Nashua Region Metropolitan Transportation Plan

2015-2040

This document provides a basic blueprint for long-term transportation investment in the Nashua Region to the horizon year 2040.The plan is structured around four major goals, developed through public outreach and coordination with advisory committees, which include Mobility and Accessibility, Quality of Life, System Sustainability and Implementation.

Adopted December 17, 2014

Image: Amherst Road, Mont Vernon, N.H.(NRPC)

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Executive Summary

Residents of the Nashua Region enjoy access to an extensive and well-developed transportation network. Most residents of the region commute by automobile and the region is well-oriented for such travel; highway networks are extensive and provide convenient access to major destinations. Traffic congestion is relatively light relative to nearby metropolitan areas and parking facilities are plentiful in nearly all areas. Pedestrian networks are well developed in many downtown and town centers and bus transit service within Nashua is relatively expansive; the system is one of the very few in the state to provide service during nighttime hours. Human service providers, like Souhegan Valley Rides, represent excellent models of grassroots transportation solutions.

The region does face many transportation challenges. Infrastructure maintenance needs have strained resources at all levels of government as many highway and bridge facilities reach the end of their functional lifespans. The region also faces a backlog of transportation project needs in an era when funding opportunities are limited. Transportation options, particularly outside of Nashua, are very limited; no fixed-route transit service

extends beyond the city boundaries, and the region lacks an integrated pedestrian and bicycle network across communities. Slightly more than a quarter of residents commute to Massachusetts for work, but recurrent traffic congestion and a preference for more travel options has spurred many residents to advocate for the extension of passenger rail service to the region. As the population ages, senior transportation needs will remain a major issue.

Moving forward, municipalities will be challenged to identify sustainable funding sources for transportation maintenance needs, particularly before embarking on major expansion projects. Investments in ITS infrastructure (designed to alert drivers of any traffic issues before they encounter them), as well as public-private partnerships and the consideration of pay-as-you-go transportation technologies offer strategies to control or reduce maintenance costs over time. The region will be challenged to defend the need for transportation investments against competing needs and showcase how such projects directly impact the region's quality of life and economic competitiveness.

Goals and Vision

In the spring of 2012, the Nashua Regional Planning Commission Transportation Technical Advisory Committee (TTAC) drafted a simple vision to guide the development of the Nashua Region Metropolitan Transportation Plan (MTP):

The Nashua Region has a comprehensive and reliable multi-modal transportation system that enables universal access for all travelers, including disabled, youth, and seniors, to all points within and beyond the region. Our transportation system enables a highly mobile community and promotes economic growth, public health, and enhances the natural environment. The Transportation system is adaptable to changes in demographics, economic conditions and energy related forces. Sufficient funding supports the operations maintenance and expansion of our transportation infrastructure to continuously meet the needs of the region.

Metropolitan Transportation Plan Vision

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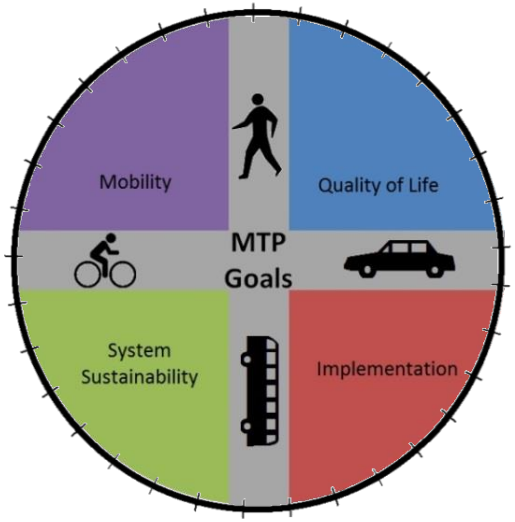
In advance of drafting this plan, the commission conducted an extensive public outreach effort in coordination with the formation of this plan. These efforts, unprecedented in the history of the commission, included a scientific telephone poll of residents, two transportation-specific public workshops, outreach at more than two dozen community events, a series of 19 focus groups and individual interviews, and continued consultation with the regional TTAC as well as a regional Transportation Sub-Committee. Residents also had the opportunity to offer their input electronically through Internet-based mapping and comment forums.

With an effort placed on consistency and conciseness, the following transportation goals were drafted to reflect public input as well as TTAC guidance. The goals support and advance the development of a transportation system that contributes to the region's mobility, quality of life, system sustainability, and continued project implementation, as directed by the vision.



Throughout the public outreach process, residents advocated transportation investment consistent with and complimentary of the region's quality of life. (NRPC Photo)

Mobility

1. Improve the availability of transportation options for people and goods.
2. Support travel efficiency measures and system enhancements targeted at congestion reduction and management.
3. Assure all communities are provided access to the regional transportation system and planning process.

Quality of Life

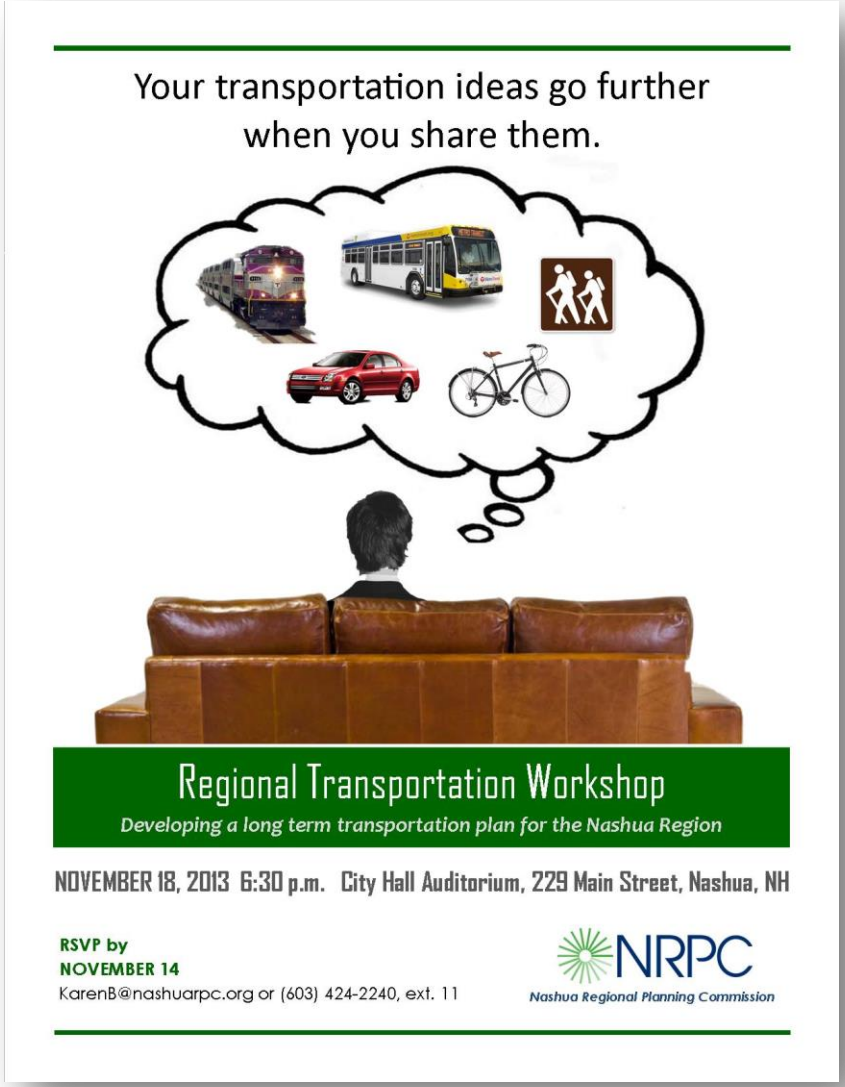
4. Preserve and enhance the natural environment, improve air quality, and promote active lifestyles.
5. Encourage livable communities which support sustainability and economic vitality.

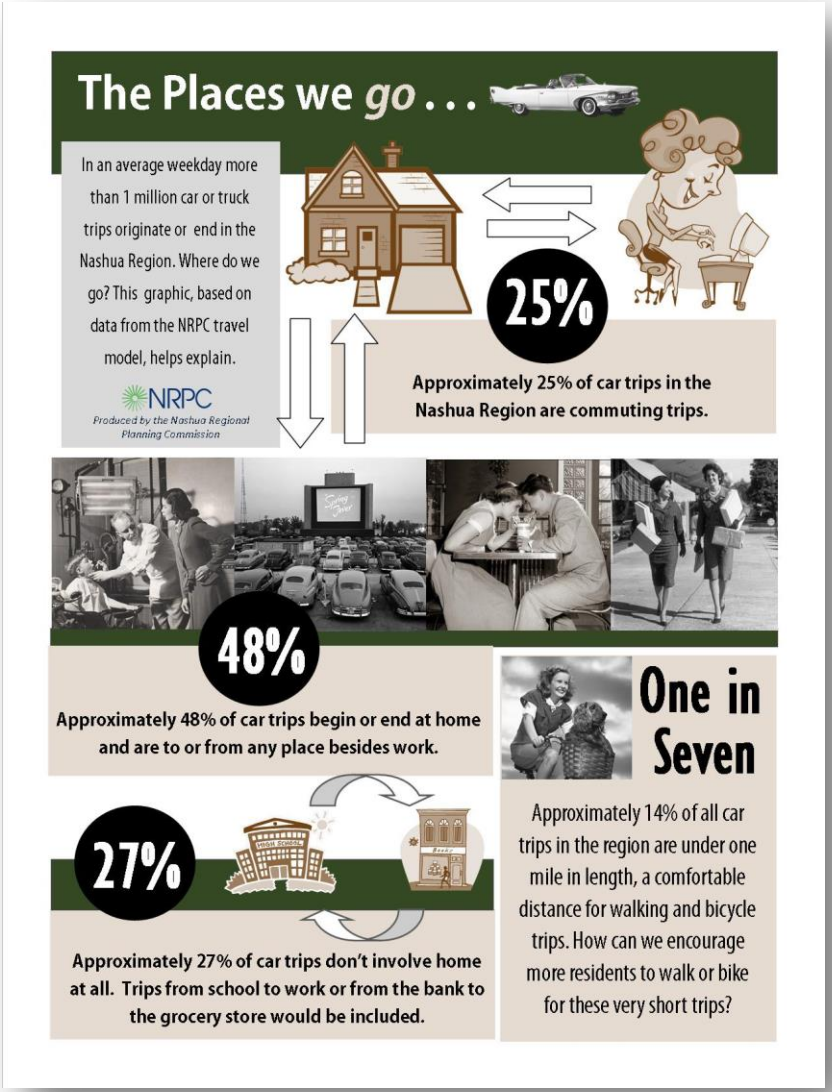
System Sustainability

6. Ensure adequate maintenance and enhance the safety and reliability of the existing transportation system.
7. Pursue long-term sustainable revenue sources to address regional transportation system needs.

Implementation

8. Provide for timely project planning and implementation.
9. Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.





A COMMITMENT to FULL PUBLIC PARTICIPATION

A broad public outreach campaign, consisting in part of workshop events and informational posters (pictured above) characterized the commission's approach to drafting the Metropolitan Transportation Plan. (NRPC)

Existing Conditions

Demographics

Information in the *Existing Conditions and Needs Chapter* provides an analysis of population distribution in the region and growth trends. Changes in the region's population are dependent on two factors; the rate of natural change (births and deaths) and migration. Like the rest of New Hampshire and much of the U.S. Northeast, population growth in the region has subsided significantly in recent years. This is a departure from previous years, particularly the latter half of the twentieth century, when the region's population grew at a significantly higher rate than both the state and the nation. While demographers expect population growth to increase somewhat in future years, it is not expected to rival growth rates experienced from the 1960s to the 1990s.

Between 2000 and 2010, population growth was most pronounced in the eastern and western expanses of the region. Six municipalities experienced population growth exceeding 10 percent, including Brookline, Litchfield, Mason, Milford, Mont Vernon, and Pelham. Nashua and Wilton were the only two municipalities to experience population declines, though those declines were very slight (comprising just 0.1 percent of the population in Nashua and 1.7 percent in Wilton).

Much of the region's roadway infrastructure, like Center Road in Lyndeborough (pictured above), is rural in nature. (Photo by NRPC)

Population growth and the geographical disposition of growth impacts transportation planning and investment decisions. Slowing population growth in the region allows policymakers to focus attention on a backlog of transportation needs that were not addressed in previous decades. At the same time, attention has increasingly focused on the unmet maintenance needs of the region's existing transportation infrastructure. A great deal of transportation infrastructure was constructed in the region in the 1960s through the 1980s to serve rapid population growth during that period; much of this infrastructure is nearing the end of its lifespan and requires significant maintenance.

The Nashua Region, like New Hampshire, is aging at a faster rate than our peers across the nation. As noted in the Existing Conditions and Needs chapter, between 1990 and 2010, the share of the region's population under age 45 declined, while older cohorts have grown significantly. This trend was particularly pronounced among those aged 20 to 44, which declined from 44.5 percent of the population in

1990 to 31.5 percent in 2010, and those aged 45 to 64, which grew from 18.2 percent of the population in 1990 to 30.4 percent in 2010.

The Nashua Region's population of those aged 45-64 jumped from an 18.2 percent share of the population in 1990 to 30.4 percent in 2010.

Population projections forecast that older age cohorts will increase between 2010 and 2040, with the largest increases centered in the population age 70 and over. Most notably, the region's population age 69 and under is projected to decline by approximately 3 percent between 2010 and 2040, while the population aged 70 and over is projected to jump by more than 300 percent. The share of the population under age 40 in 2040 is projected to remain relatively flat with a 1.3 percent decrease in that cohort projected.

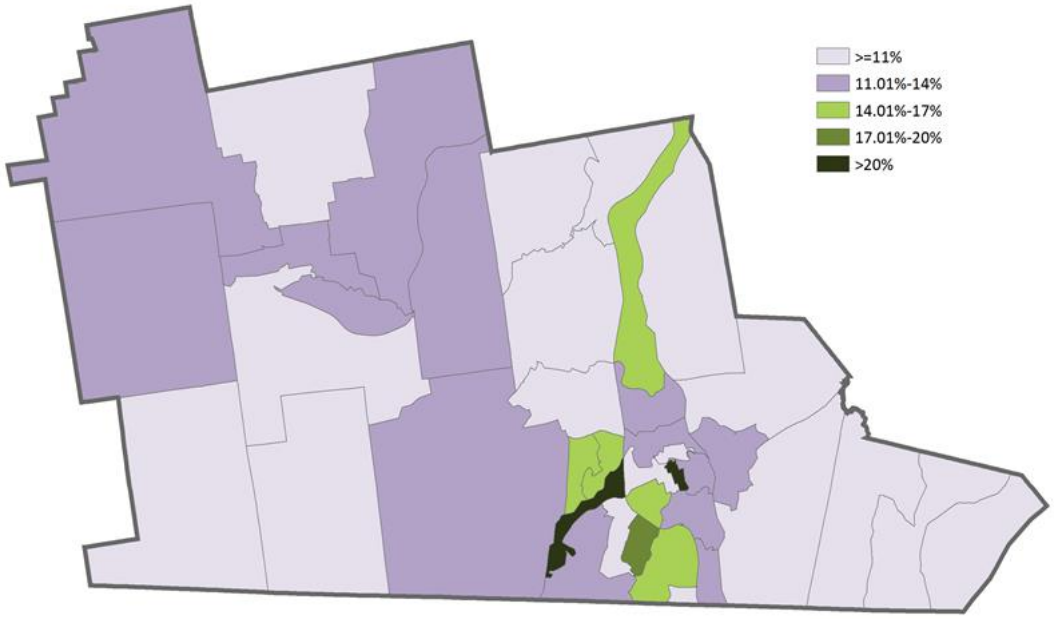
Senior Population

As seniors age, their motor skills, reflexes, and vision may be impacted over time and movements required of driving an automobile may become difficult. Many seniors self-control for these impacts by limiting driving when it may be most difficult, including in low light conditions, and some may discontinue driving altogether.

Measured by miles traveled, seniors over age 70 are more likely to be involved in fatal crashes than most other age groups. This trend is particularly pronounced among seniors age 85 and over. In the Nashua Region, the population age 80 and over is projected to more than triple between 2010 and 2040.

Within the region, the communities of Hollis and Lyndeborough accommodate the largest shares of seniors at 14 and 13 percent of the population. Litchfield and Brookline have the smallest shares of residents age 65 and over at 9 and 6 percent .respectively.

Share of Population Age 65 and over, Nashua Region



Eastern Merrimack and several Nashua neighborhoods house the largest concentrations of seniors in the region. *Source: U.S. Census American Community Survey (2008-2012)*

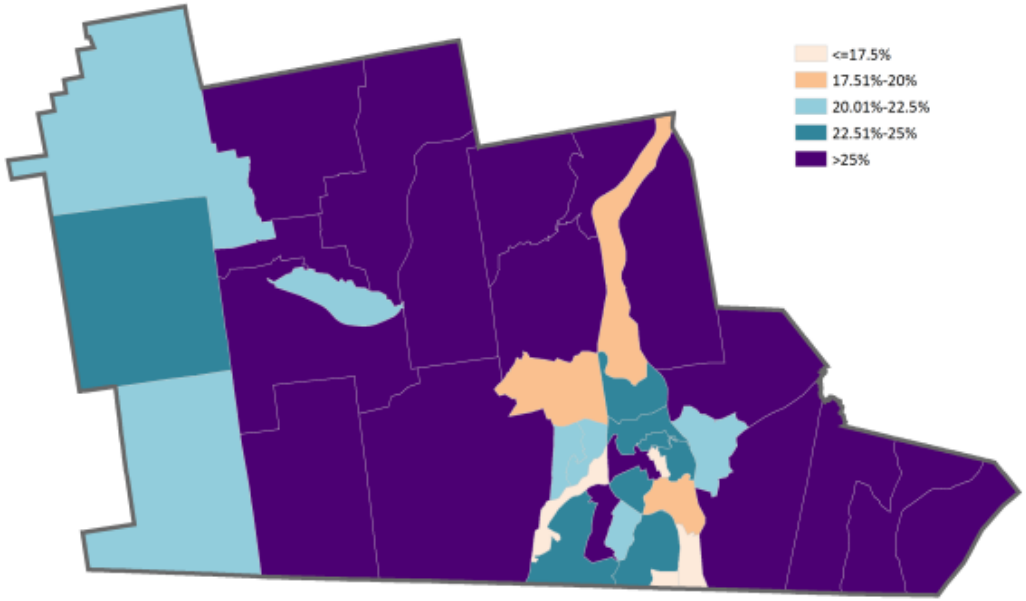
Population Under Age 18

New Hampshire State Law prohibits those under the age of 16 from operating a motor vehicle. Since driving is the region's dominant travel mode, young people may encounter limitations to their mobility. Population projections for the region forecast that the region's population of residents under age 16 is expected to remain relatively steady to 2040, declining only slightly over that time.

Young people, and particularly young males, are significantly more likely to be involved in fatal crashes than other age groups. In 2012, for every 100,000 of the U.S. population, an average of 27.6 males and 18.8 females between the ages of 20-24 died in fatal crashes; the highest rate of any age group including those over 84. Several factors are believed to impact the higher rate of fatalities among young people including driver inexperience and a greater likelihood to adopt risky driving behaviors, including speeding, and distracted or impaired driving.

The region's population of juveniles is largely concentrated in suburban communities, and particularly in Amherst, Brookline, Hollis, Litchfield, Mont Vernon and Pelham. Children represent the smallest share of the population in the City of Nashua and the region's westernmost rural communities of Mason, Lyndeborough and Wilton.

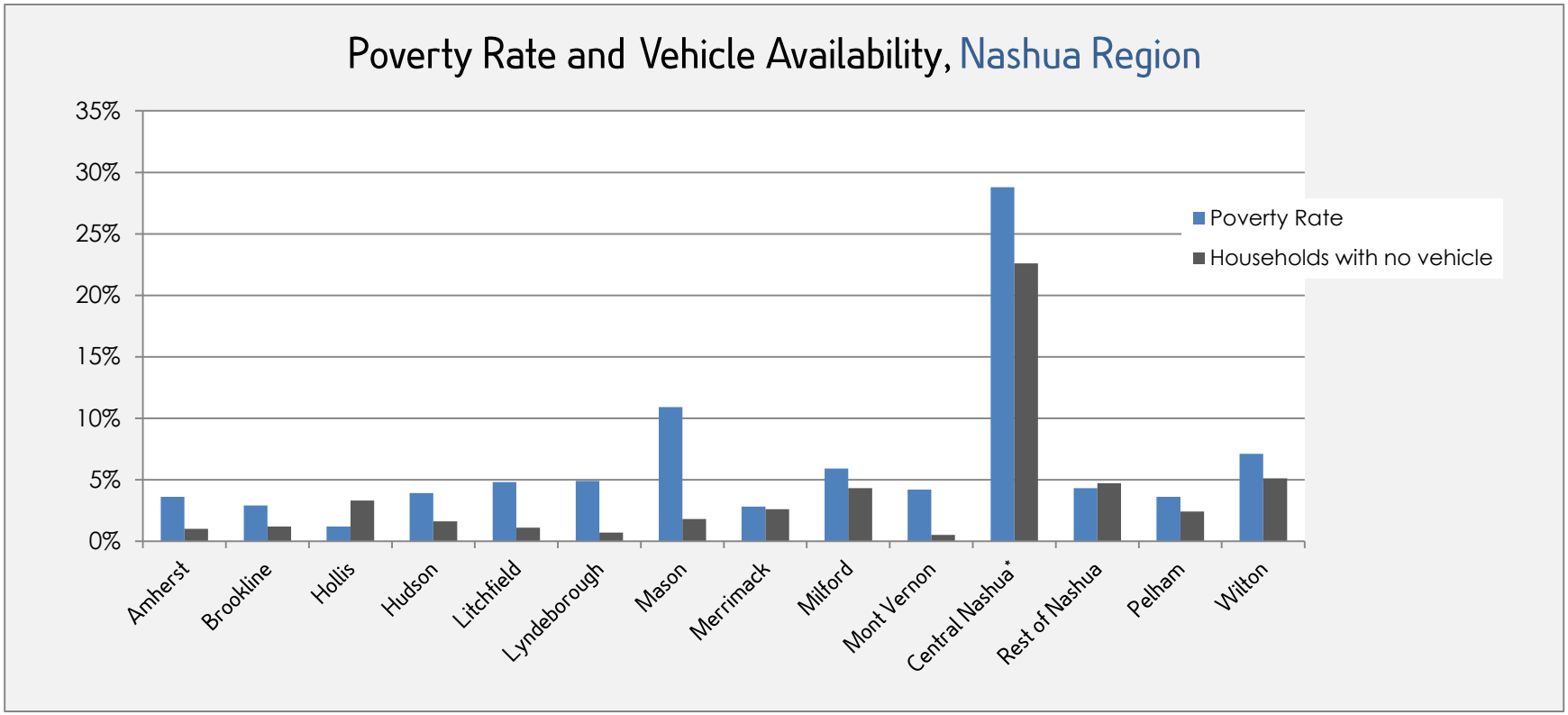
Share of Population Under Age 18, Nashua Region



The region's juvenile population is relatively evenly distributed and is most concentrated in suburban communities. *Source: U.S. Census American Community Survey (2008-2012)*

Recent research suggests that young people are less likely to pursue a driver's license than previous generations. For example, in 1983, approximately 70 percent of 18 year-olds nationwide had obtained a driver's license, however by 2010 only 49 percent had done so (Varga, 2014). Other research suggests young people are less likely to purchase automobiles than previous generations. In 2010, those between the ages of 21 and 34 purchased 27 percent of all new cars in America, down from 38 percent in 1985 (Tuttle, 2013).

Many explanations have been offered for these developments, including that impacts from the recession have limited the financial ability of young people to own and operate cars and that



Poverty rates and shares of households without access to a vehicle are highest in Central Nashua.

**-Central Nashua includes Census Tracts 105, 106, 107, and 108. With a population of 17,628, it makes up approximately 20 percent of Nashua's population.*

Source: U.S. Census American Community Survey (2008-2012)

new technological innovations consume more of their income. It has also been offered that young people are simply less interested in automobiles than previous generations and more open to utilizing alternative forms of transportation. Rising awareness of global climate change and increased demand for housing in walkable commmunities may also influence such behaviors. Regardless of the cause, it is the travel behaviors of younger populations should be continually monitored because if such behaviors are carried over into adulthood, they will significantly impact transportation patterns in future years.

Poverty and Vehicle Availability

The Nashua Region enjoys a demographic profile of a relatively affluent population. Poverty levels in all outlying municipalities track well below the national rate. Poverty levels are slightly higher in the region's westernmost

rural communities, particularly so in Wilton and Mason. However, the area of greatest concern in the region is Central Nashua. This area, which makes up approximately 20 percent of the city's population, is home to a relatively significant concentration of poverty; all four census tracts encompassing Central Nashua, boast poverty levels above 27 percent.

In 11 of the region's 13 municipalities, fewer than 5 percent of households lack access to an automobile and in seven of those communities, fewer than 2 percent do (American Community Survey, 2012). While Nashua also provides the best developed transit system in the region, 8.3 percent of households lack access to an automobile. Households without access to automobiles are most concentrated in Central Nashua, the area of the region best served by public transit and where many amenities are within walking distance. More than three percent of households lack access to an automobile in the municipalities of Hollis, Milford and Wilton.

Growth Patterns and Land Uses

Travel behaviors are significantly impacted by the density, diversity, design, and the scale and location of land uses. Other factors, including the demographics of residents, also impact such decisions. Additionally, transportation systems impact land development patterns by improving mobility.

Historically, residential areas in the region clustered around major employment centers. In Nashua, Milford and Wilton, where textile mills powered local economies in the late 1800s and early 1900s, early residences located within walking distance of mills because mobility was very limited. The introduction of passenger rail service and streetcar service within Nashua opened some additional areas to development, but the automobile most dramatically influenced the region's settlement patterns, opening virtually all areas with road access to development.

Since 1960, population growth in the region has consistently migrated from the City of Nashua to outlying communities. While Nashua housed 61 percent of the region's population in 1960; the city accommodated only 42 percent in 2010. During the same period, population growth in outlying communities experienced rapid growth. Notably, Merrimack's population increased from fewer than 3,000 residents in 1960 to more than 25,000 in 2010. Similarly, Hudson grew from fewer than 6,000 residents in 1960 to nearly 25,000 in 2010. Growth in outlying communities was largely driven by single family home construction.

Many significant transportation investments followed this growth, including construction of Continental Boulevard in Merrimack, widening of Route 101A through Amherst to Milford, and the completion of a 2-mile section of the Hudson Circumferential Highway linking Hudson and Nashua.

The dispersed nature of this growth, and the fact that much of it occurred distant to employment and commercial centers, can make it difficult to provide transportation options to such areas aside from car travel. Consequently, no public transit exists outside of Nashua and pedestrian facilities in many outlying communities are not well developed, though some downtown and village areas provide notable exceptions. Commuting trips are also relatively long; Nashua is the only municipality in the region where the average commute time is below the national average of 25.4 minutes (Nashua's average commute is virtually identical at 25.3 minutes) Merrimack, Lyndeborough and Milford are the only other municipalities in the region where the average commute time registers under 29 minutes.

Mason and Wilton endure the longest commutes at 41 minutes and 34 minutes respectively.

Average commute times by municipality

25 minutes
Nashua

27-29 minutes
Lyndeborough, Merrimack, Milford

30-32 minutes
Amherst, Hudson, Litchfield, Pelham

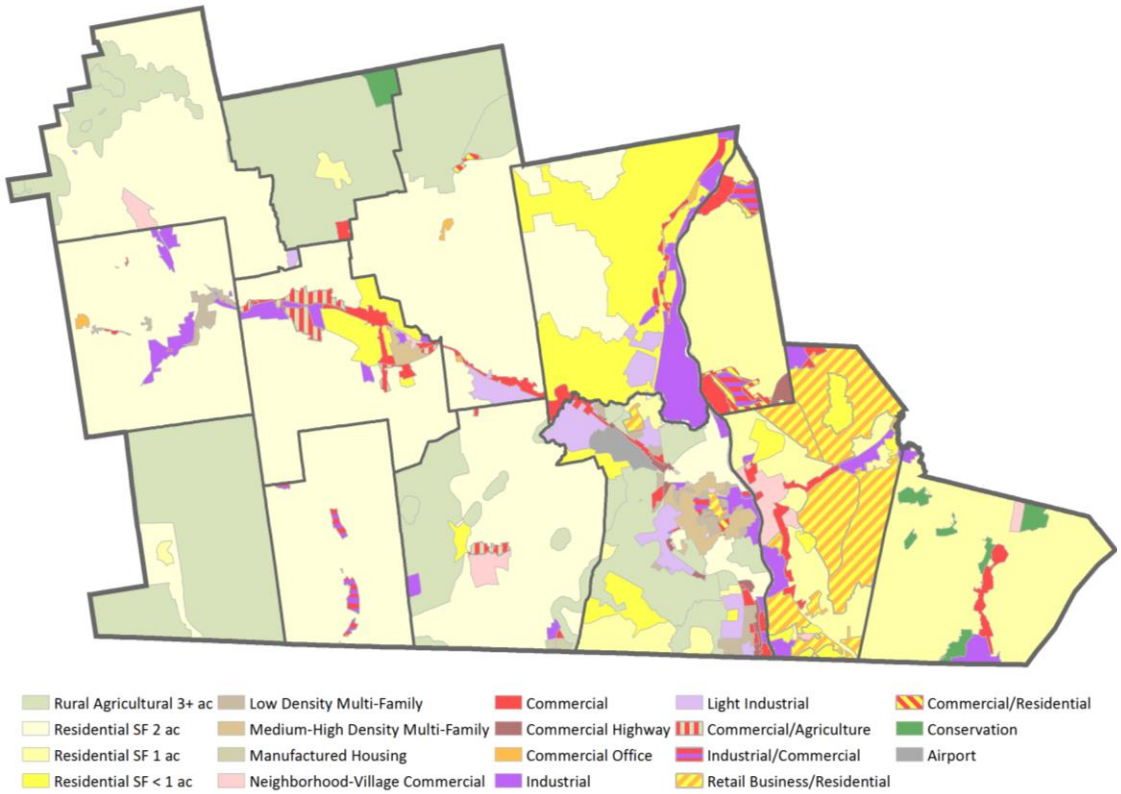
33-35 minutes
Brookline, Hollis, Mont Vernon, Wilton

41 minutes
Mason

Source: U.S. Census American Community Survey, 2008-2012

All municipalities of the region, and particularly all those except Nashua, are very reliant on the automobile for trips. Downtown Nashua; where population density is relatively high, pedestrian and transit facilities are well developed and commercial and employment destinations

Zoning districts by primary highest density or permitted use



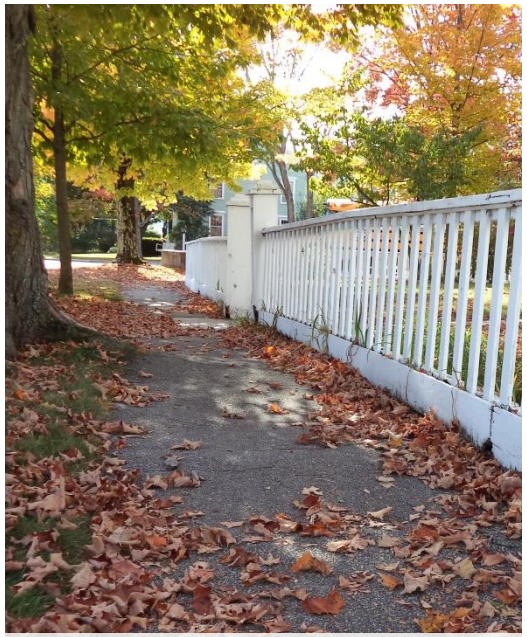
Minimum lot size restrictions of two acres or more are particularly prevalent in the region's westernmost communities.

Source: NRPC interpretation of municipal zoning ordinances

are proximate; enjoys the highest levels of alternative travel mode usage in the region.

The City of Nashua serves as the employment hub of the region, accounting for over 52 percent of all jobs. Merrimack is the second largest employment center in the region supplying approximately 18 percent of all jobs. Employment centers, both in the City of Nashua and across the region, are largely centered along major transportation

corridors, including the F.E. Everett Turnpike, Route 101A and the Main Street corridor in Downtown Nashua. Approximately 85 percent of all jobs within the region are located within one-quarter mile of these three routes (NRPC GIS analysis, 2014). Secondary routes, including NH State Routes 3A, 13, 28, and 111 provide most of the remaining employment in the region.



A sidewalk in Amherst Village.
(Photo by NRPC)

Regional Road Network

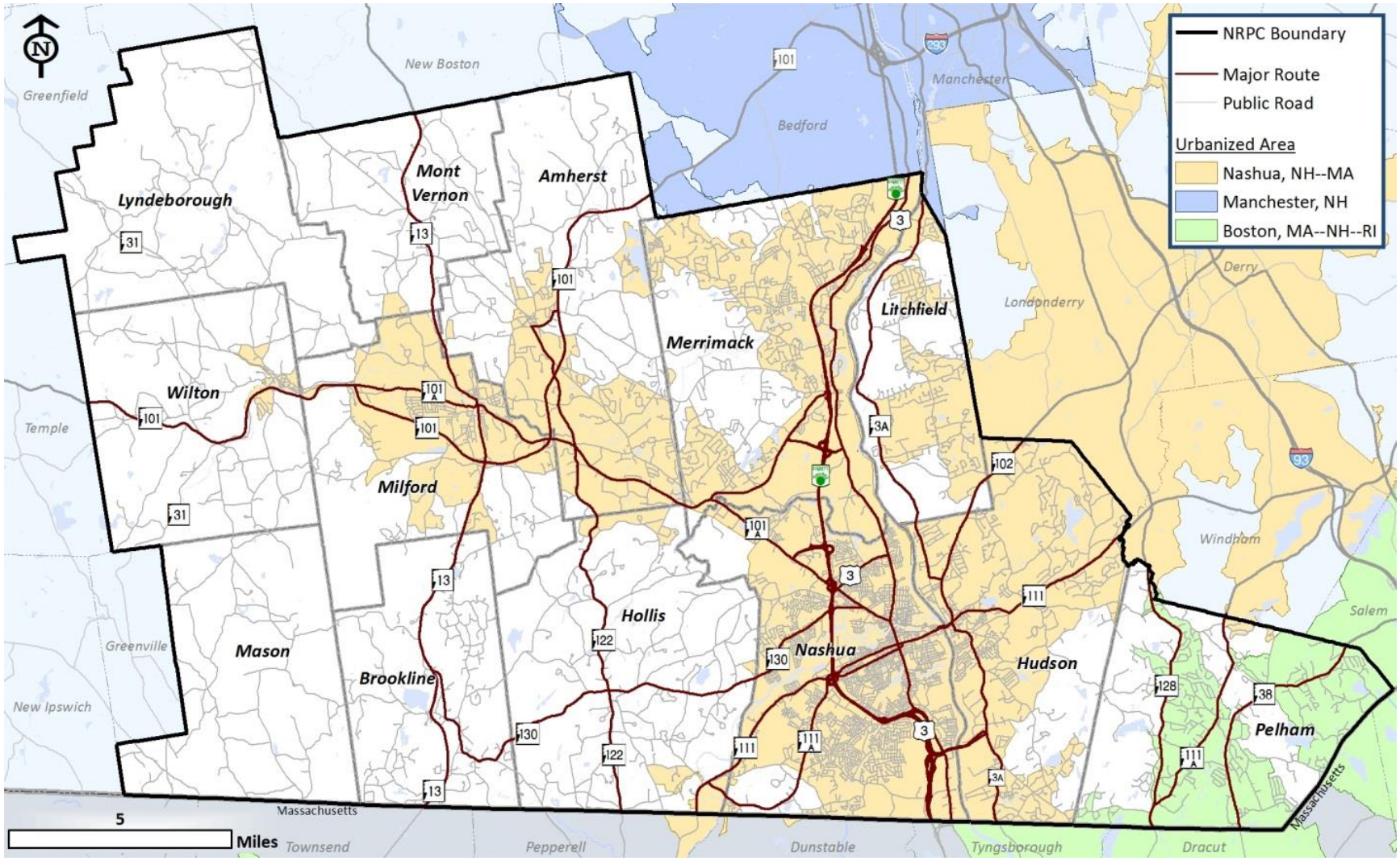
Automobile travel is the dominant form of transportation in the Nashua Region and the area enjoys an extensive road, highway and bridge network. The F.E. Everett Turnpike is the primary north/south arterial in the region. The Turnpike runs from the Massachusetts State Line northward, through Nashua and Merrimack, and exits the region at the Merrimack/Bedford border. It connects the greater Boston area with the Nashua region and also provides access to the central and northern areas of New Hampshire. Construction of the F. E. Everett Turnpike began in 1953. By 1966, the turnpike extended 45 miles between the New Hampshire/Massachusetts border and the state's capitol in Concord. Interchanges have been added and improved through the years; the most recent interchange, which provides access to the Manchester Regional Airport, opened to traffic in 2011 just north of the region in Bedford.

Other key north/south routes in the Nashua region:

- Daniel Webster Highway provides an alternative north/south corridor to the Turnpike in Nashua, extending from the Massachusetts state line through Nashua to the Henri Burque Highway where it rejoins US 3.
- NH 3A goes from the Massachusetts state line through Hudson and Litchfield on the eastern side of the Merrimack River.
- NH 102 runs northeasterly from Hudson center to Londonderry and connects with I-93.
- NH 38 runs through Pelham and provides access to Massachusetts and I-93
- NH128 also runs through Pelham and provides access to Lowell, MA via Dracut, MA. NH 128 also provides alternative route to Manchester, NH.
- NH 122 provides a north/south corridor west of Nashua from the Massachusetts state line through Hollis and Amherst.
- NH 13 extends from the Massachusetts state line in Brookline through Milford and Mont Vernon.

NH101A is the primary east/west arterial west of the Merrimack River. It extends east from Milford to downtown Nashua where it terminates at the intersection of Main Street, providing access to the downtown business district and South Nashua and Massachusetts

Regional Road Network



The rural communities of Mason and Lyndeborough are the only municipalities in the region without a major state route within their borders.

Source: NRPC GIS

(as Daniel Webster Highway); Concord Street, which provides access to Merrimack and points north as it rejoins US 3 at the Henri Burque Highway intersection; and NH 111A (Canal Street), which continues east across the Merrimack River into Hudson, ultimately connecting with I-93 (as NH 111). NH101A serves as both a travel and retail corridor with heavy development in Nashua, Merrimack and Amherst. Until the 1970s, Route 101A was a two-lane rural road. As the communities west of Nashua grew, so did traffic volumes along 101A. In the mid-70s, the road was widened to 5-lanes from the Nashua/Merrimack town line westerly to just over the Amherst town line, and between 1987 and 1990, the rest of the roadway was widened to its intersection with the NH 101 Bypass in Milford.

Other key east/west routes in the Nashua region:

- NH 101 is the primary east/west corridor in southern New Hampshire, connecting the Nashua Region to the Keene in the western part of the state and the Seacoast to the east. Within the region, NH 101 connects Wilton and Milford to Amherst, and to Nashua via an interchange with NH 101A.
- NH 130 extends westerly from Nashua, providing access to Hollis and Brookline, where it intersects with NH 13.
- NH111 connects the F.E. Everett Turnpike with downtown Nashua. It continues to the east, crossing the Merrimack River at the Taylor Falls Bridge and extending into Hudson Center. NH 111 exits the region on the east side of Hudson, eventually connecting with I-93 via Exit 3 in Windham, NH.

