SNHPC

2021-2045 Metropolitan Transportation Plan

FOR THE SOUTHERN NEW HAMPSHIRE PLANNING COMMISSION

ADOPTED, *JANUARY 26th 2021*

TABLE OF CONTENTS

LIST OF ACRONYMS

AADT- Annual Average Daily Traffic
ACS- American Community Survey
ADA- American with disabilities Act
ATV- All Terrain Vehicle
BUILD- Better Utilizing Investments to Leverage Development
CART- Cooperative Alliance for Regional Transportation
CFR- Code of Federal Regulations
CMAQ- Congestion Mitigation and Air Quality
CMP- Congestion Management Process
CO- Carbon Monoxide
CSAC- Complete Streets Advisory Committee
CVTC- Community Volunteer Transportation Company
FAST- Act- Fixing America's Surface Transportation Act
FHWA- Hederal Highway Administration
FRA- Federal Railroad Administration
FTA- Federal Transit Administration
GARVEE- Grant Anticipation Revenue Vehicles
GIS- Geographical Information Systems
HSIP – Highway Safety Improvement Program
ITS- Intelligent Transportation Systems
LCHIP- Land and Community Heritage Investment Program
LMP- Limited Maintenance Plan
LOTTR- Level of Travel Time Reliability
MHT- Manchester- Boston Regional Airport
MPO- Metropolitan Planning Organization
MTA- Manchester Transit Authority
MTP-Metropolitan Transportation Plan
NAICS- North American Industry Classification System
NEPA- National Environmental Policy Act
NH GRANIT- The New Hampshire Geographically Referenced Analysis and Information Transfer System
NHDOT- New Hampshire Department of Transportation
NHES- New Hampshire Employment Security
NHS- National Highway System
NPMRDS- National Performance Management Research Data Set
OHRV- Off highway recreation vehicle
PBPP- Performance-based planning
PEA- Planning Emphasis Area
PFPNH- Partnering for Performance New Hampshire
RCC- Regional Coordinating Council
RSA- Road Safety Audits
SHSP- Strategic Highway Safety Plan
SNHPC- Southern New Hampshire Planning commission
SPUI- Single Point Urban Interchange
STIP- Statewide Transportation Improvement Program
TAC- Technical Advisory Committee
TAM- Transit Asset Management
TAP- Transportation Alternatives Program
TAZ- Traffic Analysis Zone
TDM- Transportation Demand Management
TERM- Transit Economic Requirements Model
TIP- Transportation Improvement Program
TMA- Transportation Management Association
TTTR- Truck Travel Time Reliability
TYP- Ten-Year Transportation Improvement Plan
UPWP- Unified Planning Work Program
UZA- Census Urbanized Area

LIST OF TABLES & FIGURES

TABLES LIST

FIGURES LIST

1.0 INTRODUCTION

Pursuant to federal regulations, Metropolitan Planning Organizations (MPOs) must prepare a Metropolitan Transportation Plan (MTP) to accomplish the objectives of the MPO, the region's municipalities, and the public transit providers with respect to the development of the area's transportation network. The MTP must identify how the metropolitan area will manage and operate a multi-modal transportation system (including transit, highway, bicycle, pedestrian, and accessible transportation) to meet the region's economic, transportation, development, and sustainability goals – among others – for a 20-plus year planning horizon, while remaining fiscally constrained in accordance with anticipated transportation revenues.

1.1 THE SOUTHERN NEW HAMPSHIRE PLANNING COMMISSION

As shown in Figure 1, The Southern New Hampshire Planning Commission (SNHPC) member communities include the City of Manchester and the towns of Auburn, Bedford, Candia, Chester, Deerfield, Derry, Francestown, Goffstown, Hooksett, Londonderry, New Boston, Weare and Windham. The land area of the SNHPC planning region is approximately 520 square miles. The SNHPC is a political subdivision of the State of New Hampshire and serves as the MPO for the census-defined Manchester Urbanized Area (UZA) and portions of the Nashua UZA and Boston UZA. For more information on the structure of the SNHPC, its responsibility as an MPO, and the planning products they produce, please review its Prospectus document found on the SNHPC website.

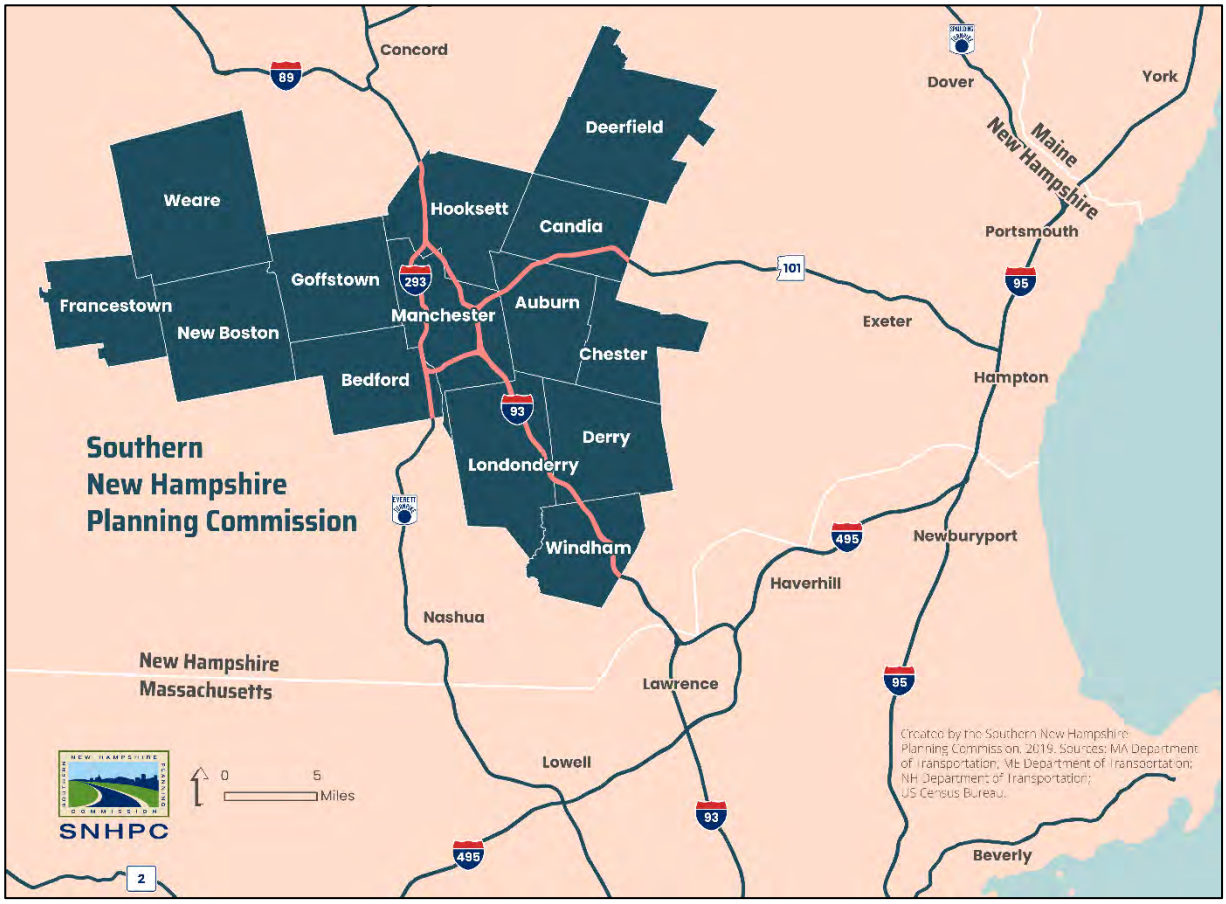


Figure 1: The Southern New Hampshire Planning Commission Region

1.2 Regional Land Use, Population, and Employment Trends

Located just 60 miles away, the SNHPC region has proximity to Boston, tying the region to the economic influence of Greater Boston region. The SNHPC is also centrally located within the New England region, providing access to Boston, the Seacoast, and New Hampshire's Lakes and White Mountains regions within approximately an hour of travel time. The major metropolitan areas of New York City and the City of Montreal are accessible in approximately 5 hours travel time.

The SNHPC region is home to a broad range of demographic conditions depending on location. Approximately 40% of all people within the region reside within the City of Manchester's urban environment.[1] The other communities within the region have varying levels of development ranging from a predominant landscape of suburban single-family homes to sparsely populated rural environments. To put this into context, Figure 2 illustrates that Boston, as a reference city, has five acres of land for every 100 residents while Manchester, the urban center of the SNHPC region, has 19 acres for every 100 residents. In contrast, within the SNHPC region's most rural community of Francestown, there are 1,156 acres of land for every 100 residents in the town.

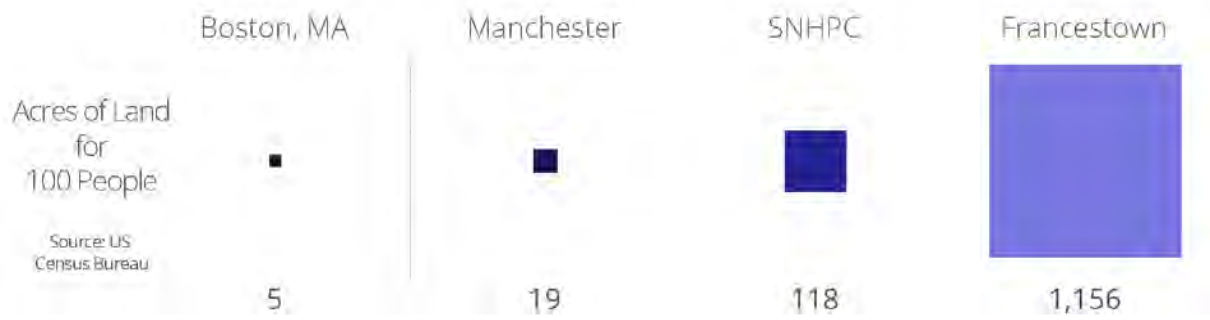


Figure 2: Acres of Land for 100 People Urban to Rural

Land Utilization

Over the past half century, development within the region and southern New Hampshire more generally has tended toward suburbanization and exburbanization through the conversion of agricultural or undeveloped lands. This is especially true for the period of relatively high growth in population between 1960 and 1990 and then as a continuing pattern to present day. Figure 3 Illustrates that between 1980 and 2010, 91% of all growth within the region took place outside the urbanized center of Manchester.[2] This pattern of development moved the region from a majority of residents living within the City of Manchester to a region characterized by a majority of the population living within the suburban communities surrounding the city and beyond. Moving forward, this pattern is likely to continue but be less pronounced as migration to the region has slowed and suburban communities are largely built out.

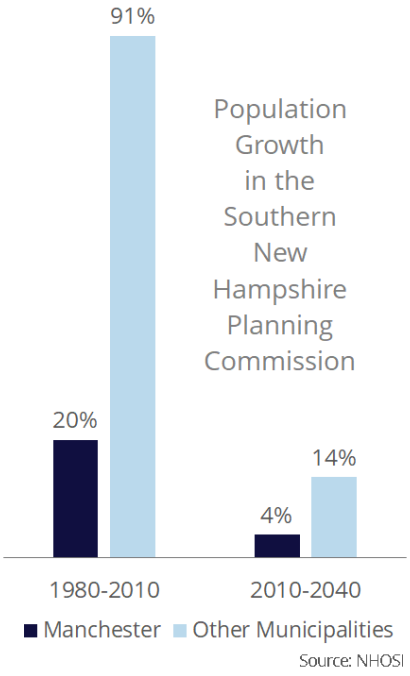


Figure 3: Population Growth Manchester and Other Municipalities within the SNHPC Region

[1] US Census Bureau 2018 5-Year American Community Survey
[2] NH Office of Strategic Initiatives

POPULATION TRENDS

According to the 2018 Census 5-Year American Community Survey (ACS) Estimates, the region's population is approximately 275,000 people centered in the City of Manchester (population 112,000). The region as a whole has experienced a consistent slowing in population growth over the last 40 years. Figure 4, below, further illustrates the percentage of annual population growth since 1970. Each line represents an individual municipality within the region. The area in white reflects actual numbers while the grey area to the right is a forecast of future growth out to a 2045 horizon. Southern New Hampshire is not alone in experiencing this trend of low population growth. The entire state of New Hampshire and to a similar extent the greater Northeast region are trending in a similar way. The patterns of low growth have been partly attributed to the higher cost of living and higher cost of labor present in the Northeast. Other markets, especially in the south and sunbelt of the United States are attractive for relocating households and businesses due to the relatively low cost of land, housing, construction, and labor. The aging population of the state is playing a significant role in the region's low population growth. If forecasts hold true, by 2040, 3 in 10 New Hampshire residents will be 65 or older and 1 in 10 will be 80 or older. Between 2010 and 2040 the population 80 years of age and over is projected to more than triple. In 2040 New Hampshire will have an additional 111,000 people who are 80 years of age and over, roughly the size of Manchester today.

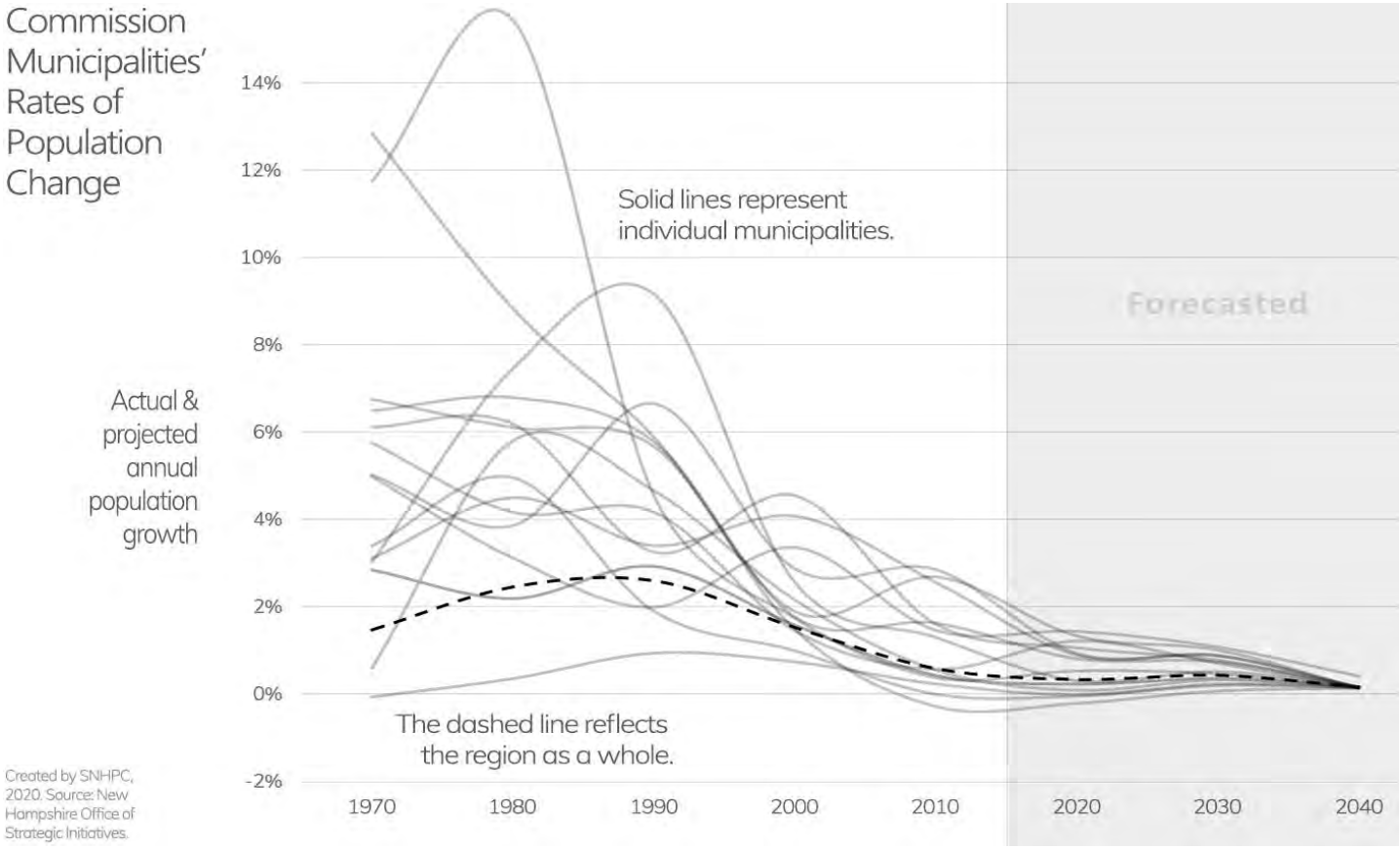


Figure 4: SNHPC Rates of Population Change, by Municipality

EMPLOYMENT PATTERNS

The centers of economic activity and employment play an important role in transportation activity for the SNHPC region. The influence of historical industrialization along the Merrimack River, trade and tourism activity along the seacoast, and labor specialization associated with the Greater Boston area all affect the existing movement of goods and people. As the historical center of industry, Manchester is home to approximately half of all jobs in the region. Figure 5 illustrates the importance of Manchester, and the adjacent municipalities, as a center of employment.

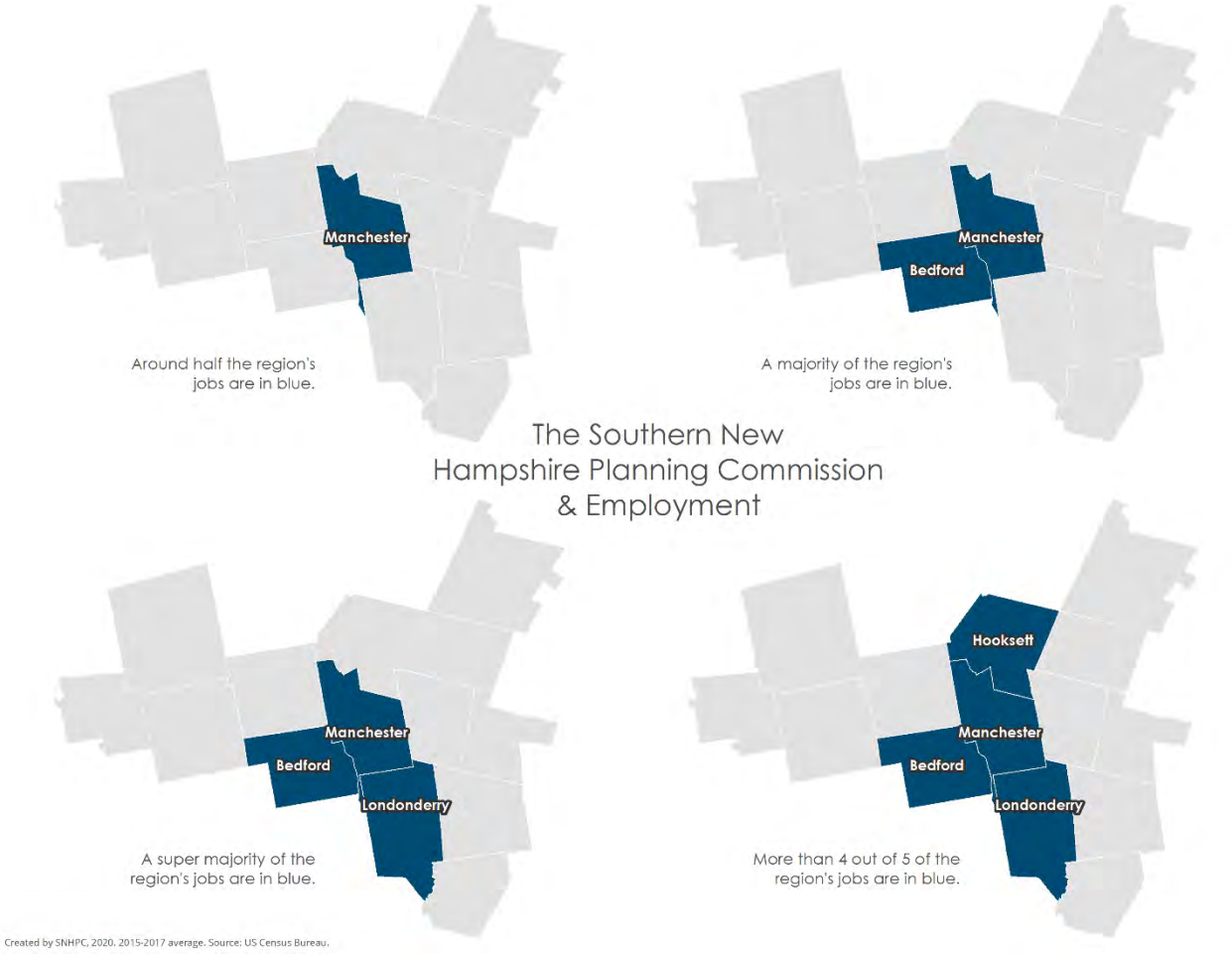


Figure 5: SNHPC Employment Concentrations by Municipality

While economic patterns predated the development of the interstate and turnpike system, investment in key highway facilities like Interstate 93, Interstate 293, and the F.E. Everett Turnpike have played a major role in shaping the region's the pattern of employment since their creation. Over time, jobs within the region have clustered around highway exits to take advantage of greater access to markets they offer. As Figure 6 shows, more than 80% of all jobs within the region are 2 miles or less from a highway exit. The influence highways have on housing, employment, and land use within the region are significant. It is anticipated that automobile-dependent land along highway exits will continue to be a preferred site for employers and commercial activities while single-family housing will continue to slowly disperse in less developed portions of the region.

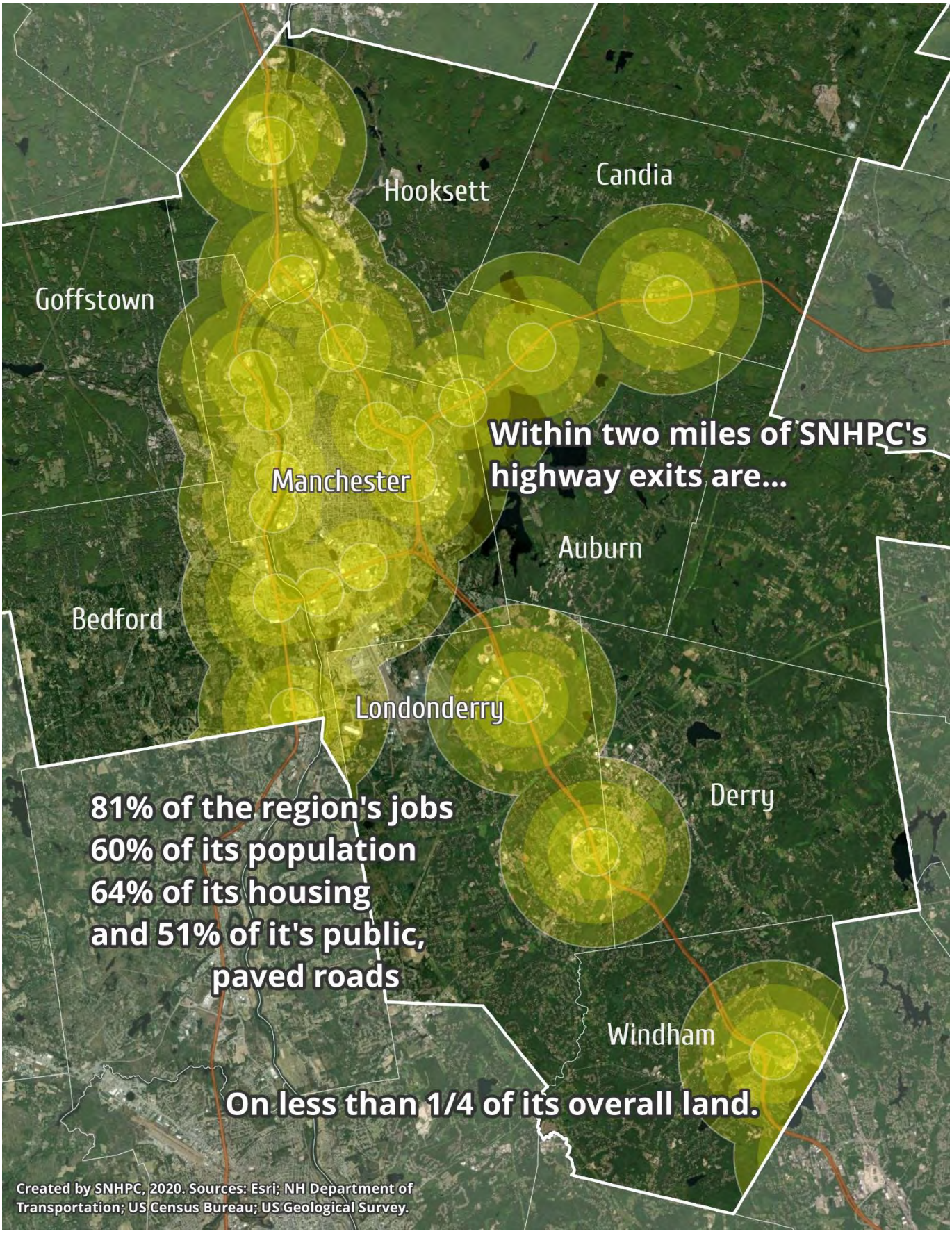


Figure 6: Jobs, Populations, Housing, and Roads within 2 Miles of Highway Exits

EMPLOYMENT TRENDS

Employment growth is expected to increase 7.4% in the SNHPC region between 2018 and 2028, which will outpace the projected 5.3% statewide employment increase in the same period. Employment projections for the planning region were developed by New Hampshire Employment Security (NHES) as a supplement to statewide 2018-2028 employment projections.

In 2018, six industries represented roughly half the jobs in the region: health care and social assistance; retail trade; educational services; accommodation and food services; and manufacturing. The order and overall importance of these industries is not projected to change by 2028. However, growth in retail trade and manufacturing employment is expected to flatten. Other industries, such as professional, scientific, and technical services, or construction are forecast to make substantial gains. These shifts in employment may influence how and where the road network is utilized over time.

Occupations Projected to Grow the Most from 2018-2028 in the SNHPC Region

1.	Personal Care and Service	20.9%
2.	Life, Physical, and Social Science	18.3%
3.	Healthcare Support	15.7%
4.	Community and Social Service	17.8%
5.	Healthcare Practitioners and Technical	14.0%
6.	Architecture and Engineering	14.0%

Given the region's demographic shifts, presence of multiple hospitals, and the continued emergence of medical research (largely concentrated in Manchester's Millyard area), professions in the healthcare industry are projected to have significant growth rates over the next decade. Beyond the sectors listed above, other categories projected for significant growth include Computer and Mathematical industries (13.2%) and Construction and Extraction industries (12.1%).

It should be noted that these employment projections were developed using data that preceded the economic impacts of COVID-19 on the Region, New Hampshire, and the nation. The SNHPC utilizes data provided by the NH Employment Security Department (NHES) for 2018 to 2028 along with statewide long-term projections. In general, employment projections make no assumptions about business cycle fluctuations, natural disasters, or other catastrophic events which affect the economy. While the impacts of the COVID-19 pandemic on employment in New Hampshire are not yet fully understood, the SNHPC will continue to coordinate with NHES and other partner agencies to adjust employment projections as warranted in the future.

1.3 Regional Projects of Influence

Through the continuing process of the transportation planning, federally funded and regionally significant projects are included in the MTP with some assumptions of their future impact on and capacity improvements to the roadway network. The following major projects are currently in progress and will have a significant impact on the region's transportation system when completed:

- Completion of Interstate 93 Widening
  Improvements to Interstate 93 involve the addition of travel lanes in each direction of the mainline as well as the reconstruction of five interchanges on a 19.8-mile segment between the City of Manchester and Town of Salem. These improvements will increase efficiency of the interstate and reduce safety deficiencies within the project area.

- Widening of the F.E. Everett Turnpike
  The preferred alternative for the project involves the widening of the mainline to three lanes in each direction between Nashua and Manchester. The work includes bridge replacements (to accommodate the widening) in five locations, stormwater treatment improvements, and construction of noise barriers.

- Interstate 293 Improvement Exits 6 & 7
  The preferred alternative for this project involves the widening of the Interstate 293 mainline to three lanes in between exits, reconstructing Exit 6 as a Single Point Urban Interchange (SPUI), and reconstructing Exit 7 as a full access interchange north of its current location.

- Construction of Exit 4A on Interstate 93
  This project includes the construction of a new diamond interchange on I-93 north of the existing Exit 4 interchange, Exit 4A would provide access east of I-93 via a 1-mile connector road to Folsom Road, Tsienneto Road, and ultimately NH Route 102.

- Capital Corridor Passenger Rail Development
  In 2014, the New Hampshire Department of Transportation completed an alternatives analysis for extending passenger rail service from Massachusetts into New Hampshire. The study found that commuter rail service to Nashua and Manchester could be feasible. The project has now advanced into design, environmental review, and financial planning phase. In December 2020, the NHDOT executed a contract with a consulting firm to perform this work between 2021 and 2023. If implemented, the project has the potential to produce a mode shift in the region away from private automobiles, towards transit, walking, and bicycling.

