# Master Plan of the Town of Hudson, NH

Nashua Regional Planning Commission 2025

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# Chapter 1 COMMUNITY VISION

## Introduction

Hudson is a large town with a small-town feel. It enjoys an enviable location with convenient access to major employment centers, transportation, shopping, and recreational opportunities while retaining much of its historic rural character. Hudson residents appreciate the town's public facilities, parks, schools, and natural areas, and a strong sense of community prevails. The town seeks a balanced approach to growth and development that protects the features of Hudson that residents cherish while maintaining a strong tax base, preserving open space and mitigating the through-traffic that congests its most heavily traveled corridors.

Defining the essential character of the town, identifying, and addressing its challenges, and translating the desires of its residents and other stakeholders into goals, objectives and recommended actions is the essence of the Master Plan. This chapter summarizes the outcomes from the series of surveys, workshops and public input sessions that established the vision and goals of the Master Plan. The Vison section is one of only two Master Plan sections required under state law. As stated in NH RSA 674:2, the Vision section "[] serves to direct the other sections of the plan." The statute further states that "[T]his section shall contain a set of statements which articulate the desires of the citizens affected by the master plan, not only for their locality but for the region and the whole state. It shall contain a set of guiding principles and priorities to implement that vision." In order to articulate the desires of Hudson residents, an extensive public input and engagement process was undertaken.

## What we Heard

To help obtain the input necessary to inform the Master Plan, a comprehensive online survey was conducted in September of 2019. A total of 390 people completed the survey. In addition to answering survey questions, respondents were also able to comment on each question. A total of 417 comments were received, some of which are quoted in this section. Interestingly, only 31% of the respondents considered themselves to be Hudson natives, while 69% did not. Most respondents or their families, therefore, chose to move to Hudson and those choices are reflected in the ways they perceive and value the town.

In addition to the survey, two public engagement workshops were held in October and November of 2019. Each workshop included a Saturday morning session and a Wednesday evening session to provide multiple opportunities for participation. A total of 45 people participated in one of the two workshop A sessions and 41 people participated in one of the workshop B sessions.

Workshop A was organized as a *SWOT* (Strengths, Weaknesses, Opportunities, and Threats) analysis. During the SWOT analyses, participants were randomly organized into small groups to discuss and then prioritize Hudson's strengths, weaknesses, opportunities, and threats. The results from each of the four categories were recorded on large sheets of paper by each group and were subsequently posted around the meeting room. At the end of the session, participants were able to view the results from all groups and vote for their top selections within each of the four categories using adhesive colored dots.

During the SWOT analyses, the groups also discussed a wide range of issues impacting Hudson. The notes taken by the individual groups reflected several common themes including issues related to community character, small-town character, growth, development and planning, conservation and open space, and traffic.

In the survey and at the initial public input sessions, residents overwhelmingly selected the town's location, including proximity to employment, highways, the mountains, the ocean, Boston, and other attractions, as Hudson's greatest strength and its most important feature. The resident comment quoted below sums up the sentiment of many Hudson residents:

> "I can sit on my porch looking into the woods while drinking coffee, but 3 minutes down the road I have all the immediate amenities I need. Ten minutes away I have movies, malls, and restaurants and 30-45 minutes away I have cities, nightlife, and corporate working environments."


October 30 SWOT Analysis at Hills Memorial School

Other highly valued features include Hudson's small-town feel, its parks (especially Benson Park), open spaces and natural areas and sense of community. The following quotes typify many residents' feelings about Hudson's sense of community:

> "I have lived in Hudson all of my life and would not want to live anywhere else. I love the sense of community, people helping people, low tax rate and the quality of our school system. Generally, people feel like they can participate in our town government which helps to bring people together to get things done for the good of the community."

> "I have a wonderful neighborhood on a quiet road with 1+ acre wooded lots. But the best thing about my neighborhood is my neighbors. Hudson's greatest asset is the people who make our community what it is. After all, it's the people who live, work, volunteer, support local businesses, and make a difference in our town."

When asked to identify issues that concerned them, survey respondents identified the loss of open space and natural areas as their top concern (76%) followed by traffic congestion (73%), loss of rural character (71%) and issues related to residential and commercial development (62% and 60% respectively). Similarly, when asked "how much attention should the town pay to the following issues," the issues where most respondents indicated that the town should "do more" were traffic congestion (58%), controlling residential development (53%), land/open space conservation (52%) and controlling commercial development (51%).

Concerns over the loss of open space, as noted in the following comments, were cited by many of the people who responded to the survey:

> "I am saddened by the amount of land that has been developed over the last 5 years. My main reason for moving to Hudson was the small town feel and country setting. I spent years saving and dreaming of living here and to see it changing so much is heartbreaking to me."

> "I am hoping Hudson doesn't lose all the beautiful space it has available for outdoor activities. I just don't want us to go too fast."

Not surprisingly, traffic generated many comments. The following comment seems to succinctly express the views of many residents:

> "Traffic is a nightmare!! It's like driving the gauntlet trying to get to and from work."

Many traffic-related comments were focused on specific roadways (especially Lowell Road) and various intersections. Several comments specifically addressed *Hudson Boulevard*; a proposal to construct a two-lane limited-access road in the former Circumferential Highway right-of-way from Route 111 to Route 3A at the Sagamore Bridge. Comments included those in support and opposition to the project as well as those who support the project, but only if it were mostly state-funded. The examples below approximate the feeling of many residents. (Note that people used both the name "Hudson Boulevard" and "Circumferential Highway" to describe the project.)

> "I am really hoping that the Hudson portion of the Circumferential Highway goes forward, with a character similar to Albuquerque in Litchfield. Traffic to and from Nashua is at a critical, chronic level. I haven't heard of any ways to make the Rt. 111 river crossing less congested, but I am hopeful that positive change can be put into place at Lowell Rd."

> "Hudson Blvd concept is a state responsibility. The town should pay its fair share but not most of the cost."

> "A Circumferential Highway would raise everyone's property taxes by $300/yr for the next 30 years. For what?! To make it easier for people to commute around Hudson, and bypass the businesses on Lowell Road? No thanks!

Many people who responded to the survey or participated in the public input sessions expressed a need for more sidewalks and some for bike lanes.

> "[] I wish we could get some sidewalks. I can't go for a walk except on my side road…but can't go anywhere else due to speeding, windy roads and cars can't see us. We need sidewalks."

Issues related to residential and commercial development generated many comments on the survey and were also a major subject of discussion during the public input sessions. These included concerns over the extent of residential development generally and subsequent loss of open space, and a consensus that commercial and industrial development should be limited to existing commercial industrial areas as expressed in the survey comment below:

> "Let's keep the commercial businesses along the river and the main routes and keep the residential areas residential."

Generally, a balanced approach to development, as noted in the following quote, seems to be the goal of most of the people who provided input into the planning process.

> "The town's growth and economic viability depend on a balanced approach to development and land protections. Development opportunities and sound land use regulations provide Hudson a way to compete with surrounding communities for better employment and a strong tax base while not sacrificing the overall character of the community."

Like people who participated in the survey, public input session participants raised many concerns related to traffic and development. Public input session participants also identified a lack of community vision and a lack of investment in community facilities (especially schools) as major concerns together with concerns over low voter turnout and public participation. These concerns align with several of the comments expressed in the survey as well, such as the following:

> "Hudson is at a turning point. Currently the town is holding onto its low taxes and small-town thought process, not wanting to embrace change. Inevitably the town is growing whether we like it or not. If we do not have a vision to steer growth into a harmonized and balanced direction our town will change based on what developers want, not based on what the vision should be collectively. Balance is critical. Aiding healthy growth while also targeting environment protection efforts so that the town character stays overtime."

> "All town facilities require "active maintenance" to enable our staff/employees to serve our residents, students in safe, secure, efficient facilities. This not only takes planning and funding. The CIP process needs to be elevated to a status where it not only becomes a tool for future planning but has the support and commitment from our Board of Selectmen and School Board to execute in a coherent and "affordable" way."

> "We need to have more citizen involvement. Many people have been negative about the Town but ask them to join a board, commission, or a committee and all they can say is, "I don't have

the time to do it." We have 18,000 + registered voters and less than 25% participate in local elections."

Several comments received through the online survey and in public input sessions expressed a desire for Hudson to have a more clearly defined town center. The comment highlighted below echoes the views of many participants:

> "I wish the town had a type of downtown area like other towns. Where you can park your car and visit a bunch of stores, shops, stop for a bite to eat at a small cafe etc. This would also be a place where the town's people gathered for events for holidays etc."

One section of the survey asked people to rate various town and school facilities. Overall, the level of satisfaction was high, especially for Benson Park and the Library. The Rodgers Memorial Library was rated as "excellent" by 64% of survey respondents and "good" by 20%. Benson Park ranked even higher at 63% "excellent" and 32% "good". Benson Park was also identified as one of Hudson's most important assets during the public input sessions. The schools also generally ranked well though many participants were not familiar with specific facilities and frequently selected "no opinion." The simple survey comment below summarizes the views of many residents.

> "Love the school, parks and library!"

Rodgers Memorial Library

Many people also called for both specific and general improvements to various parks and schools as noted in the comments below.

> "We have long overlooked the Merrimack River and having access for passive recreation would be a great addition. The Lowell boat launch is a great example of what could be accomplished. Merrill Park could be improved to accomplish this idea."

> "Many of the schools need some serious TLC and the high school really needs an auditorium. Hudson has great musical talent with their bands and music programs. An auditorium at the high school would not go to waste and could be used for so many things. The playing fields in

Hudson also need much TLC and it would be great if we could have more fields for our teams to play and practice."

Following the SWOT Analyses, the workshop B public input sessions were held to dive deeper into the main issues raised during the SWOT analyses and the online survey. Once again, participants were broken up into random groups and asked to brainstorm on four themes: Vision /Community Character, Land Use Development (Planning & Zoning), Natural Resources Conservation/Recreation/Open Space and Traffic. Topics included the following themes:

- Vision – Community Character; what is our vision? What does small-town character mean? What is it about Hudson's character that we want to preserve; to change?
- Land Use Development (Planning & Zoning) – what do we mean by uncoordinated growth? What does good planning & development look like? How do we get there?
- Natural Resources conservation/recreation/open space: what types of areas should be prioritized? Where? How should conservation land/open space be used? How do we get there?
- Traffic – where are the greatest problem areas? What are the solutions?

The results of these sessions brought together the public input received from the online survey and the four public input sessions to create a multi-part vision statement outlined below.

Session B Conclusions

One of the greatest planning needs identified by participants in the public input sessions is the need for a community vision. The following were identified by participants as elements to be included in this vision.

Town Center. Most groups discussed the need or desire for a defined, walkable town center that provides a sense of place and a venue to bring the community together. Possible locations include:

- The town's historic, walkable economic center in the vicinity of Library Park.
- The Town's "official" historic center near Benson Park in the vicinity of the intersection of Central and Greeley Streets.
- Other locations along Lowell Road or Derry Street.

Natural Resources. Many participants identified Hudson's natural resources as one of its most valuable assets citing the following goals:

- Expand Conservation areas and increase open space.
- Build on existing open space assets such as Benson Park and Robinson Pond.
- Expand the existing trail network and facilitate connections between schools, parks, conservation areas, and other community facilities.

Traffic. While Hudson's location is certainly a strength, it brings with it the challenges of effective transportation and traffic solutions. The following goals were identified:

- Increase and expand transportation mobility options including public transportation (buses), sidewalks, bicycles, and commuter rail.

- Alleviate congestion on Lowell Road.
- Mitigate commuter traffic passing through Hudson including through residential neighborhoods.
- Consider another Merrimack River bridge crossing.

Land Use Participants indicated a desire for a balanced, planned approach to Hudson's land use development, with goals including:

- More open space conservation and protection in new developments.
- Focus commercial and industrial development within existing commercial/industrial areas.
- Encourage reuse or redevelopment of existing commercial buildings and sites rather than on undeveloped land.
- Improve design standards landscaping, architecture, and site design.

Due to the onset of the COVID-19 Pandemic and other challenges, progress on the Master paused in the spring of 2020. In the fall of 2022, the Planning Board resumed the Master Plan update effort. As a part of that effort, a second survey was conducted that built on the themes of the 2019 survey. 725 people responded to the 2022 survey. The results of the 2022 survey largely validated the results of the 2019 survey with strong support shown for expanding conservation land and open space (79%), creating a defined, walkable town center (64%), expanding sidewalks and trails (76%), preserving the character and integrity of existing neighborhoods (80%), protecting the town's rural/residential character (78%) and protecting the Town's historic resources (77%). There was also a strong sense that commercial industrial development should be focused in existing commercial and industrial areas (84%), encouraging the reuse and redevelopment of existing commercial/industrial sites (91%), and that design standards should be improved and energy efficient designs encouraged (71%). Traffic remained a major concern, but there was no overriding consensus on the Circumferential Highway (aka Hudson Boulevard).

To provide an opportunity to dive deeper into each of these key issue areas, two additional public input sessions were held in October of 2022; one virtual session and one in-person session. Every issue that was discussed among participants did not, of course, result in consensus, however, there are some definite outcomes that emerged from these sessions that supplement the results of the 2022 survey. These are summarized below by topic followed by a summary of the outcomes from each of the participating groups.

Transportation

Traffic congestion, the impact of though-traffic, speed, and safety were top priority concerns in all groups. Traffic issues on Wason Road and Lowell Road in particular were cited in every group. The proposed Circumferential Highway, also known as Hudson Boulevard, was discussed in all groups. The general consensus was that the project would serve mainly through traffic from surrounding towns and provide little benefit to Hudson residents, though this view was not universal. Concern was also expressed that the project would result in unacceptable environmental impacts. Though traffic related problems were a focus in all groups, there was little consensus on how to address these challenges. As was noted in one group: "If not the Circumferential, then what?" Overall, there was a strong consensus that that Hudson needs more sidewalks, particularly along major corridors and in the vicinity of schools.

Land Use/Zoning

There was a consensus in almost all groups that the General (G & G1) zoning districts need to be pared back significantly or eliminated entirely. Most participants felt that existing developed areas such as established residential neighborhoods in the G zones should be rezoned to reflect existing conditions. Consideration should also be given to making sure that there are adequate transitions or buffer areas between different types of uses such as between commercial and residential areas. Providing opportunities for commercial and industrial development in appropriate areas was also stressed as well as providing opportunities for small businesses. Concern was also expressed that important natural areas in the G zones should be conserved.

Aside from addressing the G zones, the need to protect groundwater, wetlands, woodlands, and other natural resources was stressed by multiple participants. Many also expressed a desire to see more walkable, mixed-use development, especially within a defined town center area.

The concept of fostering the development of a defined town center was raised in several groups. Though there are differences of opinion on where the town center is or ought to be and on the elements that make a town center, there was a general sense that it should be walkable, include green space, contain a mix of land uses, and have some form of public gathering space.

Community Design

Except for the need for more sidewalks and more walkable development, there was little consensus around issues related to community design. Better buffers between commercial and residential developments were raised in a few groups. In terms of building and site design, the barn at Countrybrook Farms Nursery & Garden Center on Lowell Road was cited as a good example of commercial development by several participants. Other individual sites mentioned included the Starbucks on Lowell Road and cluster of shops across from Fox Hollow.

As previously stated, Hudson seeks a balanced approach to growth and development that protects the features of Hudson that residents cherish while maintaining a strong tax base, preserving open space and mitigating the impact of the through-traffic that congests its most heavily traveled corridors. The goals outlined in the Master Plan are designed to help achieve these ends while guiding the development of the town into the future. Each of the eight Master Plan chapters also contain specific goals, objectives, and recommendations designed to build upon the vision expressed in this section.

# CHAPTER II - POPULATION AND HOUSING

## INTRODUCTION

The population and housing chapter of the Master Plan is the foundation upon which the plan is based. This chapter is broken into five major parts: Population and Housing Goals, Population, Housing, Methods for Encouraging and Meeting Local Needs, and Recommendations. The first section establishes the broad-based goals of the chapter and serves as a guide for recommendations. The second section investigates historic, current, and projected trends for Hudson residents and households in comparison to the NRPC region and State. The third section details housing construction, the different types and composition of housing, and the housing market in terms of renters and owners. The fourth section of the chapter provides technical expertise on the methods for meeting local needs, the principles of affordable housing, various regulatory options, an array of tools and resources for communities, as well as state and federal housing programs. The final section provides a list of recommendations that the Town of Hudson shall consider implementing when trying to achieve community housing goals.

This chapter is also designed to meet the requirements of NH RSA 674:2-III (l), which requires that master plans contain a housing section which:

> *"[ ] assesses local housing conditions and projects future housing needs of residents of all levels of income and ages in the municipality and the region as identified in the regional housing needs assessment performed by the regional planning commission pursuant to RSA 36:47, II, and which integrates the availability of human services with other planning undertaken by the community."*

## POPULATION AND HOUSING GOALS

Hudson should be a livable, affordable, multi-generational community that is appealing and supportive of income groups, ages, and family types. Hudson should strive to:

- Preserve the community character and integrity of existing neighborhoods
- Encourage sustainable and energy-efficient residential neighborhoods
- Enable innovative housing options that are affordable and suitable for all ages and family types
- Encourage mixed-use areas which promote live/work/play developments
- Promote linkages and integration between neighborhoods, community facilities, and work locations of residents
- Ensure that housing choices are available to meet the Town's fair share needs of current and future generations

## POPULATION

The population within the Town of Hudson, like many other communities, is heavily influenced by its surrounding region. Due to its location – directly adjacent to the City of Nashua, proximity to the F.E. Everett Turnpike and Daniel Webster Highway Corridor, 17 miles from the City of Manchester, and 45 miles from Boston – the Town's composition of people and housing needs are one of the most diverse in the State and NRPC region.

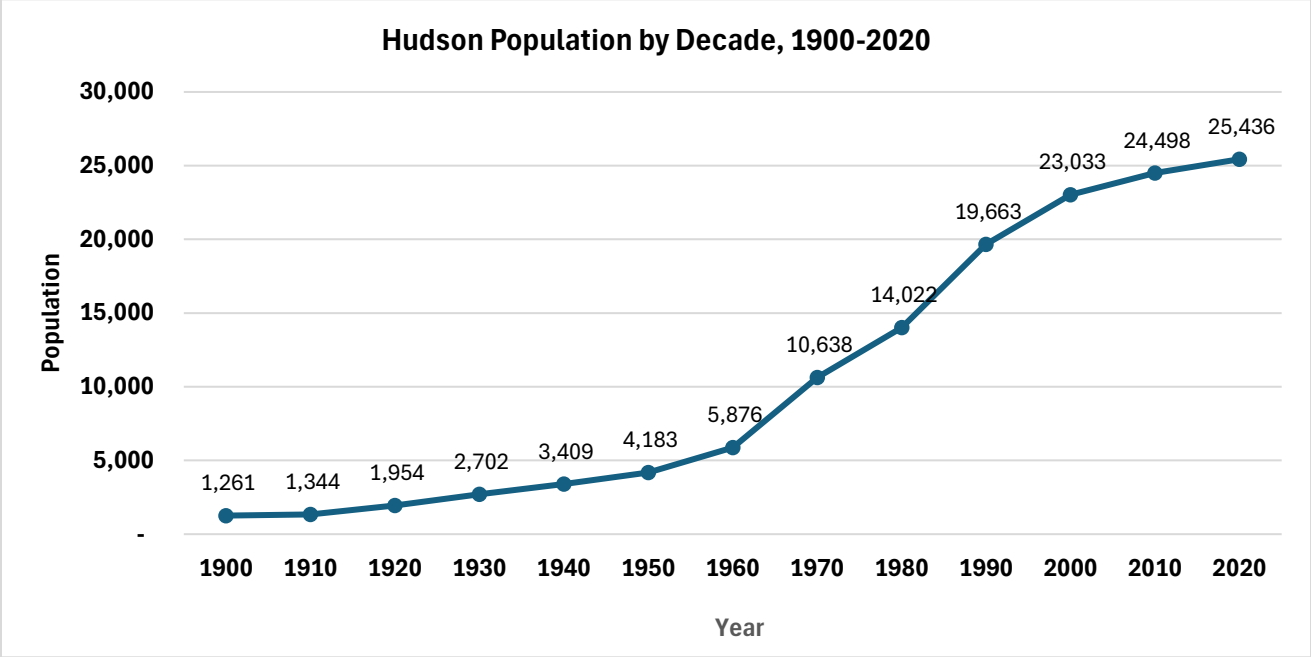
| 2023 Population Estimates | | |
|---|---|---|
| **Hudson** | **NRPC Region** | **State of NH** |
| 25,476 | 310,224 | 1,387,834 |

*Source: American Community Survey, 5-year estimates, 2023*

Hudson is the third most populous community, behind Nashua and Merrimack in the NRPC region. Like any other community, population growth and composition are impacted by the growth of neighboring communities. In the case of Hudson, its geographic proximity to Nashua, Manchester, northern Massachusetts, and the Greater Boston area plays an influential role in an array of population attributes. The following subsections will further detail of these measurements and characteristics.

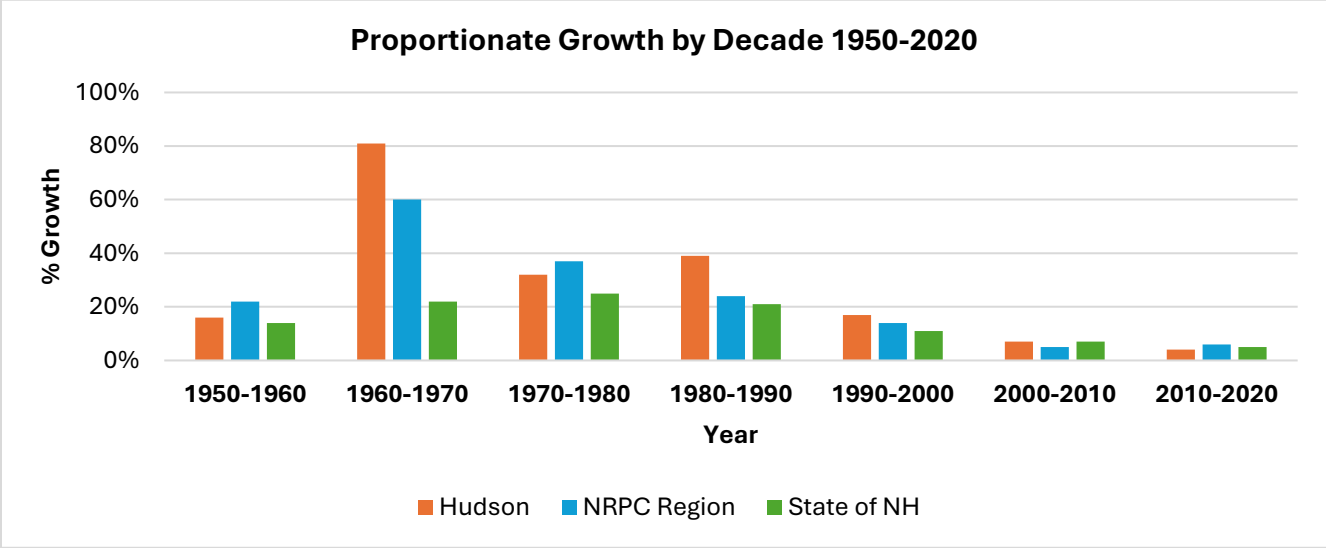
### Historic Population Trends

For much of the 1800s, the population of Hudson remained relatively stable, fluctuating between 1,064 and 1,344 people. At the end of the 19th and into the early 20th century, people across the northeast United States were migrating west or into cities for industrial employment. The City of Nashua became an economic hub for industrial activity, most of which was concentrated between downtown Nashua and the Taylor Falls Bridge area. The combination of migration and industrial expansion had a profound impact on the need for more workers, housing, and other services.




*Source: US Decennial Census, 1900-2020*

In the years following 1910, the population began to grow considerably and by 1960, Hudson's population had reached 5,876 people. Then in the 1960s, the Town experienced a decade of extremely rapid population increase stimulated by increased suburbanization and the growth of manufacturing and high-technology industries in Hudson, Nashua, and the Greater Boston metropolitan area. Between 1960 and 1970, Hudson grew by a whopping 81%; historically, its highest growth rate ever. The spillover from neighboring communities and expanding migration from Massachusetts was made possible by major expansions to the State and Federal highway system of the mid-century. In two decades from 1970 to 1990, Hudson continued to experience considerable growth. However, from the beginning of the 1990s and through the end of the 2000s, Hudson's population growth significantly slowed. According to Census data, the Town has only grown by about 938 people since 2010.




***Source:*** *US Decennial Census 1950-2020*

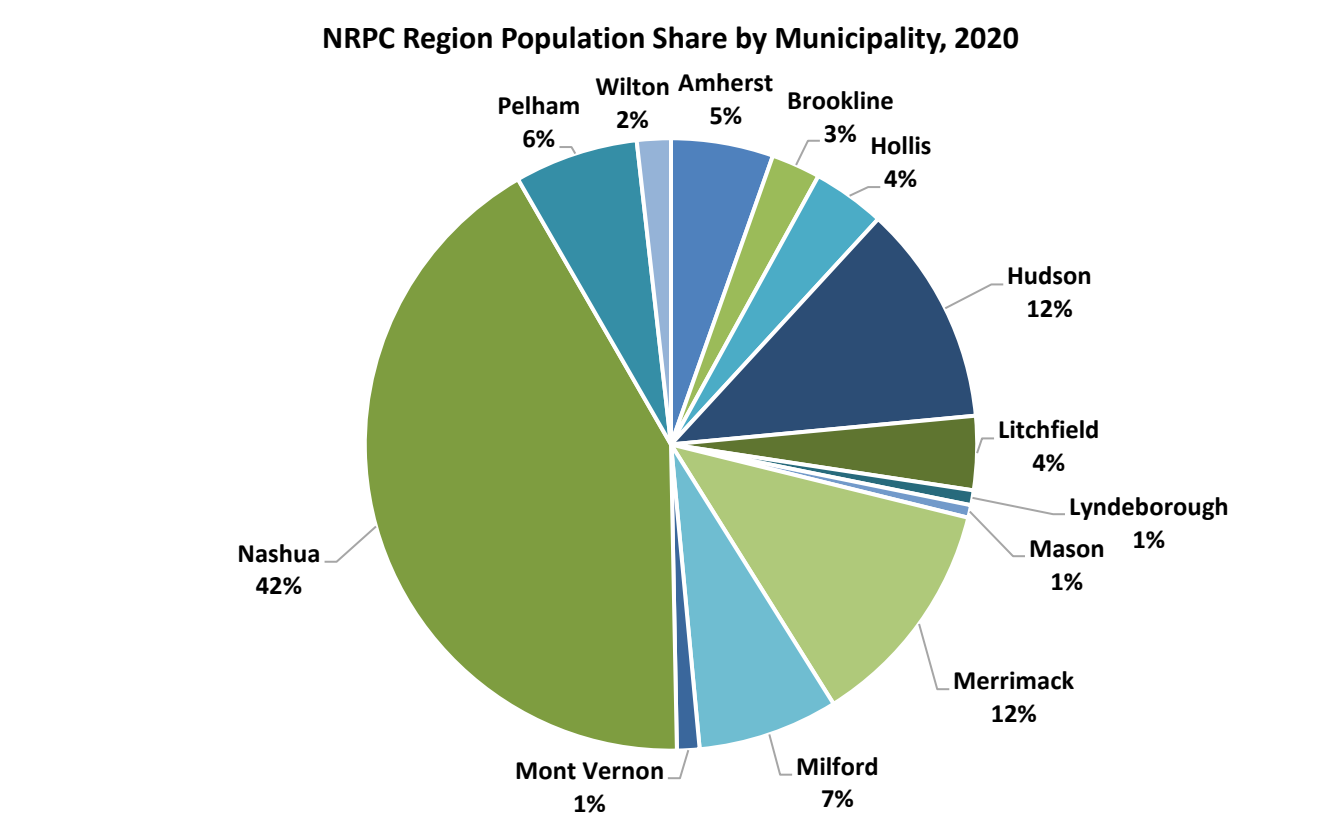
In comparison, the NRPC region has experienced a similar ebb and flow of population growth while the State has generally grown at a lower rate. All three geographic areas eventually settled into the 5% to 7% range in 2010 and 4% to 6% in 2020. The slowing of population growth rates in the State, region, and Town have reduced growth-related strains on community facilities and services but have also had an adverse impact on our ability to support the economy's workforce needs.

| Proportionate Growth by Decade, 1950-2020 | | | | | | |
|---|---|---|---|---|---|---|
| **Year** | **Hudson** | **Hudson** | **NRPC Region** | **NRPC Region** | **State of NH** | **State of NH** |
| **1950-1960** | 5,876 | 16% | 63,216 | 22% | 606,900 | 14% |
| **1960-1970** | 10,638 | 81% | 100,862 | 60% | 737,579 | 22% |
| **1970-1980** | 14,022 | 32% | 138,089 | 37% | 920,475 | 25% |
| **1980-1990** | 19,530 | 39% | 171,478 | 24% | 1,109,252 | 21% |
| **1990-2000** | 22,928 | 17% | 195,788 | 14% | 1,235,786 | 11% |
| **2000-2010** | 24,467 | 7% | 205,765 | 5% | 1,316,470 | 7% |
| **2010-2020** | 25,436 | 4% | 217,543 | 6% | 1,377,529 | 5% |

*Source: US Decennial Census 1950-2020*

## Population Share

Over the past 60-plus years, Hudson has consistently comprised a larger share of the regional population with each passing decade. Over this time, the Town of Hudson – like Merrimack – grew by about 20,000 people and accounts for roughly 12% of the region's population. The City of Nashua experienced growth of roughly 50,000 people over this time period; however, their regional share has decreased over time and has held steady at around 42% for the 2020 Census. These results are consistent with the national trend of decentralization to suburban areas over the last half of the 20th century. Although, recent data suggest an increasing trend of migration and housing development within certain larger urban centers such as Boston.




*Source: 2020 US Decennial Census, Table DP1*

## Population Density

Population density reflects the relative intensity of development and is an important indicator for understanding the broad sense of community character. Population density, as a calculation of people per area, reveals the concentration of community settlement and the existing extent of development and/or need for services. This information is used in the planning and implementation of many community aspects from land use, zoning, transportation infrastructure, land conservation, fire and police services, school facilities, and community amenities. The collective impact of these settlement patterns and corresponding decisions aid the cultivation of the overall sense of community development; more commonly, we may describe these communities as urban centers, small towns, suburban bedroom communities, rural areas, or anywhere in between.

| Population Density, Persons per Square Mile, 2000-2040 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Square Miles | 2000 | | 2010 | | 2020 | | 2030 | | 2040 | |
| | | Population | Density | Population | Density | Population | Density | Population | Density | Population | Density |
| Amherst | 34.5 | 10,769 | 312 | 11,201 | 325 | 11,470 | 332 | 11,691 | 339 | 11,620 | 337 |
| Brookline | 20.1 | 4,181 | 208 | 4,991 | 248 | 5,234 | 260 | 5,599 | 279 | 5,818 | 289 |
| Hollis | 32.6 | 7,015 | 215 | 7,684 | 236 | 7,756 | 238 | 7,936 | 243 | 8,317 | 255 |
| Hudson | 29.2 | 22,928 | 785 | 24,467 | 838 | 25,076 | 859 | 26,132 | 895 | 26,888 | 921 |
| Litchfield | 15.1 | 7,360 | 487 | 8,271 | 548 | 8,495 | 563 | 8,707 | 577 | 8,894 | 589 |
| Lyndeborough | 30.6 | 1,585 | 52 | 1,683 | 55 | 1,969 | 64 | 2,075 | 68 | 2,091 | 68 |
| Mason | 24 | 1,147 | 48 | 1,382 | 58 | 1,420 | 59 | 1,496 | 62 | 1,466 | 61 |
| Merrimack | 33 | 25,119 | 761 | 25,494 | 773 | 26,654 | 808 | 27,885 | 845 | 28,317 | 858 |
| Milford | 25.9 | 13,535 | 523 | 15,115 | 584 | 15,909 | 614 | 16,806 | 649 | 17,374 | 671 |
| Mont Vernon | 16.8 | 2,034 | 121 | 2,409 | 143 | 2,734 | 163 | 2,806 | 167 | 2,769 | 165 |
| Nashua | 30.6 | 86,605 | 2,830 | 86,494 | 2,827 | 88,915 | 2,906 | 91,449 | 2,989 | 91,768 | 2,999 |
| Pelham | 26.7 | 10,914 | 409 | 12,897 | 483 | 13,392 | 502 | 14,211 | 532 | 14,635 | 548 |
| Wilton | 26.1 | 3,743 | 143 | 3,677 | 141 | 3,843 | 147 | 3,859 | 148 | 3,894 | 149 |
| NRPC Region | 345.2 | 196,935 | 570 | 205,765 | 596 | 212,867 | 617 | 220,651 | 639 | 223,852 | 648 |

*Source: US Census; NRPC Projections (2018)*

In 2010, Hudson had the second-highest overall population density in the region and had a considerably higher density than the regional average. As such, Hudson's density levels are well above many of the more rural towns to the west such as Lyndeborough, Mason, Mont Vernon, or Wilton and rival that of Merrimack. To varying degrees, all NRPC member communities will experience an uptick density between now and 2040. It is estimated that Hudson will add about 80 people per square mile from 2010 to 2040, however, the Town is expected to remain about 30% as dense as Nashua and relatively comparable to Merrimack over these next three decades. Though portions of the town may urbanize to some extent, Hudson will remain a largely suburban community for the foreseeable future.

## Migration and Natural Increase

Part of understanding historic and projected population growth lies in the fluctuation between natural increase – births v. deaths – and the migration of people from other communities, states, and countries. The two decades between 1970 and 1990 were quite similar in that roughly two-thirds of Hudson's population growth came from people migrating into the Town (5,808 migrants of the 8,892 net population growth). After a reversal of this trend during the 1990s, the 2000s resulted in a net decrease in the number of migrants while 104% of the Town's growth came from natural increase.

It is estimated that this trend will again reverse with migration outpacing natural increase in the years to come, though at rates far lower than experienced during the late 20th century. NRPC has projected that Hudson's population growth during the 2010s will result in a 60/40 percent split between migration and natural growth

increases. For the two decades between 2020 and 2040, all of Hudson's net population growth is expected to come from people migrating to the Town.

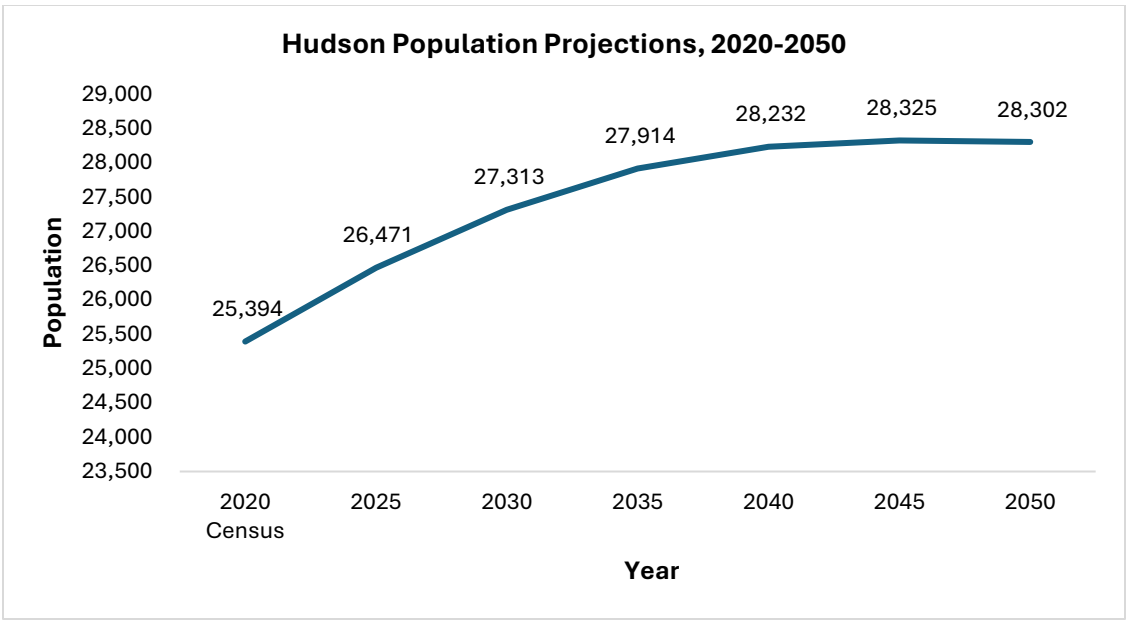
| Historic and Projected Population Growth, Natural Increase and Migration, 1970-2040 | | | | | |
|---|---|---|---|---|---|
| | Total Population Change | Numeric Natural Increase | Percent Natural Increase | Numeric Migration Increase | Percent Migration Increase |
| **Hudson** | | | | | |
| **1970-1980** | 3,384 | 1,324 | 39% | 2,060 | 61% |
| **1980-1990** | 5,508 | 1,760 | 32% | 3,748 | 68% |
| **1990-2000** | 3,398 | 2,270 | 67% | 1,128 | 33% |
| **2000-2010** | 1,539 | 1,596 | 104% | -57 | -4% |
| **2010-2020** | 1,159 | 471 | 41% | 688 | 59% |
| **2020-2030** | 911 | -187 | -21% | 1,098 | 121% |
| **2030-2040** | 582 | -647 | -111% | 1,229 | 211% |
| | | | | | |
| **NRPC Region** | | | | | |
| **1970-1980** | 37,501 | 11,520 | 31% | 25,981 | 69% |
| **1980-1990** | 33,809 | 15,620 | 46% | 18,189 | 54% |
| **1990-2000** | 24,245 | 16,238 | 67% | 8,007 | 33% |
| **2000-2010** | 8,830 | 12,324 | 140% | -3,494 | -40% |
| **2010-2020** | 11,383 | 5,762 | 51% | 5,621 | 49% |
| **2020-2030** | 5,481 | -1,048 | -19% | 6,529 | 119% |
| **2030-2040** | 1,369 | -6,578 | -481% | 7,947 | 581% |

*Source: US Decennial Census; NRPC Projections (2018)*

## Population Projections

The New Hampshire Office of Planning and Development (OPD) calculates population projections for each municipality in the state by combining census data with birth and death data from the NH Department of State/Division of Vital Records Administration and other sources. It is then used to develop survival and fertility rates and age-specific migration rates. The births and deaths span the decade, with rates specific to New Hampshire.

Based on OPD's in-house projections, Hudson is projected to increase in population slowly until about 2040 where the growth rate then plateaus. If these projections hold true, an additional 2,908 people will be added to Hudson's population by 2050. These low growth rates are supported by regional and state data which indicate lower fertility rates and slowing of migration to the area. With such minimal change, it is anticipated that Hudson will continue to reflect a suburban community with urban elements such as multi-family and non-residential development.




***Source:*** *NH Office of Planning and Development, State, County and Municipal Population Projections, September 2022*

## Race

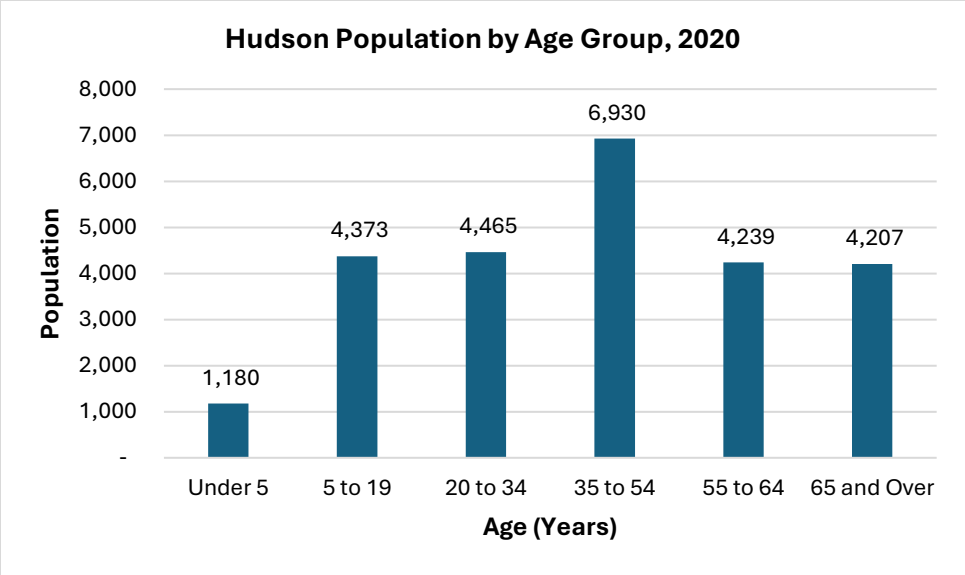
Southern New Hampshire has become increasingly diversified over time and more so than other regions in New Hampshire. The City of Nashua is one of the most diverse communities in the State, along with Manchester. However, these cities tend to have much higher concentrations of minorities than neighboring communities. As of 2020, non-white persons in Hudson comprised of about 5.5% of the Town's population. In comparison, 17.3% of the NRPC region is estimated to be of non-white persons while the State is closer to 11.7%.

| Population by Race, 2000-2020 | | | | | | |
|---|---|---|---|---|---|---|
| | Total | | | Percent Non-White | | |
| | 2000 | 2010 | 2020 | 2000 | 2010 | 2020 |
| Hudson | 22,091 | 24,467 | 25,394 | 3.7% | 7.0% | 5.5% |
| NRPC Region | 183,081 | 205,765 | 217,543 | 6.5% | 9.8% | 17.3% |
| State of NH | 1,186,851 | 1,316,470 | 1,377,529 | 4.0% | 6.1% | 11.7% |

*Source: US Decennial Census 2000-2020*

## Age

Of Hudson's roughly 25,000-person population, approximately 30% of those are aged between 30 and 54. An additional 30% of the population is split among those 20 to 34 and those 55 to 64 years old. This combined 60% of the population is an important demographic in that they comprise the majority of the Town's workforce. Consequently, this population accounts for the majority of household earnings that go to paying rents, buying homes, paying taxes, and further propelling consumer spending. In 2000 and 2010, this combined cohort accounted for a slightly higher 62% of Hudson's population.




*Source: US Decennial Census 2020*

The other two populations, those under 19 years old and those 65 and over, account for the remaining 40% of the population, also play major roles in the community's housing composition, service needs, and overall growth. The roughly 6,000 school-aged children in Hudson have a tremendous impact on issues such as school enrollment and home-buying decisions for parents. The roughly 4,000 people aged over 65 years old are comprised of typically smaller households with housing and service needs that differ from those of younger residents.

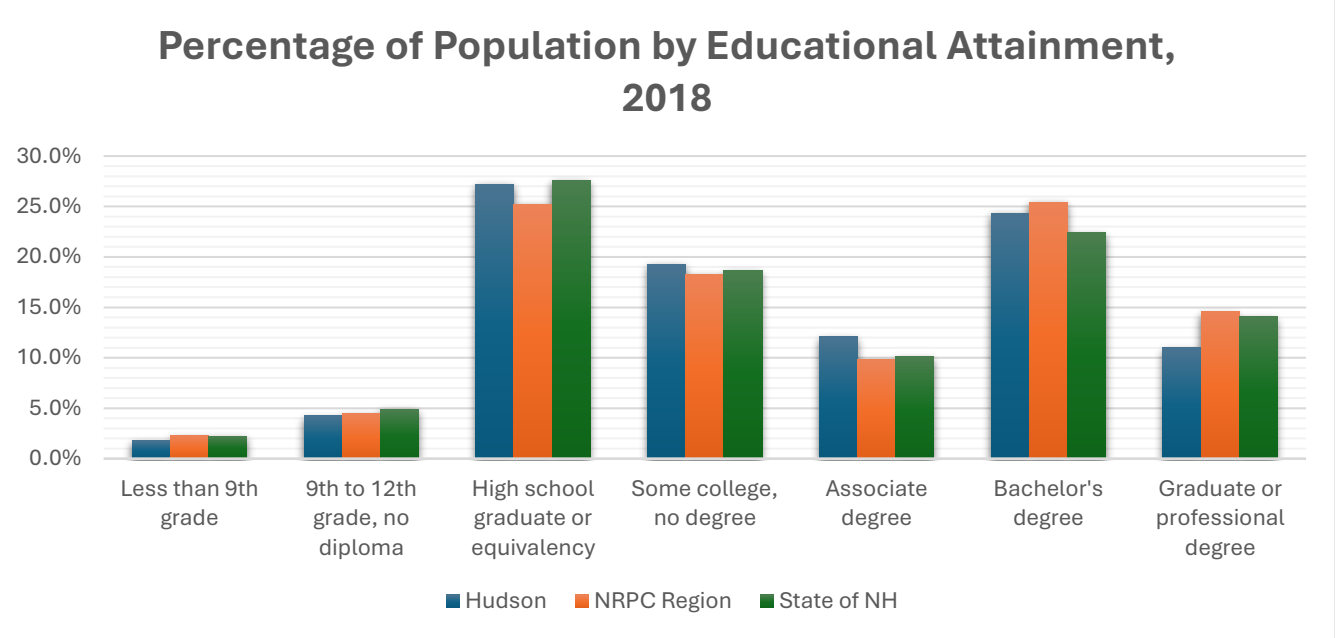
| Population by Age, 2020 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Total** | **Under 5** | **5 to 19** | **20 to 34** | **35 to 54** | **55 to 64** | **65 and Over** |
| **Hudson** | 25,394 | 1,180 | 4,373 | 4,465 | 6,930 | 4,239 | 4,207 |
| **NRPC Region** | 217,543 | 10,622 | 38,290 | 40,136 | 57,209 | 34,732 | 36,554 |
| **State of NH** | 1,377,529 | 61,480 | 231,222 | 257,146 | 340,287 | 221,440 | 265,954 |

*Source: US Decennial Census 2020*

Since 2000, there have been steady decreases in the percentage of the population under 55 years old within Hudson, the NRPC region and the State. Growth within New Hampshire has been primarily driven by those at or reaching retirement age. The figure below supports a similar narrative for Hudson. The most worrisome indication is those within the 35 to 54-year-old range. This population is conceivably in their most prime earning, home purchasing, and child-raising years. A decreasing trend of this population could mean that communities are missing out on the revenue which comes from a variety of taxes such as those from real estate sales, property, meals, and other fees. Additionally, the decreasing trend of this middle-aged population eventually reverberates down to decreases in the number of children. However, there is a promising trend for young adults, aged 20 to 34 years old, who have the potential to become long-term revenue-generating residents.

## Educational Attainment

Hudson, like many communities in New England, has a relatively high level of educational attainment. As of 2023, about 93% of the Hudson population has earned at least a high school diploma; about 1% above the NRPC region, and 2% above the State. While the Town has a higher percentage of those with some college or an associate degree, it does lag behind the region and State for graduate or professional degrees. Empirical evidence has linked higher levels of educational attainment to higher incomes.




**Source:** ACS, Table S1501 (2014-2018, 5-year Estimates)

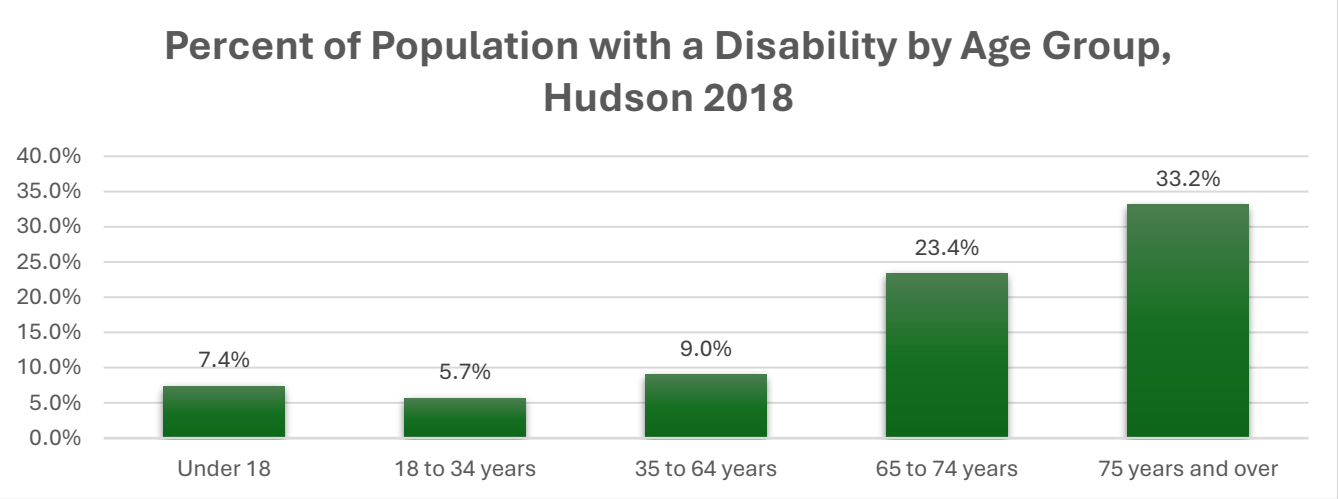
## People with Disabilities

According to the US Census Bureau, persons with disabilities are those who have serious difficulties with at least one of the following: hearing, vision, cognition (physical, mental, or emotional), ambulatory (walking or climbing stairs), self-care (bathing or dressing), or independent living (doing errands, visiting a doctor, or going shopping). Across the NRPC region and within Hudson, about 11% of the total population has at least one disability.

| People with Disabilities, 2018 | | | | | | |
|---|---|---|---|---|---|---|
| | Total Non-Institutionalized Population | Population under 18 years old with Disability | Population 18-64 years old with Disability | Population 65 and over with Disability | Total with Disability | Percent Total Population with Disability |
| **Hudson** | 25,062 | 390 | 1,270 | 1,049 | 2,709 | 10.8% |
| **NRPC Region** | 210,191 | 2,035 | 11,511 | 9,268 | 22,814 | 10.9% |
| **State of NH** | 1,326,243 | 12,711 | 84,966 | 69,967 | 167,644 | 12.6% |

**Source:** ACS, Table S1810 (2014-2018, 5-year Estimates)

When disabilities among Hudson residents are broken out by age group, a more comprehensive picture indicates that a majority are over the age of 65. About 24% of those aged 65 to 74 years old and 33% of those 75 or over have at least one disability. Of the six disability types across all ages, difficulties with cognition, ambulatory movement, and independent living comprise of the largest percentages. Housing and other services which support the needs of the disabled community are vital to ensuring community inclusion and connectivity for all residents.




**Source:** ACS, Table S1810 (2014-2018, 5-year Estimates)

## Households

Total Households

Like population trends, there has been comparatively slow growth in the number of households in recent years. Although the decennial census reported that Hudson grew by nearly 900 households from 2000 to 2010, the 2018 ACS reported an estimated of just over 100 households since. It is also key to point out the slight growth in the average number of people per household in Hudson.

**Total Households, 2000-2018**

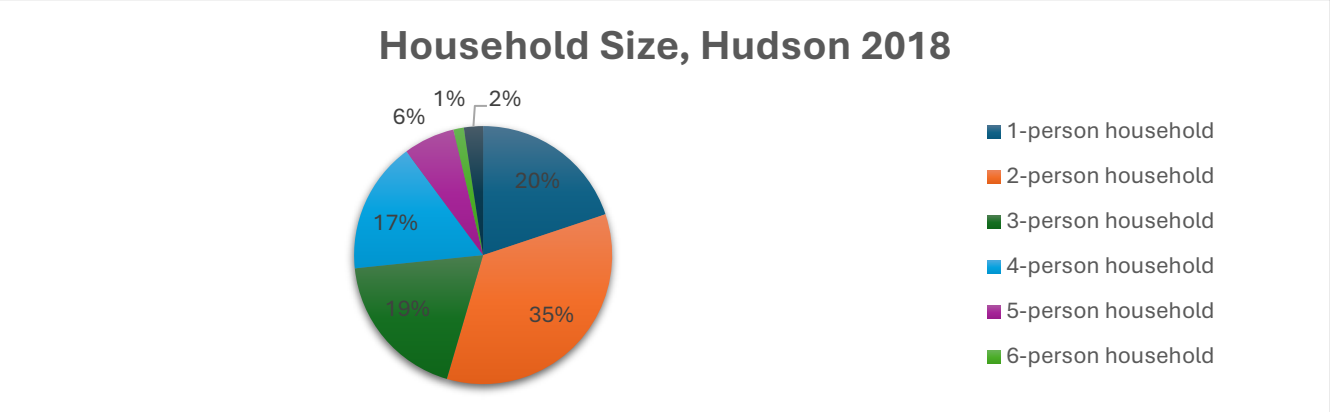
| | Total Households | | | Average # of Persons per Total HH | | |
|---|---|---|---|---|---|---|
| | 2000 | 2010 | 2018 | 2000 | 2010 | 2018 |
| **Hudson** | 8,034 | 8,900 | 9,018 | 2.83 | 2.73 | 2.77 |
| **NRPC Region** | 72,410 | 78,494 | 81,651 | 2.85 | 2.62 | 2.56 |
| **State of NH** | 474,606 | 518,973 | 531,212 | 2.53 | 2.46 | 2.47 |

**Source:** US Census; ACS, Table S1101 (2014-2018, 5-year Estimates)

Household Size

Household size is a critical indicator of housing need. Approximately 54% of households in Hudson are comprised of 2 and 3 people, while the remaining 46% (roughly 4,200 households) make up the rest. As can be

seen in the graph below, however, there is a wide array of household sizes that require a correspondingly diverse array of housing types and sizes.




*Source: ACS, Table B11016 (2014-2018, 5-year Estimates)*

Between 2010 and 2018, there has been a pronounced increase in one and two-person households and a significant decrease in three to six-person households with a particularly pronounced drop in the number of four-person households. These changes reflect the significant decline in the number of children in Hudson, noted above, as well as an increase in people aged 65-years and above. Shifts in household size have direct implications on housing type and size as well as on community facility and service needs. Also notable is the increase in the number of households with seven or more people. This increase may indicate a trend toward multi-generational and shared housing. The increase in households with seven or more people resulted in a slight uptick in Hudson's average household since 2010.

Despite the trend in Hudson toward smaller households, Hudson's average household size is still noticeably larger in comparison to the region and state.

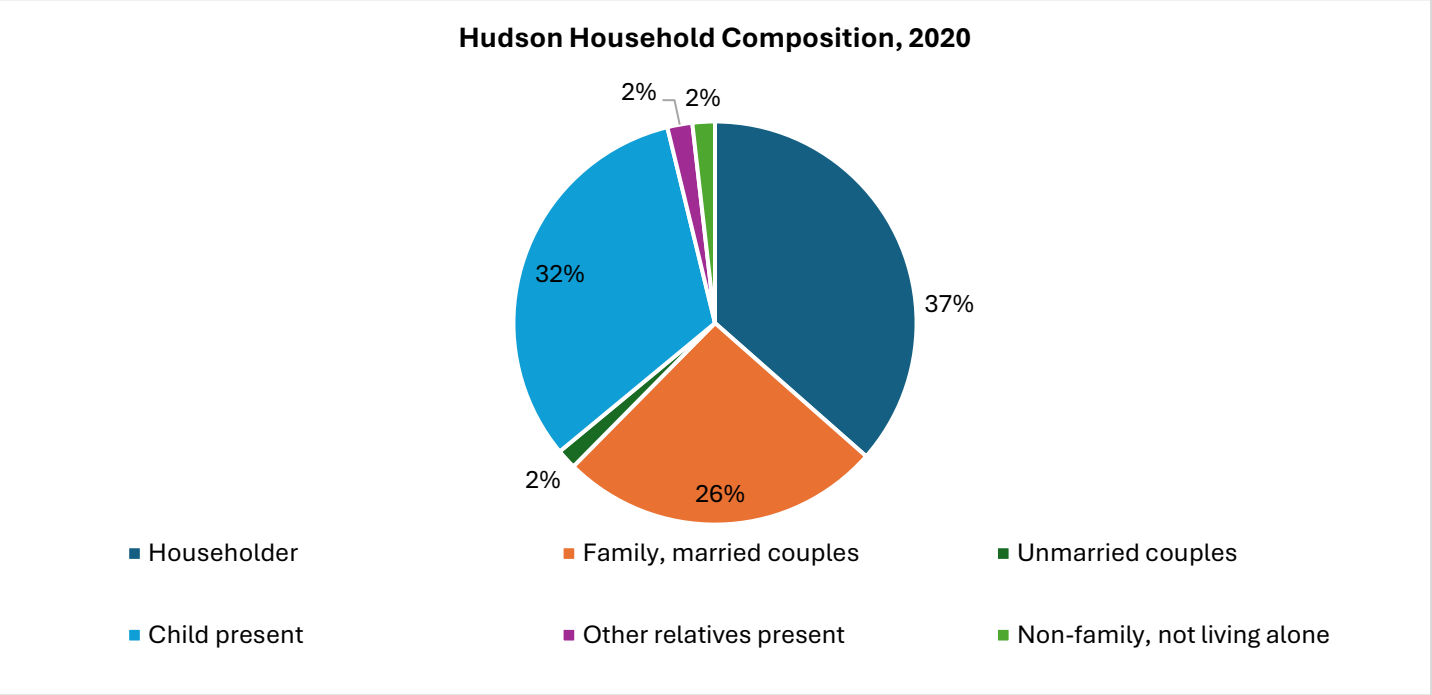
| Total Households, 2018 | | | | | | |
|---|---|---|---|---|---|---|
| | **Total Households** | **Avg. # of Persons per Total HH** | **Total Family Households** | **Avg. # of Persons per Family HH** | **Total Non-Family Households** | **Avg. # of Persons per Non-Family HH** |
| **Hudson** | 9,018 | 2.77 | 6,649 | 3.21 | 2,369 | 1.32 |
| **NRPC Region** | 85,651 | 2.56 | 55,932 | 3.06 | 25,719 | 1.29 |
| **State of NH** | 531,212 | 2.47 | 341,752 | 3.03 | 189,460 | 1.31 |

**Source:** ACS, Table S1101 (2014-2018, 5-year Estimates)

## Household Composition

In addition to size, the US Census Bureau also categorizes households as "family" and "non-family" with various subcategories. As of 2020, families comprised of married couples accounted for approximately 26% of all

households while single householders accounted for 37%, non-families accounted for 2%, and families with children present accounted for 37%.




*Source: US Decennial Census, 2020*

The most significant changes in Hudson's household composition are consistent with the changes the Town has experienced in population by age group and household size: a decrease in the number of families with children and the increase in the number of non-family households living alone. The figure below indicates that fewer households are comprised of married couples and even fewer family households have children. There were also noticeable shifts among single-parent households with single-female headed households decreasing alongside and an almost proportional increase in single-male headed households. Finally, non-family households have experienced considerable increases since 2010, particularly for those living alone.

## Median Income

Household income levels are an important measure of economic strength, quality of life, and the need for services within a community or region. The following tables display the median income across various types of households within Hudson, Hillsborough County, and the State. Relative household income is also key to understanding housing costs and needs. The relative worth of a household income can be abnormally skewed by inflation and create a misperception of economic health. In the interest of this chapter, it is important to compare household incomes with rising housing costs and understand the influence of inflation on both. In addition, the median household incomes displayed in the following subsections take into account both family and non-households, while per capita income is simply based on each individual person basis.

### Household Income

As can be seen in the table below, Hudson households and individuals have become more affluent since 2010. Median Household income within Hudson increased by 53.8% to $124,973 between 2010 and 2023 compared to a 44.9% increase for the County and a 51.1% increase for the State. Per Capita income in Hudson increased even

more sharply over the 2010 to 2023 time period by 76.4% as opposed to a 37.7% for the County and an increase of 41.2% for the State. Increasing household and per capita incomes are an indicator of Hudson's economic strength as well as its quality of life and overall desirability.

| Median Income, 2010-2023 | | | | | | |
|---|---|---|---|---|---|---|
| | Median Household Income | | | Per-Capita Income | | |
| | 2010 | 2010 (in 2018 dollars) | 2023 | 2010 | 2010 (in 2018 dollars) | **2023** |
| **Hudson** | $81,242 | $93,123 | $124,973 | $32,157 | $36,859 | $56,725 |
| **Hillsborough County** | $69,321 | $79,459 | $100,436 | $33,108 | $37,950 | $52,243 |
| **State of NH** | $63,277 | $72,531 | $95,628 | $31,422 | $36,017 | $50,867 |

*Source: US Census*

| Percent Change in Median Income, 2010-2023 | | |
|---|---|---|
| | Median Household Income | Per-Capita Income |
| **Hudson** | 53.8% | 76.4% |
| **Hillsborough County** | 44.9% | 37.7% |
| **State of NH** | 51.1% | 41.2% |

*Source: US Census*

## HOUSING

There are several data resources that provide housing statistics and trends. The US Census Bureau's decennial census and ACS provide a wide range of housing characteristics dating back decades and centuries ago. The NH Housing and Finance Authority (NHHFA) also provides valuable information in broad, localized terms. NHHFA includes important information related to housing units, building permits, home sales, etc. The following subsections help describe the current housing conditions, influencing factors, and the historical trends in the perspective of Hudson, the NRPC region, and the State of New Hampshire.

### Housing Units

Since 1960, the Town of Hudson has experienced an eleven-fold increase in the number of housing units. In comparison, the NRPC region and State experienced between a three- and four-fold increase over that same time period. Hudson's increases have equated to roughly 9,000 new units since 1960 with two noticeable spikes in the 1960s and 1980s including an astonishing 238% increase between 1960 and 1970. Current estimates of the 2010s indicate a significant drop in housing production for the first 8 years of the decade.

| Housing Unit Totals, 1960-2020 | | | |
|---|---|---|---|
| | **Hudson** | **NRPC Region** | **State of NH** |
| **1960** | 865 | 21,002 | 224,440 |
| **1970** | 2,920 | 31,260 | 280,962 |
| **1980** | 4,369 | 47,944 | 386,381 |
| **1990** | 6,902 | 66,375 | 502,247 |
| **2000** | 8,034 | 74,341 | 547,024 |
| **2010** | 9,213 | 82,568 | 614,238 |
| **2020** | 9,839 | 93,955 | 638,795 |

*Source: US Decennial Census, 1960-2020 Table DP1*

Similarly, the NRPC region followed this same trend with large growth from 1960 to 1990 while the State experienced its largest growth in the 1970s and 80s. With each passing decade, Hudson, the NRPC region, and the State have all continued to slow their production rates.

| Housing Unit Growth in Comparison to the Previous Decade Totals, 1960-2020 | | | | | | |
|---|---|---|---|---|---|---|
| | Hudson | | NRPC Region | | State of NH | |
| | Numeric | Percentage | Numeric | Percentage | Numeric | Percentage |
| **1960-1970** | 2,055 | 238% | 10,258 | 49% | 56,522 | 25% |
| **1970-1980** | 1,449 | 50% | 16,684 | 53% | 105,419 | 38% |
| **1980-1990** | 2,533 | 58% | 18,431 | 38% | 115,866 | 30% |
| **1990-2000** | 1,132 | 16% | 7,966 | 12% | 44,777 | 9% |
| **2000-2010** | 1,179 | 15% | 8,227 | 11% | 67,214 | 12% |
| **2010-2020** | 626 | 7% | 11,387 | 14% | 24,557 | 8% |

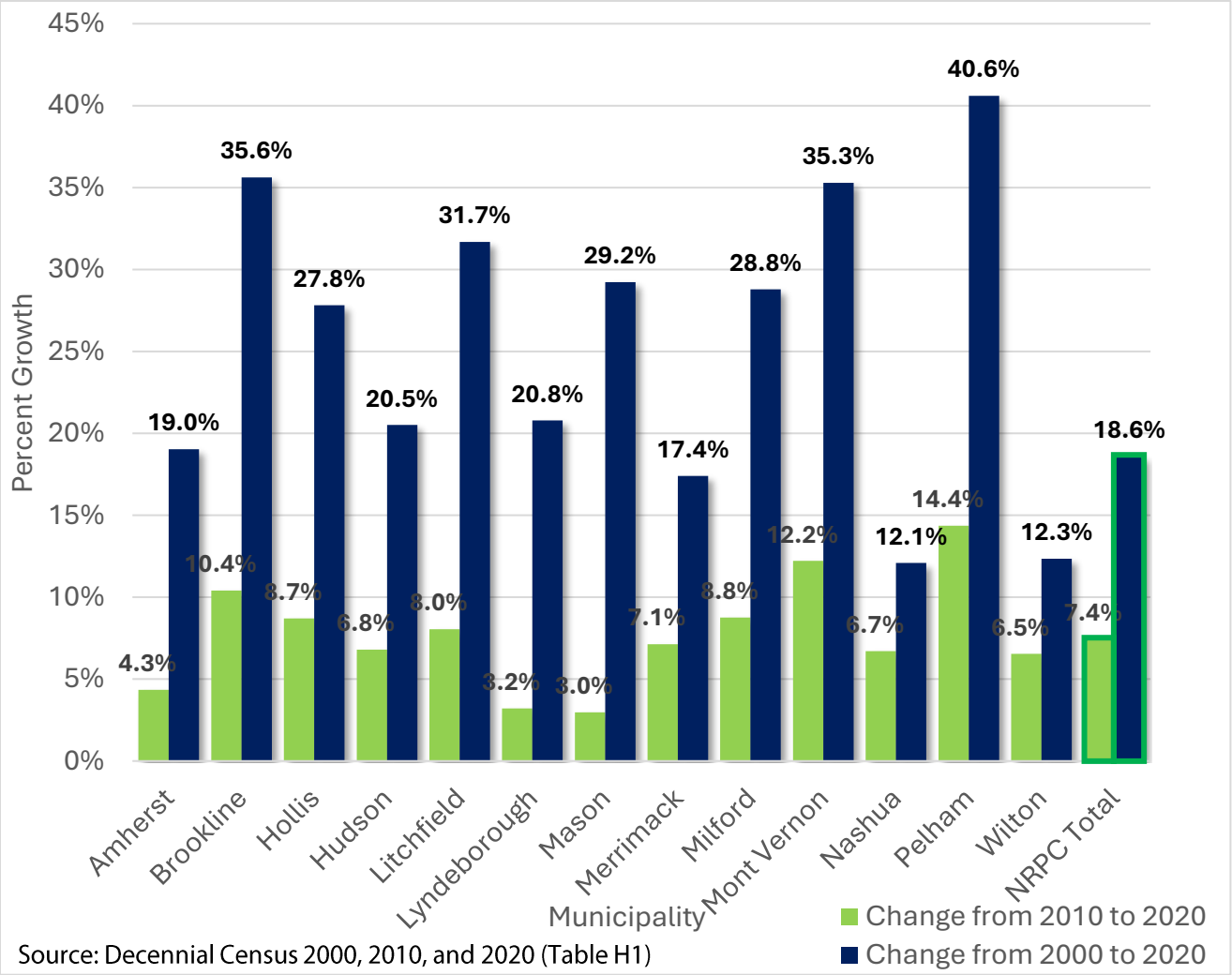
*Source: US Decennial Census 1960-2020*

There are a number of different reasons as to why housing production can slow including changing demographics and migration, the slowing of demand or preference, stagnant income levels, tighter lending practices, increases to development costs, restrictive land use regulations, or the complete build-out of an area. Over time, communities go through different phases or combinations of these scenarios which impact their housing unit growth. The slowing pace of housing development in Hudson appears to be driven largely by a decline in migration as well as a steep drop in the number of people in the prime home-buying 35 to 54 age group coupled with a large increase in the population of those aged 65 or older.

## Building Permits

Building permit data in the report updates the 2020 Census and ACS data and are collected via an annual mail survey of municipalities. While not all building permits result in actual construction, NHOSI does request that municipalities report on the number of expired permits from the previous year. To the extent possible, these figures contained in this report represent the actual number of housing units.

**Regional Building Permit Data – 2010 - 2020**




Source: Decennial Census 2000, 2010, and 2020 (Table H1)

**Regional Building Permit Data – 2010 - 2020**

| Municipality | Total Housing Units | | | Change from 2000 to 2020 | | Change from 2010 to 2020 | | Share of Region | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2010 | 2020 | Numeric | Percent | Numeric | Percent | 2000 | 2010 | 2020 |
| Amherst | 3,752 | 4,280 | 4,466 | 714 | 19.0% | 186 | 4.3% | 5.0% | 5.2% | 5.0% |
| Brookline | 1,384 | 1,700 | 1,877 | 493 | 35.6% | 177 | 10.4% | 1.9% | 2.1% | 2.1% |
| Hollis | 2,491 | 2,929 | 3,184 | 693 | 27.8% | 255 | 8.7% | 3.3% | 3.5% | 3.6% |
| Hudson | 8,165 | 9,212 | 9,839 | 1,674 | 20.5% | 627 | 6.8% | 10.9% | 11.2% | 11.1% |
| Litchfield | 2,389 | 2,912 | 3,146 | 757 | 31.7% | 234 | 8.0% | 3.2% | 3.5% | 3.5% |
| Lyndeborough | 587 | 687 | 709 | 122 | 20.8% | 22 | 3.2% | 0.8% | 0.8% | 0.8% |
| Mason | 455 | 571 | 588 | 133 | 29.2% | 17 | 3.0% | 0.6% | 0.7% | 0.7% |
| Merrimack | 8,959 | 9,818 | 10,517 | 1,558 | 17.4% | 699 | 7.1% | 12.0% | 11.9% | 11.9% |
| Milford | 5,316 | 6,295 | 6,846 | 1,530 | 28.8% | 551 | 8.8% | 7.1% | 7.6% | 7.7% |
| Mont Vernon | 720 | 868 | 974 | 254 | 35.3% | 106 | 12.2% | 1.0% | 1.1% | 1.1% |
| Nashua | 35,387 | 37,168 | 39,663 | 4,276 | 12.1% | 2495 | 6.7% | 47.3% | 45.0% | 44.7% |
| Pelham | 3,740 | 4,598 | 5,258 | 1,518 | 40.6% | 660 | 14.4% | 5.0% | 5.6% | 5.9% |
| Wilton | 1,451 | 1,530 | 1,630 | 179 | 12.3% | 100 | 6.5% | 1.9% | 1.9% | 1.8% |
| **NRPC Total** | **74,796** | **82,568** | **88,697** | **13,901** | **18.6%** | **6129** | **7.4%** | **100.0%** | **100.0%** | **100.0%** |

NHOPD provides an annual report on short- and long-term trends in housing construction and total housing supply across the State of New Hampshire. It is also worth noting that duplexes and other attached units like single-family homes with accessory dwelling units (ADUs), are categorized as multi-family units. Permits are typically valid for one year. Some permits never result in actual construction and the permit expires[1].

Since 2000, there have been over 1,500 housing units constructed (executed building permits) in Hudson with over two-thirds (1,035 of 1,541 units) of them completed in the first 10 years. Approximately 72% of all the housing units constructed from 2000 to 2018 were for single-family detached units while the remaining 28% comprised of some form of a multi-family structure.

[1] **Source:** NHOSI, Current Estimates and Trends in New Hampshire's Housing Supply (2019)

Between 2020 and 2023, 328 housing units have been constructed (executed building permits) in Hudson. Approximately 37.8% of all the housing units constructed from 2020 to 2023 were for single-family detached units while 36.3% were for duplex units. Note that an additional 272 units would be needed to meet the Nashua Regional Planning Commission (NRPC) Regional Housing Needs Assessment (RHNA) total housing unit production target of 600 units for 2025 and an additional 767 units will be needed to achieve the RHNA 2030 target of 1,095 units.

**Annual Building Permits Issued in Hudson by Type – 2020-2023**

| PERMIT TYPES | 2020 | 2021 | 2022 | 2023 | Estimated Current Total 2020-Present | RHNA 2025 Target | RHNA 2030 Target |
|---|---|---|---|---|---|---|---|
| **Total Units** | **126** | **67** | **57** | **78** | **328** | **600** | **1,095** |
| Single Family | 32 | 34 | 30 | 28 | 124 | | |
| Two Family | 13 | 28 | 28 | 50 | 119 | | |
| 3-4 Family | 0 | 0 | 0 | 0 | 0 | | |
| 5 or more Family | 81 | 0 | 0 | 0 | 81 | | |
| Manufactured Housing | 0 | 5 | -1 | 0 | 4 | | |

**Source:** NHOPD (2024)

Housing construction trends in Hudson are similar to those of the NRPC region in that there were noticeable building spikes that occurred in the early- and mid-2000s. Then, like the rest of the Nation, the Great Recession of the late-2000s and early 2010s brought housing construction almost to a halt. Since the Recession, the region has recovered economically, but building activity has remained below prerecession levels.

In contrast to regional trends, however, the percentage of multi-family units constructed in Hudson has declined in the post-recession years. Approximately 35% of Hudson's housing construction was for multi-family units in the 2000s compared to about 15% in the 2010s.

## Housing Type

Hudson is estimated to have about 81% of its housing stock dedicated to single-family units. The remainder of Hudson's roughly 10,080 total housing units are primarily multi-family units along with a handful of manufactured units (19%).

| Housing Stock by Type, 2020 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total Housing | Single-Family Units | | Multi-Family Units | | Manufactured Housing Units | |
| | | Numeric | Percentage | Numeric | Percentage | Numeric | Percentage |
| **Hudson** | 10,080 | 8,131 | 81% | 1,760 | 17% | 189 | 2% |

*Source: US Decennial Census 2020, Table DP1*

## Housing Tenure

Housing tenure describes the financial arrangement for occupying a housing unit; households either own or rent the unit they are living in. Approximately 80% of the housing units in Hudson are categorized as owner-occupied while the NRPC region and State have noticeably smaller percentages. Conversely, Hudson's percentage of renter-occupied units are roughly 10% lower than that of the NRPC region and the State. While there have been slight fluctuations since 2000, the ratio of owners to renters has been relatively stable. Higher homeownership rates can be a good sign that communities are providing an environment for long-term residents and a stable tax base. A disproportionately low rate of renter households, however, can indicate an insufficient supply of housing alternatives. It is also notable that the percentage of rental units in Hudson has steadily declined since 2000. Since most rental units are multi-family units, this change corresponds with the decline in multi-family housing construction noted previously in this chapter.

| Housing Tenure as a Percentage of Occupied Units, 2000-2020 | | | | | | |
|---|---|---|---|---|---|---|
| | Owner-occupied | | | Renter-occupied | | |
| **Year** | 2000 | 2010 | 2020 | 2000 | 2010 | 2020 |
| **Hudson** | 78% | 80% | 80% | 22% | 20% | 20% |
| **NRPC Region** | 70% | 73% | 70% | 30% | 27% | 30% |
| **State of NH** | 70% | 71% | 71% | 30% | 29% | 29% |

*Source: US Census; 2000, 2010, and 2020 Decennial Census Table DP1*

| Total Housing Units by Tenure and Vacancy, 2020 | | | | | |
|---|---|---|---|---|---|
| | **Total Units** | **Occupied** | **Owner-occupied** | **Renter-occupied** | **Vacant** |
| **Hudson** | 10,080 | 9,752 | 8,245 | 1,507 | 328 |

*Source: US Decennial Census 2020, Table DP1*

Vacancy rates are a powerful indicator of homeownership and rental market trends. According to the 2018 ACS, Hudson and the NRPC were experiencing a 3% and 4% vacancy rate across owner- and renter-occupied units, respectively. Even though the 2010 vacancy rates were relatively similar, at 3.4% and 5.1% for Hudson and the NRPC region, empirical evidence from NHHFA infers that the housing market of the late 2010s is much tighter than what the ACS has reported though this may be a product of their smaller sample sizes and slightly higher margins of error compared to the decennial census.

## Renter and Owner Housing Markets

The Town of Hudson is located within the Nashua HUD Metropolitan Fair Market Area (HFMA) along with most communities within the NRPC region (with the exception of Lyndeborough). The following subsections pertaining to renter- and owner-occupied housing will identify income, rent, purchase price limits established by HUD, as well as a variety of measurements reported by the New Hampshire Housing Finance Authority (NHHFA) including median rental and home purchase prices; rental vacancy and home absorption rates; rental and home sales frequency; and levels of cost-burdened households.

## Renter-Occupied Housing

As previously noted, approximately 20% of all occupied units in the Town of Hudson are inhabited by renters. The following subsections will detail an array of aspects that highlight the increasingly tight rental market in Hudson and the greater Nashua HFMA.

### Median Rent

Fair market rents are established by HUD multiple times throughout the year for each HFMA. The market rents provide a fair market cost of rent, plus utilities, upon which HUD assistance programs are based. Rents are further determined by the number of bedrooms and then adjusted accordingly. The table below provides the fair market rents for the Nashua HFMA, effective October 1, 2024[2].

| Fair Market Rents, FY 2025 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Studio | 1- Bedroom | 2- Bedroom | 3- Bedroom | 4- Bedroom | 5- Bedroom | 6-Bedroom |
| **Nashua HMFA** | $1,458 | $1,621 | $2,126 | $2,824 | $2,999 | $3,449 | $3,899 |

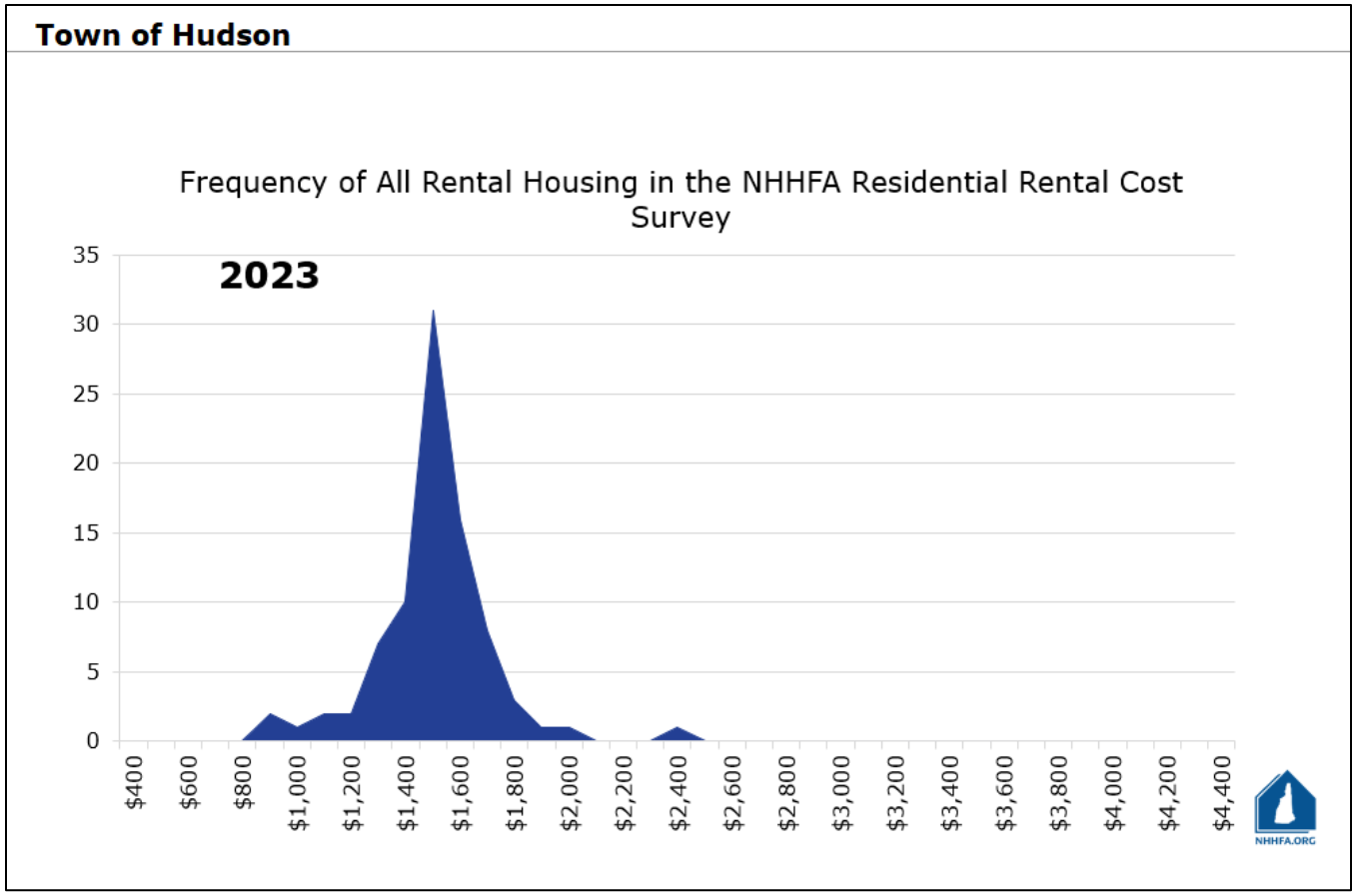
*Source: HUD (2025)*

### Median Rent Frequency

Median rent frequency can be explained as the number of rental agreements per cost grouping. The table below indicates that the majority of rental agreements for 2023 fell between $1,400 and $1,800 a month. The takeaways from this information are that 1.) a majority of rental agreements are at or near the overall market, 2.) an even larger percentage of agreements were reached for those units within the two most affordable cost groups, and 3.) there were noticeably fewer agreements being reached for those renting in the $1,201 to $1,400 a month range. The third point emphasizes the lack of options – observed through agreements – that are available for households earning just slightly below the median income and are not the most in need of subsidized or substandard units. A large number of rental leases in higher cost grouping may indicate that a large number of these rental units are single-family homes.

Median rent data, when viewed alongside HUD Fair Market Rents for the region, and the median rent frequency data cited above, both indicate that Hudson's rental housing supply is relatively affordable and consistent with the overall rental housing market. However, though median rents in Hudson do align with HUD Fair Market rent levels, many households still struggle with housing costs in the community.

