning ≤60% & Pay 50%+	Total # of Owner Households	Owner Households earning ≤100% MAI	Owner HH earning ≤100% MAI & Pay 30%+	Percent Owner HH earning ≤100% & Pay 30%+	Owner HH earning ≤100% MAI & Pay 50%+	Percent HH earning ≤100% & Pay 50%+
Auburn	1,695	95	60	60	63.2%	40	42.1%	1600	530	390	24.4%	300	18.8%
Bedford	7,220	945	170	130	13.8%	80	8.5%	6275	1130	885	14.1%	465	7.4%
Candia	1,505	75	68	68	91.1%	15	20.0%	1430	360	225	15.7%	90	6.3%
Chester	1,575	40	30	30	75.0%	0	0.0%	1535	310	250	16.3%	180	11.7%
Deerfield	1,450	165	40	12	7.5%	0	0.0%	1285	375	265	20.6%	145	11.3%
Derry	12,545	3820	1,808	1343	35.2%	575	15.1%	8725	3005	2405	27.6%	1585	18.2%
Goffstown	5,955	1280	495	330	25.8%	195	15.2%	4675	1610	1255	26.8%	615	13.2%
Hooksett	4,660	700	263	168	24.0%	55	7.9%	3960	1225	740	18.7%	350	8.8%
Londonderry	8,375	820	440	357	43.5%	150	18.3%	7555	2240	1925	25.5%	1160	15.4%
Manchester	45,370	22395	10,868	7912	35.3%	4480	20.0%	22975	8610	6440	28.0%	3510	15.3%
New Boston	1,875	210	58	35	16.7%	20	9.5%	1665	430	340	20.4%	170	10.2%
Raymond	4,015	615	287	122	19.8%	100	16.3%	3400	1580	635	18.7%	360	10.6%
Weare	2,975	210	67	45	21.4%	30	14.3%	2765	835	208	7.5%	128	4.6%
Windham	4,515	265	73	58	22.0%	38	14.5%	4250	995	705	16.6%	570	13.4%
SNHPC Region	103,730	31,635	14,728	10,671	34%	5778	18.3%	72,095	23,235	16,668	23.1%	9,628	13.4%

TABLE 18 – SNHPC REGION COST BURDEN BY TENURE

Source: 2006-2010 US Census Bureau ACS, 2006-2010 HUD Comprehensive Housing Affordability Strategy (CHAS)

Note: As with the CHAS 2000, rounding rules applied to all special tabulation data. This causes discrepancies when adding up smaller geographies. It has a similar effect when creating your own subtotals within a table. As a result, HUD recommends using the largest geographies possible, and the fewest number of table dimensions possible. In addition, the ACS can have very large margins of error, particularly with cross-tabulated data such as the CHAS. HUD realizes that some in some jurisdictions, for certain data elements, the ACS data may show unexpected results.

PROPERTY TAX RATES

Another element of housing cost and affordability factors in the Southern New Hampshire region is the property tax rate. The State of New Hampshire does not have an income or sales tax and therefore communities rely heavily on property taxes to fund public services and infrastructure. Average property tax rates over the past 13 years in the SNHPC region were approximately \$22.00 per \$1,000 property value, with the 2013 average at \$23.44 per \$1,000. Average property tax rates from 2000-2013 fluctuated down to an average low of \$18.11 per \$1,000 in 2007.





Source: Department of Revenue Administration 2000-2013, Municipal Services Division

Property tax rates by municipality for the SNHPC Region in 2013 are shown on **Figure 15** (page 48).The Town of Derry has the highest rate in 2013 at \$31.49 per \$1,000. Derry has had the highest rate in the region since 2008. The highest tax rate in any town from 2000-2013 was in Goffstown in 2002 at \$32.92 per \$1,000.



Figure 15 – 2013 SNHPC Region Property Tax Rates

Source: Department of Revenue Administration 2000-2013, Municipal Services Division

"Although property taxes are an important piece of New Hampshire's revenue picture, the state government obtains funds from a diverse set of sources. While New Hampshire has the lowest total per capita revenues in the region, its per capita property tax collections are high compared with most other New England states. Per capita combined state and local property taxes in the Granite State were more than \$300 (or 16 percent) higher than the regional average in FY 2007. Property taxes also represented a larger share of total state and local revenues than elsewhere in the region. However, New Hampshire's state government revenue system is considerably more diverse than those of its regional counterparts. Indeed, no single revenue source accounted for more than 20 percent of combined unrestricted general and education fund revenues in FY 2007. The statewide property tax was the state's largest revenue source that year (16 percent), followed by the state's two major business taxes, the business profits tax (15 percent) and the business enterprise tax (11 percent). New Hampshire state government also obtains revenue from a variety of other sources, including taxes on meals and rooms, tobacco, communications, real estate transfers, and interest and dividends, as well as various non-tax sources."²⁵

²⁵ Jennifer Weiner. How Does New Hampshire Do It? An Analysis of Spending and Revenues in the Absence of a Broadbased Income or Sales Tax. New England Public Policy Center. Research Report 11 – 1. April 2011.

ACCESS TO HOUSING OPPORTUNITIES

Fair housing equity involves an analysis of areas of opportunity within a region and where disparities might exist for racial/ethnic minorities. Access to opportunity has been found to be a factor in individual outcomes and improving fair housing in any area will depend on equalizing access to opportunity. To focus analysis, HUD developed methods to quantify a select number of the important "stressors" and "assets" in every neighborhood. In particular, HUD has selected six dimensions upon which to focus:

- 1. Neighborhood School Proficiency
- 2. Poverty
- 3. Labor Market Engagement
- 4. Job Accessibility
- 5. Health Hazards Exposure
- 6. Transit Access

NEIGHBORHOOD SCHOOL PROFICIENCY INDEX

The neighborhood school proficiency index uses school-level data on the performance of students on state exams to describe which neighborhoods have high-performing elementary schools and which have lower performing elementary schools.

When looking at the neighborhood school proficiency index for the SNHPC Region, low levels (21-40) of disparities exist for the Black/African American and Hispanic populations. Very low levels (<1-20) exist for the Asian and Native American populations.

POVERTY INDEX

HUD created a simple poverty index to capture the depth and intensity of poverty in a given neighborhood. The index uses family poverty rate and public assistance receipt to operationalize both aspects. The index is a linear combination of two vectors: the family poverty rate (pv) and the percentage of households receiving public assistance (pa).

When looking at the poverty index for the SNHPC region, low levels (21-40) of disparities exist for the Black/African American and Hispanic populations. Very low levels (<1-20) exist for the Asian and Native American populations.

OF NOTE IS THERE ARE SIMILAR DISPARITY LEVELS FOR BOTH NEIGHBORHOOD SCHOOL PROFICIENCY AND POVERTY LEVELS.

LABOR MARKET ENGAGEMENT INDEX

The labor market engagement index provides a summary description of the relative intensity of labor market engagement and human capital in a neighborhood. This is based upon the level of employment, labor force participation, and educational attainment in that neighborhood. Formally, the labor market engagement index is a linear combination of three standardized vectors: unemployment rate, labor force participation rate, and percent with a bachelor's or higher.

For labor market engagement, very low levels (<1-20) of disparities exist for the Black/African American, Hispanic, Asian and Native American populations in the SNHPC region.

JOBS ACCESS INDEX

The job access index summarizes the accessibility of a given residential neighborhood as a function of its distance to all job locations, with distance to larger employment centers weighted more heavily. Specifically, a gravity model is used, where the accessibility of a given residential block-group is a summary description of the distance to all job locations, with the distance from any single job location positively weighted by the size of employment (job opportunities) at that location and inversely weighted by the labor supply (competition) to that location.

Jobs Access in the SNHPC region is more favorable to all of the minority populations²⁶ in the SNHPC region.

TRANSIT ACCESS

HUD has constructed a transit access index where available data exists to support local analysis. HUD uses data on over 200 transit agencies that provide data through General Transit Feed Specification (GTFS) Exchange to assess relative accessibility within metro areas (or balance of state).²⁷

The only transit provider in the State of New Hampshire that reports to the GTFS exchange is in Nashua. Therefore the data provided for the Transit Access Index is not relevant to the analysis for the SNHPC region. The Manchester Transit Authority (MTA) provides bus transit services within the City of Manchester, but outside of the City there are relatively little public transit options for this region.

ENVIRONMENTAL HEALTH HAZARD EXPOSURE INDEX

HUD has constructed a health hazards exposure index to summarize potential exposure to harmful toxins at a neighborhood level. Potential health hazards exposure is a linear combination of standardized EPA estimates of air quality carcinogenic, respiratory and neurological with indexing census tracts.

Health hazard exposure in the SNHPC Region is more favorable to all of the minority populations²⁸ in the SNHPC Region.

²⁶ All minority populations with the exception of Pacific Islander where there is not enough data to support the calculations in the indices for this analysis.

²⁷ The General Transit Feed Specification (GTFS) defines a common format for public transportation schedules and associated geographic information. GTFS "feeds" allow public transit agencies to publish their transit data and developers to write applications that consume that data in an interoperable way.

²⁸ All minority populations with the exception of Pacific Islander and Native American where there is not enough data to support the calculations in the indices for this analysis.

Panel A - All Persons (All Households)									Disparities				
	All Persons	White Persons	Black /African American Persons	Hispanic or Latino Persons	Asian Persons	Native American Persons	Pacific Isldr. Persons	Black - White	Hispanic - White	Asian - White	Native Amer White	Pacific Isldr White	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
Opportunity Dimensions:													
Poverty Index***	55	57	32	33	46	49	0	25	25	11	8	0	
School Proficiency Index***	44	45	21	23	36	35	0	24	22	9	10	0	
Labor Market Engagement Index***	50	51	34	33	46	44	0	17	18	5	7	0	
Job Access Index***	40	39	43	43	44	41	0	-4	-4	-5	-2	0	
Transit Access Index ²⁷	1	1	1	1	1	1	0	0	0	0	0	0	
Health Hazards Exposure Index***	87	87	90	88	89	87	0	-3	-1	-2	0	0	
Counts	273,561	245,022	5,072	11,894	6,522	487	85						

TABLE 19 – SNHPC REGION OPPORTUNITY INDEX MEASURES

Source: 2013 HUD FHEA Data Tables, U.S. Census. Data on the populations in Panel A is from the 2010 Decennial Census SF1. Data on impoverished population in Panel B comes from the American Community Survey (ACS) 2006-2010 five year estimates. Population groups smaller than 250 people (in census 2010) or 1,000 people for ACS-sourced data are coded as zero. The higher minimum population threshold for the ACS data is motivated by concerns about sampling error. Disparity columns (8-12) have associated significance flags for statistically significant differences. *** 0.01 significance level **0.05 significance level *0.1 significance level.

Very Low	<1-20
Low	21-40
Moderate	41-60
High	61-80
Very High	81-100
Positive	<-1

HOUSING SUPPLY PROJECTIONS

An understanding of future needs for housing units is invaluable to the planning process. Future housing projections are utilized both in transportation modeling, as well as growth management and future land use planning. SNHPC produces population projections based on the cohort-component method and dwelling unit projections based on historical annual average increase in units since 1970. Population and housing supply projections from this analysis are presented in **Table 20** and **Table 21** below. The SNHPC region population is projected to increase by 61,131 individuals by 2050 to a total population of 335,985. This represents an increase of approximately 22 percent. Communities projected to have the greatest amount of growth in the region from 2010-2050 are Weare (1.19 percent growth rate), New Boston (1.17 percent growth rate) and Londonderry (1.10 percent growth rate). Communities projected to have the least amount of growth from 2010-2050 are Derry (0.12 percent growth rate), Manchester (0.32 percent growth rate) and Goffstown (0.42 percent growth rate).

Municipality	2010	2015	2020	2025	2030	2035	2040	2045	2050
Auburn	4,953	5,137	5,288	5,519	5,712	5,983	6,226	6,569	6,937
Bedford	21,203	22,242	23,243	24,121	24,816	25,409	25,886	26,226	26,689
Candia	3,909	4,191	4,420	4,601	4,726	4,810	4,855	4,896	4,949
Chester	4,768	5,097	5,404	5,711	5,982	6,239	6,437	6,613	6,759
Deerfield	4,280	4,571	4,839	5,114	5,344	5,561	5,740	5,888	6,061
Derry	33,109	33,881	34,400	34,931	35,195	35,416	35,215	34,821	34,473
Goffstown	17,651	18,171	18,663	19,162	19,583	19,942	20,142	20,301	20,435
Hooksett	13,451	14,159	14,809	15,431	15,961	16,432	16,790	17,113	17,157
Londonderry	24,129	25,132	26,082	27,267	28,438	29,925	31,477	33,354	35,435
Manchester	109,565	112,395	114,895	117,555	119,351	120,724	121,235	121,960	122,723
New Boston	5,321	5,582	5,796	6,120	6,403	6,795	7,201	7,578	7,990
Raymond	10,138	10,593	11,424	11,918	12,261	12,705	13,000	13,427	13,767
Weare	8,785	9,497	10,183	10,857	11,464	12,013	12,472	12,888	13,275
Windham	13,592	14,502	15,320	16,239	17,061	17,774	18,375	18,890	19,335
Total	274,854	285,151	294,765	304,548	312,296	319,725	325,049	330,524	335,985

TABLE 20 - SNHPC REGION POPULATION PROJECTIONS, 2010-2050

Source: 2010 U.S. Census, SNHPC Population Projections

In terms of housing, communities projected to have the greatest amount of growth in the region from 2010-2050 are New Boston (1.22 percent growth rate), Raymond (1.22 percent growth rate) and Weare (1.21 percent growth rate). Communities projected to have the least amount of growth from 2010-2050 are Derry (0.33 percent growth rate), Manchester (0.55 percent growth rate) and Bedford (0.74 percent growth rate).

In addition to the SNHPC housing unit projections, the New Hampshire Housing Finance Authority has recently released relatively new housing production projections by county and regional planning commission region utilizing a headship model which projects population by age group; owner households and rental households to the year 2025 (see more at: http://www.nhhfa.org/housing-data-needs.cfm). This information will be used by the SNHPC in its next update of the fair housing needs assessment for the region.

	Census	Projected Housing Units									Growth Rate	
Municipality	2010	2015	2020	2025	2030	2035	2040	2045	2050	2010-2050	2010-2020	2010-2050
Auburn	1,814	1,860	1,967	2,075	2,183	2,291	2,399	2,507	2,615	1.05%	0.82%	801
Bedford	7,634	7,787	8,087	8,387	8,687	8,987	9,287	9,587	9,887	0.74%	0.58%	2,253
Candia	1,494	1,537	1,609	1,682	1,755	1,828	1,900	1,973	2,046	0.90%	0.75%	552
Chester	1,596	1,635	1,731	1,826	1,922	2,017	2,113	2,208	2,304	1.05%	0.81%	708
Deerfield	1,743	1,808	1,913	2,018	2,124	2,229	2,334	2,439	2,544	1.09%	0.94%	801
Derry	13,277	13,459	13,668	13,878	14,088	14,297	14,507	14,716	14,926	0.33%	0.29%	1,649
Goffstown	6,341	6,613	6,939	7,266	7,592	7,919	8,245	8,572	8,898	0.97%	0.91%	2,557
Hooksett	5,184	5,348	5,606	5,864	6,122	6,380	6,638	6,896	7,154	0.92%	0.78%	1,970
Londonderry	8,771	9,019	9,594	10,169	10,744	11,319	11,894	12,469	13,044	1.14%	0.90%	4,273
Manchester	49,288	49,980	51,357	52,735	54,113	55,491	56,869	58,247	59,624	0.55%	0.41%	10,336
New Boston	1,967	2,081	2,213	2,345	2,477	2,609	2,741	2,872	3,004	1.22%	1.19%	1,037
Raymond	4,254	4,460	4,751	5,042	5,332	5,623	5,914	6,204	6,495	1.22%	1.11%	2,241
Weare	3,466	3,610	3,847	4,085	4,322	4,560	4,797	5,035	5,272	1.21%	1.05%	1,806
Windham	5,164	5,477	5,790	6,103	6,416	6,666	6,916	7,166	7,416	1.04%	1.15%	2,252
												-
Total	111,993	114,671	119,073	123,474	127,875	132,213	136,551	140,890	145,228	0.75%	0.61%	33,235

TABLE 21 - SNHPC REGION HOUSING UNIT PROJECTIONS, 2010-2050

Source: 2010 U.S. Census, SNHPC Dwelling Unit Projections

FAIR SHARE DISTRIBUTION ANALYSIS

An unusually strong economy and unprecedented population growth in the mid-1980s pushed housing values to levels in 1990 that were two-to-three times their market value ten years earlier. High housing demand, resulting from the influx of new businesses, job increases, higher salaries and more people, caused demand to outstrip supply, resulting in a rapid increase in housing prices. For the majority of the population whose income kept pace, this presented no problem and increased their net worth. However, many people lacking appropriate education, training, and experience found only limited job opportunities and modest wages during this period. Affordable housing soon became a critical issue for a substantial segment of New Hampshire's residents.

As a result of this shortage of affordable housing units, beginning in 1988 regional planning commissions were required to establish a *housing needs assessment* that reviews housing for families of all income levels. One suggested component of the housing needs assessment is a fair share distribution analysis, which projects the estimated future need for affordable housing across the region. **Table 24** presents the estimated proportionate fair share workforce housing need for the Southern New Hampshire Planning Commission region.

BACKGROUND

Adequate, affordable housing for everyone is an important factor that is vital to the welfare and security of those residing in the SNHPC Region. Such housing enables the region to attract and retain residents that contribute to its overall economic success and maintain the quality of life residents have come to appreciate. In recognition of this need, a local "fair share" distribution is determined for each municipality in the region as part of the Housing Needs Assessment presented in this chapter.

In 2008 (effective January 1, 2010) the New Hampshire legislature enacted RSA 674:59, which states that:

"I. In every municipality that exercises the power to adopt land use ordinances and regulations, such ordinances and regulations shall provide reasonable and realistic opportunities for the development of workforce housing, including rental multi-family housing. In order to provide such opportunities, lot size and overall density requirements for workforce housing shall be reasonable. A municipality that adopts land use ordinances and regulations shall allow workforce housing to be located in a majority, but not necessarily all, of the land area that is zoned to permit residential uses within the municipality. Such a municipality shall have the discretion to determine what land areas are appropriate to meet this obligation. This obligation may be satisfied by the adoption of inclusionary zoning as defined in RSA 674:21, IV (a). This paragraph shall not be construed to require a municipality to allow for the development of multifamily housing in a majority of its land zoned to permit residential uses."

It is also important to note the definitions in RSA 674:58, where affordable housing is defined as "housing with combined rental and utility costs or combined mortgage loan debt services, property taxes and require insurance that do not exceed 30 percent of a household's gross annual income." Multi-family housing is defined as "a building or structure containing 5 or more dwelling units." Workforce housing is defined as "housing which is intended for sale and which is affordable to a household with an income of no more than 100 percent of the median income for a 4-person household for the metropolitan area or county in which the housing is located as published annually by the United States Department of Housing and Urban Development. Workforce housing also means rental housing which is affordable to a household for the metropolitan area or county in which the housing also means rental housing which is affordable to a household for the metropolitan area or county in which the housing also means rental housing which is affordable to a household for the metropolitan area or county in which the housing is located of the median income for a 3- person household for the metropolitan area or county in which the housing is located as published annually by the United States Department of Household for the metropolitan area or county in which the housing is located as published annually by the United States Department of Household for the metropolitan area or county in which the housing is located as published annually by the United States

20 percent of the units, or in which more than 50 percent of the dwelling units have fewer than two bedrooms, shall not constitute workforce housing for the purposes of this subdivision."

METHODOLOGY

The distribution developed in this assessment ²⁹ reflects municipal-level estimates of the current and reasonably foreseeable future workforce housing need, as defined in RSA 674:58-59.

Table 24, page 58, distributes the total workforce housing units estimated for the region in **Table 18** (2010) and **Table 22** (2020) to each community in proportion to their share of the housing units in the region. The workforce housing estimate is stated as a total number for each community and does not distribute the housing estimate between owner vs. renter units. Determining these ratios is left up to the community to determine, based on their local knowledge and data on owner and rental units. Each community can utilize this analysis to determine the distribution of owner vs. renter housing units as appropriate for their community. It should also be noted that adequate and accurate rental data does not exist to provide guidance to the region and each municipality. It will have to be the responsibility of each municipality to determine their rental/owner housing status and to collect that data in their community going forward in order to determine if they are meeting their fair share of the regional workforce housing estimated distribution for both owners and renters.

The housing numbers shown in **Table 24** represent the total proportionate distribution per municipality, including any existing housing that fits within the affordability definitions. It is likely that some communities in the region already have the indicated number of units that are affordable within these income limits, while many others may not. This analysis makes no attempt to ascertain whether a community is presently meeting its proportionate share of the regional workforce housing need. It states what the estimated distribution is today (base year 2010) and what it is estimated to be in 2020. It is the responsibility of each community to determine whether or not their existing housing stock supplies the number of units, both owned and rented, to meet their share of the region's workforce housing fair share distribution.

A housing affordability analysis is an exercise that each community should undertake in order to make this determination. Town assessor databases can be used to estimate the number of homes that have an assessed value that is less than the maximum purchase price of homes needed to qualify as "workforce housing" (see **Table 24**, pg. 58 for estimated maximum purchase and rental prices in the SNHPC Region). The New Hampshire Housing and Finance Authority has an affordability calculator on their website that can be used to determine this maximum purchase price as well. If the number meeting this criteria is equal to or greater than that shown on **Table 24** (for current conditions – 2010) the town can be assumed to be meeting its proportionate share for owner housing. SNHPC can conduct, as requested by each municipality, an owner-occupied affordable housing audit. This audit does not address rental data and that piece will need to be collected and analyzed by each individual community.

Determining rental values is more difficult, as this information is not collected or maintained comprehensively at the town level. NHHFA provides some useful data, especially for larger communities, in its annual rental price survey. For others it may be necessary to use NH Housing's County, regional or HUD HFMA estimates of rental prices, together with locally derived estimates of the number of rental units available in order to determine how many workforce housing qualified units exist in the community.

²⁹ Methodology derived from the Rockingham Planning Commission Regional Housing Needs Assessment, October 2008.

WHILE IT IS IMPORTANT FOR COMMUNITIES TO PERIODICALLY EVALUATE WHETHER THEY ARE MEETING THEIR FAIR SHARE OF THE REGION'S ESTIMATED WORKFORCE HOUSING DISTRIBUTION, IT SHOULD BE UNDERSTOOD THAT WITH RESPECT TO RSA 674:59, IT IS ONLY NECESSARY TO DEMONSTRATE THAT THEY ARE PROVIDING AND REALISTIC **OPPORTUNITIES** REASONABLE FOR THE DEVELOPMENT OF WORKFORCE HOUSING. A COMMUNITY NEEDS ONLY TO DEMONSTRATE THAT THEY REACH OR EXCEED THEIR FAIR SHARE IF THE COMMUNITY INTENDS TO CLAIM THAT IT HAS MET ITS FAIR SHARE OBLIGATIONS AND IS THEREFORE EXEMPT FROM CERTAIN ASPECTS OF THE NEW LAW.

The significance of this methodology is it represents one means of establishing an estimate of the number of standard affordable housing units, from a theoretical standpoint, that would be needed to accommodate workforce housing income households by the year 2020. This calculation allows communities five years beyond the publication of this report to plan for needed increases in the distribution of workforce housing units in the region. The estimate produced by using the fair share models should be considered as a guide or goal for each community striving to increase the housing supply and provide decent, affordable housing for all levels of income. It provides a mechanism by which each community can assess its fair share need relative to other communities in the Southern New Hampshire region. Further, it provides a framework for the establishment of a cohesive affordable housing policy at the regional level.

WORKFORCE HOUSING UNIT PROJECTIONS

Future projections of households in the SNHPC Region are outlined in **Table 22** in order to determine future workforce housing and fair share distribution. Current (2010) regional workforce household percentages (**Table 18**, page 46) are used along with the housing unit projection growth rates for 2010-2020 outlined in **Table 21**, page 53, to estimate future workforce households in 2020.

Municipality	20	10	2020	Growth Rate	
	Total Households			2010- 2020	
Auburn	1,695		1,834	0.82%	
Bedford	7,220		7,639	0.58%	
Candia	1,505		1,618	0.75%	
Chester	1,575		1,703	0.81%	
Deerfield	1,450		1,586	0.94%	
Derry	12,545		12,909	0.29%	
Goffstown	5,955		6,497	0.91%	
Hooksett	4,660		5,023	0.78%	
Londonderry	8,375		9,129	0.90%	
Manchester	45,370		47,230	0.41%	
New Boston	1,875		2,098	1.19%	
Raymond	4,015		4,461	1.11%	
Weare	2,975		3,287	1.05%	
Windham	4,515		5,034	1.15%	
SNHPC Region	103,730	1	10,048	0.61%	

TABLE 22- SNHPC REGION PROJECTEDHOUSEHOLDS, 2010-2020

Source: 2006-2010 U.S. Census Bureau ACS, 2006-2010 HUD Comprehensive Housing Affordability Strategy (CHAS), 2012 SNHPC Dwelling Unit Projections

TABLE 23 – SNHPC REGION ESTIMATED WORFORCE HOUSEHOLDS, 2010-2020

	2010 Percent Total HH	2010 WF HH	2020 WF HH
Renter Households earning ≤60% MAI	14.20%	14,728	15,625
Owner Households earning ≤100% MAI	22.40%	23,235	24,650
Total WF HH		37,963	40,276

TABLE 24 - SNHPC REGION ESTIMATED PROPORTIONATE FAIR SHARE WORKFORCE HOUSEHOLD DISTRIBUTION, 2010-2020

А	В	С	D	E	F	G	Н		J	K
				100% Area				Estimated Workforce Housing Distribution		
Community	2010 Households*	Town Share of Regional Households	HUD HMFA Area	Family Income (AMFI)	Max. Monthly Payment, Owner	60% AMFI (3-person Household)	Max Monthly Payment, Renter	2010	2020	Increase in Distribution 2010-2020
Auburn	1,695	1.6%	Western Rockingham	\$106,300	\$2,658	\$56,280	\$1,407	620	658	38
Bedford	7,220	7.0%	Manchester	\$76,500	\$1,913	\$41,340	\$1,034	2,642	2,803	161
Candia	1,505	1.5%	Western Rockingham	\$106,300	\$2,658	\$56,280	\$1,407	551	584	34
Chester	1,575	1.5%	Lawrence MA-NH	\$82,800	\$2,070	\$47,580	\$1,190	576	612	35
Deerfield	1,450	1.4%	Western Rockingham	\$106,300	\$2,658	\$56,280	\$1,407	531	563	32
Derry	12,545	12.1%	Lawrence MA-NH	\$82,800	\$2,070	\$47,580	\$1,190	4,591	4,871	280
Goffstown	5,955	5.7%	Manchester	\$76,500	\$1,913	\$41,340	\$1,034	2,179	2,312	133
Hooksett	4,660	4.5%	Merrimack Co	\$83,300	\$2,083	\$45,000	\$1,125	1,705	1,809	104
Londonderry	8,375	8.1%	Western Rockingham	\$106,300	\$2,658	\$56,280	\$1,407	3,065	3,252	187
Manchester	45,370	43.7%	Manchester	\$76,500	\$1,913	\$41,340	\$1,034	16,605	17,616	1,011
New Boston	1,875	1.8%	Hillsborough Co	\$82,600	\$2,065	\$44,640	\$1,116	686	728	42
Raymond	4,015	3.9%	Lawrence MA-NH	\$82,800	\$2,070	\$47,580	\$1,190	1,469	1,559	89
Weare	2,975	2.9%	Manchester	\$76,500	\$1,913	\$41,340	\$1,034	1,089	1,155	66
Windham	4,515	4.4%	Lawrence MA-NH	\$82,800	\$2,070	\$47,580	\$1,190	1,652	1,753	101
TOTAL	103,730	100.0%	NA	NA	NA	NA	NA	37,963	40,276	2,312

TABLE KEY							
Column	Explanation						
Α	RPC Community						
В	Total number of households, (single, multi, and manufactured), OEP estimate.						
С	Town's share of the region's (13 town RPC region) total households.						
D	The town's federally assigned HUD-Fair Market Rent Area Housing Market						
E	HUD Fair Market Rent Area's "100%" Median Area Income (MAI) for a 4-person family. Amount called out in SB 342						
F	Maximum payment (mortgage, Insurance and taxes) for a ownership unit to qualify as Workforce Housing						
G	60% of HUD Fair Market Rent Area's Median Area Income (MAI) for a 3-person family. Amount called out in SB 342.						
Н	Maximum payment (Rent and Utilities) for a rental unit to qualify as Workforce Housing						
I	Estimated Workforce Housing need for 2008						
J	Estimated Workforce Housing need for 2015						
К	Increase in Workforce Housing need between 2008 and 2015						

INCOME LIMIT CALCULATION									
HOME OWNERSHIP									
Est. Max Purchase									
ers. Hsld	\$10k down	\$20k down							
\$106,300	\$373,534	\$381,615							
\$82,800	\$292,793	\$300,925							
\$76,500	\$271,103	\$279,205							
\$82,600	\$292,016	\$300,153							
\$83,300	\$294,500	\$302,621							
HOME RENTAL									
60% MAI, 3 pers. Hshld Estimated Max Rent/mo.									
\$56,280	\$1,407								
Lawr MA-NH \$47,580		\$1,190							
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*CHAS/ACS 2006-2010

AFFORDABLE AND EQUITABLE HOUSING CHOICE OPPORTUNITIES AND BARRIERS

As housing costs continue to rise and incomes remain nearly stagnant, the reality of those who need affordable housing is very different from the perception of affordable housing. These perceptions are deeply ingrained and severely flawed. Many people think that affordable housing will not blend into their neighborhoods and are only large, ugly projects, which reduce surrounding property values and raise taxes. It is perceived that affordable housing will lead to increased crowding and social problems, as well as higher crime.

In truth, affordable housing today is none of these things. A wide range of incomes and backgrounds need quality affordable housing. Likely the people who could most benefit from affordable housing are our neighbors, co-workers, friends, or family, our firefighters, teachers, and nurses to name a few. Affordable housing is housing that is affordable to all income levels when spending 30 percent or less of household income toward housing costs. Affordability and the need for affordable housing affect many different groups of people in various ways.

In addition to affordability, equity and patterns of segregation are also a concern that need to be addressed in the region and the state in order to ensure that every resident is considered in land use and housing plans, no matter their race, color, nationality, disability, sex, religion, familial status, age, marital status or sexual orientation.³⁰

Within the SNHPC Region there are a number of opportunities and barriers to affordable and equitable housing choices. Outlined below are the key opportunities and barriers that have been identified from the Granite State Future public outreach process and the housing analysis within this chapter.

- 1. Housing Costs and Affordability
- 2. Housing Types (Choices)
- 3. Local Zoning Ordinances
 - a. Multi-family Housing Units
 - b. Minimum lot sizes
 - c. Age-restricted Housing
 - d. Cluster Housing
 - e. Co-Housing (built by community land trusts and housing trusts)
 - f. Redevelopment of older parts of downtowns and cities
 - g. Workforce Housing
 - h. Mobile Homes
- 4. Employment Opportunities
- 5. Economic Factors
- 6. Educational Opportunities
- 7. Crime and Perceptions of Safety
- 8. Discrimination and Patterns of Segregation
- 9. Physical Infrastructure
 - a. Water
 - b. Sewer
 - c. Natural Gas
 - d. Transportation/Public Transportation
 - e. Access to Healthy Food
 - f. Access to Services and Civic Infrastructure

³⁰ NH RSA 354-A: Law Against Discrimination.

Perhaps foremost in our consciousness are the high costs of real estate. Most residents would agree that the purchase price of homes and condos in the region is quite high. Creative financing options such as reverse amortization, interest-only, and adjustable-rate mortgages (ARMs) have enabled more people to achieve the "American Dream" of homeownership despite rising prices. These types of mortgages allow people to finance more and to outbid others for the house of their dreams, but the dangers down the road are numerous. While these types of mortgages can offer an initial period of low payments and fixed interest rates, once this period expires, the subsequent readjustment can mean a significant hike in monthly payments. The result can be an inability to meet the financial obligations of the loan and eventually foreclosure. The impacts on communities due to rising number of foreclosures can be a significant burden.

Rental properties in the SNHPC Region are extremely scarce outside Manchester and rent assisted units are subject to waiting lists hundreds of people long. The current practice of converting apartments to condominiums further exacerbates the problem, displacing people who cannot afford to own homes for the sake of supplying less expensive owner occupied homes.

With such a large percentage of renters below the median area income, communities need to provide more affordable rental units. Both the public and community planners need to be educated that apartments are positive additions, and the people who live in apartments are viable members of the community. Apartments can benefit communities by reducing sprawl, conserving open space, reducing traffic congestion and the burden to area schools, and improve economic success by providing housing for employees and customers of local businesses.

Workforce housing provides opportunities to the people that fulfill jobs vital to a community's existence, such as teachers, health care workers, and police and fire personnel who may fall within this income bracket. Workforce housing should be a goal of communities in the SNHPC Region. Communities depend on service providers to perform at their best all the time. By not providing affordable workforce housing, these essential personnel are hampered by undue stress, long commutes, and disenfranchisement from the community.

The over-55 demographic in the SNHPC Region is growing and creating new housing needs as well. In the past decade the region has gained 35,605 citizens 55 or older. While aging populations do not add to school enrollment locally, an aging population can have significant impacts on our health care systems and costs and related services. For example, the largest percentage of our current county tax dollars are used to pay for long term care services paid by Medicaid (nursing home, assisted living and community based residents) in both public and private settings (50 percent of Medicaid LTC costs are paid by the Federal government and 50 percent by county tax dollars). Many communities are addressing this increase in elder population through age-restricted housing. Ten communities in the SNHPC Region permit elderly housing in community zoning – Bedford, Candia, Deerfield, Derry, Goffstown, Hooksett, Londonderry, Manchester, Raymond and Windham. In Auburn, Chester, New Boston, and Weare, elderly housing is not specifically noted in zoning.

Age-restricted housing benefits communities by enabling older residents to remain in the community and providing tax income without added pressure on school enrollment. In the short-term, affordable housing for seniors makes sense economically. In addition, seniors typically have more expendable wealth than other age cohorts, so that can also be significant business/economic drivers. However, age-restricted housing should not be favored over other forms of affordable housing; a balance needs to be achieved to foster continued economic growth.

FAIR HOUSING INFRASTRUCTURE

FAIR HOUSING LAW

Federal Law

Fair Housing Act Overview

In 1968 the U.S. Congress made efforts to end housing segregation in the U.S. At this time the Chicago Open Housing Movement had raised awareness regarding fair housing problems over the previous three years and Martin Luther King Jr. had recently been assassinated, causing much civil unrest. Title VIII of the Civil Rights Act of 1968, commonly known as the Fair Housing Act, made acts of housing discrimination based upon race, sex, national origin, religion or ethnicity illegal. In 1988 the Act was amended in order to make acts of discrimination against families with children and people with mental or physical disability illegal as well. To ensure fair housing requirements are being met, states and local governments must have an Analysis of Impediments to Fair Housing Choice (AI). The U.S. Department of Housing and Urban Development (HUD) is designated by statute to administratively enforce federal housing discrimination laws such as the federal Fair Housing Act. Estimates of housing discrimination which are in violation of the Fair Housing Act range from two to four million cases a year.

Westchester County Case

While states and local governments must have an Al in order to certify they are meeting legal requirements to affirmatively further fair housing, these requirements have historically been overlooked by HUD. The Westchester County, New York case marks a turning point of new attention from HUD under the Obama administration. In a lawsuit brought by the Anti-Discrimination Center alleging racial segregation, a U.S. District Court ruled in 2009 that Westchester County's AI had "utterly failed" and all of Westchester's certifications that it had or would affirmatively further fair housing were "false or fraudulent." Rather than furthering integration and fair housing, Westchester County policies were actively causing racial segregation by locating affordable housing developments in areas where African-Americans were already highly segregated. A court settlement was reached requiring the county to spend over \$51 million to develop new affordable housing, with the majority of this housing in areas with low ratios of people of color. In 2010 and in 2011, Westchester's Als were once again rejected by HUD when they did not meet the agency's detailed requirements, resulting in the 2011 temporary suspension of more than \$7 million in Community Development Block Grant (CDBG), HOME, and Emergency Shelter Grant (ESG) funds.³¹ The Westchester County case establishes that state and local governments that are recipients of HUD funds must conduct meaningful Als and ensure their ordinances and policies do not result in racial segregation or other discriminatory outcomes.

Civil Rights Act

The Civil Rights Act of 1964 is widely recognized as landmark federal legislation which made discrimination on the basis of race, ethnicity, nationality, religion, and gender illegal. The groups of people who benefit from the Act are referred to as "protected classes." Dissent in the 1960s regarding the widespread discrimination against persons of African descent led to the enactment of the Act, which was originally called for by President Kennedy and successfully signed into law under President Johnson. Title VI of the Act sets forth explicit legal obligation to provide equal access to housing for the protected classes. The Act also imparts equal rights for these protected classes in the following areas: voting, public accommodations, public facilities and public education, federally assisted programs, and employment.

³¹ National Low Income Housing Coalition. "2012 Advocates' Guide to Housing & Community Development Policy." *NLIHC*. 2012. Web. 18 March 2009.

2007 Limited English Proficiency Guidance

The Civil Rights Act of 1964, under Title VI, states that no person "on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Since persons with limited English proficiency (LEP) have a limited ability to speak, read, write, or understand English as a result of national origin, they are protected under the Act. LEP persons received further protection from federal case law, Executive Order 13166, a U.S. Department of Justice regulation and guidance, as well as HUD's own proposed guidance issued in 2003. All of these documents establish that federal agencies and recipients of their financial assistance must examine the services they provide, identify any need for services to LEP persons and develop and implement a system to provide those services so LEP persons can meaningfully access them.³²

To assist grantees that receive direct or indirect HUD funding in carrying out their responsibilities to LEP persons, HUD issued a notice in 2007 titled "Final Guidance to Federal Financial Assistance Recipients Regarding Title VI Prohibition Against National Origin Discrimination Affecting Limited English Proficient Persons." This Final LEP Guidance clarifies the compliance standards that grantees must follow to ensure accessibility to LEP persons. Information in appropriate languages must be provided to LEP individuals in order to allow equal access to information, services and programs. Recipients must conduct a four-part analysis and draft a Language Access Plan to determine their obligations to LEP persons and determine the extent and methods of providing information in languages other than English and set forth policies and practices consistent with the Final LEP Guidance.³²

ADA

In 2010, 18.7 percent of the U.S. civilian non-institutionalized population had a disability, representing 56.7 million people.³³ The Americans with Disabilities Act of 1990 (ADA) ensures that this sizeable part of the population is equally protected. The Act was drafted after years of campaigning by the disability rights movement and a series of legislation with disability protections such as Section 504 of the 1973 Rehabilitation Act, the Civil Rights Restoration Act of 1988, and the Fair Housing Act of 1988.³⁴ The ADA prohibits discrimination due to a person's disability in employment, state and local government, public accommodations, commercial facilities, transportation, and telecommunications. As defined by the ADA, a person with a disability is someone who has a physical or mental impairment that substantially limits at least one major life activity, a person who has a history of such an impairment, or a person who is perceived by others as having such an impairment. The ADA also protects people who have a relationship or association with an individual with a disability.³⁵ With respect to housing accessibility, Title II of the ADA applies to housing provided by public entities such as state and local governments. Title III additionally states that public and common use areas at housing developments must be accessible to persons with disabilities.³⁶

³² New Hampshire Legal Assistance. "Analysis of Impediments to Fair Housing Choice in New Hampshire: 2010 Update." *NHHFA*. 2010. Web. 18 Jan. 2013.

³³ Brault, Matthew. "Americans With Disabilities: 2010." Census.gov. U.S. Department of Commerce, U.S. Census Bureau. July 2012. Web. 18 March 2013.

³⁴ Mayerson, Arlene. "The History of the ADA: A Movement Perspective." *DREDF*. Disability Rights Education and Defense Fund. 1992. Web. 18 March 2013.

³⁵ U.S. Department of Justice, Civil Rights Division. "A Guide to Disability Rights Laws." ADA.gov. July 2009. Web. 18 March 2013.

³⁶ U.S. Department of Housing and Urban Development. "Accessibility Requirements for Buildings."

http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/disabilities/accessibilityR

VAWA

Extensive grassroots efforts in the late 1980s and early 1990s are credited with the development of the Violence Against Women Act (VAWA) of 1994. A variety of advocates and professionals from places such as the battered women's movement, law enforcement officers, and lawyers successfully lobbied Congress to adopt legislation to address domestic and sexual violence. In 2005 VAWA's focus expanded to also include dating violence and stalking. VAWA now incorporates protections into HUD funded housing programs for victims of all these types of crimes. These changes reflect the fact that domestic violence is a significant contributing factor to homelessness, for women especially.³⁷ In February 2013, Congress renewed VAWA with provisions that expanded these federal protections to include gays, lesbians, transgender individuals, Native Americans, and immigrants as well. VAWA provisions apply to the Public Housing Program, Section 8 Housing Choice Voucher Program, and Project-Based Section 8 Funding Programs. These housing programs may not be allowed to deny housing or evict applicants based on the status of their victimization. Federally subsidized housing providers must notify program participants of VAWA protections. Likewise, Section 8 Housing Choice Voucher Program Administrators must notify participating landlords of their obligations to victims of violence.

State Law

NH Fair Housing Law

New Hampshire provides state-specific fair housing protections as well. The NH Fair Housing Law is found under Title XXXI on Trade and Commerce in Chapter 354-A, the New Hampshire Law Against Discrimination. The Fair Housing Law consists of Revised Statutes Annotated (RSA) 354-A:8 to RSA 354-A:15. The Fair Housing Law declares that equal housing opportunity without discrimination is a civil right. It prohibits housing discrimination on the basis of age, sex, race, creed, color, marital status, familial status, physical or mental disability, national origin, or sexual orientation. The overall Law Against Discrimination also establishes a state agency, the Commission for Human Rights, to eliminate and prevent discrimination in housing accommodations, as well as in employment and public accommodations.³⁸ Housing discrimination refers to services relating to the business of selling or renting dwellings, including access to and membership in multiple-listing services and brokers' organizations.³⁹

Repeal of RSA 130-A:8

RSA 130-A:8 set forth a prohibition on the rental of housing with lead paint hazards to children. In 1997, the New Hampshire Legislature repealed RSA 130-A:8. The statute had stated that rental agents and landlords of housing found by the commissioner of the Department of Health and Human Services or a health authority to have a lead exposure hazard present could not rent that housing if it is to be occupied by a child less than six years of age. Misinterpretation of the section led to rejections of families with children from housing where any lead paint was located, essentially comprising discrimination against families with children. The repeal of RSA 130-A:8 ensured that New Hampshire law better matched federal and state housing discrimination law. The repeal also follows HUD guidance, which prohibits

³⁷ National Law Center on Homelessness & Poverty. "The impact of the Violence Against Women Act 2005 (VAWA) on the housing rights and options of survivors of domestic and sexual violence." *NCDSV.org.* Web. 18 March 2013. http://www.ncdsv.org/images/ImpactVAWAHousing-TheProbandRemedy.pdf>

³⁸ State of New Hampshire. "Title XXXI Trade and Commerce: Chapter 354-A State Commission for Human Rights." New Hampshire General Court. Web. 18 March 2013. http://gencourt.state.nh.us/rsa/html/xxxi/354-a/354-a-mrg.htm

³⁹ New Hampshire Commission for Human Rights. "Statute and Rules of the Commission for Human Rights." Web. 18 March 2013. http://www.nh.gov/hrc/laws.html
landlords from discriminating against families with children due to the existence of lead paint in their housing.⁴⁰

Addition of Sexual Orientation as Protected Class

Sexual orientation is an important factor in discrimination. Though few cases of this type of housing discrimination are reported in New Hampshire, hate crimes motivated by sexual orientation bias represent over a quarter of all incidents reported by New Hampshire police departments to the FBI from 2004-2008, and were the second highest category after race.³² RSA 354-A:8 was adopted in 1997, adding protection from housing discrimination due to a person's sexual orientation to the NH Fair Housing law. This amendment also reaffirmed the opportunity to obtain housing without discrimination due to previously established protected classes of age, sex, race, creed, color, marital status, familial status, physical or mental disability, and national origin. Sexual orientation, as defined by RSA 354-A:2 refers to actual or perceived heterosexuality, bisexuality, or homosexuality.³⁹ On a federal level, the U.S. Fair Housing Act (FHA) does not yet specifically include sexual orientation and gender identity as prohibited bases. However, according to HUD, a lesbian, gay, bisexual, or transgender (LGBT) person's experience with sexual orientation or gender identity-based housing discrimination may still be covered by other protections in the Act, such as those concerning gender, disability, and allowed considerations in FHA-insured lending.⁴¹

RSA 354-A:15 – Housing for Older Persons

The Housing for Older Persons section, RSA-A:15, of the Fair Housing Act, is an amendment that disallows that provisions in this chapter regarding familial status or age apply with respect to housing for older persons.³⁸ Housing for older persons is considered to be one of the following three types of housing:

- 1. Housing provided under any state or federal program that HUD determines is specifically designed and operated to assist elderly persons as defined in the program;
- 2. Housing intended for and solely occupied by persons 62 years of age or older; or
- 3. Housing intended and operated for occupancy by at least one person 55 years of age or older per unit.⁴⁰

Before this amendment was adopted, housing for older persons was exempt only from familial status provisions. This meant that, previously, a qualified housing for older persons provider could legally refuse to rent to a family with children under 18, but not legally refuse to rent to a family with 19-year-olds or anyone else under 55 or 62 years of age. While the adoption of this amendment does allow additional legal discrimination, it is believed that this amendment helps better match the Fair Housing Act with legislative intent because "construing qualified housing for older persons as exempt from familial status but not age provisions would render the exemption meaningless."⁴²

⁴⁰ New Hampshire Commission for Human Rights. "Frequently Asked Questions about Exceptions

to the N.H. Law Against Housing Discrimination." 12 Oct. 2005. Print.

⁴¹ U.S. Department of Housing and Urban Development. "LGBT Housing Discrimination." *HUD.gov.* Web. 18 March 2013.

<http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/LGBT_Housing_Discrimination>

⁴² City of Manchester Planning and Community Development Department. "Impediments to Fair Housing Plan: 2010 Update." 2010. Print.

RSA 540:2 - New Tenancy Protections for Victims of Domestic Violence

Data analysis of the New Hampshire Housing Finance Authority (NHHFA)'s 2010 Fair Housing Survey revealed that domestic violence status, among other factors, figured significantly in respondents' perceptions of discrimination and reports of unfavorable housing outcomes. Domestic violence survivors report being denied rental housing, denied a mortgage, and being evicted in higher numbers than those who did not report domestic violence status.³² RSA 540:2 aims to address discriminatory eviction due to status as a victim of domestic violence. It states that landlords may not terminate a tenancy solely based on a tenant or a household member of a tenant having been a victim of domestic violence, sexual assault, or stalking, with the condition that the victim provides the landlord with written verification that they have obtained a valid protective order against the perpetrator of the domestic violence, sexual assault, or stalking. As determined by definitions in RSA 540:1-a, this statue does not apply to the lessors or owners of: single-family houses if the owner currently owns 3 or fewer single-family houses, rental units in an owner-occupied building containing 4 or fewer dwelling units, and single-family houses acquired by banks or other mortgagees through foreclosure. RSA 540:2 also provides support for sole eviction of the tenant or household member accused of the domestic violence, sexual assault, or statute does not prevent eviction due to nonpayment of rent.⁴³

Civil Rights Act

New Hampshire's Civil Rights Act, or RSA 354-B, was enacted by the Legislature in 1999. This law followed the Human Rights Act and established new protections for the protected classes in that act – race, color, national origin, ancestry, sexual orientation, gender and disability.⁴² The Act states that all persons have the right to engage in lawful activities and to exercise and enjoy the rights in and laws of the United States and New Hampshire Constitutions without being subject to actual or threatened physical force or violence or trespass on property when such actual or threatened conduct is due to a bias against a protected class. The Civil Rights Act also gives the New Hampshire Attorney General authority to initiate civil actions on behalf of people for relief against any person believed to have violated the provisions. It also permits civil penalties, injunctive relief necessary to prevent continued or future violations, and restitution for out-of-pocket expenses.^{42,44}

Private Right of Action - RSA 354-A:21

RSA 354-A-21, effective as of 2000, sets forth a Procedure on Complaints that allows for expanded options for individuals seeking redress.³⁸ Before this amendment was passed, individuals alleging violations of the provisions of the New Hampshire Law Against Discrimination were limited to filing complaints with the Human Rights Commission and enforcement through the Attorney General's office. Adding upon extensive enforcement provisions concerning complaints before the Human Rights Commission, enforcement provisions established in RSA 354-A:21 allow an aggrieved individual to file a complaint in court. Parties alleging to be aggrieved by practices prohibited by RSA 354-A may bring an action in superior court for civil damages and/or injunctive relief. This provision "not only allows an individual to choose where he or she will seek relief for an alleged discriminatory act, but also allows him or her to seek remedies for alleged violations of other laws before a body which has jurisdiction to consider all claims."⁴²

 ⁴³ State of New Hampshire. "Title LV Proceedings In Special Cases: Chapter 540. Actions Against Tenants." New Hampshire General Court. Web. 18 March 2013. http://www.gencourt.state.nh.us/rsa/html/LV/540/540-mrg.htm
 ⁴⁴ State of New Hampshire. "Title XXXI Trade and Commerce: Chapter 354-B Civil Rights Act." New Hampshire General Court. Web. 18 March 2013. http://gencourt.state.nh.us/rsa/html/LV/540/540-mrg.htm
 ⁴⁵ State of New Hampshire. "Title XXXI Trade and Commerce: Chapter 354-B Civil Rights Act." New Hampshire General Court. Web. 18 March 2013. http://gencourt.state.nh.us/rsa/html/xxxi/354-b/354-b-mrg.htm

Statewide Building Code

New Hampshire's first statewide building code, effective as of 2002, was created by RSA 155-A. The Code represented a way to standardize and modernize the pre-existing, varying local codes that were in use, in order to better serve the interests of public health, safety and welfare.⁴² The Code adds to the preexisting state-wide requirements of the State Fire Code and the New Hampshire Barrier Free Design Code by adopting International Building Code 2009, International Energy Conservation Code 2009, International Existing Building Code 2009, International Mechanical Code 2009, International Plumbing Code 2009, International Residential Code 2009, National Electrical Code 2011, and State Fire Code Saf-C 6000.45 In addition, the Code provides the Life Safety Code with precedence for requirements in regard to means of egress. While the Code supersedes all local codes that are less stringent, municipalities have freedom to adopt more restrictive codes if desired. RSA 155-A applies to all new buildings constructed by the state or a state agency, as well as all new public buildings in New Hampshire. According to the statute, public buildings are all buildings into which the general public is allowed entry as a normal part of the building's operation and use. Residential buildings such as apartment buildings and shelters are examples of buildings considered to be public and which must comply with the Code, while residential buildings such as one and two family dwellings are not considered public and are exempted from the Code requirements.42,46

The Code for (Architectural) Barrier Free Design (AB Code) for the State of New Hampshire is especially relevant to fair housing. Effective as of 2008,⁴⁷ the AB Code originates from RSA 275-C:11, which established a Committee on Architectural Barrier-Free Design (Abfd).⁴⁸ The Committee is a permanent committee of the Governor's Commission on Disability, and is responsible for the AB Code. The Committee's Chapter Abfd 300, Code For Barrier-Free Design, states that its purpose is to ensure, through the elimination of architectural barriers, that publicly funded public buildings and facilities are accessible to, and functional for, persons with disabilities. It names the 2010 ADA Standards for Accessible Design (as clarified or modified by Abfd 303.02) as the source of the provisions of the AB Code.⁴⁹ The AB Code incorporates by reference the International Building Code 2006 and Accessible and Usable Buildings and Facilities ANSI A117.1-2003.⁴⁷

Workforce Housing Law

In 2008, RSA 674:58-61 established New Hampshire's Workforce Housing Law, which mandates communities to provide workforce housing. Workforce housing is defined as housing opportunities that are affordable for moderate and low-income families, including rental multi-family housing. ^{32, 50} The Workforce Housing law follows fair housing New Hampshire Supreme Court precedent by codifying the 1991 case of *Britton v. Town of Chester*, 134 N.H. 434. In the *Britton* case, the Court ruled that "all New Hampshire municipalities have an obligation to afford reasonable opportunities for the development of

⁴⁶ New Hampshire General Court. "Title XII Public Safety And Welfare: Chapter 155-A New Hampshire Building Code." Web. 18 March 2013. http://www.gencourt.state.nh.us/rsa/html/XII/155-A/155-A-mrg.htm

<http://www.nh.gov/disability/information/architectural/documents/nh_accessibility_codes.pdf>

⁴⁹ Architectural Barrier-Free Design Committee. "Chapter Abfd 100-300." Web. 18 March 2013.

⁴⁵ New Hampshire Department of Safety. "NH State Building Code (Current)." Web. 18 March 2013. http://www.nh.gov/safety/boardsandcommissions/bldgcode/nhstatebldgcode.html

⁴⁷ New Hampshire Governor's Commission on Disability. "Accessibility Codes that Apply in New Hampshire Updated August 2010." Web. 18 March 2013.

⁴⁸ New Hampshire General Court. "Title XXIII Labor: Chapter 275-C Governor's Commission On Disability." Web. 18 March 2013. http://www.gencourt.state.nh.us/rsa/html/XXIII/275-C/275-c-mrg.htm

http://www.gencourt.state.nh.us/rules/state_agencies/abfd100-300.html

⁵⁰ State of New Hampshire. "Title LXIV Planning And Zoning: Chapter 674 Local Land Use Planning And Regulatory Powers." New Hampshire General Court. Web. 18 March 2013.

<http://www.gencourt.state.nh.us/rsa/html/lxiv/674/674-mrg.htm>

housing for low and moderate income families, including fair share of the regional need for such housing." Unfortunately, in the subsequent years, most municipalities disregarded their responsibilities under Britton, with significant effects upon families with children. The new Workforce Housing sections of Chapter 674 on Local Land Use Planning and Regulatory Powers now again mandate, this time via statute, that local governments provide meaningful opportunities for the development of affordable housing for moderate and low-income families.³² In Manchester, many working class residents are in need of affordable workforce housing, including entry level teachers, firefighters, police officers, artists, nursing assistants and medical workers, hospitality employees, retail and service employees.⁴²

Protection for Homeowners Against Predatory Foreclosure Schemes

In 2007, new laws concerning Chapter 479 on Mortgages of Realty were passed in New Hampshire, regulating foreclosure consultants and pre-foreclosure conveyances in order to protect homeowners from predatory foreclosure schemes.⁵¹ In the past few years many homeowners facing foreclosure, especially low-income and unsophisticated borrowers, were preyed upon by foreclosure "prevention" schemers even as the same predatory and unethical lending practices helped drive the U.S. housing crisis. The Analysis of Impediments to Fair Housing Choice in New Hampshire 2010 Update noted that members of many protected class groups were specially targeted. Schemes included "charging high fees for offers to intervene with foreclosing lenders or for referrals to bankruptcy attorneys; situations where the homeowner believes he or she is refinancing but unknowingly transfers ownership of her home to another party; and lease/buyback deals with terms that all but ensure that the homeowner will never be able to regain title to his home." The new RSA 479 statutes importantly require that a foreclosure contract be implemented before services are provided. This contract must fully disclose and describe the terms, services to be provided, and costs of the contract; be notarized; and be accompanied by a notice of the right to cancel the contract. Requirements that aim to eliminate unknowing loss of homeownership are established as well. The statutes also provide specific protection of persons with limited English proficiency (LEP persons) by establishing that contracts for LEP persons must be written in their language.³²

FAIR HOUSING INFORMATION, TRAINING, EDUCATION AND OUTREACH

The City of Manchester recently updated their Analysis of Impediments to Fair Housing Choice. For this analysis the City conducted a survey and focus groups to receive input on what the impediments to fair housing choice were in the City. Survey results revealed that a majority of Manchester residents do not know where to find fair housing information and/or what their rights are in regard to fair housing. Discrimination data analyzed reveals there is a need for continued outreach and education to property owners/managers and landlords to increase awareness of fair housing laws and to reduce discriminatory practices. The following resources are available in the SNHPC region for fair housing information, education and training.

Federal

U.S. Department of Housing and Urban Development (HUD)

HUD administratively enforces federal housing discrimination laws such as the federal Fair Housing Act, as designated by statute. The Office of Fair Housing and Equal Opportunity (FHEO) is the HUD program office that specifically oversees fair housing. HUD produces many of the written fair housing materials distributed by state, local, and non-profit agencies in New Hampshire. The HUD Consolidation Plan's

⁵¹ State of New Hampshire. "Title XLVIII Conveyances and Mortgages of Realty: Chapter 479 Mortgages of Realty." New Hampshire General Court. Web. 19 March 2013. http://www.gencourt.state.nh.us/rsa/html/XLVIII/479/479-mrg.htm

certification to "Affirmatively Furthering Fair Housing" requires entitlement communities to undertake Fair Housing Planning. The Analysis of Impediments to Fair Housing should be viewed as part of the City's Consolidated Plan.⁴² The AI report has been completed to meet requirements of the Fair Housing Planning Guide.

HUD also receives federally-based housing discrimination complaints from residents. The HUD Regional Office serving New Hampshire is located in Boston, Massachusetts and may be reached at (800) 827-5005 toll-free. The nearest FHEO Office is located in Boston as well and may be reached at (617) 994-8300 or (617) 994-8305. Anyone with housing discrimination complainants may file federally-based complaints directly with HUD in a variety of languages via toll-free voice (800) 669-9777 and TTY (800) 927-9275, online or by fax to (617) 565-7313 (the Boston FHEO office), or mail to the Boston FHEO Center at 10 Causeway Street, Suite 308, Boston, MA 02222.⁵² The HUD housing discrimination complaint form is available electronically at and is included as part of the 2008 HUD Fair Housing brochure.⁵³ HUD assumes all costs of processing and investigating the complaints.⁴²

U.S. Department of Justice, Civil Rights Division

The Housing and Civil Enforcement Section has the ability to prosecute civil violations of the federal Fair Housing Act. Located in Washington, D.C., there are several attorneys assigned to handle cases arising in the New England region. Although many of the cases handled are referred by other federal agencies, private citizens may also file complaints. Priority is given to "pattern and practice" cases involving ongoing violations affecting many people. There are no costs associated with lodging a complaint with the Department of Justice.⁴²

U.S. Federal District Court, District of New Hampshire

New Hampshire residents with housing discrimination complainants may bring a private lawsuit in federal court for violations of the federal Fair Housing Act. There are filing fees and other potential costs of litigation, some of which may be waived by the court for low-income litigants.⁴²

State

New Hampshire Commission for Human Rights (HRC)

The HRC is a state agency established by RSA 354-A for the purpose of eliminating discrimination in employment, public accommodations and the sale or rental of housing or commercial property, because of age, sex, sexual orientation, race, creed, color, marital status, familial status, physical or mental disability or national origin. The commission has the power to receive, investigate and pass upon complaints of illegal discrimination and to engage in research and education designed to promote good will and prevent discrimination. The New Hampshire "Law Against Discrimination" is contained in NH RSA 354-A, and covers employment, housing, and places of public accommodation. The Commission adopts rules pursuant to RSA 541-A, the Administrative Procedure Act, in accordance with the procedures set forth in the Act. The Commission's rules, once adopted in accordance with RSA 541-A, have the force of law unless they are amended or revised or unless a court of competent jurisdiction determines otherwise.⁴²

⁵² U.S. Department of Housing and Urban Development. "Filing Your Housing Discrimination Complaint Online." Web. 20 March 2013. http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/online-complaint>

⁵³ U.S. Department of Housing and Urban Development. "Fair Housing: Equal Opportunity for All." Web. 20 March 2013. http://portal.hud.gov/hudportal/documents/huddoc?id=DOC_11868.pdf

State Court System

New Hampshire residents with housing discrimination complainants may bring legal actions in state superior or district courts for violations of federal or state housing discrimination laws. State claims must be filed first with the HRC, which then may grant permission to remove the complaints to state court. There are filing fees and other potential costs of litigation, some of which may be waived by the court for low-income litigants.⁴²

State of New Hampshire, Office of the Attorney General

The New Hampshire Office of the Attorney General is available to serve the people of New Hampshire with diligence, independence and integrity by performing the constitutional, statutory and common law duties of the Attorney General. Duties of the Attorney General include to serve as the State's chief legal officer and chief law enforcement officer; to seek to do justice in all prosecutions; to provide the State with legal representation and counsel of the highest quality; to protect the State's environment and the rights of its consumers; and to provide supervision and leadership of New Hampshire law enforcement.⁴²

New Hampshire Housing Finance Authority (NHHFA)

New Hampshire Housing Finance Authority is a self-supporting public benefit corporation. Although established by statute as a public instrumentality, the Authority is not a state agency and receives no operating funds from the state government. The Authority administers a broad range of programs designed to assist low- and moderate-income persons and families with obtaining decent, safe and affordable housing. Their mission is to promote, finance and support affordable housing opportunities and related services for New Hampshire families and individuals through the efficient use of resources and the building of effective partnerships, thereby contributing to the economic and social development of the State and its communities.⁵⁴ NHHFA is associated with publications such as the Analysis of Impediments to Fair Housing Choice in New Hampshire 2010 Update.³²

New Hampshire Workforce Housing Council

The Workforce Housing Council coordinates and supports local, regional and statewide efforts that encourage communities to embrace a wide range of housing options to meet the needs of New Hampshire's diverse workforce. These efforts include assisting regional workforce housing groups, encouraging private sector engagement, educating and informing decision makers, encouraging research exploring housing's impact on economic vitality, and impacting statewide policy decisions and practices.