There are only two crossings of the Merrimack River within the Region. The northern-most crossing, between Downtown Nashua and Hudson Center, is comprised of two one-way bridges: the Taylor Falls Bridge, mentioned above, crosses the river in the easterly direction, and the Veterans Memorial Bridge crosses in the westerly direction. Both bridges carry two lanes of traffic and are consistently plagued by serious intersection capacity problems on both sides of the River.

The Sagamore Bridge is the second and southernmost crossing of the Merrimack River in the region. The bridge was expanded as part of the Circumferential Highway project and connects the F.E. Everett Turnpike and Daniel Webster Highway with NH 3A in Hudson. This is a high capacity bridge with four lanes of traffic. The bridge is a major commuting route for residents east of the Merrimack River seeking to access the Turnpike. Adjacent to the Sagamore Bridge is the only dedicated bicycle pedestrian crossing of the Merrimack in the region.

In November 2011, the Manchester Airport Access Road (MAAR) opened. This road provides another crossing of the Merrimack River at the northern most portion of the NRPC region in Merrimack. While the primary purpose of the road is to provide direct access to the Manchester Airport from the F. E. Everett Turnpike, it also improves access to Litchfield. Past analyses have suggested that the MAAR is located too far north to significantly reduce traffic crossing at the Taylor Falls/Veterans Memorial Bridge or the Sagamore Bridge. Traffic counts collected by NH DOT support those forecasts as traffic counts at Sagamore Bridge were virtually unchanged in 2012 and 2013 after construction of MAAR in 2011. NRPC is currently monitoring traffic volumes along the NH 3A in Litchfield and Hudson as well as

the Daniel Webster Highway in Merrimack to assess the impact/benefit of the MAAR on regional traffic flow.

Federal Functional Class

Federal functional classification is the process by which streets and highways are grouped into classes or systems, according to the type of service they are intended to provide. It reflects a highway's balance between providing land access versus mobility. In general, roads are classified as urban or rural based on US Census data, then as arterials, collector roads or local roads, based on function.

Class	Miles	Share
Class I - Primary	113	7.1%
Class II - Secondary	125	7.9%
Class IV - Urban Compact	58	3.6%
Class V - Local	1,238	78.0%
Class VI - Unmaintained	54	3.4%

Source: NRPC GIS

The functional classification of the nation's highways, roads and streets impacts the apportionment of federal funds. Roadways that are located on a Federal-aid Highway or that are designated as being part of National Highway System (NHS) are eligible for federal funds. Roads functionally classified as local streets or rural minor collectors are not part of the Federal-aid Highway System and are not generally eligible for Surface Transportation Program (STP) or NHS funds. The NHS includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. In the Nashua region, the F.E. Everett Turnpike, NH Route 101 and NH 101A are part of the NHS. Projects funded through these programs are generally initiated through New Hampshire's Ten Year Plan Process.

Traffic Volumes and Trends

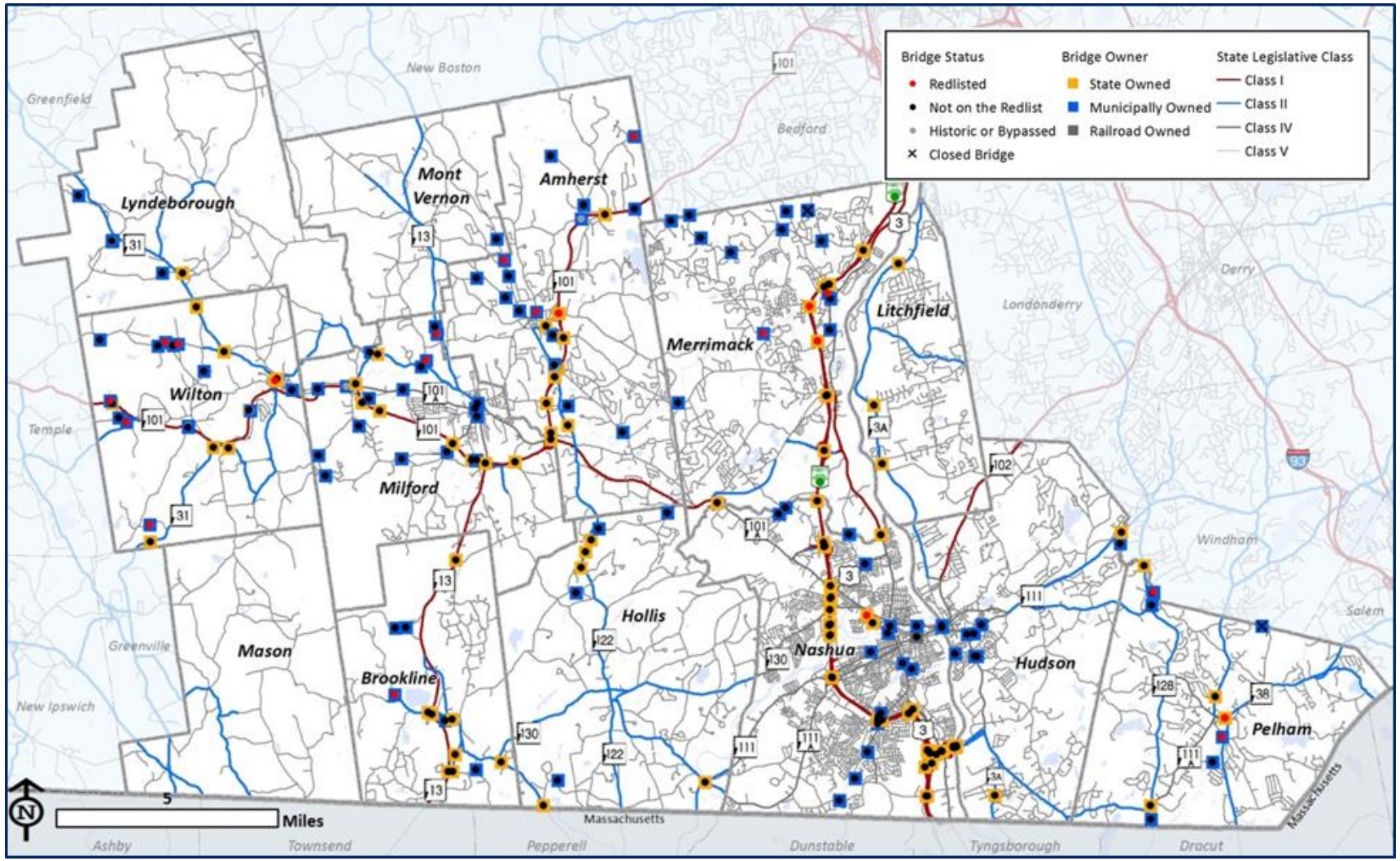
Custodian	Share
Locally Maintained	81.6%
NH DOT Maintained	15.0%
Unmaintained	3.4%

Source: NRPC GIS

NRPC conducts a traffic counting program each year to monitor existing traffic conditions. The counts are conducted to support the NH DOT Highway Performance Monitoring System (HPMS) and to establish baseline data used in the validation of the NRPC Travel Demand Model. In addition, the NH DOT maintains a number of permanent count stations within the region. Traffic volume data is typically gathered between April and November of each year. Since much of the data is collected during the summer months, seasonal adjustment factors are applied to arrive at a figure that represents a daily average for the entire year. In addition the data must be corrected for the percentage of truck traffic as the additional axels on heavy trucks can skew the results. All corrections to data are made by the NHDOT and resulting traffic volume is referred to as the Average Annual Daily Traffic (AADT).

The NRPC traffic count database contains hundreds of locations from throughout the region. Regionally, average daily traffic volumes have remained flat for the last decade in most areas. Traffic volumes on the east west corridors with in the region have remained flat or decreased slightly, while the north south corridors have only shown slight increases in average Annual Daily Traffic. The declines were most notable in the second half of the decade which featured gas prices

Regional Road Network by Functional Class, Bridge Status



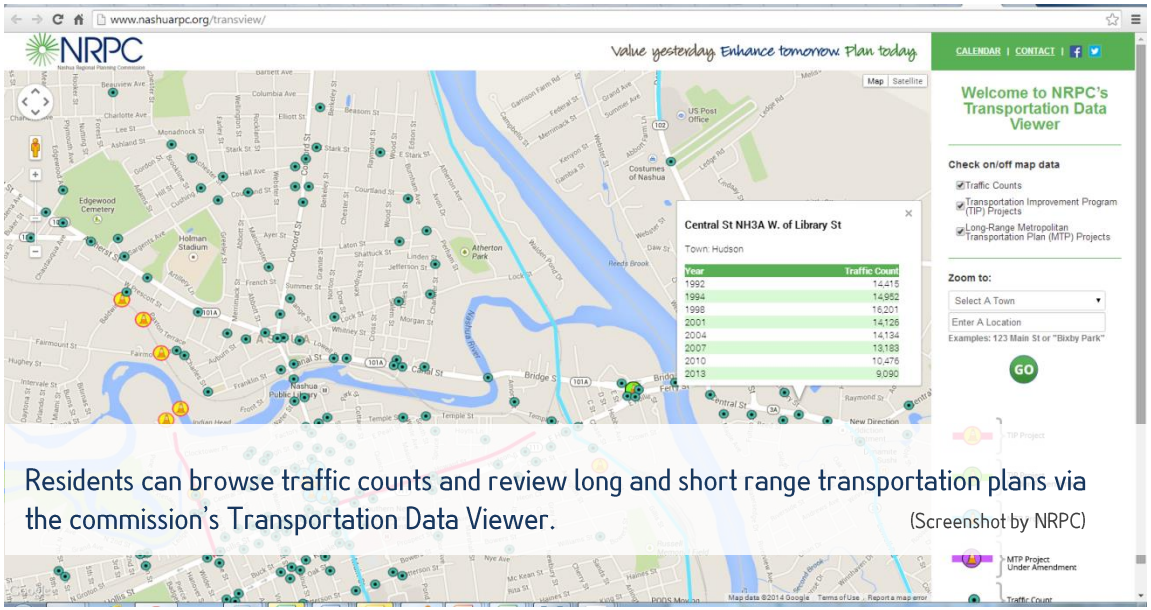
Several Class I roads traverse the region including all of Route 101 and the Everett Turnpike and parts of Routes 3, 13, 101A and 102.

Source: NH DOT, NRPC traffic counts

exceeding $4.00 per gallon and an economic recession. The sluggish economy combined with slower than projected population growth which may also have contributed to the flattening of traffic growth.

Notable decreases in the annual average daily traffic occurred along NH 101A at the Milford / Amherst town line and on NH 111 at the Taylor Falls Bridge however both roadways still experience peak hour congestion. The F.E. Everett Turnpike saw modest growth of about 1% in AADT over the course of the last decade. This is a much lower growth rate than experienced in previous decades. NH 3A has also showed a slight upward trend at specific count locations.

The recent declines in regional traffic are consistent with national trends in Vehicle Miles Travelled (VMT). National VMT dropped for only the second time in history in 2008. This corresponded with the economic recession and higher gas prices. It is expected that AADT and VMT will resume growth as the economy recovers but at a lower rate consistent with anticipated population projections. Additional count data is provided in the appendix. The entire NRPC traffic count database as well as projects in the region's Metropolitan Transportation Plan and Transportation Improvement Plan is available on line at http://www.nashuarpc.org/transview/



Residents can browse traffic counts and review long and short range transportation plans via the commission's Transportation Data Viewer. (Screenshot by NRPC)

Traffic Congestion

Traffic congestion is a condition on road networks that occurs as use increases, and is characterized by slower speeds, longer trip times, and increased vehicle queuing. In general, there are two types of congestion; recurring or non-recurring. Recurring congestion is experienced during peak travel periods when traffic volume approaches or exceeds the capacity of the roadway. Non-recurring congestion is experienced when vehicular travel slows down at unpredictable times and places. Non-recurring congestion can be attributed to traffic incidents, disabled or stopped vehicles on the roadway or shoulders, poor weather conditions, road construction or maintenance or special events generating excess travel demand.

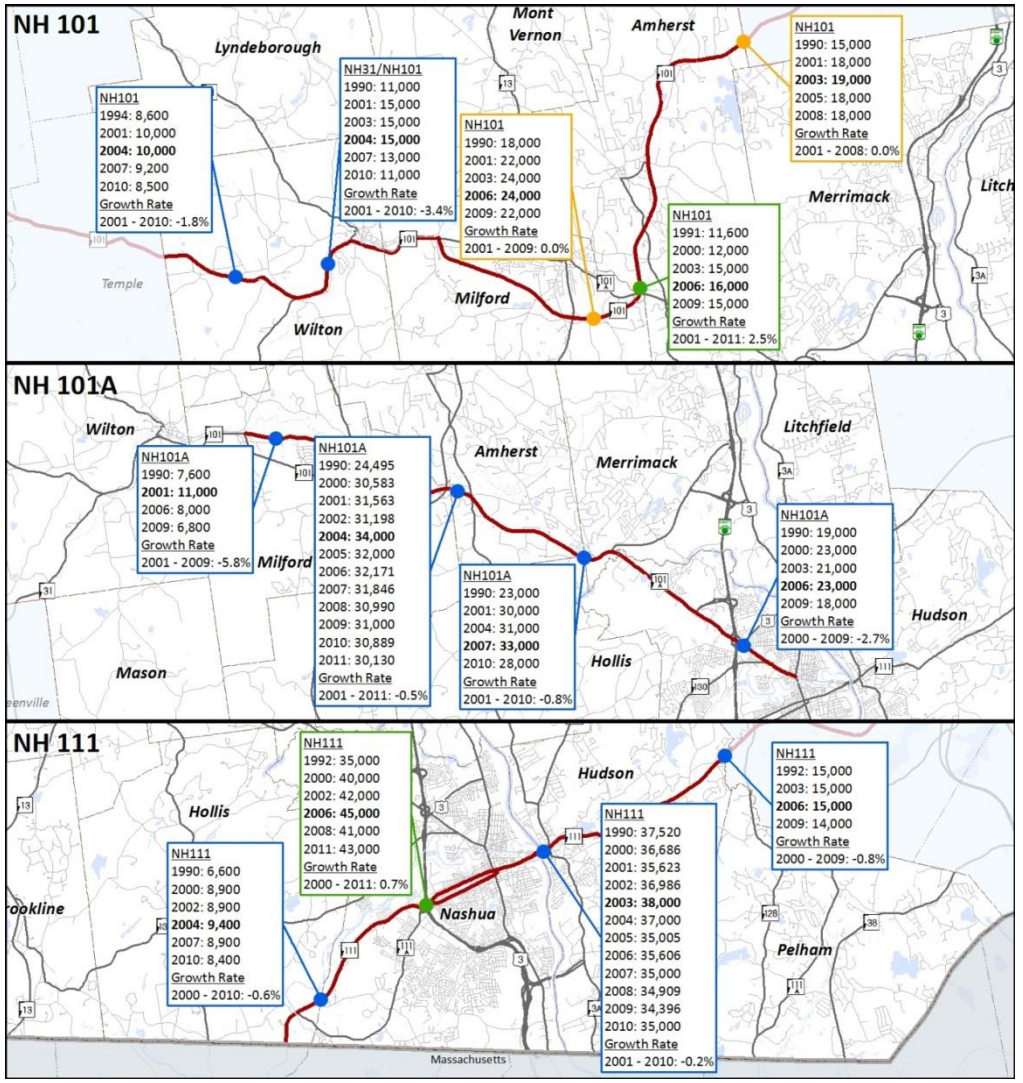
Traffic congestion is relative to the experience of the observer and the classification of the roadway. A higher level of congestion may be acceptable on a corridor with mixed retail and commercial uses or in a village setting but not acceptable

on an Interstate or major arterial corridor. Traffic congestion in New Hampshire is less than many of the neighboring Northeast states. Left unmanaged traffic congestion can have negative impacts on the economic vitality of the region, the quality of life of its residents and the environment.

NRPC developed its Congestion Management Process (CMP) as a planning and project programming tool that aids in the effective management of the transportation system through development and implementation of operational and travel demand management strategies. It also provides system performance information to decision makers to assess the effectiveness of implemented strategies as well as identify system investment priorities.

In 2011, NRPC began to quantify traffic congestion in the region. The CMP process has identified segments of the regional roadway network that are experiencing congestion during peak travel periods, including sections of NH101A, NH111, F.E. Everett Turnpike and NH3A.

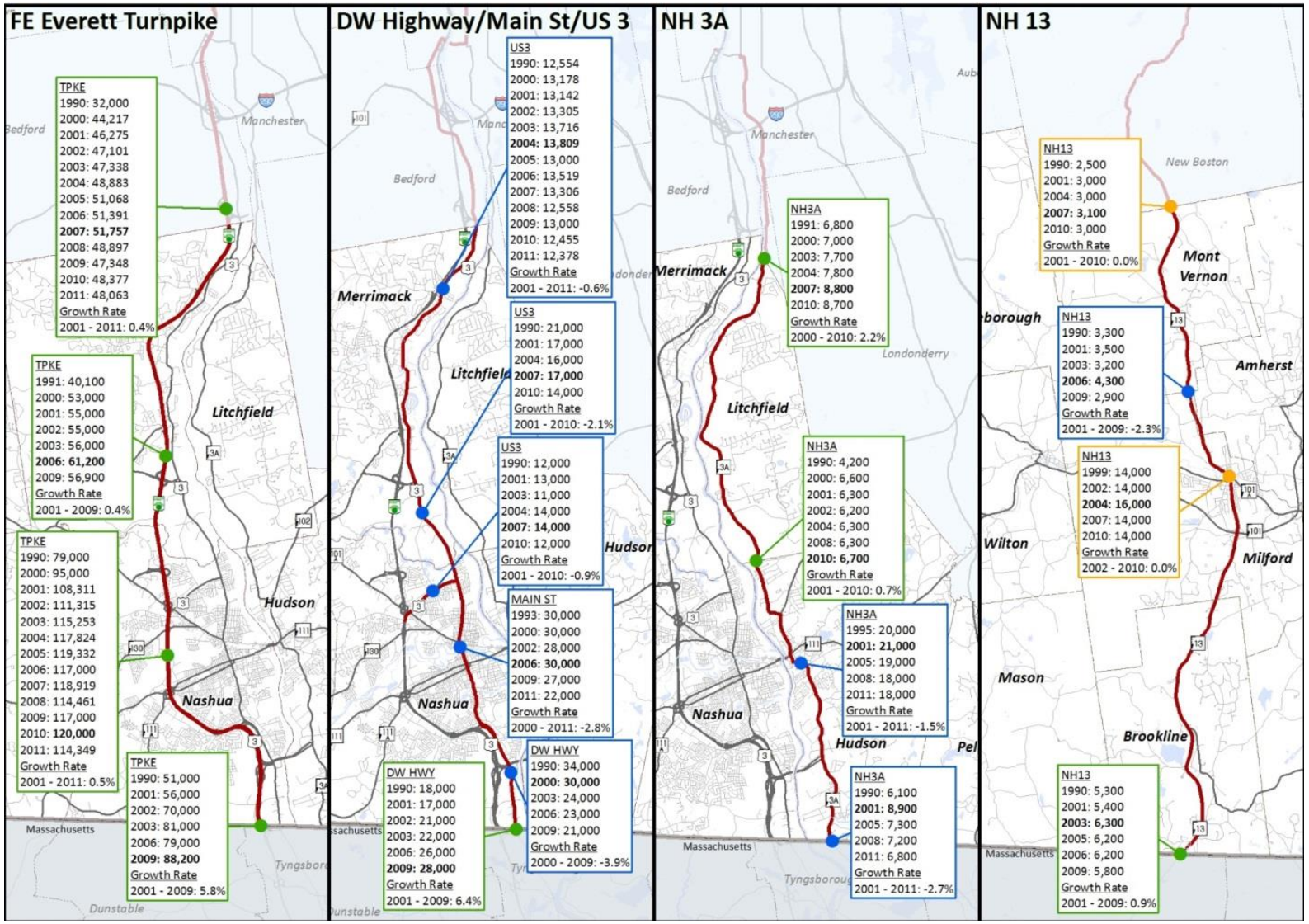
Traffic Counts, Major East-West Routes



Traffic levels on the region's key east-west routes have remained relatively consistent with, or fallen slightly from counts conducted between 2000 and 2001.

Source: NRPC GIS

Traffic Counts, Major North-South Corridors



Among key north-south routes, traffic counts increased the most in South Nashua along the F.E. Everett Turnpike and Daniel Webster Highway.

Source: NRPC traffic counts

NH 101A

Route 101A was evaluated between the Milford Oval and Exit 8 of the F.E. Everett Turnpike. As both the region's major east-west route and a major commercial corridor, more than 25 traffic signals line the route with speed limits ranging from 25 mph in East Milford to 40 mph along most of the corridor. Congestion along the corridor was found to be most pronounced in Nashua and in South Merrimack.

NH 111

Travel time on NH 111 was evaluated between the F. E. Everett Turnpike at Exit 5 and the Hudson Windham Town Line. The NH111 corridor experiences pockets of heavy congestion. Congestion levels were found to be most pronounced between Downtown Nashua crossing the Merrimack River into Hudson Town Center, with delays averaging approximately 10 minutes over free-flow conditions.

F.E. Everett Turnpike

The F.E. Everett Turnpike was evaluated between the Bedford Toll Plaza and the Massachusetts state border. Travelers along the corridor experience minor pockets of recurring congestion associated with the bottleneck conditions between Exits 8 and 10 and particularly so between Exit 11 and the Manchester Airport Access Road. Congestion is not a significant issue along the turnpike in Nashua, as travel times mirror free flow conditions.

NH 3A

The NH 3A has pockets of congestion throughout the corridor. Approaching the Hudson town center from the north or from the south, the average traveler can expect significant delay. This is particularly true with travel time during the evening peak where travel on the approach to the intersection of NH 3A and NH 111 can take 5 to 6 times longer than free flow conditions.

The congestion management process is ongoing and data on additional corridors will be collected and analyzed. This data and analysis will be used to prioritize needs and support funding requests for improvements. Details of the data collection methodology and complete analysis of each corridor is available in CMP Corridor Reports listed on the NRPC web site. More information on the Congestion Management Process is also available on the NRPC website.

Parking Facilities

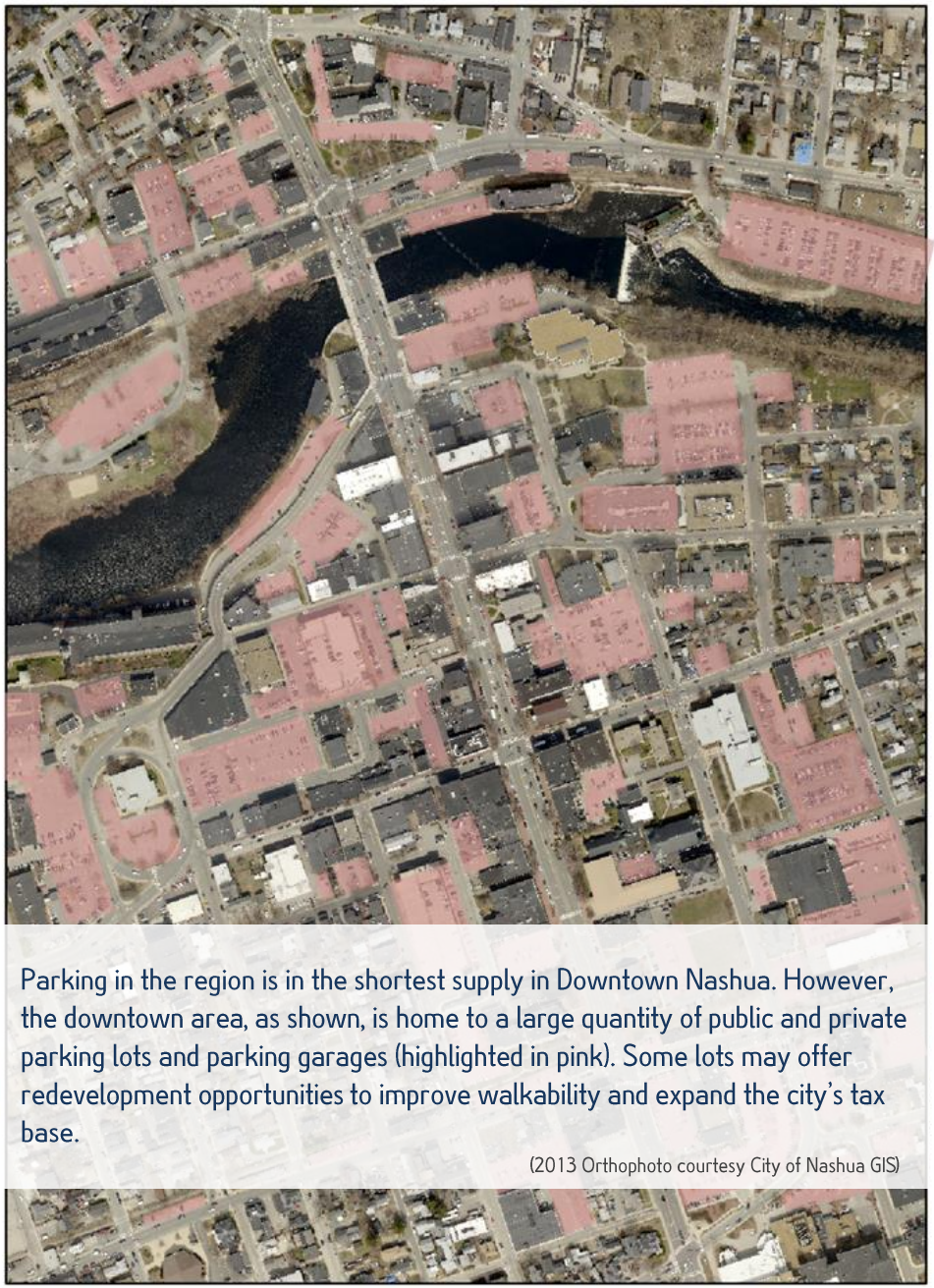
Vehicular parking facilities are well distributed across the region. In most areas, parking is easily accessible and convenient to destinations. Parking is so plentiful in some areas, that under-utilized parking lots may present redevelopment opportunities to both expand municipal tax bases and enhance an area's walkability and aesthetics.

Nashua is the only municipality in the region to charge for public parking, and parking fees are only collected in some areas of the Downtown area. Beginning in 2013, the city began installing solar-powered electronic parking payment stations in some areas. The stations are more convenient for many users as they accept debit and credit card payments. Public parking is available along streets and in surface parking lots as well as

two parking garages in Downtown Nashua. The city charges a lower hourly rate in its garages and some of its surface lots to encourage parking there for longer downtown visits. By incentivizing garage and lot parking, the city encourages a higher rate of turnover for highly sought after on-street parking.

By incentivizing garage and lot parking (through lower rates), Nashua encourages higher turnover of on-street parking.

According to the Nashua Department of Parking Services, parking occupancy reaches between 75 and 85 percent in downtown municipal garages during business hours, which is enforced as between 7 a.m. and 5 p.m. for most areas. Parking occupancy drops significantly during evenings and falls to as low as 15 percent on weekends. The garages might be well-suited to handle additional residential development, as peak parking demands for residential units are virtually the reverse of those associated with office developments.



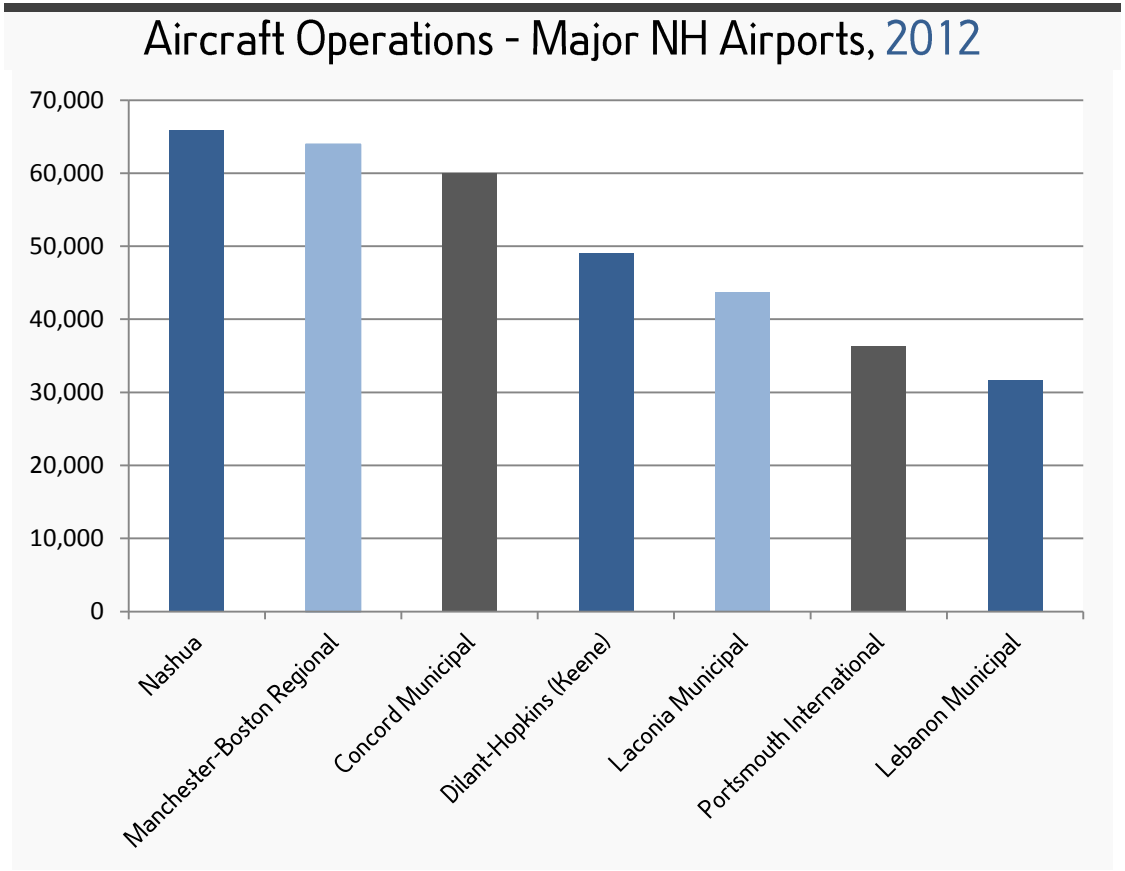
Parking in the region is in the shortest supply in Downtown Nashua. However, the downtown area, as shown, is home to a large quantity of public and private parking lots and parking garages (highlighted in pink). Some lots may offer redevelopment opportunities to improve walkability and expand the city's tax base.

(2013 Orthophoto courtesy City of Nashua GIS)

Air Traffic

The Nashua Airport is one of 25 public use airports in New Hampshire and the only one within the Nashua Region. Although the Nashua Airport provides very minimal commercial service (there were only 48 commercial service enplanements in 2013, according to the Federal Aviation Administration), it is the busiest general aviation airport in New Hampshire.

Nashua Airport is the only airport in New Hampshire classified as a reliever airport by the FAA under the 2009-2013 National Plan of Integrated Systems. Reliever airports are large general aviation airports located in metropolitan areas that are designated to handle additional traffic when primary commercial airports reach capacity. Lawrence Municipal Airport in Massachusetts and Auburn-Lewiston Airport in Maine are examples of other reliever airports in New England. Reliever airports are the third highest airport classification under the FAA system, after commercial service-primary and commercial service-non primary airports. In New Hampshire, Manchester-Boston Airport and Lebanon Municipal Airport are classified as commercial service-primary airports while Portsmouth International Airport at Pease is classified as a commercial service non-primary airport.



Nashua Airport recorded more aircraft takeoffs and landings than any other public airport in New Hampshire in 2012.

Source: Federal Aviation Administration

In 2012, the FAA released 'General Aviation Airports: A National Asset'. The report documents an 18-month study of the nearly 3,000 general aviation (GA) airports, heliports, and seaplane bases identified in

the FAA's National Plan of Integrated Airport Systems (NPIAS). This in depth analysis highlights for the traveling public the pivotal role GA airports play in our society, economy, and the aviation system. The study also aligns the GA airports into four categories---national, regional, local, and basic---based on their existing activity levels. Nashua Airport has been classified as a GA airport of national significance.

More aircraft are based at the Nashua Airport than any other airport in New Hampshire.

Air traffic at Nashua Municipal Airport is dominated by general aviation local and itinerant traffic. The airport boasts five flight schools, including a helicopter flight school. Military and charter service make up less than one percent of airport operations. In comparison, commercial air carriers made up nearly 50 percent of aircraft operations at Manchester-Boston Regional Airport in 2012. Nashua Airport offers no scheduled commercial service, however there are several charter operations regularly conducting business. Nashua Airport has approximately 250 based aircraft which is more than any other airport in the state.

Nashua Airport was one of the busiest airports in New England for many years, due in large part to the airport's partnership with Daniel Webster College and its flight training program. However, the program was discontinued in 2010 and airport activity dropped somewhat as a result.

Due to federal budget cutbacks resulting from sequestration, the FAA announced in 2013 that air traffic control would be discontinued at 149 airports, including at the Nashua Airport tower. However, in April 2013 Congress passed legislation to end air traffic controller furloughs and shift funds to avoid airport tower closures. In 2012, Nashua Airport completed a runway relocation and extension project to improve safety at the facility. Runway 14/32 was relocated 300 feet to the north to provide adequate separation between the runway and a nearby taxiway. The runway was also extended 500 feet to support larger aircraft operations. The project was funded in part by $16 million in grants under the FAA's Airport Improvement Program.

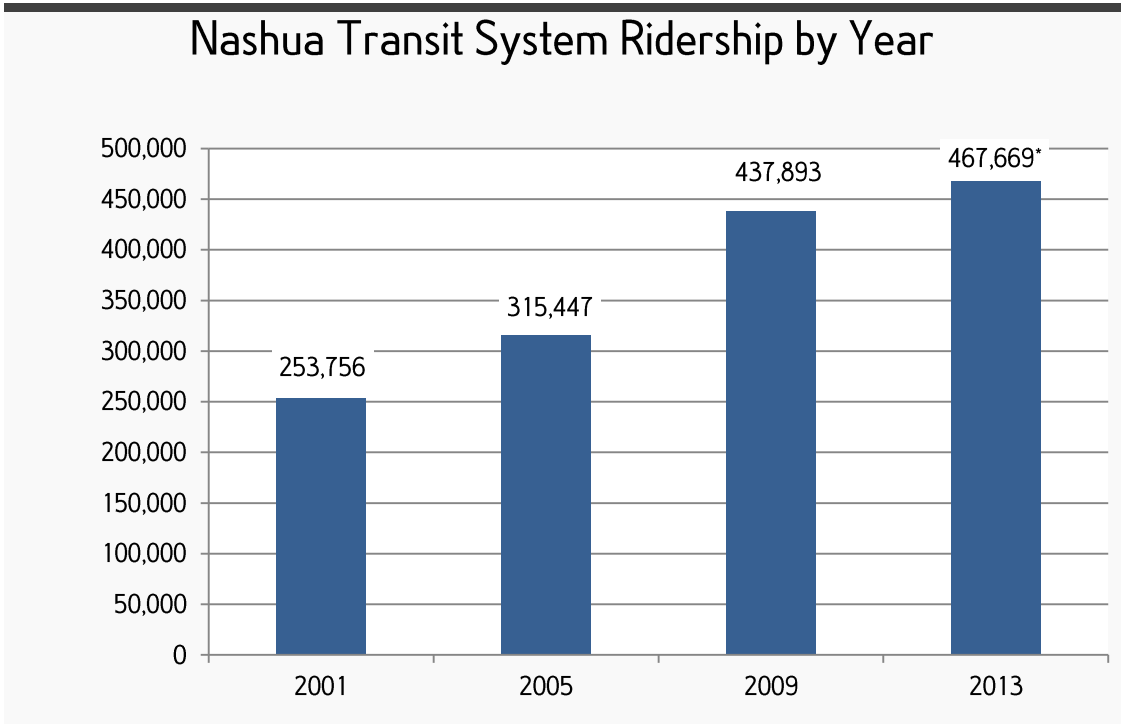
Nashua Airport – Boire Field
(Nashua Airport Authority)

Transit and Pedestrian/Bicycle Infrastructure

Nashua Transit System

The Nashua Transit System is the only public transit provider based and operated within the Nashua Region. The system operates nine different routes which run weekdays between the hours of 6:15 a.m. and 7:05 p.m. While transit coverage is extensive within the city of Nashua, the system does not operate in any surrounding communities. Service with more limited hours is available on Saturdays and the system does not operate on Sundays. All routes offer one hour service frequencies apart from the system's two most popular routes, servicing the city's busiest mixed-use corridors, which operate at ½ hour service frequencies. All routes offer connections to the Nashua Transit Center, located in Downtown Nashua.

In response to ridership demand for expanded hours of transit service in the evening, the system began it's 'After 7' service which provides weekday service from 7 p.m. to 10:30 p.m. on three routes. The Nashua Transit System is currently the only public transit provider in New Hampshire to offer public transit service after 7 p.m.



Nashua Transit System ridership has jumped by approximately 85 percent since 2001.

* - Measured between July 1, 2013 and June 30, 2014 *Source: Nashua Transit Service*

An analysis of ridership patterns among the Nashua Transit System service indicates that ridership is heaviest surrounding major commercial destinations. Ridership is by far the highest at the Nashua Transit Center where all routes converge and transfers are most accessible (the transit center accounted for 36 percent of all ridership aboard the system). However, the Pheasant Lane Mall, Nashua Mall Shopping Center and Westgate Shopping Center, all among the largest commercial centers in the region, accounted for the highest ridership of all stops in the system. The high level of ridership at Westgate Plaza, on the far western edge of the Nashua city boundaries, suggest that some riders may be using the stop and then walking to access destinations to the west, as the Route 101A corridor accommodates several large commercial centers in the

communities of Amherst and Merrimack currently unserved by transit.

The only Nashua Transit System route to rank in the Top 20 in ridership that is not located in a major commercial area is the Spit Brook bus shelter stop, located just west of the Exit 1 interchange along Spit Brook Road. This area is surrounded by a dense cluster of multi-family housing and is located directly across from the Nashua Office Park and the Nashua Technology Park, two major employment centers in the region.

Among Nashua Transit routes, the four routes serving the Daniel Webster Highway and Route 101A corridors boast the highest levels of ridership. In fact, the routes account for over 57 percent of all daytime ridership on the system. The system's 'After 7' evening service, which services popular stops with three routes, accounted for 9.4 percent of all ridership, indicating that the service, which only runs three hours is being well utilized.

Among cities with a population above 10,000, Nashua boasts the second highest share of residents who utilize public transit for commuting trips in the state.

According to data culled from the American Community Survey, Nashua boasts the seventh highest share of residents who utilize public transit for commuting trips in New Hampshire, and the second highest share among cities with a population above 10,000. Within Nashua, parts of the central city enjoy significant transit use. For example, 9.4 percent of residents who live along the city's downtown Main Street corridor (Census tract 107) reported taking transit to work. That is the highest rate of transit ridership of any census tract in the state. Additionally, 5.5 percent of residents in the city's 'Tree Streets' neighborhood (Census tract 108) reported taking transit for commuting trips, the 4th highest rate of transit use in the state. Higher transit ridership appears to be somewhat correlated to personal income in the region. Both census tracts have a poverty rate of approximately 30 percent, one of the highest rates in the region.