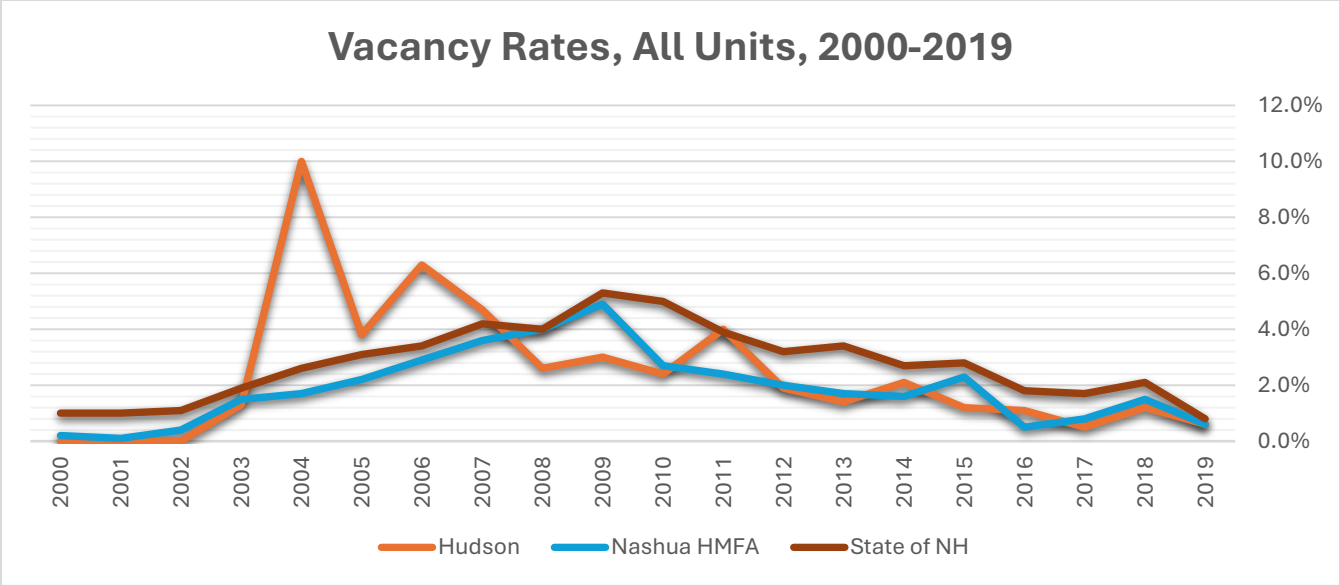
[2] **Source:** HUD Fair Market Rents FY 2025




*Source: New Hampshire Housing and Finance Authority (2023)*

Vacancy Rates

Extremely low vacancy rates in Hudson, the Nashua HFMA, and the State have been a major influence on rising rental costs over the past half-decade. NHHFA considers a "balanced" vacancy rate for rental units to be between 4% and 5% (NHHFA, 2019) while other research suggests that "healthy" vacancy rates are about 7-8% for rental units (Florida, 2018; Kasulis, 2016). As of 2019, rental vacancy rates across all units, for all three geographies, were below 1%. Due to housing preference, need, or circumstances, rental vacancy rates have not been near healthy or balanced levels since the Great Recession of the late 2000s, early 2010s.




*Source: New Hampshire Housing and Finance Authority (2019)*

### Cost-Burdened Renters

When rental stock and vacancy rates are extremely low, many households can become forced to pay more than they can reasonably afford. Households that pay more than 30% of their household income toward housing costs are considered to "cost-burdened." Of the 1,351 households paying rent in Hudson, about 29% of them are cost-burdened. The major concern with having a larger percentage of residents being cost-burdened is its impact on the households' ability to afford other essential expenses like groceries, transportation, health care, and education.

| Gross Rent as a Percentage of Household Income, 2023 | | | |
|---|---|---|---|
| | **Hudson** | **NRPC Region** | **State of NH** |
| **Total units paying rent** | 1,351 | 22,709 | 143,594 |
| **Less than 15.0 percent** | 6.4% | 11.7% | 11.6% |
| **15.0 to 19.9 percent** | 16.5% | 12.6% | 13.5% |
| **20.0 to 24.9 percent** | 30.8% | 14.4% | 13.3% |
| **25.0 to 29.9 percent** | 17.3% | 14.9% | 13.9% |
| **30.0 to 34.9 percent** | 6.1% | 10.6% | 9.8% |
| **35.0 percent or more** | 22.9% | 35.7% | 37.9% |

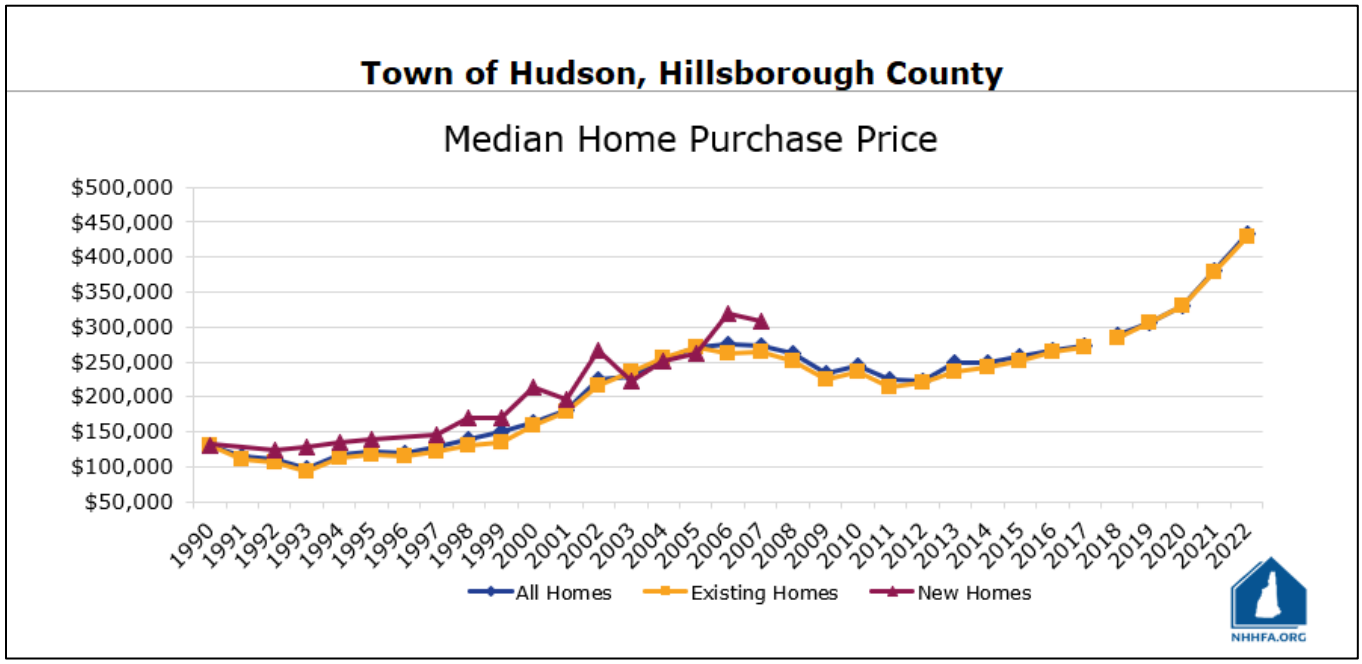
*Source: 2023 American Community Survey 5-year estimates, Table DP04*

## Owner-Occupied Housing

Approximately 80% of all occupied units in the Town of Hudson are owner-occupied, an increase from 78% in 2000. This trend sheds light on the demand for homeownership in the area as well as for housing construction. The following subsections will highlight the rise of home prices, the diverging frequency of home sales and listings, and the decreasing percentage of owners who are burdened by housing costs.

Median Purchase Price

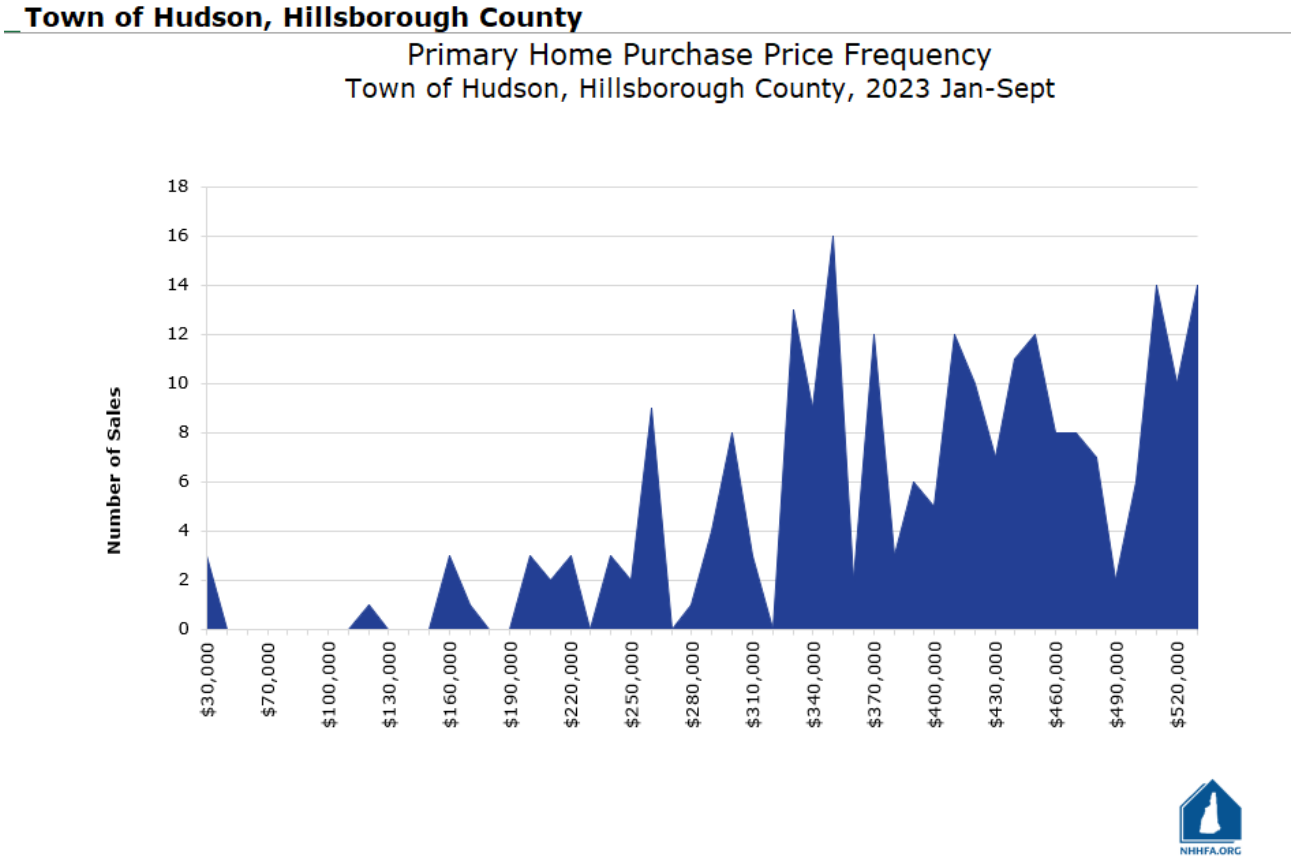
Like all communities in the region and across the United States, home prices took a significant dive during the Great Recession. Home prices in Hudson began to recover in 2012 and reached pre-recession levels around 2017. Since then, home prices have continued to rise.




*Source: New Hampshire Housing and Finance Authority (2023)*

Median Purchase Price Frequency

Median purchase price frequency is the occurrence of home sales per cost grouping. The figure below indicates that the largest percentage of home sales for 2023 in Hudson were for homes that sold for $350,000 or higher.




*Source: New Hampshire Housing and Finance Authority (2023)*

Cost-Burdened Owners

As the upward pressure from a housing market increases prices, some households seeking to enter homeownership are confronted with paying a higher percentage of their income toward housing costs. Existing home-owners who suffer a loss of income can also become cost-burdened. According to HUD, cost-burdened households are those that pay more than 30% of their income for housing costs and may have difficulty affording other necessities such as food, clothing, transportation, and medical care[3]. Approximately 1,377 (29.0%) Hudson households pay more than 30% of their income on housing costs. The percentage of cost-burdened homeowner households in Hudson has become higher than the NRPC Region (25.1%) and State (27.9%) in the past 10 years.

[3] **Source:** HUD, Affordable Housing (2019)

| Mortgages as a Percentage of Income, 2018 | | | |
|---|---|---|---|
| | Hudson | NRPC Region | State of NH |
| Housing units with a mortgage | 5,418 | 41,667 | 251,983 |
| Less than 20.0 percent | 48.6% | 44.6% | 43.4% |
| 20.0 to 24.9 percent | 16.4% | 18.2% | 17.8% |
| 25.0 to 29.9 percent | 9.6% | 12.1% | 11.0% |
| 30.0 to 34.9 percent *(cost burdened)* | 7.9% | 6.5% | 7.8% |
| 35.0 percent or more *(cost burdened)* | 17.5% | 18.6% | 20.1% |

*Source: American Community Survey 2023 5-year estimates, Table DP04*

## Assisted Housing

Hudson has three assisted housing developments: Buttercup Hill on Webster Street, and the newly constructed Friars Court I and Friars Court II development on Dakota Drive. These facilities provide 145 units of assisted housing and account for roughly 6% of the assisted housing units in the NRPC Region.

| Assisted Housing by Town | | | | | | |
|---|---|---|---|---|---|---|
| | Total | General Occupancy | Age Restricted | Transitional | Special needs | Substance abuse |
| Amherst | 49 | 28 | 21 | 0 | 0 | 0 |
| Hollis | 24 | 0 | 24 | 0 | 0 | 0 |
| Hudson | 145 | 81 | 64 | 0 | 0 | 0 |
| Litchfield | 30 | 30 | 0 | 0 | 0 | 0 |
| Merrimack | 100 | 45 | 55 | 0 | 0 | 0 |
| Milford | 182 | 50 | 132 | 0 | 0 | 0 |
| Nashua | 1,875 | 658 | 1,108 | 40 | 13 | 56 |
| Pelham | 65 | 0 | 65 | 0 | 0 | 0 |
| Wilton | 31 | 0 | 31 | 0 | 0 | 0 |
| NRPC Region | 2,501 | 892 | 1,497 | 40 | 13 | 56 |

*Source: New Hampshire Housing, 2023 Directory of Assisted Housing*

### Workforce Housing

Understanding the State's workforce housing statutes are important because every municipality that exercises its power to adopt land use ordinances and regulations must provide a reasonable and realistic opportunity for the development of workforce housing. Other important requirements state that workforce housing must be allowed in a majority of their residential zones and that each municipality must fulfill its regional fair share of such housing. The integration of workforce housing can help ensure moderate- and low-income households

have the same access to community services, amenities, and economic opportunities. In addition, affordable workforce housing can further ensure communities have the workforce necessary to support a strong and growing economy.

Workforce housing can take the form of many different housing types including single-family homes, ADUs, elderly housing, inclusionary housing, and multi-family developments. The key determinant is not the housing type but housing costs. Workforce housing as defined by RSA 674:58, IV means housing which is intended for sale and which is affordable to a household with an income of no more than 100% of the median income for a 4-person household for the metropolitan area. Workforce housing also means rental housing which is affordable to a household with an income of no more than 60% of the median income for a 3-person household in the metropolitan area. In the context of workforce housing, it is also important to understand the definition of "affordable."

Affordable, as defined by RSA 674:58, I, means housing with combined rental and utility costs or combined mortgage loan debt services, property taxes, and required insurance that does not exceed 30% of a household's gross annual income. In 2018, the estimated workforce housing purchase price (considered to be affordable) for the Nashua HUD Metropolitan Fair Market Area (HMFA) was $352,500 for a family of four making 100% of the HUD median area income, which was $106,300 per year. In Hudson, 71% of homes sold in 2018 were below $340,000. For rental housing, the 2018 estimated workforce housing limit (considered to be affordable) for monthly rent in the Nashua HUD Metropolitan Fair Market Area was $1,440 for a family of three making 60% of the HUD median area income, which was $57,400. In Hudson, the median rental cost for a market unit stood at $1,431 a month, slightly less than the Nashua HUD Metropolitan Fair Market rent and 40% of all units leased in 2018 fell under $1,400 per month.

Since Hudson's median home sales prices and market rents fall below Nashua HMFA thresholds, as do a large proportion of housing units for sale or rent, it appears that Hudson does currently meet the requirements of New Hampshire's Workforce housing law. It is also noteworthy that Hudson has historically permitted a diversity of housing types at relatively moderate densities including multi-family housing and duplexes. Nevertheless, many families and individuals in Hudson are cost-burdened. Further, many families and individuals of all income levels seek housing alternatives based on lifestyle, household size, composition, age, and physical ability. Alternatives for addressing a broad range of housing needs are described in the following section.

## METHODS FOR ENCOURAGING AND MEETING LOCAL HOUSING NEEDS

Hudson's housing needs are broad and encompass a range of income groups and family types. Several considerations and methods for meeting these diverse housing needs are described in the following sections including:

- regulatory options that can provide incentives through innovative local land use controls;
- local tools and resources which provide research data, and guidance materials; and
- various state and federal government programs that provide financial assistance in the form of loans, grants, tax credits, interest rate reductions, etc.

## Regulatory Options

Accessory Housing

Accessory dwelling units (ADUs) can provide for a wide range of housing needs that are readily integrated into the fabric of the community without the need for special incentives or subsidies. For the elderly, an accessory apartment can allow the individual to maintain a degree of independence while still receiving the support of family members. The same is true for younger family members. Where student housing is scarce, accessory dwelling units can provide a housing alternative within a family setting. For older or younger homeowners, the modest rent that may be received for such a unit may make homeownership a possibility that would otherwise not exist. Under RSA 674:71-73, which went into effect on June 1, 2017, accessory dwelling units (ADUs) means:

> "a residential living unit that is within or attached to a single-family dwelling, and that provides independent living facilities for one or more persons, including provisions for sleeping, eating, cooking, and sanitation on the same parcel of land as the principal dwelling unit it accompanies."

Municipalities like the Town of Hudson that have adopted zoning ordinances are required to permit ADUs as a matter of right or by either conditional use permit or special exception, in all zoning districts that permit single-family dwellings. The state leaves it to the Town's choice as to whether or not the ADU can be attached or detached. Other regulations included are not limited to[4]: Municipalities may require the owner to occupy one of the units but may not limit ADUs occupancy to family members of the owners of the principal dwelling. ADUs may also be deemed a unit of workforce housing for the purposes of satisfying the municipality's obligation under RSA 674:59.

*Within Hudson...*

The Town of Hudson currently includes a section within its Zoning Ordinance that addresses ADUs with the purpose of them being to increase the supply of affordable housing without the need for more infrastructure or further land development while maintaining aesthetics and compatible uses within community neighborhoods. Among other general provisions, the Town has established the following requirements[5]:

- an ADU be attached to the principal dwelling;
- either the principal dwelling unit or ADU must be occupied by the owner of record of the principal dwelling;
- the front face of the principal dwelling is to appear as a single-family dwelling and any additional entrances must be located on the side or rear of the structure;
- separate utility service connections and/or meters for the principal dwelling unit and an ADU shall not exist;
- a minimum of four off-street paved parking spaces shall be provided, no separate driveways;
- the ADU shall not be less than 350 square feet nor greater than 750 square feet;
- an ADU shall not have more than 2 bedrooms; and
- multiple ADUs are not permitted on any lot.

[4] **Source:** NH RSA 674, Planning and Zoning: Local Land Use Planning and Regulatory Powers (2020)
[5] **Source:** Town of Hudson Zoning Ordinance (2020)

Age-Restricted Housing

Age-restricted or elderly housing ordinances are a way that communities address the need for specialized housing for older populations without allowing for general multi-family housing or overall increases in density. These usually take the form of overlay zones. In most cases, age-restricted housing ordinances provide for a higher density than allowed in the underlying zone and contain a separate set of regulations and restrictions than those found in other zones. Some ordinances contain provisions for subsidized housing, others do not. Nearly all the communities in the NRPC region have some type of age-restricted housing zone.

*Within Hudson...*

The Town of Hudson currently does not have any provisions for age-restricted housing.

Clustered or Open Space Development

Clustered housing is a form of zoning that eases the dimensional standards for lots compared to the normally required standards. This regulatory strategy allows for greater flexibility in configuring structures, preserving open space, and reflecting the community's local character while meeting overall density requirements. Ordinances around the state may identify similar provisions under the title of "cluster development," "open space development" or "conservation development."

Homes in cluster developments are generally configured on smaller lots that do not meet the community's traditional lot size, road frontage, and setback requirements. The altered design requirements are attractive to potential developers as it may reduce development costs and in-turn, increase profitability, and reduce housing costs to potential buyers. In some cases, under the use of a clustered housing provision, municipalities may provide developers with the opportunity to earn housing density bonuses. A density bonus grants a developer additional housing unit density beyond that which is normally permitted, in exchange for more open space, recreational facilities, affordable housing, etc. The word "opportunity" is emphasized here because any proposed cluster development may or may not actually meet the density bonus requirements set forth in a community's zoning ordinance, and the developer may or may not be allowed to build more dwelling units than traditional regulations would permit. The permitted housing types, configurations, percentage of open space, required amenities, and other conditions for meeting the clustered housing definition vary from one municipality to another.

*Within Hudson...*

The Town of Hudson currently includes a section within its Zoning Ordinance that addresses "Open Space Development" with the purpose of preserving "the rural and scenic character by encouraging more efficient patterns of land development which conserve open and green spaces, farmland, wildlife habits, water resources, scenic areas, and other natural resources." In addition, the requirements are designed to provide increased recreational opportunities and great neighborhood cohesion. Among other provisions, the Town has established the following requirements[6]:

- reduced lot size and setbacks, as applicable;
- shared common open space; and
- potential road and right-of-way reductions.

[6] **Source:** Town of Hudson Zoning Ordinance (2020)

## Group Housing

Group homes are an important means of providing housing for the elderly and for special needs groups such as deinstitutionalized individuals, the homeless, handicapped individuals, and other special needs groups. Generally, a group home is a single-family home that houses several unrelated individuals with common needs. This allows for mutual support for people with common needs in a family-type setting. The homes provide individual or shared bedrooms with common living areas.

A provision for group homes usually requires a community to amend its zoning ordinance to provide a definition of "family" that would allow for a group home to be placed in a single-family area. Because group homes are not subdivided, they are not considered to be multi-family housing. A typical ordinance may provide a definition, for example, that would allow ten unrelated elderly, handicapped, or de-institutionalized individuals to be considered a family for zoning purposes, provided that the home is not subdivided and that the individuals live together as a single housekeeping unit. An alternative would be to provide for group homes under a special exception provision.

The largest impediment to providing for group homes is neighborhood resistance. Individuals purchasing homes in single-family areas have an expectation that the neighborhood will be maintained with a certain character. While a house that is purchased for a small group of older residents may pose little threat to neighbors, a home for de-institutionalized mental health patients, ex-convicts, or those battling opioid recovery may trigger such resistance. Great care must be provided to avoid the disruption of existing neighborhoods. Regulations that may mitigate some of the potential negative impacts associated with the group homes in single-family areas would be similar to those found in ordinances governing home-occupations and accessory housing. The intent should be to provide restrictions related to parking, entrances, and the appearance of the home to maintain the single-family character of the area.

*Within Hudson...*

The Hudson Zoning Ordinance does not specifically address group housing.

## Inclusionary Housing

Inclusionary housing programs as defined by RSA 674:21, IV-a is an innovative land use control that provides a voluntary incentive or benefit to a property owner in order to induce the production of affordable housing for moderate-, low- and very-low-income households in exchange for density bonuses or zoning changes. Generally, a residential developer seeking a higher density than normally allowed under the zoning ordinance would be required to set aside a certain percentage of the units for lower-income households. Many inclusionary housing programs also require a certain percentage of the units to be designated for elderly or handicapped households. Depending on the ordinance, developers interested in applying for a density bonus or zone change apply either to the local zoning board of adjustment or to the planning board. New Hampshire statutes require inclusionary housing programs to be voluntary, and ordinances typically apply only where the municipality attempts to use zoning as an incentive to provide for a recognized need within the community. The developer receives an incentive, usually increased density, which provides the impetus for developing the desired housing type. The percentage of units that must be set aside for target groups could vary based on the local ordinance.

In general, most ordinances require the below-market-rate units to be provided within the site. The units may be smaller than the market rate and may lack some amenities but may not be recognizably different from the other units in the development. Some ordinances allow below-market-rate units to be clustered within a portion

of the development. Other ordinances encourage the below-market-rate units to be distributed throughout the complex.

Because most ordinances require below-market-rate units to be provided on-site, the maintenance, management, and marketing of the units remain a private responsibility. Local ordinances usually include a provision requiring that below-market units, whether rental or owner-occupied, remain at below-market levels for a fixed period of time. The time period can vary from 10 to 99 years. Municipalities, however, must take the responsibility of ensuring that below-market units remain at target levels. This is particularly difficult for below-market-rate owner-occupied housing as the resale of the property must be regulated to ensure that a lower or moderate-income family can purchase the unit while allowing the seller to capture some equity from the property. In most cases, the monitoring of inclusionary housing programs is the responsibility of a local housing authority, community development department, or planning department.

The greatest constraint to implementing an inclusionary housing program in the region's municipalities is the difficulty of administering the program. Although market studies have been done which indicate that developments with below-market-rate units do not suffer from lowered real estate values, public perception is difficult to overcome. Another barrier is the difficulty of amending zoning ordinances to allow for the flexibility to provide for density bonuses in many municipalities. The greatest advantage of inclusionary housing programs is that the below market rate units are generally built, managed, and maintained by private developers. The municipality avoids having to maintain an inventory of housing to manage and avoids the difficulty of locating sites and building needed housing.

By including a small number of moderate and low-income units within a mix of market-rate units, the community avoids the problems associated with over concentration. The families that occupy the units are integrated with the greater community and are provided with the same level of maintenance and the same public facilities and services as the general population. Furthermore, programs that also encourage the provision of elderly and handicapped housing, as well as three-bedroom rental units, allow for even greater integration of household types. In this way, the housing needs of most family types, including various age and income groups, can be accommodated within a single residential development with only minimal public sector involvement.

Communities interested in implementing an Inclusionary Housing Ordinance should consult the Innovative Land Use Planning Techniques Handbook, published by the NH Department of Environmental Services, which includes a model ordinance and background information for New Hampshire municipalities.

*Within Hudson...*

This housing type is not currently included in the Hudson Zoning Ordinance.

Manufactured Housing

Manufactured housing, as defined in RSA 674:31, is a term that includes what is traditionally known as trailers or mobile homes. State law requires that all municipalities must provide for reasonable opportunities for the location of manufactured housing, though many communities continued to severely restrict such housing. This is often due to aesthetic considerations as well as the association of manufactured housing with lower-income groups. In general, manufactured housing is situated either in higher density parks, on individual lots, or in manufactured housing subdivisions.

Manufactured housing parks can provide an important housing alternative for low and moderate-income groups. The purchase price is relatively low because the lots in the park must be rented. As a result, many residents in manufactured housing parks face eviction if the land is sold. The lack of new manufactured housing parks makes relocation nearly impossible unless the family can afford to purchase a lot. Mobile homes on individual lots or within subdivisions are only a limited form of affordable housing due to the very high land costs within the region. Although a manufactured home on an individual lot maybe only marginally less expensive than a conventional home on a similar lot, this can make the difference in affordability for many moderate- and middle-income families.

*Within Hudson...*

The Town of Hudson currently includes a section in its Zoning Ordinance that addresses Manufactured Housing; however, it does not provide a purpose or vision for such housing. Among other provisions, the Town has established the following requirements[7]:

- only permitted in the General District, which accounts for roughly 52% of the Town's total area;
- must be located in a manufactured housing subdivision or park that is a minimum of 10 acres in size;
- lot sizes must be in conformance with underlying dimension requirements (1-2 acre minimums);
- subdivisions and parks must be screened with a natural buffer along its perimeter;
- only single-family manufactured homes are permitted, one unit per lot;
- must be affixed to a permanent foundation;
- potential for shared or common space; and
- requires a permit from the Building Inspector to be placed or moved.

Hudson should consider amending its Zoning Ordinance to eliminate the requirement that Manufactured Housing only be permitted in the General District in Manufactured Housing Parks or Subdivisions and allow this type of housing by right in all residentially zoned districts.

Multi-Family Housing

Multi-family, as defined in RSA 674:58, is housing *for the purpose of workforce housing developments*, which means a building or structure containing 5 or more dwelling units, each designed for occupancy by an individual household. The emphasis is on the italicized words specifically clarifies this definition as other State statutes define multi-family units to be any structure containing more than 2 dwelling units. This difference is important as structures with 5 or more dwelling would qualify under the "reasonable and realistic opportunity" for workforce housing, whereas anything less, would not.

Multi-family housing is a common way in which municipalities and developers can provide affordable housing options to residents within the region. The development of multi-family housing units typically looks to density and proximity as avenues to a solution. There higher densities are typically located in more centralized locations with access to a variety of employment opportunities, amenities, and services. Development costs, landowner mortgages, and overall maintenance costs are reduced when expenses are spread among more occupants, and ideally, these cost savings are then transferred over to eventual occupants. Although the basic idea of increasing density to spread expenses is sound, the strategy is not always implemented in a way that provides more affordable housing. The combination of the increasing demand among moderate- and high-income households

[7] **Source:** Town of Hudson Zoning Ordinance (2020)

into the urban cores, preference to the rental market, and very low vacancy rates have, in turn, increased the cost of multi-family housing.

*Within Hudson...*

The Town of Hudson currently defines multi-family housing as structures with three or more dwelling units attached by any portion of one or more floors, walls, roofs. Multi-family units are only currently permitted in the Business District (roughly 4.3% of the Town's total area) along with parts of Route 102/Derry Street, Route 111/Central Street/Burnham Road, Route 3A/Lowell Road, and at their convergence near the Taylor Falls Bridge[8].

## Workforce Housing

Workforce housing as defined by RSA 674:58, IV means housing which is intended for sale and which is affordable to a household with an income of no more than 100% of the median income for a 4-person household for the metropolitan area. Workforce housing also means rental housing which is affordable to a household with an income of no more than 60% of the median income for a 3-person household in the metropolitan area. In the context of workforce housing, it is also important to understand the definition of "affordable." Affordable, as defined by RSA 674:58, I, means housing with combined rental and utility costs or combined mortgage loan debt services, property taxes, and required insurance that does not exceed 30% of a household's gross annual income.

In 2022, the estimated workforce housing purchase price (considered to be affordable) for the Nashua HUD Metropolitan Fair Market Area (HMFA) was $427,177 for a family of four making 100% of the HUD median area income. The 2022 estimated workforce housing limit (considered to be affordable) for monthly rent in the Nashua HUD Metropolitan Fair Market Area was $1,650 for a family of three making 60% of the HUD median area income.

Workforce housing can take the form of many different housing types including ADUs, elderly housing, inclusionary housing, and multi-family developments. However, the key determinant is not the housing type but housing costs. Updated income and housing costs limits which qualify as housing units as "affordable" are released by HUD a few times a year and these thresholds affect the measure of affordable workforce housing and other regulatory determinants (i.e., home prices within a development seeking density bonuses through inclusionary housing regulations) within the metropolitan area.

Understanding the State's workforce housing statutes are important because every municipality that exercises its power to adopt land use ordinances and regulations must provide a reasonable and realistic opportunity for the development of workforce housing. Other important requirements state that workforce housing must be allowed in a majority of their residential zones and that each municipality must fulfill its regional fair share of such housing. The integration of workforce housing can help ensure moderate- and low-income households have the same access to community services, amenities, and economic opportunity. In addition, affordable workforce housing can further ensure communities have the workforce necessary to support a strong and growing economy.

[8] **Source:** Town of Hudson Zoning Ordinance (2020)

*Within Hudson...*

The Town of Hudson does not currently have specific Workforce Housing land use regulations; however, the town does have 47 units of Workforce Housing in the Friar's Court I development and an additional 34 Workforce Housing in units in Friar's Court II as well as 64 units of affordable senior housing in Buttercup Hill development. Further, Hudson has three manufactured housing parks with a total of 152 units and several forms of both rental and home ownership housing also that may also qualify as workforce housing.

## Tools

There is a significant amount of research, data, and guidance materials available to help communities in New Hampshire meet their local housing needs. The following represents some of the key resources and tools for municipalities in the NRPC region.

NH Housing's Meeting the Workforce Housing Challenge Guidebook provides resources for municipalities to address the requirements of the State's Workforce Housing Statute.

The NH Innovative Land Use Handbook, published by the NH Department of Environmental Services, includes model ordinances and guidance on numerous means to create a flexible set of incentives to support more affordable choices, including:

- Cluster or Conservation Open Space Subdivisions;
- Mixed-Use Development;
- Infill Development;
- Energy Efficient Development; and
- Inclusionary Housing.

NH Housing's Housing Solutions Handbook includes examples and case studies from New Hampshire of zoning ordinances that provide workforce housing opportunities, such as:

- Flexible zoning and land use regulations that allow for a mix of housing choices,
- Planned-unit and cluster development,
- Examples of multi-unit structures that maintain rural and single-family character,
- Redevelopment of existing housing stock,
- Examples and case studies from New Hampshire of multi-unit structures that maintain rural and single-family character,
- Accessory dwelling units, and
- Regulatory provisions that encourage a variety of housing sizes and types (i.e., cottage housing, accessory dwelling units, condominiums, single-family homes, etc.).

NH Housing collects and reports on a variety of housing data including demographic, purchase price and rental cost trends; HUD's income limits and allowances; and assisted housing for every municipality in the State.

NRPC has developed several fact sheets including:

- Inclusionary Zoning;
- Overlay Districts;
- Performance Zoning;

- Village Plan Alternative; and
- Form-Based Codes.

The NH Office of Energy and Planning reports on building permits issued in every NH community that municipalities can use to monitor rates of residential growth to assess whether future rates are projected to increase beyond current low levels of growth.

The Planning Board in New Hampshire: A Handbook for Local Officials, written by the NH Office of Energy and Planning, provides guidance and resources to help municipalities prepare a Capital Improvements Program to ensure municipal services can keep pace with growth rates.

The Community Development Finance Authority's CDFA Neighborhood Stabilization Program, Community Development Block Grants, and Community Development Improvement Program provide financial resources to help municipalities invest in existing neighborhoods.

NH RSA 79-e, the Community Revitalization Tax Relief Incentive enables communities to provide tax relief in exchange for investment designed to enhance downtowns and town centers, promote economic development, and rehabilitate historic structures.

## Resources

In addition to the above tools and resources available statewide, there are several organizations within the NRPC region that can provide valuable support to municipalities.

NeighborWorks Southern NH

NeighborWorks Southern New Hampshire is a non-profit organization dedicated to helping individuals and families in the Southern New Hampshire region by providing access to quality housing services, revitalizing neighborhoods, and supporting opportunities for personal empowerment. Based in Manchester, in recent years NeighborWorks expanded its service area to include the Nashua region and acquired the former Neighborhood Housing Services of Greater Nashua. Additionally, in the NRPC region, Neighborworks developed Casmir Place in Nashua (2006) and Hidden Pond Apartments in Amherst (fall 2013) and most recently (2019), purchased two residential buildings (8 units) on McLaren Ave and Ledge St in Nashua to begin capital improvements and energy upgrades totaling $450,000. Additionally, NeighborWorks has been working with residents of Nashua's Tree Streets on various community initiatives including NeighborFest, a celebration of community among neighborhood residents, and the Neighborhood Mural Initiative, a project to fuse local art with significant historical events. Other major programs include:

- Homeownership: Help underserved families understand critical components of homeownership, including financial responsibilities, maintenance, and repair; homeownership as an opportunity to improve economic viability; and guidance and assistance in the loan process;
- Affordable housing development: Develop affordable housing for sale or rent for low- and moderate-income families and individuals;
- Resident services: Involve tenants and other community residents in the civic life of the community and provide a variety of enrichment services.

Southern New Hampshire Services

Southern New Hampshire Services (SNHS) assists low-income members of the region to achieve self- sufficiency through a series of child development; health, food, and nutrition; housing and homeless; workforce development; energy; volunteer, community, and multi-cultural services programs. Through their programs to prevent and address homelessness, SNHS provides shorter-term assistance to those that are at risk of eviction or utility termination, connects homeless persons with the local service system, and provides supportive housing for the homeless. Mary's House, located in Nashua, NH, consists of forty rehabilitated apartments for homeless women. SNHS Management Corporation, a housing management subsidiary of SNHS, provides specialized elderly housing services, sponsors supportive housing for homeless projects, and serves as a general contractor for construction projects that include low-income housing development and rehabilitation. Working with the City of Nashua Lead Paint program, SNHS conducts outreach and education relative to the dangers of lead paint and benefits of abatement. Lastly within the housing programs, SNHS provides supportive elderly housing to low-income senior citizens and has 6 properties with a total of 248 units in the City of Nashua (SNHS, 2019).

Harbor Homes

Harbor Homes is another non-profit serving low income and vulnerable populations in the NRPC region. While Harbor Homes works throughout the state, their primary focus is the greater Nashua area serving Nashua, Amherst, Brookline, Hollis, Hudson, Litchfield, Merrimack, Milford, Mont Vernon, Mason, Manchester, and Wilton. They provide residential, primary, and behavioral health care, and supportive services to more than 1,200 low-income individuals and families who are homeless, at risk of homelessness or living with mental illness and other disabilities each year. Services provide a holistic approach to providing food, shelter, and basic needs to help families maintain sustainable independence. Harbor Homes focuses on providing affordable housing, health care, mental health care, workforce development, and employment assistance, supportive services for veterans, and homeless prevention (Habor Homes, 2019).

Greater Nashua Habitat for Humanity

Greater Nashua Habitat for Humanity, an affiliate of Habitat for Humanity International, was formed in 1994 according to their website. Habitat builds affordable houses for qualifying low- and moderate-income families using donated labor, materials, and in some cases land as well as through grants and fundraising. As noted on their website, "Successful applicants purchase their Habitat home with 0% interest mortgage provided by Nashua Habitat with monthly payments capped at 30% of the families' monthly income. Each mortgage payment in turn funds future homes. The future homeowner volunteers 350 of sweat equity hours, including building their home and other activities; also provides a small down payment; and attends financial budgeting classes."

In addition, Habitat operates a Critical Home Repair Program that provides repairs focused on health, safety, and code-related improvements for low- and moderate-income homeowners and nonprofit organizations. Habitat has constructed homes in Amherst, Hudson, Wilton, and Nashua. Their current project is a duplex planned in Nashua's French Hill neighborhood.

Others

While not expressly dedicated to meeting local housing production needs, there are several other organizations within the NRPC region that play a critical role in supporting resident housing needs and promoting equal opportunities. The City of Nashua has formed the **Cultural Connections Committee**, comprised of city officials

and residents, was created to act as a sounding board for ethnic community problems, act as a communications link between organizations, assist in community program ideas and publications, inform, and educate, and encourage awareness and appreciation of cultural differences. The Gate City Immigrant Initiative is a subcommittee of the Cultural Connections Committee.
The Mission of the Gate City Immigrant Initiative is to provide support to orient and empower newcomers and the broader community to fully integrate as citizens of Greater Nashua in good health and well-being.

The **Continuum of Care** is a collaborative group of Federal, State and City governments, housing program directors, hospitals, veterans, social service agencies, homeless and formerly homeless individuals, the financial community and private sector representatives, and religious institutions of several denominations that meet regularly to promote comprehensive, cohesive, and coordinated approaches to housing and community resources for homeless persons and families. The Continuum works to identify and address service gaps and risk factors in the community and prioritize unmet service needs for a system of prevention, intervention, outreach assessment, direct care and aftercare for homeless individuals and families. The collaborative group serves the communities of Nashua, Brookline, Amherst, Hollis, Merrimack, Milford, Mont Vernon, Hudson, Litchfield, and Mason. Particularly the Continuum works to end homelessness and is funded through annual applications to HUD to provide housing and supportive services. The Greater Nashua COC is also responsible for the development and implementation of the Greater Nashua Ten Year Plan for Ending Homelessness. ("Nashua Continuum of Care," 2014)

Similarly, **Elder Wrap** is another social service community collaborative comprised of public and private agencies in the Greater Nashua area that recognizes that many elders have complex health, housing, support, and social needs. A core group of agencies meets monthly to review specific cases and discuss broader community issues affecting elders. Professionals from other agencies are invited to join meetings when their specialized focus is relevant to the individuals being discussed. Sometimes elders and their families attend a Wrap Around meeting to participate in the discussion of their needs and services.

## State and Federal Programs

Within the State of New Hampshire, most federal and state housing programs are administered through the New Hampshire Housing Finance Authority (NHHFA). The NHHFA programs are described below. In addition to these programs, Veterans Administration (VA) and Federal Housing Administration (FHA) loans are available through those agencies.

### Section 8 Housing Choice Voucher Program

This rental assistance program provides a direct subsidy to the owner of rental housing to allow low-income families to occupy privately owned and maintained housing units without spending in excess of 30% of their total annual household income for shelter. Qualification is based on income and fair market rent guidelines established by the US Department of Housing and Urban Development (HUD). The intent of the program is to allow for federal housing assistance to low-income households without building government-owned and operated housing. The owner of a unit qualified under the program is paid the difference between what the tenant can pay and the actual rent. Limited funds have restricted the program to very low-income female-headed households and very low-income elderly households. The program is administered by HUD through the NHHFA. Program eligibility and assistance is based upon income and household size. To be placed on the

program, applicants must have incomes below 30% AMI, however, NHHFA is able to accept a limited number of admissions for applicants with incomes below 50% AMI.

### Section 8 New Construction and Substantial Rehab Program

The New Construction and Substantial Rehabilitation Programs provide assistance to developers to rehabilitate existing rental housing or to construct new rental housing within HUD guidelines. The maximum term of assistance provided by HUD under the New Construction and Substantial Rehabilitation Programs for a project financed with the proceeds of a loan insured by the Federal Housing Administration is 20 years. Rather than allowing the Section 8 certificate to be used by a qualifying family to obtain housing in any qualifying rental unit, the program attaches the Section 8 certificate to the unit. This program encourages the construction of new rental housing for very low-income households. The voucher program merely provides a subsidy for existing units without increasing the housing stock available to low-income families.

### Housing Choice Voucher Homeownership Program

New Hampshire Housing offers the option for households currently receiving a Housing Choice Voucher to apply it towards homeownership for first-time homebuyers. There are eligibility requirements established by HUD and New Hampshire Housing. Generally, for those under the age of 62, the household head must have been employed for at least 30 hours a week for a full year, earn minimum wage, have established credit, and have a bank account for at least 6 months. Choosing to use a voucher for homeownership increases the mortgage a household can afford.

### Emergency Housing Program

This program aids households in imminent danger of eviction due to financial difficulty with short-term assistance when local welfare programs are unable to offer assistance. New Hampshire Housing's Emergency Housing Program supports approximately 25 households at a time for a maximum of 3 months. Households must first seek any other possible source of assistance before turning to this program and their household income must be below 50% of the area median income.

### Low-Income Housing Tax Credits

Low Income Housing Tax Credits (LIHTC) encourage private investment in new, affordable rental housing and is the most commonly used affordable multi-family rental financing mechanism today. Projects are selected by NH Housing on a competitive basis and the use of LIHTC requires that a project provide a minimum of 20% of its units to households earning up to 50% of the area median family income (AMFI). Alternatively, at least 40% of its units may be offered to renters at or below 60% of AMFI. The balance of the units may be rented at prevailing market rents. Mixed-income projects may be feasible in stronger rental markets. Typically, LIHTC development will be affordable to households earning 40-60% of AMFI. Most of today's LIHTC projects are not subsidized with project-based Section 8 contracts, though tenants holding vouchers may use them in such projects and may be necessary for those earning less than 40% AMFI to afford rents. Therefore, many of today's "subsidized rental housing" cannot reach the households with the lowest incomes, however, LIHTC rental housing does, support an important component of workforce rental housing.

The maximum LIHTC allocation that any single general occupancy project may receive in any single funding round is $800,000. The maximum LIHTC allocation that any single age-restricted project may receive in any single funding round is $600,000. From 2014 through 2018, the State received and allocated between $2.1 and

$3.4 million per year ($2.8 million on average) to affordable housing projects across the state. Some of the more recent assisted housing projects in the area since 2010 include (NHHFA, 2019):

- Cotton Mill, Nashua (2011-2012)
- Pine Valley Mill, Milford (2013)
- Salmon Brook Senior, Nashua (2015)

### Construction Lending Program

The Construction Lending Program provides construction financing for multi-family rental projects utilizing other New Hampshire Housing funding. In addition, funds may be used in certain circumstances to bridge investment from Low-Income Housing Tax Credit investors. Rates and terms are competitive with the market, and this program offers the convenience and cost savings of a single source of financing for an affordable housing rental project.

### Special Needs Housing Program

The Special Needs Housing Program is designed to provide financing for projects serving populations that need more intense services than are typically provided in traditional rental housing. The financing may be primary or gap lending that is frequently structured on a deferred payment basis. Developers of these projects are typically service providers of such diverse groups as the homeless, the mentally or physically challenged, women and children in crisis, and families and children in need of transitional housing.

### Tax-Exempt Bonds Financing and Portfolio Preservation Program

The Tax-Exempt Bond Financing and Portfolio Preservation Program is designed to provide construction and/or permanent debt financing through the sale of tax-exempt or taxable bonds and equity financing through the use of the 4% Low Income Housing Tax Credit. The program is well-suited for the preservation of existing subsidized housing. Projects using this program typically have an income stream that allows the project to service significant long-term debt.

### Community Development Block Grants

Community Development Block Grant (CDBG) funds can be combined with other funds to support the creation of housing units or can be used for related community needs such as encouraging homeownership, developing infrastructure, revitalizing downtown, rehabilitating rental housing, and other uses that have a primary benefit to households earning less than 80% of AMFI. This program is sponsored by HUD and managed by NH's Community Development Finance Authority (CDFA). Grants are available to municipalities or counties, and non-profits if they have partnered with and are applying through a municipality. Grants are awarded for up to $500,000 per applicant each year and NH receives approximately $8-10 million annually, approximately half of which goes to housing and public facilities projects.

### Public Land/Affordable Rental Housing Program

The Public Land/Affordable Rental Housing Program is a State program passed by the General Court in 1986 (RSA 204-D). The program allows surplus public land to be transferred without consideration to the NHHFA for the development of low-income housing. The intent of the program is to remove the land cost from the cost of development to allow for the construction of low-income housing that can be economically feasible. The NHHFA will self- finance, construct, and manage the housing. The greatest limitation facing the program is the availability of properly zoned surplus lands.

Federal Home Loan Bank of Boston Affordable Housing Program

The Federal Home Loan Bank of Boston offers both grants and loans to member institutions who are working with developers of affordable rental or home-ownership opportunities. In general, the Affordable Housing Program (AHP) for ownership initiatives must benefit households earning less than 80% of AMFI; use of funds for rental developments is limited to projects having at least 20% occupancy by households at or below 50% of AMFI. For 2019, the subsidy limits for anyone AHP application is $650,000 in direct subsidy and $1 million in total subsidy, including the subsidized advance interest- rate subsidy.

Single-Family Mortgage Program

The Single-Family Mortgage Program is by far the most significant State housing program. The program provides low-interest loans for first-time homebuyers within established housing prices and income guidelines. The program is financed through the issuance of tax-exempt bonds by the NHHFA. In general, a first-time homebuyer applies for an NHHFA loan through a conventional mortgage institution and generally approved if the applicant, as well as the home, qualifies. Loan products offered include funds for the down payment and closing costs, low or no private mortgage insurance, purchase and rehabilitation programs, emergency home repair, voucher assisted mortgages, and a tax credit program. The program provides assistance to a large number of first-time homebuyers; and as of April 2014, increased its income limit to $110,000 for all communities, counties, and family sizes, capturing all families below the median income level.

Home Help NH

HomeHelpNH is a statewide foreclosure counseling initiative sponsored by the New Hampshire Department of Justice, New Hampshire Banking Department and New Hampshire Housing Finance Authority. The initiative's goal is to help at-risk homeowners find solutions through free, comprehensive pre- and post-foreclosure counseling. Over the course of the first year of this three-year statewide initiative funded through the National Mortgage Servicing Settlement, HomeHelpNH counselors assisted more than 800 households and provided approximately 5,600 hours of free foreclosure guidance on mortgage modifications, mortgage document review, credit and budgeting analysis, rental help, and legal service referrals to at-risk households.

Federal Housing Administration and Veterans Administration Loans

These Federal Government programs are not administered through the NHHFA. Rather than provide low-interest loans, the programs provide assistance to qualifying home buyers primarily by 1) allowing for a higher percentage of household income to be devoted to housing costs; 2) providing mortgage insurance or guarantees; and 3) by allowing for down payments as low as 5%. Both of these programs are far less restrictive than NHHFA single-family home programs and are less limited in terms of funding. These programs provide essential assistance to moderate-income households throughout the Nation.

# CONCLUSIONS

## Population

With an estimated population of 25,458 Hudson is the third most populous community in the Nashua region and the tenth-largest in the State. During the last half of the 20th century, Hudson experienced rapid population growth, but since 2000, population growth has slowed significantly. Since 2010, Hudson's population has grown by only 7%. At this rate, Hudson will experience its first decade of less than double-digit growth in over 50 years. An even lower rate of less than 5% growth is projected for the coming decade. By 2030, Hudson's population is

projected to grow by 1,079 people to a total population of 26,537. Importantly, the composition of the population will also change.

Since 2010, the number of Hudson residents aged 65 or older has increased by 1,400 people, by far the largest increase of any age group, followed by a 586 person increase in those aged 55-64 years old. These increases will likely result in increased demand for senior or elder services, including transportation and access to health care, and increased demand for senior housing and assisted living facilities.

Over this same period, there have also been steady decreases in the percentage of the population under 55 years old. Most significant is a large drop within the 35 to 54-year-old age group. People in this age group tend to be in their prime earning, home buying, and child-raising years. If these trends continue, the consequences for the labor and housing markets could be significant. Substantial declines were also experienced in the 5 to 19 age group (school-aged children) and children under 5 years-old which will likely result in lower school enrollments and less demand for youth-related programs and facilities. On-the-other-hand, there has been an increase in the number of young adults in Hudson aged 20 to 34 years old. If this trend can be extended, it has the potential to strengthen Hudson both socially and economically in the coming years.

Another population group important to consider in planning for community needs are people with disabilities. In 2018, Hudson had an estimated 2,709 people with disabilities. Importantly, a majority of Hudson residents with disabilities are over the age of 65. Given Hudson's aging population, the population of people with disabilities is also expected to increase. Housing and other services which support the needs of the disabled will become increasingly important in Hudson. It will also become increasingly important to ensure that appropriate accommodation is made to support community inclusion and connectivity for all residents.

## Housing

Between 2010 and 2020, there has been a pronounced increase in one and two-person households in Hudson and a significant decrease in three to six-person households. These changes reflect the overall ageing of the population as well as the decline in the number of children as noted above. At the other end of the spectrum, there has been a notable increase in the number of households with seven or more people. This increase may indicate a trend toward multi-generational and shared housing.

In 2018, the average number of people per household in Hudson was 2.77, a decline from 2.83 in 2000. Declining household size reflects changes that have occurred in Hudson's household composition: a decrease in the number of families with children and the increase in the number of people living alone. Changes in household size and composition have direct implications on housing type and size as well as on community facility and service needs.

While Hudson's households have grown smaller and its residents older, they have also become more affluent. Since 2010, incomes for family and non-family households within Hudson increased significantly. In 2020, median household income in Hudson was $96,224 as compared to $78,655 for the County and $74,057 for the state. Increasing household income is an indicator of Hudson's economic strength as well as its quality of life and overall desirability.

In 2020, Hudson has a total of 9,839 housing units, an increase of 506 units or 5% since 2010 which is consistent with the state and regional growth rates. In contrast to regional trends, however, the percentage of multi-family units constructed in Hudson has declined in recent years. This trend is likely due to the fact that most vacant

land suitable for residential construction in Hudson is located within the town's General Zones which do not permit multi-family development and in areas without a public sewer. During this same period, the percentage of owner-occupied units in Hudson increased from 78% in 2010 to 80% in 2020.

Median rents in Hudson, and elsewhere in the Nashua region, have increased substantially in recent years as demand has increased and vacancy rates dropped. Nevertheless, the median market-rate rental rate of $1,550 is affordable for this region, though many households still struggle with housing costs in the community. Home prices have also increased in recent years, though at a slightly lesser rate than that of the state and region. The median home price for Hudson is currently estimated at about $350,000. Given Hudson's relatively high median household income, homes in Hudson are also considered to be relatively affordable for this market area.

## RECOMMENDATIONS

Hudson should be a livable, affordable, multi-generational community that is appealing to and supportive of a diverse range of income groups, ages, and family types. Housing development in Hudson in coming years will need to reflect the demands of smaller households with fewer children, more non-family households, an aging population, more people living with disabilities and the growing disconnect between a declining rate of multi-family housing construction at a time when market demand for rental housing is increasing. Given limited public sewer capacity, an overwhelming desire of the community to retain its small-town feel, concerns over the extent of residential development and a desire to conserve open space, expansion of multi-family and higher density housing development beyond the districts where it is currently allowed is not likely to gain public support. Therefore, Hudson should strive to expand housing alternatives by leveraging the planning and zoning tools that it already has and making minor adjustments as needed. These effects should include the following actions.

- Consider amending its Zoning Ordinance to eliminate the requirement that Manufactured Housing only be permitted in the General District in Manufactured Housing Parks or Subdivisions and allow this type of housing by right in all residentially zoned districts.
- Consider adopting a Workforce Housing Ordinance to incentivize development of home ownership housing affordable to households making 100% of the median income and rental housing affordable to households at 60% of the median income.
- Encourage the incorporation of ADA accessibility accommodations within new residential developments to meet the needs of a growing population of people with disabilities;
- Maintain the town's existing *Open Space Development* ordinance to provide flexibility in residential development types while conserving open space;
- Support regulations that preserve suburban/rural housing conditions within developed portions of the General and General-1 zoning districts;
- Encourage the development of accessory dwelling units that correspond with community character and provide flexible regulatory options that do not deter implementation;
- Consider permitting detached accessory dwelling units to increase housing opportunities for multi-generational living and rental housing without unduly impacting neighborhood character;
- Support workforce housing developments in districts that have access to the municipal sewer and as part of new mixed-use developments; and
- Encourage more mixed-use and infill development where appropriate and within zones such as, but not limited to, Town Residential and Business districts

# CHAPTER III - NATURAL RESOURCES

## Introduction

Hudson's natural resources are among the most valued of the town's assets and the conservation of open space is one of the highest priorities for Hudson residents. When asked to identify issues that concerned them the most in the 2019 Master Plan survey, respondents identified the loss of open space and natural areas as their top concern (76%). The loss of rural character came in a close 3rd at (71%). Though conservation is clearly a high priority, many Hudson residents believe that current efforts are sufficient and only a slight majority (52%), believe that the Town should "do more" about land conservation. The principal goals of the Natural Resources component of the Master Plan as stated in Chapter I – Community Vision and Goals, are as follows:

- Expand Conservation areas and increase open space.
- Build on existing open space assets such as Benson Park and Robinson Pond.
- Expand the existing trail network and facilitate connections between schools, parks, conservation areas, community facilities, residential neighborhoods, and employment centers.

The Natural Resources Chapter is designed to consider various constraints to development in planning for the future growth of the community and to identify priorities for conservation. This chapter is an update of the 2006 Master Plan Natural Resources chapter. Wherever possible, updated maps and data are provided, however in some cases where new data is not available, information presented in the 2006 plan is brought forward. This chapter includes the following sections: 1) upland resources such as topography, soils, and forest land; 2) water resources, and 3) existing and potential conservation lands.

## General Conditions

The Town of Hudson lies on the eastern banks of the Lower Merrimack River in south central New Hampshire. The Town shares its southern border with the State of Massachusetts and its western border with the City of Nashua. As a result, Hudson has developed significantly as a rural/suburban residential community for Nashua and Greater Boston as well as a commercial and industrial center. As available developable land becomes scarcer, impacts of growth make it increasingly important to understand, inventory and plan for the protection of the Town's natural resources. A distinct set of development constraints exists on each parcel of land due to the specific topography, soils, water resources, and flora and fauna that could be present. In addition, the abundance and diversity of natural resources in Hudson, including wetlands, ponds, streams, fields, and forests, provides opportunities for a variety of land uses while contributing to the overall quality of life in the community.

### TOPOGRAPHY

Topography generally relates to the surface configuration of the land. The topography of an area can be described by two measurable characteristics — Elevation and Slope. A brief description of each of these factors is given below, along with an explanation of their importance in planning for land use and development within the Town.

## Elevation

Elevation defines the relative height of a piece of land at a given point. So that measures of elevation are comparable, they are expressed in terms of feet above Mean Sea Level (feet aMSL). Elevations in

Hudson vary from the lowest point at 100 feet aMSL along the Merrimack River, to 510 feet aMSL in between Musquash Swamp and Pond in the southeast part of Town. The eastern half of the Town is dominated by higher elevations and steep slopes. The western half of the Town is slightly flatter, which indicates the former riverbed location during the glacial retreat and forms the watershed boundary for the Merrimack River main-stem. Map III-1 illustrates the topography for the Town of Hudson.

## Slope

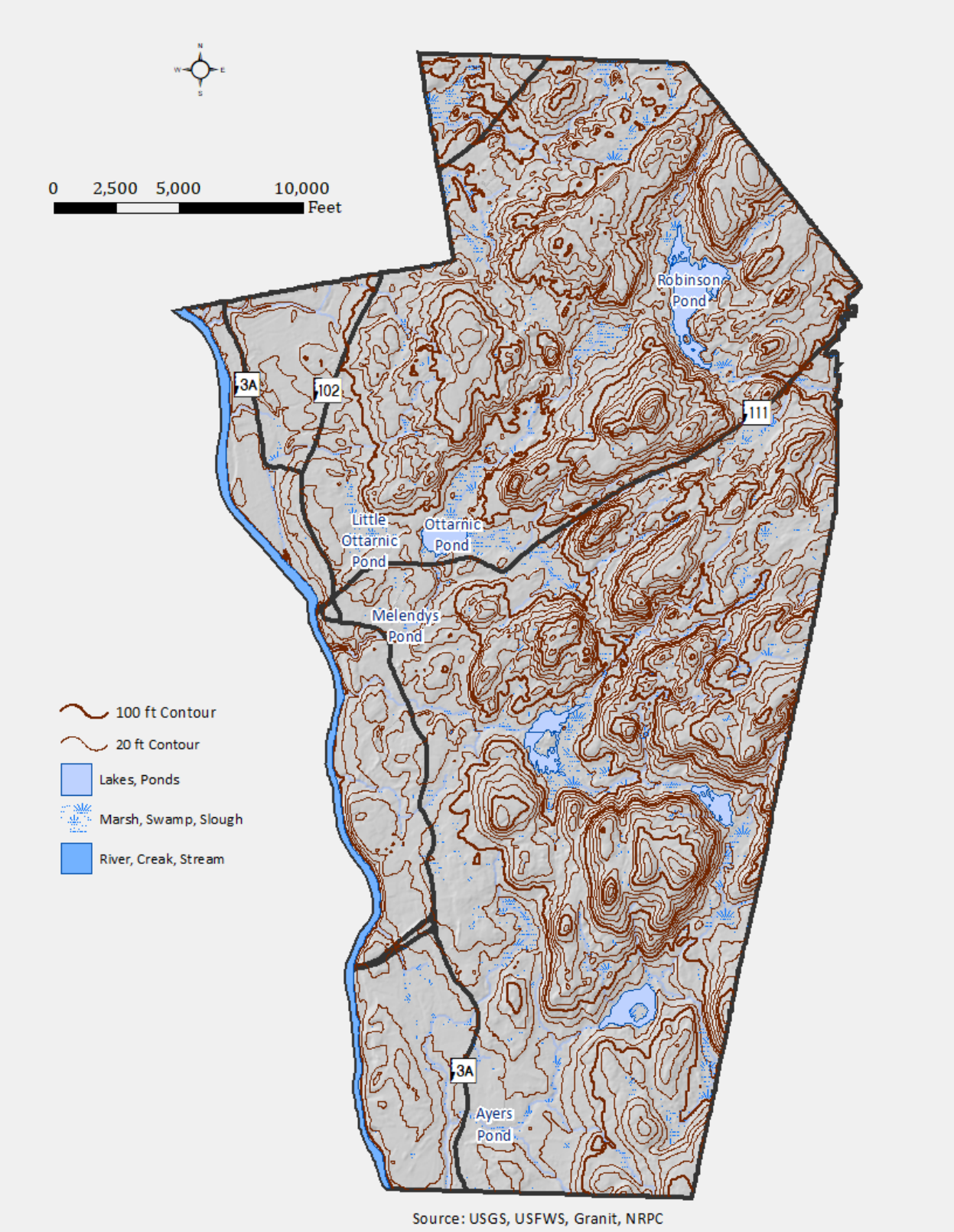
Slope refers to the relative steepness or pitch of a piece of land. Measurements of slope are expressed in percentages and are calculated by dividing the difference in elevation of two points by the distance between the points (i.e., change in elevation/distance = % slope). Thus, land with 0% slope has constant elevation and is perfectly level. Likewise, land with 100% slope has a pitch equivalent to a 45-degree angle. The mapping of slopes is a valuable tool in determining areas where slope conditions may require special design considerations or other precautionary measures. The following slope categories are recommended for consideration in planning for the future land uses in Hudson and are illustrated on Map III-2.

25+% Slope - Land areas in this category are among the most difficult to develop. A 25% slope represents a 25-foot vertical rise in elevation in a 100-foot horizontal distance. The central part of Hudson, near Musquash Swamp contains the few areas in Town where the slopes are 25% or greater. These areas will require extreme care and usually need special engineering and landscaping to be developed properly. The major problem of development on slopes of 25% or more is that in general steep slopes have a very shallow layer of soil covering bedrock. Proper safeguards must be applied to such sites to minimize hazards to downslope areas, and these safeguards usually mean costly and often problematic engineering and landscaping solutions. There are few areas where slopes exceed 25% or greater in the Town of Hudson, see Map III-2.

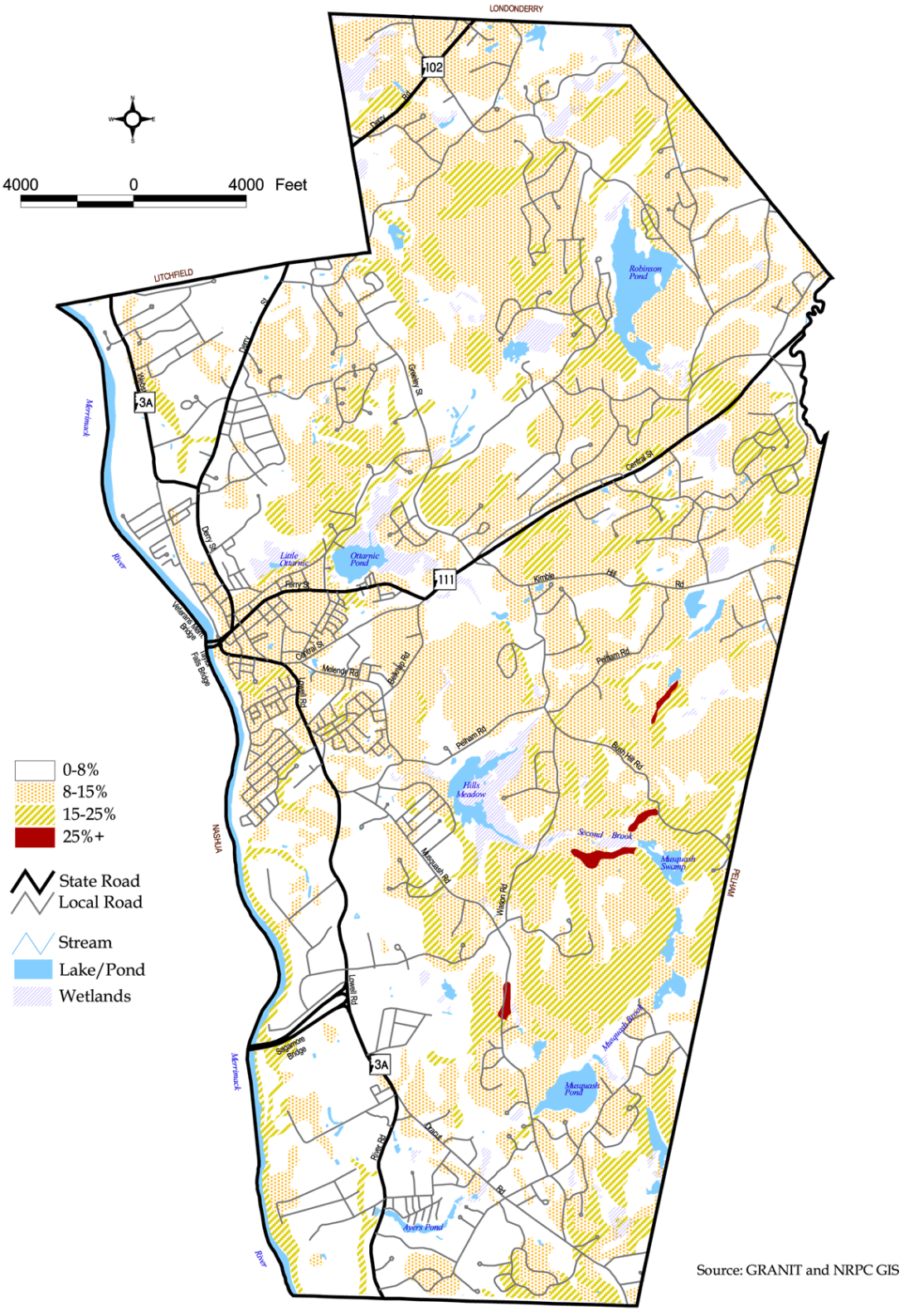
15-25% Slope - Areas in this slope category present similar challenges to areas with slopes greater than 25%. Development of these areas should be undertaken with extreme care, recognizing the sensitivity of the environmental factors involved. In general, the steeper the slope, the shallower the soil layer covering bedrock. In addition, the velocity of surface water run-off can increase with the steepness of the slope, thereby increasing the potential for erosion and decreasing the potential for absorption of surface run-off. Road construction is also more difficult and costly under these slope conditions and will result in increased volume and velocity of run-off to adjacent roadway areas. If proper safeguards are not applied, substantial hazards and potential damage to downslope property could result. For these reasons, active land uses should be avoided or approached with caution. Areas with 15-25% slopes are scattered throughout the Town in both developed and undeveloped areas. These areas are more suitable for open space.

8-15% Slope - Land areas with slopes in this category can present many of the same problems that are associated with the 15%+ category including erosion susceptibility and low absorption potential that can make site development and subsurface sewage disposal difficult. The severity of these conditions, however, is less hazardous than on steeper slopes. Overcoming site conditions can be accomplished with caution and foresight. Approximately one third of the Town is comprised of slopes in this category.

## Map III-1. Topography



## Map III-2. Slope



0-8% Slope - Land areas in this slope category are generally considered to be well-suited for development. Land in this slope category is concentrated on the western side of Town along the banks of the Merrimack River and straddling some of Hudson's busiest corridors including Lowell Road and Derry Street. These moderately sloping areas are ideal for a wide variety of land uses and not surprisingly, most of Hudson's most heavily developed land is in these areas. Their relative flatness does not pose severe erosion potential, and the velocity of the surface water run-off is sufficiently slow to allow absorption of the water into the soil. In addition, soil layers on slopes of 0-8% are usually of sufficient depth to allow for the absorption and purification of run-off and septic system effluent. One exception to the above comments, however, must be noted. Areas of 0-3% slope at low elevations, or with poorly or very poorly drained soils, have been found to have a high-water table (at or near the surface) throughout most of the year. These areas pose substantial problems to site preparation, construction, and effective subsurface sewage disposal. But generally, flat, well-drained areas are usually quite suitable for active use and development.

## Soils

In areas currently without access to Town sewer, soils are the most important determinant of the land's development capability. A soil's depth to water table, susceptibility to flooding, slope, depth to bedrock, stone cover, and permeability present potential constraints to the construction of roads, stormwater management and control systems, buildings, and septic disposal systems. Soils with high limitations for septic systems comprise approximately 40% of Hudson's land area. Concentrations of these soils are located primarily in the northern and southern parts of Town, with scattered concentrations in the central part. Soils with moderate limitations for septic systems comprise approximately 40% of the Town's land area. Concentrations of these soils are located primarily in the central part of Town along the Merrimack River and in the northern area adjacent to the Londonderry Town line, with scattered concentrations throughout the central part. Many of these areas, however, benefit from public sewer. Soils with slight limitations for septic systems comprise approximately 20% of the Town's land area.

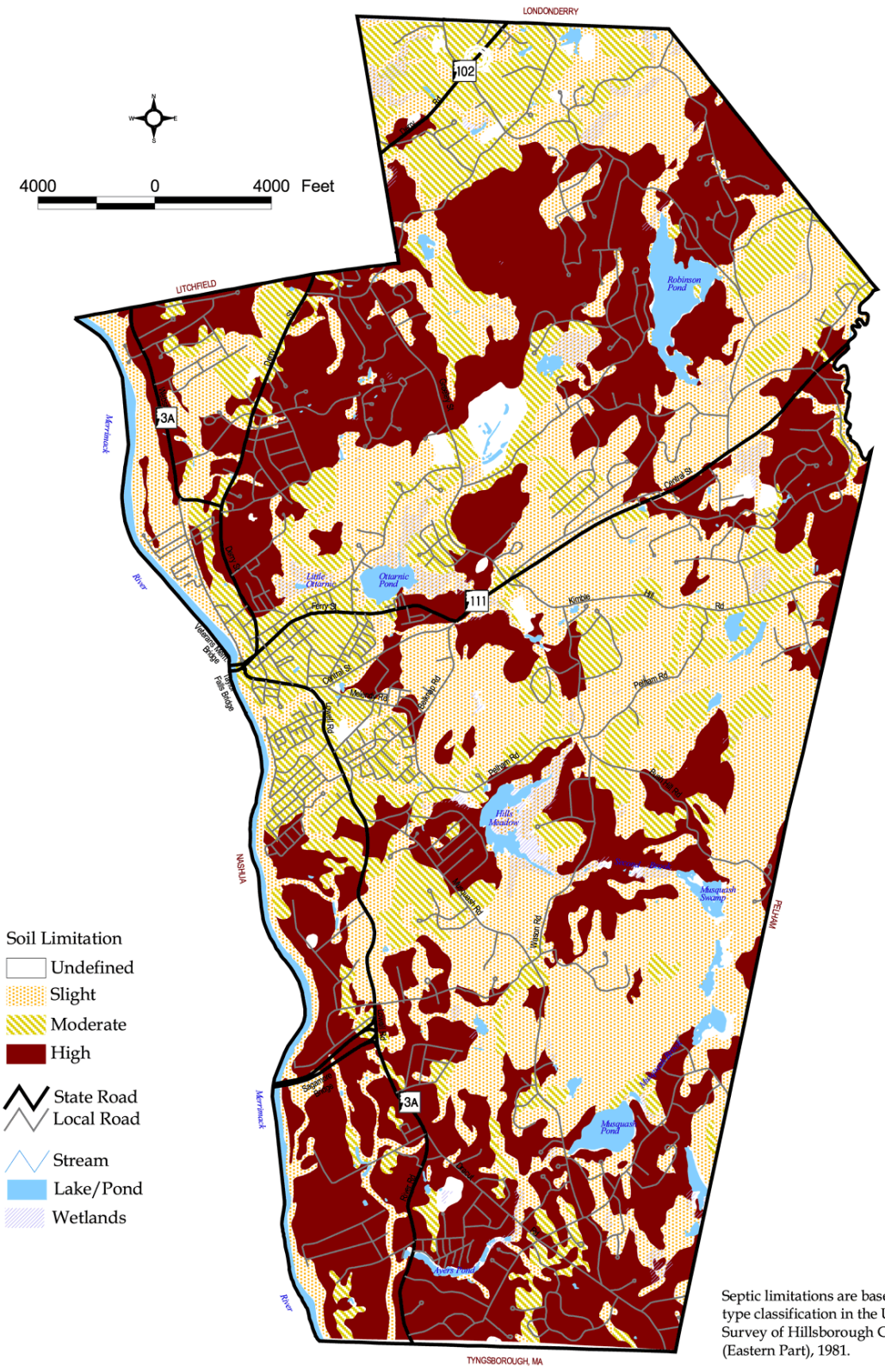
Hudson bases minimum lot sizes for residential development on the presence of both water and sewer service facilities. A single-family residence on Town water and sewer, for example, requires a minimum lot size of 30,000 square feet or 0.70 acres. Without public water and sewer, the residence requires 43,560 square feet for a single family and 60,000 square feet for a duplex. The Town does not permit construction of multi-family houses without Town water and sewer.

## Agricultural Soils

Like other Merrimack River Valley communities, Hudson once enjoyed a notable concentration of prime and important farmland, however, most of these areas have been developed for nonagricultural purposes. The USDA has identified soil types that are best suited for crop production based on soil quality, growing season, and moisture supply. The three agricultural soil classifications recognized by USDA in New Hampshire are discussed below. The location of these soils is illustrated on Map III-4, though as noted above, most of these areas are no longer available for farming.

Prime Farmland - These lands are best suited for producing crops. Their soil quality, growing season, and moisture supply make them suitable for producing sustained high yields of crops economically when treated and managed according to modern farming methods. They can be farmed continuously without degrading the environment and usually require little investment and energy for maintaining their productivity. These soils are rated among the best in the country for farming uses. Almost no Prime Farmland remains undeveloped in Hudson.

## Map III-3. Soil Limitations




Septic limitations are based on soil type classification in the USDA Soil Survey of Hillsborough County (Eastern Part), 1981.

Farmlands of Statewide Importance - These lands are rated as being of statewide importance for the production of crops. Though not of national importance, they are important to agriculture in New Hampshire and can be farmed satisfactorily and will produce fair to good crop yields when managed properly. The Farmlands of Statewide Importance are scattered throughout Hudson and are commonly found adjacent to wetlands.

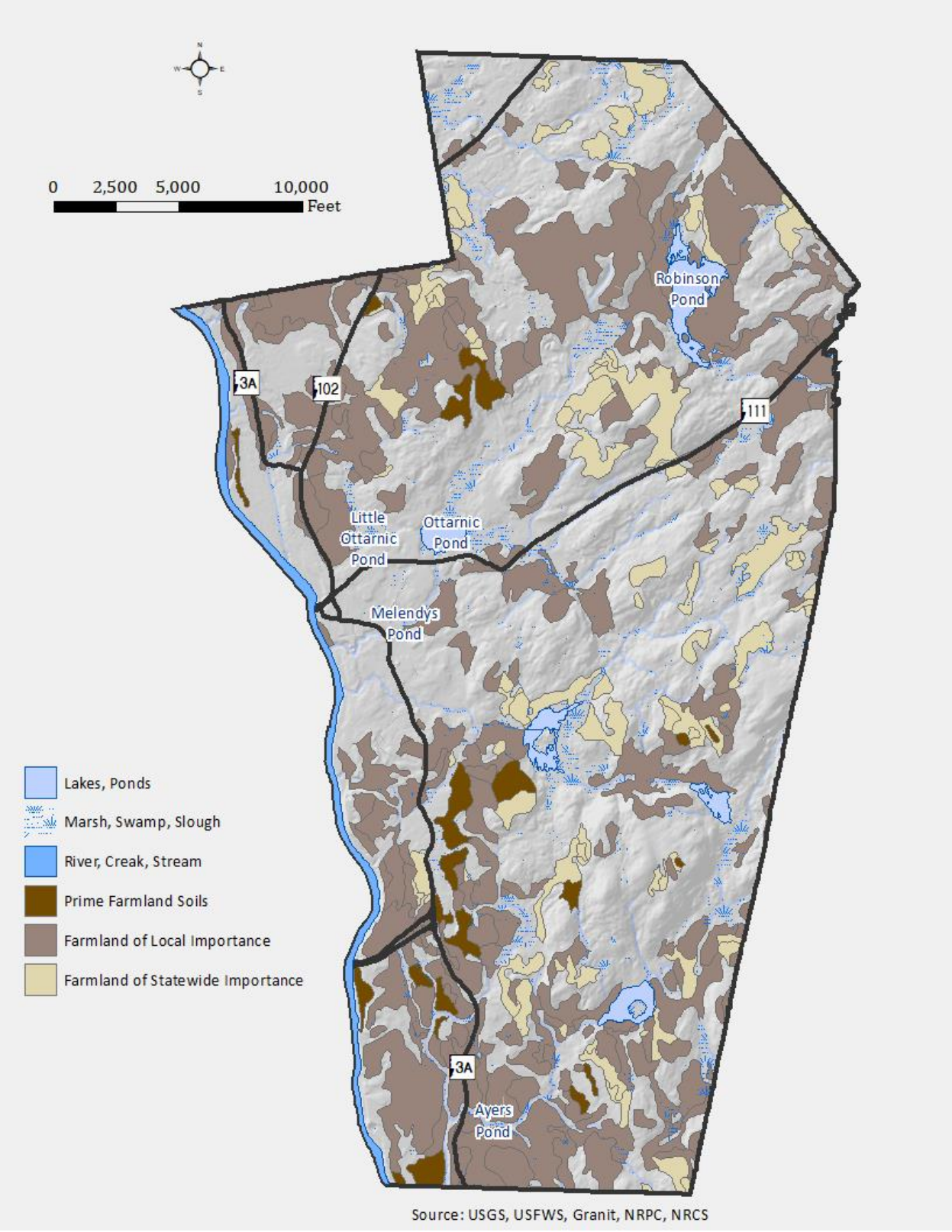
Farmlands of Local Importance - These lands are rated as having local importance because they are already being actively farmed or were farmed in recent years. Aa with Farmlands of Statewide Importance, these areas are scattered throughout Hudson.

Although agriculture is not extensive in Hudson, remaining areas are still an important resource that provides local seasonal produce and planting materials, provides open space, contributes to the rural character of the town, and serves as an educational resource. Significantly, the largest active farm in Hudson is the 100-acre Farm at Alvrine High School. The Farm is a key component of the school's Wilbur H. Palmer Career Technical Center (CTE) program. Alvrine' s facility houses a working dairy farm with several milking cows along with horses and donkeys and a large community garden. Milk from the Farm is used in the making of cheddar cheese under the well-known Cabot brand which can purchased locally and throughout the region. The Alvrine Farm encompasses some of the few remaining undeveloped areas of farmland soils of Statewide and Local significance in Hudson. The Town-owned Hills property across Derry Street also includes undeveloped areas of soils of Statewide and Local significance as well as an area of Prime Farmland soil.

Other undeveloped concentrations of Statewide and Locally Important farmland soils are found to the north, southeast and east of Robinson Pond including on the Robison Pond Park site itself; east of Lowell Road in south Hudson; in east-central Hudson and in the vicinity of Musquash Brook on both Town-owned and privately-owned land.

The Town of Hudson encourages the pursuit of agriculture, promotes agriculture-based economic opportunities, and protects farmlands within the Town by allowing agricultural uses and related activities to function with minimal conflict with abutters. Backyard farming and/or so called "Victory gardens" can provide cost saving nutrition while also providing relief from unexpected events like supply chain disruptions, product recalls, and has potential to combat against 'food deserts." Hudson should adopt policies that allow residents to utilize their properties for such uses. Efforts should be taken to encourage existing farmlands to remain in agricultural production and to protect important agricultural soils on undeveloped land that is not currently in use. This is especially true in the General Districts where agriculture uses are allowed and there is sufficient area for viable farming. The Town's Conservation Fund as well as the Trust for New Hampshire Lands and the Land and Community Heritage Investment Program could provide resources to protect important agricultural lands through the acquisition in fee or through easements. It is also noteworthy that undeveloped land with important farmland soils often also encompasses important wildlife habitat areas.

## Map III-4. Important Agricultural Soils



## Forests

Forests were the dominant landscape characteristic of New Hampshire after the retreat of the glaciers. Before colonization of New Hampshire, southern New Hampshire was 93% forested with the remaining 7% being marsh or ponds. By 1850, at the height of agricultural development in New Hampshire, only 20% was forest, while the remaining 80% of Hillsborough County was cleared for livestock grazing, growing livestock feed, and raising crops for home consumption. Agriculture began to decline during the 1860's with western migration and industrialization of the northeast. These fields slowly gave way to scrub trees and conifers generally took over the abandoned farmlands and meadows. Currently, the US Forest Service estimates that New Hampshire is approximately 83% forested.

Today, the greatest threats to Hudson's remaining forested areas, aside from development, are from invasive pest species. Most significant of these are the Hemlock Woolly Adelgid, an invasive, aphid-like insect that attacks hemlock trees, and the Emerald Ash Borer, a beetle from Asia. Ash Borer beetle larval feed on the tissue between the bark and sapwood that disrupts transport of nutrients and water in the tree, eventually causing the tree to die. Gypsy moths are also a threat to the health of area forests though the mortality rate from infestations is relatively low.

Hudson's forested land is made up of by two dominant habitat types: Appalachian Oak-Pine and Hemlock-Hardwood Pine. Appalachian Oak-Pine Forest lands include tree species such as black, scarlet, chestnut and white oaks and shagbark and pignut hickories. Also found are black birch, aspen, pitch pine, sassafras, and yellow birch. Sugar maple and white ash may also be present. Blueberry, black huckleberry, sheep laurel, and Pennsylvania sedge are typical understory plants. As noted in *The New Hampshire Wildlife Action Plan Habitat Stewardship Series* produced by the UNH Cooperative Extension, "Appalachian oak-pine forests, with their abundance of nut-bearing oaks and hickories, provide a rich food source for wildlife such as ruffed grouse, turkey, black bear, squirrels, mice, and chipmunks. In turn, raptors such as northern goshawk feed on small mammals and find nesting and perching sites in white pines in the tree canopy. Near water, white pines provide key nest and perch sites for bald eagles, great blue herons, and osprey." Due largely to development pressure, large forest blocks of Appalachian Oak-Pine Forest are becoming increasingly rare in New Hampshire. Wildlife species found in Appalachian oak-pine habitats include the following:

American woodcock, Bald eagle*, Black bear, Black racer*, Blanding's turtle**, Bobcat, Canada warbler, Cerulean warbler, Common nighthawk**, Cooper's hawk, Eastern pipistrelle, Eastern red bat, Hognose snake**, Moose, New England cottontail**, Northern goshawk, Northern myotis, Ribbon snake, Ruffed grouse, Silver-haired bat, Smooth green snake, Timber rattlesnake**, Veery, Whip-poor-will, White-tailed deer, Wild turkey, Wood thrush.