Non-profits

New Hampshire Legal Assistance and the Housing Justice Project (HJP)

New Hampshire Legal Assistance (NHLA) is a non-profit law firm offering legal services in civil matters to families, seniors and eligible low-income individuals. NHLA provides legal services to vulnerable low-income citizens, ranging from simple legal information and advice to representation in all of New Hampshire's courts and before many of the local, state and federal agencies.⁴²

Partially funded in the past by the City of Manchester, The Housing Justice Project (HJP) of New Hampshire Legal Assistance is a group of attorneys and paralegals who are committed to promoting equal access to housing for New Hampshire Legal Assistance (NHLA) clients. Focusing on the rapidly growing minority, immigrant, and refugee communities in Manchester, the HJP works closely with local public and private organizations that assist these particularly vulnerable populations in the struggle against housing

⁵⁴ New Hampshire Housing Finance Authority. Web. 20 March 2013.

discrimination. The HJP works with these populations by investigating complaints of discrimination involving section 8 or public housing issues, mortgage foreclosure, property taxes, mobile home park issues, fair housing/housing discrimination complaints and housing accessibility issues for persons with mobility disabilities. The HJP helps by providing full legal representation to lower income families and individuals in emergency situations who are either currently without shelter or are at imminent risk of becoming homeless. The individuals of HJP help ensure admittance to safe shelters and supply access to the proper resources to help families move out of homelessness. Additionally, the HJP also works to alleviate the steady stream of Manchester homeowners who are at risk of losing their homes to foreclosure by assisting them to file bankruptcy and save their home. As well as supplying legal assistances, the HJP does a considerable amount of community outreach to tenants, housing providers and social service agencies about tenants' rights and general fair housing law.⁵⁵

Disability Rights Center (DRC)

The DRC provides information, advice, and legal representation to individuals who have problems with housing and have been discriminated against due to their disability. The DRC provides workshops and educational events on Fair Housing Rights of People with Disabilities.⁵⁵

NH Community Loan Fund

The New Hampshire Community Loan Fund collaborates with a wide range of donors and lenders, and with business, nonprofit and government partners. Together, they offer financing and support to people with low and moderate incomes to secure affordable housing, quality jobs, child care and early education for their children. See website at: https://www.community loanfund.org

NeighborWorks Southern New Hampshire (NSNH)

NSNH is a non-profit organization dedicated to the improvement of the lives of individuals and families living in the Southern New Hampshire region by providing access to quality housing services, revitalizing neighborhoods and supporting opportunities for personal empowerment. NSNH has helped thousands of people break the cycle of poverty and improve their financial stability through either home ownership or providing quality affordable rental housing. In addition, NSNH conducts homeowner workshops designed to educate and prepare low-income renters for homeownership by providing them with the abilities and skills needed to purchase and maintain their own home.⁴²

The Way Home

The Way Home is a non-profit agency dedicated to helping low-income households obtain and succeed in safe, affordable housing. Since 1988, The Way Home has assisted more than 19,000 families and individuals with their housing needs. The Way Home has found that demand for its homeless prevention services has increased dramatically with the economic downturn. In addition, many families and individuals are at risk due to job losses: "In spite of the bursting of the housing bubble, housing remains too expensive for many families in Southern New Hampshire. In 2011, the affordable housing wage needed to rent a two-bedroom apartment in Manchester, NH was approximately \$20.37/hr. Low-wage workers continue to be one paycheck from homelessness, even as more apartments become vacant." The Way Home's Housing Resource Center at 214 Spruce Street in Manchester provides HUD-certified housing counseling for at-risk homeowners, renters, and homeless persons as part of their innovative homelessness prevention and intervention programs. Working with community partners, they offer resources to help make housing safe, to help secure rental housing, and to provide transitional shelter & permanent supportive rental housing.

⁵⁵ New Hampshire Legal Assistance. Web. 22 July 2013. http://www.nhlegalaid.org/about/new-hampshire-legalassistance

The Way Home also strives to prevent foreclosures, which hit homeowners and smaller landlords alike, since foreclosures drive demand for rental units while depressing home values.⁵⁶

Families in Transition (FIT)

Families in Transition is a non-profit organization located in Manchester and Concord, New Hampshire. It was founded in 1991 in response to the growing number of homeless individuals and families in the greater Manchester area and throughout the state. Since its inception, FIT has been committed to providing only the most innovative, comprehensive, and effective interventions specifically designed to help homeless individuals and families reach beyond the cycle of homelessness to lead healthy and successful lives. Their belief is that having a home is a basic human right and is fundamental to becoming an engaged and contributing member of the community.⁵⁷

Family Promise of Greater Rockingham County

Family Promise of Greater Rockingham County is an interfaith hospitality network dedicated to helping homeless children in Derry, Salem and 14 surrounding communities in New Hampshire. The Network, or IHN, provides a safe place for homeless families with children to turn for food, shelter, and social services. Participating congregations of any faith offer guidance, encouragement, overnight stays, and meals, while preserving the dignity of families as they take steps to regain independence.

City of Manchester

Manchester Housing and Redevelopment Authority (MHRA)

MHRA is the largest public housing agency and largest landlord in Northern New England. An independent, public non-profit, MHRA was established by state legislation and confirmed by a referendum of Manchester citizens in 1941 and receives policy oversight from a five-member Board of Commissioners. MHRA owns and manages 1,271 public housing apartments for low income families, elderly, and adults with disabilities, and provides housing subsidies for over 1,800 households through the administration of the Section 8 Housing Choice Voucher Program. MHRA also offers the Homeownership Program conducted in conjunction with the Housing Choice Voucher Program and operated in partnership with New Hampshire Housing Finance Authority and NeighborWorks Southern New Hampshire. MHRA offers an array of supportive programming to residents, including a licensed after school child care program, teen educational and recreational activities, adult employment and vocational services, social activities for the supports needed (meals, housekeeping, etc.) to allow the elderly and persons with disabilities to maintain their independence.⁵⁸

In addition to housing services, MHRA also conducts redevelopment activities on behalf of the City of Manchester and is the primary redevelopment entity in the City. MHRA takes credit for creating jobs and increasing Manchester's tax base through various major redevelopment initiatives, such as the Verizon Center, Manchester Air Park, the Center of New Hampshire, and Amoskeag Millyard. MHRA efforts have recently produced new affordable housing development initiatives, resulting in over 600 new units at a total development cost of over \$70 million, which MHRA cites as evidence of its renewed emphasis on generating more low-income housing opportunities.⁵⁸

⁵⁶ The Way Home. Web. 20 March 2013.

⁵⁷ Families in Transition. Web. 20 March 2013.

⁵⁸ Manchester Housing and Redevelopment Authority. Web. 20 March 2013.

Manchester Welfare Department

The vision of the Manchester Welfare Department is to improve the quality of life for those disadvantaged members of their community, and to do so in the most professional and respectful manner. The Department's mission is to provide emergency assistance to individuals and families who lack adequate resources. They facilitate by directing less fortunate citizens to federal, state, and non-profit relief agencies to reduce the burden on their departmental budget and on Manchester taxpayers. They strive to promote self-reliance and independence in all whom the Department serves so they may become productive citizens.⁵⁹

City of Manchester Planning and Community Development Department

Financial assistance for housing activities in Manchester is primarily provided through the use of federal funds from the United States Department of Housing and Urban Development. The Federal funds include the Community Development Block Grant Program (CDBG), the HOME Investment Partnerships Program and to a lesser degree Emergency Solutions Grant (ESG) monies. The use of these funds is restricted to activities which provide affordable housing or shelter to low income people. Federal Funds also include Neighborhood Stabilization Program (NSP and NSP III) funding to address the effects of abandoned and foreclosed properties, in order to put them back into service for the benefit of rehabilitation and extended affordability options. In addition to Federal funds the City also has an Affordable Housing Trust fund which is available for housing initiatives. The City allocates all of these funds on an annual basis as a part of the Community Improvement Program (CIP) process and on a project specific basis throughout the year.

The City Housing Initiatives also include a Lead Hazard Control Program. The purpose of the program is to assist property owners in the control of Lead Hazards that constitute an imminent health threat in homes built prior to 1978 and to protect young children from lead poisoning.

In addition to City resources, Manchester housing initiatives leverage monies from other sources. The majority of the leveraged funds are administered by the New Hampshire Housing Finance Authority and they include but are not limited to HOME Investment Partnership funds, the Affordable Housing Fund, tax exempt bonds and Low Income Housing Tax Credits.⁶⁰

City of Manchester Consolidated Plan - The Consolidated Plan for the City of Manchester establishes the priorities for the use of Community Development Block Grant, HOME Investment Partnerships Program, and Emergency Solutions Grant funds granted to the City by the U.S. Department of Housing and Urban Development (HUD). It also serves as an application and performance reporting mechanism.⁴²

Other

Workforce Housing Coalition of the Greater Seacoast

The Workforce Housing Coalition of the Greater Seacoast (WHC) is an education and outreach initiative which hosts public forums and trainings to highlight solutions to the region's housing challenges; Offers municipalities research and technical assistance to help improve local housing policies; Provides developers with information and data to advance workforce housing projects. Through a united coalition of business, municipal and community leaders, the coalition's mission is to be a catalyst for the development of a range of housing options affordable for the diverse workforce in the Greater Seacoast region of New Hampshire and Maine.

⁵⁹ City of Manchester Welfare Department. Web. 20 March 2013.

⁶⁰ City of Manchester Planning and Community Development Department. Web. 20 March 2013.

CATCH Neighborhood Housing

CATCH Neighborhood Housing is a 501(c)3, non-profit organization offering a full spectrum of housing services in Merrimack County, New Hampshire. CATCH works to create innovative housing solutions for lowor moderate- income individuals and families.

DISCRIMINATION AND PATTERNS OF SEGREGATION

The following New Hampshire State Statute pertains to equal housing opportunity for the state: **RSA 354-A:8 Equal Housing Opportunity Without Discrimination a Civil Right**. – The opportunity to obtain housing without discrimination because of age, sex, race, creed, color, marital status, familial status, physical or mental disability or national origin is hereby recognized and declared a civil right. In addition, no person shall be denied the benefit of the rights afforded by this section on account of that person's sexual orientation.

Nationally, fair housing rights are protected under Title VIII of the Civil Rights Act of 1968 (Fair Housing Act). The federal Fair Housing Act makes it illegal to make, print or publish or cause to be made, printed or published housing ads that discriminate, limit or deny equal access to apartments or homes because of race, color, national origin, sex, religion, familial status and disability. The U.S. Department of Housing and Urban Development (HUD) handles fair housing complaints for individuals and community groups. From January 2008 – January 2013, HUD handled 40 fair housing cases for communities in the SNHPC region (19 were found to be no cause). The following table outlines fair housing cases in the region by town and basis (not including cases with a no cause finding).

HUD Cases January 1, 2008 - January 28, 2013											
By Town	Disability	Familial Status	National Origin	Race	Color	Gender	Religion	Marital Status	Age	Sexual Orientation	Total
Auburn											0
Bedford	1										1
Candia											0
Chester											0
Deerfield											0
Derry		1									1
Goffstown											0
Hooksett											0
Londonderry	1										1
Manchester	7		2	2							11
New Boston	1										1
Raymond		6									6
Weare											0
Windham											0
SNHPC Region	10	7	2	2	0	0	0	0	0	0	21

TABLE 25 - SNHPC REGION FAIR HOUSING CASES, 2008-2013

New Hampshire Legal Assistance handles Fair Housing cases for low-income and elderly clients in all regions of New Hampshire. They also offer community education and outreach on Fair Housing issues. NHLA work is funded by a grant from the United States Department of Housing and Urban Development (HUD).

From January 2008 to December 2013 NHLA handled 109 fair housing cases related to discrimination in the SNHPC region.⁶¹ Over half of these were related to the protected class of those with a disability (68 cases). The protected class of national origin and race were both largely represented in this timeframe as well with 16 cases and 12 cases, respectively.

Mortgage Lending practices

The chart below outlines mortgage loan denials by race for the State of New Hampshire for 2010. Latino households had the highest rate of denial, followed by Black households and then White households. Asian households had the smallest rate of denial for home mortgage loans in 2010.



FIGURE 16 - 2010 NEW HAMPSHIRE HOME MORTGAGE LOAN DENIALS

Source: 2010 HMDA. Data compiled by the Federal Reserve Bank of Boston. *Data refers to Non-Latino white, non-Latino Black and non-Latino Asian

⁶¹ New Hampshire Legal Assistance. Data provided through December 31, 2013. Note: Findings were not included in the data provided by NHLA and therefore could include cases with a "no cause" finding.



FIGURE 17 - NEW ENGLAND HOME MORTGAGE DENIAL RATES BY RACE/ETHNICITY, 2006-2010

New Hampshire, along with Connecticut, Massachusetts, Maine, Rhode Island and Vermont are represented in the chart above illustrating total home mortgage denial rates by race/ethnicity for 2006-2010. The data is also shown on **Table 26** (next page) by income and race/ethnicity. It clearly illustrates that the Black and Latino populations have significantly higher denial rates than the White and Asian populations and when looking at the income data, this still holds true no matter what the income bracket is.

Source: 2006-2010 HMDA. Data compiled by the Federal Reserve Bank of Boston.

TABLE 26 - NEW ENGLAND HOME MORTGAGE DENIA	L RATES BY INCOME AND RACE/ETHNICITY, 2006-2010
--	---

Income (in thousands)	1 to 30	31 to 50	51 to 70	71 to 90	91 to 120	121 to 150	over 150	Total
2006								
White	34.1%	22.9%	19.4%	17.9%	16.5%	14.6%	14.9%	19.0%
Black	47.4%	35.4%	31.3%	30.7%	29.8%	31.5%	29.6%	31.8%
Asian	37.8%	20.6%	18.7%	16.2%	14.1%	15.6%	14.0%	16.9%
Latino	49.2%	33.0%	29.3%	28.2%	28.1%	28.5%	26.5%	29.7%
2007								
White	36.8%	25.4%	22.6%	21.1%	19.3%	16.4%	16.1%	21.7%
Black	50.5%	39.5%	38.1%	38.5%	38.5%	37.9%	35.6%	38.8%
Asian	41.1%	26.1%	20.9%	19.2%	16.6%	14.4%	13.6%	19.3%
Latino	50.9%	38.5%	36.9%	37.7%	35.6%	35.2%	34.3%	37.5%
2008								
White	39.0%	25.8%	21.9%	20.0%	17.7%	15.4%	13.1%	20.5%
Black	55.2%	43.4%	38.6%	37.8%	38.9%	38.6%	33.3%	39.7%
Asian	48.2%	24.7%	21.5%	17.6%	15.6%	14.4%	10.8%	18.1%
Latino	57.0%	41.1%	37.8%	36.5%	32.9%	33.3%	27.1%	37.8%
2009								
White	35.5%	21.4%	17.0%	15.1%	13.3%	11.9%	11.0%	15.6%
Black	44.0%	32.1%	29.5%	29.7%	28.7%	23.7%	22.2%	28.4%
Asian	43.0%	23.8%	17.9%	14.0%	11.2%	10.6%	10.0%	14.6%
Latino	42.4%	31.2%	27.6%	25.3%	21.9%	18.5%	16.6%	26.1%
2010								
White	38.7%	21.4%	16.5%	14.2%	12.3%	10.4%	10.3%	15%
Black	45.0%	29.7%	26.6%	24.6%	24.3%	20.6%	18.2%	26%
Asian	45.4%	26.9%	18.9%	14.3%	10.9%	9.2%	8.8%	14%
Latino	43.0%	27.9%	23.2%	20.7%	18.1%	17.3%	14.5%	23%

NOTE: Tables include only first-lien loans for owner-occupied homes. The data exclude junior-lien loans, all loans for multi-family properties, and all loans for non-owner-occupied homes. Demographic groups refer to "non-Latino white," "non-Latino Black," and "non-Latino Asian." Source: 2006-2010 HMDA. Data compiled by the Federal Reserve Bank of Boston.

CONCLUSION

The overarching theme of the input received throughout the Granite State Future process was the Southern New Hampshire region is a convenient and desirable place to live, work and play. There are many characteristics that draw people to our region, including the proximity to the mountains, the coast, the City and to numerous recreational opportunities. While there are many opportunities in the region, there are also a number of challenges surrounding housing choices, opportunity and affordability. Local government, regional organizations and the State can play a large role in assisting the needs of housing in the region. Goals and recommendations to address housing needs in the Southern New Hampshire region are outlined below.

GOALS AND RECOMMENDATIONS

•Goal 1: Encourage development of a variety of affordable housing choices in every community of the region

Recommendation 1-1: Support incentives for investment in reuse and redevelopment of existing structures.

Recommendation 1-2: Encourage communities to allow for cluster housing in their zoning ordinance to provide affordable housing opportunities and to protect the environment.

Recommendation 1-3: Encourage walkable "village neighborhood" development to enhance employment and housing opportunities.

Recommendation 1-4: Encourage more expansive single-family zoning definitions which would allow for flexible multi-generational housing, in-law and accessory apartment living arrangements.

Recommendation 1-5: Assist communities in conducting zoning ordinance reviews and developing recommendations to provide for workforce housing.

Goal 2: Develop and implement a comprehensive public outreach campaign to increase education and training opportunities for fair housing and housing needs in the region

Recommendation 2-1: Promote and host educational workshops and training sessions on housing resources, law and fair housing issues. Specifically work with NHHFA to promote the Housing Awareness public education campaign to promote local acceptance of a variety of housing options.

Recommendation 2-2: Develop a "best practices" resource guide that highlights what other states are doing to encourage/incentivize/require affordable housing, such as 40-B in Massachusetts.

Recommendation 2-3: Clearly distinguish and educate local officials and residents on the differences between manufactured and mobile homes. Manufactured homes are reliably affordable and not mobile.

Recommendation 2-4: Promote "inter-generational communities" and educate its potential benefits, such as seniors being available to volunteer at daycare if residing near a school.

Goal 3: Work to address statewide housing issues impacting the Southern NH region

Recommendation 3-1: Balance existing HUD entitlement funding between the revitalization of impacted areas (those with housing problems, minority and/or low-income concentrations) and the creation of new affordable housing in non-impacted areas.

Recommendation 3-2: Encourage public transportation services, in all its myriad forms, such as Rideshare.

Goal 4: Monitor statewide, regional and local trends to ensure housing needs are being met

Recommendation 4-1: Encourage communities to conduct a spatial inventory of where development is occurring, as well as an inventory of affordable housing units.

Recommendation 4-2: Continue to conduct a Regional Housing Needs Assessment to determine where regional cooperation is needed in order to meet housing needs.

Recommendation 4-3: Work with NHHFA to incorporate statewide trends, results and data into regional analysis in order to guide regional and local recommendations and plans.

MOVING SOUTHERN NH FORWARD Volume 2 Chapter 3: Transportation



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.

Adopted by the Planning Commission on December 16, 2014

Regional Comprehensive Plan 2015

for the Southern NH Planning Commission Region



Prepared by the Southern New Hampshire Planning Commission

Adopted on

December 16, 2014

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The purpose of the Transportation Chapter is to provide the public and decision-makers with a strategic analysis and evaluation of the region's transportation infrastructure; existing and future transportation conditions; key transportation issues and needs recognized through the public outreach events, activities and surveys; and the key goals and recommendations of the plan, including the background information and data which support this evaluation. This chapter is not meant to serve as a comprehensive transportation plan. Rather, it is a strategic integration and evaluation, taking into consideration the sustainability and livability principles and themes as outlined in Volume 1 of the Plan.

VISION & PURPOSE

The Transportation Chapter is founded upon the following Value Statement:



Expanding and improving upon our local and regional transportation choices for all modes of travel, including bicycling, walking and public transit; choice needs to be a priority to enhance our region.

This Value Statement is also in line with New Hampshire's Livability Principles, which state:



"Transportation Choices provide a number of options that help people safely and efficiently get where they need to go, whether it is by walking, driving, biking, public transportation, carpooling, or taking a train or plane. Transportation networks should make it easy to get from one place to another, and should also allow the efficient movement of goods to support the economy (commercial freight, rail, and air transport)."¹

Public input collected via Granite State Future (GSF) public outreach efforts, including regional visioning workshops, comments submitted online, and a telephone survey conducted by the University of New Hampshire, demonstrate widespread public support for expanded transportation choices.

PUBLIC INPUT FROM SNHPC OUTREACH

As captured in SNHPC's Public Outreach Report, the Transportation Choices theme is one of three major themes that emerged from the public input received: everyone values having some choices for transportation and we could be doing a better job of making more choices available to all. Those who live, work and play in Southern New Hampshire would like to see improved transportation infrastructure for all modes of transportation; not only for the automobile, but especially for bicycles, pedestrians and public transit. Transportation should be a choice above all, but for a lot of our communities, options may be

¹ Granite State Future, 2014. History and Principles. <u>http://www.granitestatefuture.org/about/history-and-overarching-principals/</u> (last accessed February 12, 2014)

limited by the infrastructure that exists currently and the feasibility of developing creative solutions for expanding those options in our region.

WRITTEN COMMENT CARDS

Among all the written public comment cards, nearly half (45 percent) of the written comments collected indicated transportation issues as the main weakness of the region. The figure below displays the categories of comments with transportation suggestions.



FIGURE 1: PUBLIC COMMENTS ON IMPROVING TRANSPORTATION CHOICES

Public transportation is the most frequently requested Transportation Choices improvement with over one third (35 percent) of comments associated with this general outreach question. Respondents asked for expanded bus service and public transportation for local trips especially; one comment also wanted to see smart public transportation linked with smart phone applications.

Pedestrian improvements were the second most popular improvement suggested (23 percent), and included more sidewalks and general pedestrian amenities. One comment emphasized the importance of sidewalks by noting that some people must walk to get places.

Transportation infrastructure upgrades (16 percent) were proposed to reduce traffic and better connect neighborhoods. Some comments recommended commuter trains to Boston (14 percent).

Other comments requested that bicycles be better included in roadways (12 percent), not just for recreation purposes, but also for commuting purposes. A selection of specific comments listed by comment category is displayed in Table 1.

TABLE 1: PUBLIC COMMENTS ON IMPROVING TRANSPORTATION CHOICES

Categories	Comments	
	Better public transportation, including rail	
1 More public transportation/	More bus service locally	
buses/ bus service	Smart public transportation such as a small efficient bus routed and scheduled by a smart phone app.	
	Longer bus hours. Safer walkways	
	More rails to trails and other safe places (sidewalks) to walk the dogs and kids. Connecting the parking lots on South Willow to make multiple visits easier.	
 Better walkability/ more pedestrian amenities 	Some people have to walk for transport. I'd like to see more sidewalks.	
	Public transportation, more sidewalks	
	Better public transportation, more pedestrian amenities to make places more walkable, more economic development and focus on job creation	
	Need to work on infrastructure - traffic is an issue in many Southern NH towns/cities	
3. Improved transportation infrastructure	Manchester needs to embrace its status as a major New England city, and assert itself as an affordable, urban alternative to Boston, Providence and Portland. It needs better planningmixed-use development on parking lots and empty lots just outside of downtown, stronger neighborhood centers to anchor areas outside of downtown, and better public transit. Right now, downtown is a great place to visit and there are several wonderful neighborhoods, but they aren't connected well.	
4. Train to Boston/ commuter	Rail to Boston; More bike paths; First rate schools	
rail	Commuter Rail, more high tech jobs, fiber optic internet ("FIOS")	
5 Moro bioveling opportunities	Better roads for road bicycling in the community	
5. More bicyching opportonines	More bike lanes and bike paths for commuters, not just for recreation.	

VISUAL PREFERENCES SURVEY

The results of the Visual Transportation Preferences survey indicate a need for supporting many different transportation options, at percentages suggesting a preference for increasing public transportation, bicycling, and walking to modal shares greater than currently present; see Figure 2.

As shown in Figure 2, participants' selection of images indicated they most preferred to drive (23 percent) or use a train (23 percent), very closely followed by biking (20 percent) or walking (18 percent). Using a bus (11 percent) was preferred by many respondents at the two events held in Manchester (15 percent and 16 percent), while fewer people listed it as their preference at the third event, the Deerfield Fair (5 percent). Some participants also listed rideshares (5 percent) as their preference. Overall, participants in the Visual Preference survey demonstrated preferences for a range of different transportation options, with no single option preferred by even a quarter of participants. The results suggest that residents want a diversity of choices.



FIGURE 2: TRANSPORTATION CHOICES: VISUAL PREFERENCE SURVEY

REGIONAL VISIONING WORKSHOPS AND FORUMS

Public input collected at the Regional Visioning Workshops also supports transportation choices as a key theme. Transportation was the most discussed topic at the regional workshop held in New Boston. At the Candia regional workshop, transportation was named as a "huge issue" for those without cars and young people. Comments such as this one at the regional workshop in Derry express similar sentiments: "Transportation [is] absolutely critical—we do not do it more—we need more options. [It] needs to be integrated locally." At all three of these workshops, participants repeatedly stated that while cars are currently the main form of transportation, they want more choices. Investments in transportation infrastructure were considered important for a multitude of reasons: improving the safety of bicyclists and pedestrians, attracting and retaining youth, boosting the economy and tourism, strengthening social connections in their communities, protecting the environment, increasing energy efficiency, and better serving children, seniors, and others who cannot drive.

Transportation Choices was also a reoccurring topic of discussion at other public forums as well. In the Neighborhood Conversations, the SHINE Senior Program members, Raymond Coalition for Youth, Manchester Shared Youth Vision Team, and Greater Manchester Clergy Association named transportation as an area for improvement. Community of Interest discussions with Liberty House members and Hillsborough Advisory Council members also yielded transportation choices as a focus for improvement, as did discussion at the Community of Place forum in Manchester. According to the Communities of Interest focus groups that took place across New Hampshire, transportation was the top issue of importance for demographic groups such as senior citizens; low income populations; minority, immigrant, and refugee populations; disabled populations; and youth.

PUBLIC INPUT FROM UNH TELEPHONE SURVEY

UNH Telephone Survey results provide further insight into residents' transportation preferences:

 With regard to walking and biking, a large majority of residents (89 percent) said they want their community to promote safe places to walk or bicycle when they were asked "What should be actively encouraged in your community?" This suggests broad support for Complete Streets that provide accommodation for not only automobiles, but also for pedestrians and bicyclists.

of residents want their community to promote safe places to walk or bike

89 percent

- A majority of residents (55 percent) also stated that they want policy makers to invest in availability of bike paths. Households earning over \$90,000 are more likely to want investment in the availability of bike paths.
- Fewer residents (32 percent) wanted policy makers to invest more in sidewalks and crosswalk areas. Household earning less than \$20,000, those aged 30 to 39 and those who have lived in New Hampshire for 6-10 years are more likely to want investment in sidewalks and crosswalk areas.
- Nearly three-fourths (73 percent) of residents think policy makers should invest more money in maintaining roads, highways and bridges (with 55 percent willing to pay more in taxes to do so).
- Over half the region's residents want investments in improving the availability of senior and special needs transportation (56 percent).
- About half of residents want investments in expanding bus service between major cities (52 percent).
- Investing in reduced congestion on major roads is desired by nearly half of residents (45 percent).

73 percent of residents want policy makers to invest more money in maintaining roads, highways, and bridges

- Slightly less than half of residents would like policy makers to invest more in traffic safety (44 percent).
- Over a third of residents think that policy makers should invest to improve the availability of public transportation (36 percent). Households earning less than \$40,000 and young people (18 to 29) are more likely to want investment in improving the availability of public transportation.

Overall, residents were split on whether or not to increase "investments in transportation." Note that while nearly 90 percent of residents wanted their community to "promote" safe places to walk and bicycle, significantly fewer residents wanted policy makers to "invest" in facilities for the these same initiatives. See Figure 3 for more information from the UNH Telephone Survey on residents' preferences for public investment in transportation.



FIGURE 3: SHOULD POLICY MAKERS INVEST MORE IN TRANSPORTATION? - UNH TELEPHONE SURVEY, 2013

KEY ISSUES & CONCERNS

Residents of Southern New Hampshire view transportation as one the two biggest areas for improvement in the region. Throughout the outreach process and the writing of this chapter a number of key issues and concerns came to the forefront of focus, as follows:

- [Choices] Residents of the Southern NH region want more choices than are offered by the current transportation infrastructure. Currently, the overwhelming majority of residents drive a single-occupancy motor vehicle to get to work. However, public input indicates that residents want to be able to choose from bus transit, commuter rail, bicycling, and walking as well.
- [Safety for all users] Safety is always a goal at the forefront of transportation planning. The SNHPC Region experiences on average 20.5 transportation-related fatalities per year (2002-2011) compared to over 100 fatalities per year statewide. Currently the State has a laudable "Driving Towards Zero" initiative that calls attention to the goal of reducing transportation fatalities. Complete Streets initiatives initiatives that improve safety for all users: the handicapped, pedestrians, bicyclists, and those riding motorcycles or travelling in cars are currently not in place but could improve safety, particularly for the most vulnerable users.
- [Healthy transportation] Rates of obesity and overweight individuals are increasing in the state; healthy transportation choices that allow physical activity to be incorporated into daily routines are needed. Infrastructure and facilities that support healthy transportation options such as bicycling and walking are important for providing choices that improve health outcomes for the region's residents.
- [Affordability] In the Southern New Hampshire Region, the majority of neighborhoods are not considered affordable in terms of combined transportation and housing costs. Approximately 70 percent of residents do not live in affordable neighborhoods². The majority of affordable neighborhoods in the region are located in Manchester. Additionally, 100 percent of the residents spend more than 15 percent of their income on transportation, which is the maximum percentage considered affordable by the H+T index. This unaffordability is due to the high dependency upon automobile transportation.³
- [Emissions] Transportation has large impacts upon the environment and human health. Over a quarter of greenhouse gas (GHG) emissions in the US are attributed to the transportation sector. Average growth of gasoline consumption per decade in NH is 35 percent, suggesting a trend of greater volumes of GHGs. Strategies that reduce vehicle miles travelled (VMT) are key to reducing transportation emissions. Improving transportation alternatives to single-occupancy motor vehicles is the focus of VMT-reduction strategies.
- [Funding] Transportation funding priorities on the whole are very automobile-focused, although some funding opportunities exist for alternatives. Critical lack of funding at the state level results in continuing deterioration of existing road/bridge infrastructure, as well as shortage of innovation/new funding for transit and other modes. Economic sustainability for funding the transportation system is challenged by uncertain federal budgets and limited municipal resources as well. The ever-growing network of roads and bridges requires continuous maintenance costs in

² Note: data unavailable for the Town of Windham

³ The Center for Neighborhood Technology. 2013. H+T Affordability Index. Retrieved from http://htaindex.cnt.org/ (last accessed 13 November 2013)

order to prevent even greater costs of larger-scale replacement. 22 percent of the region's highway pavement is in poor condition and this percentage has been increasing since 2000.

- [Economic Development] Transportation plays a central role in economic development. The transportation system needs to not only ensure the mobility of people and goods, but also needs to maximize the accessibility of businesses and contribute to vibrant downtown and commercial areas. Complete Streets projects that improve street facilities for all users have been found to increase foot and bicycle traffic, result in greater sales, attract new businesses, create jobs, increase property values, and input local dollars into the economy.
- [Retaining Youth] An oft-repeated concern heard during public outreach was that youth are leaving the state and region. Many possible reasons for this abound, but limited transportation alternatives and the high cost of commuting by automobile-based transportation may be one factor. Youth need affordable transportation choices, but the current regional transportation system often requires relatively-expensive car ownership to get around. National trends indicate that youth are driving less than in previous generations, and "alternative" modes of transportation, such as bicycling and public transit, are growing in popularity among youth in particular. Bicycle and pedestrian facilities e.g. bikes lanes and sidewalks could help increase livability and attract youth.
- [Education] There is a lack of information among lawmakers and public as to the need to diversify modes and increase investment in public transit, both in rural and urban areas. Municipalities in the region are new to "Complete Streets" policies and other alternative transportation planning efforts; an initial knowledge gap needs to be bridged to overcome current challenges. A lack of public knowledge of the connection between transportation infrastructure and regional and state economic development opportunities also shapes policy. Greater education on our transportation challenges could spur more conversation on the region's transportation choices.
- **Congestion**: It is estimated that the total number of highways (highway sections) currently operating at or near capacity today will remain the same or increase in traffic congestion if no improvements are made by the year 2040. While the total number of vehicle miles traveled (VMT) appears to be decreasing 5-6 percent regionally, the total number of daily vehicle trips is expected to continue to increase on average 0.7 percent annually in the region. Providing transportation alternatives and demand management techniques can help reduce vehicle trips in terms of numbers and miles travelled.
- [Climate adaptation] Transportation infrastructure often bears the brunt of weather-related disasters such as severe storms and flooding. With climate change, the likelihood of these disasters has been increasing and will continue to increase, underscoring the need for investment in infrastructure and adaptation, in additional to greater transportation choices.

EXISTING AND FUTURE CONDITIONS

Topics addressed in this section are as follows: safety, movement of goods, transportation options and Complete Streets, connectivity, walkability and bikability, energy efficiency and greenhouse gas emissions, parking options/ travel demand management, smart growth and land use, financing, transportation improvement programming, and coordinating local, regional, and state goals.

RED LISTED BRIDGES

27 Red Listed Bridges: 13 State & 14 Municipal in Southern New Hampshire

There are a total of 27 bridges – 13 state-owned and 14 municipal-owned – in the region that are Red Listed. The13 Red Listed state bridges in the region represent 9.0 percent of the 145 Red Listed state bridges in New Hampshire.^{4,5} A Red List designation indicates that a bridge has one or more major structural elements in poor condition or requires weight limit postings. State-owned Red List bridges are inspected twice per year, and municipally-owned Red List bridges are inspected once a year. Different actions may be taken with regard to red-listed bridges, including replacement or rehabilitation, scheduling for replacement or rehabilitation in the Ten-Year Plan, or plans made for the bridge to be addressed by the New Hampshire Department of Transportation (NHDOT) Bridge Maintenance Bureau. Other bridges may need to be added to the Ten-Year Plan, or simply be monitored and kept in service.⁶ Addressing red-listed bridges is a NHDOT stated priority for development of the next Ten-Year Plan.

The 1-93 expansion⁶ and the I-293 Exit 4 project, currently underway, are two projects aimed to reduce the number of red-listed bridges in the region. The I-293 Exit 4 project is part of the NH Bureau of Turnpike's Capital Program to address red list bridges and improve safety and congestion on the Turnpike System. Expanding the Capital Program (which is nearing completion with an 80 percent completion rate in July 2013) could provide additional revenue for improving Red-Listed bridges. Some state projects are authorized but not funded, while other bridges are close to becoming red listed.

Challenges associated with Red-Listed bridges include the cost to rehabilitate or replace them, as each bridge can cost millions of dollars. Additionally, a large portion of the bridge inventory is reaching the end of its design life, resulting in the projected addition of further bridges to the Red List. ⁶ Despite many bridge projects undertaken, the number of Red-Listed bridges in the state has remained roughly constant from 2010 to 2011, ranging from 140 at the lowest (in 2012) to 149 at the highest (in 2011).^{4,6} Thirdly, current preservation activities are aimed to extend the life of a bridge with insufficient investment. Delaying maintenance and trying to address the worst bridges first increases rate of bridge deterioration,

http://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/nhdot_redlist2013-04-01.pdf (last accessed July 25 2013).

⁵ New Hampshire Department of Transportation. 2013. NHDOT Municipal Red List. Concord, NH: New Hampshire Department of Transportation. http://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/nhdot_municipal_redlist2013-04-

25 July 2013).

⁴ New Hampshire Department of Transportation. 2013. NHDOT Red List Summary. Concord, NH: New Hampshire Department of Transportation. http://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/nhdot_redlict2013.04.01.pdf (last)

 <u>01.pdf</u> (last accessed 25 July 2013).
 ⁶ New Hampshire Department of Transportation. 2012. 2012 Annual Report. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/media/documents/2012AnnualReport.pdf</u> (last accessed

reduces bridge life expectancy, and requires major bridge rehabilitation or replacement at much higher costs. ⁶ The same could be said of road maintenance as well.

Because greater numbers of bridges are aging, the NHDOT is "evaluating methods to extend the lives of bridges while reducing future bridge costs by keeping them in good condition." Current NHDOT strategies for tackling Red-Listed bridges include:

- Increase bridge preservation efforts to reduce the rate of deterioration;
- Use better methods and materials to extend the life expectancy on all new bridges; and
- Include bridge preservation/rehabilitation work with roadway work to attain a better economy of scale and reduce the cost of bridge work⁶

These strategies will be needed in order to prevent the number of red-listed bridges from increasing and to most efficiently manage the cost of rehabilitation and replacement. See Table 2 and Table 3 below for details on current Red-Listed bridges in the Southern New Hampshire Region.

Town	Year Red- Listed	Location	Action	Status
Bedford 2008		NH101 over Pulpit Brook	Replace	Needs to be added to the Ten-Year Plan; currently in draft Ten-Year Plan
Bedford	2009	NH114 over Brook	Rehab	In the Ten-Year Plan
Bedford	1999	US 3 over FEE TPK	Replace	Under Construction
Deerfield 2010		NH107 over Freese's Pond	Replace	Needs to be added to the Ten-Year Plan; currently in draft Ten-Year Plan
Manchester 2012		I-293, FEE TPK SB over Black Brook	Rehab	In the Ten-Year Plan*
Manchester	2012	I-293, FEE TPK NB over Black Brook	Rehab	In the Ten-Year Plan*
Manchester 1997		I-293, FEE TPK over N BR Piscataquog River	Rehab	In the Ten-Year Plan
Manchester 1999		I-293, FEE TPK over S BR Piscataquog River	Rehab	In the Ten-Year Plan
Manchester	1999	I-293, FEE TPK Spur over S BR Piscataquog River	Rehab	In the Ten-Year Plan
Manchester	1999	I-293, FEE TPK over Spur D	Rehab	In the Ten-Year Plan
Manchester 1999		I-293 Ramp over I-293, FEE TPK	Replace	In the Ten-Year Plan
New Boston	2004	NH 13 over S BR Piscataquog River	Rehab	To be addressed by Bridge Maintenance
Raymond	1990	Dudley Road over Lamprey River	Remove	Project cancelled

TABLE 2: STATE RED LISTED BRIDGES BY TOWN⁴

* Work delayed pending completion of Manchester 16099 planning study.

Source: NHDOT and SNHPC

TABLE 3: MUNICIPAL RED LISTED BRIDGES BY TOWN⁵

Town	Year Built & Rebuilt	Location	
Auburn	1850, 1991	Griffin Mill Road over Maple Falls Brook*	
Bedford	1928, 1984	Beals Road over Baboosic Brook	
Candia	1920	Old Deerfield Road over Brook	
Candia	1930	Beane Island Road over Bean Brook	
Chester	1932	Hanson Road over Exeter River	
Deerfield	1930	Blakes Hill Road over Lamprey River	
Londonderry	1930	Stokes Road over Little Cohas Brook	
New Boston	2004	Dougherty Lane over Mid Br Piscataquog River	
New Boston	1920, 1973	Hilldale Lane over S Br Piscataquog River	
Weare	1973	Lull Road over Peacock Brook	
Weare	1973	Old Francestown Rd over Peacock Brook	
Weare	1940	Peaslee Road over Piscataquog River	
Weare	1930, 1996	Burroughs Road over Choate Brook	
Windham	1984	Castle Hill Road over Beaver Brook	

*Currently closed Source: NHDOT and SNHPC

PAVEMENT CONDITIONS

22 percent of Pavement is in Poor Condition in Southern New Hampshire

Pavement condition measuring, reporting, and monitoring are based upon the Ride Comfort Index and additional pavement condition data. The 5.0-point scale Ride Comfort Index, or RCI, measures the roughness of a road traveled by a motorist. It has been used by NHDOT since 1995. "Good" is the equivalent of a score greater than 3.5 and requires no work, "Fair" is between 3.5 and 2.5 and requires some work, and "Poor" is defined as less than 2.5 and requires major work. ^{7,6} The Figure 4 displays the percentage of miles of pavement in the Southern New Hampshire region by condition:

⁷ New Hampshire Department of Transportation. 2011. Pavement Condition: Collection Year 2010. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/org/projectdevelopment/planning/typ/documents/c Pavement Condition.pdf</u> (last accessed 26 July 2013).

FIGURE 4: MILES OF PAVEMENT BY CONDITION IN SOUTHERN NH



Approximately, 31 percent of the region's pavement is in good condition, 47 percent is in fair condition, and 22 percent is in poor condition. Statewide, since 2000, the percentage of pavement in good or fair condition has been steadily decreasing and the percentage of pavement in poor condition has been steadily increasing, with the minor exception of 2010 due to funding providing by the American Recovery and Reinvestment Act.⁶ With the current funding levels, resurfacing mileage, and unpredictable cost of asphalt cement, NHDOT states that it will not be possible to maintain the good or fair mileage at the current level. Based on the Pavement Management System, funding will need to be increased from \$57M to \$69M per year in order to maintain the current mileage of roadways in good or fair condition. If funding levels are not increased, then the downward trend is projected to continue.^{8,9}

These trends and financing concerns affect the entire State, including the Southern New Hampshire region. NHDOT states a need to develop a permanent sustainable means to hold the existing condition level constant and prevent further deterioration of the network. The safe and efficient movement of people and goods is significantly affected by the condition of New Hampshire's transportation infrastructure. Poorly maintained pavement (and bridges, rail lines, buses, and airport runways) not only creates unsafe conditions for the traveling public, but also increases travel time, decreases capacity, and increases maintenance costs. If additional funding is not found and the roadway network continues to deteriorate, the cost of restoring roadways back to good condition increases exponentially. For example, NHDOT says that while periodic resurfacing of a roadway with a thin hot mix asphalt overlay costs approximately \$40,000 per mile, full depth reclamation and repaving with all new hot mix asphalt costs approximately ten times that - \$400,000 per mile.^{8,9}

⁸ New Hampshire Department of Transportation. 2011. 2011 Annual Report. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/media/documents/2011-annual-report.pdf</u> (last accessed 29 July 2013).

⁹ New Hampshire Department of Transportation. 2011. Performance – 2011: State Highway Pavement in Good or Fair Condition. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/org/commissioner/balanced-</u> <u>scorecard/department/documents/bs_performance_pavecond.pdf</u> (last accessed 29 July 2013).

TRANSPORTATION ACCIDENTS AND FATALITIES

20.5

Transportation Fatalities/ Year in Southern New Hampshire There are 20.5 transportation-related fatalities per year in Southern New Hampshire, based on 2002 to 2011 NH DOT data; see Table 4. There are over 100 fatalities annually in the state as a whole. According to NHDOT, the number of fatal accidents in New Hampshire decreased by approximately 23 percent between 2005 and 2010. In

2009 there were 110 highway fatalities, the lowest number since the early sixties. In 2011, an even lower total of 90 fatalities was achieved, although the 2010 number was comparable to pre-2009 numbers.¹⁰ A national data comparison shows New Hampshire ranked 7th in the lowest number of crashes per capita in the nation in 2010. NHDOT credits the decrease in fatalities in part to engineering enhancements, public education, and increased law enforcement participation in statewide campaigns. Examples of engineered safety improvements include paving roadway shoulders, improving guardrails, installing rumble strips, enhancing delineation, and making intersection safety improvements.¹¹

Year	Southern NH Fatalities	No. Accidents with Fatalities in Southern NH	NH Fatalities ^{12,10}
2002	11	10	127
2003	25	22	127
2004	24	21	171
2005	35	34	166
2006	21	20	127
2007	21	21	129
2008	18	18	138
2009	21	19	110
2010	14	11	128
2011	15	15	90
Average	20.5	19.1	120.3

TABLE 4: TRANSPORTATION FATALITIES IN SOUTHERN NEW HAMPSHIRE AND THE STATE 2002-2011

Source: NHDOT

High accident locations are also considered with regard to transportation safety. For this purpose, high accident intersections are defined by SNHPC as intersections with 10 or more accidents in four years (between 2008 and 2011). Accidents at or within 200 feet of an intersection were considered to be associated with the intersection. The six locations with the most accidents are as follows. Note that the

¹⁰ <u>http://vtrans.vermont.gov/sites/aot/files/documents/other/2012TriStatePMReport.pdf</u> (last accessed October 18, 2013).

¹¹ Driving Towards Zero New Hampshire, 2013. The Numbers. NHDOT, AAA, CHaD, City of Manchester, FHWA, NHTSA, NHDOJ, NHDOS, Victims Inc., & BIANH. <u>http://www.nhdtz.com/resources/detail/19</u> (last accessed October 18, 2013).

¹² State of New Hampshire (2007). New Hampshire Strategic Highway Safety Plan. <u>http://www.nh.gov/dot/org/projectdevelopment/highwaydesign/documents/shsp_2007.pdf</u> (last accessed October 18, 2013).

number of accidents is in parentheses. **S** indicates than an intersection has been studied, whereas **NS** indicates that it has not been studied.

- Manchester: Amoskeag Rotary / I-293 Exit 6 / Front St / Eddy St / Goffstown Rd / Amoskeag St (Unknown) I-293 Exit 6 & 7 Planning Study
- 2. Bedford: S. River Road/ Kilton Rd (98) S
- Manchester: Second St/ Queen City Ave/ Woodbury St (89)
 NS
- 4. Manchester: NH 28 S Willow St/ Weston Rd (80) NS
- 5. Manchester: NH 28A Mammoth Rd/ Bridge St/Wellington Rd (78) NS
- 6. Londonderry: NH 102 Nashua Rd/ Gilcreast (77) S

Table 5 provides information on the number of high accident locations in each municipality in Southern New Hampshire.

TABLE 5: HIGH ACCIDENT INTERSECTIONS IN SOUTHERN NEW HAMPSHIRE

Municipality	High Accident Intersections	Municipality	High Accident Intersections
Manchester	229	Raymond	5
Derry	29	Candia	2
Londonderry	26	Chester	1
Hooksett	22	Deerfield	1
Bedford	17	Auburn	0
Windham	13	New Boston	0
Goffstown	10	Weare	0

Source: SNHPC

Figure 5 provides information on the high accidents locations in the City of Manchester. Out of the 229 high accident intersections identified by SNHPC, the majority (132) had between 10 and 19 accidents each over four years. 57 intersections had between 20 and 29 accidents, 20 intersections had between 30 and 39, 14 had 40-59, 3 had 60-79 and 3 had 80-100+.

355 High Accident Locations in Southern NH



FIGURE 5: MANCHESTER HIGH ACCIDENT INTERSECTION (SOURCE: SNHPC, NHDOT DATA)

MOVEMENT OF GOODS

The movement of goods in the region by trucking, rail, waterways, and air, is a critical part of supporting the economy. The tonnage of freight shipped by all modes is one key statistic used to assess this transportation metric.

68,600,000+ tons of goods annually shipped in the State of New Hampshire

In 2009, NHDOT calculated that 68,677,213 tons of goods were shipped annually in New Hampshire.^{13,14} A breakdown of freight by region is not available at the present time. This measure includes four types of transportation that move freight into, out of, within and through the State of New Hampshire via the intermodal transportation system. The vast majority of goods in New Hampshire are shipped via truck transport (88 percent). Other means of shipping freight, in order from most used to least used include rail (7 percent), waterway (5 percent), and air (~0 percent). See Figure 6 below for a graphic representing modal share.¹³

¹³ New Hampshire Department of Transportation. 2011. NHDOT Balanced Scorecard 2011: Measuring, Managing and Communicating NHDOT's Transportation Performance. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/org/commissioner/documents/bsc_booklet_weblr.pdf</u> (last accessed 30 July 2013).

¹⁴ New Hampshire Department of Transportation. 2011. Performance – 2011: Total Freight Shipped Via All Modes. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/org/commissioner/balanced-scorecard/department/documents/bs_performance_totalcargoshipped.pdf</u> (last accessed 30 July 2013).


FIGURE 6: NH FREIGHT SHIPPING MODES (NHDOT, 2011)

A study by the OECD and cited by organizations such as the Vermont Agency of Transportation lists rail as the least environmentally damaging method of shipping goods by a number of different metrics. By comparison, freight trucks produce significantly more air pollution than freight rail. Trucks also produce more noise than rail since rail has the benefit of being of an intermittent nature. The average cost of accidents, noise, local pollution, and greenhouse gases per 1,000 tons/km is around four times (400 percent) higher for freight trucks than for freight rail, making rail the preferred shipping mode for multiple factors.¹⁵

A comparison of New Hampshire to other states shows that it uses relatively more trucking and fewer rails for freight than Vermont. Over 17 percent of the roughly 55,000,000 tons of freight is shipped every year in Vermont is shipped by rail.¹⁵ In Maine, about 80 percent of goods are shipped via truck, not including courier services.¹⁶

A variety of factors affect the number of tons of freight shipped. Factors include the demand for goods, the strength of the economy (regionally and nationally), the availability and condition of transportation infrastructure, the health of the freight industry, and competition within the freight industry. NHDOT notes this core metric figure may not be a good current estimation given that the 2009 data was collected and processed before the current recession. The future annual amount of freight shipped may also significantly differ. NHDOT expects freight demand (measured in tons) to double by the year 2025, nationwide. To accommodate this growth and remain competitive with surrounding states, NHDOT emphasizes continued funding of capacity project such as I-93, and rail, port, and airport modernization and expansion.¹³

¹⁵ Vermont Agency of Transportation (2013). Freight services. <u>http://rail.vermont.gov/freight</u> (last accessed 18 October 2013).

¹⁶ TRIP (2009). Falling Behind: The Condition and Funding of Maine's Roads, Highways & Bridges. <u>http://www.mbtaonline.org/LinkClick.aspx?fileticket=Dy3NrJ%2FKliE%3D&tabid=36</u> (last accessed 18 October 2013).

HIGHWAY CAPACITY

Future conditions for the vehicle-focused roadway network have been modeled by SNHPC. Regionally, total daily vehicle trips are expected to increase from 1,754,509 trips per day in 2005 to 2,367,270 in 2035. This increase is a result of 1) projected socio-economic growth in the 14 SNHPC communities and 2) overall background growth in statewide travel. This increase in generated trips is equivalent to an average increase of 1.00 percent annually. It should be noted that, as economic conditions change over the 30-year planning period, some years will experience accelerated growth in trips while other years will show slower growth. Although predominant travel patterns will remain essentially unchanged throughout the 30-year planning period, the construction of significant projects such as Raymond Wieczorek Drive will modify regional travel patterns and impact traffic on other principal regional routes such as I-293, F.E. Everett Turnpike, US 3, and Brown Avenue. In general, trips to/from Manchester will increase at a slower rate compared with elsewhere in the region because many Manchester TAZs have already or will soon reach their built-out capacity. As a result, additional growth will occur in other less built out portions of the region.

The 2035 average daily traffic volume assignments for 100 selected spot locations of the region's roadways are examined in the Regional Transportation Plan. Projected growth at the 100 selected spot locations varies between 0.39 and 4.35 percent per year; assuming growth between 2005 and 2035 is uniform. On an overall basis, growth in terms of daily link volumes averages out to an annual rate of 1.36 percent.

A commonly used measure of the overall use of a region's highway system is the daily vehicle miles traveled (VMT) statistic. In order to consider the effect of future VMT upon the highway network, a "No-Build" scenario was considered in which no new highway improvement projection are built. The 2035 projections using the No-Build highway network reveal that, overall, regional VMT will total 10,236,483 up from 7,215,142 in the base year. This amount of growth in vehicle miles traveled translates into an average annual increase of 1.17 percent over the 30-year planning horizon.

The SNHPC Long Range Regional Transportation Plan explains that the term "highway capacity" refers to the maximum number of vehicles that can be expected to traverse a section of roadway under certain prevailing traffic, roadway and control conditions. This term, usually expressed in vehicles per hour, refers to a rate of flow and not a total daily volume. Based upon the link capacities that are input into the model, roadway sections that are or will become capacity deficient were identified for a 2010 Base Year and a 2035 No-Build (existing highway network assuming that no projects are completed) scenario.

The results of the 2010 Base Year assignment indicate that sections of highway currently operating at over capacity during peak hour periods include:

- NH 101 (Bedford)
- I-93 and I-293 in Londonderry and Manchester
- NH 114A in Goffstown
- NH 102 in Londonderry
- US 3/NH 28 in Hooksett

The results of the future No-Build assignment indicate that by 2035, the sections of highway currently operating at or over capacity during peak hour periods would expand to include:

- NH 101 in Auburn and Bedford
- NH 102 in Chester and Raymond
- F.E. Everett Turnpike in Manchester and Bedford

Map 2 presents the 2040 No-Build Roadway Capacity Deficiencies identified from the Base Year and 2040 No-Build model results. A comparison of the congested roadway corridors between Map 1 and Map 2 reveals the impacts of the incremental growth of traffic under a scenario where no improvements to the regional transportation infrastructure are implemented. Under these conditions, without improvements to expand the capacity of the roadway network, travelers will experience increasing amounts of peak hour traffic congestion resulting in increased travel times, increased fuel consumption and increased vehicle emissions. Additionally, businesses operating commercial vehicles under these conditions will experience reduced productivity through increases in travel times and fuel costs.

Map 3 displays planned transportation improvements, some of which will increase highway capacity. In particular the Interstate 93 and F. E. Everett Turnpike projects are intended to improve North – South highway travel in the region. See map for details.









Additonal Projects

- 1) Manchester Transit Authority- Operating and Capital Assistance
- 2) CART- Operating and Capital Assistance
- 3) Portsmouth-Manchester 20222-
- Bus Service (2016)
- 4) Boston Express Commuter Bus Service (2015 - 2019)
- 5) Manchester Boston Regional Airport -Modernization / Preservation (2015-2024)
- 6) Nashua Bedford F.E. Everett Turnpike -ITS Development (2017)

Hooksett SNH17 - US3 / NH28 -Reconstruct / Widen from Martins Ferry Rd to West Alice St

Manchester 24206/24212 -Salmon St - Ramp Bridge

Planned Improvements taken from the NH DOT's recommendation for the Ten Year Transportation Improvement Plan 2015-2024 (DRAFT)

*Text denoted in red represents projects that are still in need of additional funding or anticipate future funding through toll increases

Manchester 14966- I-293/ F.E. Everett Turnpike- Exit 4 Bridge Rehabilitation / Replacement (2017)

Manchester - 15837 **Bridge Rehabilitation**



PUBLIC TRANSIT

3,400,000+ annual ridership utilizing public transit in Southern New Hampshire

In 2011, the Southern New Hampshire region had an annual ridership of 3,415,291utilizing public transit. According to NHDOT, ridership measures one-way trips, i.e., transit vehicle boarding. Transit ridership is a common measure of transit service and is reported to the Federal Transit Administration. For perspective, the population of the Southern New Hampshire region was approximately 275,000 people in 2010. On average each person took 12.4 trips via public transit annually.

The Manchester Transit Authority (MTA) is a major provider of public transportation in the Southern New Hampshire region. As displayed in Figure 7 below, ridership on many MTA routes has increased over the last three fiscal years (July 2010-June 2013). Overall ridership stood at 432,120 for fixed route services in fiscal year 2013. According to the 2013 MTA Short Range Transit Plan, average yearly load factors (the percent of seats that are occupied on any given route, expressed in terms of vehicle capacity) increased on 5 of their 10 routes from FY2010-FY2012. In addition to local routes, MTA initiated express service to Nashua in November 2010 and to Concord in October 2011. These routes have seen significantly increased ridership in the past 2-3 years.

In August 2013, SNHPC, in coordination with CNHRPC, NH DOT, and Steadman Hill Consulting, initiated a Manchester-Concord Transit Feasibility Study, the purpose of which is to determine the potential transit market for services between the two cities and Manchester Airport. The study, when complete, will provide alternatives to address long-term solutions for meeting transportation demands in the corridor. At the time of this writing, alternative potential services were being formulated, with commuter service and direct airport service as possibilities. As part of this study, MTA implemented a pilot program that has considerably increased service between the City of Concord and the Manchester Airport. MTA has implemented this service for an initial one year period while the demand study is being performed. Funding for the new service is provided through the Federal Transit Administration (FTA) with matching funds from State of New Hampshire toll credits.

Most transit systems in the state have seen their ridership increase over time.¹³ Transit ridership is expected to steadily increase through the next couple of years according to NHDOT projections.¹⁷ This increase could be because existing systems are attracting more riders, or because the availability of transit is expanding with longer hours, greater frequency or geographical reach, or a combination of factors. Changes to schedules to make them more convenient, new buses, and other improvements have increased ridership in the City of Manchester.¹³

¹⁷ New Hampshire Department of Transportation. 2011. NHDOT Balanced Scorecard - Executive Summary 2011. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/org/commissioner/documents/2011bsc_executivesummaryIr.pdf</u> (last accessed 30 July 2013).



FIGURE 7: MTA RIDERSHIP BY ROUTE, FY 11- FY 13 (MTA, 2013)

One challenge associated with public transit ridership is funding uncertainties. It is difficult to anticipate future funding levels that will be available for transit improvements, which in turn leads to increased ridership. A lack of funding at the state and local levels means the region is unable to utilize all the Federal Transit Administration (FTA) funding available since the local match cannot be found. This results in untapped FTA funding despite the need for funding. Additionally, New Hampshire is more reliant on funding provided by FTA than most states. Without fortuitous, unforeseen funding investments that would enable expanded services, a prudent projection for future ridership is that of modest gains as local systems are able to make incremental improvements. With additional funds, transit could be expanded

95.8 miles of public transit in Southern New Hampshire

and ridership increased by covering currently unserved areas and improving the frequency and convenience of existing services. ¹³

SNHPC calculates that public transit serves 95.8 miles in the region. This calculation is based on a best estimate from data available from local transit providers. Local public transit providers in Southern New Hampshire include Cooperative Alliance for Regional Transportation (CART) and Manchester Transit Authority (MTA), CART serves Chester, Derry, Hampstead, Londonderry, and Salem, with limited service only to Plaistow and Windham. (MTA) serves Manchester as well as Bedford, Hooksett, Goffstown, and Londonderry; and includes express service from Manchester to Nashua and Concord. Intercity bus services in the region include Boston Express Bus, providing service on I-93 between Manchester, Londonderry, Salem, and Boston and service on Rt. 3 between Manchester, Nashua, and Boston; Concord Coach Lines

providing service from Northern & Central NH to Boston with stops including Berlin, Littleton, Conway, Meredith, Tilton, Concord, and Manchester; and Peter Pan, providing service between Manchester and Amherst, MA.¹⁸

COMMUTING PATTERNS



FIGURE 8: COMMUTERS' TRANSPORTATION

The majority of SNHPC residents make daily trips to work by car, and this percentage has increased in the most recent decades. In 2009, 83.5 percent of SNHPC residents drove alone to work. See **Table 6**: **Commuting Methods in Southern New Hampshire** for full details. According to U.S. Census data, residents of different municipalities had average commute times ranging between Manchester, with 22.8 minutes on average, to Weare, which had the highest average commute time of 36.2 minutes. ¹⁹ Driving alone and long commutes are associated with quality of life and environmental impacts. These commuters may have less free time to participate in their communities, spend time with their families, and develop social connections, in addition to daily stress factors. Automobiles are not considered to be "active transportation" since they do not incorporate exercise. Furthermore, automobiles are a significant contributor to air pollution and greenhouse gas emissions.