In addition to the major projects noted above, the regional transportation system sees a multitude of infrastructure improvements on an annual basis. To monitor the implementation of the MTP and Transportation Improvement Program (TIP), the SNHPC maintains an Annual List of Obligated Projects, which includes all projects in the Southern New Hampshire Planning Commission region for which federal funds were obligated during the preceding Federal Fiscal Year (i.e. October 1st through September 30th). The Federal Highway Administration (FHWA) defines "obligated" as "the federal government's legal commitment to pay or reimburse the states or other entities for the federal share of a project's eligible costs". The annual list contains all federally funded projects started in the current fiscal year and projects already underway that will not be completed until a future year.

1.4 COVID-19 Disruptions to Transportation Activities in the SNHPC Region

The MTP provides a forward-looking analysis of future transportation needs in the region based on demographic and travel demand data projections. With any forward-looking analysis there is uncertainty, and it is important to acknowledge that the future conditions projected in the MTP will be influenced in the short and long-term by the COVID-19 pandemic.

In the short-term, the following negative impacts on the region's transportation network have been recognized as a result of the COVID-19 pandemic:

- Traffic volumes on key arterial roadways in the region declined significantly, partially rebounded and continue to slowly increase towards pre-pandemic levels.
- Vehicle miles traveled in the region declined significantly and are rebounding in a similar pattern to traffic volumes.
- Public transportation services in the region temporarily suspended regular service (from April to June) but have now reopened with improvements to service hours and route design. Transit ridership levels have started to rebound, but are not back to pre-pandemic levels as some major transit designations (e.g. college and hospital campuses, etc.) largely remain closed.
- Certain transportation revenue sources, including the State gas tax and toll revenue, have declined due to reduced travel and it remains unclear how revenue will be affected over time.

Notwithstanding these negative impacts, the COVID-19 pandemic has also produced some unexpected positive developments affecting the region's transportation network and transportation planning process, including:

- Employers have broadly embraced remote working arrangements, which has been a longstanding regional Travel Demand Management (TDM) strategy to reduce vehicle miles traveled.
- Reduction in vehicle miles traveled correlates to reduced emissions and improved air quality.
- Virtual public engagement techniques have increased participation at many of the SNHPC's public meetings and standing committee meetings, allowing for more robust public and stakeholder engagement in the metropolitan transportation planning process.

The long-term effects of the COVID-19 pandemic on the SNHPC region's transportation system are not yet fully understood. From a financial perspective, the federal government has shown a willingness to intervene and offset some of the negative financial impacts of the COVID-19 pandemic, most notably through direct funding support for public transportation providers (including MTA/CART) provided by the Coronavirus Aid, Relief, and Economic Security (CARES) Act. Additionally, it is anticipated that future federal interventions may involve aid to State DOTs.

However, many questions remain unanswered. Will traffic volumes and vehicle miles traveled eventually rebound to pre-pandemic levels? Will remote working arrangements forged out of the necessity of the pandemic become permanent in the future? While we do not yet know the answers to these questions, the SNHPC will continue to coordinate with NHDOT, FHWA, FTA, MPOs, and other partner agencies to adjust the assumptions and projections in this MTP to reflect COVID-19 related transportation system changes in the future.

1.5 The Southern New Hampshire Planning Commission Region's Vision

SNHPC's Regional Comprehensive Plan contains the current and established long-range vision for the SNHPC region. The vision is further defined by the region's stated planning values. The following is a paraphrased version of the vision statement with a focus on the transportation elements of that statement:

"SNHPC places a high value on sense of community, local identity, and local decision making; however, it also recognizes that all municipalities within the region benefit from regional collaboration and cooperation. As SNHPC plans for the future, it will continue to value and protect the built and natural environment, prepare for climate change impacts, and increase renewable energy initiatives and choices. Long range planning should expand and improve upon local and regional transportation choices for all modes of travel, including bicycle, walking and public transit".

The SNHPC Regional Comprehensive Plan was developed through extensive public outreach and engagement, including robust survey of resident opinions on issues ranging from land use and transportation to visual preferences of housing typologies. The primary data produced from and summarized within the SNHPC Regional Comprehensive Plan is a primary source for guiding land use and housing considerations within this Metropolitan Transportation Plan.

The vision statement of the SNHPC Regional Comprehensive Plan was derived from the values held within the Region. The following values from that plan also inform decision-making for this Metropolitan Transportation Plan document.

- **Traditional Settlement Patterns:** Historical settlement patterns vary from community to community and regional values reflect appreciation for this diversity; residents want future development to largely occur in areas that are already developed.
- **Housing Choices:** Residents demonstrate a preference for a range of different housing types and neighborhoods, but everyone values housing choices that are safe and affordable for all.
- **Transportation Choices:** Expanding and improving upon our local and regional transportation choices for all modes of travel, including bicycling, walking and public transit; choice needs to be a priority to enhance our region.
- **Natural Resource Functions and Quality:** Value for rural living is deeply rooted in enjoyment of the beautiful, quality environment; residents want to keep this way of life and protect the functions and quality of the environment and natural resources.
- **Community and Economic Vitality:** Residents treasure the strong bonds in their communities and want to ensure they address the needs of seniors, attract youth, and serve every child and adult in between. They value the community strength that comes from quality schools, enhanced job creation and expanded economic development opportunities, including small business growth and local agriculture.
- **Climate Change and Energy Efficiency:** Residents support renewable energy choices such as solar, wind, and geothermal that are climate friendly. They support policies for higher energy efficiency standards in new buildings and incentives for home energy efficiency improvements. Many residents are also concerned about various weather-related events.
- **Local Decision-Making:** Residents believe that equity is found in local decision-making and strongly value being involved in their communities as well as collaborating regionally.

1.6 TRANSPORTATION MODES OF THE METROPOLITAN TRANSPORTATION PLAN

The SNHPC region is served by highway, air, and rail transportation modes, with the Interstate and arterial highway systems servicing the majority of passenger and freight traffic. The scope of work for this MTP is defined through each of the following transportation modes:

- *Highways (passenger and truck freight);*
- *Transit (bus, paratransit, and light rail);*
- *Bicycling and Walking (all active transportation modes);*
- *Air (commercial passenger and air freight); and*
- *Inter-City Rail (commuter rail and rail freight).*

HIGHWAYS

Major highways link the region. I-93 and the F.E. Everett Turnpike are the primary controlled-access north-south highways connecting the region to other parts of the State. I-93 carries on south into Massachusetts and north to Vermont. Interstate 293 (I-293) provides an east-west connection between I-93 and the F.E. Everett Turnpike. US Route 3, NH Route 3A and NH Route 28 also provide north-south access within the region and southern New Hampshire. NH 101 provides east-west access from the region to the seacoast and the Connecticut River Valley; NH 111 provides east-west access from the region to the seacoast and Massachusetts. Highways are the overwhelmingly dominant mode used for transporting people and goods to, from, within, and through the SNHPC region. Additionally, many of the transit services provided to, from, and within the region are dependent on the aforementioned highway facilities to conduct daily service operations.

TRANSIT

Manchester Transit Authority (MTA) provides fixed-route transit service to the greater Manchester area. Half of Manchester's residents and two-thirds of its jobs are located within a three-minute walk of MTA's existing fixed route service. Three quarters of all residents and 5 out of 6 jobs are within a five-minute walk of the same fixed-route service. In addition, MTA provides demand-response services in Goffstown, Hooksett, and New Boston, and express service to Nashua and Concord. The Cooperative Alliance for Regional Transportation (CART), a subsidiary of MTA, provides curb-to-curb transportation in a five-town Greater Derry/Salem service area including Chester, Derry, and Londonderry which are located within the SNHPC region. In addition to local public transit, private businesses such as Boston Express also provide transit services in the region via bus routes to Boston's South Station and Logan Airport via both the I-93 and the F. E. Everett Turnpike corridors. While availability of transit service plays a critical role in ensuring people across all incomes and physical abilities have access to transportation options, transit ridership provides less than 1% of the total trips to, from, and within the region. The availability of transit facilities within Manchester's core urban area will continue to be an important consideration for maintaining existing density and land development in the region's economic center. Downtown Manchester land use exceeds the ability to surface park those uses, and transit provides a feasible alternative to using single-occupancy vehicles where parking resources are limited.

BICYCLING & WALKING

The region contains a non-motorized trail network comprised of several trail facilities. The region's primary facilities include the Granite State Rail Trail running North-South through the region. The Granite State Rail Trail is part of a larger conceptual trail spanning the state between the Town of Salem and City of Lebanon. The Rockingham Recreational Trail and Piscataquog-Goffstown Rail Trail run east-west through the region. The Rockingham Recreational Trail connects the City of Manchester to Portsmouth and the NH seacoast. While these trails are identified as regional scale facilities, they currently have several gaps and are maintained by a combination of local municipalities, clubs, and non-profit organizations. On-street bicycle and pedestrian infrastructure is primarily found in the City of Manchester and the Town of Derry which have a comparatively larger, more traditional street grid network relative to other municipalities. Smaller communities within the region generally have few sidewalk and on-street bicycle facilities, which are limited to the historic village centers and in proximity to schools within the municipality.

AIR TRAVEL

The SNHPC region's primary air travel facility, Manchester-Boston Regional Airport, is strategically situated less than 50 miles north of Boston, Massachusetts. The airport is three miles south of the City of Manchester's Central Business District. Manchester-Boston Regional Airport (MHT) is owned by the City of Manchester and is operated by the City's Department of Aviation. Once a final stop for military bombers and fighters before transiting the Atlantic to Europe during World War II, MHT now serves as New England's fourth-largest airport by passenger volume and third largest airport by cargo volume. MHT currently hosts three major passenger airlines, and a growing volume of air freight businesses, as well as numerous smaller private general aviation services, including Wiggins Airways. MHT provides several non-stop flights, employs an estimated 7,000 people, and contributes to over $800 million in economic output for the state of New Hampshire. While MTP includes Air Travel as a mode, it is only concerned with the intermodal surface transportation aspects of freight and passenger travel between Air and other modes.

INTER-CITY RAIL

No commuter rail service currently exists in the region. The 2014 Capital Corridor Rail & Transit Alternatives Analysis, supported by the Federal Transit Administration (FTA) and Federal Railroad Administration (FRA), was completed to enable consideration of alternatives to meet the transportation needs of the corridor. The preferred alternative to introduce inter-city commuter rail service would provide eight round trips per weekday from Downtown Manchester to Boston's North Station. With the completion of the Alternatives Analysis, the next phase of the project includes development of a detailed financial plan, preliminary engineering and environmental permitting required for submitting a New Starts or Small Starts funding request to FTA.

1.7 Federally Designated Metropolitan Planning Factors

Figure 7: Federally Designated Metropolitan Planning Factors (FHWA)

The MTP is intended to establish a long-range guide for funding improvements to the transportation network. Prioritization of the MTP recommendations is aided by a screening process that uses federally designated planning factors to ensure that impacts to health, safety, welfare, and the environment are properly considered in the interest of the public. Figure 7 diagrams the interrelation of the MTP with federal planning factors and MPO planning responsibilities.

The diagram shows eight planning factors, the number of planning factors grew to ten during the last federal funding reauthorization. The ten MPO planning factors are as follows:

1. Support the **economic vitality** of the United States, the States, metropolitan areas, and nonmetropolitan areas, by enabling global competitiveness, productivity, and efficiency.
2. Increase the **safety** of the transportation system for motorized and non-motorized users.
3. Increase the **security** of the transportation system for motorized and non-motorized users.
4. Increase **accessibility and mobility** of people and freight.
5. Protect and enhance the **environment,** promote **energy** conservation, improve the **quality of life**, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
6. Promote **efficient system management and operation**.
7. Enhance the integration and **connectivity** of the transportation system, across and between modes throughout the State, for people and freight.
8. Emphasize the **preservation** of the existing transportation system.
9. (New) Improve the **resiliency and reliability** of the transportation system and reduce or mitigate stormwater impacts of surface transportation.
10. (New) Enhance **travel and tourism**.

Together, the transportation modes and the national planning factors encompass the responsibility of an MPO to the federal government in developing a long-range plan for transportation network investments, known as the Metropolitan Transportation Plan (MTP).

1.8 Authority of the Metropolitan Transportation Plan

The MTP is one of the MPO's required planning documents, addressing the long-range future of the region. Every four years, the MPO identifies the transportation system's strengths and weaknesses; forecasts change in population, employment, and land use; and creates a plan to address existing and future mobility needs. The resulting MTP allocates funding for major projects in the SNHPC region and guides the MPO's funding of capital investment programs and studies.

The MTP is defined in the Fixing America's Surface Transportation (FAST) Act. A five-year, $300 billion highway, transit, highway safety and rail bill providing approximately $225 billion in contract authority over the authorization period. The FAST Act provided $47 billion in funding during FY 2020 and distributes nearly 93 percent of all Federal-aid Highway program contract authority through formula programs. In addition, the FAST Act established a National Highway Freight program worth approximately $1.2 billion a year as well as a discretionary program for Nationally Significant Freight and Highway Projects valued at approximately $900 million a year. Under the same legislation, approximately $61 billion over five years is provided for transit.

The federal transportation funding authorization is currently funded under a continuing resolution, providing a one-year level funding extension of the FAST Act, leaving the underlying structure of the FAST Act unchanged. The continuing resolution creates uncertainty about the nature, scale, and predictability of future transportation funding beyond 2021 and maintains outdated formulas for allocating federal transportation funding to the states.

The Continuing, Comprehensive, and Cooperative Transportation Planning Process

The federal government regulates the funding, planning, and operation of the surface transportation system through the federal transportation program, which was enacted into law through Titles 23 and 49 of the United States Code. Section 134 (c)(3) of Title 23 of the Federal Aid Highway Act and Section 5303 of the Federal Transit Act, as amended, require that urbanized areas conduct a transportation planning process, resulting in plans and programs consistent with the objectives of the metropolitan area, in order to be eligible for federal surface transportation funding.

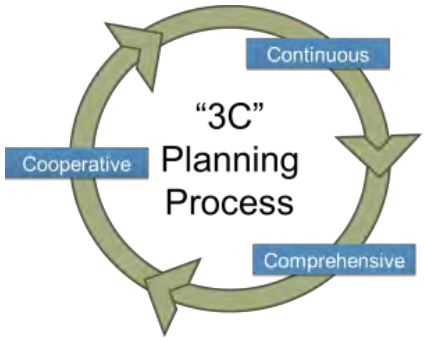


Figure 8: The "3C" Transportation Planning Process

Federal regulations require that all MPOs carry out a continuing, comprehensive, and cooperative "3C" transportation planning process diagrammed in Figure 8. SNHPC is responsible for carrying out the 3C planning process in the region and has established objectives for the process:

- Identify transportation problems and develop possible solutions.
- Ensure that decision-making balances short and long-range considerations and adequately reflects the range of possible future scenarios, options, and consequences.
- Represent both regional and local considerations, as well as both transportation and non-transportation objectives and impacts, in the analysis of project issues.
- Assist implementing agencies in effecting timely policy and project decisions with adequate consideration of environmental, social, fiscal, and economic impacts, and with adequate opportunity for participation by other agencies, local governments, and the public.

- Help implementing agencies to prioritize transportation activities in a manner consistent with the region's needs and resources.
- Comply with the requirements of the FAST Act, the Americans with Disabilities Act of 1990, the Clean Air Act, the Civil Rights Act of 1964, Executive Order 12898 (regarding environmental justice), Executive Order 13166 (regarding outreach to populations with limited English-language proficiency), and Executive Order 13330 (regarding the coordination of human-services transportation).

1.9 Technical Approach to Planning

The MTP uses a travel demand forecasting model developed specifically for the SNHPC region. The model provides travel projections for the region's roadway system to a 2045 horizon year. SNHPC's regional travel demand model has a 2015 base year and includes land use, population, employment, and travel data sources, to inform inputs for traffic projections. SNHPC uses a CUBE software package to develop the regional travel demand model. The technical approach for assessing future transportation demand and evaluating the performance of systems are described as follows:

1. Collect and stratify base year (2015) socio-economic data by Traffic Analysis Zone (TAZ), and project this data for the horizon year (2045) for the entire SNHPC region and adjacent towns that fully encompass the Manchester Urbanized Area;
2. Identify and code the highway network to be evaluated; and code the distances, speed, capacity, number of lanes, and directionality features of each roadway segment in the system;
3. Define the truck and external trip tables for the base year and for the horizon year; and,
4. Generate traffic assignments for the base year and validate; then repeat for the future years after incorporating anticipated improvements to the highway network proposed in the MTP program of projects.

Chapter 4: Travel Demand Forecast section of the MTP provides an overview of the regional travel demand model, while detailed outputs of the model can be found in Appendix A of the MTP. The model is one means of informing the program of projects identified in Chapter 7 of this MTP. Other means of identifying projects for inclusion in the MTP involved the following planning activities:

- Results of the Regional Travel Demand Model;
- Projects identified in regional plans including the Congestion Management Process and Intelligent Transportation Systems Architecture;
- Projects identified in recently-completed local or regional corridor studies;
- Projects identified as priorities in adopted local master plans;
- Projects identified as priorities in adopted statewide plans including the State Freight Plan and Statewide Strategic Transit Assessment;
- Projects identified in other special studies including Transit-oriented Development (TOD) plans and Road Safety Audits (RSA);
- Unfunded projects previously submitted by municipalities for Transportation Alternatives (TAP), Congestion Mitigation and Air Quality (CMAQ), or Better Utilizing Investments to Leverage Development (BUILD) program consideration;
- And appropriate transportation projects listed within the two Community Economic Development Strategic (CEDS) plans within the SNHPC region.

The next chapter of the MTP describes overall regional transportation goals and objectives. The goals and objectives have been designed both to fulfill the specific transportation needs of the SNHPC region and to address priorities as described in Federal Transportation legislation.

2.0 Plan Goals and Objectives

The SNHPC is the agency responsible for establishing transportation priorities in the region. Federal transportation regulations reinforce this responsibility by requiring long-range intermodal transportation planning as a prerequisite for federal project consideration and funding.

This chapter presents the long-range transportation planning goals of the SNHPC. The eight planning goals are thematically aligned with the Federally Designated Planning Factors as listed in Section 1.6 of this report. The list of eight goals and associated objectives is a revised format in comparison to the list of objectives found in the previous (FY 2017 – FY 2040) Metropolitan Transportation Plan. While the current goals and objectives reflect the prior list of goals, the revisions made provide a hierarchy. Stated transportation goals now reflect a desired end state. Subordinate to goals are objectives. Objectives are directional statements regarding activities or milestones to achieve the stated goal. Within the goals and objectives, statements seek to address specific modes of transportation. The stated goals and objectives are written to continue the general directives from previous planning documents and current federal planning legislation.

2.1 Safety and Security

Goal - Safe and Secure Transportation Options for all Users

Objective A: Decrease transportation related fatalities and injuries within the region.

Objective B: Maintain a complete functional highway classification system for the region.

Objective C: Establish transit safety measures and set safety targets in support of regional goals.

2.2 Efficiency and Preservation

Goal - Managed congestion, improved efficiency, and preservation of the existing transportation system

Objective A: Increase access and efficiency of the street and highway network.

Objective B: Increase adoption of access management policies and implementation tactics.

Objective C: Improve the condition of the region's interstate, road, and bridge facilities.

Objective D: Increase vehicle, freight, and transit travel time reliability.

Objective E: Increase revenue sources for preservation of local transportation facilities.

Objective F: Decrease reliance on highway system for the movement of people and goods.

Objective G: Decrease congestion through travel demand management policy implementation.

Objective H: Advance the establishment of a Transportation Management Association.

Objective I: Decrease peak hour travel by single-occupant vehicles in congested corridors.

2.3 Local Economy and Access

Goal - A network of pedestrian, bicycle, and transit facilities connecting people to local goods and services

Objective A: Encourage the adoption of local Complete Streets policies and their implementation.

Objective B: Increase access to multi-modal facilities for walking and bicycling.

Objective C: Maintain access to public transit options through sustainable funding sources.

Objective D: Maintain planning coordination with public transit providers within the region.

Objective E: Increase support of local initiatives to incorporate appropriate Bicycle and Pedestrian facilities into the scope of regional highway projects.

2.4 Regional Economy and Connectivity

Goal - A Highway System that connects all users to economic opportunities through diverse travel choices

Objective A: Increase coordination for advancement of the introduction of rail service.

Objective B: Increase the adoption of bicycle-friendly policies to support mode choice.

Objective C: Maintain planning coordination with State Agencies and other MPOs.

Objective D: Advance policy and programming for mixed-use and town-center development to support walking, bicycling, and transit as mode choices.

2.5 Global Connectivity and Tourism

Goal – Passenger rail service connecting the region's economic center to global markets and tourism opportunities

Objective A: Advance the policy and program objectives of the State Rail Plan.

Objective B: Increase planning activities which promote and facilitate rail transportation.

Objective C: Maintain planning coordination with NHDOT Bureau of Rail and Transit.

Objective D: Advance programming for an intermodal connection of rail and air facilities.

2.6 Resiliency and the Environment

Goal - A transportation system capable of sustaining air, water, land, and energy resources while enduring changes to climate, society, and other external impacts

Objective A: Decrease negative environmental impacts from the transportation network.

Objective B: Decrease reliance on fossil fuels as a transportation energy source.

Objective C: Increase use of alternative fuels within the transportation sector.

Objective D: Decrease emissions from motor vehicles to exceed Clean Air Act standards.

Objective E: Increase the quality of air, water, and wildlife habitat within the region.

Objective F: Advance policy and programs to adapt to and mitigate the effects of a changing climate.

2.7 Land Use and Quality of Life

Goal - Coordinated land use policy and transportation investments for the preservation of infrastructure and enhancement of the region's quality of life

Objective A: Increase the adoption of land use policies which support mode choice.

Objective B: Decrease per capita consumption of agricultural, forested, and undeveloped land.

Objective C: Increase economic capacity of, and housing choices within, existing settlements.

2.8 Authentic Engagement

Goal - An Informed public on the current strengths and weakness as well as future opportunities and threats of the region's transportation system

Objective A: Increase the diversity of public involvement in the transportation planning process.

Objective B: Increase access, timeliness, and frequency of public notice for planning products.

Objective C: Increase communication across appropriate mediums to facilitate public input.

Objective D: Maintain the prioritization of community transportation needs when considering options specific to plan elements and potential projects.

2.9 Tracking Progress Towards Goals

In order to track progress in obtaining the stated goals, a form of measurement of progress towards those goals is needed. This tracking of progress primarily comes in the form of Performance Measures. The reporting of Performance Measures is mandated by the federal government for several metrics which are identified in detail in the Plan Evaluation chapter of this MTP. The SNHPC in its role as an MPO is obligated by the federal government to identify realistic and achievable targets for each required Performance Measure.

In selecting Goals and Objectives for the MTP, attention was given to the correlation between the Goal, the Objective, and the Performance Measures. Many of the objectives listed above have a direct relation to a federally-required Performance Measure. While the SNHPC is obligated to report on these measures, not all goals and objectives listed above relate to a required Performance Measure. The SNHPC recognizes that there may be utility in knowing trends and understanding the trajectory of goals and objectives that do not have a relation to federally-mandated performance measures. As such, the SNHPC may periodically collect data and analyze trends beyond those required by the federal government. The MTP Plan Evaluation chapter refers to this discretionary data and analysis as “indicators of success” so as to not confuse them with federally-required reporting. Where appropriate, SNHPC will identify “indicators of success” in relation to Goals and Objectives that do not already have any ties to a reported performance measure metric.

3.0 EXISTING CONDITIONS

3.1 THE ROADWAY NETWORK

The roadway network is the principal means of moving goods and people within and through the SNHPC region. An extensive network of roads and highways link all areas of the region to locations within and beyond the State of New Hampshire. This roadway network contains a variety of road types which serve particular travel objectives. These objectives range from serving long-distance passenger and freight needs to serving neighborhood travel from residential developments to nearby shopping centers. In order to consistently categorize these road types, a functional classification of roadways defines the role each road type plays in serving the many travel needs of all roadway users. Functional classification carries expectations about roadway speed, capacity, and relationship to existing and future land use development. Federal legislation continues to use functional classification in determining eligibility for funding under the Federal-aid program. Because of the importance of federal aid in funding the region's transportation network, SNHPC identifies the portions of the road network which are eligible for federal aid. Figure 9 identifies all road segments in blue which are eligible for federal aid. The figure also identifies roadways which are non-federal aid eligible in red.

ROADWAY SEGMENTS

Major roadway segments within the SNHPC region are identified by road classification in Figure 10 and 11. Figure 10 illustrates all segments of the entire regional network by functional class. Roads are grouped into two functional systems as either arterial highway or collector roads. The arterial highway system is the group of roads constituting the highest degree of through traffic movement and largest proportion of total travel. The interstate highway system is part of the federal arterial highway system. On the other hand, the collector road system is the group of roads providing a link between through traffic movement and direct private property access functions, linking major property uses to each other or to the arterial highway system. The collector road system is composed of rural major collector roads, rural minor collector roads, urban major collectors, and urban minor collectors.

Critical elements of the regional highway system such as Interstate 93 and the F.E. Everett Turnpike provide through travel capability and arterial roadways such as U.S. Route 3, NH Route 28, NH Route 111, and portions of NH Route 101 also accommodate through travel while also providing access to collector streets, local roads and abutting property.

Figure 11 is a more detailed map specific to the central area of greater Manchester. This map is shown on a larger scale to allow for illustration of all roadway segments within this urbanized area based on their functional classification.