* State-threatened species ** state-endangered species

Blanding's Turtle - *Source: Northeast Blanding's Turtle Working Group*

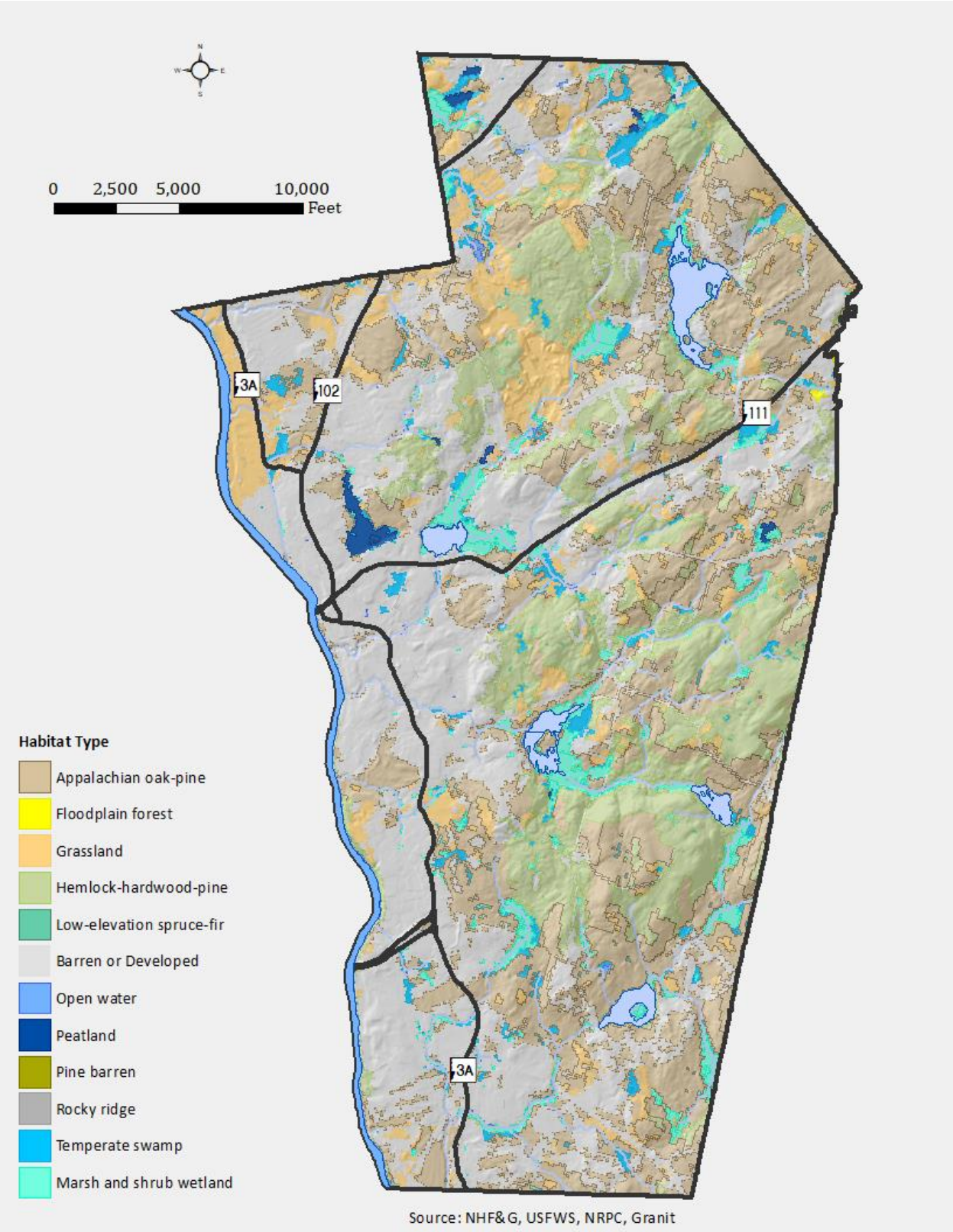
Hemlock-hardwood-pine forest is the most wide-spread habitat in New Hampshire and is heavily represented in Hudson. Dominant trees include white pine and eastern hemlock along with beech, sugar maple, white ash, and red oak. Small trees and shrubs such as witch hazel, maple-leaved viburnum, black birch, black cherry, and ironwood, together with starflower and Canada mayflower found on the forest floor. According to *The New Hampshire Wildlife Action Plan Habitat Stewardship Series*, "Hemlock-hardwood-pine forests are the habitat that surround and support many smaller and unique habitat types in southern New Hampshire. Most wildlife that requires vernal pools, marsh habitat, headwater streams, floodplains, shrublands, grasslands, or peat bogs will also use the surrounding forest to meet their needs for food, cover, or breeding." Wildlife species found in these forests include:

Eastern small-footed bat, Eastern towhee, Flying squirrel, Fisher, Jefferson's salamander, Moose, Northern goshawk, Northern long-eared bat, Pine elfin butterfly, Porcupine, Purple finch, Red-breasted nuthatch, Red-shouldered hawk, Red squirrel, Ribbon snake Cooperative Extension, American toad, American woodcock, Barred owl, Black bear, Black-throated green warbler, Blackburnian warbler, Blanding's turtle**, Blue-spotted salamander, Bobcat, Broad-winged hawk, Canada warbler, Cerulean warbler, Cooper's hawk, Eastern pipistrelle, Eastern red bat, Ruffed grouse, Silver-haired bat, Six-spotted tiger beetle, Smooth green snake, Spotted turtle*, Timber rattlesnake**, Veery , Whip-poor-will, Wood nymph butterfly, White-tailed deer, Wild turkey, Wood thrush, Wood turtle

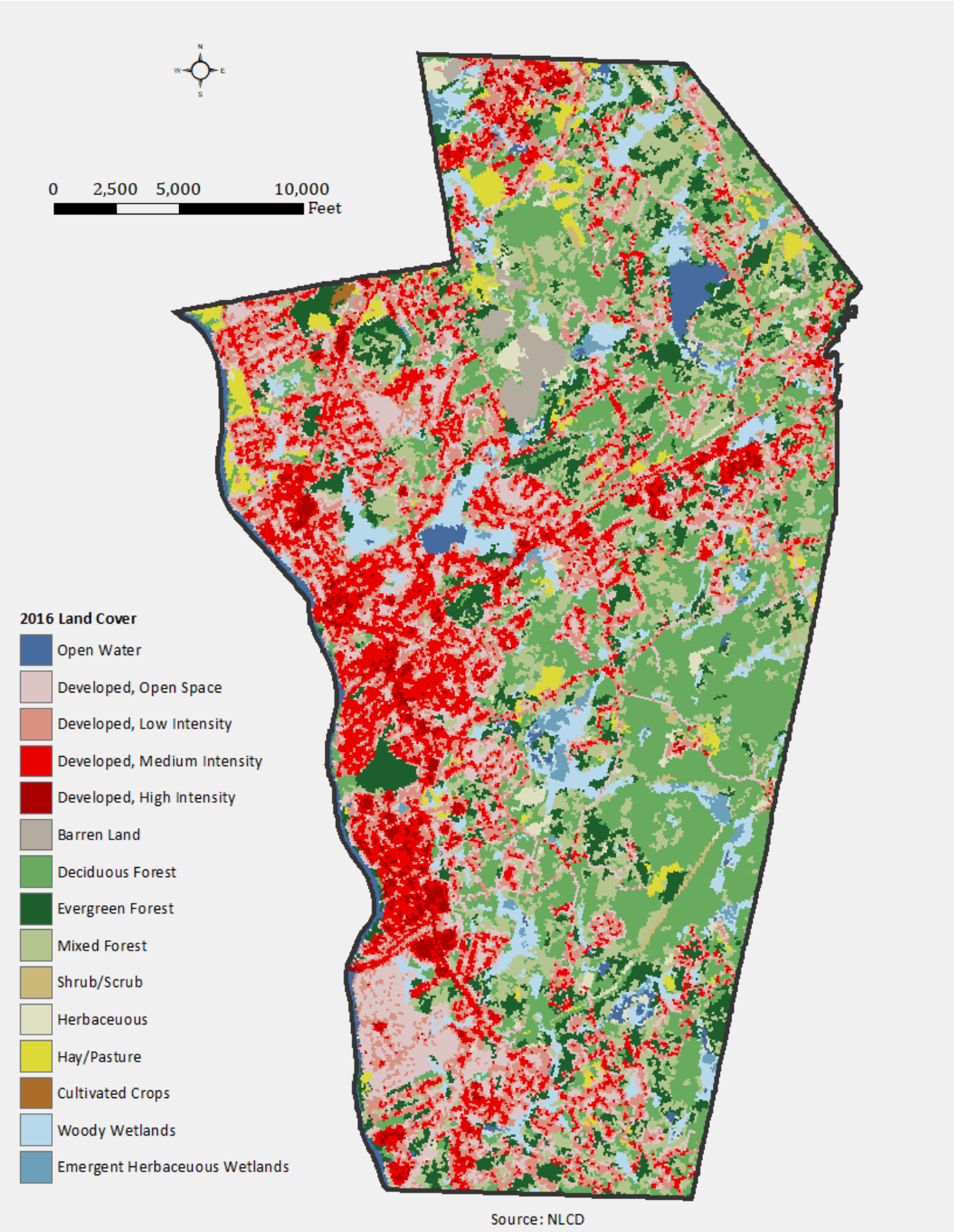
*State-threatened **state-endangered

The dominant forest types in Hudson are illustrated on Maps III-5. Map III-6 depicts land cover in Hudson by type.

## Map III-5. Forest Habitats



## Map III-6. Land Cover by Type



As can be seen on the preceding maps, the largest remaining forest blocks in Hudson are in the eastern half of the Town, especially in more rural east-central areas. One of the largest of these forest blocks is located on property owned by Brox Industries and is adjacent to an active excavation site. The future of that area is therefore uncertain. Fortunately, however, a significant portion of a large forest block in the southeastern section of Hudson is owned by the Town and is included within the Musquash Pond Conservation area.

The Musquash Conservation Area, pictured to the left, encompasses approximately 416 acres of wetland, open water, and upland areas of mixed forest types. The Town of Pelham also owns almost 25 acres of abutting conservation land in Hudson and additional land in Pelham. Key features include 6.9-miles of trails, a canoe/kayak launch area, and historic sites such as the Deacon Merrill Homestead (see Chapter VII – Historic Resources.) Many species of birds and mammals require large, unbroken tracts of forest to sustain their populations. To maintain healthy and diverse wildlife populations, unfragmented forest blocks of at least 500 acres, ideally with a diversity of habitat areas, are desirable.

Preserving large unfragmented forest blocks is also essential to retaining the Town's scenic beauty and rural character, and to provide sufficient area for hiking trails and other outdoor recreational activities. Adding conservation land to Musquash Pond is Hudson's best opportunity to preserve a large block of forested land capable of sustaining a healthy population of wildlife while providing passive recreational opportunities. Currently, additional undeveloped forestland exists on several adjacent parcels, some of which are vulnerable to development. Most important of these is the adjacent 200+ acre property owned by Nash Family Investments. Acquisition of this property would greatly enhance protection of Hudson's most important block of unfragmented forestland. In recent years, designated Town Forests have been used as a stream of revenues that supports conservation and forest management efforts. Today, Hudson has three dedicated Town Forest areas that are used for this purpose: Colburn Town Forest (52 acres), Hudson Town Forest (78.6 acres) and Rangers Town Forest (56.7 acres). The Conservation Commission is charged with the care of these lands, and the group is actively pursuing the expansion of these forests through abutting land acquisition.

## Water Resources

Water is essential to every element of community life. Like air, water is constantly in motion, running above and below the ground's surface across town, state, and national boundaries. The natural system of water in Hudson is also extremely important in planning for growth. Hudson's surface waters are used by residents for fishing, swimming, and boating. Water is drawn from the ground to supply the community with potable drinking water both through on-site wells and from public water supply wells in Litchfield. Conscious and careful planning of the land uses in the Town must be adhered to if hazards to the health and well-being of community residents are to be avoided.

## Surface Water Resources

Hudson's surface water resources, including watershed boundaries, are illustrated on Map III-7. Most prominent among these is the Merrimack River. The Merrimack River forms the entire western boundary of the Town and serves as a regional water supply and recreational resource. The Merrimack River also receives discharge from several of the region's wastewater treatment plants including the City of Nashua and the Town of Merrimack and much of the stormwater system. The Merrimack River is one of 12 rivers in the state protected under the Rivers Management and Protection Act. Activities within one quarter of a mile of the river are regulated by the State and reviewed by the Lower Merrimack River Local Advisory Committee (LMRLAC). The Town currently maintains active membership on LMRLAC to review development within the Merrimack River corridor. Currently, access to the Merrimack River in Hudson is extremely limited yet as noted in Chapter I – Community Vision & Goals, improved access is a high priority.

Hudson's largest surface water resource after the Merrimack River pictured below, is Robinson Pond,. Robinson Pond is the largest water body in Hudson. Residents of Hudson and nearby towns use the pond for swimming, boating, nature walks in the Town-owned conservation land, fishing, and bird watching (also see Chapter VIII – Community Facilities). Much of the Robinson Pond watershed is developed which contributes to elevated amounts of nutrients leaching into the pond, resulting in a eutrophic condition. Efforts to improve the condition of the pond include regular water quality monitoring and outreach to residents in the Robinson Pond watershed encouraging them to adopt good stewardship practices and strict enforcement of State regulations. The Conservation Commission is actively monitoring a study that is underway by the Nashua Regional Planning Commission that will evaluate the Robinsons Pond watershed. The study will provide recommendations to the town on ways to improve the overall health of the pond though Best Management Practices and will involve the participation of the Conservation Commission to help inform abutting landowners of the importance of this vital resource. Additionally, the Conservation Commission recently purchased 16 and 25 Robinson Pond Drive – 36 acres for the purpose of protecting the Robinson Pond watershed.

As discussed above, another important water resource in Hudson is Musquash Pond and its associated wetlands and brook. Musquash Brook originates in western Pelham near the Town border and flows into Hudson through a series of ponds and into Limit Brook, which empties into the Merrimack River in Tyngsborough, Massachusetts. Single-family residences comprise nearly half of the land area within the Musquash and Limit Brook watersheds. Despite increased development in recent years, however, this area constitutes one of Hudson's highest quality natural resources because of the diverse wildlife habitat and the numerous recreational opportunities available to area residents.

*Merrimack River at Merrill Park*

## Watersheds, Rivers, and Streams

A watershed is defined as a geographic area consisting of all land that drains to a particular body of water. Watersheds vary in size, shape, and complexity. Watersheds are delineated by identifying the highest topographic points in a given area and determining the direction in which water will flow from these high points. All water bodies have their respective watersheds. Major rivers, such as the Merrimack River also typically contain many sub-watersheds and tributaries. All the perennial streams identified in Table III-1 are tributaries in the larger Merrimack River watershed, with individual watersheds for each stream (see Map III-7).

Table III-1. Perennial Streams in Hudson

| Name | Total Length (miles) | Length in Hudson (miles) | Dammed or Free Flowing | Class[i] |
|---|---|---|---|---|
| Musquash Brook | 2.7 | 2.7 | free | B |
| Limit Brook | 2.6 | 2.6 | free | B |
| Second Brook | 2.5 | 2.5 | dammed | B |
| First Brook | 1.5 | 1.5 | dammed | B |
| Merrill Brook | 1.9 | 1.9 | dammed | B |
| Glover Brook | 1.0 | 1.0 | dammed | B |
| Reeds Brook | 2.1 | 2.1 | free | B |
| Chase Brook | 2.3 | 1.5 | dammed | B |
| Merrimack River | 116 | 6.8 | dammed | B |

Each of the perennial streams in Hudson has a watershed. The water quality in each of these streams is directly related to the land use and activities that take place within each watershed, which are not always defined by municipal boundaries. Because the drainage area of any given water body may extend beyond a town's borders, inter-municipal coordination of land uses in each watershed is important in ensuring effective management and protection of the water resource. One example is the Musquash Brook Watershed, which is in both Hudson and Pelham, with about one-quarter of its watershed area in Pelham and the remainder in Hudson. Map III-7 illustrates each watershed area in Hudson. Table III-2 provides area statistics for each watershed.

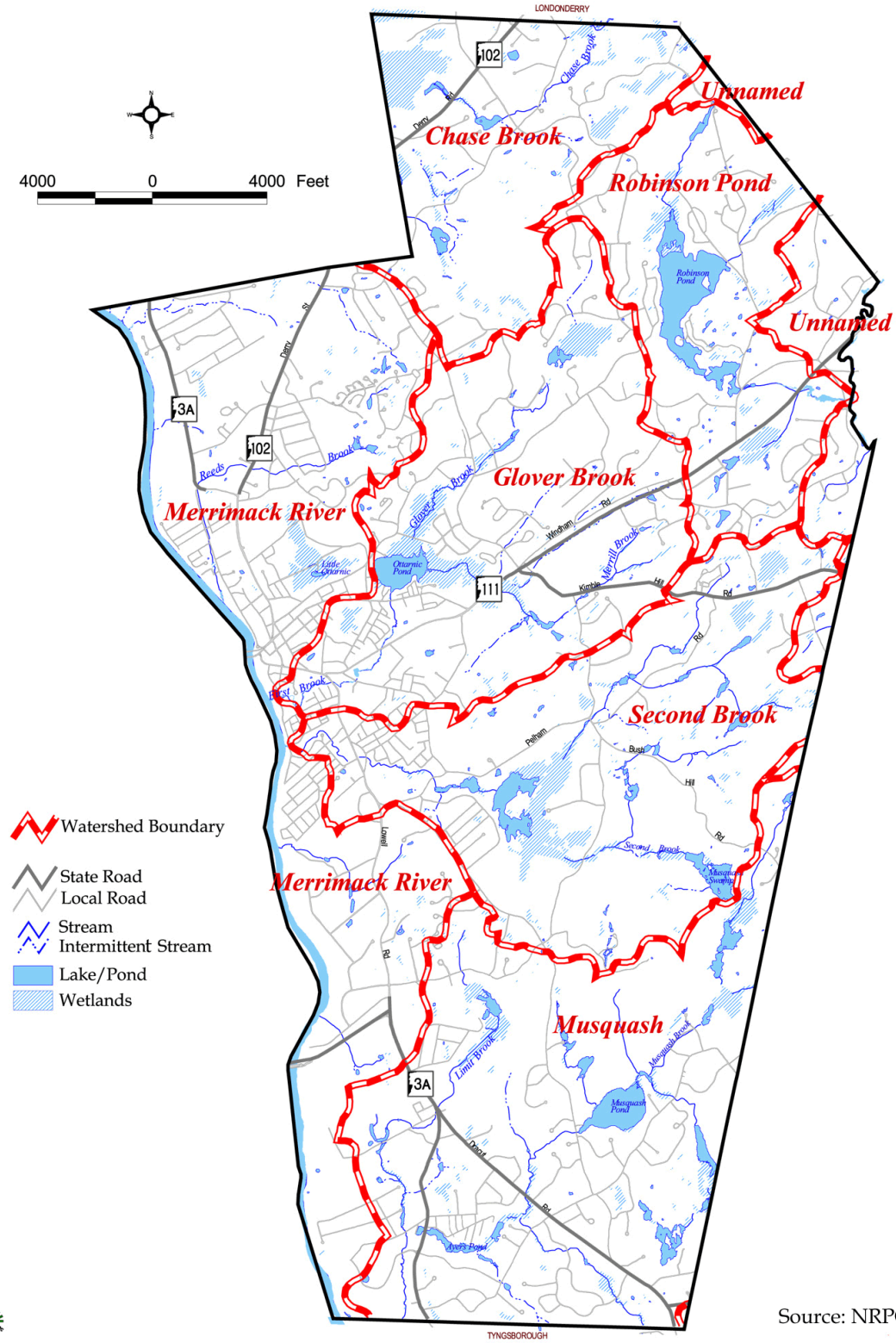
Because all of these systems are connected in the greater Merrimack River watershed, it is important to remember that small disturbances in the perennial streams and their watersheds can alter water quality and quantity in the larger streams and rivers such as the Merrimack River. Erosion, flooding, and contamination can occur in the smaller streams from stormwater. The cumulative impacts of development, from the smallest stream to the largest river, have an impact on both water quality and quantity in a community.

**Table III-2. Watersheds in Hudson**

| Watershed | Acres in Hudson | Percentage of Hudson |
|---|---|---|
| Merrimack River primary watershed | 3,999 | 21% |
| Musquash Brook watershed | 3,840 | 20% |
| | | |
| Unnamed watershed | 580 | 3% |
| Second Brook watershed | 3,323 | 18% |
| Glover Brook watershed | 3,060 | 16% |
| Beaver Brook | 107 | 1% |
| Chase Brook watershed | 1,888 | 10% |
| Robinson Pond | 1,976 | 11% |
| **Total area** | **18,773** | **100%** |

Source: NRPC as delineated on USGS quadrangle maps.

## Map III-7. Water Resources




Source: NRPC GIS

## Lakes and Ponds

Hudson's lakes and ponds are an especially important surface water resource, providing wildlife habitat, water supply, flood control, and outdoor recreational opportunities. An inventory of Hudson's lakes and ponds is found in Table III-3, below.

Table III-3. Lakes and Ponds in Hudson

| Name of Water | Area (acres) | Average Depth (feet) | Class | Trophic Class | Type |
|---|---|---|---|---|---|
| Ayers Pond | 12 | 5.5 | B | Eutrophic | Dammed |
| Benson's Pond | 1.8 | ~ 6 | B | NA | Dammed |
| Little Ottarnic Pond | 2 | NA | B | NA | NA |
| Ottarnic Pond | 34 | 12 | B | Eutrophic | Dammed |
| Melendy's Pond | 1.5 | NA | B | NA | NA |
| Musquash Pond | 32 | NA | B | NA | NA |
| Robinson Pond | 88 | 29.5 | B | Eutrophic | Natural |
| Unnamed Pond (Musquash Brook) | 52.7 | 9.8 | B | Eutrophic | Natural |

Source: NH DES, *Survey Lake Data Summary*, November 2000.
*Hudson Conservation Plan*, November 1990.
Dave Clark, *Benson's Property Water Control Structures,* 2002.

The trophic class of a lake indicates its stage in the natural aging process, called eutrophication that all water bodies undergo. Generally, three classifications are used: oligotrophic - high transparency with low levels of nutrients and vegetation and high levels of dissolved oxygen; mesotrophic - elevated levels of nutrients and vegetation and decreased levels of dissolved oxygen; and eutrophic - low transparency, rich in nutrients, abundant aquatic vegetation, and low levels of dissolved oxygen. Most of the lakes and ponds in Hudson are classified as eutrophic. The natural aging process can be accelerated by excessive nutrient loading which encourages weed and algal growth, and in turn speeds up the deposition of decaying vegetation as organic sediments on the lake's bottom.

Robinson Pond is an example of the acceleration of eutrophication in a pond. The pond, once a popular location for summer camps, has become a popular location to build year-round single-family homes. Due to the intense development, increased amount of nutrients from lawn fertilizers, failing septic tanks and other natural conditions, Robinson Pond is experiencing high levels of phosphorous. Protecting the pond's water quality through sound land use practices, sustainable technologies, natural mitigation processes, public education and land conservation is essential to ensure that it remains a wildlife and recreational.

## Shoreland Water Quality Protection Act

The Shoreland Water Quality Protection Act, originally named the Comprehensive Shoreland Protection Act (CSPA), was enacted into law in 1991. Significant amendments were passed in 2008. The Act establishes minimum standards for the development of shoreland areas adjacent to the state's public waters. Protected shoreland includes all-natural freshwater bodies without artificial impoundments,

artificially impounded freshwater bodies, rivers, coastal water, and all land located within 250 feet of the reference line of public waters. Natural woodland buffers must adhere to the following:

1. Where existing, a natural woodland buffer must be maintained within 150 feet of the reference line.
2. Tree cutting is limited to 50% of the basal area of trees, and maximum of 50% of the total number of saplings in a 20-year period.
3. A healthy, well-distributed stand of trees must be maintained.
4. Stumps and their root systems must remain intact in the ground within 50 feet of the reference line.

The Shoreland Protection Act only regulates activities along Ayers Pond, Ottarnic Pond, Robinson Pond, and an unnamed Pond along Musquash Brook and has helped to mitigate adverse impacts to these surface waters resulting from land use and development activities.

## Wetlands

Wetlands perform multiple important functions including aquifer recharge, flood control, water purification and wildlife habitat for a wide range of plant and animal species. Several endangered and threatened species are found only in wetlands. As such, Hudson should consider policies and procedures to restrict land uses that endanger these sensitive habitats. Wetlands are defined by three parameters: hydric (saturated) soils; hydrology (water table at or near the surface), and wetland vegetation. Map III-8 illustrates that wetland areas in Hudson are, for the most part, located adjacent to the town's rivers, streams, and ponds. This relationship is the result of a localized high-water table and the source of greater quantities of soil water during periods of high stream flow. There are also some scattered pockets of wetland soils throughout town, usually at the bottom of low-lying areas or depressions.

The significant wetland systems in Hudson include: Musquash Brook-Pond, Second Brook-Mile Swamp, Ottarnic Pond-Glover Brook-Merrill Brook, Robinson Pond, and Chase Brook. Many of these wetlands form contiguous systems, designating them high in ecological value. The value of these connected systems is diminished, however, when land use alteration (such as filling) causes portions of these systems to become fragmented.

Regulatory methods of protecting wetlands from pollution and destruction include requirements for erosion and sedimentation control plans and enforcement of those plans, minimum setbacks for buildings and septic system leach fields, minimum vegetative buffer requirements and prime wetland designation. Hudson's Wetland Conservation District zoning permits only the following uses: forestry and tree farming, agriculture (including grazing, cultivation and harvesting of crops), water supply wells, conservation areas and nature trails, and some uses that are permitted by a Conditional Use permit issued by the Planning Board as long as they do not adversely affect wetlands. With increasing development taking place within the Wetland Conservation District, the Planning Board should carefully evaluate wetland buffer areas during site plan review to ensure minimal disturbance. A biennial review of the Wetland Conservation District may help ensure the Town of Hudson is following all State and Federal Regulations.

*New Hampshire Wetland*

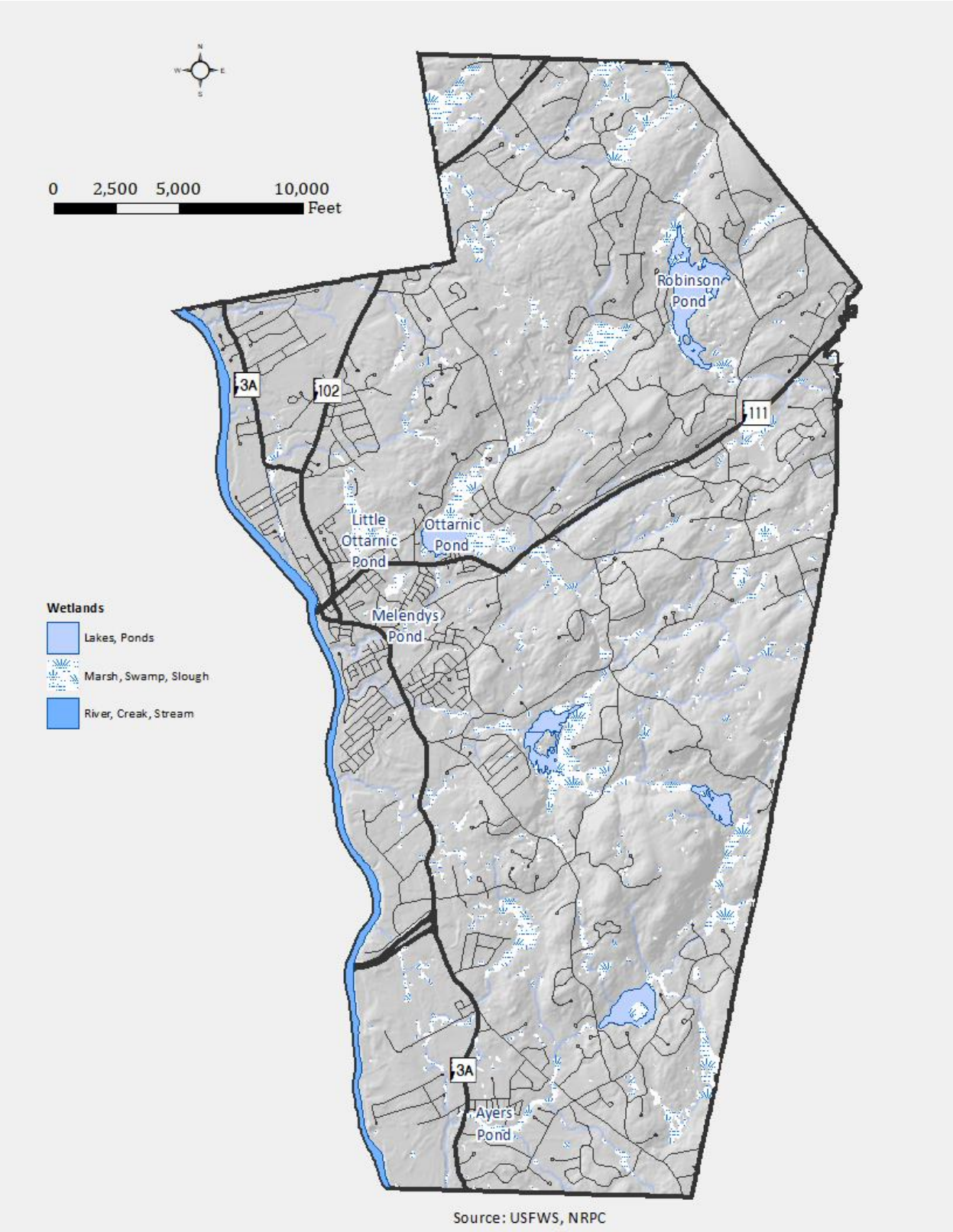
## Vernal Pools

Vernal pools are essential for the life cycle of many invertebrates and amphibians. These temporary forested wetlands serve as a home to many of these species which feed on the nutrients from fallen leaves. Vernal pools can range in size from a few square feet to several acres. Vernal pools are generally associated with forested wetlands, but can also be found within larger wetlands, such as oxbows in river floodplains or scrub-shrub wetlands.

Most vernal pool animals do not live their entire lives in the pool but migrate in response to snow melt and early spring rains. The pools generally dry up by mid to late summer. Depending on the groundwater, some pools will be refilled in the autumn. Mole salamanders and wood frogs spend 90% of their lives in the surrounding uplands, perhaps as far as a quarter mile from the pool. Adults migrate to the pool for a few weeks to reproduce and surviving juveniles leave before the water dries.

Other organisms (e.g., snakes, turtles, insects, and birds) migrate from nearby wetlands to breed or feed in the productive pool waters. These animals return to more permanent wetlands. Other animals develop entirely in the pool and most survive the dry season. Fingernail clams and air-breathing snails burrow beneath the leaves that remain to await the return of water. Fairy shrimp deposit eggs in the dry pool that hatch after the pool refills.

Map III-8. Wetlands



## Floodplains

Floodplains are areas adjacent to watercourses and water bodies, which are susceptible to the natural phenomenon of flooding during periods of high run-off. The unpredictable nature of flooding requires the application of precautionary measures to avoid substantial damage to life and property in areas susceptible to floods.

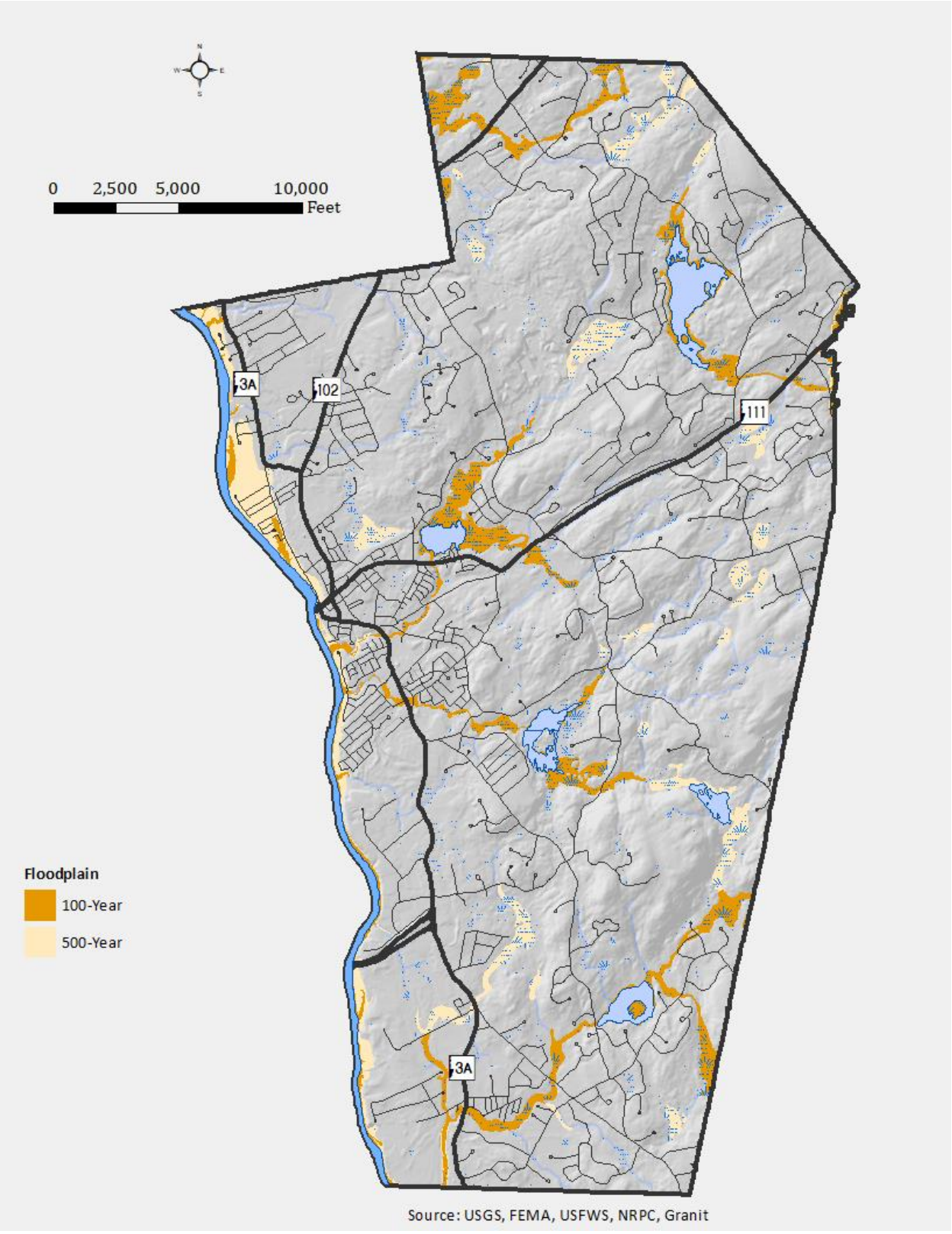
Two methods are available to avoid the problems presented by periodic flooding. Protective measures can be applied to structures already located, or proposed for location, on floodplain areas. Preventive measures can also be used to regulate the types of development permitted in these areas to minimize the potential hazards to life and property of community residents and landowners. Employing either approach requires the identification of affected properties.

Floodplain areas cover over 2,000 acres or approximately 11% of the area in Town. Most of the floodplain area is located along the east bank of the Merrimack River and in the Second Brook and Ottarnic Pond Watersheds as indicated on Map III-9. The only way to change the floodplain boundary is for the owner or the Town to submit a Letter of Map Revision and proof to the Federal Emergency Management Agency (FEMA) stating that the designated area is no longer subject to flooding, although it may have been at one time.

The Town of Hudson requires a floodplain permit for all proposed developments in any special flood hazard areas. The special flood hazard areas are determined by the various zones within the 100-year flood elevation as defined in the Community's Flood Insurance Study, the Federal Insurance Rate Map, and the Flood Hazard Boundary Map. While the Town of Hudson allows development in special flood hazard areas upon approval, the applicant must also obtain permits required by federal or state law. These permits must be provided by the applicant prior to approval by the Town Engineer. In addition, there are certain qualifications that a structure or structures must meet in order to receive a building permit, including the following: 1) all new construction and substantial improvements of residential structures have the lowest floor, including the basement, elevated to or above the one-hundred-year flood level; and 2) proposed structures to be located on slopes in special flood hazard areas…shall include adequate drainage paths to guide floodwaters around and away from the proposed structures.[ii]

Flooding at Central Street - from *Remember Hudson When…Memories of the 1936 Flood*

Map III-9. Floodplains



Hudson's natural areas provide habitat for species such as the Common Nighthawk, pictured above, a state-endangered species.

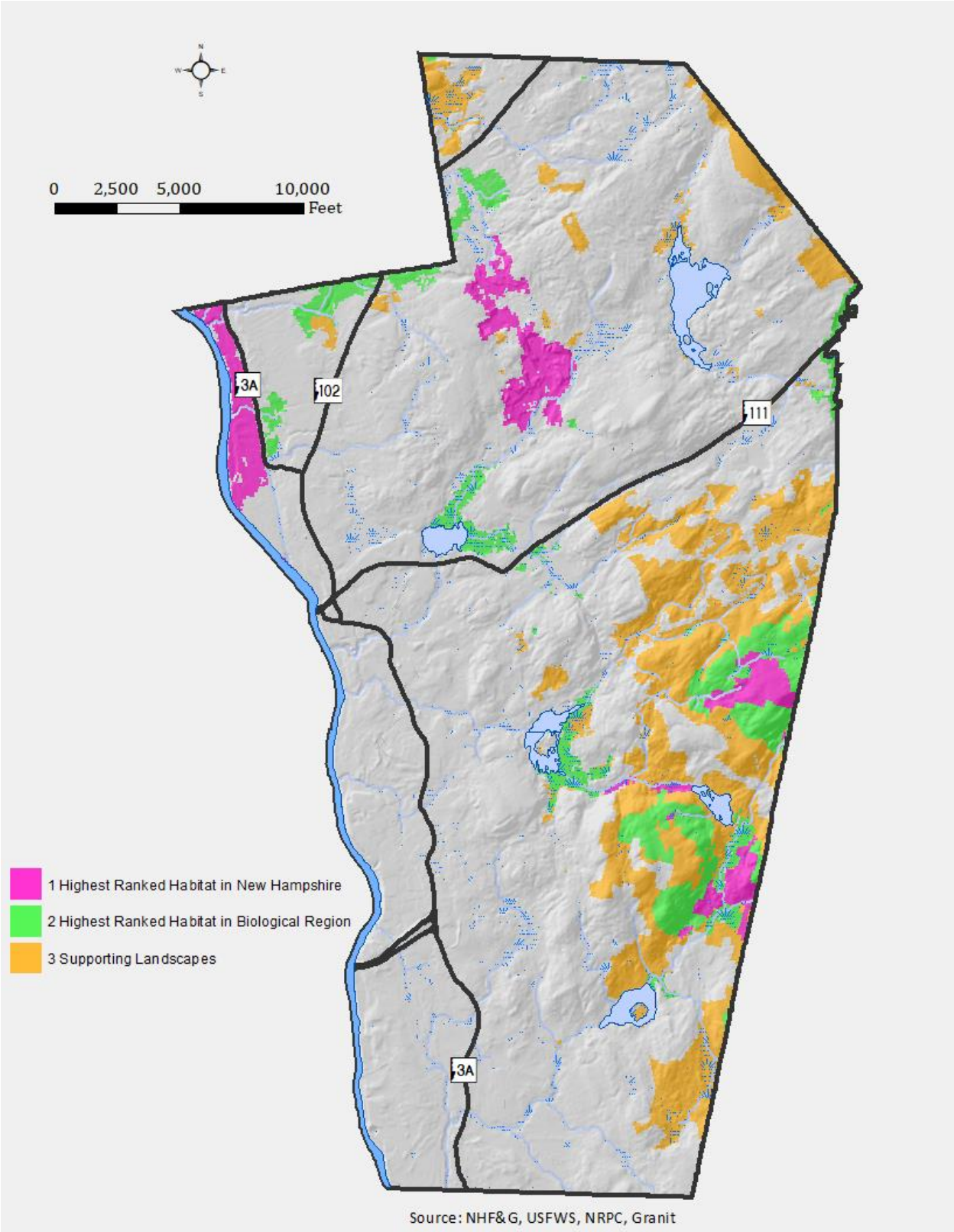
## Wildlife Habitat

The suitability of various habitats to support wildlife is affected by the features of a particular place including the size of the area, proximity to other habitat types, proximity to developed areas and other factors. New Hampshire Fish & Game (NHFG) developed a method to assess the relative ecological condition of habitats through the use of statewide GIS data that represents species diversity, landscape context and human impacts. The data was first developed in 2006 and most recently revised in 2015. For 2015, several regional datasets were used.

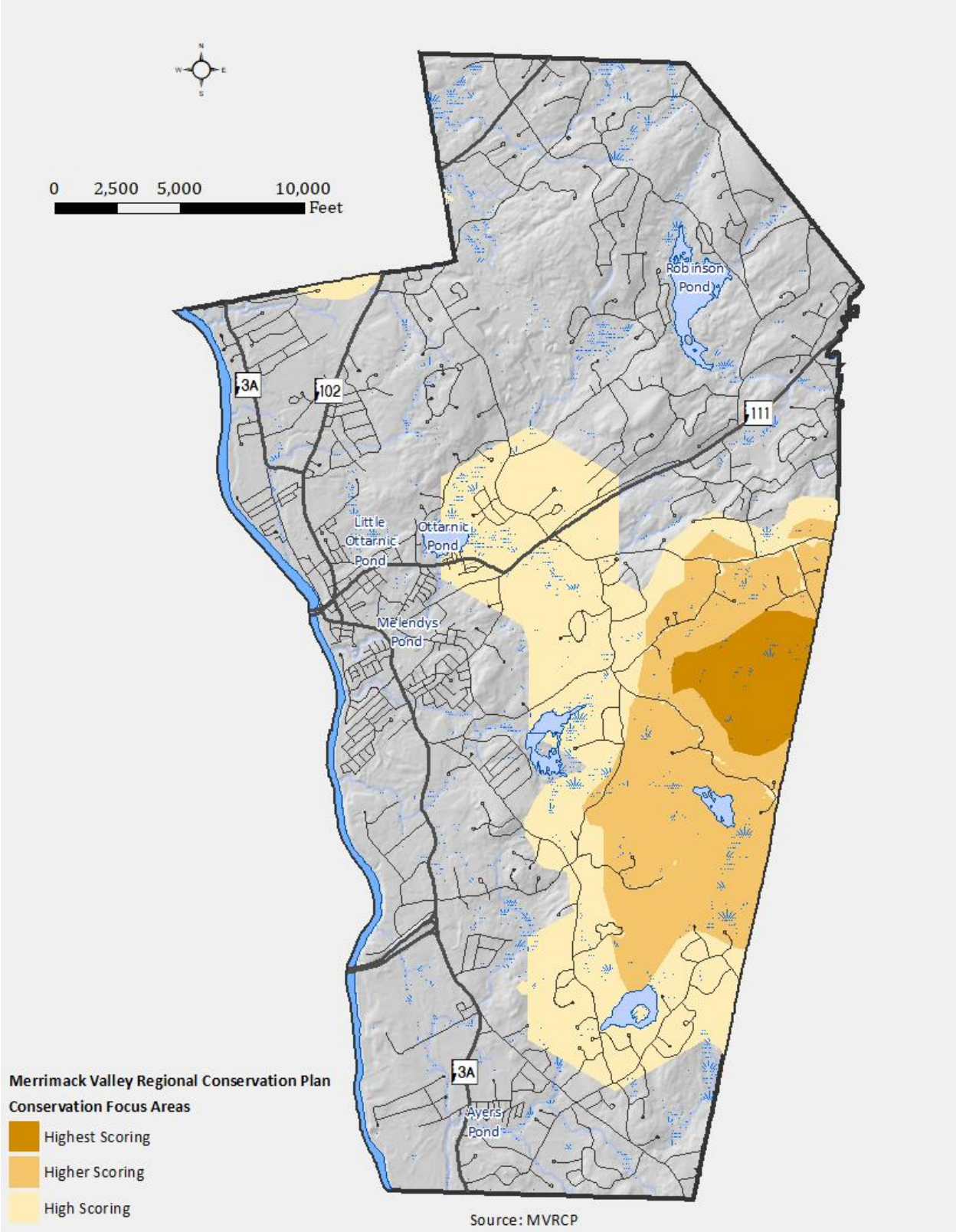
The NHFG rating system is based on three variables: biological diversity, landscape context, and impacts of human activities. Habitats are ranked to identify priority conservation targets across all habitat types. The results of this analysis are shown on Map III-10, on the following page. It should be noted, however, that the highest ranked habitat area shown in the upper left corner of the map adjacent to the Merrimack River has recently undergone development and the large area shown in the north-central portion of town is located on the Brox Industries excavation site.

In 2014, the Merrimack Conservation Partnership, a regional conservation alliance formed to protect the southern portion of the greater Merrimack River watershed in New Hampshire and Massachusetts, developed a conservation plan for the two-state region. This plan also identified priority habitat areas but used a somewhat different analysis based on the "co-occurrences" of four main conservation themes: 1) Wildlife Habitat, 2) Water Resources, 3) Agriculture and Forestry, and 4) Recreation and Trails. The resulting Conservation Focus Area Map for Hudson is shown on Map III-11. Both maps can be used to identify priority areas for land conservation. Since the publication of this map, a large open-space single family development has been built within the "highest scoring" area of the map.

**Map III-10. NHFG Habitat Tiers**



**Map III-11. MVRCP Priority Areas**



## Groundwater Resources

A substantial portion of water in Hudson is below the ground's surface. Groundwater is water that is stored in the pore or fracture spaces between the individual particles of soil, sand, gravel, bedrock, etc. The ground acts as a sponge (called an aquifer) which filters and stores large amounts of potable water. These supplies are tapped by drilling or digging wells to obtain water for domestic consumption. The amount of water which can be obtained in this manner is determined by the nature of the material holding the water. For example, per unit volume of material, sand and gravel deposits generally have a higher potential for yielding large amounts of water than do deposits of till and bedrock. The three different types of groundwater aquifers include: saturated stratified drift, saturated unconsolidated till, and bedrock. Each source varies as to the quantity of groundwater present and how it moves. Each is described below and illustrated on Map III-12.

*Stratified Drift Aquifers* - Stratified drift aquifers are made up of sand and gravel materials. The materials were deposited by the melting of glacial ice like rivers that deposit sand or gravel bars today. The deposits may be quite extensive and are layered or "stratified." Their course texture allows for large volumes of water to be stored, and their high porosity allows groundwater to flow through quite readily. For these reasons, stratified drift aquifers are a prime source of water for municipal and other large-volume users.

*Till Deposits* - Till deposits contain a mixture of clays, sands, and gravels of varying grain sizes. These deposits do not have the capacity to store or transmit large volumes of water; however, they can provide sufficient volumes to supply individual residences or small community wells.

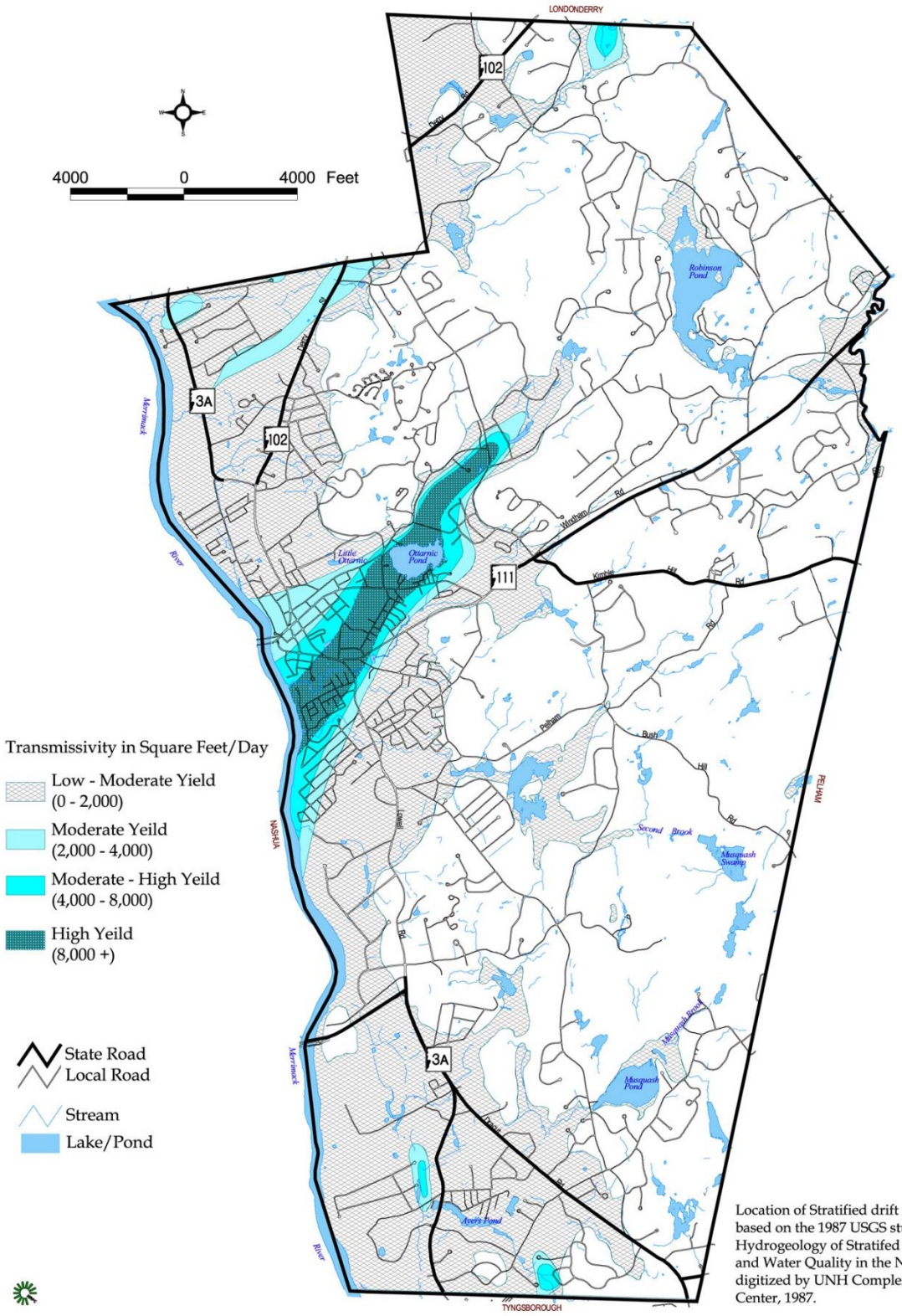
*Bedrock Aquifers* - Bedrock aquifers are composed of fractured rock or ledge, where groundwater is stored in the fractures. These aquifers are extraordinarily complex because bedrock fractures decrease with depth, “pinch out" over short distances, and do not carry much water. Wells drilled in bedrock that do not "hit" a fractured area will come up dry. If the well encounters an extensive fracture system, then groundwater yields may be high. On average, bedrock aquifers yield smaller volumes of groundwater than wells drilled in stratified drift.

Hudson has a nearly continuous stratified drift aquifer along the Merrimack River that measures approximately 10 square miles or 36% of the total land area in Town (see Map III-12). The most productive aquifer is located around Ottarnic Pond and extends northeast along Glover Brook and southwest to the Merrimack River. This aquifer contains the largest volume of recoverable stored groundwater within Hudson. Several wells, with capacities ranging from 100 to 400 gallons per minute (gal/min), are located in this aquifer near Ottarnic and Melendy Ponds. This area, however, lies under one of the most developed sections of Hudson. The Town should consider absorbing the properties abutting Ottarnic Pond into the Sewer District as this area is currently surrounded by, yet isolated from, the Sewer District.

The area along NH 102 near Alvrine High School in northern Hudson contains a permeable kame delta deposit which supplies water to individual households. According to Map III-8 this area has a moderate transmissivity rate of 2000-4000 square feet per day. Transmissivity is the ability of water to move through the ground. The higher the square footage per day, the more water the ground carries through it. Other permeable stratified drift aquifers, such as the one located adjacent to the border of Londonderry, and another located on the border of Tyngsborough are medium yield but lack the aerial extent and saturated thickness to support large-municipal water systems requiring more than 100 gallons per minute.

As mentioned previously, surface water and groundwater are interconnected. Precipitation falls in areas referred to as watersheds formed by a series of connecting ridges which create a basin. Surface water, flowing through a system of interconnected wetlands, brooks, streams, rivers, is encompassed by the drainage basin or watershed. A watershed can be subdivided into smaller subwatersheds.

Map III-12. Aquifers



In a watershed, groundwater is recharged in stratified drift aquifers in two ways. The area of direct recharge is the land surface directly overlying the stratified drift deposit. Water infiltrating the earth materials within this area has a "direct" route to the groundwater resource. The indirect recharge is the land surface outside the direct recharge area, but within the surrounding watershed, which contributes water to the groundwater system. Watershed management and protection can be used to provide a framework for a comprehensive water resource protection strategy, of which aquifer protection is a part.

## Water Supply

All water supplied to Hudson residents and businesses comes from groundwater sources. These sources are tapped by drilling or digging wells to obtain water for consumption. Hudson's public water supply comes from one well located in the Town of Litchfield. Two other wells that are drawn from the Darrah Pond Aquifer in Litchfield were shut down due to PFOA levels. Pennichuck Water Works supplements Hudson's water supply with water from the treatment plant during periods of high demand through the Taylor Falls Pump Station at Ferry Street. Specific information regarding water supply in Hudson is discussed in detail in Chapter VIII: Community Facilities.

The presence and location of major groundwater supplies demand careful consideration in the Town's planning efforts. Map III-8 illustrates areas of groundwater favorability. It should be noted that all groundwater supplies are connected and thus have potential for both depletion and contamination. While water quality issues remain important, water quantity issues have recently become more pressing, especially in the southeastern portion of New Hampshire.

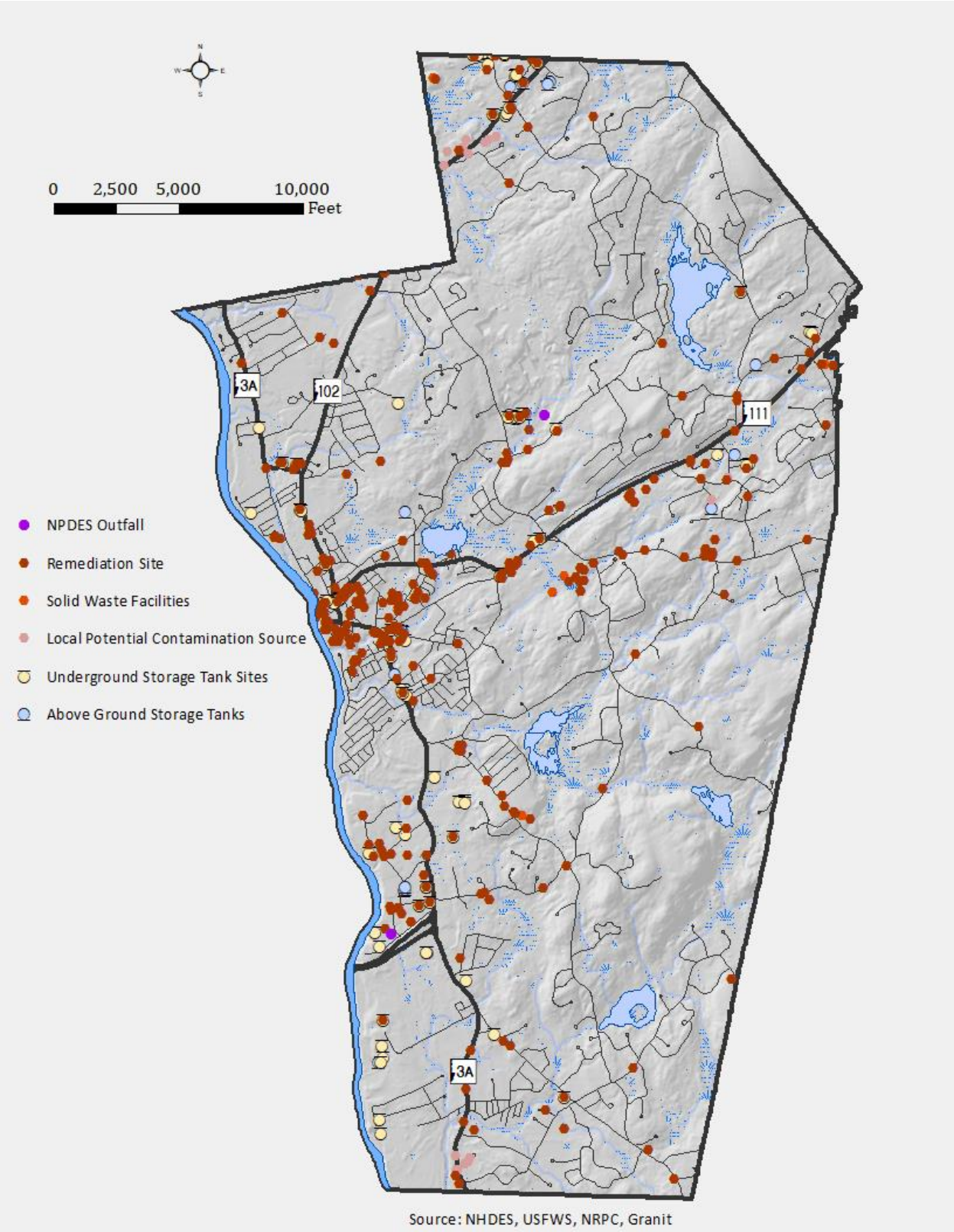
## Threats to Surface and Groundwater Resources

Rivers, streams, lakes, ponds, and groundwater resources face a myriad of threats. The two main categories of pollution are point source and non-point source pollution. Point sources of pollution are those that can be traced back to an identifiable source, such as a pipe or sewer outfall. Non-point sources of pollution are more diffuse in origin, such as agricultural and urban stormwater runoff, septic system effluent, snow dumps, road salt, soil erosion, etc. The NHDES, New Hampshire Non-Point Source Management Plan, lists the various forms of non-point source pollution in order of priority for abatement efforts. The list is based on the following factors: 1) danger to public health; 2) magnitude and pervasiveness of the potential threat; 3) potential impacts to receiving waters; 4) professional judgement; 5) ability of existing regulatory programs to control pollution; 6) adequacy of existing education programs to promote pollution control; 7) public perception; and 8) comments of Non-Point Source Management Plan Subcommittee.

The list of non-point source pollution, in order of priority, is: 1) urban (stormwater) runoff; 2) hydrologic and habitat modifications; 3) subsurface waste disposal systems; 4) junk, salvage, and reclamation yards; 5) construction activities; 6) marinas; 7) road maintenance; 8) unlined landfills; 9) land disposal of biosolids; 10) land disposal of septage; 11) agricultural activities; 12) timber harvesting; 13) resource extraction; 14) storage tanks (above ground and underground); and 15) golf courses and landscaping.

A potential contaminant source is defined as a human activity or operation upon the land surface that "poses a reasonable risk that regulated contaminants may be introduced into the environment in such quantities as to degrade the natural groundwater quality." These and other threats to groundwater quality in Hudson are illustrated on Map III-11.

Map III-13. Potential Threats to Groundwater Quality



This section briefly examines some of the issues and trends in point and non-point source pollution and actions that can be taken to address this pollution. The focus is on non-point source pollution and urban runoff, now acknowledged as being the most serious threat facing surface and groundwater resources today. The recommendations that follow this discussion will mention several "best management practices" (BMPs) that address non-point source pollution and stormwater runoff. BMPs are variously defined as technical guidelines for preventing pollution caused by specific activities, and recommended treatment or operational techniques to prevent or reduce pollution. Some of the major sources of surface and groundwater contamination are discussed below.

## Stormwater Runoff

The development of land for residential, commercial, or industrial purposes increases the amount of impervious surface area within any given site due to the construction of buildings, roads, driveways, parking lots and other improvements. Impervious surfaces reduce the natural infiltration of stormwater into the ground, thereby reducing recharge of groundwater resources. This is particularly true where stormwater is discharged into a storm drainage system that exports stormwater off a site and out of a watershed. Increased imperviousness results in direct stormwater discharges into streams and rivers, which results in the alteration of the natural flow of the stream, causing erosion and sedimentation, loss of aquatic wildlife habitat and increased flood hazards.

Stormwater runoff is also a principal non-point contamination source of surface and groundwaters. Potential contaminants found in stormwater runoff include nutrients such as phosphorous, nitrates, heavy metals, floatables and solids, pathogens such as viruses and bacteria, organic compounds including oils, grease, MTBE, and pesticides and herbicides. These materials can lead to the degradation of surface and groundwaters. The U.S. Environmental Protection Agency (US EPA), through a program called the National Pollutant Discharge Elimination System (NPDES),iii aims to prevent and control non-point pollutant sources. The first phase of this program, appropriately referred to as the "Phase I Stormwater Rules," regulated the municipal stormwater systems and discharges of medium and large municipalities (those with populations greater than 100,000).

In May 2003, the EPA expanded the NPDES program to include stormwater systems within the urbanized areas of municipalities with populations less than 100,000.iv These Phase II rules also impact construction activities between 1 and 5 acres, whereas Phase I regulated construction activities of greater than 5 acres. To comply with Phase II requirements, regulated municipalities are required to submit a Notice of Intent (NOI). This NOI includes a stormwater management plan that addresses the six minimum control measures required by the EPA.

The stormwater management plan was designed to reduce the discharge of pollutants to the maximum extent practicable, to protect water quality and to satisfy the water quality requirements of the Clean Water Act. It contains 6 minimum control measures: 1) public education and outreach; 2) public participation and involvement; 3) illicit discharge detection and elimination; 4) construction site runoff control; 5) post-construction runoff control; and 6) pollution prevention and housekeeping.

The Town of Hudson Subdivision of Land Regulations, Section 289-20. Flood, Stagnant and Stormwater require that a Stormwater Management Report be prepared for any site or subdivision plan in Hudson. The report must provide, among other things, a stormwater drainage plan that is certified by a licensed professional engineer and proves that "all drainage shall be designed to achieve a zero increase in run-off for both peak and volume…".v In Hudson, the stormwater drainage plan is seen as the single most important element of the entire site plan.

### Road Salt

Excessive salting of roads and improper salt storage create the potential for sodium, calcium, and chloride contamination of the groundwater, which can pose health threats to humans, endanger animals and plants, and corrode metal and concrete.

To avoid contamination of public water supplies, municipalities establish no-salt routes which encompass areas adjacent to public water supplies and areas where on-site wells are located near roadways. Other areas are treated with a mixture of salt and sand. A more expensive method is the use of Calcium Magnesium Acetate (CMA) which is biodegradable and non-toxic to the environment.

Another alternative is to identify critical portions of roads in Town that can be designated for a conversion to "low salt" or "no salt" status on a prioritized basis over a specified time period. The Town can also request that the State use alternative deicers on certain state-maintained roads in priority areas.

### Subsurface Sanitary Waste Disposal

Septic system failures from improper design, installation, or maintenance allow nutrients, particularly nitrogen and sometimes bacteria and viruses to leach into water resources. The first receptor of these contaminants is often a nearby private well, but surface waters may also be affected. Septic system leachate, along with stormwater runoff, may contribute to excessive algae growth in surface waters which, in turn, decreases the amount of oxygen available to fish, decreases sunlight penetration and clogs waterways. In most cases, older septic systems and cesspools pose the greatest threat to groundwater and surface water quality. The EPA considers new systems meeting today's heightened standards to be passive and durable systems that can provide acceptable treatment despite a lack of attention by the owner.

### Underground Storage Tanks

Leaks in improperly equipped underground storage tanks (USTs) are difficult to detect and may go unnoticed for a long time. Even a small leak of only a few gallons can contaminate millions of gallons of ground water. The State regulates USTs where the cumulative volume of all tanks at the facility is 1,100 gallons or more. Some tanks, including those containing non-petroleum-based chemicals and those containing heating oil for on-site residential consumption are exempted. As of 2020, 73 USTs in Hudson were registered with the NH DES Subsurface Water Bureau.

## Existing and Potential Conservation Land

### Existing Conservation Land

Since the Master Plan was last updated in 2006, the amount of conservation land in Hudson has almost doubled from approximately 1,100 acres or 5.9% of the town's land area to 2,064 acres or approximately 11% of the total area of the Town. Some of these gains were the result of land set aside for conservation within Open Space developments, however, most were the result of strategic acquisitions by the town. Most significant of these was the purchase of 165.81 acres for Benson Park that includes both conservation and passive recreational areas. More recent acquisitions include the purchase of 40 acres of forestland, including wetlands and existing trails, at 68 Pelham Road in 2019. . Although acquisition of the Pelham Road site predated this Master Plan update, it nevertheless meets the Plan's goals of expanding conservation areas and increasing open space (in general), building on existing open space assets such as Benson Park and Robinson Pond, and expanding the existing trail network to facilitate connections between schools, parks, conservation areas, and other community facilities. The Conservation Commission and Town Staff secured an access easement through dedicated open space on the Oak Ridge Development that is used to connect hiking trails from the Pelham Road site to Benson Park. The connection between Pelham Road and Benson Park through the Oakridge Development demonstrates the value of Open Space developments as part of the town's conservation

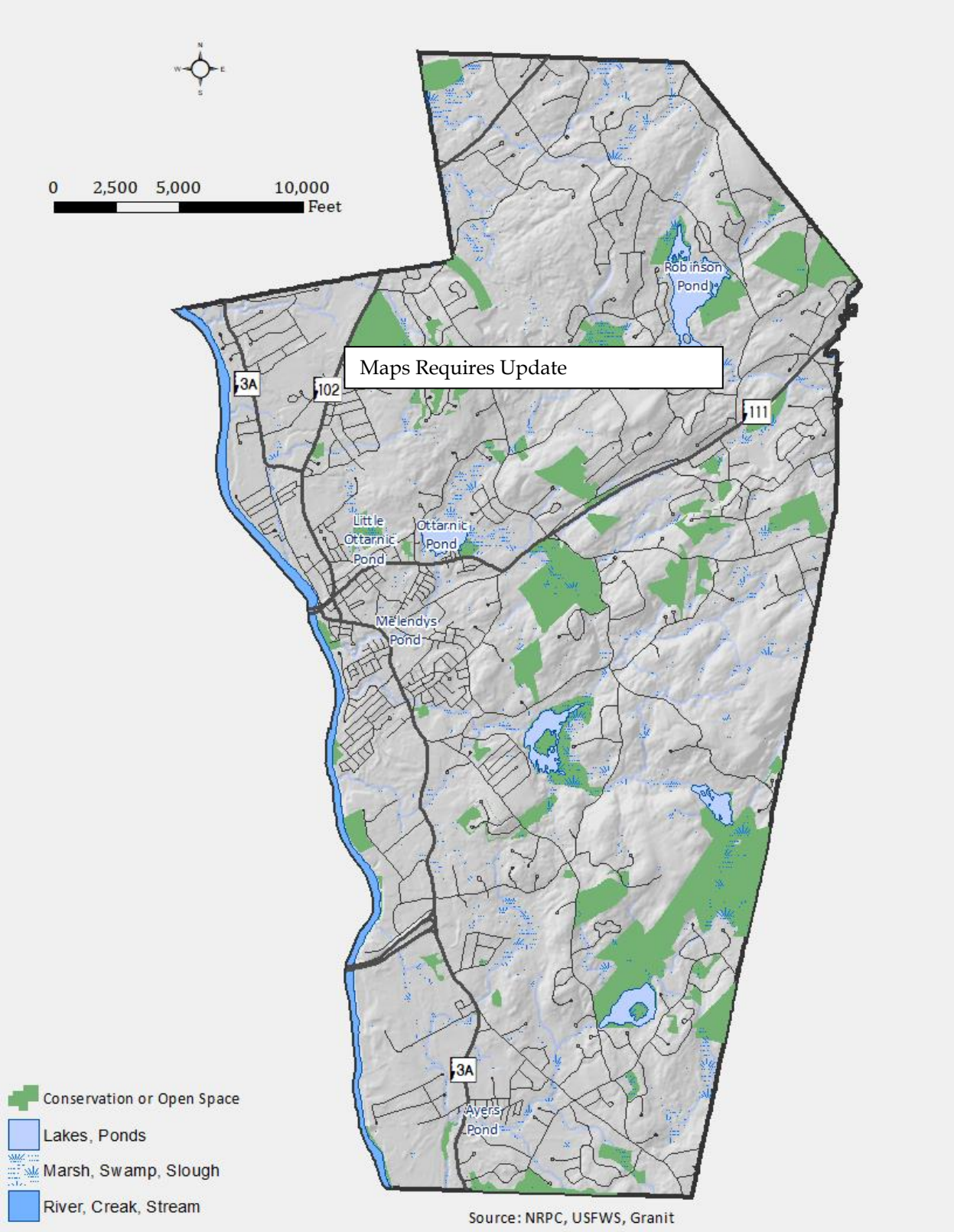
strategy. In 2020, voters approved transferring a vacant 27.48-acre parcel together with a 1.2 acre and 3.3-acre parcel to the Conservation Commission to expand the adjacent 29-acre Rangers Drive Town Forest which was itself dedicated as a Town Forest in 2019. Other significant acquisitions included property adjacent to Robinson Pond (36 acres) and additions to Hudson Town Forest (26.3 acres). At 416 acres, the Musquash Pond conservation area is the largest and perhaps, most important of Hudson's conservation lands. As noted previously in this chapter, the site encompasses important wildlife habitats and historic sites, provides multiple trails totaling 6.9-mile in length and supports outdoor recreational activities such as hiking, mountain biking, walking, bird watching, running, snowshoeing, canoeing, and kayaking.

Though only partially located within Hudson, the Leslie C. Bockes Memorial Forest on Bockes Road is the second largest conservation area available to Hudson residents. The 226-acre site, managed by the Society for the Protection of New Hampshire Forests, includes protected land in Hudson, Londonderry, and Windham. Including abutting land owned by the Town of Windham, the protected forest area encompasses approximately 300 acres. The site provides opportunities for hiking, cross-country skiing, snowshoeing, and horseback riding.

*Leslie C. Bockes Memorial Forest – Source: SPNHF*

Another important site is the 78.6-acre Hudson Town Forest conservation area located off Kimball Hill Rd. near the Pelham town line. Existing conservation land in Hudson is illustrated in Map III-14. It is important to note that the map depicts both publicly and privately owned protected land including land dedicated to conservation within Opens Space Developments.

Map III-14. Existing Conservation Land & Open Space



## Open Space Development

Hudson's Open Space Development (OSD) Ordinance encourages a pattern of development designed to allow residential development while conserving open space. This is achieved by reducing the individual lots in a subdivision by up to 50% of the minimum lot size requirements established in the Zoning Ordinance. The ordinance requires that the remainder "shall be dedicated to permanent open space, conservation land or recreation." OSDs are allowed in any zoning district and may be designed for any use or combination of uses permitted in the district where the OSD is located. Off-site compensatory open space may also be permitted by the Planning Board in lieu of on-site open space if it is deemed ecologically, culturally, historically, and/or recreationally important. The Open Space Development Ordinance has been used very successfully in Hudson and in several locations, land conserved through the ordinance abuts town-owned conservation and recreation land. The Town should continue to encourage developers to consider OSDs as a means of protecting additional open space, especially in areas that abut existing conservation land or encompass important wildlife habitats.

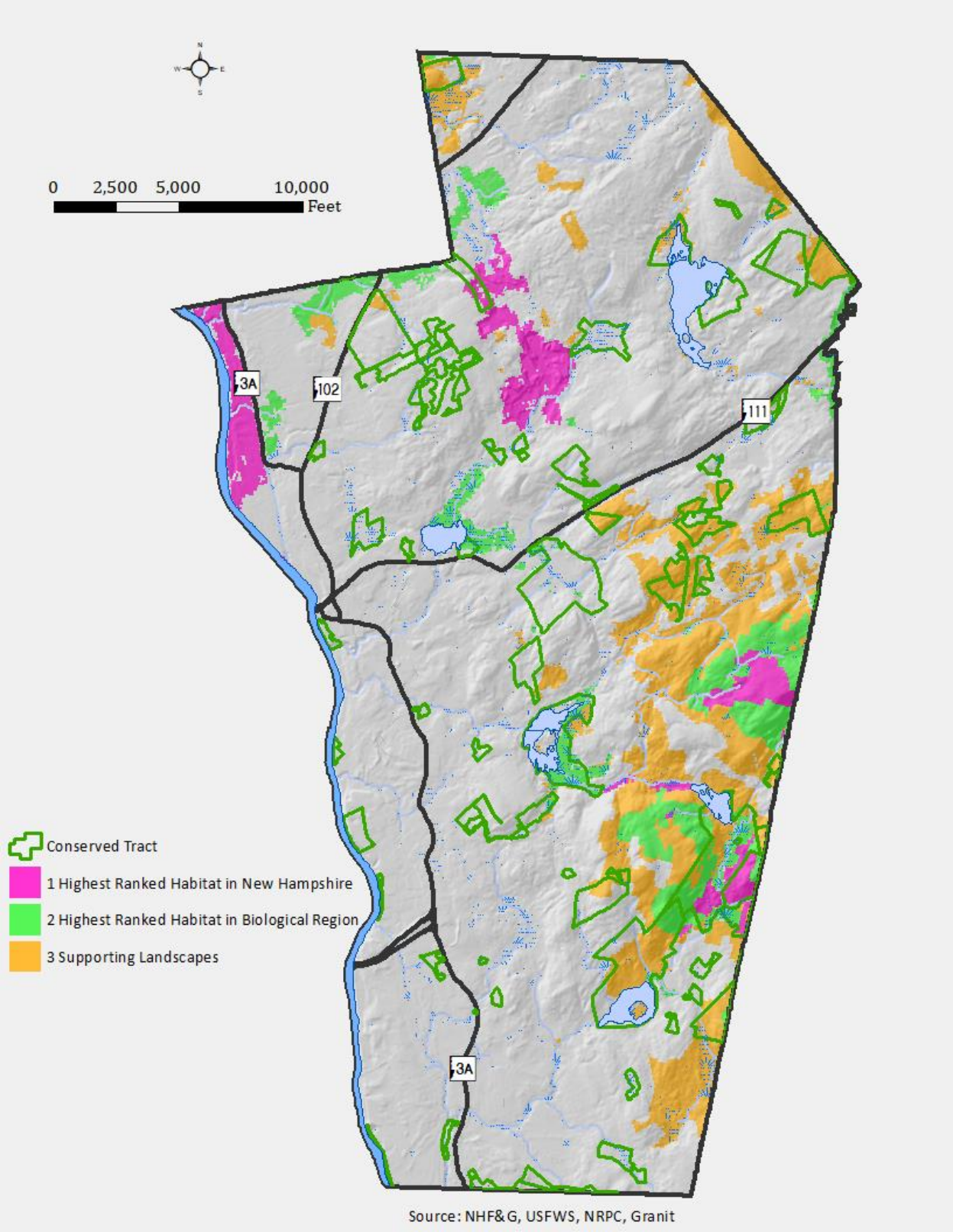
## Land in Current Use (NHRSA 79-A)

The current use program provides substantially reduced property tax assessments for land maintained as forests, farmland, or wetlands of 10 acres or greater and for active farms of less than 10 acres with a minimum $2,500 gross value of product. In 2020, a total 3,131.51 acres of land in Hudson was held in Current Use including 1,221.87-acres classified as Farmland, 1,335.45-acres of Forestland (including 115 with documented stewardship), 319.81 acres classified as Unprodctive and 254.38 acres of Wetland. Though an important tool, the Current Use program does not provide permanent protection since land enrolled in the program can easily be converted to other uses. Land coming out of Current Use is subject to a land use change tax of 10% of the fair market value at the time of the change, and in Hudson, 75% of this tax is earmarked for use by the Conservation Commission to purchase land for conservation purposes.

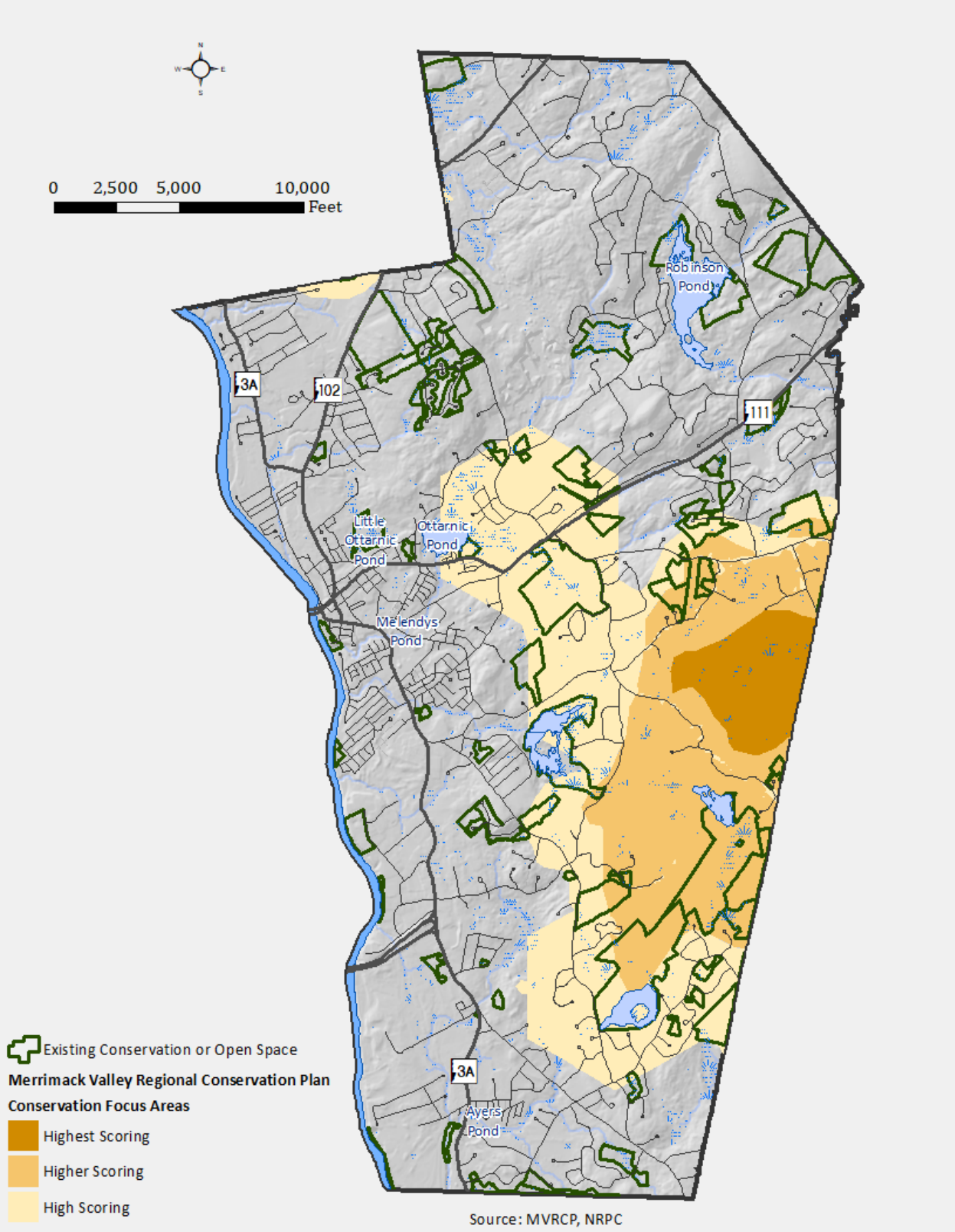
## Priorities for Future Conservation Efforts

Protecting open space is one of the highest priorities identified through the Master Plan public input process and this support has also been demonstrated by voter approval of efforts to acquire land for open space and to dedicate existing town-owned land to conservation purposes. Though significant sites have been acquired by the town in recent years, properties important for wildlife habitat, outdoor recreation and the overall quality of life and character of the town remain unprotected. When evaluating potential conservation site acquisitions, priority should be given to sites that meet the Master Plan goals of: Expanding Conservation areas and increasing open space, building on existing open space assets such as Benson Park and Robinson Pond, and expanding the existing trail network and facilitating connections between schools, parks, conservation areas, and other community facilities. In addition, a priority should be placed on preserving the remaining large forest tracks and important wildlife habitats. Map III-15 depicts priority habitat tiers identified by New Hampshire Fish & Game, shown above, together with existing conservation lands. Map III-16 depicts priority habitat area identified by the Merrimack Conservation Partnership, also shown previously, alongside existing conservation lands.

**Map III-15. Existing Conservation Land & Open Space with NHFG Habitat Tiers**



**Map III-16. Existing Conservation Land with MVRCP Priority Areas**



As previously noted, the highest ranked habitat areas on the NHFG map in the northwest corner of town along the Merrimack River and in the north-central part of Town on the Brox Industries site do not appear to be available for conservation and the highest ranked area in the east-central part of town (south of Kimball Hill Road and north of Bush Hill Road) is currently planned for development. This latter area also encompasses the highest priority habitat area on the MVRCP map. Fortunately, the most important remaining wildlife habitat area is located within and adjacent to the town's existing Musquash Pond Conservation area. A high priority, therefore, should be given to acquiring additional undeveloped land adjacent to the Musquash Pond Conservation area to protect additional high priority wildlife habitats while creating a protected forest block greater than 500-acres in area. Acquiring additional land in this area would also meet the Master Plan goals of expanding conservation areas and increasing open space, building on existing open space assets, and expanding the existing trail network. Other high priority areas are described below.

## Robinson Pond

Robinson Pond is Hudson's largest pond and is the site of Hudson's only public beach. As previously noted, much of the Robinson Pond watershed is developed which contributes an increased amount of nutrients into the pond, resulting in a eutrophic condition. To protect and improve the condition of the pond while expanding recreational opportunities, a priority should be placed on acquiring additional undeveloped land adjacent to the pond for conservation and passive outdoor recreational uses. Hudson should promote natural and technological means to maintain and improve the water quality to ensure continued enjoyment by future generations. It is also noteworthy that the vacant land around Robinson contains some of the few remaining undeveloped concentrations of important farmland soils. Further, building upon existing open space at Robinson Pond is a specific goal of the Master Plan.

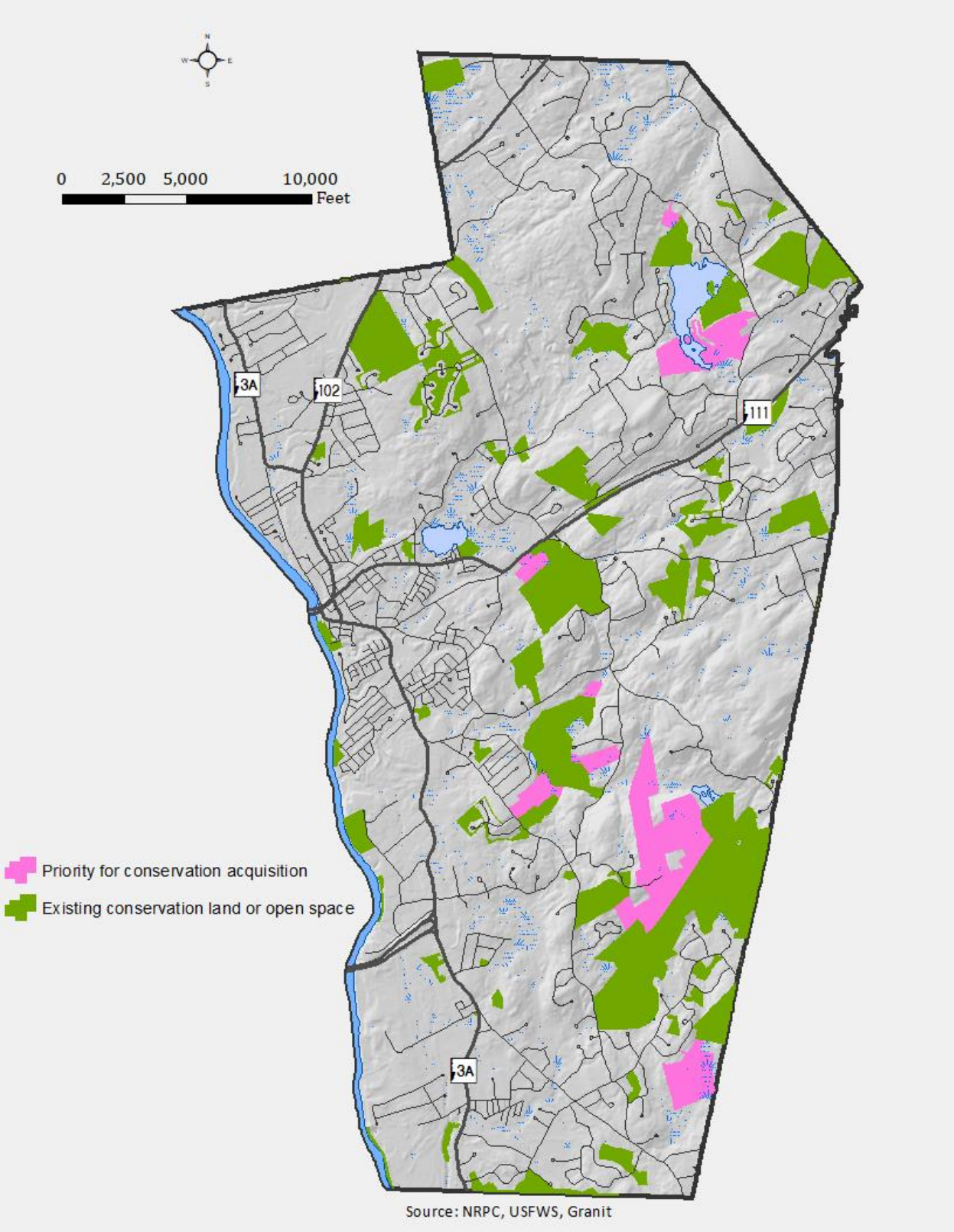
## Benson Park

Though opportunities to expand Benson Park are limited, like Robinson Pond, building upon Hudson's most popular park is a specific Master Plan goal. Most significant is a 23-acre parcel located at the park's northwest corner fronting on Central Street. This split-zoned property (Business/General) is poorly suited to development due in large part to the extent of wetlands on the site that are hydrologically connected to Merrill Brook and other surface waters in the park.