In addition to the strong commuter preference of single-occupancy vehicles, a large number of residents in the SNHPC region commute daily out of state (in general to Massachusetts) to their place of employment. According to New Hampshire Employment Security, the percent out-of-state commuters ranges from 43.0 percent, 30.6 percent, and 24.0 percent of residents in Windham, Derry, and Londonderry, respectively, towns with easy access to Boston via I-93, to 4.4 percent for the town of Weare. Chester and Raymond also have large populations of out of state commuters, making this issue an important concern for the region with economic development implications as well. Because of its role as the economic heart of the

¹⁸ NH Rideshare. 2011. Transit Services. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/programs/rideshare/transit.htm (</u>last accessed 30 July 2013).

¹⁹ New Hampshire Employment Security. 2013. Community Profiles. <u>http://www.nhes.nh.gov/elmi/products/cp/</u> (last accessed 28 October 2013).

SNHPC Region, Manchester had the one of lowest rates of out of state commuters (8.1 percent) as well as the highest rate of residents that both live and work within its boundaries (67.2 percent).¹⁹

Based on American Community Survey data, SNHPC calculated that 11 percent of workers 16 years of age and older in the Southern New Hampshire region commute by carpooling (8.1 percent), walking (2.0 percent), public transportation (0.6 percent), or bicycling (0.2 percent). Additionally, 4.8 percent of workers work from home, for a total of 15.8 percent of workers with "green commutes" with reduced

15.8 percent of workers have "green commutes"

environmental impacts. The majority of commuters in the region choose to use a single occupancy motorized vehicle (83.5 percent). Other modes of transportation for commuting include taxicab (0.1 percent) and motorcycle (0.1 percent).²⁰ Compared to 1990, the percentage of workers commuting by carpooling, walking, public transportation, or bicycling has decreased slightly. Of interest is that more workers in Londonderry utilize public transit than do workers in Manchester, attesting to the use of the Boston Express in addition to the MTA bus services in the region. Refer to Table 6 and Table 7 below for details.

²⁰ American FactFinder. 2010. American Community Survey: Table B08301 Means of Transportation to Work for Workers 16 and Over. United States Census Bureau. <u>http://factfinder2.census.gov</u> (last accessed 30 July 2013).

		Mode of Travel											
Town	Total Workers 16 and Over	Drive Alone	Percent Drive Alone	Carpool	Percent Carpool	Total Public Transport	Percent Public Transport	Total Walk or Bicycle	Percent Walk or Bicycle	Work from Home	Percent Work from Home	Other*	Percent Other
Auburn	2,848	2,409	84.6	234	8.2	0	0.0	68	2.4	126	4.4	11	0.4
Bedford	9,977	8,646	86.7	457	4.6	71	0.7	67	0.7	616	6.2	120	1.2
Candia	2,224	2,001	90.0	89	4.0	0	0.0	49	2.2	78	3.5	7	0.3
Chester	2,398	1,947	81.2	194	8.1	8	0.3	28	1.2	168	7.0	53	2.2
Deerfield	2,415	1,946	80.6	148	6.1	11	0.5	44	1.8	266	11.0	0	0.0
Derry	18,021	15 , 586	86.5	1,430	7.9	62	0.3	219	1.2	642	3.6	82	0.5
Goffstow n	9,890	7,867	79.5	558	5.6	0	0.0	274	2.8	1099	11.1	92	0.9
Hooksett	7,478	5,976	79.9	618	8.3	23	0.3	351	4.7	375	5.0	135	1.8
Londonde rry	13,193	11,128	84.3	868	6.6	159	1.2	197	1.5	825	6.3	16	0.1
Manchest er	55,874	46,084	82.5	5,591	10.0	509	0.9	1629	2.9	1,572	2.8	489	0.9
New Boston	2,895	2,345	81.0	225	7.8	0	0.0	84	2.9	241	8.3	0	0.0
Raymond	5,112	4,529	88.6	423	8.3	22	0.4	8	0.2	94	1.8	36	0.7
Weare	5,117	4,360	85.2	410	8.0	0	0.0	71	1.4	250	4.9	26	0.5
Windham	6,612	5,456	82.5	489	7.4	49	0.7	69	1.0	539	8.2	10	0.2
Region	144,054	120,280	83.5	11,734	8.1	914	0.6	3,158	2.2	6,891	4.8	1,077	0.7

TABLE 6: COMMUTING METHODS IN SOUTHERN NEW HAMPSHIRE

*Other = motorcycle, taxicab, and other

Source: ACS 2010

Municipality	Drove Alone		Carpooled		Public Transportation (including Taxi)		Bicycled or Walked			Other Means*			Mean Travel Time to Work (minutes)				
	1990	2000	2009	1990	2000	2009	1990	2000	2009	1990	2000	2009	1990	2000	2009	1990	2000
Auburn	79.3	87.9	86.3	15.4	6.8	7.8	0.5	0.4	0	1.5	0.3	2.1	0.4	1.3	3.9	25.6	26.7
Bedford	85.5	86	87.2	7.5	5.4	4.2	0.4	0.3	1	1.2	0.5	0.7	0.5	1.5	6.7	21.4	27.2
Candia	79.6	86.5	86	12.1	9.4	6.5	1.1	0.5	0	2.1	0.5	1.4	0.8	0	6.1	25.8	28.3
Chester	79.9	84.2	78.3	10.4	6.8	12	0.6	1.2	0	2.4	0.6	0	1	0	9.6	32.3	32.2
Deerfield	82.6	86.6	82	9.7	7.8	5.8	0.3	0	0	1.4	1	0.5	1	0.3	7.4	33.6	33.9
Derry	83.3	84.9	85.9	12.1	9.7	8	0.6	0.8	0.4	1.3	1.4	1.6	0.5	0.6	4.2	29.6	31.1
Goffstown	78	81.7	78.9	11.5	8.5	7.2	0.1	0.1	0.1	6	5.1	5.5	0.5	1	8.3	22.6	26.1
Hooksett	87.8	82	80.8	6.9	8.8	7.9	0.5	1.6	0.1	1.6	3.6	5.3	0.2	0.4	5.7	20.7	25.7
Londonderry	82.8	86.3	84.9	12.1	7.9	7.7	0.8	1.3	1	1.7	0.7	1.2	0.5	0.6	5.2	28.3	29.7
Manchester	76.9	81	83	14.2	11.9	10.1	1.5	1.4	0.6	4.8	3.1	3.3	0.6	0.4	3	18.8	21.3
New Boston	79.1	82.4	84.4	14.1	10.5	6.3	0	0.5	0	3	1.3	0.3	0.5	0.6	9	29.3	32.7
Raymond	81.2	83.7	85.5	14.4	12.3	10.7	0.6	0.2	0.8	1.3	1.5	0.9	0.5	0.2	1.8	31.2	31.6
Weare	82.4	81.6	83.1	13	11.5	8.4	0	0.4	0	0.4	2.1	2.9	0.6	0.4	5.6	31	35.1
Region	80	83	83.6	12.7	10	7.9	0.9	1	0.3	3.3	2.3	1.9	0.5	0.6	5.9	26.94	29.35
State of NH	78.2	81.8	N/A	12.3	9.8	N/A	0.7	0.7	N/A	4.4	3.1	N/A	0.8	0.6	N/A	21.9	25.3

Table 7: Historic Commuting Methods by Percentage in Southern New Hampshire

*Other Means = worked from home, motorcycle, and other. (Note that 2009 data might include "worked from home" while other years may exclude this segment of workers.)

Sources: 1990 U.S. Census, 2000 U.S. Census, ACS 2005-2009

RAIL LINES

~10 miles of Rail Lines capable of 40 mph speed in Southern New Hampshire

The New Hampshire Main Line is the only active rail line in the Southern New Hampshire Planning Commission region. The New Hampshire Main Line runs for 39 miles in New Hampshire, roughly half of which are in the Southern New Hampshire region. Owned and operated by Pan Am Railways, the line connects Manchester to Nashua and Concord. There are 11 bridges and 23 grade crossings along the overall line. Pan Am Railways operates from the Massachusetts state line to Bow, delivering unit coal trains and local freight to Nashua, Merrimack, Manchester, and Concord. Map 5 on the following page displays the Main Line and other active rail lines in Southern New Hampshire and the greater area.²¹

The active railroad lines in New Hampshire are classified as to condition according to a system established by the Federal Railroad Administration (FRA). The maintenance of rail lines capable of 40 mph speeds is considered by NHDOT to be one rail-related performance measure. The class of track is a measure that provides an indication of the general condition of railroad track infrastructure. FRA Class 3 track allows operation of freight rail at up to 40 mph and passenger rail at up to 60 mph.²²

The Main Line is maintained to FRA Class 3 from Nashua to Manchester, Class 2 between Manchester and Bow, and Class 1 between Bow and Concord. Table 8 below displays allowed operating speed limits by class; as you can see can, only Class 3 rail lines are capable of 40 miles per hour. From Map 5, it appears that roughly 10 miles of the Main Line in the Southern New Hampshire region are Class 3 and capable of 40 mph speed.²²

Class	Maximum allowable freight train speed	Maximum allowable passenger train speed					
1	10 mph	15 mph					
2	25 mph	30 mph					
3	40 mph	60 mph					
Source: FRA 2012							

TABLE 8: ALLOWED TRAIN SPEED BY CLASS OF RAIL LINE

NHDOT states that track maintained for Class 3 operation would provide satisfactory performance of both freight and passenger service in nearly all cases. The Department suggests establishing goals for the miles of active track at Class 3 would provide an effective measure of overall condition of the railroads in the state, recognizing that track is maintained and repaired by private railroad companies primarily with private capital. In New Hampshire there are currently about 100 miles of track maintained to FRA Class 3, and although it is projected that the mileage of FRA Class 3 track will not change, NHDOT has set a goal

²¹ New Hampshire Department of Transportation. 2012. New Hampshire State Rail Plan. <u>http://www.nh.gov/dot/org/aerorailtransit/railandtransit/documents/FinalStateRailPlan.pdf</u> (last accessed September 19, 2013).

²² Federal Railroad Administration. 2012. Track and Rail and Infrastructure Integrity Compliance Manual: Volume II, Chapter 1 Track Safety Standards Classes 1 through 5. <u>www.fra.dot.gov/Elib/Document/3019</u> (last accessed 04 November 2013).

to increase the mileage by 80 percent - from 100 to approximately 180 miles - by 2016. This goal reflects proposed track upgrades on Pan Am's New Hampshire Main Line and the New Hampshire Northcoast's Conway Branch.²²

The southern half of the State currently receives three quarters of all freight shipped into New Hampshire by rail, based on weight. This figure includes not only the New Hampshire Main Line, but also the Concord to Lincoln Line and the Hillsboro Branch. While the freight received is quite diverse, traffic is dominated by coal for electricity generation. Clay, concrete, glass, and stone also comprise much of the freight moving into this area, based on weight. Other products shipped to this area include farm products, lumber and wood products, food, chemical products, and some nonmetallic minerals. Significantly more freight rail traffic is shipped into this area than is shipped out. The small amount of outbound freight rail traffic is categorized by shippers as miscellaneous freight.²¹

The rail in this region has significant potential for shared passenger and freight use. Two potential passenger rail services are expansion of Massachusetts Bay Transportation Authority (MBTA) commuter rail service from the south or intercity passenger rail service as part of the New Hampshire Capitol Corridor. This corridor is within the Federal Railroad Administration's designated Boston-Montreal high speed rail (HSR) corridor. Infrastructure improvements in the corridor would benefit both passenger and freight interests. The 2013 NH Capitol Corridor Study is currently examining potential transit options.²¹



CONNECTIVITY

Connectivity refers to the linkages between modes, options and transportation networks. One key metric of connectivity is the percent of population with access to multi-modal transportation.





Multi-modal transportation refers to the presence of rail and transit options, in additional to the conventional automobile mode. Slightly less than half (46 percent) of Southern New Hampshire residents are served by multi-modal transportation, according to SNHPC calculations. This is because nearly half the SNHPC population resides in Manchester, where public transit options are concentrated. This 46 percent figure compares favorably to the state-wide figure; slightly less than a quarter (24 percent) of New Hampshire residents overall have access to multimodal transportation. Access to multi-modal transportation, is measured here in terms of geographic proximity of multimodal transportation to an individual's home. An individual is said to have access if the facility is within one-quarter of a mile (0.25 miles). NH calls this measure a good beginning indicator, and notes other issues that may also impact the attractiveness of multimodal transportation to riders are not addressed. These other issues include frequency of service; service schedule - how early and late the service operates; proximity of multimodal options to an individual's workplace or other frequent destinations; and rider amenities (e.g. bus or train shelters or enhanced rider information).²³

NHDOT states that growth in access to multimodal transportation will occur with either an increase in population in proximity to existing multimodal terminals or the extension of rail or transit into new areas. They also note other factors, such as frequency and convenience of service, play a key role in growth of ridership along with access.²³ Although increasing these percentages with access is desirable, NHDOT projects that if 2012 budget levels and funding splits, 2012 staffing levels, and 2011-2020 Ten Year Plan (TYP) priorities are not changed, trended performance will likewise yield no change in access to multi-

²³ New Hampshire Department of Transportation. 2011. Performance – 2011: State Population with Access to Multimodal Transportation. Concord, NH: New Hampshire Department of Transportation. <u>http://www.nh.gov/dot/org/commissioner/balanced-</u> <u>scorecard/department/documents/bs_performance_multimodaltrans.pdf</u> (last accessed 31 July 2013).

modal transportation.¹⁷ The TYP now in effect is for FY 2013 – FY 2022 and the version being formulated now is for FY 2015 – FY 2024.

Park and Ride lots are another component of multi-modal transportation. These lots allow commuters to inexpensively and conveniently transfer to public transportation options from automobiles. NHDOT operates Park and Ride lots in the following locations²⁴:

Belmont*	Londonderry I-93 Exit 5**
Boscawen	Lyme
Bow	Nashua FEE Tpk Exit 5*
Chesterfield	Nashua FEE Tpk Exit 7
Concord I-93**	Nashua FEE Tpk Exit 8**
Concord I-89	New Hampton
Dover-NH 16**	New London
Dover-Ice Arena*	Northwood*
Epping	Plaistow
Grantham	Portsmouth-NH 33*
Hampstead	Portsmouth Transportation Center**
Hampton	Salem I-93 Exit 2**
Hillsboro	Tilton
Hooksett FEE Tpk Exit 11	Warner
Londonderry I-93 Exit 4**	Windham I-93 Exit 3

TABLE 9: NH PARK AND RIDE LOTS

*Municipally Owned & Maintained lots

**Location with bus terminal. Terminal operator may charge a fee for the operation of each unscheduled bus departure using the facility, including charter trips. Please contact the facility operator directly with questions about fees.

²⁴ NH Department of Transportation. 2013. NH Rideshare Program: Park & Ride Locations. <u>http://www.nh.gov/dot/programs/rideshare/lots/index.htm</u> (last accessed29 October 2013)





WALKABILITY & BIKABILITY

Currently there is little focus in land use development on planning for pedestrian and bicycle travel. Additionally, existing facilities often do not allow for safe and comfortable travel by these modes. According to the NH Department of Health and Human Services, in the state as a whole, many residents report their communities do not have sidewalks or bicycle lanes. Only 24 percent of residents report having paved streets with sidewalks and only four percent report having paved streets with bike lanes.²⁵

On paved New Hampshire streets:

- 24 percent of residents have sidewalks
- 4 percent of residents have bicycle lanes

According to the Federal Highway Administration (FHWA), a walkable community is "easy and safe to walk to goods and services (i.e., grocery stores, post offices, health clinics, etc.). Walkable communities encourage pedestrian activity, expand transportation options, and have safe and inviting streets that serve people with different ranges of mobility."²⁶ Factors in walkability include not only the availability of sidewalks, but also quality of sidewalks – walkability is affected when sidewalks have missing sections, broken pavement, or obstacles such as poles and shrubbery blocking them.^{27,28} Availability and quality of crosswalks are other factors, as are roadway conditions such as road width, traffic volumes and speeds. Land use patterns that influence accessibility, the relative location of common destinations and the quality of connections between them, play a role in walkability. Walkability is also influenced by community support and security and comfort for walking.²⁷ Walkable areas are pedestrian-friendly.

Similarly, bikable communities are bicyclist-friendly. The League of American Bicyclists describes five elements of bicycle-friendly communities as follows:

- Engineering: Creating safe and convenient places to ride and park;
- Education: Giving people of all ages and abilities the skills and confidence to ride;
- Encouragement: Creating a strong bike culture that welcomes and celebrates bicycling;
- Enforcement: Ensuring safe roads for all users;
- Evaluation & Planning: Planning for bicycling as a safe and viable transportation option²⁹

Bicycle infrastructure and facilities such as bicycle lanes, shared-use trails, bicycle parking, and bicyclefriendly policies are part of bicycle communities. Comprehensive bicycle plans and dedicated funding also

²⁵ NH Obesity Prevention Program, 2011. Municipal Survey Report: Obesity Prevention in New Hampshire Communities. NH Department of Health and Human Services, Division of Public Health Services http://www.dhhs.nh.gov/dphs/nhp/documents/munisurveyreport.pdf (last accessed September 20, 2013).

²⁶ Federal Highway Administration, 2013. A Resident's Guide for Creating Safe and Walkable Communities. U.S. Department of Transportation. <u>http://safety.fhwa.dot.gov/ped_bike/ped_cmnity/ped_walkguide/about.cfm</u> (last accessed January 13, 2014).

²⁷ Victoria Transport Policy Institute, 2013. Walkability Improvements: Strategies to Make Walking Convenient, Safe and Pleasant. TDM Encyclopedia. <u>http://www.vtpi.org/tdm/tdm92.htm</u> (last accessed January 13, 2014)

²⁸ U.S. Department of Transportation, U.S. Environmental Protection Agency, National Center for Safe Routes to School, Pedestrian and Bicycle Information Center, n.d. Walkability Checklist. http://katana.hsrc.unc.edu/cms/downloads/walkabilitychecklist.pdf (last accessed January 13, 2014)

 ²⁹ The League of American Bicyclists, 2013. The Essential Elements of a Bicycle Friendly America. http://www.bikeleague.org/content/5-es (last accessed January 13, 2014)

play an important role.²⁹ At the time of writing, infrastructure and facilities are extremely limited in the region, no comprehensive bicycle plans are in place, and dedicated funding for bicycles has not yet been utilized.

ENERGY EFFICIENCY & GREENHOUSE GAS EMISSIONS

Energy efficiency and greenhouse gas emissions in transportation are linked to factors such as energy use, traffic flow, and the transport of goods. Key data include carbon dioxide (CO₂) emissions, number of alternative fuel-powered automobiles, types of automobile fuels available, municipalities, transit organizations and others utilizing alternative fuels, cost of fuels, gasoline and diesel fuel consumption, and per person energy expenditure.



FIGURE 10: CHANGE IN FUEL CONSUMPTION IN NH 1950-2010 (USDOT)

Figure 10 shows that fuel consumption in New Hampshire has increased over 500 percent between 1950 and 2010. For comparison, New Hampshire's population has increased less than 150 percent in that same period.³⁰ Looking over the span of six decades, gasoline consumption has consistently climbed the chart from decade to decade; the average growth in gasoline consumption per decade is 35 percent. Gasoline consumption has grown as much as 73 percent in a single decade (the 1960s), although the most recent decade (the 2000s) experienced a more moderate growth of 5.8 percent. Diesel consumption, though initially expanding rapidly from 1950 levels, has remained relatively constant since the late 1990s, actually declining by 5.3 percent in the most recent decade. As of 2010, the State of New Hampshire consumes over 800,000,000 gallons of fuel annually, 88 percent of which is gasoline.³¹

³⁰ United States Census Bureau. 2013. Population in the U.S. Washington, D.C.: United States Census Bureau. <u>http://www.google.com/publicdata/explore?ds=kf7tgg1uo9ude</u> (last accessed 31 July 2013).

³¹ Office of Highway Policy Information. 2012. U.S. Highway Statistics. Washington, D.C.: Federal Highway Administration. <u>http://www.google.com/publicdata/explore?ds=gb66jodhlsaab</u> (last accessed 31 July 2013).

FIGURE 11: U.S. GREENHOUSE GAS EMISSIONS ATTRIBUTED TO TRANSPORTATION, 2010



Figure 11 indicates that 27 percent of greenhouse gas emissions emitted by economic sectors are attributed to transportation. This national statistic for the year 2010 was calculated by the U.S. Environmental Protection Agency (EPA). This 27 percent of greenhouse gas (GHG) emissions represents 1,834 teragrams or 1,000,000 metric tons of GHGs.³² GHGs, such as carbon dioxide, are of significance since they directly cause global warming, or climate change. The impacts of climate change are discussed further in the Climate Change Impacts Assessment Chapter.

The transportation sector is a major contributor to climate change. EPA names transportation as the second of five major fuel consuming sectors contributing to carbon dioxide (CO₂) emissions from fossil fuel combustion; in order: electricity generation, transportation, industrial, residential, and commercial. CO₂ from fossil fuel combustion is the largest source of U.S. greenhouse gas emissions, and accounts for approximately 78 percent of emissions (weighted by global warming potential) since 1990. Emissions of CO₂ from fossil fuel combustion increased at an average annual rate of 0.7 percent from 1990 to 2010. The U.S. Environmental Protection Agency names growth in emissions from electricity generation and transportation activities as the second of two fundamental factors influencing this trend (the first factor is a generally growing domestic economy). Between 1990 and 2010, U.S. CO₂ emissions from fossil fuel combustion increased a total of 13.7 percent. From 2009 to 2010, these emissions increased by 3.5 percent.³²

 ³² United States Environmental Protection Agency. 2012. Inventory Of U.S. Greenhouse Gas Emissions And Sinks: 1990 – 2010. Washington, D.C.: U.S. Environmental Protection Agency.
 <u>http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2012-Main-Text.pdf</u> (last accessed 31 July 2013).



FIGURE 12: NH TRANSPORTATION CARBON EMISSIONS 1990-2011

Source: U.S. Environmental Protection Agency³³

As Figure 12, NH Transportation Carbon Emissions 1990-2011 shows, the transportation sector in New Hampshire makes up an even greater share of state carbon emissions than the sector does at the national level. Between 1990 and 2011 transportation was responsible for 39 percent of New Hampshire carbon emissions on average. Most recently in 2011, transportation emissions accounted for a notable 43 percent of emissions. The data suggests that reducing carbon emissions from transportation will be important to climate change mitigation strategies in the state.

REGIONAL TRAFFIC VOLUMES

Recent traffic data in the SNHPC Region suggests a dramatic slowing in total traffic growth on roads other than interstates and freeways. Traffic counts over the last ten years have remained virtually flat, decreasing by roughly 6 percent. Since our traffic count program has a three-year cycle, traffic count locations repeat every three years. We took the years with the same count locations and compared total traffic volumes. The following numbers represent the sum of the locations of the volume of traffic to pass through each location in one day. These counts do not include sections on interstates and freeways whose counts were conducted by NHDOT. From Table 10, a conclusion could be drawn that total traffic volumes are decreasing on local roads. See Figure 13 for this traffic volume data displayed in graph form. The

³³ U.S. Environmental Protection Agency, 2011. CO₂ Emissions from Fossil Fuel Combustion. <u>http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2012-Main-Text.pdf</u> (last accessed 31 July 2013).

trend of decreasing overall traffic volumes however does not equate to decreasing volumes on every individual road. Increasing traffic volumes were observed for 11 roadway segments, including parts of Interstate 93, Interstate 293, and U.S. Route 3. Traffic volumes on the following road segments increased:

- I-93 between exit 4 and exit 5 in Londonderry
- I-93 between exit 3 and exit 2 in Windham
- I-293/NH 101 between I-93 and exit 2 in Manchester
- I-293 between exit 4 and exit 3 in Manchester and Bedford
- US 3/NH 28 between Compbell and NH 28A in Manchester and Hooksett
- NH 3A between Greenview Drive and Technology Drive in Manchester and Hooksett
- US 3/NH 28 at Hooksett/Allenstown town line
- NH 3A between Hackett Hill Road and S. Main Road
- NH 28 Bypass in Derry
- NH 27 (Raymond Road) between NH 43 and Blevens Drive in Candia
- NH 43 at Candia/Deerfield town line

Thus, even though overall traffic volumes in the SNHPC region are decreasing on roads whose counts are conducted by the planning commission, congestion remains an issue on the interstates and highways with the highest traffic volumes.

Cycle	e A: 393 locations:			
2004	2007	2010	6%	decrease in traffic volume
2,443,950	2,382,290	2,296,820		
Cycle	e B: 413 locations:			
2005	2008	2011	5%	decrease in traffic volume
2,328,900	2,233,570	2,203,640		
Cycle	e C: 436 locations:			
2006	2009	2012	6%	decrease in traffic volume
2,330,130	2,217,610	2,178,830		

TABLE 10: DECREASING TRAFFIC VOLUMES WITHIN THE SNHPC REGION



FIGURE 13: DECREASING REGIONAL TRAFFIC VOLUMES

VEHICLE MILES TRAVELED (VMT)

Table 11 displays total Vehicle Miles Traveled (VMT) for the region's municipalities between 2002 and 2013. This data reveals that VMT growth has been very slow since 2002, and actually declining in some towns such as Deerfield, New Boston and Weare, but increasing overall although slowly in many of the region's larger towns. Across the nation and in many major urban areas, total VMT has been decreasing in recent years due in part to rising fuel costs and increasing public transportation use. Within the SNHPC Region, however, VMT is still growing primarily due to a strong commuter preference for single-occupancy vehicles and the fact that many residents commute daily long distances for employment.

Municipality	2002	2008	2011	2013	
Auburn	206,729	238,153	230,390	217,015	
Bedford	685,249	718,198	724,984	819,901	
Candia	246,367	255,586	276,644	314,455	
Deerfield	81,740	82,575	73,822	76,648	
Derry	524,909	514,558	517,350	546,392	
Goffstown	261,992	269,886	271,895	276,377	
Hooksett	764,666	813,071	859,543	750,956	
Londonderry	877,036	883,780	1,022,100	1,039,390	
Manchester	2,200,203	2,205893	2,231,201	2,212,446	
New Boston	89,231	73,910	63,320	66,498	
Raymond	336,641	328,410	353,745	350,339	
Weare	148,751	141,682	121,294	126,933	
Totals	6,513,488	6,606,565	6,838,004	6,893,057	

TABLE 11: VMT GROWTH WITHIN THE SNHPC REGION

Source: NH DOT

AIR QUALITY

In terms of emissions trends, New Hampshire has "already begun to make real progress" in many of the areas targeted by the recommendations in the NH Climate Action Plan (2009), but it is unclear how successful efforts have been in the most recent couple of years. Between 2005 and 2009, 67 percent of indicators showed positive trends. In this time period the New Hampshire economy experienced a decrease in overall energy demand, even as the NH economy as a whole grew. Renewable electricity generation also expanded. Primary energy consumption decreased 14 percent, and associated GHGs decreased 21 percent between 2004 and 2009. Per capita emissions in NH decreased from 2005-2009 as well. However, the limited data available for indicators in 2010 and 2011 suggest it will be challenging to maintain positive trends. For the transportation sector, the amount of energy consumed and GHG emissions remained relatively flat from 2005 to 2009, as did public transit ridership. However, VMT and per-capita VMT importantly did decrease, perhaps indicative of higher fuel prices or smart growth land use planning. Total land conserved increased as well.³⁴

The regional air quality analysis for the Southern NH Region focuses on Volatile Organic Compounds (VOC), Nitrogen Oxides (NOx) and Carbon Monoxide (CO). VOC and NOx are important precursors to the production of the GHG ozone. Air quality in the SNHPC region is improving. The previous Boston-Manchester-Portsmouth (SE) NH 8-hour Ozone Non-Attainment area designated April 2004, which included the entire SNHPC region except for three towns in attainment, was designated as "unclassifiable/attainment" in July 2013. This finding of "unclassifiable/ attainment" also applied to much of the southern portion of New Hampshire. The City of Manchester was also previously designated non-attainment for carbon monoxide (CO) and is required to demonstrate conformity to a 20-year maintenance plan to ensure it continues to achieve compliance. CO has noteworthy indirect effects upon climate change.

AFFORDABILITY

According to the Housing + Transportation affordability index, neighborhoods that are considered to be "location efficient"—compact neighborhoods with walkable streets, access to transit, and a variety of amenities—have lower transportation costs than inefficient ones. Contrastingly, location inefficient places are auto-dependent, and people who live there have high transportation costs and are more susceptible to fluctuations in gas prices. A neighborhood is conventionally deemed affordable if no more than 30 percent of income is spent of housing. The H+T index also considers the cost of transportation and defines a neighborhood as affordable if no more than 45 percent of household income is spent on housing and transportation combined.

In the Southern New Hampshire Region, the majority of neighborhoods are not considered affordable. Approximately 68 percent of residents do not live in affordable neighborhoods and 52 percent of neighborhoods were not affordable.³⁵ The majority of affordable neighborhoods that are available are located in Manchester. Additionally, 100 percent of the residents spend more than 15 percent of income on transportation, the H+T index's suggested affordable amount. ³⁶ For comparison, in the Nashua Planning Commission Region 80 percent of residents do not live in affordable neighborhoods and 76 percent of neighborhoods were not affordable; in the Rockingham Planning Commission Region these

³⁴ Wake, C., Skoglund, C., Pisa, R., Doll, S., 2012. New Hampshire's Energy, Environmental, and Economic Development Benchmark Report. New Hampshire Energy and Climate Collaborative. http://nhcollaborative.org/media/2012_NH_EEE_BenchmarkReport_Full.pdf (last accessed March 28, 2014)

³⁵ Note: data unavailable for the Town of Windham

³⁶ The Center for Neighborhood Technology. 2013. H+T Affordability Index. Retrieved from <u>http://htaindex.cnt.org/</u> (last accessed 13 November 2013)

numbers were 79 percent and 74 percent respectively. Nationally, 72 percent of U.S. neighborhoods are not considered affordable to the typical household in terms of combing housing and transportation costs.³⁷

FINANCING

On July 6, 2012, the President signed into law MAP-21, the Moving Ahead for Progress in the 21st Century Act. MAP-21 provides over \$105 billion in funding for surface transportation programs for fiscal years 2013 and 2014. It provides needed funds and transforms the policy and programmatic framework for investments to guide the growth and development of the country's vital transportation infrastructure. MAP-21 creates a streamlined, performance-based, and is a multimodal program to address the many transportation challenges including improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

Fiscal constraint requirements have remained a key component for transportation plan and program development in MAP-21. Fiscal constraint requires that revenues in transportation planning and programming are identified and "are reasonably expected to be available" to implement the metropolitan long range transportation plan and the TIP while providing for the operation and maintenance of the existing highway and transit systems. Metropolitan planning statutes state that the long-range transportation plan and TIP must include a financial plan that "indicates resources from public and private sources that are reasonably expected to be available to carry out the program" [23 U.S.C 134(g)(2)(B) and 134(h)(2)(B)(ii)]. Additionally, revenues must be "available and committed" for the first two years of a TIP in air quality non-attainment and maintenance areas [23 CFR 450.324(e) and 23 CFR 450.216(a)(5)].

Federal transportation legislation has placed emphasis on intermodal transportation. The previous legislation, SAFETEA-LU, required that "the plans and programs for each metropolitan area[s] shall provide for the development and integrated management and operation of transportation systems and facilities (including pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system..." This emphasis on the development of an integrated and intermodal system includes consideration of the importance of pedestrian and bicycle facilities in this system. In the past, legislation emphasized that the use of all possible forms of transportation should be encouraged to:

- Efficiently use and reduce the impact of vehicular transportation on our limited fuel supplies and land resources;
- Reduce the negative impacts of hydrocarbon combustion (fossil fuel) on air quality; and,
- Reduce traffic congestion at major intersections and in densely populated areas.

Secondary benefits resulting from increasing levels of bicycle and pedestrian transportation include improved public and environmental health, safer streets, more vibrant downtown areas and increased economic activity and property values.

The current federal transportation legislation, MAP-21, is a multimodal program to address many transportation challenges including many that pertain to walking and biking.

Among the eight planning factors carried forward in MAP-21 are four that support improved accommodations for bicycles, pedestrians, and public transportation:

³⁷ The Center for Neighborhood Technology. 2013. About the Index. Retrieved from http://htaindex.cnt.org/about.php (last accessed 06 January 2014)

- Increase the safety of the transportation system for motorized and non-motorized users;
- Increase the security of the transportation system for motorized and non-motorized users;
- Increase accessibility and mobility of people and freight;
- Protect and enhance the environment, promote energy conservation, and improve quality of life, and promote consistency between transportation improvements

TRANSPORTATION IMPROVEMENT PROGRAMMING

The Transportation Improvement Program (TIP) is a vital link between plan development and project implementation where plans are converted into specific improvement projects and then programmed for implementation on the basis of priority and fiscal constraint. The FY 2013 – FY 2016 TIP is a staged multiyear program of regional transportation improvement projects for the SNHPC Metropolitan Planning Organization (MPO) area. Based on guidelines contained in Moving Ahead for Progress in the 21st Century (MAP-21), the TIP is updated at least once every four years. The TIP is updated by the MPO in accordance with joint federal metropolitan planning regulations, 23 CFR 450, issued by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), U.S. Department of Transportation. Metropolitan planning factors carried forward in MAP-21 are included in this document as Appendix B. Additionally, the SNHPC MPO is required to certify that its transportation planning process is in conformance with applicable legislation.

In New Hampshire, the TIP is generally updated every two years by the MPO, concurrent with the NH Department of Transportation (NHDOT) State Transportation Improvement Program (STIP). The first two TIP years include those projects that have been selected for funding as agreed upon by the NHDOT and the MPO. The projects included in the TIP are included in the air quality determination. Those fiscally constrained projects included in the third year of the TIP subsequently become the first year projects following the biannual TIP update. All transportation projects utilizing Federal transportation funds in the SNHPC MPO region must be included in a conforming approved TIP in order to be incorporated into the STIP and proceed to implementation. Other requirements pertaining to the development and maintenance of the TIP include:

- The TIP must contain all transportation projects including all capital and non-capital projects within the MPO area to be funded through Title 23 or the Federal Transit Act, projects consistent with the recommendations of the long-term RTP and all regionally significant projects regardless of whether FHWA/FTA approval is required;
- The TIP must include a financial plan demonstrating that it is financially constrained by year and must include project-specific costs by funding source and category. Funding for the first two years must be available and committed and funding for the third and fourth years should be reasonably approved;
- The TIP must be established through the use of effective early and continuing public involvement;
- If adopted by the MPO and approved by the Governor, the TIP must be included in the STIP without modification.
- The TIP serves as the short-range project-specific component of the long-range plan for the region, which is called the Regional Transportation Plan for the Southern New Hampshire Planning Commission (RTP). The RTP, which addresses all forms of transportation used in the 14 municipalities of the region and for each mode, is intended to serve as a guide for funding of transportation projects. Prioritization of the Plan recommendations results from a screening process to assure that impacts associated with health, safety, welfare and the environment are properly weighed in the public interest.

KEY STRATEGIES & PROJECTS

Key transportation strategies include healthy transportation, energy conservation, and reducing greenhouse gas emissions. With a focus on key opportunities and short term and long term solutions, the following key projects have been identified as well.

SAFETY

Safety has been continued as a stand-alone planning factor in MAP-21. For many years, SNHPC, which has maintained its own core strategies designed to increase safety, also collaborates on numerous projects with its member communities to address safety issues. Many projects and programs included in the Regional Transportation Plan sustain and improve the safety of the transportation system. Transportation projects involving the development of alternative modes of transportation such as walking and bicycling improve the safety of the transportation system by diverting trips to alternative modes. Major planned/proposed improvement projects such as the widening of the NH 101 corridor in Bedford and the re-design of the I-293 Exit 6/7 area in Manchester and Hooksett are also essential to the maintenance of a safe roadway network.

At the state level, NHDOT has instituted a program entitled "Driving Toward Zero" in an attempt to reduce considerably the number of traffic-related deaths in NH. Eliminating deaths on New Hampshire roadways is an important vision and the driving force behind the work of the New Hampshire Driving Toward Zero Deaths (NHDTZD) Coalition. It is also an important vision for all who travel on New Hampshire's roadwaysby car, motorcycle, truck, bicycle, or even on foot-day and night under all types of weather conditions.

The NHDTZD's mission is to create a safety culture where even one roadway fatality is one too many. Zero fatalities is the only acceptable number and of course, the only number we can ALL LIVE with.

The New Hampshire Driving Toward Zero Deaths Program aligns with the Toward Zero Deaths: A National Strategy on Highway Safety program that began in 2009 as a data-driven effort focusing on identifying and creating opportunities for changing American culture as it relates to highway safety.³⁸

SNHPC is also currently active in assisting member communities in obtaining Highway Safety Improvement Program (HSIP) funding for hazardous roadway and intersection improvements in the region. The HSIP program was established to provide funding for modest safety improvements that achieve significant reductions in traffic fatalities and serious injury crashes. The HSIP funding process is dependent on data, as locations for improvements are identified through crash information demonstrating that there is a safety problem. NHDOT has been utilizing these funds to address highway safety issues around the State and SNHPC has already been successful in assisting two member communities to obtain funding for improvements through this program. HSIP provides the following strategic goals for safety on New Hampshire roads:

- Reduce the number of traffic fatalities and serious injuries;
- Reduce the number and severity of crashes;
- Decrease the potential for incapacitating and fatal injuries; and
- Maximize the benefit of the limited resources: time and money.

The Road Safety Audit (RSA) represents another proactive approach to improving transportation safety. An RSA is an examination of a future or existing roadway to report on safety issues. The RSA represents a

³⁸ New Hampshire Department of Transportation, 2013. Driving Toward Zero: About Us. <u>http://www.nhdtz.com/about</u> (last accessed 25 September 2013).

strategy to improve safety and communicate to the public how local, regional and State stakeholders can proactively work toward crash reduction at hazardous locations. The RSA can be performed during the planning, preliminary design and final design stages of a planned facility as well as on existing roads. The RSA concept has proven to be highly effective in identifying and reducing the roadway crash potential. NHDOT is currently participating in RSAs for hazardous locations in the region and SNHPC is currently assisting in these efforts by coordinating and participating in RSA training for stakeholders. SNHPC has also participated in RSA exercises at three locations in the region.

As part of the SNHPC Unified Planning Work Program (UPWP), the SNHPC staff have been conducting a High Accident Location Study on a yearly basis. A high accident location study is conducted based on comprehensive crash data analyses and field visits to identify possible accident causes and countermeasures to effectively mitigate the safety issues. In addition to the UPWP fund, the State Planning and Research (SPR) fund has been used in these studies as well. The findings of a study form the basis for designing safety improvements to be implemented through HSIP funding. The SNHPC has completed 13 high accident intersection studies in the region.

CONTEXT SENSITIVE SOLUTIONS

Context Sensitive Solutions are a sustainable planning approach currently utilized in regional planning. SNHPC staff have participated in Context Sensitive Solutions (CSS) training and are actively involved in efforts to encourage principals of CSS and Context Sensitive Design in transportation planning and design processes. CSS is a collaborative, interdisciplinary approach stressing transportation design that fits physical setting and preserves scenic, aesthetic, historic and environmental resources while maintaining safety and mobility. Benefits of CSS design include more cost-effective roadway design that better accommodates community objectives including multi-modal transportation, efficient land use, preservation of cultural and environmental resources, increased safety, and more livable communities.

HEALTHY TRANSPORTATION

Transportation plays an important role in health. Sources ranging from the Center for Disease Control to HEAL (Healthy Eating Active Living) Strategies to the State Plan to Address Health Disparities and Promote Health Equity in NH emphasize the importance of transportation in health. The following strategies are recommended for supporting health objectives:

- Improve infrastructure to support walking, bicycling and other modes of active transportation³⁹
- Adopt zoning policies for mixed-use, compact and transit oriented development³⁹
- Improve transportation to health care facilities, employment centers, and food⁴⁰
- Expand transportation options and improve use of existing options to connect individuals to transportation needed for health visits, including chronic care treatment⁴¹

New Hampshire is among the states with the highest percentage of overweight adults, a fact that highlights the importance these strategies. In 2012, 27.3 percent of New Hampshire adults were obese.⁴² NH

³⁹ HEAL NH, 2013. Recommended Strategies for Cities and Towns. <u>http://www.healnh.org/2011-11-08-16-46-50/cities-towns.html</u> (last accessed September 20, 2013)

⁴⁰ HEAL NH, 2008. HEAL Action Plan for New Hampshire 2008. <u>http://www.healnh.org/about-heal/heal-action-plan/69-heal-action-plan.html</u> (last accessed September 20, 2013)

⁴¹ The State Plan Advisory Work Group, 2011. State Plan to Address Health Disparities and Promote Health Equity in NH. New Hampshire Health and Equity Partnership. <u>http://www.dhhs.nh.gov/omh/documents/disparities.pdf</u> (last accessed September 20, 2013)

adolescents are also among the least physically active teens in the nation. Improving infrastructure to support walking and bicycling, and adopting zoning policies for development that supports these transportation modes, could make a difference by creating opportunity for physical activity. Resources for communities include the Livable Walkable Community Toolkit, the Safe Routes to School (SRTS) program, and the Bike-Walk Alliance of NH.⁴⁰

ENERGY CONSERVATION

Energy conservation in the transportation section is currently being promoted through SNHPC's participation in the CMAQ and Transportation Alternatives (formerly the Transportation Enhancement (TE) grant programs. Many of the projects eligible for funding under the CMAQ program such as improvements to public transit, bicycle and pedestrian facilities and programs, travel demand management projects and establishments of Transportation Management Associations can also make significant contributions to reductions in energy use. The Transportation Enhancement (TE) program supported community-based projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure. Eligible projects, which included creation of bicycle and pedestrian facilities, conversion of abandoned railway corridors to trail facilities and streetscape improvements, can also be instrumental in energy savings. The Transportation Alternatives (TA) also supports these activities, although there are differences from the former TE program.⁴³

SNHPC also assisted member communities in preparing master plan energy chapters. Transportationrelated recommendations from these chapters include incorporating "Complete Streets" principles into roadway design, encouraging compact and mixed-use developments in village centers and development of facilities for cyclists and pedestrians.

REDUCE GREENHOUSE GAS EMISSIONS

This strategy, reducing greenhouse gas emissions, overlaps somewhat, but not entirely, with the energy conservation strategy. SNHPC supported the State and New Hampshire Department of Environmental Services to address the impacts of climate change through the development of implementation strategies for the New Hampshire Climate Action Plan. The Plan, originally created through an Executive Order in 2007, established quantified greenhouse reduction goals and recommended specific actions to achieve these goals.

The New Hampshire Climate Action Plan was created through a Climate Change Policy Task Force consisting of over 100 participants who engaged the public through a process that included official listening sessions and additional opportunities for public comment. The results of the process were recommended goals to reduce greenhouse gas emissions 1) 20 percent below 1990 levels by 2025 and 2) 80 percent below 1990 levels by 2050. Strategies developed to achieve the goals include those in the transportation sector with a focus on fuels, transportation demand (vehicle-miles traveled) and vehicles. The Climate Action Plan includes some 67 recommended actions for addressing the state's energy needs while also strengthening the economy and reducing the threats of climate change.

⁴² Centers for Disease Control and Prevention, 2013. Overweight and obesity. http://www.cdc.gov/obesity/data/adult.html (last accessed January 8, 2014)

⁴³ Federal Highway Administration (FHWA), 2013. Transportation Alternatives Program (TAP) Guidance. U.S. Department of Transportation. <u>http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm</u> (last accessed January 17, 2014)

Since the release of the New Hampshire Climate Action Plan, progress on the implementation of the Plan is being monitored by the NH Energy and Climate Collaborative, which released the NH Climate Action Plan Annual Progress Review in June 2010 and a subsequent Benchmark Report in the summer of 2012. The Collaborative consists of a group of 21 leaders from the business, non-profit and public sectors, who volunteered to track, report, facilitate and communicate progress towards implementation of the recommended actions outlined in the NH Climate Action Plan.

The New Hampshire Climate Action Plan⁴⁴ recommends a number of transportation-focused strategies for reducing greenhouse gas emissions. Key strategies include:

- Encourage appropriate land use patterns that reduce vehicle-miles traveled
- Reduce vehicle-miles traveled through an integrated multi-modal transportation system
- Support reducing vehicle emissions through state actions
- Support regional and national actions to reduce greenhouse gas emissions from fuel
- Include climate change adaptation and mitigation in programs and planning

Encouraging appropriate land use patterns that reduce vehicle-miles traveled is an important aspect of reducing greenhouse gas emissions (GHGs) from transportation. Appropriate land use patterns could be encouraged by developing model zoning to support bus/rail transit; developing model zoning for higherdensity, mixed-use development; streamlining approvals for low-greenhouse-gas development projects; assessing greenhouse gas emission impact fees; and continuing/expanding funding, education, and technical assistance to municipalities. Some of these actions may be more appropriate at the regional or state level than the municipal level.

Reducing vehicle-miles traveled through an integrated multi-modal transportation system involves promoting public transit and facilities for bicycle and pedestrian infrastructure. Recommended actions encompass improving existing local/intra-regional transit (bus) service, expanding local/intra-regional transit (bus) service, improving existing inter-city bus service, expanding and improving bicycle and pedestrian infrastructure, maintaining and expanding passenger rail service, maintaining and expanding freight rail service, implementing a stable funding stream to support public transportation, and expanding park-and-ride infrastructure. Some of these actions may be more appropriate at the regional or state level than the municipal level.

Various actions to reduce vehicle emissions undertaken at the state level should be supported as well. Such state actions include adopting California Low Emission Vehicle (CALEV) standards, creating a point-of-sale financial incentive for high-efficiency vehicles, installing retrofits to address black carbon emissions, implementing commuter trip reduction initiative, increasing highway automobile efficiency, and addressing vehicle idling, and improving traffic flow. Supporting regional and national actions to reduce greenhouse gas emissions from fuel includes support for standards such as stricter corporate average fuel economy standards for heavy-duty vehicles. Support for adoption of a low-carbon fuel standard and for promotion of alternative fuel and advanced technology vehicles and supporting infrastructure is recommended as well.

More generally, the NH Climate Adaptation Plan recommends including climate change mitigation (and adaptation) throughout programs and planning, which includes not only transportation programs and planning but other areas as well.

⁴⁴ New Hampshire Climate Change Policy Task Force, 2009. The New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future. NH Department of Environmental Services. <u>http://des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/documents/nhcap_final.pdf</u> (last accessed September 20, 2013).

COMPLETE STREETS



FIGURE 14. PEDESTRIAN CROSSING ON GRANITE STREET IN MANCHESTER, NH

Complete Streets is an important component of transportation options. Complete Streets enable safe, convenient, and comfortable transportation for all users, including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities. Complete Streets with pedestrian, bicycle, and automobile improvements offer many more transportation choices and directly benefit public health, the environment, and the local economy.

Complete Streets work to reduce accidents and fatalities, aid older folks driving and walking, help seniors stay active in their communities and provide opportunities for physical activity, important in the fight against obesity. People with disabilities (nearly 20 percent of Americans) also directly benefit. Many communities with Complete Streets also experience new business growth and job creation, and increased sales tax revenues.

The NH Department of Transportation says in the Statewide Bicycle and Pedestrian Plan that "The economic benefits of bicycle paths in terms of stimulating economic development and bringing revenue to a community or region should not be overlooked."⁴⁵ Pedestrians likewise generate significant economic activity through shopping, dining, and accessing personal and professional services.⁴⁶ In

Burlington, VT, the Burlington Bike Path serves as a key resource not only for recreation and commuting, but also as an economic generator. The Bike Path is part of Burlington's network of on-street paths and is the spine of the regional bicycle corridor. A study found that 30 percent of all bike path users come from beyond the city and spend \$4,500,000 locally each year.⁴⁷

The National Complete Streets Coalition has found that local businesses see many benefits in improving access by pedestrians and bicyclists. For example, when a bike lane was added along Valencia Street in San Francisco's Mission district, nearby businesses saw sales increase by 60 percent. The merchants attributed the increased sales to increased pedestrian and bicycle activity. Similarly, a study in Toronto showed nearly 75 percent of merchants along Bloor Street expected that better bicycle and pedestrian facilities would improve business. In Washington, D.C., design improvements for a three-quarter mile

⁴⁵ New Hampshire Department of Transportation. 2000. New Hampshire Statewide Bicycle and Pedestrian Plan. <u>http://www.nh.gov/dot/programs/bikeped/documents/BikePedPlan.pdf</u> (last accessed 29 August 2013)

⁴⁶ Vermont Department of Health (2012). Complete Streets: a Guide for Vermont Communities. Retrieved from http://www.ccrpcvt.org/completestreets/Complete Streets for VT communities_2012.pdf (last accessed 29 August 2013)

⁴⁷ Burlington Vermont Department of Parks and Recreation. 2013. Burlington Bike Path. City of Burlington, VT. Retrieved from http://www.enjoyburlington.com/parks/bikepath1.cfm

corridor in Barracks Row helped attract 44 new businesses and 200 new jobs, with increases in sales and foot traffic.⁴⁸

In New Hampshire, the City of Keene has passed a Complete Streets Resolution in 2011 resolving "that in order to develop and maintain a safe, efficient, balanced and environmentally sound transportation system for people of all ages and abilities, transportation and development projects shall incorporate a Complete Streets philosophy that expands transportation choices...."⁴⁹ The City of Concord's proposed Downtown Improvement Project also embraces Complete Streets, and the project proposes to convert the existing four-lane Concord Main Street to a two-lane Complete Street design configuration "promoting multi-modal use and offering more transportation choices, all while improving livability, safety and providing a reliable transportation network." Property values are conservatively anticipated to increase eight percent with the completion of the Complete Streets project.⁵⁰

Creating complete streets means transportation agencies must change their approach to community roads. By adopting a Complete Streets policy, communities direct their transportation planners and engineers to routinely design and operate the entire right of way to enable safe access for all users, regardless of age, ability, or mode of transportation. This means every transportation project will make the street network better and safer for drivers, transit users, pedestrians, and bicyclists – making your town a better place to live.

There is no singular design prescription for Complete Streets; each street is unique and responds to its community context. Roadways that are planned and designed using a Complete Streets approach may include: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more.⁵¹

Complete Streets policies are relatively new in New Hampshire. No policies have been adopted in the Southern New Hampshire region thus far. A list of municipal Complete Streets policies or projects in the state includes:

- Keene Complete Streets resolution and inclusion in 2010 Comprehensive Master Plan⁵²
- Portsmouth Complete Streets policy⁵³
- Concord Comprehensive Transportation Policy,⁵⁴ Complete Streets Downtown Improvement Project⁵⁵, Rt. 3/ Fisherville Rd project⁵⁶

⁴⁸ National Complete Streets Coalition. 2010. Economic Development. Smart Growth America. Retrieved from http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/factsheets/economic-revitalization (last accessed 29 August 2013)

⁴⁹ City of Keene, NH. 2011. Keene City Council August 18, 2011. Retrieved from <u>http://keene.granicus.com/MediaPlayer.php?view_id=2&clip_id=265</u> (last accessed 29 August 2013)

⁵⁰ City of Concord, NH. 2013. Expected Property Value Benefit: Analysis and Estimation. Concord Downtown Complete Streets Improvement Project. Retrieved from <u>http://www.concordnh.gov/DocumentCenter/View/1790</u> (last accessed 29 August 2013)

⁵¹ Smart Growth America. 2013. Welcome to the National Complete Streets Coalition <u>http://www.smartgrowthamerica.org/complete-streets</u> (last accessed 28 October 2013)

⁵² City of Keene, NH. 2011. Complete Streets. 2010 Comprehensive Master Plan. <u>http://www.ci.keene.nh.us/departments/planning/keene-cmp-2010/plan/transportation/complete-streets</u> (last accessed 28 October 2013)

⁵³ City of Portsmouth, NH. 2013. Complete Streets Policy. <u>http://planportsmouth.com/bike-pedestrian.html</u> (last accessed 28 October 2013)

⁵⁴ Smart Growth America. 2013. Complete Streets Policy Adoption. <u>http://www.smartgrowthamerica.org/documents/cs/policy/cs-chart-allpolicies.pdf</u> (last accessed 28 October 2013)

PEDESTRIAN AND BICYCLE FACILITIES

Current land use patterns in the region often do not support development of facilities and planning for pedestrian and bicycle travel. Additionally, existing facilities often do not allow for safe and comfortable travel by these modes. The extent to which planning for pedestrian and bicycle facilities can practically occur at the local level often varies greatly. As a result, project level actions can be taken to change practices, policies and regulations pertaining to pedestrian and bicycle facilities in the following areas:

- Land use, by making development more compact and reducing distances between origin and destination points;
- Engineering practice, by supplying adequate facilities and seriously considering bicycle and pedestrian needs at every stage of the planning and development process;
- Education concerning automobile, pedestrian, and bicycle safety;
- Encouragement, by building community support and awareness, and by assisting private and public sector businesses to increase employee levels of biking and walking; and
- Enforcement, by more strictly implementing existing laws to strengthen the education element.

Promotion of bicycle and pedestrian transportation also involves providing incentives and reducing disincentives at the project level through improvements such as:

- Signage
- Support facilities
- Traffic calming
- Implementation of principles and guidelines for shared use path design
- Implementation of principles and guidelines for pedestrian planning and design
- Implementation of principles and guidelines for bicycle planning and design

A suggested planning process for designing and implementing pedestrian and bicycle improvements in communities could include the following benchmark steps:

- Building community support
- Identify issues and problems
- Set goals and objectives
- Establish an action plan
- Enact an implementation plan

The establishment of a regional system of bicycle and pedestrian facilities has the potential to link communities and form a network of alternative transportation corridors. This system could connect to locally developed systems and link with sidewalks, shared-use paths, and local streets. The system of bicycle and pedestrian facilities in the region is currently growing through the efforts of stakeholder groups such as the RTCC and in the spring of 2010, Transportation Enhancement grants were awarded to trail projects in Goffstown, Manchester and Derry. SNHPC's trails in Map 8 can be viewed below. It displays the principal existing and planned system of bicycle and pedestrian facilities in the region. Further development of this infrastructure would be instrumental in the development of a transportation system where alternative modes become essential ingredients and significantly contribute to regional mobility and accessibility.

⁵⁵ City of Concord, NH. 2013. Concord Downtown Complete Streets Improvement Project. http://concordmainstreetproject.com/ (last accessed 28 October 2013)

⁵⁶ Central New Hampshire Regional Planning Commission. 2012. Complete Streets Policy. <u>http://www.cnhrpc.org/transportation/complete-streets-policy.html</u> (last accessed 28 October 2013)

Walking and biking also are a strategy in energy conservation efforts, as discussed in the prior energy conservation section.

In 2008, SNHPC and its member communities assisted the NHDOT in an update to the State Bicycle Maps. The completion of the project created a user-friendly bicycle map that includes transit and passenger rail information providing opportunities to increase the use of alternative transportation modes. The maps note that cyclists will find heavy traffic around the Manchester vicinity. Bicycle services can be found along surface highway corridors connecting Salem to Concord and Nashua to Manchester. A highlight of the Merrimack Valley is the Manchester and Lawrence Railroad corridor, where a paved rail trail currently connects Derry and Windham. See Appendix A: Regional Merrimack Valley Bicycle Routes (NHDOT).⁵⁷

With the assistance of an advisory committee comprised of representatives of various City Departments, the SNHPC completed a Downtown Manchester Pedestrian Study in 2008. The study recommendations included those involving prioritizing infrastructure improvements, developing policy related to development of procedures for determining vehicular and pedestrian rights-of-way, maintaining pedestrian crosswalks, incorporating pedestrian planning into the City's signage package, improving connectivity between pedestrian corridors and expanding pedestrian improvements to other portions of the study area.

The Safe Routes to School (SRTS) program is another existing pedestrian initiative. SRTS is designed to 1) teach children, parents and faculty about the benefits of walking to school, 2) increase the number of children who walk to school, 3) reduce traffic congestion in and around schools and 4) increase pedestrian and vehicular safety. SRTS programs are developed through a combination of educational measures, programs, and physical improvements to the transportation infrastructure. Benefits identified through a SRTS program include improved health and physical development in children, decreased conflicts between children and motor vehicles, reduced traffic congestion and air pollution, increased independence and improved social interaction skills for children. SRTS programs involve cooperation between the school community, local residents, municipal authorities and law enforcement. SNHPC has participated in various SRTS projects for member communities and in its capacity as a member of the State SRTS Advisory Council. SNHPC Safe Routes to School projects include:

- The Hallsville E.S. SRTS Demonstration Project was geared toward encouraging and enabling children to walk to school through strategies and physical improvements near the school. The project included identification and documentation of student and parent attitudes toward walking to and from school, completion of a Parking Occupancy Study for the area in the vicinity of the school and Development of a Traffic/Parking Mitigation Plan that has increased vehicular and pedestrian safety in the vicinity of the school.
- The SRTS Site Evaluation for Henry Wilson E.S. in Manchester involved completing a Site Evaluation
 under contract to the Manchester Health Department that focused on the area around the school
 and made recommendations to increase vehicular and pedestrian safety within the catchment area
 of the school. The completion of the Site Evaluation and subsequent Travel Plan enabled the school
 to obtain Federal funding to implement infrastructure improvements designed to improve safety
 and increase the number of children who walk to school.
- SNHPC also conducted a similar SRTS Travel Plan Site Evaluation for Weston E.S. in Manchester under contract to the Manchester Health Department.

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,

⁵⁷ NH Department of Transportation, 2013. *Merrimack Valley Region Bicycle Routes*. New Hampshire Regional Bicycle Maps. <u>http://www.nh.gov/dot/programs/bikeped/maps/mv.htm</u> (last accessed September 30, 2013).
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 include, 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 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. One multi-use trail that the RTCC is focused on developing is the paved trail connecting Derry and Windham.

The RTCC is another resource for trail maps. See the Appendix B Regional Trails Coordinating Council map for trails extending from the Southern New Hampshire region.

Based on a review of projects summarized in this section, the SNHPC has been shown to be committed to helping achieve our residents' vision for expanded transportation choices by facilitating and encouraging bicycling and walking as convenient, safe, and practical forms of transportation throughout the region. This work is generally supported by objectives emphasizing the regional network, safety, appropriate design, education and promotion, planning and maintenance, including:

- Establishing a continuous and coordinated regional bikeway and pedestrian walkway system, ensuing that this regional system is well linked with local municipal systems and adjacent systems in adjacent towns and regions;
- Making biking and walking safer;
- Creating a traveling environment that provides an inviting, viable alternative to motorized travel;
- Promoting public awareness and acceptance of bicycling and walking as attractive, viable transportation and recreation modes;
- Participating in and promoting SRTS activities in the SNHPC region; and
- Fully and meaningfully integrating bicycling and pedestrian needs into the land use planning, transportation planning, highway design, and highway maintenance processes.



Multi-modal transportation which includes consideration of the importance of pedestrian and bicycle facilities in this system is needed to expand transportation choices. Encouraging efficient use of the transportation infrastructure through the development of a multi-modal system focused on modes such as walking and cycling will result in 1) reducing the impact of vehicular transportation on our limited fuel supplies and land resources; 2) reducing the negative impacts of hydrocarbon combustion (fossil fuel) on air quality; and 3) reducing traffic congestion at major intersections and in densely populated areas. These priorities suggest the need for increasing use of bikeway and pedestrian facilities to not only expand capacity and improve travel efficiency, but also to provide other benefits such as improved health, safer streets, more vibrant downtown areas and increased economic activity and property values. Many of these benefits can be realized through focus on Pedestrian-Oriented Development and a "Complete Streets" approach to roadway network design at the local level. Developments and improvements emphasizing alternative modes of transportation will provide the infrastructure required for individuals to utilize increased transportation options.