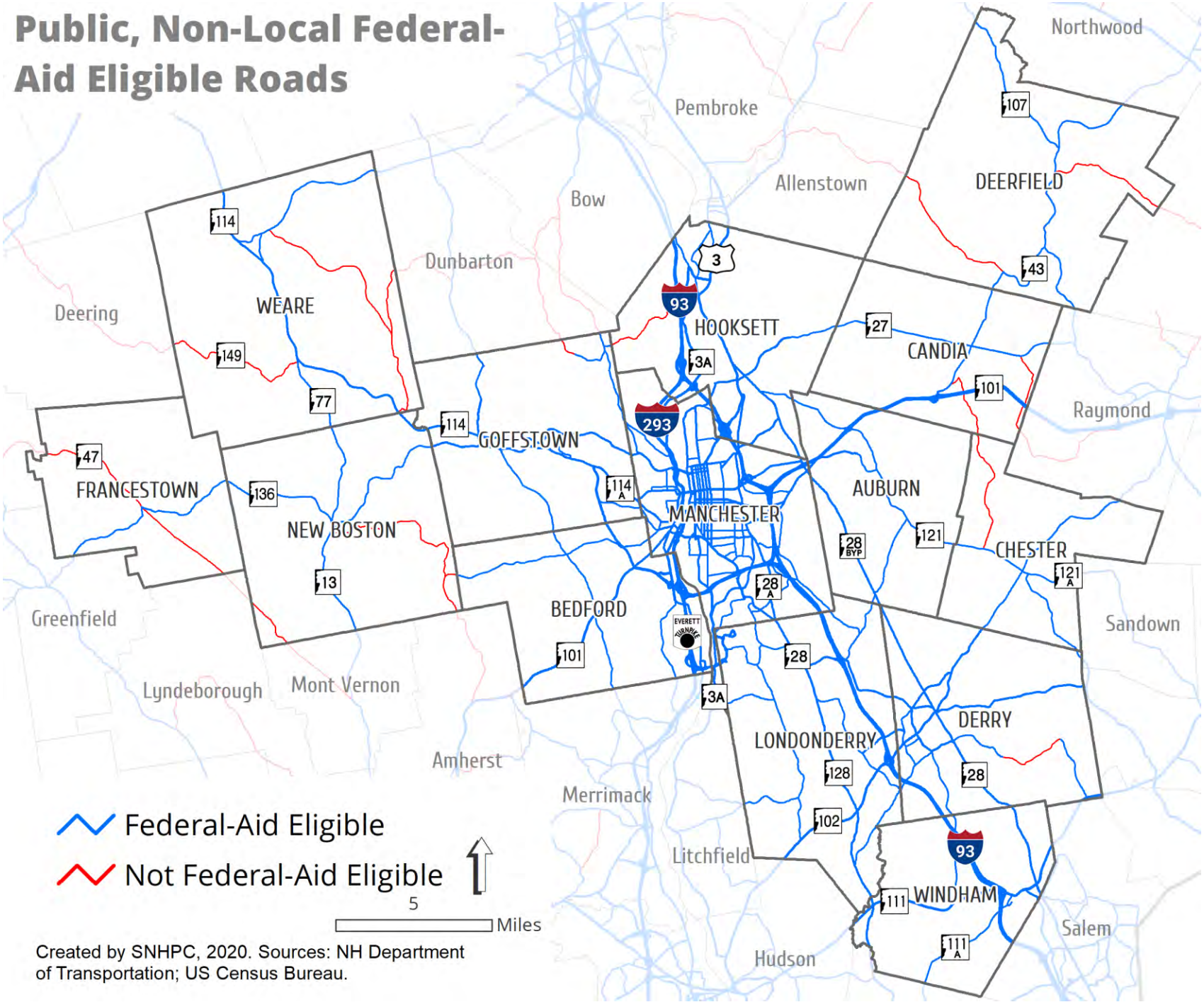


Figure 9: Regional Network of Federal-Aid and Non-Fed. Aid Eligible Roadways

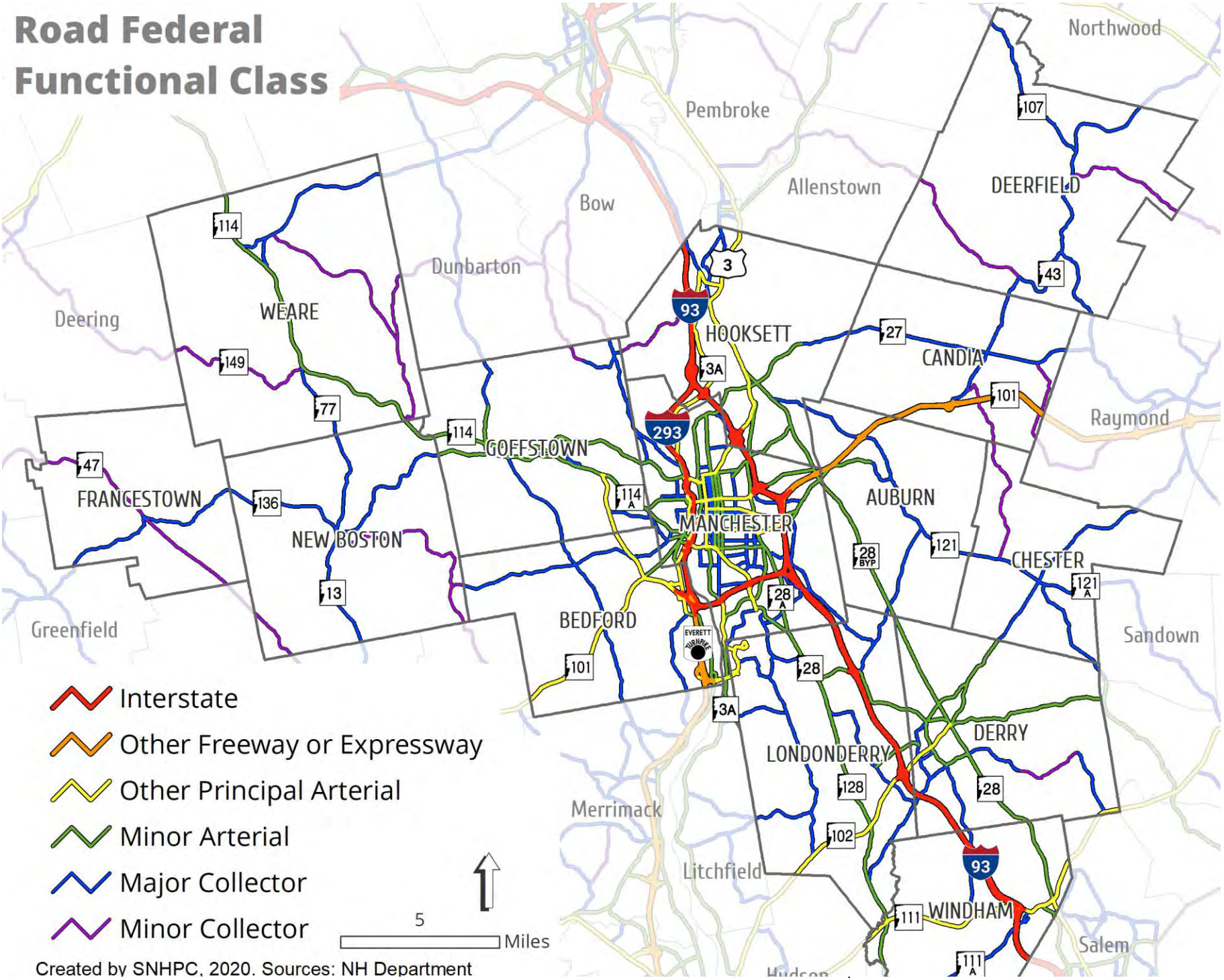


Figure 10: Regional Road Network by Functional Class

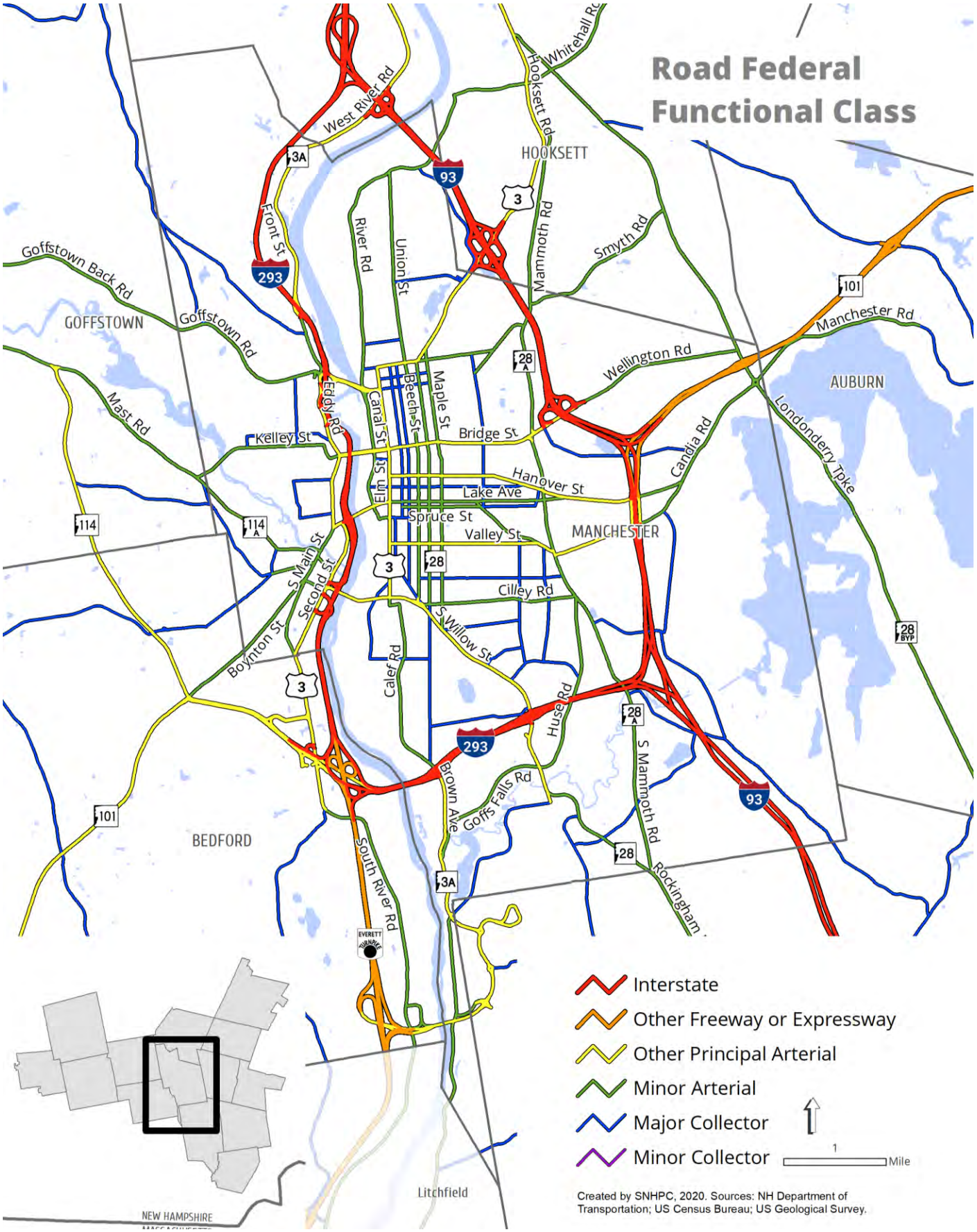


Figure 11: Greater Manchester Road Network by Functional Class

TRAFFIC VOLUMES

Traffic on the major roadways within the region is continuously monitored by SNHPC and NHDOT through long-term and short-term data collection programs. The data is used to produce Annual Average Daily Traffic (AADT) volume estimates for the roadway system which are subsequently used in various planning projects. The SNHPC's regional travel demand model is used to forecast future traffic levels as detailed in Appendix A. Figure 12 presents AADT volumes for the SNHPC region. The volumes are broken out by federal road classification.

The process of forecasting future traffic volume is documented in Chapter 4 of the MTP and is used to create an estimated projection of future traffic conditions via the SNHPC's regional travel demand model. Traffic counts summarized for a base year of 2015 indicate that the highest daily traffic volumes in the region are found on I-93/NH 101 at over 115,000 vehicles per day, I-293/NH 101 with approximately 92,000 vehicles per day and I-93 South of Exit 3 with over 91,000 vehicles per day. For more detailed information on site-specific traffic volumes, a library of existing traffic volume data is documented in an interactive map available on the SNHPC website.

MAJOR ROAD NETWORK ACTIVITY CENTERS

Significant traffic volumes are found near and between the locations of major traffic generators. Generators include concentrations of facilities associated with business, commercial enterprises, industrial/manufacturing firms, airport-related functions, and businesses, as well as large residential developments including apartments and condominiums. In the SNHPC region, major generators include:

- South Willow Street (manufacturing, wholesale distributors, retail sales and services);
- Downtown Manchester and Manchester Millyard (offices, retail sales, entertainment, education, and services);
- NH Route 102, Londonderry and Derry (retail sales);
- NH Route 28, Derry (retail sales, manufacturing);
- US Route 3, Hooksett (retail sales and service companies, education, and manufacturing);
- US Route 3, Bedford (office, retail sales);
- US Route 101, Bedford (office, retail sales);
- Manchester-Boston Regional Airport and Pettengill Road, Londonderry;
- NH Route 111, Windham; and
- NH Route 3A, Hooksett.

TRAVEL PATTERNS THROUGH THE REGION

The region's interstate and freeway roads allow workers from outside the SNHPC region to traverse through the region for employment in other markets outside the region. This external-to-external movement of vehicles is estimated to make up one fifth of all interstate and freeway trips within the SNHPC region. This large proportion of workers moving through the region points to the importance of Interstate 93, the F.E. Everett Turnpike, and NH Route 101 as critical links for labor beyond the SNHPC region.

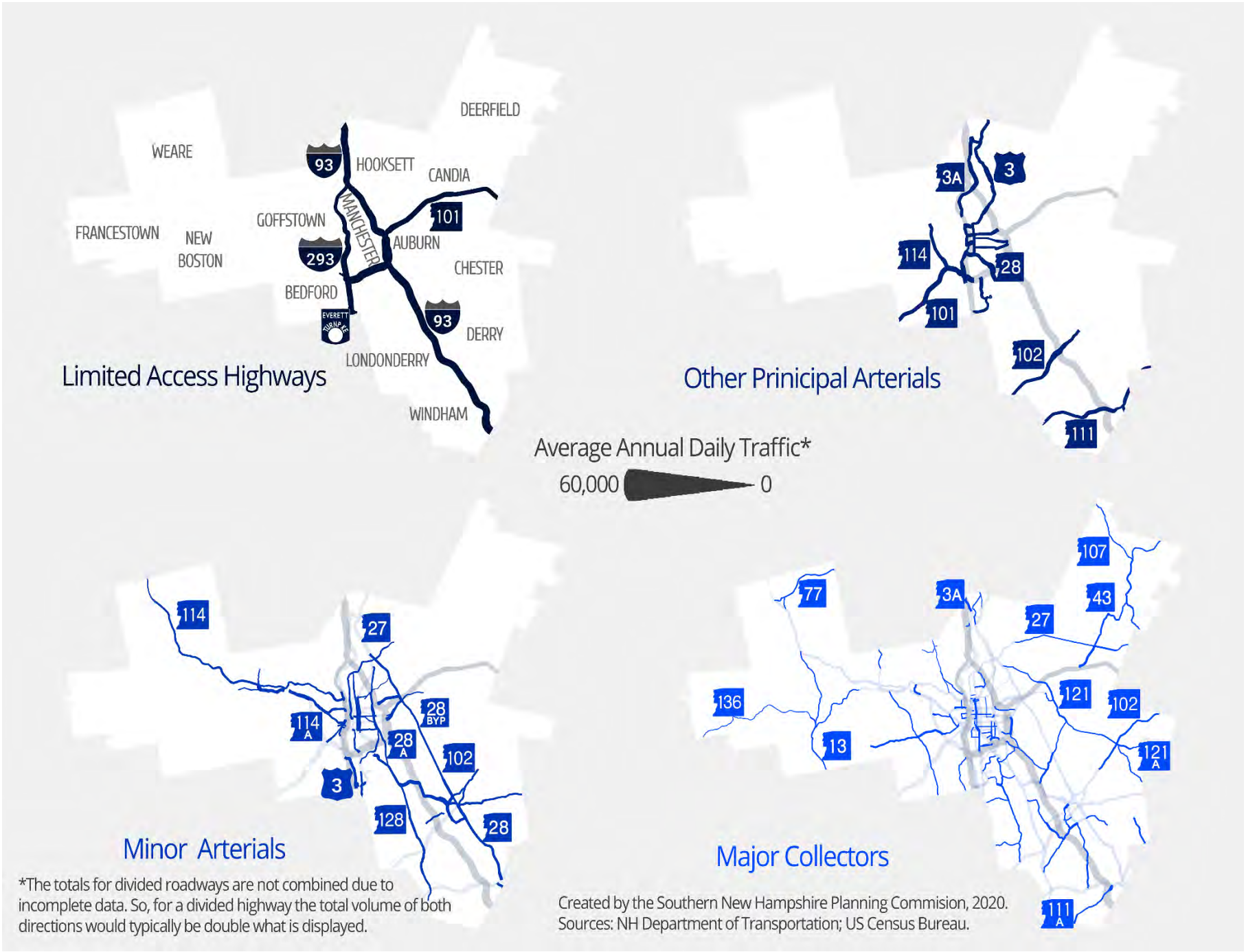


Figure 12: Average Annual Daily Traffic, by Road Class

EMPLOYMENT PATTERNS AND THE TRANSPORTATION NETWORK

Figure 13 uses data from the US Census OnTheMap tool to show that the region's workforce travel patterns have a roughly even distribution between people traveling into (33%), out of (35%), and within the region (32%) for employment. This metric is an indicator of the overall efficiency of transportation network. Labor that resides closer to centers of employment have shorter commute trips. Shortening average commute trip length and/or time within the region is known to be a successful strategy for reducing per capita commute times, vehicle miles traveled, network congestion, and for increasing the overall capacity of the road network.

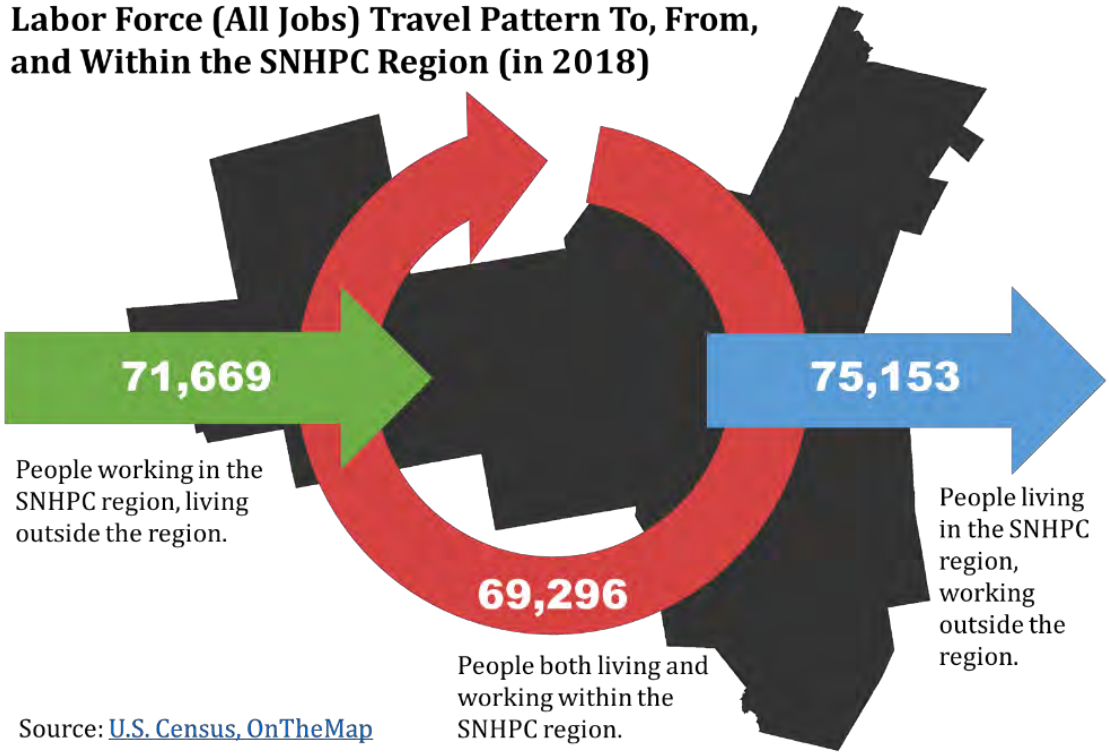


Figure 13: Labor Force Travel Pattern To, From, & Within the SNHPC Region

3.2 Transit Facilities and Service

Transit service in the region is provided by the Manchester Transit Authority (MTA), established in 1973, and by the Greater Derry-Salem Cooperative Alliance for Regional Transportation (CART), which initiated service in 2006. In 2019, CART and MTA merged, with CART becoming a separately-branded service of the MTA. As such, MTA is now the only designated recipient of FTA Urbanized Area 5307 funding in the region.

MTA Transit Services

The current MTA fixed-route system, shown in Figure 14, consists of twelve routes in fare zone one (shown in red on Figure 14). These fixed routes provide scheduled service Monday through Friday. Saturday service is provided on eight of the twelve fare zone one routes. Hours of operation on weekday fare zone one routes start as early as 5:30 AM and run until 6:25 PM while on Saturdays, service is provided between 9:30 AM and as late as 5:55 PM. The regular fare for a one-way trip in fare zone one is $2.00 with half fare discounts available for senior citizens (65 and older) and disabled passengers. Weekday express travel from Manchester to Concord and Nashua is available through MTA with the purchase of a $5.00 day pass, also known as fare zone two (shown in purple in Figure 14). MTA service is provided from a transit hub on Elm Street at Veterans Park within the City's central business district. Routes extend outward to serve most geographic areas of the City and limited portions of four abutting communities. Weekday frequency of service on most MTA routes is sixty minutes. In addition to the fare zone one and two services, MTA also provides a fare zone three seasonal destination service to the Deerfield Fair and Hampton Beach.

Finally, MTA's fare zone four service includes a free service known as the "Green Dash" (shown in green in Figure 14) for the Downtown Manchester area. The shuttle provides transportation between downtown and the Millyard within the central business and Millyard districts. The service runs continuously between 8:20 AM and 7:00 PM Monday through Friday and is free to the public.

The MTA also provides complementary paratransit service on StepSaver, a transportation program offered under the Americans with Disabilities Act to individuals unable to use fixed-route buses. The service is provided on an advanced reservation basis from 5:30 AM to 7:00 PM Monday through Friday and from 9:30 AM to 5:30 PM on Saturday. StepSaver service covers most of Manchester, as well as parts of Goffstown, Bedford, and Hooksett. The fare for StepSaver service is $4.00 per one-way trip. For detailed and up-to-date information on individual fixed routes, fare zones, route schedules, and other services provided by MTA, please visit their webpage at: MTAbus.org.

CART Transit Services

CART is a subsidiary of MTA providing service to the SNHPC-region towns of Chester, Derry, and Londonderry plus the towns of Hampstead and Salem located outside the SNHPC region. CART currently provides deviated fixed-route service as well as curb-to-curb service to the five towns. Curb-to-Curb, a shared-ride service, is available to any resident of the five towns. Service priority is given to seniors and others with demonstrated need. CART also provides a deviated-route shuttle service to congregate meal sites in the towns of Derry and Londonderry, with pick-up and drop-off within a quarter mile radius of the route. All CART rides must be scheduled in advance pursuant to CART's Scheduling Policy.

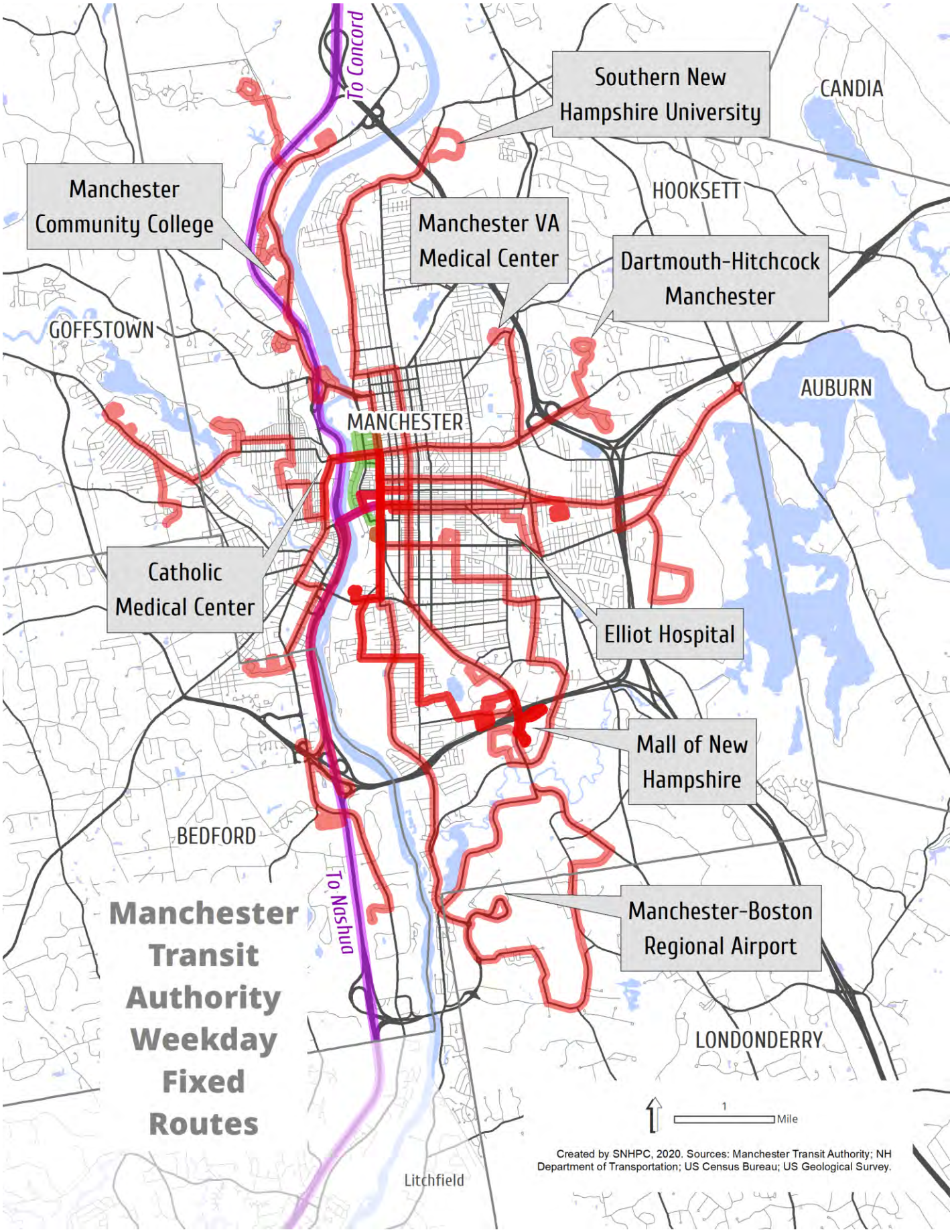


Figure 14: Manchester Transit Authority Weekday Fixed Routes

MTA Capital Facilities and Equipment

The MTA office, maintenance, and bus storage garage are located at 110 Elm Street in Manchester. This facility, completed in January 1976, contains separate office, storage, and maintenance spaces. The office area provides space for supervisory and clerical personnel, a conference room, and an operator's lounge with locker rooms. The bus storage section contains seven lanes with overhead doors at each end and sufficient space to park 35 full-sized transit coaches. The maintenance area contains five bays with hydraulic lifts, a ventilated booth for spray painting and bodywork, a machine shop area, and a spare parts storage room. An auxiliary building located on the premises houses an automatic gantry-type washer used to clean the exteriors of the buses. The fuel island with diesel and gasoline pumps and an overhead canopy are located outside the main building. The MTA rolling stock includes several transit coaches, low floor cutaway transit vehicles, lift equipped StepSaver vehicles, StepSaver entervans, school buses, and operational support vehicles for supervisory and operational tasks. For an up-to-date list of MTA's fleet vehicles, please visit their webpage at: https://mtabus.org/about-mta/our-fleet/

MTA Ridership

Table 1: MTA Annual Fixed Route Ridership 2006-2019

	MTA Fixed Route Ridership	Annual Change
2006	439,625	
2007	411,728	-6%
2008	475,210	15%
2009	531,961	12%
2010	446,902	-16%
2011	462,109	3%
2012	430,404	-7%
2013	442,233	3%
2014	483,959	9%
2015	491,571	2%
2016	484,474	-1%
2017	443,706	-8%
2018	410,840	-7%
2019	398,943	-3%

Source: Manchester Transit Authority

Table 1 indicates that since FY 2006, annual ridership on the MTA system has decreased approximately ten percent. While ridership declined in 2007 and 2010 because of service cutbacks required due to a decrease in local funding, the general trend in MTA ridership for this period has been increasing ridership. Review of annual statistics indicates that ridership tends to be highest in the fall and spring months, and lowest in early winter and during summer. The prime-age labor force participation rate, the unemployment rate, and even total vehicle miles traveled each account for less than 1/6th of the difference in ridership year to year.[3]

Transit use for commuting remains low. According to the Census Bureau, in Manchester around 1% of workers commute using public transportation.[4] The vast majority, four out of five, drive alone to work. This pattern is consistent for low-and moderate-income workers as well. Individuals making less than $35,000 a year (roughly 27,000 people or two in five workers in Manchester) are 99 times more likely to drive alone to work than take public transportation. This is despite the costs of owning and maintaining a vehicle representing 20 to 60% of the total income for the average family making that amount.

[3] Federal Reserve Bank of St. Louis; NH Department of Transportation.
[4] US Census Bureau 2018 5-Year American Community Survey

COMMUNITY-BASED TRANSIT SERVICES

Research has indicated that New Hampshire is experiencing a rapid increase in its senior population. Population Projections prepared the NH Office of Strategic Initiatives (NHOSI) demonstrate a trend of aging. Between 2010 and 2040 the population 80 years of age and over is projected to more than triple. The aging of the population is anticipated to exert pressure on the financial resources of both the State and local governments. Additionally, an increasingly elderly population will present significant challenges impacting the provision of local services, which includes transportation.

The SNHPC is responding to these changing demographics and their likely impacts on mobility through its continuing participation in the Region 8-9 (Greater Manchester, Derry, and Salem) Regional Coordinating Council (RCC) under the direction of the State Coordinating Council for Community Transportation. The goals of this process are to improve coordination of Community Transportation by reducing duplication and increasing the availability of services.

Community Transportation refers to all transportation resources in a community that are available to help meet the mobility needs of a community, including groups such as the elderly, those with physical disabilities, and others for whom operating private passenger vehicles is not feasible from a physical or economic standpoint. Community Transportation can include both public and private services, such as conventional public transit as well as public and private shuttles for seniors, vans owned/operated by churches, community organizations, or others. Some of these are operated by volunteers.

Community Transportation services in the SNHPC region include services provided by MTA, its subsidiary CART, Easter Seals New Hampshire, and Rockingham Nutrition Meals on Wheels. These include demand-response services and other special shuttles. Also, volunteer driver programs in the region include the CareGivers (a program of Catholic Charities) servicing Manchester and surrounding communities, Derry Caregivers, and the Community Volunteer Transportation Company (CVTC) serving Francestown and communities west of the SNHPC region.

The Region 8-9 RCC is continuously working on ways to improve coordination of services and increase the availability of Community Transportation. The Community Transportation services are funded in part by FTA 5310 Purchase of Service and Formula funds made available to the RCC regions through NHDOT's statewide allocation.

INTERCITY BUS SERVICE

Concord Coach Lines - This carrier provides commuter-based service between Concord, NH and Boston's Logan Airport. The service includes a stop at the I-93 Exit 5 Park and Ride facility located in Londonderry. Regional service is also provided from Concord, NH and in-state points north.

Boston Express - This carrier provides service on Interstate 93 between Concord, NH and Boston's South Station Transportation Center and Logan Airport including stops at the I-93 Park & Ride Facilities at Exits 4 and 5 as well as two stops daily in Downtown Manchester. Parallel service is also provided via the F.E. Everett Turnpike serving points south of the SNHPC Region, including the City of Nashua. Figure 15 shows total annual ridership between the years of 2007 and 2019 on both the I-93 and F.E. Everett Turnpike routes serviced by Boston Express. The figure demonstrates that

ridership on the I-93 route remained relatively steady after being introduced in 2008, while ridership on the F.E. Everett Turnpike route observed a steady increase in ridership over the same time period. The I-93 weekday service includes four southbound and northbound trips serving Manchester. Boston Express I-93 weekday service to Londonderry includes 14 daily round trips serving the Exit 5 Park and Ride Facility. Weekend service on both routes has a slightly reduced number of trips.