## Other Conservation Priorities

Other recommended priority conservation areas include undeveloped land adjacent to existing conservation land at Hills Meadow which include significant concentrations of undeveloped Prime and Important Farmland Soils and extensive 100-year and 500-year floodplains, and an undeveloped area adjacent to existing conservation land in the southeast corner of town. Recommended priority conservation lands are shown on Map III-17 alongside existing conservation and open space sites.

**Map III-17. Recommended Priority Conservation Areas**



## Stewardship

The preservation of conservation land and open space through acquisition of property in fee, by easement, through Open Space Developments and by other means is critical, however, ensuring that wildlife habitats thrive and providing for optimal outdoor recreational opportunities while minimizing unwanted impacts requires careful planning and stewardship. There are multiple resources available to assist in developing management plans for conservation land. These include US Fish & Wildlife, UNH Cooperative Extension, The Society for the Protection of New Hampshire Forests and New Hampshire Fish & Game (NHFG). Funded by the US Fish and Wildlife Service, the New Hampshire Fish and Game Department recently published *Trails for People and Wildlife - A Guide to Planning Trails that allow People to Enjoy Nature and Wildlife to Thrive*. As noted on the NHFG website, the guide is:

> "a statewide tool that can be used to assess existing trails and site new trails in the most wildlife-friendly way. This mapping tool highlights areas particularly important for wildlife and areas that would be more suitable for trail development. The guidebook explains in more detail how recreation can impact wildlife, how to use the tool to minimize those impacts, and provides some real-world examples of how conservation organizations are using it to make their trail planning efforts most effective."

The Town, through its Conservation Commission, should consider developing management plans for each of its conservation sites as it has for the Rangers Drive Town Forest and the Hudson Town Forest. To further aide in overseeing our woodland resources, the Conservation Commission should consider forming a Forestry Committee to assist in the decision-making process for these unique parcels. Further, as new trails are planned or improvements to existing trail networks proposed, consideration should be given to using the Trails For People and Wildlife mapping tool to minimize adverse impacts to wildlife while maximizing outdoor recreational opportunities for the people of Hudson.

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Duties of the Engineer. http://www.ci.hudson.nh.us/

[iii] www.epa.gov/npdes.

[iv] Comprehensive Environmental Inc., *Phase II Stormwater Rule Summary and How Municipalities Can Prepare for Compliance*; 2000.

[v] *Town of Hudson, New Hampshire, Subdivision and Site Plan Regulations.* Chapter 289-20(C) – Flood, Stagnant Water and Stormwater.

# CHAPTER IV – ECONOMIC DEVELOPMENT

## INTRODUCTION

The Economic Development chapter of the Master Plan is intended to address both the economic wellbeing of Hudson residents as well as strength of the town's tax base. The factors influencing the local economy are largely driven by forces operating at the super-regional, state, national and international level, and are typically beyond the control of a single community. The town, however, can manage the ways in which it engages with broader economic forces. One of the areas where the town has a great deal of control is local zoning and other land use regulations. Land use regulations, together with other local ordinances and regulations, work to encourage or hinder opportunities for business development, investment, and job creation in the town. Land use regulations also impact the tax base by determining the amount of commercial and industrial development permitted in the town, establishing density and open space requirements and by influencing the quality of development though landscaping regulations, design standards and other similar requirements. Along with land use regulations, economic development is greatly influenced by the transportation network and the availability of public sewer, water and other utilities and telecommunications. This chapter is focused primarily on economic development within the context of land use planning and other factors that the town can control, though a description of the regional context and key economic indicators are also discussed. Some content of this chapter is derived from the *Hudson Economic Development Assessment* prepared by NRPC in June of 2018.

*Note: Variation in sample years for datasets depend on availability of data and analysis at time of publication.*

### Regional Economic Climate

Prior to, and following, the COVID-19 outbreak, economic conditions in New Hampshire, the Nashua region and Boston metro area were strong. Unemployment has reached record lows and job growth has been robust. Wages and incomes are rising, and the housing market is strong. Demand for Commercial and Industrial property in the region reflects the state of the economy. Demand is strongest for industrial space with particularly high demand for large footprint (500,000 sq. ft.+), high bay warehousing and distribution space. In the second quarter of 2023, Warehouse/Distribution rents in the Nashua submarket (which includes Hudson) increased to $9.62 per sq. ft. over the prior quarter, the largest increase in the state (Colliers International NH Industrial Trends). Overall industrial lease rates were $12.40 per square foot. With a total of 20,031,060 square feet, the Nashua area market has by far the largest concentration of industrial space in the state with an overall vacancy rate of 2.6%. The combination of low vacancy rates and increasing lease rates have stimulated demand for new construction, and projections expect an increase in vacancy rates as new projects are completed.

The market for office space in the region while once stagnant, has seen notable increases over the past few years. Nashua submarket area currently market offers 5,549,664 square feet of office space. The vacancy rate for the area's office market stood at a relatively high 13.4% and rents have experienced some of the fastest rate increases in the state at an average asking rate of $19.08 per square foot. Recent projections indicate that vacancy rates and rents will remain close to current rates in the near future; an indication that new office space construction will be limited. Demand for new retail space, especially regional retail, is also expected to be limited with few new entrants into the market and several significant facility closures, both recent and pending, impacting the market.

## Hudson's Economic Environment

"Hudson's mix of prime location, stable tax rate, business diversity and pastoral charm continues to make it a major economic powerhouse for southern NH. Hudson properties are in such high demand that realtor.com last year named the town's zip code as the seventh hottest market in the United States." Ragsdale, K.(2021 December). Hudson Among Hottest Communities in Nation. *Business NH Magazine.*

Over the past few decades, the Town of Hudson has emerged as a major economic engine for the southern New Hampshire Region. As stated in the Town's 2006 Economic Development Master Plan chapter, "Hudson has evolved into one of the Nashua region's major employment centers over the past few decades as the number of jobs and the amount of non-residential development has increased considerably." Today, approximately 13% of Hudson's land area is commercial & industrial land and buildings.

While retail uses in Hudson are scattered along NH 3A (Lowell Rd), within the Hudson Mall, and on NH 102, there are several discrete industrial regions in the Town. Going north to south, these areas include Continental Paving and its immediate vicinity on NH 102, Brox Industries on Greeley St, the Clement Industrial Park along NH 111, the Sagamore Industrial Park off of NH 3A, and the BAE compound on the Massachusetts border.

# Employment

## Unemployment

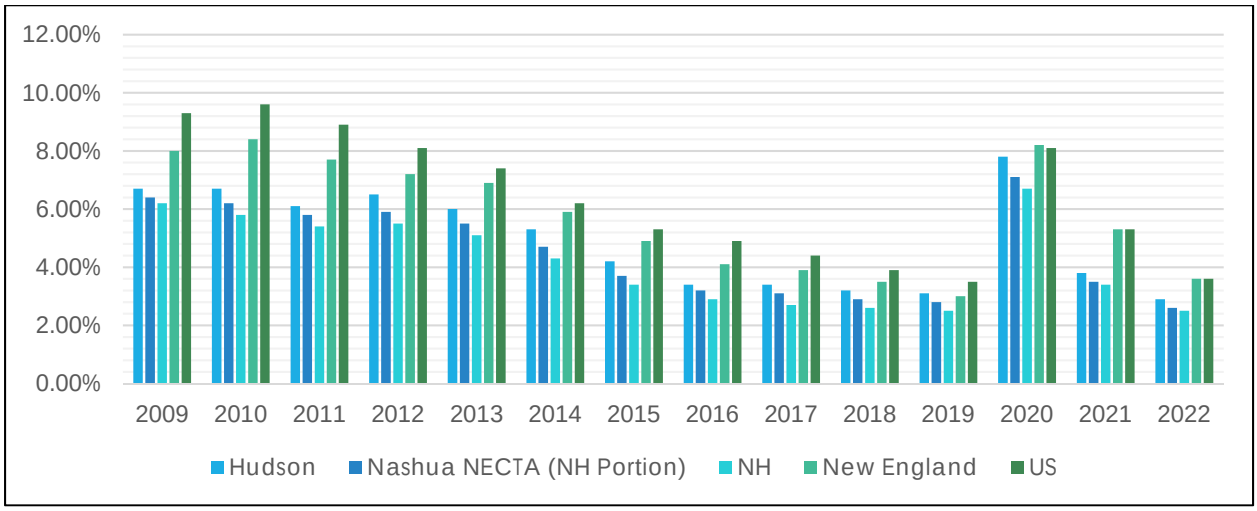
Table IV-1 shows unemployment figures for Hudson and other geographic areas from 2009 to 2022. Hudson has historically maintained an unemployment rate above the rate of the Nashua NECTA (New England City and Town Areas) region and the State of New Hampshire. Hudson, the region, and the state, however, have consistently experienced unemployment rates well below New England and national averages. As can be seen in the table below, unemployment rates had been falling steadily from the high levels experienced during the recessionary years at the beginning of the period through 2019. Unfortunately, these gains were temporarily wiped out by business closures triggered by the response to COVID-19 in the spring of 2020. Unemployment rates began to fall once again in 2021 as COVID-19 policies came to an end, and recent hiring surges have pulled unemployment rates back to record lows. Figure IV-1, on the following page, illustrates the unemployment data depicted on Table IV-1.

**Table IV-1 Annual Average Unemployment Rates 2009 -2021**

| Year | Hudson | Nashua NECTA (NH Portion) | NH | New England | US |
|---|---|---|---|---|---|
| **2009** | 6.70% | 6.40% | 6.20% | 8.00% | 9.30% |
| **2010** | 6.70% | 6.20% | 5.80% | 8.40% | 9.60% |
| **2011** | 6.10% | 5.80% | 5.40% | 7.70% | 8.90% |
| **2012** | 6.50% | 5.90% | 5.50% | 7.20% | 8.10% |
| **2013** | 6.00% | 5.50% | 5.10% | 6.90% | 7.40% |
| **2014** | 5.30% | 4.70% | 4.30% | 5.90% | 6.20% |
| **2015** | 4.20% | 3.70% | 3.40% | 4.90% | 5.30% |
| **2016** | 3.40% | 3.20% | 2.90% | 4.10% | 4.90% |
| **2017** | 3.40% | 3.10% | 2.70% | 3.90% | 4.40% |
| **2018** | 3.20% | 2.90% | 2.60% | 3.50% | 3.90% |
| **2019** | 3.10% | 2.80% | 2.50% | 3.00% | 3.50% |
| **2020** | 7.80% | 7.10% | 6.70% | 8.20% | 8.10% |
| **2021** | 3.80% | 3.50% | 3.40% | 5.30% | 5.30% |
| **2022** | 2.90% | 2.60% | 2.50% | 3.60% | 3.60% |

**Source:** NH Employment Security, August 2023.

**Figure IV-1. Unemployment Rates, 2009 – 2022**




**Source:** NH Employment Security, August 2023.

## Local Employers

Table IV-2 shows employers and employees by employment sector in Hudson (2018). Hudson had a total of 637 private businesses together with 12 governmental employment entities for a total of 649 employers, up from 609 in 2000. The total number of people employed in Hudson in 2022 has increased from 11,466 in 2000 to 12,072 in 2022. The largest employment sector in Hudson is manufacturing. This sector employed 3,697 people in 2022, or 31.6% of total employment, though manufacturing employment has declined significantly in recent years. By contrast, Hudson had 5,212 jobs or 45% of all employment in the manufacturing sector in 2000. Manufacturing enjoys among the highest wages of any sector, making its decline noteworthy. Retail, Hudson's second largest sector, employs 1,500 or 14% of total employment, slightly up from 12% in 2000. In contrast to Manufacturing with an average weekly wage of $1,853.10, average weekly wages for Retail are among the lowest at $695.58. Major employers in Hudson now include BAE Systems, the Hudson School District, and the fabricator APW Enclosures.

In the last few years, two employers have significantly increased their footprint in Hudson. OnSemi, a manufacturer of silicon carbide and intelligent power technologies acquired Hudson-based GT Advanced Technologies (5 Wentworth Drive) and subsequently expanded into another facility at 55 Executive Drive (aka former Comcast site). Integra BioSciences, a medical and laboratory equipment manufacturer, moved into 2 Wentworth Drive and subsequently acquired 22 Friars Drive, establishing Hudson as their US headquarters. Hudson's largest employers are shown on Table IV-3.

**Table IV-2. Employers and Employment by Employment Sector, Hudson, 2022**

**Source:** NH Employment Security at http://nhetwork.nhes.state.nh.us/nhjs.
Note: **N/A = not available as the information is either not tracked by NH Employment Security or Confidential.**

| Employment Sector | Employers | | Employees | | Average |
|---|---|---|---|---|---|
| | # | % | # | % | Weekly Wages |
| Agriculture, Forestry and Fishing | N/A | N/A | 0 | N/A | N/A |
| Mining | N/A | N/A | N/A | N/A | N/A |
| Construction | N/A | N/A | N/A | N/A | N/A |
| Manufacturing | 73 | 11.50% | 3,697 | 31.60% | $1,853.10 |
| Transportation and Warehousing | 19 | 2.90% | 150 | 2.70% | $1,090.83 |
| Wholesale Trade | 48 | 8.60% | 703 | 5.00% | $1,637.93 |
| Retail Trade | 75 | 11.40% | 1,500 | 14.00% | $695.58 |
| Information | N/A | 1.20% | N/A | 8.70% | $1,254.62 |
| Finance & Insurance | 12 | 2.30% | 84 | 0.90% | $1,250.27 |
| Real Estate and Rental Leasing | 17 | 2.30% | 92 | 0.80% | $1,471.66 |
| Professional and Technical Service | 58 | 8.30% | 545 | 3.80% | $1,602.58 |
| Management of Companies/Enterprises | 9 | 0.90% | 33 | 0.40% | $2,074.99 |
| Administrative and Waste Services | 53 | 8.50% | 480 | 4.40% | $1,054.74 |
| Educational Services | 10 | 1.50% | 68 | 0.50% | $461.90 |
| Health Care and Social Assistance | 30 | 4.60% | 482 | 4.40% | $941.64 |
| Arts, Entertainment, and Recreation | 10 | 1.80% | 166 | 1.60% | $789.29 |
| Accommodation and Food Services | 45 | 7.20% | 740 | 5.90% | $440.32 |
| Other Services Except Public Admin | 62 | 10.80% | 262 | 2.50% | $939.25 |
| Unclassified Establishments | N/A | 0.50% | N/A | 0.10% | N/A |
| Total Government | 12 | 1.80% | 130 | 8.40% | $1,110.88 |
| Federal Government | 2 | 0.30% | 128 | 1.10% | $1,391.91 |
| State Government | 2 | 0.30% | 15 | 0.10% | $559.92 |
| Local Government | 8 | 1.20% | 802 | 7.10% | $1,075.74 |
| **Total Private + Government** | **649** | **100.00%** | **12,072** | **100.00%** | **$1,339.15** |
| Total Private | 637 | 98.20% | 1,125 | 91.60% | $1,358.58 |

**Table IV-3. Largest Employers in Hudson, 2022**

| Employer Name | Product or Service | Number of Employees |
|---|---|---|
| **BAE Systems** | Signal analysis & jamming technology | 678 |
| **Hudson School District** | Education | 571 |
| **APW Enclosures** | Sheet metal fabrication & integration | 300 |
| **Mercury Systems** | Defense electronics | 200 |
| **Integra BioScience** | Research & biotechnology | 190 |
| **Hudson Mills** | Apparel, textile | 100 |

Sources: New Hampshire Community Profiles - 2022, NH Department of Employment Security; Town of Hudson


*BAE Systems is Hudson's Largest Employer*

**Table IV-4 Commuting Destinations of Hudson Residents**

| Place of Work | Total Workers | Percentage |
|---|---|---|
| **Nashua** | 2,356 | 19% |
| **Hudson** | 2,286 | 18% |
| **Merrimack** | 258 | 2% |
| **Other Nashua Area** | 455 | 4% |
| **Manchester** | 754 | 6% |
| **Other Manchester Area** | 164 | 1% |
| **Salem** | 343 | 3% |
| **Londonderry /Derry** | 404 | 3% |
| **Bedford** | 285 | 2% |
| **Windham** | 124 | 1% |
| **Concord** | 109 | 1% |
| **Rockingham/Seacoast** | 288 | 2% |
| **Other Northern NH** | 92 | 1% |
| **Other Western NH** | 98 | 1% |
| **NH Subtotal** | **8,016** | **64%** |
| **Lowell** | 520 | 4% |
| **Other Lowell Area** | 1,238 | 10% |
| **Burlington** | 243 | 2% |
| **Boston /Cambridge** | 323 | 3% |
| **Other Boston Metro** | 1,218 | 10% |
| **Northern Mass.** | 453 | 4% |
| **Central Mass.** | 392 | 3% |
| **Southern Mass.** | 59 | 0% |
| **Massachusetts Subtotal** | **4,446** | **36%** |
| **Other** | 56 | 0% |

Source: American Community Survey

Though a discussion of Hudson's employment sectors, wages and major employers is a critical component of planning for the town's economy, it is important to note that only 18% of Hudson residents in the labor force actually work in Hudson. 36% of Hudson workers commute to Massachusetts, the highest percentage in the region, and 19% commute to jobs in Nashua. The high (and growing) percentage of workers commuting to Massachusetts may also be contributing to Hudson's relatively large increase in median family and per capita income as discussed in greater detail below.

## Income

Table IV-5 shows per-capita income and median household income in Hudson, Hillsborough County, and the state for 2011 (actual), 2011 shown in 2021 dollars and 2021. By a wide margin, Hudson had a significantly higher median household income in 2011 and 2021 than the state or county. Per capita income in 2011 was higher than the state median but similar to that of the county, likely to due to

Hudson's larger average household size (see Chapter II). In 2021, however, Hudson's per capita income exceeded that of both the state and county and median family income increased substantially in adjusted as well as actual dollars. These figures indicate that Hudson is becoming more affluent and that incomes are rising at a higher rate than that of the State and County.

**Table IV-5. Median Household Income, 2011-2021**

| Median Income, 2011-2021 | | | | | | |
|---|---|---|---|---|---|---|
| , | Median Household Income | | | Per-Capita Income | | |
| | 2011 | 2011 (in 2021 dollars) | 2021 | 2011 | 2011 (in 2021 dollars) | 2021 |
| **Hudson** | $84,304 | $101,165 | $112,285 | $33,721 | $40,465 | $51,705 |
| **Hillsborough County** | $70,591 | $84,709 | $86,930 | $33,653 | $40,384 | $45,238 |
| **State of NH** | $64,664 | $77,597 | $83,449 | $32,357 | $38,828 | $43,877 |

**Source:** US Census Bureau

**Table IV-6. Median Household Income, 2011-2021**

| Percent Change in Median Income, 2011-2021 (in 2021 dollars) | | |
|---|---|---|
| | Median Household Income | Per-Capita Income |
| **Hudson** | 33.19% | 53.33% |
| **Hillsborough County** | 23.15% | 34.42% |
| **State of NH** | 29.05% | 35.60% |

**Source:** US Census Bureau

## Regional Comparison of Tax Base

Table IV-7 shows the total equalized assessed value of all property in the NRPC Region. Equalized assessed valuation per capita is used as a measure of the relative strength of a community's tax base. Hudson's 2022 equalized assessed value per capita of $164,655 makes it the sixth highest ranking NRPC community after Amherst, Hollis, Merrimack, Pelham and Mount Vernon. Hudson's per-capita assessment value, however, is slightly lower than that of the region and lower than that of the State. It is noteworthy that two communities with the highest valuations per capita, Amherst and Hollis, have much lower levels of commercial and industrial development, but benefit from higher residential property values and relatively extensive areas of conservation land that tend to enhance the values of neighboring properties. Merrimack, the third ranked community in the region, has a large commercial and industrial base and a diverse range of housing types as a well as fairly extensive park and conservation land. Strengthening Hudson's tax base will require balancing commercial and industrial development while protecting the property values of existing residential neighborhoods, building on the town's park and conservation holdings and careful development of remaining areas suitable for residential development.

**Table IV-7. Non-Residential Equalized Assessments in the NRPC Region, 2022**

| Rank 2022 | Community | Total Equalized Assessed Valuation | Population | Equalized Assessed Valuation Per Capita | Rank 2000 |
|---|---|---|---|---|---|
| **1** | Hollis | $1,946,089,953 | 8,478 | $229,546 | 1 |
| **2** | Amherst | $2,477,964,039 | 11,940 | $207,535 | 2 |
| **3** | Merrimack | $4,980,745,509 | 27,165 | $183,352 | 5 |
| **4** | Pelham | $2,572,903,412 | 14,421 | $178,414 | 4 |
| **5** | Mont Vernon | $452,442,166 | 2,613 | $173,150 | 3 |
| **6** | **Hudson** | **$4,261,444,003** | **25,881** | **$164,655** | **6** |
| **7** | Litchfield | $1,378,695,482 | 8,621 | $159,923 | 12 |
| **8** | Nashua | $14,663,791,399 | 92,043 | $159,315 | 8 |
| **9** | Mason | $232,370,183 | 1,465 | $158,614 | 13 |
| **10** | Lyndeborough | $259,235,506 | 1,723 | $150,456 | 7 |
| **11** | Brookline | $875,615,047 | 5,835 | $150,063 | 9 |
| **12** | Wilton | $566,962,426 | 3,933 | $144,155 | 10 |
| **13** | Milford | $2,155,625,035 | 16,534 | $130,375 | 7 |
| | **NRPC Region** | **$36,823,884,160** | **220,652** | **$166,887** | |
| | **State** | **$252,630,325,928** | **1,388,779** | **$181,908** | |

**Source:** NH Department of Revenue Administration, Annual Report for FY2022 at:https://www.revenue.nh.gov/publications/reports/documents/2022-annual-reportvf-web.pdf

Population from NH OPD Estimates.

## Existing Commercial and Industrial Uses

Industrial uses contribute the most to Hudson's tax base compared with other non-residential uses, comprising 38% of the total non-residential assessed value. Table IV-8 shows the assessed value *per acre* for each non-residential use. The average assessed value per acre for commercial property in Hudson is $167,200 per acre. The average assessed value per acre for industrial property in Hudson is $283,900 per acre. Currently Sagamore Industrial Park, the largest in Hudson, is experiencing a total vacancy rate of 1%, well below what is desirable and indicative of high demand due to the park's access to Route 3 and Turnpike. The second largest park in Hudson, Clement Industrial Park, currently is at a vacancy rate of 13.9%. With a notably higher vacancy rate than its larger counterpart, Clement is in a generally worse location for doing business, with little option to expand nearby.

A high assessed value per acre indicates that the use contributes more to the local tax base per area of land than other uses. The three *generalized* land uses with the highest assessed value per acre are miscellaneous commercial uses, office uses, and private school/childcare uses. *Specific* uses with the highest assessed value per acre include gas line rights-of-way, nursing homes, restaurants/bars, carwashes, auto parts stores and banks. Specific developed uses with the lowest assessed value per acre include sand/gravel plants and quarries, fish/game clubs, golf courses, discount stores and parking lots, all of which require large areas of land. Land uses that require large areas of land for private open space or parking generally have a lower assessed value per acre.

**Table IV-8. Non-Residential Equalized Assessments in Hudson, 2018**

| Land Use* | Quantity (parcels) | Total Assessed Value | Total Acreage | Assessed Value per Acre |
|---|---|---|---|---|
| Auto-Related | 46 | $19,299,000 | 81.9 | $235,700 |
| Institutional | 4 | $1,622,600 | 5.6 | $289,200 |
| Lodging | 3 | $5,816,000 | 5.6 | $1,045,700 |
| Office | 60 | $41,483,500 | 78.2 | $530,200 |
| Recreation | 5 | $5,723,100 | 516.6 | $11,100 |
| Retail | 45 | $60,785,700 | 139.4 | $436,100 |
| Storage | 28 | $16,528,500 | 77.4 | $213,600 |
| **Total Commercial** | **191** | **$151,258,400** | **904.7** | **$167,200** |
| | | | | |
| Non-Utility Industrial | 96 | $180,411,200 | 564.7 | $319,500 |
| Utility/Communications | 57 | $57,292,600 | 272.6 | $210,200 |
| **Total Industrial** | **153** | **237,703,800** | **837** | **$283,900** |

*These land use categories are derived from the assessor's database. Variation in sample years for datasets depend on availability of data and analysis at time of publication.

## Economic Revitalization Zones

The Economic Revitalization Zone (ERZ) tax credit program, which is detailed in RSA 162-N, offers a short term business tax credit for projects that improve infrastructure and create jobs in designated areas of a municipality. ERZs were established to stimulate economic redevelopment, expand the commercial and industrial base, create new jobs, reduce sprawl, and increase tax revenues within the state by encouraging economic revitalization in designated areas. Communities benefit from ERZs by the job growth of its businesses located in the community, and by potential growth of the local tax base due to expansion of the business's plant and equipment assets.

Hudson currently has three (3) designated ERZ's:

1. Sagamore Industrial Park
2. Clement Industrial Park
3. BAE Systems (65 River Road)

This program has regularly shown to be an asset when attracting business. The CFO of Integra BioSciences reported that the ERZ tax credits made a difference in the company's decision to locate and grow in Hudson.

## Future Commercial and Industrial Development

Issues related to residential and commercial development generated many comments on the Master Plan survey and were also a major subject of discussion during the public input sessions. These included concerns over the extent of residential development generally and subsequent loss of open space, and a consensus that commercial and industrial development should be limited to existing commercial industrial areas as expressed in the survey comment below:

> "Let's keep the commercial businesses along the river and the main routes and keep the residential areas residential."

Generally, a balanced approach to development, as noted in the following quote, seems to be the goal of most of the people who provided input into the planning process.

> "The town's growth and economic viability depend on a balanced approach to development and land protections. Development opportunities and sound land use regulations provide Hudson a way to compete with surrounding communities for better employment and a strong tax base while not sacrificing the overall character of the community."

Land Use Participants indicated a desire for a balanced, planned approach to Hudson's land use development, with goals including:

- More open space conservation and protection in new developments.
- Focus commercial and industrial development within existing commercial/ industrial areas.
- Encourage reuse or redevelopment of existing commercial buildings and sites rather than on undeveloped land.
- Improve design standards landscaping, architecture, and site design.

This section provides brief profiles of Hudson's existing business and industrial districts as well as areas identified as having potential for significant commercial and industrial growth. The areas identified as having significant growth potential are based on several factors including land availability, land-use, and access to transportation networks. The development potential for each of these areas takes into account possible building area, potential property valuations, tax revenue, employment, and other factors. In some cases, both industrial and retail development scenarios are discussed. It should be noted that commercial and industrial development types vary widely, and potential impacts can vary considerably. These analyses are based on development scenarios that could be reasonably anticipated given existing development patterns in Hudson and prevailing market conditions.

## Sagamore Industrial Park


The Sagamore Industrial Park is Hudson's largest industrial district and its largest concentration of employment, supporting an estimated 2,700 jobs. It is noteworthy that many of these jobs are also relatively high-paying making it an important component of the region's economy. The industrial park is located just north of the Sagamore Bridge between Lowell Road and the Merrimack River. There are a variety of businesses in the park, including facilities for major corporations such as BAE and Comcast, medium and small manufacturers, high-tech companies, and office uses. The business park is mostly built-out, as the rear portion of the Friary property that had long been available for development, is now under construction for the headquarters of operations for the Life Is Good apparel company. Currently, Sagamore contains 56 parcels totaling 288 acres with over 2,500,000 square feet of building area. The combined property assessment for the area exceeds $168,000,000, generating over $3,320,000 in annual tax revenue (2017). The park generates an estimated 8,133 average daily vehicle trips.

## North Hudson – NH 102 Vicinity

Located along NH 102 in between Londonderry and Litchfield, this area is characterized by a diverse mix of land uses including retail, office, and industrial uses such as paving operations. Consistent with its diversity of uses, the area falls into three zoning districts: Business, Industrial and General. Its location in a heavily travelled corridor in close proximity to Londonderry and Litchfield are strengths, however, future development potential is limited by land availability and natural constraints such as wetlands.

Currently the area includes 64 parcels totaling just over 400 acres which support a total of 583,749 square feet of building area. The district has a combined property value of $67,311,651 and generated $1,327,386 in tax revenues in 2017. The area supports approximately 800 jobs and generates an estimated 2,626 average vehicle trips per day. As noted above, future development potential in the area is limited to an estimated additional building area of just under 122,000 sq. ft. which would result in an addition of $7,500,000 to the tax base generating just under $148,605 in additional tax revenue and 170 new jobs. Additional traffic is estimated at a modest 400 average daily vehicle trips which would have little impact to traffic in the Derry Road corridor.

## Brox Industries Property


Brox Industries, Inc. currently owns eight parcels totaling 633 acres in the north-central Hudson with 6 being contiguous, making it the largest contiguous site under common ownership in the town. The Brox site includes a quarry which processes hot mix asphalt and aggregate, though large areas are entirely undeveloped. The property was assessed at $8,572,493 in 2017 and generated $169,050 in tax revenue. The site is zoned General which permits a wide range of commercial and industrial uses; however, the property has no frontage on a state highway or arterial road. Though close to 3 million square feet of commercial or industrial building area could be supported on the site theoretically, access is provided solely by local, heavily residential streets which limits future commercial or industrial development potential. Should current operations on the site cease at some point, the cleared portions of the site would be ideal for a commercial-scale solar array. Such a use could generate significant green energy while generating no measurable increase in traffic and little land use impact to surrounding residential areas. It is worth noting that a 20-megawatt solar array has been proposed on approximately 120 acres of the former Brox industrial property in Milford which would generate enough clean electricity to power about 5,000 homes. Remaining forested areas of the site in the future should be retained as open space or developed for low to moderate density residential uses consistent with surrounding neighborhoods.

## Clement Industrial Park

Located along NH Route 111 near the Windham border, the Clement Industrial Park is one of Hudson's designated Economic Revitalization Zones. Though zoned Industrial, there are several differing uses within the park including contractor yards and job shops which feed into larger construction and automobile-focused industries, municipal services, and several single-family residences. The Clement Industrial Park encompasses 64 parcels totaling 281 acres in area with a total building square footage of just over 1 million square feet. The park's combined property assessment is close to $68,000,000 generating over $1.3 million in tax revenues for the town in 2017 while providing an estimated 1,000 jobs. Though not much undeveloped land remains, the park could support approximately 182,765 square feet of building area which could generate $228,000 in additional tax revenue and another 170 jobs. Some lots, however, may be challenging to develop for industrial purposes due to topography.

## BAE Campus


BAE Systems is the largest manufacturing employer in New Hampshire and one of the largest overall employers in the region. The company has two principal facilities in Nashua, one in Merrimack and one in Hudson. With approximately 678 (relatively high-paying) jobs, BAE is also Hudson's largest private employer. BAE is a British multinational defense, security, and aerospace company. The Hudson campus focuses on research and development. The facility is located on a 170-acre site on Lowell Road near the Massachusetts border that supports 559,778 square feet of building area. The property is assessed at $31,971,100 and generated $630,470 in tax revenue in 2017. Though considered a developed site, there is room for expansion and additional building area has been approved by the Planning Board.

## Retail Commercial Districts


Hudson plays an important role as a commercial hub that draws both local and regional customers. Major retailers include Walmart, pictured above, and Sam's Club on Lowell Road which bring in customers from northern Massachusetts, Nashua, and other nearby communities. Other large retailers include the Hannaford supermarket in the Hudson Mall on Derry Road and Market Basket on Lowell Road. Most of Hudson's commercial areas, however, are characterized by strip developments with small businesses such as auto service and repair shops, restaurants, gas stations, pharmacies and other businesses that serve Hudson residents and people in surrounding communities.

Hudson's business districts contain approximately 450 parcels totaling about 1,100 acres. Large retail establishments such as Hudson Mall and Walmart have among the highest per square foot values of any properties in Hudson. The town's business districts have a combined assessed value of $428,030,989, generating $8,440,772 in tax revenues (2017) making them critical to the town's tax base. In addition to generating substantial tax revenues and providing Hudson residents with needed goods and services, these commercial uses employ over 3,000 people.

Hudson's principal retail areas are located on Lowell Rd, Derry Road and Central Street (NH 111). Few development sites remain available within existing business zoned districts. Though there is potential for expansion into General zones, particularly in south Hudson along Lowell Road, capacity limitations on Lowell Road together with potential conflicts with existing residential uses are likely to limit commercial expansion. Further, the results of the Master Plan survey and public input sessions indicate a desire to keep commercial development within existing commercial districts. As such, future retail development will consist mainly of redevelopment of existing commercial sites. Though opportunities for expansion of Hudson's business districts are limited, redevelopment of existing commercial sites over time offers the

opportunity to implement enhanced design standards, improved landscaping, and better access management such as limiting curb cuts to reduce congestion.

## Recommendations

Hudson is well situated for continued economic growth because of its proximity to centers of commerce in the Merrimack Valley and northern Massachusetts, its convenient access to existing and planned highway, rail and air transportation infrastructure and continued interest in non-residential real estate. Challenges to economic growth include limited amounts of undeveloped land zoned exclusively for commercial and industrial development, limited road capacity (especially on Lowell Road), limited public water and sewer facilities and the need to preserve the tax base while planning for residential growth. Based on the existing economic conditions in Hudson, there are several strategies that the Town can pursue to sustain and enhance economic growth for the foreseeable future.

1. Protect limited industrially zoned land from non-industrial encroachment. Hudson's existing industrial parks and industrially zoned land have limited growth potential with sufficient land to accommodate approximately 300,000 square feet of additional building area capable of supporting between 350 and 400 additional jobs. The manufacturing, R&D and office related jobs located in Hudson's existing industrial districts, especially in the Sagamore Industrial Park and BAE's Lowell Road campus, are generally high-paying and important both to Hudson's economy and that of the region. These areas also contribute mightily to Hudson's tax base, while demanding less in services than residential or retail commercial uses. Given limited expansion potential, it is imperative that the town resist attempts to develop land within its industrially zoned areas for residential uses unless the land is unsuitable for industrial development or for commercial uses that do not directly support industrial uses.
2. The Town should seek assistance in identifying economic development strategies to attract high-tech, "clean" industrial businesses that create high-paying jobs, are compatible with a variety of land uses and increase Hudson's profile as a place for employment and innovation.
3. Since opportunities to expand existing Business Districts are limited, future commercial development will largely take the form of redevelopment. To encourage growth of future tax revenues and to meet the needs of a growing population, it will be important to maximize redevelopment potential within existing Business Districts. The town should review existing land use regulations, including setback, building height and parking requirements, to ensure that maximum supportable commercial development and mixed-use development densities can be accommodated within existing commercial areas. At the same time, it is important to adopt design standards, improved landscaping requirements, access management regulations and improved pedestrian/bicycle accommodations to enhance the aesthetic appeal of Hudson's business districts and minimize vehicular congestion. Further, since most visitors experience Hudson by travelling through major commercial corridors like Lowell Road, Derry Road and Central Street, improving the aesthetic appeal of these areas will enhance the general perception of Hudson, thereby helping to support higher property values.
4. Explore the potential for zoning tools such as Village Districts as either an overlay or a base district, and/or Form-Based Code that incorporates principles of New Urbanism to enhance existing Business areas through redevelopment.
5. Identify opportunities in which a zoning district change can more clearly define residential, business, and industrial areas to sustainably create additional space for industrial and business corridors.

6. Changes in regulation regarding the location and size of businesses near or within residential areas to relax and encourage development of more mixed use zones within village centers and adjacent residential areas of Hudson.
7. Review of current zoning regulations regarding setback, building height, and minimum parking requirements to adjust for modern best practice and avoid mono-form design.
8. Improvements to multi-modal transportation within village centers and primary business corridors to both reduce automotive traffic and improve aesthetic appeal.
9. Review any current design guidelines and reform into consistent, town-wide guideline set for improved aesthetic appeal.

# CHAPTER V – TRANSPORTATION

## INTRODUCTION

Land use and transportation are integral elements in the spatial layout and growth of a community. The dominant use of the automobile contributed to the transformation of the character of Hudson from rural to suburban during the latter part of the twentieth century. The rise in motor vehicle use has enabled residents to commute longer distances, businesses to improve services for their customer base, and communities to broaden their tax bases through economic growth. The rise in motor vehicle use has also created traffic congestion problems, especially along major highway corridors. The key to preserving and enhancing Hudson's transportation network is to ensure that roadway capacity and regional connections are enhanced and maintained and that incremental improvements to the complete transportation network that includes transit, sidewalks, and bicycle routes, are implemented.

The purpose of the Transportation Chapter of the Master Plan is to discuss strategies for an efficient and safe transportation system that will preserve the community's character, accommodate growth, and increase the availability of transportation choices. This chapter includes a discussion of: 1) the existing transportation network, including the roadway classification system, existing traffic conditions, highway capacity, crashes, bridge conditions and travel patterns; 2) future traffic projections; 3) transportation solutions, including regulations, access management, community character guidelines, traffic calming and scenic road designation; 4) alternative transportation, including transit, bicycle and pedestrian facilities; and 5) recommendations.

Note: During the course of drafting and review of this chapter, the Nashua Regional Planning Commission performed a Townwide Traffic Study independent of the analysis contained herein. This study is included as part of this chapter in the Appendix V-1.

## EXISTING TRANSPORTATION NETWORK

### Roadway Classification

Chase Street – A Class IV Road

Based on the New Hampshire Department of Transportation (NH DOT) road mileage inventory, there are 194.4 miles of roads in the Town of Hudson. The State of New Hampshire classifies roadways in two ways. The first is by a state funding category (the State Aid classification system) and the second is by federal funding category (the Functional classification system). The State Aid classification system was developed by the State of New Hampshire, as defined by RSA 229–231, to determine responsibility for construction, reconstruction, and maintenance as well as eligibility for use of state aid funds. Descriptions of the State Aid classification system are included in Appendix V-2. The State Aid classification road mileage in Hudson is summarized

in Table V-1 and illustrated on Map V-1.

**Table V-1. State Aid Classification Road Mileage**

| Legislative Class | Miles | Percentage |
|---|---|---|
| **Private Roads** | 25.93 | 13.34% |
| **Class I: Primary State Highway** | 2.89 | 1.49% |
| **Class II: Secondary State Highway** | 12.92 | 6.64% |
| **Class III: Recreational Roads** | 0 | 0.00% |
| **Class IV: Roads in Urban Compact Area** | 7.61 | 3.91% |
| **Class V: Local Roads** | 142.01 | 73.03% |
| **Class VI: Non-Maintained Local Roads** | 3.09 | 1.59% |
| Total | **194.44** | **100.00%** |

**Source:** NH DOT, 2020.

The functional classification system was also developed by the State of New Hampshire as required by the Federal Highway Administration (FHWA). The Functional classes were set according to the criteria defined by the FHWA and the American Association of State Highway and Transportation Officials (AASHTO). This system classifies roads and highways into different categories according to their functions and was developed to define eligibility for funds under federal programs. Descriptions of the functional classification system characteristics are included in Appendix V-2. Arterial and Collector roadways in Hudson are listed in Table V-2 and illustrated on Map V-2.

**Table V-2. Statewide Roadway Functional Classification***

| Functional Classification | Roadways |
|---|---|
| Urban Other Principal Arterial | NH 111, NH 102 From Library street to Litchfield Line,<br>NH 102 from Litchfield line to Londonderry,<br>Sagamore Bridge,<br>Taylor Falls Bridge,<br>NH 3A from Sagamore Bridge to Elm Ave |
| Urban Minor Arterial | NH 3A from Elm Ave to Litchfield line,<br>Library St,<br>Central St from NH 3A to NH 111,<br>Belknap St from County Rd to Central St,<br>County Rd from NH 3A to Belknap Rd,<br>NH 3A from MA line to Sagamore Bridge |
| Urban Major Collector | Dracut Rd, Wason Rd,<br>Bush Hill Rd, Kimball Hill Rd,<br>Greeley St,<br>Highland Ave from 3A to Highland St,<br>Highland St,<br>Old Derry Rd from NH 102 to Greeley St |

**Source:** NH DOT, 2020.

* Other classifications are used for the NH DOT, but do not apply to the Town of Hudson.

In addition to the statewide roadway classification, the Town of Hudson has adopted its own functional classification scheme within the Town's zoning ordinance for certain roads. Table V-3 summarizes the Town's official functional classification.

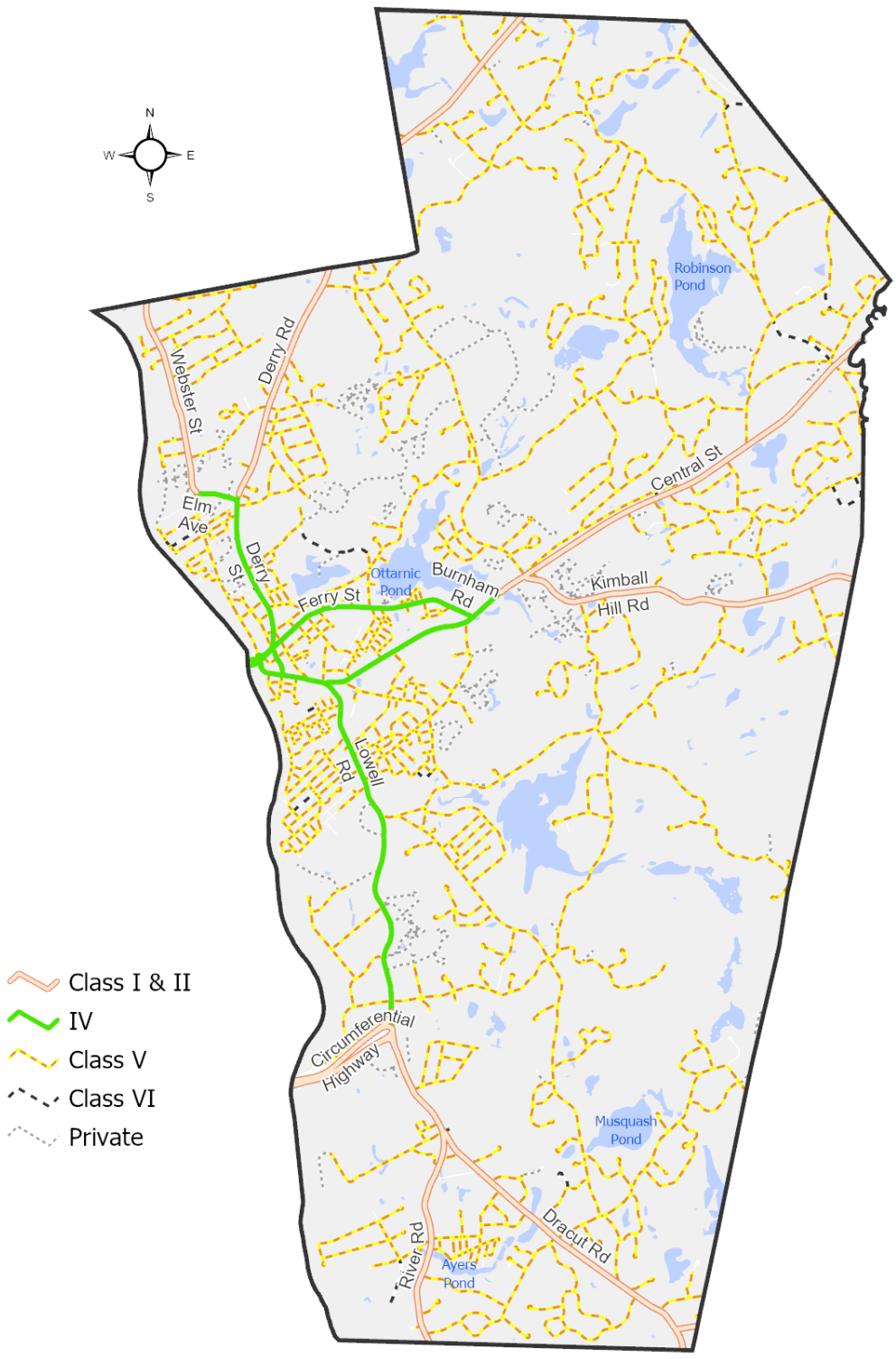
Lowell Road (NH 3A) – A Class IV Arterial

**Table V-3. Town Designated Roadway Functional Classification**

| Functional Classification | Roadways |
|---|---|
| **Arterial** | 1) NH 3A (Elm Street, Lowell Road, Webster Street, and River Road).<br>2) NH 102 (Derry Street)<br>3) NH 111 (Central Street)<br>4) Dracut Road |
| **Collector** | 1) Barretts Hill Road<br>2) Belknap Road<br>3) Burns Hill Road<br>4) Bush Hill Road<br>5) Greeley Street<br>6) Highland Street<br>7) Kimball Hill Road<br>8) Lawrence Road<br>9) Musquash Road<br>10) Old Derry Road<br>11) Pelham Road<br>12) Pine Road<br>13) Robinson Road<br>14) Wason Road<br>15) West Road<br>16) Windham Road |

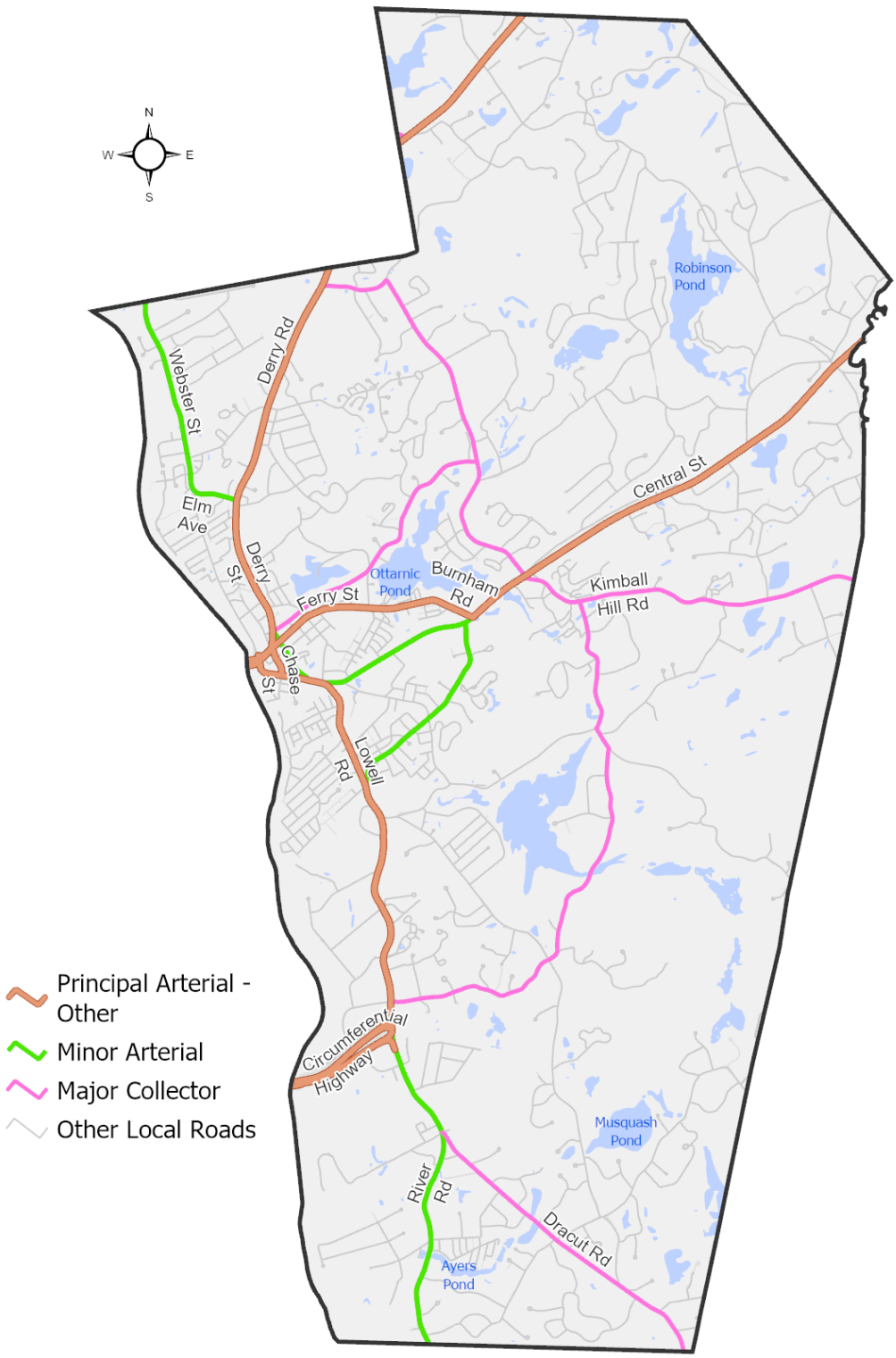
**Source:** Hudson Zoning Ordinance.

**Map V-1. State Aid Classification of Roadways in Hudson**




**Source:** NH DOT, 2020.

**Map V-2. Statewide Functional Classification of Roadways in Hudson**




**Source:** NH DOT, 2020.

## Existing Traffic Conditions, Trends and Level of Service

The Hudson Master Plan resident survey conducted by NRPC provides data on the level of concern among citizens over the level of traffic congestion along the town's roadways. Forty-three percent (43%) are "very concerned" and 30% are "concerned." The remaining 27% is split between "neutral" and "not concerned." Fifty-eight percent (58%) said the Town should "do more" to address congestion and 32% said "maintain current efforts." The remaining 10% did not favor action by the Town.

Historic traffic volume data for the Town of Hudson has been compiled primarily from the Nashua Regional Planning Commission (NRPC) traffic count program. Traffic counts are conducted for the NH DOT in accordance with federal guidelines under the Federal Highway Performance Monitoring System (HPMS). The HPMS guidelines describe federal procedures for sampling highway and road volumes. These procedures provide the Federal Highway Administration (FHWA) with highway volumes for design standards and meet the Environmental Protection Agency's (EPA) requirements for estimating vehicular highway travel. In addition to NH DOT's annual traffic counting program, NRPC maintains an ongoing traffic count program to validate the region's traffic model and provide data for residential and commercial trip generation rates. NRPC also provides traffic counts for member communities upon request.

Using the observed traffic count data, it is possible to evaluate the performance of highway facilities through the use of highway capacity analysis. The principal objective of this procedure is the estimation of the maximum amount of traffic that can be accommodated by a given facility. It provides tools for the analysis, improvement of existing facilities and for the planning and designs of future facilities.

Traffic on Lowell Road

"Level of Service" (LOS) is a term which denotes the type of operating conditions which occur along a roadway or at a particular intersection for a given period of time, generally a one-hour peak period. It is a qualitative measure of the effect of a number of operational factors including roadway geometrics, travel delay, freedom to maneuver and safety. Level of service categories for roadway segments and descriptions are explained below.

Level of Service "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.

Level of Service "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is still relatively unaffected.

Level of Service "C" is in the range of stable flow but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. Occasional backups occur behind turning vehicles.

Level of Service "D" represents high-density, but stable, flow. Speed and freedom to maneuver are restricted, and the driver experiences a below average level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

Level of Service "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform level. Freedom to maneuver within the traffic stream is extremely difficult and is generally accomplished by forcing other vehicles to give way. Congestion levels and delay are very high.

Level of Service "F" is representative of forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point that results in lengthy queues.

Table V-4 indicates the relationship between traffic volumes and level of service for various roadway types. Table V-5 provides the daily weekday volumes for important HUdson roadways, along with the levels of service for each particular road.

**Table V-4: Maximum Daily Traffic for Each Level of Service by Roadway Type (Per Two-Way Single Lane Volume)**

| | LOS A | LOS B | LOS C | LOS D | LOS E |
|---|---|---|---|---|---|
| Expressway | 10,000 | 19,000 | 27,000 | 32,000 | 38,000 |
| At-grade Principal Arterial | 4,200 | 7,500 | 12,000 | 18,000 | 28,000 |
| Minor Arterial | 4,000 | 7,000 | 11,500 | 17,000 | 26,500 |
| Major Collector | 3,600 | 6,300 | 10,400 | 15,300 | 23,800 |
| Minor Collector | 3,200 | 5,700 | 9,400 | 13,800 | 21,400 |
| Local (Paved) | 2,500 | 4,500 | 7,500 | 11,000 | 17,000 |

**Source: Derived from procedures in the 1985 Highway Capacity Manual.**

Existing traffic counts, historic trends and level of service are shown in Table V-5. Map V-3 illustrates the Average Weekday Traffic (AWDT) for roads of higher functional classification in Hudson.

The Taylor Falls/Veterans Bridge, NH 3A south of Wason Road and the Sagamore Bridge carry the highest traffic loads and operate at LOS E. While the TF/Veterans Bridge volume has remained flat for the last ten years and the Sagamore Bridge has experienced only moderate growth, NH 3A has averaged a 3.4% annual growth rate since 2009. Other NH 3A locations have shown low or no growth in recent years. NH 111 east of the town center to the Windham line has seen moderate annual growth in the

1.1% to 1.7% range. High growth has occurred on some local roads which enable drivers to bypass the NH 111 and NH 3A arterials through the town center to reach south Hudson. Bush Hill Road and Wason Road, in particular, have absorbed the growing traffic demand.

Wason Road, pictured above, has experienced high Levels of traffic growth

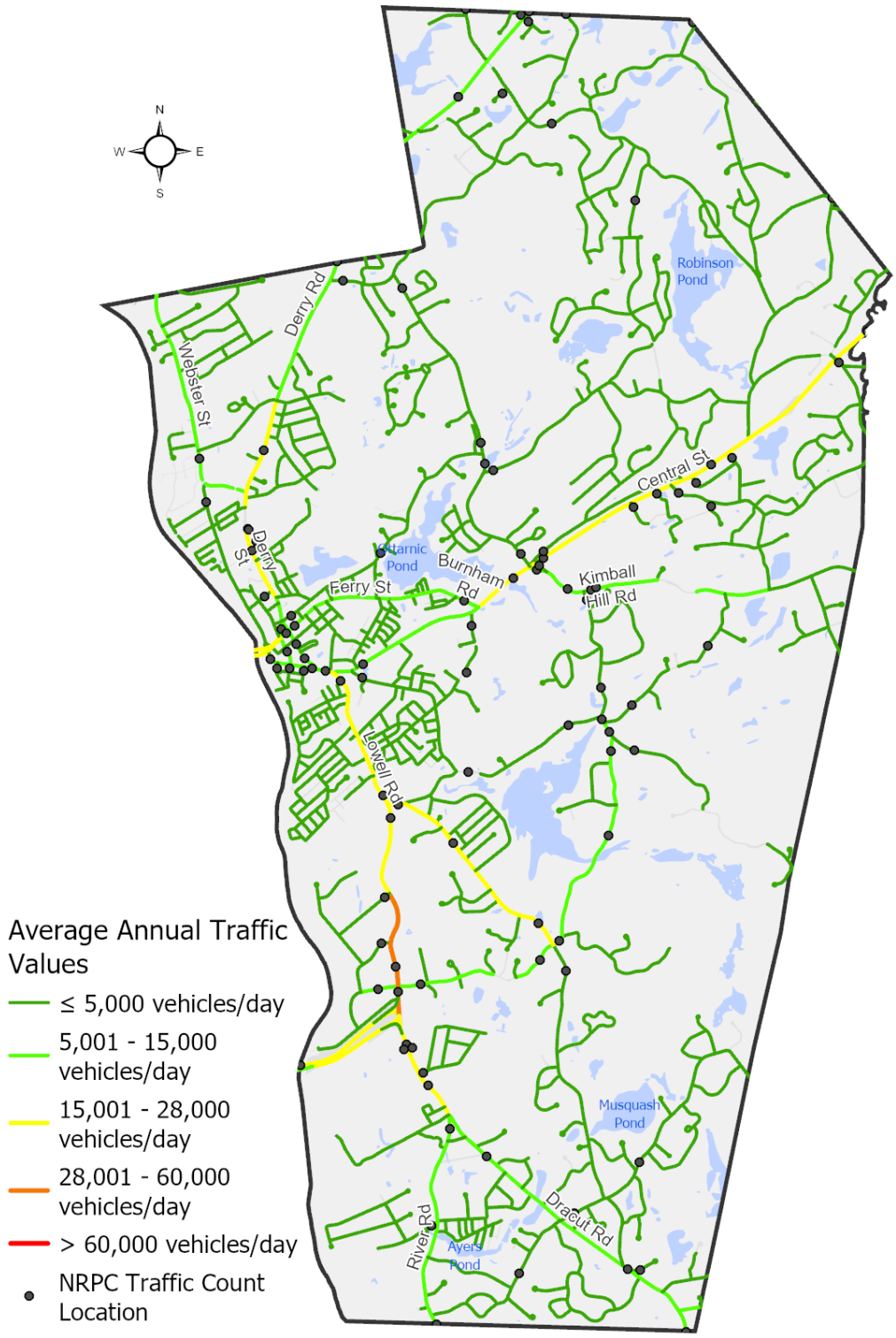
**Table V-5. Average Weekday Traffic (AWDT) and Growth Trends**

| Facility | Location | Prior Count | Prior AWDT | Current Count | Current AWDT | Annual % Change | LOS |
|---|---|---|---|---|---|---|---|
| **NH 111 TF/Vet Mem Br** | over Merrimack River | 2009 | 37,870 | 2019 | 37,150 | -0.2% | E |
| **NH 111 Ferry St.** | E. of Library St. | 2010 | 13,250 | 2019 | 13,200 | 0.0% | D |
| **NH 111 Burnham Rd.** | N. of Central St. | 2013 | 13,130 | 2019 | 12,550 | -0.8% | D |
| **NH 111 Central St.** | E. of Kimball Hill Rd. | 2011 | 16,920 | 2017 | 18,670 | 1.7% | E |
| **NH 111 Central St.** | at Windham TL | 2012 | 15,490 | 2018 | 16,530 | 1.1% | D |
| **NH 102** | at Londonderry TL | 2009 | 15,750 | 2019 | 17,770 | 1.3% | D |
| **NH 102** | at Litchfield TL | 2010 | 16,380 | 2019 | 16,800 | 0.3% | D |
| **NH 3A/102 Derry St** | N. of Ledge Rd. | 2008 | 28,690 | 2017 | 26,330 | -0.9% | D |
| **NH 3A/102 Derry St** | N. of NH 111 Ferry St. | 2009 | 18,640 | 2018 | 15,750 | -1.9% | D |
| **NH 3A Lowell Rd** | S. of Central St. | 2008 | 23,360 | 2017 | 22,640 | -0.3% | E |
| **NH 3A Lowell Rd** | S. of Pelham Rd. | 2008 | 25,450 | 2017 | 25,400 | 0.0% | D |
| **NH 3A Lowell Rd** | S. of Wason Rd. | 2009 | 30,450 | 2017 | 39,700 | 3.4% | E |
| **NH 3A Lowell Rd** | S. of Rena St. | 2011 | 24,300 | 2017 | 23,580 | -0.5% | D |
| **NH 3A River Rd** | S. of Dracut Rd. | -- | -- | 2019 | 9,950 | -- | C |
| **NH 3A River Rd** | at Mass. SL | 2011 | 7,805 | 2017 | 7,710 | -0.2% | C |
| **Belknap Rd.** | S. of Central St. | 2013 | 5,470 | 2019 | 5,140 | -1.0% | B |
| **Burns Hill Rd.** | N. of Wason Rd. | 2009 | 2,780 | 2019 | 2,810 | 0.1% | A |
| **Bush Hill Rd.** | S. of Kimball Hill Rd. | 2012 | 4,470 | 2018 | 5,470 | 3.4% | B |
| **Bush Hill Rd.** | S. of Speare Rd. | 2008 | 5,760 | 2017 | 6,760 | 1.8% | C |
| **Bush Hill Rd.** | E. of Wason Rd. | 2009 | 1,280 | 2019 | 1,780 | 3.4% | A |
| **Central St.** | S. of NH 111 | -- | -- | 2019 | 5,540 | -- | B |
| **Central St.** | E. of Adelaide St. | 2009 | 5,326 | 2018 | 5,770 | 0.9% | B |
| **County Rd.** | E. of NH 3A | 2008 | 4,140 | 2017 | 4,520 | 1.0% | B |
| **Dracut Rd.** | S. of Musquash Rd. | 2012 | 13,550 | 2018 | 15,300 | 2.0% | D |
| **Dracut Rd.** | Mass. SL | 2013 | 8,070 | 2019 | 9,690 | 3.1% | C |
| **Executive Dr** | W. of NH 3A | -- | -- | 2018 | 2,730 | -- | A |
| **Flagstone Dr.** | W. of NH 3A | -- | -- | 2018 | 4,340 | -- | B |
| **Greeley St.** | N. of NH 111 Central St. | -- | -- | 2019 | 5,310 | -- | B |
| **Highland St.** | N. of George St. | 2011 | 3,740 | 2017 | 3,990 | 1.1% | B |
| **Kimball Hill Rd.** | S. of NH 111 Central St. | 2010 | 7,175 | 2017 | 8,200 | 1.9% | C |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Library St.** | N. of NH 3A Central St. | 2009 | 10,420 | 2018 | 9,000 | -1.6% | C |
| **Melendy Rd.** | S. of Central St. | 2009 | 2,880 | 2018 | 1,970 | -4.1% | A |
| **Musquash Rd.** | S. of Burns Hill Rd. | -- | -- | 2019 | 2,240 | -- | A |
| **Old Derry Rd.** | E. of NH 102 | 2013 | 3,180 | 2019 | 2,820 | -2.0% | A |
| **Park Ave** | S. of NH 111 | -- | -- | 2018 | 2,230 | -- | A |
| **Pelham Rd.** | W. of Bush Hill Rd. | 2009 | 2,310 | 2018 | 2,150 | -0.8% | A |
| **Sagamore Bridge** | Hudson/Nashua CL | 2009 | 45,055 | 2018 | 49,600 | 1.1% | E |
| **Sherburne Rd** | at Pelham TL | 2014 | 8,180 | 2017 | 9,190 | 4.0% | C |
| **Speare Rd.** | E. of Bush Hill Rd. | 2009 | 1,830 | 2019 | 2,360 | 2.6% | A |
| **Wason Rd.** | E. of Musquash Rd. | 2009 | 5,850 | 2018 | 9,330 | 5.3% | C |
| **Wason Rd.** | E. of NH 3A | 2009 | 8,590 | 2018 | 9,330 | 0.9% | C |

Source: NRPC & NHDOT traffic counts

**Map V-3. Average Daily Traffic on Hudson Roads**




**Source:** NH DOT, 2020.

## Planned Intersection Improvements

At the request of the Towns of Hudson and Litchfield, a traffic study was completed to determine future impacts of the Circumferential Highway on traffic operations at various essential intersections within the local road network. The *Hudson-Litchfield Traffic Study, 2002* was funded through a grant from the NH DOT. The engineering consultant firm of Vollmer Associates was contracted to evaluate existing and future traffic conditions at those intersections. The main purpose of the study was to evaluate traffic conditions over a twenty-year horizon and to consider improvements needed as a result of the impacts of the Circumferential Highway and the Airport Access Road in Manchester. The study identified specific needed improvements at the study area intersections. A number of these improvements have since been implemented. Table V-6 summarizes the remaining recommended improvements that have yet to be implemented. In 2019, the Planning Board commissioned design studies for the Belknap Road/Birch Street/NH 3A area but no construction has been planned.

**Table V-6. Recommended Intersection Improvements in Hudson**

| Intersection Location | Recommended Improvements |
|---|---|
| **Belknap Road**<br><br>**NH 3A/Birch Street** | • Extend Belknap Road from County Road to a new four-way signalized intersection with NH 3A and Birch Street.<br>• Construct sidewalk along the northern side of the Birch Street extension.<br>• Add a left turn storage lane on the NH 3A southbound approach at the newly signalized intersection.<br>• Install raised island at the southwest corner of the intersection to better define driveway openings. |
| **County Road** | • Convert the southern end of County Road to one-way northbound.<br>• Maintain existing two-way traffic from ball fields to Belknap Road. |

**Source:** Vollmer Associates, *Hudson-Litchfield Traffic Study, 2002*.

## New Hampshire State Transportation Improvement Program (STIP) in Hudson

The New Hampshire State Transportation Improvement Program (STIP) includes the following two projects in Hudson, shown in Table V-7. Construction has started on NH 3A to add a southbound right turn lane, During the 2022 solicitation of projects for the Ten Year Plan, Hudson submitted three new projects with one being successfully added. A sidewalk infill and pedestrian improvements project for NH 102 (Derry Road) between Ledge Road and Alvirne High School is currently on the draft NH DOT Ten Year Plan.

**Table V-7. NH STIP Projects in Hudson**

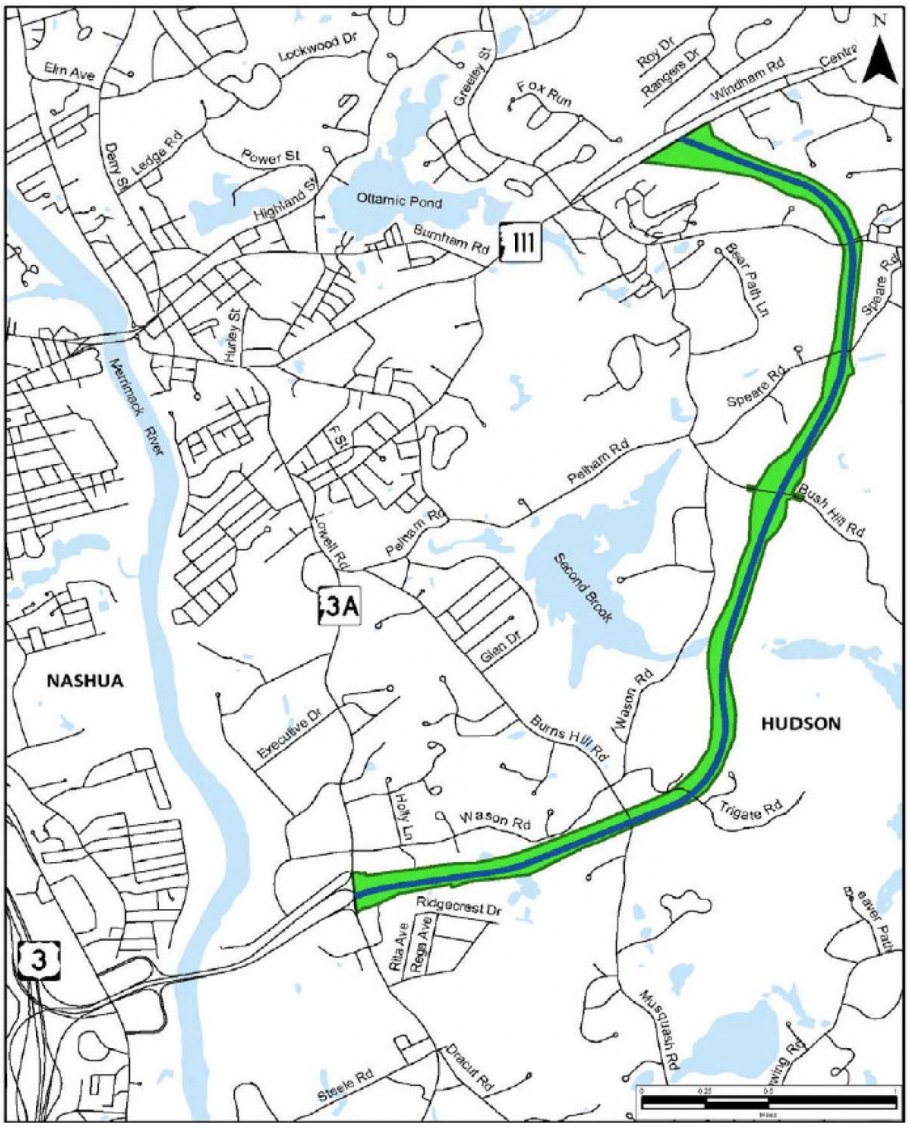
| Location | Improvements |
|---|---|
| **NH 3A** | Construct a third southbound right turn lane on NH 3A between Wason Rd. and Sagamore Bridge Rd. Construction in FY 2023. Project cost of $1.55 million is 80% federal, 20% Town funding. |
| **Hudson Blvd** | Preliminary engineering in FY 24-25 of a new roadway between Rte. 3A and Rte. 111. Construction TBD. All project cost of $55.68 million. Feasibility study cost ~$1 million, 80% federal, 20% Town funding. |

Source: NH State Transportation Improvement Program

## Hudson Boulevard

The Hudson Boulevard has evolved as a scaled down southern segment of what was formerly known as the Circumferential Highway. Although this project was removed from the NH Ten Year Transportation Plan programming in 2005, it has since been re-added with preliminary engineering slated to start in 2024-2025. In contrast to the limited-access, high-speed expressway once envisioned, the project now is seen as an approximate 40 mph, controlled access roadway (no frontage) along the southern Circumferential Highway right-of-way between NH 3A and NH 111 with at-grade intersections and a parallel, separate multi-use path for bicycles and pedestrians. The estimated project cost is about $56 million as of the 2023-2032 plan, increasing to $60 million in the 2025-2034 draft. Traffic impacts of the project are presented later in the future year traffic forecast.

**Map V-4. Proposed Hudson Boulevard**



## Vehicle Crashes

Road safety is a transportation issue running a close second to traffic congestion among Hudson citizens. Twenty-eight percent (28%) of respondents said they are "very concerned" about speeding and traffic safety, while 36% replied "concerned." Thirty-five percent (35%) said the Town should "do more" to address speeding, 55% favor "maintaining current efforts" and 10% did not favor Town action on this issue.

Recent Crash in Hudson - Source: *ABC Boston*

The State of New Hampshire since 2017 has maintained vehicle crash data through a system known as the NH VISION database. This system replaced a legacy database that had been managed by two departments, the NHDOS and NHDOT, which had resulted in data inconsistencies. The most recent crash data available is for 2018. Since the 2017 data had many incidents which were coded to municipality but not a roadway, NRPC is processing and analyzing crash data for years 2018 and going forward.

Crash rates are developed based on the number of crashes per million vehicle miles traveled annually. Table V-8 provides these rates for 2018. One year of data is insufficient to develop conclusive findings; NRPC will update its crash database statistics annually from the NH Vision database and will review the data to determine if intersection-level statistics can be reliably developed.

The Town should consider further detailed studies for the highest crash rate intersections to develop improvements and strategies to reduce crashes. The Town of Hudson Highway Safety Committee should consider requesting that the NH DOT perform safety studies for the highest crash rate intersections. The studies should include collision diagrams and an analysis of the physical road features and traffic control, road conditions at the time of the crashes (latest three years), the severity of the crashes, and a summary tabulation of crashes. Any further detailed crash studies should include input from the public and include the following six steps:

1. Identify the locations that are candidates for improvements.
2. Quantify the main crash trend(s) at a particular location.
3. Determine the source of the problem(s).
4. Evaluate types of improvements to address the crash problem(s).
5. Obtain an expert opinion about safety improvement(s).
6. Obtain funding to implement a safety improvement.

New Hampshire offers several programs and funding sources to aid in improvements to road and multi-modal transit safety. Some broad programs for funding include Safe Streets and Roads for All (SS4A) grants, as well as Highway Safety Improvement Program (HSIP) funds. A comprehensive safety plan is often-times a requirement for towns to access larger pools of state and federal funding for safety improvements, so the adoption of a Complete Streets policy may be a first step in improving local safety for drivers and pedestrians.

**Table V-8 Vehicle Crash Rate by Street, 2018**

| | Length | ADT | MVM/Year | Crashes | Crashes/ MVM/Yr |
|---|---|---|---|---|---|
| **Lowell Rd** | | | | | |
| **Central St-County Rd** | 0.51 | 20,400 | 3.80 | 31 | 8.16 |
| **County Rd-Executive Dr** | 1.06 | 23,000 | 8.90 | 25 | 2.81 |
| **Executive Dr-Sagamore Br** | 0.82 | 30,000 | 8.98 | 57 | 6.35 |
| **Sagamore-Dracut Rd** | 0.74 | 23,500 | 6.35 | 48 | 7.56 |
| **Derry Rd** | | | | | |
| **Ferry St-Elm Ave** | 1.01 | 25,000 | 9.22 | 59 | 6.40 |
| **Elm Ave-Derry Ln** | 0.64 | 15,400 | 3.60 | 10 | 2.78 |
| **Derry Ln-Alvirne HS** | 0.43 | 15,200 | 2.39 | 11 | 4.61 |
| **Alvirne HS-Londonderry TL** | 2.66 | 14,900 | 14.47 | 17 | 1.18 |
| **Central St** | | | | | |
| **Ferry St-Lowell Rd** | 0.47 | 15,000 | 2.57 | 12 | 4.66 |
| **Lowell Rd-Burnham Rd** | 1.05 | 5,150 | 1.97 | 7 | 3.55 |
| **Burnham Rd-Kimb Hill Rd** | 0.43 | 21,900 | 3.44 | 18 | 5.24 |
| **Kimb Hill Rd-Windham TL** | 2.71 | 17,000 | 16.82 | 6 | 0.36 |
| **Wason Rd** | 2.64 | 7,200 | 6.94 | 38 | 5.48 |
| **Ferry St** | 1.28 | 11,900 | 5.56 | 36 | 6.48 |
| **Dracut Rd** | 2.16 | 13,200 | 10.41 | 28 | 2.69 |
| **Bush Hill Rd** | 4.61 | 4,600 | 7.74 | 22 | 2.84 |
| **Robinson Rd** | 3.35 | NA | NA | 18 | NA |
| **Library St** | 0.40 | 8,200 | 1.20 | 17 | 14.20 |
| **Sagamore Br** | 1.07 | 45,000 | 17.57 | 17 | 0.97 |
| **Walmart Dr** | 0.18 | 9,500 | 0.62 | 10 | 16.02 |
| **Kimball Hill Rd** | 2.15 | 7,500 | 5.89 | 10 | 1.70 |
| **Musquash Rd** | 2.27 | 2,000 | 1.66 | 10 | 6.03 |
| **River Rd** | 1.45 | 8,000 | 4.23 | 9 | 2.13 |
| **Old Derry Rd** | 2.69 | 2,500 | 2.45 | 9 | 3.67 |
| **Pelham Rd** | 1.60 | 1,900 | 1.11 | 8 | 7.21 |
| **Executive Dr** | 0.43 | 2,500 | 0.39 | 8 | 20.39 |
| **Melendy Rd** | 1.10 | 1,800 | 0.72 | 7 | 9.69 |
| **Burnham Rd** | 0.28 | 11,300 | 1.15 | 6 | 5.20 |

Source: NH Vision Database, 2018

## Bridge Conditions

NH DOT inspects locally-owned bridges as well as state-owned bridges. NH DOT defines a bridge as a structure with a span of at least 10 feet. Inspection and maintenance of culverts and other structures that do not meet this 10-foot span definition on local roads are the responsibility of the town (NH RSA 234). NH DOT inspects bridges on Class IV and V roads (local roads) every two years and the records of these inspections must be kept by the town. The state inspections are a prerequisite for a town's participation in the State Bridge Aid program.

The municipality bears the responsibility for the installation of signs for posting load restrictions on local bridges, although the NH DOT recommends these load restrictions after inspection. The Town should develop routine inspection and maintenance for culverts and other structures on local roads that are not inspected or maintained by the state.

The State of New Hampshire lists ten bridges in the Town of Hudson that are regularly inspected and rated by the NH DOT. The “Structurally Deficient” rating for a bridge denotes that there are deficiencies in the bridge structure and a load restriction is recommended, or repairs for those bridges that need significant maintenance. The “Functionally Obsolete” rating refers to the bridge’s capacity for traffic operations in relation to the function of the approach road. NH DOT lists one bridge in Hudson as “Structurally Deficient.” The NH 3A bridge over First Brook was listed as structurally deficient for its culvert, which is rated as poor condition. The NH DOT lists two bridges (Taylor Falls/Veterans Bridge over the Merrimack River, owned evenly between Hudson & Nashua) as “Functionally Obsolete.” The "Functionally Obsolete" status for the Taylor Falls/Veterans Bridge refers to the fact that these bridges are not wide enough to provide the capacity needed to avoid traffic congestion based on the traffic demand at this location. These bridges have been programmed in the NH Ten Year Highway Plan for moderate rehabilitation and are scheduled for construction in 2024/2025. The project cost is 80% funded by the State and the local share will be split between Hudson and Nashua.

In addition to inspecting and rating bridges for weight restrictions, NH DOT publishes a list of bridges statewide that are included on its “red list.” NH DOT defines “red list” bridges as those bridges “…requiring interim inspections due to known deficiencies, poor conditions, weight restrictions, or type of construction. These structures are inspected twice yearly.” No bridges in Hudson are included on the “red list.”

## Travel Patterns

Information on origin and destination patterns for travel to workplace is available from the American Community Survey (ACS) through the OnTheMap tool. For 2020, about 29% of Hudson residents commute within the town or to Nashua, while another 35% travel to locations in Massachusetts for work. The remaining 36% are distributed primarily among several New Hampshire municipalities.

Information on commuting is available from 2017 -2021 ACS 5-year data. 82% of Hudson's workers commuted by single occupant vehicle, which, while a decrease from a fairly steady rate of about 87% since the 2000 Census, it is still and higher than the national average of 76%. This decrease may be due to an increase in the number of people working from home. The mean travel time to work stands at 31.6 minutes, which is 14% higher than it was in 2000. This may be due to both longer travel distances and more congested highway arterials.

**Table V-9 Commuting Destinations of Hudson Residents**

| Place of Work | Total Workers | Percentage |
|---|---|---|
| **Nashua** | 2,495 | 18% |
| **Hudson** | 1,525 | 11% |
| **Merrimack** | 514 | 4% |
| **Other Nashua Area** | 524 | 4% |
| **Manchester** | 870 | 6% |
| **Salem** | 488 | 3% |
| **Londonderry /Derry** | 692 | 5% |
| **Bedford** | 288 | 2% |
| **Windham** | 150 | 1% |
| **Concord** | 197 | 1% |
| **Other NH** | 1,073 | 1% |
| **New Hampshire Subtotal** | **8,816** | **64%** |
| **Lowell** | 602 | 4% |
| **Burlington** | 231 | 2% |
| **Boston /Cambridge** | 504 | 4% |
| **Other Massachusetts** | 3,515 | 25% |
| **Massachusetts Subtotal** | **4,852** | **35%** |
| **Other** | 56 | 0% |

Source: American Community Survey

The Town should encourage alternative modes to single occupancy auto use to help decrease traffic congestion and provide greater choices for Hudson commuters. The Town should work with the NRPC and the NH DOT to plan for and promote alternative modes of transportation. Programs should include efforts to increase commuter participation in existing region-wide carpooling and vanpooling programs, commuter bus lines and commuter rail. In addition, the Town should work with the NRPC and the Nashua Transit System to extend the existing bus routes from Nashua to Hudson to provide for an alternative mode for commuting within the Nashua region. The Town should also support the NH DOT's region-wide effort to extend the commuter rail line from Boston and Lowell to Nashua recognizing this will require capacity improvements to the regional transportation network to serve it. The commuter rail sites identified by the NH DOT on Daniel Webster Highway in South Nashua and on Crown Street in Nashua are both a short driving distance for most Hudson commuters. In addition to working on and coordinating the alternative transportation effort with government agencies, the Town should also explore the option of working directly with large employers in the Town to coordinate the alternative modes initiative.