In addition to specific completed projects such as assisting the NHDOT in an update of State Bicycle Maps, completion of the Manchester Downtown Pedestrian Study, and Safe Routes to School Travel Plans for Wilson and Weston Elementary Schools, SNHPC is also involved in numerous other activities promoting and advancing biking and walking as alternative modes of transportation in the region. The update of the Livable, Walkable Community (LWC) Toolkit was developed as a resource to 1) improve the livability of New Hampshire communities and 2) increase rates of physical activity among residents throughout the state. The Toolkit is a resource to bring together citizens and stakeholder groups to develop local action plans for becoming more livable, walkable communities. The updated Toolkit will serve as an educational and community planning resource to inform and educate communities, planning professionals and policy makers on how they can reshape the built environment to encourage and implement safe places for walking and biking.

SNHPC is currently participating, along with NHDOT, RPC and local trail stakeholder groups in the Regional Trails Coordinating Council (RTCC). The RTCC was designed to build upon the past work of the Manchester Regional Trails Alliance to assist member organizations in the development and implementation of a comprehensive trail plan. The RTCC strives to facilitate biking and walking through the connection of 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 RTCC is currently developing and implementing a comprehensive plan to complete regional north/south and east/west corridors by identifying and pursuing sources of funding, fundraising and prioritizing trail sections.

SNHPC will also continue to promote the development of pedestrian and bicycle facilities through its participation in the Transportation Alternatives (TA) (formerly Transportation Enhancement (TE)) and Congestion Mitigation and Air Quality Improvement Program (CMAQ) programs. The CMAQ program provides assistance for air quality improvement and congestion mitigation projects. Projects eligible for CMAQ funding include construction of bicycle and pedestrian facilities that are not exclusively recreational and establishing and funding State bicycle/pedestrian coordinator positions for promotion and facilitation of non-motorized transportation modes. The TA program is designed to fund activities such as construction, planning, and design of facilities for pedestrians and bicycles, and conversion of abandoned railway corridors into trails for pedestrians, bicyclists, and other non-motorized transportation users.⁴³ In an effort to develop a multi-modal transportation network that emphasizes cycling and walking, SNHPC will continue to facilitate and encourage these modes as convenient, safe, and practical forms of transportation. Goals related to this effort include establishing continuous and coordinated regional bikeway and pedestrian walkway systems and linking this system with others in adjacent towns and regions. Previous sections of this plan emphasized project level actions required facilitate this goal such as promoting more compact development to reduce distances between origin and destination points, actively considering bicycle and

pedestrian needs at every stage of the planning and development process and building community support and awareness of biking and walking.

PUBLIC TRANSPORTATION

Increasing accessibility and mobility of people and freight is essential to sustain the economy of the region. The ability of people and goods to move throughout the region has a direct impact on quality of life for residents and employees in the area. Increased accessibility and mobility in turn depend on the development and maintenance of an efficient transportation system that utilizes various modes. SNHPC currently participates in the planning process for existing transit services in the region, such as those offered by Manchester Transit Authority (MTA) and Cooperative Alliance for Regional Transportation (CART). SNHPC staff has also been involved in plans and agreements to develop new transit services such as the fixed-route CART Salem Shuttle, which is now in service.

Plans to expand passenger rail service in the region and proposals to develop multimodal transportation hubs at locations such as downtown Manchester and Manchester-Boston Regional Airport (MBRA) have the potential to improve accessibility and mobility for individuals and freight and facilitate access to goods and services. SNHPC continues to contribute to the efforts of the NH Rail Transit Authority (NHRTA) in developing commuter and passenger rail and related public rail transportation services. NHRTA is pursuing the implementation of passenger rail service on the NH Main Line Capitol Corridor as the first phase of a Boston to Montreal rail service. Currently, the project is being studied by URS Corporation, with the approval of the NH Executive Council, to determine its benefits and economic feasibility.

A study designed to determine the demand for regularly scheduled bus service between the Portsmouth Transportation Center and MBRA was completed by SNHPC and Rockingham Planning Commission in February 2009. After using this study as a guide to implementing the service, in April 2010 the NHDOT applied for Congestion Mitigation and Air Quality Improvement Program (CMAQ) start-up funding for the service. NHDOT Bureau of Rail and Transit was subsequently awarded a \$2,500,000 CMAQ grant to implement regularly scheduled bus services between the MBRA, downtown Manchester and the Portsmouth Transportation Center. The start of service occurred in autumn of 2013.

Many of the Commission's current transit activities deal with continuing support and assistance for existing transit services and other initiatives, such as the pursuit of an expansion of passenger rail services into southern New Hampshire, that involve new services. One element all existing transit services and proposals for future services have in common is the need for funding for operations and capital replacement. Because of competing economic priorities at the local level, communities in the region are challenged to provide local matching funds sufficient to sustain transit at current operating levels. Providing funding to expand transit services above their current levels will be even more challenging. The Financial Plan of the latest Regional Transportation Plan identifies revenues from various Federal, State and local sources available for funding transit projects. However, the funding projections it identifies are assumed to be sufficient only for maintaining the current service levels and replacement of capital; additional funding will be required for growth and expansion of transit in the region. It appears evident that in order to expand transit in the SNHPC region, sources of dedicated transit revenue must be identified.

MAINTENANCE OF ROADS AND BRIDGES

Maintenance is a cornerstone of state and regional goals. NHDOT's 2012 Annual Report emphasizes that the condition of New Hampshire's transportation infrastructure greatly affects the State's ability to provide for the safe and efficient movement of people and goods: "poorly maintained pavement, bridges, rail lines, buses, and airport runways increase travel time, decrease their capacity, create unsafe conditions for

the traveling public, and increase maintenance costs." ⁶ The Regional Transportation Plan similarly accentuates the importance of maintenance, noting that the region's continuing dependence on roadways for commerce and movement of goods suggests maintenance and preservation of the highway network will become increasingly important.

Data presented earlier in the chapter emphasize the importance that truck transportation currently plays in the movement of goods within the region. The data show that truck and highway transportation play a vital role in developing and sustaining the region's economy and therefore are essential for maintaining the quality of life for residents and businesses. At the present time, because commercial trucking services based on regional roadways will continue to be essential to sustain the region's economy, maintenance and preservation of the highway network is a key issue. It is also important to note the region's continuing dependence on roadways for freight transportation may require strategies to address air quality concerns and greenhouse gas emissions associated with transporting goods. In the longer term, increased accessibility and mobility for the movement of goods will depend on the development and maintenance of an efficient transportation system that utilizes other modes.

Existing conditions data relevant to maintenance goals includes pavement condition, Red Listed bridges, and rail lines capable of 40 mph speed. With regard to bridges, it notes that delaying maintenance and trying to address the worst bridges first increases rate of bridge deterioration, reduces bridge life expectancy, and requires major bridge rehabilitation or replacement at much higher costs. ⁶

With regard to pavement condition, NHDOT data for 1996 through 2012 show that the mileage of roadways in good or fair condition reached an all-time high of 3,064 miles in 2000, and is projected to continue declining steadily through 2018, the furthest year for which projections were made; see Figure 15 below. The goal of NHDOT is to hold the current amount of mileage in good or fair condition in 2012 steady through 2018, resulting in over 200 more maintained miles by that time. On State roads, it is the goal of NHDOT's roadway maintenance strategy to focus resurfacing activities on higher volume roadways thus keeping them from deteriorating to poor condition.⁶

Funding is at the heart of maintenance needs. NHDOT's anticipated cost to repair/replace all current Red Listed bridges is \$715M or \$71.5M per year over the next 10 years. There currently is a \$15M annual shortfall of available funding to address these needs. If this trending is not addressed, bridge conditions will worsen exponentially in the future.¹³



New Hampshire Pavement Condition

Source: NHDOT 2012

PASSENGER RAIL

In March of 2013, the NH Department of Transportation, working in concert with its counterparts in Massachusetts, started the NH Capitol Corridor Study, a 21-month project supported by both the Federal Railroad Administration (FRA) and Federal Transit Administration (FTA).

The project will include a study of potential rail and bus transit investments in the NH Capitol corridor, which connects the major population centers of New Hampshire to metropolitan Boston, and the development of a service development plan and related documents for intercity passenger rail between Boston, MA and Concord, NH. This study will be taking a multimodal, systems-wide approach in the development of the alternatives that will be considered. The NH Capitol Corridor extends 73 miles between Boston and Concord. Rail facilities within the corridor include existing Massachusetts Bay Transportation Authority (MBTA) commuter rail service between Boston and Lowell, MA and Pan Am Railways, Inc. freight service between Lowell, MA and Concord, NH. In addition to the existing rail infrastructure, highway corridors under consideration for commuter service investment include the US Route 3/Everett Turnpike corridor and the I-93 corridor in Massachusetts and New Hampshire. Both of these highway corridors are served by commuter and intercity bus service.

Implementing the findings of NH Capitol Corridor Study will improve public transit options in the region, whether by passenger rail or by bus.

TRANSPORTATION DEMAND MANAGEMENT

SNHPC promotes Transportation Demand Management (TDM) to reduce the number of single-occupancy vehicle trips. Organized TDM programs can include benefits such as vanpools, bicycling and walking programs, incentive programs, parking management, alternative work hours, and compressed workweeks. Rather than depending on Interstate widening programs to solve all our commute problems, TDM strives to reduce the number of vehicles on the road. By using the existing transportation infrastructure more efficiently, the impact of the expected population growth on transportation can be mitigated. While office employers can coordinate TDM benefits for their employees, Transportation Management Associations can coordinate TDM commuter benefits on a regional scale, making TMAs a valuable and sustainable transportation administration tool for the region.

In 2005, SNHPC completed a report called Smart Choices, Smart Trips: An Employer's Guide to Implementing Effective Transportation Demand Management Programs in Southern New Hampshire. In summary, the keys to a successful TDM program are communication, planning, and commitment. Employers must communicate effectively with their employees at every stage of the process to determine the needs and attitudes of employees as well as to inform them about options and office policies. Good research and planning can prevent disorganization and allow companies to implement new components of the TDM programs as resources become available. Finally, a company that is committed to changing the commuting habits of its workforce will follow through with their TDM program until their goals are met, demonstrating the importance of alternative transportation to the employees as well as the greater community.

A substantial proportion of traffic in the region is created by commuters who live far distances from where they work. Transit Oriented Development, in which towns build mixed-use, pedestrian-friendly developments around transportation centers (such as transit stations or Park and Ride facilities) can be promoted as a sustainable response to this issue. These higher-density complexes allow residents to live in close proximity to retail services and have easy access to their workplaces. They serve the towns by easing infrastructure costs and reducing traffic congestion. Park and Ride lots and facilities are other tools that can be used to pursue similar ends. Cheaper and easier to implement than Transit Oriented Developments, Park and Ride facilities placed at major crossroads can promote car-pooling and reduce congestion and carbon emissions. Park and Ride can be viewed as a low hanging fruit when pursuing larger sustainable transportation measures as it can be a small but important first step toward that goal. The New Hampshire DOT maintains a list of all Park and Ride facilities in the state, offers a commuter matching service, and provides other Park and Ride information through its Rideshare program- see the Existing and Future Conditions section of this chapter for locations in Southern New Hampshire.⁵⁸

Other measures for consideration that promote a more sustainable transportation network moving into the future include:

- The continued pursuit and promotion of bicycle and pedestrian planning;
- Increased public transit options, including the possible creation of a regional transit authority;
- Increased park-and-ride facilities near interstate entrance ramps and other major roadway junctions to encourage more carpooling and vanpooling;
- Commuter rail to Boston and other passenger rail services;
- Park and ride facilities near major highway access points;
- Intelligent Transportation Systems (ITS) that utilize advanced communication and information technology to increase driver safety, improve transportation times, reduce fuel consumption, make freight delivery more efficient and generally improve upon the current transportation system;
- Provide alternative fuel infrastructure as the technology becomes widely available. Examples of
 this would include pumps for alternative fuels at filling stations and recharging stations for electric
 cars;
- Additional smart growth land use techniques similar to TOD that promote compact development and less auto-dependence, including Planned Unit Developments (PUD), Traditional Neighborhood Design (TND) developments, Village Plan Alternatives (VPA) and Conservation Subdivisions.

SNHPC is also collaborating with other State MPOs to address congestion in the urbanized portion of New Hampshire. Federal transportation law requires that MPOs serving the same Transportation Management Area (urbanized area with a population over 200,000, as defined by the Bureau of Census) must address congestion management via a Congestion Management Process (CMP). Because portions of the Rockingham Planning Commission (RPC), Nashua Regional Planning Commission (NRPC) and SNHPC are included in the census Boston Urbanized Area, these organizations completed development of CMPs in 2010.

A CMP is defined as a set of actions linked to the planning and environmental review processes that provide for effective management and operation of a transportation system. It is based on agreed-to travel demand reduction and operational management strategies and additional measures designed to increase capacity. The CMP, which can be integrated into the Regional Transportation Plan, is used to identify congested locations, determine the causes of congestion, develop alternative strategies to mitigate congestion, evaluate the potential of different strategies and track and evaluate the impact of previously implemented congestion management strategies.

The ultimate goal of the SNHPC CMP involves the development of a series of goals pertaining to managing or minimizing the impacts of congestion in the region. SNHPC is currently collaborating with RPC and NRPC on development of the annual CMP programs to initiate the process of managing congestion in regional corridors. Eventually, each MPO will individually implement its own strategies to address congestion issues. The final step in the development of the CMP will involve the evaluation and monitoring of the implemented strategies.

⁵⁸ NH Rideshare (2013). NH Rideshare – Your Source for Transportation Alternatives. NHDOT. <u>http://www.nh.gov/dot/nhrideshare/index.htm</u> (last accessed 04 November 2013)

Non-governmental initiatives to encourage alternative transportation also play a role the region. In 2011, the first Statewide Commute Green Challenge saw 678 commuters saving 64,731 miles in a one-week competition. The coalition behind the challenge, Commute Green New Hampshire, also worked together to build a website, Trip Logger tool, coordinate marketing materials, and secure funding in addition to conducting the Statewide Challenge. In 2012, more than 500 individuals and 100 teams logged their green trips on the website (CommuteGreenNH.org) from May to December 2012. During that time, participants logged 223,589 miles, avoided 10,801vehicle trips, reduced CO₂ emissions by 219,117 pounds, and saved \$128,116 in vehicle operating costs.

CGNH has initiated ongoing conversations with a

The 8 Step CMP Development Process



FIGURE 16: THE STEPS OF THE CONGESTION MANANGEMENT PROCESS (FHWA)

number of different organizations. It is working with vRide, a ride sharing company, to develop vanpools along I-93 corridor. Concurrently, Central New Hampshire Regional Planning Commission (CNHRPC) staff is working with NH Department of Administrative Services to develop a pre-tax transit benefit program for state employees. CGNH is also in ongoing conversations with MassRides, Massachusetts Transportation Management Associations and their advisory council on how to coordinate connectivity of ridematching technology, marketing materials, events, etc. These organizations have been invited to participate in the strategic planning process. Likewise, CGNH is working with Vermont Agency of Transportation and GoMaine on ridematching technology evaluation and connectivity and how to develop an effective customer service call center as well as using coordinated marketing materials. These agencies have been invited to participate in the strategic planning process.

SMART GROWTH & LAND USE

Smart Growth and Land Use themes focus on alternative transportation modes; relieving congested roads; decreasing water and air pollution; and promoting energy efficiency; infill and compact development; mixed use; and transit-oriented development. Smart growth land use techniques include Planned Unit Developments (PUD), Traditional Neighborhood Design (TND) developments, Village Plan Alternatives (VPA) and Conservation Subdivisions.

A set of ten basic principles have been developed by the Smart Growth Network. The principles stem from the experiences of communities around the nation that have used smart growth approaches to create and maintain great neighborhoods. They are:

- 1. Mix land uses
- 2. Take advantage of compact building design
- 3. Create a range of housing opportunities and choices
- 4. Create walkable neighborhoods
- 5. Foster distinctive, attractive communities with a strong sense of place
- 6. Preserve open space, farmland, natural beauty, and critical environmental areas
- 7. Strengthen and direct development towards existing communities
- 8. Provide a variety of transportation choices
- 9. Make development decisions predictable, fair, and cost effective

10. Encourage community and stakeholder collaboration in development decisions⁵⁹

Transportation overlaps with land use, housing, community development, and other focus areas in smart growth. Creating walkability and providing a variety of transportation options are at the heart of smart growth in transportation planning.

SCENIC BYWAYS

Who Said "Live Free or Die"?

General John Stark, a New Hampshire hero said it, and we celebrate it!



Tour the General John Stark Scenic Byway and see why we call NH home. The Byway towns of Dunbarton, Goffstown, New Boston, and Weare welcome you!

FIGURE 17 THE GENERAL JOHN STARK SCENIC BYWAY

Through the efforts of the SNHPC, the Towns of Goffstown, New Boston and Weare and the Town of Dunbarton in the Central New Hampshire Regional Planning Commission region, the General John Stark Scenic Byway was designated a New Hampshire State Scenic and Cultural Byway on June 5, 2008, by the State Scenic and Cultural Byways Council and NHDOT. The Byway showcases many cultural and historical features of regional, State and National significance. To facilitate ongoing management of the Byway, a series of goals and strategies as well as a corridor management plan have been identified and developed by the General John Stark Byway Council.

Economic development is also an important strategy of the General John Stark Scenic Byway supporting the goals and objectives of the Regional Transportation Plan. Specifically, the Byway seeks to expand local economic development by; 1) expanding existing local businesses, including local artists, agriculture, and tourist related businesses; 2) encouraging businesses and communities to market the Byway in their advertising; and 3) promoting new tourist related businesses. The Council has designed a number of strategies to implement these goals including working with member communities to encourage incorporating the Byway into their economic development strategy. Support for small businesses applying for Tourist Oriented Directional Signs to help attract visitors to their business will also be provided and the Council will also work with business owners to participate in the Byway planning process.

Two other scenic byways recently won approval from the State Scenic Byway Council in May 2014: the Upper Lamprey Scenic Byway and the Robert Frost/Old Stage Coach Scenic Byway. The Robert Frost/Old Stage Coach Scenic Byway

includes the towns of Auburn, Chester, Derry, Hampstead, and Atkinson, and its nomination was submitted to NH DOT in August 2012. The Upper Lamprey Scenic Byway encompasses the towns of Northwood, Deerfield, and Candia. SNHPC submitted this byway's nomination on behalf of the ad hoc byway committee in January 2013. These byways' ad hoc committees remain very active in their compilation of Corridor Management Plans, which will be essential in securing federal byway funding, should it become available in the coming years.

⁵⁹ Environmental Protection Agency, 2013. About Smart Growth. <u>http://www.epa.gov/dced/about_sg.htm</u> (last accessed January 24, 2014)



CLIMATE CHANGE ADAPTATION

The NH Climate Adaptation Plan recommends including climate change adaptation throughout programs

and planning. Various types of infrastructure, such as the transportation network, are at increased risk of damage and disruption due to climate change.

SNHPC is currently conducting culvert assessments and emergency planning which has revealed infrastructure that is vulnerable to extreme weather events. Major flood events have caused significant damage to roads, bridges and culverts in our communities. The Towns of Goffstown and Raymond in particular have experienced many flooding issues in the past five years that have inflicted considerable damage to local roads, bridges and property. Towns such as Deerfield and Chester had

all of their major evacuation routes closed off due FIGURE 18 2007 FLOODING IN DEERFIELD, NH to flooding in recent big storms - see Figure 18.



Mobility of residents and emergency responders, particularly in rural towns which do not have many roads, is a worry; the biggest concern above all is safety. Safety is a clear issue in towns such as Goffstown where over 300 homes are in low-lying areas prone to flooding. SNHPC is studying the Piscataquog River quite extensively right now by developing a hydrology model to determine the vulnerability of local road and stream crossings. In addition, SNHPC plans to team up with the USGS Pembroke, NH office to conduct a flood inundation and early warning study. SNHPC is also currently in the process of assisting our communities in updating their Hazard Mitigation Plans.

FHWA and FTA have issued guidance to MPOs on natural hazard mitigation involving the protection of transportation infrastructure from the impacts of climate change. As MPOs incorporate security and natural hazard planning into their processes, they are working in an environment of "All-Hazards Planning" as defined by the Department of Homeland Security (DHS) in its regulations for planning for and responding to threats to the public and the nation's infrastructure. DHS uses the term all-hazards to describe an incident, "natural or man-made, that warrants action to protect life, property, environment, and public health or safety, and to minimize disruptions of government, social, or economic activities."

SNHPC presented an all-hazards planning approach to security in early 2010 to its Technical Advisory Committee which includes representatives from the NHDOT and FHWA. Subsequent discussion focused on the security-related projects currently being undertaken at the regional level as well as on additional ways that SNHPC may be able to use its resources to contribute further to security planning work in the region. The following list of activities was identified:

- Transportation modeling to support and coordinate local evacuation plans.
- Mapping local and regional evacuation routes in relation to transportation infrastructure and natural hazards.
- Identifying the transportation needs of transportation-dependent populations in the region.
- Utilizing the Public Participation Plan for the SNHPC Region to disseminate information about regional evacuation plans to the public.

Recent events including a severe ice storm in December 2008 and a significant windstorm in February 2010 highlighted the need for community preparedness in the SNHPC region. As a result, SNHPC in association with the City of Manchester and a Community Preparedness Committee consisting of representatives from emergency management, police, fire and local government from each town in the region, prepared a Southern New Hampshire Community Preparedness Plan in 2010. The Plan, which was created to develop a regional framework to enable planning for increasing levels of community preparedness, provides an overview of emergency services in the Southern New Hampshire region including contact information for emergency management personnel in each community. Mitigation strategies and actions including evacuation procedures are outlined and the Plan also identifies community readiness stages for each community and strategies for implementation. The plan outlines an outreach process developed and implemented in the Southern New Hampshire region.

This Southern New Hampshire Community Preparedness Plan is intended to be a model for other regions in the State for developing their own community preparedness programs and for increasing levels of community preparedness throughout the State of New Hampshire. By addressing the need for community preparedness and planning on a regional level, communities will all benefit from increased coordination and efficiency of resources.

In addition to the Southern New Hampshire Community Preparedness Plan, SNHPC has also collaborated with its member communities in the development of local Hazard Mitigation Plans. Hazard mitigation is defined as "activities designed to alleviate the effects of a major disaster or emergency or long-term activities to minimize the potentially adverse effects of future disaster in affected areas". This includes structural interventions such as flood control devices and nonstructural measures such as avoiding construction in flood-prone areas. Mitigation includes not only avoiding the development of vulnerable sections of the community but also making existing development in hazard-prone areas safer.

FEMA has mandated that all communities within the State of New Hampshire establish local hazard mitigation plans as a means to reduce future losses from natural or man-made hazard events before they occur. The New Hampshire Division of Homeland Security and Emergency Management provided funding to SNHPC to create local Hazard Mitigation Plans for its communities. The SNHPC originally began preparing local Hazard Mitigation Plans for its member communities in 2001 and updates to the Plans were initiated in 2008. The mitigation plans include critical facilities at risk including medical facilities, public utilities and schools and also consider primary and alternate evacuation routes in each community.

Increasing the security of the transportation system in the region through the success of the programs discussed in this section depends heavily on public knowledge and acceptance of them. Much of the information about these projects is available to the public through the internet. Because of the importance of the internet and access to it in delivering information to the public, the University of New Hampshire, nine regional planning commissions and the NH Department of Resources and Economic Development/Division of Economic Development are currently collaborating on the State of New Hampshire Broadband Data and Development Grant Program Project.

SNHPC's newest climate change adaptation effort is the Piscataquog Watershed Stream Crossing Vulnerability Assessment (anticipated completion December 2013), which will inform adaptation to more frequent extreme precipitation events. SNHPC has selected a contractor to build an Excel and GIS-based hydrologic/ hydraulic capacity model formulated on the NRCS TR-55 runoff model, and to apply this model to all of the watershed's stream crossings (e.g. drainage pipes, culverts, arches and bridges). The project involves assessing the design, condition and vulnerability of each stream crossing and recommending the necessary sizing of these structures for replacement or restoration priority so they will not wash out during severe storms and flooding events.

One key issue in ensuring that transportation infrastructure can withstand climate change is strengthened design guidelines. Adapting to climate change by building and rebuilding stronger ensures that structures won't waste taxpayer dollars by getting wiped out a couple of years down the road in the next big storm.

However, engineers do not necessarily factor in climate change when they design transportation infrastructure. Designs are often based upon out-of-date Technical Paper 40 (TP40) precipitation data on the 100-year flood of the past. Organizations such as the Northeast Regional Climate Center at Cornell University⁶⁰ have updated the data to reflect climate change-caused precipitation changes that have occurred through recent years. Adopting these new data and incorporating them in design guidelines will ensure longer lasting infrastructure. Additionally, there is a need to not only look back on climate change that has already occurred, but to also look ahead and anticipate further future changes.

ALTERNATIVE FINANCING

As discussing in the Existing and Future Conditions section, there is a need for alternative financing in order to fulfill stated transportation goals. Table 12, below, presents a list of options for funding transportation improvements.

TABLE 12: ALTERNATIVE FINANCING METHODS

Alternative	Description	Drawbacks/Benefits
Public-Private Partnerships (PPPs or P3s)	FHWA encourages the consideration of public-private partnerships: "Early involvement of the private sector can bring creativity, efficiency, and capital to address complex transportation problems facing State and local governments." ⁶¹	New Hampshire has not enacted statutes enabling use of PPPs at this time. ⁶²
Tax increment financing	Property values are assessed for the base year. Any taxes from an increase in property values or new property are dedicated to improvements in those areas, such as roads, transit, parking, pedestrian, and traffic signals.	Most districts use bonds initially and then use taxes to repay bonds. Immediate tax benefits from new developments delayed for several years until bonds are paid off.
Assessments	A fee on properties within a district to pay for specific improvements within the district. Can be one-time or recurring, used to retire bonds or fund maintenance costs.	Works well only with cooperation from local businesses paying the fees. Are not considered taxes and cannot be deducted from federal taxable income.
Transit Assessment District	This is similar to assessment, but rates vary according to proximity from transportation improvements. Can be divided into graduated assessment benefit zones.	Subject to voter approval. Can be done completely at a local level.
Fees	As opposed to taxes, these are levied only on those parties causing a significant impact on transportation infrastructure. May be assessed based on square ft of development, units constructed, or peak hour vehicle trips generated.	Can be challenged by the private sector. Levied at the time that the building permit is issued—assuring concurrent construction of roads. Money only funds new improvements—new and old residents must equally share maintenance costs of old roads.

⁶⁰ DeGaetano, A. and Zarrow, D., n.d. Extreme Precipitation in New York & New England. Northeast Regional Climate Center, Cornell University.

http://precip.eas.cornell.edu/docs/xprecip_techdoc.pdf (last accessed January 17, 2014)

⁶¹ Federal Highway Administration, 2013. Public-Private Partnerships. U.S. Department of Transportation. <u>http://www.fhwa.dot.gov/ipd/p3/index.htm</u> (last accessed January 21, 2014)

⁶² Federal Highway Administration, 2013. State P3 Legislation. U.S. Department of Transportation. <u>http://www.fhwa.dot.gov/ipd/p3/state_legislation/index.htm</u> (last accessed January 21, 2014)

Negotiated Investments	Private sector contributes or fully funds public sector transportation improvements, either in exchange for zoning changes and building permits or for projects that benefit the private company.	Can be used on the local level as a negotiation technique for developers who need zoning changes.
Private donations or initiatives	A private developer finances all or part of a transportation project that benefits him/her but is a low public priority.	Raises the question of the degree to which private interests can influence public priorities.
Use of property rights	The city or state sells or leases property rights above, below, or adjacent to highways, routes, or other transportation facilities.	Requires intensive negotiations and involvement and is a lengthy process.
Contracted transit services	When private interests dictate a public- access transit system, private funds are invested in fully financing or contracting out services for public use.	In cases with little public involvement, transit can become effective and efficient for the intended users. However, construction is totally dictated by private interests.
Tolls	Tolls are collected for use on roads.	Toll roads are constructed more quickly.
Tax on gasoline	Taxes are levied on gasoline and used towards transportation projects.	Can be passed at a local or county level. Must receive public support. Gas prices already expensive.
Tax on Vehicle Miles Travelled (VMT)	Taxes take the form of a distance-based user fee. Oregon has passed legislation enabling 5,000 volunteers to be charged \$0.015/mile in 2015 (in lieu of the gas tax in place).	Political acceptance is still growing on the national level, but this approach is not feasibility in New Hampshire.
Beer tax	Taxes collected on beer in Birmingham, AL	New Hampshire has no sales tax.
Lottery	Portions of lottery proceeds go toward transit and transportation costs.	Currently, NH lottery revenues go toward operating expenses, prizes, and education. Requires legislative approval.

PUBLIC OUTREACH

One of the initial steps in developing a fully integrated and connected transportation network is to ensure as much information as possible on an area's transportation plans, programs and projects is readily available to stakeholders and the public. This information must be accessible to a wide variety of individuals, groups, and organizations affected by and/or interested in these issues. Establishment of effective early and continuing public involvement in the planning process before key decisions are made, and while there is ample opportunity to affect decisions, is essential to the development of a planning process emphasizing a fully integrated and connected transportation network.

In order to develop a fully integrated and connected transportation network, SNHPC is committed to promoting opportunities for informed public input to be used in the decision making process by providing timely access to needed information and reasonable opportunities for interested parties to comment. In an effort to facilitate the development of an integrated and connected transportation network in this region, the SNHPC is responsible for numerous plans designed to fully inform the public about transportation plans, programs and projects.

The Public Involvement Process for the SNHPC Region was designed to satisfy specific purposes and objectives pertaining to public involvement, incorporate current practices, and technological innovations to satisfy the requirements of Federal transportation legislation. Current transportation legislation includes

increased emphasis on public participation emphasis including a need for extensive stakeholder participation above and beyond "public involvement". Developed in the spirit of improving citizen participation and providing multiple opportunities for public officials, special interest group, and citizen input, the Public Involvement Process for the SNHPC Region represents the current practices of the Commission for engaging the public in the planning process. The Process is included as Appendix B of the Regional Transportation Plan.

Information available on the SNHPC website makes use of reproductions of plans, maps, graphics and other visualization techniques designed to more effectively communicate information to the public. SNHPC also directly distributes the latest news and information from the Commission through the monthly "Media Blast" and quarterly newsletters. It is hoped that the ability of SNHPC to effectively communicate information to the public will be further enhanced through the development of new links between the Commission's transportation database and its GIS capabilities. Staff is currently focusing on 1) linking traffic count data from the annual regional traffic counting program to the network of the SNHPC travel demand model, 2) linking the traffic flows, accident history, level of service, level of congestion, transportation hubs, transit routes and major activity centers with regional maps in GIS format. It is hoped the information developed through these enhanced features will be made available to the public. Interactive maps displaying traffic counts as different locations throughout the region are available on the SNHPC website.

The SNHPC regularly participates in public forums and community surveys to more effectively gauge local attitudes. An extensive outreach effort was untaken for this effort to update the Regional Comprehensive Plan, some of the results of which can be viewed at the beginning of this chapter. The full input collected from the regional workshops, neighborhood conversations, events, surveys, and comment cards can be found in SNHPC's Public Outreach Report on the Granite State Future project. On behalf of the Region 8 Regional Coordination Council, SNHPC also participated in the administration of Community Transportation provider and consumer surveys that were administered to clients of social service agency based clients in the region. SNHPC also facilitates access to information on transportation planning plans, programs and projects through additional activities such as the Planners Roundtable series which have been held on a continuing basis since 2005. Topics discussed at Planners Roundtable meetings have included the planned Woodmont Commons development in Londonderry, the Capitol Corridor passenger rail project and the Route 3 Mixed Use Overlay District in Bedford.

OUTCOMES

The core goals and recommendations help to define the region's transportation agenda and identify and prioritize projects that can best meet transportation needs as discussed in Key Issues and Concerns. They were developed based on the principles of the Key Projects and Strategies.

CORE GOALS

The transportation core goals, listed below, are as follows:

- 1. Safer transportation for all users
- 2. Fewer trips by single occupancy-vehicles
- 3. Increased availability of pedestrian and bicycle facilities
- 4. Increased availability of public transportation
- 5. Development of passenger/ freight rail
- 6. Smart growth land use policies

- 7. Climate change adaptation in transportation
- 8. Increased education on transportation issues and alternatives
- 9. Sustainable funding for transportation infrastructure

RECOMMENDATIONS

The recommendations listed below are strategic initiatives intended to demonstrate a commitment to and implementation of the aforementioned core goals and to bring about enhanced transportation infrastructure 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. Some of these initiatives are also listed in others chapters of *Moving Southern New Hampshire Forward*. These strategic initiatives are ranked in order of priority and include:

- Analyze Complete Streets Challenges Conduct a comprehensive analysis of state and local policies and practices preventing Complete Streets or causing difficulties for municipalities interested in implementing Complete Streets, and suggest recommendations. For example, state guidelines may not currently encourage bicycle use of shoulders, and legal responsibilities concerning snow and ice removal may be a difficulty in sidewalk implementation.
- Offer Complete Streets Training and Educational Opportunities Provide information and ongoing support to municipal planners, engineers, and other transportation professionals, community leaders, and the general public to develop understanding of "the Complete Streets approach, the new processes and partnerships it requires, and the potential new outcomes from the transportation system," as identified by Smart Growth America.⁶³
- Change Procedure and Process in Transportation Decision-Making In order to smoothly ameliorate the identified challenges to Complete Streets implementation, revise, update, and adopt documents, plans, and processes. Maintenance and operation procedures need to be updated to look beyond automobile movement, as does criteria for selection of transportation projects. Likewise, design guidance and criteria for measuring infrastructure performance need to account for all users of the transportation system.⁶³
- **Develop Additional Funding Sources** Funding is critical to implementing the infrastructure projects that are needed in the region. Financing measures to consider include Public-Private Partnerships (PPPs), impact fees & TIFDS, private investment, bonding, and local taxes.
- Develop a Regional Bicycle and Pedestrian Plan "Bicycle-friendly communities have one thing in common: they place a high priority on short- and long-term planning methods and policy-making that incorporate and support non-motorized transportation."⁶⁴ A Plan helps to ensure that appropriate facilities for bicyclists are provided throughout the built environment in the region.⁶⁵,⁶⁶

⁶³ Smart Growth America (2010). Implementation. National Complete Streets Coalition. Retrieved from <u>http://www.smartgrowthamerica.org/complete-streets/implementation</u> (last accessed 6 January 2014)

⁶⁴ Pedestrian and Bicycle Information Center (2013). Develop Plans and Policies. http://www.bicyclinginfo.org/develop/ (last accessed 6 January 2014)

⁶⁵ Pedestrian and Bicycle Information Center (2013). Levels of Bicycle Planning. Retrieved from <u>http://www.bicyclinginfo.org/develop/levels.cfm</u> (last accessed 6 January 2014)

⁶⁶ League of America Bicyclist (2013). The Essential Elements of a Bicycle Friendly America. <u>http://www.bikeleague.org/content/5-es</u> (last accessed 8 January 2014)

- Implement Transportation Demand Management Evaluate strategies such as ordinances and programs encouraging carpooling, staggered work hours; work at home options, and park and ride lots that can reduce the number of single-occupancy vehicle trips, causing congestion on the region's primary roads and highways and which have positive impacts on energy and air quality. Trip reduction ordinances can be a successful tool for managing congestion and involving the private section in traffic management efforts.⁶⁷
- **Become a Bicycle-Friendly Community** Work with the League of American Bicyclists to achieve designation as a Bicycle-Friendly Community in each municipality across the region.⁶⁸
- Utilize Smart Growth Principles in Land Use Management and Urban Design Adopt land use policies that allow for transportation efficient development and opportunities for short pedestrian and bicycle trips, as well as other alternative transportation options.⁶⁹
- Update Design Guidelines to Reflect Current and Future Climate Change When designing transportation infrastructure, engineers consult data on extreme precipitation and flooding events (e.g. the 100-year flood). Due to climate change, this data has become out-of date, and it is recommended that engineers use accurate data reflecting present change and weighing future change.
- 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.
- 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.
- 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.
- Research and Prepare for New and Smart Transportation Facilities and Vehicles in the Future As fuel costs increase in the region, there could be continued growth and new technological developments in electric vehicles and smart driverless cars in the future. SNHPC should continue to research, advise and help prepare the region around the growth of new transportation technologies in the future.
- Prepare the Region's Transportation Infrastructure to Adjust to Older and More Elderly Drivers – As the region's population continues to grow older in the future, it is important that transportation infrastructure - streets, bridges, public transit, rail, air – be respectful of the needs of older citizens in using these systems from both a safety and operational nature. This includes making it safer for older drivers to see important safety markings and signage,

⁶⁷ U.S. Environmental Protection Agency, n.d. Trip Reduction Ordinances. <u>http://www.epa.gov/otaq/stateresources/policy/transp/tcms/trip_reduction.pdf</u> (last accessed 8 January 2014)

⁶⁸ League of America Bicyclist (2013). Becoming A Bicycle Friendly Community. http://www.bikeleague.org/content/communities (last accessed 8 January 2014)

 ⁶⁹City of Seattle, Washington, 2008. Best Practices: Land Use Management and Urban Design. Seattle Urban Mobility Plan.

http://www.seattle.gov/transportation/docs/ump/07%20SEATTLE%20Best%20Practices%20in%20Transportation %20Demand%20Management.pdf (last accessed 8 January 2014)

particularly during night driving. Improvements in directional markings and signage could also be integrated with many online and smart phone applications.

APPENDIX



MOVING SOUTHERN NH FORWARD ^{VOLUME 2} Chapter 4: Community Infrastructure & 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.

Adopted by the Planning Commission on December 16, 2014

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COMMUNITY INFRASTRUCTURE AND FACILITIES

PURPOSE

The purpose this chapter is to provide an overview of the 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 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 Decision-Making

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



PUBLIC INPUT AND SURVEY RESULTS

The public input collected for this chapter of the plan was collected primarily through the regional visioning workshops, public comments submitted online, and a telephone survey conducted by the University of New Hampshire. From all the public input received 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 most targeted by residents.

COMMUNITY DEVELOPMENT

From the UNH Survey Center's telephone survey over two thirds (67 percent) 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 percent) and broadband access (42 percent).



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

Within the SNHPC Region, households earning between \$90,001 and \$160,000 and those aged 40-49 are more likely to favor higher taxes for the development of water lines as opposed to other households earning less. More than two-thirds (70 percent) of 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 percent), followed by energy efficiency (18 percent), safe and affordable housing (15 percent), economic development (14 percent), infrastructure for development (8 percent), transportation system (7 percent), preparedness for weather-related or other emergencies (6 percent), all priorities are equal (6 percent), something else (3 percent) and none of the above (1 percent).

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, 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.

Municipality	School Name	Grade Span	Туре
Auburn	Auburn Village School	К, 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	К, 1-4	Public
	Ross A. Lurgio Middle School	7-8	Public
Candia	Henry W. Moore School	К, 1-8	Public
Chester	Chester Academy	P, K, 1-8	Public
Deerfield	Deerfield Community School	P, K, 1-8	Public
Derry	Derry Village School	К, 1-5	Public
	East Derry Memorial Elementary School	К, 1-5	Public
	Ernest P. Barka Elementary School	К, 1-5	Public
	Gilbert H. Hood Middle School	6-8	Public
	Grinnell School	P, K, 1-5	Public
	South Range Elementary School	К, 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	Р, К	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		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		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

	Highland-Goffes Falls School	K, 1-5	Public
	Hillside Middle School	6-8	Public
	Jewett School	Р, К, 1-5	Public
	Manchester Central High School	9-12	Public
	Manchester Memorial High School		Public
	Manchester School of Technology	9-12	Public
	Manchester West High School	9-12	Public
	McDonough School	К, 1-5	Public
	Middle School at Parkside	6-8	Public
	Northwest Elementary School	К, 1-5	Public
	Parker-Varney School	Р, К, 1-5	Public
	Smyth Road School	P, K, 1-5	Public
	Southside Middle School	6-8	Public
	Webster School	К, 1-5	Public
	Weston School	К, 1-5	Public
	Wilson School	К, 1-5	Public
	Mill Falls Charter School	K, 1-4	Charter
	Making Community Connections Charter School	6-12	Charter
	Polaris Charter School	К, 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	Р	Public

Source: NH Department of Education,

http://my.doe.nh.gov/Profiles/PublicReports/PublicReports.aspx?ReportName=SchoolList (accessed April 7, 2014).

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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

TABLE 4-2: SCHOOL ADMINISTRATIVE UNITS IN SNHPC REGION

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
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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 ^A	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 ^A	3,169	3,169
Raymond High School	Raymond	445	445

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



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.

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

TABLE 4-4: EDUCATION BUDGETS BY MUNICIPALITY

*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 <u>Municipal Benchmarks</u>, David N. Ammons, 2nd Edition, 2001, page 301.

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

TABLE 4-5: POLICE BUDGETS BY MUNICIPALITY

Source: NH Department of Revenue

TABLE 4-6: POLICE EMPLOYEES BY MUNICIPALITY

		Police Employe	es*	2010 Full-time		
Municipality	2005	2010	2012	Population	statt/1,000 Population ratio	
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 handing 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 <u>Municipal Benchmarks</u>, David N. Ammons, 2nd Edition, 2001, Table 11.3, page 144.

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

TABLE 4-7: FIRE PROTECTION BUDGET BY MUNICIPALITY

Source: NH Department of Revenue

TABLE 4-0: FIRE EMPLOTEES DI MUNICIPALITI	TABLE 4-8: F	FIRE	EMPLOYEES	ΒY	MUNICIPALITY
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	Fire Em	ployees (Fu	ull Time)		Full-time Fire
Municipality	2005	2010	2012	2010 Population	Employee/1,000 Population Ratio
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.

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

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

*NBO indicates 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 <u>Municipal Benchmarks</u>, 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 <u>Municipal Benchmarks</u>, David N. Ammons, 2nd Edition, 2001, pg. 105.

⁴ lbid. 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 <u>Municipal Benchmarks</u>, 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 <u>Municipal Benchmarks</u>, David N. Ammons, 2nd Edition, 2001, pg. 217.

⁶ lbid. pg. 216.

⁷ lbid. Table 16.15, pg. 230.

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	\$1 <i>57</i> ,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

TABLE 4-10: LIBRARY BUDGETS BY MUNICIPALITY

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. <u>http://www.nhasc.org/seniorcenters.html</u> (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.



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

	TABLE 4-12: GENER	L GOVERNMENT	BUDGETS BY	MUNICIPALITY
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Source: NH Department of Revenue9

		Go	Average Number				
Municipality	2005	2006	2007	2008	2009	2010	of Employees 2005-2010
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

TABLE 4-13: GENERAL GOVERNMENT EMPLOYEES BY MUNICIPALITY

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.

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

TABLE 4-14: TOTAL TAX RATES PER MUNICIPALITY*

* "Total Tax" includes municipal, local education, state education, and county taxes Source: NH Department of Revenue

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

TABLE 4-15: PROPERTY TAX RATES (EQUALIZED)

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.

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		

TABLE 4-16: CAPITAL IMPROVEMENT PLANS BY MUNICIPALITY

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**).

For MWW, 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.

In total, when MWW, Pennichuck and the towns of Derry and Hooksett water systems are combined in the region they can provide up to 65% or more of the region's water needs. Many of the region's towns also collaborate in mutual aid and have in place interconnection options in case a system closes or shuts down due to an emergency or other condition. The Town of Windham, for example, has an agreement with Salem/Methuen and Derry for mutual aid and future water extensions, if necessary.

¹¹ 2012 Water Rate Survey. NHDES.

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

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			
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
			Ond				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			

TABLE 4-17: UTILITIES BY TOWN

*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)

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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/hyd rant	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

TABLE 4-18: NH DES WATER RATE SURVEY RESULTS

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 <u>http://www.nh.gov/water-sustainability</u>. Accessed January 3, 2014.

TOWN OF AUBURN

<u>Service Area</u> - 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.

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

Future Plans and Projects – None reported.

TOWN OF BEDFORD

<u>Service Area</u> – 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.

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

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

Future Plans and Projects – None reported.



TOWN OF CHESTER

<u>Service Area</u> – Not reported.

<u>Expansion and Improvements since 2010</u> – 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.

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

Number of Domestic Services – Not reported.

Future Plans and Projects – Not reported.

TOWN OF DERRY

<u>Service Area</u> – 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.

<u>Expansion and Improvements since 2010</u> – 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.

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

<u>Number of Domestic Services</u> – 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.

<u>Future Plans and Projects</u> – 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

<u>Service Area</u> – 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.

<u>Expansion and Improvements since 2010</u> – 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.

<u>Water Source/Plant(s) Used</u> – 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.

<u>Number of Domestic Services</u> – 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.

<u>Future Plans and Projects</u> – 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

<u>Service Area</u> – 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.

<u>Expansion and Improvements since 2010</u> – 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.

<u>Water Source/Plant(s) Used</u> – 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

<u>Service Area</u> – 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.

<u>Water Source/Plant(s)</u> 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.

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

<u>Future Plans and Projects</u> – None reported.

CITY OF MANCHESTER

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

<u>Expansion and Improvements since 2010</u> – 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.

<u>Water Source/Plant(s) Used</u> – 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.

<u>Number of Domestic Services</u> – 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.

<u>Future Plans and Projects</u> – 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

<u>Service Area</u> – 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.

<u>Water Source/Plant(s) Used</u> – 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.

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

<u>Future Plans and Projects</u> – 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 WEARE

<u>Service Area</u> – A small portion of the town center.

Expansion and Improvements since 2010 – None reported.

<u>Water Source/Plant(s)</u> 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.



TOWN OF BEDFORD

<u>Service Area</u> – 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.

<u>Expansion and Improvements since 2010</u> – 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.

<u>Treatment Plant(s) Used</u> – 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.

<u>Number of Accounts</u> – Bedford has 900 connections served by a municipal sewer system.

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

TOWN OF DERRY

<u>Service Area</u> – 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.

<u>Expansion and Improvements since 2010</u> – There have been no municipal sewer extensions since 2010.

<u>Treatment Plant(s) Used</u> – 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.

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

<u>Future Plans and Projects</u> – 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

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

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

<u>Treatment Plant(s) Used</u> – 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.

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

<u>Future Plans and Projects</u> – 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

<u>Service Area</u> – 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.

<u>Expansion and Improvements since 2010</u> – 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.

<u>Treatment Plant(s) Used</u> – 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.

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

<u>Future Plans and Projects</u> – 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

<u>Service Area</u> – 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 128 to I-93.

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

<u>Treatment Plant(s) Used</u> – 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.

<u>Number of Accounts</u> – There are approximately 1,436 connections.

<u>Future Plans and Projects</u> – 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

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

<u>Expansion and Improvements since 2010</u> – 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.

<u>Sewer Infrastructure</u> – 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.

<u>Number of Accounts</u> – 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.

<u>Future Plans and Projects</u> – 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

<u>Service Area</u> – 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 $\frac{1}{2}$ mile of cement-lined ductile iron 8-inch mains.

Expansion and Improvements since 2010 – None.

<u>Treatment Plant(s) Used</u> – 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.

<u>Number of Accounts</u> – 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 4-19 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.

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

TABLE 4-19: SEPTAGE DISPOSAL SITES AND TOWN RESPONSIBILITY

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, <u>www.epa.gov/owow/NPS/Section319II/intro.html</u>

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.



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 foot 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.

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

TABLE 4-20: OPERATING SOLID WASTE DISPOSAL SITES

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

	Advanced Recycling TS	Private	Prolerized New England Company
Manchester	B. Rovner Company	Private	B. Rovner, Co, Inc.
Multilesiei	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. There are also smaller electricity providers in the towns of Derry and Windham (see Map 4-6 below). 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 renewable energy 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.





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)

Compressed NATURAL GAS (CNG)

Compressed Natural Gas (CNG) offers the region another source of reliable energy. Largely ignored in both state and regional energy plans, this alternative fuel source is growing in the state, particularly in rural areas and municipalities which do not have natural gas resources available. Since there appears to be a growing movement to restrict gas pipeline growth plans in many parts of the state, CNG offers a viable energy alternative. However, even CNG requires pipeline supplies to work so it would not make any sense to totally eliminate new and improved pipeline service to New England. CNG uses a compressing station at a pipe head and then fills 40 foot cylinders that are in turn used to deliver the product to the end user. Although this is not an ideal solution for residential heating purposes, it is a great fuel for industrial and commercial locations, as well as providing fuel for CNG fueling facilities for automobile and truck fueling facilities.

Successfully implemented, CNG could not only help reduce the operating costs faced by companies located in NH and the SNHPC Region, but also could have the added benefit of addressing emissions resulting from fossil fuels. As such it is important that CNG be considered and implemented as it lowers energy costs, which are a large detriment to regional competiveness and does not require any investment on the part of government entities. 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 15-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.

 ¹⁵ Compressed Natural Gas Complex Coming to Concord, New Hampshire. Liberty Utilities Press Release. <u>http://www.liberty-utilities.com/east/gas/about/documents/LU NH Gas CNGFilling.pdf</u>. Accessed April 9, 2014.
 ¹⁶ Dave Solomon. "LNG official: No need to build pipeline". New Hampshire Union Leader (A8). Friday, April 4, 2014.

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

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

COMPRESSED NATURAL GAS (CNG)

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Atkinson Greenland Newington Salem Allenstown Boscawen Gilford Litchfield Nashua Keene Concord Concord	(Steam)
Dover Hampton North Hampton Seabrook Amherst Bow Goffstown* Londonderry* Northfield Durham Hampton Beach Plaistow Somersworth Auburn* Canterbury Hollis Loudon Pembroke East Kingston Hampton Falls Portsmouth Stratham Bedford* Concord Hooksett* Manchester* Sanborton Exeter Kensington Rochester Belmont Derry* Berlin Franklin Laconia Milford	

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.



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 the replace the current cable TV franchises with MetroCast. This Consortium has allowed all 12 towns receive legal assistance and developing specific franchise agreement terns 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 fiberoptic 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". <u>http://iwantbroadbandnh.org/broadband_mapgallery</u>.

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.



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, were water and sewer infrastructure exits, 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, Wal-Mart, 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 Wal-Mart'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.
- 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.
- 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.

MOVING SOUTHERN NH FORWARD VOLUME 2 Chapter 5: 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.

Adopted by the Planning Commission on December 16, 2014

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PURPOSE

The purpose of this chapter is to identify, describe and work to protect 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 AND UNH 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 project and this regional plan update.

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

<u>Written Comment Cards</u>: 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).

Categories	Comments
	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!
1 Outdoors / country sotting /	Land, space, quiet, trees, wildlife
natural beauty	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

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

<u>Visual Preference Survey</u>: 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.

<u>**UNH Telephone Public Survey Results:**</u> 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:



How high a priority would you place on the following issue in your community over the next 10 years...

High Priority Medium Priorit	y ■Low Priority ■Don'i	Know
Managing shore land and waterfront development	53%	25% 20% 1 <mark></mark> %
Protecting air quality	89%	<mark>8%</mark> %
Preserving farms and agricultural land	77%	20% <mark>0</mark> %
Protecting forests for timber production	55%	30% 1 <i>5</i> %1%
Protecting access to recreation land and scenic views	64%	30% <mark>6</mark> %
Protecting aquatic and marine habitats	75%	21% <mark>0</mark> %
Protecting the quality of drinking water supplies	96%	<mark>0</mark> %
Protecting the quality of water for recreational purposes like swimming and fishing	73%	22% <mark>6</mark> %

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.



Source: UNH Survey Center

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



Source: UNH Survey Center



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.



Source: UNH Survey Center



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 to125-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.



Map # 5 - 1 Granite State Future
Natural Resources Surface Waters
 Baboosic Brook Watershed Beaver Brook Watershed Cohas Brook Watershed Cohas Brook Watershed Exeter River 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 Spickett 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 Image: 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. Image: Communities This map is prepared for planning purposes only and is not to be used for legal boundary determinations or for regulatory purposes. Image: Communities Map Produced by GIS Service SNHPC 2013. Contact: SNHPC, gis@snhpc.org or (603) 669-4664 Image: Communities 0 1.25 2.5

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 meltwater 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." 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, <u>http://www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/about-us/naturalcommunities.aspx</u>

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%

TABLE 5-2 WATER SUPPLY LANDS CONSERVED IN SNHPC REGION

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 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).

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	332,413	4,643	1.40%

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

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.



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 septage 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.

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

TABLE 5-4: STEEP SLOPE ACREAGE IN SNHPC REGION

*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.



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

⁹ Ibid.

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

⁶ Ibid.

⁷ Ibid.

⁸ 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).

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%

TABLE 5-5 CONSERVED FOREST LANDS IN SNHPC REGION

Source: SNHPC & GRANIT

¹¹ Ibid.



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.

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%

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

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.

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		

TABLE 5-7: NEW HAMPSHIRE WAP CRITICAL HABITAT LIST

*<u>Note</u>: 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.



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.

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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.



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 publiclyand 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 (<u>www.uctc.net</u>), 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 turns 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 though 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, <u>http://www.tpl.org/content_documents/nh_managing_growth_report.pdf</u>.

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<u>The Economic Impact of Open Space in New Hampshire</u>, 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, <u>http://www.tpl.org/content_documents/nh_managing_growth_report.pdf</u>.

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 in 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.

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	

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

*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).

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	

TABLE 5-10: STATE RESERVATIONS - SNHPC REGION

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.



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

<u>Clough State Park</u>

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 1/4 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.

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.

<u>Rockingham Recreational Trail – Manchester/Lawrence Branch</u>

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.

<u>Bargain Sale</u>

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 development, 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 COSC 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 Corneliusen 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: \$70,0000 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 firedamaged 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 Pawtuckawy 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 chokepoints 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.





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 nonfarm 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 contains 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



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

Source: 2007 Agricultural Census

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.

	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

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

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.

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

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/derryfarmers market
Hooksett	Goodwill Plaza	Wednesdays, July 10 through August 28	www.facebook.com/farmersmarket .hooksett
Manchester	Downtown	Tuesdays	http://iine.us/common-earth- farms/
Manchester	Layfayette Park	Wednesdays	http://iine.us/common-earth- farms/
Manchester	Downtown next to Victory Park	Thursdays, June through October	www.manchesterfarmersmarket.co m
New Boston	Town Common	Saturdays, June 15 through October 19	www.facebook.com/NewBostonFar mersMarket
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/farmer s-market/Weare-Farmers-Market- NH
Weare	Across from TD Bank	Fridays, June 7 through October 11	http://moodypondmarketplace.co m/

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

Community Supported Agriculture (CSA) is an important program 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.

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/

TABLE 5-14: COMMUNITY SUPPORTED AGRICULTURE IN SNHPC REGION

Source: CSA providers and various publications from the NH Department of Agriculture, found here: <u>http://agriculture.nh.gov/publications/</u>

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.

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, fsield trips, and "pick-yourown" 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.

The University of New Hampshire College of Life Sciences and Agriculture, Department of Natural Resources and the Environment recently developed a free e-book: Live Free and Farm and Independence in the Granite State³² This important work notes that New Hampshire began to see a return to local food and agriculture in 1995. Grass farming and grazing are key to the success of local food production and grazing periods in the state can be extended with modern thinking and technology.

New Hampshire is also very close to the food market so producing food makes sense and 90 percent of the state's retail grocery stores supply travels long distance by truck to reach the state. Some of the major problems to local farming include regulations which favor larger scale agricultural over small scale production and the need for more agricultural friendly local regulations.

³²See:

http://content.yudu.com/Library/A32btg/LiveFreeandFarmFood/resources/index.htm?referrerUrl+http%3A %2F%Fnre.unh.edu%2Ffaculty%2Fcarroll





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	Lavalle y 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



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 farmland³³: "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 Farmland³⁴: "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."

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%

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

³³ Town of Chester 1997, definitions derived from NRCS USDA standards

³⁴ New Hampshire Soil Attribute Data Dictionary, 2002

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 costsharing 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.

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

TABLE 5-16: PRIMARY ZONING DISTRICT FOR UNRESTRICTED AGRICULTURE



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 areas 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.

<u>Auburn</u>		<u>Londonderry</u>	
Calef Lake	27.9 acres	Kendall Pond	11.4 acres
Little Massabesic Lake	49.5 acres	Little Cohas Brook	18.2 acres
Clark Pond Dam	58.1 acres	Scobie Pond	26.6 acres
Massabesic Lake	2,900 acres	<u>Manchester</u>	
Bedford		Stevens Pond	15.5 acres
Sebbins Pond	19.8 acres	Nutt Pond	16.1 acres
Candia		Dorrs Pond	17.6 acres
Tower Hill Pond	158 acres	Crystal Lake	18.6 acres
<u>Deerfield</u>		Long Pond	28.3 acres
Spruce Pond	21.7 acres	New Boston	
Beaver Pond	58.4 acres	Still Pond	11.4 acres
Freeses Pond	82 acres	Beard Pond	11.9 acres
Pleasant Lake	493.5 acres	Dennison Pond	12 acres
Derry		Dodge Pond	12.5 acres
Ezekiel Pond	10.3 acres	Bailey Pond	14.2 acres
Upper Shield Brook	11.3 acres	Raymond	
Beaver Brook	40 acres	Dead Pond	10.8 acres
Ballard Pond	120.9 acres	Norton Pond	11.4 acres
Beaver Lake	133.6 acres	Governor's Lake	52.2 acres
Island Pond	497.9 acres	Onway Lake	192 acres
<u>Goffstown</u>		Weare	
Uncanoonuc Lake I	24 acres	Ferrin Pond	14.7 acres
<u>Hooksett</u>		Mount William Pond	33.1 acres
Pinnacle Pond	18.6 acres	Perkins Pond March	55 acres
Clay Pond	28.9 acres	<u>Windham</u>	
Head's Pond	51.7 acres	Canobie Lake	373.4 acres
		Cobbett's Pond	344.7 acres

Invertebrates	Amphibians	Birds (continued)	
Freshwater Molluscs	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	
Insects	Mink frog	Purple martin (E)	
Barrens ilame	Northern leopard frog (SC, RC)	Purple sandpiper	
Barrens xylotype	Reptiles	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)	Birds	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)	
Fish	Bald eagle (E, FT)	Wood thrush	
Alewife	Bay-breasted warbler	Mammals	
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	

NEW HAMPSHIRE WILDLIFE ACTION PLAN, SPECIES OF GREATEST CONCERN

Source: NH Wildlife Action Plan

CHANGES IN WATERSHEDS IN THE U.S. DUE TO INCREASING HOUSING DENSITY

NI		Cu a la	14/	
Numerical	vv atersned	State	vvater	Private Forest to
Rank			Quality	Experience Increased
			Index	Housing Density
				(percent)
1	Piscataqua-Salmon Falls	Maine, Massachusetts, New	74.6	63
		Hampshire		
2	Contoocook	New Hampshire	75.5	55
3	Etowah	Georgia	68.1	51
4	Merrimack	Massachusetts, Maine, New	66.3	50
		Hampshire		
5	Seneca	North Carolina, South	68.5	46
		Carolina		
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	69.9	36
		Carolina		
12	Saluda	North Carolina, South	70.9	34
		Carolina		
13	Upper Neuse	North Carolina	60.6	50
14	Four Hole Swamp	South Carolina	69.1	35
15	Rivanna	Virginia	68.3	36

TABLE 5-17: WATERSHEDS WITH THE LARGEST PROJECTED DECREASE IN WATER QUALITY

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 Agriculture³⁵

³⁵ Private Forests, Public Benefits: Increased Housing Density and Other Pressures on Private Forest Contributions. 2009. <u>http://www.fs.fed.us/openspace/fote/benefits_download.html</u>

Numerical	Watershed	State	Estimated Private	Private Forest to
Rank			Timber Volume	Experience
			(million cubic feet)	Increased Housing
				Density (percent)
1	Merrimack	Massachusetts, New	1,867	50
		Hampshire		
2	Piscataqua-Salmon Falls	Maine, Massachusetts,	1,094	63
		New Hampshire		
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	1,319	40
		Carolina		
8	Haw	North Carolina	1,048	46
9	Contoocook	New Hampshire	919	55
10	Upper Broad	North Carolina, South	1,378	36
		Carolina		
11	Saluda	North Carolina, South	1,439	34
		Carolina		
12	Upper Neuse	North Carolina	853	50
13	Upper French Broad	North Carolina, South	1,346	34
		Carolina, Tennessee		
14	Presumpscot	Maine	797	55
15	Hiwassee	Georgia, North Carolina,	1,008	38
		Tennessee		

|--|

Source: U.S. Department of Agriculture³⁶

³⁶ Private Forests, Public Benefits: Increased Housing Density and Other Pressures on Private Forest Contributions. 2009. <u>http://www.fs.fed.us/openspace/fote/benefits_download.html</u>

MOVING SOUTHERN NH FORWARD VOLUME 2 CHAPTER 6: 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.