Figure 15: Boston Express Annual Ridership

Greyhound - This national carrier provides service connecting Manchester with destinations such as MHT, Boston and Logan Airport.

Peter Pan Bus Lines - This carrier includes stops in Manchester as part of their regional bus services connecting to Connecticut and Massachusetts.

OTHER TRANSIT SERVICES AND FACILITIES

Rideshare – NH Rideshare is a ride matching service provided by the NH Department of Transportation that helps to reduce transportation costs as well as traffic congestion and air pollution. NH Rideshare provides information and assistance about ridesharing including carpools, vanpools, buses, and trains.

NHDOT works with New Hampshire Regional Planning Commissions and employers to promote the use of alternative modes of transportation through a branded program known as Commute Smart New Hampshire. The Commute Smart program is designed to encourage and assist people seeking to choose sustainable transportation alternatives in place of driving single-occupancy vehicles. Partners in the Commute Smart New Hampshire program actively support the development and provision of strategies and policies to reduce travel demand across the state including use of transit, walking, bicycling, carpooling, and telecommuting.

Park and Ride Facilities –Park & Ride facilities are an important component in facilitating carpooling, bus transit, and other intermodal activities. There are over 30 public Park & Ride lots throughout the state, with four located within the SNHPC region. The lots within the SNHPC region are located in the towns of Hooksett, Londonderry, and Windham. Hooksett's lot has 45 parking spaces and is located off of I-93 Exit 11. Londonderry has two lots, located along I-93 at Exit 4 and

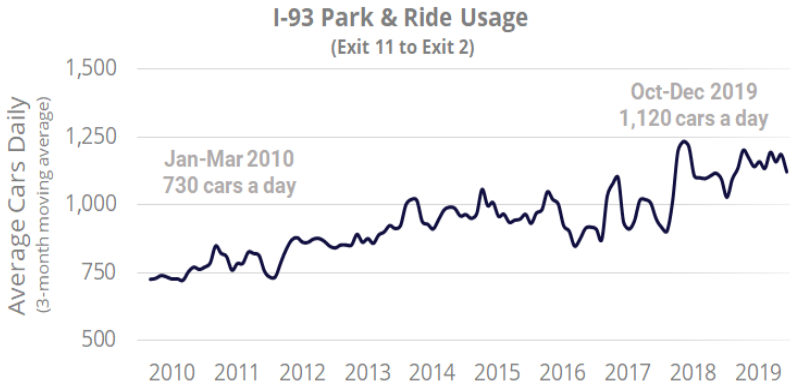


Figure 16: I-93 Park & Ride Usage

Exit 5 respectively. Both Exit 4 and Exit 5 lots have substantial infrastructure and supporting facilities, including shelters, transit loading canopy, staffed ticketing facilities, public bathrooms, telephone, bike racks, and lighting. The Exit 4 facility has 452 parking spaces while the Exit 5 facility contains 728 parking spaces. Windham's Park & Ride lot has 140 parking spaces and is located off at I-93 Exit 3. Both Park & Ride facilities in Londonderry are operated by Boston Express through a maintenance contract with NHDOT. Figure 16 shows the significant increase in usage of the I-93 Park & Ride facilities from 2010 to 2019.

Micro-mobility and Bikeshare – Starting in 2017, the City of Manchester hosted a Micro-mobility program operated by Zagster. The company's bikeshare rental program operated until 2020 before closing due to COVID impacts. Prior to the bikeshare business model ending in Manchester, Zagster proposed a transition of the program to an undocked electric scooters rental program. Coordination for the rollout of the electric scooter program was underway with city elected officials and department staff when the impacts of COVID-19 on public activity halted the micro-mobility initiative from moving forward in 2020.

3.3 FREIGHT TRANSPORTATION

The U.S. transportation system consists of over four million miles of public roads, nearly 140,000 miles of active railroads, about 25,000 miles of inland waterways and approximately 2.8 million miles of pipelines transporting gas and other hazardous liquids. Nearly 19.6 billion tons of goods were moved on the U.S. transportation network in 2012 and projections developed by USDOT anticipate an increase in air and multimodal freight activity.

The NHDOT, in consultation with partners and stakeholders, has developed a State Freight Plan, pursuant to the requirements of the FAST Act. The State Freight Plan reviews existing conditions related to freight transportation in New Hampshire, identifies freight bottleneck areas, identifies potential Critical Urban & Critical Rural Freight Corridors, and identifies freight transportation improvement projects to utilizes the statewide allocation of National Freight Performance Program funding.

As part of the development of the State Freight Plan, the SNHPC facilitated regional process to hear stakeholder feedback to identify potential Critical Urban Freight Corridors (CUFC) in the SNHPC region. Based on this process, the SNHPC identified and recommended five corridors as potential CUFCs in the region.

1. **NH Route 101** (from the intersection of NH Route 101/114 in Bedford east to the SNHPC regional boundary at the Candia/Raymond town line)

   Both inbound and outbound commodity flow data reflect the importance of NH Route 101 as an east-west freight traffic corridor within the SNHPC region and beyond. While the SNHPC MPO has only recommended that the limited access section of NH Route 101 be designated as a CUFC, stakeholders also identified freight traffic issues including capacity concerns west through Bedford into the Nashua Region. Additionally, the interchange of NH Route 101/I-93 was identified as a freight bottleneck.

2. **Raymond Wieczorek Drive and Pettengill Road** (entire length)

   Raymond Wieczorek Drive provides connectivity between the F.E. Everett Turnpike and air freight operations at the Manchester-Boston Regional Airport. Aside from connections between I-95 and the Port of New Hampshire, Raymond Wieczorek Drive is one of the few true intermodal freight connectors in the State of New Hampshire. Pettengill Road provides additional freight connectivity in this area in the Town of Londonderry and serves one of the only areas in New Hampshire specifically developed through land use planning to be a hub of logistics, warehousing, and freight movement.

3. **NH Route 28 Bypass** (from NH Route 101 Exit 1 to U.S. Route 3 in Hooksett)

   As the only state highway in New Hampshire officially signed as a "Bypass," permissive signage effectively encourages all traffic, including trucks, to use this roadway to avoid other congested areas. The segment between NH Route 101 Exit 1 to U.S. Route 3 in Hooksett was specifically identified as a potential CUFC because it serves significant freight traffic generators on the east side of the City of Manchester north into the Town of Hooksett. Capacity and congestion resulting in bottlenecks are the key freight traffic concerns on this segment.

4. **NH Route 3A/Brown Avenue** (from I-293 Exit 2 to the Manchester-Boston Regional Airport)

   NH Route 3A/Brown Avenue provides a direct connection between Interstate 293 and air freight operations at the Manchester-Boston Regional Airport. The identified segment of NH Route 3A/Brown Avenue also includes freight generators of regional and statewide significance, including a UPS warehousing/logistics center. Congestion is the primary freight traffic concern on this segment.

5. **Candia Road** (from I-93 Exit 6 to East Industrial Park Drive)

   The short segment of Candia Road provides freight traffic connectivity between the I-93 mainline and a regionally-significant area of warehousing and industrial development situated along East Industrial Park Drive in the City of Manchester. Freight bottlenecks at the I-93 Exit 6 interchange are the primary freight traffic concern on this short segment.

Figure 17 below illustrates the dominance truck freight plays in the overall movement of goods within the State of New Hampshire. The graph on the left provides the dollar value of the freight moved while on the right the actual tonnage of freight movement. Within the SNHPC region, freight trucks interface with other modes principally at MHT where goods transfer from air to truck and vice versa. The recent completion of Pettengill Road adjacent to MHT has resulted in several freight-based and freight dependent businesses relocating operations to this highly accessible road.

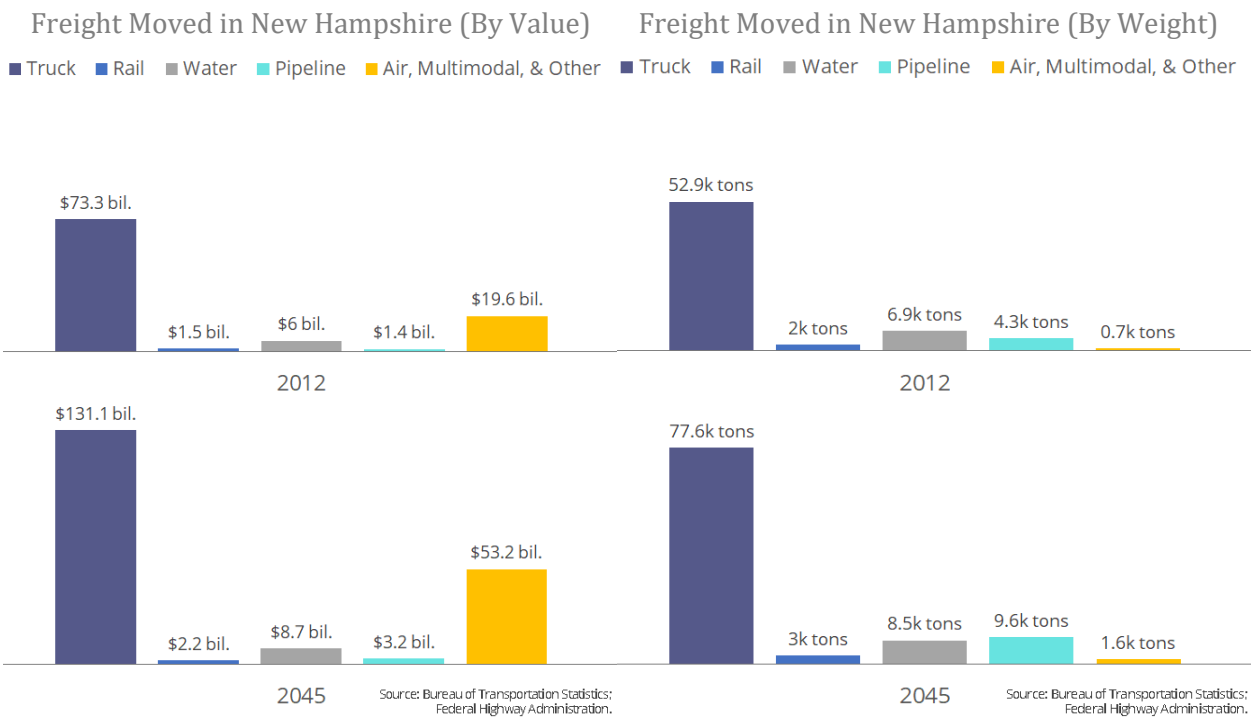


Figure 17; Freight Moved in New Hampshire 2012 Actuals and 2045 Projections Measured in Dollars and Tons

At MHT, air freight is carried on scheduled passenger flights as well as on scheduled and on-demand all-cargo flights. All-cargo carriers operating at MHT include FedEx, United Parcel Service as well as smaller operations via Wiggins Airways. Trucking companies in the region include those

with the capability to haul liquid or dry bulk goods, as well as those carrying general freight. The data presented in the previous paragraph illustrates that truck and highway transportation play a vital role in developing and sustaining the region's economy and are essential for maintaining the quality of life for those who live and work in this area. Because of the region's established roadway network and current limited use of other modes, commercial trucking services will likely continue to be essential to sustain the region's expanding economy. The region's continuing dependence on roadways for commerce and movement of goods suggests that maintenance and preservation of the highway network will become increasingly important.

Major infrastructure improvements, such as the widening of I-93, improved multi-modal access to MHT and expansion of the region's rail network are required so the region can compete economically with other areas. Still, the maintenance and expansion of the transportation system requires funding support on the part of local, regional, State and Federal levels of government and the private sector.

3.4 BICYCLE AND PEDESTRIAN FACILITIES

The FAST Act maintains emphasis on the importance of intermodal transportation, requiring that "*the plans and programs for each metropolitan area[s] shall provide for the development and integrated management and operation of transportation systems and facilities (including pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system […]*". This emphasis on the development of an integrated and intermodal system includes consideration of the importance of pedestrian and bicycle facilities in this system in an effort to:

- Efficiently use/reduce the impact of vehicular transportation on the region's limited resources;
- Reduce the negative impacts of hydrocarbon combustion (fossil fuel) on air quality; and
- Reduce traffic congestion at major intersections and in densely populated areas.

BICYCLE AND PEDESTRIAN FACILITIES

Exiting dedicated bicycle and pedestrian facilities within the region include the Goffstown Rail Trail, the Granite State Rail Trail (in Derry, Londonderry, Windham), the Piscataquog Rail Trail which connects the Goffstown Rail Trail at the Manchester town line to downtown Manchester (this trail includes the Friends Across the Merrimack River Bridge and a bridge constructed over Kelly Falls Dam), the Rockingham Rail Trail Portsmouth Branch (in Auburn, Candia, and Manchester), the Rockingham Rail Trail Freemont Branch (in Derry and Windham) and the New Boston Rail Trail.

Existing trail facilities vary in surface treatment, condition, and allowable use. For example, allowances range from non-motorized use to ATV use and conditions range from loose sand surface to paved surface. In addition to existing trail facilities, there are several planned and proposed trails, including several segments which would complete gaps along existing trail facility routes. The NHDOT is currently in the process of developing a Statewide Pedestrian and Bicycle Transportation Plan. The focus of this plan is to develop a network of bike facilities on state roadways and to infill gaps in the sidewalk network. Ultimately, the state's first formal pedestrian and bicycle transportation plan will articulate new policies, programs and infrastructure projects intended to support walking and bicycling in all regions of New Hampshire. Existing, planned, or proposed regional trails which comprise the network are shown in Figure 18 below.

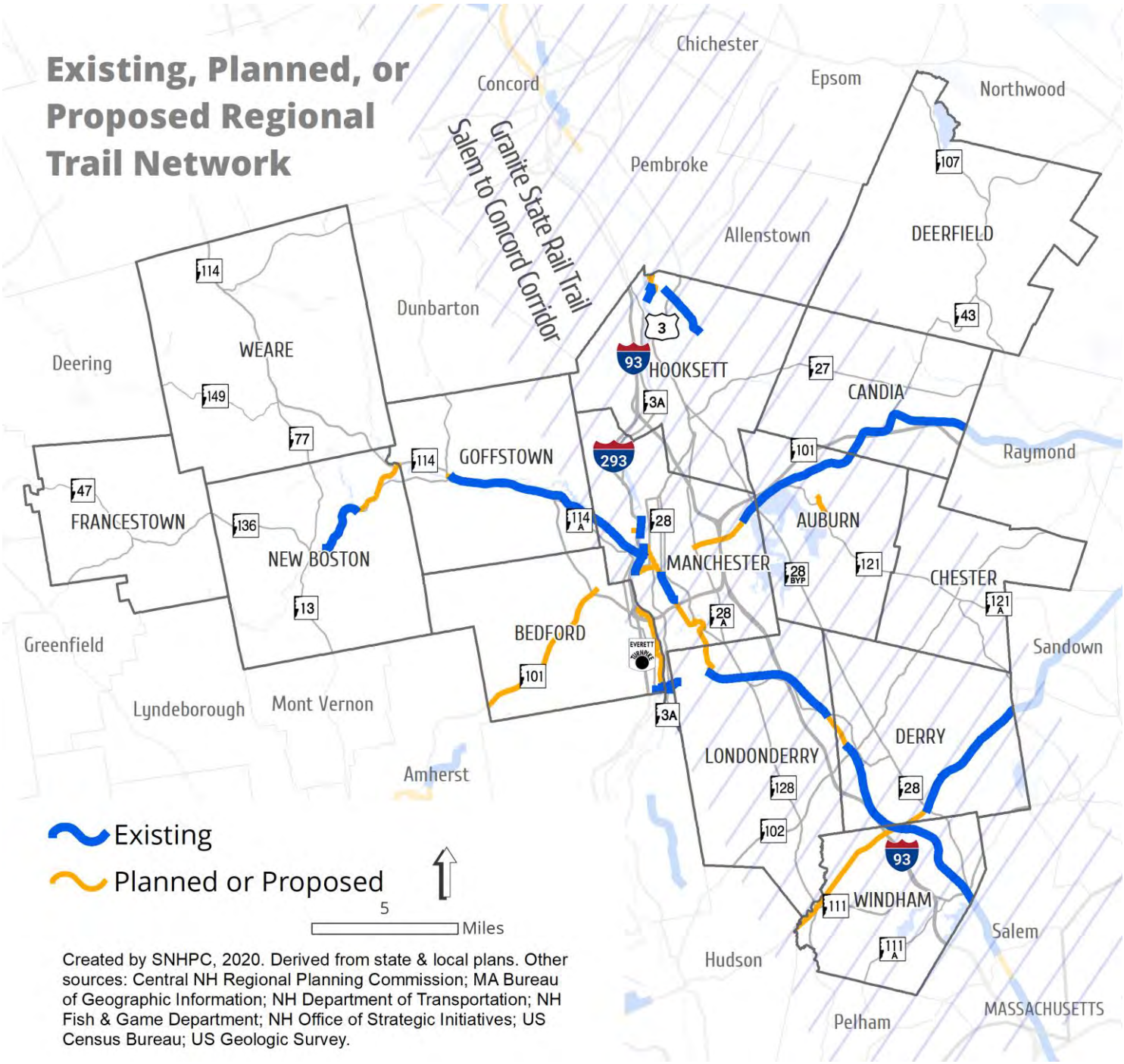


Figure 18: Existing, Planned, or Proposed Regional Trail Network

BICYCLE AND PEDESTRIAN COUNTING PROGRAM

The SNHPC currently utilizes infrared pedestrian counters to gather data on the utilization of sidewalks, rail trails, hiking trails and intersections. Bicycle/pedestrian counting data is a valuable metric for determining trends for long-term transportation planning and as justification for investments in new active transportation facilities. The counting program is capable of collecting data in many environments. Figure 19 provides a glimpse into the types of counts and the range of their usage. Count locations range from rural trails to sidewalks in urban centers. Along with routine counting sites, SNHPC fulfills requests for bike/ped counts from member municipalities. The Bicycle and Pedestrian Count Locations Data is available to the public on SNHPC's website.

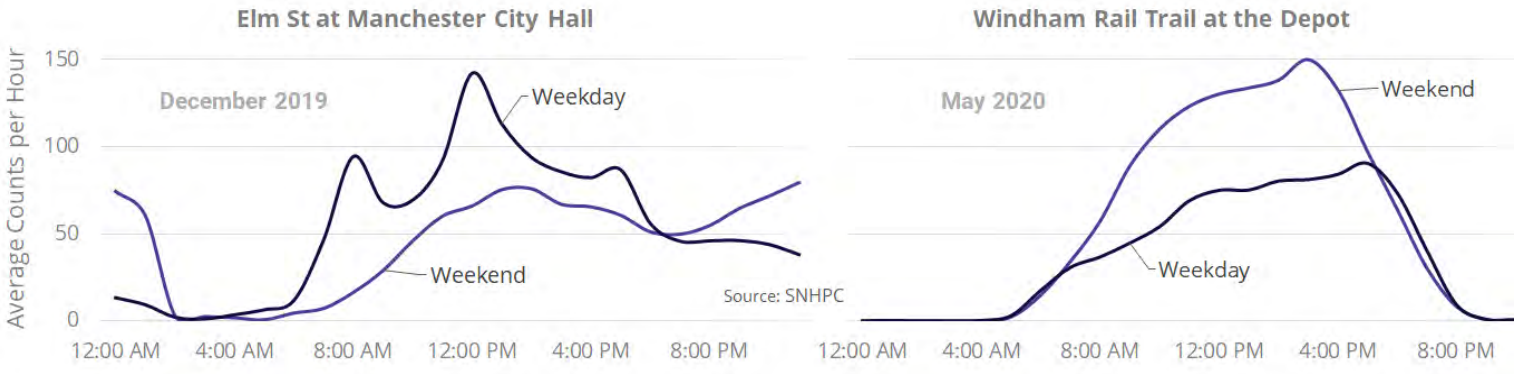


Figure 19: Bicycle and Pedestrian Count Data Manchester and Windham

TRANSPORTATION ALTERNATIVES PROGRAM

The FAST Act, through the Transportation Alternatives Program (TAP) provides funding to build non-motorized facilities that are safe, reliable, and convenient. The TAP Program reimburses up to 80 percent of the costs for eligible pedestrian and bicycling projects. Several bicycle and pedestrian facilities within the SNHPC region have been constructed through TAP. In the 2018 funding round, both Manchester and Londonderry received $800,000 each to complete abutting segments of the Granite State Rail Trail within their respective municipality. With the 2020 continuing resolution to maintain level the federal funding of transportation, this program is anticipated to continue to be a primary source of bicycle/pedestrian project funding in the SNHPC Region.

COMPLETE STREETS ADVISORY COMMITTEE (CSAC)

NHDOT staffs and organizes the CSAC meetings and planning products. The mission of CSAC is to support bicycling, walking, and other micro-mobility devices, as well as transit as safe, convenient, and sustainable forms of transportation that increase New Hampshire's livability, increase economic activity, and improve public and environmental health. CSAC members seek to improve the state through education, public outreach, collaboration, policy, and construction. SNHPC staff regularly participate in CSAC meetings to ensure that the region's bicycle and pedestrian transportation needs are adequately reflected in statewide initiatives.

3.5 Intermodal Facilities

Manchester Transportation Center

The Manchester Transportation Center, located at 119 Canal Street, is a multi-modal bus facility in the central portion of the city. Boston Express and Concord Coach offer inter-city bus services to destinations such as South Station and Logan International Airport in Boston from this facility. This facility has also historically served as a boarding location for Greyhound and Peter Pan Bus Lines. MTA also serves the facility via Route 3 (Brown Avenue/Airport). The facility is owned by the City of Manchester and operated by Boston Express.

Manchester-Boston Regional Airport (MHT)

Manchester-Boston Regional Airport (MHT) is the largest commercial airport in New Hampshire and a major economic engine for the region. The annual economic impact of the facility is substantial. In 2015, MHT airport accounted for over 7,000 jobs, $268 million in payroll, $23 million in tax revenues, and $832 million in total economic output. The airport is owned by the City of Manchester and is operated by the City's Department of Aviation which oversees the daily operations, maintenance, planning, design, and construction. According to the MHT website, the airport is served by three major commercial flight carriers with a total of nine daily flights. American Airlines offers direct flights to Charlotte, Philadelphia, Washington D.C., and Chicago. Southwest provides direct flights to Baltimore, Chicago, Orlando, and Tampa. United is currently providing direct flights to Washington D.C. where travelers can connect to many other destinations. MHT also hosts UPS and FedEx as major cargo carriers and serves as the primary air cargo hub for all of Northern New England, including a growing volume of Amazon parcels. Along with major cargo operations, MHT services specialty cargo carriers and smaller aviation operations via Wiggins Airways and SWA Cargo.

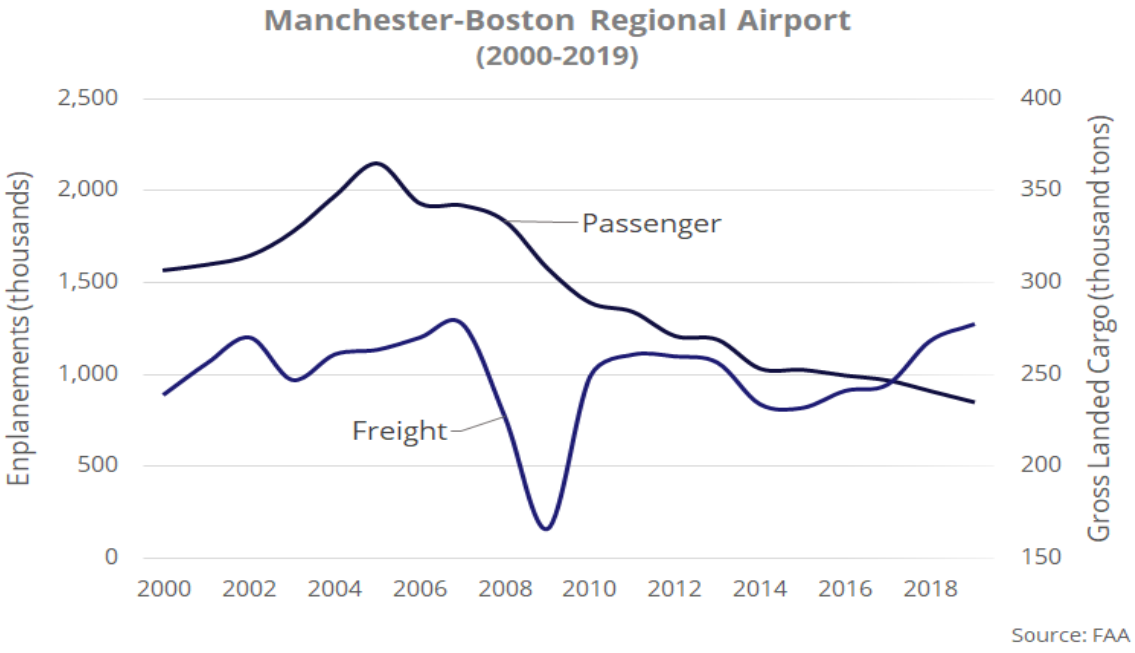
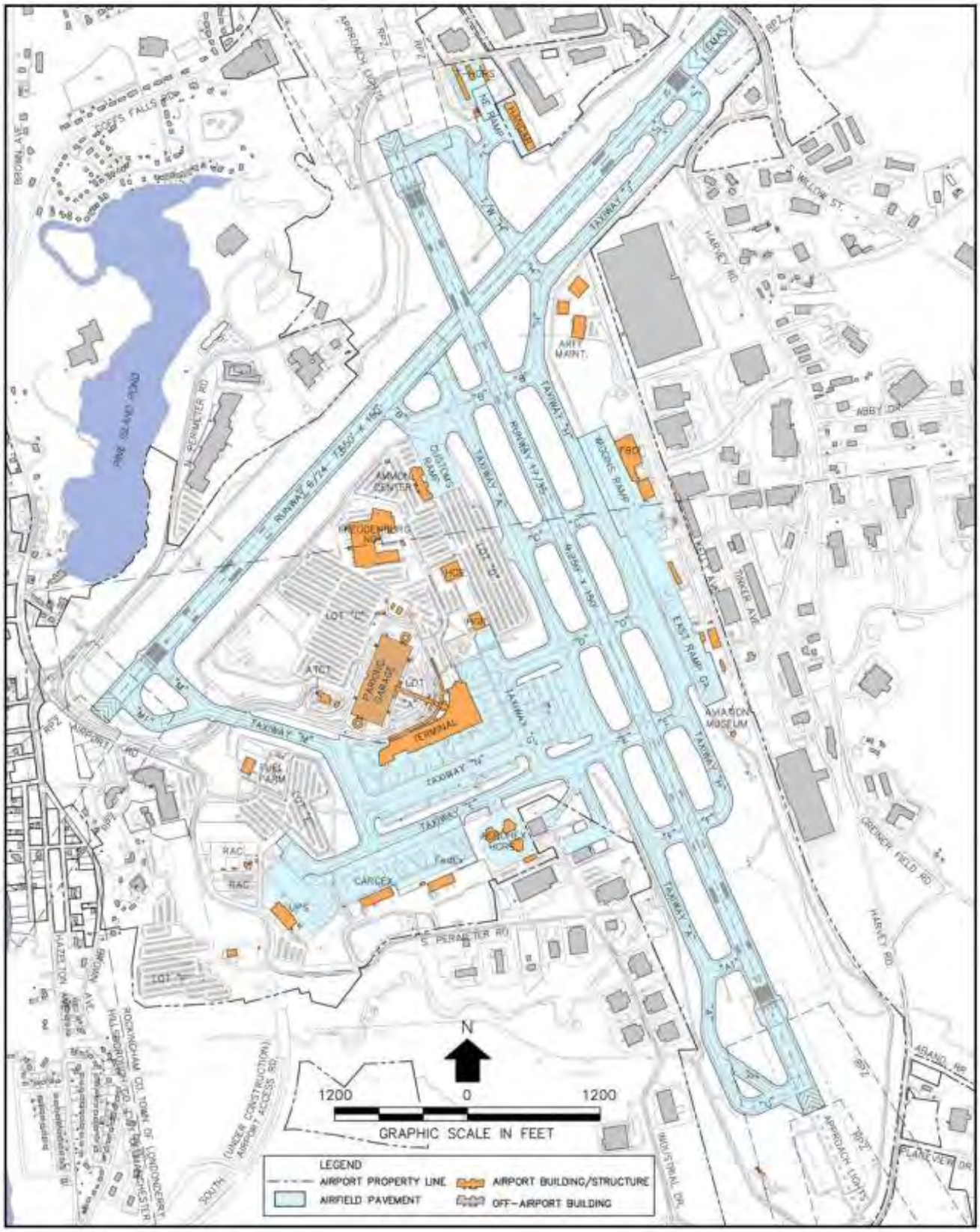


Figure 20: MHT 2000-2019, Enplanements & Gross Landed Cargo

MHT has experienced periods of rapid growth in the recent past. Between 1998 and 2008, MHT achieved the most growth in domestic origin and destination passengers of any airport in New England. Four major runway improvement and expansion projects were completed at MHT between 2002 and 2007. However, since mid-2005, domestic airlines have reduced flights. This trend is reflected in Figure 20 which summarizes enplaned passenger data and freight at MHT between the years of 2000 and 2018. Declines in passenger traffic since 2005 reflect not only economic factors but also increasingly competitive flights and improved ground access at Logan Airport in Boston, which is located just 55 miles from MHT.