## Table V-10. Means of Transportation to Work (Workers 16 years and over)

| Means of Transportation | 2021 | | 2020 | |
|---|---|---|---|---|
| | Estimate | Margin of Error | Estimate | Margin of Error |
| Drove alone | 82.4% | +/- 3.3 | 85.4% | +/- 3.3 |
| Carpooled | 5.3% | +/- 1.5 | 6.0% | +/- 1.9 |
| Public transportation (excl. taxi) | 1.0% | +/- 0.7 | 0.4% | +/- 0.4 |
| Bicycle | 0.1% | +/- 0.2 | 0.3% | +/- 0.3 |
| Walked | 0.3% | +/- 0.5 | 0.1% | +/- 0.2 |
| Taxi, motorcycle or other means | 0.5% | +/- 0.4 | 0.7% | +/- 0.5 |
| Worked at home | 10.4% | +/- 3.4 | 7.1% | +/- 2.9 |
| Total | **15,237** | | **15,508** | |

**Source:** US Census Bureau, American Community Survey (5-year estimates)

## Table V-11. Travel Time to Work (Not Working from Home)

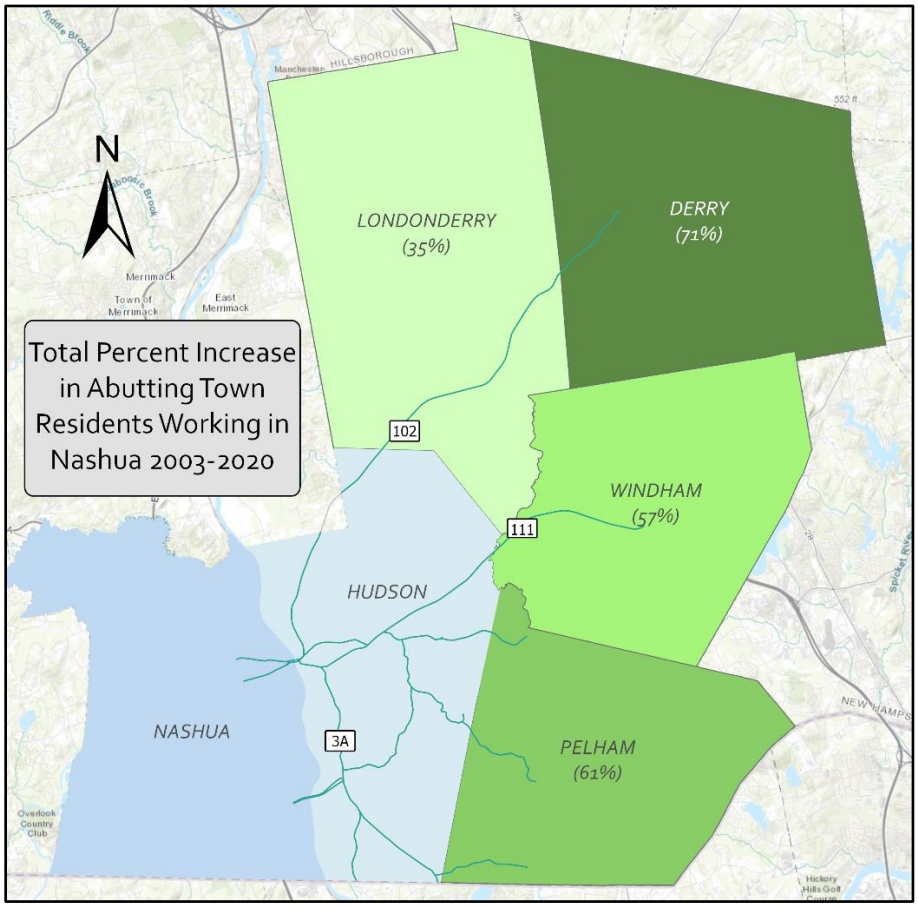
| Travel Time | 2021 | | 2020 | |
|---|---|---|---|---|
| | Estimated Total | Margin of Error | Estimated Total | Margin of Error |
| Less than 10 minutes | 7.3% | +/- 2.5 | 8.6% | +/- 2.3 |
| 10 to 14 minutes | 13.3% | +/- 2.8 | 13.3% | +/- 3.2 |
| 15 to 19 minutes | 12.1% | +/- 2.9 | 13.5% | +/- 2.9 |
| 20 to 24 minutes | 11.5% | +/- 2.6 | 11.3% | +/- 2.3 |
| 25 to 29 minutes | 8.1% | +/- 1.8 | 8.4% | +/- 1.8 |
| 30 to 34 minutes | 13.9% | +/- 3.0 | 14.3% | +/- 3.1 |
| 35 to 44 minutes | 10.1% | +/- 1.9 | 8.5% | +/- 1.9 |
| 45 to 59 minutes | 10.5% | +/- 2.8 | 8.2% | +/- 2.5 |
| 60 minutes or more | 13.3% | +/- 3.2 | 13.9% | +/- 2.8 |
| Mean Travel Time to Work (min.) | 31.6 | +/- 2.2 | 30.7 | +/- 2.3 |

**Source:** US Census Bureau, American Community Survey (5-year estimates)

## Hudson Through Traffic Pattern

While many commuter trips on Hudson roadways are workers either living or working within Hudson town borders, a major contributor to congestion during peak hours is through-commuters from towns east of Hudson driving to Nashua, and vice versa. These commuters use NH 111 (Central/Burnham/Ferry), NH 102 (Derry Rd.) and NH 3A (Webster/Lowell) to cross the Veteran's Bridge, as well as local residential roads such as Wason and Bush Hill Road as mentioned prior to reach Lowell Road, in order to cross the Sagamore Bridge. Unlike other communities, Hudson current lacks a strong east-west thru-way for commuter traffic.

**Map V-5. Towns Commuting Through Hudson to Nashua**



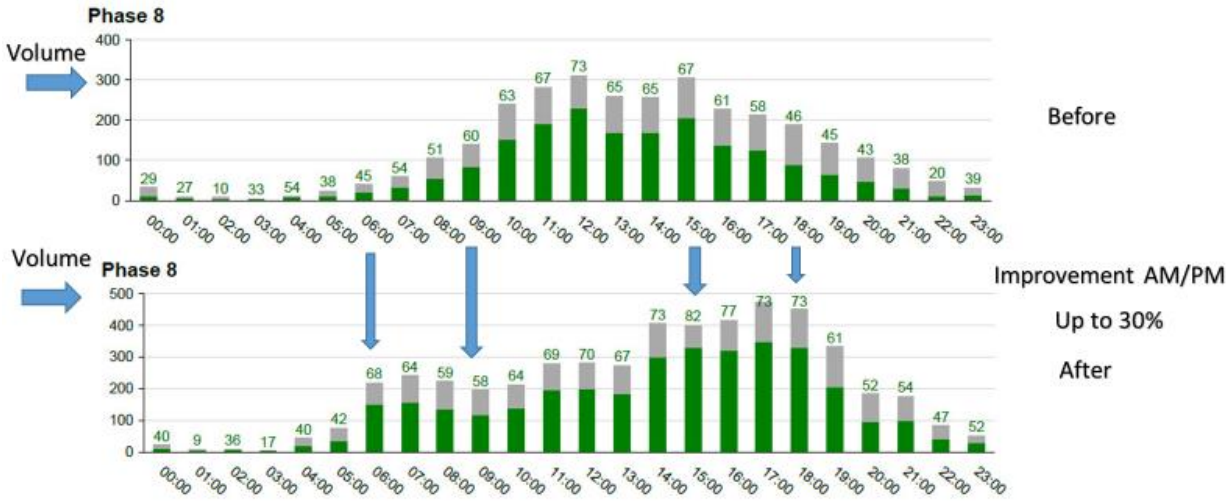

Over the time period of 2003-2020, the American Community Survey (ACS) documented an aggregate increase of 40% in trips originating from east of Hudson and arriving in Nashua. This represents a year-on-year increase of ~2%. It should be noted that due to COVID-19 the years of 2019 and 2020 may not be representative of greater patterns in transit over time. Of note, these increases in traffic are concentrated around the morning and evening peak commute hours as the recorded trips are for work only, thus exacerbating the already most congested times of day. While the aggregate increase was 2% year on year, the rate varied notably between years and between towns as conditions have fluctuated. The total percent change for the four nearest towns eastward can be seen above. While conditions have changed over the past two decades, there are no indicators that growth will subside or that problems related to through traffic will be remediated without intervention.

## Hudson's Traffic Management System

The Town of Hudson is the municipal leader in the Nashua area with respect to implementation of state-of-the-art traffic management control. The Town employs the GRIDSMART single camera system for actuation. GRIDSMART gathers and interprets traffic data, enabling staff to adjust signal timing and traffic flow strategies, and conduct real-time monitoring and visual assessment. The system is now proceeding toward total coverage of Hudson's signalized intersections.

A variety of data is obtained from the system for planning purposes, in addition to the real-time operational adjustments that can be implemented. Performance packets provide daily volumes, turning movement counts, vehicle length classification, green/red arrivals, red light violation counts and speed. The example below illustrates how the system has improved green phase traffic signal arrivals.

**Figure V-2. Before & After Green Arrivals on Library Street**




Source: Town of Hudson

## Future Traffic Projections

Future traffic forecasts can be estimated utilizing the NRPC regional traffic model. The projections in this section were conducted mid-2020 whereas the projections in the Hudson Townwide Traffic Study were done in 2022 (Appendix V-1). The NRPC model uses 25-year regional land use forecasts to estimate future trip generation and zones of trip attraction and production within the region. The road network in the model is revised to reflect changes in the system due to the completion of major roadway capacity projects for future traffic estimation. The future revised road network, along with changes in land use assumptions, yields future trips and trip distribution within the region. Model calibration is achieved by comparing ground counts taken in the field with a base year model run that reflects existing network and land use conditions. The model is then revised to reflect future network and land use conditions based on the planned road projects and the land use growth assumptions. One issue that must be emphasized is that the traffic model adjusts its forecast of traffic for the anticipated levels of congestion. As a roadway becomes highly congested, with traffic in excess of roadway volume, the model calculates the degree to which delay is resulting from the traffic congestion and switches traffic

to alternate routes. These alternate routes are often longer mileage routes but due to lower levels of congestion, they are the fastest path the model can find between an origin point and a destination.

Table V-12 shows the estimated forecasts for daily traffic volumes, in vehicles per weekday for roads within the Town of Hudson, as compared with the existing average weekday traffic. These volumes represent the future baseline condition, i.e. only projects in the Nashua Area Metropolitan Transportation Plan (MTP) that have identifiable funding sources are included in the scenario. Construction of the Hudson Boulevard does not have secured funding sources and is therefore modeled as a separate scenario, with the results shown in Table V-13.

Under the baseline scenario, traffic overall is forecasted to increase by 12% over Hudson's roadways by 2045. While the town's arterials are anticipated to grow at rates at or around the average, a number of local roads may expect to experience high rates of growth, as drivers find alternative paths to congested arterials, particularly in the town center area. Wason Road and Bush Hill Road are prime examples of roadways which will increasingly accommodate the overflow traffic.

The construction of Hudson Boulevard, linking NH 3A to NH 111 in the southern half of Hudson, is projected to carry between 20,000-23,000 vehicles per day over most of its length. A 10% decrease in Taylor Falls Bridge traffic is forecasted, along with a 13% increase in Sagamore Bridge volume, due to a faster travel path to the turnpike and south Nashua via this route. Significant decreases in traffic on NH 3A and NH 111 are projected as the Boulevard diverts traffic away from the town center area. Wason Road and Bush Hill Road, which now provide a local road path in close proximity to the right-of-way originally reserved for the southern segment of the Circumferential Highway, would experience significant traffic relief. In contrast, the model shows an increase of traffic on Burns Hill Road, perhaps as it is used to reach the Boulevard from locations near the Pelham Road area. Future studies should examine this scenario for mitigation of this potential increase.

**Table V-12. 2045 Forecasted Weekday Traffic Volumes in Hudson**

| | | Current | 2045 Proj | Pct. | |
|---|---|---|---|---|---|
| Facility | Location | AWDT | AWDT | Growth | LOS |
| **NH 111 TF/Vet Mem Br** | over Merrimack River | 37,150 | 43,160 | 16% | E |
| **NH 111 Ferry St.** | E. of Library St. | 13,200 | 14,280 | 8% | D |
| **NH 111 Burnham Rd.** | N. of Central St. | 12,550 | 13,160 | 5% | D |
| **NH 111 Central St.** | E. of Kimball Hill Rd. | 18,670 | 20,200 | 8% | E |
| **NH 111 Central St.** | at Windham TL | 16,530 | 17,760 | 7% | D |
| **NH 102** | at Londerry TL | 17,770 | 18,950 | 7% | E |
| **NH 102** | at Litchfield TL | 16,800 | 17,270 | 3% | D |
| **NH 3A/102 Derry St** | N. of Ledge Rd. | 26,330 | 28,280 | 7% | D |
| **NH 3A/102 Derry St** | N. of NH 111 Ferry St. | 15,750 | 18,010 | 14% | E |
| **NH 3A Lowell Rd** | S. of Central St. | 22,640 | 23,390 | 3% | D |
| **NH 3A Lowell Rd** | S. of Pelham Rd. | 25,400 | 27,490 | 8% | D |
| **NH 3A Lowell Rd** | S. of Wason Rd. | 39,700 | 44,940 | 13% | E |
| **NH 3A Lowell Rd** | S. of Rena St. | 23,580 | 25,850 | 10% | D |
| **NH 3A River Rd** | S. of Dracut Rd. | 9,950 | 9,780 | -2% | C |
| **NH 3A River Rd** | at Mass. SL | 7,710 | 8,590 | 11% | C |
| **Belknap Rd.** | S. of Central St. | 5,140 | 6,220 | 21% | B |
| **Burns Hill Rd.** | N. of Wason Rd. | 2,810 | 3,140 | 12% | A |
| **Bush Hill Rd.** | S. of Kimball Hill Rd. | 5,470 | 6,330 | 16% | B |
| **Bush Hill Rd.** | S. of Speare Rd. | 6,760 | 8,830 | 31% | C |
| **Bush Hill Rd.** | E. of Wason Rd. | 1,780 | 2,990 | 68% | A |
| **Central St.** | E. of Adelaide St. | 5,770 | 6,290 | 9% | B |
| **County Rd.** | E. of NH 3A | 4,520 | 5,520 | 22% | B |
| **Dracut Rd.** | S. of Musquash Rd. | 15,300 | 17,590 | 15% | D |
| **Dracut Rd.** | Mass. SL | 9,690 | 9,670 | 0% | C |
| **Executive Dr** | W. of NH 3A | 2,730 | 2,530 | -7% | A |
| **Flagstone Dr.** | W. of NH 3A | 4,340 | 4,260 | -2% | B |
| **Greeley St.** | N. of NH 111 Central St. | 5,310 | 5,850 | 10% | B |
| **Highland St.** | N. of George St. | 3,990 | 5,590 | 40% | B |
| **Kimball Hill Rd.** | S. of NH 111 Central St. | 8,200 | 9,280 | 13% | C |
| **Library St.** | N. of NH 3A Central St. | 9,000 | 9,930 | 10% | C |
| **Melendy Rd.** | S. of Central St. | 1,970 | 2,590 | 32% | A |
| **Musquash Rd.** | S. of Burns Hill Rd. | 2,240 | 2,560 | 14% | A |
| **Old Derry Rd.** | E. of NH 102 | 2,820 | 4,000 | 42% | B |
| **Park Ave** | S. of NH 111 | 2,230 | 2,500 | 12% | A |
| **Pelham Rd.** | W. of Bush Hill Rd. | 2,150 | 2,930 | 36% | A |
| **Sagamore Bridge** | Hudson/Nashua CL | 49,600 | 56,790 | 14% | E |
| **Sherburne Rd** | at Pelham TL | 9,190 | 11,120 | 21% | D |
| **Speare Rd.** | E. of Bush Hill Rd. | 2,360 | 3,460 | 47% | B |
| **Wason Rd.** | E. of Musquash Rd. | 9,330 | 13,870 | 49% | D |
| **Wason Rd.** | E. of NH 3A | 9,330 | 12,650 | 36% | D |

Source: NRPC traffic forecast based on population & employment forecasts

## Map V-6. 2045 Forecasted Traffic Increases

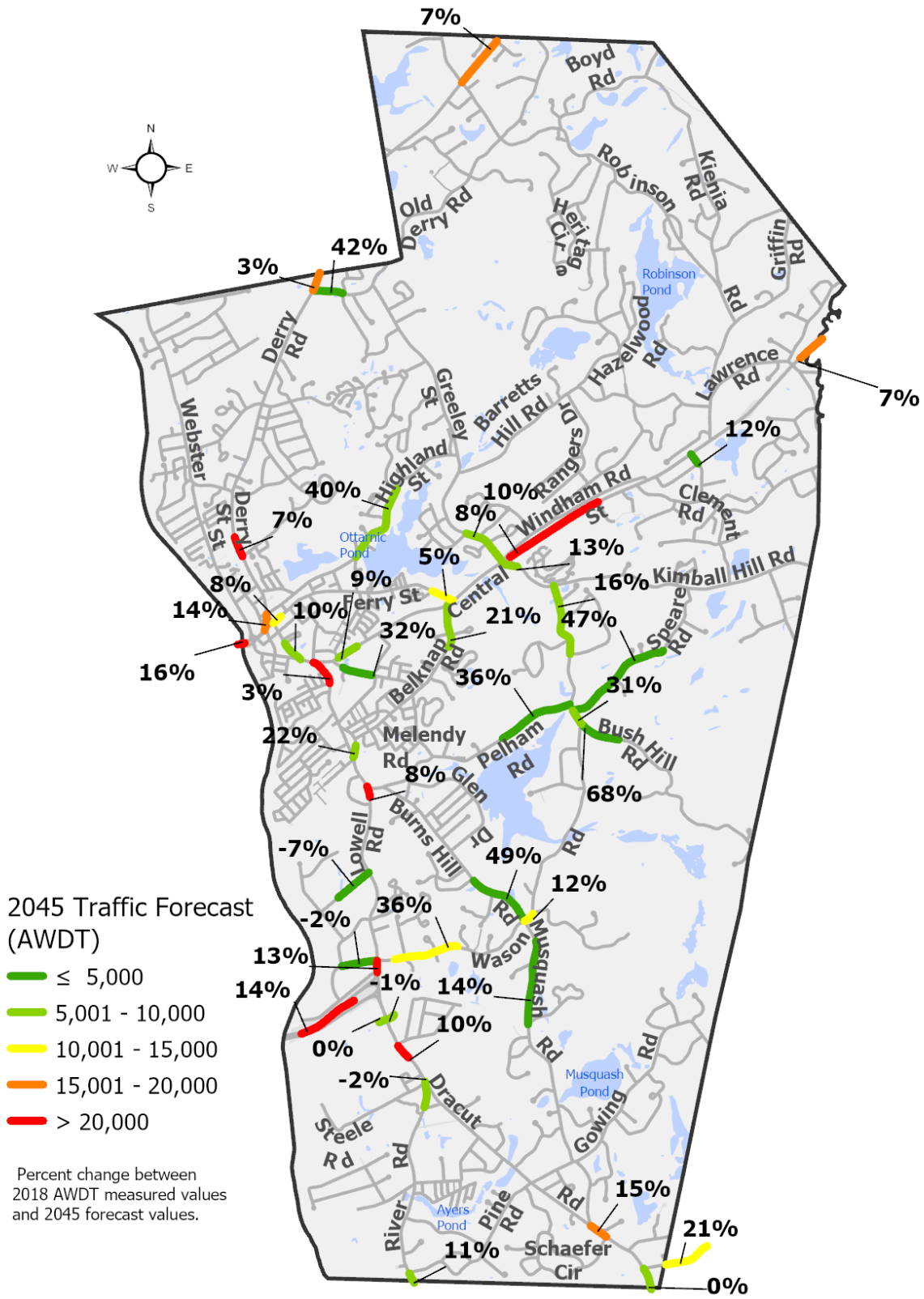


**Table V-13. 2045 Forecasted Traffic with Hudson Boulevard**

| | | | | Base to |
|---|---|---|---|---|
| | | 2045 | 2045 Bld | Build |
| | | Base Vol. | Hud Blvd | % Change |
| **Hudson Blvd** | NH 3A to Musquash Rd. | | 23,620 | |
| **Hudson Blvd** | Musquash Rd to Bush Hill Rd | | 21,740 | |
| **Hudson Blvd** | Bush Hill Rd to Kimball Hill Rd | | 20,380 | |
| **Hudson Blvd** | Kimball Hill Rd to NH 111 | | 12,995 | |
| **Taylor Falls Bridge** | Hudson/Nashua CL | 43,160 | 39,050 | -10% |
| **Sagamore Bridge** | Hudson/Nashua CL | 56,790 | 63,970 | 13% |
| **NH 111 Central St.** | E. of Kimball Hill Rd. | 20,200 | 14,300 | -29% |
| **NH 111 Central St.** | E. of Greeley St. | 25,100 | 20,200 | -20% |
| **NH 111 Burnham Rd.** | N. of Central St. | 13,160 | 11,470 | -13% |
| **NH 111 Ferry St.** | E. of Library St. | 14,280 | 12,720 | -11% |
| **NH 3A/102 Derry St** | N. of Ledge Rd. | 28,280 | 27,320 | -3% |
| **NH 3A/102 Derry St** | N. of Ferry St. | 18,010 | 16,810 | -7% |
| **NH 3A Lowell Rd** | S. of Central St. | 23,390 | 21,220 | -9% |
| **NH 3A Lowell Rd** | S. of Pelham Rd. | 27,490 | 23,290 | -15% |
| **NH 3A Lowell Rd** | S. of Wason Rd. | 44,940 | 33,940 | -24% |
| **Library St.** | N. of NH 3A Central St. | 9,930 | 9,390 | -5% |
| **Speare Rd.** | E. of Bush Hill Rd. | 3,460 | 2,620 | -24% |
| **Greeley St.** | N. of NH 111 Central St. | 5,850 | 5,830 | 0% |
| **Central St.** | E. of Adelaide St. | 6,290 | 3,950 | -37% |
| **Melendy Rd.** | S. of Central St. | 2,590 | 2,180 | -16% |
| **Belknap Rd.** | S. of Central St. | 6,220 | 5,620 | -10% |
| **County Rd.** | E. of NH 3A | 5,520 | 4,950 | -10% |
| **Kimball Hill Rd.** | E. of Bush Hill Rd. | 5,450 | 4,200 | -23% |
| **Kimball Hill Rd.** | S. of NH 111 Central St. | 9,280 | 8,490 | -9% |
| **Bush Hill Rd.** | S. of Kimball Hill Rd. | 6,330 | 2,550 | -60% |
| **Bush Hill Rd.** | S. of Speare Rd. | 8,330 | 3,340 | -60% |
| **Bush Hill Rd.** | E. of Wason Rd. | 2,990 | 1,670 | -44% |
| **Pelham Rd.** | W. of Bush Hill Rd. | 2,930 | 2,270 | -23% |
| **Burns Hill Rd.** | N. of Wason Rd. | 3,140 | 4,150 | 32% |
| **Wason Rd.** | E. of Musquash Rd. | 13,870 | 6,570 | -53% |
| **Wason Rd.** | E. of NH 3A | 12,650 | 7,410 | -41% |

Source: NRPC traffic model estimate

# Existing Regulations

## Impact Fees

The Town of Hudson Zoning Ordinance currently assesses impact fees on developments to raise funds for the mitigation of traffic and transportation impacts attributable to the development. The fees are assessed based on a schedule developed by the Planning Board which is reviewed annually for necessary revision and update. At present, improvements are on the town's CIP that are in progress include: Twin Bridges Rehabilitation, Lowell Road First Brook Bridge Rehabilitation and traffic light upgrades.

## Road and Sidewalk Layout

At present, the Town's subdivision regulations require that the width of the right of way for a new residential street be at least 50 feet wide with a pavement width of 24 feet, or 28 feet for streets greater than 1,000 feet in length (§289-28). Major streets, collector streets and commercial streets require a paved width of 36 feet or wider, if deemed necessary (§289-28). The subdivision regulations require that streets be laid out to intersect as nearly as possible at right angles and not less than 60 degrees. Street grades should not exceed 4% for major streets and 7% for local streets. In addition, the subdivision regulations require that sidewalks be constructed in new subdivisions where deemed essential by the Planning Board to provide access to schools, playgrounds, shopping centers and other community facilities. The sidewalks must be at least four feet wide and provide for pedestrian comfort and safety. New roads that are to be classified by the Town code as major streets, collector streets, and commercial streets are required to have a pavement width of 36 feet. The definition of the Town code street classification scheme is included in the Appendix V-2.

A number of criteria should be considered in updating the design standards for local streets:[1]

- *Design and maintain street space for the comfort and safety of residents*. Local residential streets should be designed with consideration to the needs of children, pedestrians, and bicyclists. The main function of the local street is to provide access to adjacent residential properties. Long distance travel and high speeds are not priorities for local streets, therefore, the Town should reconsider its subdivision requirement for a 24 foot width for residential streets. A residential street with pavement width of 20 feet is sufficient to allow for emergency vehicle access with *no* on-street parking. A pavement width of 24 to 26 feet is sufficient for a residential street to allow for emergency vehicle access *with* on-street parking.
- *Provide a well connected, interesting pedestrian network*. Convenient and safe pedestrian access to schools, shopping, recreation, employment and other destinations should be provided. This may include the development of an interconnected pedestrian pathway system. The Town should reconsider its 4 foot width requirement for sidewalks. The Americans' with Disabilities Act (ADA) guidelines call for a minimum sidewalk pavement width of at least five feet.[2] Sidewalks on high volume roads should be required to be at least eight feet wide with a three foot landscaped buffer between the curb and paved surface. This buffer provides a margin of safety between the pedestrian flow and high speed and high volume traffic.
- *Provide convenient access for people who live on the street, but discourage through traffic; allow traffic movement, but do not facilitate it*. Traffic control measures should be considered to eliminate extensive through traffic on local streets. The Town should consider traffic calming measures on streets that serve as cut-throughs in neighborhoods. The traffic calming measures should be implemented with input from the Town Highway Safety Committee and the public.
- *Differentiate streets by function.* Streets should be clearly distinguished within the network in terms of the functional differences between local residential streets and major collectors or arterials in the overall street design.
- *Relate street design to the natural and historical setting.* Street design should relate to and express the terrain, natural character, and historic traditions of the locale. Irregularities of a site such as large rocks or trees and slopes should be incorporated rather than removed. Street

[1] Southworth and Ben-Joseph, *Streets and Shaping of Towns and Cities*, page 143.
[2] United States Department of Justice, *Americans' with Disabilities Act Standards for Accessible Design, Excerpt from 28 CFR Part 36*, July 1, 1994 at: http://www.usdoj.gov/crt/ada/adastd94.pdf.

details including curb design, sidewalk paving or signs must relate to the regional vernacular rather than being anonymous from a handbook.

- *Reduce impervious surfaces by minimizing the amount of land devoted to streets.* There are several factors that should shape a plan including a design concept, on-street parking needs, traffic volumes and land constraints (steep slopes, wetlands, etc.). Narrower residential streets reduce the amount of impervious surfaces and allow for better groundwater recharge.
- *Roundabouts to reduce conflicts at intersections.* There are instances in which roundabouts can improve traffic flow, reduce congestion and improve safety for pedestrians and motorists alike. They should be considered in future road layouts.

## Access Management

Access Management "*…involves providing (or managing) access to land development while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity and speed."*[3] The speed and volume of traffic on a roadway is greatly reduced due to vehicles entering and exiting side streets and driveways. In general, access management techniques involve the regulation of the number, spacing and width of access points, the design of those access points, and the provision of alternative transportation methods to reduce vehicle trips. The primary goal of access management is to preserve roadway capacity by reducing turning movement conflicts with through traffic.[4]

NH 3A and NH 102 represent the main north-south roadways in Hudson. NH 111 serves as the main corridor for east-west travel. To preserve the existing road capacity, which has a theoretical limit, and to enhance safety for vehicles entering and exiting driveways, access management techniques should be applied to Hudson's major corridors including NH 3A, NH 102, NH 111 and Dracut Road. The Town should coordinate access management policies with NH DOT's access management initiatives. The following general access management techniques can be implemented through the subdivision, site plan and/or driveway regulations, and/or the zoning ordinance:

- Reduce the number of curb cuts along arterials and encourage the use of common driveways.
- Encourage the development of service roads parallel to arterials that allow for access to adjacent commercial developments.
- Require developers to fund road improvements such as turn lanes, medians, consolidation or alignment of access points and/or pedestrian facilities that reduce the impedance of through traffic.
- The minimum distance allowed between curb cuts along roads and arterials should be at least the minimum distances recommended in Table V-14. With the exception of a 100-foot minimum separation between driveways and intersections, there are no minimum driveway separation requirements in the subdivision or site plan regulations.

**Table V-14. Minimum Access Separation Distances**

| Posted | Spillback Rate* | | | |
|---|---|---|---|---|
| Speed (mph) | 5% | 10% | 15% | 20% |
| 30 | 335 | 265(a) | 210(b) | 175(c) |
| 35 | 355 | 265(a) | 210(b) | 175(c) |

[3] AASHTO, *Policy on the Geometric Design of Highways and Streets*, 2001.
[4] Nashua Regional Planning Commission, *Access Management Guidelines*, April 2002.

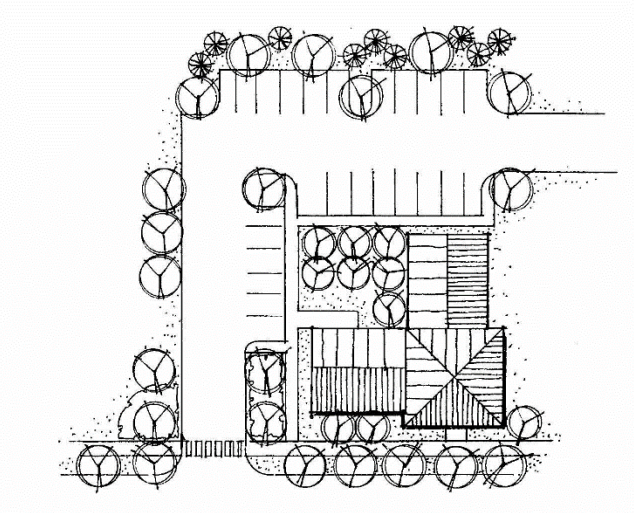
| | | | | |
|---|---|---|---|---|
| 40 | 400 | 340 | 305 | 285 |
| 45 | 450 | 380 | 340 | 315 |
| 50 | 520 | 425 | 380 | 345 |
| 55 | 590 | 480 | 420 | 380 |

**Source:** Gluck, J.S., Haas, G., Levinson, H.S., and Jamal Mahmood, *Driveway Spacing and Traffic Operations*, TRB Circular E-C019, December 2000.

*Spillback occurs when a right-lane through vehicle is influenced by right-turn-in to or beyond a driveway upstream of the analysis driveway. The spillback rate represents the percentage of right-lane through vehicles experiencing this occurrence.
(a) Based on 20 driveways per mile; (b) Based on 25 driveways per mile; (c) Based on 30 driveways per mile.
*Based on an average of 30-60 right turns per driveway.

- Place parking behind or beside buildings (Figure V-3) to allow for adequate driveway throat length and to screen parking when possible to make the building the focal point of the destination. Use green spaces to articulate the differences between driveways, parking and pedestrian areas.

**Figure V-3. Parking to Rear and Side of Building**



- Encourage easements between parcels for the interconnection of non-residential sites that allow employees and customers to move from site to site without repeatedly entering and exiting the roadway.
- Encourage easements or future right of way access between residential subdivisions in order to encourage an interconnected street system.
- Allow for pedestrian access between developments. Crossing points for pedestrians should be across driveways rather than through parking areas. Encourage separate sidewalks and walking paths in parking lots for non-residential uses.
- Enter into a Memorandum of Understanding (MOU) with NH DOT to coordinate review of access points. Until recently, NH DOT would issue permits with limited input from the local decision makers. To improve the coordination of local and state planning objectives along the state's road system, NH DOT has developed a MOU which is a formal agreement between NH DOT and the community to coordinate on the review and issuance of driveway permits to access state roads.

## Community Character Guidelines

The adoption of "community character guidelines" for non-residential development can result in development that is compatible with the community's character, enhances traffic safety and preserves highway capacity. The NRPC publication, *Non-Residential Development Community Character Guidelines*,[5] includes guidelines relating to building orientation, building design, access management, parking lot landscaping, offsite parking, site lighting guidelines, loading and service facilities guidelines, and public spaces and landscaping guidelines. The Town should assess the existing site plan, subdivision and zoning requirements based on recommendations included in this document.

## Traffic Calming

Excess traffic and speeding on local roads through residential neighborhoods have been a byproduct of growth experienced by the Town and the region. Traffic calming is an integrated approach to traffic planning that seeks to maximize mobility while reducing the undesirable effects of that mobility.[6] There are several techniques that are described to achieve the goals of traffic calming:

- Reduce the speed at which automobiles travel by altering roadway design. These techniques include speed bumps and speed tables, rumble strips or changes in the roadway surface, center medians, diagonal diverters, dead-end streets or cul-de-sacs, neck downs, chicanes, chokers and protected parking, narrower streets and roundabouts (see photos[7], below).
- Change the psychological feel of the street through design or redesign. The use of traffic control devices, signs, pavement markings and landscaping should enhance the image of the residential street as a place that is safe for pedestrians.
- Discourage the use of private motor vehicles. Encourage other modes of transportation.
- Create strong viable local neighborhoods. Create compact neighborhoods with a range of facilities on hand so that people can drive shorter distances to where they want to go and make more trips by foot, bicycle or public transportation.

A primary way to slow down traffic is to narrow the real or perceived horizontal width of the pavement. Streets can be narrowed in various ways. A so-called "curb extension" is generally the best and perhaps most widely used option. It slows down traffic, shortens the crossing distance for pedestrians and a sidewalk can be added along the road if necessary.[8]

**Center Median**


**Speed Table**

**Chicane**

**Choker**

[5] Nashua Regional Planning Commission, *Non-Residential Development Community Character Guidelines*, 2000.
[6] Cynthia L. Hoyle, *Traffic Calming*, PAS Report 456, pg. 9.
[7] Photo Source: Fehr & Peers, Associates, Transportation Consultants at www.trafficcalming.org.
[8] Conservation Law Foundation, *Take Back Your Streets*, May 1995, pg. 32.

## Scenic Road Designation

As New Hampshire's residential, commercial, and industrial development has grown, so has the need to improve the road system. To prevent the elimination of scenic roads, communities are enabled by NH RSA 231:157 to designate roads other than state highways as Scenic Roads. This law protects such roads from repair or maintenance which would involve the cutting or removal of medium and large-sized trees within the right of way, except with the written consent of an official body. The law is an important tool in protecting the scenic qualities of roads. The large trees and stone walls that line many rural roads are irreplaceable and contribute heavily to the New England character of the region's towns. There are no designated scenic roads in Hudson. Consideration should be given to designating appropriate routes.

### Road Surface Management System (RSMS)

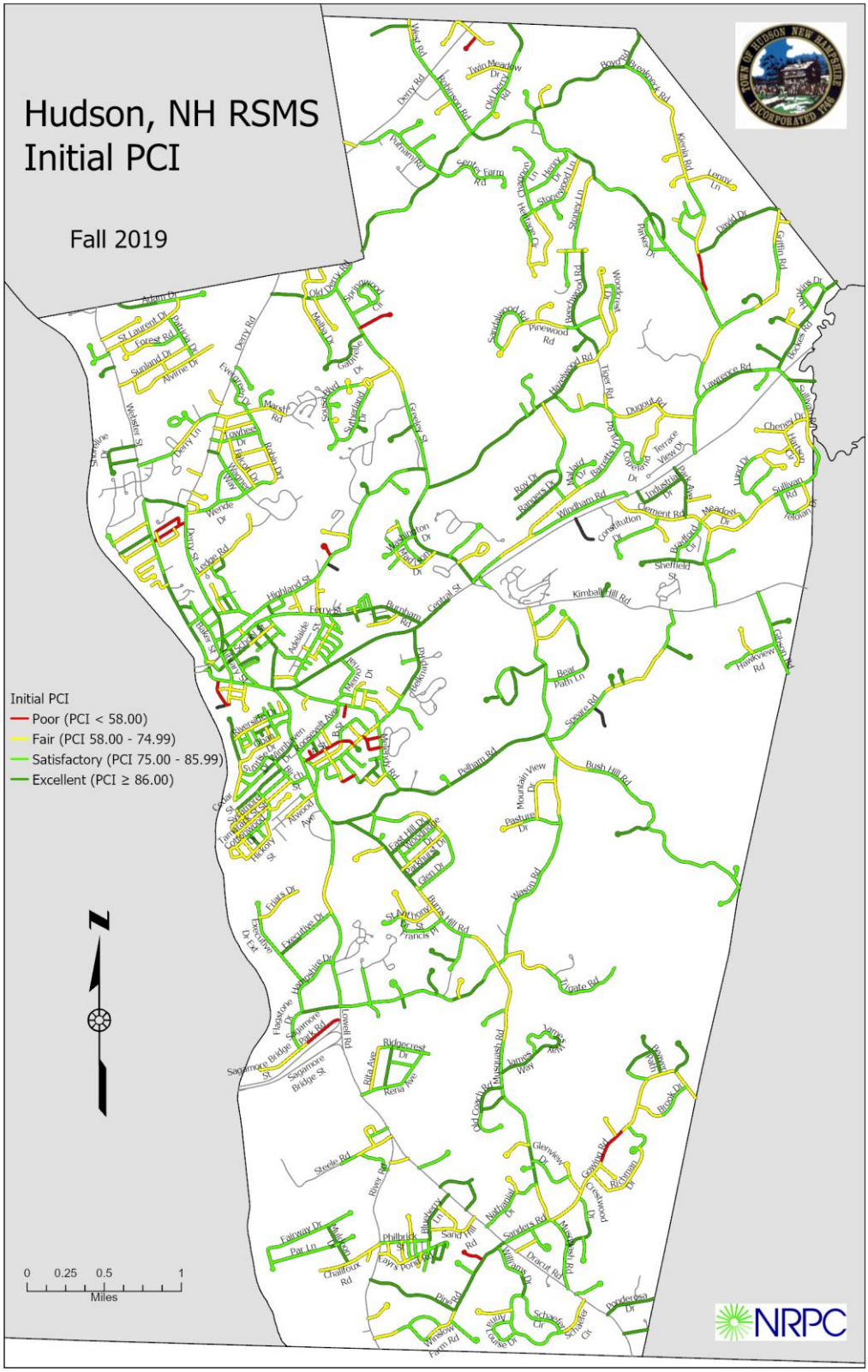
In the Fall of 2019, Nashua Regional Planning Commission (NRPC) conducted a Road Surface Management System (RSMS) assessment for the Town of Hudson. This assessment followed methodology and software developed by the Department of Civil Engineering at the University of New Hampshire. The technology platform for this assessment was provided by the NH Statewide Asset Data Exchange System (SADES), a partnership between New Hampshire Department of Transportation (NH DOT) and the UNH Technology Transfer Center.

The RSMS assessment had two phases: 1) a town-wide inventory of pavement condition on all town-owned paved roads (phase 1), and 2) an analysis examining changes in pavement condition, repair treatment effect, and repair cost over a 10-year period (phase 2). This assessment is not intended to constrain the decision-making process of the Hudson Department of Public Works (DPW) in selecting roads for repairs and treatment types. Instead, the RSMS assessment will serve as a tool for DPW and town officials to assess current and future pavement condition and as a guide for budgeting the cost of future repairs.

Results from phase 1 of the 2019 Hudson RSMS assessment are below in Map V-7 2019 Initial Pavement Conditions.

Hudson should consider developing a multi-year paving and road surface improvement plan based on the RSMS assessment and incorporate the plan into the Town's Capital Improvements program.

**Map V-7. 2019 Initial Pavement Condition**




**Data Source:** NRPC

# NON-MOTORIZED TRANSPORTATION

## INTRODUCTION

Although most trips in Hudson are taken by automobile, opportunities exist for developing a multi-modal transportation network that would expand upon the exiting sidewalk network and include additional bicycle, pedestrian, and public transit facilities. Each trip taken by bicycle, foot or transit removes one private vehicle from the roadway, thereby enhancing the capacity of the road network, potentially reducing traffic congestion, and providing options for those who cannot or do not wish to drive.

Most of the road network in Hudson can technically be used today by non-motorized users. However, after engaging with Hudson residents, it is clear that most people do not consider these routes to be safe, multimodal spaces.

During the public outreach component for developing this document many residents who responded to the survey or participated in the public input sessions expressed a need for more sidewalks, bike lanes, and mitigation of traffic congestion. Public comments contributed by Hudson residents included:

> "*Complete streets design with space for walkers, bicyclists and cars would be a welcome relief from the mostly car only street design of today".*
>
> *"[] I wish we could get some sidewalks. I can't go for a walk except on my side road…but can't go anywhere else due to speeding, windy roads and cars can't see us. We need sidewalks."*
>
> *"Sidewalks and bicycle lanes would be useful throughout town, especially 111, 102, and 3a".*
>
> *"I would not be opposed to the smaller (single lane) version of the Hudson Boulevard project, especially if it had an adjacent bike path".*
>
> *"I would love to see the current Circumferential highway aka Hudson Blvd land turned into a stunning bike path connecting Lowell road all the way to Bensons park".*
>
> *"Lowell road has grown so much. Needs bike lane".*

The community vision that emerged as a result of citizen involvement in this planning process indicates a clear desire for a transportation network with increased and expanded mobility options including public transportation, sidewalks, bicycles, and commuter rail. This vision includes:

- A defined, walkable town center that provides a sense of place and a venue to bring the community together.
- A walkable economic center in the vicinity of the town's historic Library Park.
- Increased walkability near the town's "official" historic center near Benson Park in the vicinity of the intersection of Central and Greeley Streets.
- Increased walkability, bikeability and overall mobility at locations along Lowell Road and Derry Street.

This section attempts to incorporate this vision into the Hudson transportation system.

## Bicycle and Pedestrian Network Connectivity

A connected bike network provides a safe and comfortable transportation experience, enabling people of all ages and abilities to get where they want to go. The network functions just like the road network. It offers people multiple ways to get where they want to go and provides a safe, comfortable experience

for people of all ages and abilities. To meet the needs of everyone, a connected bike network should be, by definition, low-stress and high-comfort. Such a network can include a variety of facilities, from a protected bike lane or a quiet neighborhood street to a shared-use path. High-stress facilities such as a conventional bike lane on a street with a 45mph speed limit may not meet the needs of people of all ages and abilities and would therefore not be considered part of a connected bike network. A connected bike network gets people where they want to go and offers a comfortable way to get there[9].

For pedestrians, the most basic feature of walkability is a complete, continuous, and safe walkway network that provides clear protection from motor vehicles and is accessible to all people, including those with disabilities[10]. Crosswalks are necessary for safely connecting the walkway network across vehicle traffic and are a critical part of making walkable areas accessible to all people, including those with disabilities. Connectivity that prioritizes walking over motorized forms of transportation improves walkability by making walking more convenient relative to other modes of transportation.

A network that is town-wide will consider multimodal treatments for all areas in town, not just a select few locations. While the primary goal of this network should be to work toward safety for all users as a key element of design, the next-most important characteristic of this network should be its ability to integrate places. A town-wide network should not require multimodal users to first drive to a location where they can then elect to use another mode of transportation. Rather, the network should seek to connect to all people, all areas, all points of interest, and with other towns.

The town of Hudson should consider bicycle and pedestrian network connectivity as it plans for the future. The rest of this chapter describes the current bicycle and pedestrian network and offers ideas for improvements.

## Existing Conditions - Sidewalks, Bike Routes, Off Road Trails and Destinations

### Library Common and Historic Town Center – Ferry and Central Streets

There are various residential areas within walking or biking distance of the Library Common (downtown) area and the Historic Town Center area just east of Kimball Hill Road, as illustrated on Map V-8.

Destinations in this general area include the Hudson town office, St. John the Evangelist Church, Library Street School, Dr. H. O. Smith School, the Hudson Community Center, Hudson Memorial School, and numerous businesses. The Hudson Senior Center and Benson Park are on Kimball Hill Road, near Central Street at the eastern edge of the downtown area.

There are sidewalks along Library, Chase, Ferry, and Central Streets, and Derry Road, in the historic town center and Library Common area, as illustrated on Map V-8.

The sidewalk along Central Street is continuous from Taylor Falls Bridge to the Ferry Street intersection. There are sidewalks on both sides of Ferry Street from the vicinity of Taylor Falls Bridge to Gloria Avenue. There are no sidewalks between Gloria Avenue and Burnham Road and then no sidewalks along Burnham Road to Central Street.

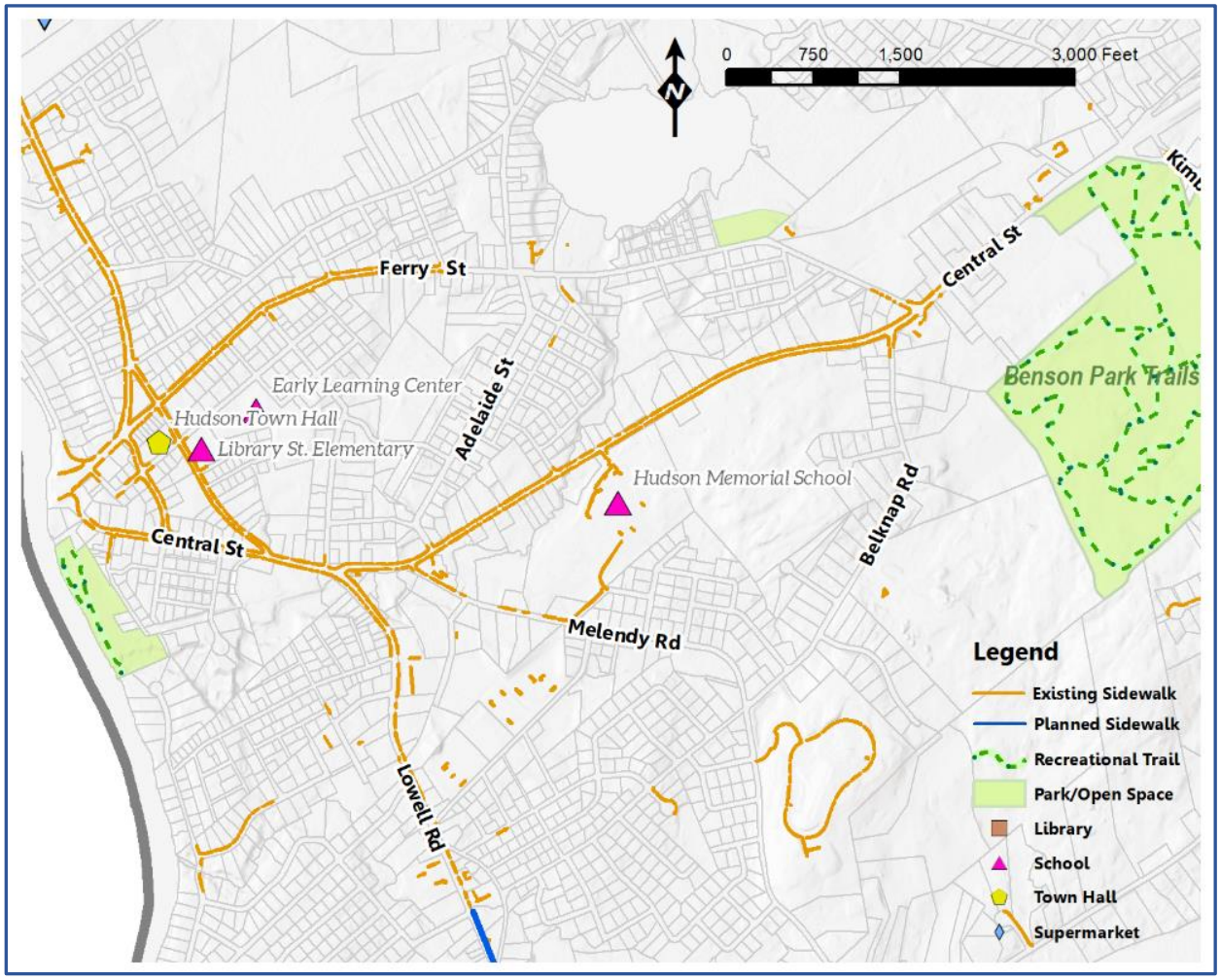
On Ferry Street, there are signalized intersections at Derry Road, Library Street, and the intersection with Central Street. The Derry Road signals do not include pedestrian phases or crosswalks. The signalized intersection at Library Street does have a pedestrian phase and crosswalks on all four legs.

[9] http://www.pedbikeinfo.org/cms/downloads/InfoBrief_PBIC_Networks.pdf
[10] https://www.itdp.org/2018/02/07/pedestrians-first-walkability-tool/

On Central Street there are signalized intersections at Library Street, Lowell Road, Ferry Street (Burnham Rd) and at Kimble Hill Road. There are pedestrian phases and crosswalks at the Library Street and Lowell Road intersections. There are no crosswalks or pedestrian phases at the Ferry Street (Burnham Road) intersection. There are no crosswalks or pedestrian phases at the Kimble Hill Road intersection and there are no dedicated bicycle accommodations along the Ferry Street or Central Street corridors.

Infill of this sidewalk network was submitted for consideration for NH DOT's Ten Year Plan but was not selected at this time. However, it will be places on NRPS's long range transportation plan.

**Map V-8.Central Sidewalk Network**



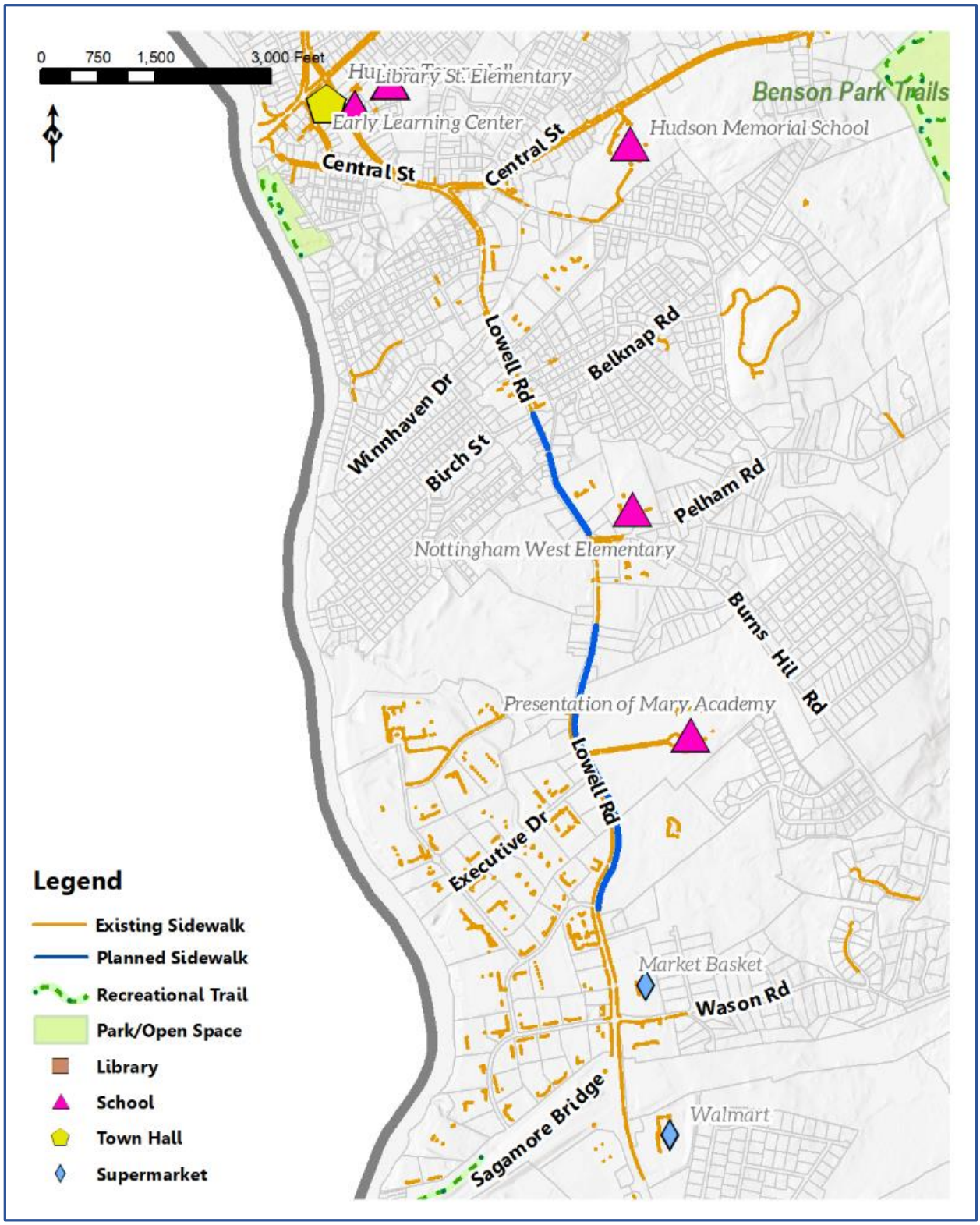

## Lowell Road (NH3A)

Lowell Road is a significant commercial corridor in Hudson. Destinations include shopping centers, numerous restaurants, large supermarkets, Walmart, and Sam's Club. The corridor includes the Sagamore Business Park and plans for one of the largest distribution centers in the state has been approved. Additional destinations include Presentation of Mary Academy, Nottingham West Elementary School, Stonewood School and Jette Field.

There are residential areas within biking and walking distance along the corridor, particularly between Central Street and Pelham Road. There are intermittent sidewalk segments along Lowell Rd (NH3A) from Central Street southward to Walmart (just south of the Sagamore Bridge). New sidewalks are planned

(NRPC 2019-2045 Metropolitan Transportation Plan) from Birch Street to Pelham Road, and from Nottingham Square to Executive Drive which will close some of the gaps in sidewalks along the corridor.

**Map V-9. Lowell Road Sidewalk Network**



Signalized intersections are provided at Pelham Road, Fox Hollow Drive, Executive Drive, Hampshire Drive, Wasson Road/Flagstone Drive, Sagamore Bridge, Walmart Boulevard, Rena Avenue, and Dracut Road. There is a crosswalk and pedestrian phase on Pelham Road at the Pelham Road/ Lowell Rd intersection, and there are crosswalks and pedestrian phases on Lowell Road and Fox Hollow Drive at that intersection. There is a pedestrian phase and crosswalk on Executive Drive on the west side of the Lowell Road intersection but no crosswalk or pedestrian phase on Lowell Road itself. There is no pedestrian phase at the Hampshire Drive intersection. There are crosswalks and pedestrian phases on all four legs of the Wasson Road/Flagstone Drive intersection. There are no crosswalks or pedestrian phases at Sagamore Bridge, Walmart Boulevard, Rena Avenue or Dracut Road intersections.

There are no dedicated bicycle accommodations along the corridor, but there is a dedicated bike and pedestrian path on the Sagamore Bridge between the Sagamore Industrial Park in Hudson and the residential and commercial area along the Daniel Webster Highway in South Nashua.

Pedestrian improvements were submitted for consideration for NH DOT's Ten Year Plan but was not selected at this time. However, it will be places on NRPS's long range transportation plan.

## Derry Road

There are various residential areas within biking and walking distance along this corridor.

Destinations include the Hudson Mall Shopping Center, Hannaford Supermarket, numerous retail establishments and small businesses. The Rogers Library, Alvrine High School and the Hills Garrison Elementary school are also located on this corridor.

There are intermittent sidewalks along Derry Road from the downtown area to the intersection of NH3A/NH102, and then along NH102 from Towhee Drive to Old Derry Road, which is just beyond Alvrine High School, Hills Garrison Elementary School and Rogers Library.

There are new sidewalks proposed between the Hudson Mall Shopping Center and Phillips Drive (north entrance) and from Marsh Road to Towhee Drive which will complete the sidewalk connection between the schools, library, and downtown Hudson.

There are signalized intersections at Highland/Library Street, Hudson Mall Shopping Center, and Elm Avenue intersections.

There is a crosswalk and pedestrian phase on Derry Road at Highland Avenue intersection. There are no crosswalks or pedestrian phases at the Hudson Mall entrance nor at the Elm Avenue intersection.

There are no dedicated bicycle accommodations along the corridor.

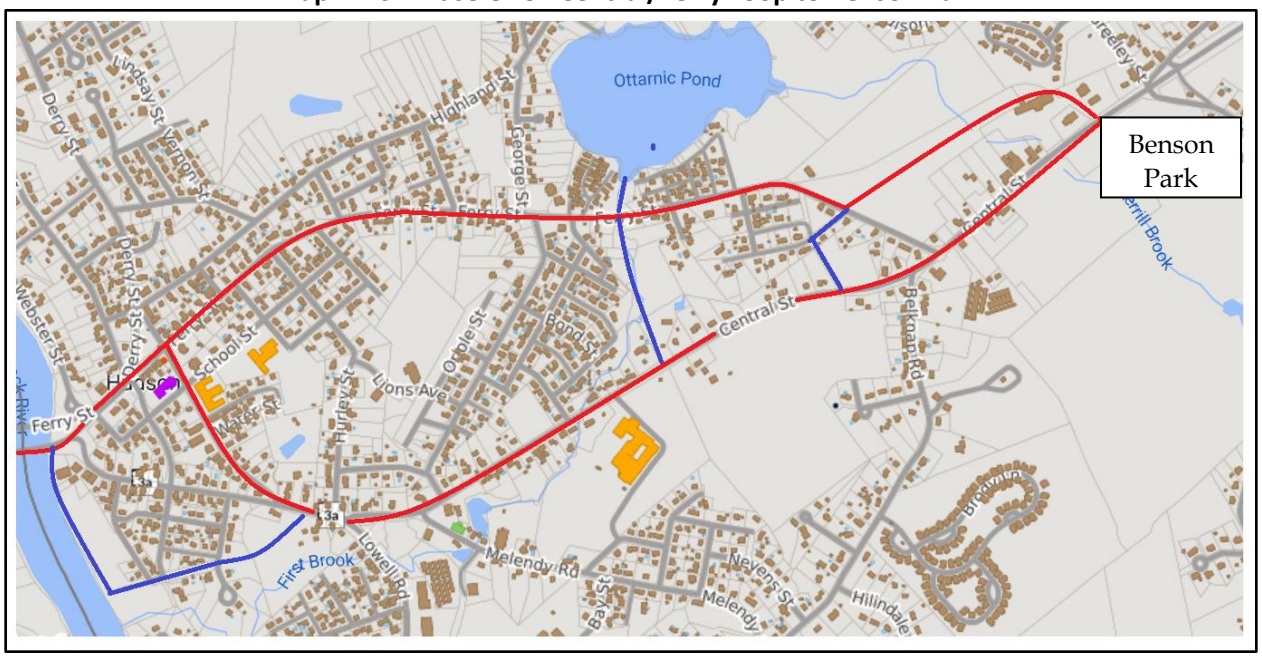
Infill of the sidewalks, pedestrian improvements and drainage improvements are currently part of NH DOT's draft Ten Year Plan, a significant milestone.

## Town-wide Loop Concept

This section is conceptual in nature for the purpose of introducing an idea for a local and regional recreational and transportation asset. In considering the potential to fill in gaps of the bicycle and pedestrian network, a long term vision or aspiration could be a town-wide bicycle/pedestrian loop that connects both bridges, Benson Park and other areas of community interest while providing a centralized loop to access various part of town. This vision could being with "Phase One" - a loop connecting the twin bridges from the Souehgan Rail Trail in Nashua up Ferry St. to Benson Park (a 166 acre preserved conservation and historical asset for the region). The return path could down Central and either up Library St. (past the Alvirne Memorial Library) or through private easements to the Merrimack River accessing Merrill Park. This conceptual loop is illustrated in Map V-10.

"Phase Two" of this concept could include the use of the Right Of Way for the Circumferential Highway (aka Hudson Blvd). This ROW is already owned by the NH DOT, and this concept aligns with the proposed Hudson Boulevard that includes a parallel, separated multi-use path. Implementing this leg completes the town-wide loop in conjunction with the Phase One Central Loop.

**Map V-10. Phase One - Central/Ferry Loop to Benson Park**




*Red lines indicate targeted pedestrian loop. Blue lines indicate other potential options to connect other natural and town assets.*

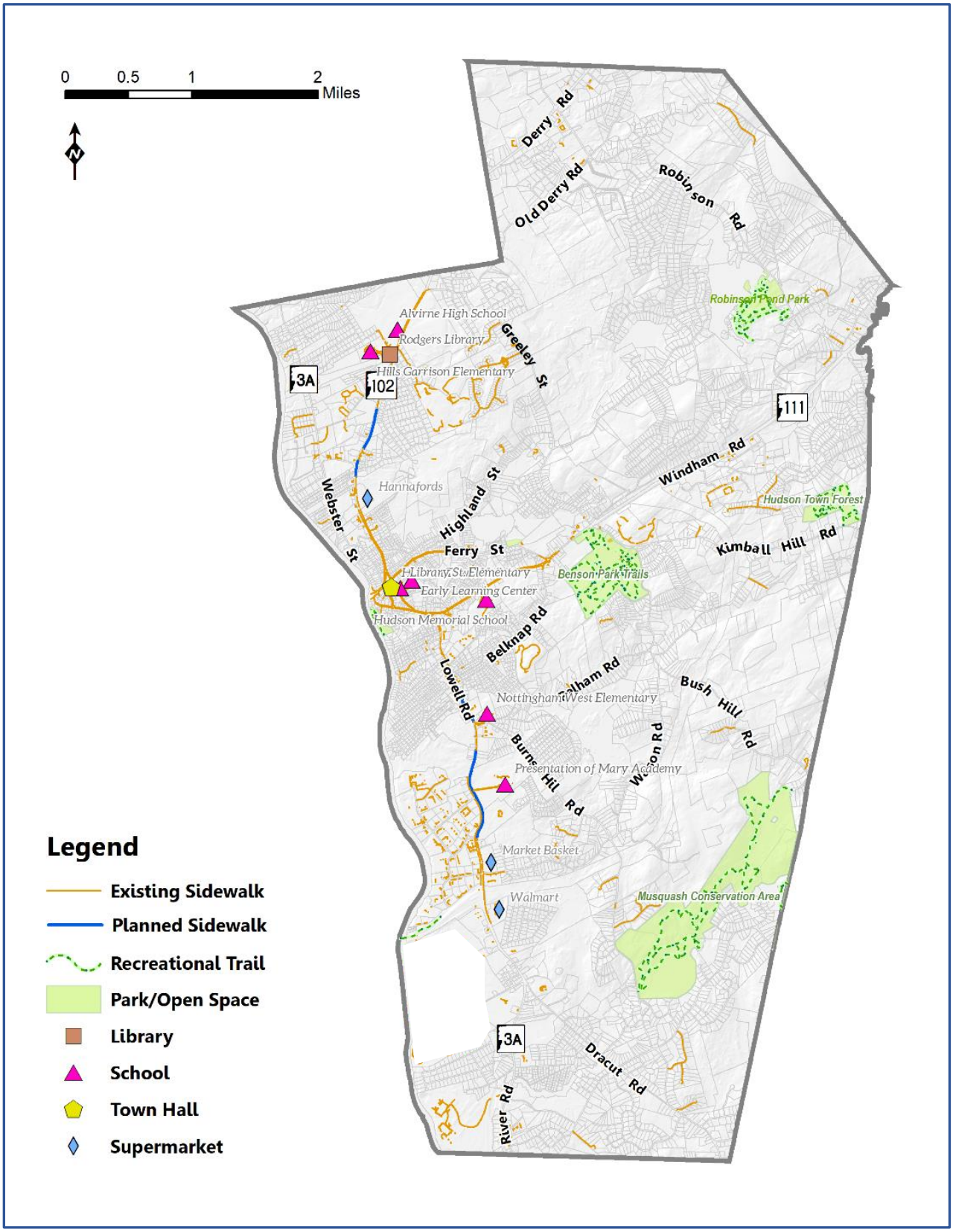
## Other Sidewalks and Trails

In addition to the sidewalks along the key corridors that have already been described, there are numerous sidewalk segments in neighborhoods throughout Hudson, as can be seen in Map V-11 on the following page. Additionally, there are sidewalk segments throughout the Sagamore Industrial Park.

There is also an existing separated bicycle and pedestrian path across the Merrimack River on the Sagamore Bridge that connects the industrial park with the residential and commercial area along Daniel Webster Highway in Nashua.

Map V-11 also shows various recreational trail systems throughout town, including in Benson Park, Musquash Conservation Area, the Hudson Town Forest, and Robinson Pond Park.

## Map V-11 Existing & Planned Sidewalks



## Bicycle Level of Traffic Stress (BLTS)

For a bicycling network to attract the widest possible segment of the population, its most fundamental attribute should be low-stress connectivity, that is, providing routes between people's origins and destinations that do not require cyclists to use links that exceed their tolerance for traffic stress, and that do not involve an undue level of detour[11].

BLTS is a rating given to a road segment or crossing indicating the traffic stress it imposes on bicyclists[12]. Levels of traffic stress range from 1 to 4 as shown:


- LTS 1: Strong separation from all traffic except low speed, low volume traffic and simple intersection crossings. *Suitable for kids and beginners.*
- LTS 2: Except in low speed / low volume traffic situations, cyclists have their own place to ride that keeps them from having to interact with traffic except at formal crossings. Physical separation from higher speed and multilane traffic and intersections that are easy for an adult to negotiate. A level of traffic stress that *most adults can tolerate (willing and wary).* This is the BLTS that Hudson's bicycle network should strive to meet.
- LTS 3: Involves interaction with moderate speed or multilane traffic, or proximity to higher speed traffic. A level of traffic stress *acceptable to those classified as comfortably confident.*
- LTS 4: Involves interaction with higher speed traffic or proximity to high speed traffic. A level of stress *acceptable only to those who are the most traffic tolerant*.

NRPC used ArcGIS technology to develop a BLTS analysis and associated map of the Hudson road network (Map on next page). Staff used similar methodology that was used during the recent statewide BLTS study (the analysis did not include intersections). The methodology used existing NRPC road attribute data including speed (derived from posted speed or functional class), number of lanes, traffic direction, bike lane width, parking lane width, shoulder type, and shoulder width. Staff collected supplemental roadway data using a combination of aerial imagery (Google Maps and Google Streetview), a point file of speed signposts and locally or regionally collected speed and volume data. These additional attributes included: bike and parking lane widths, posted/prevailing speed, and residential area designations. These road characteristics influence how stressful it is for an individual to ride a bike on a segment of roadway.

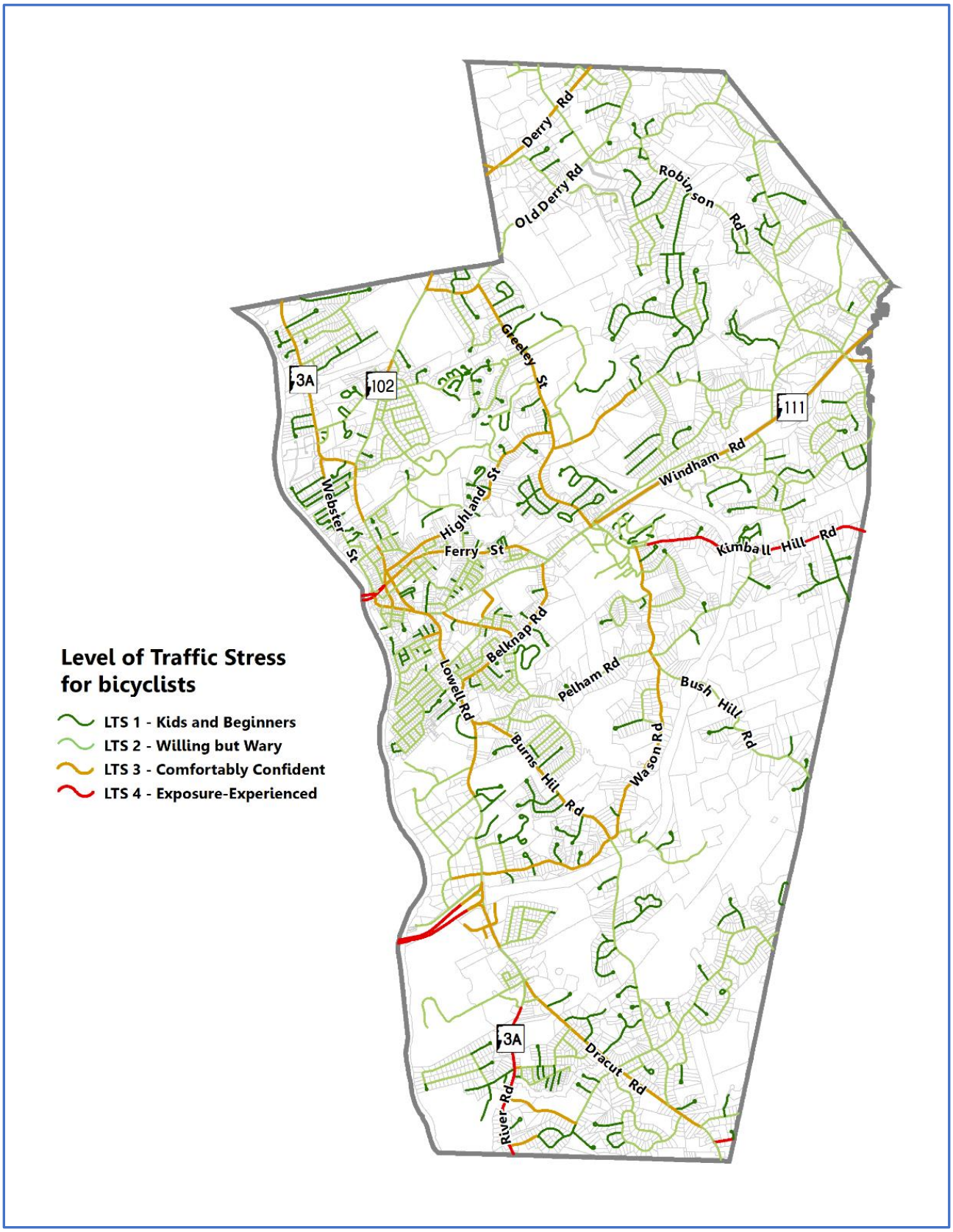
Map V-12 shows that residential neighborhoods with low traffic volumes and low posted speed limits generally experience low levels (BLTS 1 or 2) of traffic stress. This is true even without the existence of bike lanes or sidewalks. On the east side of downtown, Central Street between Lowell and Kimble Hill Roads experiences a BLTS 2 (tolerable for most adults). Moving north from downtown, segments of Derry Road from Highland Street to the Litchfield town line vary between BLTS 2 and 3 because in some areas there are sidewalks and shoulders and in other locations there are not. Webster Street/NH3A is generally BLTS 3 because of minimal shoulders and high traffic volume and speed.

[11] Mineta Transportation Institute
[12] Peter G. Furth, Northeastern University College of Engineering.

Higher levels of traffic stress can be seen in areas with higher volumes of traffic, higher posted speed limits, lack of bike lanes, narrow or non-existent shoulders and other factors. Taylor Falls bridge shows a BLTS of 4 (most stressful) because there is a high volume of traffic and no bike lanes. Derry Road and Highland, Ferry, Library, Chase, and Central Streets in the historic downtown area experience BLTS 3 (only suitable for confident and experienced riders) because of high traffic volume, narrow shoulders, and absence of bike lanes. Kimble Hill Road east of Benson Park is BLTS 4 because the speed limit increases to 40mph and there are minimal shoulders. Lowell Road between Central Street and the Sagamore Bridge is mostly BLTS 3 because of narrow shoulders and high traffic volume**,** with some exceptions where the level of stress is 2. Dracut Road is generally BLTS 3, and River Road is BLTS 4.

Bicyclists Gather at the Statehouse in 2009

## Map V-12 Level of Traffic Stress



## Crash Data

**Table V-15. Crash Data**

| Motor Vehicle - Bicycle - Pedestrain Crashes (2010-2018) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Accident Street** | **Accident Type** | **# Fatals** | **# Injuries** | **Accident Street** | **Accident Type** | **# Fatals** | **# Injuries** |
| ADAM DR (#27) | Pedestrian | 0 | 1 | KIMBALL HILL RD | Bicyclist | 0 | 1 |
| BARRETTS HILL RD (#32) | Pedestrian | 0 | 1 | KIMBALL HILL RD | Pedestrian | 0 | 1 |
| BURNS HILL RD (#45) | Pedestrian | 0 | 0 | KIMBALL HILL RD | Pedestrian | 0 | 0 |
| CENTRAL ST | Pedestrian | 0 | 2 | LIBERTY ST (#15) | Pedestrian | 0 | 1 |
| CENTRAL ST | Pedestrian | 0 | 1 | LIBRARY ST (#40) | Pedestrian | 0 | 1 |
| CENTRAL ST (#36) | Pedestrian | 0 | 1 | LIBRARY ST (#27) | Pedestrian | 0 | 1 |
| CENTRAL ST | Pedestrian | 1 | 0 | LIBRARY ST (#38) | Pedestrian | 0 | 0 |
| CONSTITUTION DR (#33) | Pedestrian | 0 | 0 | LOWELL RD (#77) | Pedestrian | 0 | 1 |
| DERRY (#64) | Pedestrian | 0 | 1 | LOWELL RD (#64) | Pedestrian | 0 | 1 |
| DERRY ST (#194) | Pedestrian | 0 | 0 | LOWELL RD (#254) | Pedestrian | 0 | 0 |
| DERRY ST | Pedestrian | 0 | 0 | LOWELL RD | Bicyclist | 1 | 0 |
| DERRY ST (#15) | Pedestrian | 0 | 1 | LOWELL RD (#125) | Pedestrian | 0 | 1 |
| DERRY ST (#86) | Pedestrian | 0 | 1 | LOWELL RD (#254) | Pedestrian | 0 | 1 |
| DERRY ST (#65) | Bicyclist | 0 | 1 | LOWELL RD (#253) | Pedestrian | 0 | 1 |
| DERRY ST (#102) | Pedestrian | 0 | 1 | LOWELL RD (#77) | Pedestrian | 0 | 1 |
| DERRY ST (#77) | Pedestrian | 0 | 1 | LOWELL RD (#254) | Pedestrian | 0 | 1 |
| DERRY ST (#106) | Pedestrian | 0 | 1 | LOWELL RD (#212) | Pedestrian | 0 | 2 |
| DERRY ST | Pedestrian | 0 | 1 | OLD DERRY RD (#145) | Pedestrian | 0 | 1 |
| DERRY ST | Pedestrian | 0 | 1 | PARK AVE | Bicyclist | 0 | 1 |
| DERRY ST | Pedestrian | 0 | 1 | PELHAM RD (#10) | Pedestrian | 0 | 1 |
| DERRY ST (#26) | Pedestrian | 0 | 1 | PELHAM RD (#2) | Pedestrian | 0 | 0 |
| DERRY ST (#82) | Pedestrian | 0 | 1 | PELHAM RD (#5) | Pedestrian | 0 | 1 |
| DRACUT RD (#133) | Pedestrian | 0 | 1 | ROBINSON RD (#154) | Pedestrian | 0 | 1 |
| DUGOUT RD | Pedestrian | 0 | 1 | SCOTTSDALE DR | Pedestrian | 0 | 1 |
| ELMWOOD DR | Pedestrian | 0 | 1 | WASON RD | Pedestrian | 0 | 0 |
| FERRY ST (#57) | Bicyclist | 0 | 1 | WASON RD (#2) | Pedestrian | 0 | 1 |
| FLAGSTONE DR (#21) | Pedestrian | 0 | 1 | WEBSTER ST (#229) | Pedestrian | 0 | 1 |
| GRAND VIEW (#6) | Bicyclist | 0 | 1 | WEBSTER ST | Pedestrian | 0 | 1 |
| HAVERHILL ST (#1) | Bicyclist | 0 | 0 | WINHAVEN DR (#6) | Pedestrian | 0 | 1 |
| HIGHLAND ST (#83) | Pedestrian | 0 | 1 | | | | |
| HIGHLAND ST (#1) | Bicyclist | 0 | 1 | | | | |
| | | | | | **Total Crashes:** | | **60** |
| | | | | | **Total Pedestrian:** | | **52** |
| | | | | | **Total Bicycle:** | | **8** |
| | | | | | **Total Injuries:** | | **50** |
| Crash data courtesy of NHDOT | | | | | **Total Fatal Injuries:** | | **2** |

NRPC reviewed motor vehicle crash data within the town. The preceeding table provides information about each reported crash.

The table indicates 60 crashes involving bicycles or pedestrians were reported over the 10-year period (approx. 6 per year). There were 50 total injuries and 2 fatalities.

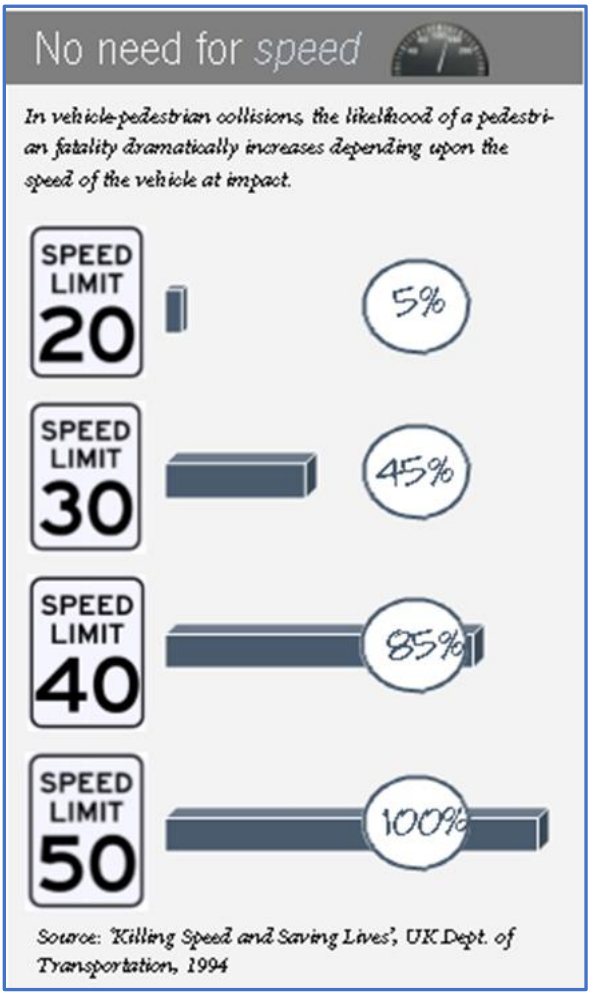
Fifty-two crashes involved pedestrians and 8 involved bicyclists.

## Roadway Design and Safety

The area that is now Hudson was incorporated in 1746 (as Nottingham West, NH), and then renamed Hudson in 1830. Town roads in those early days bear little resemblance to Hudson's modern roads. In fact, roadways in Hudson, as in the majority of American communities, have for decades been designed with the primary mission of optimizing the flow of motorized vehicles efficiently, with little (if any) consideration of how to safely accommodate other modes of transportation.

## Driver Behavior and Roadway Design

It is important to recognize that roadways which are designed solely for motor vehicles fail to adequately accommodate the needs of users of other modes of transportation. In order to have roadways that effectively incorporate multimodal users, the town should re-consider the idea that all roadways are exclusive to motor vehicles and embrace the idea that town roadways should be designed to accommodate a variety of transportation modes.




Transportation engineers now acknowledge that motor vehicle driver behavior is mostly influenced by how the road is designed[13]. Drivers feel safe when there are long sight distances, wide painted lanes, and no visible obstructions, and when they feel safe, they by nature drive faster. If a road in a downtown business district or neighborhood is designed the same way as a highway, drivers feel safe and will therefore tend to drive fast, regardless of the speed limit, signage, or if pedestrians or bicyclists are present. If a roadway is engineered exclusively for motor vehicles, other attempts to influence driver behavior (for example, posted speed limits) will probably have a minor or temporary impact. Additionally, painted bike lanes and sharrows do not necessarily provide an incentive for individuals to bike more often. In fact, bike lanes may instill a false sense of security. For this reason, painted bike lanes are not included in the design guidelines that are described later in this document. Instead, the design guidelines encourage roadway treatments that provide clearly defined spaces for all modes which will provide more incentive for non-motorized users.

If residents of Hudson want to improve walkability and bikeability in the community, future roadway improvements need to be designed with the

[13] Amherst (NH) Multimodal Master Plan

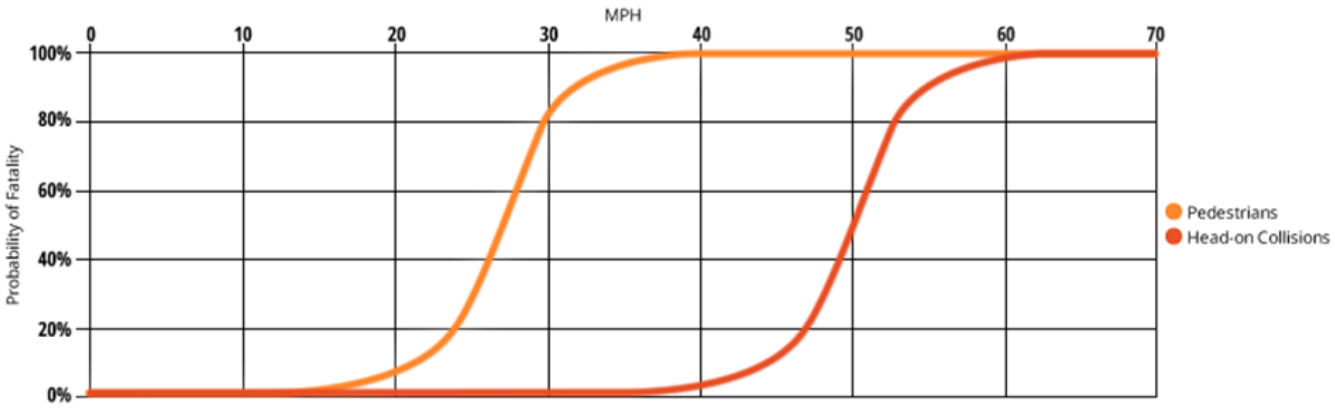
intention of providing visual cues that automatically encourage drivers to slow down. Examples include physically narrowing travel lanes, using different colors or materials on roadway shoulders, incorporating trees or other objects into the driver's peripheral vision along the roadway edge, and other design treatments. The goal is to make the driver feel less comfortable and therefore encourage slower speeds. If an intersection feels unsafe to a driver, for example, the driver will approach and enter the intersection with more caution and at slower speed.

## Incorporating Systematic Safety into Roadway Design

The Amherst (NH) Multimodal Master Plan provides a useful explanation of how the relationship between motor vehicle speed and severity of crashes with other vehicles or with vulnerable users (pedestrians, bicyclists) is key to safe roadway design.

There is a maximum safe speed for every type of conflict on a roadway[14]. For crashes between motor vehicles and vulnerable road users, various data show a similar pattern in fatality risk. The risk increases slowly until impact speeds of around 30 mph. Above this speed, risk increases rapidly – the increase is between 3.5 and 5.5 times from 30 mph to 40 mph. For passengers in motor vehicles, fatality rates increase dramatically at approximately 50 mph, though side impact figures indicate even greater risk at lower speeds. This information helps define general categories of roadways, each with their own design characteristics that help to minimize safety risks to.

Where vulnerable road users are more commonly found and may cross the street anywhere or act in an unpredictable manner, the target speed achieved by the road design should be 30 mph or less (preferably 20mph) because at higher speeds, the chance of a pedestrian or bicyclist surviving a collision falls rapidly. At the highest speeds, road design should separate vehicles from other vehicles by direction, based on the physical limitations of vehicles to absorb energy from head-on collisions without resulting in fatality. The following graph shows the relationship between speed of motor vehicles (horizontal axis) and the probability of a fatality (vertical axis) from collisions involving vehicles/pedestrians and collisions involving vehicles/vehicles.



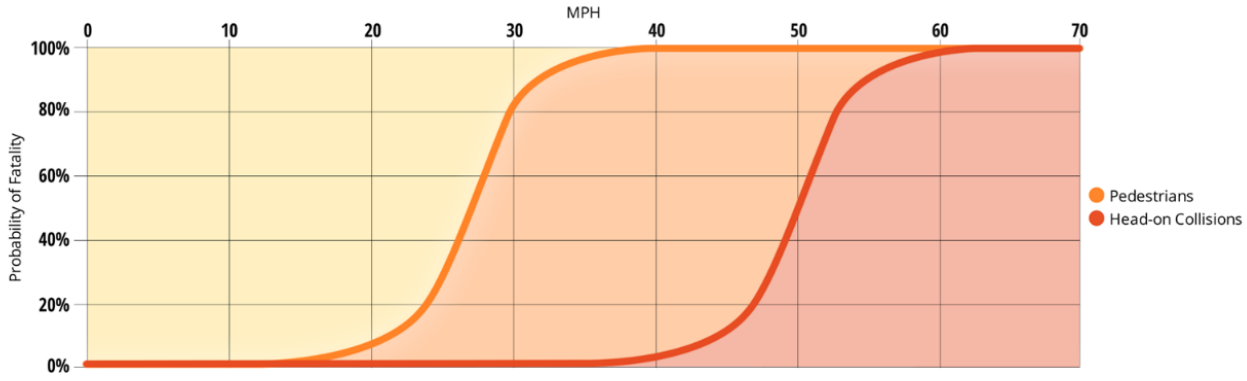

The graph suggests that when considering the relationship between speed and safety risk, and how to incorporate vulnerable users into the road network, there are three types of roads:

- Low-speed/low-volume (local) streets in which motor vehicles and multimodal users may safely mix so long as the design speed of the roadway is kept below ~30 mph.