Adopted by the Planning Commission on December 16, 2014

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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)
- 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 having nearby job opportunities as highly important, with 89 percent of respondents indicating it is important to foster local employment. Other important aspects of a community include having nearby small businesses and retail stores (85 percent), grocery stores (83 percent) and cultural and recreation facilities (81 percent), all of which can contribute to the local economy. In addition to job opportunities, two-thirds (67 percent) of the residents surveyed think future development should occur in areas that are already 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



Comments on the general outreach questions regarding *What's Best? and What Could Make (This Area) Even 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

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



Weare Center Store

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.

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 2000s. 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: <u>http://www.fdic.gov</u>

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 principles 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 as well as Chapter 3: Transportation.

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

⁵ NHES, ELMB, Road to Recovery, New Hampshire's Economy 2010, June 2010.

by Raymond and Derry. Along with a high relative income, the State of New Hampshire currently has one 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 an income, see Chapter 2: Housing.

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	

TABLE 6-1: POVERTY RATES BY SNHPC COMMUNITY

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 employers pay out the second highest weekly wages, but Manchester residents earn the lowest median annual household income in the region.



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.

⁹ 2000 U.S. Census.

	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%

TABLE 6-2: EDUCATIONAL ATTAINMENT FOR THE SNHPC REGION, 2009

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 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

¹⁰ Personal Speech

¹¹ For more information on the 55% Initiative see University System of New Hampshire at: <u>http://www.usnh.edu/media/press/20090316 charter partners.html</u>

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

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 across the board drop off 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

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

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 key elements are also designed to guide economic development and growth into the future. Elements of the plan and its recommendations are included in the following sections.

It is important to note that at the local community level, economic development is an ongoing process which involves many different responsibilities including recruiting new businesses and jobs, maintaining existing businesses and jobs, and working to improve local competitiveness and assets. In carrying out this work, it is important to have an active economic development committee or council, identified economic strategies and goals, and an effective website.

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

TABLE 6-3: ECONOMIC DEVELOPMENT MEASURES BY MUNICIPALITY, SNHPC REGION

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.

- <u>Economic Development Administration (EDA)</u> 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.
- <u>USDA Rural Development</u> 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.)
- <u>Community Development Finance Authority (CDFA)</u>: 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/.
 - <u>CDBG Program</u> 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: <u>http://www.buzgate.org/8.0/nh/fh_listing.html?id=10002&lid=5522&cb=nhecon</u>

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.
- <u>NH Department of Resources and Economic Development (NHDRED)</u>. DRED is the primary state government economic development agency: <u>http://www.nheconomy.com</u>. 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, <u>http://www.nheconomy.com/</u>

and Guarantee Asset Program. Import/Export Loans: The state also offers Foreign Buyer Credit, Export-Import Bank of the United States and other sources.

<u>RSA 79E</u>: 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. It 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.
- <u>Capital Region Development Council (CRDC)</u>: 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 CRDD's programs see their website at: http://www.crdc-nh.com/.
- <u>Regional Economic Development Center of Southern New Hampshire (REDC)</u>: 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: <u>www.redc.com</u>.
- <u>Tax Increment Financing (TIF) Districts</u> 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 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 in the SNHPC Region which are important factors in attracting these and other industries to the region.

Strengths:

- There is strong local interest in 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 equipment, 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 broadband 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 workforce, both skilled and non-skilled
- Favorable access to and close proximity to major transportation routes;
- A significant number of ideal development sites, locations and major land parcels available throughout the SNHPC Region at different levels of readiness and cost.

Weaknesses:

- While there is strong local interest in 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 for 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 NH 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.

Industry/Economic Segment	Auburn	Bedford	Candia	Chester	Deerfield	Депту	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													

TABLE 6-4: TARGET INDUSTRY ANALYSIS RECOMMENDATIONS

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

- <u>Airport</u>: 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.
- <u>Highway/Alternative Modes</u>: 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.
- <u>Public Transport/Multi Modal</u>: 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.
- <u>Passenger/Freight Rail</u>: 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

- <u>Water/Wastewater</u>: Place a high priority on upgrading, expanding and funding public water and sewer systems, including a regional approach to the provision of such services in the region.
- <u>Communications/Broadband</u>: 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

• <u>Smart Growth</u>: 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

• <u>Workforce</u>: 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

• <u>Colleges/Universities</u>: 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

• <u>Energy</u>: 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

• <u>Planning/Job Creation and Financial Resources</u>: Promote economic development opportunities among all the core goals of this plan.

Goal 6-8: Entrepreneurship

• <u>Business Support and Development</u>: 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

- <u>Site Readiness</u>: 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.
- <u>Target Industries</u>: 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

• <u>Economic Development</u>: 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 12 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 for municipalities to apply for public works related funding through the EDA. The REDC provides a CEDS plan for all municipalities within the

SNHPC Region located in 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 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, <u>http://www.flymanchester.com/about/news.php?id=57</u>

²¹ Londonderry News, <u>http://www.londonderrynh.net/?tag=airport-access-road</u>

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 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 serviceproviding 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	ility 2015		2020		2025		2030		2035		2040		2015-2040
	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







MOVING SOUTHERN NH FORWARD VOLUME 2 Chapter 7: Cultural and Historic Preservation



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.

Adopted by the Planning Commission on December 16, 2014

Cultural and Historic Resources

Prepared by the Southern New Hampshire Planning Commission

Adopted on

December 16, 2014

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CULTURAL AND HISTORIC RESOURCES

PURPOSE

The purpose of this chapter is to review existing state of cultural and historic preservation planning within the Southern New Hampshire Region and to identify which cultural and historic preservation practices, actions and strategies are important in moving the region forward to the year 2035. This chapter also identifies and describes a variety of planning tools and programs as well as funding opportunities for municipalities and non-profit organizations for preserving the region's historic resources and enhancing local arts and culture.

VISION

Residents of the SNHPC Region place a high value on community and local identity, including respecting the settlement patterns and historic characteristics of their communities. These values are reflected in the Adopted Vision Statement for this plan (see Volume I).

PUBLIC INPUT AND SURVEY RESULTS

In July 2013, the Survey Center of the University of New Hampshire conducted a telephone survey through the *Granite State Future* project seeking public input across the state of New Hampshire on a variety of planning related topics including the arts, culture and historic preservation. The survey results indicate 86 percent of New Hampshire residents responding to the survey value protecting historic buildings and neighborhoods; the second highest scoring response among 13 categories. In addition, when asked the question "what should actively be encouraged in your community?" 68 percent of the respondents indicated that their community should sponsor cultural and sporting events (see overall survey results in

SNHPC staff also polled the Manchester Arts and Cultural Group. Discussions held with this group yielded three main themes concerning arts and culture in the SNHPC Region:

- 1. The need to reinstate arts programs that have been cut, and protect remaining arts programs in public schools;
- 2. Raise awareness of the importance of arts and culture; and
- 3. Establish arts and culture leadership.

Figure 1). UNH Survey Center telephone survey results specific to the SNHPC Region indicate that a total of 90% of the survey respondents value protection historic buildings and neighborhoods in the region. This is somewhat higher than the overall statewide 86 percent result.

In addition, to the UNH Survey Center telephone survey, SNHPC also conducted several online surveys and organized and facilitated a number public outreach events seeking input from residents and business owners within the region (see SNHPC's *Public Outreach Report* for more information). The results of this public outreach effort indicate that when residents were asked what is best about community and economic vitality in the region, over 45 percent of the

respondents replied they value a variety of activities and recreational opportunities. This response likely refers to cultural events and activities as well as recreational opportunities.

SNHPC staff also polled the Manchester Arts and Cultural Group. Discussions held with this group yielded three main themes concerning arts and culture in the SNHPC Region:

- 4. The need to reinstate arts programs that have been cut, and protect remaining arts programs in public schools;
- 5. Raise awareness of the importance of arts and culture; and
- 6. Establish arts and culture leadership.

FIGURE 1 WHAT SHOULD BE ACTIVELY ENCOURAGED IN YOUR COMMUNITY?



Source: UNH Survey Center, 2013

It was also noted that arts and culture serve important educational, economic and community development purposes. In addition, the economic development aspect of the arts was stressed, with respondents stating that "arts and culture institutions bring in millions of dollars in revenue for the city (property taxes aside)." The group called for leadership from various sectors of the community, such as the state, Southern New Hampshire University, businesses, and the immigrant community. With this leadership, awareness can be raised and arts programs in public schools can be expanded. The economic and educational importance of the historic, artistic, and cultural resources of the Southern New Hampshire region underpin the content of this technical component and helps to inform about the issues, concerns, key goals and strategies identified herein.

KEY ISSUES AND CONCERNS

Key Issues:

- Increased planning attention is needed at both the regional and local level to actively
 promote and preserve the region's historic and cultural resources today and in the future.
 Specifically more communities in the region need to be positioned to achieve Certified
 Local Government status which opens more doors for preservation success.
- Many communities within the region need a comprehensive vision as well as a plan to
 effectively protect and promote their historic resources and cultural qualities and assets.
 Not all community master plans adequately address cultural and historic preservation.
- In addition, a greater emphasis is needed at both the region and local level to include and expand the arts and promote cultural activities as an economic development tool.

Additional Concerns:

- The SNHPC Region is rich with history and contains significant historic and cultural resources, but many municipalities have not participated in the full suite of historic and cultural planning tools and programs that are available to them.
- 2. Many communities have historic societies, heritage and historic commissions, and other historic/cultural organizations which have been active in their communities for many years, but very few municipalities and planning boards have taken the next step -- that is implementation -- e.g. tapping into the creative arts economy and putting into place effective and available preservation tools and programs.
- To be successful, cultural and historic preservation planning must be proactive and communities must be committed and fully supportive of their cultural and preservation vision and goals.
- 4. In most cases, it is the lack of funding and lack of effective public/private partnerships that have been the largest impediment and roadblock to implementation.

HISTORIC RESOURCES

EXISTING CONDITIONS

Cultural and historic resources play an important role in the identity and natural beauty of Southern New Hampshire. These attributes are what draw many visitors to the region and entice residents to further explore the area. These resources are also key economic drivers for many communities throughout Southern New Hampshire. From the beauty of our region's stone walls, historic homes and buildings to our cultural institutions, villages and city centers, history and culture are ever present in the lives of Southern New Hampshire residents.

The purpose of this section of the plan is to describe the region's history and to identify what planning tools and techniques are available to advance the preservation and enhancement of historic and cultural resources within the region. This section also explores existing practices as well as available funding. The following subsection contains a brief history of the region.

HISTORY OF THE REGION

The rich history of the Southern New Hampshire Planning Commission region goes as far back as the 17th century. From barns, farmlands and meandering stone walls, to bridges, dams, and massive millworks, the area's history is captured in those remnants. Through preservation we can tell stories of the past while ensuring resources are available for the future.

The SNHPC region's history can be generally described in terms of economic pursuits. Prior to the 17th century, the region had a vibrant Native American culture. In the 18th century, the region's residents pursued farming, fishing, and timber trades. The Merrimack River provided rich farmlands along its banks, a plentiful fishery, and access to the ocean and European markets for timber.

The SNHPC region's towns were all first settled in the early to mid-18th century. As settlements spread outward from the seacoast, tensions between early settlers and Native Americans increased and a number of wars broke out. The towns settled before 1740 experienced the violence associated with displacing the Native Americans. These towns include Londonderry, Chester, Manchester, Raymond, and Bedford.

The Town of Londonderry was first settled as Nutfield, in 1719 by Scottish-Irish immigrants. This original land grant included present-day Derry, parts of Windham, Manchester, Salem, and Hudson. The town was re-named Londonderry in 1722 and incorporated in 1740. In 1827, the Town of Derry was incorporated and separated from Londonderry.

The Town of Chester, incorporated in 1722, was one of the earliest settlement grants to accommodate seacoast area growth. Auburn, Candia, and Hooksett, which were part of the original Chester land grant, were eventually cleaved off to form the towns we know today. Auburn was first settled in 1734 and incorporated in 1845. Candia was first settled in 1748 and incorporated in 1763. Hooksett was the first settled in 1749 and was not incorporated until 1822, despite having been called Hooksett for the previous 50 years.

The land area that became the City of Manchester was originally granted by Massachusetts in 1722 and encompassed land granted by New Hampshire to the towns of Chester and Londonderry in the same year. This happened often until King George settled the boundary dispute between Massachusetts and New Hampshire in 1740. Called Harrytown, Old Harrytown, and Tyngstown, it was incorporated in 1751 as the town of Derryfield. In 1810, it was renamed Manchester and was incorporated as a city in 1846.

The Town of Raymond was first settled in 1725 as a parish of Chester. It was called Freetown initially and was incorporated in 1764. The Town of Bedford was first granted in 1730 to soldiers who fought against the Narragansett Indians in Rhode Island. Originally called Narragansett No. 5, it was incorporated in 1750 as Bedford.

The Town of New Boston was first settled in 1742 and was called Lanestown. It was re-granted in 1748 to families from Londonderry, and was incorporated in 1763. The Town of Goffstown was originally established as Narragansett No. 4 by Massachusetts. It was re-granted in 1748 by New Hampshire, re-named Goffstown, and incorporated in 1761. The Town of Weare was granted to soldiers of the Canadian wars in 1735 by Massachusetts and called Beverly-Canada. The town has also been known as Halestown, Robiestown, and Wearestown. It was incorporated as Weare in 1764. The Town of Deerfield was first settled in 1756 as a parish of Nottingham. Despite being one of the last towns to be settled, it was incorporated in 1766 prior to other towns. The Town of Windham was first settled in 1719 as part of a larger settlement known as "Nutfield" which also encompassed the towns of Derry and Londonderry. Windham was officially incorporated in 1741.

Due to the North-South flow of the major rivers in the state, communication with Boston was more likely and easier than with Portsmouth, the provincial capital. This familiarity caused New Hampshire to play an important role in the events of the Revolutionary War and the subsequent formation of the new Republic. Troops from New Hampshire fought in the Battles of Bunker Hill and Lexington and Concord. New Hampshire was also the first to draft a state constitution, instruct their delegates to vote for independence at the Continental Congress in Philadelphia, and the ninth and deciding state to ratify the new U.S. Constitution in 1788.

The 19th century brought a transition to textile manufacturing and the boom of the mill towns. Situated along the Merrimack River, the SNHPC Region, particularly Manchester, was an international center for mill technology and the railroad. The rise of manufacturing and westward national expansion resulted in a decline in farming pursuits in New Hampshire during this time. The textile boom brought in an influx of immigrants to the Manchester area. By the beginning of the 20th century, the percentage of foreign-born residents in New Hampshire was higher than the national average.

New Hampshire was a dominant player in the manufacturing trade at the beginning of the 20th century, but at the end of World War I, New Hampshire's importance in the textile mill industry began to decline and continued through the depression of the 1930s. Manufacturing pursuits shifted to shoes and electronics, while smaller towns took advantage of the New Hampshire scenery and began to promote themselves as tourist destinations. The mid-20th century saw continuing declines in economic growth, but by the 1960s efforts to attract businesses, combined

with the growth of Boston, helped to promote New Hampshire as one of the fastest-growing states in the Northeast.¹

Preserving this historic legacy can be a challenge amid current and projected population and economic growth trends in Southern New Hampshire. Local communities can work together with regional, state and federal agencies to accomplish successful preservation. The establishment of a historical society, historic district commission, or heritage commission is an important first step in the preservation process which Manchester and many of the region's communities have done. Once established, these committees can serve as advisors for planning boards and can help facilitate the listing of properties on various national and state registers. These registers raise awareness of the importance and value of historic preservation, foster civic pride and facilitate tourism and a sense of place within communities.

HISTORIC PRESERVATION TOOLS

"Preservation saves energy by taking advantage of the nonrecoverable energy embodied in an existing building and extending the use of it²"

The Southern New Hampshire Planning Commission region is a rich and vibrant repository of cultural and historic resources. Many of these sites are being preserved and have designation locally and nationally. However, there are still more historic and cultural landmarks that many communities would like to see preserved.

To be successful, historic preservation planning must be proactive in its preservation goals. There are a number of tools available to help communities with their preservation efforts. These include, but are not limited to:

- Landmark Designation and National and State Register of Historical Places
- Establishment of Historical Societies, Heritage and Historic District Commissions
- Zoning Regulations such as Historic and Neighborhood Districts
- Historic Easements
- Grants, Loans, and Tax Credits

LOCAL ACTIONS TO ENCOURAGE HISTORIC PRESERVATION EFFORTS

<u>Historical Society</u>. There are many different approaches communities can pursue to encourage historic preservation. The most important and basic step is the formation of a historical society. Historical societies can be organized by historic preservation minded individuals or as non-profit organizations. It is important to note that historical societies can be formed with no affiliation to the municipality. Once formed these organizations can conduct the research, inventory and

¹ New Hampshire Division of Historical Resources. 2013. New Hampshire Historical Highway Markers. <u>www.nh.gov/markers/brief.html</u> (last accessed 8/9/2013).

² Advisory Council on Historic Preservation. 1979. Assessing the energy conservation benefits of historic preservation: Methods and Examples.

nomination work necessary for historic preservation. Members can also be active in local, state and national organizations and nonprofits which actively work to protect key resources and gain public support in this effort.

<u>Historic District Commissions</u>. New Hampshire RSA 673:4 and 673:4a also allows communities to form historic district commissions (HDC) and heritage commissions (HC). Once formed, communities can vote to allow historic district commissions to take on the duties and responsibilities of a heritage commission and vice versa. Historic district commissions are concerned solely with historic districts, primarily administering historic zoning districts and related building guidelines. HDCs can regulate the appearance within a designated historic district, such as review building permits, site plan review applications, and demolition requests.

Heritage commissions are non-regulatory bodies that focus on the entire town. The purpose of heritage commissions is to identify, preserve, protect, and enhance the historic character of the municipality. Considered the 'town preservation experts,' heritage commissions are empowered to conduct surveys and advise planning boards on preservation issues.

According to RSA 674:45, historic districts are designed to showcase the cultural, social, economic, political, and architectural history of an area, while conserving property values, fostering civic beauty, and strengthening the local economy.³ Historic district commissions can also assist local planning boards with technical and historic advice and work to establish and administer historic districts. The citizens of the municipality generally formulate the powers and responsibilities of historic district commissions. Thus, citizens should not fear that a historic district commission would enforce severe rules or restrictions. The only requirement that historic district commissions must complete is a local historic resources survey.

Currently, the following municipalities in the region have established historic district zoning: Bedford, Goffstown, Londonderry, Manchester, Raymond, Weare and Windham. Communities that have established historic district or heritage commissions, a historic district ordinance, and have completed the local historic resources survey can then apply for Certified Local Government status.

<u>Certified Local Government</u>: The designation as a Certified Local Government (CLG) can provide additional preservation funding and resource opportunities for communities. In order to be granted CLG status, municipalities must meet specific state and federal standards. These standards pertain to the entire community, not only a historic district. Once certified, communities are members of a network made up of the National Division of Historic Resources and other CLGs. Additionally, there are federal matching grant funding opportunities reserved exclusively for CLGs. Currently, three communities in the region – Derry, Goffstown and Londonderry – are certified local governments. A summary of the municipalities in the region which currently have in place an historical society; historic district or heritage commission; and have achieved CLG status is provided in the following Table 1.

³ New Hampshire Division of Historic Resources. 2003. What are Historic Districts Good for, Anyway?.

Municipality	Historical Society	Heritage Commission	Historic District Commission	Certified Local Government Program
Auburn	Х		Х	
Bedford	Х		Х	
Candia	Х	Х		
Chester	Х	Х	Х	
Deerfield	Х	Х		
Derry	Х	Х	Х	Х
Goffstown	Х	Х	Х	Х
Hooksett	Х	Х		
Londonderry	Х	Х	Х	Х
Manchester	Х	Х	Х	
New Boston	Х			
Raymond	Х	Х	Х	
Weare	Х	Х		
Windham	Х	Х	Х	

TABLE 1: LOCAL HISTORIC PRESERVATION ORGANIZATIONS IN THE SOUTHERN NEW HAMPSHIRE PLANNING COMMISSION REGION

Source: New Hampshire Division of Historical Resources

HISTORIC RESOURCES SURVEY AND INVENTORY

The most important historic preservation planning tool is the historic resources survey and inventory. According to the New Hampshire Department of Environmental Services (NHDES), less than 25 percent of New Hampshire's communities have completed this step. Many years ago SNHPC compiled a list of properties in the region that were considered historically and culturally significant to its member communities as part of the 2004 NHDES Regional Environmental Planning Program (REPP) (see final report on the SNHPC website). This report of Local Resource Protection Priorities, while providing a starting point, is by no means all-inclusive and cannot substitute for a detailed inventory.

At the same time, the REPP cannot substitute for a prioritized history survey of the most important or endangered historic sites, properties and buildings within a community. A town-wide comprehensive survey and inventory must be conducted in accordance with state and federal standards. Once compiled, such an historic inventory can guide future planning decisions and provide a starting point for historical societies and heritage commissions in nominating decisions for the National and State Registers of Historic Places.

HISTORIC DISTRICT OVERLAY & OTHER ZONING TOOLS

Historic zoning or historic district overlay zoning is a tool for preservation. Typically, this type of zoning consists of an overlay zone applied over existing zoning regulations in designated historic districts. The heritage commission, historic district commission or a design review board reviews building permits and demolition requests within the district. In some cases, the heritage commission or historic district commission requests; while an independent design

review board reviews permits. In either case, the efforts of the preservation groups and the planning board need to be coordinated for best results, otherwise, problems can arise. For instance, zoning in historic districts could be incompatible with current uses, or there could be density, lot size, or off-street parking issues.

To determine the need for historic zoning overlays or revised zoning ordinances, communities should first map historic districts, properties and landmarks, along with the boundaries of existing zoning ordinances to determine potential conflicts and areas of compatibility. Additionally, historic zoning ordinances may allow historic properties special exceptions for uses typically not permitted by the municipality's zoning ordinance. One example is to allow historic residences, which can be large and expensive to maintain, to be used as office space or multi-family housing. Another consideration is the use of existing mill buildings for mixed use, such as residential or commercial purposes. By providing for mixed uses in historical districts, communities can facilitate revitalization.

<u>Transfer of Development Rights</u>. Another important zoning tool is transfer of development rights (TDR). TDRs allow the development rights for low-density historic buildings, or the "air" above a historic building or site where zoning allows for more stories to be sold or transferred to another location where higher-density development is allowed or desired. Density bonuses can also be utilized to preserve open space with archeological potential.

<u>Conditional Zoning.</u> Conditional zoning is another preservation tool in which zoning change requests are granted only if certain conditions are met. The conditions might be preservation of open space or built structures, among others. All of these zoning tools require a willingness to cooperate between planning boards and preservation groups and knowledge of zoning regulations, potential historic and archeological areas in need of preservation, and development objectives.

<u>Neighborhood Heritage District</u>: As defined by the New Hampshire Division of Historical Resources, a Neighborhood Heritage District (NHD) is a zoning mechanism that helps protect the key character of an area.⁴ The district is a group of buildings and their settings that are architecturally or historically distinctive and are worth protecting based on their contribution to the character of the community.⁴ A NHD differs from other types of historic preservation in that its objective is to protect neighborhood character, whether residential, commercial or a mix of uses, rather than design details of individual buildings. The features that are determined to be significant in maintaining the character of a neighborhood are determined by the community seeking to establish a NHD.

In the SNHPC region the Town of Hooksett is undergoing a two-year process to explore the feasibility of a NHD around the area of Robie's Store. The purpose of this study is to determine the viability of a zoning overlay designed to help preserve and protect the visual character of the village and perhaps the surrounding neighborhoods.

<u>Demolition Delay Ordinances</u>. According to the New Hampshire Division of Historical Resources, "Demolition review is a preservation tool that ensures potentially significant buildings and structures are not demolished without notice to the community and review by a heritage or historic district commission."⁵ These reviews, or delays, are most commonly adopted as an amendment to

⁴ For more information, please visit: <u>http://www.nh.gov/nhdhr/documents/neighborr_hert_handbook.pdf</u>

⁵ New Hampshire Division of Historical Resources. 2007. Protecting Historic resources Through Demolition Review.

the building code, as a bylaw in an existing historic preservation or zoning ordinance, or as a stand-alone ordinance.⁵

Demolition delay or review ordinances allow for a review process by a local historic preservation agency or group to determine the structure's historic value or significance. If it is determined that the structure is architecturally significant, a delay on a demolition permit is issued, during which time a public hearing is scheduled to consider alternatives to demolition and options for preservation. However, this is simply a delay to review alternatives to demolition; this does not guarantee that a building will not eventually be demolished. In the SNHPC region the Towns of Goffstown, Weare and Windham have some form of demolition delay ordinance.

<u>Scenic Road Designation</u>. New Hampshire RSAs 231:157 and 231:158 also allows towns to make scenic road designations. Any town road, other than a Class I or II highway, can be designated a scenic road by petition of 10 or more people. A local scenic road designation can be useful for the protection of natural landscapes; roadway repair or maintenance cannot disturb or harm trees or stone walls without written consent of the responsible board.

FEDERAL & STATE PRESERVATION PROGRAMS

There are a number of state and federal programs that provide designations which can assist in preservation efforts. Such designations can also make communities more attractive to businesses and tourists, providing an economic boost to the area. It is important to note that a designation does not guarantee permanent preservation of a site, but most citizens and communities would rather maintain the designation, rather than allow such a site to be lost.

HISTORIC PRESERVATION TAX CREDIT PROGRAM

The Federal Historic Preservation Tax Credit Program allows a 20 percent tax credit for the preservation of historic buildings. The tax credit is only available for income-producing structures, not individual private residences. To qualify for the tax credit, the structure has to be listed, or at least be eligible to be listed on the National Register of Historic Places, as an individual structure or as part of a historic district. The structure must meet the ten Standards for Rehabilitation, set by the Secretary of the Interior and the rehabilitation efforts must be substantial. This means the cost of the rehabilitation must exceed the pre-rehabilitation value of the structure. The National Park Service, along with the Internal Revenue Service and State Historic Preservation Offices, administer the tax credit.

HISTORIC PRESERVATION EASEMENTS

Historic preservation easements allow a property owner to grant a portion of the rights of the property to a group that commits to preservation. The property owner retains the right to sell the property; however all subsequent property owners forever relinquish the development, demolition, alteration, or other rights waived as part of the easement. Historic preservation is not inexpensive. Easements provide property owners with a mutually beneficial alternative. Not only does the property owner retain ownership, along with any potential financial benefits, but there is also the possibility of a federal tax deduction. These benefits are balanced by the knowledge that the owner has contributed to the preservation of a historic or culturally significant place. Owners can claim a federal tax deduction of the value of the easement up to 30 percent of their adjusted

gross income. The balance of the easement tax benefit can be carried forward up to five years.⁶ The value of the easement, as determined by an appraiser, is typically the difference between the appraised fair market value of the property and the value with the easement in effect. Properties must meet certain qualifications set by the IRS in order to qualify for tax benefits.

To be eligible, properties must be on the National Register of Historic Places or be located within a nationally registered Historic District and certified by the U.S. Department of the Interior as historically significant to the district.⁷ Certification must come prior to an historic preservation easement, or before the owner files a tax return for the year the easement was granted.

Additionally, qualified properties must be accessible to the public. Depending on the nature of the site, this could mean as few as a couple of hours or days per year, or even the ability to view the site from a distance. Historic preservation easements generally prohibit the destruction or alteration of the property without review and approval by the easement holder. Development and subdivision restrictions are also common. Additionally, some easements require the owner to maintain or restore the property to certain conditions. Historic preservation easements provide ownership of the property, thereby alleviating the financial burden of maintaining the property alone. As of 2010, there were four organizations that hold historic preservation easements in New Hampshire. These include: the New Hampshire Division of Historical Resources, the Manchester Historic Association, the New Hampshire Land & Community Heritage Investment Program (LCHIP), and the New Hampshire Preservation Alliance.⁸

THE NATIONAL REGISTER OF HISTORIC PLACES

When individuals think about historic designations, the National Register of Historic Places is perhaps the most commonly known. The National Register is maintained by the National Park Service and contains over 80,000 listings. Listings on the National Register are eligible for special federal tax benefits, preservation assistance, and acknowledgement that the property has national, state or community significance. Properties must meet certain criteria to be considered for designation. Map 7-2 on page 29 in this chapter identifies both national and state listed registry properties within the SNHPC Region.

Essentially, properties are generally at least 50 years old and are associated with significant events or people in the past, or exhibit distinctive characteristics of a historical time period or architectural style. National Register designation does not, however, equal preservation. Properties on the list can be privately owned, and the designation does not limit the owner's right to change or demolish the property.

The National Park Service has created a publication that guides communities through the application process; communities considering nominating properties for National Register designation should consult this document.⁹

More information on tax deductions can be found at: <u>http://www.nps.gov/tps/tax-incentives/taxdocs/easements-historic-properties.pdf</u>

⁷ For a description of historically important land areas, as defined by the IRS visit <u>http://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Conservation-Easement-Audit-</u> Techniques-Guide# Toc156

⁸ For more information on the National Park Service Historic Preservation Planning Program, please visit: <u>http://www.nps.gov/hps/pad/index.htm</u>

⁹ See the National Register Bulletin at: <u>http://www.nps.gov/nr/publications/bulletins/pdfs/nrb39.pdf</u>

FIGURE 2: THE ROBERT FROST FARM, NATIONAL **HISTORIC SITE, DERRY, NH**



There are 54 properties listed on the National Register of Historic Places in the SNHPC region. These properties represent a diverse mix of structure types, including town halls, churches, cemeteries, factories, and homesteads. Also represented are historic districts, schoolhouses, and public buildings. Communities with properties listed on the National Register include: Bedford, Chester, Deerfield, Derry, Goffstown, Hooksett, Londonderry, Manchester, Raymond, Weare and Windham.

NATIONAL HISTORIC LANDMARKS

National Historic Landmarks are places that have meaning for all Americans. They are designated by the Secretary of the Interior and nominated by the National Park Service. Landmarks can be buildings, districts (villages or communities), sites without built structures, uninhabited structures, or objects. There are fewer than 2,500 designated landmarks nationally and only about 20-25 new landmarks are designated per year. To be designated a National Historic Landmark, areas must be associated with historic events, people or ideals, be prime examples of design or construction, or exhibit a way of FIGURE 3: THE JOHN STARK HOUSE, MANCHESTER, life. New Hampshire is home to 23 National NH Historic Landmarks. Two of these are in the



SNHPC region – the Robert Frost Homestead and the Matthew Thornton House – both of which are in Derry.

THE NEW HAMPSHIRE STATE REGISTER OF HISTORIC PLACES

Properties listed on the State Register of Historic Places are eligible for the same types of benefits as the National Register, only the source of the funding, planning assistance, and tax benefits are at the state level, rather than federal. The criteria for properties to be considered for inclusion on the State Register are also similar to the National Register. In general, properties must be at least 50 years old and must tell a historically significant story. Eligible property types include buildings; districts; sites such as parade grounds or a village green; landscapes; structures such as stone walls or bridges; and objects. The New Hampshire Division of Historical Resources offers guidance to

communities that desire to apply to the State Register. Currently, there are 23 properties from seven towns in the region listed on the State Register of Historic Places.

NEW HAMPSHIRE HERITAGE LANDMARKS

Pursuant to RSA 227-C: 25, all National Historic Landmarks owned by the state, as of July 1, 1993, were designated as New Hampshire heritage landmarks. Currently the program is not active in the state, but the Robert Frost Homestead in Derry qualifies under this designation.

THE NEW HAMPSHIRE BARN SURVEY

The New Hampshire Division of Historical Resources has been administering a barn survey, in an attempt to identify and record the locations of historically significant barns in the State. As previously stated, the first step for any large-scale preservation effort is the completion of a survey of the historic resources. The completion of a town-wide barn survey can help both town and state preservation efforts. Deerfield conducted such a survey from November 2000 through July 2002. Chester and Hooksett each completed a town-wide barn survey. New Boston has compiled an informal survey of town barns, chicken houses, school houses and old mills as well.

New Hampshire state law also provides for the preservation of barns through RSA 79-D. This law allows municipalities to provide property tax breaks to barn owners that meet certain requirements. The owners' barns must provide a public benefit with the preservation of their barn and agree to maintain the barn or structures throughout the minimum 10-year discretionary preservation easement. The barn owners are granted tax relief, enabling them to repair and maintain their barns. The easement also provides that the town will not increase the assessed value after the repair work has been completed and tax relief can be equivalent to a 25 to 75 percent reduction of the structure's full-assessed value. To qualify as a "historic agricultural structure," the structure, including the land it was built on must be or have been used for agricultural purposes and also be at least 75 years old.¹⁰ The town must also adopt the provision.

STATE HISTORIC MARKERS PROGRAM

The New Hampshire Historical Markers Program commemorates New Hampshire's places, people, or events of historical significance. The New Hampshire Division of Historic Resources, with the help of the New Hampshire Department of Transportation, administers the program. Marker requests can be made by communities, organizations, or individuals and must be accompanied by accurate documentation including footnotes, a bibliography, copies of supporting research and a petition signed by at least 20 citizens.

The SNHPC region is home to 17 historic markers in ten of the 14 towns in the region. These markers commemorate people, places, and events such as an early clockmaker, poets, war heroes, early settlers and settlements, engineering works, manufacturing buildings, cemeteries, and landscapes.

PRESERVE AMERICA

Created by the White House and supported and promoted by First Lady of the United States Michelle Obama, Preserve America Communities are recognized for celebrating their heritage.¹¹ Designated communities are allowed to display the Preserve America logo, are included in the

¹⁰ For more information on New Hampshire's barn preservation efforts, visit the New Hampshire Division of Historical Resources at <u>www.nh.gov/nhdhr</u>

¹¹ For more information please visit: <u>http://www.preserveamerica.gov/</u>

Preserve America directory, and receive a Preserve America Community road sign. Additionally, some communities are eligible to receive funding to support planning, development, implementation or enhancement of heritage programs. To date, more than 800 communities have been designated Preserve America Communities, more than triple the number since 2003. The towns of Hooksett, Portsmouth and Keene currently represent New Hampshire.¹²

HISTORIC LANDSCAPES

The National Historic Landscape Initiative is not a list of designated properties, but rather a resource for the preservation of landscapes.¹³ It provides publications, workshops, technical assistance and national policy direction. Landscapes are an essential part of how New Englanders identify with the region and the image of the New England village would be incomplete without landscapes. By protecting landscapes, communities can provide enjoyment for their citizens and an improved quality of life. Landscapes are more than just open space; they include residential sidewalks, lawns, and trees, as well as agricultural fields, forests, and stones. Currently no towns in the region have preserved historic landscapes, but historic landscape preservation is a method that can work well in concert with existing open space conservation efforts in the region.

HISTORIC AMERICAN BUILDINGS SURVEY

The Historic American Buildings Survey is a program that works toward preservation through documentation. The program documents important architectural sites throughout the U.S.- begun in the 1930s, it was originally performed by professional architects. Today, college students complete the fieldwork and documentation during the summer months.

Currently, there are 30 buildings in Manchester listed on the survey. These include residential homes, commercial and industrial buildings, bridges, and even portions of the Manchester Airport.

NATIONAL UNDERGROUND RAILROAD PROGRAM

The National Underground Railroad Program is a National Park Service project to record and map the locations of the highly secretive network of stations providing safe haven on the road to freedom in the North or Canada. Locations that are part of the network can display the network logo, receive technical assistance and participate in program workshops. Many communities in New Hampshire contain properties with a folklore connection to the Underground Railroad. The Moses Sawyer Homestead is one of four known stops in Weare along the Underground Railroad. The Network provides an opportunity for local historical societies or heritage commissions to preserve these traditional stories, while garnering national recognition as important historic places. Sites are not limited to buildings or 'stations' but can also be river crossings, routes, or hiding places.

SCENIC BYWAYS PROGRAM

The State of New Hampshire is home to 14 State Scenic Byways and three National Scenic Byways—the Connecticut River, the Kancamagus, and the White Mountain. A scenic byway is a designation that showcases the state's most beautiful vistas and landscapes. There are currently five state scenic byways in the SNHPC Region. The state recently approved the Robert Frost/Old Stage Coach Byway and the Upper Lamprey Scenic Byway in 2014 which become the state's newest scenic byways. The Amoskeag Millyard Scenic and Cultural Byway located in Manchester is

¹² New Hampshire Division of Historical Resources. The Old Stone Wall. Fall 2005: Vol. XIV, No.1.

¹³ For more information please visit the National Center for Preservation Technology and Training: <u>http://ncptt.nps.gov/programs/historic-landscapes/</u>

only one mile long, but historic and cultural attractions are abundant along its route. Londonderry's Apple Way is ten miles long and provides visitors with a snapshot of Londonderry's agricultural history.

The General John Stark Scenic Byway (GJSSB), designated in 2008, loops through the towns of Dunbarton, Goffstown, New Boston and Weare. The 34 mile loop showcases the many historical features that date back to the Revolutionary War and Industrial Revolution. It is named for General John Stark, who coined the State's motto, "Live Free or Die". The byway's moniker is due to the numerous features relating to General Stark and the Stark family that can be found along the route, such as the Molly Stark Cannon in New Boston. The GJSSB Council meets quarterly, discussing such topics as events, marketing, and an interactive website.

While funding for these byways has been available in the past under federal transportation legislation, there is no longer standalone scenic byway funding under MAP-21, which took effect in October 2012. Eligible projects under the Surface Transportation Program and the Transportation Alternatives Program that may have previously been eligible as part of the National Scenic Byways Program include: the construction of turnouts, overlooks, and viewing areas; historic preservation and rehabilitation of historic transportation facilities related to a byway; bicycle and pedestrian facilities along a byway.¹⁴

ARCHAEOLOGICAL SITES AND PROGRAMS

There has been human habitation in New Hampshire for at least the past 10,000 years. Our knowledge of settlements and archaeological sites is limited, however, because most of the State has not been fully explored. This explains why a map of archaeological sites cannot be produced. The New Hampshire State Conservation and Rescue Archaeology Program (NH SCRAP) is hesitant to describe known archaeological sites on a map because people have a tendency to assume that blank space on a map equates to the absence of archaeological significance. This is not the case in New Hampshire; the blank space simply means it has not been explored yet.

There are a few generalizations about potential archeological sites that communities can use to determine preservation efforts. Generally, SCRAP has found that sites tend to be within 300 feet of rivers or other water bodies. Areas near a waterfall or rapids pose a good chance of hosting former settlements. Certain soil types, such as well-drained alluvial soils are indicators of activity. Settlements have been known to occur on high ground near wetlands or swamps because these areas provided good resources for hunters and gatherers. A slope grade of 20 percent or greater could rule out a site, since steep slopes are not attractive for habitation. These environmental guidelines are imprecise indicators of settlement because the environmental landscape of the State has changed many times over the last 10,000 years. Unfortunately, there is no predictable model to determine settlement areas in New Hampshire.

THE MAIN STREET PROGRAM

The National Trust for Historic Preservation's Main Street Center, Inc. currently provides a staff person to assist communities in establishing and maintaining local Main Street Programs in New Hampshire. At one time there was a New Hampshire Main Street Program organized through the NH Community Development Finance Authority; however this program is no longer active in the state. Many existing Main Street initiatives in NH are also recognized as Nationally Designated Main Street Programs under the National Trust Main Street Center. While Main Street Programs contribute significantly in helping to revitalize and maintain local business growth and expansion,

¹⁴ 23 U.S.C. 101(a)(29), 23 USC 213(b), MAP-21 (1101, 1122)

they also play a crucial role in the education, health and well-being of our citizens. Exposure to the arts and creative industries fosters growth in youth populations, creates jobs and increases overall quality of life. The creative economy in the SNHPC Region is an engine of growth and community vitality and will continue to play a role in shaping our region through creative industries and by adding to the cultural activity and rich history of the area.

Main Street Programs are designed to improve the economic vitality of a downtown center, while supporting historic preservation. The National Trust's Main Street Center located in Concord, NH is open to all NH towns and cities and provides at least three years of technical support to participants, which are competitively selected. A successful Main Street Program requires both public and private cooperation and relies on four principles to accomplish revitalization. These are: organization; promotion; design; and economic restructuring. Participants in the program need to understand that results are incremental. While he focus is limited to central business districts, an economically vibrant downtown can impact the overall vitality of the town. Currently, Goffstown is the only town in the region which is a member of the National Trust's Main Street Center.¹⁵

VILLAGE OR DOWNTOWN DESIGN GUIDELINES

Village or Downtown Design guidelines outline locally acceptable site and architectural design and can be formulated to identify desirable community characteristics. They focus on the aesthetic and promote new development and substantial improvements to existing structures that is harmonious with the surrounding area, town center, or historic district. The guidelines can specify locally desired architectural styles, construction materials, building scale, window and door design, sign size and design, awnings and canopies, lighting fixtures, landscaping, fencing, and screening methods.

In the SNHPC Region, the towns of Derry, Chester, Goffstown, Hooksett, Londonderry, Windham and the City of Manchester have established design guidelines to ensure that future growth and development in their historic village centers and downtowns is compatible with its surroundings. These guidelines are typically incorporated in the communities' Site Plan Review or Land Use Development Regulations. Within the SNHPC region, these regulations range from providing a general clause requiring the preservation and protection of historic features to location specific guidelines for new development.

VILLAGE PLAN ALTERNATIVE

The Village Plan Alternative (VPA) is a planning tool that allows for the creation of new villages within a municipality that promote compact development with a mix of land uses, including residential, small-scale commercial, recreation and conservation.¹⁶ The purpose of a VPA is to promote mixed-use development in close proximity to one another within a neighborhood. The development is then at scale to the smaller populations and lower density of many New Hampshire towns.

The VPA is designed to implement the specific provisions of RSA674:21.VI(a). The ordinance was designed "to respond to the economic, environmental and social consequences of conventional twoacre lot zoning that segregates the locations of work, home, and recreation and produces a

¹⁵ For more information on the National Trust for Historic Preservation Main Street Center, visit http://www.preservationnation.org/main-street

¹⁶ NHOEP; Frost, Benjamin. The "Village Plan Alternative" RSA 674:21,VI [HB 1344]

sprawling development pattern."¹⁷ The VPA addresses these concerns by promoting smart growth principles, preserving the working landscape, and protecting environmental resources.

In the SNHPC Region the towns of Auburn, Hooksett and Windham have adopted Village Plan Alternative subdivision regulations.

FUTURE PRESERVATION PROGRAMS

Clearly, the largest impediment to historic preservation is planning and financing. Most people would agree that the preservation of their town or region's historic and cultural resources is desirable and important. There are many planning tools and funding programs to assist historic preservation efforts. All it takes is public support, committed volunteers and public/private partnerships. Currently the best available funding for historic preservation includes the following programs and funding sources.

<u>The National Trust</u> provides both grants and loans to non-profit organizations and public agencies. Some of the grants require that the property be designated a National Historic Landmark to qualify. Grant opportunities range from \$500 to \$10,000. Typically, the money must be used for professional advice, public outreach, educational materials, preservation planning and land use planning.

<u>The New Hampshire Preservation Alliance</u> sponsors a Historic Barn Assessment Grant Program. This program provides matching grants of \$250 to \$400 to barn owners for the hiring of a barn assessment consultant, who will determine the required steps to stabilize, repair, and reuse the barn.

Another local resource is the <u>New Hampshire Land and Community Heritage Investment Program</u> (LCHIP). This organization provides matching grants to NH communities and non-profit organizations for the preservation of local natural, cultural, and historic resources. Currently six municipalities in the SNHPC Region – Bedford, Derry, Hooksett, Londonderry, Manchester and Windham – have taken advantage of this program, with grants ranging from \$109,000 to \$300,000. Unfortunately, the State has reduced the allocated budget for LCHIP by 85 percent.¹⁸

With the exception of Bedford, Londonderry and Windham, most communities in the SNHPC region have ten percent or more of their homes built prior to 1940. This indicates great preservation potential existing today and in the future for the region. While not all of these structures should be preserved, the general age of the building stock is illustrative of patterns or clusters of development within historic neighborhoods. These areas could potentially be analyzed and grouped as historic districts in the future.

In addition to the need for funding, a review of municipal master plans indicates that little preservation work has occurred within the SNHPC Region. While most communities recognize the importance of maintaining their historic character, there are very few historic plans that have been developed and few goals or objectives have been adopted. At best, simple historic planning efforts could be conducted including an audit, inventory or review of existing zoning ordinances

¹⁷ Community Technical Assistance Program. Village Plan/Context Sensitive Solutions. <u>http://www.nhctap.com/documents/ctap/products/CTAP%20Factsheets/Village%20Plan%20Alternative%20Factsheet.pdf last accessed 8/9/2013.</u>

¹⁸ Visit <u>www.lchip.org</u> for more information.

and local land use policies for historic preservation needs. While every town in the region has important historic or cultural resources to protect, many of the region's towns are at different stages in implementing effective historic preservation programs.

Examples of some of the historic preservation goals in the towns' master plans include:

- Establish a Heritage Commission, Historic District Commission or Historical Society
- Designate historic areas as historic districts
- Establish zoning and land use regulations that recognize the value of historic resources and strive to preserve those features
- Organize public group walks through local historic districts
- Prepare educational brochures about the local historic district, town center or areas of historic pride and importance
- Prepare informational materials or a website to promote local resource management and protection
- Incorporate historic landmarks and cultural resources into school field trips and curriculum
- Promote private voluntary preservation
- Develop cohesive town centers within the historic setting
- Promote town center development consistent with historic character

These goals provide a starting point, but continued emphasis and proactive historic preservation planning is still needed in the region. Implementation takes both committed volunteers and effective leadership. This leadership can often be found in existing organizations and non-profits as well as in the establishment of public/private partnerships which can work together to protect and revitalize significant historic buildings and cultural landmarks within a community.

During 1998 and 1999, the New Hampshire Department of Environmental Services contracted SNHPC, along with the other regional planning commissions around the state, to collaborate with communities to identify and map what each community believed their Local Resource Protection Priorities (LRPP) to be. This inventory and data was then reviewed and updated again in 2004 and 2011. Today most of these mapped priorities still represent unprotected natural and cultural resources worthy of preserving. The overall project's intent was to gain an understanding of local priorities for two purposes – to assist the LCHIP program to identify projects to fund and to assist planners, regional planning commissions, and state agencies in their planning efforts.

Within the SNHPC Region, a total of 256 cultural and historic features were identified in the most recent LRPP as future preservation priorities by 12 of the 14 communities; Deerfield did not participate in the LRPP effort and the Town of Windham was added to the SNHPC Region in 2013 (see Table 2).

Features listed in Table 2 include historic homes, barns and farms, mills, cemeteries, schools, stores and taverns, and many other sites unique to the region's communities. Six of the cultural features identified in the original 1998-99 listing were removed from the LRPP in 2004 due to successful preservation efforts. Of those, three were added to the National Register of Historic Places, two were protected through new private development that included preservation of the historic structures, and the Town of Chester protected the last through outright purchase. No properties were removed from the list due to new development that negatively impacted the historic feature or for demolition.

Municipality	Cultural Resources	Cultural and Natural Resources	
Auburn	23	0	
Bedford	10	0	
Candia	13	0	
Chester	1	1	
Deerfield	N/A	N/A	
Derry	27	0	
Goffstown	12	1	
Hooksett	71	4	
Londonderry	50	6	
Manchester	5	3	
New Boston	1	2	
Raymond	0	0	
Weare	24	2	
Windham	N/A	N/A	
SNHPC Region	237	19	

TABLE 2: LOCAL RESOURCE PROTECTION PRIORITIES INTHE SOUTHERN NEW HAMPSHIRE PLANNING COMMISSION REGION

Source: SNHPC

By comparison, 22 of the natural features identified in 1998-99 were preserved as of 2004 and removed from the list and another five natural features were removed due to recent growth and development. Today it is not known how many of the features identified in the 2010 update have been protected or preserved. This represents an important project and survey that should occur to help better inform the public and each community of its overall historic and cultural preservation needs.

ARTS AND CULTURAL RESOURCES AND DESIGN

Arts, culture and visual design are important aspects to a community and create a unique local identity or brand that allow communities to stand out among similar municipalities at the local, regional and national level. Examples include community arts centers and land, art classes, pottery studios, retail shops, art and music galleries and performances, etc. The arts also include new and emerging computer related businesses and industries as well as graphic design. All of these resources offer both established and new emerging business opportunities to help support economic development around institutions and venues as well as promote tourism and the influx of tourist dollars. The entire creative arts economy in total helps to enhance a community's vitality, sense of place, and overall quality of life. In short, these resources help to bolster a community's economy, tax base and foster important social connections that may otherwise not occur.

EXISTING CONDITIONS

SOUTHERN NEW HAMPSHIRE'S CREATIVE ECONOMY

According to the New Hampshire Business Committee for the Arts, the creative economy "encompasses the cultural core of artists, cultural nonprofits, and creative businesses that produce and distribute cultural goods and services that impact local and regional economies by generating jobs, revenue and quality of life. The creative economy is a powerful and positive force that drives community growth and vitality."¹⁹ While the current iteration of the creative economy may include molecular engineers and graphic designers, it has its roots in the arts and is often identified with cultural nonprofits.

Cultural nonprofits play a significant economic role in Southern New Hampshire. According to Dunn & Bradstreet, New Hampshire is home to 4,618 arts-related businesses that employ 13,111 people.²⁰ Art schools, design, publishing, film, radio, performing arts, visual arts/photographers and museums employ a creative workforce, spend money locally, generate government revenue, and are a cornerstone of tourism and economic development. A 2012 survey by Americans for the Arts found that in NH \$115 million was spent by nonprofit arts and cultural organizations which added/translated to \$62.1 million in local sales in retail, lodging and restaurants.²¹

The SNHPC Region is home to over 300 commercial and nonprofit cultural organizations that employ a significant number of employees with total salaries and compensation of over \$20 million for fiscal year 2010.²² These institutions and businesses generated over \$23 million in revenue in 2010 with total net assets topping \$175 million (see Table 3).²² At the local level, these institutions and businesses are the creative engines that can fuel growth.

¹⁹ New Hampshire Business Committee for The Arts. © 1999-2004. All Rights Reserved. <u>http://www.nhbca.com/</u> last accessed 8/9/2013.

²⁰ New Hampshire Business Committee for the Arts. 2013. Creative Economy Facts. http://www.nhbca.com/news_040610_ce.php last accessed 8/9/2013.

²¹ Americans for the Arts. The Economic Impact of Nonprofit Arts and Culture Organizations and Their Audiences. Arts and Economic Prosperity IV: Report for the State of New Hampshire. Copyright 2012 Americans for the Arts, 1000 Vermont Avenue NW, 6th Floor, Washington, DC 20005.

²² Select data from the New England Foundation for the Arts (NEFA) is for the Towns of Bedford, Candia, Chester, Deerfield, Derry, Goffstown, Hooksett, Londonderry, Manchester, New Boston and Windham for cultural nonprofits only. Financial data for the Towns of Auburn, Raymond and Weare was not collected

A 2012 study conducted by Americans for the Arts attempted to track how many times a dollar is "re-spent" in the local economy and the economic impact generated with each round of respending. This input-output analysis revealed that direct expenditures by cultural organizations in New Hampshire was more than double the national average and average spending by nonprofit arts and culture event attendees in New Hampshire was \$22.31 per person, excluding the cost of admission to the event.

While these institutions contribute significantly to our region's economy, they also play a crucial role in the education, health and well-being of our citizens. Exposure to the arts and creative industries fosters growth in youth populations, creates jobs and increases overall quality of life. The creative economy in the SNHPC Region is an engine of growth and community vitality and will continue to play a role in shaping our region through creative industries and by adding to the cultural activity and rich history of the area.

Municipality*	Total Cultural Businesses	Total Cultural Nonprofits	Number of Employees**	Number of Employees per 1,000 population	Total Net Assets at Year End	Total Revenue
Auburn	4	4	93	18.8	NA	NA
Bedford	17	14	320	15.1	\$350,358	\$1,229,125
Candia	5	2	91	19.1	\$902,251	\$192,266
Chester	3	5	78	16.4	\$34,190	\$21,028
Deerfield	7	7	68	15.9	\$3,514,522	\$1,843,787
Derry	21	9	1,001	30.2	\$66,184	\$186,536
Goffstown	10	2	607	34.4	\$50,477	\$61,809
Hooksett	13	9	425	31.6	\$403,969	\$519,471
Londonderry	12	6	776	32.2	\$323,326	\$277,028
Manchester	87	62	4,352	39.7	\$170,170,914	\$19,698,244
New Boston	7	3	116	21.8	\$73,206	\$85,005
Raymond	8	0	277	27.3	NA	NA
Weare	5	6	169	19.2	NA	NA
Windham	9	2	198	14.6	\$52,188	\$28,621

TABLE 3: SELECT CHARACTERISTICS OF ARTS AND CULTURAL INSTITUTIONS IN SNHPC REGION 2010

* All data from NEFA, 2010; (NA=Data Not Available)

** Includes Arts, Entertainment, Accommodation, Recreation and Food Service Employees

The figures in this table are representative of two sources from the CultureCount project. Where the figures differ from those publicly available a second, non-public data source was used. The reasoning for this was to capture the largest number of cultural institutions represented. For instance, publicly available data for the Town of Bedford, NH can only account for financial information from four institutions, while there are 14 cultural non-profits listed for the Town. In this case a supplementary data set was used that accounts for more, if not all, institutions.

for 2010. Definitions and more information can be found at:

<u>http://www.nefa.org/creative_economy/research_data</u> all data Copyright © 2011 New England Foundation for the Arts/Culture Count <u>http://www.culturecount.org</u>.

PERFORMING ARTS CENTERS

Performing arts centers are part of the Southern New Hampshire region's cultural heritage. For the purpose of this plan, a performing arts center is defined as a multi-use performance space that is intended for use by various types of the performing arts, including dance, music and theatre. A range of spaces, private and public, may host performances; see the Tables 3, The Dimension of Arts and Culture. The American Planning Association produced this table as part of a briefing on the role of the arts and culture in planning practice.

Table 4 identifies all the known performing arts centers and venues within the Southern New Hampshire Planning Commission Region. The locations of these sites are also identified and shown on Map 1, Performing Arts Centers in Southern New Hampshire.

Table 4 Dimensions of Arts and Culture ²³

DEGREE OF PROFESSIONALISM							
Professional or Formal (> Vocational or Informal							
Creator or producer is recognized as artist by peers, has received advanced training in the art form, makes at least a portion of his or her living through artwork, or is presented or exhibited by arts-specific venue	Creator or producer is engaged in project solely for purposes of expression (e.g., ethnic religious, personal) and enjoyment						
TYPE OF PRODUCT OR ACTIVITY							
Tangible (> Intangible							
Painting, sculpture, monument, building, multimedia, or other permanent or temporary physical work of art	Event, performance, or gathering (temporary activity); oral history or cultural expressions passed on from generation to generation						
Specific-purpose venues () Non-arts venues							
Museums, theaters, galleries, community art centers, music clubs, etc.	Schools, churches, parks, community centers, service organizations, libraries, public plazas, restaurants, bars, shops, businesses, homes, etc.						
LEVEL OF PARTICIPATION AND INVOLVEMENT							
Creator (> Consumer							
Creator (responsible for the creation of the artistic, cultural, or creative expression)	Audience member, supporter, or critic (indirectly involved or associated with the artistic or cultural activity)						

²³American Planning Association. 2011. The Role of the Arts and Culture in Planning Practice. <u>http://www.planning.org/research/arts/briefingpapers/overview.htm</u> (last accessed October 3, 2013).
The following locations throughout Southern New Hampshire have been identified as hosting performances such as dances, plays, concerts, live music, recitals, and comedy acts. Venues include various private and public spaces, such as stadiums, town halls, auditoriums, theaters, libraries, banquet halls, churches, schools, recreational centers, taverns, parks, and town commons. While institutions such as the Palace Theater, Verizon Wireless Arena, Tupelo Music Hall, and Currier Museum of Art may be among the most well-known performing arts centers, the region has over 70 centers of varying types and sizes. All of this centers and venues provide a positive economic impact to the region and each community.

TABLE 5 PERFORMING ARTS CENTERS

AUBURN		
1. Auburn Village School	Auburn	
2. Circle of Fun Playground Gazebo	Auburn	
BEDFORD		
3. Bedford Dance Center	Bedford	
4. Bedford High School Theater	Bedford	
5. Bedford Old Town Hall	Bedford	
6. Bedford Public Library	Bedford	
7. Bedford Village Common	Bedford	
8. McKelvie Intermediate School	Bedford	
9. Memorial Elementary School	Bedford	
10. Riddle Brook Elementary School	Bedford	
11. Ross Lurgio Middle School	Bedford	
CANDIA		
12. Candia Gazebo	Candia	
CHESTER		
13. Congregational and Baptist Church	Chester	
14. Stevens Memorial Hall	Chester	
DEERFIELD		
15. Deerfield Community School	Deerfield	
16. Deerfield Gazebo	Deerfield	
17. Deerfield Town Hall	Deerfield	
DERRY		

	18. Adams Memorial Opera House	Derry
	19. Black Box Theatre - Pinkerton Academy	Derry
	20. Church of Transfiguration	Derry
	21. MacGregor Park	Derry
	22. Stockbridge Theatre - Pinkerton Academy	Derry
GC	DFFSTOWN	
	23. Goffstown High School Theater	Goffstown
	24. Goffstown Town Common	Goffstown
	25. YMCA Allard Center	Goffstown
HC	OKSETT	
	26. Donati Park	Hooksett
0	NDONDERRY	
	27. Londonderry High School	Londonderry
	28. Londonderry Senior Center	Londonderry
	29. Londonderry Town Common	Londonderry
	30. Tupelo Music Hall	Londonderry
	31. Whippersnappers	Londonderry
MA	NCHESTER	
	32. Alva de Mars Megan Chapel Art Center - Saint Anselm College	Manchester
	33. Manchester High School Central	Manchester
	34. Manchester High School West	Manchester
	35. Currier Museum of Art	Manchester

36. Dana Humanities Center - Saint Anselm College	Manchester	
37. Dance Studio of Manchester	Manchester	
38. First Congregational Church	Manchester	
39. Franco-American Centre	Manchester	
40. French Auditorium – NH Institute of Art	Manchester	
41. Grace Episcopal Church	Manchester	
42. Jewish Federation Theatre (JFNH)	Manchester	
43. Last Chapter Pub - SNHU	Manchester	
44. Manchester Memorial High School	Manchester	
45. Midnight Rodeo Bar	Manchester	
46. Mill-Around-Dance Studio - Waumbec Mill	Manchester	
47. Milly's Tavern	Manchester	
48. Nancy S. Boettiger Theater - The Derryfield School	Manchester	
49. Northeast Delta Dental Stadium	Manchester	
50. Palace Theater	Manchester	
51. Samuel & May Gruber Recital Hall- Manchester Community Music School	Manchester	
52. SNHU Dining Center Banquet Hall	Manchester	
53. St. Joseph's Cathedral	Manchester	
54. Stark Park	Manchester	
55. Strange Brew Tavern	Manchester	
56. Studio 550	Manchester	
57. The Chateau Restaurant and Event Center	Manchester	
58. The Clarion Hotel	Manchester	
59. The Jam Factory	Manchester	
60. The Shaskeen	Manchester	
61. Universalist Unitarian Church	Manchester	
62. University of New Hampshire at Manchester Third Floor Auditorium	Manchester	

63. Verizon Wireless Arena	Manchester
64. Veterans' Park	Manchester
65. Walker Auditorium - SNHU	Manchester
NEW BOSTON	
66. New Boston Town Common	New Boston
RAYMOND	
67. Raymond High School	Raymond
68. Veronica Laffs Comedy Club	Raymond
WINDHAM	
69. Castleton Banquet and Conference Center	Windham
70. Candia Gazebo - Griffin Park	Windham
71. St. Matthew Parish Catholic Community	Windham
72. Windham High School Theater	Windham





ARTS AND CULTURAL RESOURCES

PUBLIC ART & CREATIVE SPACES

Public Art refers to artworks located in public places and/or created using public funds. They usually consist of all forms of visual art conceived in any medium, material or combination thereof, which are placed in areas accessible or visible to the public. Works may be permanent, temporary, or functional. Public art does not include any architectural or landscape design, except when commissioned and designed by an artist.