The Airport Master Plan is used by MHT to plan growth and guide development to meet the existing and future needs of those using the facility. The Master Plan includes a long-term capital improvement plan consisting of airfield and roadway improvements and terminal improvements including upgraded enhanced ticketing and baggage claim areas and enhanced pedestrian connections.

Section 6 of the Airport Master Plan defines the regional and local access to MHT. Part of this plan has been implemented through the completion of Raymond Wieczorek Drive, including direct connections between the F.E. Everett Turnpike, U.S. Route 3 and NH Route 3A. As shown in the figure below, Section 6 of the Airport Master Plan also defines facility improvements for the introduction of an Intermodal Center and for future passenger rail service. The rail station and the corresponding airport connector would provide several benefits to the airport and passengers served by the airport. The anticipated benefits include additional public transportation services for passengers and employees, a nucleus for a regional transportation center and intermodal facility, and expansion of the airport's market area. Annual ridership for this airport connector is anticipated to be 74,000 in the first year of service and grow as high as 600,000 annual riders in the long-term.



Source: URS Corporation, 2010.

Figure 21: MHT Existing Facilities Map

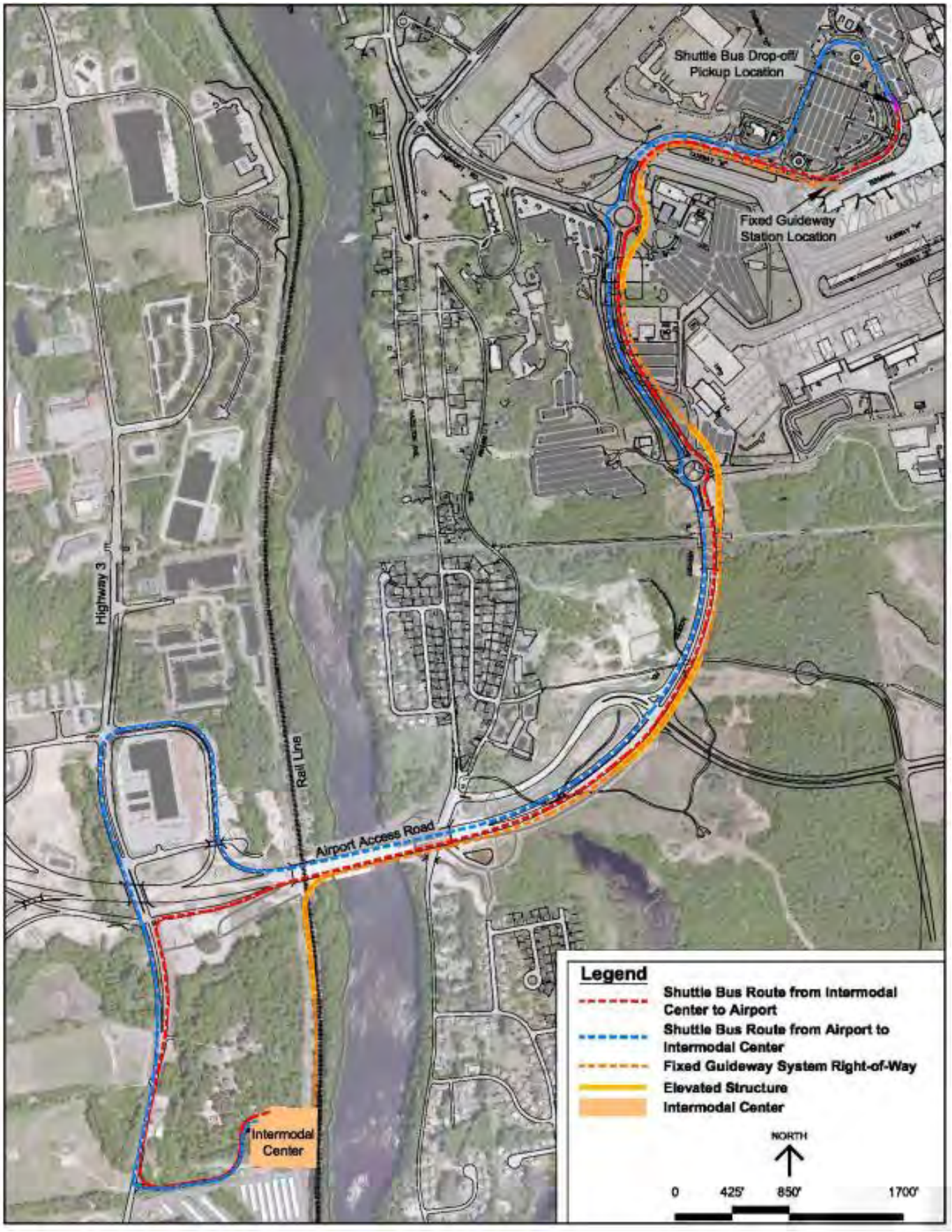


Figure 22: Intermodal Center and Potential Routes for Intermodal Connector

3.6 New Hampshire's Rail System

The rail network in the State of New Hampshire consists of approximately 443 miles of active track via 12 different local and regional railroads. Of the total mileage by rail carrier, Pan Am Railways is the largest. Pan Am operates 121 miles of railroad in New Hampshire. Pan Am Railways is the only provider operating within the SNHPC region. Pan Am operates 15.9 miles of railroad within the region as shown in Figure 24 on the next page.

Table 2: Miles of Railroad by Carrier, State and SNHPC Region

Miles of Railroad by Carrier State & Region			
	Miles of RR in NH	**% of Total in NH**	**Miles of active RR in Region**
Regional Railroads			
Pan Am Railways	121	27.1%	15.9
New England Central	24	5.4%	N/A
Local Railroads			
Claremont Concord	5	1.1%	N/A
Green Mountain	1	0.2%	N/A
Milford-Bennington	18	4.0%	N/A
New England Southern	18	4.0%	N/A
New Hampshire Central	44	9.9%	N/A
NH Northcoast	42	9.4%	N/A
St. Lawrence & Atlantic	58	13.0%	N/A
Twin State	6	1.3%	N/A
Tourist Railroads			
Conway Scenic	51	11.4%	N/A
Plymouth & Lincoln	55	12.3%	N/A
Total	**443**	**100%**	**15.9**

Table 2 provides a summary of the mileage of railway owned and operated by various entities within the state. Passenger rail service is currently offered in New Hampshire by Amtrak on the Vermonter, and the Downeaster. The Vermonter provides service between St. Albans, Vermont and Washington, D.C. including a stop in Claremont, New Hampshire. The Downeaster provides service between Boston, Massachusetts and Brunswick, Maine. Service includes stops in New Hampshire in Dover, Durham, and Exeter. Figure 24 on the next page is a map of railroads, active, inactive, or abandoned within the SNHPC. The map is categorized by carrier and usage type.

Figure 23: Proposed Capital Corridor Route

The only active rail line in the SNHPC region is the 15.9 miles of Boston & Maine Line running north-south along the Merrimack River through the center of the region. This line is owned by Pan Am Railways, and under discussions for purchase by CSX Railroad. Other inactive rail lines, including the Rockingham and Lawrence lines, which have been wholly or partially converted to trails for bicycles, pedestrians, and/or off-highway recreation vehicle (OHRV) use.

The Capitol Corridor Rail Alternatives Analysis considered alternatives for extending passenger rail service from Massachusetts to New Hampshire, including the portion of the Boston & Maine Line within the SNHPC region.

Figure 23 illustrates the route and station locations from the Capitol Corridor Alternatives Analysis. The Capital Corridor Rail Alternatives Analysis report's

preferred alternative for development is the Manchester Regional Commuter Rail service alternative. This alternative identifies four service station locations for the initial phase of service, which are shown in yellow on Figure 23. Station locations are in South Nashua, downtown Nashua, downtown Manchester, a Bedford station serving MHT near the interchange of the F.E. Everett Turnpike, and Downtown Manchester. Future steps in development of passenger rail service on the Capitol Corridor include finalizing required operating agreements, securing federal and local capital and operating funding, and pursuing public-private partnerships for station development.

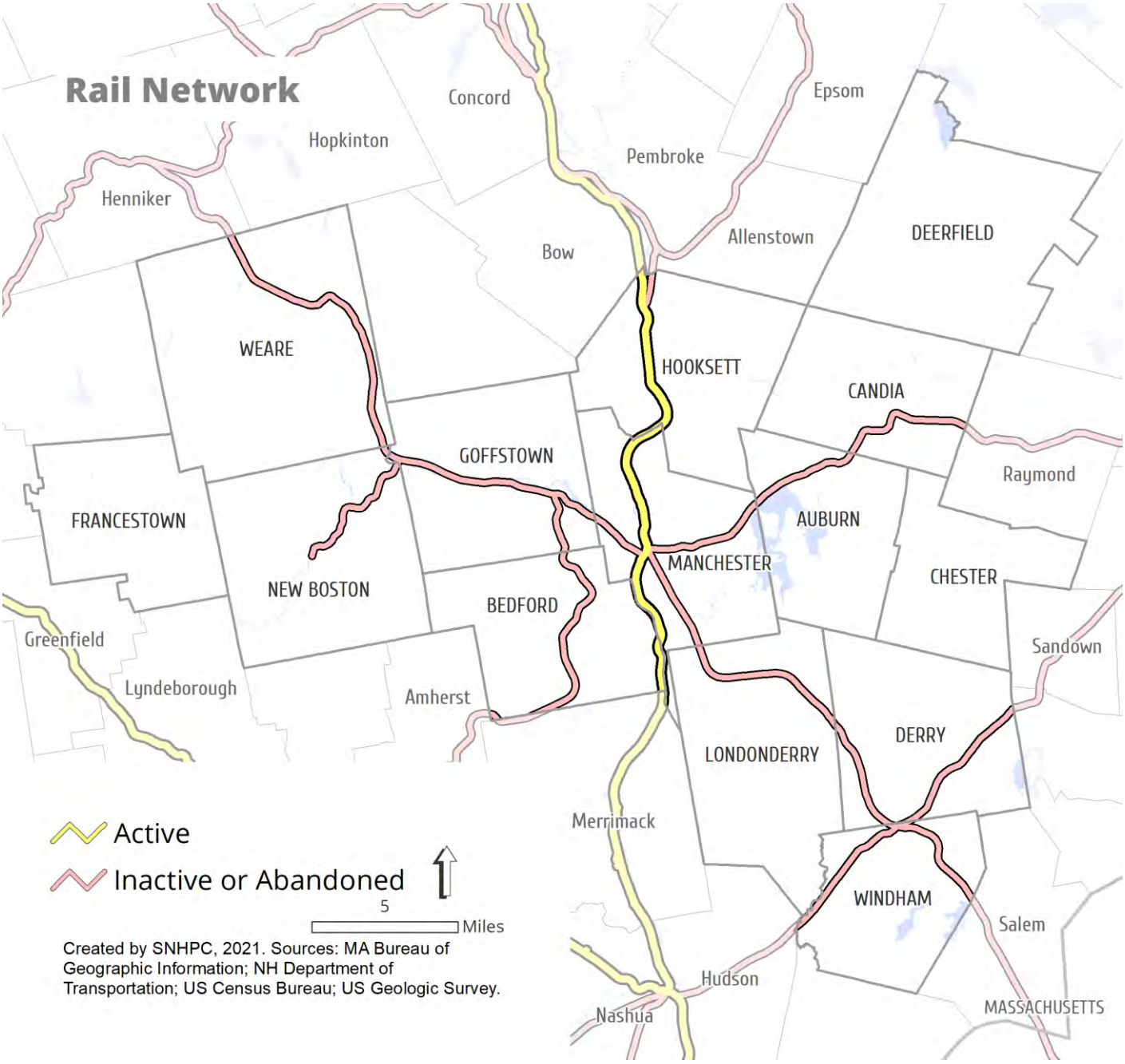


Figure 24: Active, Inactive or Abandoned Rail Network in the SNHPC Region

3.7 Land Use & Climate Change

Land Use and Transportation

Transportation planning impacts land value and influences its use. Land use impacts the origins and destinations that affect travel demand and the efficiency of travel modes. In the SNHPC region, much of the transportation and land use planning over the past 60 years has favored auto-dependent and suburban development. Transportation and land use planning decisions and policies such as increasing roadway capacity, high minimum acreage requirements for residential development, high minimum parking requirements, minimal public transit service, and minimal bike-ped. facilities have directly and indirectly created sprawling communities and encouraged automobile-oriented development in the SNHPC region.

From 1960 to 1990, the SNHPC region experienced relatively high growth in population. As a result, many municipalities enacted policies to limit growth and development through minimum-size requirements for lots, septic-specific lot size requirements, impact-fees, and growth management zoning to guide and slow growth, and to preserve the character of the community. With increased residential development, traffic congestion has steadily increased and has encouraged large transportation investments to serve the region's sprawled development patterns, such as the I-93 widening, and the reconstruction of the exit 5 ramps and signals on I-293.

Climate Change and the Transportation Network

The changing climate brings increased frequency and intensity of extreme precipitation events, which has a direct impact to the transportation network not only in the SNHPC region, but statewide as reported by NHDOT. Over the past 25 years, New England has averaged approximately four major disasters per year (presidential and state declarations combined) and nine out of ten of these disasters were caused by flooding. Southern New Hampshire has already experienced a significant increase in precipitation over the past century and that trend is projected to continue. Climate projections indicate a wetter future, but one where precipitation comes almost twice as often in the form of extreme precipitation brought on by higher temperatures and accelerated evaporation on hot days. As extreme precipitation events increase, the region's roads and bridges will have an increased exposure to elevated run off from lakes, rivers, and streams. These events cause serious flooding which can result in erosion and inundated infrastructure, often reducing their useful life.

The SNHPC conducted a region-wide analysis through the 2020 Regional Vulnerability Assessment to document empirical data and identify risks associated with culverts and bridges in order to aid in the prioritization of adaptation and mitigation projects targeted to vulnerable infrastructure. At the request of the region's municipalities, SNHPC developed an online map of prioritized stream crossings including a filter function to limit data by municipality, crossing ownership (state, local, private, or unknown), and stream crossing size (upstream horizontal open width measured in feet). The online map includes a video tutorial to illustrate these mapping functions. SNHPC also conducted field assessments to fill in gaps in data for high priority stream crossings. SNHPC will continue field assessments in support of the New Hampshire Geological Survey (NHGS) during the summer of 2020 and in future years to improve the completeness of the region's stream crossing inventory in the Statewide Asset Data Exchange System (SADES).

4.0 Travel Demand Forecasts

4.1 The Regional Travel Demand Model

The SNHPC maintains a software-based travel demand model to simulate traffic on the region's network of roadways. The SNHPC uses this model to better understand the deficiencies of the roadway network in the current period to compare it to a projected future condition. This process aids in determining how and where transportation improvements are needed, which informs the development of the program of projects presented in the MTP. Travel demand models have specific analytical capabilities, such as the forecasting of travel demand and the consideration of destination choice, mode choice (whether by personal motor vehicle, bus transit, walking and biking), time-of-day travel choice, route choice, and the representation of traffic flow in the highway network.

These are mathematical models that forecast future travel demand based on current conditions, and projections of population, housing, school enrollment, and employment trends. Travel demand models were originally developed to determine the benefits and impacts of major highway improvements in metropolitan areas. However, these models were not designed to evaluate the impacts of intelligent transportation systems (ITS), the impacts of future connected and autonomous vehicles, or operations and maintenance projects. Thus, travel demand models have limited capabilities to accurately estimate changes in travel characteristics (such as speed, delay, and queuing) resulting from implementation of ITS, technological innovations, or operation and maintenance projects. These limitations occur because of the limited representation of the dynamic nature of traffic within travel demand models.

Travel Demand Modeling Software

SNHPC regularly maintains and updates the regional transportation model which utilizes the Cube/Voyager software package and the Commission's socio-economic database compiled at the "Traffic Analysis Zone" (TAZ) level. A traffic analysis zone (TAZ) is a special area delineated by for tabulating traffic-related data, especially journey-to-work and place-of-work statistics. A TAZ usually consists of one or more census blocks, block groups, or census tracts. In total, the SNHPC's travel demand model includes 359 TAZs that comprise the entire SNHPC region plus four adjacent northern communities that are in the Manchester urbanized area.

The traffic forecasting procedure generally follows the standard four-step process described below:

- **Trip Generation**: Determines the quantity of trips generated at each traffic zone.
- **Trip Distribution**: Determines the origin/destination pattern of trips generated for TAZs.
- **Modal Split**: Determines the mode the trips are going to use to travel to their destination.
- **Traffic Assignment**: Determines the route the trips are going to take to their destination.

Detailed information on the technical aspects of the SNHPC travel demand model including traffic count locations, traffic assignments, trip attraction, and model validation are all defined within Appendix A: Travel Demand Model Data: Inputs and Outputs of this document.

4.2 Traffic Analysis Zones (TAZ)

Table 3: Number of TAZ by Town

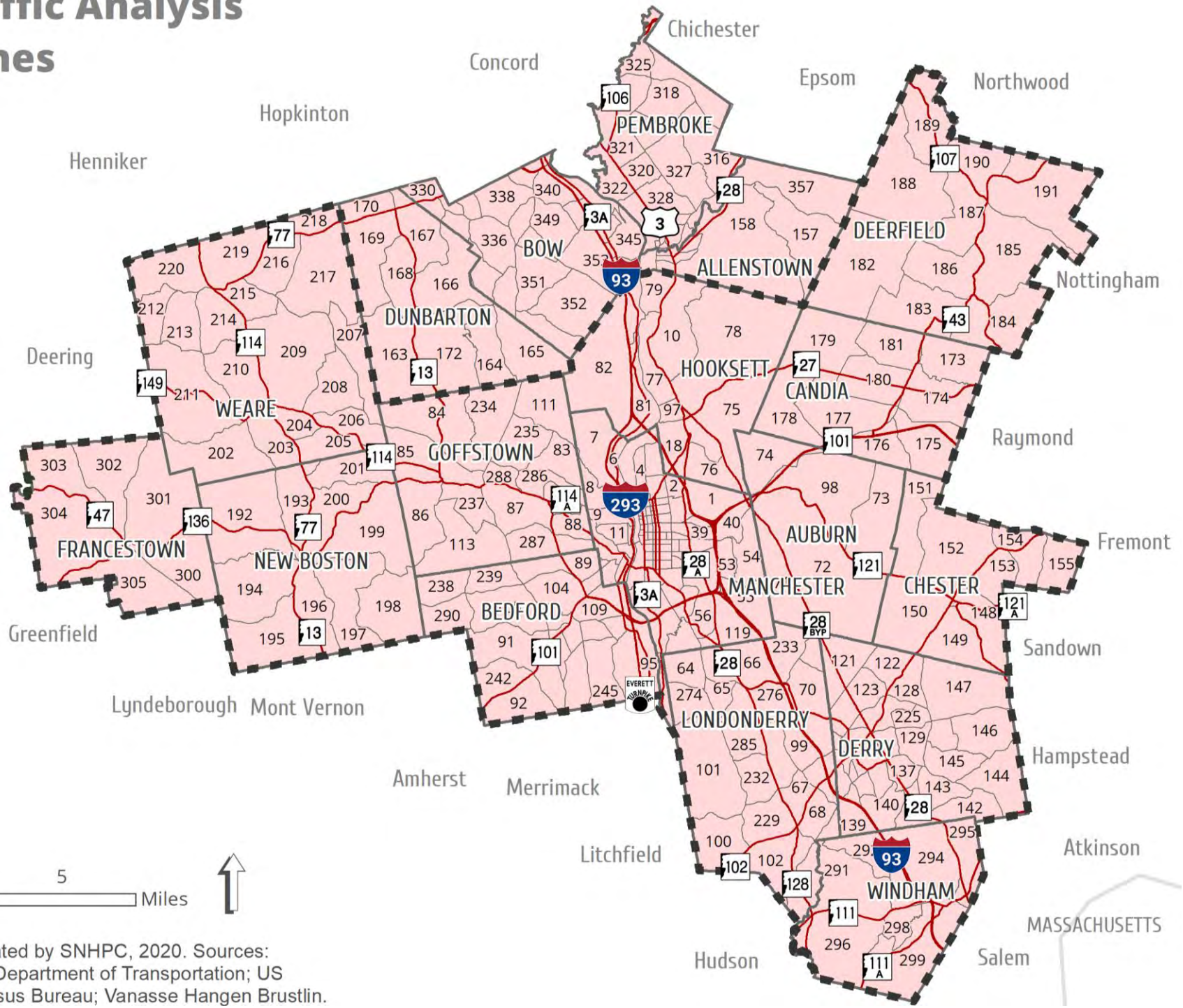
Municipality	# TAZ
Allenstown	10
Auburn	5
Bedford	25
Bow	27
Candia	9
Chester	8
Deerfield	10
Derry	35
Dunbarton	10
Francestown	6
Goffstown	17
Hooksett	12
Londonderry	29
Manchester	94
New Boston	10
Pembroke	24
Weare	19
Windham	9
Model-Wide Total	**359**

The model includes all 14 communities within the SNHPC Region, plus four municipalities just north of the SNHPC region: Allenstown, Bow, Dunbarton, and Pembroke.

These towns were added as a result of the 2010 Census, which resulted in portions of the Manchester Urbanized Area (UZA) extending north into the towns of Allenstown, Bow, and Pembroke. The SNHPC is required to include the entire Manchester UZA in the metropolitan planning process, and these three communities are entitled to seats on the SNHPC MPO Policy Committee. The Town of Dunbarton does not contain a portion of the Manchester UZA, but is included to maintain the model's continuity of important transportation corridors that traverse the community.

The model's combined 18 municipalities are broken down into 359 smaller TAZs. Generally, larger more dense areas have more TAZs because there are more roadways and corresponding origins and destinations. Figure 25 and Figure 26 on the following pages demonstrate the layout of the TAZ system. Table 3 shows the total number of zones specific to each municipality within the traffic model.

Traffic Analysis Zones



Created by SNHPC, 2020. Sources:
NH Department of Transportation; US
Census Bureau; Vanasse Hangen Brustlin.

Figure 25: Traffic Analysis Zones Systems Model-Wide

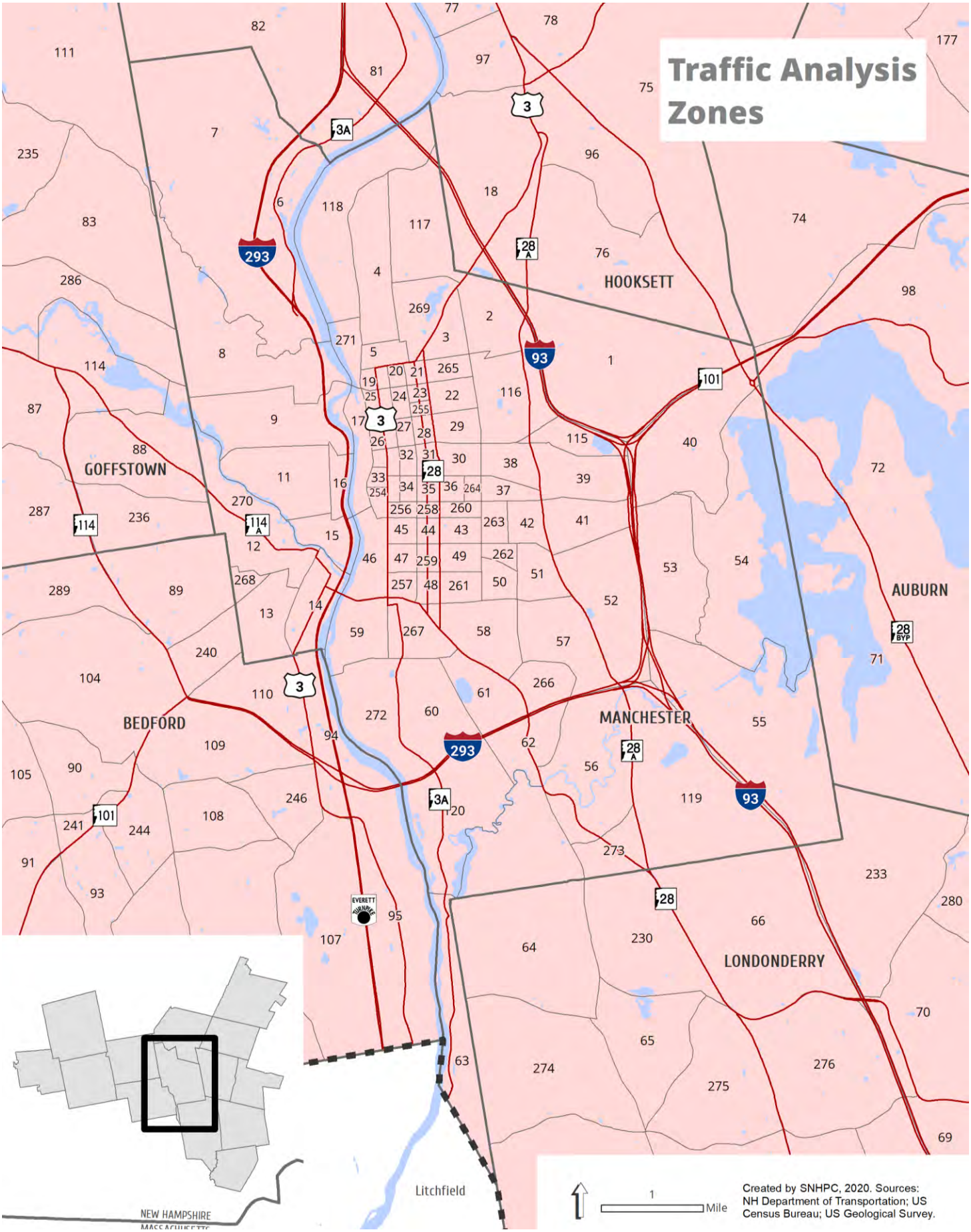


Figure 26: Traffic Analysis Zones Systems, Manchester

4.3 Forecasting Model Inputs and Validation

There are several variables that contribute to the model to forecast travel demand, including a series of socioeconomic variables. At a high level, these variables include population, number of households, school enrollment and employment. A complete table of socioeconomic variables input into the traffic model are available in Appendix A: Travel Demand Model Data: Inputs and Outputs. Each of these variables is determined at the TAZ level. Population, household, and school enrollment data was obtained from a variety of sources including the U.S. Census, NH Office of Strategic Initiatives, and the SNHPC's municipalities to be compiled at the TAZ level. Employment data obtained from the New Hampshire Employment Security (NHES) Department includes a North American Industry Classification System (NAICS) code and address for each business in the SNHPC region. NAICS codes were used to separate employment into categories including agriculture, government, industrial, retail and service. The data was then compiled at the TAZ level.

The roadway network of the SNHPC travel demand model is generally representative of the region's interstate, freeway, turnpike, and principal arterial roadways. Smaller, more localized roadways were generally not included in the model's representation of the street network. Within the model, a road segment is referred to as a "link" and the intersection of two or more streets is called a "node." The SNHPC travel demand model representation of the roadway network contains thousands of links and nodes, and is reflected in a "true shape" format mirroring the real-life roadway network for display purposes.

Trip Generation Process

The trip generation process establishes the relationships between the trip "productions" (such as housing and population) and "attractions" (such as employment and shopping activities) related to land use and the socioeconomic characteristics of the region. The purpose of trip generation is to estimate trip-ends produced by and attracted to each TAZ. Trip generation and trip distribution data within the model is classified into six trip purposes: Home to Work; Home to Shopping; Home to Social; Home to School; Home to Other; and Non-Home Based. The model utilizes trip generation rates developed from a regional household travel survey previously conducted by University of New Hampshire Survey Center. A complete cross classification of trip generation and a table of attraction rate inputs for the model are available in Appendix A: Travel Demand Model Data: Inputs and Outputs. Data from the household travel survey was used to determine the portion of total trips traveling outside the region, which is utilized as an input to the model. Trip generation and attraction rate data was used to develop 2015 estimates of vehicular trip productions and attractions for each TAZ. These trip generation computations represent an estimate of the number of vehicle trips generated by the 18 municipalities within the travel model.

Gravity Model Technique

The "Gravity Model" technique is used to determine the distribution of internal auto trip ends. The "Gravity Model" assumes that the number of trips between a traffic zone and all other zones is directly proportional to the relative attractiveness of the zone, as measured by the number of attractions, and inversely proportional to the travel time between them. As a result, three types of trips are distributed: Internal zone to internal zone trips; Internal to external zone trips; and External zone to internal zone trips. These distributed trip values are then combined with truck trips and external to external trips (trips without an origin or destination in the region).

TRAVEL MODE SPLIT

Mode Split is the percentage of travelers using a particular type of transportation or number of trips using said type. It is important to note that the SNHPC travel demand model does not include a conventional "Mode Split" phase because transit ridership is estimated to account for less than one percent of total trips in the region, a level which is insufficient to justify incorporating mode split capability into the model. The SNHPC would revisit this if a significant catalyst enhanced multi-modal travel in the region.