[14] Ibid.

- Medium speed/higher volume (connecting) streets in which motor vehicles and multimodal users should be separated from each other due to risk of serious injury/death in the event of a collision.
- High speed roads (highways) in which motor vehicles should be separated from multimodal users *and* motor vehicles (by direction) due to risk of serious injury/death in the event of a head-on collision.

Each of these street categories has unique needs and requires appropriate designs to maximize safety for all users. These categories are arranged below to illustrate their corresponding recommended designs and the rationale that informs their selection.




| | | Local Roads | Connecting Streets | Highways |
|---|---|---|---|---|
| Roadway Characteristics | Speed | ~30 mph & below | ~30 mph to ~50 mph | ~50 mph & above |
| | Volume | ~5,000 AADT or below | ~5,000 AADT or greater | Doesn't matter |
| | Functional Use | Local/ neighborhood access | Local access & through traffic | Highways |
| Relationship to vulnerable Road Users | Method of Protection | Permanent speed limitiation through roadway design (traffic calming, etc) | Permanent speed limitiation through roadway design, additional measures at intersections & crossings | Wide margins and/or physical barriers |
| | Placement | Mixing of Pedestrians/bikes/ motor vehicles | No mixing of pedestrians/bikes/ motor vehicles except at crossings | Motor vehicles completely separated from pedestrians/bikes |

## Design Guidelines

The Town of Hudson has a mixture of local streets that are just fine for pedestrians and bicyclists of all abilities, as well as road corridors that are urbanized and developed to the level and extent where comprehensive pedestrian and bicycle facilities are appropriate.

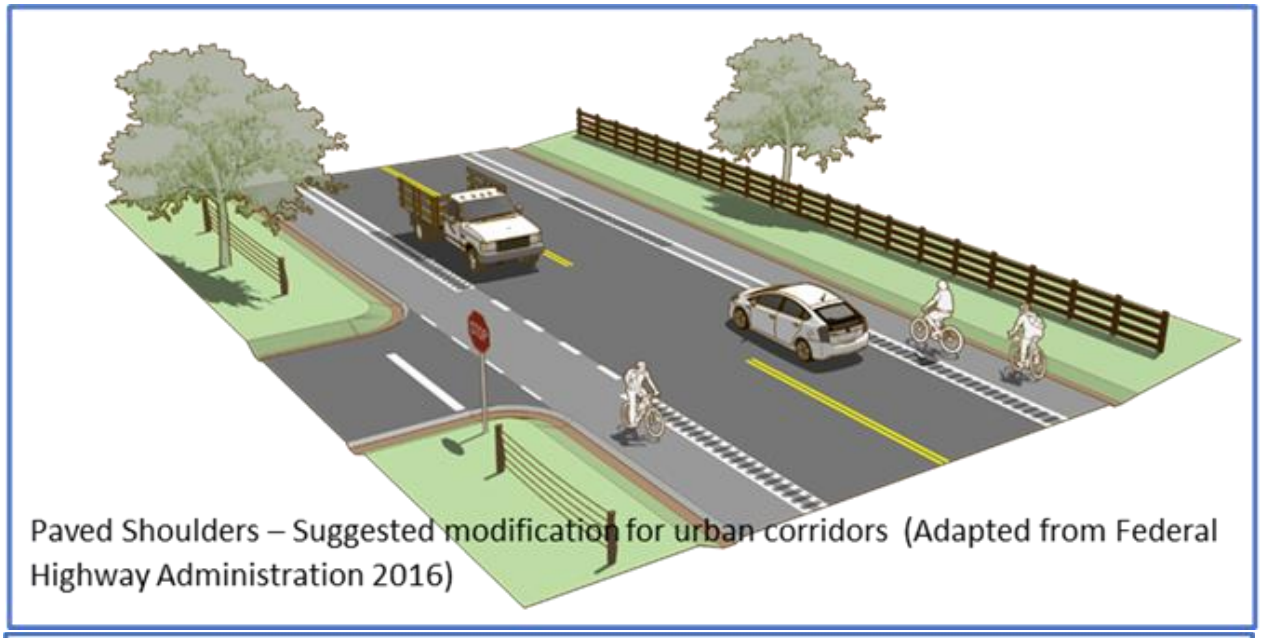
The following design guidelines should be considered whenever maintenance, rehabilitation or new construction occurs within the right of way of any street in Hudson. This will allow multimodal

accommodations to be implemented on a gradual basis over time as part of the road maintenance and/or town capital improvement program. This will also minimize the cost of bicycle and pedestrian infrastructure improvements.

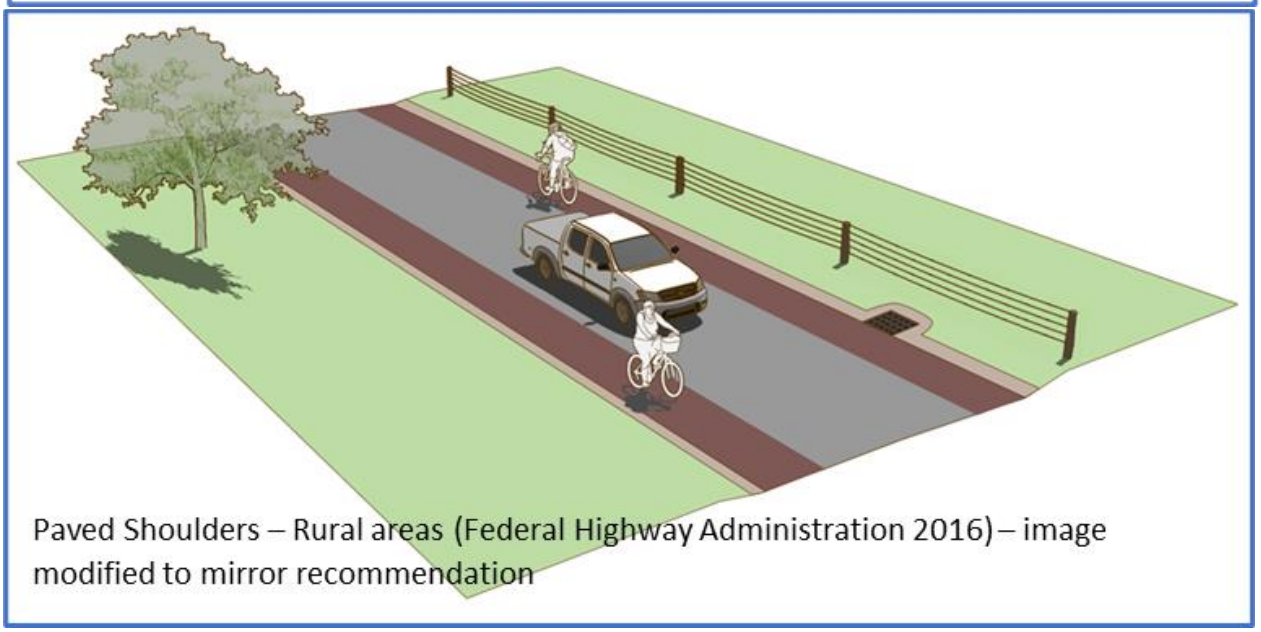
## Local Roads – Enhanced Paved Shoulders

Local roads are defined by their ability to safely mix motorized and non-motorized traffic at low speeds. These roads are generally neighborhood streets characterized by their lower vehicular traffic volumes and (comparatively) higher volumes of multimodal users. The upper limit of this category is defined by exponentially higher risk of death in a collision between a vehicle and a vulnerable road user at ~30 mph. Local roads are specifically defined by vehicular traffic speeds of ~30 mph and below and volumes of ~5000 Average Daily Traffic (ADT) and below.

On local roads it is unnecessary and impractical to physically segregate motor vehicles from vulnerable road users. In many cases, such as on typical cul-de-sacs, nothing at all needs to be done to encourage pedestrians or cyclists to travel on the road. In other cases, when motor vehicle speed and volume



Paved Shoulders – Suggested modification for urban corridors (Adapted from Federal Highway Administration 2016)



Paved Shoulders – Rural areas (Federal Highway Administration 2016) – image modified to mirror recommendation

approach the upper level of this category, visual separation of road users is appropriate. The Federal Highway Administration (FHWA) provides guidance for visually separating motor vehicles from pedestrians and bicyclists. Paved shoulders along the edge of roadways can improve bicycle safety in areas where traffic speed and volume begin to approach the upper end of what could be considered a local road. The enhanced shoulder design takes existing road design and uses visual traffic calming techniques that create roadways where motorists feel the need to drive slower, thereby providing a more comfortable space for non-motorized modes.

Space occupied by non-motorized users should be defined from traditional road space in a distinctive way. It is therefore recommended that when paved shoulders are installed, hot mix asphalt colorant should be utilized as it tends to color the surface for the life of the asphalt, as opposed to surface-applied paints, which require regular maintenance. FHWA-approved color should be used universally in these spaces and in most cases terra cotta is the recommended color.

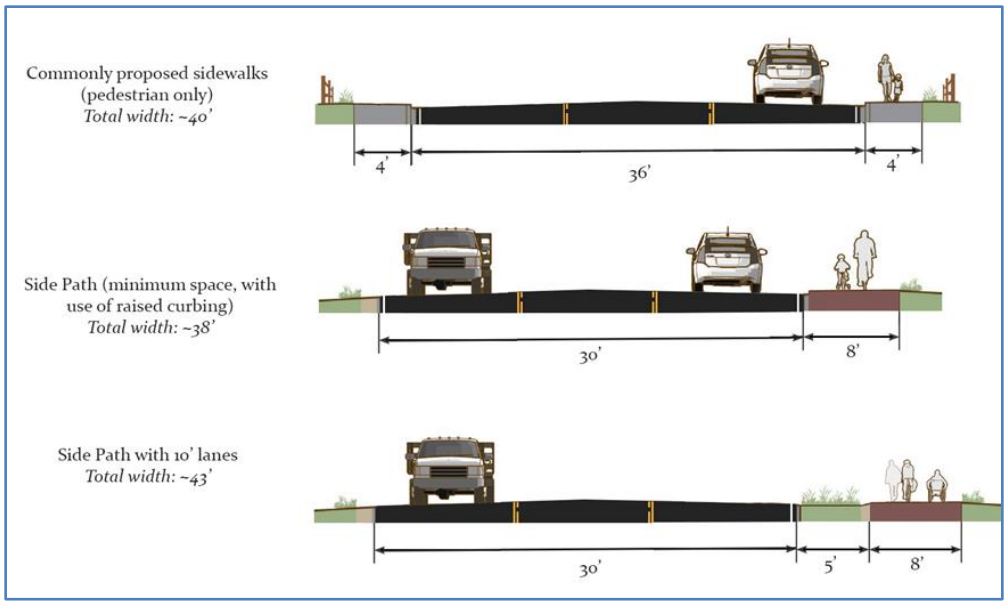
This design can be used on rural road segments as well as more urban areas, as shown in the figures above. For rural areas, the design may include only the painted shoulder. In more urban areas, the design can include painted striping and rumble strips to further distinguish between the motor vehicle travel lane and the shoulder.

Technically, none of these design elements are MUTCD traffic control devices, therefore the regulatory perspective and use of this roadway is completely identical to conventional roadways.

## Connector Streets – Sidewalks and Side Paths

Connector streets are streets generally characterized by traffic speeds above 30 mph which, as noted earlier, presents a high risk of death or serious injury in a collision between a vehicle and a vulnerable road user. Additionally, high traffic volumes factor into a high level of bicycle and pedestrian traffic stress. For this type of roadway, mixing of motorized traffic with vulnerable road users is not the safest solution and therefore segregation of vulnerable users away from motorized traffic is the preferred means of protection.

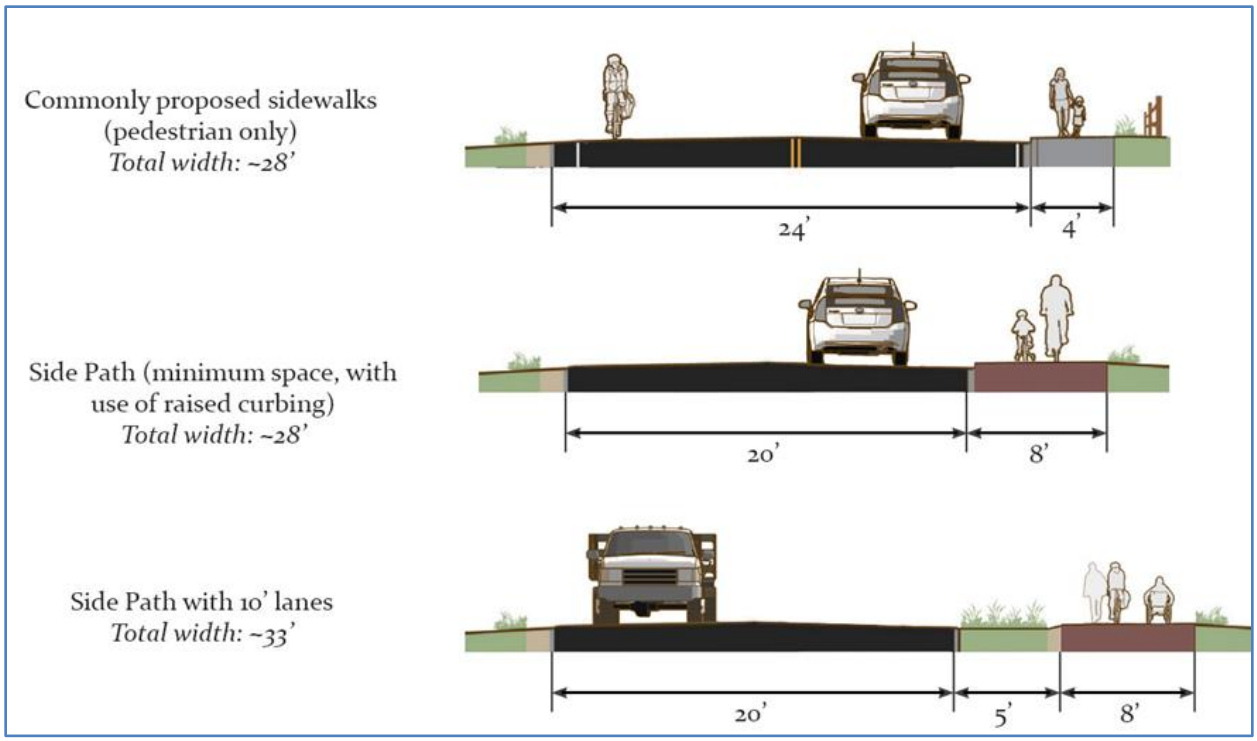
Ideally, the recommended roadway treatment for this type of road would be a side path–a paved, minimum of eight feet wide, bidirectional, multiuse space beside the street. A side path is simply a wider-than-normal sidewalk. The images on the right (top) show a typical cross section of 12-foot travel lanes and 4-foot sidewalk. Notice that if travel lanes are narrowed to 10-feet, an 8-foot side path can be incorporated into a narrower right of way. The image to the right (bottom) shows how a side path can be



incorporated into a center turn lane cross section using less right of way than is typical of existing conditions on Ferry Street or Lowell Road. It is also possible to incorporate a side path into a 5-lane cross section, using less right of way than is typical.

A side path may still be possible in certain areas along various corridors in Hudson where land use has not fully encroached into the right-of-way or where redevelopment may occur in the future. In these cases, a side path should be considered. In areas where a side path is not realistic, sidewalks should continue to be required and travel lanes should be narrowed to allow for the widest possible shoulder, thus allowing more room for bicycles and enhanced shoulders.

As explained earlier, space occupied by non-motorized multimodal users should be defined from traditional road space in a distinctive way. It is therefore recommended that when asphalt sidewalks and side paths are installed, the same hot mix asphalt colorant be used that was used for paving enhanced shoulders.



## Crosswalks at Uncontrolled Pedestrian Crossings

Raised Crosswalk in Nashua

Federal Highway Administration guidance states that pedestrians are especially vulnerable at non-intersection locations, where 72 percent of pedestrian fatalities occur. FHWA guidance addresses safety issues at uncontrolled pedestrian crossing locations, which occur where sidewalks or designated walkways intersect a roadway at a location where no traffic control (for example, traffic signal or STOP sign) is present. These common crossing types occur at intersections (where they may be marked or unmarked) and at non-intersection or midblock locations (where they must be marked as crossings). Overall, uncontrolled pedestrian crossing locations correspond to higher pedestrian crash rates than controlled locations, often due to inadequate pedestrian crossing accommodations.

Improvements could include crosswalk visibility enhancements, Pedestrian Hybrid beacons, raised or textured crosswalks, road diets, and rectangular rapid flashing beacons.

The engineering of specific improvements is beyond the scope of this Master Plan. Best practices for design guidelines and road treatments that accommodate all modes of transportation continue to evolve and this document strongly recommends that best practices always be followed. The following resources provide clear and up-to-date guidance.

- **NATCO URBAN BIKEWAY DESIGN GUIDE (2014)** HTTPS://NACTO.ORG/PUBLICATION/URBAN-BIKEWAY-DESIGN-GUIDE/
- **FHWA, BIKEWAY SELECTION GUIDE (2019)** https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf

- **FHWA, Small Town & Rural Multimodal Networks (2016)**
  https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf
- **FHWA, Safe Transportation for Every Pedestrian (STEP) Guidance**
  https://safety.fhwa.dot.gov/ped_bike/step/resources/
- **FHWA, Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations (2018)**
  https://safety.fhwa.dot.gov/ped_bike/step/docs/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf
- **AASHTO, Guide for the Development of Bicycle Facilities (2012)**
  https://nacto.org/references/aashto-guide-for-the-development-of-bicycle-facilities-2012/
- **AASHTO, Guide for the Planning, Design, and Operation of Pedestrian Facilities (2021)**
  https://store.transportation.org/item/collectiondetail/224
- **Safe Routes to School Guide**
  http://guide.saferoutesinfo.org/engineering/marked_crosswalks.cfm
- **Safe Routes to School - School Area Traffic Control**
  https://www.ite.org/pub/?id=e2660e01%2d2354%2dd714%2d51eb%2df2e399c901f9

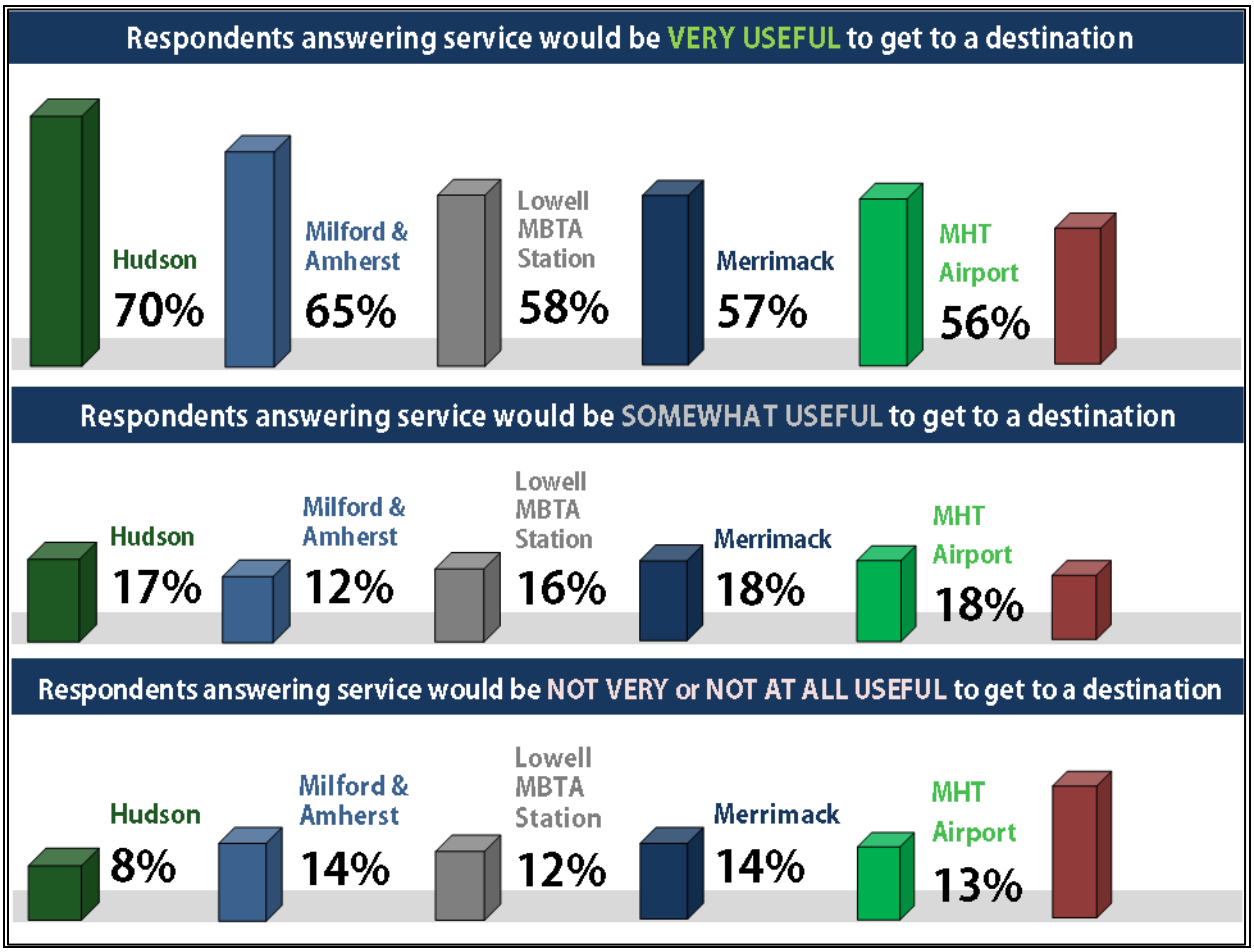
## Public Transit

Previous Master Plans have recommended that the Town of Hudson give consideration to supporting Nashua Transit Service route extensions into the Town, primarily to the Town Center and commercial/industrial areas along NH 3A. Introducing fixed route transit service to areas of lower-income households and economic activity areas would facilitate mobility and increase access to employment opportunities, commercial and retail establishments, and connecting service to Lowell Regional Transit Authority routes, which runs to the state line at Ayotte's Market. There have been several public outreach efforts in recent years which have included questions aimed at gauging public interest in additional fixed-route services. In a survey conducted in 2015, Hudson was selected by 70% of respondents as a destination for which transit would be a useful option. While this should not be construed to mean that this percentage of the population desires to take transit as a regular mode, it does show that the proximity of Hudson to existing NTS routes does generate a level of interest in services. In 2018, NRPC conducted an on-board survey of NTS riders, with one purpose being to obtain feedback on desired service extension areas. Table V-16 provides the distribution of responses. Walmart is the leading preferred destination, cited by 46% of all existing riders. As the respondents to this survey are regular riders of NTS Citybus with 80% riding three times a week or more often, these preferences should be given significant weight in terms of evaluating potential new service areas. Only 20% of NTS riders report an auto available for their trip and about half are making work trips via the bus. Extension of transit service to Hudson would enable opportunities to reach work areas now only accessible by private auto.

**Table V-16. Nashua Transit System On-Board Survey**
**Desired Transit Destinations in Hudson**

| | |
|---|---|
| Hudson Town Center | 20% |
| Hannaford, Hudson | 21% |
| Ayotte's Stateline Market, Hudson | 10% |
| Walmart, Hudson | 46% |
| **Hudson, Any Location** | **53%** |

**Figure V-4. 2015 Public Outreach Survey**




A survey of the general public was also conducted by NRPC in 2018 in which respondents were asked to identify preferred bus destination. This survey reached primarily non-users of transit to determine the highest potential destinations for those who are not likely using NTS at present. In this survey, Hudson destinations do not fare as well; Walmart is the preferred stop in the town but less preferred than Walmart in Amherst or the Premium Outlets in Merrimack.

Most recently, the 2019 Hudson resident survey indicated 15% of Hudson residents are “very concerned” about the lack of public transportation and 18% are “concerned.” While only one-third of citizens indicated a level of need for transit, this still represents a significant portion of the public in the town.

In 2019 the NRPC conducted a study to evaluate the potential for fixed-route transit extensions within the region. Both the estimated travel demand and costs of service for the new route were developed. The transit use forecasting procedure utilizes the relationship between rider demographics and activity center size with levels of transit use. These correlations were developed through regression analysis, using independent variables that are likely to correlate highly with transit use. The estimation was done for four trip purposes: home-based work (HBW), home-based medical (HBM), home-based school (HBSC and other home-based trips (HBO).

**Table V-17. General Public On-Line Survey Preferred Bus Destinations**

| Preferred Bus Stop Locations | Total | % Total |
|---|---|---|
| Milford Medical Care, Milford | 34 | 16% |
| Milford Oval | 49 | 23% |
| Market Basket, West Milford | 48 | 23% |
| Lowe's Shopping Plaza, Amherst | 45 | 22% |
| Shopping Plaza, Amherst | 66 | 32% |
| Walmart, Amherst | 92 | 44% |
| Hudson Town Center, Hudson | 17 | 8% |
| Hannaford, Hudson | 21 | 10% |
| Ayotte's Market, Hudson | 11 | 5% |
| Walmart, Hudson | 39 | 19% |
| Premium Outlets, Merrimack | 73 | 35% |
| YMCA, Merrimack | 42 | 20% |
| Shaw's Plaza – Exit 11, Merrimack | 49 | 23% |
| King Kone and Surrounding Residences, Merrimack | 29 | 14% |
| CVS/Senior Center/Town Center, Merrimack | 43 | 21% |
| Shaw's – Exit 12, Merrimack | 33 | 16% |
| Target, Bedford | 37 | 18% |
| Manchester-Boston Regional Airport, Manchester | 74 | 35% |
| Other Merrimack-Milford-Hudson | 9 | 4% |
| Total | **209** | |

To develop the regression equations, the NTS service area was divided into 60 transit analysis zones that are conveniently walkable to NTS routes. Both trip productions (the trip end to or from a home) and trip attractions (the trip end to or from an activity center) were estimated. For home-based trip productions, zero-auto households were found to be the strongest independent variable. For attractions to activity centers, various employment categories constituted the dominant variable, with school enrollment and level of transit service also included in the estimation.

Map V-13 shows the Hudson transit route that was evaluated, along with the eight transit analysis zones (80 through 87) that were estimated for new transit ridership based on the calibrated regression equations. The route traverses both Merrimack River bridges connecting with downtown Nashua via the Taylor Falls/Veterans Memorial Bridges and the south Nashua business district via the Sagamore Bridge.

The route provides new transit to the following:

- Hudson Mall
- Dr. H.O. Smith School
- Hudson Municipal Offices
- Hudson Gardens Apartments

- Stonewood School Day Care
- Walmart, Sam's Club, Market Basket, and numerous other commercial establishments on NH 3A
- Executive Drive/Flagstone Drive office buildings (Sagamore Business Park)

It was found that Hudson does not have the high transit-dependent population as seen along the DW Highway in Merrimack nor does it have as strong a commercial attraction base for transit as does the NH 101A corridor. Table V-14 presents the total estimated trips by transit zone, trip purpose and whether they are production to attraction (P→A) or vice versa. The 16,700 annual trips (58 per average weekday, 36 per average Saturday) that are estimated are about 25% household production trips and 75% commercial/office attracted trips. The differential between production and attraction trips indicates that Nashua residents would provide a significant amount of the home end trips to Hudson destinations.

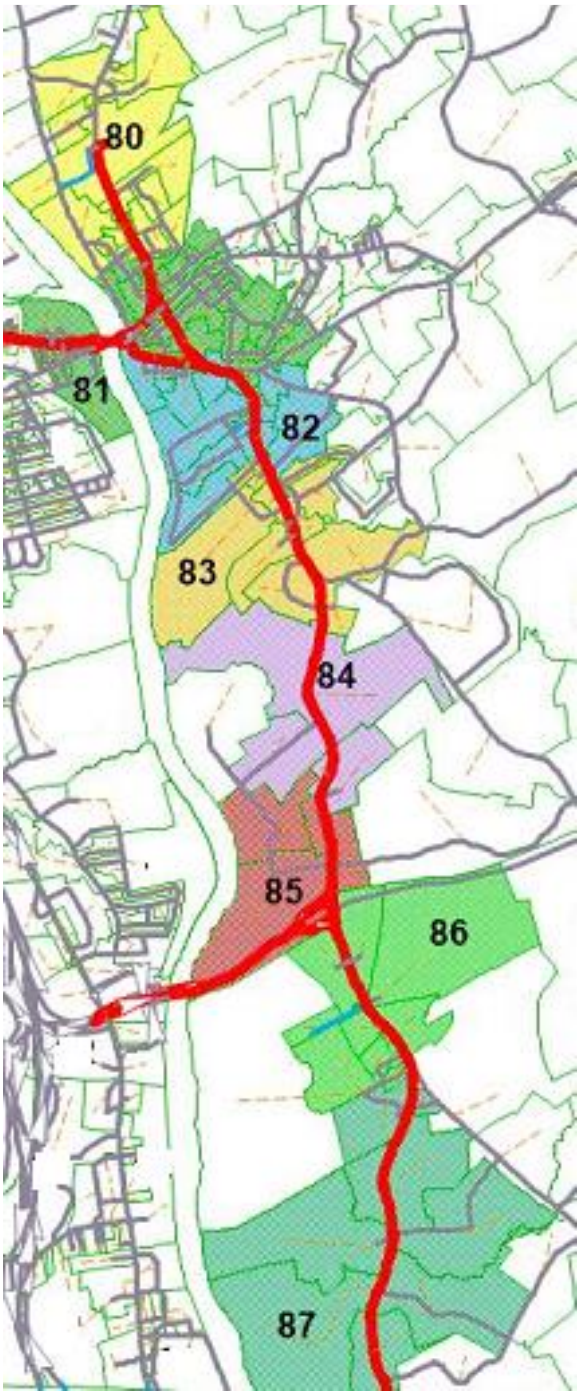
The ridership potential for Hudson is somewhat less than is projected for a Merrimack transit route along US 3 (17,800) and significantly lower than estimated for the extension of the NH 101A transit route to western Milford (27,500).

**Table V-18 NH 3A Transit Route Ridership Estimates by Transit Zone and Trip Purpose**

| Town | Area | HBW P-->A | HBW A-->P | HBO P-->A | HBO A-->P | HBM P-->A | HBM A-->P | HBSC P-->A | HBSC A-->P | Total P-->A | Total A-->P | NHB Trips | **Total Trips** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hudson | 80 | 135 | 1,308 | 87 | 366 | 20 | 62 | 17 | 0 | 259 | 1,736 | 120 | **2,114** |
| Nash/Hud | 81 | 1,217 | 521 | 779 | 0 | 184 | 0 | 150 | 88 | 2,330 | 609 | 176 | **3,116** |
| Hudson | 82 | 372 | 265 | 238 | 0 | 56 | 0 | 46 | 0 | 712 | 265 | 59 | **1,036** |
| Hudson | 83 | 68 | 508 | 43 | 0 | 10 | 0 | 8 | 124 | 129 | 632 | 46 | **807** |
| Hudson | 84 | 68 | 479 | 43 | 0 | 10 | 0 | 8 | 0 | 129 | 479 | 37 | **645** |
| Hudson | 85 | 68 | 2,842 | 43 | 1,142 | 10 | 348 | 8 | 0 | 129 | 4,333 | 268 | **4,730** |
| Hudson | 86 | 34 | 2,061 | 22 | 796 | 5 | 0 | 4 | 0 | 65 | 2,858 | 175 | **3,098** |
| Hudson | 87 | 135 | 760 | 87 | 75 | 20 | 0 | 17 | 0 | 259 | 835 | 66 | **1,160** |
| **Total: NH 3A Rte** | | **2,096** | **8,745** | **1,342** | **2,380** | **316** | **410** | **259** | **212** | **4,013** | **11,747** | **946** | **16,706** |

The Hudson NH 3A transit route is 9.35 miles in one direction and would operate 64,850 revenue miles annually, assuming twelve weekday runs and eight Saturday runs. With 16,700 trips projected, the riders per vehicle revenue mile is calculated at 0.26, which would not compare favorably with existing NTS routes. The annual net cost (total expenses less farebox revenue) is estimated at $282,000. Eliminating the section of the route south of Walmart to the Massachusetts state line would improve productivity to a degree, as this is a low ridership segment, while reducing the net operating cost to under $250,000.

**Map V-13.**
**NH 3A Transit Extension to Hudson & Transit Zones**



## Demand Response Service

There is no fixed-route bus service in Hudson, but limited demand response service is available to eligible Hudson residents through the Nashua Transit System City Lift service. City Lift is a public transportation service for individuals who qualify as disabled under the Americans with Disabilities Act (ADA) who are not able to use the fixed route CityBus services. Service is also available to seniors 65 years old or older. The service operates Monday through Friday between the hours of 8:00 am and 4:00 pm including travel time to and from destinations in Nashua.

The table below provides ridership data from fiscal years 2019 and 2020. It can be seen that ridership was trending up in fiscal year 2020 as compared to fiscal year 2019 and then dropped off in the last 3 months (April-June) of fiscal year 2020 as a result of the Covid-19 pandemic.

**Table V-19 City Lift Ridership Data**

| FY 2019 | | | FY 2020 | |
|---|---|---|---|---|
| **FY 2019 Months** | **Total Trips** | | **FY 2020 Months** | **Total Trips** |
| July | 51 | | July | 47 |
| August | 32 | | August | 56 |
| September | 19 | | September | 68 |
| October | 37 | | October | 42 |
| November | 38 | | November | 62 |
| December | 44 | | December | 37 |
| January | 43 | | January | 35 |
| February | 38 | | February | 25 |
| March | 37 | | March | 35 |
| April | 47 | | April | |
| May | 37 | | May | |
| June | 37 | | June | |
| **Totals** | **460** | | **Totals** | **407** |

The Locally Coordinated Transportation Plan for the Greater Nashua and Milford Region (2020-2024) (LCTP) identified community transportation needs in Hudson and laid out a vision for how communities in the Nashua region, including Hudson, could be integrated into a more robust community transportation system.

The specific needs that were identified in Hudson included:

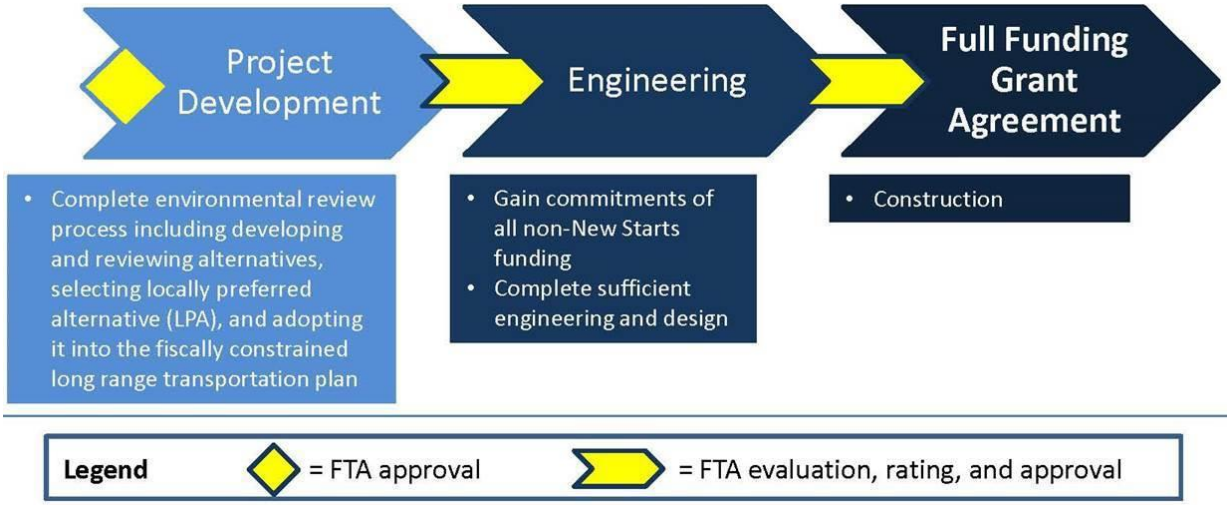
- Need to evaluate and adjust paratransit services for destinations within Hudson and not just to and from Nashua.
- Daily or weekly service for Hudson residents to destinations within Hudson and to Nashua. Destinations may include locations that cater to grocery, shopping, entertainment, etc.

The LCTP recommended the establishment of regularly scheduled, and/or demand response service for residents of Hudson, to destinations within those communities, and to destinations in Nashua. The recommendations in the plan were supported by stakeholders throughout the region and in Hudson.

## Passenger Rail

The extension of passenger rail into southern New Hampshire has been advanced in various incarnations over the past several years with intermittent periods of progress interspersed by periods of setbacks and inaction. Though Concord Coach Lines' inter-city bus service does meet the needs of many Boston-bound commuters, the buses still suffer from the same congestion and traffic-related delays that impact all driving commuters. Passenger or commuter rail on the other hand, is not affected by highway congestion and during peak hours can provide considerably faster service. The most promising recent proposal, the Capital Corridor initiative, would involve the extension of the existing MBTA commuter rail service from Lowell, MA to Manchester with an eventual extension to Concord. The project would include stations in south Nashua near FE Everett Turnpike Exit 2, downtown Nashua, an Airport station in Bedford near the junction of the Turnpike and NH 101 and a station in downtown Manchester. The service is envisioned to provide 11 roundtrips (weekdays) directly to downtown Boston's North Station. Hudson residents would have easy access to both the downtown Nashua (Crown Street) and south Nashua stations. In 2019, Senate Bill 241 passed into law which enabled NHDOT to access $5 million in federal funding to complete the Project Development phase of the project. The project development process is outlined in Figure V-3 below but is currently halted.

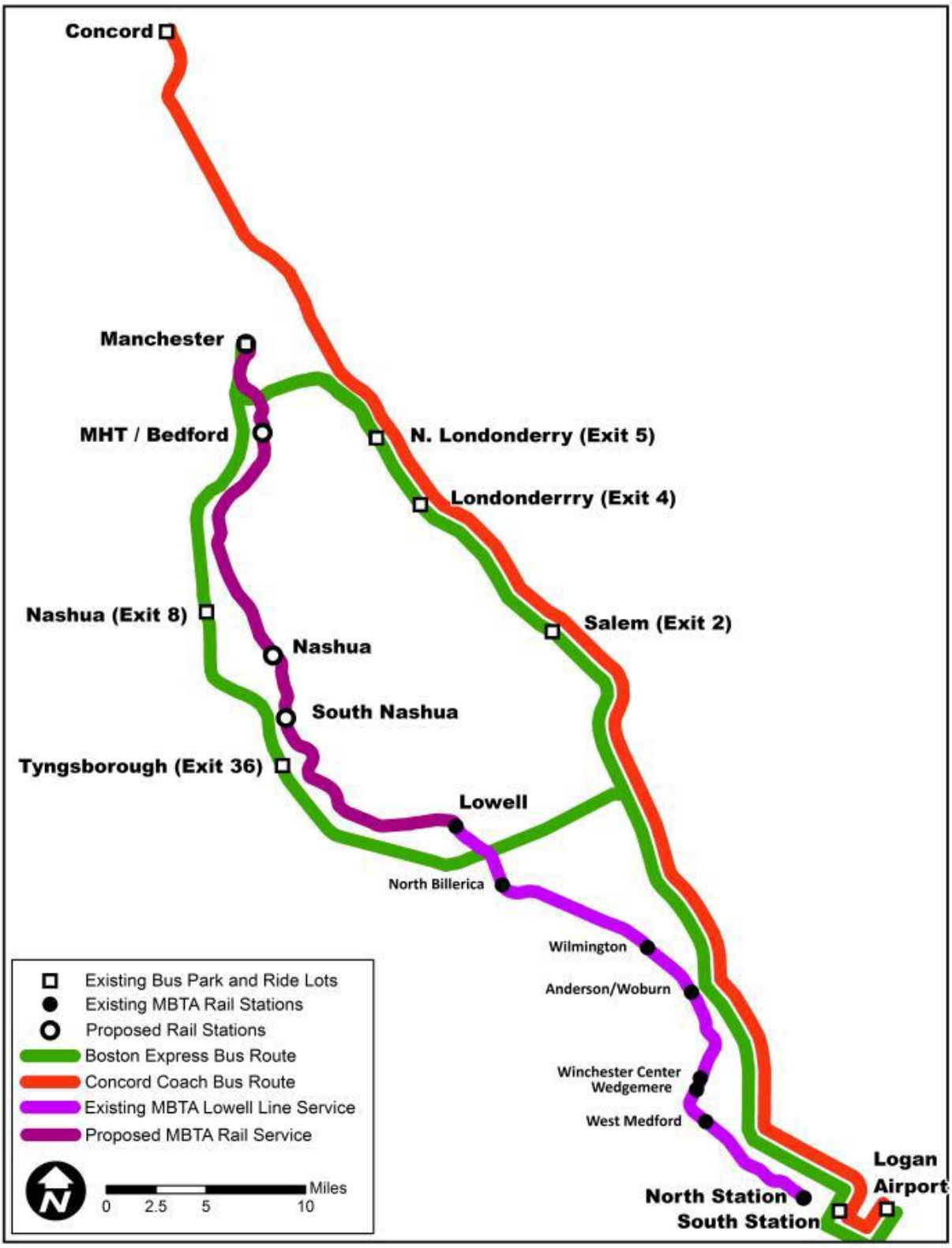
**Figure V-5**
**Capital Corridor Project Development Phase**




Source: NHDOT

A second alternative is inter-city passenger rail such as Amtrak's Downeaster service that connects Portland and other Maine communities to Boston with service to Exeter, Durham and Dover in New Hampshire. As noted previously, 35% of Hudson's labor force commutes to Massachusetts, a percentage that has increased notably over recent years. The extension of passenger rail service to the region could enhance the commutes of many current Hudson residents while serving to attract new residents who work or plan to work in Boston.

**Map V-14**
**Existing Inter-City Bus Service and Proposed Extension of MBTA Commuter Rail**
**(NH Capital Corridor)**



## Connected and Autonomous Vehicles

Connected and autonomous vehicles (CAVs) include a wide range of technologies ranging from communication systems that allow vehicles to communicate with third parties to technologies that enable vehicles to operate partially or fully without human control. While fully automated or autonomous vehicles have not yet been deployed outside the realm of testing, varying CAV technologies are already being implemented in a variety of ways that impact the transportation system, and fully connected and automated vehicles will likely become commercially available within the planning horizon. How these technologies will impact the transportation system remains subject to speculation and debate, however, there is little doubt that significant impacts to mobility, safety, street capacity, congestion, land use and the environment will occur. This section provides a brief overview of CAV technologies and their possible impacts.

### Connected Vehicles

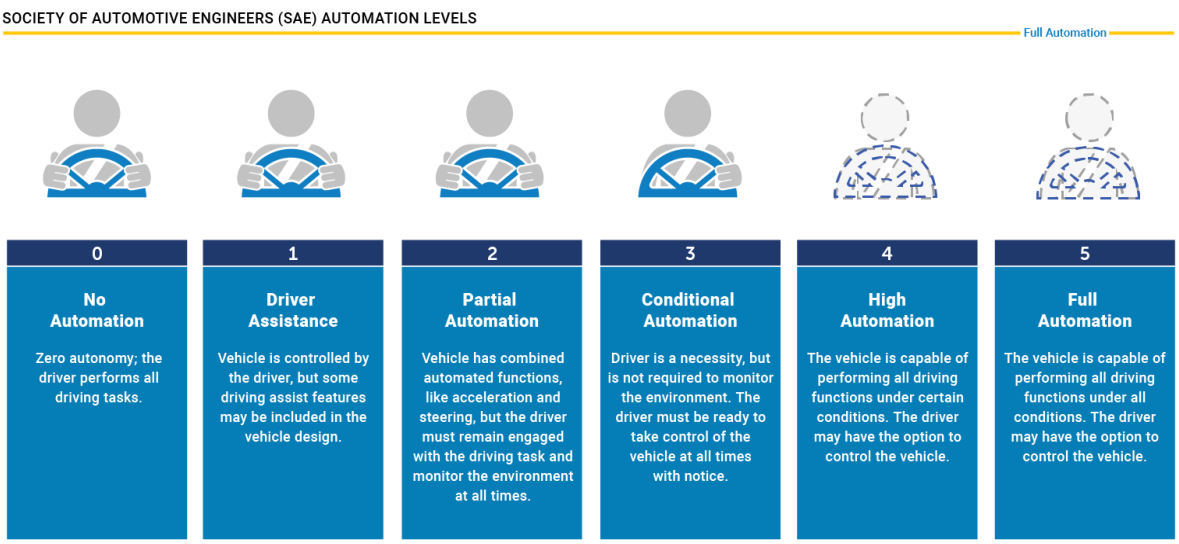
Connected vehicles are vehicles that use any of a number of different devices or communication technologies to communicate with the driver, other cars on the road (vehicle-to-vehicle or V2V), roadside infrastructure (vehicle-to-infrastructure or V2I), and the "Cloud" (V2C). These technologies can be used to improve vehicle safety and efficiency, improve navigation and improve commute times.

Examples of vehicle connectivity already in use include GPS systems and E-ZPass as well as General Motor's OnStar, Ford's Sync and Chrysler's Uconnect. Transit Signal Priority technologies that allow emergency vehicles or public transit vehicles to communicate with traffic signals have also been deployed in many locations. In New Hampshire, the state legislature passed a law enabling the use of Transit Signal Priority technology and the City of Dover is currently implementing a Signal Phase and Timing (SPaT) Challenge to test V2I strategies at signalized intersections. NHDOT is also moving forward with a corridor-wide Intelligent Transportation Systems (ITS) improvement project for the F.E. Everett Turnpike which will allow for a wider variety of communication systems to be deployed. Currently, Android Auto, Apple CarPlay, and Amazon Alexa are combining those earlier technologies with lessons from the smartphone industry to increase connectivity and integrate information across devices. Although adding connectivity to vehicles has its benefits, it also has challenges. By adding connectivity, there can be issues with security, privacy, and data analytics and aggregation due to the large volume of information being accessed and shared.

### Automated Vehicles

Automated vehicles are vehicles that use devices and technology to take over a portion or potentially all of the decision making related to the driving task (aka Autonomous Vehicles, Self-Driving Vehicles, Driverless Cars, or Robotic Cars). The U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) has adopted the Society of Automotive Engineers' (SAE) six levels of automation definition as illustrated in Figure V- below.

## Figure V-6




Source: Society of Automotive Engineers' (SAE) 6 Levels of Automation

**Potential CAV Safety Benefits**

Driver behavior and driver error are believed to be contributing factors in more than 90% of crashes nationwide. CAVs mitigate human error issues and are expected to substantially reduce crashes. By eliminating human error, transportation planners would be able to better focus safety improvement resources in areas with true infrastructure deficiencies.

**Potential CAV Capacity Benefits**

- FHWA research suggests that, in the long-term, CAVs could safely travel at closer headways (platoon), which could increase traditional volume/capacity ratios.
- CAVs could utilize real-time traffic data that allows for efficient optimization across the entire transportation network.
- Due to the prevalence of Zero Occupant Vehicle (ZOV) circulation and dead-head trips, VMT, VHT, and delay are likely to increase when CAVs begin to gain market share. Reductions in delay are only likely to be realized when CAV technology is fully integrated and ubiquitous (e.g. close to 100% utilization).

**Potential CAV Special Mobility Benefits**

- CAVs could facilitate independent living by improving mobility for elderly, disabled, and visually-impaired populations.
- The need for human assistance and accessible vehicles will still exist.
- Deploying CAV technology is expected to be more cost effective than demand response human service transportation, particularly in rural areas.

**Potential CAV Environmental Benefits**

- Vehicles will accelerate and decelerate more efficiently
- Aerodynamic drafting (platooning) resulting in improved traffic flow dynamics

- Fewer unnecessary stops
- Many CAVs are likely to be Zero Emission Vehicles
- May reduce need to consume land with large parking areas

**Potential Environmental Drawbacks**

- Zero-occupant Vehicles will increase VMT and VHT (in the medium-term)
- Convenience of CAVs could increase the proliferation of suburban sprawl land use patterns
- Faster driving speeds

It should also be noted that the current car ownership model will likely change as fully automated vehicles become more widely available. Though the extent of such changes is unknowable at this time, the high cost of fully automated vehicles coupled with likely early adoption of the technology by ride-hailing services such as Uber and Lyft, suggest that shared autonomous vehicle models, whether through ride-hailing or subscription-based services, may come to dominate the automobile market.

## Electric Vehicles

Electric vehicles (EVs) are emerging as part of the mainstream transportation landscape and are anticipated to become increasingly common and widespread as newer consumer models become more efficient and affordable and EV technology spreads to commercial truck, bus and utility vehicle fleets. The term EV, as defined by the New Hampshire Department of Environmental Services (NHDES), "refers to a vehicle propelled solely by an electric motor with a battery as the motor's energy storage device." The NHDES website notes that "there are presently two forms of EV:

- "Battery Electric Vehicle or BEV," which uses an electric motor to propel the vehicle, powered by battery packs that are recharged directly from a source of electricity (Nissan Leaf, e.g.).

- "Plug-In Electric Hybrid Vehicle or PHEV," which can be driven by an electric motor and internal combustion engine (Ford C-Max Energi, e.g.) or can be driven only by its electric motor with an internal combustion engine and generator to recharge the battery (Chevy Volt, e.g.).

An EV uses an external electricity source to recharge the battery by connecting it to an electrical supply through a connector system that is designed specifically for this purpose (plugging in)."

There are three types or levels of EV charging stations:

- Level 1 chargers use a 120 V AC plug and can be plugged into a standard outlet. Unlike other chargers, Level 1 chargers do not require the installation of any additional equipment. These chargers typically deliver two to five miles of range per hour of charging and are most often used at home. Level 1 chargers are the least expensive option, but they also take the most time to charge a vehicle battery. EV owners can use a level 1 charger to charge their vehicles at home overnight by plugging into a typical garage outlet.

- Level 2 chargers use a 240 V (for residential) or 208 V (for commercial) plug. Unlike Level 1 chargers, they can't be plugged into a standard wall outlet and are usually installed by a professional electrician. Level 2 EV chargers deliver 10 to 60 miles of range per hour of charging and can fully charge an electric car battery in as little as two hours. Level 2 chargers can be installed at home and are ideal options for public facilities, parking lots and businesses.
- Level 3 or DC Fast Chargers (also known as CHAdeMO EV charging stations) can offer 60 to 100 miles of range for an electric car in just 20 minutes of charging. However, they are typically only used in commercial and industrial applications and require highly specialized, high-powered

equipment to install and maintain. Further, not all electric cars can be charged with the use of DC Fast Chargers.

EV Charging station in Derry, NH

The primary drivers behind the growth of EVs are the reductions in air pollution and greenhouse gas emissions that can be realized when the electricity used is obtained from cleaner burning fuels such as natural gas or more importantly, renewable energy sources such as solar, wind or hydro power. Given the potential benefits of EV adoption, state, federal and local governments together with environmental advocacy organizations and private industry are actively encouraging and incentivizing the deployment of EVs. As of September 2022, there were an estimated 44,000 public charging stations in the US classified as level 2 and DC fast charging (*US Department of Energy*). Growth of the EV sector, however, is dependent of the development of a reliable network of conveniently located EV charging infrastructure at private homes, public facilities, and commercial settings such as shopping centers, office buildings and other sites where vehicle owners are likely to remain for one or more hours. At the local government level, ideal sites include town halls, police and fire stations, schools, public works garages and other publicly-owned facilities.

The point at which the adoption of EV technology becomes widespread remains uncertain, however communities can take proactive steps to encourage local infrastructure development to ensure that they are *EV ready*. To become EV ready, Hudson should consider creating a plan to deploy strategically placed EV charging stations throughout the community at both public and private commercial sites. The

plan should consider key regulatory areas such as zoning, site plan regulations, parking requirements and the creation of opportunities for both the public and private-sector charging station development.

NHDOT has published a Plan for Electric Vehicle Infrastructure Deployment centered on the creation of alternative fuel corridors. The plan is currently in the Request for Proposal stage, and is scheduled for contract selection in April 2024. This plan is to invest $17 million in funding over five years for the identification and construction of charging stations every 50 miles and within 1 mile of the corridor. Two of the identified corridors are Rte.3 and I-93, both quite close to Hudson. While this may provide stations nearby to Hudson, the development and encouragement of stations and private chargers within Hudson's borders is still worth developing ordinance and planning for.

## Recommendations

The Town should budget for traffic improvements in its Capital Improvement Program and undertake a systematic transportation system improvement program. The Town should include in its CIP improvement projects for the NH 102/NH 111/Chase Road intersection, the NH 111/Kimball Hill Road/Greeley Road intersection and the NH 3A/County Road (south) and County Road/Belknap Road intersections. Hudson should also work closely with NH DOT and NRPC to secure federal funding for eligible road projects. In addition, the Town should refer to the Townwide Traffic Study completed in 2023 to assess the impact of changing patterns of future traffic conditions, especially along the corridors of NH 3A, Dracut Road, and NH 111. Additional overall recommentaions include the following:

- The Town should reconsider its pavement width requirements for local streets and sidewalks based on function and needs.
- The Town should employ access management techniques for the purpose of preserving roadway capacity and ensuring safe movement for vehicles entering and exiting curb cuts and side roads. These techniques should be applied to major corridors in the Town including NH 3A, NH 102, NH 111 and Dracut Road. Access management techniques that should be pursued include implementing minimum driveway separation distances based on roadway speed, entering into a Memorandum of Understanding with the NH DOT for review of access points and other techniques as recommended in the NRPC *Access Management Guidelines*, 2002.
- The Town should utilize traffic calming measures where appropriate based on traffic flow and right of way constraints to direct and control traffic through neighborhoods.
- The Planning Board should maintain close contact with the NH DOT to ensure ample opportunity for public and Town input regarding any planned changes to state roads within Hudson or routes feeding traffic into Town.
- The Town should consider utilizing the State's scenic designation statute to preserve the rural integrity of specific roads, with input from the Town's Highway Safety Committee and the public.
- The Town should work with NRPC and NH DOT to continue to study regional traffic patterns.

## Road and Sidewalk Layout

As noted earlier in this chapter, local residential streets should be designed with consideration to the needs of children, pedestrians, and bicyclists. A residential street with pavement width of 20 feet is sufficient to allow for emergency vehicle access with *no* on-street parking. A pavement width of 24 to 26 feet is sufficient for a residential street to allow for emergency vehicle access *with* on-street parking. Hudson's subdivision and site plan regulations should be designed to accomplish the following.

- Provide a well connected, interesting pedestrian network. Convenient and safe pedestrian access to schools, shopping, recreation, employment and other destinations should be provided. This may include the development of an interconnected pedestrian pathway system. The Town should reconsider its 4 foot width requirement for sidewalks. The Americans with Disabilities Act (ADA) guidelines call for a minimum sidewalk pavement width of at least five feet. Sidewalks on high volume roads should be required to be at least eight feet wide with a three foot landscaped buffer between the curb and paved surface. This buffer provides a margin of safety between the pedestrian flow and high speed and high volume traffic.
- Provide convenient access for people who live on the street, but discourage through traffic; allow traffic movement, but do not facilitate it. Traffic control measures should be considered to eliminate extensive through traffic on local streets. The Town should consider traffic calming measures on streets that serve as cut throughs in neighborhoods. The traffic calming measures should be implemented with input from the Town Highway Safety Committee and the public.
- Differentiate streets by function. Streets should be clearly distinguished within the network in terms of the functional differences between local residential streets and major collectors or arterials in the overall street design.
- Relate street design to the natural and historical setting. Street design should relate to and express the terrain, natural character, and historic traditions of the locale. Irregularities of a site such as large rocks or trees and slopes should be incorporated rather than removed. Street details including curb design, sidewalk paving or signs must relate to the regional vernacular rather than being anonymous from a handbook.
- Reduce impervious surfaces by minimizing the amount of land devoted to streets. There are several factors that should shape a plan including a design concept, on-street parking needs, traffic volumes and land constraints (steep slopes, wetlands, etc.). Narrower residential streets reduce the amount of impervious surfaces and allow for better groundwater recharge.

## Access Management

NH 3A and NH 102 represent the main north-south roadways in Hudson. NH 111 serves as the main corridor for east-west travel. In order to preserve the existing road capacity and to enhance safety for vehicles entering and exiting driveways, access management techniques should be applied to Hudson's major corridors including NH 3A, NH 102, NH 111 and Dracut Road. The Town should coordinate access management policies with NH DOT's access management initiatives. The following general access management techniques can be implemented through the subdivision, site plan and/or driveway regulations, and/or the zoning ordinance:

- Reduce the number of curb cuts along arterials and encourage the use of common driveways.
- Encourage the development of service roads parallel to arterials that allow for access to adjacent commercial developments.
- Require developers to fund road improvements such as turn lanes, medians, consolidation or alignment of access points and/or pedestrian facilities that reduce the impedance of through traffic.
- The minimum distance allowed between curb cuts along roads and arterials should be at least the minimum distances recommended in Table V-14 on Page 24 above. With the exception of a 100-foot minimum separation between driveways and intersections, there are no minimum driveway separation requirements in Hudosn's subdivision or site plan regulations.

## Safety

The Town should consider further detailed studies for the highest crash rate intersections to develop improvements and strategies to reduce accidents. The Town of Hudson Highway Safety Committee should consider requesting that the NH DOT perform safety studies for the highest crash rate intersections. The studies should include collision diagrams and an analysis of the physical road features and traffic control, road conditions at the time of the crashes (latest three years), the severity of the crashes, and a summary tabulation of crashes. Any further detailed crash studies should include input from the public and include the following six steps:

1. Identify the locations that are candidates for improvements.
2. Quantify the main crash trend(s) at a particular location.
3. Determine the source of the problem(s).
4. Evaluate types of improvements to address the crash problem(s).
5. Obtain an expert opinion about safety improvement(s).
6. Obtain funding to implement a safety improvement.

## Alternative Transporation Modes

The Town should work with the NRPC, NHDOT and neighboring communities to encourage alternative modes to single occupancy auto use to help decrease traffic congestion and provide greater choices for Hudson commuters. Specific recommendations are provided below.

- Work with the NRPC and the Nashua Transit System to explore extending a bus route from downtown Nashua to south Hudson to serve the Sagamore Business Park and other destinations along Lowell Road and to connect to the terminus of an existing Lowell Regional Transit Bus that stops at Ayotte's Market on the Hudson/Massachusetts border.
- Hudson should support efforts to extend the commuter rail line from Boston and Lowell to New Hampshire. The commuter rail sites identified by the NH DOT on Daniel Webster Highway in South Nashua and on Crown Street in Nashua are both a short driving distance for most Hudson commuters. This would likely increase housing demand within walkable distances of these areas where transit-oriented development patterns may be appropriate (e.g. vicinity of Library Common). This would also require improvements to the regional infrastructure that would support the potential rail stations.
- The Town should explore the option of working directly with large employers in the Town to coordinate the alternative modes initiative. Large employers have a significant impact on traffic in the Town and reduction in work trips to those locations will result in the greatest possible reduction in traffic.

## Electric Vehicles

Hudson should develop an Electric Vehicle (EV) Charging Station implementation plan with a focus on key public facilities including the Municipal facilities, schools and certain commercial sites. Consider amending the Site Plan Review Regulations to require EV charging stations at large commercial sites and multi-family developments.

New Hampshire is poised to experience a rapid increase in Electric Vehicles (EV) over the next 10-15 years. Tourism is the 2nd largest industry in the state, bringing EVs from other states to our downtowns, state parks and other popular destinations. EV adoption is much higher in neighboring states (especially Massachusetts), and they are driving into New Hampshire. Where will they charge? Charging infrastructure, and its fee structures, can influence the places they visit. As EV owners plan their trips

(whether it is daily or a vacation), they will look for charging infrastructure to determine where to get groceries, shop, eat dinner, or vacation.
On May 30, 2018, New Hampshire Senate Bill 517 (SB 517) was passed establishing the Electric Vehicle Charging Stations Infrastructure Commission to make recommendations on various policies, programs and initiatives related to the use and support of zero emission vehicles in New Hampshire.

When planning for EV locations plans should consider:

- Currently available electrical service. EV charging stations may require additional circuits and electrical capacity at municipal sites. All new charging station installations should have a load analysis performed on the facility's electrical demand to determine if there is capacity to add EV charging stations. AC Level 2 stations will need a dedicated 240-volt (40 amp) circuit and upgrading electrical service may be necessary.

- Distance between the electrical panel and the charging station. A longer distance between the electrical panel and the EV charging station means higher installation costs because it increases the amount of necessary trenching (and repair), conduit, and wire. It is desirable to minimize the distance between the electrical panel and EV charging station as much as possible while also considering the location of the charging station on the property.

- Location of charging station on the property. Do you want the EV charging stations close to the entrance of building(s) to incentivize EV drivers, or out of the way to maximize the number that can be installed? Consider the impact of placing the charging station at a particular location on the property. Placing charging station spaces away from a building might discourage their use, but other customers may be upset if a charging station is installed in prime parking spaces that often remain vacant because there currently are fewer EV drivers.

- Consider the location of existing infrastructure. Construction costs are largest added expense for EV charging stations, and the cost differential depends on the work required. Existing elements such as landscaping, walkways, curb cuts and other structural elements should be considered in site plan for EV charging stations. These elements add costs for removal or relocation, in addition to acting as barriers to accessible charging. Trenching, curb cuts and drilling through hardscaping or structural elements to add new conduits to connect EV charging stations to power sources can also be cost prohibitive. When possible, consider trenching through landscaping, although the EV charging stations should always be mounted on a concrete or other solid surface pad and protected from traffic.

- Availability of networks and communications. Most public EV charging stations will contain an advanced metering system and link to a network that tracks usage, bills customers, and manages electrical loads. Some EV charging stations will connect to telecommunications networks using wi-fi, Ethernet or cellular connections. This type of communication is especially important for managing user messaging and other advancements in technology that regulate information about available charging stations and when a driver's charge is complete. Complications for network connections arise in garages, where repeaters may need to be installed to guarantee network signals. Potential installation sites should be assessed for their network connection ability.

- Accessibility standards still apply. The US Access Board has basic guidelines for how to make EV charging stations parking spaces accessible. Spacing requirements are detailed within their guide and other design guidelines.

- Consider general parking lot management practices. As with any parking area, please consider best practices when installing the EV charging stations such as installing and maintaining adequate lighting (especially where and when stations are available for use 24 hours a day), providing clear signage, and keeping the area maintained (i.e., cutting away vegetation and keeping snow cleared)."

## Bicycle/Pedestrian Infrastructure Recommendations

The following recommendations and priorities are meant to encourage pedestrian and bicycle travel in Hudson. They should be considered whenever maintenance, rehabilitation or new construction occurs within the right of way of any street in Hudson. This will allow multimodal accommodations to be implemented on a gradual basis over time as part of the road maintenance and/or town capital improvement program. This will also minimize the cost of bicycle and pedestrian infrastructure improvements.

### Regulatory

It is recommended that bicycle and pedestrian improvements be achieved through Site Plan Review and Subdivision Regulations. The Planning Board should therefore incorporate the design guidelines suggested in this document into those ordinances. In addition to the proposed design guidelines, regulations could call for internal sidewalks at commercial properties, the interconnectivity of adjacent commercial and/or multifamily properties (both for vehicles and pedestrians), and the dedication of sidewalk rights of way along key corridor and local roads where insufficient space exists within the current public right of way.

### Planning Studies

The Town should consider detailed corridor studies to determine the specific design treatments, costs, and engineering that will be necessary to improve conditions for bicycle and pedestrian travel. The following key corridors are candidates for in-depth corridor studies:

- Central Street from Taylor Falls Bridge to Kimble Hill Road
- Lowell Rd/NH3A from Central Street to Dracut Road
- Derry Road from Taylor Falls Bridge to Old Derry Road
- Ferry Street from Taylor Falls Bridge to Central Street

### Physical Improvements

The Town should adopt a consistent roadway cross section along all key corridors like those described in the design guidelines section of this document. This cross section should be considered whenever maintenance, rehabilitation or new construction occurs within the corridor right of way. This will allow multimodal accommodations to be implemented on a gradual basis over time as part of the road maintenance and/or town capital improvement program. As explained earlier in this document, painted bike lanes are not recommended. Instead, the following recommendations incorporate design guidelines that encourage roadway treatments that provide clearly defined spaces for all modes which will provide more incentive for non-motorized users.

## Sidewalks and Side Paths

Sidewalks or side paths should be required on both sides of the road in the downtown area and along all key corridors a (see priorities below); sidewalks should be to ADA standards and should be a minimum of 5 feet wide with minimum 6" granite curbing. Where right of way allows, minimum 8-foot wide, bidirectional side paths should be considered.

## Travel Lanes and Enhanced Shoulders

- Use pavement markings to define 10-foot-wide travel lanes wherever possible.
- Use the additional shoulder width to accommodate bicycles.
- Enhanced shoulders should be used on local roads where traffic volume approaches 5,000 AADT and prevailing speed is greater than approximately 30 MPH.
- Use FHWA-approved color to define shoulders.

## Crosswalks

- Best practices should be used when considering installation or upgrades to crosswalks.
- Existing crosswalks should be maintained or upgraded as noted in the following priorities section.
- New crosswalks should be installed as noted in the following priorities, and through additional public outreach.

## Traffic Calming (alternative road surfaces, raised crosswalks, edge friction, sidewalk bump outs, etc.)

- Traffic calming treatments should be considered where motor vehicle operating speeds exceed posted speed by @ least 5 MPH
- Speed studies along key corridors should be undertaken to identify where traffic calming is needed.

## HUDSON BOULEVARD MULTI-PURPOSE PATH

The Town should prioritize the development of a 10-foot-wide (minimum), bidirectional, non-motorized, multi-use path along the right-of-way that is reserved for the future construction of the Hudson Boulevard. The path should be designed to accommodate the future construction of the Boulevard. This path would provide access from neighborhoods along the corridor to nearby recreational and employment opportunities. Recreational attractions include nearby Benson Park, Musquash Recreational Area, and the Hudson Town Forest. Employment attractions include the large industrial park near the Sagamore Bridge and the future Target flow distribution center at the former Green Meadow Golf Club. If NH DOT disposes of the Right-of-Way, the land should still be planned for this path as part of future development and/or conservation efforts.

Multi-Purpose Path along Albuquerque Ave. in Litchfield

Litchfield's Albuquerque Avenue multi-use path is a good example of a successful development process. In 2007, Litchfield secured funding to construct an eight-foot wide pedestrian path/bikeway along this two-mile corridor. The path runs parallel to Albuquerque Ave on the westerly side of the road between Route 3A and Hillcrest Road and where it then shifts to the easterly side. Construction of the path leveraged approximately $470,000 in federal grant funds together with $18,500 of local money for design and construction.

Since its completion in 2010, the Albuquerque multi-use path has become a valuable community asset. Throughout the day, the path serves a wide range of users including early morning joggers, evening strollers, people walking dogs, people biking and students walking to Campbell High School. In addition to the High School, the path connects two Town parks and a golf course as well as the Town Hall/Police Station and Fire Department complex.

## Kimball Hill Road

Benson Park is an important community asset and connections along Kimball Hill Road are an important component of a complete non-motorized network in Hudson.

- Sidewalks and side paths:
  - Wherever right of way allows, incorporate a minimum 8-foot wide, bidirectional side path with a 5-foot buffer along one edge of the road from Central Street, past the Benson Park entrance, ending at Bush Hill Road.
- Enhanced Shoulders:
  - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Bush Hill Road to the vicinity of the Hudson Town Forest.
  - Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.

## Connections to Musquash Conservation Area and Hudson Town Forest

In future road construction projects and where right-of-way exists, the Town should prioritize access to the Musquash Conservation Area and the Hudson Town Forest in the following manner:

- Enhanced Shoulders:
  - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Musquash Road and Kimball Hill Road. Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.

## Improvements to Key Corridors

### Central Street Corridor: Taylor Falls Bridge to Kimball Hill Road

- Sidewalks and side paths:
  - *Taylor Falls Bridge to Lowell Road intersection* – maintain the existing sidewalks on both sides of the road and upgrade to a minimum of 5 feet wide and 6” granite curbing in future road upgrades.
  - *Lowell Road to Burnham Road* - maintain the existing sidewalks on both sides of the road and upgrade to a minimum of 5 feet wide and 6” granite curbing in future road upgrades.
  - *Burnham Road to Kimball Hill Road* – incorporate minimum 8-foot wide, bidirectional side path along southeast edge of Road.
- Enhanced Shoulders:
  - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Central Street for entire length of corridor between Taylor Falls Bridge and Burnham Road intersection. Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.
- Signalized intersections
  - Library Street – upgrade to include signalized pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection
  - Lowell Rd – upgrade to include pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.

- Burnham Road/Central Street - upgrade to include pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.

- Memorial Drive (Hudson Memorial School entrance)
  - Crosswalks at this intersection should be upgraded to communicate to motor vehicle operators that extreme caution is needed when children are present. Raised crosswalks, alternative materials, colored pavement or other best practice should be used.
- Crosswalks on Central Street
  - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.
  - Upgrade crosswalks on all side street approaches to the corridor.
  - Install crosswalks on Central Street to provide pedestrian access across the corridor at key locations. Locations to be determined during future public outreach.
- Travel Lanes
  - Use pavement markings to define 10-foot-wide travel lanes wherever possible.
  - Use the additional shoulder width to accommodate bicycles.

### Ferry Street (NH111) Corridor: Derry Street to Central Street (including Burnham Road)

- Sidewalks and side paths:
  - *Derry Street to Gloria Avenue* – maintain the existing sidewalks on both sides of the road and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades.
  - *Gloria Avenue to George Street* – incorporate sidewalks on both sides of the road and at a minimum of 5 feet wide and 6" granite curbing in future road upgrades.
  - *George Street to Central Street* – incorporate a minimum 8-foot wide, bidirectional side path along one edge of the road.
  - It is also recommended that wherever right of way allows a side path should be considered as an alternative to sidewalks.
- Enhanced Shoulders:
  - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Ferry Street for entire length of corridor between Derry Street and George Street intersection.
  - In the short term, extend enhanced shoulders all the way to Central Street intersection. Remove when side path is incorporated into the pavement cross section.
  - Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.
- Signalized intersections
  - @ Library Street – upgrade to include signalized pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.
  - @ Central Street/Burnham Road– upgrade to include pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.

- Crosswalks on Ferry Street
    - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.
    - Upgrade crosswalks on all side street approaches to the corridor.
    - Install crosswalks on Ferry Street to provide pedestrian access across the corridor at key locations; locations to be determined during future public outreach.
- Travel Lanes
    - Ten-foot travel lanes along entire corridor

## Lowell Road (NH3A) Corridor

- Access Management:
    - Numerous driveways and the associated curb cuts pose challenges to improving biking conditions along this corridor. Some improvement could be achieved if access management practices were implemented to consolidate driveways and cut down on the curb cuts. It is recommended that a corridor study be undertaken to determine how access management principles could be implemented.
- Sidewalks and side paths:
    - Wherever right of way allows, incorporate a minimum 8-foot wide, bidirectional side path along one edge of the road.
    - *Central Street to Birch Street* – maintain the existing sidewalks and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades and include sidewalks on both sides of road where there are currently sidewalks on only one side.
    - *Birch Street to Pelham Road, and Nottingham Square to Executive Drive* – follow through on plans (NRPC 2019-2045 Metropolitan Transportation Plan) to incorporate sidewalks along these segments.
- Signalized intersections:

  *Pelham Road, Fox Hollow Drive, Executive Drive, Executive Drive, Hampshire Drive, Wason Road intersections* – maintain the existing signals including pedestrian phases.
- Crosswalks on Lowell Road:
    - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.
    - Upgrade crosswalks on all side street approaches to the corridor.
    - Install crosswalks on Lowell Road to provide pedestrian access across the corridor at key locations. Locations to be determined during future public outreach.
- Travel Lanes
    - Ten-foot travel lanes along entire corridor

## Derry Road Corridor

- Sidewalks and side paths:
    - Wherever right of way allows, incorporate a minimum 8-foot wide, bidirectional side path along one edge of the road. The segment between Elm Avenue and Old Derry Road could most likely accommodate this type of roadway cross section.
    - *Ferry Street to Elm Avenue* – maintain the existing sidewalks and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades and include sidewalks on both sides of road where there are currently sidewalks on only one side. Fill in sidewalk gap between Hudson Mall shopping Center and Phillips Drive (north entrance).
    - *Elm Avenue to Old Derry Road* – complete sidewalk system between Marsh Road to Towhee Drive which will complete the sidewalk connection between the schools, library, and downtown Hudson.
- Signalized intersections:
    - *Highland Road intersection* – maintain the existing signals including pedestrian phases.
    - *Hudson Mall Entrance* – incorporate pedestrian phase.
    - *Elm Avenue* – incorporate pedestrian phase.
- Crosswalks:
    - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.
    - Upgrade crosswalks on all side street approaches to the corridor.

# APPENDIX V-2

## Classification Schemes

### State Aid Classification[15]

**Class I, Primary State Highway System**, consists of all existing or proposed highways on the primary state highway system, excepting all portions of such highways within the compact sections of towns and cities, provided that the portions of turnpikes and interstate highways within the compact sections of those cities are Class I highways.

**Class II, Secondary State-Highway System**, consists of all existing or proposed highways on the secondary state highway system, excepting portions of such highways within the compact sections of towns and cities. All sections improved to the satisfaction of the Commissioner are maintained and reconstructed by the State. All unimproved sections, where no state and local funds have been expended, must be maintained by the town or city in which they are located until improved to the satisfaction of the highway commissioner. All bridges improved to state standards with state aid bridge funds are maintained by the State. All other bridges shall be maintained by the city or town until such improvement is made.

**Class III, Recreational Roads**, consist of all such roads leading to, and within state reservations designated by the Legislature. The NH DOT assumes full control of reconstruction and maintenance of such roads.

**Class IV, Local Roads,** consist of all local roads within the urban compact sections of cities and towns listed in RSA 229:5, V. The urban compact section of any such city or town shall be the territory within such city or town where the frontage on any road, in the opinion of the Highway Commissioner, is mainly occupied by dwellings or buildings in which people live or business is conducted, throughout the year. No highway reclassification from Class I or II to Class IV shall take effect until all rehabilitation needed to return the road surface to reputable condition has been completed by the State.

**Class V, Rural Local Roads,** consist of all other traveled roads which the town or city has the duty to maintain regularly.

**Class VI, Local Roads, Not Maintained,** consist of all other existing public ways, including roads subject to gates and bars, and roads not maintained in suitable condition for travel for five years or more.

[15] NH Department of Transportation, 2004.

# APPENDIX V-2 (Continued)

## Classification Schemes

### Functional Classification[11]

**Principal Arterial,** provides corridor movement suitable for substantial statewide or interstate travel and provides continuity for all rural arterials which intercept the urban area. Serves the major traffic movements within urbanized areas such as between central business districts and outlying residential areas, between major inter-city communities or between major suburban centers. Serves a major portion of the trips entering and leaving the urban area, as well as the majority of the through traffic desiring to bypass the central city.

**Minor Arterial**, serves trips of moderate length at a somewhat lower level of travel mobility than principal arterials. Provides access to geographic areas smaller than those served by the higher system. Provides intra-community continuity, but does not penetrate identifiable neighborhoods.

**Collector,** collects traffic from local roads and channels it into the arterial system. Provides land access and traffic circulation within residential neighborhoods and commercial and industrial areas.

**Local,** comprise all facilities not on higher systems. Provides access to land and higher systems. Through traffic usage is discouraged.

### Town of Hudson Street Classification

**Major Streets -** Streets designed, or required, to carry large volumes of traffic to, from, or through the Town.

**Collector Streets-** Streets designed, or required, to collect traffic from minor streets and distributing traffic to major streets.

**Commercial Streets -** Streets designed, or required, to serve industrial or mercantile concentrations and carry traffic to major streets.

**Residential Streets -** Streets designed, or required, to provide vehicular access to abutting residential properties.

**Service Streets -** Streets designed, or required, to provide vehicular access to abutting commercial or industrial properties.

**Access Streets -** Streets or minor ways**,** designed, or required, to provide vehicular access to off-street loading or off-street parking facilities.

[11] NH Department of Transportation, 2004.

## APPENDIX V-3

### Federal Aid

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) significantly restructured the federal-aid transportation program. ISTEA was re-authorized and revised in 1998 (the Transportation Equity Act for the 21st Century, TEA-21). Descriptions of the various programs which emerged from these transportation bills are as follows:

***National Highway System (NHS):*** This program funds projects on the designated national highway system on an 80% federal, 20% state/local basis. There are no highway routes in Hudson designated as part of the National Highway System

***Surface Transportation Program (STP):*** This program targets the funding of projects by states and localities for any facility with a higher functional classification than rural minor collector. The flexibility of the STP also allows for funding of lower functional classification roadways at the discretion of states and localities. Funding is based upon an 80% federal and 20% state/local share. Projects selected by the Town using their allocated municipal funds or Enhancements require a 20% municipal match. There are four subcategories of STP funds as described below:

- STP < 200,000 - This category of STP exists to fund projects in small urban areas with a population under 200,000. There are statewide and municipal apportionments.
- STP Any Area - This category of STP funds may be used in urban or rural areas.
- STP Transportation Enhancements - This category funds projects submitted by municipalities and chosen through a statewide selection process. Eligible projects include: bicycle and pedestrian facilities, scenic improvements, and preservation of abandoned railroad corridors, historic preservation, rehabilitation of historic transportation facilities and mitigation of water pollution from highway runoff.
- STP Hazard Elimination - These funds are earmarked for minor projects designed to eliminate hazardous roadway or traffic conditions

***Bridge Rehabilitation and Replacement:*** This category includes bridges which are on-system, i.e. those that are functionally classified as higher than local, and off-system, which are municipally owned. The 80% federal/20% local share applies to the bridge category.

***Congestion Mitigation and Air Quality (CMAQ):*** CMAQ funds are eligible for transportation related projects in ozone and carbon monoxide non-attainment areas. Projects must contribute to meeting attainment of national ambient air quality standards, through reductions in vehicle miles traveled, fuel consumption, reduced delay or other factors. Construction of roadway capacity serving single occupancy vehicles is not eligible for CMAQ funding. Funding is 80% federal, 20% state/local.

# CHAPTER VI - LAND USE

## INTRODUCTION

Population growth, housing needs, economic trends, and the regulatory environment have resulted in direct changes to the Hudson landscape. The Town's existing natural features, roadways, and built environment are the foundation for future development and conservation efforts. This chapter discusses 1) historic development patterns; 2) an analysis of developed land and existing land uses, including residential, recreational, commercial, industrial and agricultural land uses; 3) and analysis of undeveloped land and Hudson's existing zoning districts.

## HISTORIC DEVELOPMENT PATTERN

Hudson, with an area of 29.2 square miles, is the sixth-largest municipality in the Nashua region and has the second-highest population density in the region (see Chapter II). Hudson has grown dramatically over the past few decades both as a bedroom community for Nashua and employment centers in Massachusetts as well as a center of employment in its own right. By the close of the 19th Century, most of Hudson's 1,200 residents were concentrated in the vicinity of the Taylor's Falls Bridge area. The remainder of the population was located in the old Hudson Center area on NH 111, on fertile farmlands along the Merrimack River, scattered along major roadways and on more isolated farmsteads throughout what was an overwhelmingly rural community. The Town's commercial uses were few and tended to be interspersed with residences to serve the local needs of a non-automobile-oriented society. In rural areas, non-residential uses included farms as well as traditional rural industries such as sawmills, cooperages, inns, and taverns. As the 20th Century progressed, fundamental technological, economic, and social changes took place which would forever alter the landscape in all the region's communities. Hudson, however, developed differently than most.

Above: Aerial Photo of Sagamore Bridge Area

After World War II, most rural communities confronted development by becoming increasingly residential in character. Hudson, however, welcomed commercial and industrial growth along with residential development even though the Town had not historically been an employment center. Furthermore, although the Town's population grew rapidly, most housing development corresponded with the extension of public water and sewer which resulted in higher density residential development that was reasonably contained to the central and western portions of Town. As a result, much of the eastern portion of the Town has continued to be rural in character. With development of the Sagamore Bridge in south Hudson and improvements to the Town's highway

network (see photo above), commercial development sprawled along major routes such as Lowell Road (NH 3A), Derry Street (NH 102) and Central Street (NH 111). Industrial areas also developed which include some of the region's largest employers such as Digital Equipment Corporation and Sanders Associates (now known as BAE Systems). The Town's commercial, industrial and residential development, however, consumed most of its rich productive farmland, some of which was located along the Merrimack River.