In the Southern New Hampshire Region, the City of Manchester is home to numerous outdoor art displays, from small, neighborhood installations to large, iconic murals evidenced by the mural on the Manchester College of Pharmacy and Health Sciences building. These projects can be a point of pride for a community or help to combat blight through the repurposing of blank walls or publicly visible areas with murals, drawings or lighting displays. The Manchester community group known as Eagle Eyes is working with young adults in the city to clean up graffiti in publicly visible spaces and replace it with art that reflects the space or the values of the local community. More information on this group can be found on their website: http://eagleeyes1.org/

In addition to public art, throughout New Hampshire businesses, non-profits and communities are developing creative spaces to support artists and cultural organizations. Among them:

- Langer Place (Manchester)
- Salmons Falls Mills (Rollingsford)
- The Button Factory (Portsmouth)
- AVA Gallery and Arts Center (Lebanon)
- Riverview Mills (Wilton)
- Mennino Place (Concord)
- Washington Street Mills and Cultural Center (Seacoast area) see http://www.onewashingtoncenter.com/space.php

PLANNING TOOLS FOR THE ARTS

To foster creative business and promote local arts and a creative economy, a variety of planning and zoning tools have been implemented in many communities throughout New England. The City of Lowell, Massachusetts offered financial and regulatory incentives in select areas of their downtown to revitalize under-utilized properties. The city adopted an Artist Overlay District that allowed artists to live and work in the same facility. This mix of uses was previously restricted under the city's zoning code. Lowell also advertised and sponsored these live/work units housed in properties in the Artist Overlay District, some of which the city had acquired through foreclosure. Through partnerships with local property owners, marketing and a zoning overlay, Lowell was able to transform its image as a disinvested, post-industrial city to a creative arts hub north of Boston.

At the state level, a 1998 declaration from the State of Rhode Island's General Assembly allows for tax incentives to be utilized by artists living in locally designated arts districts. Under Rhode Island General Laws §44-18-30B(6) the state offers an exemption from sales tax and personal income tax to all works of art sold by artists so long as they live and work within a locally designated arts district. This sales tax exemption also extends to galleries located within the district.

While the aforementioned tax incentives may not apply to New Hampshire, similar incentives could be offered to New Hampshire residents. Currently New Hampshire offers reduced property tax bills to elderly and disabled property owners under RSA 72:38-a and also offers tax relief to low and moderate income home owners. In addition, RSA 79-E known as the Downtown Tax Incentive was recently expanded to include the potential for tax relief to owners seeking to rehabilitate historic buildings, whether they are located within downtowns and village centers or not; and also adds provisions for making qualified energy improvements. Even if RSA 79-E has already been adopted locally, the town meeting or city council must vote to accept these latest amendments before it can take effect.

Generally all of these articles could be used as model legislation to create a property tax relief program at the local and state level through the application of zoning changes or overlays granting relief to those property owners using commercial or residential space for creative purposes. While it should be noted that many artists, gallery owners, and those participating in other creative industries often rent their work space, this does not rule out an exception that limits the property owner to collecting tax relief in the identified zone. This exception could be implemented if the property owner can demonstrate a certain percentage of their renters are involved in a creative industry. It would be necessary to define exactly what constitutes a creative industry, or any industry type for which a similar moniker is used; however, this would be at the discretion of the enabling legislative body/municipality.

BEST PRACTICES FOR CREATIVE ECONOMIC DEVELOPMENT

There are many examples and best practices in promoting the arts and implementing creative economic development. These strategies and best practices generally center around building creative communities by convening stakeholders, building partnerships and promoting successes. Many of these strategies engage economic development professionals, chambers of commerce, artists/organizations, creative businesses, entrepreneurs, and public officials.

Faced with increasingly tighter budgets and limited resources, municipalities, arts organizations, arts advocates, and artists themselves are challenged to further the important work of bringing art to citizens, visitors, and all sectors within New Hampshire's communities. The **Guide to Creating an Arts and Cultural Plan** is an extensive gathering of local, state and national resources to help community arts organizers, local and regional planners and business leaders. Town and city officials, and economic development professionals who understand the connection between the creative industries and community vitality, can create an action plan to move toward a creative economy planning focus.

Creating an Arts and Culture Plan is a planning strategy that can support community economic development, tourism, and quality of life goals. Working together, community and regional planners, town and city officials, arts and cultural councils, and citizens interested in growing the creative economy and celebrating the role that arts and culture play in community vitality can:

- Identify businesses, individuals, non-profits, and academic organizations that contribute to the creative economy;
- Collect data showing the role that creative industries, public art, and the arts education play in engaging citizens and sustaining community vitality;
- Explore collaborations and partnerships to share resources and ideas;

• Include citizens in creating a plan that is unique to the needs and desires of their individual communities or regions.²⁴

Different organizations, including local and state governments, non-profits, businesses and local and regional planning agencies can take the initiative to create policies to establish and maintain support for building the creative economy. Samples of various policy initiatives are identified and discussed below.

a. Creating an Arts and Cultural Commission

Communities can choose to create an Arts and Cultural Commission to conduct a cultural asset inventory, develop arts and cultural programming, oversee percent for art fund disbursement, and manage public art installations. Example ordinances in New Hampshire include:

- Nashua, NH Establishing the Nashua Arts Commission
- Rochester, NH Arts and Culture Commission

It is also important to consider what role an Arts and Cultural Commission will play in the community. Will it have purchasing authority? Will it be a stand-alone nonprofit or part of the City or Town governance structure? Will City or Town resources be available to support the Commission such as office space, accounting services and liability insurance?

b. Establishing an Arts and Cultural District

<u>ArtistLink</u>, a non-profit resource addressing artist needs for space, health insurance, financial support, and business planning, identifies <u>cultural districts</u> as "...a well-recognized, labeled area of a city in which a high concentration of cultural facilities and programs serve as an anchor of attraction. Typically, cultural districts are geographically defined and have many different names, including: arts districts, arts and entertainment districts, arts and science districts, artists' quarter, museum district, and theatre district." Communities can choose to create an arts and cultural district to develop tourism, and revitalize neighborhoods.

<u>The Project for Public Spaces</u> (PPS), a non-profit planning, design and educational organization dedicated to helping people create and sustain public spaces, outlines 11 principles for creating great community places. Their pioneering Placemaking approach helps citizens transform their public spaces into vital places that highlight local assets, spur rejuvenation and serve common needs.²⁵

c. Percent for Art Programs

The <u>New Hampshire Percent for Art Program</u> enacted by the State Legislature in 1979 through RSA 19-A:9 and RSA 19-A:10 authorizes one half of one percent of the capital budget appropriation for new buildings or significant renovations to be set aside in a non-lapsing account for the acquisition or commissioning of artwork. The Percent for Art Program is dedicated to aesthetically enriching statefunded buildings, enhancing the effectiveness of the services provided in state buildings through the art displayed there and making the arts more available to our citizens. The program takes a unique approach to the acquisition of artwork by creating a Site Selection Committee that engages in a process where planners, architects, state employees, art professional and private citizens collaborate in the selection, commissioning or purchasing of works of art by artists and craftspeople for state buildings. The

²⁴ http://nhcreativecommunities.org/Resources/GuidetoCreatinganArtsCulturalMasterPlan/tabid/384/Default.aspx

²⁵ http://www.pps.org/reference/what_is_placemaking/

themes developed by the committee and the artwork selected often help the agencies housed within the buildings to better meet their mission. Some examples of existing programs in New Hampshire include:

- Hampton Beach Percent for Art Project
- Portsmouth Ordinance for Funding of Public Art
- Portsmouth Public Art Acquisition Policy

d. New Hampshire Creative Communities

There are many examples of creative communities in New Hampshire. New Hampshire's creative community efforts take many forms. They are evolving and established local and regional arts councils, municipally associated arts commissions, statewide arts service organizations, and organizations (chambers of commerce, main street programs, municipal economic development departments) that support strengthening the arts infrastructure in their communities/regions.

The City of Concord offers inspiration and guidance for what can be achieved in other communities in the state. In 2006, the City of Concord set out to develop and enhance the city's creative economy. Their efforts resulted in the 2008 creative economy plan titled: New Hampshire's Creative Crossroads: The Concord Creative Economy Plan. The goals of this plan include:

- **Capacity** Build capacity of Concord's creative sector through strategies such as public and private funding for not-for-profits, information, networking, management assistance, and coordination.
- **Creative Climate** Develop a business and public policy climate that encourages creativity with a public commitment to creative economic development that actively enables creative enterprises and individual artists.
- Identity Define and promote a creative identity and brand Concord so residents, current and prospective employers, potential creative workers, and visitors understand Concord's unique and authentic identity as a home and destination.
- **Downtown** Develop and enhance Concord's downtown, implementing Main Street Concord plans for upper-story residential and creative enterprises, special events, restaurants, shopping, and streetscape and façade development that results in a vibrant, lively downtown with activity into the evenings and weekends.
- **Greater Concord** Enhance neighborhoods and surrounding communities as walkable villages that encourage creative businesses, artist housing, cultural programming, parks and open space, and cultural attractions.²⁶

The achievement of these goals will represent a significant investment in defining Concord as a creative city. Already the Concord Chamber of Commerce has partnered with the City's Economic Development Advisory Council to publish the previously mentioned report and the goal of retaining the offices of the League of New Hampshire Craftsmen has been achieved. Artist housing has also been provided in newly developed units and a feasibility study of incubator space in downtown Concord has been completed.

²⁶ City of Concord Economic Development Advisory Council; Creative Economy Task Force. New Hampshire's Creative Crossroads: The Concord Creative Economy Plan. June 30, 2008.

According the NEFA, Concord has exceled in defining their creative industries and worked toward breaking down negative stereotypes between contrasting industries. The Creative Crossroads plan notes that a creative economy consists of:

"a cultural core that includes occupations and industries, both for profit and not for profit that focus on the production and distribution of cultural goods and services, as well as intellectual property – but specifically intellectual property that has a cultural component. The **Creative Economy involves** a cultural workforce [consisting of] occupations that represent work that directly produces cultural goods and services, regardless of industry, or work within an industry that makes cultural goods/services regardless of the actual work task. [The creative economy consists of] **Cultural Enterprises** [or] those industries that are involved in the production and or distribution of cultural goods and services."²⁶

Through the use of public/private partnerships, definition of goals and the addition of a housing component into the long-term feasibility of the expansion of Concord's creative economy, the city is leading the way in planning for creativity. Municipalities in the SNHPC Region could benefit from the lessons learned in Concord. These municipalities could use the *Crossroads* plan as a model for creating a regional identity or brand that is amenable to cultural and creative industries.

A thriving arts environment is important to communities. In New Hampshire we know that change happens at the local level and the arts are no exception. Local efforts support and bring new focus to the arts and creativity and what they do for our communities. Provided below is a list of many creative communities and local efforts currently in the works in New Hampshire:

NH Creative Communities

- Arts Alive! (Keene area) <u>www.monadnockartsalive.org</u>
- Arts Alliance of Northern New Hampshire <u>www.aannh.org</u>
- Art Esprit Rochester <u>www.artesprit.org</u>
- Art-Speak, Portsmouth Cultural Commission (seacoast) <u>www.art-speak.org</u>
- ArtVentures New Hampshire (statewide)
- AVA Gallery & Arts Center (Lebanon) <u>www.avagallery.org</u>
- City Arts Nashua <u>www.2.cityartsnashua.org</u>
- Creative Concord <u>www.concordnhchamber.com</u>
- Dover Arts Commission <u>www.ci.dover.nh.us</u>
- Great Mills Management (statewide) www.chinburgbuilders.com or www.onewashingtoncenter.com
- Lake Sunapee Region <u>www.centerfortheartsnh.org</u>
- Lamprey Arts and Cultural Alliance (Newmarket) <u>www.lampreyarts.org</u>
- Lebanon Recreation & Parks Department <u>http://recreation.lebnh.net/</u>
- Manchester Arts Commission
- Manchester Economic Development Office <u>www.yourmanchesternh.com</u>
- MoCo Arts (Keene) <u>www.moco.org</u>
- New Hampshire Business Committee for the Arts <u>www.nhbca.com</u>
- Peterborough Cultural Planning Committee
- Portsmouth Economic Development Program
- Rochester Main Street Program <u>www.rochestermainstreet.org</u>
- Upper Valley Arts Alliance <u>www.uvarts.org</u>

Provided below is a short summary of some of these programs and local efforts.

<u>Arts Alivel</u>, a Keene-based non-profit that works to sustain, promote, and expand access to arts and cultural resources in the Monadnock region, and Americans for the Arts conducted an 11-month study to quantify the broad economic impact of arts and cultural activities in the Monadnock region. The Arts and Economic Prosperity III study provides compelling new evidence that the nonprofit arts and culture are a \$16.6 million industry in the Monadnock Region supporting 477 full-time equivalent jobs and generates \$1.3 million in local and state government revenue. (see http://monadnockartsalive.org)

<u>Art-Speak</u> is a City of Portsmouth Cultural Commission. It was created to support Portsmouth's arts and culture following a recommendation by the Mayor's Blue Ribbon Committee on Arts and Culture in 2002. Art-Speak strengthens Portsmouth's position as a world-class City in which to live, work and play in by supporting and giving voice to its vibrant arts and cultural sector. Art-Speak achieves the following on behalf of Portsmouth's citizens, arts and cultural-related organizations, businesses and the City of Portsmouth itself:

- Promotes appreciation, awareness, participation and dialogue in support of the invaluable contribution that arts, culture and history makes to our city's vitality and quality of life;
- Implements and periodically updates the Portsmouth Cultural Plan;
- Markets and promotes Portsmouth as a cultural destination;
- Creates new resources to support local artists and cultural organizations;
- Performs a coordination function for local arts and cultural organizations and advocates on their behalf at local, state and national levels;
- Convenes an annual forum for community dialogue related to arts and culture;
- Introduces businesses to expectations and the importance of supporting the cultural community;
- Serves as an advisory to all departments of City government on arts and cultural issues;
- Prepares annually a state-of-the-city State of the Arts Report for the City Council;
- Collaborates with regional and state arts and cultural organizations;
- Surveys and measures Portsmouth's arts and culture industry as a \$41.4 million industry; and
- Seeks funding for arts and cultural activities and events.

Art-Speak has non-profit status, which enables the organization to secure private funding from donations, sponsorships and grants to accomplish Portsmouth's arts and cultural goals, as stated in the City's Master Plan. The City of Portsmouth provides office space and associated services as well as limited funding to Art-Speak.

<u>Lakes Creative Economy</u> project is a joint initiative of Belknap EDC, Lakes Region Chamber of Commerce, and Lakes Region Tourism Association that began in the summer of 2012. The mission is to support the growth of a strong creative arts sector in the Lakes Region. The vision for 2020 is the Lakes Region will have a vibrant creative arts community that is valued and supported by residents and visitors. In 2013, the Lakes Creative Economy worked to carry out the following activities:

- Facilitated quarterly Arts Roundtables of creative artists and businesses interested in supporting the arts in the Lakes Region. The purpose of these roundtables is to encourage artists and businesses to partner in new ways and to educate local artists about tools available to them to help them promote their work.
- Established a central, on-line "Arts & Entertainment Calendar" for the Lakes Region.
- Established an on-line "Arts & Entertainment Directory" for the Lakes Region.

CONCLUSIONS AND RECOMMENDATIONS

The Southern New Hampshire Planning Commission region's history spans centuries and encompasses many facets. From agricultural legacies seen in the region's farms and orchards to manufacturing traditions evidenced in the many mills and dams, the region is home to a variety of potential preservation gems. The towns in the region recognize the importance of preserving the historic character of the region, but this is not enough. To transition from the goal of preservation to the execution of preservation, towns should organize a Historic District Commission or a Heritage Commission. Once established, these organizations can utilize the tools for preservation, such as the historic resources survey and inventory; historic district overlay zoning; various preservation easements, grants and loans.

Towns that have created a Historic District Commission or Heritage Commission, and have utilized the various preservation tools, may find it easier to apply for a variety of state and federal designations outlined previously in the types of preservation. By garnering various designations, communities can showcase their unique heritage. It is recommended that municipalities interested in pursuing historic preservation practices should begin researching sites identified in the LRPP for preservation designations or purchase.

Despite the advantages of designation, it is important to realize that historic sites are still vulnerable to loss. Communities should educate themselves and their citizenry about the advantages and disadvantages of historic preservation and implement the types that are most suited to their historic resources.

Many of the aforementioned challenges and goals for the protection and preservation of historic resources are applicable for the region's cultural venues and industry. Without proper foresight and follow through of suggested policies cultural and artistic venues may go in need of new facilities or desperately needed funding sources. For municipalities to move toward expanding local creative economies the City of Concord's policies should be review to determine applicability when crafting municipal policy. Furthermore, cooperation between local business leaders and the creative community should be encouraged. Municipal administrators are in a position to take a leadership role in facilitating this dialogue and should be encouraged to do so.

Historic preservation designations and policies geared toward bolstering arts and cultural resources can provide education – not only to visitors and patrons of the sites and venues, but also to their own citizens thereby encouraging future efforts. Historic, artistic and cultural resources can attract visitors, which can add dollars to the community's economy. Provided below are the key goals and recommendations identified through this chapter and the Project Leadership Team.

Identified Key Goals and Recommendations:

- Promote greater collaboration between the public and private sector in historic preservation and the arts and culture. The SNHPC should work individually with each of the region's communities to actively collaborate in establishing historic, arts and cultural commissions and developing local arts and historic preservation plans, visions and goals and recommendations that can advance historic preservation and promote the arts and culture in local and regional economic development initiatives and strategies. This includes taking stock and conducting necessary inventory of existing regulations, policies and programs.
- 2. SNHPC can also help build local leadership and set up appropriate commissions and promote "place-making" as the centerpiece of local historic, arts and cultural plans. This planning must involve the public and key stakeholders within each community and address "place making", arts and culture, and historic preservation.

- 3. Some additional important goals and recommendations include: (a) keeping arts in regional and local budgets and reinstating arts programs that have been cut; (b) promoting businesses and organizations that can provide the leadership skills necessary to build and maintain public and private support, partnerships and volunteers in the arts and historic preservation; (c) conduct comprehensive inventories of the historic and cultural infrastructure, including cluster and target analysis of specialized historic, arts and culture-related industries and businesses; (d) obtain and provide planning grants and training to communities to promote the arts; (e) consider establishing cultural and mixed use zoning districts; (f) seeking legislative authority to create and implement new tools such as cultural enterprise zones; (g) most importantly, creating and fostering an environment, places, amenities and events that can stimulate investment, create new jobs and business opportunities, attract young workers and build a talented workforce; (h) promoting and supporting historic preservation and the arts and cultural programs in community planning and as a local economic development tool within the community; (i) restoring and protecting arts programs in local schools and raising the importance of arts and culture in the community; and (j) establishing a coordinated and organized network of arts and culture leadership in the state.
- 4. Artistic talent and historic preservation are essential for revitalization and economic growth. Artists need places to live, work, perform and to exhibit their work. Communities need historic buildings and places to sustain community character and place. All of these actions including the reuse of existing older industrial space and historic properties as space for artists and cultural events and organizations will improve quality of life and attract creative industries and businesses and promote economic growth and development.

MOVING SOUTHERN NH FORWARD ^{VOLUME 2} Chapter 8: Climate Change Impacts Assessment



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.

Adopted by the Planning Commission on December 146, 2014

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CLIMATE CHANGE IMPACTS ASSESSMENT

PURPOSE

The purpose of the Climate Change Impacts Assessment Chapter is to (1) identify climate change impacts and weather-related events and hazards in the Southern New Hampshire as presented in regional studies; (2) encourage communities to incorporate climate change and weather-related events and hazards into local municipal master plans, hazard mitigation plans, and other community planning processes; and (3) offer recommendations for local adaptation and mitigation strategies and actions.

This chapter is not meant to serve as a comprehensive source of national climate change information; rather, it is based upon the Impact Assessment conducted for Southern New Hampshire, *Climate Change in Southern New Hampshire: Past, Present, and Future* (Cameron Wake, et. al., 2014) and the Northeast *Climate Impacts Assessment* (NECIA) (from the Union of Concerned Scientists). These reports offer detailed analyses of the impacts of future climate change and weather variability identified over the 21st century as it applies to the SNHPC Region. For background information on climate change specifically, refer to the Resources Section (see **Appendix A**).

VISION

This Chapter is based upon the following identified Value Statement of residents within the region:



Climate Change and Energy Efficiency

Residents support renewable energy choices such as solar, wind, and geothermal that are climate-friendly. They support policies for higher energy efficiency standards in new buildings and incentives for home energy efficiency improvements. Many residents are also concerned about various weather-related events.

This Value Statement is in line with New Hampshire's Livability Principles, which states:

"Climate Change and Energy Efficiency – identify opportunities to save energy and costs and reduce risks to our communities, businesses and citizens. In recent decades, New Hampshire has seen an increase in extreme storms and flooding coupled with steadily rising fuel and energy prices. How can we reduce dependence on outside sources of energy, construct homes and buildings that are more efficient, and reduce impacts to our communities and infrastructure from extreme storms and flooding?"

Public input collected through the Granite State Future (GSF) public outreach efforts, including regional visioning workshops, comments submitted online, and a telephone survey conducted by the University of New Hampshire, demonstrate public support for policies that would serve climate change mitigation by reducing carbon emissions, such as renewable energy and energy efficiency initiatives.

¹ Granite State Future, 2012. History and Principles. <u>http://www.granitestatefuture.org/about/history-and-overarching-principals/</u> (last accessed January 27, 2014)

OUR COMMUNITY PREPAREDNESS

UNH Telephone Survey (2013) results provide further insight into residents' values and opinions regarding community preparedness.

• 57 percent of residents in the region are concerned about their <u>community's level of preparedness</u> in weather-related situations; 13 percent are very concerned and 44 percent are somewhat concerned.

57 percent

of residents are concerned about their community's level of preparedness

• Older people (70 years of age and older) are more likely to be very concerned with their <u>community's preparedness</u>. 28 percent are very concerned, more than twice the rate of residents overall.

See **Figure 1** for more information from the UNH Telephone Survey on the opinions of the region's residents. Full results can be found in the Granite State Future 2013 Statewide Survey Southern Region Report for NH Regional Planning Commissions.



FIGURE 1 CONCERN ABOUT COMMUNITIES' LEVELS OF PREPAREDNESS (SOURCE: UNH)

WEATHER-RELATED EVENTS

According to the UNH Telephone Survey, many residents are concerned about weather-related events.

- 80 percent, or four in five residents, are concerned (40 percent "very concerned" and 40 percent "somewhat concerned") with <u>snow or ice storms</u> in their community.
- 71 percent of residents are concerned about <u>power outages</u>; 35 percent are very concerned and 36 percent are somewhat concerned.
- 54 percent of residents are concerned about <u>wind damage</u>; 17 percent are very concerned and 37 percent are somewhat concerned.
- 37 percent of residents are concerned about <u>flooding</u>; 11 percent are very concerned and 26 percent are somewhat concerned.
- 32 percent of residents are concerned about <u>drought</u>; 12 percent are very concerned and 20 percent are somewhat concerned.
- 25 percent of residents are concerned about <u>wildfires</u>; 10 percent are very concerned and 15 percent are somewhat concerned.

71 percent are concerned about power outages

Climate change increases the frequency of strong storms that can cause outages.

- Older people (70 or older) are more likely to be very concerned about <u>wind damage</u> (30 percent). Older people and those who are retired are also more likely to be very concerned about <u>flooding</u> (22 percent and 14 percent) and <u>wildfires</u> (33 percent and 27 percent).
- Non-white residents and households earning less than \$40,000 are more likely to be very concerned about <u>snow or ice storms</u> (65 percent for non-white residents, 51 percent for those earning less than \$20,000 and 58 percent for those earning \$20,000 to \$39,000). Non-white residents and those who work at home are more likely to be concerned about <u>power outages</u> (52 percent and 51 percent).
- Conversely, young people (18 to 29) are less likely to be very concerned about <u>wind damage</u> and <u>power outages</u>.

See Figure 2 for more information from the UNH Telephone Survey on the opinions of the region's residents. Full results can be found in the Granite State Future 2013 Statewide Survey Southern Region Report for NH Regional Planning Commissions.



FIGURE 2 CONCERN ABOUT WEATHER-RELATED EVENTS IN YOUR COMMUNITY (SOURCE: UNH)

AT-RISK POPULATIONS

As the frequency and severity of weather-related events increase within the region, community preparedness for these events will become increasingly important.

One of the most critical at-risk groups is the senior population (see Chapter 2: Housing). Residents of 70 years of age and older are likely to be very concerned about weather-related events and community preparedness (28 percent). Specifically they are likely to be most concerned with three different weather-related events – wind damage, flooding, and wildfires. This heightened concern is a reflection of limited mobility and/or other challenges faced by seniors. (On a related note, 56 percent of the region's residents want investments in improving the availability of senior and special needs transportation.) As the region's population ages and the share of the population in the older demographic increases, communities may need to take extra steps to ensure their safety in weather-related events.

Disadvantaged and low-income populations are also more likely to be very concerned about extreme weather-related events, suggesting they may likewise experience extra challenges from adverse weather conditions. Examples of populations with such heightened concerns include non-white residents and households earning less than \$40,000.

KEY ISSUES & CONCERNS

Climate Change and Severe Weather-Related Impacts in Southern New Hampshire and beyond include:

- Summer droughts
- Winter/spring floods
- Rising food prices
- Ecosystem disruption
- Economic losses
- Health impacts
- Infrastructure damage

Key Issues:

- Political feasibility of adequately addressing climate change and maintaining a relatively stable climate in the future
- Lack of knowledge about climate change among both elected officials and the public
- The complexity of climate change and severe weather patterns complicates education efforts
- Difficulty in transitioning away from fossil fuel infrastructure
- Challenges of rapidly decreasing carbon emissions through energy efficiency and renewable energy measures
- Investing in climate change adaptation and emergency preparedness
- Developing local, state, and national climate change and emergency preparedness leadership
- Adopting policies that will lead to achieving less emissions and using less fossil fuels

EXISTING AND FUTURE CONDITIONS

FIGURE 3 NEW HAMPSHIRE'S MIGRATING CLIMATE (SOURCE: NECIA)



Climate change, or global warming, has already started according to many scientists and is projected to continue in the future. This section examines present climate changes and two possible scenarios or paths that climate change may take in the future, depending on humanity's energy choices. Global warming is causing changes in Southern New Hampshire's temperature, precipitation, and severe weather events. Impacts could affect the region's health, ecosystem, food supply, economy, and infrastructure.

SCENARIOS

"[There are] two future global emission scenarios, each of which paints a very different picture. In the low emissions scenario, improvements in energy efficiency combined with the development of renewable energy reduce our emissions of [greenhouse gases] below those of today by 2100. In the high emissions scenario, fossil fuels are assumed to remain a primary energy resource, and emissions of heattrapping gases grow to three times those of today by 2100. Our current global emissions trend, up through 2012, places us on the high emissions scenario."

- Climate Change in Southern New Hampshire: Past, Present, and Future, 2014

According to the New England Climate Impact Assessment (NECIA, 2007), the climate in New Hampshire of 2040 could be more like that currently in Maryland, and the New Hampshire of 2070 could be more like North Carolina. New Hampshire's climate is migrating – see Figure 3.

CLIMATE CHANGE IMPACTS IN SOUTHERN NEW HAMPSHIRE

LOCAL TEMPERATURE CHANGE

Temperatures in Southern New Hampshire are rising and will continue to rise as global warming progresses. Since 1970, average annual maximum temperatures in Southern New Hampshire have warmed 1.1 to 2.6°F, with the greatest warming occurring in winter (1.6 to 3.4°F). The number of days per year with minimum temperatures below 32°F has decreased by 15 days, and the coldest winter nights are warming. These shifts in temperature have caused the length of the growing season to increase.²

4°F warming with low emissions scenario in Southern NH avg. annual temperatures by 2100

8-9°F warming with high emissions scenario in Southern NH avg. annual temperatures by 2100 By 2100, maximum and minimum daily temperatures are projected to rise significantly in both the high and low emissions scenario, but the increase in the high emissions scenario is roughly twice that of the low emissions scenario. The difference between the 2100 outcomes for the two scenarios is even starker for minimum temperatures than for maximum temperatures.

Depending on the scenario, mid-century annual average temperatures may increase on average by 3 to 5° F, and end-of-century annual average temperatures may increase as much as 4 to 8° F.

Summer temperatures are expected to experience the

most dramatic change, up to 11°F warmer under the higher emissions scenario: "Extreme heat days are projected to increase dramatically, and the hottest days will be hotter, raising concerns regarding the impact of extreme, sustained heat on human health, infrastructure, and the electricity grid."²

Climate scientist Dr. Cameron Wake has depicted potential future summers in Southern NH where fourfifths of the summer is a heat wave (around 90 °F or higher) punctuated by more bearable cooler days – "think North Carolina." Summers will experience drought conditions despite the trend of more total precipitation over the course of a year. By 2100, Southern New

>**70 days/year above 90°F** in Manchester, NH by 2100 in the high emissions scenario

Hampshire will likely see between **20 and 54 days per year above 90°F** depending on either the low or high emissions scenario. Factoring in the urban heat island effect, Manchester, NH could see over 70 days per year above 90°F by 2100 in the high emissions scenario.²

Temperature data from the Impact Assessment conducted for Southern New Hampshire is displayed in Figure 4 and

Figure 5. The maximum temperatures graphed in Figure 4 are the annual averages of the maximum temperature on each day of the year (e.g. daily highs).

The minimum temperatures graphed in

² Wake, C., Burakowski, E., Wilkinson, P., Hayhoe, K., Stoner, A., and Keely, C. 2014. Climate Change in Southern New Hampshire: Past, Present and Future. *Climate Solutions New England*.

Figure 5 are the annual averages of the minimum temperature on each day of the year (e.g. nightly lows). The red lines represent the high emissions (A1fi) scenario and the blue lines represent the low emissions (B1) scenario. See Appendix B for detailed data.²

FIGURE 4 MODELED MAXIMUM TEMPERATURES FOR SOUTHERN NEW HAMPSHIRE FROM THE HIGH EMISSIONS SCENARIO AND LOWER EMISSIONS SCENARIO FOR ANNUAL TEMPERATURES (SOURCE: C. WAKE, ET. AL., 2014)



FIGURE 5 MODELED MINIMUM TEMPERATURES FOR SOUTHERN NEW HAMPSHIRE FROM THE HIGH EMISSIONS SCENARIO AND LOWER EMISSIONS SCENARIO FOR ANNUAL TEMPERATURES (SOURCE: C. WAKE, ET. AL., 2014)



LOCAL PRECIPITATION CHANGE

Climate change has already altered precipitation patterns in the region. Since 1970, annual precipitation in Southern New Hampshire **has increased 12 to 20 percent**. Extreme precipitation events, where at least 1 inch of precipitation falls in 24 hours, have also increased across the region. At some locations the increase in extreme precipitation events has been "dramatic." The consequence of this increase in large precipitation events is evident in the several large floods that have occurred across New Hampshire over the last decade, such as the 2007 flooding shown in Figure 6 at right.²

Triple the severe storms with 4 inches of precipitation in 48 hours in Manchester, NH by 2100 under both scenarios FIGURE 6 2007 FLOODING IN DEERFIELD, NH (SOURCE: TOWN OF DEERFIELD)



Climate change is projected to bring increased precipitation to the region, under both the low emissions and high emissions scenario. Much of the added precipitation will fall in the winter and spring, leading to concerns for increased flooding in these seasons. This extra precipitation will also fall in the

form of more frequent extreme precipitation events. For example, in Manchester it is anticipated that the frequency of storms where 4 inches of rain fall in 48 hours will **double** by 2040-2069 and **triple** by 2070-2099 (relative to the historical amounts from 1980-2009) under both the low emissions and high emissions scenarios.² Paradoxically, summer droughts are also projected to be an issue since the added precipitation will be competing with longer and strong heat waves that cause faster evaporation rates.²

FIGURE 7 HISTORICAL AND PROJECTED ANNUAL PRECIPITATION FOR SOUTHERN NEW HAMPSHIRE FOR THE HIGHER EMISSIONS SCENARIO AND LOWER EMISSION SCENARIO (SOURCE: C. WAKE ET. AL., 2014)



IMPACTS TO THE BUILT ENVIRONMENT

Climate change can negatively affect the built environment in a number of ways. More frequent extreme precipitation events and higher temperatures in particular can damage infrastructure. For this reason, climate change adaptation efforts are key to protecting investments and saving money in the long term.

Extreme precipitation events result in adverse effects, such as:

- excessive stormwater runoff
- flooding
- increased erosion
- degradation of water quality
- damage to critical infrastructure (e.g. buildings, roads, dams, bridges, culverts, water supply)²

FIGURE 8 2007 FLOODING IN RAYMOND, NH (SOURCE: TOWN OF RAYMOND)



As the data for Manchester displayed in Table 1 and Figure 9 indicate, the number of extreme precipitation events is projected to significantly increase in both the low emissions and high emissions scenarios. The frequency of the most extreme (4" in 48 hours) precipitation event is projected to increase by at least half (56 percent) in the short term and more than triple (328 percent) in the long term. The second most extreme (2" in 48 hours) event is projected to occur at least a quarter more frequently (26 percent increase) in the short term and at least half (56 percent) more often in the long term. The third most extreme (1" in 24 hours) event is projected to occur at least one-sixth (17 percent) more often in the short term and at least one-third (31 percent) more frequently in the long term.

Interestingly, the low emissions scenario would result in higher frequencies of extreme precipitation events in the short term. However, by mid-century the frequencies are similar and by the end of century the high emissions scenario results in more frequent events than does the low emissions scenario.³

MANCHESTER	Historical 1980- 2009	Short Term 2010-2039		Medium Term 2040-2069		Long Term 2070-2099	
MANCHESTER		Low Emissions	High Emissions	Low Emissions	High Emissions	Low Emissions	High Emissions
1" in 24 hours (events per yr)	8.3	10.2 23% inc	9.7 17% inc	10.6 28% inc	10.9 31% inc	10.9 31% inc	12.6 52% inc
2" in 48 hours (events per yr)	3.4	4.6 35% inc	4.3 26% inc	4.9 44% inc	5.1 50% inc	5.3 56% inc	6.0 76% inc
4" in 48 hours (events per decade)	1.8	4.8 167% inc	2.8 56% inc	4.7 161% inc	4.3 139% inc	7.7 328% inc	7.7 328% inc

TABLE 1 PROJECTED CHANGES IN EXTREME PRECIPITATION EVENTS IN MANCHESTER, NH

³ With the exception of 4" in 48 hours events, which are of equal frequency.



FIGURE 9 PROJECTED CHANGES IN EXTREME PRECIPITATION EVENTS IN MANCHESTER, NH 1980-2099

Extreme precipitation and flooding can temporarily block roadways with standing water. Water can tear through roads and destroy bridges, leaving areas impassable and facing millions of dollars in repairs. Homes and businesses in flood zones are susceptible to expensive damage as well. Severe storms can impact the larger economy when extensive damage to key infrastructure occurs. The impact of Hurricane Irene upon New Hampshire and New England provides a recent example of economic ramifications of extreme precipitation events. Thousands of tourists typically travel in autumn to view the fall foliage and enjoy other activities – the Vermont tourism season alone is worth \$300 million – but after the 2011 hurricane, some communities faced major business losses due to the decrease in tourism. In New Hampshire, the Kancamagus Highway suffered from collapses and buckling from Woodstock to North Conway, and several campgrounds were destroyed before one of their busiest weekends.⁴ Like other floods in recent memory in the state, damage was greatest where bridges and culverts were unable to adequately convey flood flows, or where long ago actions such as channel straightening increased the speed of river flow, increasing the force available to erode and undermine river banks and lead to collapse.⁵

FIGURE 10 EMERGENCY CREWS KEEP PEOPLE AT A SAFE DISTANCE FROM THE QUECHEE COVERED BRIDGE IN LEBANON, NH, AS IT FLOODED WITH WATER FROM THE OTTAUQUECHEE RIVER (THE ASSOCIATED PRESS)⁶



⁴ Rathke, L., 2011. Irene's flooding threatens Vermont's fall tourism. <u>http://seattletimes.com/html/travel/2016094689_trvermont02.html</u> (last accessed March 3, 2014)

⁵ New Hampshire Department of Environmental Services, 2013. Fluvial Erosion Hazards and River Geomorphic Assessment Program. Environmental Fact Sheet.

⁶ The Associated Press, 2011. Hurricane Irene: Wet, deadly and expensive, but no monster. <u>http://www.nola.com/hurricane/index.ssf/2011/08/hurricane irene wet deadly and.html</u> (last accessed May 2, 2014)

ECONOMIC IMPACTS

"New Hampshire's social and economic health is predicated in part upon the health of its lakes and rivers, oceans and beaches, mountains, scenic towns, and natural areas."⁷

- NH Department of Environmental Services, 2008

In the extensive outreach conducted to the region's residents for this updated Regional Comprehensive Plan, one of the most common things that people said was best about where they lived was the natural resources. As the quote above states, New Hampshire's natural resources are linked to its social and economic health.

New Hampshire's economy is susceptible to impacts of climate change. While some economic sectors – such as agriculture, forestry, and fisheries; or travel and tourism – are obviously impacted by the environmental damage caused by climate change, all sectors of the economy, regionally and globally, face increased risks from climate change. Severe storm events can wreak havoc on businesses and infrastructure. A 2011 study by the consulting firm Mercer warns that climate change could increase investment-portfolio risk by 10 percent over the next two decades by disrupting supply chains.

In New Hampshire, government and business leaders are already discussing climate and the economy. In August 2013, the NH Institute of Politics hosted a Roundtable Discussion on Climate and Economy: How Climate Change Impacts New Hampshire Businesses. The panel discussion emphasized the need to address climate change to protect businesses from climate change impacts such as flooding damage, price

increases of agricultural products, and general economic downturns caused by severe storm events.

Stories at the roundtable discussion, like that from Smuttynose Brewery owner Peter Egleston, offer concrete examples of the economic impacts of climate change. Mr. Egleston said that Smuttynose lost a large warehouse in New York City due to heavy flooding caused by Superstorm Sandy in 2012, but the biggest impact of flooding was the lost customers - many restaurants and bars that were unable to recover from the flooding remained closed. Storms like Sandy are becoming increasingly frequent in a warming world. Global droughts have also led to a 200 percent increase in the price of barley, one of the main ingredients in beer, driving up production costs. Mr. Egleston encourages climate change action.

Climate change impacts the bottom line of not only businesses, but also of government.

FIGURE 11 DISCUSSION OF CLIMATE CHANGE IMPACTS TO THE ECONOMY IN NEW HAMPSHIRE



⁷ New Hampshire Department of Environmental Services, 2008. Global Climate Change and Its Impact on New Hampshire. Environmental Fact Sheet. <u>http://des.nh.gov/organization/commissioner/pip/factsheets/ard/documents/ard-23.pdf</u> (last accessed April 14, 2014)

Also at the roundtable discussion, New Hampshire Department of Resources and Economic Development (DRED) Commissioner Jeff Rose spoke of the impacts of climate change upon major industries and state revenue sources closely connected to natural resources and vulnerable to bad weather. He highlighted the travel and tourism industry, the ski and snowmobile industry, and state parks as industries and state revenue sources that are particular sensitive to the impacts of adverse weather.

The New Hampshire Climate Action Plan emphasizes the economic imperative to mitigate climate change – quickly:

The sooner [greenhouse gas emission] reductions are accomplished, the greater the economic benefit; actions can either begin more quickly to provide a fairly steady rate of greenhouse gas emission reductions or they could be delayed, thus requiring larger reductions at a later time. **Delays in achieving reductions** would result in increased implementation costs, thus reducing their economic benefit and making it more difficult to reach the long-term goal [bold in original].



FIGURE 12 CROPS SUCH AS APPLES AND BLUEBERRIES MAY BE ADVERSELY IMPACTED BY CLIMATE CHANGE

AGRICULTURE

Farming in Southern New Hampshire will need to adapt to many agricultural changes and a number of adverse impacts from global warming. While farmers expect a longer growing season brought by higher temperatures, there are also risks that gains could potentially be offset and exceeded by adverse impacts such as increased pressure from invasive weeds, pests and disease; changing rainfall patterns; summer droughts and heat waves; warmer winters, and more frequent damaging storm events.²

According to Climate Change in Southern New Hampshire: Past, Present, and Future: "The growing

"As temperatures rise, farms and fisheries will likely face increasing problems with productivity, potentially damaging livelihoods and the regional economy."

- U.S. Environmental Protection Agency, 2007

season will get longer, which may provide opportunities for farmers to grow new crops. However, many existing crops will likely experience yield losses associated with increased frequency of high temperature stress, inadequate winter chill period for optimum fruiting, and increased pressure from invasive weeds, insects, or disease."² Large portions of the Northeast may become unsuitable for growing some traditional New England fruit varieties of apples and blueberries and some varieties of staple crops such as grain, and soybeans.

Rising minimum temperatures in winter will also likely open the door to invasion of cold-intolerant species that prey on the region's forests and crops. Climate change further enables the northward expansion of

invasive insects like the woolly adelgid (Adelges tsugae), an aphid-like insect that has decimated stands of eastern hemlock from Georgia to Connecticut since the 1950s.²

The timber industry will experience further challenges since the spruce and fir forests that serve as a source of sawlogs and pulpwood are projected to "all but disappear from the Northeast." According to the Northeast Climate Impacts Assessment (NECIA), if the higher-emissions scenario prevails, productivity of spruce/fir forests is expected to decline and suitable habitat will nearly vanish by 2100; see Figure 13. Major losses are projected even under the lower-emissions scenario. This would greatly exacerbate stresses on the pulp and paper industry in New Hampshire and the rest of the Northeast.⁸

Dairy production, another aspect of the Northeast's agricultural economy, will also face adverse impacts. Increases in temperature and associated heat stress will likely reduce milk yields and slow weight gain in dairy cows. According to NECIA, "the projected increases in temperature would negatively affect operations, since production costs would increase with reductions in milk and meat production.



A BROWN AUTUMN?

FIGURE 13 CHANGES IN HABITAT FOR DIFFERENT FOREST TYPES BY LATE CENTURY (SOURCE: NECIA, 2007)

Changes to New Hampshire's forests will also affect the fall tourism and maple syrup industries. As the Union of Concerned Scientists reports, "Because forests cover most of New Hampshire, projected changes in forest species will change the character of the state." Sugar maples, with their characteristic foliage and

⁸ Frumhoff, P. C., McCarthy, J. J., Melillo, J. M., Moser, S. C., Wuebbles, D. J., 2007. Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions. Northeast Climate Impacts Assessment (NECIA). Union of Concerned Scientists. <u>http://www.northeastclimateimpacts.org/pdf/confronting-climate-change-in-the-u-snortheast.pdf</u> (last accessed February 3, 2014)

maple sugar producing properties occur exclusively in the northeastern United States and southeastern Canada.⁹ Unfortunately, this species is one of many that will be adversely impacted by climate change:

"Maple sugar production depends on prolonged cold temperatures with freezing nights and warm daytime temperatures to create the optimal sugar content and sap production. With warming under way, the maple sugar industry long associated with New England has already felt some impact. Over the last two decades, the center of maple sugar production has shifted from the United States into Canada. Global climate models project a substantial northward shift in maple tree distribution. Such shifts in forest vegetation could cause lower elevations in New Hampshire to lose their brilliant fall foliage and resemble instead the brown autumns currently experienced in southern Pennsylvania."⁹

As the maps in Figure 13 show, the higher emissions scenario is projected to eliminate maple habitat from Southern New Hampshire by 2100. The colors in the map correspond to the different forest types shown in the color-coded photos.

WILDLIFE

According to the New Hampshire Wildlife Action Plan, the state's coastal habitats outside the region will likely be the most immediately affected by climate change due to sea level rise. Sea level rise inundates habitat, changes water salinities and increases the damaging effects of storm surge. In inland areas with freshwater habitats such as the SNHPC region, more precipitation occurring in stronger storms and longer summer droughts will alter stream flooding and wetland recharge. Increasing temperature will also affect the ranges and reproductive cycles aquatic species, while in terrestrial habitats species will relocate to accommodate their preferred temperature and moisture ranges. Species composition will shift and will potentially result in altered food webs and other natural process.¹⁰

According to NH Fish and Game biologists and other experts, who spoke at a July 2013 workshop of the N.H. Coastal Adaptation Workgroup, animal species face pressure from shifts in temperature and the plants they depend on. Some animal species such as moose are not expected to be able to migrate north, and will face climate change impacts in the current ranges without relocating to more suitable habitats. Species such as loons which are at the southern end of their ranges may move northward. Particularly sensitive species, such as purple finches, are expected to disappear as early as 2050. Migratory birds, who comprise the vast majority of New Hampshire's

FIGURE 14 NEW HAMPSHIRE'S MOOSE ARE IMPACTED BY CLIMATE CHANGE



⁹ Ekwurzel, B., n.d. Global Warming in New Hampshire: Our Climate, Economy, and Health. The Union of Concerned Scientists. <u>http://www.ucsusa.org/assets/documents/global warming/nh warming webfinal.pdf</u> (last accessed February 7, 2014)

¹⁰ New Hampshire Fish and Game Department, 2013. Ecosystems and Wildlife Climate Change Adaptation Plan. Amendment to the New Hampshire Wildlife Action Plan. <u>http://www.wildlife.state.nh.us/Wildlife/Wildlife Plan/climate change/Eco Wildlife CC Adapt Plan.pdf</u> (last accessed March 3, 2014)

breeding birds, that winter far away from the state in the Caribbean and Central America, are expected to have difficulties timing their migration to match the changing start date of spring and the start of available food for their young. Migratory birds will be exposed to climate change impacts not only in New Hampshire, but wherever else they stay around the year. Species that live at higher elevations in the state, such as Bicknell's Thrush, may find that the majority of their suitable habitat disappearing if temperatures continue to rise.¹¹

New Hampshire's moose are already facing stresses worsened by climate change, and many biologists are concerned about their ability to adapt to future changes. ¹¹ The New Hampshire moose population has plummeted by more than 40 percent in the last decade; only 4,500 moose remain today from the previous population of 7,500. Biologists attribute some of this decline to increasing parasite loads – namely, ticks and brain worm– influenced by shorter winters caused by climate change. Ticks leave moose weakened from blood loss, and many die of anemia. Individual moose have been found to be infested with 150,000 ticks, five times more than normal. After the 2001 winter, of the collared moose in New Hampshire, 75 percent of the calves died along with 20 percent of the adult cows. Over a five year period, ticks accounted for 41 percent of all moose deaths in the state. ¹¹

Heat also negatively affects moose directly, as summer heat stress leads to weight loss, reduced pregnancy rates, and increased susceptibility to predators and disease. When it gets too warm, moose typically seek shelter rather than foraging for nutritious foods needed to keep them healthy. For the past few years, many New Hampshire cows have been under the weight necessary to successfully bear calves, and fewer calves are born today than were born a decade ago. The many impacts that moose face from climate change are examples of the ways in which other species can similarity be affected.¹¹

HEALTH IMPACTS

New Hampshire and the Northeast are projected to experience a number of adverse health impacts due to climate change. One reason for this is the amount of extremely hot days per year will greatly increase over the coming century, especially under the higher-emissions scenario. These heat waves will increase the risk of heat-related illness and death among vulnerable populations, especially in urban areas.

For example, under the higher-emissions scenario, the greater Manchester area could experience 23 days over 100°F and over 65 days over 90°F each summer by 2100 according to the Northeast Climate Impact Assessment (NECIA); see Figure 15.8





¹¹ National Wildlife Federation, n.d. New Hampshire: Help Save the Moose from a Changing Climate. <u>http://www.nwf.org/pdf/2013-State-Facts-Postcards/NH%20Fact%20Sheet.pdf</u> (last accessed March 3, 2014)

According to the most recent climate change assessment, Manchester will experience 38 to 73 days over 90°F each summer depending on the scenario.² The 2003 heat wave in Europe that caused up to 70,000 excess deaths shows just how deadly heat can be, even in "developed" countries.¹²

Due to higher temperatures, global warming could worsen air pollution in the state, creating more days when national air-quality standards cannot be met. Again, this impact will be worse under the higheremissions scenario. Poor air quality will exacerbate the risk of respiratory, cardiovascular, and other ailments, if local vehicle and industrial emissions of ozone-forming pollutants are not reduced.⁸ Ground-level ozone concentrations cause direct lung injury and increase the severity of respiratory diseases such as asthma and chronic obstructive pulmonary disease. Allergy sufferers can expect rising temperatures and carbon dioxide levels to worsen pollen-based allergies across the Northeast, particularly under the higher-emissions scenario.⁸

More frequent outbreaks of mosquito-borne diseases such as West Nile virus may be another consequence of hotter, longer, drier summers punctuated by heavy rainstorms, which create favorable conditions for mosquito habitat.⁸

Ticks are another pest whose New Hampshire population could grow in a warming world. The Center for Disease Control and Prevention (CDC) warns that climate change is causing ecosystem changes that include the migration of vectors and animal hosts that carry Lyme disease, which is transmitted via ticks.¹³

The NH Climate Action Plan states that public health officials need better data/analysis for vector-borne infectious disease forecasting and an understanding of what indicators to track, such as weather patterns, mosquito pools, and tick populations.

FIGURE 16 TICK AND MOSQUITO POPULATIONS COULD INCREASE IN NH DUE TO CLIMATE CHANGE



The CDC also links drought caused or worsened by climate change to impacts on human health. Droughts can potentially strain agricultural productivity and result in increased food prices and food shortages, worsening strain on those affected by hunger and food insecurity in the U.S., including here in New Hampshire. Droughts can also result in shortages of clean water and may concentrate contaminants that negatively affect surface waters in some areas.¹³

FOOD INSECURITY

As the weather patterns change, the future predictability and reliability of crop yield has been called into question. Mild changes to weather will have growing effect on the output of farms, either positive or negative. However positive effects will be eroded by severe weather events, which are increasing in severity and frequency due to climate change, and which will have decidedly negative effects on crop yield. Severe weather events include events such as floods, strong storms, and droughts.

¹² University College London and The Lancet Medical Journal, 2009. Climate change: The Biggest Global-Health Threat Of The 21st Century. <u>http://www.ucl.ac.uk/news/news-articles/0905/09051501</u> (last accessed February 19, 2013).

¹³ Center for Disease Control and Prevention (CDC), 2010. Health Effects. Climate and Health Program. <u>http://www.cdc.gov/climateandhealth/effects/default.htm</u> (last accessed March 3, 2014)

Weather and climate-related food shortages in other parts of the United States are of particular concern for those of us in the State of New Hampshire because "we rely on outside sources for 96 percent of the food we consume. The recent drought in the mid-west United States in 2013 serves as an example of how crop yield can be stressed by extreme weather events. Although famine in New Hampshire may sound



absurd, the possibility of widespread hunger hides behind fewer than five days of grocery supply. If travel and transport restrictions were enforced to halt the spread of deadly disease, how could we possibly avoid food shortages? This looming threat to our sustenance and security cannot go unnoticed."¹⁴

Food insecurity is already an issue for families in New Hampshire and in Manchester in particular. Feeding America's "Map the Meal Gap 2013" study estimated that 11 percent of residents in New Hampshire remain food insecure, and the number of seniors and children in need are rising. Five percent of seniors ages 60 and over (13,000 people) are food insecure. The "Map the Meal Gap" study has shown a steady increase in senior hunger and projected that if the growth remains consistent, 22 percent of seniors will be food insecure in 2030. 14 percent of children in New Hampshire are food insecure, and nearly half are not eligible for federal nutrition assistance.¹⁵

In Manchester, more than 10% of families are below of poverty level and the City is categorized as at moderate risk of food insecurity. Although its risk was categorized as moderate rather than high since its high poverty level was somewhat offset by its high urban population density, researchers with the Children's Alliance of New Hampshire and the Carsey Institute stress it is important to note that Manchester has neighborhoods which "are at serious risk of food insecurity due to poverty alone."¹⁶ The families in these neighborhoods especially could be adversely impacted by rising food prices caused by climate change impacts.

KEY STRATEGIES & PROJECTS

The Energy Efficiency and Green Building Chapter contains many energy-focused strategies and projects that can reduce greenhouse gas emissions. In this chapter, a few additional climate change mitigation strategies are proposed that offer broader approaches to slowing climate change. Climate change adaptation strategies and projects are also offered.

¹⁴ Lougee, Jeremy. Sustaining Agriculture in the Granite State. 2009. <u>http://www.aconservationtrust.org/Keep%20Growing%20resources/SustainingNHAgriculture.pdf</u> (last accessed April 14, 2014)

 ¹⁵ The New Hampshire Food Bank, 2013. New Data Shows NH's Most Vulnerable Populations Have Increased Need for Food Assistance. <u>http://www.nhfoodbank.org/news-and-events/6/18/2013/New-Data-Shows-NH-s-Most-Vulnerable-Populations-Have-Increased-Need-for-Food-Assistance</u> (last accessed April 14, 2014)

 ¹⁶ Wauchope, B. and Ward, S. K., 2012. Mapping food Insecurity and Food Sources in New Hampshire Cities and Towns. Children's Alliance of New Hampshire and the Carsey Institute.
<u>http://www.carseyinstitute.unh.edu/publications/IB-Wauchope-CAofNH-NH-Food-Insecurity.pdf</u> (last accessed April 14, 2014)

NATURAL HAZARDS MITIGATION

"Prevention pays. It outperforms Wall Street hands down, and at the same time, it pays dividends that you can't calculate in dollars and cents. It saves lives. It saves suffering. It saves loss of property. Prevention saves jobs. Bottom line, prevention works."

- James Lee Witt, Director, Federal Emergency Management Agency

The effects of climate change will greatly increase the need for natural hazards mitigation and adaptation in the present and future years for our region and our state. *Hazard mitigation* is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards (44 CFR 201.2).

Hazard mitigation activities may be implemented prior to, during, or after an event. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs. ¹⁷ It includes both structural interventions, such as flood control devices, and nonstructural measures, such as avoiding construction in the most flood-prone areas.

Mitigation includes not only avoiding the development of vulnerable sections of the community, but also making existing development in hazard-prone areas safer. For example, a community could identify areas susceptible to damage from natural disasters and take steps to

FIGURE 17 VIEW OF THE 2006 MOTHER'S DAY FLOOD IN HOOKSETT, NH



make these areas less vulnerable. It could also steer growth to less risky areas. Keeping buildings and people out of harm's way is the essence of mitigation.

Mitigation should not be seen as an impediment to growth and development. On the contrary, incorporating mitigation into development decisions can result in a safer, more resilient community, one that is more attractive to new families and businesses. Natural Hazards that we are susceptible to in the Southern New Hampshire Region include:

- Flooding
- Dam Failure
- Erosion / Mudslides
- Landslides
- Earthquakes
- Drought
- Wildfire

¹⁷ FEMA. Local Mitigation Plan Review Guide. October 1, 2011.
- Lightning
- Hurricanes
- Tornado/Downburst
- Severe Winter Weather
- Debris-impacted Infrastructure / River Ice Jams
- Rapid Snowpack Melt
- Radon
- Geomagnetism
- Hailstorms
- Extreme Heat

The impacts of climate change on our region have been dramatic in recent years. In the past ten years (between 2004 and 2013), there were more FEMA declared major disasters and emergencies than there were in the previous five decades from 1953 through 2003 (Figure 18).¹⁸ Major disaster events are on the rise in New Hampshire, with the frequency and severity of storms and storm related damage increasing annually. Over \$68 million in FEMA public assistance grants were given to the State of New Hampshire between 2007 and 2011 alone. This number does not include the added economic costs of property damage, cleanup and restoration that communities, residents, and businesses sustained as a result of major disasters.

All of the 16 major declarations in the state in the past ten years have been caused by severe storms, and ten of them (63 percent) involved flooding. See Table 3 for details. The climate change projections for Southern New Hampshire indicate the frequency of severe storms with extreme precipitation is increasing significantly.

By late century, the most severe (4" in 48 hours) precipitation event is projected to *quadruple* in frequency in Manchester under either scenario and in Windham will either increase by 50 percent (low emissions) or double in frequency (high emissions).²

Together, these trends suggest that our region could see more severe storm and flooding-based major disaster declarations in the future. Climate change adaption measures that tackle flooding will be important to mitigate the extra hazards.

Each community in the Southern New Hampshire Region has developed a Natural Hazards Mitigation Plan that is updated and approved by FEMA every five years. These plans identify past and potential hazards and prioritize mitigation strategies to address them. Hazard areas for the Southern New Hampshire Region are illustrated on Map 8-1.

It is apparent that we are facing a significant change in the strength, frequency and severity of these hazards and must develop a unified mitigation and adaptation strategy for our communities, our region and our state. Mitigation and preparedness strategies must look to the long-term possibilities of the effects of climate change on our region, making sure our land use and development policies and ordinances are working to ensure the protection of our residents, property and infrastructure.

¹⁸ Federal Emergency Management Agency, 2014. Disaster Declarations for New Hampshire. U.S. Department of Homeland Security. <u>https://www.fema.gov/disasters/grid/state-tribal-government/33</u> (last accessed February 28, 2014)



FIGURE 18 NEW HAMPSHIRE DISASTER AND EMERGENCY TRENDS, 1971-2013

Table 2 Major Disaster Declarations for in New Hampshire 2004-2013 (Source: FEMA)

Disaster Number	Date	Incident Description				
<u>4139</u>	08/02/2013	Severe Storms, Flooding, and Landslides				
<u>4105</u>	03/19/2013	Severe Winter Storm and Snowstorm				
<u>4095</u>	11/28/2012	Hurricane Sandy				
<u>4065</u>	06/15/2012	Severe Storm and Flooding				
<u>4049</u>	12/05/2011	Severe Storm and Snowstorm				
<u>4026</u>	09/03/2011	Tropical Storm Irene				
<u>4006</u>	07/22/2011	Severe Storms and Flooding				
<u>1913</u>	05/12/2010	Severe Storms and Flooding				
<u>1892</u>	03/29/2010	Severe Winter Storm				

<u>1812</u>	01/02/2009	Severe Winter Storm
<u>1799</u>	10/03/2008	Severe Storms and Flooding
<u>1787</u>	09/05/2008	Severe Storms and Flooding
<u>1782</u>	08/11/2008	Severe Storms, Tornado, and Flooding
<u>1695</u>	04/27/2007	Severe Storms and Flooding
<u>1643</u>	05/25/2006	Severe Storms and Flooding
<u>1610</u>	10/26/2005	Severe Storms and Flooding

Goals and recommendations for climate change in the Southern New Hampshire region aim to provide guidance on both mitigation and adaptation for the projected climate change impacts we face.



LEGISLATIVE STRATEGIES

"The Task Force recommends... a long-term reduction in greenhouse gas emissions of 80 percent below 1990 levels by 2050. The goal of reducing greenhouse gas emissions by 80 percent by 2050 has been adopted by numerous states, cities and organizations. This goal is based on the reductions that climate scientists believe to be necessary to stabilize greenhouse gases in the atmosphere at or below 450 parts per million CO₂. It has been projected that stabilizing the concentrations of greenhouse gases at this level will avoid the most severe and catastrophic potential impacts of climate change."⁸

- New Hampshire Climate Adaptation Plan (2009)

On the federal level, serious climate legislature is also crucial to achieving a lower emissions scenario and lessened climate change impacts. The New Hampshire Climate Action Plan recommends supporting strong climate action at the federal level, "endors[ing] strong national climate legislation to complement state efforts to reduce greenhouse gas emissions and prepare for the projected impacts of climate change." Federal legislation could take the form of investment in regional transportation networks or a national cap and trade mechanism for greenhouse gases, for example. The Plan recommends that funds collects through legislative controls on greenhouse gases be returned to the state in order to fund the emission reduction, clean energy, energy efficiency, and adaptation priorities contained in the Climate Action Plan. The Plan also states national legislation should support comprehensive adaptation planning that integrates the enhancement of the state's significant existing built and natural infrastructure.