TRAFFIC ASSIGNMENT EQUILIBRIUM

The traffic assignment procedure in the model involves an equilibrium technique method which assumes travelers use the shortest time path and have "perfect" information about the available routes. Trips for each origin-destination pair are assigned to the minimum path and trips are totaled for each link. The assigned trip volume is then compared to the link capacity to determine congestion. If a link is congested, the travel time is adjusted to result in a longer travel time. Changes in travel time means that the shortest path may change. This process is repeated (iterated) until equilibrium between travel demand and travel supply is achieved. As a result of congestion, trips on congested links shift to uncongested links until the equilibrium condition occurs.

TRAVEL MODEL VALIDATION

Because the travel demand model relies on inputs that mimic real world conditions, and those inputs contain assumptions, there is a need to check inputs and assumptions against real world conditions to validate their accuracy. While not an input into the model itself, the model validation exercise does provide a mathematical check of assumptions to ensure they reasonably represent base year travel activity in the region. Validation involves modifying the model parameters until actual base year traffic is replicated. During the validation of the SNHPC travel demand model, the computer-generated assignment of base year traffic volumes is compared with the actual ground counts at numerous locations in the region.

The base year (2015) total ground count of daily traffic volumes for all 126 traffic count locations was 2,046,930 vehicles. The base year travel demand model results yielded a simulated 2,067,574 trips, producing a 1% difference, which is withing acceptable standards. Table 4 validates the results of the base year comparison between AADT counts and model output to demonstrate the inputs and assumptions meet the standards of accuracy required of the model.

Table 4: Model Validation Results Summary, 2015 Base Year

	2015 Ground Count	2015 Model Results	Difference
Daily Volume Total, All External Stations	609,870	614,786	0.8%
Daily Volume Total, All 126 Spot Locations	2,046,930	2,067,574	1.0%

The ground counts and model results of the base year (2015) traffic assignment at all 126 selected network locations are available in Appendix A: Travel Demand Model Data: Inputs and Outputs.

4.4 Base Year (2015) Travel Demand Forecast No Build Scenario

The term "highway capacity" refers to the maximum number of vehicles that can be expected to traverse a section of roadway under certain prevailing traffic, roadway and control conditions. This term, usually expressed in vehicles per hour, refers to a rate of flow and not a total daily volume. Based upon the link capacities that are input into the model, roadway sections that are or will become capacity deficient were identified for the 2015 Base Year model.

2015 Base Year Deficiencies

The results of the 2015 Base Year travel demand model indicate that sections of the highway network are currently operating near or over capacity during peak hour periods include:

- I-93 from I-293 in Manchester to the Salem town line in Derry;
- I-93 and I-89 Interchange, including Logging Hill Road Exit in Bow;
- NH101 west of the F.E. Everett Turnpike extending along Meetinghouse Road in Bedford;
- U.S. 3 between College Park Drive in Hooksett and Granite Street in Allenstown;
- I-293/F.E. Everett Turnpike Exits 4, 5, and 6 in Manchester;
- I-293 / NH 101 Exits 1 and 2, as well as NH 101 Exit to U.S. 3 via Kilton Road in Bedford;
- I-93 / NH 101 Exit 6 and I-93 Exits 8 and 10 in Manchester / Hooksett;
- The intersections of U.S. 3 / Elm Street at Bridge St., Granite St., Valley St. in Manchester;
- Westbound onramp for NH 101 at Exit 3 in Candia;
- The intersection of U.S. 3 and Alice Avenue in Hooksett;
- NH Route 3A and Main St. between Hackett Hill Rd. and College Park Dr. in Hooksett;
- Commerce Avenue and Industrial Drive in Londonderry;
- Commercial Street between Phillip Cote Street and Stark Street in Manchester;
- Tarrytown Road between Spruce Street and Elliot Way in Manchester;
- The intersections of NH 28 and NH 128 and NH 28 and NH 28A in Londonderry;
- The intersection of NH 102 and NH 28B in Derry;
- NH 102 between Londonderry Road and High Street in Derry;
- The intersection of NH 111 and Range Road in Windham;
- NH 27 between U.S. 3 and NH 28B in Hooksett;
- NH 101 near capacity between Bedford Center Road and NH 114 in Bedford;
- NH 114 near capacity between NH101 and New Boston Road in Bedford;
- Main Street near capacity between Granite Street and Sullivan Street in Manchester;
- Airport Access Road near capacity at roundabout entry to Manchester Airport;
- Bridge Street near capacity at the access point to Trinity High School in Manchester;
- Brown Avenue near capacity between Hancock Street and Queen City Ave. in Manchester;
- Page Road between Birchdale Road and White Rock Hill Road in Bow.

Figures 27 and 28 on the following pages illustrate the location of the listed deficient road segments and intersections within the model area. Figure 27 illustrates the entire model area while Figure 28 illustrates the same content for the City of Manchester.

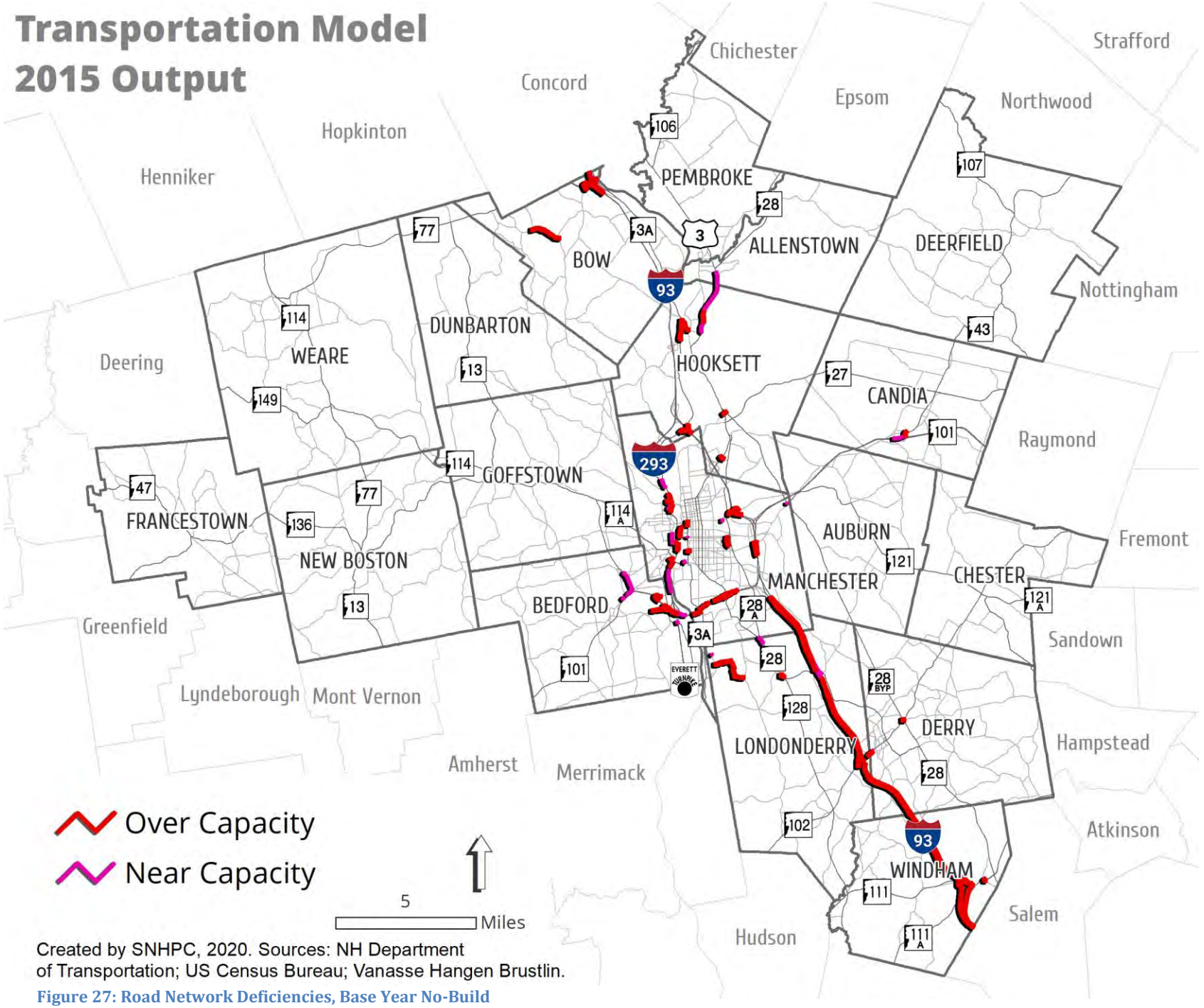


Figure 27: Road Network Deficiencies, Base Year No-Build

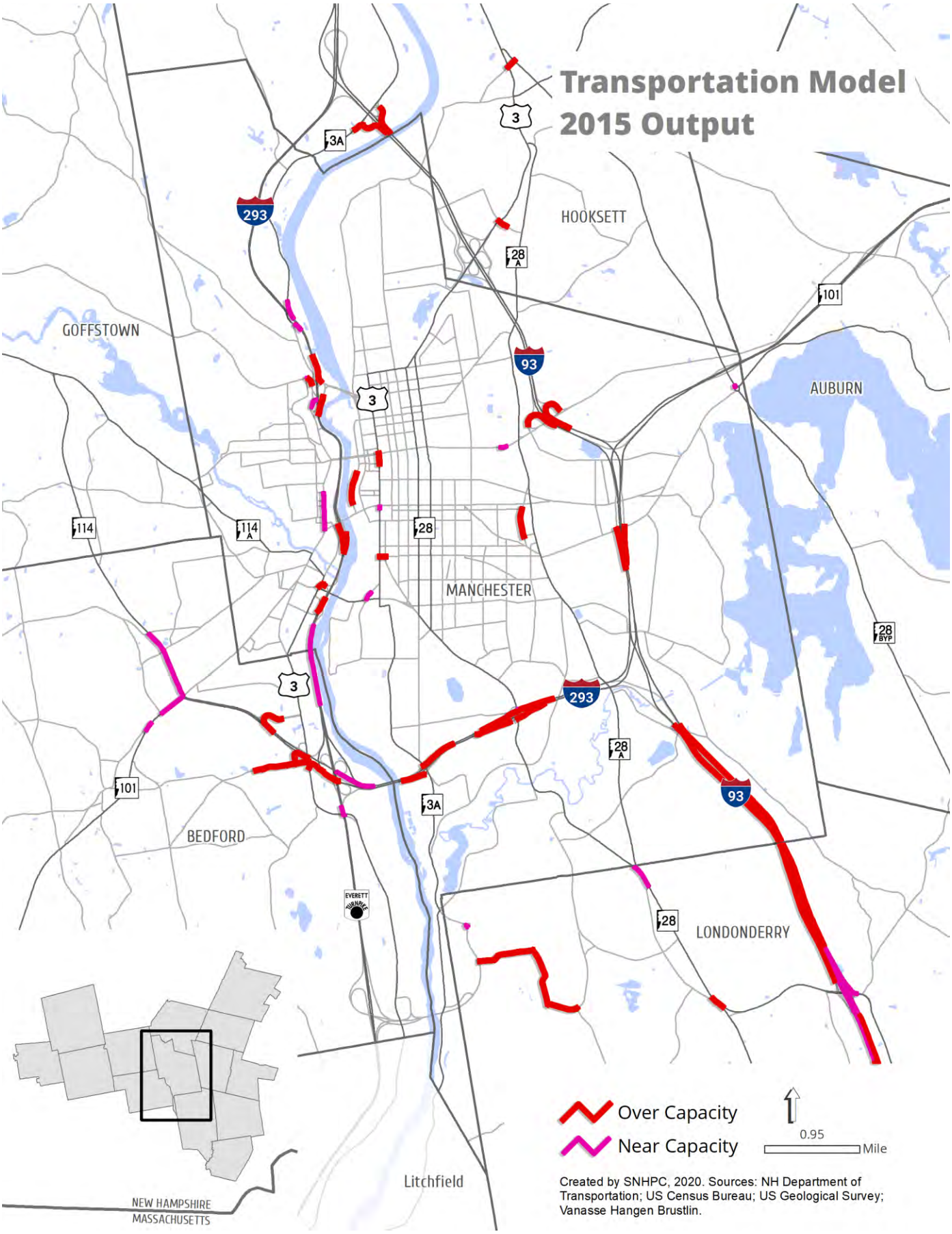


Figure 28: Road Network Deficiencies in Manchester, Base Year No-Build

4.5 Horizon Year (2045) Travel Demand Forecast No Build Scenario

Where Figures 27 and 28 depict the roadway deficiencies for the Base Year of 2015, Figures 29 and 30 depict the roadways deficiencies for the Horizon Year of 2045 under a "No-Build" scenario. Figures 29 and 30 depict the impacts of incremental growth in population, housing, and employment on traffic assignments under this "No-Build" scenario.

The projected growth in population, housing, and employment out to the 2045 horizon year is quantified in Table 5 below. The projected growth in population in the SNHPC region by the horizon year is expected to be 9% greater than the base year. Housing stock is projected to increase by 15% while employment is expected to increase by 23% over the same timeframe. The growth of population, housing, and employment all affect the number of trips within the region and will increase the total daily vehicle-miles traveled over this period. Under these conditions, without improvements to expand the capacity of the roadway network, travelers will experience increasing amounts of peak hour traffic congestion resulting in increased travel times, increased fuel consumption and increased vehicle emissions. Additionally, businesses operating commercial vehicles under these conditions will experience reduced productivity through increases in travel times and fuel costs. Table 5 summarizes the base year to horizon year change in socio-economic data for each SNHPC member community as well as Allenstown, Bow, Dunbarton, and Pembroke which are included in the model.

Table 5: Socio-Demographic Data

	Population Change		***Housing Change***		***Employment Change***	
	2045	**Change '15-'45**	**2045**	**Change '15-'45**	**2045**	**Change '15-'45**
Allenstown	4,360	1%	1,850	4%	880	18%
Auburn	6,060	14%	2,570	34%	2,180	22%
Bedford	25,780	16%	8,970	18%	19,570	24%
Bow	8,850	15%	3,130	12%	4,630	18%
Candia	4,040	3%	1,530	5%	970	21%
Chester	5,760	18%	2,200	36%	440	21%
Deerfield	5,060	15%	2,050	30%	670	22%
Derry	33,300	1%	13,090	3%	10,080	23%
Dunbarton	3,430	23%	1,190	14%	290	20%
Francestown	1,660	6%	660	7%	190	19%
Goffstown	19,070	7%	6,640	7%	5,530	23%
Hooksett	18,120	25%	6,590	26%	14,910	22%
Londonderry	27,100	9%	11,300	31%	21,010	19%
Manchester	114,340	5%	51,260	10%	75,280	24%
New Boston	6,460	18%	2,650	34%	920	23%
Pembroke	7,850	11%	2,810	3%	2,420	18%
Weare	9,710	10%	3,440	7%	2,240	24%
Windham	17,280	21%	6,520	30%	4,320	23%
Just SNHPC	**293,740**	**9%**	**119,470**	**15%**	**158,310**	**23%**
Model-Wide	318,230	9%	128,450	14%	166,540	23%

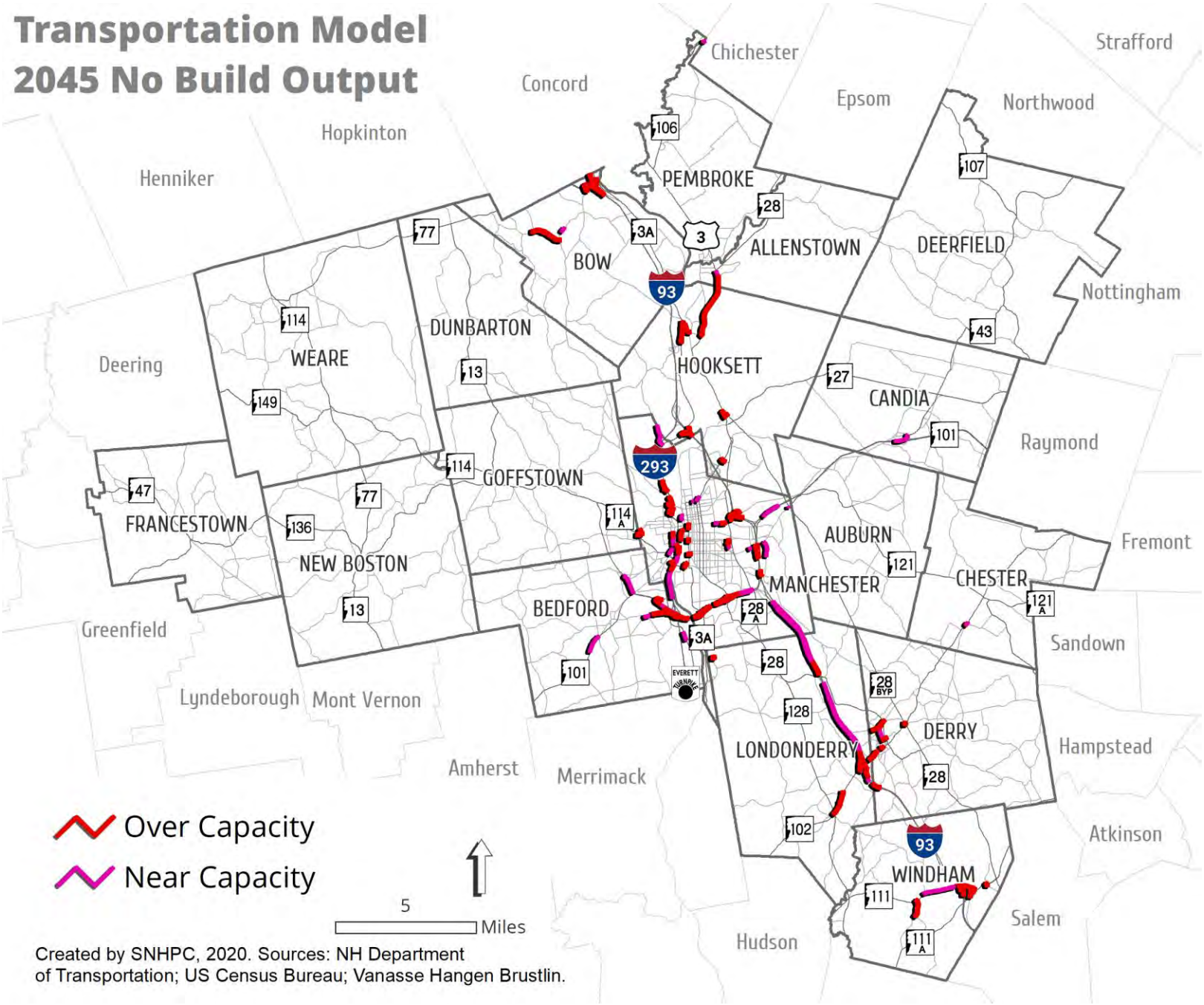


Figure 29: Road Network Deficiencies, Horizon Year No-Build

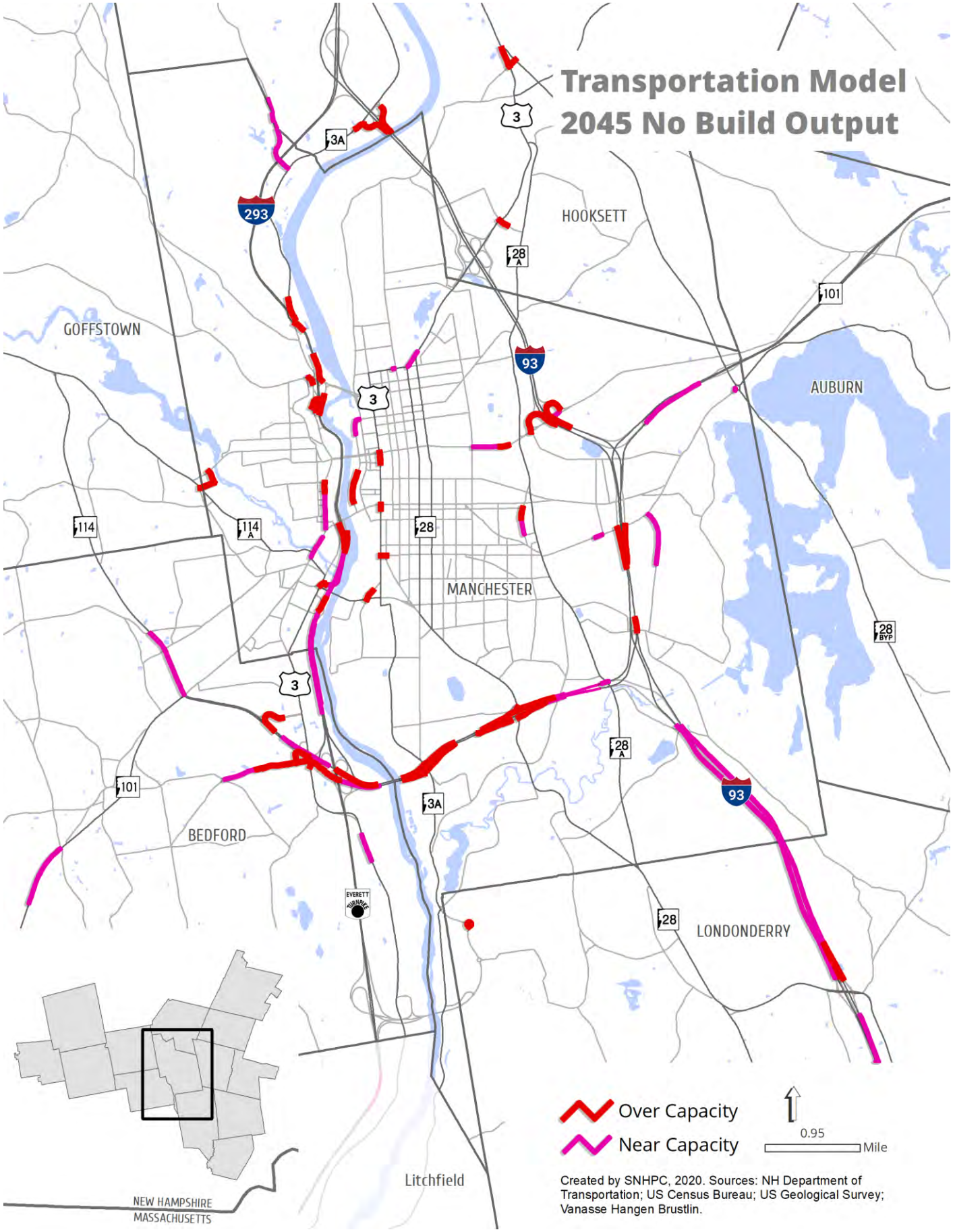


Figure 30: Road Network Deficiencies in Manchester, Horizon Year No-Build

2045 Horizon Year Deficiencies for No Build Scenario

The results of the future "No-Build" travel demand assignment indicate that by 2045, the sections of highway operating over or near capacity during peak hour periods would largely remain the same, but with some additions. The results of the 2045 Base Year travel demand assignment indicate that the following sections of the highway network are projected to operate near or over capacity during peak hour periods:

- I-93 from Manchester to Derry would transition from over capacity to near capacity;
- I-93 and I-89 Interchange, including Logging Hill Road Exit in Bow;
- NH101 west of the F.E. Everett Turnpike extending along Meetinghouse Road in Bedford;
- U.S. 3 between College Park Drive in Hooksett and Granite Street in Allenstown;
- I-293 Exits 4, 5, 6, and 7, plus segments of I-293 between those exits in Manchester;
- I-293 / NH 101 Exits 1 and 2, as well as NH 101 Exit to U.S. 3 via Kilton Road in Bedford;
- I-93 / NH 101 Exit 6 and I-93 Exits 8 and 10 in Manchester / Hooksett;
- The intersections of U.S. 3 / Elm Street at Bridge St., Granite St., Valley St. in Manchester;
- Westbound onramp for NH 101 at Exit 3 in Candia;
- The intersection of U.S. 3 and Alice Avenue in Hooksett;
- NH Route 3A and Main St. between Hackett Hill Rd. and College Park Dr. in Hooksett;
- Segments of Commercial Street between Granite Street and Canal Street in Manchester;
- The intersection of Hooksett Road and Webster Street in Manchester;
- Tarrytown Road between Spruce Street and Elliot Way in Manchester;
- Segments of the NH 102 corridor between NH 128 and NH 28B in Londonderry / Derry;
- Segments of the NH 111 corridor between Lowell Road and NH 111A in Windham;
- Lowell Road between NH 111 and Cobbett's Pond Road in Windham;
- The intersection of NH 111 and Range Road in Windham;
- The intersection of U.S. 3 and NH 28B in Hooksett;
- NH 101 near capacity between Wallace Road and Covenant Way in Bedford;
- NH 114 near capacity between NH101 and New Boston Road in Bedford;
- Main Street near capacity between NH 114A and Sullivan Street in Manchester;
- Airport Access Road at roundabout entry to Manchester Airport;
- Theophile and Agnes Street in Manchester;
- Bridge Street over or near capacity from Hall Street to Trinity High School in Manchester;
- Brown Avenue near capacity between Hancock Street and Queen City Ave. in Manchester;
- And Page Road between Birchdale Road and White Rock Hill Road in Bow.

Impact of Alternative Transportation Modes

Transportation projects involving transit, bicycle and pedestrian modes play a role in addressing the growth of traffic in the region. Demand for transportation alternatives will increase over time due to the growth of transportation-dependent groups, increased cost of vehicle ownership, and increased focus on walkable mixed-use developments. Development of projects involving bikeway and pedestrian multi-use paths, and trails are expected to continue, and the provisions of FAST Act will continue to stress the importance of these modes. Despite the anticipated growth of bicycle, pedestrian, and transit trips, they only make up a tiny fraction of total trips in the region. As a result, investments in bicycle, pedestrian, and transit trips will have limited impact on any of the travel demand model scenarios.

4.6 Horizon Year (2045) Travel Demand Forecast Build Scenario

Figures 31 and 32 on the following pages depict the roadway deficiencies for the horizon year of 2045 assuming that the capacity improvements identified in the program of transportation improvement projects detailed in Chapter 7 of this MTP have been built build to mitigate known existing deficiencies.

2045 Horizon Year Deficiencies for Build Scenario

The results of the base year assignment compared with the "Build Scenario" for 2045 indicate that sections of highway currently estimated to be operating at or over capacity include segments such as portions of NH Route 101 in Bedford, I-93 and I-293 in Londonderry and Manchester, and U.S. Route 3 in Hooksett and NH Route 28 in Manchester.

The estimated impacts of the various transportation projects included in the 2045 Build Scenario regional travel demand model assignment, are presented in Figures 30 and 31. Through a comparison of Figures 28 and 30 the Build and No-Build scenarios, the impact of the implementation of the MTP projects on regional travel can be estimated.

These maps indicate estimates of regional travel conditions and illustrate differences of the scenarios by including capacity-related MTP projects in the 2045 Build scenario. Although these projects are conceptual in nature, the results are intended to illustrate the impacts the projects have on would have on known, existing deficiencies.

2045 Horizon Year Deficiencies for Build Scenario

Considering the inclusion of the significant improvements currently scheduled for the Build Scenario out to the 2045 Horizon Year, the travel demand model indicates the following deficiencies. These deficiencies are segments or interchanges, nearing capacity or exceeding capacity in the Build Scenario for 2045.