## EXISTING LAND USE

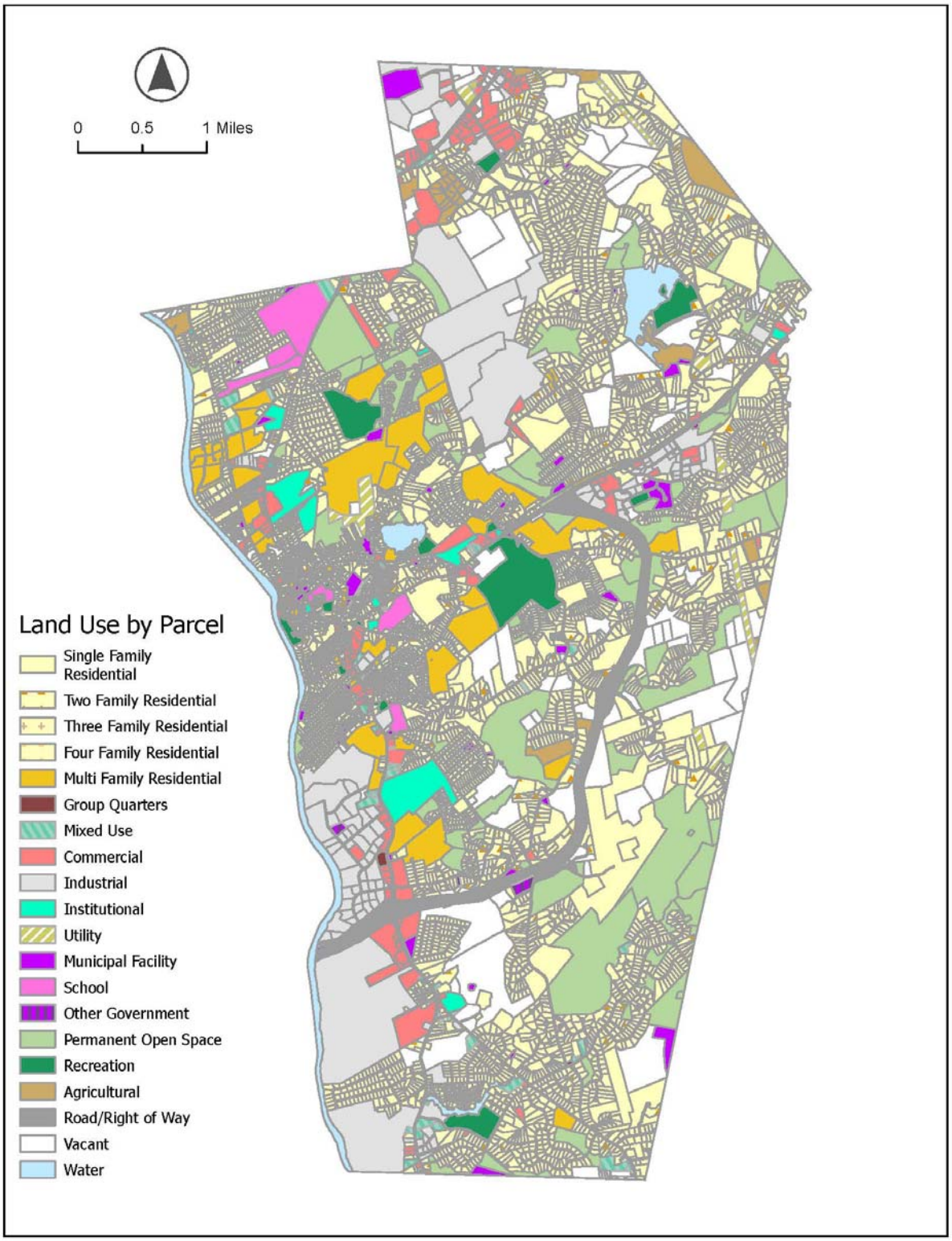
The Nashua Regional Planning Commission (NRPC) maintains a Geographic Information System (GIS) database for generalized land use in Hudson based on data provided by the Town of Hudson Assessor. This GIS database is a general representation of how land is being used and is broken down into various land use categories. The database is parcel specific: i.e., each property is assigned one use for the entire area of the property. These categories include Agricultural, Commercial, Four Family Residential, Group Quarters, Industrial, Institutional, Mixed-Use, Multi-Family Residential, Municipal Facility, Other Government, Permanent Open Space, Recreation, Road, Right-of-Way (ROW), School, Single Family Residential, Three Family Residential, Two Family Residential, Utility, Vacant and Water. The location of these categories is illustrated in Map VI-1 and the area of each category is shown in Table VI-1.

**Table VI-1. Area of Generalized Land Use Types in Hudson**

| Land Use | Acres | % of total |
|---|---|---|
| Agricultural | 231 | 1.23% |
| Commercial | 588 | 3.13% |
| Four Family Residential | 25 | 0.13% |
| Group Quarters | 6 | 0.03% |
| Industrial | 1864 | 9.93% |
| Institutional | 235 | 1.25% |
| Mixed Use | 144 | 0.77% |
| Multi Family Residential | 919 | 4.90% |
| Municipal Facility | 209 | 1.11% |
| Other Government | 17 | 0.09% |
| Permanent Open Space | 1893 | 10.09% |
| Recreation | 373 | 1.99% |
| Road | 1139 | 6.07% |
| ROW | 290 | 1.55% |
| School | 211 | 1.13% |
| Single Family Residential | 7012 | 37.36% |
| Three Family Residential | 55 | 0.29% |
| Two Family Residential | 1069 | 5.70% |
| Utility | 157 | 0.84% |
| Vacant | 1934 | 10.31% |
| Water | 395 | 2.11% |

**Source:** 2023 NRPC GIS parcel database for land use

## Map VI-1. Existing Land Use Categories in Hudson, 2023




**Source:** 2023 NRPC GIS parcel database for land use

# ANALYSIS OF DEVELOPED LAND

## Agricultural

Agriculture is permitted in all of Hudson's zoning districts. While approximately 2,186 acres of prime and statewide significant farmland soils can be found in Hudson, it is estimated that active agriculture uses encompass only about 231.2 acres, or about 1.23%, of Hudson's total land area. Much of the former agricultural land in Hudson has been converted to other uses, particularly along the Merrimack River. The remaining agricultural land in Hudson includes several farms, including the Whispering Brook Farm, Living Legends Farm, Harmon Hill Farm, and the Smith Farm.

## Commercial

Commercial uses encompass about 588 acres, or 3%, of Hudson's total land area. Of the 588 acres, there are about 2.54 million square feet of floor space and an average of around 4,400 square feet per acre (~10%). A pattern of low-density, strip development that prioritizes parking lots over buildings has characterized commercial development in Hudson. Because this development pattern is located along major arterials and at prominent intersections, it gives the appearance that business uses encompass far more of the Town's land area than is actually the case but also, it strongly influences the perceived community character. The "strip development" style of commercial development may be attributed to the auto-oriented style of development pervasive since the 1950's as well as geometry of the Business Zones along these corridors which is a 500-foot offset from the corridor while split-zoned parcels strictly as two distinct zones, resulting in a lot geometry conducive to strip development. Hudson's most significant commercial areas are located along the NH 3A, NH 111 and NH 102 corridors. Under existing zoning, commercial uses are permitted in the Town's Business District, General District, and General-1 District. A handful of commercial uses, such as restaurants, auto repair, and offices/professional services are also permitted in the Industrial District. Many commercial uses have also been developed in Residential Districts either before zoning was adopted in Hudson or through variances granted by the Zoning Board of Adjustment. In 1994, the Town's zoning district map was amended to rezone some of the larger commercial developments so that they would be within the Business District; however, the process of realigning the zoning districts to reflect existing land use patterns is not yet complete.

## Residential

Residential is, by far, the largest land use category in Hudson, encompassing around 10,000 acres, or roughly 50%, of Hudson's 18,767-acre total land area. Based on a 2020 total housing unit count of 7,653, residential uses are developed at an average density of approximately 1.3 units per acre.[1]

**Table VI- 2. Number of Residential Units by Type in Hudson**

| Property Type | Number of Units | Total Acres |
|---|---|---|
| Single-family | 5,686 | 6,051 |
| Condos and Condexes | 1,059 | 2,422 |
| 2 - Family | 744 | 1,002 |
| 3+ Family | 124 | 609 |
| Manufactured Housing | 40 | 163 |
| Total | **7,653** | **10,247** |

Source: Hudson Assessing

Note: Acreage is slightly different than Table VI-1 due to variation in classifications.

[1] All housing unit counts from Town of Hudson Assessing data.

### Single-Family Residential Use[2]

Most of Hudson's residential land use is comprised of single-family dwelling units. Single-family residential uses encompass about 5,686 acres, or 30%, of Hudson's 18,767-acre total land area. In April 2020, 74%, or 5,686 housing units, were single-family. Single-family residential uses are developed at an average density of approximately 1.2 units per acre.

### Condos and Condexes[3]

Condos and condexes are the second-largest residential land use in Hudson, following single-family. In April 2020, condos and condexes encompassed 2,422, or 12.9%, of Hudson's 18,767-acre total land area. Condos and condexes also make up 13.8% of the total housing units in Hudson.

### Two-Family (Duplex) Residential Use

Two-family, or duplex, residential uses encompass about 1,002 acres, or 5.3%, of Hudson's 18,767-acre total land area. In 2020, 9.7%, or 744 of the total housing units in Hudson are two-family.

### Multi-Family Residential Use[4]

Multi-family (3+ units per building) residential uses encompass approximately 609 acres, or 3.2%, of Hudson's 18,767-acre total land area. In April 2020, 1.6%, or 124, of the total housing units were considered multi-family.

### Manufactured Housing

Manufactured housing uses encompass approximately 163 acres, or 0.9%, of Hudson's 18,767-acre total land area. In April of 2020, 0.5%, or 40 units, were considered manufactured.

*Note: The housing land use statistics above are based on Hudson Assessing data.*

## Industrial

Industrial land uses are the third largest land use category in Hudson, encompassing about 1,864 acres or 9.93% of the Town. Of those 1,864 acres, there are, or planned to be, about 6.59 million square feet of floor space, averaging around 3,500 square feet of floor space per acre. As noted in Chapter IV, Economic Development, industry is an important component of Hudson's economy and of the region in general and many industrial uses tend to require large sites for their operations. Most of the Town's industrial uses are located between Lowell Road and the Merrimack River, on NH 102 near the Londonderry Town line and on NH 111. As with commercial uses, the General District and General-1 District also permit industrial uses.

## Institutional

Institutional uses include places of worship and privately owned cemeteries. Institutional uses encompass 235 acres, or 1.3%, of Hudson's total land area.

[2] Single-family residential use includes accessory dwelling units (ADUs) and all other accessory living units
[3] Condex – a duplex style condominium (Hudson Assessing)
[4] Multi-Family Housing – Includes all buildings containing three or more housing units. As defined by the U.S. Census.

## Mixed-Use

Multiple or mixed uses on a single lot. Mixed-Use occupies 144 acres, or 0.8%, of Hudson's total land area.

## Municipal Facilities and Other Government

Municipal facilities occupy 209 acres, or 1.11%, of Hudson's total land area. "Other government" land use constitutes 17 acres, or 0.1% of Hudson's total land area.

## Recreation

Park/Recreation uses encompass about 373 acres of Hudson's total land area. Parks and recreation lands encompass about 2% of the developed land in the Town. There are both public and private park and recreation land uses. At times, this category overlaps with open space as well as municipal facilities. Further discussion of parks and recreation can be found in Chapter VIII, Community Facilities.

## Schools

Hudson offers five public schools and is home to several private schools/educational facilities. Schools occupy 211 acres or 1.13% of Hudson's total land area. For more information about schools, see the Community Facilities Chapter (Chapter VIII).

## Permanent Open Space

Open space is considered any land that is not developed and is protected in perpetuity through conservation easements or other restrictions. Open space land uses encompass about 1,893 acres, or 10.09%, of the total land area in Hudson. This is a nearly 900-acre increase from the 2006 Master Plan resulting from acquisitions by the Conservation Commission, conservation through Open Space Subdivisions by the Planning Board and other changes to classification.

## Current Use Land

NH RSA 79-A, enacted in 1973, authorized current use taxation of property. Administered by the NH Department of Revenue Administration, the current use program is designed to "prevent the loss of open space due to property taxation at values incompatible with open space usage. Open space land imposes few if any costs on local government and is therefore an economic benefit to its citizens. The means for encouraging the preservation of open space authorized by this chapter is the assessment of land value for property taxation on the basis of current use" (RSA 79-A:1). Parcels of fieldland, farmland and forestland of ten acres or more; "natural preserves" or wetlands of any size; and farmland generating more than $2,500 annually are eligible for reduced property assessments under the program. Local officials must lower the assessed valuation of any property in the program to a prescribed level. When a parcel is removed from the program, the owner must pay a penalty (or "land-use change tax") equal to 10% of the land's fair market value.

In Hudson, 75% of this land-use change tax is allocated toward the purchase of land for conservation purposes; however, these taxes need to be spent within the year they are collected, or they are transferred into the General Fund. According to the Hudson Assessing Department as of 2023, approximately 2,779 acres of land in Hudson is in current use, down from 3,100 acres in 2019.

## ANALYSIS OF UNDEVELOPED LAND

As of March 2020, approximately 2,387 acres of the total land area in Hudson remained undeveloped for various uses. This is a large decrease from the 5,330 acres of undeveloped land reported in the last master plan update in 2003.

A simple Buildout Analysis was conducted on this potentially developable land. A Buildout Analysis estimates the amount of developable land remaining in the Town and estimates the number of housing units and non-residential acres that could be developed. The Buildout Analysis considers issues of slope, wetlands, and 100-year floodplains as development constraints. Table VI-2 shows the results of this simple Buildout Analysis. The table shows the amount of developable land remaining in the Business, General, General-1, Industrial, Residential-1, Residential-1, and Town Residence Districts. The locations of these Zoning Districts are illustrated on Map VI-2.

**Table VI-3. Undeveloped and Developable Land by Zoning District, 2020**

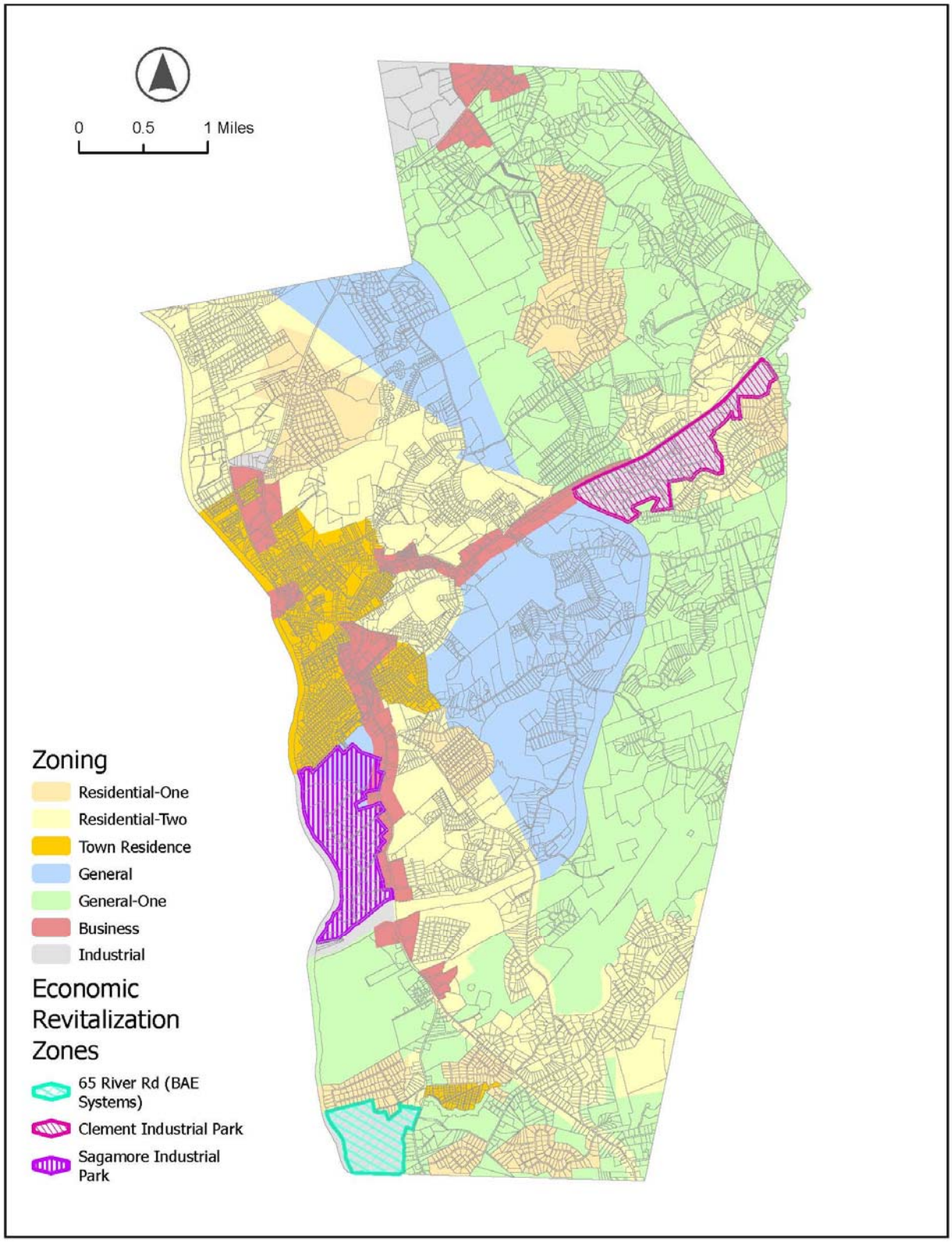
| Zoning | Total Acres | Undeveloped Acres | Constrained Acres | Developable Acres |
|---|---|---|---|---|
| Business | 802.2 | 69.9 | 14.69 | 55.2 |
| General | 2717.6 | 336.8 | 88.79 | 248.0 |
| General - 1 | 7073.9 | 1571.9 | 408.87 | 1163.1 |
| Industrial | 1153.0 | 46.7 | 19.3 | 27.4 |
| Residential - 1 | 1625.6 | 4.4 | 0.2 | 4.2 |
| Residential - 2 | 4427.7 | 338.2 | 125.9 | 212.3 |
| Town Residence | 968.8 | 19.0 | 6.57 | 12.4 |
| TOTAL | 18768.8 | 2386.9 | 664.3 | 1722.6 |

**Source:** NRPC GIS database, 2020.

The results of the buildout analysis indicate that, of the total 2,387 acres of undeveloped land remaining in Hudson, there are about 664 acres of constrained land. Constrained land is considered undevelopable due to the physical challenges it poses for development. This includes land that contains wetlands, 100-year floodplain, and/or steep slopes greater than 25%. After the constrained land is removed from consideration, approximately 1,723 acres throughout Hudson remain for future development. [5]

[5] The potential number of buildable lots presented in each district is based on zoning and does not necessarily reflect what is built.

## Map VI-2. Zoning Districts in Hudson, 2023



The Residential-1 District has the smallest buildable area remaining in Hudson with only about 4.2 acres of developable land. Potentially, with water and sewer, an additional 6 single-family houses could be constructed on 30,000 square foot lots before the district is built out. Without water or sewer, 4 single-family houses could be constructed on 1-acre lots before the Residential-1 District is completely built out.

In the Residential-2 District, there are approximately 212.3 acres of developable land remaining. An additional 212 single-family homes can be constructed on 1-acre lots (with or without water and sewer) until buildout. Similarly, 154 duplexes could be constructed on 60,000 square foot lots without Town water or sewer.

With the exception of multi-family housing units, all types of residential development are allowed in the General District. There are approximately 248 acres of land developable in this district. The General District has a minimum lot area requirement of 1-acre with or without Town water and sewer, so an additional 248 single-family, two-family, or manufactured could be constructed until buildout. An additional 248 elderly housing units could be constructed if serviced by water and sewer.

In the General-1 District, all residential uses are permitted except for multifamily and elderly housing. Approximately 1,163 acres of land are considered developable in the General-1 District. Current zoning requires a minimum lot size of two acres, with and without town water and sewer. Potentially, an additional 581 single-family, two-family, or manufactured dwellings could be constructed in the General 1-District until buildout.

The Town Residence District has about 12.4 acres of developable land remaining. Because this District allows smaller lots sizes, there is a potential for an additional 54 new single-family house lots that can be built. Assisted living facilities and elderly housing developments are also permitted in this district, however elderly housing must be serviced by Town water and sewer and density bonuses are no longer available as the age restricted housing ordinance was repealed in 2022.

Similarly, the remaining 55.2 acres of developable land within the Business District could potentially support 80 commercial lots serviced by Town water or sewer (30,000 square foot lots), or 55 commercial lots without Town water and sewer (1-acre lots).

Lastly, 27.4 acres are available for development within the Industrial District, with a potential for 39 industrial lots serviced by Town water and sewer (30,000 square foot lots), or 27 industrial lots without water or sewer (1-acre lots).

It should be noted that calculations for build-out presented above are based on the 2023 Zoning Ordinance and do not reflect what may actually be constructed in each District. In addition, the remaining residential land area is unlikely to develop at the exact density permitted by the Zoning Ordinance, given land constraints such as steep slopes and areas needed for roads, utilities, and/or open space, and density options for accessory dwelling units and housing for older persons. The estimates apply to future commercial and industrial developments, as it is likely that the average floor area ratio will increase as land values rise and redevelopment occurs. A more detailed buildout analysis may be useful as a planning tool to determine the full potential of the Town's land to accommodate future housing units and non-residential development.

## FUTURE LAND USE GOALS

Topics surrounding land use are inextricably woven into themes present in transportation, housing, natural resources and economic development. The following discussion of land use goals highlight areas of need discussed by the community during outreach activities and board meeting in recent years. Future decision making related to these topics should also consider the relationship and aligned goals of other chapters of the Master Plan.

### General Districts

The General and General-1 Districts allow a wide variety of residential, commercial and industrial uses.

The Zoning Ordinance describes the General District:

> "The G District includes all areas not specifically designated as being within an R-1, R-2, TR, B or I District. The district is designed to permit a wide diversity of land uses. Most uses permitted in the other five districts are permitted in the G District. The G District is intended to allow natural constraints, such as infrastructure development and market forces to determine the most appropriate use of land. ***It is also intended that the G District will eventually be absorbed by the expansion of other existing districts or replaced by newly created districts.***"

And the Zoning Ordinance describes the General-1 District:

> "The G-1 District includes all areas not specifically zoned as being within an R-1, R-2, TR, B, or I District located outside the right-of-way of the Circumferential Highway as depicted on the Town Zoning Map. The District is designed to permit a wide diversity of land uses at a density appropriate to the rural nature of the area, the natural constraints of the land and the lack of infrastructure. Uses permitted in this District are the same as those permitted in the G District."

The General Districts have evolved since their establishment in 2001 much as described, directed by "natural constraints, such as infrastructure development and market forces to determine the most appropriate use of land." It may be time for the Planning Board to consider that much of the land in these zones have matured as designed as intended to "eventually be absorbed by the expansion of other existing districts or replaced by newly created districts."

Much of the land zoned either G or G-1 has developed as single-family and two-family residential, as shown on Map VI-1. This includes lands that stretch along the eastern side of the Town that are primarily accessed by collector and local, residential roadways. It may be appropriate to designate these lands as residential zones. On the other hand, some lands zoned G & G-1 have developed as commercial or industrial, particularly along arterials roadways and/or near other commercial or industrial zones and uses; these lands might be considered for rezoning as commercial or industrial. The Planning Board should carefully examine the lands currently zoned G & G-1 not as one piece, but as several different districts for future zoning efforts.

### Business Districts

The majority of the Business District was developed in the 1970's through 1990's with retail, automotive and restaurant uses typical of late 20th century strip development. Given the limited availability of undeveloped land and the relatively short design life of existing commercial buildings, there is opportunity for redevelopment in the next 20 years, especially along the aforementioned highway corridors. While there once where two different business districts, one associated with the central

business or village core area and one associated with highway-like areas, the two were collapsed into one business district circa 1994. Revisiting the concept of multiple different business districts with different uses and architectural character may assist in achieving a commercial landscape that is more diverse and sensitive to the desired character of the environs. For example, auto-oriented uses might more appropriate in highway areas, while pedestrian-oriented uses may be a more appropriate development style for central business areas.

Current zoning permits a mix of multi-family and various commercial uses, in the Business District; however, existing development tends to be single use. Furthermore, the density requirements for multi-family housing could be discouraging traditional mixed-use development (currently, multifamily requires 53,560 square feet of buildable area for three units and an additional 5,000 square feet of buildable area for each additional unit). Parking requirements may also inhibit this type of development although the parking regulations do allow for the consideration of shared parking between uses.

An access management plan may assist with maintaining the capacity of the roadways and improving access for all modes of transportation. The plan should include best practices such as complete streets policies for vehicle, bicycle and pedestrian circulation, urban design; and stormwater management techniques such as Low Impact Development.

## Revisiting District Boundaries

The boundaries of the Business Districts are worth examining for opportunities to clarify future development expectations in advancement of aesthetic character aspirations and to form a more cohesive, complete community. Some areas in Town that may not be zoned properly to meet community goals, and where rezoning should be considered. Also, many instances of split-zoned properties, make their land use prospects somewhat precarious, and often require a variance for any type of site development or use. Last, as mentioned above, it may be worth evaluating the current ubiquitous Business zone and consider breaking it into two or more different districts that respond to the variety of development patterns throughout Hudson.

There are areas in Town currently zoned Business that might be more appropriately zoned Residential. For example, there are well established residential neighborhoods that are partially zoned Business because they are within 500-feet of a State Road. This causes residents to seek variances anytime they wish to make a change to their property. Some examples of these areas are:

- Some areas along Webster Street between Elm Street & Ferry Street.
- Some parcels not on, but behind parcels fronting on Burnham Road.
- Some parcels in the vicinity of County Road.

Conversely, there are areas in Town currently zoned Residential or General that might be more appropriately zoned Business. Even further, there are some areas that have a mix of zoning designations but should be reconsidered as one district and parcels that are constrained from meeting their highest and best use due to being split-zoned.

## Central Village Area Redevelopment

Business-zoned lands within the core are of Town may benefit from different dimensional standards than what exist today. These areas originally developed prior to the ubiquity of the automobile and as such, had a traditional look and feel commonly associated with New England. In some instances this character is retained, however both current zoning standards and development practices are more

aligned with auto-oriented site design. For example, large front yard setbacks push buildings away from the road, affecting architectural character as well as physical/visual separation from pedestrian ways. Other examples of these standards include high parking requirements; high lot size requirements for traditional mixed use development that includes residential uses; and allowance of auto-oriented site designs. New zoning standards, design guidelines and/or form-based code could help re-direct the character of these areas to be more cohesive with traditional New England town centers. These areas should: establish or re-establish pedestrian connections with abutting neighborhoods to reconstruct integrated, complete communities; and encourage smaller scale commercial, multi-family and/or mixed-use development.

### State Highway Retail Redevelopment

As existing retail development age, there may be opportunities to reshape the commercial character of the business districts through redevelopment. Redevelopment of commercial properties on Hudson's major state highways (NH 3A, 102, and 111) is a feasible alternative to expanding the Business District. Site development along these corridors should not be considered in isolation. There may be multiple opportunities for shared parking, shared access, façade improvements and mixed residential/retail/office uses as applications for redevelopment are received. Corridor property redevelopment is a specific example of how design standards might be effectively used by the Town and the private sector, working together. Village District Zoning, including overlay zoning, should be considered as a policy tool to incentivize redevelopment of tired retail sites.

Aside from the issue of design standards, the overall development standards by which existing properties were designed should be evaluated to determine their effectiveness and applicability. The Town might consider conducting a land use study of the commercial areas along each of the three state highways for the purpose of determining better configurations of parking and off- highway traffic circulation. These studies could also evaluate the appropriateness of the zone boundaries to match the zones with the actual land uses.

Similarly, pedestrian accessibility and safety in the state highway corridors in Hudson should be promoted. Although many people may still choose to use their vehicles, the lack of adequate pedestrian and bicycle facilities leave people no alternative mode of transportation.

### Zoning & Regulatory Tools

Once defined, standards and character for future development in Business areas can be implemented through the use of a variety of zoning & regulatory policies which may include Form-Based Code, Village District Zoning, Overlay Districts, Design Guidelines and/or a combination thereof. For example, a mixed-use open space development overlay district could promote compact development with a mix of land uses, including residential, small-scale commercial, recreation and conservation within a neighborhood. Adopting a mixed-use open space overlay district may be a useful option for new development sites of a certain size and location where a new village style development would be appropriate. On the other hand, incentivizing the redevelopment of existing commercial areas could be implemented through new zoning standards, new districts or overlay districts. Through a combination of zoning ordinances and land use regulations, these examples could be based on the principles of Traditional Neighborhood Design (TND) and include elements of Form-Based Code (which brings greater emphasis to the massing, scale and architectural character), to achieve the community's aesthetic and character goals.

Design guidelines are different from regulations in that compliance would be encouraged rather than uniformly required, so private-property decision-making is respected; however, they are a good method to ensure that a business district or highway corridor is more than a collection of mismatched buildings and landscaped areas. Development of urban design guidelines for the Town of Hudson and amendments to the sign ordinance may assist in improving the aesthetics and function of the state highway corridors in Hudson. The Town might wish to consider adoption of urban design standards. Design standards are guidelines for private-sector property owners, to assist them in making decisions about how to develop or redevelop property in ways that make them compatible with neighboring land uses and in keeping with an overall conceptual framework and community character.

## Riverfront Opportunities

Up through the mid-20th Century, the typical American city or town with river frontage regarded its waterway as a transportation route and a convenient source of water and energy. The result was often an industrial/warehousing district – economically sound in its day, but hardly picturesque. More recently, as manufacturing has declined and the service-sector economy, especially tourism, has boomed, riverfront communities are discovering that waterways like the Merrimack

River are assets. There are many examples in New England of communities that have redeveloped their riverfronts with shops, restaurants, and entertainment venues that complement the river's natural beauty.

A Merrimack Riverfront District is a concept that Hudson should consider. A specific plan should be created to promote this possibility in the Town, with recommendations that can be implemented through zoning and economic development initiatives, among other tools. Specific elements should include public access, as discussed previously, and a pedestrian-friendly access network.

## Open Space

A consistent focus in the Town of Hudson is the need to conserve the natural environment and open space, including forests, the remaining agricultural land, water bodies and wildlife. The view often expressed is that the natural environment must be protected to preserve the character and quality of life within Hudson. Yet some level of development is inevitable, and measures must be taken to facilitate reasonable development.

Conservation of open space protects air and water quality and wildlife habitat, and can preserve prime agricultural soils and other soils of importance. For all development, the use of buffers and integrated open space, with respect to environmental constraints, should be considered. The Town should strive to manage its present municipal lands by developing an open space plan that would include recommendations on the use of Town-owned parcels, priorities for acquiring privately held land from willing sellers/owners, and incentives for private landowners to voluntarily place conservation easements on their land. A main goal of the plan would be to develop a connected array of green spaces, for the benefit of both wildlife and Town residents; an example might be protecting additional land in the Musquash Swamp area along the Hudson and Pelham town-line. A concurrent goal of the Town should be to maximize the size of other connected open space areas for the purpose of conserving and preventing further fragmentation of wildlife habitat.

## Light Industrial/High-Tech Opportunities

While the Town of Hudson is currently home to several high-tech, bio-tech and other cutting edge industries, policies to attract more of these business should be considered. Despite the perception that Hudson currently has adequate land zoned for commercial and industrial use, there are significant constraints on developing some of these properties, and as identified in the Economic Development chapter, there is high demand for industrial land in the region. Constraints include: difficult or sensitive environmental features, poor road access, and difficult or costly infrastructure (water and sewer) needs. Several tasks are necessary to address these constraints: 1) the Town should reexamine current parcel zoning to determine whether the constraints of the land necessitate rezoning as open space or low-intensity development; and 2) the Town should identify and properly zone land that lacks these constraints and whose highest and best use is commercial/industrial. 3) Identify barriers to redevelopment or rehabilitation of existing industrial properties. 4) Communicate with existing and potential employers in Hudson to identify their site selection needs such as available utilities. These tasks should run parallel with an examination of the zoning ordinance text so that zoning districts can be used to promote the desired light industrial mix.

## Recommendations

Participants in community outreach efforts indicated a desire for a balanced, planned approach to Hudson's land use development, with goals including:

- More open space conservation and protection in new developments.
- Focus commercial and industrial development within existing commercial/ industrial areas.
- Encourage reuse or redevelopment of existing commercial buildings and sites rather than on undeveloped land.
- Improve design standards landscaping, architecture, and site design.

In response to these goals, there are several land use strategies in pursuit of a balanced, livable, and economically sustainable community:

1. Examination of the lands currently zoned as General and General-1 for their suitability to be appropriately zoned to produce results expected and desired by the community. While much of these lands have organically developed residentially, other areas may be more suitable as commercial, business or light industrial zones. As part of this analysis, identify opportunities to create transition areas or buffer areas between incompatible land uses.

2. Create opportunity for growth within existing, developed commercial areas and other areas suitable for commercial activity by:

    a. Reviewing the existing Business zone and consider re-establishing different types of Business Districts based on community character and their relationship with the development patterns they abut, for example town core areas versus auto-oriented areas.

    b. Considering the development of a mixed-use, village district or overlay zone that incentivizes the redevelopment or rehabilitation of existing business areas and corridors.

c. Design redevelopment or rehabilitation of existing business or retail areas that relate to the neighborhoods they enjoin through pedestrian connectivity, open spaces, landscape and architecture.

d. Enhancing opportunities for more desirable aesthetics and development types by implementing elements of form based code, or developing design guidelines and landscape standards that correspond to the desired character on a neighborhood or district basis.

e. Examine and potentially relocate district boundary lines of Business zone(s) considering the development history and context of existing uses.

3. Explore the potential for mixed-use development of areas of community enjoyment, leisure and entertainment that harnesses the unique and finite resource of riverfront property.

4. Develop an open space plan for current Town-owned land and priority areas that focuses on connectivity for wildlife and recreation as well as walkability within and between neighborhoods.

5. Identify development constraints and future utility and infrastructure needs of both existing businesses and burgeoning industries to identify opportunities to foster sustainable economic growth.

# CHAPTER VII - HISTORIC RESOURCES

## INTRODUCTION

The quality of future planning can be enhanced in many ways by an appreciation of a community's past. Although Hudson's historic resources are overshadowed by the tremendous amount of new construction which has occurred over the past several years, the historic buildings and sites which survive play a critical role in defining the town's character and connecting the present with the past. Like many environmental resources, historic resources are precious, fragile, and nonrenewable and may be lost without awareness, respect, and adequate protection. Hudson's historic resources also play an important role in contributing to the rural and small-town character valued by so many Hudson residents. Further, the largest remaining concentrations of historic buildings and sites in Hudson are located in areas that have the greatest potential to develop into the defined Town Center that is one of the key goals of the Master Plan (see Chapter I – Community Vision and Goals). These areas include the Taylor Falls Bridge area and Hudson Center together with Benson Park. Each of these areas is described in greater detail on the following pages.

Hills Memorial Library – one of Hudson's most notable historic buildings

## HISTORICAL BACKGROUND

The Town of Hudson was formerly part of the Town of Dunstable which was chartered in 1673 as an outpost of the Massachusetts Bay Colony. Parts of the old township broke away as separate entities beginning about 1730. Hudson was known as Nottingham West from 1746 until 1830 when residents petitioned the General Court for a name change to avoid confusion with another Nottingham, New Hampshire. The settlement of what is now Hudson began about 1710. Early on, three houses were built by the Blodgett, Taylor, and Hills families in the garrison style to withstand Indian attacks within a half

mile of the Merrimack River. Settlement in town did not begin in earnest, however, until the end of Lovewell's War in 1725, and by 1733 there was a settlement of about ten families on the Joseph Hills Farm and some eight families near the Musquash area.

The first meetinghouse was built in 1733 on the road leading from Dracut to Litchfield (later Musquash Road). When the boundary between New Hampshire and Massachusetts was established in 1746, the meetinghouse was no longer in the center of town, so the citizens voted to build a new meetinghouse near Blodgett Cemetery in 1748. The 1733 meetinghouse given to Rev. Merrill and he continued services there. It was later given to the neighboring Town of Pelham. Meetings continued to be held at the second meeting house until 1778 when it was voted to hold future meetings at the Rev. Mark Strickland's house (aka North Meeting House). The North Meeting House, located in Hudson Center, was built by the Presbyterians in about 1771. It was occupied as a house of worship by the Presbyterians, Congregationalists and lastly by the Baptists. It was deeded to the town by the Baptists in 1842. Town meetings were held here until 1857, when built on new town hall on the same site. All town meetings were held here until 1939. Town meeting was held in H.O. Smith School until 1963, and then several other school sites.

Tenney Family Tomb in Hudson Center

Prior to the construction of the Taylor's Falls Bridge across the Merrimack River from Nashua to Hudson in 1827, one of the earliest and busiest ferries was established in 1729 at Cummings Farm in Hudson, running to a spot near the mouth of the Nashua River. At least two other ferries linked Hudson to Nashua including the Hills Ferry in the northern part of town and Little's Ferry at South Nashua.

Hudson Center developed rapidly in the late 18th and early 19th Century after the Presbyterian Church or North Meetinghouse was erected in 1771. By 1834, Hudson Center was the primary village center of the town. It contained a tavern, three small stores, a meetinghouse, a physician and eight or nine

residences. Other than the small concentration of buildings at Hudson Center, there were no other village centers in town. The construction of several new buildings, including the Hudson Baptist Church in 1841 and the Town House in 1857 reinforced the importance of the village at the center, although by this time the importance of the Center was beginning to wane.

The area known as Hudson Bridge, at the eastern terminus of the Taylor's Falls Bridge, had begun to develop as a commercial center as early as 1837, when a store was established there, and continued to develop rapidly during the mid-19th Century due to its proximity to the industrial city of Nashua. By the early 20th Century, the business center of the town had moved from Hudson Center to "The Bridge". The post office moved to the Bridge area in 1910 and the town library moved to the Hills Memorial Library in 1909. The Hudson Volunteer Hose company constructed a hose carriage house at the Bridge in 1892. Library Park and the rest station was established in 1911 for those awaiting the electric cars at the southeast corner of the park. The advent of the electric railways in Hudson in 1895 simplified commuting to the mills in Nashua and accelerated the evolution of Hudson as a bedroom community for Nashua.

Agriculture continued to play a major role in the local economy well into the 20th Century. Local farms included both mixed family farms and larger production operations, primarily poultry, apples, and dairy. The U.S. Census indicates that there were 172 farms in Hudson in 1880, ranging from five to more than five hundred acres. In the early 20th Century, Hudson still retained many dairy farms, market gardens and extensive orchards. Even those who worked in Nashua or other urban centers typically kept small gardens and a few chickens.

The poultry industry was particularly significant in the early to mid-20th Century. The Jasper farm grew to become one of New England's largest breeding farms and Grant Jasper became one of the leaders of the New England poultry industry. At its peak, the farm contained over three hundred acres, eighteen large hen houses, and more than 200 portable brooder houses and range shelters. The daily production was more than 25,000 eggs.

Lowell Road illustrates Hudson's transition from agricultural community to suburban town. In the 1920s there were about twenty-five farms along the road but by the 1960s only half as many remained. As of 2020, there are only a handful of agricultural operations town wide. The construction of the Sagamore Park Bridge in 1974 brought new volumes of traffic to Lowell Road and much of the remaining farmland soon gave way to commercial strip development and lesser amounts of industrial development.

The building boom of the 1970s and 1980s, spurred in part by the availability of public sewer and water services, has changed the mix of housing in town, increasing the proportion of multi-family housing, particularly duplexes, while decreasing that of single-family houses, particularly those of a historic nature. Several large industrial complexes have been built on Route 111, near the Windham town line, while commercial development has been concentrated along major routes such as Lowell Road, Derry Road and Route 111. Much of the eastern portion of town continues to be more rural in character.

## SIGNIFICANT LOCAL HISTORIC RESOURCES

Many of Hudson's historic resources are clustered in the two historic village centers, Hudson Bridge and Hudson Center. Although these areas comprise the most notable concentrations of historic resources in town, there is hardly an old road in town where an historic homestead or mill site cannot be found. Hudson's old roads still in use include Bush Hill Road, Derry Road, Kimball Hill Road, Lowell Road, Pelham Road and Robinson Road. The following is a summary of some of Hudson's most important historic resources.

## Hudson Center

Furthered by its central location in town, Hudson Center developed rapidly in the late 18th and early 19th centuries as previously noted. It was situated approximately two miles from the current Taylor's Falls Bridge in the area of Route 111 and Greeley Street. Construction of the Presbyterian Church or North Meetinghouse in 1771 provided an impetus for further development. The church was erected on the site of the present Town House (Wattanick Grange Hall). A town common and burying ground were laid out several years later.

A cluster of buildings was constructed in the 1840s and 1850s in the then-popular Greek Revival Style. These include the Hudson Baptist Church (1841), the Greeley House next to the church (c.1840) and the Town House (1857). The Hudson Center School was constructed in 1908 along with several houses over the years. The Old Hudson Center Cemetery, which dates to 1778, can still be seen at the junction of Kimball Hill Road and Center Street. The Route 111 bypass of the 1960s, however, resulted in the relocation of several structures in Hudson Center and in the taking of a large part of the town common. A proliferation of commercial activity just west of Hudson Center and industrial areas to the east has isolated Hudson Center in recent decades, though another significant concentration of historic buildings and sites is located nearby in what is now known as Benson Park.

Town House (Grange Hall) in Hudson Center

## Benson Park

The 166-acre Benson Park was once a popular amusement park and zoo called Benson's Wild Animal Farm which was in operation from 1924 to 1987. In 1992, the State of New Hampshire Department of Transportation (NHDOT) purchased the land as a wetlands mitigation site. The site was later sold to the Town, but the deed included Historic Preservation easements encompassing a 1.7-acre area around the Hazelton Barn (which dates back to an 18th century farm) and an approximately one-acre area around the Office and Kitchen which was built for the Wild Animal Farm in the 1930s. Under the conditions of these easements, the Town is required to preserve and maintain these structures together with the B&M Railroad Depot which dates to the late 19th century. Other significant structures remaining on site include the Elephant House, The Gorilla House and the Old Woman's Shoe.

To better connect Hudson Center to Benson Park, improved bicycle and pedestrian accommodations along Center Street, including a signalized pedestrian crosswalk at the intersection of Kimball Hill Road, Greeley Street and Central Street should be pursued, thereby bringing together two of Hudson's most important historic and cultural areas and creating the semblance of a town center for Hudson (see Chapter V-Transportation).


B&M Railroad Depot at Benson Park

## Hudson Bridge

Historic Home on Maple Street

The area which developed adjacent to the Taylor's Falls Bridge crossing the Merrimack River became the dominant center in the late 19th and early 20th Century. The original bridge was built as a 16-foot wide covered toll bridge in 1827. It was not until the arrival of the electric railway in 1895 that a densely populated area had been settled at the bridge crossing.

Examples of a wide variety of architectural styles popular at the turn of the Century are visible in the houses and other buildings in this area. The Hills Memorial Library (pictured on page 1), dating to 1909, is a unique structure combining native stonework and Tudor style influences. Other significant structures include the Sanders House, a landmark Victorian house on Derry Street at Library Park and a group of related rowhouses that also face Library Park. Improved pedestrian accommodations in this area, especially additional crosswalks to access Library Park, would significantly enhance the role of the Bridge area as Hudson second town center.


Kimball Webster School Building

Other historic and potentially historic buildings and sites are scattered throughout Hudson and can be found on most old town roads. In some cases, historic sites are found in off-road forested areas such as the remains of the Deacon Merrill Homestead in the Musquash Pond Conservation area. This site includes the remains of a house, well, barn, and corral built in the early 1700s for the Merrill family, who were among Hudson's earliest European settlers. The landmark Hills House, shown above, is located on Derry Road across from Alvrine High School. Another important building, the Alvrine Chapel, is also located nearby.

Hills House

Alvrine Chapel

Some of Hudson's oldest historic sites are cemeteries. These include the following:

- Ford Cemetery: (1735-1966), Musquash Rd.
- Blodgett Cemetery: (1749-1982), Pelham Rd.
- Old Hudson Center Cemetery: (1778-1850), Central St. & Kimball Hill Rd.
- Senter Cemetery: (1759-1907), Old Derry Rd.
- Poor Farm Cemetery (also known as Cemetery of the Unknown): (1828-1870), Twin Meadow Dr.

Hudson's historic cemeteries are depicted on Map VII-2.

Old Hudson Center Cemetery

## National Register of Historic Places

The National Register of Historic Places is the official list of the Nation's cultural resources worthy of preservation. Established by the National Historic Preservation Act of 1966 and administered by the National Park Service within the Department of the Interior, the Register lists properties of local, state and/or national significance in the areas of American history, architecture, archaeology, engineering and culture. Resources may be nominated individually, or in groups, as districts or as multiple resource areas and must generally be older than 50 years.

The primary benefit of National Register listing is the recognition it affords and the appreciation of local resources which is often stimulated through such recognition. The National Register also provides for

G.O. Sanders House

review of effects which any federally funded, licensed, or assisted project, most notably highway projects, might have on a property which is listed on the Register or eligible for listing. Register standing can also make a property eligible for certain federal tax benefits (investment tax credits) for the rehabilitation of income-producing buildings and the charitable deduction of donations or easements.

Contrary to many commonly held beliefs, National Register listing does not interfere with a property owner's right to alter, manage, dispose of, or even demolish his property unless federal funds are involved. Nor does National Register listing require that an owner open his property to the public.

A National Register district must have the approval of the majority of property owners in the district. For a single, privately owned property with one owner, the property will not be listed if the owner objects. National Register listing can be an important catalyst to change public perception and increase historic awareness but cannot prevent detrimental alterations or demolition. Yet, it remains an important first step toward historic awareness, respect, and protection. Statewide there are nearly eight hundred National Register listings.

Thirty-two individual buildings or sites and five districts in the region are listed on the Register. Properties listed on the National Register in Hudson are shown in Table VII-1, and properties that could potentially be listed on the National Register are shown in Table VII-2.

**Table VII-1.**
**Hudson Properties Listed on the**
**National Register of Historic Places**

| Name of Property | Address | Date Listed | Ref# | Architects/Builders |
|---|---|---|---|---|
| **Hills House** | 211 Derry Road | 4/8/1983 | 83001141 | Ripley, Hubert G. |
| **Hills Memorial Library** | 16 Library Street | 6/7/1984 | 84002812 | Ripley, Hubert G. |
| **Sanders, G.O. House** | 10 Derry Street | 2/27/1986 | 86000277 | Sanders, George O. |

**Table VII-2.**
**Properties Having the Potential to be Listed on the**
**National Register of Historic Places**

| Name of Property | Address |
|---|---|
| **Benson's Wild Animal Farm** | Central Street. & Kimball Hill Road. |
| **Davis-Cohen (Morrison) House** | 101 Bush Hill Road |
| **Hudson Baptist Church** | 236 Central Street |
| **Baptist Parsonage** | 234 Central Street |
| **Smith-Walch-Sinkiewiecz House** | 79 Greeley Street |
| **Hudson Center School** | 10 Kimball Hill Road |
| **Bartlett-Charbonneau House** | 2 Old Derry Road |
| **Hills-Murray House** | 20 Old Derry Road |
| **Hudson Townhouse/Wattannick Grange** | 2 Windham Road |
| **Old Derry Road Historic District:** | Houses at 34-36, 48, 53, and 62-66 Old Derry Road and No. 9 Schoolhouse at 82 Old Derry Road |

Note: The list of properties with the *potential* for listing on the National Register is not all inclusive but is based on evaluations by the NH Department of Transportation for the Hudson-Nashua Circumferential Highway Project.

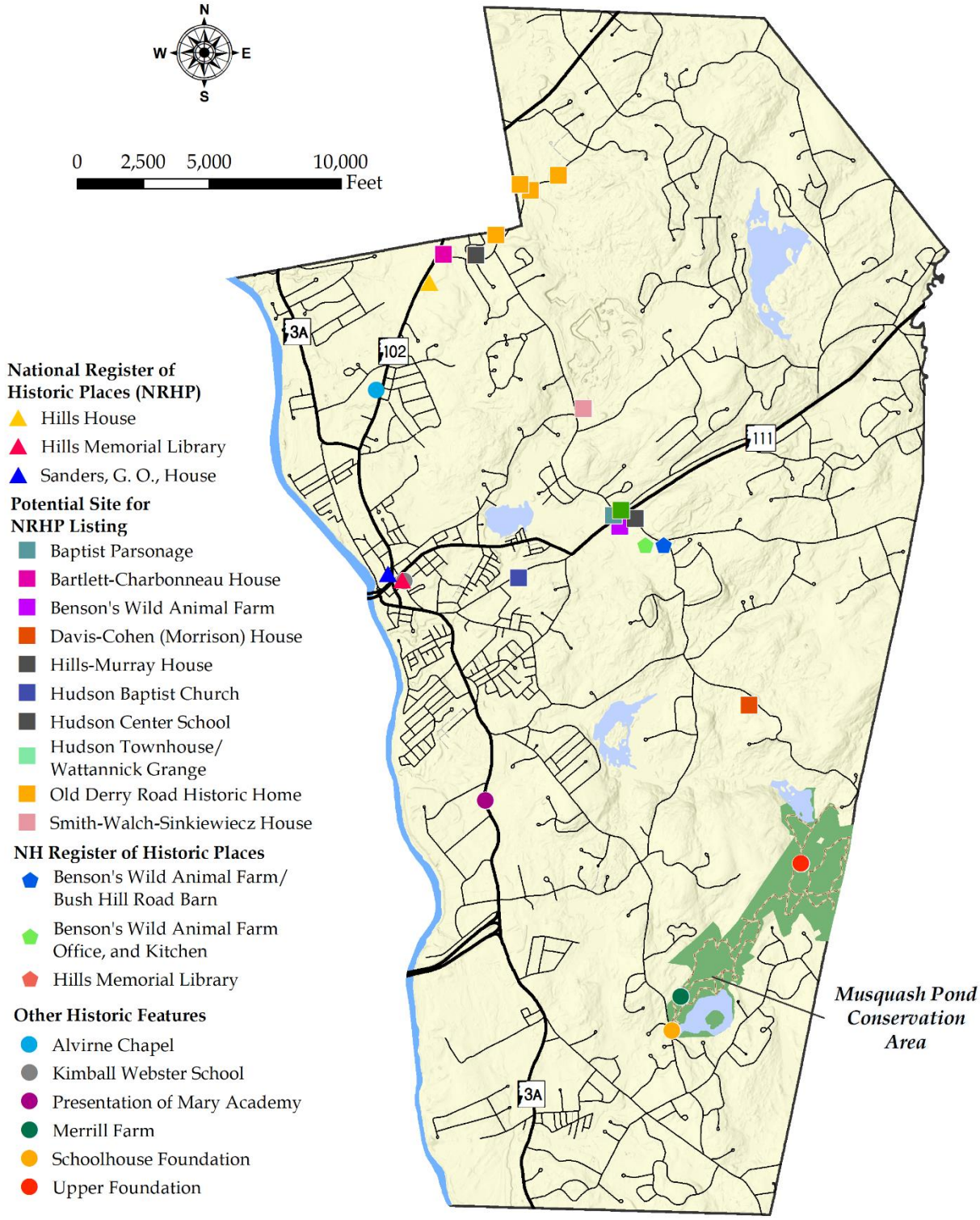
## State Register of Historic Places

The State of New Hampshire Register of Historic Places program encourages the identification and protection of historical, architectural, archaeological, and cultural resources. The program provides for listing to encourage awareness of the historical significance of the listed structure but does not mandate protection. Benefits of listing include public recognition, consideration and advocacy in the planning of local and state funded projects, qualification for state financial assistance for preservation projects (i.e., LCHIP) and special consideration or relief in the application of some access, building and safety code regulations. Listing takes place through application to the NH Division of Historic Resources. All buildings listed under the section on the National Register may be appropriate for listing under the state program. Two of the remaining structures on the Benson's Property are listed on the NH State Register, as well as the Hills Memorial Library (see Table VII-3).

**Table VII-3.**
**Hudson Properties Listed on New Hampshire Register of Historic Places**

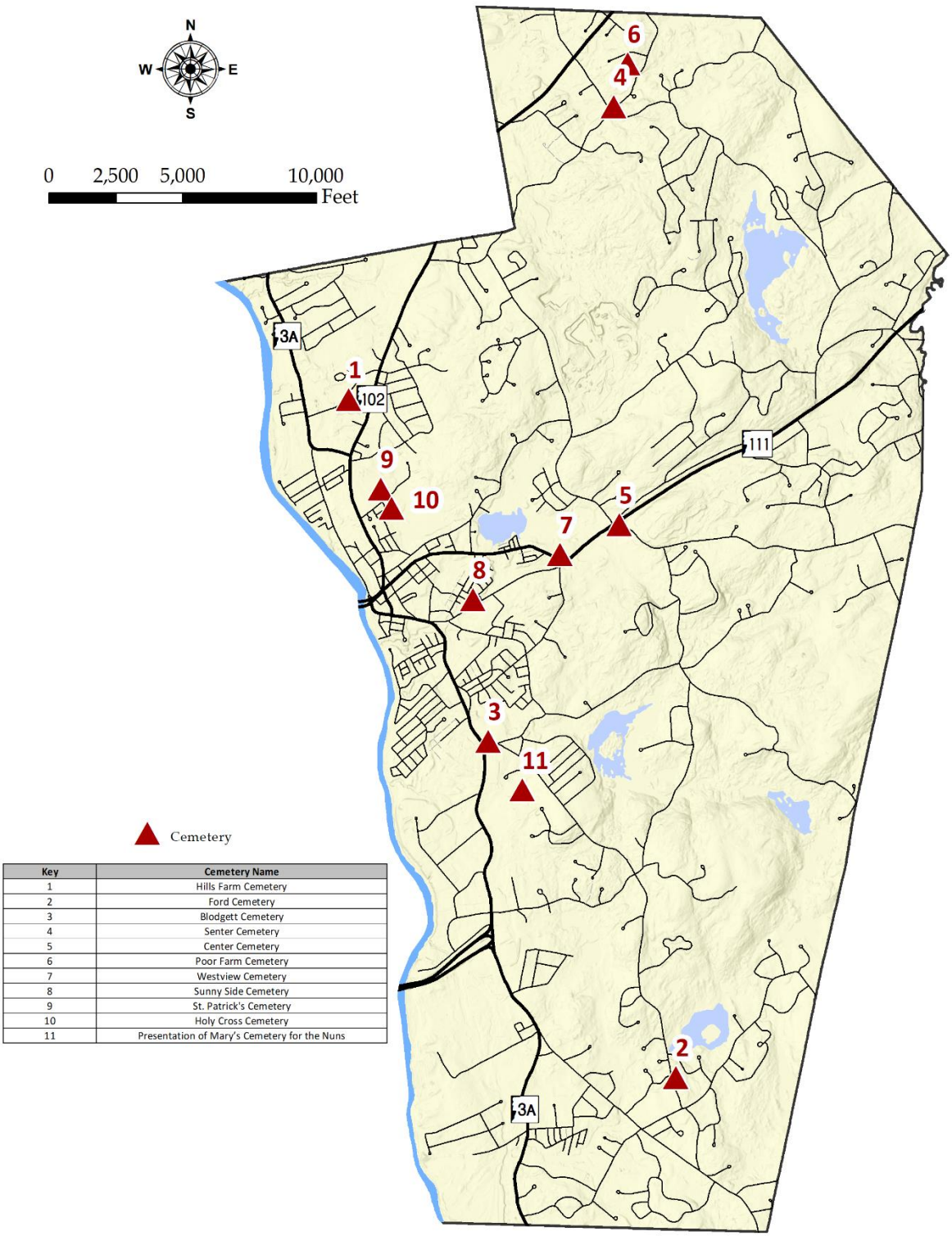
| Name of Property | Address | Date Listed | Listed on National Registry |
|---|---|---|---|
| **Benson's Wild Animal Farm, Bush Hill Road Barn** | 27 Kimball Hill Road; int. Bush and Kimball | 4/29/2002 | No |
| **Benson's Wild Animal Farm, Office, and Kitchen** | 27 Kimball Hill Road; int. Bush and Kimball | 4/29/2002 | No |
| **Hills Memorial Library** | 18 Library Street | 4/30/2012 | Yes |

## Map VII-1: Historic Resources




Source: US National Parks Service, NRPC

## Map VII-2: Historic Cemeteries




| Key | Cemetery Name |
|---|---|
| 1 | Hills Farm Cemetery |
| 2 | Ford Cemetery |
| 3 | Blodgett Cemetery |
| 4 | Senter Cemetery |
| 5 | Center Cemetery |
| 6 | Poor Farm Cemetery |
| 7 | Westview Cemetery |
| 8 | Sunny Side Cemetery |
| 9 | St. Patrick's Cemetery |
| 10 | Holy Cross Cemetery |
| 11 | Presentation of Mary's Cemetery for the Nuns |

Source: NRPC, Town of Hudson

# TOOLS FOR ENHANCEMENT AND PROTECTION OF HISTORIC RESOURCES

There are various methods that can be used to encourage the preservation or restoration of historic resources. These include: 1) historic resources survey; 2) National Register of Historic Places; 3) local historic districts; 4) the Certified Local Government (CLG) program; 5) local heritage commissions; 6) historic building rehabilitation federal tax credits; 7) historic markers; 8) easements; 9) protection of archeological areas; 10) Scenic Road designation; 11) innovative land use controls; and 12) building code provisions.

## Historic Resources Survey

Preservation through documentation is the most basic and essential of preservation strategies. There are several reasons for undertaking an historic resources survey. In addition to providing a permanent written and photographic record of a town's architecture, a good inventory is the foundation for other preservation tools. It can be of service to the historic district commission and can be used to prepare nominations for listing of historic structures in the National Register of Historic Places. Data gathered in a survey may encourage a greater appreciation of historic structures and sites by local citizens. Historic resource assessments are also necessary for accomplishing environmental reviews required in projects receiving federal funding, such as highway projects. As the beginning of a comprehensive historic preservation strategy, information gathered should act as a firm foundation for future decision making, by identifying buildings suitable for and worthy of preservation and/or rehabilitation.

A complete historic resources survey can help a community weigh proposed actions more carefully, so that it does not inadvertently expend its long-term assets in realizing immediate objectives. If a comprehensive town-wide survey is not feasible, Hudson would be wise to identify the historic resources and areas which may be impacted by future road improvements.

## Historic Structures Report

The purpose of a historic structures report (HSR) is to develop an understanding of a building's physical history and condition, and provide specific, useable information for implementing a treatment plan. Buildings that are important in the history of a community have potential to continue to serve that community in many ways after its original function is no longer viable. An HSR is a tool that analyzes that potential for the multiple values that a building represents, taking into consideration the meaning, use and cost to maximize the benefit to the community. Examples of HSR reports can be found on the Town's website for the Hazelton Barn, former B&M Railroad Depot, and the Kitchen & Office building at Benson Park.

## Local Historic Districts

The term "historic district" can refer either to a historic district established by Town Meeting vote, previously discussed, or to a National Register Historic District. Both are useful preservation tools but differ in the way in which they are established and the protection they afford. A historic area may be both a locally designated historic district and a National Register District. Several communities within the region, including Amherst, Hollis, Mont Vernon, and Nashua have enacted local historic district ordinances.

The most comprehensive preservation tool available to local governments under New Hampshire state law is the creation and administration of a local historic district (RSA 674:45). The purpose of a historic district is to protect and preserve areas of outstanding architectural and historic value from inappropriate alterations and additions which might detract from an otherwise distinctive character. Historic districts should not attempt to "freeze" time but should preserve what is significant to a district while accommodating change and new construction in accordance with regulations based on a local consensus.

Historic districting can be an effective technique for protecting the character of an area. Unlike zoning which focuses on land use, a historic district emphasizes exterior appearance and setting. Yet unlike site plan review, historic districts allow officials to exercise authority over construction and alteration of single-family dwellings, however, buildings alone need not comprise a district. Effective district preservation should involve streetscapes, landscapes, contributing views and viewsheds as well as buildings. It should be noted that historic districting is not an appropriate method for protecting all historical resources in an area, especially where properties are widely scattered. Historic districting also may not be the most effective means of protecting a significant land area, but districting can be effectively combined with other techniques.

## Certified Local Government (CLG) Program

The National Historic Preservation Act of 1966 provides for matching grants-in-aid to the states from the Historic Preservation Fund for historic preservation programs and projects. Federal law requires that at least ten percent of each state's Historic Preservation Fund grant be designated for transfer to eligible local governments that apply for the money. A local government can participate in the program once the State Preservation Office certifies that the community has established its own historic preservation commission, district and a program meeting certain federal and state standards. Matching grants are made each year to certified local governments for survey and planning projects, including preparation of National Register nominations and historic resource surveys. Currently, the CLG program represents the only source of state funds available for communities interested in preservation planning. In the Nashua Region, the only communities designated as CLGs are the City of Nashua and the Towns of Amherst and Hollis.

## Local Heritage Commissions

In 1992, the Legislature enacted RSA 674:44-A to enable towns or cities to establish heritage commissions "for the proper recognition, use and protection of resources, tangible or intangible, primarily man-made, that are valued for their historic, cultural, esthetics or community significance within their natural, built or cultural contexts."

RSA 674:44-B defines the power of the commission and authorizes the acquisition of property in the name of the town. Heritage commissions may, if authorized by the Town assume the composition and duties of historic district commissions or the municipality may choose to maintain separate and distinct commissions. If separate, the heritage commission is advisory to the historic district commission, the planning board, and other local boards.

The Town may appropriate funds and the proper handling of these or other related funds as specified in the statute. The makeup of members is like other local boards, and a planning board member may be a member of the heritage commission. The requirements for meetings, disqualification of a member, the abolition of heritage commissions, effect of abolition, and the transfer of documents are the same as for other local boards. The statute also amends the historic district statutes to incorporate references to cultural and community values as a public purpose and authorizes the creation of more than one district in a municipality.

## Federal Historic Rehabilitation Tax Credit

The Federal Historic Rehabilitation Tax Credit (HTC) was formally introduced by Congress in 1979. Previously, there was a 10% credit for non-residential buildings in service prior to 1936 and a 20% credit for structures that the National Park Service has deemed as historic. New Tax Legislation signed at the end of 2017 (Public Law No: 115-97) has eliminated the 10% credit.

To qualify for the 20% tax credit, the building must a certified historic structure per the National Park Service. The structure must be used for a business or other income-producing purpose, and a substantial amount of the tax credit must be spent on rehabilitation of the building.

The investment tax credits provide some incentive to rehabilitate older buildings instead of undertaking new construction. Unfortunately, because these credits do not cover privately owned, non-income producing residences which constitute most of Hudson's resources, their use in Hudson is somewhat limited. Larger structures with income-producing potential could benefit from the use of the credits, which would also ensure the sympathetic rehabilitation of the buildings.

## NH Historical Highway Markers

Markers are an easy, inexpensive way to tell both residents and visitors about significant people, places, and events in a community's past. The State Marker Program was originated by the New Hampshire Legislature in 1955. The aim of the program is the erection of appropriate markers designating events, people, and places of historical significance to the State of New Hampshire. Communities who would like to be considered for a marker submit a request for consideration by the State Highway Department and Division of Historical Resources. There is generally no cost involved for a marker on a state-maintained road. There is a charge of $1,100 for a marker on a private road. Statewide there are approximately 260 historical markers. Few have been erected in NRPC communities with only one in Amherst, one in Mason, two in Merrimack, one in Milford and one in Pelham. Hudson does not currently have any State markers.

The sole purpose of the marker program is recognition. The program is non-restrictive; it does not protect historic sites nor does it obligate owners in any way. The criteria which apply to marker selection are also much less stringent than those for getting a property listed on the National Register. A marker may be used to point out historic sites that have changed considerably over time or even to commemorate events for which there is no standing evidence, anything which has historical significance to a community. For the simple recognition of a historic property, the historical marker program may be a better tool than the National Register, more readily visible and much easier to use. Another type of marker which has found widespread use involves the placement of wooden date markers on houses. Such a program was initiated in Hudson back in 1976 as part of the Bicentennial celebration.

## Easements

Across the country, preservation easements have proven to be an effective tool for protecting significant historic properties. As has been noted above, Benson Park is subject to two historic easements held by the state. An easement is a property right that can be bought or sold through a legal agreement between a property owner and an organization eligible to hold easements. Just as a conservation easement can be used to protect open space, scenic areas, waterways, wildlife sanctuaries, etc. from incompatible use and development, an architectural easement protects the exterior appearance of a building. If properly administered, easements are a superior method of conserving and protecting land, water, and historic resources; perhaps better and longer than zoning or locally designated historic districts.

Easements provide property owners with two important benefits. First, the character of a property is protected in perpetuity. In addition, the donation of an easement may make the owner eligible for certain tax advantages. If the property is listed in the National Register, in return for giving an easement, an owner is eligible under the Tax Treatment and Extension Act of 1980 to make a deduction from his taxes. Donation of an easement may also reduce estate and local property taxes.

Easements are also extremely beneficial to a community. The costs of acquiring easements may be significantly lower than buying properties outright to protect valuable resources, particularly when easements can be acquired by donation. Significant resources can remain in private hands but are protected from inappropriate alteration as the organization holding the easement is given the right to review any proposed change to the structure or property.

## Protection of Archaeological Areas

Although much of this chapter deals specifically with architectural resources, it should be recognized that the preservation of areas of high potential for prehistoric and historic archaeological sites poses unique problems. In comparison to historic structures, archaeological resources are more difficult to identify and protect. Each site is unique and fragile. Once a site is disturbed, information is lost. While there is often an urgent need to keep the location of an important archaeological resource confidential, the same confidentiality will often preclude public awareness. Acquisition of the land or land development rights is often the only way to effectively preserve archaeological resources. Ironically, increased appreciation may also represent a very real threat to archaeological resources.
Rapid growth is the greatest threat to archaeological resources. The few applicable laws that protect archaeological resources are primarily federal. As a result of these laws, large highway projects or projects which require review by a federal agency usually have a review of impacts to cultural resources. In addition, there are mining laws which allow review of projects for impacts and there is the possibility of review within the dredge and fill process.

Since much of the region's growth is from private rather than public sources, archaeological evaluation is not required. In some cases, cooperative developers have permitted recording of archaeological data which would otherwise be destroyed. The State Division of Historical Resources has very limited ability to review private projects for impact on archaeological resources. Local officials should consult the Division if a proposal will impact a known archaeological resource or if a project is in a location with a high probability of archaeological potential such as areas with proximity to water. In extreme cases, the Town may wish to ask developers to fund recovery of archaeological data by hiring a professional archaeologist as a consultant to evaluate a property for archaeological potential and/or survey the area for unknown archaeological sites. This procedure is dictated by law in many neighboring states but is not currently required in New Hampshire.

## Scenic Road Designations

New Hampshire State law enables a community to designate any road as scenic unless it is a Class I or II highway. A scenic road designation protects trees and stone walls located on the public right-of-way. After designation of a scenic road, any repair, maintenance, reconstruction or paving work, tree removal or stone wall removal cannot take place without prior written consent of the planning board or official municipal body.

Designation of a road as "scenic" will not affect the Town's eligibility to receive State aid for road construction. It does however give communities a way to protect an important statewide resource and may also help to preserve the scenic quality around historic structures and stimulate respect for the existing landscape. Many communities within the region are currently taking advantage of this potential preservation tool. Currently, no roads in Hudson are designated as scenic.

## Innovative Land Use Controls

The use of an “open space development” ordinance allows for development to be located away from sensitive areas, agricultural lands, or historic areas. In the State of New Hampshire RSA 674:21 gives communities authority to adopt a variety of innovative land use controls which may support the preservation of community character and consequently historic resources. The concept of the transfer of development rights is another strategy that may be used to help a community retain its historic character.

Many communities also adopt historic preservation standards as a means of determining the effects of construction on areas of historic significance. The standards require that proposed construction, alteration, removal, or demolition of a structure be evaluated for the effects on the historical, cultural,

or architectural value of a landmark or a historic preservation district. There are several criteria by which to apply these standards, which will vary by community.

In addition, impact fees can be used for the rehabilitation of both cultural and natural resources. During the site plan review and approval process, the Hudson Planning Board assessed a per unit impact fee on the Thurston's Landing subdivision to be used specifically on the Benson's Property. At the discretion of the Board of Selectmen, the money can be used for all types of improvements and rehabilitation. This would include, but not be limited to, the restoration of cultural resources such as buildings and natural resources such as scenic walkways, stone walls, rustic bridges, and landscaping.

### Building Code Provisions

In seeking to protect the public's health and safety, standards such as building codes may present unique complications to the use or rehabilitation of an historic building. As a result, some communities have elected to amend local building codes to exempt historic structures from certain code requirements, other than life safety provisions. This allows historic buildings to continue to be used safely while not imposing a modern set of standards that are impossible for an older building to meet without a significant loss of integrity.

## CONCLUSIONS & RECOMMENDATIONS

Hudson's historic resources are irreplaceable assets that help to define the community and create a distinct sense of place. Some of these resources, such as the historic buildings at Benson Park, are among Hudson's best-known features and most popular attractions. Notably, the largest concentrations of historic buildings and sites in Hudson are in the areas of Hudson Bridge around Library Park and Hudson Center which includes what is left of Hudson's 18th century Town Common. As can be seen in Chapter I - Community Vision & Goals, the creation of a defined town center or downtown for Hudson is one of the Master Plan's most important goals. Both the Hudson Bridge and Hudson Center areas have the potential to provide the functions that are commonly associated with New England town centers including small central open spaces or town commons that are populated with multiple monuments and memorials. One of the key elements of own centers, however, this point, both areas are largely drive-by locations that are visited and enjoyed by few residents. Preserving and protecting historic buildings and sites within these areas and enhancing public access to and use of their common open spaces would provide broad benefits to the entire community. The

following recommendations are designed to provide alternatives to preserve and protect Hudson's historic buildings and sites with an emphasis on the Hudson Bridge and Center areas.

- Consider creating local historic districts in the vicinity of the Hudson Bridge area and the Hudson Center area with the latter to include the remaining section of the Town Common and the Old Hudson Center Cemetery. Local historic districts provide among the highest levels of protection for historic areas while maintaining local control. Creation of the districts would also necessitate the creation of a Heritage Commission or Historic District Commission to administer district regulations and become part of the Town's Design Review Process.
- Provide improved bicycle and pedestrian accommodations in Hudson Center including sidewalks on both sides of Central Street and a signalized crosswalk at the intersection of Kimball Hill Road and Central Street to connect the historic buildings and residential areas on the northwestern side of NH 111 with the old Town Common and Benson Park. A sidewalk or widened shoulder should also be provided along Kimball Hill Road to connect the old Town Common with Benson Park.
- Enhance the use and appreciation of the old Town Common, the historic Old Center Cemetery and its various monuments and points of interest. In addition to the sidewalk and crosswalk improvements noted above, consideration should be given to providing a few well-placed parking spaces on or adjacent to the site to accommodate visitors. Consideration should also be given to installing interpretive signage to describe the historic features of the site and split rail or decorative fencing along NH 111 to provide a greater sense of security. Adding picnic tables would also enhance the visitor experience and could both leverage and benefit the adjacent Super Sub restaurant.
- Provide enhanced pedestrian connections to Library Park including a signalized crosswalk at the intersection of Ferry and Derry Streets at Highland Street and the intersection of Derry and Ferry Streets. with an emphasis on connections to Library Park.
- Enhance the use and appreciation of Library Park together with its gazebo, monuments, and other points of interest. In addition to the sidewalk and crosswalk improvements noted above, consideration should be given to installing decorative fencing along Derry and Ferry Streets to provide a greater sense of security for park users. As with the old Town Common, adding interpretive signage and picnic tables could also enhance the visitor experience, though limited seating is currently available.
- Consider designation of select local roads for protection under the scenic road provisions of RSA 231:157, which provides protection for trees and adjacent stone walls that provide a foundation for Hudson's enduring rural New England character.
- Institute a historic sign or marker program through the Historical Society or other body to identify historic homes and site throughout the town to enhance appreciation of Hudson's history and culture and to instill pride of ownership.
- Provide more specific standards for design control in the Town's Nonresidential Site Plan Review regulations for key historic corridors such as the Hudson Center and Hudson Bridge areas.
- Consider joining the Certified Local Government (CLG) Program.

# CHAPTER VIII - COMMUNITY FACILITIES

## INTRODUCTION

The provision of adequate community facilities and services is the principal responsibility of town government and is vital to maintaining the health, safety, and welfare of the community. Overall, Hudson residents appear to be largely satisfied with the town's existing community facilities and services. This is especially true for the Benson Park and the Library as well as other select facilities such as the Senior Center. The following simple and direct comment taken from 2019 Master Plan Survey expresses the sentiments of many Hudson residents: "*Love the school, parks and library!"*

Frustration at the lack of investment in certain facilities, however, was also raised during the Master Plan public input sessions and survey as expressed in the following comment: *"We have sacrificed for too long trying to save 2 cents on a tax rate. As a result, we don't have the services we should, our schools are in disrepair and we have a lot of work to do. Time to stop being cheap and invest in the future."*

This chapter examines the existing and estimated future level of service needs for each of the town's principal community facilities and services based on information derived from the 2006 Master Plan, the 2019 Master Plan survey and public input sessions, the FY2020 CIP, Town and School District Annual Reports, and other sources. Although a variety of subjects are examined, an emphasis is placed on space needs and capital improvements.

The estimated future space needs of various community facilities are determined largely by the demand for the services they provide. Demand for services is objectively determined by the size of the town's total population and its demographic breakdown as well as the number of housing units and other factors. The demand for local government facilities and services is also influenced by state, federal, and industry standards, requirements, and mandates. Demand for facilities and services must also be weighed alongside the financial capability of the town and the willingness of residents to fund certain facility improvements, programs, and services. This chapter provides a discussion of 1) Town Hall; 2) Library; 3) Police Department; 4) Fire Department; 5) Recreation; 6) Solid Waste; 7) Public Works Department; 8) Public Schools; 9) Public Water Supply; and 10) Public Sewer. The location of existing public facilities is illustrated on Map VIII-1.

# TOWN HALL FACILITIES


## Existing Conditions

The Hudson Town Hall is located on a 1.4-acre site at 12 School Street. The building is 12,632 square feet ($ft^2$) in area. The original building was constructed in 1965 in a modern adaptation of the Federal style.[1] Additions and renovations were made in 1974, 1987, and 1998. Twenty-five off-street parking spaces are located on the south side of the Town Hall with 11 spaces in front of the building and 21 spaces to the rear.

The Town Offices went through a major renovation project during the summer of 1987 when the original building interior was refitted with new office space and the east wing was added. The west wing of Town Hall includes offices for the Town Clerk and Tax Collector, Welfare, Assessing Department, and Administration. The lower level houses The Finance Department, IT, a staff kitchen and breakroom, and the Board of Selectmen's Meeting Room. There is a chairlift to provide handicapped access to the lower level but no elevator. The east wing houses Planning, Engineering, Zoning/Code Enforcement, and Inspectional Services on the main floor and a lower-level meeting room used by the Planning Board, Zoning Board, and other town committees and commissions. There is no elevator access to the lower level. Further, while it is possible to access the east and west sides of the Town Hall's lower level through the Finance Department, there is no public access provided between the two areas.

[1] Town of Hudson Assessor's database. 6,316 $ft^2$ is building footprint and therefore interior floor area is estimated at twice this figure. The actual interior floor area is smaller. This figure does not include the Fire Station.

## Existing Needs

Town Hall expansion has been a topic of discussion in Hudson for several years due to the facility's space constraints, layout, and accessibility challenges. In 2020, a proposed expansion plan was submitted to the 2020 Capital Improvements Program for the expansion of Town Hall. The proposal included the renovation of the existing building and an addition to the west side of the building (parking lot side) that would be approximately 30 feet wide by 72 feet long, which is approximately 2,160 square feet. The project would address multiple issues and accomplish the following:

- Provide a central location for customers to pay their utility bills instead of having them go to the basement to pay bills
- Group Water and Sewer employees together for efficiency,
- Increase security in the Welfare Department
- Provide the IT Department with adequate space to work and add a locked secure area for servers (currently shared space)
- Repair HVAC central air and heating in the entire building
- Increase overall office security
- Provide all employees an office to work from
- Add a conference room to the main floor
- Reorganize parking lot
- Relocate the gas tank
- Create an area for record retention on site

The CIP Committee, however, recommended that an alternatives and feasibility analysis be conducted that would evaluate the potential for Town Hall expansion along with possible relocation scenarios.

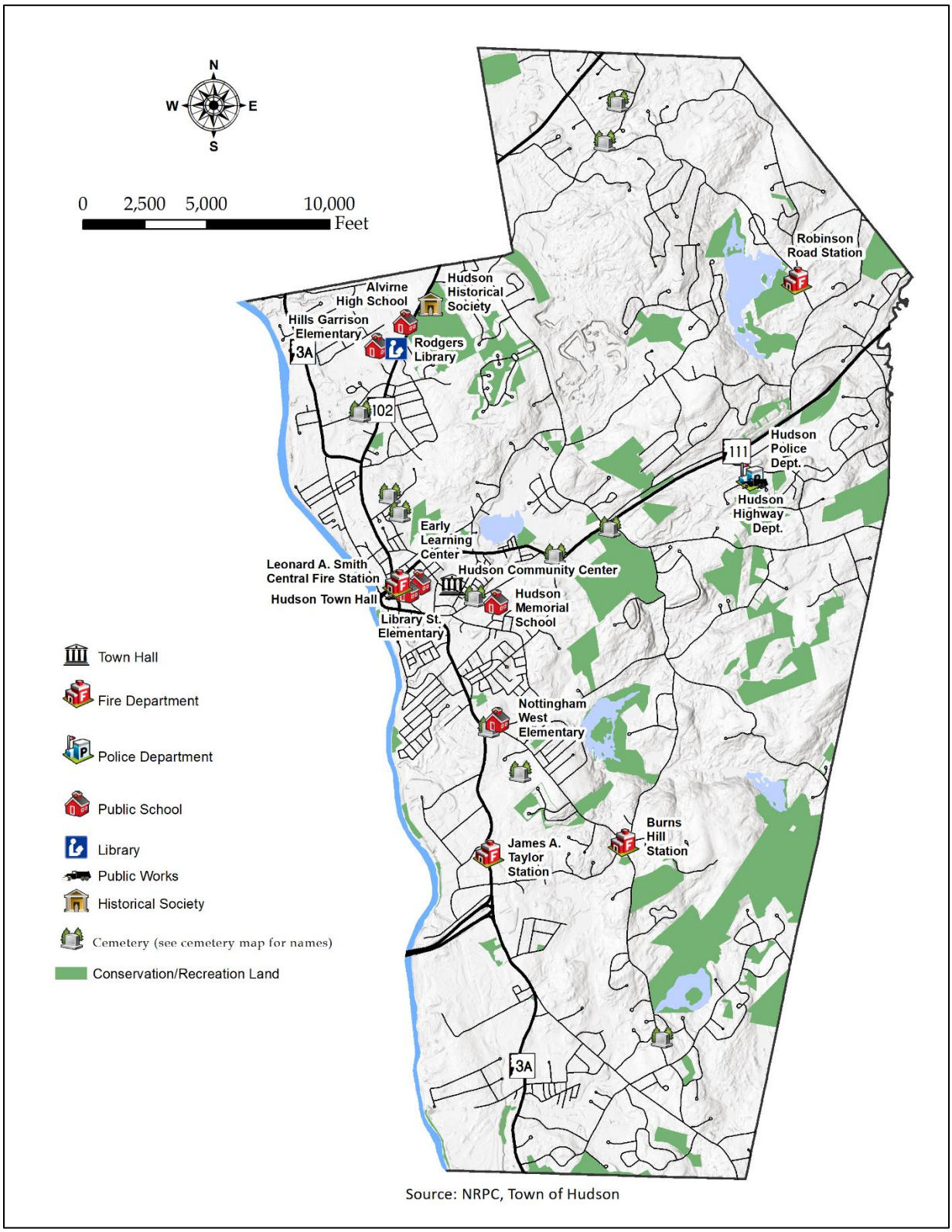
## Future Needs

The Town's population is projected to grow from 25,394 people in 2020 to a projected 28,302 by 2050[2], and it is likely that additional employees may be needed in various departments. Larger meeting rooms have also been identified as a need. Due to public interest in several Planning Board applications between 2020 and 2023, meetings often needed to be held at the Community Center for greater capacity. The expansion or relocation of the Town Hall should include an appropriately sized and equipped meeting room.

The Town Hall is a center of community activity and therefore should reflect the community's character as well as provide for practical space needs. The existing Town Hall has an architectural style and site design that reflects the surrounding residential area, despite being originally constructed in 1965. Any renovations to the existing Town Hall or construction of a new Town Hall should continue this tradition of reflecting Hudson's community character. Further, whether a proposal comes forward to expand or relocate Town Hall, consideration should be given to the ways in which either scenario would serve the goal of creating a defined Town Center for Hudson. In addition, elevator access to the lower level should be provided.

[2] New Hampshire Office of Planning and Development 2022 Population Projections

## Map VIII-1. Location of Existing Community Facilities



# GEORGE H. AND ELLA M. RODGERS MEMORIAL LIBRARY

## Existing Conditions

After many failed attempts to finance the expansion of Hills Memorial Library, two local businessmen, Al, and Phil Rodgers, made a generous donation of $4,000,000 in 2008 that led to the building of George H. and Ella M. Rodgers Memorial Library. The brothers made two stipulations with their donation; the building had to be a metal structure and the Library was to be named in honor of their parents. The George H. and Ella M. Rodgers Memorial Library celebrated its 10th Birthday in June of 2019.

The Rodgers Memorial Library is the second-highest ranked town facility in the 2019 Master Plan survey with 64% of respondents rating the Library as "excellent" and 20% rating it as "good". This survey comment expresses the views of many residents: "*We have a fabulous library which is open to many of the community needs. My favorite place in Hudson*!" The facility is a 19,661 square foot building with architecture reminiscent of the Arts and Crafts style. The Library is situated on the eastern edge of a 27.43-acre parcel adjacent to the Hills-Garrison Elementary School and just south of Alvrine High School. The first floor includes the Children's Room (approximately 3,800 square feet), the Adult Reading Room/Reference/Study Rooms (approximately 5,200 square feet), the Lobby (approximately 1,400 square feet), and the Administrative Wing (approximately 2,500 square feet). There are currently 9 full-time employees and 15 part-time employees. The full-time employees all work 40 hours/week and the part-time employees' schedules range from 6 hours/week to 28 hours/week. The Library also offers extensive eResources grew in response to the COVID-19 epidemic.

## Existing Needs

The Library could benefit from more small group meeting space that could also be used for a teen/tween space. There are currently 2 study rooms which seat 6-8 people, a children's programming area which has child-sized furniture, and the Community Room which seats up to 60 people. When there is a need for space for a group of 10-15 people, staff must put them in the Community Room. Unfortunately, staff frequently turn groups away due to a lack of meeting space.

## Future Needs

Looking to the future, the biggest challenge for the library is that it is located in the north-western part of town. Residents who live south of Walmart and east of Benson Park comment that it is a "long way" to the library. Consideration should be given to increasing the use of the former Hills Memorial Library, especially for meeting space and expanded programming. The historic former library building is more centrally located and is currently used on a limited basis only. The Library should also continue to expand its online virtual programming.

# POLICE DEPARTMENT

## Existing Conditions

The Hudson Police Department is located on a 4.56-acre site at 1 Constitution Drive near the DPW facility. It contains the Emergency Operations Center, Animal Control Facility, and Kirby Building. The existing 14,000 sq. ft. building was constructed in 1995 and was designed to meet the department's needs until 2005. The interior of the facility has been modified to accommodate additional staff since its construction. The number of employees in the Police Department is shown in Table VIII-3. As of 2019, there were 69 full-time employees and 16 part-time employees.

**Table VIII-3. Police Department Employees**

| Employee | # of Employees | |
|---|---|---|
| | Full Time | Part-Time |
| Chief | 1 | 0 |
| Executive Coordinator | 1 | 0 |
| Department Chaplain | 1 | 0 |
| Field Operations Bureau Captain | 1 | 0 |
| Patrol Lieutenant | 3 | 0 |
| Patrol Sergeant | 3 | 0 |
| Patrol Officers | 20 | 0 |
| Special Investigations Captain | 1 | 0 |
| Special Investigations Detectives | 8 | 0 |
| Special Investigations Sergeant | 1 | 0 |
| Legal Division | 5 | 1 |

| Employee | Full Time | Part-Time |
|---|---|---|
| Administrative Bureau Captain | 1 | 0 |
| Support Services Sergeant | 1 | 0 |
| Support Services Officer | 1 | 0 |
| School Resource Officer | 3 | 0 |
| Communications Lieutenant | 1 | 0 |
| Communications Division | 9 | 0 |
| Animal Control Division | 1 | 1 |
| School Crossing Guards | 0 | 6 |
| Facilities Management | 1 | 1 |
| Records Division | 2 | 0 |
| Special-Part Time Officers | 0 | 6 |
| Total | 80 | |

Source: Town of Hudson 2022 Annual Report

## Existing and Future Needs

Expansion and renovation of the Police Department facility was approved by Town Vote under Article 9 of the FY 2023 Warrant in the amount of approximately 6 million dollars. The project will expand the size of the police facility by approximately 5,775 square feet and partially renovate the existing 9,544 square foot facility. The expansion is proposed on the west end of the building, taking up some of the employee parking lot. As noted in the Town's 2020 CIP, even with the addition of the 5,700 square feet, the police facility will still not meet the size originally planned for in 1995. The Town's CIP Committee strongly recommended this proposal.