The region also offers Boston Express, a public-private bus service linking Nashua to Boston. The service is operated by a private company. Departures leave from the Exit 8 park-and-ride facility in Nashua and service South Station and Logan International

Nashua Transit Ridership

DAYTIME SERVICE	
Route 1	24,450
Route 2	70,704
Route 2A	48,584
Route 4	22,190
Route 5	32,006
Route 6	79,895
Route 6A	47,990
Route 7	26,530
Route 8	40,977
Route 9	38,450
Total Daytime	**431,776**
EVENING SERVICE	
NORTH	13,743
SOUTH	23,320
CENTRAL	7,830
Total Evening	**44,893**
TOTAL RIDERSHIP	**476,669**

Source: Nashua Transit System

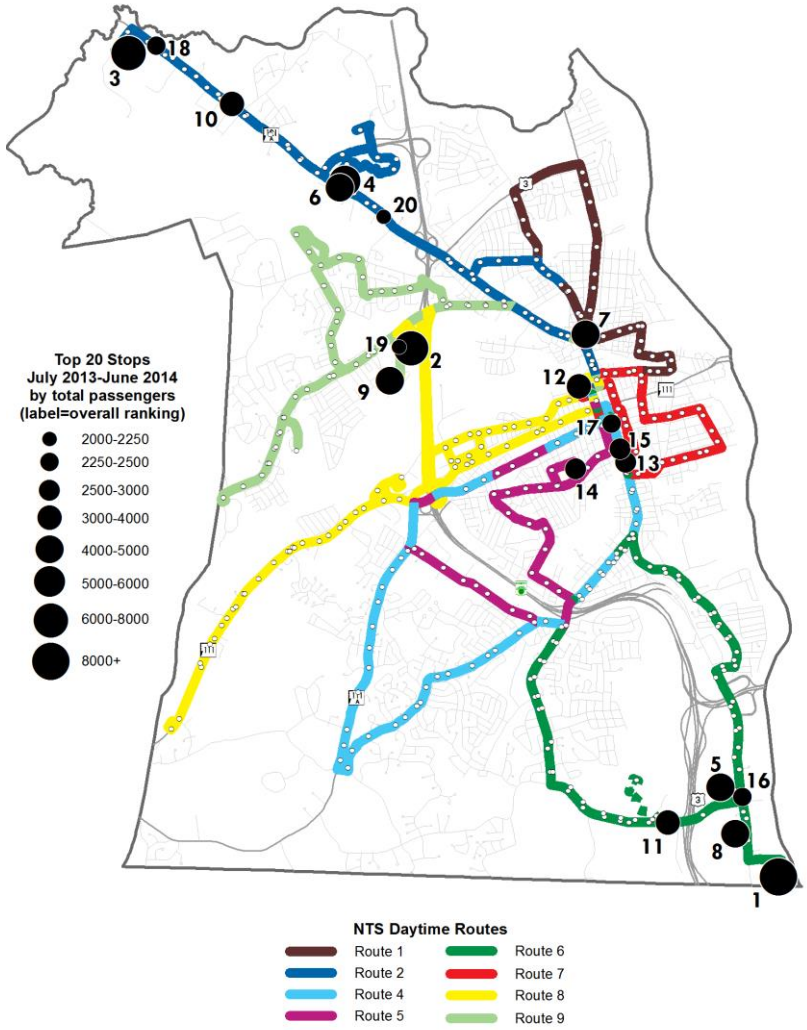
Airport, two of New England's largest transportation terminals, in Boston. The bus also stops at the Exit 35 park-and-ride facility in Tyngsborough, Mass. Lot counts indicate that vehicles with NH license plates make up approximately 70 percent of users of those facilities. Boston Express offers 13 daily departures from Boston and 12 arrivals on weekdays between 5 a.m. and 10:30 p.m.

Aside from the Nashua Transit Center, the Pheasant Lane Mall was the most popular Nashua transit stop in 2013-2014.

Manchester Transit Authority

The Manchester Transit Authority operates its Nashua Express service on weekdays and Saturdays between downtown Manchester and the Nashua Mall (FEE Turnpike Exit 6). There are 5 round trips on weekdays and 3 on Saturdays. This service allows a connection to the Nashua Transit System Routes 8 and 9 which run to the NTS Transit Center where passengers have full access to the Nashua Transit System route network.

Most Popular Stops, Nashua Transit System



Major retail centers in South Nashua, on Route 101A, and at Exit 6 proved most popular with transit riders in 2013-2014.

** - This map omits the Nashua Transit Center, which handled 169,899 passengers, or approximately 36 percent of all riders, between July 2013 and June 2014.*

Source: NRPC interpretation of municipal zoning ordinances

Demand Response Service

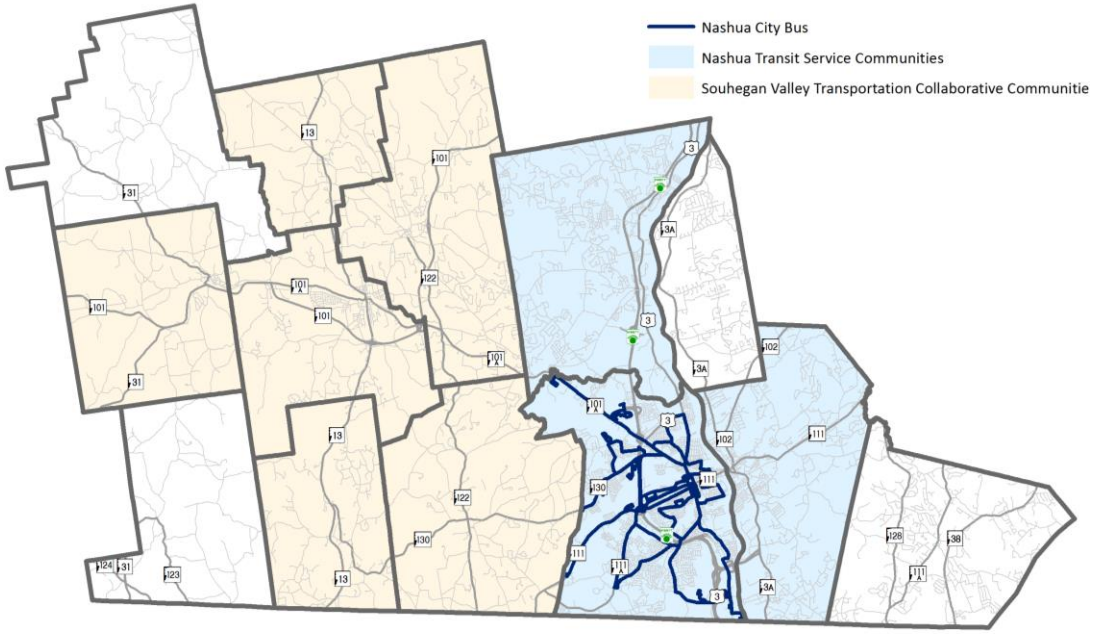
The Nashua Transit System provides demand response services, for both senior citizens and those who qualify as disabled under the Americans with Disabilities Act, via its City Lift service for residents of Nashua, and at reduced hours, to residents of Merrimack and Hudson. Those wishing to utilize the service must fill out an application and schedule an in-person review with the Nashua Transit System to ensure applicants meet qualifications. Six communities on the western side of the region provide such service through the Souhegan Valley Rides initiative.

Between 2009 and 2013, Souhegan Valley Rides ridership jumped by approximately 300 percent, from 1,224 to 3,678.

Souhegan Valley Rides

The Souhegan Valley Transportation Collaborative operates Souhegan Valley Rides, a dial-a-ride demand response bus service in the western part of the region.

Transit and Demand Response Service Areas, Nashua Region



Demand response service is available in all but four of the region's 13 communities.

Source: NRPC GIS

Originally launched to serve the towns of Amherst, Brookline, Hollis and Milford, the service recently expanded to cover Mont Vernon and Wilton. The service operates Monday through Friday between the hours of 8 a.m. and 6 p.m. As of April 2014, the service had provided 14,929 rides. The Nashua Transit System provides buses. Milford residents comprise the largest share of ridership, accounting for 73 percent of all rides. The service is sustained through fares, municipal appropriations and federal funding. The service is popular; in Milford, the only town in which residents vote directly on funding of the service, 78 percent of voters approved spending for Souhegan Valley Rides in 2013 (Town of Milford).

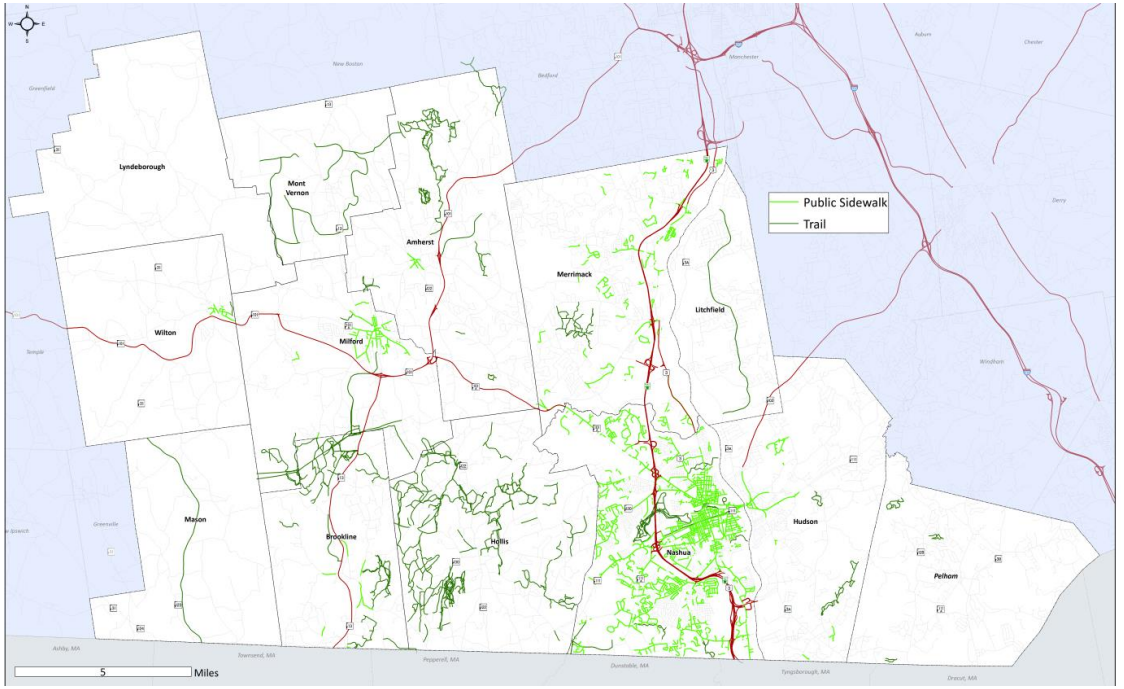
Bicycle and Pedestrian Facilities

As a share of commuting trips, residents of the region who walk or bike represent a relatively small share, comprising only 2 percent of the population. However, biking and walking offer significant benefits; they emit no greenhouse gas emissions, offer an excellent form of exercise and improved health outcomes for users and are less expensive to develop infrastructure for than automobiles.

Additionally, the region contains a handful of very walkable areas, providing a strong foundation for the expansion of pedestrian- and bicycle-friendly infrastructure and development. In Milford, 45 percent of the town's population lives within a half-mile of the downtown, followed by Wilton (40 percent) and Nashua (37 percent). Sidewalk networks in all three areas are well developed. Across the whole of the region, 28 percent of residents and 27 percent of jobs are located within a half mile of downtowns or town centers.

Several municipalities in the region have undertaken efforts to improve bicycle and sidewalk facilities in recent years. The City of Nashua continues to expand its riverwalk along the Nashua River in the downtown area. The Town of Brookline recently expanded sidewalk facilities in its village center while dual roundabout projects recently completed in Pelham village will improve pedestrian conditions in that community. Amherst officials are focusing on improving pedestrian conditions in areas surrounding schools and in the village center. The town of Merrimack recently completed a sidewalk and trail plan for its town center, while Milford officials are currently drafting a town-wide bicycle and pedestrian master plan.

Sidewalks and Trails, Nashua Region



Sidewalk networks are best developed throughout Nashua and in the town centers of Milford, Hudson and Wilton. The Town of Merrimack has over 20 miles of sidewalk facilities, but they are most prevalent in residential areas and are not well connected.

Sources: NRPC and municipal GIS data. Some municipal information not available in GIS database.

Share of households within ½ mile of town center

45 percent
Milford

37-40 percent
Nashua, Wilton

23 percent
Mont Vernon

17-18 percent
Lyndeborough, Wilton

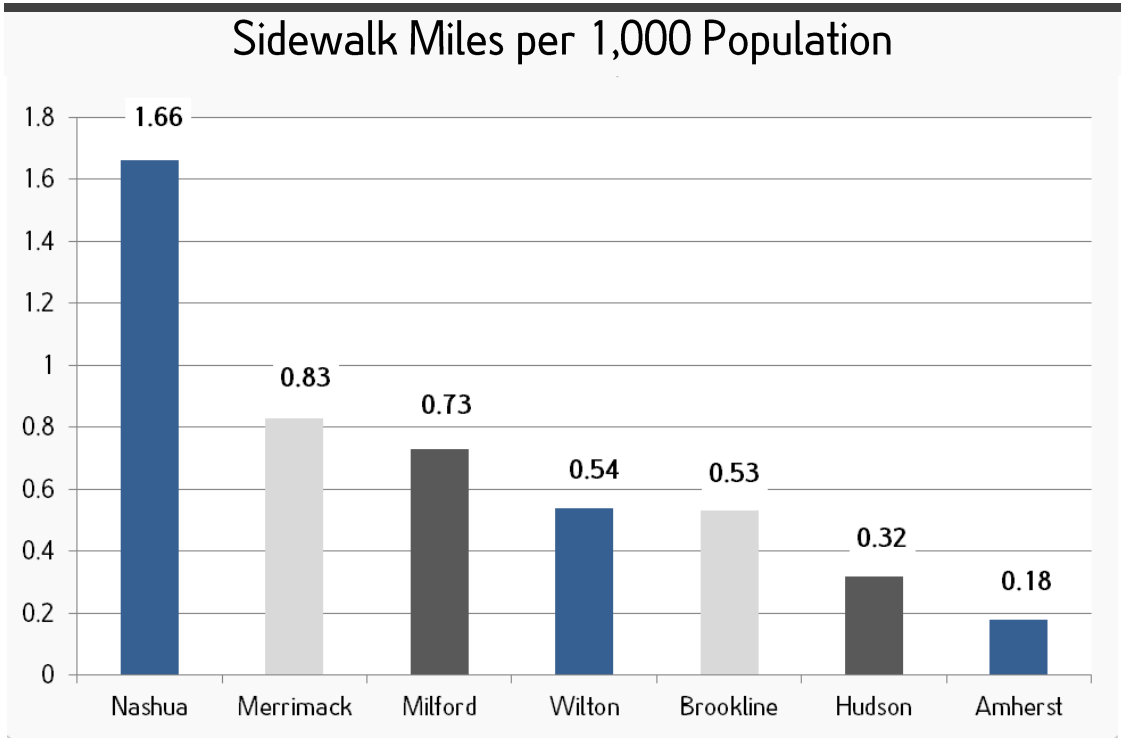
13-15 percent
Amherst, Brookline, Hudson

6-10 percent
Hollis, Mason, Pelham

4 percent
Litchfield

Source: NRPC GIS

Approximately 14 percent of car trips in the Nashua Region are for trip distances of one mile or less.



Nashua Transit System ridership has jumped by approximately 85 percent since 2001.

* - Measured between July 1, 2013 and June 30, 2014

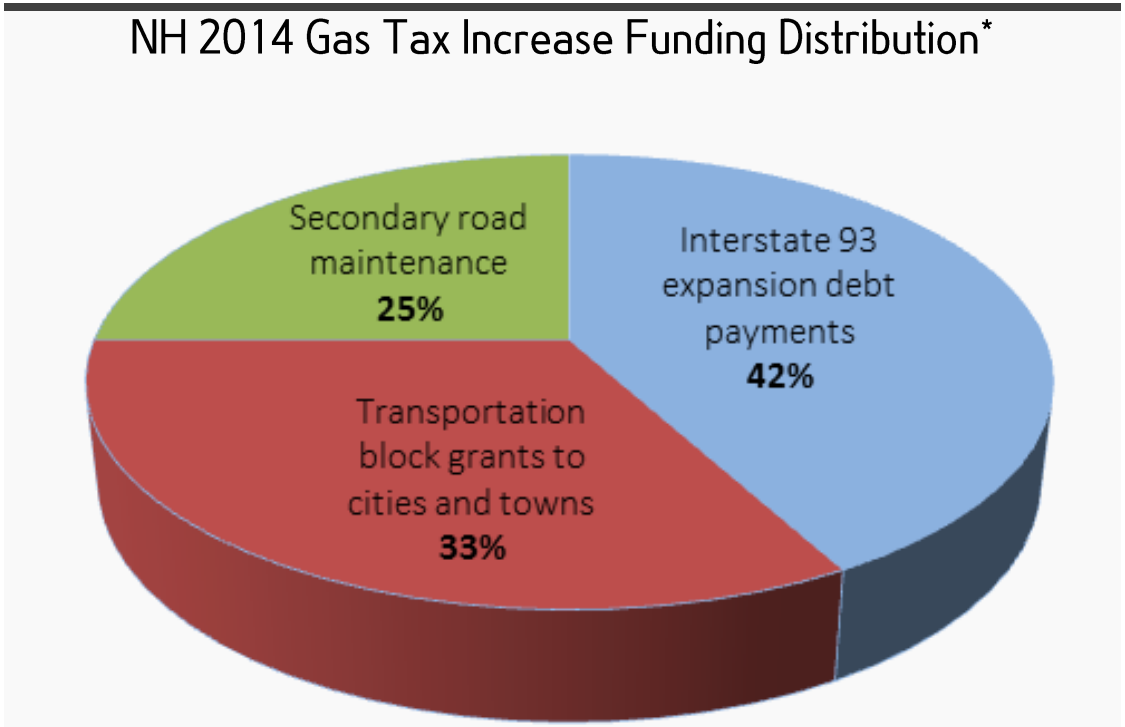
Source: Nashua Transit Service

The Milford Oval represents one of the region's most walkable neighborhoods. (NRPC)

Funding and Maintenance

The region enjoyed its most vigorous period of population growth between 1960 and 1980. Between 1960 and 1970, the region's population increased by 57 percent; between 1970 and 1980 it grew by 37 percent. Growth was largely concentrated in the region's suburban communities in the form of single-family home construction. This growth, largely occurring in a dispersed fashion, required a great deal of new road construction. Today many roadways built during this period are nearing the end of their lifespans or require costly maintenance projects to remain functional. Many bridges have been red-listed by the NH Department of Transportation, indicating severe structural deficiencies, and some have been forced to close.

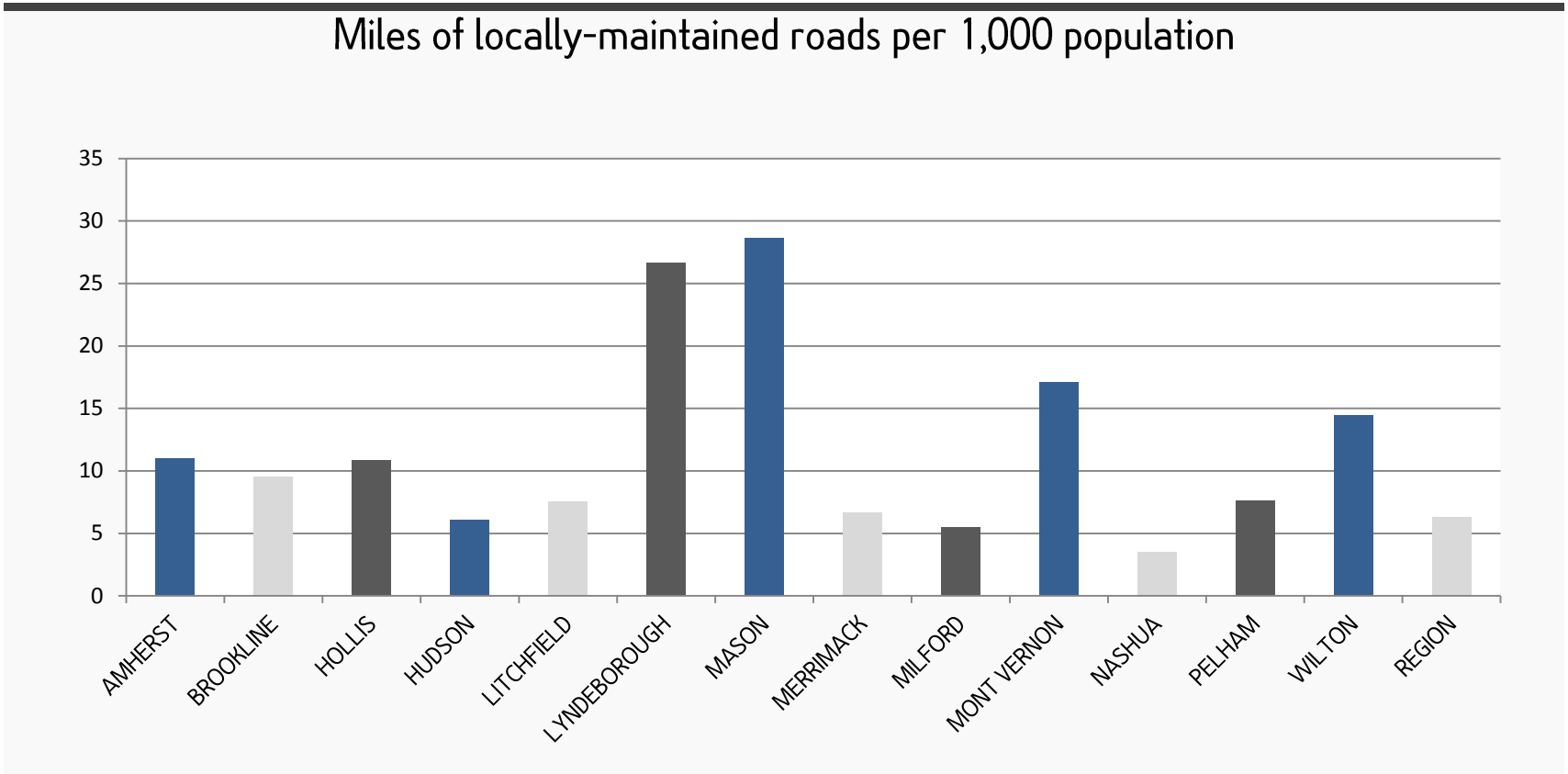
At the same time, costs related to road maintenance have increased while revenue streams have remained constrained. The NH State Legislature approved a 4.2 cent increase in the state gasoline tax in 2014. Approximately 42 percent of the increase is earmarked for debt payments related to the Interstate 93 expansion, while 33 percent is allocated to municipal transportation block grants and 25 percent is set aside for secondary road maintenance.



* - The 2014 Gasoline tax increase is set to be repealed in 20 years, or when bonding for Interstate 93 is paid off, whichever comes first.

Source: NH DOT

Prior to 2014, the state gas tax, New Hampshire's primary source of state transportation funding, remained static between 1991 and 2013 at $0.194 per gallon. The state did not increase aid for bridge maintenance and repair between 1994 and 2014, forcing some bridges to shut down. Inflation, coupled with advances in vehicle fuel efficiency significantly reduced the buying power of the tax over 22 years. New passenger vehicles sold in 2012, the most recent year for which data was available, were approximately 26 percent more fuel efficient than those sold in 1991, according to the U.S. Department of



Road maintenance funds are particularly stretched in the region's most rural communities where low population densities contribute to higher per capita road maintenance needs.

Source: U.S. Census 2010, NRPC GIS

Transportation. By indexing the total state and federal gas tax of $0.38 per gallon to inflation, its buying power rises to $0.61 in the year 2014. Assuming one drove a new car in 1993 at 15,000 miles per year, he or she paid approximately $300 that year on state and federal fuel taxes. When indexing for inflation to reflect 2014 buying power, that amount rises to $494. In comparison, a person driving a mid-size sedan in 2014 at 15,000 miles a year paid approximately $250 in total gasoline taxes over the year.

Taken together, these developments have significantly strained both municipal and state transportation budgets. Approximately 37 percent of state-maintained roadways are listed in poor condition and the state's backlog of repairs for roadways, highways

Approximate share of municipal budgets dedicated to road maintenance, 2012-2013

35-36 percent
Lyndeborough, Mason

29-30 percent
Amherst, Mont Vernon

20-22 percent
Brookline, Wilton

13-15 percent
Hollis, Merrimack, Wilton

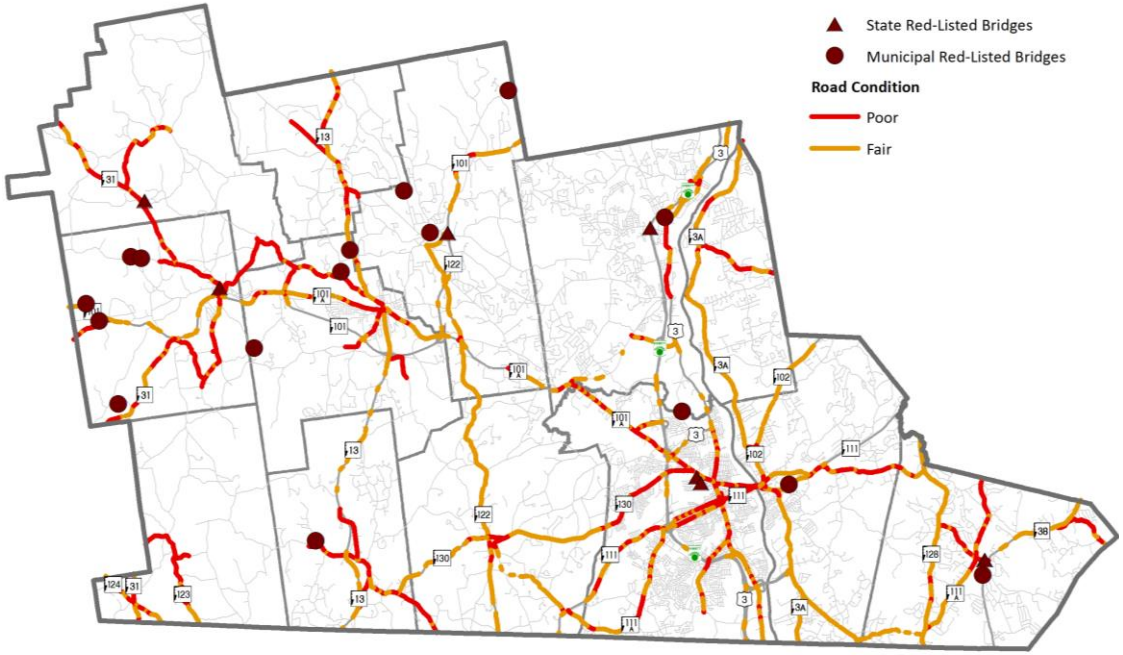
10-12 percent
Hudson, Milford, Pelham

Less than 5 percent
Nashua

Source: Municipal town reports and Nashua City Budget. Includes Highway and Streets line item spending, highways and streets administration spending, capital reserve fund installments for road maintenance, debt payments for investments directly related to road construction and maintenance, and warrant articles for road maintenance and construction. For the City of Nashua, parking and transit spending was not included. School spending not considered. Budget accounting practices vary by municipality and this list is designed only to provide an approximate share for each municipality.

and bridges reached $1.3 billion in 2013, according to one estimate (TRIP, 2013). Road maintenance costs consume the greatest share of municipal budgets in the region's most rural communities where low population density and scattered settlement patterns require long road networks. For example, in Nashua, every 1,000 residents are responsible for maintaining only 3.5 miles of roadway; in Mason that figure jumps to 28.6 miles. Roadway maintenance needs can place fiscal strains particularly on rural communities. Cost-sharing agreements and partnerships with neighboring communities may help reduce costs over time.

Red-listed Bridges and State Road Conditions



Every municipality in the region includes either red-listed bridges or state highways with poor pavement conditions.

Source: NH DOT

Safety

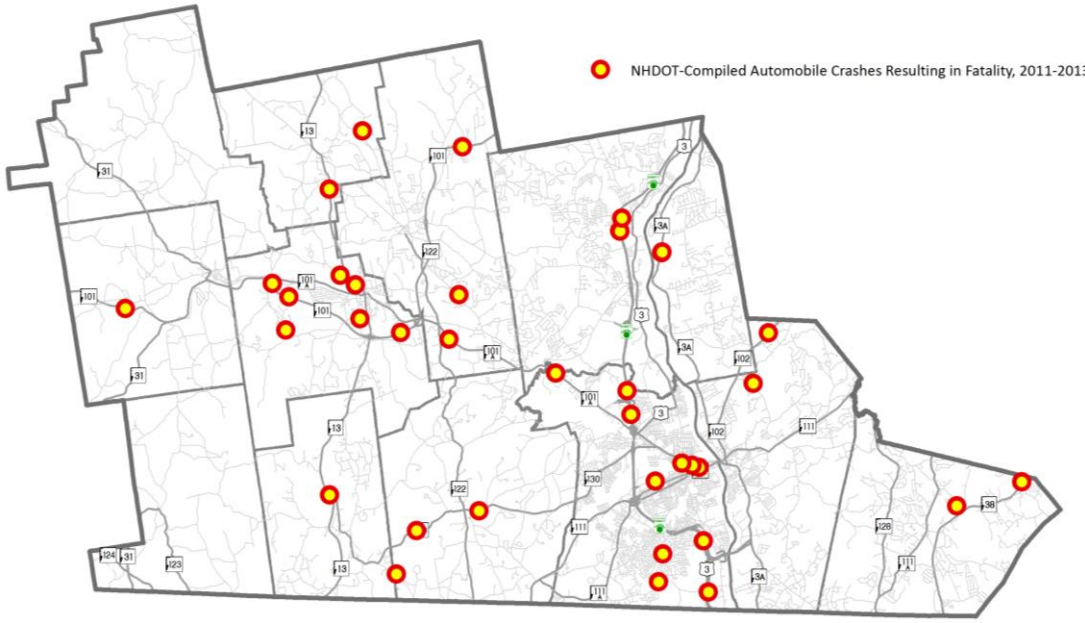
The NH Department of Transportation has identified six roadway corridors with a 'very high frequency' of injury and fatal accident in the region. The department delineates corridors in urban areas from rural ones by allowing for more accidents along urban corridors relative to rural ones before they are classified as high frequency accident areas.

NH DOT-classified high incident intersections are generally concentrated along Rt 101A in Nashua, Rt 101 in Milford/Wilton, Rt. 3A in Hudson, and Main Street in Downtown Nashua.

The department considers accident rates exceeding 0.61 in rural areas and 1.61 in urban areas to represent very high frequency injury and fatality corridors. Within the region, the six corridors rated as such include:

- NH Route 101, Milford and Wilton, from Route 101A junction to Route 31 junction (2.1 miles)
- NH Route 101A/Elm Street, Milford, from Westchester Drive to Keyes Field access road (1.4 miles)
- F.E. Everett Turnpike, Merrimack, from Exit 11 to the Bedford town line (5.3 miles)
- F.E. Everett Turnpike, Nashua, from Exit 4 to Exit 6 (3 miles)
- NH Route 101A, Nashua, from Airport Road to Diesel Road (0.6 miles)

Fatal Crashes, 2011-2013



Between 2011and 2013, fatal crash incidents occurred more frequently in Nashua and Milford.

Source: NH DOT

- Ledge Street, Nashua, from Houde Street to Pine Street (0.8 miles)

Safety improvements are planned for Route 101 in West Milford. A center turning lane will be installed along part of the route to improve accessibility and reduce conflict points between turning and through traffic.

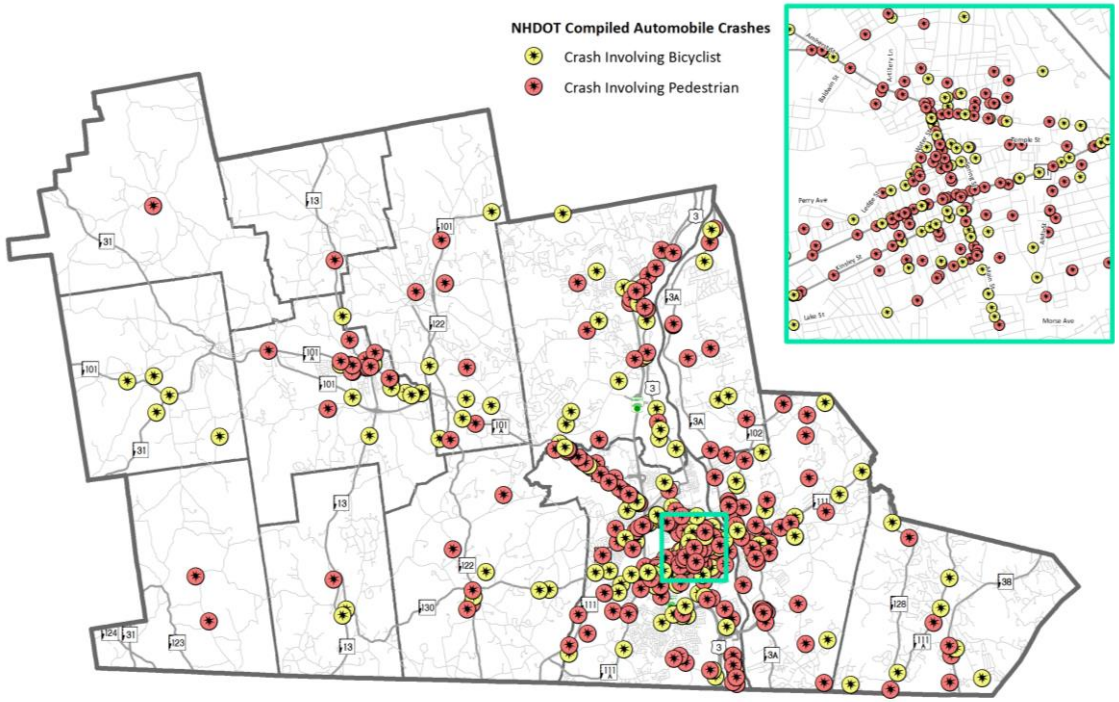
Fatal Crashes

There were 16 traffic fatalities in the region in 2013. The fatalities occurred across a dispersed geographic region, though NH Route 101A recorded the most of all corridors with three fatalities. Pedestrians (3) and bicyclists (1) constituted 25 percent of all fatalities. Six fatalities occurred during dark or low light conditions. The State of New Hampshire recorded 133 traffic fatalities in 2013. When measured as a share of population, the region recorded slightly fewer traffic fatalities than might be predicted. While the region is home to approximately 15.5 percent of the state's population, it recorded only 12 percent of the state's fatalities in 2013.

Intersections

The NH Department of Transportation classifies intersections based on their safety performance and location in a rural or urban area (urban intersections are allowed a higher rate of collisions before they are classified as high-incidence). In the Nashua Region, 30 intersections were classified as among the 100 highest incident intersections in the state. Those intersections are highlighted in the ensuing map.

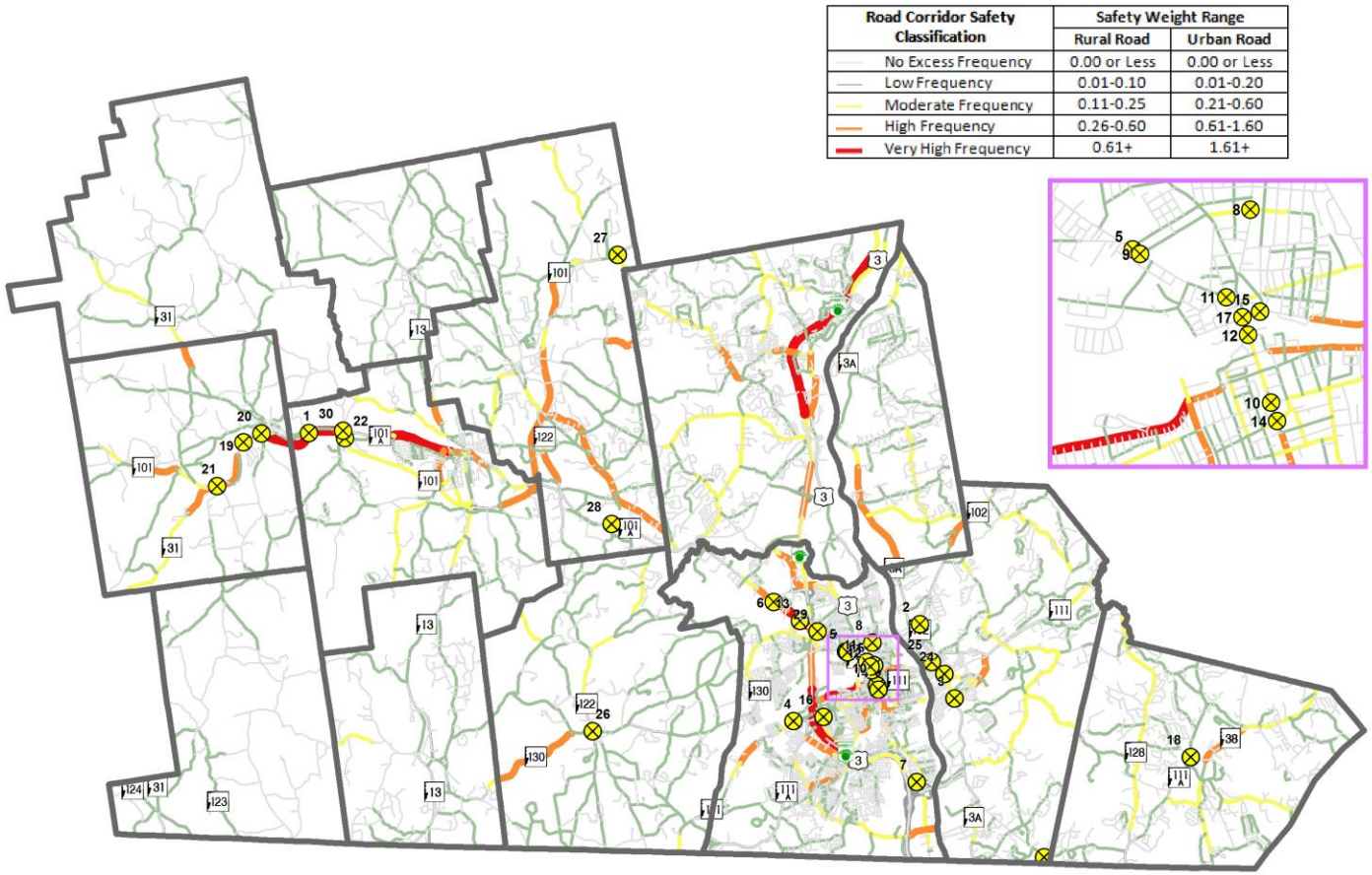
Reported Pedestrian and Bicycle Crashes, 2003-2013



Reported pedestrian and bicycle crashes between 2003 and 2013 were heavily concentrated in Nashua and areas surrounding Hudson's town center. Other concentrations include the Daniel Webster Highway (north of Continental Boulevard) in Merrimack, Downtown and East Milford, and the eastern terminus of the Hudson Circumferential Highway.

Source: NH DOT

High incident intersections and road segments



High incident intersections and road segments are largely concentrated along Route 101 in Milford and Wilton, Route 101A in Nashua, Route 3A in Hudson and Main Street in Downtown Nashua.

Source: NH DOT

Environment and Air Quality

The transportation sector impacts the natural environment in a number of ways, most prominently through greenhouse gas emissions associated with motorized transport, the loss of open space as a direct and in-direct consequence of transportation investments, and stormwater impairments due to impervious surface cover. The transportation sector is the most significant source of carbon emissions in New Hampshire, accounting for 43 percent of all such emissions in 2010. A significant source of transportation emissions is associated with personal automobile use.

National Ambient Air Quality Standards

The United States Clean Air Act, last amended in 1990, requires the Environmental Protection Agency to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health. The EPA currently sets standards for six different pollutants including carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution, and sulfur dioxide. Currently, the Nashua Region and all of New Hampshire meet EPA standards for all transportation-related emissions regulated under the NAAQS, and are therefore classified as attainment areas.