- 93 – Exit 3 ramps and interchange approaches in Windham
- I-93 – Exit 7 ramps and interchange vicinity in Manchester
- I-93 – Exit 5 ramps and interchange and northbound mainline in Londonderry
- I-93 – Exit 8 ramps and interchange vicinity in Manchester
- I-93 – Exit 9 ramps and interchange in Hooksett
- I-93 – Exit 10 ramps and interchange in Hooksett
- I-93 and I-293 northbound merge in Manchester
- I-293 - Exit 6 ramps interchange area and approaches in Manchester
- I-293/NH Route 101 from the Merrimack River to Huse Rd. in Manchester
- NH Route 101 – Wallace Rd. to Kahlico Ln. in Bedford
- NH Route 101 – Exit 3 ramps and interchange area in Candia
- NH Route 102 – Hickory Drive to Cole Rd. in Chester
- NH Route 114 – Donald St./New Boston Rd. to intersection with NH Route 101 in Bedford
- U.S. Route 3 – From the Allenstown town line to Main St. in Hooksett
- NH Route 28 – Intersection with Webster Rd. in Manchester
- NH Route 28 – The intersection with Route 102 in Derry

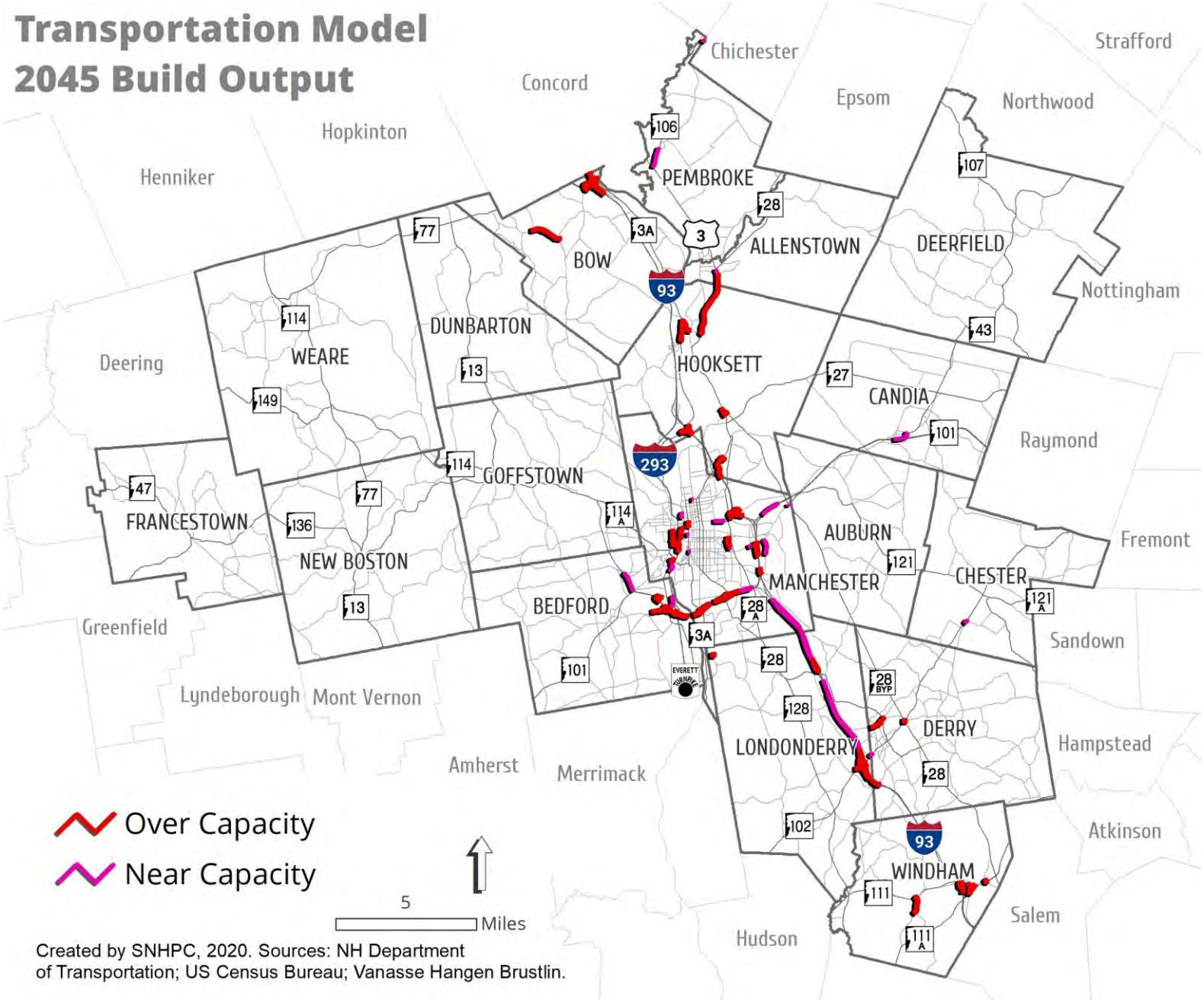


Figure 31: Road Network Deficiencies, Horizon Year Build

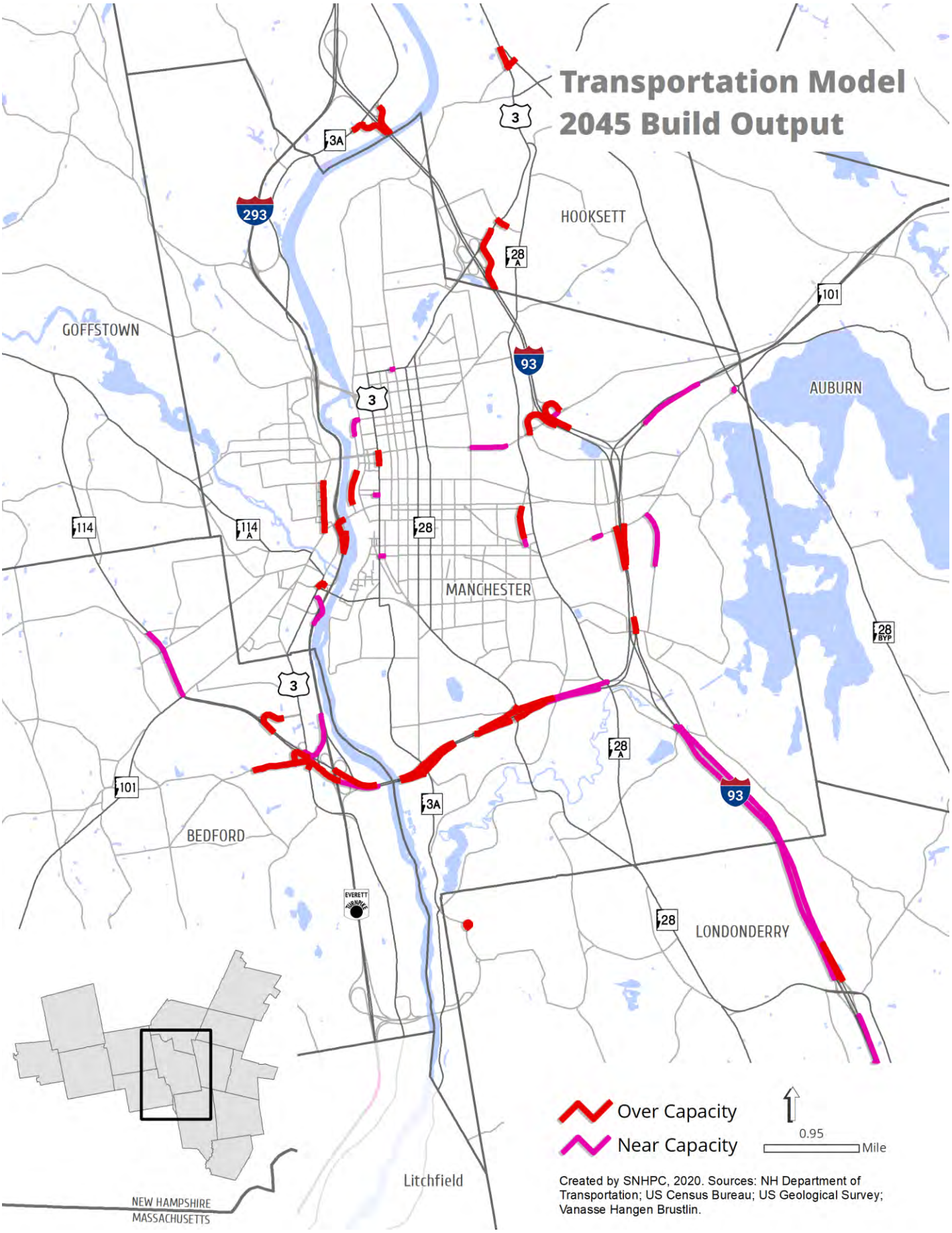


Figure 32: Road Network Deficiencies in Manchester, Horizon Year Build

4.7 Congestion Management Strategies

Figure 33 illustrates the region's road network analyzed in SNHPC's Congestion Management Process (CMP). The network includes corridors within the National Highway System (shown in blue) and corridors not in the National Highway System (shown in yellow).

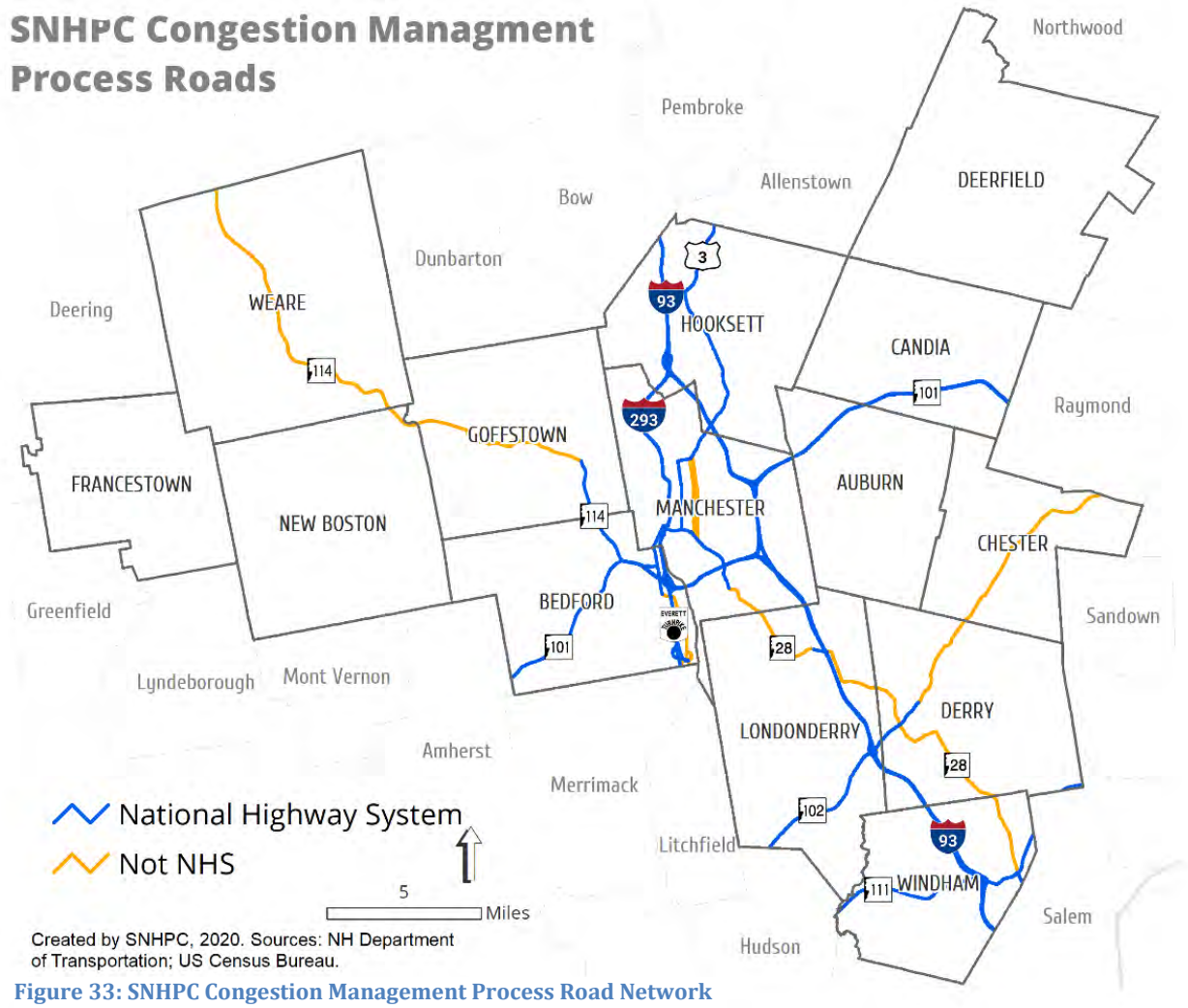


Figure 33: SNHPC Congestion Management Process Road Network

Region-Wide Strategies

As an ongoing effort, SNHPC anticipates applying some *Transportation Demand Management* (TDM) congestion strategies regionally. Strategies may include promoting and enabling alternating work schedules to relieve peak commuter traffic volumes, working remotely which was formerly referred to as "telecommuting" and has been successful tested during the COVID-19 Pandemic, and supporting and promoting ridesharing and van/carpooling. The development of a Transportation Management Association (TMA) is currently ongoing and would champion and manage coordinated TDM services for businesses and other employers in the Manchester Millyard district for example.

In addition, SNHPC has been working on multiple levels with local, regional and state partners for many years to develop bicycle and pedestrian infrastructure for *active transportation*. These strategies are coordinated with local municipalities and resources through NHDOT. Strategies include sidewalk and trail development, on-road bicycle lanes and multi-use paths, non-motorized

vehicle bridges, ancillary improvements such as lighting, wayfinding and other signage, traffic control devices for pedestrian and bicycle interactions with motor vehicles, traffic calming improvements and many other examples. These and other initiatives will continue to be designed and revamped as additional innovations become available and cost-effective.

Although land use regulation is within the purview of local municipal zoning and other local tools, SNHPC has a long history of assisting member communities and will continue to work with them on coordinated *Land Use Strategies*. These may include but are certainly not limited to the current Transit Oriented Development planning between downtown, the Millyard and the Elliot medical center area, mixed-use development, and infill and redevelopment opportunities as they arise.

CORRIDOR SPECIFIC STRATEGIES

The recently completed Congestion Management Process (2020 CMP) report identified a congestion management network of roadways covering the entire SNHPC region. This network of federal routes or federal-aid roadways is significant to the movement of people and goods and access to services. Specifically, nine corridors have been identified throughout the SNHPC metropolitan planning area for the CMP network. Specifically, nine corridors have been identified throughout the SNHPC metropolitan planning area for the CMP network. Many of the congested areas are identified through the travel demand model results.

The CMP analysis included identification of congestion management strategies for region-wide application as well as corridor specific application of individual strategies on the following corridors: I-93, I-293, F.E. Everett Turnpike, U.S. Route 3, NH 28, NH 101, NH 102, NH 111, and NH 114. The strategies are applied in a time-of-day (morning or evening commute), directional, and by segments or intersections. Listed below is a complete list of the strategies that were selected and applied to route segments and intersections. For specific strategy applications by routes and segments see the complete CMP Report.

Roadway Management Strategies:

1. Traffic Signal Timing or Coordination Improvements
2. Traffic Signal Equipment Modernization
3. ITS- Traveler Information Devices
4. ITS- Communications Network and Roadway Monitoring

Transit and Travel Demand Management (TDM) Strategies:

5. Parking Management
6. Dedicated Transit Lanes
7. Transit Service Expansion
8. Transit Signal Priority
9. Electronic Toll or Fare Collections
10. Off-street Multi-use Path

Physical Infrastructure Improvement Strategies:

11. On-street Bicycle Treatments
12. Park & Ride Facility
13. Access Management
14. Intersection/Interchange Reconfiguration or Improvements
15. Roundabout Conversion
16. Auxiliary/Acceleration/Deceleration Lanes or Ramp Improvements
17. New Grade-separated Intersections/Interchanges
18. New Travel Lanes
19. New Roadways
20. Engineering and/or Operations Study

5.0 Plan Evaluation

5.1 Performance Measures

A Performance Measurement is a numerical value used to gauge success in meeting desired outcomes. For the SNHPC in their role as an MPO, this means a set of measures that are directly linked to progress toward the National Development Goals set forth by the Federal Government as well as the goals and vision of the State of New Hampshire as defined by the NHDOT. Performance Measurements ought to track over time, and communicate the effectiveness of policies, programs, and public investments. Figure 34 diagrams the relationship between a broad vision for the region and specific performance measures used to track progress.

Figure 34: Relationship of Performance Measures to Objectives, Goals, and Vision

National Development Goals

Pursuant to MAP-21 (and continued with the FAST Act), MPOs must employ a transportation performance management approach in carrying out their federally required planning and programming activities. Chapter 23 part 150(b) of the United States Code [23USC §150(b)] includes the following seven national development goals for the Federal-Aid Highway Program:

- Safety – Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- Infrastructure Condition – Maintain highway infrastructure asset system in a state of good repair.
- Congestion – Achieve a significant reduction in congestion on the National Highway System.
- System Reliability – Improve the efficiency of the surface transportation system.

- Freight Movement and Economic Vitality – Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- Environmental Sustainability – Enhance the performance of the transportation system while protecting and enhancing the natural environment.
- Reduced Project Delivery Delays – Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practice.

National development goals resulted in the establishment of performance measures across four subject areas that require state Departments of Transportation (DOTs) and providers of public transportation to:

- Establish performance targets that reflect the [federally designated] measures;
- Report on progress towards achieving those targets [established by NHDOT and NH MPOs];
- Develop performance-based plans for safety and asset management; and
- Implement a performance-based approach to planning and programming.

5.2 Setting Performance Measure Targets

In accordance with the provisions of 23 CFR 450.324 (f)(4), MPOs are required to develop a System Performance Report as part of the MTP. The System Performance Report is intended to "evaluate the condition and performance of the transportation system" with respect to federally mandated performance targets and must include a description of "progress achieved by the MPO in meeting the performance targets in comparison with system performance."

The SNHPC MPO coordinates with partner agencies including the NHDOT, regional public transportation providers, neighboring MPOs, and the region's municipalities on the establishment of transportation performance targets. Pursuant to the requirements of the FAST Act, the SNHPC MPO has adopted performance targets for Highway Safety; Infrastructure Condition; System Performance; Carbon Monoxide Emissions Reductions; and Transit Asset Management.

The following sections of this System Performance Report detail the SNHPC's performance target setting process, current targets, and recent progress toward achieving the SNHPC region's performance targets.

SNHPC Performance Target Setting Partnerships

Following the establishment of federal transportation performance management requirements, New Hampshire's four MPOs, including the SNHPC, formed an ad hoc working group to coordinate target setting practices, utilize common data sets and methodologies, and eliminate redundancy. That ad hoc working group is known as the Partnering for Performance New Hampshire (PFPNH) workgroup and has been expanded to include participation from the following agencies:

Table 7: Partnering for Performance Collaborating Agencies

Agency	Affiliation
Federal Highway Administration	Federal
Federal Transit Administration	Federal
Nashua Regional Planning Commission	MPO
New Hampshire Department of Transportation	State
New Hampshire Department of Environmental Services	State
Rockingham Planning Commission	MPO
Southern New Hampshire Planning Commission	MPO
Strafford Regional Planning Commission	MPO

The PFPNH workgroup has established a charter to collaborate on the following performance management duties and responsibilities:

- Integrating performance targets within MPO documents and processes.
- Reporting performance targets to State and Federal regulatory agencies.
- Establishing common methodologies to calculate and set performance targets.
- Developing and establishing MPO/NHDOT data collection standards for performance measures.
- Ensuring that the MPOs and NHDOT use the best available data for target setting calculations.

Upon analyzing data and calculating draft targets, SNHPC staff reviews proposed targets with the SNHPC Technical Advisory Committee (TAC), which is comprised of municipal transportation staff (e.g., Public Works Directors, Engineering Managers, etc.), transit agencies, and partner agencies (e.g., NHDOT, NHDES, FHWA). The SNHPC TAC then makes recommendations to the SNHPC MPO Policy Committee, which formally adopts the region's performance targets.

Integration of Performance Targets in the Transportation Improvement Program

Pursuant to the requirements of the FAST Act, MPOs, including the SNHPC, are required to show that their Transportation Improvement Program (TIP) "makes progress towards achieving [the region's] performance targets" and that the TIP includes, "to the maximum extent practicable, a description of the anticipated effect of the TIP towards achieving performance targets." These requirements are detailed in Section 2 of the SNHPC Transportation Improvement Program. The performance targets also inform the SNHPC criteria to select TIP projects as detailed in Table 8.

Table 8: SNHPC TIP Project Prioritization Criteria

Ten-Year Plan Criteria		Definition	SNHPC Weighting
Economic development	*Local and regional economic dev.*	The degree to which a project supports economic development needs and opportunities at the local and regional level.	**6.29%**
	Freight movement	The degree to which the project impacts the movement of goods.	**5.73%**
Equity, environmental justice, and accessibility	*Equity and environmental justice*	The degree to which a project benefits traditionally underserved population.	**4.26%**
	Accessibility	The degree to which a project ensures accessibility by all potential users.	**7.44%**
Mobility	*Mobility needs and performance*	A historical analysis of the mobility needs and performance (e.g., Level of congestion, delay, etc.) of a location for all modes.	**7.44%**
	Mobility intervention	A forward-looking analysis of how interventions proposed as part of a project would improve the mobility performance for all modes.	**6.63%**
Natural hazard resiliency	*Hazard risk*	An analysis of the natural hazard risks (i.e., flood history) to a transportation facility.	**5.41%**
	Hazard mitigation	A forward-looking analysis of how the natural hazard mitigation measures proposed as part of a project would reduce hazard risks.	**5.82%**
Network significance	*Traffic volume*	The extent to which transportation infrastructure is currently utilized by vehicles, bicycles, and pedestrians.	**8.79%**
	Facility importance	The importance of the facility to the local and the regional transportation system (e.g., availability of alternate routes, etc.).	**8.05%**
Safety	*Safety performance*	A historical analysis of the safety performance (i.e., crash history) of a location over the past five (5) year period for all modes.	**7.44%**
	Safety measures	A forward-looking analysis of how the countermeasures proposed as part of a project would improve safety performance for all modes.	**9.81%**
State of repair	*State of repair*	The degree to which the project improves infrastructure conditions in the project area (e.g., pavement conditions, bridge conditions, etc.).	**8.34%**
	Maintenance	The degree to which the project impacts NHDOT and/or municipal maintenance requirements.	**4.20%**
Support	*Support*	The degree of documented support for the project at the local, regional, or statewide level.	**4.33%**

5.3 Progress Towards Achieving Targets

The following sections of this MTP details SNHPC's recent progress toward achieving the region's performance targets for Highway Safety, Infrastructure Condition, System Performance, Carbon Monoxide Emissions Reductions, and Transit Asset Management.

Highway Safety Measures

On March 15, 2016, the FHWA published the final rule on the Highway Safety Improvement Program (HSIP). The rule requires all MPOs, including the SNHPC, to set annual regional safety performance targets for five safety performance measures as detailed in Table 9 below.

Table 9: National Safety Performance Measures

National Safety Performance Measures	
Number of Fatalities	The total number of persons suffering fatal injuries in a motor vehicle crash during a calendar year.
Rate of Fatalities	The ratio of total number of fatalities to the number of vehicle miles traveled (VMT, in 100 Million VMT) in a calendar year.
Number of Serious Injuries	The total number of persons suffering at least one serious injury in a motor vehicle crash during a calendar year.
Rate of Serious Injuries	The ratio of total number of serious injuries to the number of VMT (in 100 Million VMT) in a calendar year.
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	The combined total number of non-motorized fatalities and non-motorized serious injuries involving a motor vehicle during a calendar year.

Prior to MPOs establishing targets, states (including New Hampshire) are required to establish safety performance targets and report them for the upcoming calendar year. In New Hampshire, the process to develop the required safety targets involves coordination and consultation between the NHDOT, Department of Safety, and the four MPOs in the state. As a basis for target setting, the most current available fatality, serious injury, and vehicle miles traveled data are analyzed to establish five year moving average trends for total fatalities, fatality rates, total serious injuries, serious injury rates, as well as total non-motorized fatalities and serious injuries.

Table 10: SNHPC Regional Safety Performance Targets

SNHPC Regional Safety Performance Targets				
	SNHPC Regional Performance		**State of NH**	**SNHPC Region**
	2013-2017 5-Yr Moving Average	**2014-2018 5-Yr Moving Average**	**Adopted 2020 Targets**	
Number of Fatalities	18.0	19.2	118.8	Support State Target
Rate of Fatalities	0.678	0.715	0.885	Support State Target

Number of Serious Injuries	131.8	117	448.0	Support State Target
Rate of Serious Injuries	4.980	4.364	3.269	Support State Target
Number of Non-Motorized Fatalities and Non-motorized Serious Injuries	16.2	14.8	51.6	Support State Target

The following series of figures detail historical performance in the SNHPC for the five federally-mandated highway safety measures.

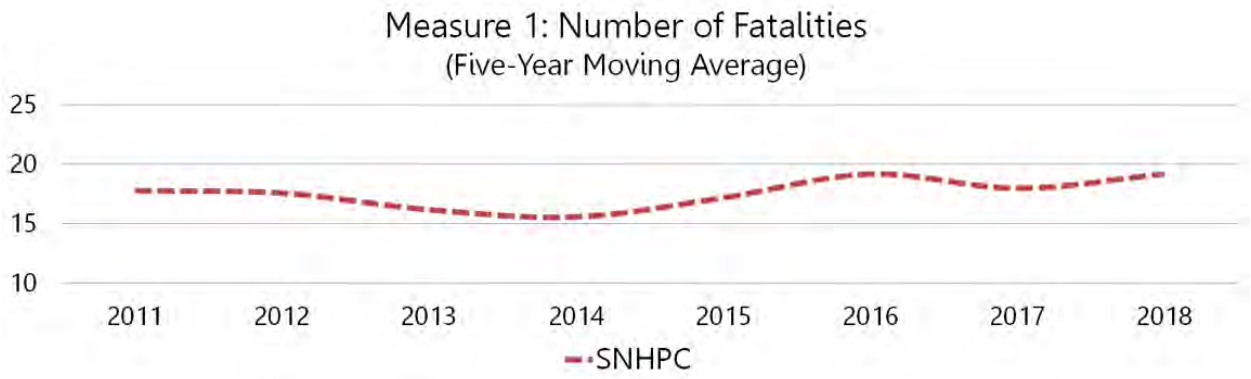


Figure 35: Safety Target, Number of Fatalities

The five-year moving average of fatalities within the SNHPC region has stayed relatively flat from 2011-2018. The number of fatalities is an annual total. The total is smoothed over a five-year timeframe to address annual anomalies. The fatality rate for the region is consistently averaging between 15-20 annual fatalities per a given five-year period.

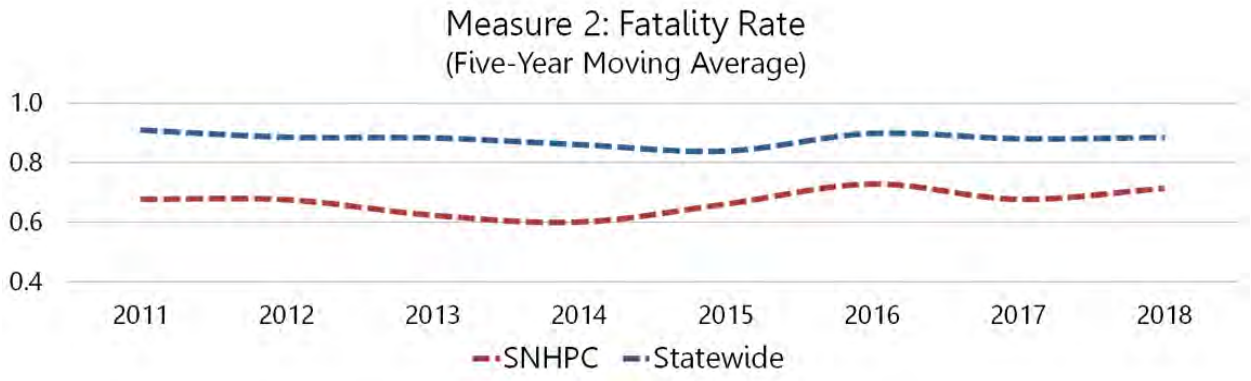


Figure 36: Safety Target, Fatality Rate

The five-year moving average of fatality rates is measured as the number of fatalities per 100 million Vehicle Miles Travels. Between 2011 and 2018, the moving average of fatalities in the SNHPC region has fluctuated little.

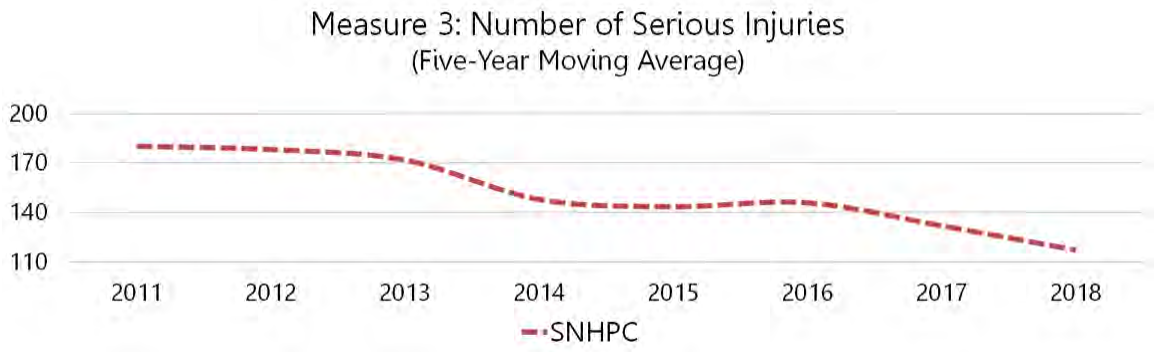


Figure 37: Safety Target, Number of Serious Injuries

The overall number of serious injuries (measured as a five-year moving average) in the SNHPC region has declined substantially, from approximately 180 in 2011 to approximately 120 in 2018. This is likely the result of improved reporting by police departments and a better understanding of which crashes should be coded as serious injuries.