Specific adaptation priorities recommended by the Climate Action Plan include protecting natural systems, which provide significant ecosystem services to the state, as well as maintaining and enhancing built infrastructure affected by extreme storm events. Funding is needed to implement these actions and could again be provided by properly structured federal legislation. The Plan notes that funding could "drive the large emissions reductions needed while growing the New Hampshire economy" if it were distributed back to the states and strategically targeted. Errort Bookmark not defined.

Recommended legislative implementation is as follows:

- 1. Pass a legislative resolution to support efforts by the New Hampshire congressional delegation to encourage passage of a national climate bill that would complement efforts at the state level and return generated revenue to the states in order to support the implementation of state Climate Action Plans.
- 2. State level funding resulting from national legislation should be directed toward tax credits to support residential and business investment in measures consistent with this Plan; state and local government, non-governmental organizations, and privately-administered matching grant and loan funds; direct grants or tax rebates to low-income households least able to adjust to potentially higher energy prices and designed to migrate participants as rapidly as possible to greater energy efficiency; and loans and grants for student and worker green jobs training.

CLIMATE CHANGE ADAPTATION TOOLKIT FOR COMMUNITIES

The New Hampshire Department of Environmental Services (DES) has developed a climate change adaptation toolkit to guide New Hampshire communities through a logical planning process.¹⁹ It provides a variety of adaptation tools and resources for assessing and planning for climate change impacts. The toolkit allows a community to choose the path to take, starting with where they currently are in assessing and planning.

If a community is starting from the beginning, there is a process that DES recommends they follow:

- 1. Research and review the state, regional and local plans and assessments for climate change mitigation (decreasing our contribution to greenhouse gas emissions) and adaptation (preparing for the impacts) that already exist.
- 2. Review messaging around climate change issues (how to talk about this in your community)
- 3. Engage your community in a conversation around climate change adaptation
- 4. Perform assessments and evaluations of your community to identify vulnerabilities and opportunities
- 5. Begin incorporating adaptation recommendations and actions into community plans (Master Plans, Hazard Mitigation Plans, Capital Improvement Plans, etc.) and regulations (Zoning, etc.)
- Seek funding to implement and draw upon additional resources as necessary State, Regional & Local Plans¹⁹

The toolkit is also designed to help communities who have already begun their planning process. This includes communities that are prepared to engage their community in a conversation around climate change and adaptation and communities that want to complete an assessment of their community and its vulnerabilities to climate change impacts. Communities ready to develop goals and strategies for planning or that are currently updating their plans and regulations and want to include climate change adaptation will also find useful resources in the toolkit. The toolkit likewise serves communities that are ready to begin planning and those recovering from an extreme storm and want to find available funding.²⁰ Municipalities in the region can view the Adaptation Toolkit and begin their planning process here: http://des.nh.gov/organization/divisions/air/tsb/tps/climate/toolkit/adaptation.htm

LOCAL CLIMATE CHANGE ADAPTATION PLANS

The City of Keene, NH has developed a climate change adaption plan that can serve as a model for other municipalities in New Hampshire. Keene has a long, steadfast history of climate protection. In April 2000, the City signed onto the Cities for Climate Protection Campaign® (CCP), administered by Local Governments for Sustainability (ICLEI). Since agreeing to participate in the CCP Campaign, the City of Keene has developed a Local Action Climate Plan to identify ways in which the greater Keene community can assist in lowering greenhouse gas emissions. The City, led by its CCP Committee, has developed processes and implemented projects to ensure they are on track to meet their greenhouse gas emissions

¹⁹ New Hampshire Department of Environmental Services, 2014. The Adaptation Toolkit for NH Communities. Climate Change Program. <u>http://des.nh.gov/organization/divisions/air/tsb/tps/climate/toolkit/adaptation.htm</u> (last accessed April 18, 2014)

²⁰ Godlewski, S. Adaptation Toolkit for NH Communities. NH Coastal Adaptation Workgroup and Upper Valley Adaptation Workgroup. New Hampshire Department of Environmental Services. <u>http://www.snhpc.org/pdf/ToolKitSNHRPC112613.pdf</u> (last accessed April 18, 2014)

reduction goal of 10% below 1995 levels by 2015. Keene reaffirmed this commitment in its Community Goals of $2003.^{21}$

Keene and ICLEI have identified five key milestones to creating a climate resilient community:

- 1. Initiate a Climate Resiliency Effort
- 2. Conduct a Climate Resiliency Study
- 3. Develop a Climate Resilient Action Plan
- 4. Implement a Climate Resilient Action Plan
- 5. Monitor, Motivate, and Re-evaluate²¹

The plan lays the foundation for Keene to move forward with a public process and further refinement of its climate change and overall sustainability goals. Note this plan represents the first time that a community has attempted to undertake the development of an adaptation plan based upon the five milestone process.²¹

The adaptation planning process in Keene importantly intersected with other local planning efforts. Keene was preparing for its comprehensive master plan update, wherein the City, community members, and other local and regional stakeholders played a major role in setting the course for Keene's future. Keene recommended that the Adaptation Plan be utilized in that process and incorporated accordingly into the comprehensive master plan in order to provide the climate lens necessary to coordinate policy, make land use decisions, identify capital improvement projects, and establish funding priorities.²¹

The goals identified by Keene in their adaptation plan address the following opportunities in the built, natural, and social environments: Building and Development, Transportation Infrastructure, Stormwater Systems, Energy Systems, Management, Fauna and Flora, Agriculture, Economy, Public Health, Emergency Services, Promote a Local Climate Appropriate Economy, and Food Security. Examples of various goals are as follows:

- Decrease stormwater runoff and flash flooding.
- Increase the protection of existing and future wetlands to maintain the ability of these systems to naturally recharge aquifers and decrease stormwater run-off.
- Increase Keene's water storage capabilities in the face of drought conditions.
- Integrate into recently published state wildlife action plan.
- Devise land use regulations to preserve forests.
- Research and identify what crops will be productive in our region with a warmer climate and changing soil composition.
- Increase public awareness about the public health implications of climate change, including risks and the need for emergency preparedness.
- Train and Educate Emergency/Human Services/Public Health officials and workers.
- Support environmentally sustainable businesses and economy.

²¹ City of Keene, NH, 2007. Adapting to Climate Change: Planning a Climate Resilient Community. In Association with ICLEI Local Governments for Sustainability.

http://www.ci.keene.nh.us/sites/default/files/Keene%20Report_ICLEI_FINAL_v2_0.pdf (last accessed April 28, 2014)

TRANSPORTATION AND LAND USE PLANNING

Other strategies from the New Hampshire Climate Action Plan focus on transportation and land use planning. Overarching strategies include:

- Reduce vehicle emissions through state actions
- Encourage appropriate land use patterns that reduce vehicle-miles traveled
- Reduce vehicle miles travelled through an integrated multi-modal transportation system
- Protect natural resources (land, water, and wildlife) to maintain the amount of carbon fixed and sequestered

These transportation and land use planning strategies connect to many of the other livability principles that guide *Moving Southern New Hampshire Forward* and are compatible with recommendations included in their respective chapters. See the Transportation, Land Use, and Environment chapters for details on these areas.

Additional inter-related overarching strategies include:

- Lead by example in government operations
- Plan for how to address existing and potential climate change impacts
- Develop and integrated education, outreach, and workforce training program

Keene's climate change adaption plan tackles land use and transportation challenges through the following goals. Building and Development goals include reducing the likelihood of structural damage resulting from predicted increases in severe weather events; creating, adopting, and implementing a City building and energy code that incorporates sustainability, green building materials, and energy conservation principles; making all new development in Keene "green" (i.e. sustainable); lowering the ecological footprint of existing buildings; and reducing sprawl and promoting infill development/ redevelopment. Transportation Infrastructure goals include creating alternative route options for movement of goods and people, designing and reconstructing roadways to handle changes in temperature and precipitation as a result of a change in climate, and providing sustainable transportation mode choices (locally and regionally).²¹

FLUVIAL EROSION HAZARD PROGRAM

Flood and other storm-related damages cost New Hampshire taxpayers \$75.6 million between 2005 and 2007 due to three major storm events. As experienced in these storms, the erosion and collapse of river and stream channels and banks can wash out roads and destroy houses and other buildings, or, in rare cases, change the course of a river.

Fluvial (water flowing in a river) erosion is a natural process most powerful during very high flows and especially during storm events when rivers have more energy to erode stream beds and banks. Damage from fluvial erosion also occurs each day, slowly over time.

As the Existing and Future Conditions section of this chapter explained, climate change is increasing the frequency and strength of severe storm events, making adaptation to fluvial erosion even more important for the present and future.

As a result of the consequences of fluvial erosion and the recent flood disasters New Hampshire has experienced, establishing a statewide Fluvial Erosion Hazard (FEH) program has been a high priority with

the New Hampshire State Legislature, the Department of Safety, the Department of Environmental Services, and the New Hampshire Geological Survey. The Federal Emergency Management Association (FEMA) endorses the FEH program, and it has been implemented in other states.

In the Southern New Hampshire Planning Commission Region, The State of New Hampshire (Departments of Safety and Environmental Services) is partnering with the Lamprey River Local Advisory Committee and the Lamprey River Watershed Association to conduct a geomorphic assessment to identify areas in the watershed most at risk to FEH in order to develop a long-term watershed plan. The SNHPC towns of Candia, Deerfield, and Raymond are in the Lamprey Watershed.

Mapping and assessing floodplains and fluvial erosion hazard areas can provide useful information for land use planning and development, as well as resource management and protection. Local governments have the mapping, planning, and zoning tools to minimize the impacts of fluvial erosion hazards, and thus, are recommended as the most appropriate entities to implement appropriate flood hazard planning and mitigation efforts.

STREAM CROSSING VULNERABILITY ASSESSMENT

The Piscataquog River watershed, in south central New Hampshire, is 217.8 square miles in size and includes the following SNHPC communities: Goffstown, New Boston, Weare and portions of the City of Manchester. The goal of this landscape scale assessment project is to evaluate, and rate, each road stream crossing's vulnerability to high water flows during severe storm events. Trout Unlimited (TU), SNHPC, and other state and federal partners are collaborating in the Piscataquog Watershed Stream Crossing Vulnerability Assessment Project to develop a geographic information system (GIS) based hydraulic capacity modeling tool to evaluate whether a particular stream crossing will pass instream water flows during the 2, 25, 50 and 100-year return interval storms.

An estimated 412 stream crossings surveyed in 2012 have been evaluated for stormwater vulnerability. The data collected has been mapped showing the hydraulic capacity rating of each stream crossing to determine existing problem areas. This information can be used to proactively develop a long-term strategy to reduce community risk associated with undersized, and vulnerable, road crossings. The results from this data analysis provides municipalities and state agencies with valuable information necessary for implementing new conservation initiatives and conducting detailed safety and hydraulic capacity investigations of hazardous culverts.

With this stream crossing information, municipal road agents and public works staff are able to prioritize restoration efforts on inadequate crossings, thereby reducing the chance of culvert wash-outs during the extreme storm event. In the end, this proactive approach to addressing infrastructure needs across the watershed will help, in both the short and long term, to reduce emergency repair costs associated with storm damage. These restorations will also serve to protect critical water quality resources as well as improve aquatic habitat frequently associated with stream fragmentation. We believe the key to protecting a community's infrastructure resiliency is to be prepared; and a big part of that preparedness is to understand the vulnerability of road crossings in each community.

COMMUNITY PREPAREDNESS

Keene's climate change adaption plan contains the following emergency preparedness goals: improve the reliability of emergency communications during severe weather events; increase community communication for emergency events; increase the ability of the public to respond/recover from extreme weather events;

and continue to train and educate staff and the public regarding current and future diseases and associated vectors.

In the SNHPC Region, similar goals are tackled in the Southern New Hampshire Region Community Preparedness Program (SNHRCPP). SNHRCPP is a regional effort by all of the municipalities in the Southern New Hampshire Planning Commission Region to increase citizen preparedness. Since climate change increases the risk of some types of hazards, preparedness becomes even more important.

The SNHRCPP collaborates with other organizations and agencies working to increase citizen preparedness in the region and promotes the Red Cross message "Get A Kit, Make A Plan, Be Informed". This website is intended as a resource for citizens and municipalities in the Southern New Hampshire Region and for bringing communities together to work towards increasing citizen preparedness in times of emergency and disaster.²²

This program was developed in two stages, planning and outreach. The Community Preparedness Committee was formed and consists of representatives from emergency management, police, fire and local government from each town in the region. This Committee, with assistance from Southern New Hampshire Planning Commission developed this plan to guide the goals and outreach strategies. The Committee then divided into working groups to develop the outreach program that was implemented.²²

This program is intended to be a model for other regions in the State for developing their own community preparedness programs and for increasing levels of community preparedness throughout the State of New Hampshire. Natural disasters will continue to threaten our communities and with this plan and program our communities will be better prepared to handle them.²²

CONCLUSIONS AND RECOMMENDATIONS

In the face of current and future challenges presented by climate change, reducing carbon pollution and adapting to and preparing for changing climates with sustainable development is recommended. As a starting point, it is recommended that municipalities endorse the New Hampshire Climate Action Plan and incorporate its recommendations and strategies into planning efforts, including climate change mitigation. Adaptation emphasis in municipal Master Plans is also key to successful planning for climate change impacts. Grants to support regional efforts to identify and address climate change impacts could help fund this work. Five goals are delineated below, with recommendations organized under each goal.

Goal 1: Increase understanding, education, and training opportunities for adaptation to climate change.

Recommendations:

- Implement an outreach program for town officials, employees, schools, organizations, and businesses.
- The Leadership Team recommended educating NH communities about climate change using the same approach that was used when recycling first began in Manchester. The approach included speaking to the schools and businesses in the area.

²² Lamprey River Local Advisory Committee and Lamprey River Watershed Association, n.d. Fluvial Erosion Hazards and Geomorphic Assessments of the Lamprey River Watershed.

- Establish a training program for key municipal employees Health Department, Department of Public Works, Planning Department, emergency personnel, engineers, transportation officials, and other decision-makers.
- Encourage climate change education programs in public school and higher education, integrate in topics relevant to climate change mitigation and adaption (e.g. in disciplines such as engineering and planning).
- Conduct research and analysis to ensure infrastructure standards reflect current and future climate change impacts (as well as mitigation goals). For example, designing for the current and projected 100-year flood rather than the outdated, less severe 100-year flood of 50 years ago.
- Increase public awareness about the public health implications of climate change, including risk and the need for emergency preparedness.
- Create support services for people who may lose their jobs as a result of climate change (for example, snowplowing and sugaring).

Goal 2: Reduce greenhouse gas emissions and other environmental impacts in order to lessen the SNHPC region's impact on climate change.

Recommendations:

- Flexible land use and zoning regulations to allow for renewable energy installations, such as wind and solar energy.
- Require stricter building codes to increase energy efficiency in new buildings and reduce fossil fuel energy use, as well as incorporate other sustainability principles.
- Support public transportation to lower emissions and improve the environment.
- Decrease stormwater runoff and flash flooding consider adopting a Net Zero Runoff site plan requirement.
- Increase the protection of existing and future wetlands to maintain the ability of these systems to naturally recharge aquifers and decrease stormwater runoff.
- Align policies with the state wildlife protection plan to protect forests, habitats, and migration routes.
- See Energy Efficiency Chapter, Transportation Chapter, and Environment Chapter for more recommendations.

Goal 3: Work toward climate change impact adaptation; prepare for and mitigate hazards associated with climate change.

Recommendations:

- Include explicit climate change impacts analysis in Master Plans. Climate change impacts analysis is not the same as hazard mitigation; with climate change, there is a need to consider bigger storms, more extreme heat, and other projections beyond current hazards. This recommendation also supports potential future zoning changes related to climate change.
- Encourage and/or require new development to reduce the effects of runoff and associated flooding from bigger, more frequent severe storms (e.g. reduce impervious surfaces).

- Consider using zoning and overlay zones to designate areas vulnerable to impacts and/or to create zones based on adaptation goals, such as protection, accommodation, and preservation.
- Support use of latest Cornell University rainfall intensity numbers based upon latest storm data in stormwater planning and management.
- Build outside of floodplains and strengthen floodplain regulations and building codes to adapt to more severe flood events (e.g. 500-year flood).
- Implement incentives for developers to build and locate subdivisions in suitable areas and set aside vulnerable areas as open space.
- Design and reconstruct roadways to handle changes in temperature and precipitation as a result of climate change.
- Develop a food security plan and integrate it into local policies, and support the local agricultural economy.
- Decrease the ways in which energy supplies could be interrupted.

Goal 4: Increase leadership and cooperation on climate change issues throughout and beyond the region throughout all levels of government.

Recommendations:

- Establish a Climate Change Adaptation Working Group, modeled on the working group for the Upper Valley region, to develop climate change leadership in the region.
- Support studies and efforts to assess the vulnerability of stream crossings and pursue funding opportunities to restore and enlarge these crossings to address higher storm flows.
- Support regional level coordination on infrastructure needs and challenges, along with state cooperation.
- Support New England regional cooperation on energy sources.
- Support improved communication between planners and FEMA to mandate climate change adaption considerations in hazard mitigation plans.

Goal 5: Develop and/or identity funding sources or innovation financing tools for climate change mitigation and adaptation.

Recommendations:

- Better align hazard mitigation programs and plans with the Capital Improvement Plan (CIP) so the two processes are more connected.
- Set up acquisition and buyout programs by governments of land vulnerable to flooding with high natural resource value.
- Align conservation easements with hazard mitigation plans and programs.

- Use tax incentives to encourage preferred development: encourage restricted uses on vulnerable properties, relocation or retrofitting in flood-prone areas, and upland infill development.
- Promote mutual sharing and mutual aid for public works.
- Use transfers of development rights to encourage development in upland/ less vulnerable areas.
- Require real estate disclosures of hazards worsened by climate change (e.g. flood and erosion) to prospective buyers.

APPENDIX A: RESOURCES

Climate Change in Southern New Hampshire: Past, Present, and Future

Dr. Cameron Wake, a research associate professor with the Institute for the Study of Earth, Oceans, and Space at the University of New Hampshire, is leading research programs to assess the impact of climate change in New England. This report (*Climate Change in Southern New Hampshire: Past, Present, and Future,* Cameron Wake, et. al., 2014) describes how the climate of southern New Hampshire has changed over the past century and how the future climate of the region will be affected by human activities that are warming the planet.

See SNHPC website at: <u>www.snhpc.org</u> for a copy of this report.

Northeast Climate Impacts Assessment (NECIA)

The Northeast Climate Impacts Assessment (NECIA) is a collaboration between the Union of Concerned Scientists (UCS) and a team of <u>more than fifty independent</u> experts to develop and communicate a new assessment of climate change, impacts on climate-sensitive sectors, and solutions in the northeastern United States. Launched in May 2005, the goal of the assessment is to combine state-of-the-art analyses with effective outreach to provide policymakers, opinion leaders, and the public with the best available science upon which to base informed choices about climate change mitigation and adaptation.

Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions, released July 11, 2007

http://www.northeastclimateimpacts.org/

The New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental and Economic Development Future

The New Hampshire Climate Change Policy Task Force has developed a report prepared by the NH Department of Environmental Services for the state. This report proscribes a long list of climate change specific actions, as well as recommendations, information on adapting to change, economic opportunities, and a strategy for moving the plan forward.

http://des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/documents/nhcap_final.pdf

National Oceanic and Atmospheric Administration

NOAA Climate.gov provides science and information for a climate-smart nation. Americans' health, security, and economic well-being are closely linked to climate and weather. People want and need information to help them make decisions on how to manage climate-related risks and opportunities they face.

www.climate.gov

APPENDIX B: CLIMATE CHANGE PROJECTIONS IN THE SNHPC REGION

Manchester, NH

		8		Ac	tual				Ch	ange from H	listorical (+ o	or -)	
	Historical*	Short	Term	Mediur	m Term	Long	Term	Short	Term	Mediur	m Term	Long	Term
Indicators	1980-2009	2010	-2039	2040	-2069	2070	-2099	2010	-2039	2040	-2069	2070	-2099
		Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
		Emissions	Emissions	Emissions	Emissions								
Minimum Temperature (°F)												
Annual TMIN	34.5	36.0	36.4	37.1	39.3	38.0	42.8	1.5	1.9	2.6	4.9	3.5	8.3
Winter TMIN	11.8	14.0	14.4	15.2	17.3	16.5	20.8	2.2	2.6	3.4	5.5	4.7	9.0
Spring TMIN	32.1	35.0	33.3	36.5	35.8	37.7	38.8	2.9	1.2	4.4	3.7	5.6	6.7
Summer TMIN	55.1	56.5	57.1	57.6	60.3	58.2	64.1	1.4	2.0	2.5	5.2	3.1	9.0
Fall TMIN	38.4	38.4	40.3	38.7	43.6	39.1	46.9	0.0	1.9	0.3	5.2	0.7	8.5
Maximum Temperature (°F)												
Annual TMAX	58.8	60.5	60.6	61.9	63.8	62.9	67.3	1.7	1.8	3.1	5.0	4.1	8.5
Winter TMAX	33.7	35.3	35.3	36.0	37.2	37.1	39.6	1.6	1.6	2.3	3.5	3.4	5.9
Spring TMAX	56.5	59.4	58.0	62.0	61.3	63.9	65.4	2.9	1.5	5.5	4.8	7.4	8.9
Summer TMAX	81.9	83.7	84.0	85.4	87.8	86.3	91.8	1.8	2.1	3.5	5.9	4.4	9.9
Fall TMAX	62.5	63.3	64.6	63.7	68.4	63.9	72.0	0.8	2.1	1.2	5.9	1.4	9.5
Temperature Extreme (d	ays per year)	8											
<32°F	160	152	150	147	138	144	122	-8	-10	-13	-22	-16	-38
<0°F	15	B 11	10	8	5	6	1	-4	-5	-7	-10	-9	-14
>90°F	14	8 21	21	32	44	38	73	7	7	18	30	24	59
>95°F	3	5	5	10	16	15	39	2	2	7	13	12	36
TMAX on hottest day													
of year	96.4	99.2	97.8	101.5	101.9	103.6	106.4	2.8	1.4	5.1	5.5	7.2	10.0
TMIN on coldest day		8											
of year	-16.2	-12.2	-11.4	-10.0	-5.6	-7.9	1.3	4.0	4.8	6.2	10.6	8.3	17.5
Growing Season (days)	175	186	188	191	202	191	218	11	13	16	27	16	43
Precipitation (in.)		38											
Annual mean	38.4	42.5	41.5	43.0	43.7	44.8	45.9	4.1	3.2	4.6	5.3	6.4	7.5
Winter mean	8.6	9.8	9.5	10.2	10.0	10.6	11.7	1.2	0.9	1.6	1.4	2.0	3.1
Spring mean	9.4	10.2	10.5	10.2	10.8	10.4	11.4	0.8	1.1	0.8	1.4	1.0	2.0
Summer mean	10.4	12.2	11.1	11.9	12.0	12.9	11.4	1.8	0.7	1.5	1.6	2.5	1.0
Fall mean	9.9	10.4	10.5	10.7	10.8	10.9	11.4	0.5	0.6	0.8	0.9	1.0	1.5
Extreme Precipitation (e	vents per year)												
1" in 24 hrs	8.3	10.2	9.7	10.6	10.9	10.9	12.6	1.9	1.4	2.3	2.6	2.6	4.3
2" in 48 hours	3.4	4.6	4.3	4.9	5.1	5.3	6.0	1.2	0.9	1.5	1.7	1.9	2.6
Extreme Precipitation (e	vents per deca	de)											
4" in 48 hours	1.8	4.8	2.8	4.7	4.3	7.7	7.7	3.0	1.0	2.9	2.5	5.9	5.9
Snow Covered Days	91	77	77	72	55	62	42	-14	-14	-19	-36	-29	-49

*There were significant gaps in the daily data from some NH sites for the period 1980-2009. Instead, the historical values in these tables were derived from the downscaled GCM model output

(SOURCE: C. WAKE ET. AL., 2014)

Windham, NH

		8 64 19		Ac	tual				Ch	ange from H	listorical (+ o	or-)	
	Historical*	Short	Term	Mediur	m Term	Long	Term	Short	Term	Mediur	m Term	Long	Term
Indicators	1980-2009	2010	-2039	2040	-2069	2070	-2099	2010	-2039	2040	-2069	2070	-2099
	1000-2000	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
		Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions
Minimum Temperature (*	°F)												1
Annual TMIN	34.9	36.7	37.1	37.9	40.4	38.8	44.1	1.8	2.2	3.0	5.5	3.9	9.2
Winter TMIN	14.3	16.5	17.0	17.9	20.0	19.2	23.6	2.2	2.7	3.6	5.7	4.9	9.3
Spring TMIN	32.4	35.6	33.8	37.3	36.5	38.5	39.8	3.2	1.4	4.9	4.1	6.1	7.4
Summer TMIN	55.0	56.7	57.4	58.0	61.2	58.8	65.6	1.7	2.4	3.0	6.2	3.8	10.6
Fall TMIN	37.7	37.7	39.9	38.0	43.5	38.5	47.1	0.0	2.2	0.3	5.8	0.8	9.4
Maximum Temperature (°F)	8											1
Annual TMAX	60.1	61.7	61.8	63.0	64.9	64.0	68.3	1.6	1.7	2.9	4.8	3.9	8.2
Winter TMAX	36.6	38.2	38.2	38.9	40.1	40.0	42.5	1.6	1.6	2.3	3.5	3.4	5.9
Spring TMAX	58.3	61.0	59.7	63.3	62.9	65.1	66.9	2.7	1.4	5.0	4.6	6.8	8.6
Summer TMAX	82.0	83.7	83.9	85.2	87.4	86.0	91.4	1.7	1.9	3.2	5.4	4.0	9.4
Fall TMAX	63.0	63.8	65.0	64.2	68.8	64.5	72.1	0.8	2.0	1.2	5.8	1.5	9.1
Temperature Extreme (d	ays per year)												1
<32°F	164	155	152	148	137	144	118	-9	-12	-16	-27	-20	-46
<0°F	13	9	8	6	4	5	1	-4	-5	-7	-9	-8	-12
>90°F	11	8 18	19	28	41	34	72	7	8	17	30	23	61
>95°F	2	e 4	3	7	12	12	33	2	1	5	10	10	31
TMAX on hottest day													
of the year	95.3	97.6	96.8	99.0	100.9	100.6	105.8	2.3	1.5	3.7	5.6	5.3	10.5
TMIN on coldest day	40.0		12.1	40.0	5.0			881 684 898 – 4	0.7		40.0	40.4	24.7
of the year	-18.8	-13.4	-12.1	-10.6	-5.0	-8.4	2.9	5.4 Rei 11	6.7	8.2	13.8	10.4	21.7
Precipitation (in.)	157	168	168	174	187	176	210	888 11 888 11	11	17	30	19	53
Annual mean	44.4	48.8	47.9	50.1	50.4	51.4	53.7	4.4	3.5	5.7	6.0	7.0	9.3
Winter mean	10.4	11.6	11.2	11.8	11.6	12.0	13.1	1.2	0.8	1.4	1.2	1.6	2.7
Spring mean	10.7	11.8	12.2	12.4	12.7	12.7	14.0	1.1	1.5	1.7	2.0	2.0	3.3
Summer mean	10.8	12.6	11.9	12.4	12.9	13.1	12.9	1.8	1.1	1.6	2.1	2.3	2.1
Fall mean	12.5	12.9	12.6	13.4	13.1	13.6	13.7	0.4	0.1	0.9	0.6	1.1	1.2
Extreme Precipitation (e	vents per year)												
1" in 24 hrs	9.8	11.4	11.1	11.7	12.6	12.5	14.0	1.6	1.3	1.9	2.8	2.7	4.2
2" in 48 hours	5.0	6.7	6.2	7.2	7.4	7.9	8.8	1.7	1.2	2.2	2.4	2.9	3.8
Extreme Precipitation (e	vents per deca	de)						REI					
4" in 48 hours	6.6	8.3	7.4	11.3	10.1	10.0	13.7	1.7	0.8	4.7	3.5	3.4	7.1
Snow Covered Days	72	58	57	53	39	45	29	-14	-15	-19	-33	-27	-43

*There were significant gaps in the daily data from some NH sites for the period 1980-2009. Instead, the historical values in these tables were derived from the downscaled GCM model output

Massabesic Lake, NH

	H		Actual					Change from Historical (+ or -)					
	Historical*	Short Term		Mediur	m Term	Long	Term	Short	Term	Mediur	m Term	Long	Term
Indicators	1980-2009	2010	-2039	2040	-2069	2070	-2099	2010	-2039	2040	-2069	2070	-2099
	1000 2000	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
		Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions	Emissions
Minimum Temperature (*	°F)												
Annual TMIN	35.4	37.1	37.4	38.3	40.5	39.2	44.2	1.7	2.0	2.9	5.1	3.8	8.8
Winter TMIN	13.5	15.7	16.0	17.0	18.8	18.2	22.3	2.2	2.5	3.5	5.3	4.7	8.8
Spring TMIN	33.1	36.0	34.7	37.7	37.4	38.9	40.6	2.9	1.6	4.6	4.3	5.8	7.5
Summer TMIN	56.1	57.8	58.3	59.0	61.9	59.7	66.1	1.7	2.2	2.9	5.8	3.6	10.0
Fall TMIN	38.4	38.7	40.2	39.0	43.6	39.5	47.0	0.3	1.8	0.6	5.2	1.1	8.6
Maximum Temperature (°F)	**											
Annual TMAX	58.4	60.1	60.1	61.5	63.3	62.4	66.8	1.7	1.7	3.1	4.9	4.0	8.4
Winter TMAX	35.2	36.9	36.8	37.7	38.7	38.8	41.3	1.7	1.6	2.5	3.5	3.6	6.1
Spring TMAX	56.3	58.9	58.0	61.3	61.2	63.1	65.2	2.6	1.7	5.0	4.9	6.8	8.9
Summer TMAX	80.3	82.1	82.4	83.7	86.1	84.6	90.2	1.8	2.1	3.4	5.8	4.3	9.9
Fall TMAX	61.4	62.4	63.0	62.7	66.6	62.9	69.8	1.0	1.6	1.3	5.2	1.5	8.4
Temperature Extreme (d	ays per year)	88					B						
<32°F	158	149	148	143	134	139	116	-9	-10	-15	-24	-19	-42
<0°F	13	8	8	6	4	5	1 8	-5	-5	-7	-9	-8	-12
>90°F	8	13	15	21	34	27	61	5	7	13	26	19	53
>95°F	1	2	3	5	10	8	28	1	2	4	9	7	27
TMAX on hottest day							B						
of the year	94.2	96.1	95.5	97.5	99.0	99.5	105.0	1.9	1.3	3.3	4.8	5.3	10.8
TMIN on coldest day		88					5						
of the year	-14.2	-10.1	-9.8	-7.8	-4.1	-6.0	2.8	4.1	4.4	6.4	10.1	8.2	17.0
Growing Season (days) Precipitation (in.)	164	178	178	183	194	186	214	14	14	19	30	22	50
Annual mean	41.3	44.9	44.5	46.1	47.0	48.3	50.1	3.6	3.2	4.8	5.7	7.0	8.8
Winter mean	8.7	9.6	9.6	9.8	9.8	10.3	11.4	0.9	0.9	1.1	1.1	1.6	2.7
Spring mean	10.2	11.1	11.3	11.6	11.8	12.1	13.2	0.9	1.1	1.4	1.6	1.9	3.0
Summer mean	11.0	12.7	12.1	12.3	13.0	13.5	12.9	1.7	1.1	1.3	2.0	2.5	1.9
Fall mean	11.3	11.6	11.5	12.3	12.3	12.4	12.7	0.3	0.2	1.0	1.0	1.1	1.4
Extreme Precipitation (e	vents per year)						B						
1" in 24 hrs	9.3	10.5	10.9	11.0	11.9	11.8	13.7	1.2	1.6	1.7	2.6	2.5	4.4
2" in 48 hours	3.9	5.0	5.1	5.3	5.8	5.9	7.8	1.1	1.2	1.4	1.9	2.0	3.9
Extreme Precipitation (e	vents per deca	de)											
4" in 48 hours	5.1	5.8	3.8	7.8	8.3	9.2	10.4	0.7	-1.3	2.7	3.2	4.1	5.3
Snow Covered Days	85	8 71	70	67	51	58	38	-14	-15	-18	-34	-27	-47

*There were significant gaps in the daily data from some NH sites for the period 1980-2009. Instead, the historical values in these tables were derived from the downscaled GCM model output

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MOVING SOUTHERN NH FORWARD ^{VOLUME 2} Chapter 9: Energy Efficiency



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.

Adopted by the Planning Commission on December 16, 2014

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PURPOSE

The purpose of the Energy Efficiency and Green Building Chapter is to provide the public and decision makers with a strategic analysis and evaluation of our region's energy vision; existing and future energy conditions; key energy issues and needs recognized through the Granite State Future (GSF) public outreach; and the key goals and recommendations of the plan, including the salient background information and data which support this evaluation. This chapter is not meant to serve as a comprehensive energy plan; rather it is a strategic integration and evaluation considering the sustainability and livability principles and themes, as outlined in Volume 1 of the Plan.

In order to have sustainable growth in the Southern New Hampshire Planning Commission region we need affordable and clean energy. Defined in the very technical sense, energy is "the capability to do work, expressed in units of power or capacity over time." The Southern New Hampshire Planning Commission region and the state of New Hampshire as a whole, needs reliable, affordable energy to expand and strengthen our economy. Energy is used in every facet of our day-to-day lives in our homes, our businesses and for our transportation needs. This important component is critical to our environmental quality and economic vitality, which are both highly regarded here in Southern New Hampshire.

VISION

The Energy Efficiency Chapter is founded upon the following Value Statement:



Residents support renewable energy choices such as solar, wind, and geothermal that are climate-friendly. They support policies for higher energy efficiency standards in new buildings and incentives for home energy efficiency improvements. Many residents are also concerned about various weather-related events.

This Value Statement is also in line with New Hampshire's Livability Principles, which provide:

"Climate Change and Energy Efficiency – identify opportunities to save energy and costs and reduce risks to our communities, businesses and citizens. In recent decades, New Hampshire has seen an increase in extreme storms and flooding coupled with steadily rising fuel and energy prices. How can we reduce dependence on outside sources of energy, construct homes and buildings that are more efficient, and reduce impacts to our communities and infrastructure from extreme storms and flooding?"

PUBLIC INPUT FROM SNHPC OUTREACH

Public input collected via GSF public outreach efforts, such as regional visioning workshops, comments submitted online, and a telephone survey conducted by the University of New Hampshire, demonstrate

widespread public support for community development, environmental protection, energy policies and emergency preparedness.

As captured in SNHPC's Public Outreach Report, Energy Efficiency is highly valued by New Hampshire residents. Residents view energy efficiency and energy choices as the second most important priority for investing public dollars. Residents are largely in favor of all the proposed energy efficiency and renewable energy projects, except for the idea of having public charging stations made for electric vehicles. Most residents also think local governments should at least be somewhat involved in developing policies for renewable energy facilities. The following section provides a summary of the UNH Survey Center's telephone survey results as related to energy.

UNH SURVEY CENTER: TELPEHONE SURVEY RESULTS

Three in four residents (77 percent) support expanding incentives for home energy efficiency improvements (with 52 percent who "strongly support"), followed by higher energy efficiency standards in new buildings (74 percent), and promoting renewable energy sources such as solar, wind and geothermal (73 percent). Meanwhile, only 34 percent were in support of public charging stations for electric vehicles.

- Those who work at home are more likely to strongly support <u>expanding incentives for home energy</u> <u>efficient improvements</u>.
- Households earning less than \$40,000 are more likely to strongly support promoting renewable energy sources.



FIGURE 1 SUPPORT/OPPOSE ENERGY POLICY CHANGES

Half of residents (49 percent) think local governments should be very involved in guidelines for renewable energy (such as large wind farms), 38 percent think they should be somewhat involved, 6 percent think they should be not at all involved and 1 percent don't know.



FIGURE 2 HOW INVOLVED SHOULD LOCAL GOVERNMENTS BE IN GUIDELINES FOR RENEWABLE ENERGY?

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

When the top two responses are combined, environmental protection (45 percent) and energy efficiency (39 percent) make up the two most cited priorities for investing public dollars.



FIGURE 3 PRIORITIES FOR INVESTING PUBLIC DOLLARS

KEY ISSUES & CONCERNS

The Southern New Hampshire Planning Commission has identified several issues that will have an impact on energy production and use in the region in the upcoming years. When addressing energy policy, the following issues should be taken into consideration.

ENERGY EFFICIENT PROJECT FUNDING

Although cost effective in the long run, energy efficiency projects require significant up-front costs that many businesses and individuals have trouble affording. Funding for energy efficient projects will help with affordability.

COMPLEXITY, INTEREST AND EDUCATION

Many energy efficiency and sustainability programs in New Hampshire are complex and difficult for the general public to understand. For instance, one recent survey showed more than 40 percent of NH residents had little to no idea about where to go for sustainable energy loans, rebates, or grants.¹ Also lack of residential interest and education can present a challenge when trying to make positive changes in a community toward energy efficiency and sustainability.

SPLIT INCENTIVES

In the case of rented buildings, owners pay the costs of initiating energy efficiency programs, but tenants receive the savings from implementing them (or the costs from not implementing them). This leads to a disincentive for landlords to invest in energy efficient projects or renovations. It also leads to a disincentive for renters to invest since investment stays with building.

VOLATILE FUEL PRICES

Develop conservation programs, identify alternative energy resources, examine infrastructure development issues, understand and monitor the impact of market design on operational efficiency and resource development, and propose solutions.

IMPACT OF ELECTRIC INDUSTRY RESTRUCTURING

Monitor energy prices and advise the municipalities on restructuring issues.

CONSOLIDATION OF NORTHEAST ENERGY MARKETS

The federal Energy Regulatory Commission has indicated its preference to combine New England, New York, and Mid-Atlantic electricity markets into a single market, with a single system operator. There are numerous technical and logistical challenges to overcome if a successful Northeast Market is to be developed. Additionally, the financial implications for residents of the Southern New Hampshire region, impacts on system reliability, and ability to influence market design and operations are unknown.

¹ Independent Study of Policy Issues: Prepared by the Vermont Investment Corporation, June 2011. A:3.

ENERGY RESOURCE DIVERSITY AS A MEANS TO ENERGY SECURITY

Having a mix of energy supplies can reduce disruptions and mitigate the price volatility of fossil fuels. Indigenous energy resources can improve local energy security. The Southern New Hampshire region will face many decisions related to energy security and will need to assess the pros and cons of government intervention to achieve diversity goals.

THE INTER-RELATIONSHIP OF ENERGY AND ENVIRONMENTAL POLICY

Environmental policy decisions can affect energy choices, prices, and reliability. Energy policy decisions can also affect environmental quality and the region's ability to meet environmental goals. There is a need for close coordination between energy and environmental policy to more effectively achieve common goals and to ensure the respective development and implementation does not inadvertently work at cross purposes.

LAND USE PATTERNS

The Southern New Hampshire Planning Commission recognizes that current zoning regulations and patterns of development are not conducive to reductions in energy consumption. Working with the municipalities in the region to encourage smart growth principles, while educating citizens about best practice in land use patterns that promote sustainable energy use and homebuilding, are essential tools in reducing energy demand.

BUILDING CODES

Building codes can be used to promote sustainable, energy-efficient construction in the built environment. Programs like the U.S. Department of Energy's Building Energy Codes Program (BECP) and certifications such as Leadership in Energy & Environmental Design (LEED) offer guidelines and metrics that can be used to increase a building's energy performance and result in greater energy efficiency and ultimately cost savings.

TRANSPORTATION ALTERNATIVES

The Southern New Hampshire Planning Commission recognizes transportation is an activity that consumes a great deal of fossil fuel. Public transportation options in the Southern New Hampshire region are lacking and the problems that surround this issue are created more so in the region. There are numerous opportunities to create alternatives to the single-occupancy vehicle travel that we are so accustomed to today. Additionally, when the use of alternative fuel in private automobiles becomes more common, accommodations for new fueling infrastructure should be made as needed. Strategies to reduce vehicle miles traveled should include a Complete Streets design approach. Complete Streets are roadways designed and operated to enable safe, attractive and comfortable access and travel for all users, including pedestrians, bicyclists, motorists and public transport users of all ages and abilities.²

² National Complete Streets Coalition (2010). Economic Development Smart Growth America. Retrieved from <u>http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/factsheets/economic-revitalization</u> (last accessed 13 January 2014).

NORTHERN PASS

The Northern Pass is transmission infrastructure project that is projected to bring 1,200 megawatts (MW) of clean, low-cost energy from Hydro-Québec's world-class hydroelectric plants in Canada to New Hampshire and New England. This is enough renewable electricity to power one million homes.

The main goal of the Northern Pass is to provide a new connection between New England's energy system and Hydro-Québec's vast hydroelectric resources. Access to this clean, low-cost power will help diversify our region's power supply and keep step with our rising demand for energy

EXISTING CONDITIONS

Energy planning has become a key issue to communities, as energy costs continue to increase and concern grows over the environmental and health costs of major forms of energy production. Reducing our dependence on increasingly expensive fossil fuels serves many purposes, such as reducing operating, environmental and health costs; increasing energy options, building comfort, productivity; and keeping more money in the local regional economy.

The connection between global greenhouse gas emissions and our major forms of energy production is becoming increasingly more profound and an extensive analysis of peer-reviewed scientific literature by the Intergovernmental Panel on Climate Change (IPCC) has clearly shown if global greenhouse gas emissions continue to grow at current rates, there will be significant and far-reaching changes in our future climate that will profoundly affect our health, economy, security, and quality of life.³ On a regional scale, as outlined in Chapter 8: Climate Change Impacts Assessment, if greenhouse gas emissions continue to increase at current rates, by late in this century New Hampshire's climate will more closely resemble that of North Carolina (**Figure 4**).⁴



FIGURE 4 TEMPERATURE EFFECTS OF A WARMING CLIMATE

³ Gittell, R. and Magnuson, M. (2007). Economic Impact of a New Hampshire Renewable Portfolio Standard. UNH Economic Analysis, 74 pp.

http://des.nh.gov/organization/divisions/air/tsb/tps/climate/documents/unh_rps_report.pdf.

⁴ Confronting Climate Change in the U.S. Northeast: Science, Impacts and Solutions. Northeast Climate Impacts Assessment Synthesis Team. July 2007. Available at:

http://www.climatechoices.org/assets/documents/climatechoices/confronting-climate-change-in-the-u-snortheast.pdf

Such a change in New Hampshire's climate presents numerous potential economic impacts including reduced viability of New Hampshire ski areas, change in forest species and extinctions, and increased frequency and severity of extreme weather events and related property damage, and human health impacts. To reduce these negative impacts of climate change, a transition to efficient and renewable sources of energy will be necessary to bring greenhouse gas levels in our atmosphere down to safer levels.

By considering energy, environmental and economic policies and programs together, we can protect the air, water, and open space in the region. Municipalities, regional planning commissions, and the state can work together to incorporate existing programs and create new ones that will provide a cleaner and healthier environment for all citizens while continuing to have a strong and diverse economy.

ELECTRICITY

As a result of the electric industry undergoing constant restructuring, regional organizations have the ability to play an increasingly larger role in energy planning. It is important for the region to take action in recognizing that New Hampshire is not an energy island, and actions taken outside of New Hampshire affect our energy security, costs and environmental impacts. As privatization and deregulation have become more prevalent in our country, state, and region, it has become a regional responsibility to adopt energy policies that take into consideration the changing global energy economy.

Currently the region is served by Public Service of New Hampshire (PSNH), the State's largest utility. Windham is served by Liberty Utilities and PSNH. A few small areas in the towns of Auburn, Candia, Chester, Deerfield, Raymond and Derry are served by the New Hampshire Electric Cooperative. PSNH serves more than 490,000 homes and businesses throughout New Hampshire and has grown to comprise three fossil fuel-fired generating plants, one wood-burning power plant and nine hydroelectric facilities. As a wholly owned subsidiary of Northeast Utilities, PSNH is an integral part of New England's largest electric system and provides the foundation for continued prosperity and growth in New Hampshire and especially in the Southern New Hampshire Planning Commission Region. (Please refer to the Service Map in the Public Utilities Chapter). PSNH plans to utilize its statewide presence to play a major role in New Hampshire's business development efforts. There are partnerships with state and local organizations to aide in bringing new businesses to New Hampshire and enabling existing businesses to expand. A variety of services are available to companies interested in moving in to New Hampshire.

PSNH facilities are capable of generating more than 1,110 megawatts of electricity. While none of the fossil-fuel fired plants or the wood burning power plant are located within the region, three hydroelectric facilities are found here:

- Amoskeag Hydro- Completed in 1924 by the Amoskeag Manufacturing Company and purchased by PSNH in 1936, Amoskeag Hyrdro originally powered the mills in the Manchester Millyard. The original generators and turbines are still in operation and the facility generates 16 MW of power
- 2) Hooksett Hydro- Completed in 1927 by PSNH, Hooksett Hydro is located on the Merrimack River and generates 1.6 MW of power. In 1988, a downstream fish passage was installed to allow native fish to move freely downriver. The original generators and turbines are still in operation.
- 3) Garvins Falls- Originally built in 1901 by PSNH predecessor Manchester Traction and Light Company; Garvins Falls Hydro is located on the Merrimack River. The plant only had two turbine generators when built; two more were added in 1925. In 1988, the waste gate at the end of the power canal was modified to permit passage of downstream fish. This facility generates 12.1 MW of power.

FOSSIL FUELS

It is clear that fuel oil, kerosene, and other types of fossil fuels are the primary sources of household heating (see **Table 1**). All of the communities in the region have a higher percentage of oil-based heating than the state as a whole. This dependence on oil-based heating is proving to be costly and harder to come by and will continue to do so in upcoming years as oil and natural gas prices increase and the economies of India and China become more oil dependent.

Municipality	Utility Gas	Bottled, Tank or Liquid Propane	Electricity	Fuel Oil, Kerosene, Etc.	Coal or Coke	Wood	Solar Energy	Other Fuel	No Fuel
Auburn	0.0	18.8	3.7	66.4	0.5	9.4	0.0	1.2	0.0
Bedford	1.4	1.7	3.0	62.0	0.0	2.0	0.0	0.8	0.0
Candia	0.0	17.7	2.3	66.6	0.0	12.1	0.0	1.2	0.0
Chester	1.2	15.9	0.0	75.7	0.5	4.4	0.0	1.7	0.5
Deerfield	1.2	19.0	0.0	62.0	1.4	16.3	0.0	0.0	0.0
Derry	8.8	15.7	16.4	52.3	0.2	2.8	0.1	2.6	0.9
Goffstown	9.2	16.0	5.2	63.4	0.0	4.5	0.0	0.9	0.0
Hooksett	35.6	8.8	4.9	46.2	0.0	3.3	0.0	1.3	0.0
Londonderry	11.8	16.4	9.3	58.6	0.0	2.6	0.0	1.2	0.0
Manchester	49.7	3.2	10.0	34.3	0.06	0.9	0.0	1.0	0.7
New Boston	3.3	31.6	2.2	50.8	0.0	11.5	0.0	0.4	0.0
Raymond	3.5	21.3	3.4	63.6	0.0	5.6	0.0	2.2	0.3
Weare	1.0	20.7	3.3	52.7	0.0	20.2	0.0	2.1	0.0
Windham	3.8	27.6	1.0	62.6	0.0	3.8	0.0	1.3	0.0
State of New Hampshire	19.7	13.4	7.7	50.0	0.1	7.2	0.05	1.2	0.7

Table 1 SNHPC Household and Heating Type - By Percentage

SOURCE: 2010 U.S. CENSUS

NATURAL GAS

According to State Energy Strategy, natural gas will continue to play a role in meeting New Hampshire's electrical and thermal energy needs.⁵ As indicated in the Business As Usual forecast, natural gas currently provides 16% of residential heating needs, 44% of commercial thermal needs and 54% of industrial thermal needs. In total, only 51 New Hampshire cities and towns have access to natural gas, and the state's two gas utilities, Unitil and Liberty Utilities, only serve approximately 117,000 customers.

Based on recent data from the EIA, at current prices consumers who switch to gas from heating oil or propane could expect to cut their annual fuel costs in half⁶. However, even with the lower cost of natural gas today, New Hampshire is still prone to supply and cost fluctuations. In the winter of 2013-2014, the region did not have enough supply for both heating and electrical generation needs. This resulted in higher prices and volatility, especially on the coldest days⁷. While New Hampshire has limited influence over natural gas transmission and pipeline expansion, the State is engaged in regional efforts to explore ways

⁵ See plan at: <u>http://www.nh.gov/oep/energy/programs/documents/energy-strategy.pdf</u>

⁶ http://www.eia.gov/todayinenergy/detail.cfm?id=13311

⁷ http://www.eia.gov/forecasts/steo/special/pdf/2013_sp_01.pdf

to encourage additional pipeline capacity in the region. The State should continue such coordination efforts, ensuring that New Hampshire's interests are represented in larger decision-making forums, and exploring other opportunities such as reducing usage through efficiency and conservation.

On the local distribution side, although the New Hampshire PUC has regulatory authority over Liberty Utilities and Unitil, the technical and economic barriers to additional gas expansion remain difficult to overcome. The high cost per mile of pipeline expansion can prohibit expansion to areas that are not densely developed. This barrier is compounded by limits on allowable payback periods for expansions. In recognition of the importance of access to natural gas across New Hampshire, the PUC recently changed the acceptable payback period limit for Liberty Utilities. The new line extension policy provides for a 20 year payback on residential and a 10-year payback on commercial and industrial line extensions. This will help Liberty bring natural gas to more customers in communities that are already served by the local gas distribution network.

The State should closely monitor any distribution expansion that occurs as well as remaining active in regional discussions of transmission expansion. The State should also continue supporting policies that increase the utilization of existing infrastructure in order to provide access to natural gas to more customers already on existing networks, while minimizing environmental disruption and making existing systems more cost effective.

Across New England, a number of public and private fleets have been incorporating fuels such as compressed natural gas (CNG), propane, and biodiesel into fleet vehicle fuel use. At the June 2014 "Green Your Fleet" Conference hosted by the Granite State Clean Cities Coalition (GSCCC), fleet managers reported significant cost savings through these changes. The largest obstacle is the need for initial infrastructural changes to fueling and maintenance docks and regional refueling locations. Planned increases in natural gas fueling infrastructure, including the recent opening of Clean Energy Fuels' public access CNG station in Pembroke, and a second station in Bow planned by another company, will increasingly support those fleets. Several national companies are also converting to CNG. For example, Waste Management is converting its fleet to natural gas and has opened 50 refueling stations, 22 of which are open to the public. These types of efforts should be monitored by the State and supported where appropriate. In particular, use of biodiesel produced with in-state resources should be encouraged.

COMPRESSED NATURAL GAS (CNG)

Compressed Natural Gas (CNG) offers the region another source of reliable energy. Largely ignored in both state and regional energy plans, this alternative fuel source is growing in the state, particularly in rural areas and municipalities which do not have natural gas resources available. Since there appears to be a growing movement to restrict gas pipeline growth plans in many parts of the state, CNG offers a viable energy alternative. However, even CNG requires pipeline supplies to work so it would not make any sense to totally eliminate new and improved pipeline service to New England. CNG uses a compressing station at a pipe head and then fills 40-foot cylinders that are in turn used to deliver the product to the end user. Although this is not an ideal solution for residential heating purposes, it is a great fuel for industrial and commercial locations. It is also an ideal fuel for CNG fueling facilities for automobile and truck fueling facilities.

Successfully implemented, CNG could not only help reduce the operating costs faced by companies located in NH and the SNHPC Region, but also could have the added benefit of addressing emissions resulting from fossil fuels. As such it is important that CNG be considered and implemented as it lowers energy costs, which are a large detriment to regional competiveness and does not require any investment on the part of government entities.

RENEWABLE ENERGY

While energy demand cannot be eliminated completely, renewable energy can be a valuable complement to energy efficiency and conservation. Energy efficiency and energy conservation can be the most sustainable, cost-effective and least polluting means of reducing our demand for energy. Homeowner and municipal education as well as other initiatives are needed to reduce the demand for energy in the Southern New Hampshire Planning Commission Region.

The Energy Information Administration (EIA) states "New Hampshire has no fossil fuel reserves but has substantial renewable energy potential. The Appalachian Mountains, which cover much of western New Hampshire, offer wind power potential, and several waterways, including the Connecticut and Merrimack River basins, are hydroelectric power resources. In addition, dense forests in northern and southern New Hampshire offer potential fuel wood for electricity generation."⁸ Among the potential benefits of renewable energy are:

- Diversification of energy sources
- More security because it can be produced close to point of use and it has multiple sources such as hydro, wind, solar, biomass and geothermal
- Efficiency gains due to less energy consumed in transmission or transport
- More energy dollars are retained in local or regional economy, not exported
- Renewable energy installations can create additional local jobs
- Reduced pollution compared with fossil fuels
- Can be greenhouse-gas neutral
- Lifetime cost can be lower than for non-renewable energy sources
- "Wastes" such as manure, sewer gas, landfill gas, landscape trimmings, can become energy sources
- Annual operation costs are low

State law, RSA 72: 61-72 grants municipalities the option to exempt certain renewable energy installations from property taxation. Currently six communities in the region – Bedford, Chester Londonderry, Raymond, Weare and Windham – have elected to exempt at least one type of renewable energy installation incentive. This total is up from three communities in 2003. If more municipalities participated in these programs, there would be more incentive for people to explore different options for home heating and electricity, leading to an improvement in the region's economic vitality and energy sustainability.

TABLE 2 SNHPC MUNICIPAL PROPERTY TAXATION EXEMPTIONS

Municipality	Solar Energy Exemption	Wind Powered Exemption	Wood heating Energy Exemption
Auburn	NO	NO	NO
Bedford	YES	YES	YES
Candia	YES	NO	NO
Chester	YES	YES	NO
Deerfield	NO	NO	NO
Derry	NO	NO	NO
Goffstown	NO	NO	NO
Hooksett	NO	NO	NO

⁸ New Hampshire State Energy Profile, <u>http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=NH</u>

Londonderry	YES	YES	NO
Manchester	NO	NO	NO
New Boston	NO	NO	NO
Raymond	YES	YES	YES
Weare	YES	NO	NO
Windham	YES	YES	NO

SOURCE: 2013 NEW HAMPSHIRE OFFICE OF ENERGY AND PLANNING

If a municipality has adopted the exemption, the value of the equipment and installation to property may be exempt from taxation.



MAP 9-1 NEW HAMPSHIRE GLOBAL SOLAR RADIATION

In 2012, the average annual electricity consumption for a U.S. residential utility customer was 10,837 kWh, an average of 903 kilowatt-hours (kWh) per month. Louisiana had the highest annual consumption at 15,046 kWh and Maine the lowest at 6,367 kWh. New Hampshire's average electricity price in 2012 was 16.47 cents per KWh, which is the sixth highest in the country. As mentioned previously, renewable energy can be a valuable complement to energy efficiency and reducing electricity consumption as well as overall cost.

The renewable portfolio standard, a regulation that requires the increased production of energy from renewable energy sources, calls for 10.65 percent of electricity from renewable energy in 2012, including 0.15 percent from solar and by 2025, 24.8 percent of electricity is expected to be from renewable energy, 0.3 percent from solar.⁹

Map 9-1 shows New Hampshire has the potential to average a daily total radiation of 3-5 KWH per Sq. Meter per Day¹⁰. This means the average household will most likely need to supplement any type of solar installation with other forms of energy. Large-scale solar installations could prove to be an effective means of energy production for large businesses or communities as an alternative energy source though. Net metering, which allows excess generation of energy to be credited towards the following months is one way to receive a return on the investment of solar.

Currently New Hampshire has several solar arrays, the largest is the 525kW solar array installed on the top level of the Manchester Airport parking Garage. Other solar projects include a 51kW solar array PSNH installed on their roof in 2009 and a 50kW array on the roof of the Stonyfield Farm Yogurt Factory installed in 2005.¹¹

Wind power is another renewable energy resource that is available in New Hampshire. The resource map (**Map 9-2**) shows estimates of wind power density at 50 meters above the ground and depicts the resource that could be used for community – scale wind development using wind turbines at 50-60 meter hub heights.

As a renewable resource, wind was classified according to wind power classes which are based on wind speed frequency distributions and air density. These classes ranged from Class 1 (lowest) to Class 7 (highest). In general, at a 50 meter height, wind power Class 4 or higher could have been useful for generating wind power with turbines in the 250 kW to 750 kW rating. Given the advances in technology, resources below Class 4 may now be suitable for the new midsize wind turbines. In recognition of these continuing advancements in wind energy technologies and the ability for the current generation of wind turbines to extract cost competitive wind energy from lower wind speeds the Energy Department has moved away from the wind speeds only.¹²

The resource map indicates New Hampshire has wind resources consistent with community – scale production. The excellent wind resource areas in the state are on the ridge crests. The White Mountain region in northern New Hampshire is the most prominent area. Certain ridge crests in the western part of the state can also have excellent wind resource.

⁹ New Hampshire Renewable Portfolio Standard, <u>http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=NH09R</u>

¹⁰ See Map 9-1 Global Solar Radiation

¹¹ Stonyfield Yogurt Solar, <u>http://www.nativeenergy.com/stonyield-farm-solar-array.html</u>; PSNH Solar, <u>http://www.psnh.com/RenewableEnergy/About-PSNH/Solar-at-Energy-Park.aspx</u>; Manchester Airport Solar, <u>http://www.flymanchester.com/newsletters/holiday-2012/solar-project</u>.

¹² U.S. Department of Energy, <u>http://www.windpoweringamerica.gov/maps_template.asp?stateab=nh</u>



MAP 9-2 NEW HAMPSHIRE WIND POWER

Currently there are three operating wind farms in New Hampshire: Lempster Mountain, Granite and Groton Wind located in Sullivan, Coos and Grafton Counties. There are two proposed wind farms as well, Wild Meadows and Alexandria located in Merrimack and Grafton Counties.

As shown in the map (**Map 9-3**), biomass is another renewable resource that is available in New Hampshire. In New Hampshire, biomass generally refers to low value wood from logging. The wood chips are burned by energy plants to make electricity, because biomass plants receive their energy from the sun through photosynthesis, they are cleaner-burning than fossil fuel plants. This map accounts for agricultural residues, wood residues, municipal discards and dedicated energy crops.



MAP 9-3 NEW HAMPSHIRE BIOMASS RESOURCES

The areas showing the greatest potential for biomass are Coos and Cheshire Counties with the potential for over 500 thousand tons per year, followed by Grafton and Hillsboro Counties with the potential of 150 - 250 thousand tons per year. The remaining counties, Sullivan, Merrimack, Carroll, Belknap, Strafford and Rockingham show potential for 50 - 100 thousand tons per year.

Currently, New Hampshire has seven existing biomass plants in Alexandria, Bethlehem, Bridgewater, Springfield, Portsmouth, Tamworth and Whitefield. These seven active biomass plants can produce 144
MW of electricity, have a capacity of 1.8 million tons of biofuel and have provided 150 direct jobs. There are also two proposed plants for the town of Berlin, Clean Power Development and Laidlaw Berlin-Biopower. These proposed biomass plants could potentially create an additional 100 MW of electricity and 63 direct jobs.¹³

CURRENT ENERGY EFFICIENCY PROGRAMS

New Hampshire currently has a variety of programs that help homeowners, cities, towns, school districts, businesses and industries, and entire regions to cut their energy use and reduce pollution. Currently the Southern New Hampshire Planning Commission member communities have done little to take advantage of these programs, and it is time for the region to come together and do so.

The New Hampshire Office of Energy and Planning (NHOEP) operates several energy programs in partnership with both private and public entities to promote a sustainable, environmentally sound future for New Hampshire as well as to encourage conservation and renewable energy source. New Hampshire also has two clean transportation programs that seek to reduce emissions by automobiles, trucks and buses and to reduce the state's reliance on foreign oil supply.¹⁴ Additionally, the two major electric utility providers in the region, PSNH and New Hampshire Electric Cooperative, provide many energy conservation incentive programs designed to reduce energy use, save money and protect our environment. The following section briefly discusses some of these programs in greater detail.