New Hampshire Ozone Status

For nearly 20 years, New Hampshire has been working to improve the quality of the air with the focus being to reduce the amount of ozone that forms during the summer months. The Nashua Regional Planning Commission in its role as the Metropolitan Planning Organization has partnered with NHDOT and NHDES to reduce mobile source emissions and meet the Ozone standards set by the Environmental Protection Agency (EPA). Over the last two decades two Ozone standards have been in effect in New Hampshire; the 1997 standard of 80 parts per billion (ppb) and the more stringent 2008 standard of 75 ppb. Both are based on measurements over an 8 hour period.

Portions of New Hampshire did not meet the 1997 80 ppb standard when it was issued so they were designated as “non-attainment”. As required by the Clean Air Act (CAA), NRPC worked to identify transportation projects that would reduce congestion and support non-motorized mode of transportation.

These efforts, combined with federal programs such as federal vehicle emission standards and fuel standards, were successful in reducing emissions in NH. By 2008, New Hampshire’s ozone levels were below both the 1997 standard and the 2008 standard of 75 ppb.

In May 2012, EPA took three actions concerning New Hampshire’s status under both ozone standards. First, EPA declared New Hampshire to be “unclassifiable/attainment” with respect to the 2008, 75 ppb standard. Second, EPA revoked the 1997 standard for transportation conformity purposes only.

Third, EPA proposed approval of New Hampshire’s re-designation request to attainment under the 1997 standard which became effective March 4, 2013. Effective July 2013, the state began operating under a 10-year Maintenance Plan. Under this designation no additional regional air quality analyses will be required for Ozone.

Nashua Carbon Monoxide Status

The City of Nashua and NRPC have been working to address the quality of the air with a focus Carbon Monoxide (CO). Unlike Ozone, CO pollution is prevalent throughout

the year and typically concentrated in urban areas with congested intersection and arterial roadways. Nashua was designated a non-attainment area for CO in 1980 by the EPA.

The Nashua Region has been classified as 'in attainment' with EPA Carbon Monoxide standards since 2001.

The Nashua Regional Planning Commission in its role as the Metropolitan Planning Organization has partnered with Nashua, NHDOT and NHDES to reduce mobile source emissions and meet the Ozone standards set by the Environmental Protection Agency (EPA). Over the last several years, intersection improvements, increased transit service and other transportation demand strategies have worked in conjunction with reduced tail pipe emissions to decrease the number of exceedances of the CO standard. By 2001 EPA designated Nashua "in attainment" with a Maintenance Plan requiring continued monitoring and air quality analyses to ensure the CO standard was not violated by proposed projects. In 2013 EPA approved Limited Maintenance Plan for CO relinquishing the NRPC of additional air quality analyses for projects proposed in the Transportation Improvement Program (TIP) and MTP.

Air Quality - Looking Ahead

Unless the standards for ozone and CO are changed by EPA, by 2023 no portions of the state will be in either non-attainment or maintenance and, therefore, will have no air quality conformity requirements. However, there are still air quality regulations in effect for transportation planning purposes. Provisions are in place prevent degradation of the improved air quality. The anti-backsliding provisions require that that New Hampshire continue vehicle inspection maintenance (I/M) programs, reasonably available control technology (RACT) and clean fuels programs. Anti-backsliding provisions of particular importance to MPOs include transportation control measures strategies to reduce vehicle emissions through transit use and Intelligent Transportation System (ITS) applications and technologies to offset growth in emissions from increased vehicle miles travelled. Therefore the MPO must continue to implement strategies and projects that will continue to reduce transportation-related emissions.

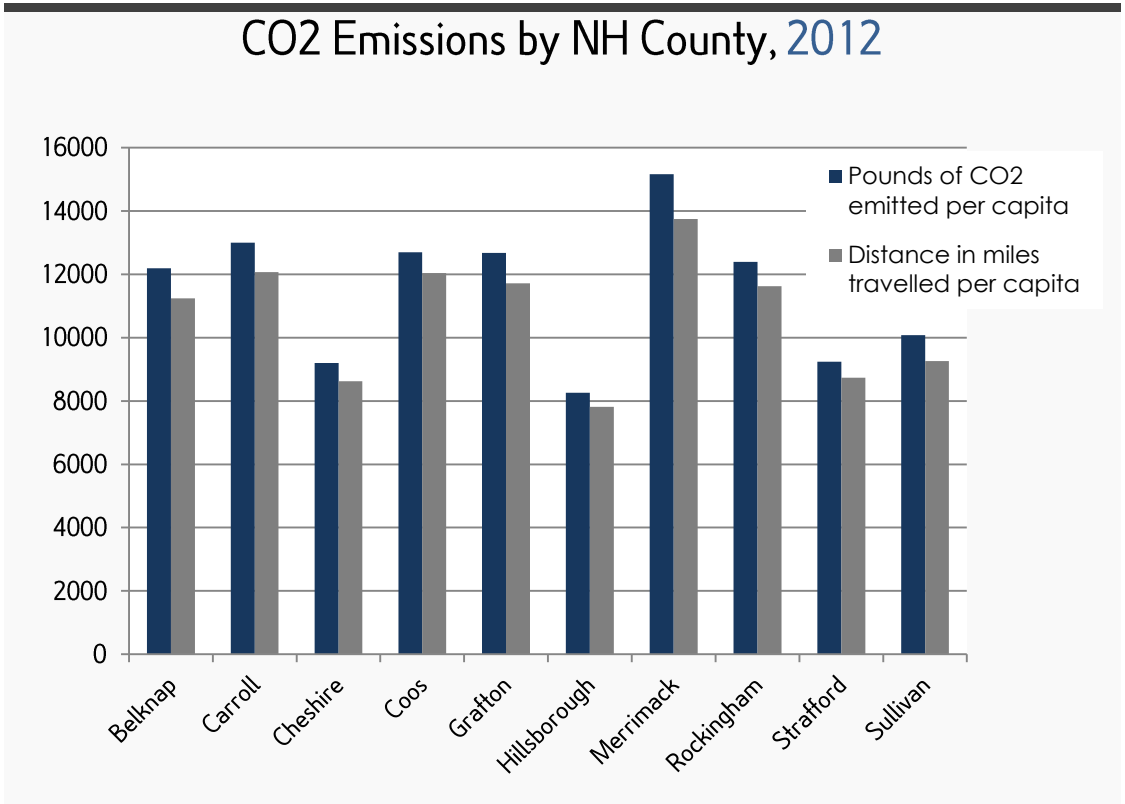
Through New Hampshire's Interagency Consultation process, it has been determined that the inclusion of non-exempt project(s) in the 2015-40 MTP and 2015-18 TIP Update triggers the requirement for a new air quality transportation conformity determination for the City of Nashua carbon monoxide (CO) attainment area with a limited maintenance plan in place, in accordance with section 93.1 04(c)(2) of the Transportation Conformity Rule. These projects while triggering the need for a new air quality conformity determination for the City of Nashua do not require a regional carbon monoxide air quality analysis in accordance with 40 CFR 93.109(e) "Areas with limited maintenance plans".

According to EPA's guidance on limited maintenance plans, the emissions budgets may be treated as essentially not constraining for the length of the maintenance period as long as the area continues to meet the limited maintenance criteria, because there is no reason to expect that these areas will experience so much growth in that period that a violation of the

CO National Ambient Air Quality Standard would result. Therefore, for limited maintenance plan CO maintenance areas, all Federal actions that require conformity determinations under the transportation conformity rule are considered to satisfy the regional emissions analysis and "budget test" requirements in 40 CFR 93.118 of the rule. Since limited maintenance plan areas are still maintenance areas, however, transportation conformity determinations are still required for transportation plans, program and projects. The NRPC (SNHPC) MPO has determined that the NRPC (SNHPC) 2015-40 MTP and 2015-2018 TIP are fiscally constrained and do not contain any Transportation Control Measures (TCMs). We therefore provide this recommendation for positive conformity determinations for these documents.

Carbon Dioxide

Carbon dioxide (CO2) emissions are not currently regulated by the EPA under the NAAQS. Carbon dioxide is a naturally occurring chemical compound and atmospheric carbon dioxide is the primary source of carbon life on Earth. However, carbon dioxide is also emitted through the combustion of fossil fuels and its concentration in the atmosphere has increased rapidly since the Industrial Revolution. There is wide agreement in the scientific community that the emission of carbon dioxide and other greenhouse gases contribute to Global Climate Change (EPA, 2014).



Due in part to its more urban nature (relative to the rest of the state), Hillsborough County records fewer miles travelled and emits fewer pounds of CO2 per capita,

Source: MOVES Model simulation, NH DES

Carbon dioxide is the primary greenhouse gas emitted through human activities. In 2012, CO2 accounted for 82 percent of all U.S. greenhouse gas emissions from human activities. In 2012, Hillsborough County accounted for approximately 23 percent of all CO2 emissions in New Hampshire under a

MOVES model simulation. The EPA's Office of Transportation and Air Quality (OTAQ) developed the MOtor Vehicle Emission Simulator (MOVES) to estimate emissions for mobile sources covering a broad range of pollutants. The model currently estimates emissions from cars, trucks and motorcycles.

Since Hillsborough County accounts for approximately 30 percent of New Hampshire's population, the country's carbon emissions, on a per capita basis, are significantly less than its peer counties in the state. This is primarily a product of fewer miles traveled in the county, which at approximately 7,700 miles per capita in 2012 was the lowest in the state. Merrimack County, at approximately 13,800 miles traveled per capita, accounted for the highest distance traveled and per capita CO2 emissions in the state.

Water Quality

Stormwater is water precipitation and snowmelt which does not infiltrate the ground but instead is discharged into water bodies. As stormwater flows toward storm drains or water bodies, it encounters surface pollutants like motor oil and fertilizer which contaminate the water before it deposits into water bodies. In New Hampshire, stormwater is the single greatest contributor to surface water pollution, accounting for 83 percent of all surface water quality impairments in the state.

The transportation sector is a significant contributor of stormwater pollution. Impervious surfaces like asphalt roadways and parking lots contribute to stormwater because they seal ground cover, preventing water infiltration. Stormwater encounters a host of pollutants as it flows over asphalt toward water bodies.

The EPA is currently finalizing new stormwater requirements for NH municipalities which will impact several communities in the Nashua Region. The EPA requirements will apply to municipalities in which a minimum of 1,000 residents reside within a designated U.S. urbanized area, requiring them to obtain a federal Municipal Separate Storm Sewer System (MS4) permit in order to discharge stormwater into water bodies. The permit will require municipal action in addressing six areas related to stormwater: Public Education; public involvement; illicit discharge detection and elimination; construction runoff; post-construction stormwater management; and pollution prevention.

The MS4 permit requirements will apply to the Nashua Region municipalities of Amherst, Hudson, Litchfield, Merrimack, Milford, Nashua, and Wilton.

Open Space

The construction of transportation facilities often involves the disturbance of open spaces. This can be mitigated through land use policies that encourage growth proximate to existing major transportation corridors.

Only a single major transportation project has occurred in the region over the last 5 years that required the disturbance of open space. Construction of Raymond Weiczoreck Drive, a limited-access four-lane roadway linking the F.E. Everett Turnpike to Manchester Boston Regional Airport, occurred almost entirely outside the region within the municipalities of Bedford, Manchester and Londonderry. However, the project, which opened in 2011, did require the taking of some land in Merrimack to provide exit ramps for the roadway.

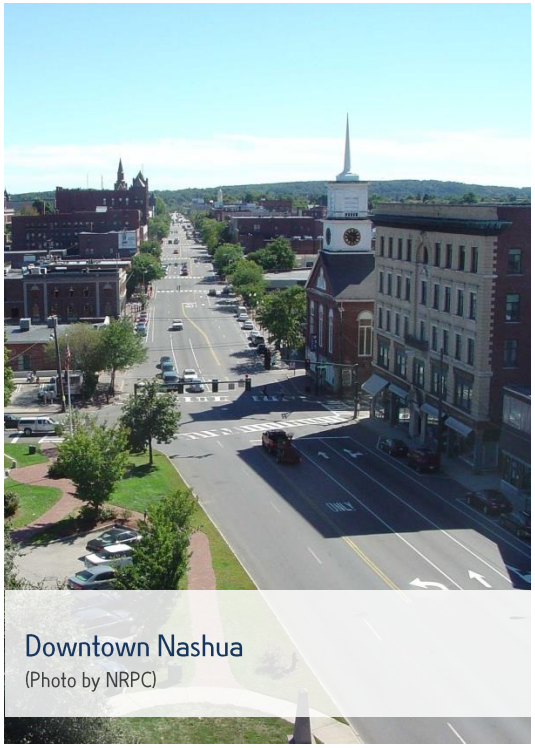
Future Conditions

Introduction

The Nashua Regional Planning Commission in its role as the Metropolitan Planning Organization is required to provide projected future transportation demand of persons and goods in the metropolitan planning area through the planning horizon of 2040. The transportation plan is required to include both long and short range strategies that lead to the development of an integrated multimodal transportation system addressing the current conditions and will lead to the future vision of the region.

The Nashua region has a comprehensive and reliable multi-modal transportation system that enables universal access for all travelers, including disabled, youth, and seniors, to all points within and beyond the region. Our transportation system enables a highly mobile community and promotes economic growth, public health, and enhances the natural environment. The Transportation system is adaptable to changes in demographics, economic conditions and energy related forces. Sufficient funding supports the operations maintenance and expansion of our transportation infrastructure to continuously meet the needs of the region.

NRPC relies on several interrelated data sets and forecasts as inputs to the regional travel demand model, the primary tool used to estimate future travel demand. Population and employment data are the primary land use inputs and are combined with traffic count data to develop future traffic scenarios on the regional road network.



Downtown Nashua
(Photo by NRPC)

Population and Employment Projections

Population Projections

The projected population for the NRPC region in 2040 is 228,400. The NRPC annualized growth rate from 2010-2040 is .35, which is down from .44 from 2000-2010. This can be explained by lower fertility rates, deaths will begin to exceed births starting in 2020 and for all communities by 2025, and that there is a significant slowing of net migration. So, unless there is a change in one of these factors, it is anticipated that the 2040 senior population will be 2 to 3 times the current population, ¼ of the population in 2040 will be 65 years of age or older, and there will be a limited change projected in the younger population. As our population ages, the region will need to be thinking about an integrated transportation system that meet the needs and preferences of the aging population. Anecdotal evidence suggests that the younger population is less interested in owning an automobile. Should this current trend continue, it will be important to develop transportation strategies that appeal to the "car free"

younger individuals to retain this important cohort in the region.

As noted in the Growth Trends and Land Uses subsection, population growth in the region's outlying communities has significantly outstripped growth in the region's urban center of Nashua since 1960. Will that trend continue to 2040?

Based on a number of factors, including availability of developable land, land use and zoning constraints, and historical growth and demographic compositions and trends, population growth is forecast to remain stronger in outlying municipalities leading to 2040. Five municipalities are projected to experience growth rates exceeding 0.5 percent annually, including Brookline (0.65%), Mont Vernon (0.62%), Pelham (0.57%), Litchfield (0.55%), and Milford (0.53%). Growth in the western communities of Milford, Brookline and Mont Vernon will likely place more pressure on Route 101A. Mobility issues also might arise in Litchfield and Pelham where current east-west travel options are relatively limited.

Population growth is projected to be most minimal in Nashua (0.15%) and Amherst (0.09%) due largely to limited developable land (in Nashua) and low density residential zoning requirements (in Amherst). Overall, population growth is forecast to be relatively uniform across the region. No municipality is projected to experience population losses and no municipality is forecast to experience an average annualized growth rate exceeding one percent.

Municipal Population Projections, 2015-2040

	Individual Municipal Population Projections					Growth Rate		
	2010	2015	2020	2030	2040	2010-40	2010-20	2000-10
Amherst	11,201	11,346	11,452	11,563	11,521	0.09%	0.22%	0.39%
Brookline	4,991	5,185	5,470	5,857	6,060	0.65%	0.92%	1.79%
Hollis	7,684	7,790	8,034	8,380	8,648	0.39%	0.45%	0.92%
Hudson	24,467	25,141	25,692	26,369	26,596	0.28%	0.49%	0.65%
Litchfield	8,271	8,541	8,808	9,312	9,764	0.55%	0.63%	1.17%
Lyndeborough	1,683	1,730	1,798	1,837	1,790	0.21%	0.66%	0.60%
Mason	1,382	1,437	1,524	1,587	1,548	0.38%	0.98%	1.88%
Merrimack	25,494	25,696	25,949	26,380	27,120	0.21%	0.18%	0.15%
Milford	15,115	15,553	16,203	17,146	17,738	0.53%	0.70%	1.11%
Mont Vernon	2,409	2,496	2,635	2,814	2,901	0.62%	0.90%	1.71%
Nashua	86,494	86,937	88,166	90,457	90,360	0.15%	0.19%	-0.01%
Pelham	12,897	13,359	13,905	14,723	15,282	0.57%	0.76%	1.68%
Wilton	3,677	3,776	3,871	3,958	3,921	0.21%	0.52%	-0.18%
REGION	**205,765**	**208,987**	**213,507**	**220,381**	**223,249**	0.27%	0.37%	0.44%

Long-term population growth is projected to be highest in the regional municipalities of Brookline, Pelham and Mont Vernon.

Source: NRPC estimates and NH Office of Energy and Planning analysis

Employment Projections

Over the ten-year period 2010 to 2020, total employment in the Greater Nashua is expected to grow by 10.7 percent, an average of a little over one percent per year, according to the NH Economic and Labor Market Information Bureau (NHELMI). Estimated employment is expected to increase from 99,470 to 110,086, a gain of 10,616 jobs. This would represent a higher level of job growth than population growth, which is forecast to increase at only 0.37 percent annually. In comparison, projected employment growth for the nation for the same period is 14.3 percent, or approximately 1.4% annually, growing from 143.1 million jobs in 2010 to 163.5 million jobs in 2020.

While, New Hampshire does not make employment projections by municipality, a review of employment trends over the last six years indicates that employment has slightly concentrated along the F. E. Everett corridor municipalities of Merrimack and Nashua (rising from 69 percent of all employment in 2007 to 71 percent in 2013).

Travel Demand Projections

The Nashua Regional Planning Commission maintains a regional travel demand model for the general purposes of transportation planning and air quality analysis. To maintain and run the model, NRPC uses TransCad, a leading traffic modeling and GIS software package produced by the Caliper Corporation. The main inputs of employment and household data are summarized by Traffic Analysis Zone (TAZ). There are 2,034 TAZs in the NRPC model, including roughly 50 external zones. Each TAZ contains totals of households, residents and employees. Residents and employees are both assigned an industry classification, based on Census data. Industry classes include retail, manufacturing, professional services, finance and real estate, and others. In addition, each household is coded with the number of vehicles available to it, also derived from Census data. The NRPC travel demand model is the most complex model maintained by MPO staff in the state. The base year of the model was calibrated to traffic counts through 2013 and uses 2010 U.S. Census data and employment data from the State of New Hampshire.

NRPC's model network consists of nearly every thru-traffic road in the region (over 800 total miles of segments) and certain major routes outside of the region to account for external trips. Each road segment is coded with certain attributes needed to run the model which include direction, length, posted speed and roadway capacity.

The Model uses a traditional 3-step modeling process: trip generation, trip distribution, and traffic assignment. A 4th step, mode choice, is not used by the NRPC model as means of travel other than the automobile represent an extremely small fraction of the total traffic on the regional road network.

In step one, trip generation, the model uses ITE trip generation rates and origin destination surveys to determine how many trips of various purposes will be produced by each TAZ, based on the associated socioeconomic data.

In step two, trip distribution, the model takes the expected number of trips produced and attracted by each zone and matches them with destinations. NRPC uses a "gravity model" to distribute the trips, meaning that a trip is more likely to travel to in a nearby zone that matches the trip purpose. The model uses average journey to work time to

determine the appropriate percentage of trips distributed between the zones. For example, if survey and census data shows that 60% of all work trips take between 20 and 30 minutes, the model will attempt to match that ratio.

Once the model knows where all the trips begin and end, it can find the paths on which to assign them. The model begins by sending every trip via the shortest path possible (in terms of time). Then, because of capacity constraints, it uses an iterative process to reassign certain trips along alternate routes.

The three step process results in future traffic forecasts are based on anticipated future land use patterns, population projections, projected housing units, employment, and school enrollment. The projected growth in land use was made in consultation with local planners from the Nashua Region, and through a review of present and proposed zoning, physical constraints, and assumptions made regarding future area-wide growth rates.

Model networks were developed for the no build condition and two future or build conditions for the years 2025 and 2040. The build condition networks include planned

Major MTP Projects		
Municipality	Project Description	Model Year
NASHUA	*Broad Street Parkway: Construction of 1.8 mi of new 2-lane roadway that will connect Broad Street (NH 130) to West Hollis Street (NH 111) in Nashua.*	2025
NASHUA	*NH 101A: Widening between Celina Avenue intersection to Amherst Street mall intersection (1.5 miles) to expand from existing five lanes to seven lanes as recommended by corridor study (Milford to Nashua)*	2025
NASHUA	*NH101A: Widening and Improvements, Phase II: Somerset Pkwy to Sunapee St and Blackstone Drive to Celina Avenue*	2025
HUDSON - LITCHFIELD - MERRIMACK - NASHUA	*US 3/NH 3A: Construct a northern crossing of the Merrimack River to provide a four lane roadway connecting NH 102 in Hudson, NH 3A in Litchfield and US 3 in Nashua. Exact location of crossing to be determined.*	2040
NASHUA - MERRIMACK	*FEE Turnpike: FE Everett Turnpike to be widened to three lanes in either direction between Exits 8 and the Bedford Tolls.*	2025
WILTON - MILFORD - AMHERST - BEDFORD	*NH 101: Widening of NH 101 between west end of bypass and Bedford town line to four-lane access controlled highway.*	2040
NASHUA - TYNGSBOROUGH, MA	*FEE Turnpike: Addition of southbound off-ramp to Exit 36 just across the Massachusetts state line in Tyngsborough to provide southbound access from the FE Everett Turnpike to the Pheasant Lane Mall.*	2025
MERRIMACK	*NH101A: (1) Construct 3rd EB lane on NH101A from Boston Post Rd to Continental Blvd; (2) add new WB right turn lane on NH101A to Continental Blvd; (3) add 2nd SB right turn lane on Continental Blvd to NH101A; (4) Traffic calming on Craftsman Lane*	2025

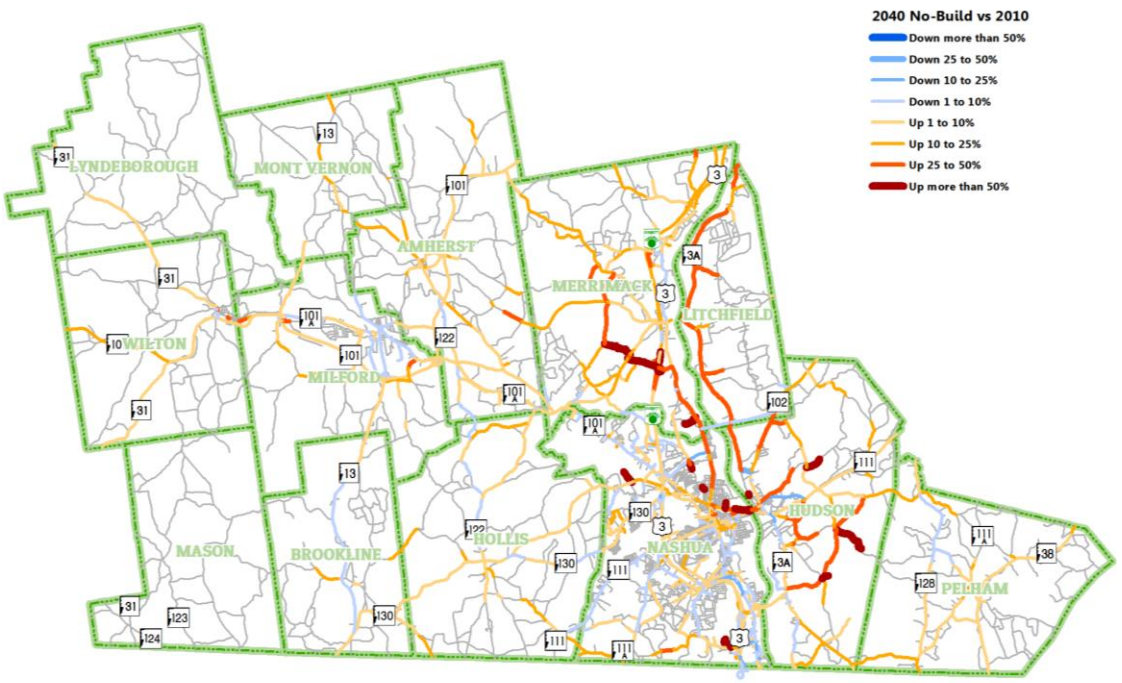
This table includes some of the major projects programed for the region's Metropolitan Transportation Plan.

projects that have been identified as long term needs for the region through past planning efforts. These projects are in the planning and project development phases and may not have environmental permits or secured funding at this time. Table ## lists future projects included in the model and the build network year in which they are included.

Historically, forecasted traffic growth rates in past models have been very high. This was due to an assumption of the high growth rates experienced in the past decades. This travel demand model update included an examination of past model inputs and forecasts compared to recent data trends and has resulted in a reduction in anticipated growth. The region experienced the net outmigration of 3,424 people between 2000 and 2010, as noted in the Existing Conditions and Needs chapter. In addition, an analysis of natural population change data, and births and deaths rates suggest much lower growth in the region. As a result future traffic growth forecasts have been tempered significantly compared to past forecasts.

Travel demand model runs were developed for the 2025 and 2040 no build condition. Under this scenario the road network includes only those improvements that are known to be under construction today and assured to be completed before 2025. The 2025 and 2040 no build networks include the Broad Street Parkway in Nashua and minor safety capacity improvements on NH 101A.

Future Conditions: No Build Scenario 2040 vs. 2010



The commission's Travel Demand Model predicts traffic levels will increase most significantly in parts of Nashua, Hudson and Merrimack under a 'No Build' scenario in 2040.

Source: NRPC GIS

What if we do nothing?

Comparing the forecast traffic volume in 2040 to the 2010 base year traffic provides a snapshot of where and how traffic conditions may change if we do not make any capacity improvements to the road network. In general, traffic volume is forecast to increase

on all major corridors by the 2040 planning horizon. The travel demand model forecasts an increase in the total number of vehicle trips of 8.6% with 23 miles of the road network exceeding capacity compared to 18 miles in the 2010 base year.

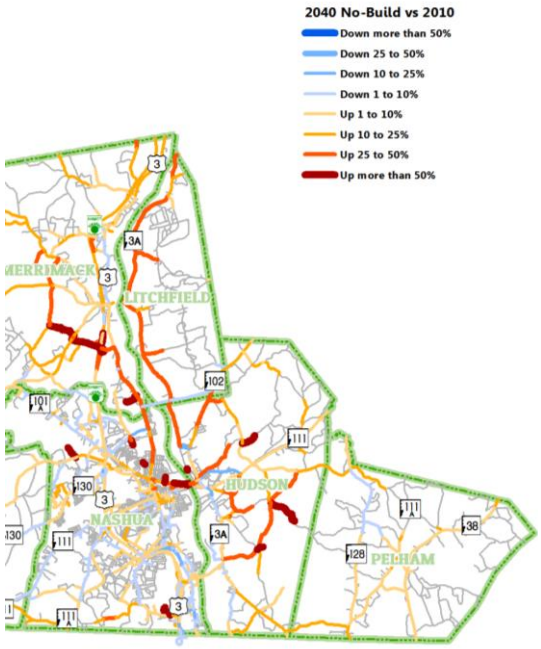
Analysis of this "do nothing" scenario, shown in the map on page 46 suggests traffic on the F.E. Everett Turnpike will increase by up to 10 % between the state line and Exit 10. North of Exit 10 traffic growth is expected to be in the range of 10% to 25%. The increase in traffic south of Exit 8 in Nashua can be accommodated by the current alignment and geometry of the roadway. North of Exit 8 to the Bedford toll plaza the F.E. Everett Turnpike is constrained by two bottlenecks where the cross section is reduced from three to two lanes. This geometric constraint combined with a forecast increase in daily volume of 16% makes the corridor a congestion and safety concern now and at the 2040 planning horizon. NH 3A in Litchfield and Hudson is also forecast to experience an increase in traffic by 2040. This is primarily due to the forecast growth in Hudson.

East west travel will continue to be constrained by limited crossings of the Merrimack River. With higher than average growth expected in Hudson, traffic volume on the Taylor Falls/ Veterans Memorial Bridges is expected to remain high. The Sagamore Bridge is also expected to carry additional traffic in the 2040 "do nothing" scenario. NH 101A west of the F.E. Everett Turnpike to the Nashua border should expect minimal growth in traffic volume through 2040 when compared to the 2010 base year. This is due the constrained nature if the corridor and the development of additional retail destinations such as the Merrimack Outlet Mall

East of the Turnpike through Nashua the corridor continues to be heavily travel with additional volume expected as more trips destined for Downtown Nashua and Hudson use Amherst Street and the Taylor Falls/Veterans Memorial Bridge. Looking further west along the NH 101A corridor travel demand is expected to increase with 24 hour traffic volume forecast to be up by as much as 10%. Forecast growth in Hudson suggests additional pressure will be placed upon the Amherst Street, Library Hill, Bridge Street and East Hollis Streets in Nashua as well as the Taylor Falls/Veterans Memorial Bridges. In Hudson, NH 111 and the Wason Road and Kimball Hill Road corridor are expected to see traffic volume increase by more than 25%.

Under a "do nothing" scenario, the long standing concerns with east/west travel and

Future Conditions: No Build Scenario 2040 vs. 2010



Under a no build scenario traffic would increase most around the Taylor Falls Bridge (linking Nashua and Hudson), along Industrial Drive in Merrimack, and on roads running parallel to or directed toward the Merrimack River..

Source: NRPC Travel Demand Model

crossings of the Merrimack River remain valid. Forecasts indicate that the NH101A and NH 101corridors are all forecast to remain congested and exceed capacity. The NH 101A from the Amherst Milford line east to Continental Blvd is expected to exceed its capacity through 2040. The NH 101 by-pass and portions of the corridor east of NH 122 are expected to exceed capacity under a do nothing scenario.

What if we build? Comparing the 2040 Build to the Do nothing

As summarized above, traffic volume is expected to increase on most arterial corridors as the planning horizon year, 2040, approaches. These forecasts, although less bullish, than in past plans still support the need for significant investment in the transportation network.

To address the chronic east west travel concerns, safety and forecast congestion in the region a number of projects are proposed for future implementation in a "build scenario". The build scenario assumes the completion of the projects listed below by 2040.

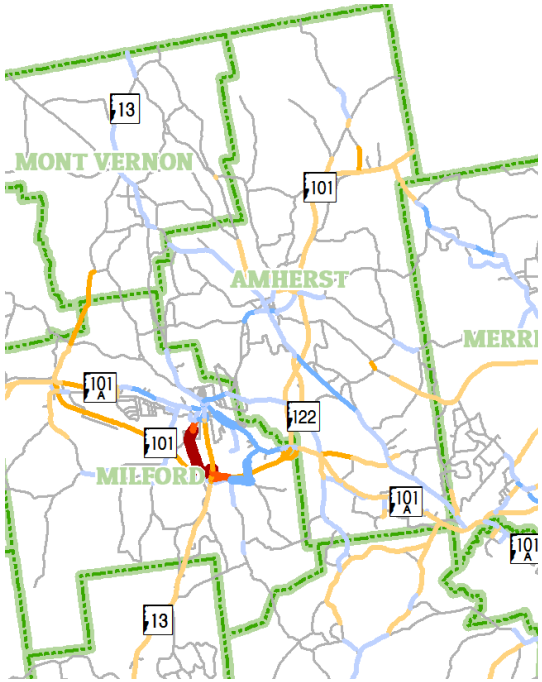
Major Corridor Projections

NH 101A and NH 101

The NH 101 and NH 101A corridors work as a system and capacity improvements to either have mutual benefits. Both corridors provide access to the westerns portion the region. The proposed widening of the NH 101 corridor from the western end of the by-pass through Bedford will allow the corridor to operate within its capacity through 2040. This project will reduce traffic through Milford downtown and on western portions of NH 101A as shown on the map to the right between each end of the by-pass. To the east through Amherst the NH 101 Corridor will continue operate at or below capacity through 2040 with the proposed improvements.

The 2040 Build Scenario traffic volumes on the eastern end of NH 101A between the Nashua border and the F.E. Everett Turnpike are forecast to drop by about 2 % by the 2040 horizon year compared to the "do nothing" scenario. This forecast "leveling of traffic volume," as illustrated on the map to the right, is influenced by a number of factors in the build scenario. This portion of the corridor is already approaching capacity

Future Conditions: Build Scenario 2040 vs. 2010



Under a build scenario, traffic levels would ease along the Route 101A corridor..

Source: NRPC Travel Demand Model

and experiences recurrent congestion in the peak hours. The land along this portion of the corridor is largely built and the opportunity for additional large traffic generators is limited. The development and expansion of the Merrimack Premium Outlets provides alternative retail options for the residents of

the western part of the region and draws traffic onto Continental Boulevard in Merrimack to access the outlets. Finally improvement to NH 101 result in shorter trips across the region and have a small impact on future volumes on NH 101A. All of these factors serve to limit traffic growth along this portion of NH 101A. The proposed widening of the NH 101A corridor from Celina Avenue to Somerset Parkway under the build scenario will serve to reduce the recurring congestion experienced today through the planning horizon year of 2040.

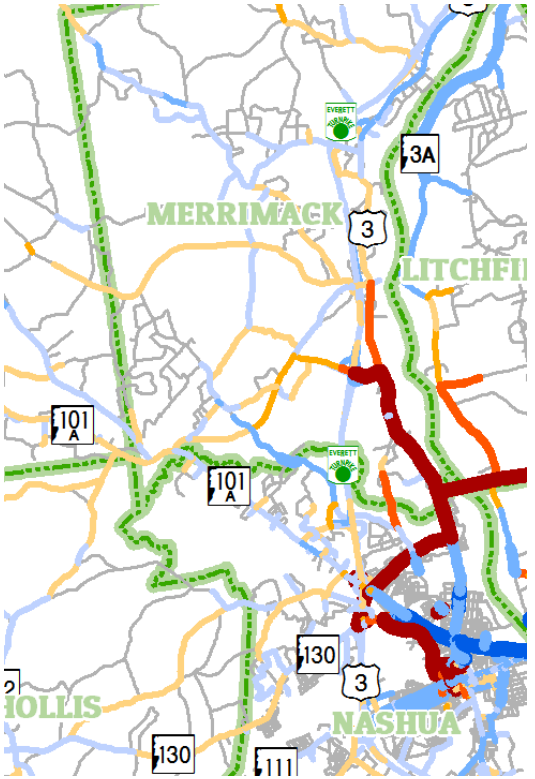
Northern Merrimack River Crossing and Broad Street Parkway

East of the F.E. Everett Turnpike, NH101A (Amherst Street) experiences significant reductions in traffic under the build scenario. The completion of the Broad Street Parkway and the proposed construction of a Northern crossing of the Merrimack River serve to reduce traffic volume on Amherst Street by up to 50% in 2040 when compared to the "do nothing" scenario. The map to the right shows this reduction in volume continuing eastward along the Bridge Street and East Hollis Street corridors and across the Taylor Falls/Veterans Memorial Bridges into Hudson. The combination of the Broad Street Parkway and Northern Crossing of the Merrimack River serve to reduce future traffic volume throughout much of Downtown Nashua. Similarly in Hudson, the Northern Crossing of the Merrimack River reduces traffic on NH 3A, NH 111, NH 102 and the cut through routes of Wason Road and Kimball Hill Road. Traffic is also forecast to drop on the Sagamore with the construction of a northern river crossing.

The construction of the Northern Merrimack River Crossing by 2040 will also impact traffic volumes on the F.E. Everett Turnpike through Merrimack. Traffic currently using the Airport Access Road (Raymond Wieczorek Drive) and Interstate 293 is drawn south to the new crossing of the Merrimack River and redistributed across the modeled network. This results in the volumes on the F.E. Everett Turnpike remaining within a few percent of the 2040 "do nothing" scenario.

The build scenario also includes the construction of an Exit 36 Southbound off ramp. The Exit 36 interchange lies just south of the New Hampshire border in Tyngsborough Massachusetts. The ramp system terminates/originates at the signalized intersection with Middlesex Road and the Pheasant Lane Mall. The current configuration of the interchange provides for

Future Conditions: Build Scenario 2040 vs. 2010



Under a build scenario, traffic levels would decrease on Main Street in Nashua and on the approach to the Taylor Falls Bridge.

Source: NRPC Travel Demand Model

all movements except for southbound Route 3 traffic.

Exit 36 Southbound Off Ramp

The construction of the Exit 36S off ramp will result in a substantial reduction in traffic volume on Spit Brook Road east of the F.E. Everett Turnpike and Daniel Webster Highway, by providing efficient and direct access to the retail and commercial land uses along southern D. W. Highway and the northern reaches of Middlesex Road. The 24- hour traffic volumes are forecast to decrease by an average of 10 percent on Spit Brook Road east of the F.E. Everett Turnpike, and by an average of 20 percent on D.W. Highway south of Spit Brook Road when compared to the 2040 do nothing Scenario.

Can Transit Help?

The NRPC travel demand model does not utilize the mode choice step in development of regional traffic forecasts. The only fixed route service available within the region runs inside the Nashua city limits and therefore impacts a small fraction of the total traffic on the regional road network.

Projected Annual Ridership Potential Regional Transit Expansions

Route: Lowell Road/Central Street , HUDSON
1,692

Route 101A, AMHERST/MILFORD
1,674

DW Highway, Exits 10-12, MERRIMACK
1,336

Derry/Elm Streets, HUDSON
538

Tinker/Thornton Roads, NASHUA/MERRIMACK
317

Source: NRPC Ridership Prediction Model

As the demographics of the region evolve, particularly in the communities surrounding Nashua, access to transit has become a more important issue. Past efforts at determining where transit service needs are concentrated have focused on basic demographic data across broad geographical areas. NRPC's 2003 Regional Transit Plan developed a Transit Need Composite Index Score for each 2000 U.S. Census Block Group in the region.

Now, with more local parcel data and better modeling and data-gathering capabilities, this analysis can be done at a much smaller scale using the NRPC fixed route ridership prediction model. NRPC has developed a statistical model that predicts transit fixed route ridership using discrete demographic, employment and land use information at the household or parcel level using pedestrian network based distances. Using this model, daily ridership is predicted for a number of key locations in the City of Nashua and surrounding communities and travel corridors. The model can then be used for scenario planning, altering inputs and deriving new ridership numbers for the future.

The fixed route ridership prediction model was used to evaluate the potential transit ridership in the communities surrounding Nashua including Amherst and Milford along NH 101A corridor. Specific community results were then compiled into a regional summary which demonstrates that many of the stops with the highest potential ridership can be found on the same corridors. These corridors include Lowell Road in Hudson, Route 101A in Merrimack, Amherst, and Milford, and Daniel Webster Highway in Merrimack. The

map below shows these corridors and the total ridership predicted along each one.

Future expansion of fixed route transit outside of Nashua requires local support to identify sources of matching funds to support operations and capital purchases. Currently Nashua Transit System operates as a City of Nashua Department under Community Development. Consideration of a regional operator similar to the COAST in Dover New Hampshire may be necessary to implement regional service without overly burdening the City of Nashua.