# FIRE DEPARTMENT

## Existing Conditions

The Hudson Fire Department utilizes five facilities: 1) the Administration Building on Ferry Street; 2) the Leonard A. Smith Central Fire Station which is adjacent to Town Hall on School Street; 3) the James A. Taylor Memorial Fire Station on Lowell Road 4) the Robinson Road Fire Station on Robinson Road and 5) the Burns Hill Storage Facility located at 88 Burns Hill Road. The Hudson Fire Department is an all-hazards fire department that responds to Fire, Rescue, Hazardous Materials Incidents as well as Emergency Medical Services (EMS) operates out of fire stations that are strategically located to minimize response times throughout town. . The Fire Department consists of 60 employees including 44 in suppression, 5 in Inspectional Services, 4 dispatchers, 5 in administration and 2 part-time personnel.

All three fire stations are staffed 24 hours a day, seven days a week with 11 personnel on duty at all times. The Fire Department is organized into three divisions that include Fire, Administration, Operations/EMS, and Inspectional Services. All personnel are cross-trained in both Fire/Rescue and EMS disciplines and respond to all calls for service. There are currently three ambulances with a fourth on order. Hudson contracts to provide ambulance coverage to the Town of Litchfield as well.

## Administration Building

The Hudson Fire Department Administration Building is located on a 0.171-acre site at 39 Ferry Street. The existing 980 sq. ft. building was constructed in 1957 and acquired by the Town in 1999. The use of this facility is limited to the Department's Administration and Fire Prevention Divisions. The purchase of this facility provided immediate additional floor area for existing needs when it was acquired. The facility was recently renovated with a new roof, HVAC system, flooring, and windows. The existing parking is limited and provides for employees only. Customers of this facility must find off-site parking.

## Leonard A. Smith Central Fire Station

The Central Fire Station, located on the 1.4-acre Town Hall site, was built in 1952 and partially renovated in 2016. The existing 9,800 $ft^2$ facility was constructed before the Department had any full-time employees. The facility houses an engine, ladder, ambulance, tanker, and squad truck as well as the shift commander's vehicle. The station is the hub of all operations for the department. There are four (4) Captains and sixteen (16) Firefighters at the Central Station.

## James A. Taylor Memorial Station

The James A. Taylor Memorial Station was newly constructed and opened in 2018, on a 1.19-acre lot at 204 Lowell Road. It was dedicated to the memory of a fallen Hudson Firefighter, who lost his life in the line of duty on July 27, 1981. There are four (4) Lieutenants and eight (8) Firefighters staffing this station with an engine, forestry truck and ambulance.

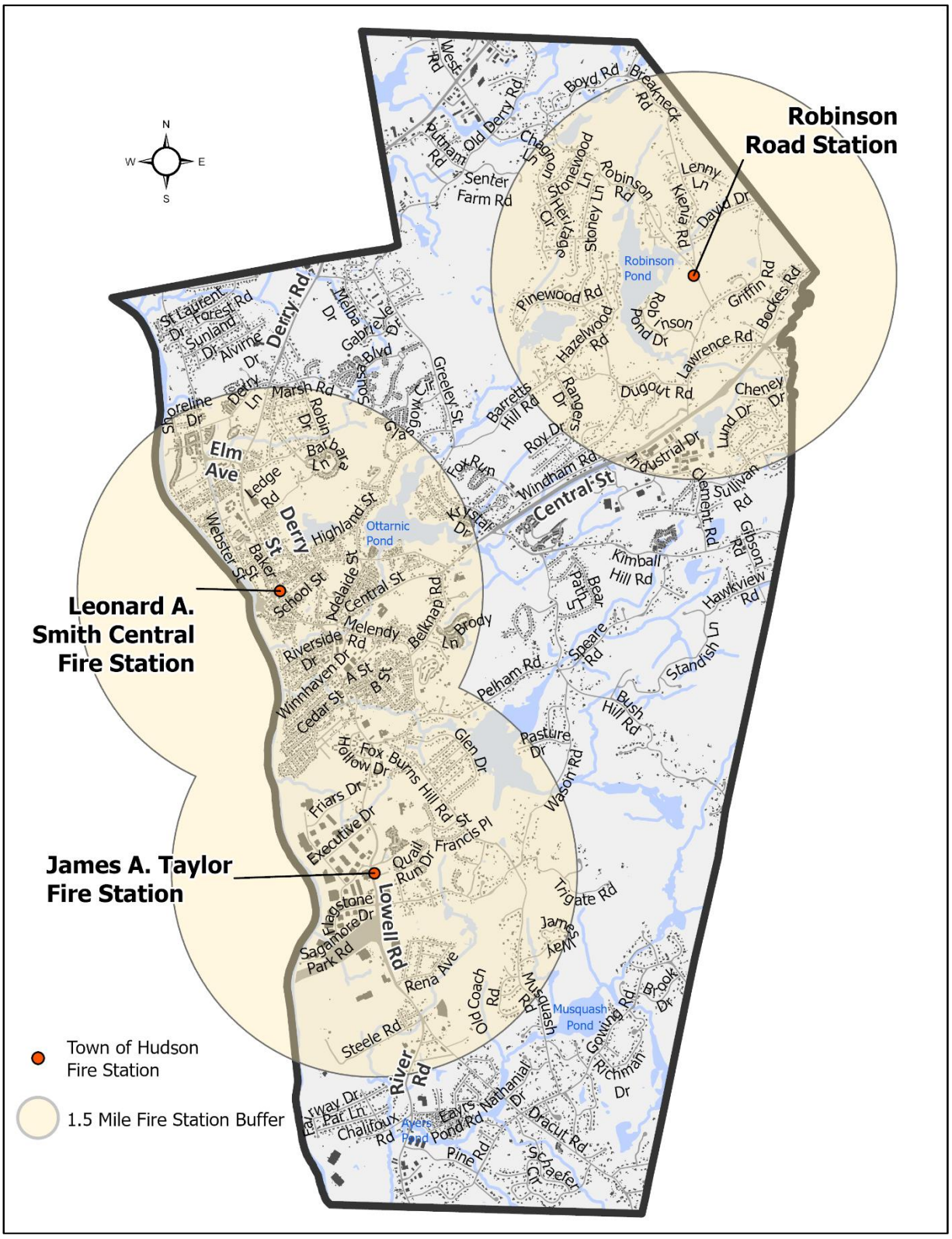
## Robinson Road Fire Station

The Robinson Road Fire Station is located on a 45.7-acre site at 52 Robinson Road. The existing 5,890 $ft^2$ facility was constructed in 1982. The facility includes two bays, a meeting room, office, and storage space. There are four (4) Lieutenants and eight (8) Firefighters staffing this station with an engine, forestry truck and ambulance. Burns Hill Station The former station on Burns Hill Road now serves as storage for EMS, fire equipment, Fire Prevention, Administration, and the Police Department.

## Town Hall

The Inspectional Services division of the Fire Department has operated in Town Hall since 2011, sharing office area with the Town's Land Use Division. Inspectional Services includes a Fire Marshal, Fire Prevention Officer, Building Official, Building Inspector and an Administrative Aide.

**Map VIII-2. Fire Department Response Radius**



# PARKS AND RECREATION

*Library Park*

## Existing Facilities

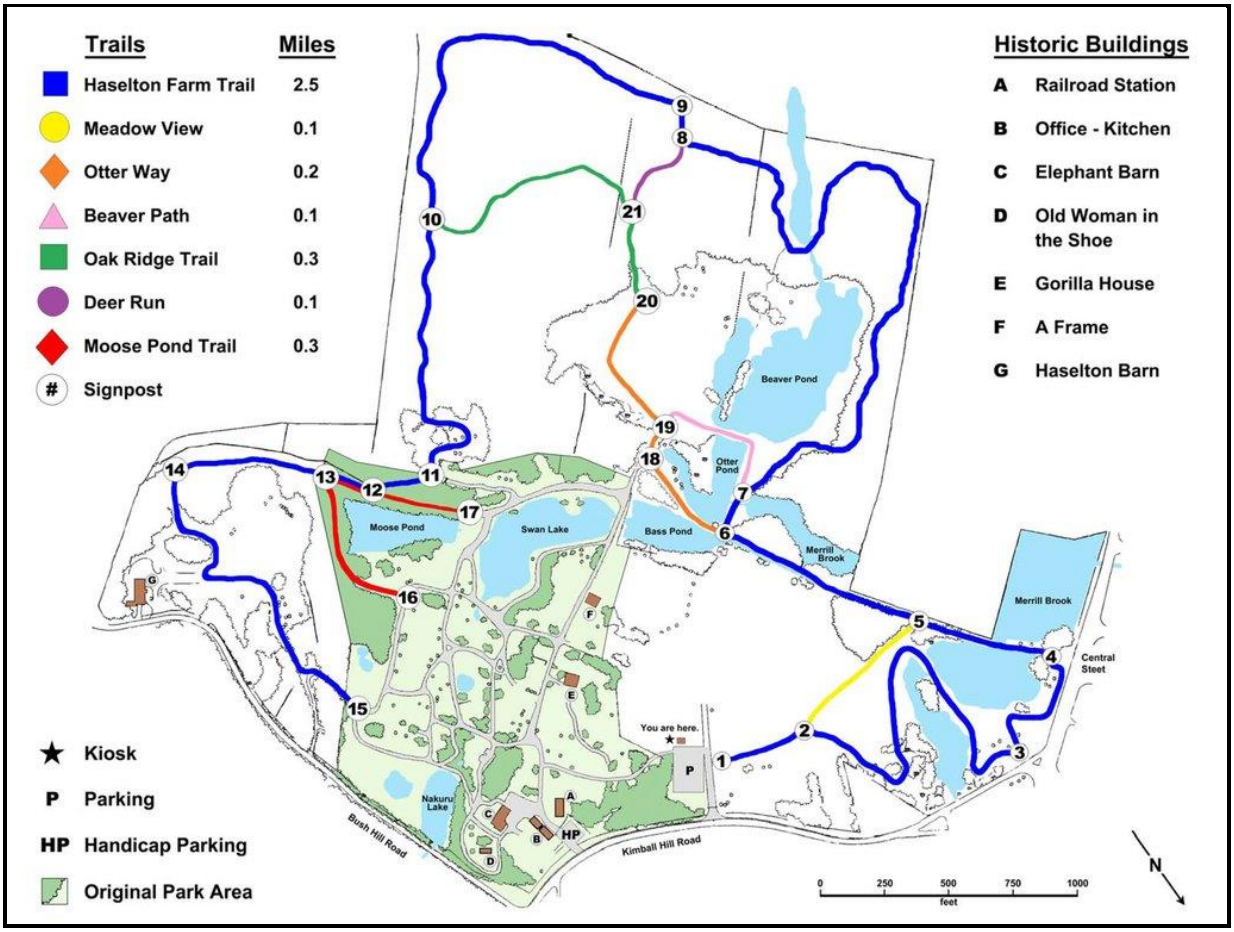
The Town of Hudson provides for a diverse range of active and passive recreational facilities throughout the Town. In addition to parks and athletic fields, Hudson offers a public beach, expansive hiking trails, an indoor recreation center, and a well-programmed senior center. The Town's existing facilities are described in greater detail on the following pages.

### Benson Park

Benson Park is one of Hudson's most treasured assets and its most popular park. The park received the highest overall rank of any town facility with 63% rating it as "excellent" and 32% as "good" in the 2019 Master Plan survey. The park was also repeatedly noted as one of the Town's most notable features during public input sessions. Benson Park is a 166-acre property created on the site of the former Benson's Wild Animal Farm property, a once-popular amusement park and zoo dating back to 1924. The Benson's property was purchased by NHDOT in 1992 to create a wetland mitigation site for wetland impacts that were anticipated to result from the construction of the proposed Circumferential Highway. After state support for the project was dropped, the Town of Hudson and NHDOT entered into an agreement that allowed Hudson to acquire the property at a reasonable price but with stringent

restrictions to maintain the land as a passive recreation park while preserving some its most important historic features. The agreement was finalized in 2008. Key language in the deed reads that "the conditions of the buildings and the property as of the date of transfer of title to the town shall be considered the baseline for evaluating the town's responsibilities herein," to ensure that Hudson will maintain and/or improve existing conditions. A *Benson's Property Master Plan*[3] was completed in 2002.

Today, Benson Park features over 4 miles of hiking and walking trails for visitors of all skill levels. The trails are open to the public year-round and leashed dogs are also welcomed. Other features include several ponds, a large playground, a 9-11 memorial, a bandstand, a large parking lot, and a dog park. A number of important historical structures from Benson's Wild Animal Farm can also be found on the property including the former Elephant Barn, the Old Woman in the Shoe, Gorilla House, the A-Frame, and the Haselton Barn. Some of the park's major features are depicted on the map below.




One of the park's newest features is the 9/11 memorial completed in 2012. The memorial features a 23-foot-long piece of steel from one of the Twin Towers. Another popular attraction, the Hudson Dog Park, is located within a securely fenced area inside the park providing separate areas for large and small

dogs. Another important recreational facility, the Hudson Senior Center, is located right at the main entrance to Benson Park.

Benson Park is maintained by the Department of Public Works with the assistance of a dedicated group of volunteers including the Benson Park Committee and the Friends of Benson Park. The latter supports the park through fundraising and promotion.

*Swan Lake, one of Benson Park's most popular attractions*

## Existing and Future Needs

Maintaining and improving Benson Park should continue to be a top priority for the Town of Hudson. Given its popularity, consideration should also be given to expanding the park through the acquisition of vacant and underutilized properties to the northwest and southwest. The Benson Park Committee submitted two projects to the 2020 Hudson CIP. One is for the replacement of the Haselton Barn roof. The roof was leaking, the shingles are falling off, and the water penetrating the roof is causing rapid deterioration of the structure. In 2022 the Board of Selectmen authorized the expenditure of approximately $65,000 to be reimbursed through the Benson Park Capital Reserve Fund to repair and install a 25-year architectural asphalt shingle roof. The other CIP project submitted was for the replacement of the kitchen roof. The temporary roof has reached the end of its serviceable life and needs to be replaced before the building suffers damage from water penetration. The New Hampshire Division of Historic Resources has deemed the clay tile roof that was originally on the building to be a "character-defining feature," requiring the use of the original product manufactured by the Ludowici

Roof Tile Co.  However, due to supply issues, an asphalt shingle roof was installed in 2021 as a matter of necessity.

In 2021, at the request of the Conservation Commission, the Planning Board recommended the use of recreation fees to hire the Nashua Regional Planning Commission to produce GIS mapping and navigable, mobile trail maps for seven popular passive recreational areas: Benson Park, Musquash Conservation Land, Robinson Pond Recreational Area, Kimball Hill Town Forest, Rangers Town Forest, Colburn Town Forest, and Pelham Road Conservation Land.

Other future improvements include the completion of a museum within the former Elephant House that houses historic artifacts from the former Benson's Wild Animal Farm. In addition, the Town has identified the following potential improvement projects:

- Identify tree and plant species with markers inside the park.
- Refurbish picnic tables.
- A project on "leave no trace" principles and how to incorporate them in the park.
- Update and install permanent signs to replace the temporary signs on the buildings.
- Design a self-guided nature trail brochure.
- Non-native plant removal and replace with native trees and shrubs.
- Investigate, recreate, and install the totem pole from the old park.
- Create a tree barrier between Route 111 and the Haselton Farm trail.


*Hudson Senior Center*

## Senior Center

The Hudson Senior Center is an attractive facility located in the "North Barn" at Benson Park. The facility includes multiple rooms and spaces for hosting a wide range of activities including a dining room with a coffee station and a piano, a pool table, a sitting area with comfortable furniture, a lounge with an organ, puzzle, card, and game tables and a patio. Activities include billiards, ping pong, snowshoeing, a walking group, book club, knitting, and quilting groups, and other activities. As Hudson's senior population (65+) is projected to be its fastest-growing population group, ensuring that the facility has the capacity to meet demand should be a priority. The lower level of the North Barn also houses Hudson Community Television studio (HCTV). HCTV provides live cablecasts of Town and School District Meetings and has studios available for local programming.


## Community Center

The Community Center is an indoor recreational facility located on an 8.84-acre site on Lions Avenue. The building also houses the Town's Recreation Department. The Center features a recently installed multi-purpose basketball court that can hold over five hundred people. The site also provides three Pickleball Courts - an increasingly popular racket sport. The Community Center offers a wide variety of recreation programs including youth and adult basketball, a summer youth program, dances, comedy shows, and other activities. Due to its size, the Community Center also hosts civic events including voting, Town and School Deliberative sessions, and Candidates Nights. At the March 2021 Town Vote, the voters approved an additional polling place. Beginning with the March 8, 2022 election there are two voting wards. Ward 1 votes at the Hudson Community Center and Ward 2 votes at Alvirne High School.

The Community Center was also used for Planning Board meetings on many occasions between 2020 and 2023. Several site plan applications drew the interest of many residents necessitating additional capacity for public hearings. As a result, it became evident that a larger meeting room at Town Hall may be needed in the future.

## Robinson Pond

Robinson Pond is a 47-acre park located on Robinson Road that features the Town's only public beach providing both a swimming area and a boat launch. At 88-acres, the pond is Hudson's largest surface water body. The beach is open from Memorial Day weekend until Labor Day weekend but is available only to Hudson residents and their guests. In addition to the beach and boat launch, the site features picnic tables, barbeque grills, and portable toilets in the summer. There are no lifeguards on duty. Water testing is conducted regularly, however, there have been beach closures over the years due to water quality issues. Given the popularity of Robinson Pond, protecting its water quality should remain a high priority for the town, and consideration should be given to acquiring adjacent underdeveloped land to enhance its long-term protection. Acquiring parcels adjacent to the park would also be consistent with

Master Plan Natural Resources goals to "Expand Conservation areas and increase open space" and to "Build on existing open space assets such as Benson Park and Robinson Pond."

## Merrifield Park

Merrifield Park is on a 9.43-acre site located at the junction of Burnham Road and Ferry Street with frontage on Ottarnic Pond. The park offers a regulation size sand volleyball court, playground equipment, picnic tables, barbeque grills, and walking trails.

## Merrill Park

Merrill Park is a small, underdeveloped park that provides Hudson's only public access to the Merrimack River. The site has a limited number of parking spaces at the entrance. The property was purchased with a grant from the Land and Water Conservation Fund. Currently, it provides a few picnic benches and carry-in canoe/kayak access to the river. Various plans have been prepared over the years to develop the park more fully and allow for motorboat access including site plans prepared in 1987 and 1991, but efforts have been hampered by asbestos contamination and associated site development costs. Increased access to the Merrimack River is a recreation/conservation priority identified as part of the Master Plan survey and outreach process. Comments such as the following reflect the views of many residents:

> "A boat ramp at Merrill Park should be a top priority. It's a cheap investment and the residents of this town deserve it."

> "We have long overlooked the Merrimack River and having access for passive recreation would be a great addition. The Lowell boat launch is a great example of what could be accomplished. Merrill Park could be improved to accomplish this idea."

Given the importance of Merrimack River access to the community, every effort should be made to obtain necessary funding through grants and other sources to develop and implement a site clean-up and improvement plan for Merrill Park that includes a boat ramp, passive recreation areas, and adequate parking. In 2022 the Conservation Commission applied for a $30,000 grant with a $10,000 match for a total of $40,000 to rehabilitate an area of Merrill Park and to install a non-motorized boat launch. The grant was part of the Municipal Boat Launch Investment Program through the Governor's Office for Emergency Relief and Recovery funded by the American Rescue Plan Act (ARPA) of 2021 from the Coronavirus State and Local Fiscal Recovery Fund. The $10,000 town match was received in the form of a donation from Brox Industries.

*Merrimack River Access at Merrill Park*

## Greeley Park

Greeley Park is a small 3.47-acre park located on Greeley Street near the intersection with Central Street. The park features a large, ADA accessible playground, basketball courts, and a youth baseball field with bleacher seating.

## Jette Field & Sousa Field

Jette Field is a 3.58-acre park located at 20 County Road. It features a softball field with bleachers for spectators. Sousa Field is an adjacent baseball field that was completed in 2008 on School District land to the rear of Nottingham West Elementary School.

## Pickleball Courts

At the corner of Central Street and Melendy Road, the Town recently developed new outdoor pickleball courts on the site of a former skate park to accommodate a growing interest in the sport. Pickleball is a relatively new racket sport that combines elements of tennis, badminton, and table tennis.

## Library Park

Though not managed by the Recreation Department, Library Park is a small (.85-acre), but nonetheless prominent green space located at a major gateway into town. The triangular park is bounded by Derry, Ferry, and Library Streets, and overlooking the park are some of Hudson's more notable historic buildings. The park features a largely ornamental bandstand and hosts Hudson's most prominent

seasonal Holiday display. Due to its size, limited access and high traffic volumes on abutting roads, the park enjoys little use. As highlighted in Chapter I – Community Vision & Goals, the desire for a defined Town Center for Hudson is one of the Master Plan's overriding goals. Though small, Library Park does serve as a town or village green for Hudson and its use should be promoted through enhanced pedestrian access including signalized crosswalks from the northeast corner of Fulton and Ferry Streets to the southwestern corner of the park and a crosswalk to the northern tip of the park from the southwestern corner of Highland and Library Streets. Increased amenities such as additional benches should also be provided, and consideration should be given to installing ornamental fencing along the Derry and Ferry Street sides of the park to enhance the safety and security of park users. Additional programming, especially with regard to the bandstand, should also be considered.

# SOLID WASTE

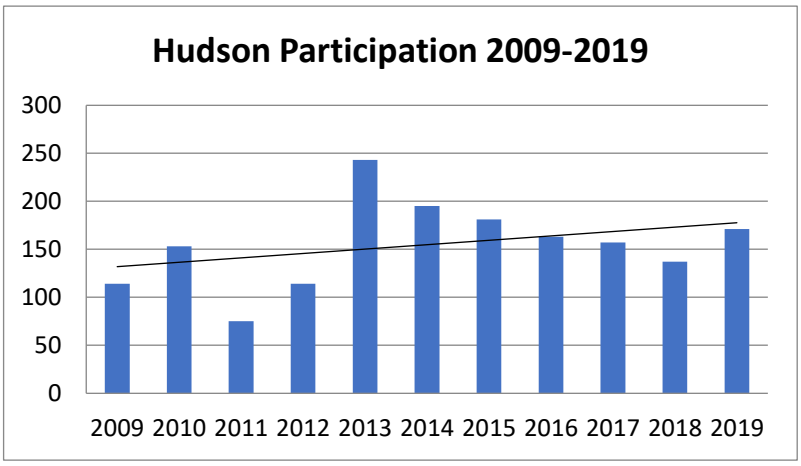
## Solid Waste Disposal

The Town of Hudson closed and capped its landfill on West Road in 1991 due to leachate problems. The site is now used as a transfer station and recycling center. In 2022, about $900,000 of ARPA funds were used to fund improvements at the transfer station: retaining wall, stormwater improvements, grading and pavement. Hudson residents are provided with curbside pickup of residential waste and recyclable materials through a private contractor. A Solid Waste Study Committee is responsible for recommending options for each contract cycle. In Fiscal Year 2019, the Town residents generated 10,472 tons/year of solid waste. Of that total, 2,533 tons/year or 24.19% were recycled.

## Household Hazardous Waste

The Nashua Regional Household Hazardous Waste/Small Quantity Generator Collection (HHW-SQG) Program is open to the residents of Hudson and surrounding communities. HHW comes from everyday products used in the home, yard, or garden and is corrosive, flammable, toxic, or reactive. The program provides a location for residents to safely dispose of HHW during various days of the year at a central location at the Nashua Public Works Garage. Hudson's household participation rates have risen from 114 in 2009 to 171 in 2019. Over the past decade, the peak year of participation for Hudson was 2013 with 243 households partaking in the events of that collection season.

| Year | Number of Hudson Households |
|---|---|
| 2009 | 114 |
| 2010 | 153 |
| 2011 | 75 |
| 2012 | 114 |
| 2013 | 243 |
| 2014 | 195 |
| 2015 | 181 |
| 2016 | 163 |
| 2017 | 157 |
| 2018 | 137 |
| 2019 | 171 |




# PUBLIC WORKS DEPARTMENT

## Existing Facilities

The Hudson Highway Department has formally been changed to Public Works as of November 2018. The Department is located on an 18.6-acre site at 2 Constitution Drive. 8.26 acres of the site is subject to a conservation easement. The 19,600 $ft^2$ facility was constructed in 2000 to replace various obsolete facilities. The facility includes a 15,400 $ft^2$ covered garage with maintenance functions, 2,000 $ft^2$ of office space, and 2,000 $ft^2$ of the mezzanine for storage. The site also includes a 3,600 $ft^2$ salt shed also constructed in 2000. The salt shed meets all existing environmental regulations for salt containment. The Public Works Department currently has 1 part-time and 26 full-time employees. A list of employees is provided in Table VIII-7.

**Table VIII-7. Public Works Department Employees**

| Department | # of Employees | |
|---|---|---|
| | Full Time | Part-Time |
| Public Works Director | 1 | 0 |
| Public Works Supervisor | 2 | 0 |
| Foreman | 3 | 0 |
| Equipment Operators | 5 | 0 |
| Mechanic | 1 | 0 |
| Traffic Technician | 1 | 0 |
| Truck/Driver Laborers | 12 | 0 |
| Operation Assistant | 1 | 0 |
| Receptionist | 0 | 1 |
| Total | **27** | |

Source: Town of Hudson Public Works Director, December 2019.

## Existing and Future Needs

The existing facility was constructed in 2000 to meet the needs of the Public Works Department for the foreseeable future. As of 2019, the facility is still adequate to meet current town needs. If the Town sees substantial growth in the future the Public Works Department may need to expand its facilities.

# PUBLIC SCHOOLS

The Town of Hudson belongs to SAU 81 and offers five public schools. There are two elementary schools, the Hills Garrison Elementary School, and the Nottingham West Elementary School. There is also an Early Learning Center that offers preschool, half-day kindergarten, and first grade. The Hudson Memorial School serves as the middle school and provides grades five through eight. Alvirne High School serves grades nine through twelve and houses the acclaimed Wilbur H. Palmer Career and Technical Center, a program unparalleled in the Nashua region.

Public schools in Hudson are governed by the five-member locally elected Hudson School Board supported by a Superintendent. The School Board offices are in the former Webster Street School at 20 Library Street. Total school district enrollment in April of 2018 was 3,426, which has decreased from last year.[4] The district has been experiencing a declining trend in enrollment for grades 1-12 and projects that this trend will continue in future years.

In addition to Hudson's public schools, the community is served by the Presentation of Mary Academy. Presentation of Mary dates back to 1926. The school is housed in a historic building located at 182 Lowell Road. The academy provides a private Catholic school alternative for the region that includes preschool, kindergarten, elementary, and junior high schools with an enrollment of over 500 students. Recent improvements to the school include a state-of-the-art $1.5 million-dollar multi-functional athletic field that is made available to the community on a rental basis, and the Thompson Center for Athletics and Performing Arts, a 36,000 square foot gymnasium and arts center completed in 2018.

## Existing and Future Needs

Each of Hudson's schools together with planned improvements included in the Town's 2020 Capital Improvements Program is described on the following pages by the facility. On March 16, 2020, the Hudson School Board adopted the following facility goals and priority objectives:

As the Board seeks to incorporate the most appropriate and cost-effective risk management techniques for loss prevention and control and to overcome deficiencies in its physical plant, it will strive to provide new and remodeled facilities that will offer the best possible physical environment for learning and teaching. The Board specifically recognizes the need for and importance of regular and substantial

[4] New Hampshire Department of Education, 2017

capital maintenance, renovation, improvement, and expansion consistent with realistic fiscal constraints. The Board aims specifically toward:

1. Facilities, including buildings, ground, and playing fields, will accommodate organization and instructional patterns that support the district's educational philosophy and instructional goals.
2. Meeting all safety requirements through the remodeling and renovation of older structures.
3. Providing building renovations to meet requirements regarding the availability of public-school facilities to persons with disabilities whenever possible.
4. Building design, construction, and renovation that will lend themselves to low maintenance costs and the conservation of energy.
5. Facilities that will also lend themselves to utilization by the community in ways consistent with the overall goals of the district.
6. Keeping the community informed about the condition of district facilities as well as the perceived needs in the areas of capital improvement expansion and acquisition. Decisions pertaining to education specifications of new buildings and those undergoing extensive remodeling will be developed with the input of teachers, students, parents, and the community.


## Alvirne High School

Alvirne High School, pictured above, was originally constructed in 1948 through a generous gift from the Hills family who's stately historic home still stands across the street. The school was severely damaged in a fire in 1974 and was subsequently rebuilt. The legacy of the Hills family, who once

operated a dairy farm on the site, is still visible today, most notably in Alvrine's outstanding Wilber H. Palmer Career and Technical Education (CTE) Center.

The Palmer CTE Center is a comprehensive Career and Technical Education program that offers programs in Finance, Accounting, Heavy Duty Mechanics, Pre-engineering, Computer Science, Drafting & Design, Digital Media, Building Trades, Culinary Arts, Education, Health Science, Marketing, Air Force JROTC, Welding and other programs and as a result of the Hills family legacy, Alvrine also offers the region's most robust agricultural program. The school's Farm spans over 100 acres with facilities for horses, donkeys, and a working dairy farm with several milking cows. Milk from Alvrine's cows is used to make cheddar cheese under the well-known Cabot brand name which can be purchased locally in Hudson as well as across the region. Through the Farm, the CTE program is also able to provide a hands-on Veterinary Science program. In addition, Alvrine supports a strong Forest and Wildlife Management program utilizing its 100-plus acre registered tree farm to train students in operating forest management equipment and in the management and study of forest ecosystems. Complementing its academic offerings, Alvrine's expansive land area also accommodates community hiking trails and a Community Garden. The CTE building was renovated, modernized, and expanded in 2021.

On the 2023 ballot, Warrant Article 1 seeks to raise $27 million to renovate and add to Alvirne High School.

## Hudson Memorial School

Hudson Memorial School is a Middle School serving grades six through eight. A $300,000 warrant article was passed at the 2020 School District Meeting to fund a roof replacement project. The roof membrane was removed and replaced. Roof decking and insulation will be replaced as needed. In addition, a

$350,000 field renovation is planned for 2023/2024. The current football/soccer field will be redesigned, excavated and a new subbase and sod will be installed. The new field will also be graded to allow for safer play and the current irrigation system will be expanded to serve all playing areas.

### Early Learning Center

The Early Learning Center is a Pre-K through grade one school that includes Dr. H.O. Smith School and the Library Street School. Both buildings need roof replacements as the current roofs have exceeded the original manufacture warranty. These projects were submitted to the FY 2020 Capital Improvements Plan. Warrant Article 9 on the 2023 ballot seeks to raise $30,000 to expand the playground at Dr. H.O. Smith Elementary School.

The Early Learning Center also has a project submitted to the Capital Improvements Plan to the current half-day kindergarten to full day.

### Hills Garrison Elementary School

Hills Garrison is an upper-elementary school serving approximately 400 students in grades 2 through 5. A roof replacement was completed in 2021.

### Library Street School

Currently, a $400,000 roof replacement is proposed for the school in 2023 as Warrant Article 5 on the 2023 ballot. The entire roof membrane will be removed with decking and insulation replaced as needed.

## School District Conclusions

As noted in Chapter II – Population & Housing, no significant increase in school-age children is anticipated in Hudson in the foreseeable future. While the CTE improvements have been made the District is still seeking significant capital improvements to the High School. With the notable exception of full-day kindergarten which has yet to gain voter approval, remaining facility needs are largely focused on maintenance such as roof replacements and athletic field improvements. A focus on continued investments in school facility maintenance and improvements should continue.

# PUBLIC WATER SUPPLY

Hudson's public water supply system has two primary functions. The first is to supply water for domestic, commercial, and industrial use and the second is to provide adequate fire protection. Consumers New Hampshire Water Company (CNHWC) previously owned the existing public water supply system. During the 1996 Annual Town Meeting, the Town of Hudson approved a measure to purchase the system and operate it as a municipal utility. The Town of Hudson now owns three water supply wells located in the Town of Litchfield and the water distribution system within the Town borders, including four public booster pumping facilities, three water storage facilities, and over 120 miles of water distribution pipe. The following are discussed herein: 1) existing public water supply system; 2) existing and future water demand and capacity; and 3) recommended improvement plan.

## Existing Public Water Supply System

### Water Supply Wells

The Town is supplied with water pumped from one active well located in Litchfield, the Weinstein well, which has a safe yield of 0.738million gallons per day (mgd) based on annualized usage. In addition,

Pennichuck Water Works supplements Hudson's water supply with water from the Pennichuck Water Works (PWW) Treatment Plant with a minimum of 1 mgd and a maximum of 2 mgd. This is metered through the Taylor's Falls pumping station meter station which is owned and operated by PWW. Water enters the Town through a newly metered 16-inch water main off Adam Drive and a 12-inch transmission line under Veteran Memorial Bridge (Pennichuck). The well and the Hudson distribution network provide water to the towns of Hudson, Litchfield, Londonderry, Windham, and Pelham. By contract, up to 15% of the safe yield of the three wells can be utilized by Pennichuck Water Works for Litchfield, Londonderry, Windham, and Pelham

## Storage Facilities

Three storage facilities provide 3.95 million gallons of water storage capacity in the main service system. The 2.0-mg Marsh Road tank is located off Marsh Road in the northwestern part of Town, the 0.95-mg Gordon Street Standpipe is located off Gordon Street near the geographic center of Town and the third 1 MG tank is located on the south end of town.

## Booster Pumping Facilities

Three booster pump stations provide water to three separate areas with high topographic land elevation. There are also several privately owned and operated high elevation booster pump stations not included in this discussion. Table VIII-12 summarizes the hydraulic grade line and capacity of the three pump stations.

**Table VIII-12. Marsh Road, Windham Road, and Compass Point Pump Stations**

| Station | Date Installed | Capacity* (gallons per minute) |
|---|---|---|
| Marsh Road | 1986 | 1000 |
| Windham Road | 2017 | 2000 |
| Wason Road | 2008 | 1000 |
| Route 102 | 2014 | 1000 |
| Overlook | 2010 | 1000 |

Source: Town of Hudson 2020
* Domestic Flow Capacity without Fire Pumps

The Marsh Road station draws water from and is located adjacent to the 2.0-million-gallon Marsh Road water storage tank. It is currently the only below-ground station, and the Town is planning to bring all the electrical and main mechanical components above ground by 2024. Windham Road was completely overdone in 2017 and is currently the biggest pump station.

### Distribution System

The over 120 miles of the water distribution system (pipeline) is relatively new and of generally good shape. Portions of the original water distribution system in the town center were constructed prior to 1930 and may be of inferior unlined cast iron pipe and in need of replacement. There is a need to locate and document all internal pipe conditions in the town center area and prioritize replacement.

## Existing and Future Water Demand and Capacity

### Water Demand

Table VIII-14 summarizes the average demand for 2022.

**Table VIII-14. Average Water Demand, Hudson 2019**

| Year | Population Served | Average Daily Demand (million gallons per day) |
|---|---|---|
| 2022 | ~25,000 | 1.5 (non-peak season)<br>2.3 peak season |

### Water Supply

The well in Litchfield is capable of supplying a safe yield of 0.738 mgd. Of that supply, approximately 15% is supplied through Pennichuck Water Works to the Towns of Litchfield, Pelham, and Londonderry. Approximately 1.5 mgd was demanded by Hudson users in 2022 and the excess demand was supplied by Pennichuck Water Works Treatment Plant. Demand in 2023 is estimated to be the same. Hudson has the Veteran Memorial Bridge Transmission line that can provide an additional 2 MGD and the Merrimac crossing in Litchfield, which was completed in 2019 and can provide an additional 1.0 MGPD.

# SEWER

## Existing Conditions

Public sewer infrastructure is owned by the town, but Hudson uses the City of Nashua's wastewater treatment plant to process sewage. The Town has an agreement with the City of Nashua to utilize 12.58% of the capacity of the wastewater treatment plant. The agreement provides the Town with just over 2 million gallons per day (mgd) of treatment capacity.[4] The existing sewer infrastructure is limited to the more densely populated areas of Town along Ferry and School Streets, and the area bounded by Melendy Road, Pelham Road, and the Merrimack River (see Map VIII-1). The sewer flume connecting Hudson and Nashua has a capacity of approximately 4.0 mgd. The Town is currently discharging 1.1-1.2 mgd in Nashua and that is because of significant improvements in inflow and infiltration done by Hudson Public Works. The Town of Hudson currently has approximately 0.36 mgd of sewer allocations available for properties that could be developed within the sewer district.

The limitations on sewer expansion due to the limited capacity of the sewage treatment plant and the inter-municipal agreement can have a significant impact on the type and scale of development within the Town. The limitations essentially ensure that new development outside the sewer service boundary will develop at a much lower density due to larger lot sizes needed to accommodate septic systems and as required by the zoning code.

## Future Needs

The Town has completed a sewer treatment facility and a drinking water treatment facility assessment which could be followed in the future, if necessary. Given limitations on available capacity, the town should limit future sewer connections to properties within the existing sewer service area except where an expansion of the service area is closely tied to Hudson's land use and economic development goals.

# Conclusions & Recommendations

Overall, Hudson residents express a fairly high level of satisfaction with Town and School District facilities, and facilities such as Benson Park, the Library, the Senior Center, and Community Center. Residents also emphasized the importance of continuing to invest in and maintain existing facilities and suggested several specific improvements to various Town and School facilities. The following recommendations are derived from resident input as well as input from other sources including the 2020 Capital Improvements Program and other existing improvement plans.

### Town Hall

Improvements to the Town Hall are necessary to meet existing needs and to accommodate future growth as well as to provide adequate security, efficiency, and accessibility. Any future expansion of the existing building should include elevator access to the lower level and improved connections between the lower levels of the east and west wings. Should a relocation scenario be pursued, alternative locations should be identified that could advance the goal of developing a defined town center for Hudson.

## Library

The Rogers Library is a relatively new facility and one of Hudson's most highly regarded municipal facilities. The location in the north-western part of town, however, is a bit out of the way for residents who live in the south and southeastern parts of Hudson and existing meeting space is limited. Consideration should be given to increasing the use of the former Hills Memorial Library, especially for meeting space and expanded programming. The historic former library building is more centrally located and is currently used on a limited basis only.

## Parks & Recreation

- Benson Park: Maintaining and improving upon Benson Park should continue to be a top priority for the Town of Hudson. Given its popularity, consideration should also be given to expanding the park through the acquisition of vacant and underutilized properties to the northwest and southwest.

- Robinson Pond: Given the popularity of Robinson Pond, protecting its water quality should remain a high priority for the town, and consideration should be given to acquiring adjacent underdeveloped land to enhance its long-term protection. Acquiring parcels adjacent to Benson Park and Robinson Pond would also be consistent with Master Plan *Natural Resources* goals (see Chapter I – Community Vision & Goals and Chapter III – Natural Resources) to "Expand Conservation areas and increase open space" and "Build on existing open space assets such as Benson Park and Robinson Pond."

- Merrill Park: Given the importance of Merrimack River access to the community, every effort should be made to obtain necessary funding through grants and other sources to develop and implement a site clean-up and improvement plan for Merrill Park that includes a boat ramp, passive recreation areas, and adequate parking.

- Library Park: Though small, Library Park serves as a town or village green for Hudson and its use should be promoted through enhanced pedestrian access including signalized crosswalks from the northeast corner of Fulton and Ferry Streets to the southwestern corner of the park and a crosswalk to the northern tip of the park from the southwestern corner of Highland and Library Streets. Increased amenities such as additional benches should also be provided, and consideration should be given to installing ornamental fencing along the Derry and Ferry Street sides of the park to enhance the safety and security of park users. Additional programming, especially with regard to the bandstand, should also be considered.

- Senior Center: The Hudson Senior Center is well used and viewed favorably by the community. Given that Hudson's senior population (65+) is projected to be its fastest-growing population group, ensuring that the facility has the capacity to meet demand should be a priority and future facility expansion, or the development of a satellite facility may be required.

## Schools

As previously noted, no significant increase in school-age children is anticipated in Hudson in the foreseeable future that would warrant the construction of an additional school or significant school facility expansions. The Palmer CTE facility was recently renovated and expanded, and the School District is seeking voter approval for renovations of Alvirne High School. Remaining facility needs are

largely focused on maintenance such as roof replacements and athletic field improvements. A focus on continued investments in school facility maintenance and improvements is prudent and should continue.

## Sewer

Given limitations on available sewer capacity, the Town should limit future sewer connections to properties within the existing sewer service area except where the expansion of the service area is closely tied to Hudson's land use and economic development goals.

# CHAPTER IX. CONCLUSIONS & RECOMMENDATIONS

## Introduction

Hudson is a large town with a small-town feel. It enjoys an enviable location with convenient access to major employment centers, transportation, shopping, and recreational opportunities while retaining much of its historic rural character. Hudson residents appreciate the town's public facilities, parks, schools, and natural areas, and a strong sense of community prevails. The town seeks a balanced approach to growth and development that protects the features of Hudson that residents cherish while maintaining a strong tax base, preserving open space and mitigating the through-traffic that congests its most heavily traveled corridors. The goals outlined in the Master Plan are designed to help achieve these ends while guiding the development of the town into the future. This chapter provides a compilation of the specific goals, objectives, and recommendations included Master Plan chapters II through VIII.

## Population & Housing

Hudson should be a livable, affordable, multi-generational community that is appealing to and supportive of a diverse range of income groups, ages, and family types. Housing development in Hudson in coming years will need to reflect the demands of smaller households with fewer children, more non-family households, an aging population, more people living with disabilities and the growing disconnect between a declining rate of multi-family housing construction at a time when market demand for rental housing is increasing. Given limited public sewer capacity, an overwhelming desire of the community to retain its small-town feel, concerns over the extent of residential development and a desire to conserve open space, expansion of multi-family and higher density housing development beyond the districts where it is currently allowed is not likely to gain public support. Therefore, Hudson should strive to expand housing alternatives by leveraging the planning and zoning tools that it already has and making minor adjustments as needed. These effects should include the following actions.

- Consider amending its Zoning Ordinance to eliminate the requirement that Manufactured Housing only be permitted in the General District in Manufactured Housing Parks or Subdivisions and allow this type of housing by right in all residentially zoned districts.
- Consider adopting a Workforce Housing Ordinance to incentivize development of home ownership housing affordable to households making 100% of the median income and rental housing affordable to households at 60% of the median income.
- Encourage the incorporation of ADA accessibility accommodations within new residential developments to meet the needs of a growing population of people with disabilities;
- Maintain the town's existing *Open Space Development* ordinance to provide flexibility in residential development types while conserving open space;
- Support regulations that preserve suburban/rural housing conditions within developed portions of the General and General-1 zoning districts;
- Encourage the development of accessory dwelling units that correspond with community character and provide flexible regulatory options that do not deter implementation;

- Consider permitting detached accessory dwelling units to increase housing opportunities for multi-generational living and rental housing without unduly impacting neighborhood character;
- Support workforce housing developments in districts that have access to the municipal sewer and as part of new mixed-use developments; and
- Encourage more mixed-use and infill development where appropriate and within zones such as, but not limited to, Town Residential and Business districts

# Natural Resources

## Priorities for Future Conservation Efforts

Protecting open space is one of the highest priorities identified through the Master Plan public input process and this support has also been demonstrated by voter approval of efforts to acquire land for open space and to dedicate existing town-owned land to conservation purposes. Though significant sites have been acquired by the town in recent years, properties important for wildlife habitat, outdoor recreation and the overall quality of life and character of the town remain unprotected. When evaluating potential conservation site acquisitions, priority should be given to sites that meet the Master Plan goals of: Expanding Conservation areas and increasing open space, building on existing open space assets such as Benson Park and Robinson Pond, and expanding the existing trail network and facilitating connections between schools, parks, conservation areas, and other community facilities. In addition, a priority should be placed on preserving the remaining large forest tracks and important wildlife habitats.

## Robinson Pond

Robinson Pond is Hudson's largest pond and is the site of Hudson's only public beach. As previously noted, much of the Robinson Pond watershed is developed which contributes an increased amount of nutrients into the pond, resulting in a eutrophic condition. To protect and improve the condition of the pond while expanding recreational opportunities, a priority should be placed on acquiring additional undeveloped land adjacent to the pond for conservation and passive outdoor recreational uses. Hudson should promote natural and technological means to maintain and improve the water quality to ensure continued enjoyment by future generations. It is also noteworthy that the vacant land around Robinson contains some of the few remaining undeveloped concentrations of important farmland soils. Further, building upon existing open space at Robinson Pond is a specific goal of the Master Plan.

## Benson Park

Though opportunities to expand Benson Park are limited, like Robinson Pond, building upon Hudson's most popular park is a specific Master Plan goal. Most significant is a 23-acre parcel located at the park's northwest corner fronting on Central Street. This split-zoned property (Business/General) is poorly suited to development due in large part to the extent of wetlands on the site that are hydrologically connected to Merrill Brook and other surface waters in the park.

## Other Conservation Priorities

Other recommended priority conservation areas include undeveloped land adjacent to existing conservation land at Hills Meadow which include significant concentrations of undeveloped Prime and Important Farmland Soils and extensive 100-year and 500-year floodplains, and an undeveloped area adjacent to existing conservation land in the southeast corner of town. Recommended priority conservation lands are shown on Map III-17 alongside existing conservation and open space sites.

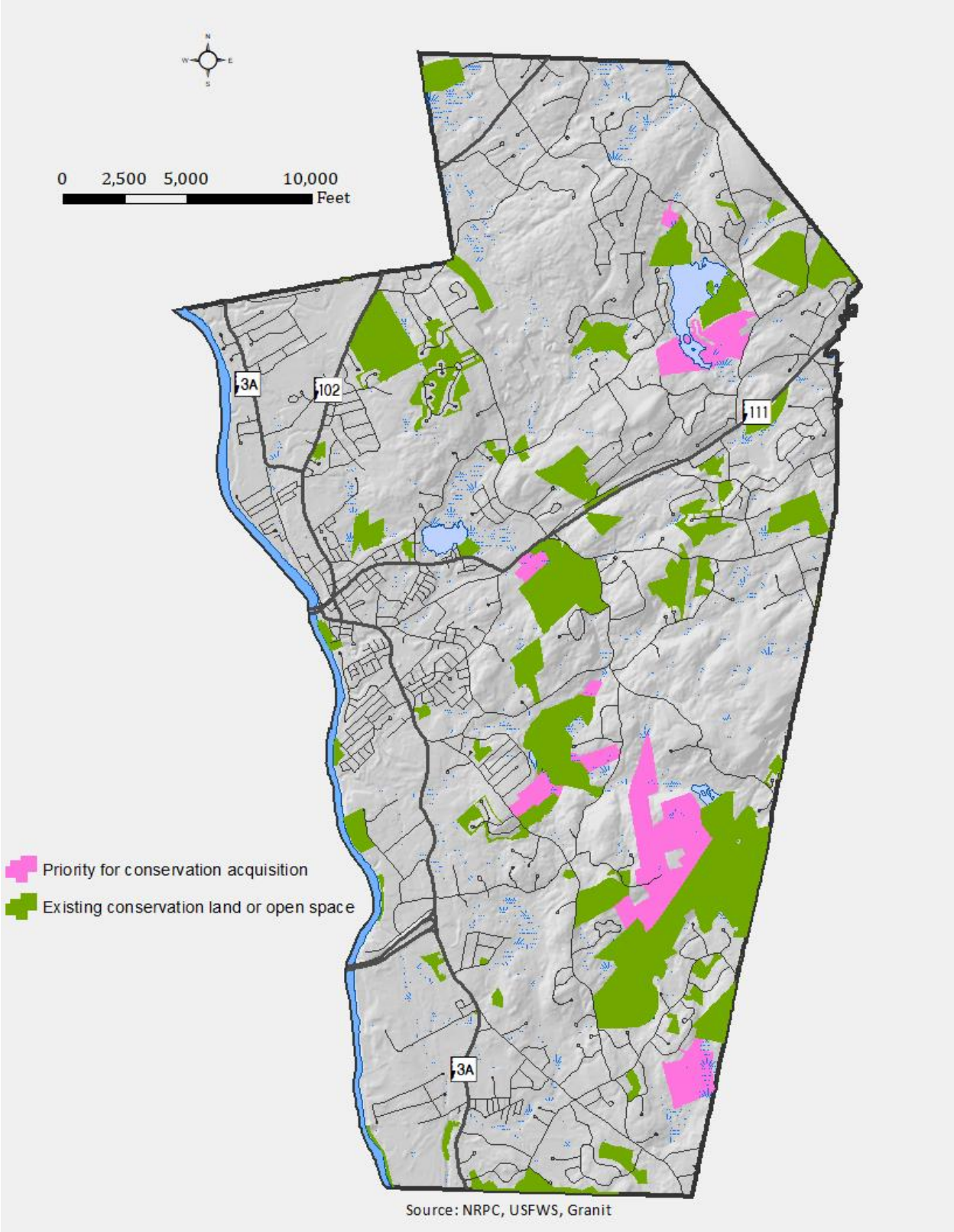
## Stewardship

The preservation of conservation land and open space through acquisition of property in fee, by easement, through Open Space Developments and by other means is critical, however, ensuring that wildlife habitats thrive and providing for optimal outdoor recreational opportunities while minimizing unwanted impacts requires careful planning and stewardship. There are multiple resources available to assist in developing management plans for conservation land. These include US Fish & Wildlife, UNH Cooperative Extension, The Society for the Protection of New Hampshire Forests and New Hampshire Fish & Game (NHFG). Funded by the US Fish and Wildlife Service, the New Hampshire Fish and Game Department recently published *Trails for People and Wildlife - A Guide to Planning Trails that allow People to Enjoy Nature and Wildlife to Thrive*. As noted on the NHFG website, the guide is:

> "a statewide tool that can be used to assess existing trails and site new trails in the most wildlife-friendly way. This mapping tool highlights areas particularly important for wildlife and areas that would be more suitable for trail development. The guidebook explains in more detail how recreation can impact wildlife, how to use the tool to minimize those impacts, and provides some real-world examples of how conservation organizations are using it to make their trail planning efforts most effective."

The Town, through its Conservation Commission, should consider developing management plans for each of its conservation sites as it has for the Rangers Drive Town Forest and the Hudson Town Forest. To further aide in overseeing our woodland resources, the Conservation Commission should consider forming a Forestry Committee to assist in the decision-making process for these unique parcels. Further, as new trails are planned or improvements to existing trail networks proposed, consideration should be given to using the Trails For People and Wildlife mapping tool to minimize adverse impacts to wildlife while maximizing outdoor recreational opportunities for the people of Hudson.

## Recommended Priority Conservation Areas



## Economic Development

Hudson is well situated for continued economic growth because of its proximity to centers of commerce in the Merrimack Valley and northern Massachusetts, its convenient access to existing and planned highway, rail and air transportation infrastructure and continued interest in non-residential real estate. Challenges to economic growth include limited amounts of undeveloped land zoned exclusively for commercial and industrial development, limited road capacity (especially on Lowell Road), limited public water and sewer facilities and the need to preserve the tax base while planning for residential growth. Based on the existing economic conditions in Hudson, there are several strategies that the Town can pursue to sustain and enhance economic growth for the foreseeable future.

1. Protect limited industrially zoned land from non-industrial encroachment. Hudson's existing industrial parks and industrially zoned land have limited growth potential with sufficient land to accommodate approximately 300,000 square feet of additional building area capable of supporting between 350 and 400 additional jobs. The manufacturing, R&D and office related jobs located in Hudson's existing industrial districts, especially in the Sagamore Industrial Park and BAE's Lowell Road campus, are generally high-paying and important both to Hudson's economy and that of the region. These areas also contribute mightily to Hudson's tax base, while demanding less in services than residential or retail commercial uses. Given limited expansion potential, it is imperative that the town resist attempts to develop land within its industrially zoned areas for residential uses unless the land is unsuitable for industrial development or for commercial uses that do not directly support industrial uses.
2. Since opportunities to expand existing Business Districts are limited, future commercial development will largely take the form of redevelopment. To encourage growth of future tax revenues and to meet the needs of a growing population, it will be important to maximize redevelopment potential within existing Business Districts. The town should review existing land use regulations, including setback, building height and parking requirements, to ensure that maximum supportable commercial development densities can be accommodated within existing commercial areas. At the same time, it is important to adopt design standards, improved landscaping requirements, access management regulations and improved pedestrian/bicycle accommodations to enhance the aesthetic appeal of Hudson's business districts and minimize vehicular congestion. Further, since most visitors experience Hudson by travelling through major commercial corridors like Lowell Road, Derry Road and Central Street, improving the aesthetic appeal of these areas will enhance the general perception of Hudson, thereby helping to support higher property values.
3. Protect the rural-residential character of Hudson's remaining large tracts of undeveloped land likely to be developed for residential uses through acquisition of additional conservation land and by rezoning large tracts of undeveloped in western areas of Hudson from G-1 to R-1.

## Transportation

The Town should budget for traffic improvements in its Capital Improvement Program and undertake a systematic transportation system improvement program. The Town should include in its CIP improvement projects for the NH 102/NH 111/Chase Road intersection, the NH 111/Kimball Hill Road/Greeley Road intersection and the NH 3A/County Road (south) and County Road/Belknap Road intersections. Hudson should also work closely with NH DOT and NRPC to secure federal funding for eligible road projects. In addition, the Town should refer to the Townwide Traffic Study completed in 2023 to assess the impact of changing patterns of future traffic conditions, especially along the corridors of NH 3A, Dracut Road, and NH 111. Additional overall recommentaions include the following:

- The Town should reconsider its pavement width requirements for local streets and sidewalks based on function and needs.
- The Town should employ access management techniques for the purpose of preserving roadway capacity and ensuring safe movement for vehicles entering and exiting curb cuts and side roads. These techniques should be applied to major corridors in the Town including NH 3A, NH 102, NH 111 and Dracut Road. Access management techniques that should be pursued include implementing minimum driveway separation distances based on roadway speed, entering into a Memorandum of Understanding with the NH DOT for review of access points and other techniques as recommended in the NRPC *Access Management Guidelines*, 2002.
- The Town should utilize traffic calming measures where appropriate based on traffic flow and right of way constraints to direct and control traffic through neighborhoods.
- The Planning Board should maintain close contact with the NH DOT to ensure ample opportunity for public and Town input regarding any planned changes to state roads within Hudson or routes feeding traffic into Town.
- The Town should consider utilizing the State's scenic designation statute to preserve the rural integrity of specific roads, with input from the Town's Highway Safety Committee and the public.
- The Town should work with NRPC and NH DOT to continue to study regional traffic patterns.

## Road and Sidewalk Layout

Local residential streets should be designed with consideration to the needs of children, pedestrians, and bicyclists. A residential street with pavement width of 20 feet is sufficient to allow for emergency vehicle access with *no* on-street parking. A pavement width of 24 to 26 feet is sufficient for a residential street to allow for emergency vehicle access *with* on-street parking. Hudson's subdivision and site plan regulations should be designed to accomplish the following.

- Provide a well connected, interesting pedestrian network. Convenient and safe pedestrian access to schools, shopping, recreation, employment and other destinations should be provided. This may include the development of an interconnected pedestrian pathway system. The Town should reconsider its 4 foot width requirement for sidewalks. The Americans with Disabilities

Act (ADA) guidelines call for a minimum sidewalk pavement width of at least five feet. Sidewalks on high volume roads should be required to be at least eight feet wide with a three foot landscaped buffer between the curb and paved surface. This buffer provides a margin of safety between the pedestrian flow and high speed and high volume traffic.

- Provide convenient access for people who live on the street, but discourage through traffic; allow traffic movement, but do not facilitate it. Traffic control measures should be considered to eliminate extensive through traffic on local streets. The Town should consider traffic calming measures on streets that serve as cut throughs in neighborhoods. The traffic calming measures should be implemented with input from the Town Highway Safety Committee and the public.
- Differentiate streets by function. Streets should be clearly distinguished within the network in terms of the functional differences between local residential streets and major collectors or arterials in the overall street design.
- Relate street design to the natural and historical setting. Street design should relate to and express the terrain, natural character, and historic traditions of the locale. Irregularities of a site such as large rocks or trees and slopes should be incorporated rather than removed. Street details including curb design, sidewalk paving or signs must relate to the regional vernacular rather than being anonymous from a handbook.
- Reduce impervious surfaces by minimizing the amount of land devoted to streets. There are several factors that should shape a plan including a design concept, on-street parking needs, traffic volumes and land constraints (steep slopes, wetlands, etc.). Narrower residential streets reduce the amount of impervious surfaces and allow for better groundwater recharge.

## Access Management

NH 3A and NH 102 represent the main north-south roadways in Hudson. NH 111 serves as the main corridor for east-west travel. In order to preserve the existing road capacity and to enhance safety for vehicles entering and exiting driveways, access management techniques should be applied to Hudson's major corridors including NH 3A, NH 102, NH 111 and Dracut Road. The Town should coordinate access management policies with NH DOT's access management initiatives. The following general access management techniques can be implemented through the subdivision, site plan and/or driveway regulations, and/or the zoning ordinance:

- Reduce the number of curb cuts along arterials and encourage the use of common driveways.
- Encourage the development of service roads parallel to arterials that allow for access to adjacent commercial developments.
- Require developers to fund road improvements such as turn lanes, medians, consolidation or alignment of access points and/or pedestrian facilities that reduce the impedance of through traffic.
- The minimum distance allowed between curb cuts along roads and arterials should be at least the minimum distances recommended in Table V-14 on Page 24 above. With the exception of a

100-foot minimum separation between driveways and intersections, there are no minimum driveway separation requirements in Hudosn's subdivision or site plan regulations.

## Safety

The Town should consider further detailed studies for the highest crash rate intersections to develop improvements and strategies to reduce accidents. The Town of Hudson Highway Safety Committee should consider requesting that the NH DOT perform safety studies for the highest crash rate intersections. The studies should include collision diagrams and an analysis of the physical road features and traffic control, road conditions at the time of the crashes (latest three years), the severity of the crashes, and a summary tabulation of crashes. Any further detailed crash studies should include input from the public and include the following six steps:

1. Identify the locations that are candidates for improvements.
2. Quantify the main crash trend(s) at a particular location.
3. Determine the source of the problem(s).
4. Evaluate types of improvements to address the crash problem(s).
5. Obtain an expert opinion about safety improvement(s).
6. Obtain funding to implement a safety improvement.

## Alternative Transporation Modes

The Town should work with the NRPC, NHDOT and neighboring communities to encourage alternative modes to single occupancy auto use to help decrease traffic congestion and provide greater choices for Hudson commuters. Specific recommendations are provided below.

- Work with the NRPC and the Nashua Transit System to explore extending a bus route from downtown Nashua to south Hudson to serve the Sagamore Business Park and other destinations along Lowell Road and to connect to the terminus of an existing Lowell Regional Transit Bus that stops at Ayotte's Market on the Hudson/Massachusetts border.
- Hudson should support efforts to extend the commuter rail line from Boston and Lowell to New Hampshire. The commuter rail sites identified by the NH DOT on Daniel Webster Highway in South Nashua and on Crown Street in Nashua are both a short driving distance for most Hudson commuters. This would likely increase housing demand within walkable distances of these areas where transit-oriented development patterns may be appropriate (e.g. vicinity of Library Common). This would also require improvements to the regional infrastructure that would support the potential rail stations.
- The Town should explore the option of working directly with large employers in the Town to coordinate the alternative modes initiative. Large employers have a significant impact on traffic in the Town and reduction in work trips to those locations will result in the greatest possible reduction in traffic.

## Electric Vehicles

Hudson should develop an Electric Vehicle (EV) Charging Station implementation plan with a focus on key public facilities including the Municipal facilities, schools and certain commercial sites. Consider amending the Site Plan Review Regulations to require EV charging stations at large commercial sites and multi-family developments.

New Hampshire is poised to experience a rapid increase in Electric Vehicles (EV) over the next 10-15 years. Tourism is the 2nd largest industry in the state, bringing EVs from other states to our downtowns, state parks and other popular destinations. EV adoption is much higher in neighboring states (especially Massachusetts), and they are driving into New Hampshire. Where will they charge? Charging infrastructure, and its fee structures, can influence the places they visit. As EV owners plan their trips (whether it is daily or a vacation), they will look for charging infrastructure to determine where to get groceries, shop, eat dinner, or vacation.

On May 30, 2018, New Hampshire Senate Bill 517 (SB 517) was passed establishing the Electric Vehicle Charging Stations Infrastructure Commission to make recommendations on various policies, programs and initiatives related to the use and support of zero emission vehicles in New Hampshire.

When planning for EV locations plans should consider:

- Currently available electrical service. EV charging stations may require additional circuits and electrical capacity at municipal sites. All new charging station installations should have a load analysis performed on the facility's electrical demand to determine if there is capacity to add EV charging stations. AC Level 2 stations will need a dedicated 240-volt (40 amp) circuit and upgrading electrical service may be necessary.
- Distance between the electrical panel and the charging station. A longer distance between the electrical panel and the EV charging station means higher installation costs because it increases the amount of necessary trenching (and repair), conduit, and wire. It is desirable to minimize the distance between the electrical panel and EV charging station as much as possible while also considering the location of the charging station on the property.
- Location of charging station on the property. Do you want the EV charging stations close to the entrance of building(s) to incentivize EV drivers, or out of the way to maximize the number that can be installed? Consider the impact of placing the charging station at a particular location on the property. Placing charging station spaces away from a building might discourage their use, but other customers may be upset if a charging station is installed in prime parking spaces that often remain vacant because there currently are fewer EV drivers.
- Consider the location of existing infrastructure. Construction costs are largest added expense for EV charging stations, and the cost differential depends on the work required. Existing elements such as landscaping, walkways, curb cuts and other structural elements should be considered in site plan for EV charging stations. These elements add costs for removal or relocation, in addition to acting as barriers to accessible charging. Trenching, curb cuts and drilling through hardscaping or structural elements to add new conduits to connect EV charging stations to

power sources can also be cost prohibitive. When possible, consider trenching through landscaping, although the EV charging stations should always be mounted on a concrete or other solid surface pad and protected from traffic.

- Availability of networks and communications. Most public EV charging stations will contain an advanced metering system and link to a network that tracks usage, bills customers, and manages electrical loads. Some EV charging stations will connect to telecommunications networks using wi-fi, Ethernet or cellular connections. This type of communication is especially important for managing user messaging and other advancements in technology that regulate information about available charging stations and when a driver's charge is complete. Complications for network connections arise in garages, where repeaters may need to be installed to guarantee network signals. Potential installation sites should be assessed for their network connection ability.
- Accessibility standards still apply. The US Access Board has basic guidelines for how to make EV charging stations parking spaces accessible. Spacing requirements are detailed within their guide and other design guidelines.
- Consider general parking lot management practices. As with any parking area, please consider best practices when installing the EV charging stations such as installing and maintaining adequate lighting (especially where and when stations are available for use 24 hours a day), providing clear signage, and keeping the area maintained (i.e., cutting away vegetation and keeping snow cleared)."

## Bicycle/Pedestrian Infrastructure Recommendations

The following recommendations and priorities are meant to encourage pedestrian and bicycle travel in Hudson. They should be considered whenever maintenance, rehabilitation or new construction occurs within the right of way of any street in Hudson. This will allow multimodal accommodations to be implemented on a gradual basis over time as part of the road maintenance and/or town capital improvement program. This will also minimize the cost of bicycle and pedestrian infrastructure improvements.

## Regulatory

It is recommended that bicycle and pedestrian improvements be achieved through Site Plan Review and Subdivision Regulations. The Planning Board should therefore incorporate the design guidelines suggested in this document into those ordinances. In addition to the proposed design guidelines, regulations could call for internal sidewalks at commercial properties, the interconnectivity of adjacent commercial and/or multifamily properties (both for vehicles and pedestrians), and the dedication of sidewalk rights of way along key corridor and local roads where insufficient space exists within the current public right of way.

## Planning Studies

The Town should consider detailed corridor studies to determine the specific design treatments, costs, and engineering that will be necessary to improve conditions for bicycle and pedestrian travel. The following key corridors are candidates for in-depth corridor studies:

- Central Street from Taylor Falls Bridge to Kimble Hill Road
- Lowell Rd/NH3A from Central Street to Dracut Road
- Derry Road from Taylor Falls Bridge to Old Derry Road
- Ferry Street from Taylor Falls Bridge to Central Street

## Physical Improvements

The Town should adopt a consistent roadway cross section along all key corridors like those described in the design guidelines section of this document. This cross section should be considered whenever maintenance, rehabilitation or new construction occurs within the corridor right of way. This will allow multimodal accommodations to be implemented on a gradual basis over time as part of the road maintenance and/or town capital improvement program. As explained earlier in this document, painted bike lanes are not recommended. Instead, the following recommendations incorporate design guidelines that encourage roadway treatments that provide clearly defined spaces for all modes which will provide more incentive for non-motorized users.

## Sidewalks and Side Paths

Sidewalks or side paths should be required on both sides of the road in the downtown area and along all key corridors a (see priorities below); sidewalks should be to ADA standards and should be a minimum of 5 feet wide with minimum 6" granite curbing.  Where right of way allows, minimum 8-foot wide, bidirectional side paths should be considered.

## Travel Lanes and Enhanced Shoulders

- Use pavement markings to define 10-foot-wide travel lanes wherever possible.
- Use the additional shoulder width to accommodate bicycles.
- Enhanced shoulders should be used on local roads where traffic volume approaches 5,000 AADT and prevailing speed is greater than approximately 30 MPH.
- Use FHWA-approved color to define shoulders.

## Crosswalks

- Best practices should be used when considering installation or upgrades to crosswalks.
- Existing crosswalks should be maintained or upgraded as noted in the following priorities section.

- New crosswalks should be installed as noted in the following priorities, and through additional public outreach.

## Traffic Calming (alternative road surfaces, raised crosswalks, edge friction, sidewalk bump outs, etc.)

- Traffic calming treatments should be considered where motor vehicle operating speeds exceed posted speed by @ least 5 MPH
- Speed studies along key corridors should be undertaken to identify where traffic calming is needed.

## Hudson Boulevard Multi-Purpose Path

The Town should prioritize the development of a 10-foot-wide (minimum), bidirectional, non-motorized, multi-use path along the right-of-way that is reserved for the future construction of the Hudson Boulevard. The path should be designed to accommodate the future construction of the Boulevard. This path would provide access from neighborhoods along the corridor to nearby recreational and employment opportunities. Recreational attractions include nearby Benson Park, Musquash Recreational Area, and the Hudson Town Forest. Employment attractions include the large industrial park near the Sagamore Bridge and the future Target flow distribution center at the former Green Meadow Golf Club. If NH DOT disposes of the Right-of-Way, the land should still be planned for this path as part of future development and/or conservation efforts.

Litchfield's Albuquerque Avenue multi-use path is a good example of a successful development process. In 2007, Litchfield secured funding to construct an eight-foot wide pedestrian path/bikeway along this two-mile corridor. The path runs parallel to Albuquerque Ave on the westerly side of the road between Route 3A and Hillcrest Road and where it then shifts to the easterly side. Construction of the path leveraged approximately $470,000 in federal grant funds together with $18,500 of local money for design and construction.

Since its completion in 2010, the Albuquerque multi-use path has become a valuable community asset. Throughout the day, the path serves a wide range of users including early morning joggers, evening strollers, people walking dogs, people biking and students walking to Campbell High School. In addition to the High School, the path connects two Town parks and a golf course as well as the Town Hall/Police Station and Fire Department complex.

## Kimball Hill Road

Benson Park is an important community asset and connections along Kimball Hill Road are an important component of a complete non-motorized network in Hudson.

- Sidewalks and side paths:
    - Wherever right of way allows, incorporate a minimum 8-foot wide, bidirectional side path with a 5-foot buffer along one edge of the road from Central Street, past the Benson Park entrance, ending at Bush Hill Road.

- Enhanced Shoulders:
    - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Bush Hill Road to the vicinity of the Hudson Town Forest.
    - Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.

## Connections to Musquash Conservation Area and Hudson Town Forest

In future road construction projects and where right-of-way exists, the Town should prioritize access to the Musquash Conservation Area and the Hudson Town Forest in the following manner:

- Enhanced Shoulders:
    - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Musquash Road and Kimball Hill Road. Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.

## Improvements to Key Corridors

### *Central Street Corridor: Taylor Falls Bridge to Kimball Hill Road*

- Sidewalks and side paths:
    - *Taylor Falls Bridge to Lowell Road intersection* – maintain the existing sidewalks on both sides of the road and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades.
    - *Lowell Road to Burnham Road* - maintain the existing sidewalks on both sides of the road and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades.
    - *Burnham Road to Kimball Hill Road* – incorporate minimum 8-foot wide, bidirectional side path along southeast edge of Road.
- Enhanced Shoulders:
    - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Central Street for entire length of corridor between Taylor Falls Bridge and Burnham Road intersection. Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.
- Signalized intersections
    - Library Street – upgrade to include signalized pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection
    - Lowell Rd – upgrade to include pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.

- Burnham Road/Central Street - upgrade to include pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.

- Memorial Drive (Hudson Memorial School entrance)
  - Crosswalks at this intersection should be upgraded to communicate to motor vehicle operators that extreme caution is needed when children are present. Raised crosswalks, alternative materials, colored pavement or other best practice should be used.
- Crosswalks on Central Street
  - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.
  - Upgrade crosswalks on all side street approaches to the corridor.
  - Install crosswalks on Central Street to provide pedestrian access across the corridor at key locations. Locations to be determined during future public outreach.
- Travel Lanes
  - Use pavement markings to define 10-foot-wide travel lanes wherever possible.
  - Use the additional shoulder width to accommodate bicycles.

### *Ferry Street (NH111) Corridor: Derry Street to Central Street (including Burnham Road)*

- Sidewalks and side paths:
  - *Derry Street to Gloria Avenue* – maintain the existing sidewalks on both sides of the road and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades.
  - *Gloria Avenue to George Street* – incorporate sidewalks on both sides of the road and at a minimum of 5 feet wide and 6" granite curbing in future road upgrades.
  - *George Street to Central Street* – incorporate a minimum 8-foot wide, bidirectional side path along one edge of the road.
  - It is also recommended that wherever right of way allows a side path should be considered as an alternative to sidewalks.
- Enhanced Shoulders:
  - Minimum 4-foot wide terra cotta-colored shoulders on both sides of Ferry Street for entire length of corridor between Derry Street and George Street intersection.
  - In the short term, extend enhanced shoulders all the way to Central Street intersection. Remove when side path is incorporated into the pavement cross section.
  - Rumble strips should be included between travel lanes and painted shoulder, where appropriate, and where the sound will not disturb residential areas.
- Signalized intersections

- @ Library Street – upgrade to include signalized pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.
- @ Central Street/Burnham Road– upgrade to include pedestrian phase for all legs. Incorporate best design practices for accommodating bicycle passage through intersection.

- Crosswalks on Ferry Street
  - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.
  - Upgrade crosswalks on all side street approaches to the corridor.
  - Install crosswalks on Ferry Street to provide pedestrian access across the corridor at key locations; locations to be determined during future public outreach.
- Travel Lanes
  - Ten-foot travel lanes along entire corridor

### *Lowell Road (NH3A) Corridor*

- Access Management:
  - Numerous driveways and the associated curb cuts pose challenges to improving biking conditions along this corridor. Some improvement could be achieved if access management practices were implemented to consolidate driveways and cut down on the curb cuts. It is recommended that a corridor study be undertaken to determine how access management principles could be implemented.
- Sidewalks and side paths:
  - Wherever right of way allows, incorporate a minimum 8-foot wide, bidirectional side path along one edge of the road.
  - *Central Street to Birch Street* – maintain the existing sidewalks and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades and include sidewalks on both sides of road where there are currently sidewalks on only one side.
  - *Birch Street to Pelham Road, and Nottingham Square to Executive Drive* – follow through on plans (NRPC 2019-2045 Metropolitan Transportation Plan) to incorporate sidewalks along these segments.
- Signalized intersections:

  *Pelham Road, Fox Hollow Drive, Executive Drive, Executive Drive, Hampshire Drive, Wason Road intersections* – maintain the existing signals including pedestrian phases.
- Crosswalks on Lowell Road:
  - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.

- Upgrade crosswalks on all side street approaches to the corridor.
- Install crosswalks on Lowell Road to provide pedestrian access across the corridor at key locations. Locations to be determined during future public outreach.

- Travel Lanes
  - Ten-foot travel lanes along entire corridor

### *Derry Road Corridor*

- Sidewalks and side paths:
  - Wherever right of way allows, incorporate a minimum 8-foot wide, bidirectional side path along one edge of the road. The segment between Elm Avenue and Old Derry Road could most likely accommodate this type of roadway cross section.
  - *Ferry Street to Elm Avenue* – maintain the existing sidewalks and upgrade to a minimum of 5 feet wide and 6" granite curbing in future road upgrades and include sidewalks on both sides of road where there are currently sidewalks on only one side. Fill in sidewalk gap between Hudson Mall shopping Center and Phillips Drive (north entrance).
  - *Elm Avenue to Old Derry Road* – complete sidewalk system between Marsh Road to Towhee Drive which will complete the sidewalk connection between the schools, library, and downtown Hudson.
- Signalized intersections:
  - *Highland Road intersection* – maintain the existing signals including pedestrian phases.
  - *Hudson Mall Entrance* – incorporate pedestrian phase.
  - *Elm Avenue* – incorporate pedestrian phase.
- Crosswalks:
  - Use best practices to ensure that all crosswalks in the corridor provide incentive for pedestrian travel.
  - Upgrade crosswalks on all side street approaches to the corridor.

## Land Use

Participants in community outreach efforts indicated a desire for a balanced, planned approach to Hudson's land use development, with goals including:

- More open space conservation and protection in new developments.
- Focus commercial and industrial development within existing commercial/ industrial areas.
- Encourage reuse or redevelopment of existing commercial buildings and sites rather than on undeveloped land.
- Improve design standards landscaping, architecture, and site design.

In response to these goals, there are several land use strategies in pursuit of a balanced, livable, and economically sustainable community:

1. Examination of the lands currently zoned as General and General-1 for their suitability to be appropriately zoned to produce results expected and desired by the community. While much of these lands have organically developed residentially, other areas may be more suitable as commercial, business or light industrial zones. As part of this analysis, identify opportunities to create transition areas or buffer areas between incompatible land uses.
2. Create opportunity for growth within existing, developed commercial areas and other areas suitable for commercial activity by:
    a. Reviewing the existing Business zone and consider re-establishing different types of Business Districts based on community character and their relationship with the development patterns they abut, for example town core areas versus auto-oriented areas.
    b. Considering the development of a mixed-use, village district or overlay zone that incentivizes the redevelopment or rehabilitation of existing business areas and corridors.
    c. Design redevelopment or rehabilitation of existing business or retail areas that relate to the neighborhoods they enjoin through pedestrian connectivity, open spaces, landscape and architecture.
    d. Enhancing opportunities for more desirable aesthetics and development types by implementing elements of form based code, or developing design guidelines and landscape standards that correspond to the desired character on a neighborhood or district basis.
    e. Examine and potentially relocate district boundary lines of Business zone(s) considering the development history and context of existing uses.
3. Explore the potential for mixed-use development of areas of community enjoyment, leisure and entertainment that harnesses the unique and finite resource of riverfront property.
4. Develop an open space plan for current Town-owned land and priority areas that focuses on connectivity for wildlife and recreation as well as walkability within and between neighborhoods.
5. Identify development constraints and future utility and infrastructure needs of both existing businesses and burgeoning industries to identify opportunities to foster sustainable economic growth.

## Historic Resources

Hudson's historic resources are irreplaceable assets that help to define the community and create a distinct sense of place. Some of these resources, such as the historic buildings at Benson Park, are

among Hudson's best-known features and most popular attractions. Notably, the largest concentrations of historic buildings and sites in Hudson are in the areas of Hudson Bridge around Library Park and Hudson Center which includes what is left of Hudson's 18th century Town Common. As can be seen in Chapter I - Community Vision & Goals, the creation of a defined town center or downtown for Hudson is one of the Master Plan's most important goals. Both the Hudson Bridge and Hudson Center areas have the potential to provide the functions that are commonly associated with New England town centers including small central open spaces or town commons that are populated with multiple monuments and memorials. One of the key elements of own centers, however, this point, both areas are largely drive-by locations that are visited and enjoyed by few residents. Preserving and protecting historic buildings and sites within these areas and enhancing public access to and use of their common open spaces would provide broad benefits to the entire community. The following recommendations are designed to provide alternatives to preserve and protect Hudson's historic buildings and sites with an emphasis on the Hudson Bridge and Center areas.

- Consider creating local historic districts in the vicinity of the Hudson Bridge area and the Hudson Center area with the latter to include the remaining section of the Town Common and the Old Hudson Center Cemetery. Local historic districts provide among the highest levels of protection for historic areas while maintaining local control. Creation of the districts would also necessitate the creation of a Heritage Commission or Historic District Commission to administer district regulations and become part of the Town's Design Review Process.
- Provide improved bicycle and pedestrian accommodations in Hudson Center including sidewalks on both sides of Central Street and a signalized crosswalk at the intersection of Kimball Hill Road and Central Street to connect the historic buildings and residential areas on the northwestern side of NH 111 with the old Town Common and Benson Park. A sidewalk or widened shoulder should also be provided along Kimball Hill Road to connect the old Town Common with Benson Park.
- Enhance the use and appreciation of the old Town Common, the historic Old Center Cemetery and its various monuments and points of interest. In addition to the sidewalk and crosswalk improvements noted above, consideration should be given to providing a few well-placed parking spaces on or adjacent to the site to accommodate visitors. Consideration should also be given to installing interpretive signage to describe the historic features of the site and split rail or decorative fencing along NH 111 to provide a greater sense of security. Adding picnic tables would also enhance the visitor experience and could both leverage and benefit the adjacent Super Sub restaurant.
- Provide enhanced pedestrian connections to Library Park including a signalized crosswalk at the intersection of Ferry and Derry Streets at Highland Street and the intersection of Derry and Ferry Streets. with an emphasis on connections to Library Park.
- Enhance the use and appreciation of Library Park together with its gazebo, monuments, and other points of interest. In addition to the sidewalk and crosswalk improvements noted above, consideration should be given to installing decorative fencing along Derry and Ferry Streets to provide a greater sense of security for park users. As with the old Town Common, adding interpretive

signage and picnic tables could also enhance the visitor experience, though limited seating is currently available.

- Consider designation of select local roads for protection under the scenic road provisions of RSA 231:157, which provides protection for trees and adjacent stone walls that provide a foundation for Hudson's enduring rural New England character.
- Institute a historic sign or marker program through the Historical Society or other body to identify historic homes and site throughout the town to enhance appreciation of Hudson's history and culture and to instill pride of ownership.
- Provide more specific standards for design control in the Town's Nonresidential Site Plan Review regulations for key historic corridors such as the Hudson Center and Hudson Bridge areas.
- Consider joining the Certified Local Government (CLG) Program.

## Community Facilities

Overall, Hudson residents express a fairly high level of satisfaction with Town and School District facilities, and facilities such as Benson Park, the Library, the Senior Center, and Community Center. Residents also emphasized the importance of continuing to invest in and maintain existing facilities and suggested several specific improvements to various Town and School facilities. The following recommendations are derived from resident input as well as input from other sources including the 2020 Capital Improvements Program and other existing improvement plans.

### Town Hall

Improvements to the Town Hall are necessary to meet existing needs and to accommodate future growth as well as to provide adequate security, efficiency, and accessibility. Any future expansion of the existing building should include elevator access to the lower level and improved connections between the lower levels of the east and west wings. Should a relocation scenario be pursued, alternative locations should be identified that could advance the goal of developing a defined town center for Hudson.

### Library

The Rogers Library is a relatively new facility and one of Hudson's most highly regarded municipal facilities. The location in the north-western part of town, however, is a bit out of the way for residents who live in the south and southeastern parts of Hudson and existing meeting space is limited. Consideration should be given to increasing the use of the former Hills Memorial Library, especially for meeting space and expanded programming. The historic former library building is more centrally located and is currently used on a limited basis only.

### Parks & Recreation

- Benson Park: Maintaining and improving upon Benson Park should continue to be a top priority for the Town of Hudson. Given its popularity, consideration should also be given to expanding

the park through the acquisition of vacant and underutilized properties to the northwest and southwest.

- Robinson Pond: Given the popularity of Robinson Pond, protecting its water quality should remain a high priority for the town, and consideration should be given to acquiring adjacent underdeveloped land to enhance its long-term protection. Acquiring parcels adjacent to Benson Park and Robinson Pond would also be consistent with Master Plan *Natural Resources* goals (see Chapter I – Community Vision & Goals and Chapter III – Natural Resources) to "Expand Conservation areas and increase open space" and "Build on existing open space assets such as Benson Park and Robinson Pond."
- Merrill Park: Given the importance of Merrimack River access to the community, every effort should be made to obtain necessary funding through grants and other sources to develop and implement a site clean-up and improvement plan for Merrill Park that includes a boat ramp, passive recreation areas, and adequate parking.
- Library Park: Though small, Library Park serves as a town or village green for Hudson and its use should be promoted through enhanced pedestrian access including signalized crosswalks from the northeast corner of Fulton and Ferry Streets to the southwestern corner of the park and a crosswalk to the northern tip of the park from the southwestern corner of Highland and Library Streets. Increased amenities such as additional benches should also be provided, and consideration should be given to installing ornamental fencing along the Derry and Ferry Street sides of the park to enhance the safety and security of park users. Additional programming, especially with regard to the bandstand, should also be considered.
- Senior Center: The Hudson Senior Center is well used and viewed favorably by the community. Given that Hudson's senior population (65+) is projected to be its fastest-growing population group, ensuring that the facility has the capacity to meet demand should be a priority and future facility expansion, or the development of a satellite facility may be required.

## Schools

No significant increase in school-age children is anticipated in Hudson in the foreseeable future that would warrant the construction of an additional school or significant school facility expansions. The Palmer CTE facility was recently renovated and expanded, and the School District is seeking voter approval for renovations of Alvirne High School. Remaining facility needs are largely focused on maintenance such as roof replacements and athletic field improvements. A focus on continued investments in school facility maintenance and improvements is prudent and should continue.

## Sewer

Given limitations on available sewer capacity, the Town should limit future sewer connections to properties within the existing sewer service area except where the expansion of the service area is closely tied to Hudson's land use and economic development goals.