NEW HAMPSHIRE GREENHOUSE GAS EMISSIONS REDUCTION FUND (GHGERF)

The Greenhouse Gas Emissions Reduction Fund (GHGERF) is a fund created by New Hampshire legislation in 2008, RSA 125-O: 23. The source of the funding comes from New Hampshire's participation in the Regional Greenhouse Gas Initiative (RGGI). RGGI is the regional cap and trade program aimed at reducing carbon dioxide emissions in the electric power sector across ten participating states in the northeast. Under RGGI, emission amounts are inventoried and a cap is established at a level below current emission levels. New Hampshire emissions allowances are sold at quarterly auctions and the proceeds fund the GHGER program.

The proceeds of these allowance auctions are portioned out among the state participants, and in New Hampshire, the statute directs that the proceeds of each auction flow into the GHGERF. The GHGERF is administered by the Public Utilities Commission (PUC), which is responsible for distributing the funds to programs across the state. These funds support energy efficiency, conservation and demand response programs in order to reduce greenhouse gas emissions generated in New Hampshire.

Ten percent of RGGI funds are set aside to help low-income residential customers reduce their energy use, and the remainder of the funds are distributed through competitive grants or adjudicative proceedings. In 2009 there were 30 awards given, totaling \$17.7 million. Grants were awarded to towns and schools for audits and retrofits, revolving loan funds, large businesses, electric utilities, non-profits, educational institutions, job training programs, and grassroots organizations.

As of June, 2010 the GHGERF has seen revenue of \$24.3 million. During the first reporting year (July 2009 to June 2010), the program was responsible for savings of \$1.5 million in energy costs for New Hampshire residents and a 4,600 metric ton reduction in carbon emissions, which is equal to taking 9000

¹³ New Biomass New Hampshire; <u>http://www.newbiomassnh.org/issues</u>

¹⁴ NHOEP maintains a website that serves as a clearinghouse for State sponsored and assisted energy planning programs at<u>http://www.nh.gov/oep/energy/programs/index.htm</u>.

cars off the road for a year. Projections for the second reporting year of the program (July 2010 to June 2011) forecast an energy cost savings of \$4.2 million and a carbon emissions reduction of 13,200 metric tons.^{15,16}

MUNICIPAL ENERGY REDUCTION FUND (MERF)

As part of the aforementioned GHGERF funding program, the Community Development Finance Authority (CDFA) was awarded \$1.5 million to help finance energy improvements for municipal facilities and activities. The CDFA is a nonprofit group that promotes affordable housing and economic development.

CDFA's Municipal Energy Reduction Fund is available to help municipalities improve the energy efficiency of their municipal buildings, street lighting, water and sewer treatment facilities, and where appropriate, electrical distribution systems. The goal is to reduce energy usage and costs.

Activities will include, but are not limited to:

- Improvements to the buildings envelope including air sealing and insulation in the walls, attics, and foundations;
- Improvements to HVAC equipment inside conditioned space;
- Installation of sealed combustion, high efficiency condensing boilers;
- Installation of alternative energy sources.¹⁷

25 X 25 RENEWABLE ENERGY INITIATIVE

The 25 x 25 Renewable Energy Initiative was announced in August of 2006 and signed into law in May 2007 as the Renewable Energy Act (RSA 362-F); the goal of 25 x 25, a bipartisan national effort, is for New Hampshire to obtain 25 percent of its energy from clean, renewable sources by the year 2025.

According to the most recent data from the federal Department of Energy, about 14 percent of New Hampshire's 2011 net electricity generation came from renewable energy.¹⁸ Energy sources include heating fuels, transportation fuels and electricity. Of the electricity consumed in New Hampshire in 2011, 10.6 percent is from renewable sources.

Achieving 25 percent renewable energy for New Hampshire might be more easily accomplished as an overall goal, rather than working toward 25 percent renewable energy in each of the end use categories and economic sectors. It will also be easier to meet the overall goal for renewable energy if demand for energy is reduced by means of energy efficiency and conservation.

The 25 x 25 Plan is being developed jointly, by the New Hampshire Office of Energy and Planning and the Department of Environmental Services in coordination with Innovative Natural Resource Solutions LLC, a New Hampshire-based consulting firm.¹⁹

¹⁵ NH Greenhouse Gas Emissions Reduction Fund Year 1 (July 2009 – June 2010) Evaluation, published by Carbon Solutions New England

¹⁶ New Hampshire Public Utilities Commission (PUC), <u>http://www.puc.nh.gov/Sustainable%20Energy/GHGERF.htm</u> and

¹⁷ New Hampshire Community Development Finance Authority, <u>http://www.nhcdfa.org/document/ep/2</u>

¹⁸ U.S. Energy Information Administration <u>http://www.eia.gov/state/print.cfm?sid=NH</u>

¹⁹ NHOEP, <u>http://www.nh.gov/oep/energy/programs/initiatives.htm#renewable</u>

ENERGY TECHNICAL ASSISTANCE AND PLANNING FOR NEW HAMPSHIRE COMMUNITIES (ETAP)

"As a component of the 2007 Energy Independence and Security Act, the U.S. Department of Energy's Energy Efficiency and Conservation Block Grant (EECBG) Program was established to assist eligible entities in implementing strategies relating to:

- Reduction of fossil fuel emissions
- Reduction of total energy use
- Improved energy efficiency in transportation, building and other areas

The American Recovery and Reinvestment Act 2009 (ARRA) and the Energy Efficiency Conservation Block Grant (EECBG), received its first appropriations of \$3.2 billion nationally in 2010. NH received approximately \$17.3 million. The national funds were distributed using the following formula:

- 68 percent distributed from the U.S. Department of Energy via a formula to the 10 most populated municipalities and/or counties in each state
- 28 percent distributed from the U.S. Department of Energy via a formula to the state energy offices in each of the states
 - Out of the portion going to NH Office of Energy and Planning, 60 percent is required to go to the municipalities which are not chosen as one of the 10 most populated municipalities. The remaining 40 percent will go into the State Energy Program
- 2 percent distributed by the U.S. Department of Energy to the Tribes
- 2 percent distributed by the U.S. Department of Energy via competitive process to municipalities, counties and tribes that are not eligible for the direct formula grant funds"²⁰

The State Energy Program is called Energy Technical Assistance and Planning for New Hampshire Communities (ETAP).

ETAP was implemented from 2010-2012 as a partnership between NHOEP, CLF Ventures, Peregrine Energy Group, Clean Air Cool Planet and the New Hampshire Regional Planning Commissions. Through this program New Hampshire municipalities were offered energy efficiency technical assistance to reduce energy use, reduce fossil fuel emissions and improve energy efficiency and transportation, building and other areas. This technical assistance took many different forms and was determined on a community by community basis through several preliminary meetings with municipal contacts. The level of assistance was also determined at these meetings.

GRANITE STATE CLEAN CITIES COALITION

Operated by the New Hampshire Department of Environmental Services and funded by the U.S. Department of Energy, Granite State Clean Cities Coalition (GSCCC) is a partnership of local private and public fleets (including municipal highway department, parks and recreation and emergency vehicles) throughout the state. The project seeks to expand the use of alternative, cleaner burning fuels by private and public fleets and individuals. GSCCC offers training, equipment and vehicle demonstrations, and strategic planning services. Currently within the Southern New Hampshire region, only the City of Manchester is a stakeholder of GSCCC.²¹

²⁰ NHOEP. <u>http://www.nh.gov/oep/</u>

²¹ Granite State Clean Cities Coalition, <u>http://www.granitestatecleancities.nh.gov/</u>

THE ALTERNATIVE VEHICLES FUEL PROJECT

Operated by the New Hampshire Department of Environmental Services and funded by Congestion Mitigation Air Quality funding from the New Hampshire Department of Transportation and the U.S. Department of Transportation, the project provides funding to help state and municipal fleets purchase alternative fuel vehicles and infrastructure.²²

BUILDING ENERGY CONSERVATION INITIATIVE

Established in April 1997, with a second financing package secured by the State Treasurer in 2002, this program analyzes state buildings for energy and resource conservation opportunities. Building Energy Conservation Initiative (BECI) utilizes a "paid from savings" procedure known as "Performance Contracting." This allows agencies to perform energy retrofits and building upgrades that would otherwise not be funded through capital appropriations, providing that energy savings can pay for the project cost, as outlined in RSA 211. NHOEP institutes the study, along with the individual state agencies whose buildings are being evaluated.

BECI is designed specifically for energy improving measures. A sample of those improvements may include lighting upgrades, HVAC upgrades, domestic hot water systems, energy management controls, water conservation measures, building envelope improvements, and miscellaneous projects which an energy service company can prove are feasible within BECI.

Each BECI contract includes instructions on the procedure needed to verify the savings generated by these energy improvements. Since various buildings may include some, but not all, of the suggested measures, a procedure of Measurement and Verification (M & V) is unique to each energy improvement. The most common M & V procedures are "Stipulated Savings," which are calculated upfront, and "Measured Savings" which involve metering and sub metering.²³

NEW HAMPSHIRE INDUSTRIES OF THE FUTURE

New Hampshire Industries of the Future (NHIOF) is a U.S. Department of Energy sponsored partnership between businesses, the Business and Industry Association's Waste Cap Resource Conservation Network, and the Governor's Office of Energy and Community Services. NHIOF is designed to help energy- and waste-intensive industries use technology and process advancements to improve profitability and competitiveness by cutting energy costs. NHIOF is helping manufacturers in some of the state's largest industry sectors- metals, rubber, plastics, and forest projects- to develop strategies to resolve issues of energy efficiency, productivity, waste reduction and environmental conservation. It also seeks to develop a vision of what business people want their respective industries to look like five, ten and twenty years in the future. Businesses are identifying obstacles to achieving that vision - such as energy efficiency, productivity, waste reduction and putting together pragmatic strategies to resolve the problems.²⁴

RENEWABLE ENERGY PROPERTY TAX EXEMPTION

This incentive, discussed in the previous section, outlined in NH RSA 72:61-72, permits cities and towns to offer exemptions from local property taxes for certain renewable energy installations. These include solar thermal (for example, to heat water), solar photovoltaic (to generate electricity), wind (to generate electricity) and central wood-fired heating systems (not stoves or fireplaces).²⁵

²² NHOEP, <u>http://www.nh.gov/oep/energy/programs/initiatives.htm#alternative</u>

²³ NHOEP, <u>http://www.nh.gov/oep/energy/programs/initiatives.htm#alternative</u>

²⁴ NHOEP, <u>http://www.nh.gov/oep/energy/programs/initiatives.htm#alternative</u>

²⁵ NHOEP, <u>http://www.nh.gov/oep/energy/saving-energy/incentives.htm</u>

NEW HAMPSHIRE ENERGY SMART SCHOOLS PROGRAM

This program is open to all K-12 public and private schools in New Hampshire. It is designed to allow schools to pursue energy efficiency initiatives aimed at controlling energy usage and saving money. The program utilizes an energy benchmarking system designed to help schools:

- Understand the energy consumption and cost trends at each of their buildings;
- Learn how their buildings are performing compared to other schools locally and nationally;
- Identify opportunities for improving operations and reducing costs;
- Take advantage of resources to implement efficiency improvements and save money.

To start, the program asks schools to submit their building and energy use data. This data is then used to create a customized analysis for each school that assesses the basic nature of its energy consumption and utility costs. The analysis also compares the school's data against similar schools in New Hampshire and across the country to assess its performance relative to buildings with comparable codes, standards, regulations, size and climate/weather. The analysis also proposes recommendations for making money saving improvements and outlines a list of resources that can help to implement them.

Schools that have participated in energy benchmarking programs have demonstrated an approximate 20 percent decrease in overall energy use. As of early 2014, 209 New Hampshire schools have been benchmarked through the Energy Smart Schools program.²⁶

HIGH PERFORMANCE SCHOOLS

High performance schools offer superior indoor environmental conditions for health and academic performance, are cost-effective and efficient to operate and maintain, and are resource efficient in the areas of energy use, water use, and building material content and durability.

House Bill 129, effective September 9, 2005 gives the Department of Education the ability to award up to three percent more state funding to districts which design, build, and operate school facilities that meet new high performance standards.

Those standards, are modeled after similar criteria established by the Collaborative for High Performance Schools (CHPS) in California and modified for the New England climate and region-specific building codes. Version 2.0 of the Northeast CHPS Criteria has been updated in 2013 and Version 3.0 of the Northeast CHPS Criteria is now available. No New Hampshire school buildings currently qualify as high performance, but a number of districts, design firms, and other advocates are working toward making high performance schools a commonplace occurrence in the state.

In New Hampshire there are over 200,000 public school students and 15,000 teachers who spend time in schools with poor indoor air quality, inadequate lighting and drafty rooms. At the same time, administrators, parents and taxpayers must address parent dissatisfaction, increased energy and operation costs and the mitigation of environmental impacts. On average \$165 million is spent annually on school construction in the state, yet despite this investment, the buildings are still lacking in terms of quality and performance.

Over 70 percent of the schools in New Hampshire have been in service for 36 years or more. This gives New Hampshire a tremendous opportunity as many municipalities look to construct new schools and rehab existing spaces. High performance schools utilize proactive, cost-effective and integrated design to result

²⁶ New Hampshire Energy Smart Schools Program, <u>http://www.nhschoolbenchmarking.com/Default.aspx</u>

in healthy and efficient school buildings. These schools serve to maximize tax dollars as well as improve the quality of life for students.

The major hurdle is the perceived cost of building a new school or rehabbing an existing one. However with the incentives provided, the long-term benefits outweigh the initial costs.²⁷

CITIES FOR CLIMATE PROTECTION PROGRAM

The Cities for Climate Protection Campaign (CCPC) enlists cities to adopt policies and implement measures to achieve quantifiable reductions in local greenhouse gas emissions, improve air quality, and enhance urban livability and sustainability. As of 2009, 1000 local governments across the country participated in the CCP, integrating climate change mitigation into their decision-making processes.

Communities that participate in the CCP benefit from the actions they take to reduce greenhouse gas emissions through:

- Financial savings in reduced utility and fuel costs to the local government, households, and businesses;
- Improved local air quality, contributing to the general health and well-being of the community;
- Economic development and new local jobs as investments in locally produced energy products and services keep money circulating in the economy.

The City of Keene has been participating in the CCP since 2000. Officials from that city acknowledged local governments play a key role in climate change efforts because they can have direct influence and control of activities that produce such emissions. Decisions about development and land use, energy-efficient buildings, investment in public transit, waste reduction and recycling program all affect local air quality and living standards. They felt the Cities for Climate Protection program was an opportunity for Keene to take practical steps to reduce greenhouse gas emissions and generate other benefits for their communities.

The Cities for Climate Protection Campaign features a five-step process:

- Conduct an energy and emissions inventory and forecast;
- Establish an emissions reduction target;
- Develop and obtain approval from the Local Action Plan;
- Implement policies and measures from Plan;
- Monitor and verify results.

Other towns in the New England region that participate include Burlington, Vermont; Bridgeport, Connecticut; and Springfield, Massachusetts.²⁸

BIO OIL PROJECT

New Hampshire Office of Energy and Planning and the New Hampshire Department of Resources and Economic Development led a study to determine the economic, environmental and technical feasibility of establishing a bio-oil production and utilization industry in New Hampshire. Other partners in the study team included US and Canadian federal agencies; multiple states' agencies; universities; forest industry, environmental, and biomass energy organizations; economic development organizations; and private individuals. The final report, entitled *Bio-oil Opportunity* and published in September 2004, was intended to provide New Hampshire state government, forest industries, community groups, citizens, bio-oil facility

²⁷ New Hampshire Performance for High Performance School, <u>http://www.neep.org/public-policy/energy-efficient-buildings/high-performance-schools/index</u>

²⁸ City of Keene, NH, <u>http://www.ci.keene.nh.us/sustainability/climate-change</u>

developers and others information on the opportunity that bio-oil production may provide in New Hampshire. This analysis is part of New Hampshire's ongoing effort to secure sustainable and clean energy.

Bio-oil is a renewable, liquid resource that can be obtained from low-grade wood waste by a process known as pyrolysis. This liquid burns cleaner and produces fewer pollutants (e.g., virtually no sulfur emissions) than coal and oil fuels. Bio-oil has potential uses for the production of heat and electricity. Eventually, it may have additional, higher value as a feedstock for a "green" chemicals industry.

Bio-oil production and utilization have several potentially beneficial outcomes including: economic support of sustainable forest management practices; renewable, indigenous, carbon-neutral energy supply; creation of jobs and retention of energy dollars in the regional economy; ability to generate and market electricity at peak demand times; possible spin-off business growth through co-location; combined heat and power applications; derivative products and services.²⁹

STATE HEATING OIL AND PROPANE PROGRAM

The State Heating Oil and Propane Program (SHOPP) monitor residential retail prices for heating oil and propane to determine the average prices for these fuels in New Hampshire. From October through March, SHOPP conducts weekly price surveys and monthly from April to September. Additionally, the state monitors kerosene, electricity, natural gas, gasoline, and diesel fuel prices on a monthly basis.³⁰

WEATHERIZATION PROGRAM

The State of New Hampshire's Weatherization Program is designed to reduce household energy use and costs in low-income households throughout the state by installing energy efficient improvements. The overall goal of the Weatherization Program is to serve those households that are most vulnerable to high-energy costs and may not have the means of making cost-effective energy conservation improvements to their homes.

The New Hampshire Office of Energy and Planning (NHOEP) operates the Weatherization Program with grants from the <u>U.S. Department of Energy</u> (DOE) and the U.S. Department of Health and Human Services. NHOEP subcontracts with New Hampshire's <u>Community Action Agencies</u> (CAAs), which are responsible for operating and delivering weatherization services at the local level. OEP, whenever possible, collaborates with the electric and natural gas utilities' energy efficiency programs to enhance the weatherization services provided to low-income households in New Hampshire. In the Southern New Hampshire region, the following agencies are:³¹

- Hillsborough County-Southern New Hampshire Services
- Rockingham County-Rockingham Community Action
- Merrimack County-Community Action Program

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STAY WARM NH

Stay Warm NH is a program offered by the NHOEP that centralizes information and resources pertaining to money and energy saving measures in one location. The Stay Warm NH website provides links to energy resources, weatherization programs and available energy-related funding opportunities. It is an invaluable source of information for residents and businesses looking to reduce energy costs in these difficult financial times.³²

²⁹ NHOEP, <u>http://www.nh.gov/oep/energy/programs/index.htm</u>

³⁰ NHOEP, <u>http://www.nh.gov/oep/energy/programs/index.htm</u>

³¹ NHOEP, <u>http://www.nh.gov/oep/energy/programs/index.htm</u>

³² NHOEP, <u>http://www.nh.gov/oep/energy/programs/index.htm</u>

BUILD GREEN NH

The Build Green NH Council is comprised of industry professionals dedicated to providing green building guidelines for building and remodeling professionals and environmentally concerned consumers through its certification program.³³

The Build Green NH Council is recognized as the voice of professional green builders and remodelers in New Hampshire by unifying the industry, promoting a broader understanding of green building, and increasing consumer awareness of Home Owners and Remodelers Association of New Hampshire (HBRANH), Green Builder. The Council is dedicated to providing quality education and awareness to our members and to the public.

Build Green NH encourages builders and consumers to look to the National Green Building Standard for guidance.

INDUSTRIAL ASSESSMENT CENTERS

The Industrial Assessment Center (IAC), funded by the U.S. Department of Energy, enables eligible small and medium-sized manufacturers to have comprehensive industrial assessments performed at no cost. The IAC assessments assist manufacturers to become more economically competitive by helping them reduce energy use, minimize waste, and increase productivity.

The Center for Energy Efficiency and Renewable Energy (CEERE) at the University of Massachusetts in Amherst serves most of New Hampshire. It was established in 1984 and is nationally recognized for its work. Since being established, they have surveyed over 450 plants. More than 1,900 Assessment Recommendation (AR) measures have been identified with average cost savings of \$35,000 per year and an average simple payback of 1.2 years.

An industrial assessment consists of an in-depth assessment of a plant site including its facilities, services and manufacturing operations. The assessment involves a thorough examination of potential savings from:

- Energy efficiency improvements
- Waste minimization and pollution prevention
- Productivity improvement

The assessment begins with the IAC team, consisting of engineering faculty and students, conducting a survey, followed by a one or two day site visit, taking engineering measurements as a basis for assessment recommendations. The team then performs a detailed analysis for specific recommendations with related estimates of costs, performance and payback times.

Within 60 days, a confidential report detailing the analysis, findings and recommendations of the team is sent to the plant. In two to six months, follow-up phone calls are placed to the plant manager to verify recommendations that will be implemented.³⁴

PAY AS YOU SAVE (PAYS) ENERGY EFFICIENCY PRODUCTS PILOT PROGRAM

The Pay as You Save (PAYS) pilot program, offered by PSNH and the New Hampshire Electric Cooperative, allows certain customers to finance the purchase of approved efficiency devices, appliances, or services on their electric bill. This innovative pilot program provides eligible customers with a way to purchase efficiency measures while eliminating up-front costs. The costs of installed measures are repaid over time by participating customers from savings on their electric bill. The PAYS program can be used for:

³³ Build Green NH, <u>http://www.buildgreennh.com/</u>

³⁴ NHOEP, <u>http://www.nh.gov/oep/energy/programs/index.htm</u>

- Weatherization; including air sealing, insulation and recommended through a Home Energy Analysis
- ENERGY STAR lighting, ENERGY STAR products
- Lighting and Lighting control recommended through a Business Energy Analysis³⁵

CORE ENERGY EFFICIENCY PROGRAMS IN NEW HAMPSHIRE

As part of the Restructuring Act, RSA 374-F:3 X, the electric utilities in the State of New Hampshire have established a set of energy efficiency programs designed for statewide implementation in the service territories of the utilities regulated by the Public Utilities Commission (PUC). A variety of programs exist, serving both residential and commercial and industrial customers. They include programs for new construction, retrofitting existing structures, and rebate programs for selected lighting and appliances. In addition to the statewide programs, individual utilities run specific programs. The electric utility companies involved are PSNH, the New Hampshire Electric Cooperative, Unitil Energy Systems and Liberty Utilities.³⁶

NHSAVES

NHSaves is the website formed by New Hampshire's electric utility companies designed to provide New Hampshire residents and businesses with information and support pertaining to the Core Energy Efficiency Programs in New Hampshire. Created in conjunction with the New Hampshire Public Utilities Commission and other interested parties, it serves as a clearinghouse for the programs available through the Core Energy Efficiency Programs. Residential, commercial and industrial electricity customers of PSNH, the New Hampshire Electric Cooperative, Unitil Energy Systems and Liberty Utilities can take advantage of these programs. Utility estimates indicate the programs, when fully implemented, have the potential to reduce electric use in New Hampshire by more than 704.7 megawatt hours, removing 522.8 tons of carbon dioxide, more than three tons of sulfur dioxide, and 1,830 pounds of nitrogen oxides from New Hampshire's air annually. The following is a list of some of the programs currently being offered through NHSaves.

CURRENT ENERGY PROGRAMS FOR BUSINESSES

LARGE BUSINESS RETROFIT PROGRAM

This program seeks to improve the efficiency of a facility through services including installation of variable frequency drives, replacement of motors, installation of energy management systems, air compressors and lighting upgrades. Technical assistance is also offered through the Retrofit Program, including project evaluation, measure identification, equipment monitoring, and energy audits. To help fund these improvements, this program offers perspective and custom rebates to customers who replace equipment at their facility with more energy efficient equipment. Not only will participants save money in the form of rebates, but they will also see long-term savings in their energy bills.

SMALL BUSINESS ENERGY SOLUTIONS PROGRAM

This is another retrofit program designed for business customers with an average monthly demand of less than 100 kilowatts (kW) and operating aging and inefficient equipment. This program will help better the efficiency of the facility through services including lighting upgrades, electric hot water measures, occupancy sensors and installation of programmable thermostats and controls for walk-in coolers. Not only will you see long term savings in the electric bill, but PSNH will help fund a portion of the improvements to the facility.

³⁵ NHOEP, <u>http://www.nh.gov/oep/energy/programs/index.htm</u>

³⁶ State of New Hampshire, <u>http://www.puc.state.nh.us/Electric/coreenergyefficiencyprograms.htm</u>

NET METERING PROGRAM

The Net Metering Program is open to any customer with a generator that has a capacity of 100 kilowatts or less and uses a renewable energy source, such as solar, wind or water, to produce electricity. Under this program, a customer's monthly PSNH bill amount reflects the difference between the power generated and the power used during that month. Net metering allows a meter to run backwards when generation exceeds usage. If generation exceeds use during a billing period, the excess generation creates a credit that is carried forward to the next billing period. When use exceeds generation in a future billing period, the customer uses the credit before buying from their utility provider.

MUNICIPAL SMART START PROGRAM

The Smart START (Savings Through Affordable Retrofit Technologies) Program gives municipal customers an opportunity to install energy saving measures with no upfront costs. Payment for services and products are made over time with the savings obtained from lower energy costs. First, the utility provider applies rebates for all eligible retrofit measures and then finances the remaining costs associated with the purchase and installation of approved measures. A Smart Start Purchase and Installation Charge, calculated to be less than the monthly savings, is then added to the monthly electric bill until all costs are repaid. Over time, the new energy efficient, environmentally friendly equipment that is installed through this program pays for itself.

NEW EQUIPMENT AND CONSTRUCTION PROGRAM

This program offers prescriptive and custom rebates to businesses building new facilities, updating existing ones or looking to replace failed equipment. It helps businesses purchase more energy efficient equipment, such as energy efficient lighting, motors, HVAC systems, chillers, variable frequency drives, and air compressors. In addition to rebates, the New Equipment & Construction Program offers technical assistance to help customers identify and purchase premium energy efficient equipment and measures.

SOLAR POWER PURCHASE AGREEMENTS

A Solar Power Purchase Agreement (SPPA) is a financial arrangement in which a third-party developer owns, operates, and maintains the photovoltaic (PV) system, and a host customer agrees to site the system on its roof or elsewhere on its property and purchases the system's electric output from the solar services provider for a predetermined period. This financial arrangement allows the host customer to receive stable, and sometimes lower cost electricity, while the solar services provider or another party acquires valuable financial benefits such as tax credits and income generated from the sale of electricity to the host customer.³⁷ The customer buys the output (e.g., kWh or pounds of steam) of a distributed generation project, rather than the actual project.³⁸

COMPETITIVE ELECTRICITY SUPPLY AGGREGATION

Aggregation is the combination of individual electricity buyers (and their loads) into a large pool. Other factors being equal, suppliers prefer dealing with larger groups, which have more purchasing leverage with suppliers competing for their business. This purchasing power can be used to obtain cost savings, a different combination of services, or more favorable service terms. Aggregation also reduces transaction costs for the members of the buyers group and for the suppliers.³⁹

³⁷ Solar Power Purchase Agreements (2012). *Environmental Protection Agency*. Retrieved from <u>http://www.epa.gov/greenpower/buygp/solarpower.htm</u> (last accessed 10 January 2014).

³⁸ ICF International, National Assoc. of Energy Service Companies. Introduction to Energy Performance Contracting. October 2007. http://www.energystar.gov/ia/partners/spp_res/Introduction_to_Performance_Contracting.pdf

³⁹ National Renewable Energy Laboratory. Customer Aggregation: An Opportunity for Green Power? February 2001.

In 1993, the New Hampshire legislature created RSA 21-I: 19-d which allows a municipality to sign a performance contract with an energy service company (ESCO). A performance contract allows costs of energy efficient upgrades to be financed through the ESCO and paid off over time through the energy savings. There is no upfront capital cost associated to the town for such programs. Performance contracts also protect municipalities by requiring the ESCO to meet a certain reduction of energy use. If this level is not reached, the ESCO is required to pay the difference in the energy bill. It is a win-win situation, allowing municipalities to become more energy efficient, reduce their energy costs, and protect it from increase costs.

CURRENT ENERGY PROGRAMS FOR RESIDENTS

NET METERING

Net Metering or net energy metering, is an electricity policy which allows utility customers to offset some or all of their energy use with self-produced renewable energy. Net metering works by utilizing a meter that is able to spin and record energy flow in both directions. The meter spins forward when a customer is drawing power from the utility grid (i.e., using more energy than they are producing) and spins backward when energy is being sent back to the grid. At the end of a given month, the customer is billed only for the net energy used.⁴⁰

ENERGY STAR LIGHTING PROGRAM

Residential customers who purchase Energy Star rated light bulbs and fixtures can receive rebate coupons redeemable at participating retailers. Other lighting and select energy savings products will also be made available from a mail order catalog. A typical Energy Star rated compact fluorescent lamp lasts up to 10 times longer than an equivalent incandescent bulb and uses 75 percent less energy.

ENERGY STAR APPLIANCE PROGRAM

Customers will receive a rebate coupon of \$10 to \$30 towards the purchase of Energy Star rated washing machines, dryers, dishwashers, refrigerators, air conditioners, dehumidifiers and air purifiers when purchased at a participating retailer. Energy Star qualified appliances can save 10-50 percent compared with conventional models, and even more compared with older models. Replacing a 10-year-old refrigerator, dishwasher, room air conditioner and clothes washer with Energy Star equipment would save around \$140 each year (calculated using the national average electric rate of 8.5 cents per kWh.)

INCOME QUALIFIED ENERGY EFFICIENCY PROGRAM

This program provides weatherization services and helps income-qualified customers understand their energy use with the goal of lowering energy costs. Qualified customers, who receive an electric bill and live in an apartment or house, either rented or owned can receive up to \$5,000 in services (additional funds may be available to customers that qualify for the NH Weatherization Assistance Program).

HOME ENERGY SOLUTIONS

Under this program, PSNH can help you with your home's energy efficiency through improvements such as insulation, air sealing, thermostat replacement, electric hot water conservation measures, and cost effective appliance and lighting upgrades.

⁴⁰ Calfinder Residential Solar Power. http://solar.calfinder.com/blog/solar-information/what-is-net-metering/

NH ENERGY STAR HOMES PROGRAM

The NH ENERGY STAR homes program encourages customers to take advantage of the benefits of building a new (or complete renovation of an existing) single or multi-family energy efficient home with incentives up to \$2,500. ENERGY STAR construction results in reduced monthly operating costs, improved homeowner comfort and a higher resale value, all while providing greater environmental benefits. The program provides assistance in evaluating your new home plans, air leakage testing, and incentives to install ENERGY STAR appliances and lighting systems.

FUTURE CONDITIONS

There are many sources of alternative energy that are becoming more readily available and have proven to be energy efficient and environmentally sound. The Southern New Hampshire Planning Commission must work with the municipalities in the region to explore these possibilities in addition to increasing efficiency through better planning, engineering and building materials.

ENERGY EFFICIENT DEVELOPMENT

There are a number of ways communities can implement energy efficient development. Implementing energy efficient regulations to minimize the impact of public utilities is one way to do so. For the communities looking for easy and less burdensome ways to implement energy efficiency, they can develop language in the regulations that can be adapted to subdivision or site plan regulations. Towns could also adopt additional building codes that exceed the state energy codes for residential and non-residential construction or adopt performance zoning ordinance encouraging the voluntary implementation of energy efficient practices for new construction in exchange for a set of incentives or bonuses. When all three alternatives are used in combination, the greatest energy savings results will be achieved. For guidance on these practices please refer to the New Hampshire Innovative Land Use Planning Techniques: A Handbook for Sustainable Development, October 2008 developed by NH Department of Environmental Services, NH Association of Regional Planning Commissions, NH Office of Energy and Planning and NH Local Government Center.

In addition to the way buildings are built, the way communities are designed, planned, and built may also influence the amount of energy used, how energy is distributed, and the types of energy sources that will be needed in the future. Energy efficiency can be incorporated into land use planning by adopting mixeduse zoning, which would allow greater accessibility to desired services without requiring greater mobility. Other ways to promote energy efficiency and conservation in land use planning include:

- Encourage livable, walkable land use policies and regulations;⁴¹
- Encourage alternative forms of transportation in the planning and design of the community. This includes park & rides, bicycle lanes, pedestrian lanes and crossing and trails;
- Encourage energy-efficient development through subdivision and site plan review regulations, zoning ordinance and building codes. Site design techniques that take advantage of sun exposure, differences in microclimate, and landscaping reduce a development's demand for fossil fuel derived energy sources and reduce overall energy consumption;⁴²
- Encourage increased reliance on the local food supply in order to:

⁴¹ Refer to the 2012 New Hampshire Livable Walkable Communities Toolkit for recommendations and policies. SNHPC. April 2012.

⁴² Model ordinance language can be found in *Innovative Land Use Planning Techniques*. October 2008. Chapter 3.5. Pgs. 371 – 388.

- Reduce transportation energy needed to get food to our homes
- \circ Increase local economic health by keeping money in the community; and
- Encourage organic farming. Local organic farmers do not rely upon the input of petroleum-derived fertilizers and pesticides and thus save energy at the farm.

ENERGY EFFICIENT BUILDING

Almost all existing buildings have the potential to reduce energy use by up to 60 percent with relatively simple and low cost practices. These include: energy audits, passive solar/daylighting, air sealing, insulation, shades/drapes, upgrades to efficient appliances and controls, etc. Site design opportunities include sun, shade, topography, and integrated landscaping practices to help reduce energy use. The Architecture 2030 Challenge outlines practical steps that all sectors can take to start implementing these demand reduction techniques.⁴³

Architecture 2030 asks that all firms, organizations and individuals choosing to adopt the 2030 Challenge commit to design all of their projects to meet the targets outlined by the initiative. This requires each new building project or major renovation to be designed to achieve an energy consumption performance standard of 50 percent of the regional (or country) average for that project's buildings type. For new building projects, this performance standard will increase to 60 percent of the regional (or country) average in the year of 2010. Every five years the standard will increase by an additional 10 percent, achieving carbon-neutral buildings in the year 2030. Major renovations are only required to meet the 50 percent target throughout this timeline, but are encouraged to achieve the increased reductions.⁴⁴

LEED CERTIFICATION

Leadership in Energy and Environmental Design (LEED) is a set of rating systems for the design, construction, operation, and maintenance of green buildings, homes and neighborhoods. LEED was developed by the U.S. Green Building Council (USGBC), and is intended to help building owners and operators be environmentally responsible as well as use resources efficiently. Proposals to modify the LEED standards are offered and publicly reviewed by USGBC's member organizations, which number almost 20,000.

USGBC's Green Building Certification Institute (GBCI) offers various accreditations to people who demonstrate knowledge of the LEED rating system, including LEED Accredited Professional (LEED AP), LEED Green Associate, and since 2011, LEED Fellows, the highest designation for LEED professionals. GBCI also certifies projects pursuing LEED.

Since they were created in 1998, LEED standards have been applied to more than 7,000 projects in the United States and 30 countries, covering more than 1.5 billion square feet (140 km²) of development area. The Southern New Hampshire Planning Commission's Region currently has 22 LEED projects, shown in **Map 9-4**.

⁴³ Architecture 2030, a non-profit, non-partisan and independent organization, established in response to the climate change crisis by architect Edward Mazria in 2002.

⁴⁴ Architecture 2030. 2030 Implementation Guidelines. http://architecture2030.org/files/2030ImplementationGuidelines.pdf



THIRD – PARTY RATINGS

Third party rating systems provide certification and verification that a building, home or community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

Examples of third – party rating systems are:

- US Green Building Council Leadership in Energy and Environmental Design (LEED) includes grounds and neighborhood
- Home Energy Rating System (HERS) home energy rating program for residential dwellings
- Building Performance Institute (BPI) a national standards development organization for residential energy efficiency and weatherization retrofit work
- EnergyStar energy performance rating system for homes and businesses
- ASHRAE's Building Energy Labeling Program Building Energy Quotient (bEQ) is a building energy labeling program that lets commercial building owners zero in on opportunities to lower building operation cost and make informed decisions to increase value

SELF - ASSESSMENTS

For individuals, a self-assessment can help determine whether there are improvements or behavioral changes that can be made to reduce energy use in their homes. Many homes use more energy than needed to keep individuals comfortable and as fuel prices continue to rise most people cannot afford to be without an energy plan to reign in these expenses. Examples of self – assessment guidelines include:

- My Energy Plan⁴⁵
- Stepping Up to the 2030 Challenge worksheet⁴⁶

PASSIVE SUSTAINABILITY

Passive sustainability allows buildings to meet occupant needs during power outages and natural disasters. Passive sustainability involves reducing demand and generating energy needed on site as much as possible. For example, passive solar, well air-sealed and insulated structures with high efficiency/low emission wood stoves provide relatively comfortable living conditions for the occupants during times when there may not be power, water, or food available from off-site sources. This is an important adaptation strategy that will create greater community resilience, given the recent extreme weather.

SMALL WIND ELECTRIC SYSTEMS

Small Wind Electric Systems can make a significant contribution to our nation's energy needs. Although wind turbines large enough to provide a significant portion of the electricity needed by the average U.S. home generally require one acre of property or more, approximately 21 million U.S. homes are built on one-acre and larger sites, and 24 percent of the U.S. population lives in rural areas.

In 2008 New Hampshire enacted a small wind energy systems ordinance with RSA 674:62:66, and the purposes outlined in RSA 672:1-III-a. The purpose of this ordinance is to accommodate small wind energy systems in appropriate locations, while protecting the public's health, safety and welfare. In addition, this ordinance provides a permitting process for small wind energy systems to ensure compliance with the

⁴⁵ <u>http://myenergyplan.net/</u>

⁴⁶ <u>http://architecture2030.org/</u>

provisions of the requirements and standards established herein.⁴⁷ Several New Hampshire communities have adopted these regulations.

A small wind electric system can work if:

- There is enough wind in the area;
- Tall towers are allowed in the neighborhood or rural area;
- There is enough space;
- The resident can determine how much electricity he or she needs or wants to produce;
- It works economically.

Depending on the wind resource, a small wind energy system can lower an electricity bill by 50 to 90 percent, help avoid the high costs of having utility power lines extended to remote locations, prevent power interruptions, and most importantly, is non-polluting. Moreover, excess energy produced by a turbine can be sold back to the existing electric grid. A small wind electric system might be a practical option for homes or businesses:

- Where property has a good wind resource;
- Located on at least one acre of land in a rural area;
- Local zoning codes or covenants allow wind turbines;
- Where average electricity bills are \$150 per month or more;
- Where property is in a remote location that does not have easy access to utility lines;
- Which are comfortable with long-term investments.

Using wind to generate electricity is currently being researched in the state. Alternative energy advocates are currently looking at several New Hampshire communities such as Claremont as possible locations to expand the use of wind power to generate electricity. State officials believe that wind power could someday contribute 10 percent of New Hampshire's power supply. However, there is resistance to creating such wind farms. Some people object to the large turbines and dislike their placement on visible hillsides. Additionally, wildlife organizations have expressed concern regarding bird and bat mortality related to turbines.⁴⁸

BIOMASS

Biomass materials consist of whole-tree wood chips (undried, unprocessed wood chips with bark attached), stumps, brush and smaller low-lying vegetation, low-grade woods, and other plan material unusable in timber or paper production. These materials can result from normal forestry practices such as timber harvesting and fire control measures, or from clearing land for homes, roads and commercial developments. For wood-fired power generation and steam generation for heat (district heating), natural residue from sawmills and other clean wood byproducts can be added to the mix.

A trend to implement such resources has grown in the New England region. **The Northeast Biomass Thermal Working Group** (NEBTWG) is a coalition of biomass thermal advocates committed to working together to advance the use of biomass for heating and CHP (combined heat and power) in the northeastern United States.

 ⁴⁷ http://nhrsa.org/law/674-63-municipal-regulations-of-small-wind-energy-systems/
 ⁴⁸ Extensive information on small wind electric systems as they

apply to New Hampshire can be found in Small Wind Electric Systems: A New Hampshire Consumer's Guide at: http://www.windpoweringamerica.gov/filter_detail.asp?itemid=317

Some activities they are working on are⁴⁹:

- Policy and regulatory advocacy at the local, state, and regional levels
- Development, promotion, and distribution of the Heating the Northeast with Renewable Biomass 2025 Vision
- Outreach to allied groups and organizations to expand network of biomass thermal advocates in the Northeast
- Identification and prioritization of key policy, regulatory and public relations issues facing biomass thermal industry
- Information and data collection to assist/influence policy makers and regulators
- Coordination of advocacy to federal delegations on key issues in Washington
- "Best ideas" sharing across region

The Renewable Biomass 2025 Vision could:

- Supply 19 million green tons of sustainable biomass for thermal energy available annually from forest and farm sources
- Achieve 25 percent of all thermal energy from renewable resources by 2025
- Achieve 75 percent of thermal renewable energy from biomass by 2025
- Convert 1.38 million households in the seven states to biomass for thermal needs
- Improve air quality, reduce greenhouse gases and build healthier communities
- Reduce 1.14 billion gallons of heating oil annually
- Reinvest \$4.5 billion in resulting economic wealth in the Northeast economy
- Create 140,200 jobs

For small-scale domestic applications of biomass the fuel usually takes the form of wood pellets, wood chips and wood logs.

In New Hampshire the Northern Wood Power Project at the Schiller Station in Portsmouth is the first nonhydro, commercial renewable biomass project in the state. Over 50 MW of coal-fired power generation was replaced by a biomass boiler. This project developed by PSNH burns wood chips and other clean wood products. In addition to creating a market for woodchips from New Hampshire's many logging operations, the facility is now a major regional contributor of renewable energy.

There are two main ways of using biomass to heat a domestic property:

- Stand-alone stoves providing space heating for a room. These can be fuelled by logs or pellets but only pellets are suitable for automatic feed.
- Boilers connected to central heating and hot water systems. These are suitable for pellets, logs or chips, and are generally larger than 15 kW.

SOLAR ELECTRIC (PHOTOVOLTAIC) SYSTEMS

Stonyfield Farms in Londonderry recently added a 5,000 square foot photovoltaic array on top of the roof of their yogurt facility. The integrated array will generate about 50,000 watts of energy on full sun days. This is enough to power 1,600 LCD computer monitors or 500 100W light bulbs. It is comparable to the amount of electricity 10 homes might use on an annual basis.

Hybrid solar lighting collects sunlight and routes it through optical fibers into buildings where it is combined with electric light in "hybrid" light fixtures. Sensors keep the room at a steady lighting level by adjusting

⁴⁹ Northeast Biomass Thermal Working Group <u>http://www.nebioheat.org/vision.asp</u>

the electric lights based on the sunlight available. This new generation of solar lighting combines both electric and solar power. Hybrid solar lighting pipes sunlight directly to the light fixture and no energy conversions are necessary, therefore the process is much more efficient.

Until recently, the Stonyfield solar array was the largest in New Hampshire. However, Exeter High School recently added over 350 solar panels that will create over 80,000 watts of electricity initially and up to 100,000 watts in the future. The panels at EHS are expected to produce seven to ten percent of the

electricity used by the school and save them \$20,000 per year over the next decade. The first phase of the project, 3,000 watts of production, was completed in December 2009.

Under the financing agreement with contractors of the project, several groups working under the title New Hampshire Seacoast Energy Partnership, the Exeter Region Cooperative School District will pay approximately \$150,000 per year for 10 years after which the school district will own the equipment outright.⁵⁰ This project shows that sustainable, renewable energy measures can be taken at the municipal level leading to thousands of dollars in cost savings.

PSNH also produces a significant amount of solar electricity. Their headquarters in Manchester, located in a reused mill building, is equipped with 183 roof panels that produce over 51,000 watts of electricity, resulting in an estimated reduction of 100,000 pounds of carbon dioxide emissions. The panels will satisfy approximately five percent of the energy needs for PSNH's Energy Park facility.



Source: Techno Green Energies, http://technogreenen ergies.com/

SOLAR HEATING

Solar heating harnesses the power of the sun to provide heat for hot water, space heating and swimming pools. Solar heating can be either passive, such as simply using large windows to let in more light and warmth, or active, where specially designed mechanical systems increase the heat gained from the sunlight.

SELF-CONTAINED SOLAR UNITS

On a smaller scale, solar energy can be harnessed using self-contained units to power street and crossing lights, parking lots, parks, bus shelters, trails and advertising billboards. These self-contained solar units do not need to be tied into the existing electric grid and do not require difficult underground wiring. They are immune to power outages and offer battery backup for cloudy days. They also are typically easier to maintain than traditionally powered units and reduce ownership costs by eliminating monthly electric bills. Self-contained solar is a good option in places where it may be difficult to run wires or that are especially remote. These relatively inexpensive and easy-to-install units are becoming increasingly popular as a safe, cost effective and efficient way for municipalities to take their first steps toward renewable energy use. The picture below is an example of a self-contained solar powered light.

HYDRO ELECTRIC

Hydroelectric is an excellent source of clean, renewable power. There are many hydroelectric dams located in New Hampshire that produce about six percent of the state's electricity needs. The Northern Pass transmission project, currently in the planning and permitting stages, is a measure designed to deliver up to 1,200 additional megawatts of low-carbon, renewable energy (predominantly hydropower) from

⁵⁰ Seacoast Online.com, accessed 1/20/11, <u>http://www.seacoastonline.com/articles/20091009-NEWS-910090323</u>, and, Revolution Energy, <u>http://www.rev-en.com/</u>, and

Coolerplanet.com

the Québec to New England's power grid. Currently Hydro-Québec has an available supply of over 42,000 MW of electricity—more power than all of New England's power plants combined.

A study is currently underway to determine the best potential route for Northern Pass infrastructure according to issues of technical and geographical feasibility, rights of way access and potential environmental and social impacts. It has already been decided that a substation in Deerfield is the optimal location for the Northern Pass to connect into the region's alternating current (AC) electric grid. From this terminal location the 1,200 megawatts (MW) of power will be distributed.

LIGHT EMITTING DIODES

For most applications, LEDs can last up to 20 years and require less maintenance than conventional incandescent bulbs, which often burn out after only a year. Traffic lights using incandescent bulbs may typically use about 150 watts per hour, 24 hours a day. LEDs only require 15 watts, a 90 percent reduction in power consumption. Multiply these savings per every traffic light and it's easy to see that the energy savings are significant. LEDs can be used for:

- Commercial lighting
- Traffic lighting
- Industrial lighting
- Street lighting;
- Flashlights
- Light bulbs for home or office
- Fluorescent replacements

In November and December 2009, the T.J. Maxx Plaza on South Willow Street in Manchester was used as part of a study for the U.S. Department of Energy (DOE) GATEWAY Solid-State Lighting Technology Demonstration Program. This federal program is designed to provide real-world demonstration experience and data on state-of-the-art solid-state lighting (SSL) product performance and cost effectiveness.



Source: Final Report prepared in support of the U.S. DOE Solid-State Lighting Technology Demonstration GATEWAY Program, June 2010

The 151,000 square foot parking lot was incurring high maintenance costs from the need for frequent lamp replacements in its 25-year-old luminaries and needed an update. Twenty-five new LED luminaries were placed in the lot, each controlled by an integral occupancy sensor that varies its operation between "high" and "low" light output settings according to the occupancy of the parking lot and the time of day. The study determined the payback period for the LED installation was approximately three years and they provided the parking lot with a 58 percent energy savings. The picture below shows a comparison of the new LED lighting (left) and the old, standard luminaries (right) at the project's midpoint.

When patrons and employees of the shopping center were surveyed, 79 percent said the replacement lighting system provided more light, 22 percent felt the lighting was about the same as in the original parking lot, and no one who responded felt the lighting had gotten worse.⁵¹

ALTERNATIVE AUTOMOBILE FUELS

Alternative fuels are becoming increasingly popular with American consumers, who are looking to decrease their carbon footprint and become less dependent on volatile fossil fuel prices and supplies. In response, automakers have been steadily increasing production of plug-in electric vehicles that run completely on electricity, alternative fuel vehicles that run on cleaner combustible fuels, and hybrids that run on a mix of combustible fuel and electric battery power. Governments have promoted the use of alternative fuel vehicles by offering tax incentives and subsidies to consumers.

The Chevrolet Volt is currently the most fuel efficient car on the market in the United States, recently surpassing the Toyota Prius for that distinction. It gets the equivalent of 93 miles per gasoline gallon when running on battery power alone and has the ability to go 25 to 50 miles on battery power, after which can be fueled by a small gasoline powered engine. It can be charged in a standard residential electrical outlet.⁵² Regarding the future of electric vehicles and their benefits, Chevy states, "Put simply, electricity is a cleaner source of power. And as technology improves in the generation of electricity, we will continue to see reduced carbon outputs. Advancements in electricity production along with reduction in emissions from electric-powered driving could help make our world a cleaner place."

With the popularity, affordability and importance of alternative fueled vehicles rising, the region must remain conscious of new developments in technology and remain equipped with the necessary infrastructure updates to foster growth in this area. This would involve, for instance, the adequate placement of recharging facilities and increased capacity on the grid for electric vehicles and the provision of alternative fuel pumps at filling stations for alternative fuel vehicles.

KEY STRATEGIES & PROJECTS

SOLAR AGGREGATION MODEL

The solar aggregation program involves a lead local government or several local governments or a region working together to advertise for and retain a third party solar developer or developers who can coordinate and implement a community/region wide-based volume purchasing campaign. The purpose of this campaign is to lower solar purchase and installation costs for the customers living or operating a business within the community/communities/region who signed up to participate in the program.

⁵¹ U.S. DOE Solid-State Lighting Technology Demonstration GATEWAY Program Report, June 2010, http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_timaxx.pdf

⁵² Chevrolet, <u>http://www.chevrolet.com/volt/features-specs/</u>

Typically, the local governments work together to scope out the basic parameters of the program and the lead local government or host agency issues the RFQ for the solar developer(s). The solar developer(s) are brought on board to develop the details of the program; to coordinate and implement the program; to negotiate and secure reduced rates from a solar provider(s) for the cost of the systems and installation, including the types of systems and quality assurance; and to sign up eligible customers seeking to participate in the bulk purchasing discount rates. The solar developer(s) costs are typically reimbursed at a negotiated rate(s) through the solar provider(s) when a solar system is purchased and installed. Thus, there is very little if any cost to the local government to participate in the program or initiative.

The SNHPC Regional Planning Commission can also lend assistance in program development, coordination as well as program promotion and marketing by seeking grant funds which can be used for developing a program website, customer application forms, and other marketing materials. Grants would need to be pursued through local foundations; private contributors and/or donations.

The services provided by a lead municipality or host agency in the solar aggregation program generally include:

- Assisting in developing initial program parameters and inter-governmental agreement;
- Developing an RFQ and implementing procurement policies and services necessary to obtain a solar developer(s) to run the program;
- Entering into a contract with a solar developer(s) for program deployment;
- Legal counsel to review RFQ process and contracts; and
- Assistance with program marketing and web postings.

An example of a solar aggregation model already in place is Solarize Mass program in the State of Massachusetts.⁵³ The Solarize Mass program has been very successful not only teaching residents and businesses in these four towns that solar energy is a viable way to manage energy costs and reduce dependence of fossil fuels, but also helping to drive down the costs of solar across the state.

LED LIGHTING PSNH

Public Service New Hampshire has recently expressed interest in converting to efficient LED (light – emitting diode) street lights. The city of Manchester has nearly 9,000 street lights and is by far PSNH's largest municipal customer. The electric bill to PSNH to keep the street lights on is approximately \$1.4 billion annually.⁵⁴ However, under the new proposed conversion to LED lights, the overall estimated reduction of costs is about eight percent. Not only would the conversion to LED lighting be cost-effective but the quality and technology of LEDs has been proven to be substantially better than the current lighting in place.

REGIONAL PLAN FOR PLUG-IN ELECTRIC VEHICLE INFRASTRUCTURE

Working to reduce greenhouse gas emissions from the transportation sector and increase the energy efficiency of Southern New Hampshire's motor vehicle fleet is an important factor in realizing energy efficiency improvements and greenhouse gas reductions. Electric Vehicle (EV) technology provides low carbon, highly efficient and cost effective transportation.

⁵³ Solarize Massachusetts Program (2012). Massachusetts Clean Energy Center. Retrieved from <u>http://www.masscec.com/news/masscec-launches-solarize-massachusetts-program-spur-solar-development</u> (last accessed 15 January 2014)

⁵⁴ PSNH LED Street Lights (2013). The Union Leader. Retrieved from <u>http://www.unionleader.com/article/20131223/NEWS06/131229749</u> (last accessed 3 January 2014).

Developing a regional plan for Plug-In Electric Vehicle (PEV) infrastructure is would be in the best interest of communities because having a plan will make transitions easier when communities are ready to move forward with implementation.

Examples of current PEV infrastructure plans include:

- VTrans Electric Fueling Infrastructure Plan⁵⁵
- Plug In Electric Vehicle Readiness Plan for the State of Washington⁵⁶

Currently SNHPC is exploring the possibility of working with PSNH for the initiation of the development of plug-in electric drive vehicles and electric vehicle infrastructure planning.

TRANSPORTATION

The transportation sector is a major contributor to greenhouse gas emissions. EPA names transportation as the second of five major fuel consuming sectors contributing to carbon dioxide (CO2) emissions from fossil fuel combustion. Energy efficiency and greenhouse gas emissions in transportation are linked to factors such as energy use, traffic flow, and the transport of goods.

Energy conservation in the transportation section is currently being promoted through SNHPC's participation in the CMAQ and Transportation Enhancement (TE) grant programs. Many of the projects eligible for funding under the CMAQ program such as improvements to public transit, bicycle and pedestrian facilities and programs, travel demand management projects and establishments of Transportation Management Associations can also make significant contributions to reductions in energy use. The Transportation Enhancement (TE) program supports community-based projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure. Eligible projects, which include creation of bicycle and pedestrian facilities, conversion of abandoned railway corridors to trail facilities and streetscape improvements, can also be instrumental in energy savings. SNHPC is also assisting member communities to prepare master plan energy chapters. Transportation-related recommendations from these chapters include incorporating "Complete Streets" principles⁵⁷ into roadway design, encouraging compact and mixed-use developments in village centers and development of facilities for cyclists and pedestrians.

OUTREACH AND EDUCATION

Utilize groups and organizations such as New Hampshire Local Energy Solutions, Energy Efficiency and Sustainability Board and the New Hampshire Sustainable Energy Association to establish municipal leadership and develop an integrated education, outreach and workforce training programs for the region. These organizations can help publicize energy efficiency tips, incentives and rebates; hold events with an energy conservation focus; incorporate energy conservation measures into community events and revise municipal energy goals by using their existing outreach and education technology and resources.

⁵⁵ VTrans Electric Fueling Infrastructure Plan (2011). Vermont Energy Investment Corporation. Retrieved from <u>http://www.veic.org/docs/Transportation/201307 VTrans EV Charging Plan Final Report web.pdf</u> (last accessed 14 January 2014).

⁵⁶ Plug In Electric Vehicle Readiness Plan (2011). Western Washington Clean Cities Coalition. Retrieved from <u>http://www.wwcleancities.org/documents/EV_Readiness_Plan_WA.pdf</u> (last accessed 14 January 2014).

⁵⁷ National Complete Streets Coalition (2010). Economic Development Smart Growth America. Retrieved from <u>http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/factsheets/economic-revitalization</u> (last accessed 13 January 2014).

ENERGY EFFICIENT MUNICIPAL BUILDINGS

Communities can consider establishing green building ordinances for municipal buildings which incentivize the use of new construction or major renovations of town buildings to meet US Green Building Council LEED standards. Communities can also consider instituting a renewable energy property tax exemption as well as incentivizing more stringent building codes than State codes to increase energy efficiency and decrease energy costs for development in the community.

ENERGY EFFICIENT LAND USE PLANNING

The way communities are designed, planned, and built may influence the amount of energy used, how energy is distributed, and the types of energy sources that will be needed in the future. Energy efficiency can be incorporated into land use planning by adopting mixed – use zoning, which would allow greater accessibility to desired services without requiring greater mobility. Other ways to promote energy efficiency and conservation in land use planning include:

- Encourage livable, walkable land use policies and regulations⁵⁸
- Encourage alternative forms of transportation in the planning and design of the community
- Encourage energy efficient development trough subdivision and site plan review regulations, zoning ordinance and building codes. Site design techniques that take advantage of sun exposure, difference in microclimate, and landscaping reduce a development's demand for fossil fuel derived energy sources and reduce overall energy consumption⁵⁹
- Encourage increased reliance on the local food supply in order to:
 - Reduce transportation energy needed to get food to our homes
 - Increase local economic health by keeping money in the community
- Encourage organic farming. Local organic farmers do not rely upon the input of petroleum derived fertilizers and pesticides and thus save energy at the farm

Deerfield is an example of a community that has already implemented some recognized methods for increasing energy efficiency in land use patterns through the Deerfield Open Space Development Ordinance, the adoption of International Energy Conservation Code (IECC) 2009 and a growing local food movement and farmers market.

CONCLUSIONS & RECOMMENDATIONS

Region-wide energy efficiency can best be implemented when other public policies are taken into consideration. Implementation of energy measures can only work when integrated with programs dealing with other region-wide issues such as land use, air quality, transportation, housing and economic development and other issues that are at the forefront of the Southern New Hampshire Planning Commission's efforts to make our region a healthier and more functional place to live.

The Southern New Hampshire Planning Commission recognizes that a region-wide energy plan needs to be created to ensure municipalities have access to accurate energy information. Current energy challenges require we move forward to achieve adequate, affordable, efficient, and environmentally sound energy supplies in our region and the State of New Hampshire as a whole. It will be important for the Southern

⁵⁸ Refer to the 2012 New Hampshire Livable Walkable Communities Toolkit for recommendations and policies. <u>http://www.snhpc.org/pdf/LWCToolkit_FINAL_April2012_NA.pdf</u>. SNHPC. April 2012

⁵⁹ Model ordinance language can be found in *Innovative Land Use Planning Techniques*. October 2008. Chapter 3.5. Pgs. 371 – 388.

New Hampshire Planning Commission and other regional planning commissions in New Hampshire to work together with the state to create awareness on this issue. The education and dissemination of energy efficient programs and alternatives are key pieces to region-wide energy efficiency.

The Southern New Hampshire Planning Commission encourages all of the communities in the region to evaluate the effects of plans, programs, and policies on energy use, and to determine how to reduce energy impacts by making more efficient use of all energy resources.

GOALS

The core goals and recommendations help to define the region's energy efficiency agenda and identify and prioritize projects that can best meet energy efficiency needs as discussed in Key Issues and Concerns. They were developed based on the principles of the Key Projects and Strategies.

The energy efficiency core goals, listed below, are as follows:

- 1. Affordable renewable energy
- 2. Increase renewable energy incentives
- 3. Increase education on energy efficiency issues and alternatives
- 4. Sustainable funding for energy efficient infrastructure
- 5. Smart growth and Green infrastructure
- 6. Increase energy efficiency of existing and future buildings

RECOMMENDATIONS

The recommendations listed below are strategic initiatives intended to demonstrate a commitment to and implementation of the aforementioned core goals and to bring about enhanced energy efficiency 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. Some of these initiatives are also listed in others chapters of *Moving Southern New Hampshire Forward*. These strategic initiatives include:

- 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.
- Utilize Smart Growth and Livability Principles Adopt land use policies that allow for energy efficient development and opportunities for renewable energy infrastructure as well as alternative transportation options.⁶⁰
- Coordination between energy and environmental policymakers Coordination to more effectively achieve common goals and to ensure their respective decisions do not inadvertently work at cross purposes.
- Increase small-scale local energy production Evaluate opportunities and the feasibility of
 establishing renewable and alternative energy sources at the local and regional scale (solar,
 geothermal, wood, biofuels, wind, and hydro); evaluate incentives in zoning and/or regulations to
 encourage installation of renewable and alternative energy sources in private development (for
 residential and commercial uses); support Combined Heat and Power systems throughout the
 region as small-scale local production sites. Continue to participate in SEC process to review

⁶⁰Smart Growth and Energy (2012). State of Washington Department of Commerce. Retrieved from <u>http://www.commerce.wa.gov/Documents/GMS-Smart-Growth-Energy.pdf</u> (last accessed 9 January 2014).

proposals for energy facilities and ensure local concerns and resources important to the economy of the region are considered.

- Increase the energy efficiency of existing and future buildings in the region conduct municipal energy audits; adopt and enforce improved building energy codes; establish financial incentives to encourage building energy efficiency improvements and energy retrofits; implement innovative energy financing programs to support energy efficiency; in areas without code officials, use the DOE's Building Energy Code Program methods, tools and procedures to measure and report baseline compliance with the building energy code.
- Increase regional use of and support for renewable energy Ensure renewable energy facilities are properly sited and do not negatively impact natural resources including scenic views and wildlife habitat; establish new or promote existing incentives and financing options for renewables for the residential, commercial, institutional, and municipal sectors; encourage expanded access to renewable energy and its benefits.