Demand response transit service has not been modeled and thus future forecasts based on ridership data are not available. Current demand response service in Nashua is limited to the ADA service provided by Nashua Transit within the ¾ mile buffer of the fixed route service. Outside of Nashua the Souhegan Valley Transportation Collaborative (SVTC) provides demand response service to the communities of Amherst, Brookline, Hollis and Milford, Mont Vernon and Wilton. Growth over the 5 years of service provided by the SVTC service has been steady. Current demographic trends suggest an aging population and a desire to age in place which support continued growth for demand response transit into the future.

Mobility and Accessibility

Introduction

Mobility refers to one's ability to move freely and easily throughout a region. Accessibility refers to the ease in which services are obtainable and easily reached. This plan recognizes that both features are important to the region's long-term sustainability and well-being. The largely rural nature of many parts of the region makes mobility particularly important, as it seeks to ensure that all residents, regardless of where in the region they reside, can conveniently reach employment and recreation centers, healthcare and services. The region also recognizes the importance of locating services and destinations within close proximity of residential areas as a strategy to encourage walking and bicycle use and reduce vehicle trips. This can be achieved, in part, by focusing transportation investments in established mixed-use areas and ensuring such projects are contextual with the existing environment and encourage additional walking/bicycle and transit trips.

This chapter focuses on enhancements to the availability of transportation options for people and goods, support for travel efficiency measures and system enhancements targeted at congestion reduction and management and assuring that all communities are provided access to the regional transportation system and planning process.

What We Heard

Asked to identify which areas of the transportation infrastructure policymakers should invest more money in, residents identified the maintenance of existing roads and bridges as their chief priority (71 percent), followed by expanding bus/rail service between cities (62 percent) and improving senior and special needs transit services. Improving the availability of bike lanes and expanding public transportation attracted moderate levels of support. Reduced traffic congestion, sidewalks and crosswalks and improving traffic safety attracted the lowest levels of support.

While many residents noted that congestion in the region was generally light, relative to surrounding major cities, concern consistently focused on traffic chokepoints along a few major corridors, particularly Route 101A, parts of the F.E. Everett Turnpike north of Nashua and on Main Street in Downtown Nashua. Route 101A emerged as a major public focus, with residents advocating congestion reduction as well as livability improvements. There was widespread agreement that traffic signals on Route 101A from Nashua to Milford should be better coordinated so as to encourage enhanced flow for through traffic on the corridor and reduce repeated stop-and-go traffic patterns.

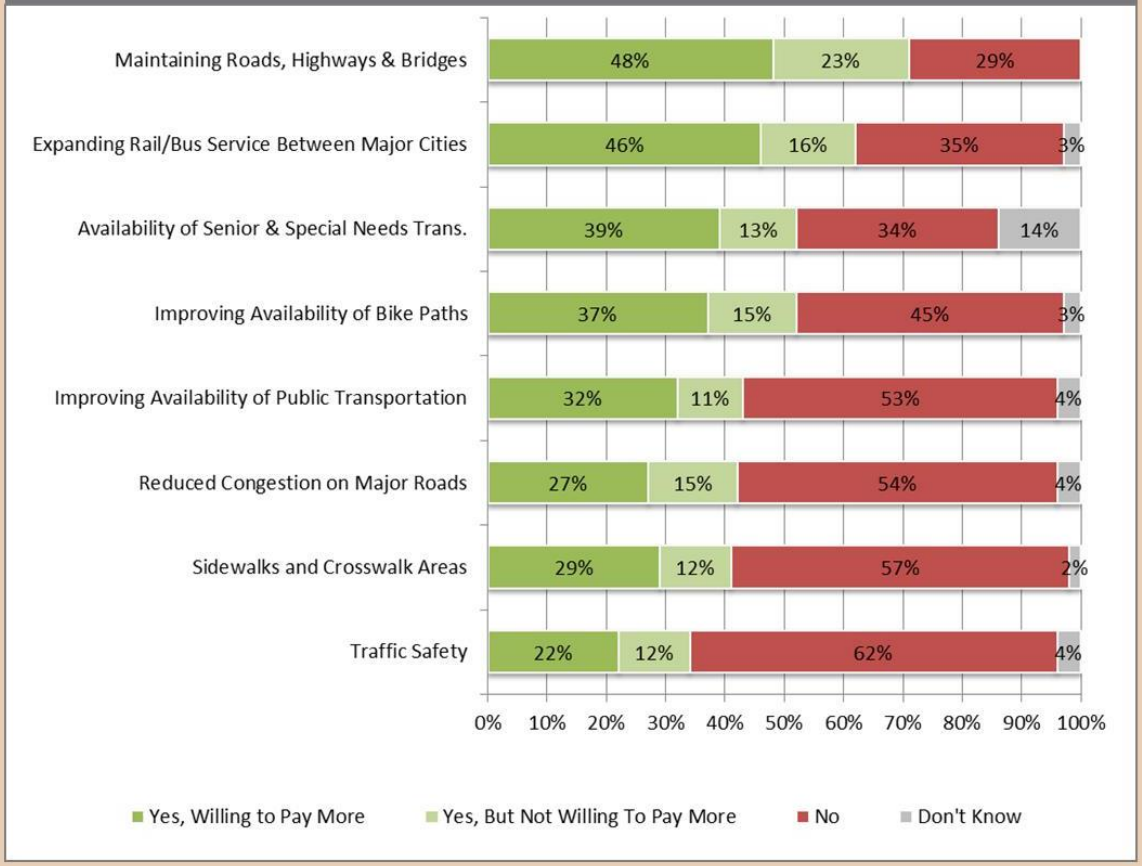
Residents identified several factors as discouraging alternative travel mode choices in the region including a lack of pedestrian and bicycle infrastructure (particularly along major corridors like Route 101A, Daniel Webster Highway and Route 3A), poor snow maintenance along sidewalks and at transit stops, the severity of the winter climate in the region, the absence of transit service outside Nashua and the fact that travelling by automobile was a great deal faster.

More than any other single transportation investment residents advocated the expansion of passenger rail service linking the region to Boston and Manchester via an extension of the existing Massachusetts Bay Transit Authority (MBTA) rail line where service currently terminates at Lowell.

NRPC

What should policymakers invest more money in?

Based on a UNH telephone survey of Nashua Region residents.



The University of New Hampshire Survey Center asked residents of the region what areas of the transportation system they would like to see more money invested in over the next five years. The top three responses were maintaining roads and bridges (71% yes, 48% willing to pay more for it), expanding rail and bus access between cities (62% yes, 46% willing to pay more for it), and senior and special needs transit (51% yes, 39% willing to pay more for it).

Approximately 425 residents of the region, and 2,900 residents of the state, were surveyed by random selection over the telephone in the summer of 2013. The sampling error is approximately 4 percent.

survey HIGHLIGHTS

*Residents of the Nashua Region are **27%** more likely to support funding for expanded rail and bus service between cities than residents in other areas of the state.*

*While **83%** of Nashua Region residents agreed that safe places to walk and bike should be actively encouraged in their community, only **13%** felt it was very important to live within walking distance of major destinations.*

*In the Nashua Region, **55%** of residents would like to live in a small home with a short commute that is close to amenities, while **43%** prefer a large home, with a long commute that is distant from amenities. Statewide results were almost identical.*

Objectives

Improve East-West Travel

While the F.E. Everett Turnpike provides the region a major north-south limited access corridor, there is no such east-west equivalent in the region. East-west travel is further stymied by two major factors; recurring congestion on the Route 101A corridor and a lack of Merrimack River crossings. Safety concerns on Route 101 and traffic congestion in West Milford along the corridor have also been identified as hampering east-west traffic flow.

Route 101A, pictured above in South Merrimack, is the region's most heavily traveled east-west corridor. (Photo by NRPC)

Route 101A

Current Conditions

Route 101A is the region's primary east-west corridor, providing access to Nashua and the F.E. Everett Turnpike from Milford. Unlike the F.E. Everett Turnpike, Route 101A is a not a limited access highway; the roadway serves as a major commercial and employment corridor with twenty-nine traffic signals lining the route from the Milford Oval to the F.E. Everett Turnpike. The corridor also serves as a major commuter corridor linking communities in the western part of the region to Nashua and employment centers to the south, including the Lowell and Boston areas. However, high traffic volumes and a significant concentration of traffic signals necessitated by intensive commercial and industrial development contribute to recurring congestion.

Route 101A generated a significant source of discussion during public outreach efforts. Criticism largely focused on the number of traffic signals along the Route 101A corridor and the fact that the signals appeared to interrupt traffic flow due to poor coordination. Many residents also noted that the route, though currently very automobile-oriented, was very well-suited for pedestrian/bicycle and transit investments due to the intensity of development along the corridor and its proximity to major residential and employment centers

Traffic counts generally increase as Route 101A advances eastward and particularly after the Continental Boulevard junction which directs Merrimack-based traffic on to the corridor. Traffic counts collected by NRPC between 2009 and 2011 indicate the highest counts just west of the Somerset Parkway junction (or the Exit 8 access to the FE Everett Turnpike) at 45,968.

Pedestrian amenities are very limited along the corridor, though sidewalk networks are best developed in the Town of Milford and near Downtown Nashua. While roadway shoulders do provide some basic measure of a pedestrian route along several stretches of Route 101A, facilities are most limited at intersections where few crosswalks or roadway shoulders provide routes for pedestrians. In sum, the corridor would best be described as automobile-oriented and unattractive for walking trips.

Transit bus access is provided at a 30-minute frequency by the Nashua Transit System from Downtown Nashua to the Westside Shopping Plaza (located on the west side of Nashua near the Merrimack town line) via Route 2 and 2A between 6 a.m. and 7 p.m. on weekdays. Transit service is offered at reduced frequencies along the corridor on Saturdays and weekdays between 7 p.m. and 10:30 p.m. No bus service extends west of the Nashua city boundaries, leaving several major commercial destinations, including the heavily trafficked Amherst Wal-Mart Superstore, unserved by public transit.

Route 101A Traffic Counts

LOCATION	COUNT	YEAR CONDUCTED
east of Henry Bourque Hwy., Nashua	22,041	2009
between Thornton Rd and Somerset Pkwy, Nashua	45,968	2011
at Merrimack/Nashua boundary	43,551	2010
at Merrimack/Hollis boundary	34,778	2010
between Route 122 and Veterans Rd, Amherst	30,418	2010
at Amherst/Milford boundary	33,055	2009
At Lorden Plaza (Shaw's Plaza), Milford	14,642	2009
east of Milford Oval	15,749	2010

Traffic counts along Route 101A .diminish somewhat after junctions with Continental Boulevard and Route 101 on the Amherst/Milford town line.

**-Counts not adjusted for season or vehicle mix* *Source: NRPC traffic counts*

Previous Plans

In 2002, the Nashua Regional Planning Commission completed a Route 101A Corridor Study. The study recommended several access management measures as well as the widening of the roadway in two key areas, in Nashua from Somerset Parkway to the Merrimack Town Line and in Merrimack from Boston Post Road to Continental Boulevard. The study also recommended the completion of sidewalks on both sides of the roadway from the F.E. Everett Turnpike to Milford as well as the addition of bus shelters and improved pedestrian access to bus stops.

A Congestion Management Study of Route 101A conducted by NRPC in 2012 identified the corridor stretch between Northern Avenue in Amherst and the Somerset Parkway in Nashua in both directions as the most congested part of the corridor during peak travel periods, while cautioning that further analysis would need to be conducted over longer time periods to offer definitive

conclusions. The report recommended land development and access management strategies to reduce traffic demands along the corridor as well as the implementation of recommendations from previous plans, including widening and intersection improvements, improved signal coordination and enhanced pedestrian/bicycle and transit amenities.

Projects

There are four Route 101A projects included in the Metropolitan Transportation Plan including intersection improvements from Route 101 to the F.E. Everett Turnpike and widening and lane additions along stretches in Merrimack and Nashua.

Route 101

Current Conditions

Route 101 serves as one of Southern New Hampshire's major east-west corridors, linking Keene in the southwestern corner of the state with Hampton Beach on the state's Atlantic Coast. Route 101 traverses three municipalities in the Nashua region, including Amherst, Milford and Wilton. Route 101 bends north in Milford, directing traffic to Manchester and other points northeast.

Traffic counts maintained by NRPC indicate that traffic levels have remained relatively stable over the last 10-12 years along all segments of the corridor in the region. Traffic levels on Route 101 in the region are heaviest between the Route 13 and Route 101A interchanges on the east side of Milford when they reach just above 26,200, according to a 2012 NRPC traffic count. Traffic levels are lowest on the Wilton/Temple town line when approximately 8,200 vehicles were recorded in 2009.

A seven-mile segment of Route 101 from Milford to Amherst functions as a limited access highway. Other sections of the roadway, including east of Baboosic Lake Road in Amherst and west of Route 101A in Milford, feature cross traffic with speed limits ranging from 35 miles per hour in west Milford to 55 miles per hour in other segments. Congestion levels are generally limited along the corridor within the region, although they are particularly acute in the bordering municipality of Bedford as the roadway approaches Interstate 293. Congestion within the region is generally limited to peak periods on the western portion of Route 101 in Milford due to consecutive traffic signals and intersecting traffic at Phelan/Old Wilton Roads and Route 101A and intensive commercial development immediately to the west.

Route 101 remains a significant safety concern in the region. With a speed limit of 55 miles per hour in many segments and a two lane configuration lacking a center median, the roadway has experienced many accidents in which drivers drift into the opposing traffic lane, causing very serious, and often fatal, crashes. Of all the corridors targeted for investment in the Metropolitan Transportation Plan, Route 101 experienced the most traffic fatalities, with 14 traffic deaths recorded over a nine-year period. NH DOT has implemented several safety measures over the years including center line and shoulder rumble strips to reduce accidents caused by driver inattention. Several additional safety improvements, including the addition of a turning lane to a segment of Route 101 in west Milford, are planned for the short-term.

Previous Studies

Several consultants worked with the Nashua Regional Planning Commission to complete a Route 101 Corridor Plan in 2002. The plan recommended the road be expanded to four lanes with a vegetated median through

Amherst and Milford, with the bypass portion of the corridor extended approximately one-half mile to the Milford-Wilton town line. The plan recommended shoulder and intersection improvements in Wilton with a two-lane configuration. The plan assumed that traffic levels would rise by approximately 35 to 50 percent by 2022, although as of 2014, traffic levels have remained relatively level since 2002.

Projects

There are two projects directly relating to Route 101A in the Metropolitan Regional Plan, both of which were recommended in the 2002 Route 101 Corridor Study.

- NH 101: Widening of NH 101 between west end of bypass and Bedford town line to four-lane access controlled highway.
- NH 101A & NH 101: Reconstruct intersection of NH 101A and NH 101 EB ramps to provide additional exiting right turn lane and install signals

Additional Merrimack River Crossing

A third Merrimack River crossing has long been proposed in the region to improve access to points east including to the Town of Litchfield and communities along the Interstate 93 corridor. The opening of Raymond Weizorack Drive, a bridge crossing from Bedford to the Manchester/Londonderry area located just north of the regional boundary, improved access, particularly to the Manchester-Boston Airport. However, there is still a gap of more than 12 miles with no river crossing and no direct connections between the towns of Litchfield and Merrimack.

Currently, only two Merrimack River crossings provide access to the region's easternmost communities and other points east, including the Interstate 93 corridor. Taylor Falls Bridge, carrying Route 111, and the Sagamore Bridge, carrying the only built portion of the Nashua-Hudson Circumferential Highway, make up the only river crossings in the region. Taylor Falls Bridge, which carried 37,873 vehicles in 2009, connects Hudson Town Center to the East Hollis Street area of Nashua (NRPC Traffic Counts). A crossing at Taylor Falls has existed since 1827, though the current bridge spans were built in 1970 and 1973. The Sagamore Bridge, located one mile north of the Massachusetts border, connects the F.E. Everett Turnpike with Route 3A. The bridge, originally constructed in 1973, was extended to two spans in 2000. Traffic counts conducted in 2013 registered 41,664 vehicles crossed the bridge daily (NH DOT, Bureau of Traffic). Traffic counts at both bridges have remained relatively consistent since 2006, with no deviation above 10 percent.

Sidewalks run alongside both spans of the Taylor Falls Bridge. A separated and protected path provides access for pedestrian and cyclists on the north span of the Sagamore Bridge linking the Appleside Drive residential area in Nashua with the Hudson Technology Park. No public transit service currently currently utilizes either of the river crossings.

Previous Studies

A partial build of the Nashua-Hudson Circumferential Highway has long been discussed as a strategy to improve east-west connections over the Merrimack River. The proposed project would create a new Exit 9 off the F.E. Everett Turnpike in Merrimack, cross the river and intersect with Route 3A in Litchfield. The exact location of the crossing is subject to an updated environmental and engineering review. While the project has long been discussed and a preliminary Environmental Impact analysis was

conducted as early as 1993, the project has remained stalled.

Previous Plans

Originally conceived as part of the Circumferential Highway, an alternatives analysis was completed in 1982; an environmental impact statement prepared in 1993 resulted in EPA filing "intent to veto" because of environmental impacts related to the new road between Routes 3A and 111. The project was reduced in scope and the southern segment was completed in 1999.

The northern segment remained in the State's Ten Year Plan, but its status was downgraded beginning in the 2005-2014 plan, and eliminated entirely in subsequent plans.

In 2003, NRPC completed a Circumferential Highway White Paper due to concerns regarding the viability of the project. The paper presented a series of alternatives and noted that a full or partial build of the highway provided the greatest traffic benefits.

Projects

- Construct a northern crossing of the Merrimack River to provide a four lane roadway connecting NH 102 in Hudson, NH 3A in Litchfield and US 3 in Nashua. Exact location of crossing to be determined.

Enable the movement of goods to support the economy

On roadways, freight traffic often requires larger road widths to accommodate the wider nature of trucking vehicles and ensure the efficient delivery of goods across regions. Throughout the region, roadway widths are generally wide enough to accommodate trucking vehicles. However, there are a few exceptions. For example, Route 13 in Milford narrows on its approach to Union Square (the Milford Oval) such that it can be difficult for trucking vehicles, including fire apparatus, to navigate the corridor.

Lower costs and better service in freight movement have a positive economic effect on all companies engaged in the production, distribution, and retail sale of goods. Reducing the cost of moving goods enables companies to serve wider markets with economic gains from scale efficiencies.

Current Conditions

The movement of freight within the region takes place mainly over the region's highways via truck. The region also has two working railways that contribute to freight movement. These include the Hillsborough Line, from Nashua to Bennington, New Hampshire, and the New Hampshire Main Line, from the Massachusetts border to Concord. There are no water port facilities that support shipping within the Nashua Region. Although the region's history includes a canal system for the movement of freight, this system has not been in use since the 19th Century. The Nashua Region's canals and waterways are presently used for recreational purposes.

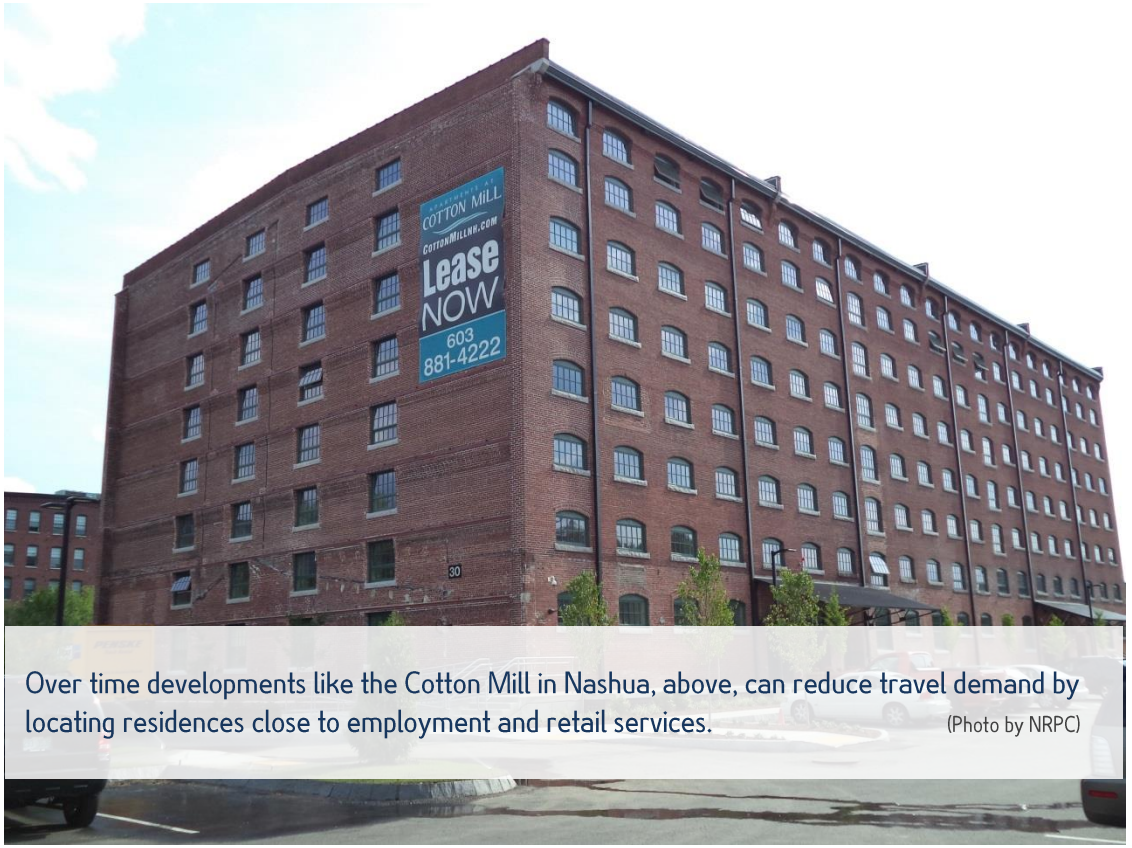
There are two active freight rail lines in the region. The New Hampshire Main Line traverses through Nashua and Merrimack continuing to Manchester and Concord to the north and Lowell to the south. The line is operated by Pan Am Railways. The Hillsboro Branch originates in Nashua and traverses through Amherst and Milford before terminating in Wilton. An inactive section of the line continues to the Town of Bennington. Pan Am operates the active section of this branch (NH State Rail Plan, 2012).

Previous Plans

The New Hampshire State Rail Plan, completed in 2012, made a series of recommendation relating to rail freight traffic including to plan for freight distribution centers along rail lines, support grant funding for branch line upgrades, provide financial support for infrastructure upgrades in partnership with shipping firms and railroads, and acquire and maintain abandoned state-owned abandoned rights-of-way to ensure they are available for potential future rail use.

Manage travel demand and reduce peak hour travel time

The region recognizes that travel demand management involves a toolkit of strategies including land use policies that encourage infill development and discourage scattered 'sprawl' patterns of development, technological investments in information sharing, corridor and intersection improvements and investments in alternative travel modes. Travel demand places its greatest stresses on the region's transportation system during peak hours, which in most areas occurs during weekday morning and evening commute periods. A number of projects proposed in the Metropolitan Transportation Plan are designed to improve infrastructure along corridors prone to recurring congestion.



Over time developments like the Cotton Mill in Nashua, above, can reduce travel demand by locating residences close to employment and retail services. (Photo by NRPC)

There is increasingly recognition that there may be more demand for transportation infrastructure than we as a nation can afford. As a result, there has been increasing interest in improving the efficiency and safety of the existing infrastructure. One of the most promising solutions for mitigating congestion and improving safety, as well as addressing some other major transportation issues, is Intelligent Transportation Systems. In ITS, advanced communication technologies are linked to the transportation infrastructure so that it can move people and goods with improved efficiency and safety.

Intelligent Transportation Systems (ITS) apply technology and communication to improve

the safety and efficiency of the transportation network of a region. Common examples of ITS applications include the EZ Pass tollbooth system, electronic message boards along the road, and vehicle location tracking. Immediately to the north of the region, plans are well underway to convert four lanes at the Bedford toll plaza to Open Road tolling lanes. This will enable EZ Pass holders to drive through the toll without reducing speeds, as is currently the case at the Hampton and Hookett toll plazas. n

NH DOT has maintained the Transportation Management Center since 2007. The center's mission is to detect, verify, and respond to incidents that affect the state transportation network. It serves to improve traffic operations, provide the public with current, accurate and useful travel and commuter information that promotes safe and efficient travel, and facilitate the maintenance of New Hampshire's transportation system.

Increase connectivity and decrease transportation-related emissions

Enhanced transportation connections can significantly reduce congestion by providing transportation users alternatives during periods of peak travel or during traffic incidents which limit traffic flow on arterial roadways. They also provide a measurable quality of life benefit by simply making

The overabundance of cul-de-sacs in a community can limit roadway connectivity. Many residents of Ledgewood Hills Drive and Arthurs Lane in Nashua live within 200 feet of each other, however a lack of connecting roadways means that residents of the two cul-de-sacs are disconnected due to the nature of the road network. For example, in order to access a neighbor on Ledgewood Hills Drive an Arthur Lane resident would need to travel more than two miles on six different local streets and two state routes to complete a trip between two points that are only 200 feet apart. Residents of Carlene Drive and Trestle Brook Drive live even closer together, approximately 100 feet, but an unusual road network means that the two points are a drive of 2.6 miles apart.

Expand fixed route transit service

Current Conditions

Currently, approximately 58 percent of residents in the Nashua Region do not enjoy access to fixed-route transit service because transit service does not extend beyond the Nashua city boundaries. The three most promising candidates for extended transit service in the region include the towns of Hudson, Merrimack and Milford, as they are the largest outlying population and employment centers in the region.

Previous Plans

NRPC's *Transit Plan for the Nashua Region* included a series of transit recommendations for the region, including the provision of fixed route service from Nashua to the towns of Hudson, Merrimack, and Milford. The plan noted that outside of Nashua, Hudson had the highest overall level of transit need.

Projects

While there are no specific transit extensions included in the Metropolitan Transportation Plan, a number of viable expansion options exist based on the recommendations included in the region's Transit Plan. Those options are discussed briefly below:

Hudson

The simplest and most feasible extension of fixed-route transit service in to the Town of Hudson would involve the extension of the Nashua Transit System's Routes 6 and 6A

servicing South Nashua. The route would access the Sagamore Bridge via Daniel Webster Highway and provide service to points along Route 3A in Hudson, including major destinations like the Hudson Wal-Mart, the Hudson Technology Park, and the Market Basket grocery store. The route would also service schools and residential areas, including Nottingham West Elementary School, the Presentation of Mary Catholic School and Convent, the Fox Hollow residential development and the densely populated neighborhoods surrounding Hudson's town center, before turning left at Route 111, crossing the Taylor Falls Bridge and re-entering Nashua. The route would re-enter Nashua in much closer proximity to its ultimate destination, the Nashua Transit Center.

South Merrimack

Merrimack's largest employers are situated in the southern areas of the municipality zoned for industrial uses. The Anheuser-Busch Brewery, BAE Systems, Fidelity Investments, Thomas More College, Brookstone, and the Merrimack Premium Outlets are all situated along Industrial Way or Daniel Webster Highway in the far southern quadrant of the town. According to the NH Economic and Labor Market Bureau, these six enterprises alone employ more than 8,400 people. Additionally, the Merrimack Premium Outlets are a major regional destination for retail shopping. Industrial Way in Merrimack is located less than two miles from the Nashua city line and an area already service by the Nashua Transit System's Route 1 service (serving Manchester and Concord Streets). Extending service to Merrimack's major employment centers via an extension of the NTS Route 1 service would represent the most efficient and feasible option to extend fixed-route transit service to the Town of Merrimack.

Milford/Amherst

An extension of fixed-route transit service to the Towns of Milford, Amherst and South Merrimack via service along Route 101A would dramatically improve transit access to the region's most heavily traveled east-west route and one of its busiest commercial corridors. The route would serve major destinations including the Amherst Wal-Mart, P.C. Connection, the St. Joseph Medical Center in Milford and a number of additional retail and residential centers along the corridor. Additionally, the route would provide access to Downtown Milford, a mixed-use area representing the largest concentration of residences outside of Nashua. Approximately, 2,834 households, or 48 percent of all households in Milford, are located within one half-mile of its downtown.

The Milford Oval is located approximately 6.5 miles from the Nashua city line and an already serviced by the Nashua Transit System (Northwest Boulevard via NTS Routes 2 and 2A). Extended service to Downtown Milford would represent the longest extension of existing service of all the options outlined in this section, however it could potentially offer the most long-term promise.

Improve access of transit alternatives to underserved populations

Current Conditions

Based on an analysis of income and vehicle availability statistics conducted in the Existing Conditions section of this plan, the region's largest underserved populations are concentrated in Central Nashua in the census tract 105, 106, 107 and 108.

Previous Plans

The "Nashua Tree Streets Neighborhood: Analysis and Overview" completed by the

Nashua Regional Planning Commission and the City of Nashua in 2012 offered several strategies to enhance the character and infrastructure of one of Nashua's most cohesive and lowest income neighborhoods. The plan recommended more transit shelters, more frequent bus service, increasing lighting and police patrols along the Heritage Rail Trail, sidewalk upgrades, and consideration of an overnight parking permit system. Some of those recommendations have already been implemented.

Coordinate transit service between Nashua, Manchester, Boston

The Boston Express bus service currently provides a transit link between the region and Boston and Manchester, but buses can experience lengthy traffic delays during peak hours and the service is outgrowing its Exit 8 facility. The prospect of additional links has long been explored in the region.

Current Conditions

Transit service from the region to Boston and Manchester is currently provided via the Boston Express bus service. Boston Express includes 13 southbound trips and 12 northbound trips from Nashua and Tyngsborough every weekend. Stops are located at the Exit 8 NH DOT Park-and-Ride lot in Nashua and the Exit 35 MassDOT Park-and-Ride lot, located just over the state border, in Tyngsborough. A partnership of principals from Concord Coach Lines and C&J Bus Lines operate the service via a contract with the NH Department of Transportation.

As noted in the Existing Conditions section, the Manchester Transit Authority also operates a single Nashua Express bus linking Manchester with the Home Depot/Kohl's Shopping Center immediately off of Exit 6.

Ridership aboard Boston Express service has steadily increased since its launch in 2007. In 2008, its first full year of service, the service accommodated 125,000 riders. By 2013, a total of 192,985 riders used the service; an increase of 54.4 percent since 2008. However, by some measures, Boston Express has become a victim of its own success. The Nashua Exit 8 Park-and-Ride is by far the most popular on the Everett Turnpike route, accounting for 60 percent of all ridership along the corridor. The Exit 8 park-and-ride lot holds 275 parking spaces and operates at capacity on weekdays. The lot is 99 percent full during those periods; a significant jump from 2011 when the lot was 78 percent full on average. A short-term lot repainting project should open up some new parking, but over the long-term the facility will need to be significantly expanded or supplemented by additional multi-modal access to Manchester and Boston.

Previous Plans

Previous plans have largely centered on passenger rail connections between nearby cities. NRPC has been assessing the feasibility and potential impacts of passenger rail since at least the 1980s. The commission completed a "Draft Proposal for the Re-introduction of Passenger Rail Service in Southern New Hampshire" in 2007 and a "Major Investment Study for Passenger Rail in New Hampshire" in 1999. The commission also participates actively on the New Hampshire Rail Transit Authority, formed in 2007 under legislation signed by then Governor Lynch. In 2013, the NH Executive Council approved funding for the Capital Corridor Transportation Alternatives Analysis, a comprehensive feasibility study of expanded service options between Boston and Concord, NH. That plan is scheduled for completion in late 2014.

Projects

The sole project in the Metropolitan Transportation Plan relating to improved connections between the region and surrounding cities is straightforward: To establish passenger rail service from the region to Manchester and Boston.

Ensure timely emergency response

It is critical that the region's transportation network function efficiently to ensure adequate emergency response times. Medical experts often refer to the importance of the 'Golden Hour' in seeking medical treatment for traumatic injuries; patients who receive medical treatment within one hour of a traumatic injury or the onset of symptoms are much more likely to survive and suffer fewer subsequent complications. This is true of both traumatic injuries and those associated with acute illnesses. Heart disease, the leading cause of death in the United States, is illustrative. Damage to heart muscle accelerates the longer one goes without receiving medical treatment after suffering a heart attack (Murphy et al., 2010).

The National Fire Protection Association recommends a five-minute emergency response time in urban areas and nine to ten minutes in rural and suburban communities with volunteer emergency services Though many factors outside of the transportation system impact emergency response times, including first responder staffing levels and communications, the ability of the emergency responders to quickly navigate the region's road network and access emergency situations is vitally important. Traffic congestion and traffic incidents like road construction and automobile crashes can significantly impair response times.

Centered in a rural area, the Wilton Ambulance Service covers three communities, including Temple and Lyndeborough. (Photo by PL Custon)

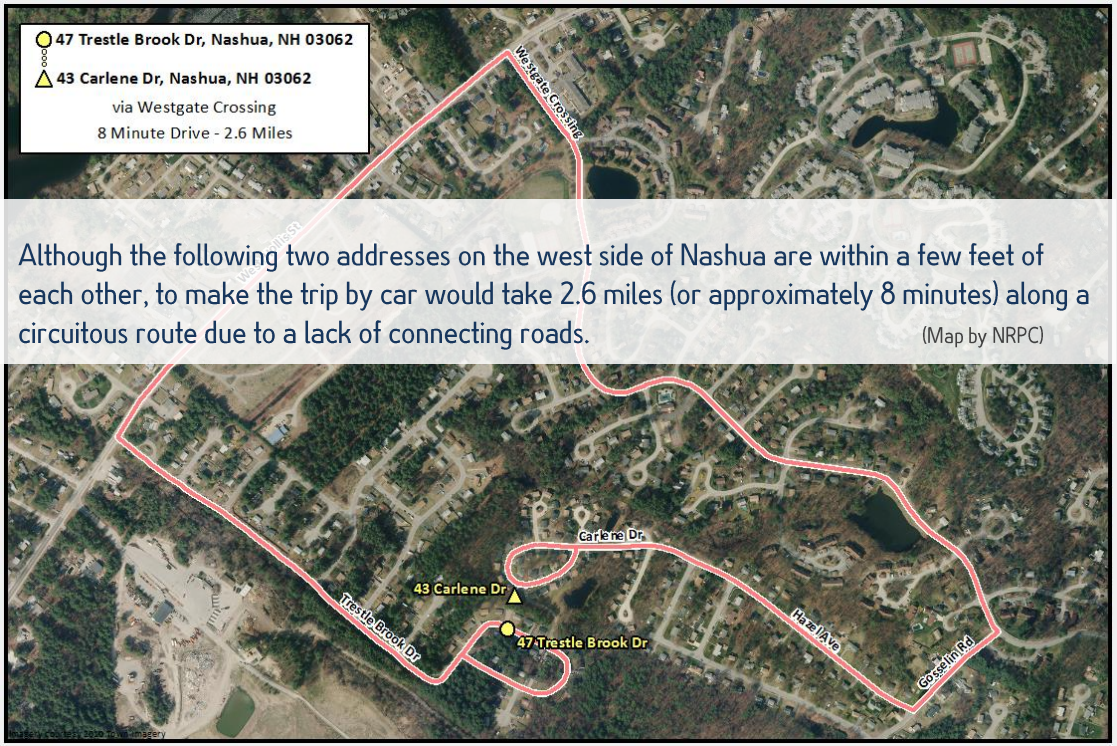
Several communities in the region employ traffic signal pre-emption capabilities for emergency responders allowing the manipulation of traffic signals in the path of emergency vehicles to allow for faster response times. For example, the City of Nashua provides fire emergency vehicles pre-emption through the use of a strobe detection system called Opticom on all 92 of the city's signals. The activation of the strobe light indicates to motorists that fire engines are approaching.

Enhanced traffic signal pre-emption technologies as well as the deployment of real-time ITS data to first responders will allow for improved responses moving forward by improving travel times through intersections and informing responders of the need to access alternative routes if necessary.

Increase connectivity and decrease transportation-related emissions for the region

Enhanced transportation connections can significantly reduce congestion by providing transportation users alternatives during periods of peak travel or during traffic incidents which limit traffic flow on arterial roadways. They also provide a measurable quality of life benefit by simply making

The overabundance of cul-de-sacs in a community can limit roadway connectivity. Many residents of Ledgewood Hills Drive and Arthurs Lane in Nashua live within 200 feet of each other, however a lack of connecting roadways means that residents of the two cul-de-sacs are disconnected due to the nature of the road network. For example, in order to access a neighbor on Ledgewood



Although the following two addresses on the west side of Nashua are within a few feet of each other, to make the trip by car would take 2.6 miles (or approximately 8 minutes) along a circuitous route due to a lack of connecting roads. (Map by NRPC)

Hills Drive an Arthur Lane resident would need to travel more than two miles on six different local streets and two state routes to complete a trip between two points that are only 200 feet apart. Residents of Carlene Drive and Trestle Brook Drive live even closer together, approximately 100 feet, but an unusual road network means that the two points are a drive of 2.6 miles apart.

Quality of Life

Introduction

A region's transportation system can significantly impact the quality of life offered to residents and visitors. Limited transportation options, recurrent traffic congestion, and transportation infrastructure incompatible with the surrounding natural and built environments are a few transportation issues that may impact a region's quality of life.

The region's roadways and transit corridors should provide viable opportunities to access employment centers, education facilities and other basic services, commercial destinations (including those supplying healthy foods), and medical care. When possible and appropriate, land use strategies that allow residences to be located within walkable distances of major destinations and employment centers may be considered. A diversity of transportation options, respectful of and consistent with a community's rural and built environment, may be considered in areas where settlement patterns are supportive.

A November 2013 evening Regional Transportation Workshop was one of several opportunities for residents of the region to offer their input on transportation issues. (Photo by NRPC)

What We Heard

Through public outreach efforts, both residents and municipal officials indicated that the region's transportation system should enrich and be supportive of the region's high quality of life. A need for more transportation options in the region was consistently noted by members of the public. Residents noted concern that the region was too automobile-dominant, that transit coverage was not offered in municipalities outside of Nashua, that pedestrian and bicycle facilities were inadequate and poorly connected, and that transit connections to the Boston area and surrounding cities were not well developed. Many residents expressed concern that the region's lack of transportation options made it less attractive to prospective residents, particularly seniors unable to drive and younger residents who

may not be able to afford or prefer to forgo the use of a car.

Of specific note, residents consistently voiced support for passenger rail service in the region. A passenger rail extension from Boston to New Hampshire's three largest cities – Nashua, Manchester and Concord – via an extension of the Lowell MBTA commuter line remains under study at the state level.

Residents also noted some concern related to traffic congestion in the region, most prominently regarding east-west travel. Concerns related to sprawl patterns of development were noted along some major corridors, including Route 101A and Daniel Webster Highway.

According to poll results from the University of New Hampshire Survey Center, residents of the region were fairly evenly divided regarding their preferences regarding housing size and commute time. Approximately 55 percent of residents indicated that they would prefer a short commute, even if that meant having a small home. Conversely, 44 percent indicated that they would prefer a large home, even if that meant having a long commute. Seniors, non-white residents and households earning less than $60,000 were more likely to prefer the small house/short commute option while families with two or more children and households earning more than $160,000 were more likely to approve a large house and long commute.

Increase access to basic amenities such as food, health care, jobs, and social services

In the Nashua Region, major health care facilities and social services are concentrated in Downtown Nashua where underserved populations are most concentrated. However, more than 42 percent of jobs are located outside the city limits, and 43 percent of residents commute to jobs outside the region.

A 2010 analysis by Reconnecting America, a national organization focused on the integration of transportation into community development, found that in the Nashua-Manchester Region (which makes up all of Hillsborough County), only 5.3 percent of low income households were located more than a mile from a grocery store. That figure ranked the area in the Top Ten of regions with a population under 500,000. Still, investments in public transit and the development of more pedestrian-oriented infrastructure, as well as zoning and land use reforms which encourage neighborhood and community food stores, will help continue progress in this important area.

Establish passenger rail service

Perhaps more than other single investment, residents of the region indicated that they would like to see passenger rail service restored to the region. Residents indicated that they believe the investment, though significant, is critical to maintaining and attracting young people and quality employers to the region and ensuring that the region's quality of life is as attractive and competitively-oriented as possible. Many residents indicated that highway traffic to the Boston area was burdensome and nearly impassible during some peak periods. Approximately 25 percent of residents of the region commute to Massachusetts to work and are therefore likely to travel corridors to the Boston area during peak hours (U.S. Census, American Community Survey, 2012).

Passenger rail has long been discussed at both the regional and state level. In 2007, the New Hampshire State Legislature voted to establish the New Hampshire Rail Transit

Authority to oversee the development of commuter rail in New Hampshire. In 2013,the NH Executive Council approved a $3.7 million Alternatives Analysis and Service Development Plan funded through the Federal Railroad Administration (FRA) and Federal Transit Administration (FTA).

Expand bicycle and pedestrian infrastructure miles

One overwhelming sentiment of public outreach efforts associated with the region plan was the need for greater investment in pedestrian and bicycle infrastructure and amenities. Many residents made clear that many roadways in the region are automobile-oriented and not conducive to pedestrian or bicycle traffic. Several indicated that they don't perceive roadways to be safe and that they lack basic amenities like sidewalks and streetlights.

Biking and walking offer significant benefits; they emit no greenhouse gas emissions, offer an excellent form of exercise and improved health outcomes for users and are less expensive to develop infrastructure for than automobiles.

Additionally, the region contains a handful of very walkable areas, proving a strong foundation for the expansion of pedestrian- and bicycle-friendly infrastructure and development. An NRPC GIS analysis revealed that in Milford, 45 percent of the town's households are located within a half-mile of the downtown, followed by Wilton (40 percent) and Nashua (37 percent). Sidewalk networks in all three areas are well developed. Across the whole of the region, 28 percent of residents and 27 percent of jobs are located within a half mile of downtowns or town centers.

The commission convened a committee of stakeholders in early 2014 to provide guidance to the commission as it works to update its regional bicycle and pedestrian plan, last completed in 2005.

The 2005 plan explained the benefits of a shift to bicycling and walking and identified a regional strategy for increasing non-motorized travel in the Nashua region. The update is intended to:

- Provide a new focus on local, short-distance trips which are the trips most likely to be done by foot or on a bike,
- Provide communities with the tools for improving their local bicycle and pedestrian environment, and,
- Provide the framework for a regional bicycle network that includes major travel corridors through the region and sub-regional connections to local networks.

The plan is structured around three major objectives and a series of corresponding action steps:

- Create a bicycle and pedestrian friendly region
  - *The plan recommends providing communities with guidance on Complete Streets frameworks, as well as the development of stress mapping at the local and regional levels, and the continued development of a regional bicycle pedestrian network.*
- Increase awareness of biking and walking as a viable means of transportation
  - *The plan calls for identifying local champions who can promote action on pedestrian and bicycle improvements at the most localized levels. The plan also recommends the continued sharing of bicycle pedestrian travel and safety data, completion of a communications and public outreach strategy, and support for law enforcement*

in creating a safer bicycle and pedestrian environment.

- Implementation
  - *In order to pursue and ensure implementation, the plan recommends the establishment of a bicycle/pedestrian technical advisory committee, identification of sustainable funding streams for capital projects and maintenance and the use of performance measures to track progress.*

The commission recognizes that in order for pedestrian and bicycle improvements to become major priorities on all levels of government and fully incorporated into the region's planning strategies and transportation network that they will need a strong base of support at the most localized of levels. The commission has been working to identify those local champions and assist communities in considering land use and operational changes necessary to permit and encourage a transportation and land use environment most conducive to walking and bicycling trips.

The long-range transportation plan includes two projects, both in Hudson, that are specifically focused on improved sidewalk infrastructure. However, it is important to note that in virtually all projects proposed, expansion of pedestrian and bicycle facilities will be evaluated and incorporated when feasible.

The Lindsay Landing mill redevelopment project in Milford provides senior housing within very walkable distances of services and retail centers.
(Photo by NRPC)

Support transit- and pedestrian-oriented development to manage VMT

Travel decision are not simply based on distance and infrastructure, elements of the built environment, and more specifically, land uses and land use mix, the extent and availability of parking, population and employment density, site design, building scale and orientation, roadway characteristics, and traffic speeds and volumes, can significantly impact travel decisions.

Therefore, in order to encourage higher rates of walking, bicycle and transit trips, municipalities may wish to reevaluate, with regional and state support if necessary, whether municipal zoning and land use regulations are consistent with encouraging a walkable and transit-accessible environment

and if local projects or development incentives can be helpful. Are there parts of the community where minimum parking requirements can be eased or waived? Are there areas where mixed uses could be permitted at a pedestrian scale or where density requirements could be eased? Is the community able to offer any incentives to developments that embrace pedestrian- and transit-friendly design characteristics? In order for pedestrian and transit infrastructure projects to work most effectively, they need to be considered in concert with land use and regulatory reforms.

While much of the region is rural in nature, land use and zoning considerations and local projects can impact travel decisions in communities of all sizes. While zoning and land use decisions are strictly the purview of municipalities, the commission is able to offer guidance when necessary and enjoys a long history of providing this type of support. Recent examples include the Exit 36 South Planning Study, which included streetscape and site design recommendations, corridor design guidelines for the Town of Milford, and a corridor plan for Route 130 in the Town of Brookline. The commission will continue to provide this service to ensure that returns on transportation investment decisions are maximized over time.

Reduce environmental effects of transportation system

Technological advancements have greatly improved the fuel efficiency and environmental impact of automobiles in recent years. Electric vehicles and those utilizing hybrid technologies, both growing in popularity, have significantly reduced greenhouse gas emissions associated with automobile use. However, automobiles continue to negatively impact the natural environment, most notably through greenhouse gas emissions and stormwater impairments associated with the vast built infrastructure necessary to support car travel.

Several projects in the Metropolitan Transportation Plan will improve air quality by reducing recurrent congestion and emissions associated with stop-and-go traffic patterns. These projects include Exit 36 South, Route 101A widening, the reconstruction of Broad Street in Nashua, and the widening of the FE Everett Turnpike through Nashua and Merrimack, intersection improvement of Route 101A in Merrimack, and reconstruction of the Routes 101 and 101A interchange at the Milford and Amherst town line.

Other projects in the plan will reduce transportation-related emissions by offering cleaner alternative modes of transport. These projects include passenger rail to Boston, sidewalk installations on Routes 3A and 102 in Hudson and the reconstruction of Main Street in Nashua. It is important to note that virtually all projects in the plan will consider pedestrian and bicycle enhancements.

While reducing automobile use through the promotion of alternative travel modes and decreased trip lengths through innovative land use and development practices will reduce the environmental impacts of the region's transportation system, strategies will also be necessary to help mitigate stormwater pollution, particularly in light of new EPA regulations targeting municipal discharges of stormwater. NRPC will continue to support municipalities as they evaluate potential strategies to reduce impervious surface coverage and consider the feasibility of other interventions to reduce stormwater pollution, including public outreach strategies.

Plan for alternative fuel infrastructure to support the next generation of passenger vehicles

Vehicle technologies are evolving rapidly. Stricter state and federal emissions and fuel economy standards have encouraged the deployment and development of high fuel efficiency and alternative powered vehicles. In 2012, the Obama administration approved new rules requiring average vehicle fuel efficiency to reach 54.5 miles per gallon by 2025 (Office of the White House, 2012). And in 2014, the EPA announced its Tier 3 vehicle emission standards targeting reductions in nitrogen oxides, volatile organic compounds, direct particulate matter, carbon monoxide and air toxics (EPA Office of Transportation and Air Quality, 2014).

As of 2104, sixteen different models of electric vehicles were available in the marketplace (though some models were limited to certain states). The U.S. Department of Energy reports just two electric charging stations in the Nashua Region, both located at car dealerships in Nashua (a private facility at Peter's Auto Sales, 280 Amherst Street and two public chargers at 153-161 Daniel Webster Highway). The region should consider expanding electric charging options to support electric vehicle use. The City of Lowell, Mass. offer four charging stations, with three located in downtown city-owned parking garages (U.S. Department of Energy, 2014).

Stricter state and federal emissions and fuel economy standards have encouraged the deployment and development of high fuel efficiency and alternative powered vehicles. In 2012, the Obama administration approved new rules requiring average vehicle fuel efficiency to reach 54.5 miles per gallon by 2025 (Office of the White House, 2012). And in 2014, the EPA announced its Tier 3 vehicle emission standards targeting reductions in nitrogen oxides, volatile organic compounds, direct particulate matter, carbon monoxide and air toxics (EPA Office of Transportation and Air Quality, 2014).

Autonomous, or driverless, cars are not yet available in the marketplace though that appears likely within the next 10 years. Already, a number of different car models can park themselves and four states, including California, Florida, Michigan, and Nevada, have passed legislation allowing the sale and use of autonomous cars.

The City of Nashua recently partnered with Public Service of NH to install an electric vehicle charging station (PSNH)

Autonomous vehicles offer a number of potential positive transportation and land use outcomes. Autonomous vehicles offer the potential to dramatically improve transportation safety through advanced threat detection and avoidance systems. They also offer the potential to generate more capacity in existing road networks through their ability to travel closer together with improved handling and accuracy (Buchanan et al., 2013). Autonomous cars may also allow for better management of

parking resources and land uses and more roadway space for alternative modes; since self-driving cars can simply drop passengers off at their destinations, roadside or nearby parking is not necessary.

While autonomous vehicles are not yet in the marketplace and electric vehicles are not widely utilized relative to gasoline-powered cars, it is likely that rapidly evolving vehicle technologies will significantly impact transport uses and transportation and land use networks moving forward. It is important for planners to be aware of those potential changes and consider them in the planning and development of transportation investments.

System Sustainability

Regular maintenance of the region's transportation system is vitally important to the long-term sustainability of the region's economy. Meeting maintenance needs has also proven a significant challenge for many municipalities in the region, as many roadways and bridges, built during periods of major population growth in the 1960s through the 1980s, reach the end of their lifespans. Ensuring that maintenance funds are allocated to the most urgent transportation needs and invested in such a way as to reduce or eliminate the need for future investments is critical to maximizing transportation-related spending.

What We Heard

Both residents and municipal officials consistently voiced concern regarding the state of transportation infrastructure in the region. Many noted issues like deteriorating pavement conditions, crumbling sidewalks, red-listed bridges, and limited state and federal support to address such issues. The need to adequately fund transportation infrastructure maintenance was noted as a major challenge in light of other competing needs. Some noted that it was difficult to build public support around system maintenance projects, as building new facilities attracted more attention.

Results from the UNH survey indicate that 71 percent of residents believe that more money should be invested in maintaining roads and bridges, with 48 percent indicating that they would be willing to pay more in taxes to do so. This issue garnered the highest levels of support of any issue that was polled for the question, ranking ahead of the expansion of bus/rail service between cities, senior transportation, bike paths, public transportation, sidewalks and crosswalks and traffic safety.

Identify road and bridge maintenance needs

The Metropolitan Transportation Plan recognizes that the region has entered a new era when maintenance needs are significant and growing and demands for new roadways are less acute. As such, the plan directs most funding in to existing roadways, focusing investments in targeted areas to reduce major traffic choke points whose impacts can affect large areas of the region's transportation network or simply to replace aging infrastructure reaching the end of its function lifetime.

Many transportation investments in this plan center on the region's major corridors, including the FE Everett Turnpike, Route 101A, Route 101 and Main Street in Nashua. Investments are tailored to improve traffic flow and mitigate the need for additional costly investments in later years. New roadways are limited to the construction of a third Merrimack River crossing and the Nashua-Hudson Circumferential Highway, two projects that have long been discussed in the region, as well as a new Route 101 interchange in Milford. The commission recognizes that the continued high performance of the region's existing roadways is critical in ensuring the long-term sustainability of the region's transportation system.

Additionally, NRPC works with municipalities to audit road surface conditions to assist local policymakers in prioritizing the expenditure of transportation maintenance funds. Investments in GIS technology and data management software can also help municipalities track transportation resources and ensure that resources are being deployed effectively. In instances where municipalities request increased taxpayer investments to meet rising maintenance demands, a thorough accounting of current

road surface conditions and previous expenditures can help policymakers better explain the issue and potentially build support for investment among residents.

Increase safety for all transportation system users

A central focus of the Metropolitan Transportation Plan is the safety of all users of the region's transportation system. The commission tracks accident rates across the region and virtually every investment is designed to improve safety over time. Safety analyses of roadways include both an examination of crash frequency and crash severity.

Several of the corridors targeted for investment in this plan currently experience relatively high rates of crashes. The Route 101 and Route 101A interchange in Amherst experienced the highest level of accidents, measured over a short span of roadway, at 115 accidents per mile per year. Route 101A, stretches of Main Street and Daniel Webster Highway in Nashua, and Lowell Road in Hudson also experienced elevated accident rates.

However, along some corridors crash severity is a more acute issue. Route 101 is illustrative. With only 6.6 collisions per mile between 2002 and 2011, Route 101 has a low rate of crashes. However, the corridor has experienced 14 fatalities over the nine-year period, the most of any corridor considered for investment in this plan.

A thorough and accurate record-keeping of accidents, including measures associated with crash severity and exact crash location, by law enforcement and safety officials will ensure that transportation investments are tailored to address the most pressing safety needs. Safety analyses must also be conducted by weighing crash severity with crash frequency.

The Souhegan Valley Transportation Collaborative provides demand response service to six towns in the Nashua Region centered around Milford. (SVTC)

Expand demand response and volunteer driver services

With the region's senior population projected to increase dramatically in coming years and much of the region unserved by public transit, the expansion of demand response service will be critical in meeting the region's mobility needs. During public outreach efforts, residents consistently voiced concern regarding the mobility needs of seniors and others who are unable to drive, particularly for those in rural communities. Progress in these efforts is being made; in 2014, Souhegan Valley Rides demand response service was expanded to two additional communities. A total of six municipalities now utilize the service. However, four municipalities in the region do not currently offer any official demand response service, relying instead on volunteer networks. Those communities include Mason and Lyndeborough, the region's most rural and among its westernmost communities and Litchfield and

Moving forward, the commission will investigate the feasibility of expanding demand response transit to municipalities that are currently unserved by such service. In situations where conditions might make expansion unfeasible, the commission will work to support volunteer networks to meet the growing need for transportation to medical trips. Additionally, the commission will continue to evaluate demand response services currently offered in the region to ensure that they are effectively meeting the needs of a growing passenger base. In situations where expansion might be necessary to meet ridership levels, the commission will work with regional services and state and federal partners in an effort to secure funding for expansion programs. The commission will work to ensure that seniors and others who are unable to drive do not have to relocate to reach vital medical services.

The COAST bus service on the NH Seacoast is a regional public transit provider (COAST)

Secure funds to match available Federal Transit Administration (FTA) funds

Funding constraints represent a significant barrier to greater investment in transportation infrastructure. One strategy to maximize transportation investments is to secure local and state funds to match federal investments. Many federal programs, including those administered by the Federal Transit Administration (FTA), require local matches be provided in order to access funds. Although these federal programs can prove very valuable, it is often difficult for municipalities to provide match support in an era of many other competing priorities.

Municipalities will be challenged to build broad-based support to finance matches for public transit expansions. Regional models, like the Cooperative Alliance for Seacoast Transportation (COAST), a regional public transit provider in

Implementation

Introduction

This chapter provides information on short and long term transportation needs beyond the ten year time frame, out to the year 2040. The long term transportation needs section address areas or components of the transportation network that are expected to be deficient and in need of improvement by the outer years of the planning timeframe. The projects in the long term transportation needs section are the pool of projects that NRPC might choose from when looking for projects to add to the State's Ten Year Plan or TIP. The construction years for these projects are a best guess as to when adequate funding might be available to allow the project to be programmed. This section can also contain "vision elements" or illustrative projects for which a need has been identified but no funding, scope or schedule has been developed.

The projects and long term needs have been reviewed by the NRPC Transportation Technical Advisory Committee (TTAC) and are endorsed by the TTAC and the NRPC Commissioners. The following sections provide a description of how the project lists were developed and are organized, as well as a description of identified long term transportation needs.

Project Scoring Criteria

Category	Criterion	Weight
State of Good Repair	Extended/Expected Service Life	9.1%
	Current Asset Condition	8.9%
Safety	Potential to Improve Safety	10.2%
	Existing Crash Rate	9.0%
Significance	Traffic Volume	3.6%
	Facility Importance	3.4%
	Availability of Alternate Routes	2.8%
Mobility	Potential to Reduce Congestion	6.4%
	Potential to Improve Freight Mobility	3.8%
	Impact as Alternative Mode	4.9%
Environment	Risk to Natural Environment	4.1%
	Risk to Historical/Cultural Environment	2.7%
	Increase Greenhouse Gases	3.3%
Economic Development	Enhance Access to Businesses	6.5%
	Economic Conditions	4.9%
Support	Local Support	3.6%
	Regional Support	2.7%
	State Support	3.0%
Potential for Success	Feasibility	4.1%
	Progress to Date	3.2%

The region's TTAC committee weighed several factors when scoring regional transportation projects.

Long Range Transportation Plan Project Update Process

The State Transportation Planning Process is driven by the States Ten Year Transportation Improvement Plan (Ten Year Plan). New Hampshire RSA 228:99 and RSA 240 require the New Hampshire Department of Transportation (NHDOT) to propose a plan for improvements to the State's transportation system. The Ten Year Plan identifies and prioritizes the critical transportation needs in New Hampshire.

The Ten Year Plan process is an incremental approach and these future year projects will be reaffirmed and prioritized in future biennial updates of the Ten Year Plan, as these factors are better understood in time. NRPC works cooperatively with the NHDOT to identify and prioritize improvements to the transportation network at the regional level. Input from communities can include requests for new projects or improvements, removal of existing projects that are no longer needed or feasible, or changes in the priority of existing projects. The MPO's Transportation Technical Advisory Committee (TTAC) develops a set of recommendations to be considered by NHDOT in the development of the draft Ten Year Plan.

The role of the MPO in New Hampshire is to successfully integrate the State Ten Year Plan Process into the Federal Transportation Planning Process. In the Nashua Region the Long Range Metropolitan Transportation Plan is used to identify transportation needs and improvements in the region. It serves as both the policy document for transportation planning in the region and the source from which specific transportation projects are identified, prioritized and advanced to the States Ten Year Plan.

Metropolitan Transportation Plan Project List	
1. Nashua, NH 101A: Phase I Widening and improvements	12. Hudson , NH 3A/NH 111: Hudson Parkway
2. Nashua, NH 101A: Phase II Widening and improvements	13. Amherst , NH 101A: NH 101 EB ramp reconstruction
3. Nashua-Tyngsborough, MA, US 3: Exit 36SB construction	14. Third Merrimack River Crossing
4. Nashua-Manchester-Concord: Passenger Rail	15. Wilton to Amherst, NH 101: Safety improvements
5. Hudson, NH 3A: Lowell Road right turn lane onto Bridge	16. Nashua, NH 130: Broad Street reconstruction
6. Nashua-Merrimack, Turnpike: Widening	17. Wilton to Bedford, NH 101: Widening to 4 lanes
7. Hudson, NH 3A: Lowell Road new sidewalk construction	18. Wilton, NH 31: Bridge Deck Replacement
8. Hudson, NH 3A/NH 102: Derry Rd new sidewalk	19. Brookline, NH 13: Left turn lane onto Old Milford Road
9. Nashua , Main Street: Reconstruction	20. Amherst, NH 122: Bridge Deck Replacement (New)
10. Merrimack, Baboosic Lake Rd: Bridge Replacement (New)	21. Pelham, Main Street: Bridge Replacement
11. Merrimack, NH 101A: Intersection improvements	22. Milford, NH 101: New interchange

Nashua Metropolitan Transportation Plan project list 2015-2040

In October 2012, the NRPC kicked off the 2-year transportation planning cycle that updates the State Ten Year Plan and Regional Metropolitan Transportation Plan by developing a priority list of projects for the region. For this planning cycle the nine Regional Planning Commissions worked cooperatively with NHDOT to develop a consistent set of criteria to score the projects.

NRPC staff worked with NHDOT and the TTAC to identify projects to be reviewed, scored and ranked against the weighted criteria. Projects were selected from the 2013-2040 Metropolitan Transportation Plan. No new projects were solicited from communities for this analysis and process. In addition, *projects in the current 2013-2016 Transportation Improvement Program are considered in progress and priority projects* and were not scored.

Project fact sheets with data/information pertinent to the categories and criteria were developed and used in the project evaluation. Final results were compiled and are presented below.

The Metropolitan Transportation Plan project listing is a compilation of regionally significant and federal aid projects covering the entire planning period from 2015 – 20140. The project list includes Nashua Regional Planning Commission 2015 – 2018 Transportation Improvement Program (TIP) and mirrors the State of New Hampshire's Ten-Year Plan (TYP) where funding for projects has been identified. The complete project listing is sorted by community and included at the end of this chapter or in the appendix. The list provides the following information:

- the facility or route number for each project;
- a brief project scope of work;
- the NH DOT project number (if applicable);
- estimated costs by year and phase;
- source of funds;
- Clean Air Act status (exempt or non-exempt); and
- any notes or comments.

Below is a summary of the major or regionally significant projects in the plan. It describes the current status of the project and any recent activity to lead towards implementation.

Projects

NH Route 101A Improvements Nashua

The *NH 101A Corridor Master Plan and Improvements Program* included a number of capacity improvements that have been incorporated into the Long-Range Transportation Plan. These improvements will reduce congestion, increase speeds to more efficient levels, and decrease vehicle miles traveled by reducing diversion of traffic to parallel routes. The resultant efficiencies from these improvements will lead to a decrease in generation of air pollutants along the corridor.

Objectives: This project directly addresses six objectives outlined in the Metropolitan Transportation Plan.

- *Improve East-West Travel*
- *Manage travel demand and reduce peak hour travel time*
- *Increase safety for all transportation system users*
- *Expand bicycle and pedestrian infrastructure miles*
- *Ensure adequate emergency response times*

- *Increase connectivity and decrease transportation-related emissions for the region*

1

Current status: The improvements to NH 101A are currently proposed for implementation in two phases. The most recent update of the State's Ten Year Plan has re-instated both phases of the project with the NHDOT managing the project and providing matching funds. Phase I, is expected to construct improvements from Sunapee Drive to Blackstone with funds programmed in 2020.

Phase II of the project is expected to widen from Somerset Parkway to Sunapee Drive and from Blackstone Drive to Celina Ave. Funds are programmed for construction in 2022.

Environmental Justice analysis: The impacted area of Route 101A spans Census Tract 102 in Nashua. Non-whites comprise approximately 15 percent of the population in this tract, with Asians dominating the minority population at 13.2 percent of the total population, according to American Community Survey 2008-12 data. Hispanics or Latinos (of any race) make up 6 percent of the population. Approximately 7 percent of residents live below the poverty line, though only 2 percent of households lack access to an automobile. Minority and poverty levels in the tract are slightly above the regional average, but below the national average.

Housing in the area is a mix of single-family and multi-family units (approximately 58 percent of residents live in structures with five or more housing units). While some disruption may be expected during construction, the projects should improve the quality of life for residents, namely by providing pedestrian infrastructure along the corridor where none currently exist and improving transit accessibility.

Next steps: NRPC is continuing to coordinate with NHDOT in an effort to advance the project. In addition NRPC is working with local leaders to rethink the NH101A Corridor. In recent years, changes in preferences related to development patterns have sparked interest in transit and pedestrian facilities along the corridor. NRPC will continue to pursue these options as progress on the widening continues.

Exit 36 South

The Exit 36 interchange lies just south of the New Hampshire border in Tyngsborough Massachusetts. The ramp system terminates/originates at the signalized intersection with Middlesex Road and the Pheasant Lane Mall. The current configuration of the interchange provides for all movements except for southbound Route 3 traffic.

The Exit 36S off ramp is expected to significantly improve operating conditions along the major roads in the south Nashua area, by relieving traffic congestion and delay, reducing greenhouse gas emissions, improving travel times, and decreasing lost productivity. The project is expected to enhance the effectiveness of public transportation and supports future passenger rail service. The southbound ramp and related improvements will provide more efficient access to services, area business establishments, and local and regional job centers. The proposed improvements will also generate opportunities for sustainable growth and serve as a catalyst for future economic development and community investment. The bi-state aspect of the project provides exceptional opportunities for innovative financing, interstate cooperation and coordination, and public/private partnerships.

Objectives: This project directly addresses five objectives outlined in the Metropolitan Transportation Plan.

- *Manage travel demand and reduce peak hour travel time*
- *Coordinate transit service between region and surrounding cities*
- *Increase safety for all transportation system users*
- *Expand bicycle and pedestrian infrastructure miles*
- *Increase connectivity and decrease transportation-related emissions for the region*

Current Status: The Nashua Regional Planning Commission has recently completed a planning study which presents several desired outcomes that address livability and integrate transportation, community and system preservation plans and practices. The completion of this study will allow project proponents to seek out support and pursue funding. (NOT In Ten Year Plan – ADD MTP Status)

Environmental justice analysis: The proposed Exit 36S ramp spans Census Tract 111.01 and 111.02 in South Nashua. The non-white population in this area varies from approximately 12 percent in tract 111.01 to 24 percent in tract 111.02. Asians make up the largest minority share in both tracts, at 9 percent and 23 percent respectively. No other minority group makes up more than 5 percent of the population. Poverty rates in both tracts register just below 7 percent. Vehicle availability is more limited in tract 111.02 where 8.4 percent of households lack access to an automobile (only 2.8 percent lack vehicle access in tract 111.01).

Should Exit 36S be constructed most of the ramp would likely be built over the state line in Massachusetts, where population density is much lower. Impacts to the South Nashua community would therefore likely be limited. Increases in ambient noise are possible but will be mitigated should the project move forward. The community would benefit from enhanced pedestrian and transit connections built in coordination with the project.

Next Steps: It is recommended that Massachusetts and New Hampshire officials continue to collaborate and advance the project by building political and community support, and pursuing multiple funding options for environmental permitting, right of way acquisition, engineering, design and construction.

This study documents benefits to both Tyngsborough and Nashua. The proposed ramp will result in significant improvements to traffic operating conditions in Nashua and will support existing businesses as well as important statewide initiatives, such as passenger rail. In Tyngsborough, improved accessibility will result in greatly enhanced economic development opportunities along Middlesex Road.

The footprint of a future Exit 36S off ramp will lay almost exclusively in Massachusetts. With the significant benefits the project brings to New Hampshire it is important for leadership in both states work cooperatively to advance the project. A project of this magnitude will require multiple funding sources.

Passenger Rail — Capitol Corridor Project

The reintroduction of passenger rail to the Nashua Region remains a priority in the region. Since service ended in the late 1960's, the last 40 years has featured a demonstration service followed by a number pf planning and feasibility studies. Recent proposals include extending commuter service from Lowell MA to Nashua,

Manchester and Concord with potential rail station locations in south Nashua, downtown Nashua and near the Merrimack Bedford line to service the Manchester Airport. Passenger rail is expected to reduced peak hour congestion on the F.E. Everett Turnpike, improve the regions capacity to move freight and provide economic growth opportunities in the region.

Objectives: This project directly addresses nine objectives outlined in the Metropolitan Transportation Plan:

- *Expand fixed route service throughout region*
- *Manage travel demand and reduce peak hour travel time*
- *Improve access of transit alternatives to underserved populations*
- *Coordinate transit service between region and surrounding cities*
- *Increase connectivity and decrease transportation-related emissions for the region*
- *Increase access to basic amenities such as food, health care, jobs, and social services*
- *Establish passenger rail service to Nashua*
- *Support transit- and pedestrian-oriented development to manage VMT growth and reduce congestion*
- *Reduce environmental effects of transportation system*

Current Status: The NHDOT is conducting the Capitol Corridor Study. The project will includes the study of potential rail and bus transit investments in the NH Capitol Corridor, which connects the major population centers of New Hampshire to metropolitan Boston, and the development of a service development plan and related documents for intercity passenger rail between Boston, MA and Concord, NH. This study will be taking a multimodal, systems-wide approach in the development of the alternatives that will be considered. (Ten Year Plan/MTP Status)

Next Steps: Upon completion of the Capitol Corridor Study, NRPC will coordinate with NHDOT and regional officials to identify next steps for the projects. For more information see www.nhcapitolcorridor.com

F.E. Everett Turnpike Widening: Merrimack — Nashua

The F.E. Everett Turnpike is the primary north-south travel route within the region and serves a significant volume of interstate travel to and from Massachusetts. Currently the Turnpike cross section varies from as wide as 5 travel lanes between exits 5 and 6 down to two travel lanes north of exit 8. The Turnpike cross section widens back to 3 lanes near exits 10 and 11 only to drop back down to two lanes north of exit 11 to the Bedford toll plaza. The variable cross section leads to bottle neck conditions during the AM and PM peak travel times causing significant congestion and compromising safety. NRPC supports widening the turnpike to a consistent 3 lane cross section from exit 8 in Nashua to the Bedford toll plaza to meet current and projected volume.

Objectives: This project directly addresses three objectives outlined in the Metropolitan Transportation Plan.

- *Manage travel demand and reduce peak hour travel time*
- *Increase safety for all transportation system users*
- *Increase connectivity and decrease transportation-related emissions for the region*

Current Status: The funds for the preliminary engineering and right of way are currently programmed in the Transportation Improvement Program for 2017- 2018. Construction and additional right of way funding are programmed in the State Ten Year Plan and NRPC Metropolitan Transportation Plan for 2022 – 2024. The future relocation of the Bedford toll plaza remains unclear as a a specific location has

not been identified. In, addition the NRPC MPO has taken the position that the widening should occur in advance of relocating the toll plaza and has echoed the concerns of the Town of Merrimack has voiced regarding the ramp tolls.

Environmental Justice Analysis: Widening of the F.E. Everett Turnpike would most significantly impact Census tracts 141, 142.02 and 143 in the Town of Merrimack. Merrimack is a relatively affluent community and only in Census tract 141, which spans the area between the turnpike and the Merrimack River, are poverty levels slightly higher than the regional average. Approximately, 7.7 percent of residents in the area fall below the poverty line and 5.5 percent of households lack access to an automobile. The area has a very low minority population however, as approximately 96 percent of residents identify as white.

Next Steps: NRPC will monitor planning and engineering activity related to this project. NRPC will re-evaluate the priority of this project in future transportation planning cycles and facilitate discussions between Merrimack, NHDOT and Southern New Hampshire Planning Commission related to the toll relocation.

Hudson Parkway

This project would connect NH 3A to NH 111 beginning at the Sagamore Bridge in Hudson. The proposed connection between the Sagamore Bridge at NH 3A and NH 111 would be a two lane controlled access highway with at grade intersections using the original Circumferential Highway alignment. Funding for this illustrative project would likely come from developer fees, the Town of Hudson and possibly regional state or federal sub allocation. NRPC completed a preliminary planning study of a connection between NH 3A at the Sagamore Bridge and NH 111 in Hudson.

Objectives: This project directly addresses three objectives outlined in the Metropolitan Transportation Plan:

- *Increase safety for all transportation system users*
- *Increase connectivity and decrease transportation-related emissions for the region*
- *Manage travel demand and reduce peak hour travel time*

Current Status: This preliminary planning study focused on developing a concept plan to connect NH 3A at the Sagamore Bridge with NH 111 in Hudson. The conceptual plan was developed using planning tools such as the NRPC Travel Demand Model and GIS datasets and analysis techniques. The plan used the existing Circumferential Highway alignment as a starting point. This allowed for the use of the environmental review that has already been completed for that proposed roadway alignment. In addition, due to the fact that the town of Hudson has been anticipating the development of a roadway in that alignment, the right-of-way has generally been protected from development. Finally, a reduced cross section will allow more flexibility in avoiding environmental resources.

The concept plan evaluates a 2-lane controlled access facility with a posted speed limit of no more than 35 MPH. Limited access will be provided at existing intersections only. This reduces the impact on the natural and built environment, as well as reducing the traffic expected on surrounding roads. The new roadway is anticipated to be similar to the design and layout of Albuquerque Avenue in Litchfield, NH.

Environmental Justice analysis: Construction of the Hudson Parkway would occur within the bounds of Census tract 123, which makes

up the entire southern quadrant of Hudson (south of Central Street and Pelham Road). This area of Hudson is quite affluent and racially homogeneous. Only one percent of households lack access to an automobile, 4.1 percent fall below the poverty line and 95 percent identify as white (4.5 percent are of Hispanic origin).

Next Steps: Additional analysis is needed to address details of how the project will intersect with NH 3A at the Sagamore Bridge and at NH 111. Further no funding source has been identified at this time. This project should be evaluated as part of the larger picture for east west travel in the region and should be considered when planning for Additional Merrimack River Crossings.

Third River Crossing

The Circumferential Highway, as originally conceived, was removed from New Hampshire's Ten Year Plan in February 2007. Since that time NRPC has engaged officials from the affected communities and examined alternative project recommendations including and additional crossing of the Merrimack River North of the Taylor Falls Bridge.

Objectives: This project directly addresses four objectives outlined in the Metropolitan Transportation Plan:

- *Increase safety for all transportation system users*
- *Increase connectivity and decrease transportation-related emissions for the region*
- *Improve East-West Travel*
- *Manage travel demand and reduce peak hour travel time*

Current Status: An additional crossing of the Merrimack River connecting NH 102 in Hudson to Route 3A, Route 3 and possibly the F.E. Everett Turnpike remains a priority for the region. However a specific location for this crossing has not been determined. Current travel demand model analysis locates the bridge at the site of the original Circumferential Highway. The project is included in the MTP to be constructed and operating by the year 2035. Updated analyses and alternative funding sources will need to be evaluated moving forward.

Environmental Justice analysis: Because a site has not yet been selected for an additional Merrimack River crossing, it is difficult to conduct an environmental justice evaluation at this time. In order to reduce impacts to low income and minority populations, it is important to note that the area south of Laton Street and north of Salmon Brook in east Nashua represents the largest concentration of low income and minority populations in the region.

Next Steps: NRPC will continue to work with affected communities to develop a long term solution to the mobility constraints resulting from limited crossings of the Merrimack River. The information and planning effort to date has provided enough detail to allow for project modeling that meets the air quality conformity requirements and provides adequate information to support various alternative funding scenarios. NRPC will continue dialogue regarding the Merrimack River crossing with community officials east and west of the Merrimack River.

As project alternatives become better defined NRPC will work with federal and state agencies and provide opportunity for public input on this project. Public input opportunities may include presentations to FHWA, NH DOT, environmental regulatory agencies, planning boards, town selectmen, city aldermen, community groups or targeted neighborhood meetings.

NH Route 101 Corridor Plan (Amherst, Milford and Wilton)

The Nashua Regional Planning Commission developed the *New Hampshire Route 101 Corridor Plan.* The purpose of the plan is to improve safety and preserve the capacity of the roadway as land use patterns change along the corridor. Implementation of the recommendations in the plan will result in a safer, better operating and better looking corridor as well as reduced traffic diversion to local streets, facilities for bicyclists and pedestrians and the capability to better control and guide commercial development.

The final report for this study recommended the widening of NH 101 to four lanes (two lanes in each direction) from the Bedford line, through Amherst, Milford, and Wilton, to the intersection of Old Wilton/Phelan Roads at the west end of the Milford bypass. A two-lane bypass will continue to the west and connect back into NH101 near the Wilton/Milford town line. The widening of NH 101 will increase the highway's capacity and decrease the generation of air pollutants by reducing congestion, increasing speeds to more efficient levels, and decreasing traffic diversion thereby reducing vehicle miles traveled.

Objectives: This project directly addresses four objectives outlined in the Metropolitan Transportation Plan:

- *Increase safety for all transportation system users*
- *Manage travel demand and reduce peak hour travel time*
- *Improve East-West Travel*
- *Increase connectivity and decrease transportation-related emissions for the region*

Current Status: The NHDOT is advancing the widening of the NH101 Corridor through Bedford NH. The major improvements and widening to NH101in the Nashua region have been delayed to address the fiscal constraint of the States Ten Year Transportation Plan.

Environmental Justice analysis: This project would impact all of the census tracts located within Amherst, Milford and Wilton (including tracts 151 and 152 in Amherst and tracts 161, 162.01, and 162.02 in Milford. Only in Wilton and in tract 162.01, making up most of central Milford, are poverty rates slightly higher than the regional average, at 8.5 percent in the Milford tract and at 7.1 percent across Wilton. Between 5 to 6 percent of households in both areas lack access to an automobile, however both areas are very racially homogenous with more than 96 percent of residents identifying as white.

Impacts to the region would be comparable to any major road expansion project, including day-to-day construction impacts, potential right-of-way acquisitions and the potential for more ambient noise due to higher traffic levels. The project would have the benefit of improving safety along a corridor long recognized for its high rate of severe crashes.

Next Steps: NRPC. NHDOT and member communities need to reevaluate the long term travel needs along the NH 101 Corridor. The original corridor study is more than ten years old and needs to be re-evaluated to ensure proper investment in this important piece of transportation infrastructure.

Strategies to Expand Transit Facilities

As noted, current fixed route transit service is limited to the Nashua City limits. Demand response service is provided on a limited basis to Merrimack and Hudson by Nashua Transit service. The Souhegan Valley Transportation Collaborative contracts with Nashua Transit System to provide non-emergency medical and shopping trips via a demand response service in the towns of

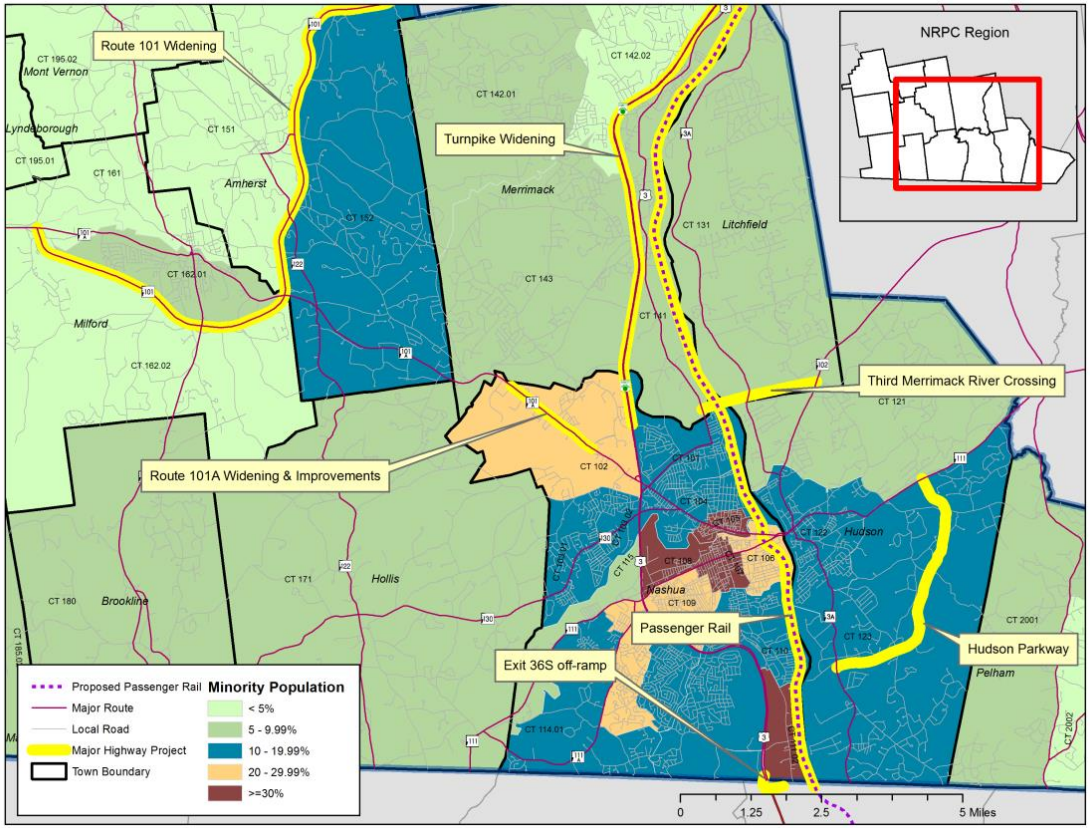
Amherst, Brookline, Hollis, Milford, Mont Vernon and Wilton.

Throughout the development of the MTP, outreach efforts related to transportation resulted in feedback that indicated the desire for more transit options. Enhanced transit service is also consistent with a number of objectives outlined in the MTP, including improving access for underserved communities and controlling travel demand. A number of opportunities exist to improve and expand service throughout the region.

Opportunities: Opportunities for regional expansion of fixed route transit service exist along several corridors and in several communities. These opportunities exist on NH 101A from Nashua to Milford, NH 3A in South Merrimack, Service to the Manchester Airport and tying NH 3A in Hudson into existing Nashua service.

Obstacles: Funding remains the largest obstacle to expanding transit service throughout the region. Since 2010 federal funding has dropped by approximately $800,000. In addition, federal operating funds require a 50% non-federal match. Reduced federal funding and scarce matching funds make it difficult to get new routes implemented.

MTP projects – Potential Impacts to Minority Populations



Programmed MTP projects will impact both areas with low minority population shares as well as areas with relatively high concentrations of minorities

Source: NRPC GIS

Next Steps: Identify sources of non-federal match to begin to expand service. Coordinate with private industry to seek support of service in the region. Investigate formula funding and legislation to regionalize transit service in the greater Nashua area.

Improve coordination and relationship with Manchester Transit Authority, Lowell

Regional Transit Authority and Cooperative Alliance for Regional Transit (CART).

Environmental Justice

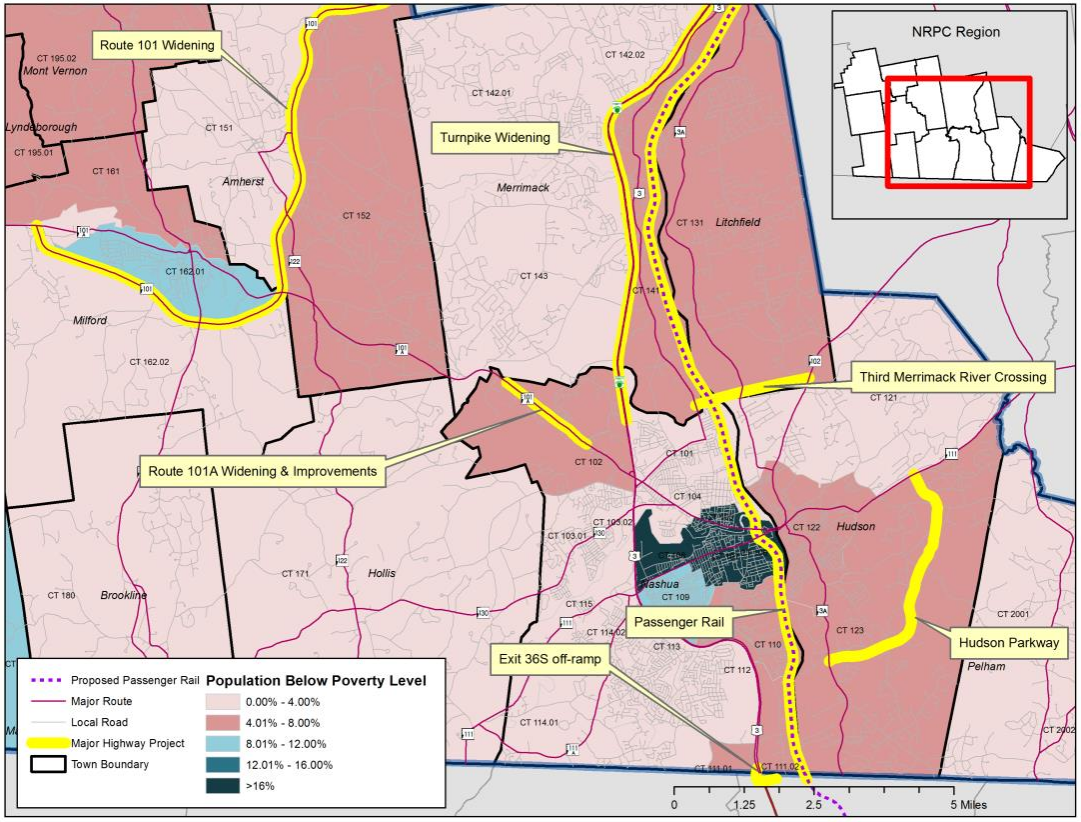
The Nashua Regional Planning Commission receives federal monies through the US DOT and FHWA and as a result is subject to consider and address the effects of all programs, policies, and activities on "minority populations and low-income populations." The Federal Highway Administration (FHWA) has incorporated environmental justice as part of their mission by involving the potentially affected public in developing transportation projects that fit harmoniously into the communities without any undue harm through displacement, or sacrificing safety or mobility.

Poverty

The Census Bureau uses a set of dollar value thresholds that vary by family size and composition to determine who is in poverty. Poverty thresholds for people living alone or with nonrelatives (unrelated individuals) vary by age (under 65 years or 65 years and older). The poverty thresholds for two-person families also vary by the age of the householder. If a family's total income is less than the dollar value of the appropriate threshold, then that family and every individual in it are considered to be in poverty. Similarly, if an unrelated individual's total income is less than the appropriate threshold, then that individual is considered to be in poverty. US Census Bureau, "How Poverty is Calculated in the ACS."

http://www.census.gov/hhes/www/poverty/poverty-cal-in-acs.pdf.

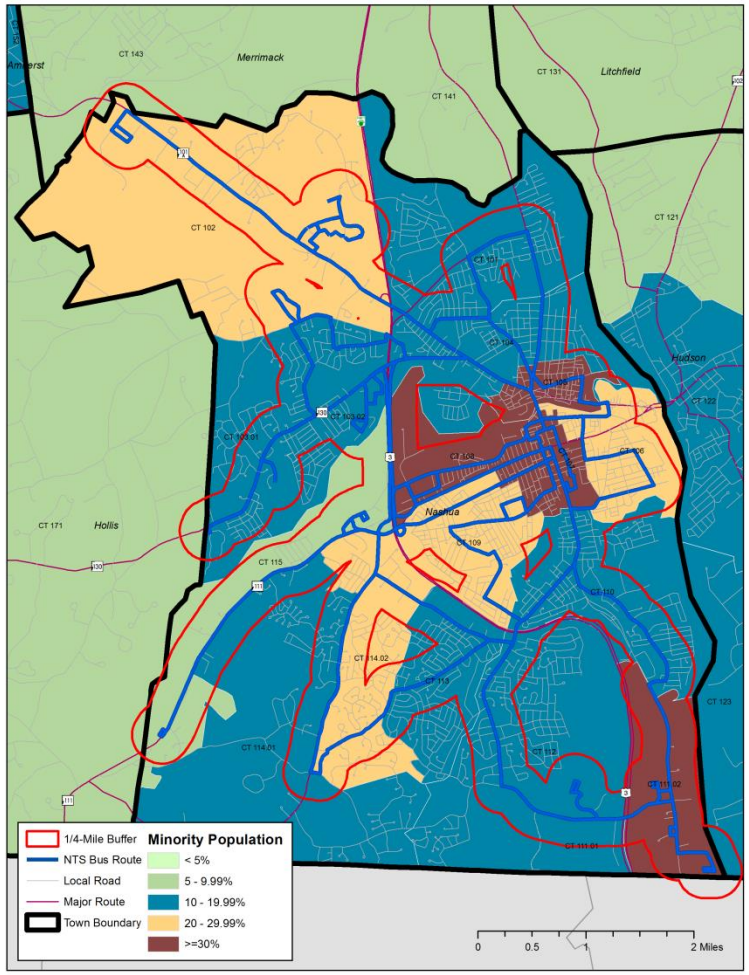
MTP projects – Potential Impacts to Low Income Populations



Programmed MTP projects do not appear to place undue burdens on low income areas of the region.

Source: NRPC GIS

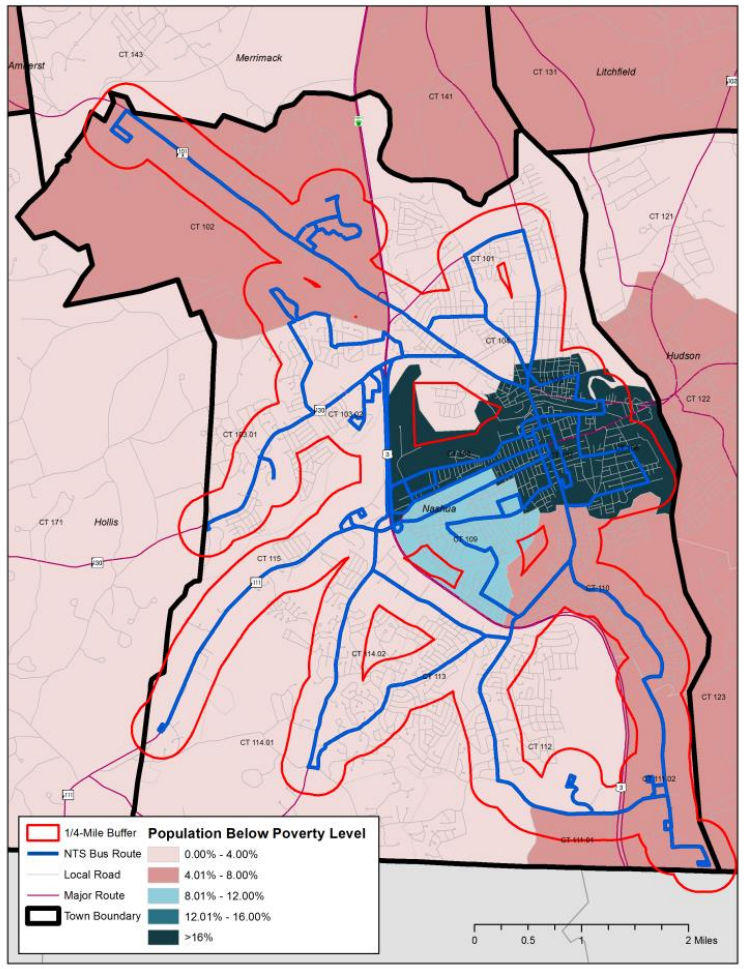
Nashua Transit Routes – ¼ mile buffer of Minority Populations



Programmed MTP projects do not appear to place undue burdens on low income areas of the region.

Source: NRPC GIS

Nashua Transit Routes – ¼ mile buffer of Low Income Populations



Programmed MTP projects do not appear to place undue burdens on low income areas of the region.

Source: NRPC GIS

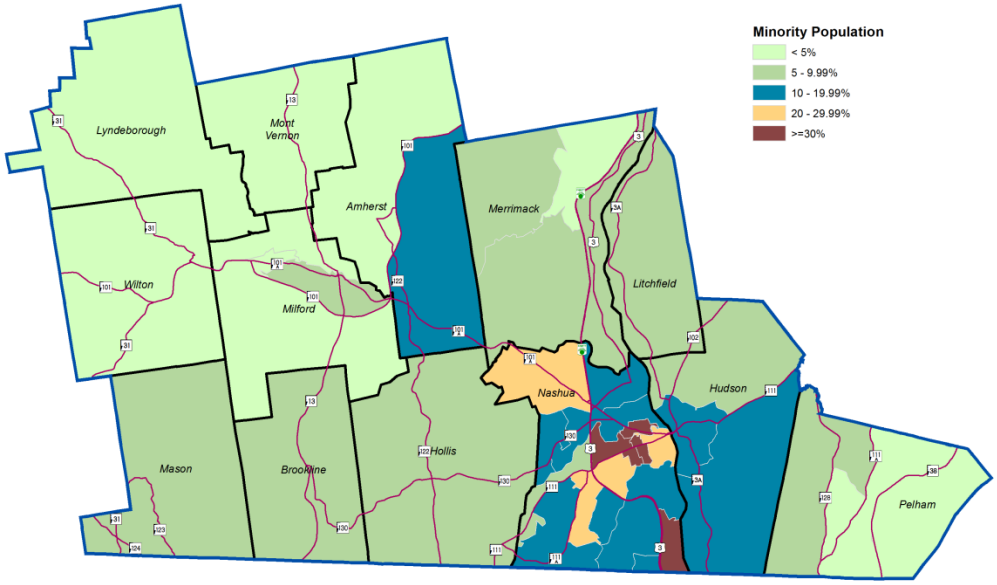
Over the last two decades, the majority of communities in the region have seen higher percentages of families and individuals living below the poverty level. This is consistent with county, state and national trends. Low median household incomes are often directly linked to automobile availability.

Automobile ownership is extremely expensive and for many low income and poverty status individuals, private vehicle costs are prohibitive and force them to be transit dependent. According to the 2006-2010 American Community Survey, the three communities in the Nashua region with the highest percentages of families living below the poverty level are Mason (7.2%, or 28 out of 387 families), Nashua (5.3%, or 1,165 out of 21,965 families) and Lyndeborough (5%, or 21 out of 417 families). Unfortunately, of those communities, only Nashua is served by fixed route transit.

General Distribution of Minorities by Census Tract In The Region

For the purposes of the US Census, minorities are defined as people who are NOT a single-race, non-Hispanic white. According to this definition, Hispanic whites are considered as minority, for example. The general concentration of minority population in the region can be found in and around the City of Nashua, particularly in the center of the city within the Tree Streets neighborhood, in southern Nashua near the state line, and along census tracts that intersect NH 101A near the Amherst and Merrimack borders. In these areas the percentage of minority population can be as high as 10-40% of the total tract population. Outside of the City of Nashua the region is fairly homogenous with concentrations of minorities as a percentage of population between 0-10%.

Minority Populations – Nashua Region



The region's minority populations are largely concentrated in the City of Nashua

Source American Community Survey 2008-2012S

Minority and Poverty Concentrations in the Nashua Region

The City of Nashua is home to the largest concentrations on minorities in the region, particularly in the Downtown and South Nashua areas. Smaller minority concentrations are also centered in parts of

Amherst and Hudson. More rural areas, including Lyndeborough, Wilton, Mont Vernon, are home to the smallest minority shares in the region.

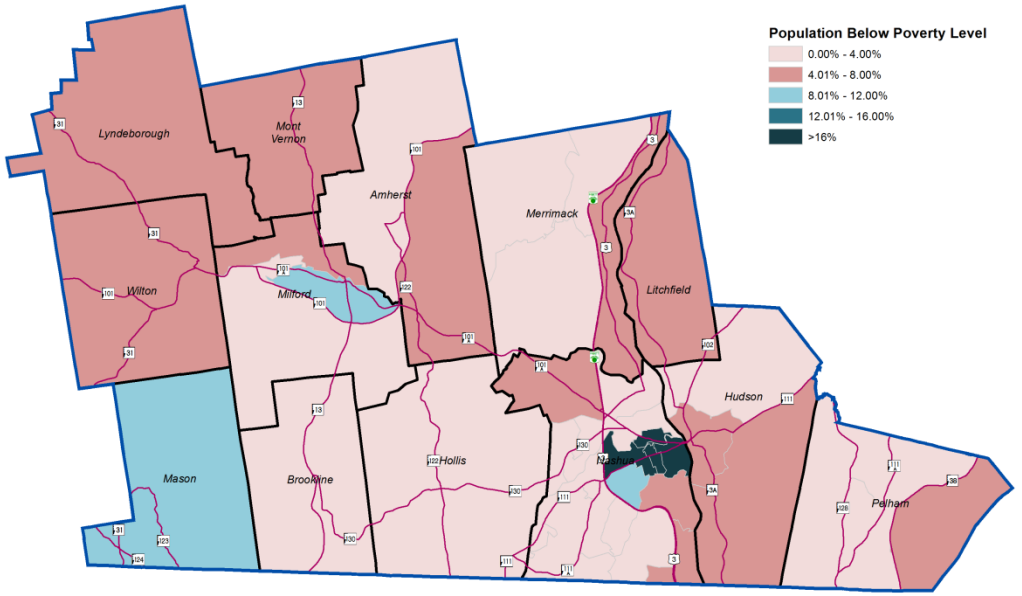
Poverty is most concentrated in Downtown Nashua where the poverty rate for four central census tracts (tracts 105-108) averages approximately 30 percent. Much smaller populations of impoverished residents are centered in Mason and Central Milford. Areas like Brookline, Hollis and Pelham boast the lowest poverty rates in the region.

Low Income and Minority Populations – Access to Transit

Transit service is relatively well developed in the City of Nashua and virtually all geographic areas of the city are serviced by transit routes. Since the region's minority and low income populations are largely concentrated in Nashua, they are well served by current transit service.

Since the city is well served geographically, future considerations may be focused on improving existing service through more frequent service, bus stop upgrades and technological investments.

Low Income Populations – Nashua Region



Low income populations are the highest share of the population in the City of Nashua and parts of Mason and Milford.

Source American Community Survey 2008-2012

Fiscal Constraint

A requirement of the Metropolitan Transportation Plan is to include a fiscally constrained project list for the period 2015 through 2040. The list must be consistent with the Transportation Improvement Program and include project and financial information for all long-term projects. A complete list of projects and fiscal constraint analysis is included in the following tables.

Fiscal Constraint Analysis for Transportation Projects in the Nashua Metropolitan Planning Area

			Fiscal Year	Statewide Resources for FHWA Federal Aid Projects[1]	NRPC MPA Share (12.75%)	Amount Programmed[2]	FY Balance	Running Balance
2040 Metropolitan Transportation Plan	2015-2024 Ten Year Plan	2015-2018 TIP	2015	$150,879,383	$19,234,895	$14,098,855	$5,136,040	$5,136,040
			2016	$145,764,815	$18,582,863	$9,404,593	$9,178,270	$14,314,310
			2017	$144,186,596	$18,381,663	$11,005,390	$7,376,274	$21,690,584
			2018	$156,769,868	$19,985,845	$12,663,720	$7,322,125	$29,012,709
			2019	$187,400,000	$23,890,735	$11,507,380	$12,383,355	$41,396,063
			2020	$191,600,000	$24,426,173	$18,534,888	$5,891,284	$47,287,348
			2021	$189,700,000	$24,183,951	$11,437,412	$12,746,539	$60,033,887
			2022	$191,900,000	$24,464,419	$13,800,612	$10,663,807	$70,697,693
			2023	$181,300,000	$23,113,075	$9,618,511	$13,494,564	$84,192,257
			2024	$179,800,000	$22,921,847	$11,192,706	$11,729,141	$95,921,399
			2025	$185,553,600	$23,655,346	$19,762,665	$3,892,681	$99,814,079
			2026	$191,491,315	$24,412,317	$8,856,707	$15,555,611	$115,369,690
			2027	$197,619,037	$25,193,511	$9,140,121	$16,053,390	$131,423,080
			2028	$203,942,846	$25,999,704	$9,432,605	$16,567,099	$147,990,179
			2029	$210,469,018	$26,831,694	$9,734,448	$17,097,246	$165,087,425
			2030	$217,204,026	$27,690,308	$19,410,534	$8,279,774	$173,367,199
			2031	$224,154,555	$28,576,398	$30,903,953	-$2,327,555	$171,039,644
			2032	$231,327,501	$29,490,843	$31,892,880	-$2,402,036	$168,637,608
			2033	$238,729,981	$30,434,550	$49,639,022	-$19,204,472	$149,433,136
			2034	$246,369,340	$31,408,456	$37,949,941	-$6,541,485	$142,891,651
			2035	$254,253,159	$32,413,526	$39,164,339	-$6,750,813	$136,140,838
			2036	$262,389,260	$33,450,759	$68,699,373	-$35,248,614	$100,892,224
			2037	$270,785,716	$34,521,183	$78,194,451	-$43,673,268	$57,218,956
			2038	$279,450,859	$35,625,861	$88,226,866	-$52,601,005	$4,617,951
			2039	$288,393,287	$36,765,889	$13,338,541	$23,427,348	$28,045,299
			2040	$297,621,872	$37,942,397	$13,765,374	$24,177,023	$52,222,322
			Totals:	**$5,519,056,035**	**$703,598,211**	**$651,375,888**	**$52,222,322**	--

[1]Sources: FYs 2015-2018 STIP, FYs2019-2024 State Ten Year Plan, FYs 2025+ Inflated FY2024

[2]Includes Share of Statewide Projects

Operations and Maintenance Needs

Fiscal Year	State Resources for Operations & Maintenance	NRPC MPA Share (12.7%)
2015	$ 125,372,492	$ 15,983,143
2016	$ 125,000,000	$ 15,935,656
2017	$ 125,000,000	$ 15,935,656
2018	$ 125,000,000	$ 15,935,656
2019	$ 125,000,000	$ 15,935,656
2020	$ 125,000,000	$ 15,935,656
2021	$ 125,000,000	$ 15,935,656
2022	$ 125,000,000	$ 15,935,656
2023	$ 125,000,000	$ 15,935,656
2024	$ 125,000,000	$ 15,935,656
2025	$ 125,000,000	$ 15,935,656
2026	$ 125,000,000	$ 15,935,656
2027	$ 125,000,000	$ 15,935,656
2028	$ 125,000,000	$ 15,935,656
2029	$ 125,000,000	$ 15,935,656
2030	$ 125,000,000	$ 15,935,656
2031	$ 125,000,000	$ 15,935,656
2032	$ 125,000,000	$ 15,935,656
2033	$ 125,000,000	$ 15,935,656
2034	$ 125,000,000	$ 15,935,656
2035	$ 125,000,000	$ 15,935,656
2036	$ 125,000,000	$ 15,935,656
2037	$ 125,000,000	$ 15,935,656
2038	$ 125,000,000	$ 15,935,656
2039	$ 125,000,000	$ 15,935,656
2040	$ 125,000,000	$ 15,935,656

Source: *NH DOT*

AMHERST					**Project ID**	**In TIP?**	**Route/Road**
					10136C	Yes	NH 101A & NH 101
Scope:	Reconstruction of EB ramps and installation of signals at NH 101 and NH 101A						
Phase	**FY**	**Federal**	**State**	**Other**		**Total**	**Funding Source**
Construction	**2018**	**$2,124,350**	**$531,087**			**$2,655,437**	**STP-State Flexible**
TOTAL		**$2,124,350**	**$531,087**			**$2,655,437**	

Amherst					**Project ID**	**In TIP?**	**Route/Road**
					LRTP18	No	NH 122
Scope:	Bridge Deck Replacement over NH Route 101 (Bridge ID 135/109) {State Red List}						
Phase	**FY**	**Federal**	**State**	**Other**		**Total**	**Funding Source**
Construction	2019	$2,500,000	$0	$0		$2,500,000	Bridge On/Off System
TOTAL		**$2,500,000**	**$0**	**$0**		**$2,500,000**	

Amherst					**Project ID**	**In TIP?**	**Route/Road**
					LRTP9	No	Various Locations
Scope:	Reconstruct railroad crossings at 5 locations at or adjacent to NH 101A: NH 101A/Amherst Village, Old Nashua Road, Northern Boulevard, and North Hollis Road.						
Phase	**FY**	**Federal**	**State**	**Other**		**Total**	**Funding Source**
	2023	$1,751,208	$0	$437,802		$2,189,009	Federal
TOTAL		**$1,751,208**	**$0**	**$437,802**		**$2,189,009**	

BEDFORD - MERRIMACK					**Project ID**	**In TIP?**	**Route/Road**
					16100	Yes	F.E. EVERETT TPK
Scope:	Improvement to Bedford Mainline Toll Plaza to Institute Open Road Tolling (TPK Capital Program)						
Phase	**FY**	**Federal**	**State**	**Other**		**Total**	**Funding Source**
PE	**2015**		**$300,000**			**$300,000**	**Turnpike Capital**
Construction	**2016**		**$3,921,600**			**$3,921,600**	**Turnpike Capital**
Construction	**2017**		**$9,691,718**			**$9,691,718**	**Turnpike Capital**
Construction	**2018**		**$5,825,255**			**$5,825,255**	**Turnpike Capital**
TOTAL			**$19,738,574**			**$19,738,574**	

BOSTON EXPRESS FEE/NASHUA CAPITAL & OPERATING			Project ID		In TIP?	Route/Road
			68060		Yes	VARIOUS
Scope:	BOSTON EXPRESS FEE/NASHUA CAPITAL, CAPITAL PM, MARKETING & OPERATING MATCH W/TOLL CREDITS					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$257,587**	**$64,397**		**$321,984**	**FTA 5307 Capital and Operating Program**
PE	**2016**	**$262,845**	**$65,711**		**$328,557**	**FTA 5307 Capital and Operating Program**
PE	**2017**	**$270,306**	**$67,576**		**$337,882**	**FTA 5307 Capital and Operating Program**
TOTAL		**$790,738**	**$197,685**		**$988,423**	

Hollis			Project ID		In TIP?	Route/Road
			LRTP1		No	NH 122/NH 130
Scope:	4-Corners Intersection Improvements - addition of turn lanes at the signalized intersection of NH Route 122 and NH Route 130.					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
	2023	$800,000	$200,000	$0	$1,000,000	Federal
	2024	$800,000	$200,000	$0	$1,000,000	Federal
	2025	$3,302,400	$825,600	$0	$4,128,000	Federal
TOTAL		**$4,902,400**	**$1,225,600**	**$0**	**$6,128,000**	

Hudson			Project ID		In TIP?	Route/Road
			14408		Yes	TRAIN DEPOT
Scope:	HUDSON CENTER TRAIN STOP DEPOT - RELOCATION AND RESTORATION OF FORMER HUDSON CENTER TRAIN DEPOT					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
Construction	**2015**	**$231,840**		**$77,280**	**$309,120**	**STP-Enhancement**
TOTAL		**$231,840**		**$77,280**	**$309,120**	

Hudson			Project ID		In TIP?	Route/Road
			20245		Yes	NH Route 111 (Ferry St.) / Library St.
Scope:	Upgrade 3 sets of traffic lights that control traffic from NH 111, US3A and NH102 merge					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$216,984**			**$216,984**	**Congestion Mitigation and Air Quality Program**
Construction	**2015**	**$216,984**		**$54,246**	**$271,230**	**Congestion Mitigation and Air Quality Program**
TOTAL		**$217,784**		**$54,446**	**$272,230**	

Hudson			Project ID		In TIP?	Route/Road
			LRTP10		No	Rte 102/Derry Road
Scope:	Phase II - Continue Pedestrian/Bike Lane on Derry St/Rte. 102, from Towhee Dr. to Megan Dr.					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	2019	$65,814	$0	$16,453	$82,267	Federal
ROW	2019	$43,876	$0	$10,969	$54,845	Federal
Construction	2019	$329,068	$0	$82,267	$411,335	Federal
TOTAL		**$438,757**	**$0**	**$109,689**	**$548,446**	

Hudson				Project ID		In TIP?	Route/Road
				LRTP11		No	Rte 102/Derry Road
Scope:	Phase III: Continue Pedestrian/Bike Lane on Derry St/Rte. 102, from Phillips Dr. to the Hudson Mall.						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
PE	2019	$28,993	$0	$7,248	$36,241	Federal	
ROW	2019	$19,329	$0	$4,832	$24,161	Federal	
Construction	2019	$144,964	$0	$36,241	$181,205	Federal	
TOTAL		**$193,285**	**$0**	**$48,321**	**$241,606**		

Hudson				Project ID		In TIP?	Route/Road
				LRTP12		No	Rte 3A/Lowell Road
Scope:	Continue Sidewalk on 3A/Lowell Rd. from Birch St. to Pelham Rd.						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
PE	2019	$24,934	$0	$6,233	$31,167	Federal	
Construction	2019	$124,669	$0	$31,167	$155,836	Federal	
TOTAL		**$149,603**	**$0**	**$37,401**	**$187,003**		

Hudson				Project ID		In TIP?	Route/Road
				LRTP13		No	Rte 3A/Lowell Road
Scope:	Continue Sidewalk on 3A/Lowell Rd. from Nottingham Square to Executive Dr.						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
PE	2019	$29,921	$0	$7,480	$37,401	Federal	
Construction	2019	$169,550	$0	$42,387	$211,937	Federal	
TOTAL		**$199,470**	**$0**	**$49,868**	**$249,338**		

Hudson				Project ID		In TIP?	Route/Road
				LRTP14		No	Rte 3A/Lowell Road
Scope:	Add a right turn lane on Rte. 3A/Lowell Rd. southbound from Flagstone Drive to the westbound ramp on Sagamore Bridge Rd.						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
PE	2019	$77,195	$0	$19,299	$96,494	Federal	
ROW	2019	$226,438	$0	$56,610	$283,048	Federal	
Construction	2019	$231,585	$0	$57,896	$289,481	Federal	
TOTAL		**$535,218**	**$0**	**$133,805**	**$669,023**		

Hudson - Litchfield - Merrimack - Nashua				Project ID		In TIP?	Route/Road
				LRTP4		No	US 3/NH 3A
Scope:	Construct a northern crossing of the Merrimack River to provide a four lane roadway connecting NH 102 in Hudson, NH 3A in Litchfield and US 3 in Nashua. Exact location of crossing to be determined.						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
	2033	$10,292,659	$0	$2,573,165	$12,865,823	Federal/Turnpike	
	2034	$21,244,047	$0	$5,311,012	$26,555,059	Federal/Turnpike	
	2035	$21,923,857	$0	$5,480,964	$27,404,821	Federal/Turnpike	
	2036	$45,250,840	$0	$11,312,710	$56,563,550	Federal/Turnpike	
	2037	$52,536,226	$0	$13,134,056	$65,670,282	Federal/Turnpike	
	2038	$60,241,539	$0	$15,060,385	$75,301,923	Federal/Turnpike	
TOTAL		**$211,489,167**	**$0**	**$52,872,292**	**$264,361,459**		

Merrimack				Project ID		In TIP?	Route/Road
				LRTP17		No	Baboosic Lake Road
Scope:	Bridge Replacement over FE Everett Turnpike (Bridge ID 107/131) {State Red List}						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
Construction	2020	$8,000,000	$0	$0	$8,000,000	Bridge On/Off System	
TOTAL		**$8,000,000**	**$0**	**$0**	**$8,000,000**		

Merrimack				Project ID		In TIP?	Route/Road
				10136D		No	NH 101A & NH 101
Scope:	Construct 3rd EB land from Boston Post Road to Continental Blvd and implement traffic calming at Craftsman Ln and Boston Post Road.						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
PE	2024				$5,618,000	National Highway System	
ROW	2024				$1,370,000	National Highway Performance Program	
Construction	2024				$1,370,000	National Highway System	
TOTAL					**$8,358,000**		

Merrimack				Project ID		In TIP?	Route/Road
				(SB 367)		No	F.E. Everett Tpk
Scope:	Removal of Exit 12 Ramp Tolls and Reconfigure Ramps.						
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**	
Construction	2015				$600,000	Turnpike Expansion	
TOTAL					**$8,358,000**		

Milford			Project ID		In TIP?	Route/Road
			13692B		Yes	NH 101
Scope:	Safety improvements from Wilton Road to NH 101 / Elm Street intersection					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
Construction	2016	$1,318,483	$329,621		$1,648,104	National Highway System
Construction	2017	$1,405,832	$351,458		$1,757,290	National Highway System
TOTAL		**$2,724,315**	**$681,079**		**$3,405,394**	

Milford			Project ID		In TIP?	Route/Road
			14837		Yes	SOUTH STREET
Scope:	South St. Improvement Project, Construct phase 2 portion of downtown revitalization plan.					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	2015	$800		$200	$1,000	STP-Enhancement
ROW	2015	$800		$200	$1,000	STP-Enhancement
Construction	2015	$832,800		$208,200	$1,041,000	FHWA Earmarks, STP-Enhancement
TOTAL		**$834,400**		**$208,600**	**$1,043,000**	

Milford			Project ID		In TIP?	Route/Road
			20253		Yes	NH Route 13 / Emerson Rd / Armory Rd.
Scope:	Int. NH Rt. 13 / Emerson Rd. / Armory Rd. signal modification & additional turn lanes.					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	2015	$1,600		$400	$2,000	Congestion Mitigation and Air Quality Program
ROW	2015	$800		$200	$1,000	Congestion Mitigation and Air Quality Program
Construction	2015	$800		$200	$1,000	Congestion Mitigation and Air Quality Program
TOTAL		**$3,200**		**$800**	**$4,000**	

MILFORD TO NASHUA			Project ID		In TIP?	Route/Road
			10136		Yes	NH 101A
Scope:	PE & ROW for improvements at NH101 WB on-ramp and widening from Craftsman Ln to Continental Blvd					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
ROW	2015	$536,800	$134,200		$671,000	National Highway System
TOTAL		**$536,800**	**$134,200**		**$671,000**	

NASHUA			Project ID		In TIP?	Route/Road
			10136A		Yes	NH 101A
Scope:	Widening of NH 101A from Sunapee Street to Blackstone Drive					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2017**	**$342,086**	**$85,521**		**$427,607**	**National Highway System**
PE	**2018**	**$464,024**	**$116,006**		**$580,031**	**National Highway System**
ROW	**2017**	**$187,444**	**$46,861**		**$234,305**	**National Highway System**
ROW	**2018**	**$2,384,178**	**$596,045**		**$2,980,223**	**National Highway System**
Construction	2020	$3,737,040	$934,260	$596,992	$5,268,292	National Highway System
TOTAL		**$7,114,772**	**$1,778,693**	**$596,992**	**$9,490,458**	

NASHUA			Project ID		In TIP?	Route/Road
			10136B		No	NH 101A
Scope:	Widening and improvements, Phase II, from Somerset Parkway to Sunapee St and Blackstone Drive to Celina Ave					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	2019				$1,756,000	National Highway System
ROW	2021				$3,740,000	National Highway Performance Program
Construction	2022				$4,889,000	National Highway Performance Program
TOTAL					**$10,385,000**	

NASHUA			Project ID		In TIP?	Route/Road
			13117		Yes	FEE TPK /NH 111
Scope:	CONSTRUCT PARK AND RIDE AND ACCESSORY FACILITIES AT UP TO TWO NASHUA LOCATIONS					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
ROW	**2017**	**$2,005,104**	**$501,276**		**$2,506,380**	**Congestion Mitigation and Air Quality Program**
Construction	2019	$2,223,181	$555,795		$2,778,976	Congestion Mitigation and Air Quality Program
TOTAL		**$4,228,285**	**$1,057,071**		**$5,285,356**	

Nashua			Project ID		In TIP?	Route/Road
			13931		No	Broad Street (NH 130)
Scope:	Broad Street reconstruction from Coburn Avenue to Coliseum Avenue including Dublin Avenue to provide shoulders and safety improvements.					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
P	2023	$333,803	$0	$83,451	$417,254	STP-Areas Less Than 200K
R	2024	$21,244	$0	$5,311	$26,555	STP-Areas Less Than 200K
C	2025	$5,642,068	$0	$1,410,517	$7,052,586	STP-Areas Less Than 200K
TOTAL		**$5,997,116**	**$0**	**$1,499,279**	**$7,496,395**	

Nashua			Project ID		In TIP?	Route/Road
			$14,815		Yes	Nashua Transit System
Scope:	Purchase the second of two new CNG buses					
Phase	FY	Federal	State	Other	Total	Funding Source
PE	2016	$412,800		$103,200	$516,000	FTA Section 5309 Capital Funds
TOTAL		$412,800		$103,200	$516,000	

NASHUA			Project ID		In TIP?	Route/Road
			16050		Yes	RAIL CORRIDOR
Scope:	EAST OF MAIN STREET, PURCHASE RAIL CORRIDOR AT VARIOUS LOCATIONS [09-32TE]					
Phase	FY	Federal	State	Other	Total	Funding Source
ROW	2015	$267,304		$66,826	$334,130	STP-Enhancement
TOTAL		$267,304		$66,826	$334,130	

Nashua			Project ID		In TIP?	Route/Road
			16110D		Yes	Broad Street Parkway
Scope:	Broad Street Parkway South					
Phase	FY	Federal	State	Other	Total	Funding Source
Construction	2015	$1,985,201		$496,300	$2,481,501	STP-Areas Over 200K
TOTAL		$1,985,201		$496,300	$2,481,501	

Nashua			Project ID		In TIP?	Route/Road
			16110E		Yes	Broad Street Parkway
Scope:	Broad Street Parkway - Fairmount Street Bridge Replacement					
Phase	FY	Federal	State	Other	Total	Funding Source
Construction	2015	$1,200,000		$300,000	$1,500,000	STP-State Flexible
TOTAL		$1,200,000		$300,000	$1,500,000	

Nashua			Project ID		In TIP?	Route/Road
			16309		No	Main Street
Scope:	Reconstruction from Hollis Street to Orchard Avenue (1.09 miles).					
Phase	FY	Federal	State	Other	Total	Funding Source
C	2024	$2,126,135	$0	$531,534	$2,657,669	STP-Areas Less Than 200K
TOTAL		$2,126,135	$0	$531,534	$2,657,669	

NASHUA			Project ID		In TIP?	Route/Road
			16314		Yes	EAST HOLLIS STREET
Scope:	Construct a multi-lane roundabout at the intersection of East Hollis St, Bridge St, and Canal St					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$320,000**	**$80,000**		**$400,000**	**STP-Areas Less Than 200K**
ROW	**2015**	**$160,000**	**$40,000**		**$200,000**	**STP-Areas Less Than 200K**
Construction	**2015**	**$1,623,200**	**$405,800**		**$2,029,000**	**STP-Areas Less Than 200K**
Construction	**2016**	**$852,019**	**$213,005**		**$1,065,024**	**STP-Areas Less Than 200K**
TOTAL		**$2,955,219**	**$738,805**		**$3,694,024**	

Nashua-Bedford			Project ID		In TIP?	Route/Road
			29408		Yes	F.E. Everett Turnpike
Scope:	Intelligent Transportation System (ITS) deployment on F.E. Everett Turnpike					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**		**$100,000**		**$100,000**	**Turnpike Capital**
Construction	**2016**		**$2,064,000**		**$2,064,000**	**Turnpike Capital**
Construction	**2017**		**$2,130,048**		**$2,130,048**	**Turnpike Capital**
TOTAL			**$4,294,048**		**$4,294,048**	

Nashua-Merrimack-Bedford			Project ID		In TIP?	Route/Road
			13761		Yes	F. E. Everett Turnpike
Scope:	F.E.E.Turnpike widening of 2-lane sections from Exit 8 in Nashua to I-293 interchange in Bedford					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**		**$1,900,000**		**$1,900,000**	**Turnpike Capital**
PE	**2016**		**$1,032,000**		**$1,032,000**	**Turnpike Capital**
PE	**2018**		**$1,648,657**		**$1,648,657**	**Turnpike Capital**
PE	2019		$1,701,414		$1,701,414	Turnpike Capital
PE	2020		$2,341,146		$2,341,146	Turnpike Capital
ROW	**2015**		**$50,000**		**$50,000**	**Turnpike Capital**
ROW	**2016**		**$103,200**		**$103,200**	**Turnpike Capital**
ROW	2019		$340,283		$340,283	Turnpike Capital
ROW	2020		$2,926,432		$2,926,432	Turnpike Capital
ROW	2021		$4,832,125		$4,832,125	Turnpike Capital
Construction	2022		$22,440,389		$22,440,389	Turnpike Capital
Construction	2023		$25,731,646		$25,731,646	Turnpike Capital
Construction	2024		$23,899,553		$23,899,553	Turnpike Capital
TOTAL			**$88,946,846**		**$88,946,846**	

Nashua - Merrimack				**Project ID**		**In TIP?**	**Route/Road**
				LRTP5		No	F.E. Everett Turnpike
Scope:	FE Everett Turnpike to be widened to three lanes in either direction between Exits 8 and Exit 11						
Phase	**FY**	**Federal**		**State**	**Other**	**Total**	**Funding Source**
L	2026	$0		$1,655,294	$0	$1,655,294	Turnpike Capital
	2027	$0		$1,708,263	$0	$1,708,263	Turnpike Capital
	2028	$0		$21,155,135	$0	$21,155,135	Turnpike Capital
TOTAL		**$0**		**$24,518,692**	**$0**	**$24,518,692**	

Nashua - Tyngsborough, Ma				**Project ID**		**In TIP?**	**Route/Road**
				LRTP3		No	FEE Turnpike
Scope:	Addition of southbound off-ramp to Exit 36 just across the Massachusetts state line in Tyngsborough to provide southbound access from the FE Everett Turnpike to the Pheasant Lane Mall.						
Phase	**FY**	**Federal**		**State**	**Other**	**Total**	**Funding Source**
L	2019	$0		$0	$2,000,000	$2,000,000	Turnpike
	2021	$0		$0	$1,000,000	$1,000,000	Turnpike
	2024	$0		$0	$7,000,000	$7,000,000	Turnpike
	2025	$0		$0	$7,000,000	$7,000,000	Turnpike
TOTAL		**$0**		**$0**	**$17,000,000**	**$17,000,000**	

NASHUA-1				**Project ID**		**In TIP?**	**Route/Road**
				6080		Yes	Transit
Scope:	CAPITAL PLANNING PROGRAM.						
Phase	**FY**	**Federal**		**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$176,000**			**$44,000**	**$220,000**	**FTA 5307 Capital and Operating Program**
PE	**2016**	**$181,632**			**$45,408**	**$227,040**	**FTA 5307 Capital and Operating Program**
PE	**2017**	**$187,444**			**$46,861**	**$234,305**	**FTA 5307 Capital and Operating Program**
PE	**2018**	**$193,442**			**$48,361**	**$241,803**	**FTA 5307 Capital and Operating Program**
PE	2019	$199,633			$49,908	$249,541	FTA 5307 Capital and Operating Program
PE	2020	$206,021			$51,505	$257,526	FTA 5307 Capital and Operating Program
PE	2021	$212,614			$53,153	$265,767	FTA 5307 Capital and Operating Program
PE	2022	$219,417			$54,854	$274,271	FTA 5307 Capital and Operating Program
PE	2023	$226,438			$56,610	$283,048	FTA 5307 Capital and Operating Program
PE	2024	$233,685			$58,421	$292,106	FTA 5307 Capital and Operating Program
PE	2025	$241,162			$60,291	$301,453	FTA 5307 Capital and Operating Program
TOTAL		**$2,277,488**			**$569,372**	**$2,846,860**	

NASHUA-2			Project ID		In TIP?	Route/Road
			6090		Yes	Transit
Scope:	OPERATING ASSISTANCE					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$1,164,114**		**$291,029**	**$1,455,143**	**FTA 5307 Capital and Operating Program**
PE	**2016**	**$1,201,366**		**$300,341**	**$1,501,707**	**FTA 5307 Capital and Operating Program**
PE	**2017**	**$1,239,810**		**$309,952**	**$1,549,762**	**FTA 5307 Capital and Operating Program**
PE	**2018**	**$1,279,484**		**$319,871**	**$1,599,354**	**FTA 5307 Capital and Operating Program**
PE	2019	$1,320,427		$330,107	$1,650,534	FTA 5307 Capital and Operating Program
PE	2020	$1,362,681		$340,670	$1,703,351	FTA 5307 Capital and Operating Program
PE	2021	$1,406,286		$351,572	$1,757,858	FTA 5307 Capital and Operating Program
PE	2022	$1,451,288		$362,822	$1,814,110	FTA 5307 Capital and Operating Program
PE	2023	$1,497,729		$374,432	$1,872,161	FTA 5307 Capital and Operating Program
PE	2024	$1,545,656		$386,414	$1,932,070	FTA 5307 Capital and Operating Program
PE	2025	$1,595,117		$398,779	$1,993,896	FTA 5307 Capital and Operating Program
TOTAL		**$15,063,958**		**$3,765,989**	**$18,829,947**	

NASHUA-3			Project ID		In TIP?	Route/Road
			3799		Yes	Transit
Scope:	PREVENTIVE MAINTENANCE 5307 FUNDING. ANNUAL PROJECT.					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$367,424**		**$91,856**	**$459,280**	**FTA 5307 Capital and Operating Program**
PE	**2016**	**$379,182**		**$94,795**	**$473,977**	**FTA 5307 Capital and Operating Program**
PE	**2017**	**$391,315**		**$97,829**	**$489,144**	**FTA 5307 Capital and Operating Program**
PE	**2018**	**$403,837**		**$100,959**	**$504,797**	**FTA 5307 Capital and Operating Program**
PE	2019	$416,760		$104,190	$520,950	FTA 5307 Capital and Operating Program
PE	2020	$430,097		$107,524	$537,621	FTA 5307 Capital and Operating Program
PE	2021	$443,860		$110,965	$554,825	FTA 5307 Capital and Operating Program
PE	2022	$458,063		$114,516	$572,579	FTA 5307 Capital and Operating Program
PE	2023	$472,721		$118,180	$590,902	FTA 5307 Capital and Operating Program
PE	2024	$487,848		$121,962	$609,810	FTA 5307 Capital and Operating Program
PE	2025	$503,459		$125,865	$629,324	FTA 5307 Capital and Operating Program
TOTAL		**$4,754,567**		**$1,188,642**	**$5,943,209**	

Project ID

NASHUA-4						In TIP?	Route/Road
			6095			Yes	Transit
Scope:	Bus Garage expansion for Nashua						
Phase	FY	Federal	State	Other	Total	Funding Source	
PE	2015	$800		$200	$1,000	FTA 5307 Capital and Operating Program	
ROW	2015	$800		$200	$1,000	FTA 5307 Capital and Operating Program	
Construction	2015	$398,400		$99,600	$498,000	FTA 5307 Capital and Operating Program	
TOTAL		$400,000		$100,000	$500,000		

Nashua-5			Project ID			In TIP?	Route/Road
			6099			Yes	Transit
Scope:	Nashua Fleet Replacement						
Phase	FY	Federal	State	Other	Total	Funding Source	
PE	2016	$4,185,792		$1,046,448	$5,232,240	FTA 5307 Capital and Operating Program	
TOTAL		$4,185,792		$1,046,448	$5,232,240		

NASHUA-6			Project ID			In TIP?	Route/Road
			$3,797			Yes	VARIOUS
Scope:	Nashua Transit System; Capital Equipment (ARRA)						
Phase	FY	Federal	State	Other	Total	Funding Source	
PE	2015	$17,799		$4,450	$22,249	FTA 5307 Capital and Operating Program	
PE	2016	$18,369		$4,592	$22,961	FTA 5307 Capital and Operating Program	
PE	2017	$18,957		$4,739	$23,696	FTA 5307 Capital and Operating Program	
PE	2018	$19,563		$4,891	$24,454	FTA 5307 Capital and Operating Program	
TOTAL		$74,688		$18,672	$93,360		

NASHUA-7			Project ID			In TIP?	Route/Road
			$7,927			Yes	TRANSIT
Scope:	ADA Operations. NASHUA TRANSIT SYSTEM.						
Phase	FY	Federal	State	Other	Total	Funding Source	
PE	2015	$219,200		$54,800	$274,000	FTA 5307 Capital and Operating Program	
PE	2016	$226,214		$56,554	$282,768	FTA 5307 Capital and Operating Program	
PE	2017	$233,453		$58,363	$291,817	FTA 5307 Capital and Operating Program	
PE	2018	$240,924		$60,231	$301,155	FTA 5307 Capital and Operating Program	
PE	2019	$248,633		$62,158	$310,792	FTA 5307 Capital and Operating Program	
TOTAL		$1,168,425		$292,106	$1,460,531		

PELHAM			Project ID		In TIP?	Route/Road
			16145		Yes	MAIN STREET
Scope:	MAIN ST OVER BEAVER BROOK - BR REPLACEMENT (BR. NO. 110/090) AND CULV REPLACEMENT (BR. NO. 111/090)					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$8,800**	**$2,200**		**$11,000**	**Bridge On/Off System**
ROW	**2015**	**$6,600**	**$1,650**		**$8,250**	**Bridge On/Off System**
Construction	2019	$1,816,657	$454,164		$2,270,821	NH Highway Fund; STP State Flexible
TOTAL		**$1,832,057**	**$458,014**		**$2,290,071**	

WILTON - MILFORD - AMHERST - BEDFORD			Project ID		In TIP?	Route/Road
			13692		Yes	NH 101
Scope:	PE and ROW for corridor improvements from NH 31 in Wilton to Wallace Rd in Bedford					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
PE	**2015**	**$88,000**	**$22,000**		**$110,000**	**National Highway System**
PE	**2018**	**$193,442**	**$48,361**		**$241,803**	**National Highway System**
ROW	**2015**	**$17,600**	**$4,400**		**$22,000**	**STP-State Flexible**
ROW	**2016**	**$90,816**	**$22,704**		**$113,520**	**National Highway System**
ROW	**2018**	**$48,361**	**$12,090**		**$60,451**	**National Highway System**
Construction	2020	$7,210,729	$1,802,682		$9,013,412	National Highway System
TOTAL		**$7,648,948**	**$1,912,237**		**$9,561,186**	

Wilton - Milford - Amherst - Bedford			Project ID		In TIP?	Route/Road
			LRTP6		No	NH 101
Scope:	Widening of NH 101 between west end of bypass and Bedford town line to four-lane access controlled highway.					
Phase	**FY**	**Federal**	**State**	**Other**	**Total**	**Funding Source**
L	2030	$7,491,667	$1,872,917	$0	$9,364,584	Federal
	2031	$16,429,226	$4,107,306	$0	$20,536,532	Federal
	2032	$16,954,961	$4,238,740	$0	$21,193,701	Federal
	2033	$20,585,317	$5,146,329	$0	$25,731,646	Federal
TOTAL		**$61,461,170**	**$15,365,293**	**$0**	**$76,826,463**	

2015-2040 Metropolitan Transportation Plan

Projects for Information Only

The following projects are included for information only and are not subject to MTP requirements, federal funding requirements, or fiscal constraint analysis. Specific project from statewide program.

Municipality	Project ID	Location	Scope	Funding Source	Phase	FY	Federal $	NH DOT $	Other $	Total $
Amherst	20231	Horace Greeley Road	Bridge Replacement over Pulpit Brook (Bridge ID 060/158) {Red List} {State Aid Bridge Program}	State Aid Bridge	PE	2020	$0	$102,927	$25,732	$128,658
					ROW	2020	$0	$5,146	$1,287	$6,433
					Construction	2020	$0	$468,316	$117,079	$585,395
						Total $:	**$0**	**$576,389**	**$144,097**	**$720,486**
Amherst	20242	Manchester Road	Bridge Replacement over Beaver Brook (Bridge ID 134/100) {Red List} {State Aid Bridge Program}	State Aid Bridge	PE	2018	$0	$111,139	$27,785	$138,924
					ROW	2018	$0	$4,832	$1,208	$6,040
					Construction	2018	$0	$575,023	$143,756	$718,779
						Total $:	**$0**	**$690,994**	**$172,748**	**$863,742**
Amherst	20243	New Boston Road	Bridge Replacement over Beaver Brook (Bridge ID 109/090) {Red List} {State Aid Bridge Program}	State Aid Bridge	PE	2019	$0	$114,695	$28,674	$143,369
					ROW	2019	$0	$4,987	$1,247	$6,233
					Construction	2019	$0	$508,649	$127,162	$635,811
						Total $:	**$0**	**$628,331**	**$157,083**	**$785,414**
Hudson	13353	Melendy Road	Bridge Rehabilitation over Hadley Brook (114/083)	State Aid Bridge	PE	2016	$0	NA	NA	$16,000
					ROW	2016	$0	NA	NA	$5,000
					Construction	2016	$0	NA	NA	$85,000
						Total $:	**$0**	**NA**	**NA**	**$107,000**
Hudson	13354	County Road	Bridge Rehabilitation and Widening over Second Brook (126/083)	State Aid Bridge	PE	2016	$0	NA	NA	$32,000
					ROW	2016	$0	NA	NA	$5,000
					Construction	2016	$0	NA	NA	$133,000
						Total $:	**$0**	**NA**	**NA**	**$170,000**
Merrimack	13923	McGaw Bridge Road	Bridge Replacement over Baboosic Brook (116/137 Red list)	State Aid Bridge	PE	2016	$0	NA	NA	$64,000
					ROW	2016	$0	NA	NA	$5,000
					Construction	2017	$0	NA	NA	$434,000
						Total $:	**$0**	**NA**	**NA**	**$503,000**

Milford *(Earmark project, which was set up to generate other projects, not yet created. The project(s) that will be created will need to be in the STIP.)*	14492	NH 101A/NH 13	Improvements in the area known as the "Oval" to improve traffic flow based on ongoing traffic studies within the town.	NH 101A/NH 13	2015-2018		TBD	TBD	TBD	TBD
						Total $:	**TBD**	**TBD**	**TBD**	**TBD**
Milford	22372	Jennison Road	Bridge Rehabilitation over Hartshorn Brook (099/150 SAB*4216)	State Aid Bridge	Construction	2016	$0	NA	NA	$170,000
						Total $:	**$0**	**NA**	**NA**	**$170,000**
Nashua	8050	Boire Field	Capacity Improvements	Federal Aviation Administration	Aeronautics	2020	$1,286,582	$66,022	$0	$1,352,604
						Total $:	**$1,286,582**	**$66,022**	**$0**	**$1,352,604**
Nashua	8051	Boire Field	Equipment Improvements	Federal Aviation Administration	Construction	2018	$1,268,433	$66,760	$0	$1,335,193
						Total $:	**$1,268,433**	**$66,760**	**$0**	**$1,335,193**
Nashua	8052	Boire Field	Miscellaneous Enhancements/Improvements	Federal Aviation Administration	Aeronautics	2020	$427,789	$22,515	$0	$450,304
						2021	$6,306,827	$331,938	$0	$6,638,765
						2022	$205,536	$10,818	$0	$216,354
						Total $:	**$6,940,152**	**$365,271**	**$0**	**$7,305,423**

2015-2040 Metropolitan Transportation Plan

Projects for Information Only

The following projects are included for information only and are not subject to MTP requirements, federal funding requirements, or fiscal constraint analysis. Specific project from statewide program.

Municipality	Project ID	Location	Scope	Funding Source	Phase	FY	Federal $	NH DOT $	Other $	Total $
Nashua	8054	Boire Field	Safety Enhancements	Federal Aviation Administration	Aeronautics	2016	$646,537	$34,028	$0	$680,566
						2017	$6,650,025	$350,001	$0	$7,000,026
						2018	$241,606	$12,716	$0	$254,322
						Total $:	**$7,538,169**	**$396,746**	**$0**	**$7,934,914**

Nashua	8817	Boire Field	Preservation - taxiway improvements. Control tower, hazard beacon, and SRE improvements. Master Planning	Airport Improvement Program	Aeronautics	2015	NA	NA	NA	$688,000
						2016	NA	NA	NA	$355,000
						2017	NA	NA	NA	$366,000
						2018	NA	NA	NA	$681,000
						2019	NA	NA	NA	$7,386,000
						Total $:	**NA**	**NA**	**NA**	**$9,476,000**
Nashua Regional Planning Commission	MPO2	Metro Planning	Nashua Metropolitan Planning Organization, anticipated funds for Unified Planning Work programs.	Metropolitan Planning	PE	2015	$267,000	$66,750	$0	$333,750
						2016	$267,000	$66,750	$0	$333,750
						2017	$267,000	$66,750	$0	$333,750
						2018	$267,000	$66,750	$0	$333,750
						2019	$267,000	$66,750	$0	$333,750
						2020	$267,000	$66,750	$0	$333,750
						2021	$267,000	$66,750	$0	$333,750
						2022	$267,000	$66,750	$0	$333,750
						Total $:	**$2,136,000**	**$534,000**	**$0**	**$2,670,000**
Pelham	26762	Willow Street	Bridget Replacement over Beaver Brook (105/069)	State Aid Bridge	PE	2022	$0	NA	NA	$154,000
					ROW	2022	$0	NA	NA	$6,000
					Construction	2022	$0	NA	NA	$965,000
						Total $:	**$0**	**NA**	**NA**	
Wilton	15767	King Brook Road	Rehabilitate bridge over King Brook (Bridge ID 074/060) {State Aid Bridge Program}	State Aid Bridge	PE	2017	$0	$43,964	$10,991	$54,955
					ROW	2017	$0	$4,396	$1,099	$5,496
					Construction	2017	$0	$215,425	$53,856	$269,281
						Total $:	**$0**	**$263,785**	**$65,946**	**$329,731**
Wilton	15768	Old County Farm Road	Bridge replacement over Blood Brook (Bridge ID 060/118) {State Aid Bridge Program}	State Aid Bridge	PE	2016	$0	$38,341	$9,585	$47,926
					ROW	2016	$0	$4,260	$1,065	$5,325
					Construction	2016	$0	$144,843	$36,211	$181,054
						Total $:	**$0**	**$187,444**	**$46,861**	**$234,305**
Wilton	26201	Stage Coach Road	Bridget Replacement over Burton Pond (086/142)	State Aid Bridge	PE	2021	$0	NA	NA	$49,000
					ROW	2021	$0	NA	NA	$8,000
					Construction	2021	$0	NA	NA	$211,000
						Total $:	**$0**	**NA**	**NA**	**$267,000**
Grand Total							**$19,169,336**			

2015-2040 Metropolitan Transportation Plan

Illustrative Projects

Municipality	Project ID	Location	Scope	Funding Source	Phase	FY	Federal $	NH DOT $	Other $	Total $
Brookline	LRTP16	NH 13	Construct southbound left turn lane at the intersection of NH 13 and Old Milford Road.	Federal	Construction	2020	$199,470	$0	$49,868	$249,338
						Total $:	$199,470	$0	$49,868	$249,338
Hudson	LRTP7	NH 3A/NH 111	Construct a two lane controlled access roadway between NH 3A and NH 111. To be funded through local and private sources.	Private/Local	PE	2015	$0	$0	$4,000,000	$4,000,000
					ROW	2016	$0	$0	$2,000,000	$2,000,000
					Construction	2017	$0	$0	$30,000,000	$30,000,000
						Total $:	$0	$0	$36,000,000	$36,000,000
Milford	LRTP8	NH 101	Construct a new full access interchange from NH 101 (Bypass) to the east of the Perry Road underpass, to serve anticipated commercial/industrial/mixed-use development in west Milford.	Federal		2024	$12,000,000	$0	$3,000,000	$15,000,000
						Total $:	$12,000,000	$0	$3,000,000	$15,000,000
Merrimack		F.E. Everett Tpk	Removal of Exit 11 Ramp Tolls and reconfigure ramps.	Turnpike Expansion	Construction	TBD	NA	NA	NA	$1,600,000
						Total $:	**NA**	**NA**	**NA**	$1,600,000
Nashua	8817	Boire Field	Preservation - taxiway improvements. Control tower, hazard beacon, and SRE improvements. Master Planning (unfunded per State Ten Year Plan)	Airport Improvement Program	Aeronautics	2020	NA	NA	NA	$403,000
						2021	NA	NA	NA	$1,108,000
						2022	NA	NA	NA	$450,000
						2023	NA	NA	NA	$6,639,000
						2024	NA	NA	NA	$1,446,000
						Total $:	**NA**	**NA**	**NA**	**$10,046,000**
Nashua - Manchester - Concord	LRTP15	Capitol Corridor	Establish Passenger rail in New Hampshire	Federal		2020	$128,658,232	$0	$0	$128,658,232
						Total $:	$128,658,232	$0	$0	$128,658,232
Grand Total							**$140,857,702**	**$0**	**$39,049,868**	**$179,907,569**

Performance Measures

This section represents the region's initial approach into incorporating performance based planning metrics. While the region will work to make progress in all of the measures outlined, it would be premature to set long-term targets at this time while rules outlining performance-based planning are still under development at the federal level, and before the region has had the opportunity to engage with NH DOT officials, commissioners and TTAC members regarding suitable target measures. Long-term targets will be incorporated as this plan is updated in time for the 2017-2042 Metropolitan Transportation Plan.

Ensuring plan implementation and efficacy requires a means of measuring the effect of investments and actions to ensure plan goals and objectives are achieved. The following performance measures were developed in order to evaluate progress toward realization of regional goals and objectives, as developed through a robust public participation process. The collection and reporting on progress toward performance targets provides a layer of transparency for the region's constituents. Additionally, tracking such measurements allows planners to evaluate whether investments are leading to the intended results, creating and planning feedback loop bringing the planning process full circle and enabling course corrections to ensure cost effective decision making. Many of the performance measures included below are also incorporated within the NH Department of Transportation's Balanced Scorecard, which will help provide additional context for the NRPC region.

GOAL: Mobility and Accessibility – Improve the availability of transportation options for people and goods. Support travel efficiency measures and system enhancements targeted at congestion reduction and management. Assure all communities are provided access to the regional transportation system and planning process.

Strategy	Performance Measure (units)	Baseline (year)
Improve East-West Travel	Congestion/Operational Level of Service on Key East-West Corridors (LOS and Volume/Capacity Ratio)	To be measured
	Number of East-West Merrimack River Crossings (# of bridges)	2 (2013)
Enable the movement of goods to support the economy	Freight Movement (tons of total freight shipped by all modes)	2012
Expand fixed route transit service through region	Commute to Work – Driving Alone (% of Commuters)	83% (2010)
	Commute to Work – Carpool (% of Commuters)	8% (2010)
	Commute to Work – All Other Modes (% of Commuters)	9% (2010)
	Access to Fixed Route Transportation (% of population)	42% (2013)

	Fixed Route Transportation Service (miles)	63.1 miles (2012)
Improve access of transit alternatives to underserved populations	Accessible Buses/Routes (number of transit routes)	
	Transit Ridership - NTS Fixed Route (# of riders/year)	476,669 (2014^)
	Volunteer Driver Program (# of rides provided)	
	ADA Transit Ridership (# of riders)	
	Elderly Disabled (# of riders)	
Coordinate transit service between Nashua, Manchester, Boston	Boston Express Ridership (passengers per year)	192,985 (2013)
	Exit 8 Park-n-Ride Lot Utilization (average number of occupied spaces)	272 = 99% capacity (2013)
Ensure adequate emergency response times	Traffic Signal Pre-Emption Capabilities For Emergency Responders (# of communities with service)	To be measured
	Deployment of Real-Time ITS Data (new systems installed)	--
	Bicycle Level of Service (LOS)	To be measured
	Pedestrian Level of Service (LOS)	To be measured

*Statewide figure. Regional data not available.

^ Measured July1, 2013-June 30, 2014

GOAL: Quality of Life – Preserve and enhance the natural environment, improve air quality, and promote active lifestyles. Encourage livable communities which support sustainability and economic vitality.

Strategy	Performance Measure (units)	Baseline (year)
Increase access to basic amenities such as food, health care, jobs, and social services	Access to a Grocery Store within 1-Mile (% of low-income households)	94.7%
Establish passenger rail service to Nashua	Rail Lines Capable of Speeds of 40 MPH (miles)	0
Expand bicycle and pedestrian infrastructure miles	Sidewalk Availability (# of miles/1,000 population)	To be measured
	Bicycle and Pedestrian Infrastructure (miles)	To be measured
Support transit- and pedestrian-oriented development to manage VMT	Vehicle Miles Traveled – Hillsborough County (miles travelled per capita per year)	7,812 (2012)
	Remaining Useful Life of Public Transit Fleet (vehicle life remaining)	To be measured
	CO2 Emissions – Hillsborough County (pounds of CO2 per capita)	8,263 (2012)
	Non-Attainment Days (number)	
Plan for alternative fuel infrastructure to support the next generation of passenger vehicles	Electric Charging Stations (# of stations)	2
	Gasoline and Diesel Consumption (gallons)	802,640,000* (2010)

*Statewide figure. Regional data not available.

GOAL: System Sustainability – Ensure adequate maintenance and enhance the safety and reliability of the existing transportation system. Pursue long-term sustainable revenue sources to address regional transportation system needs.

Strategy	Performance Measure (units)	Baseline (year)
Identify road and bridge maintenance needs	State Highway in Good Condition (miles)	71.9 (2011)
	State Highway in Fair Condition (miles)	108.4 (2011)
	State Highway in Poor Condition (miles)	68.4 (2011)
	Red Listed Bridges - State-Owned (number and percent)	7 (2011)
	Red Listed Bridges - Municipally-Owned (number and percent)	
Increase safety for all transportation system users	Fatalities (# of fatalities/year)	16 (2013)
	Fatalities – Bicyclists and Pedestrians (# of fatalities/year)	3 (2013)
	Fatalities – Route 101	115 (2013)
	Accidents – Route 101 and 101A Interchange (collisions/mile/year)	6.6 (2002-2011)
	Accidents – Route 101 (collisions/mile/year)	14 (2002-2011)
	Accidents Involving a Bicyclist or Pedestrian (# of collisions/year)	(2013)
Expand demand response and volunteer driver services	SVTC Service Area (# of communities)	6 (2014)
	SVTC Ridership (# of riders/year)	3,678 (2013)
Secure funds to match available Federal Transit Administration (FTA) funds	Match Funds Committed ($/fiscal year)	To be measured

GOAL: Implementation – Provide for timely project planning and implementation. Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.

Strategy	Performance Measure (units)	Baseline (year)
Provide for timely project planning and implementation. Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.	Are regional project selection criteria consistent with state and federal goals?	
	Are regional priorities consistent with available federal and state funding?	
	Distribution of Expenditures by Lane Miles-Highway Fund ($ per lane mile)	

Potential Environmental Issues for Consideration

Eight environmental resource areas were identified in order to discuss the range of potential environmental issues that may be associated with projects in the Nashua Metropolitan Area TIP. In general, the issues described may be either short-term or long-term, resulting from both temporary construction disturbance activities and long-term utilization of the proposed transportation venue. Impacts to each of the environmental resources may also be either direct or indirect. Direct impacts may result from immediate impacts to the specific resource in question, such as with the immediate filling of a wetland to provide a suitable roadbed, or the noise associated with vehicular traffic along a roadway. Indirect impacts are associated with a project, but tend to occur in either a temporally or spatially separate manner, such as the delayed impacts of stormwater runoff to a waterway, or the out-migration of a songbird due to increased human activity adjacent to the new roadway.

Four projects were identified as having associated environmental effects that are worthy of discussing in detail: NH 101A Widening, NH 101 Improvements, Broad Street Parkway, and the commuter rail project. A number of projects were excluded from this table: those projects that had no associated new ground disturbing activities or those that involved only widening of thruway already within a disturbed corridor were excluded. Planning projects, signalization and signing projects, and those that involved restoration of previously existing services were also excluded. Bridge replacement projects and bridge enhancement projects were also excluded, due to the limited short-term nature of the expected environmental effects, have the potential for temporary impacts to wetlands and riparian habitats that involve no or minimal ground-disturbing activities. Environmental impacts of the five identified projects are discussed in the table below.

It should also be noted that the National Environmental Policy Act requires a detailed assessment of environmental impacts for all federally funded projects. The table below is a preliminary analysis to guide transportation planning. Therefore, the environmental effects and mitigation measures provided below give a broad interpretation for the range of issues which may be analyzed in greater detail during project development.

Environmental Issues/Mitigation Summary

Resource	*Duration*	*Effect*	*Potential Issues*	*Potential Mitigation Alternatives*
Broad Street Parkway Project				
Air Quality	Short and Long-term	Direct and Indirect	Short-term emissions from construction vehicles and construction dust likely to be insignificant. Long-term impacts include the potential reduction of ambient air quality of potential significance in already-impacted airsheds.	Implementation of dust-abatement programs on as-needed basis during construction.
Archeological/ Cultural Resources	The presence of cultural resources is not anticipated in this location.			
Prime Farmland	The presence of prime farmlands is not anticipated in this location.			
Species of Special Concern	The presence of species of special concern is not anticipated in this location.			
Wetlands	Short and Long-term	Direct and Indirect	Roadway construction may impact wetlands. Indirect impacts to wetlands from increased stormwater flows and pollutant loading may also affect wetland resources. Wetland surveys and proposed mitigation may occur prior to construction.	Avoid wetland areas where possible and minimize construction disturbance in wetland habitats. Provide mitigation where possible.
Riparian Habitats	Short and Long-term	Direct and Indirect	Roadway construction may impact riparian habitats. Indirect impacts to riparian habitats from increased stormwater flows, pollutant loading, and bank destabilization may also affect riparian resources.	Avoid riparian habitats where possible and minimize construction disturbance in riparian areas where possible.

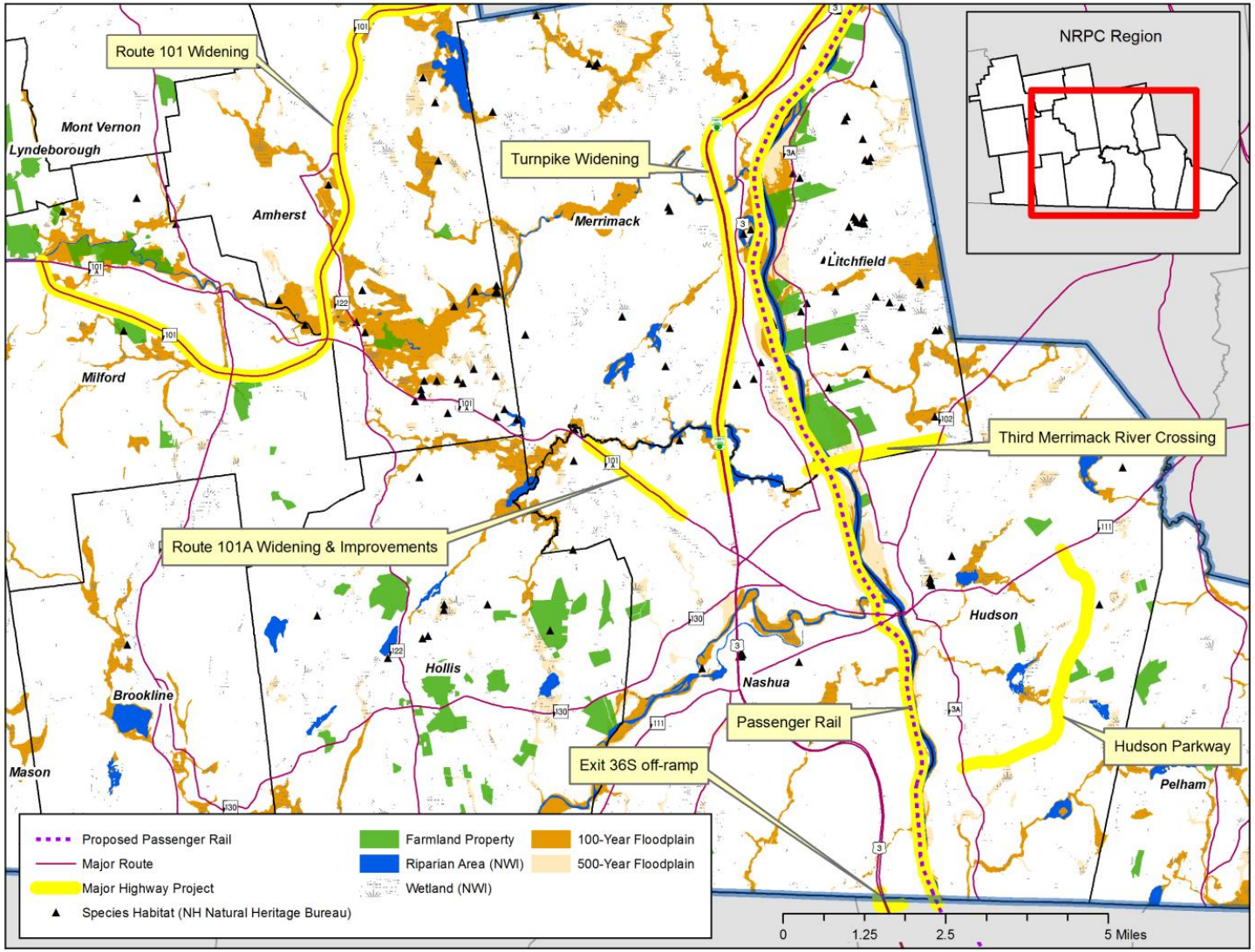
Noise	Short and Long-term	Direct	Impacts from construction noise may occur during construction phases in close proximity to community centers, particularly in residential districts. Long-term noise impacts are likely to be below thresholds requiring specific mitigation.	Limit construction activities in sensitive districts to daylight/business hours. Retain or enhance vegetative or built noise barriers where feasible.
Floodplains	Long-term	Direct and Indirect	Direct impacts to floodplains are likely to be insignificant. Indirect impacts to floodplains may be associated with increased imperviousness and fill associated with adjacent developments.	Avoid 100-year floodplains where possible and minimize construction disturbance in floodplains.
Commuter Rail Project				
Air Quality	Short term	Direct	Short-term emissions from construction vehicles and construction dust likely to be insignificant.	n/a
Archeological/ Cultural Resources	The presence of cultural resources is not anticipated in this location.			
Prime Farmland	The presence of prime farmlands is not anticipated in this location.			
Species of Special Concern	The presence of species of special concern is not anticipated in this location.			
Wetlands	The presence of wetlands is not anticipated in this location.			
Riparian Habitats	The presence of riparian habitats is not anticipated in this location.			
Noise	Short-term and Long Term	Direct	Impacts from construction noise are likely to be insignificant. Long term noise would be related to train whistles.	n/a
Floodplains	The presence of floodplains is not anticipated in this location.			

101 A Widening Project				
Air Quality	Short and Long-term	Direct and Indirect	Short-term emissions from construction vehicles and construction dust likely to be insignificant. Long-term impacts may include the potential reduction of ambient air quality of potential significance in already-impacted airsheds.	Implementation of dust-abatement programs on as-needed basis during construction.
Archeological/ Cultural Resources	The presence of cultural resources is not anticipated in this location.			
Prime Farmland	The presence of prime farmlands is not anticipated in this location.			
Species of Special Concern	The presence of species of special concern is not anticipated in this location.			
Wetlands	Short and Long-term	Direct and Indirect	Roadway construction may impact wetlands. Indirect impacts may occur from increased stormwater flows and pollutant loading. Wetland surveys and proposed mitigation may occur prior to construction.	Avoid wetland areas where possible and minimize construction disturbance in wetland habitats. If possible provide mitigation for impacted resources.
Riparian Habitats	The presence of riparian habitats is not anticipated in this location.			
Noise	Short-term	Direct	Impacts from construction noise may occur during construction phases close to residential areas. Long-term noise impacts are likely to be below thresholds requiring specific mitigation.	n/a
Floodplains	Long-term	Direct and Indirect	Direct impacts to floodplains are likely to be insignificant. Indirect impacts to floodplains may be associated with increased imperviousness and fill associated with adjacent developments.	Avoid 100-year floodplains where possible and minimize construction disturbance in floodplains.

NH 101 Improvements				
Air Quality	Short and Long-term	Direct and Indirect	Short-term emissions from construction vehicles and construction dust likely to be insignificant. Long-term impacts include potential reduction of ambient air quality of potential significance in already-impacted airsheds.	Implementation of dust-abatement programs on as-needed basis during construction.
Archeological/ Cultural Resources	The presence of cultural resources is not anticipated in this location.			
Prime Farmland	The presence of prime farmlands is not anticipated in this location.			
Species of Special Concern	Long-term	Direct and Indirect	Impacts to species of special concern could result from direct impacts of construction, and indirect impacts due to habitat loss, habitat degradation, or impacts to migratory corridors. Threatened and Endangered species surveys may be required prior to construction. Mitigation for habitat loss and/or degradation may be required.	Where Possible: Avoid construction during nesting or breeding periods for sensitive species. Limit construction disturbance areas to minimum required for construction activities. Avoid critical habitat areas and migration corridors.
Wetlands	Short and Long-term	Direct and Indirect	Roadway construction may impact wetlands. Indirect impacts to wetlands from increased stormwater flows and pollutant loading may also affect wetland resources. Wetland surveys and proposed mitigation may be required prior to construction.	Avoid wetland areas where possible and minimize construction disturbance in wetland habitats where possible. Provide mitigation for impacted resources where possible.

Riparian Habitats	Short and Long-term	Direct and Indirect	Roadway construction may impact riparian habitats. Indirect impacts to riparian habitats from increased stormwater flows, pollutant loading, and bank destabilization may also affect riparian resources.	Avoid riparian habitats where possible and minimize construction disturbance in riparian areas where possible.
Noise	Short and Long-term	Direct	Impacts from construction noise may occur during construction phases in close proximity to community centers, particularly in residential districts. Long-term noise impacts are likely to be below thresholds requiring specific mitigation.	Limit construction activities in sensitive districts to daylight/business hours. Retain or enhance vegetative or built noise barriers where feasible.
Floodplains	Long-term	Direct and Indirect	Direct impacts to floodplains are likely to be insignificant. Indirect impacts to floodplains may be associated with increased imperviousness and fill associated with adjacent developments.	Avoid 100-year floodplains where possible and minimize construction disturbance in floodplains.

Environmental Overlays for Major MTP Projects in the Nashua Region



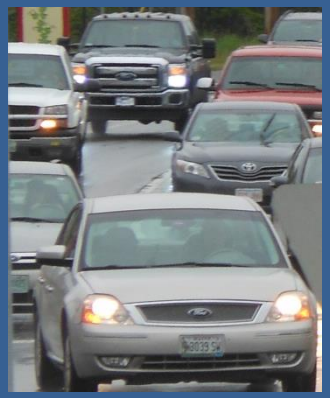
Source: NRPC GIS

Conclusion

The region's population has consistently spread out among outlying communities over the last several decades and most residents rely on automobiles for their everyday transportation needs. Traffic congestion in the region, though very manageable during most periods can plague some of the region's major transportation corridors during peak travel times. The need for congestion relief along Route 101A and a third Merrimack River crossing were frequently cited by residents.

Though managing travel demand and maintaining existing transportation infrastructure represent major challenges, the region recognizes that a toolkit of strategies are available to address these issues. Adopting land use strategies that encourage growth in walkable and transit-accessible areas may reduce long-term road maintenance and expansion needs. Investments in transit and pedestrian infrastructure will help improve mobility for residents who lack, or prefer to forgo the use of vehicles.

The continued maintenance of the region's transportation system is vital to sustaining mobility. In recent years, this has emerged as a major challenge for municipalities as many



facilities, built during growth booms in the mid- and late twentieth century, reach the end of their functional life spans. Funding for transportation maintenance has not kept up with needs. Red-listed bridges have grown in number and forced bridge closures in some areas. Communities will be challenged to ensure that limited maintenance funds are being deployed in the most efficient and beneficial manner possible and educate residents on unmet maintenance needs to help build broad-based support should budgetary increases be necessary.

During public outreach efforts, residents consistently advocated for more investment in alternative travel modes. More than any other single investment, expansion of passenger rail service to the region was advocated. More biking and walking options, development centered in walkable areas, and the extension of transit service to outlying communities were also frequently cited. Such investments may also help the region tackle persistent public health issues like maintaining air quality and addressing obesity. With the region's senior population projected to grow rapidly and younger residents demanding more travel options, the issue will remain salient. Communities should consider incorporating pedestrian/ bicycle and transit upgrades into scheduled road improvements. For major investments in alternative modes, the region will be challenged to build local support and consensus for the provision of local matching funds.