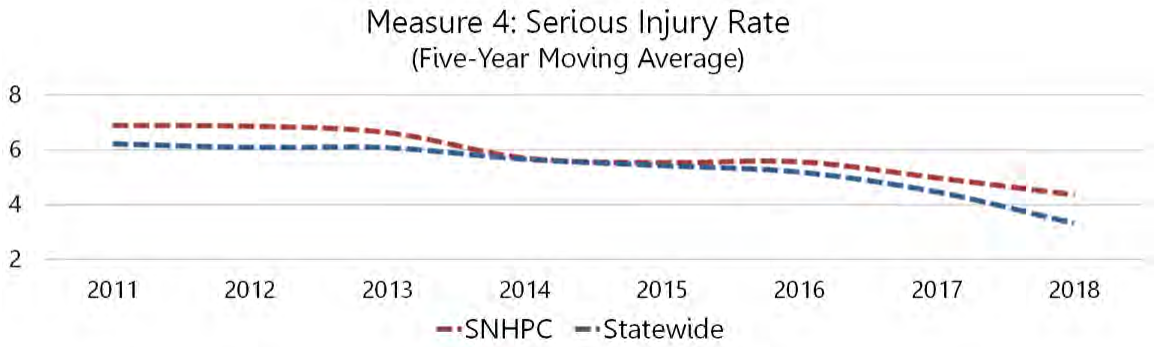


Figure 38: Safety Target, Serious Injury Rate

The five-year moving average serious injury rate has decreased consistently from 2011-2018, both in the SNHPC Region and statewide. Again, this is likely the result of improved reporting by police departments and a better understanding of which crashes should be coded as serious injuries.

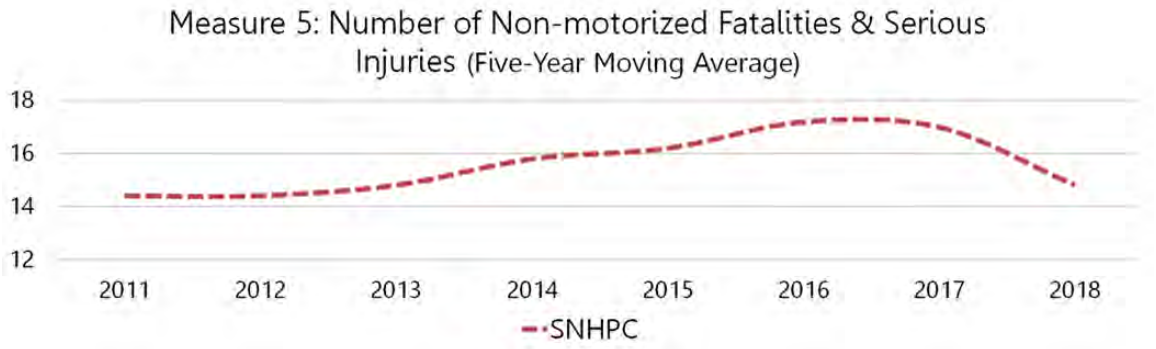


Figure 39: Safety Measure, Number of Non-motorized Fatalities and Serious Injuries

After an increase in 2016-2017, the five-year moving average number of non-motorized fatalities and serious injuries in the SNHPC has dropped back to 2011-12 levels in 2018.

As detailed in Table 10, the SNHPC has elected to support the State targets for all five safety performance measures. By supporting the State-level highway safety targets, the SNHPC MPO agrees to:

- Work with the State and safety stakeholders to address areas of concern for fatalities or serious injuries within the SNHPC metropolitan planning area;
- Coordinate with the State and include the safety performance measures and HSIP targets for all public roads in the metropolitan area in the SNHPC MTP;
- Integrate into the SNHPC long-range planning process, the safety goals, objectives, performance measures, and targets described in other state safety transportation plans and processes, including the Strategic Highway Safety Plan (SHSP); and
- Include a description in the SNHPC Transportation Improvement Program (TIP) of the anticipated effect of the TIP toward achieving HSIP targets in the MTP, linking investment priorities in the TIP to those safety targets.

INFRASTRUCTURE CONDITION

On January 18, 2017, the Federal Highway Administration (FHWA) published the final rule on Assessing Pavement and Bridge Condition for the National Highway Performance Program. The rule requires all MPOs, including the SNHPC, to set performance targets for six measures related to infrastructure condition as detailed in Table 11 below.

Table 11: National Infrastructure Condition Performance Measures

National Infrastructure Condition Performance Measures	
Pavement-related Measures	Percentage of pavement on the Interstate System in Good Condition.
	Percentage of pavement on the Interstate System in Poor Condition.
	Percentage of pavement on the non-Interstate National Highway System (NHS) in Good Condition.
	Percentage of pavement on the on the non-Interstate National Highway System (NHS) in Poor Condition.
Bridge-related Measures	Percentage of bridges on the National Highway System (NHS) in Good Condition.
	Percentage of bridges on the National Highway System (NHS) in Poor Condition.

States are required to establish 2-year and 4-year targets for Pavement Condition and Bridge Condition, and report progress on a biennial basis beginning in May 2018. MPOs, including the SNHPC, are required to establish 4-year targets for those same measures within 180 days of State target setting. MPOs have the option to support the statewide targets or to establish their own for each of the pavement and bridge measures. The State-level performance targets for pavement and bridge condition are detailed in the NHDOT Asset Management Plan for Pavements & Bridges on the National Highway System.

The SNHPC MPO Policy Committee formally adopted regional pavement and bridge condition performance targets on October 23, 2018 as detailed in Table 12 below.

Table 12: SNHPC Regional Infrastructure Condition Performance Targets

SNHPC Regional Infrastructure Condition Performance Targets			
	NHDOT		SNHPC Region
	Baseline	Adopted Target	Adopted Target
Interstate (Good Condition)	96.7%	95%	Support State Target
Interstate (Poor Condition)	0.2%	0.8%	Support State Target
Non-Interstate NHS (Good Condition)	70.1%	65%	Support State Target
Non-Interstate NHS (Poor Condition)	9.8%	12%	Support State Target
NHS Bridges (Good Condition)	57.0%	57%	Support State Target
NHS Bridges (Poor Condition)	7.0%	7.0%	Support State Target

The following series figures detail historical performance in the SNHPC for the federally-mandated pavement and bridge condition measures.

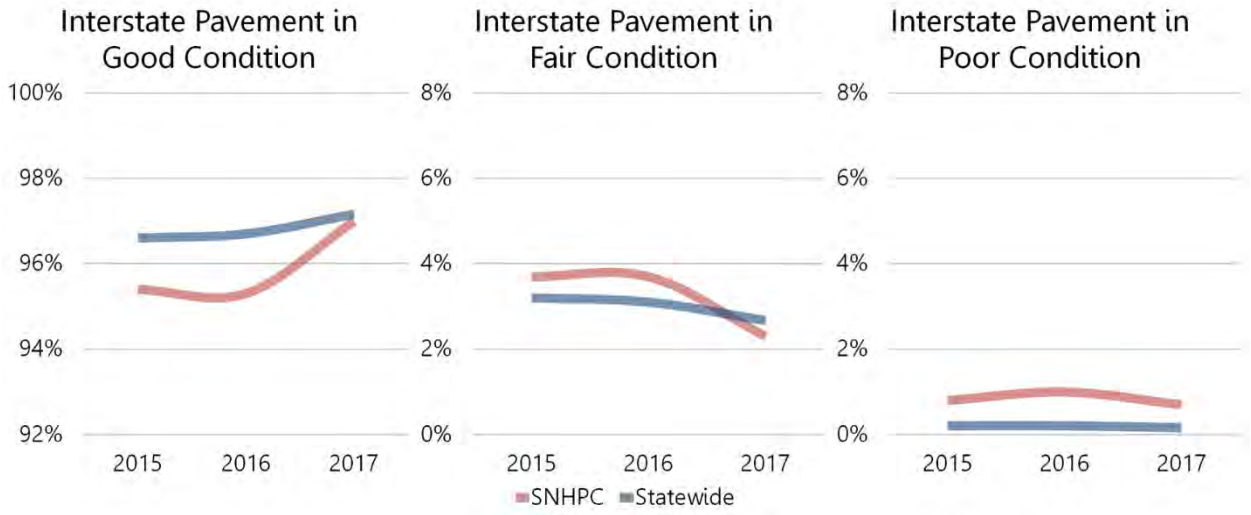


Figure 40: Condition Target, Interstate Pavement Conditions

As is illustrated in the figure above, the interstate pavement conditions within the SNHPC region are meeting targets. The percentage of the region's interstate roadways in poor condition remains low and well within targets. Between 2015 and 2015, the SNHPC region has seen an improvement where the percentage Interstate pavement conditions in fair condition is trending down to meet the state's performance. Over the same time period the percentage of pavement in good condition is trending up nearly in line with the state's performance.

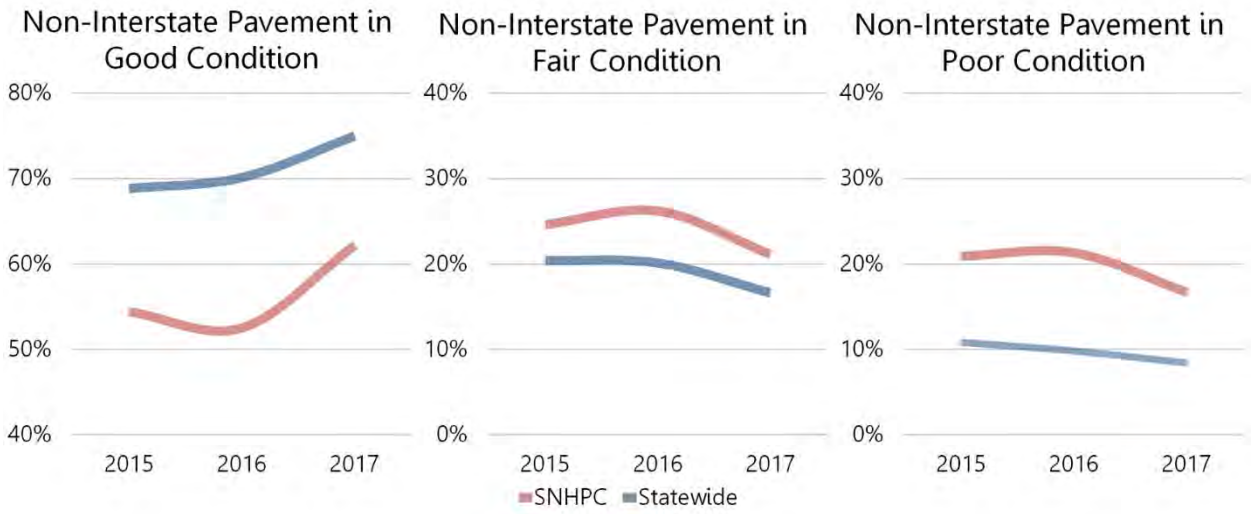


Figure 41: Condition Target, Non-Interstate Pavement Conditions

Within the SNHPC Region, pavement conditions on non-interstate roadways have seen improvement towards meeting adopted targets. Both fair and poor condition pavement in the region are declining while the percentage of Non-Interstate pavement in good condition has seen a significant improvement.

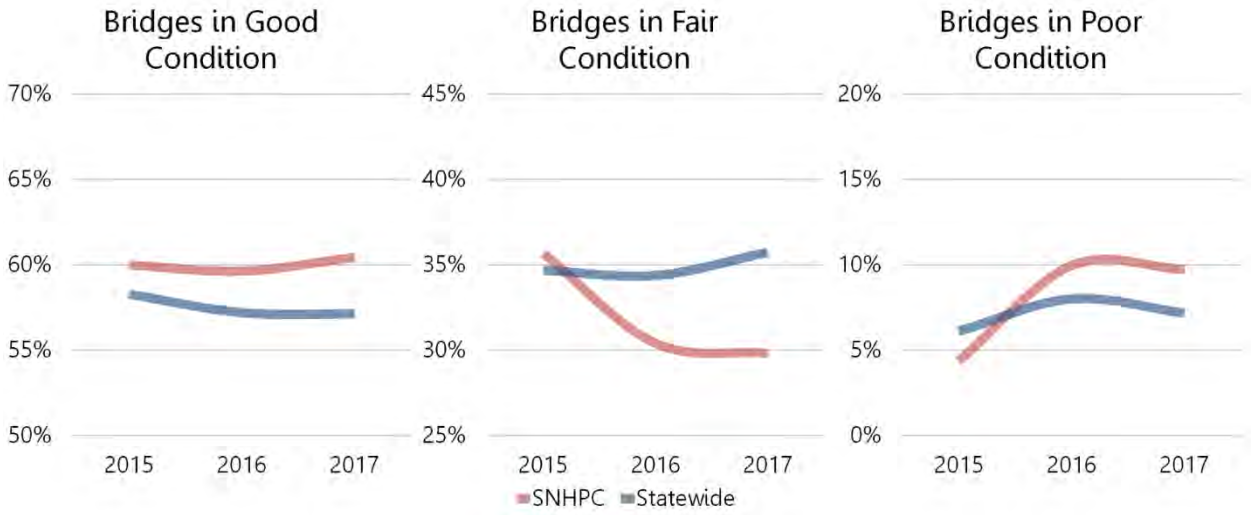


Figure 42: Condition Target, Bridge Condition

The SNHPC is close to attaining targets for bridge condition. For the period between 2015 to 2017 the SNHPC region saw the percentage of bridges in good condition remain steady. Over this time period the region observed a trend of the percentage of bridges in fair condition decline while bridges rate as being in poor condition increase.

As detailed in Table 12 above, the SNHPC has elected to support the State targets for all infrastructure condition performance measures. By supporting the State-level infrastructure condition targets, the SNHPC MPO agrees to:

- Work with the State and other stakeholders to address areas of concern for pavement and bridge conditions on the Interstate and Non-interstate National Highway System;

- Coordinate with the State and include the infrastructure condition performance measures for the Interstate and Non-interstate National Highway System in the SNHPC MTP;
- Include a description in the SNHPC Transportation Improvement Program (TIP) of the anticipated effect of the TIP toward achieving infrastructure condition targets in the MTP, linking investment priorities in the TIP to those targets.

SYSTEM PERFORMANCE

On January 18, 2017, the Federal Highway Administration (FHWA) published the final rule on Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program. Within that rule, three system performance measures were applicable to the SNHPC Region as detailed in Table 13 below.

Table 13: National System Performance Measures Applicable in the SNHPC Region

National System Performance Measures Applicable in the SNHPC Region	
Interstate-related System Performance Measures	Reliable Person-Miles Traveled on the Interstate System
	Truck Travel Time Reliability on the Interstate System
Non-Interstate-related System Performance Measures	Reliable Person-Miles Traveled on the Non-Interstate National Highway System.

States are required to establish 2-year and 4-year targets for reporting progress on National Highway System travel time reliability and Interstate truck travel time reliability on a biennial basis beginning in May 2018. MPOs, including the SNHPC, are required to establish 4-year targets for those same measures within 180 days of the State target setting. MPOs have the option to support the statewide targets or to establish their own for each of the measures.

The Federal Highway Administration defines Level of Travel Time Reliability (LOTTR) as "the ratio of the longer travel times (80th percentile) to a "normal" travel time (50th percentile), using data from FHWA's National Performance Management Research Data Set (NPMRDS) or equivalent." Similarly, the Federal Highway Administration defines Truck Travel Time Reliability (TTTR) as the "ratio generated by dividing the 95th percentile time by the normal time (50th percentile) for each segment […] by multiplying each segment's largest ratio of the five periods by its length, then dividing the sum of all length-weighted segments by the total length of Interstate."

Through an agreement with neighboring MPOs and Regional Planning Commissions in New Hampshire, the SNHPC participates in a cooperative purchase of expanded National Performance Management Research Data Set (NPMRDS) data and analytics tools, which increases the data coverage in the region and streamlines the process of calculating both LOTTR and TTTR performance.

At their October 23, 2018 meeting, the SNHPC MPO Policy Committee adopted to following regional System Performance targets as detailed in Table 14 below.

Table 14: SNHPC Regional System Performance Targets

SNHPC Regional System Performance Targets			
	NHDOT		SNHPC Region
	Baseline	Adopted Target	Adopted Target
Interstate (Reliable Person-Miles Traveled)	99.4%	95%	Support State Target
Non-Interstate NHS (Reliable Person-Miles Traveled)	87.8%	85%	Support State Target
Interstate (Truck Travel Time Reliability)	1.35	1.5	1.65

In the case of Interstate Truck Travel Time Reliability (TTTR), the SNHPC MPO Policy Committee elected to adopt a region-specific target. This was done in recognition that the SNHPC region has different conditions for Interstate TTTR than the State as a whole due to a combination of factors, including congestion. However, in addition to congestion, there are likely ongoing TTTR impacts from the longstanding construction (capacity expansion) work happening on Interstate 93 in the region (which predates the available NPMRDS data). Recognizing that Interstate 93 work would be continuing through 2020, the SNHPC MPO Policy Committee does not expect regional TTTR improvement until at least 2021 when the work is finished. This region-specific TTTR target was set in recognition that performance targets should be realistic rather than aspirational to reflect current and anticipated conditions.

By supporting the State-level system performance targets, the SNHPC MPO agrees to:

- Work with the State and other stakeholders to address areas of concern for system performance on the Interstate and Non-interstate National Highway System;
- Coordinate with the State and include the system performance measures for the Interstate and Non-interstate National Highway System in the SNHPC MTP;
- Include a description in the SNHPC Transportation Improvement Program (TIP) of the anticipated effect of the TIP toward achieving system performance targets in the MTP, linking investment priorities in the TIP to those targets.

CMAQ CARBON MONOXIDE EMISSIONS REDUCTIONS

On January 18, 2017, the Federal Highway Administration (FHWA) published the final rule on Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program. The City of Manchester is a Limited Maintenance Plan (LMP) are for Carbon Monoxide (CO). As such, the SNHPC is required to establish a four-year Congestion Mitigation and Air Quality (CMAQ) program emissions reduction target for Carbon Monoxide.

The SNHPC's target is based on the methodology utilized by the NHDOT Office of Asset Management, Performance, and Strategies. However, as the City of Nashua's CO Limited Maintenance Plan (LMP) area falls under the jurisdiction of the Nashua RPC's metropolitan

transportation planning process, the SNHPC's regional target is based solely on CMAQ projects in the City of Manchester. The Southern New Hampshire Planning Commission (SNHPC) Metropolitan Planning Organization (MPO) Policy Committee formally adopted this target at their July 28, 2020 meeting as detailed in Table 15 below.

Table 15: SNHPC CMAQ Carbon Monoxide Emissions Reduction Target

Manchester, NH CMAQ Projects	CO Reduction (kg/day)
Construct South Manchester Rail Trail from Gold St. to Perimeter Rd.	No Identified CO Reduction
Implement an Adaptive Signal Control System on Granite St. and Upgrade Signal Performance on South Willow St.	66.547
Construct a Northbound Right Turn Lane and Modify Lane Utilization at the South Willow St./Weston Rd. Intersection	2.078
Construct a Roundabout at the River Rd./Bicentennial Dr. Intersection	0.608
Regional CMAQ Emissions Reduction Target for CO	**69.233**

It should be noted that the City of Manchester's designation as a Limited Maintenance Plan area for CO is expected to end on January 29, 2021. If the designation ends as expected, this performance measure may no longer apply to the SNHPC region after that date.

TRANSIT ASSET MANAGEMENT

On July 26, 2016, the Federal Transit Administration (FTA) published the final rule on Transit Asset Management (TAM). Within that rule, four TAM performance measures were established. However, the SNHPC region does not have any active passenger rail infrastructure. Thus, only three of the four TAM performance measures are applicable to the SNHPC Region as detailed in Table 16 below.

Table 16: Transit Asset Management Applicable in the SNHPC Region

Transit Asset Management Measures Applicable in the SNHPC Region		
Asset Class	**Performance Measure**	**Target**
Equipment	The percentage of those vehicles that have either met or exceeded their Useful Life Benchmark.	25%
Rolling stock	The percentage of revenue vehicles within a particular asset class that have either met or exceeded their Useful Life Benchmark.	10%
Facilities	The percentage of facilities within an asset class, rated below condition 3 on the Transit Economic Requirements Model scale.	0%

The MPO performance targets are intended to encompass all "recipients and subrecipients of Federal Transit Administration funds who own, operate, or manage public transportation capital assets used in the provision of public transportation" in the region. The federal definition of "public transportation" does not include intercity passenger rail, intercity bus, charter bus, school bus, sightseeing services, courtesy shuttles, intra-facility shuttles, or any other service that is available only to a particular clientele. In the SNHPC region, this definition encompasses the sole transit provider: The Manchester Transit Authority (MTA) and its subsidiary, The Greater Derry-Salem Cooperative Alliance for Regional Transportation (CART).

Because CART is a subsidiary of MTA, all performance measures are reported through MTA. For equipment, MTA owns six vehicles that fall into this category: 1) A 14-year-old Caterpillar loader with a 30-year useful life; and 2) A 14-year-old International Dump Truck with a 25-year useful life. 3) A 10-year-old van past its ULB. 4) An 8-year-old supervisor vehicle past its ULB. 5) A 4-year-old supervisor vehicle past its ULB. The SNHPC MPO Policy Committee concurred with and adopted the MTA's internal target of 25% as the region's target for this measure as detailed in Table 17 below.

Table 17: SNHPC Regional Transit Equipment Performance Targets

SNHPC Regional Transit Equipment Performance Targets				
Agency	Qualifying Equipment	Equipment Beyond ULB	Baseline	Target
MTA	6	4	67%	25%
SNHPC Region	6	4	67%	25%

For the rolling stock performance measure, MTA have a combined fleet of 31 revenue vehicles. At the time of target reporting, MTA owns three rolling stock vans and 11 cutaway vehicles, none of which are beyond their useful life. MTA also owns a total of 17 transit buses, three of those vehicles exceed their Useful Life Benchmark. The MTA owned two Class 4 vehicles, and both were within their Useful Life Benchmark. The SNHPC rolling stock targets are detailed in Table 18 below.

Table 18: SNHPC Regional Transit Rolling Stock Performance Targets

SNHPC Regional Transit Rolling Stock Performance Targets					
Agency	**Asset Class**	**Total Vehicles**	**Vehicles Beyond ULB**	**Baseline**	**Target**
MTA/CART	Van	3	0	0%	10%
SNHPC Region	**Van**	**3**	**0**	**0%**	**10%**
MTA/CART	Cutaway	11	0	0%	10%
SNHPC Region	**Cutaway**	**11**	**0**	**0%**	**10%**
MTA/CART	Bus	17	3	18%	10%
SNHPC Region	**Bus**	**17**	**3**	**18%**	**10%**

As it relates to the facilities performance measure, the only applicable facility in the SNHPC region is the MTA headquarters (110 Elm St. in Manchester), which serves as both an administrative and maintenance facility. At the time of target setting, the facility was more than 30 years old and exceeded 3.0 on the FTA Transit Economic Requirements Model (TERM) scale. The facility is not expected to fall below 3.0 on the TERM scale during the planning horizon. The SNHPC's regional transit facility targets are detailed in Table 19 below.

Table 19: SNHPC Regional Transit Facility Performance Targets

SNHPC Regional Transit Facility Performance Targets				
Agency	**Facilities**	**Facilities Below 3.0 on TERM**	**Baseline**	**Target**
MTA	1	0	0%	0%
SNHPC Region	**1**	**0**	**100%**	**0%**

5.4 Transportation Planning Unified Planning Work Program

The planning activities outlined in the Unified Planning Work Program (UPWP) have been designed to meet the requirements of the Fixing America's Surface Transportation Act (FAST) Act, fulfill the local needs of the SNHPC region's municipalities, and ensure consistency with the ten federally designated metropolitan planning factors as well as Planning Emphasis Areas (PEAs) defined by the FHWA New Hampshire Division and FTA Region 1. The UPWP is the guiding document identifying how the transportation planning, technical assistance, and other activities of the SNHPC aid in the implementation of MPO responsibilities. The UPWP makes direct linkages between SNHPC planning activities and federally designated planning factors. The UPWP also makes direct linkages between SNHPC planning activities and FHWA's national performance goals. The UPWP also provides linkages between SNHPC planning activities and PEAs, as defined in Federal regulation.

The Goals and Objectives of the MTP were derived to address both a regional vision and the same federal factors/national objectives as those linked to the UPWP. In this way the Goals and Objectives relate to and serve to guide regular updates to the UPWP. Each update of the UPWP furthers both regional and federal objectives and demonstrates how upcoming transportation planning and other activities of the SNHPC support the implementation of the Metropolitan Transportation Plan. SNHPC activities which support the Goals and Objectives of the MTP fall into the following general task areas of the UPWP:

- 100 Series Tasks – Training (and Performance Based Planning)
- 200 Series Tasks – Policy and Planning
- 300 Series Tasks – Public Involvement and Coordination
- 400 Series Tasks – Plan Support (Data and Modeling)
- 500 Series Tasks – Technical Assistance
- & Appendix B Series Tasks – Special Planning Projects

As the UPWP is updated, activities include in the work plan will incorporate tasks that meet the needs of the regions transportation network as defined in the most current MTP.

5.5 Evaluating Project Impacts and Planning for Environmental Mitigation

The SNHPC MTP identifies goals, objectives, strategies, policies, and specific improvement projects necessary to meet the current and future mobility needs of the region. While the projects presented in this plan are intended to facilitate the safe and efficient movement of goods and people, it is important to recognize that there are potential environmental impacts associated with almost any transportation improvement project.

Accordingly, federal regulations require that MPO's MTPs must consider the impacts of transportation projects on regional environmental resources and identify potential mitigation strategies. Specifically, 23 CFR 450.324 (f)(10) stipulates that the MTP must include *"a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan transportation plan. The discussion may focus on policies, programs, or strategies, rather than at the project level."*

While federal regulations do not require project-level analyses of mitigation activities in the MTP, this discussion is intended to identify the types of environmental impacts associated with transportation projects in the SNHPC region and the potential mitigation strategies that may be most appropriate to address those impacts. The purpose of environmental mitigation is to preserve, restore, or enhance the region's natural resources as necessary to offset the impacts of a transportation project. In this context, mitigation can refer to any of the following activities:

1. **Avoiding Impacts:** Modifying the project to avoid impacts to environmental resources.
2. **Minimizing Impacts:** Modifying the project as necessary to limit the scope, scale, and severity of impacts to environmental resources.
3. **Rectifying Impacts:** Mitigating an impact by restoring or rehabilitating the affected environmental resource.
4. **Reducing Impacts:** Mitigating an impact through the implementation of ongoing maintenance or operational best management practices.
5. **Compensating for Impacts:** Mitigating an impact by providing an offsetting substitute resource of equal or greater value.

Many of the improvement projects detailed in the SNHPC MTP are expected to have minimal or even positive environmental impacts. For instance, the public transportation, bicycle, pedestrian, Intelligent Transportation System (ITS), and Transportation Demand Management (TDM) projects detailed in the plan are all intended to reduce single-occupant vehicle travel and improve air quality. These projects all have a basis in the SNHPC's Congestion Management Process (CMP) and are intended to maximize the existing capacity of the region's road network and minimize the need for highway capacity expansions.

However, a number of projects in the SNHPC MTP do involve capacity expansions and will have environmental impacts, and mitigation for these projects will be needed to avoid or offset negative long-term environmental consequences. Table 20 on the following pages details the most common environmental impacts associated with transportation improvement projects in the SNHPC region and identifies potential actions that could mitigate those impacts. Table 20 also details the regulatory or coordinating agencies that may provide assistance in identifying project-specific mitigation strategies and locations when projects in the SNHPC Metropolitan Transportation Plan advance from concept to construction.

Table 20: Agencies, Transportation Impacts, and Mitigation Strategies of Environmental Resources

Environmental Resource	Regulatory or Coordinating Agencies	Potential Transportation Project Impacts	Potential Mitigation Strategies
Air Quality	• NH Department of Environmental Services (Air Resources Division) • NH Department of Transportation (Bureau of Environment & other bureaus) • Environmental Protection Agency (Region 1)	• Increased emissions from vehicles for pollutants of concern (e.g., Volatile Organic Compounds, Carbon Monoxide, Oxides of Nitrogen, and Particulate Matter). • Increased dust emissions during construction.	• Implementation of Transportation Demand Management (TDM) programs. • Incorporation of bicycle/pedestrian infrastructure into the project scope to reduce VMT. • Incorporation of ITS components into the project scope to reduce delay. • Implementation of local no idling ordinances.
Cultural and Historic Resources	• NH Department of Natural and Cultural Resources (Division of Historical Resources) • NH Department of Transportation (Bureau of Environment) • Environmental Protection Agency (Region 1)	• Direct loss of historical sites, structures, artifacts, or features. • Direct loss of cultural resource sites, landscapes, or features.	• Utilization of context-sensitive project design and design exceptions to avoid/minimize cultural and historic resource impacts. • Relocation and/or adaptive reuse of historic buildings or structures. • Excavation and documentation of areas with high archaeological value/sensitivity. • Preservation in places with archaeological resources. • Implementation of Environmental Compliance Monitoring.
Conserved Lands	• Local Conservation Commissions • Local and Regional Land Trusts • NH Department of Natural and Cultural Resources (Division of Forests and Lands) • NH Land and Community Heritage Investment Program (LCHIP)	• Direct loss of conserved lands. • Secondary diminishment of the ecological value of conserved lands via ensuing development and fragmentation.	• Utilization of context-sensitive project design and design exceptions to avoid/minimize conserved land impacts. • Requirement that replacement lands purchased/provided via mitigation be of equal or greater ecological value. • Implementation of improved local land use controls to manage the impact of induced development on conserved lands.
Endangered or Threatened Species	• Local Conservation Commissions • NH Department of Transportation (Bureau of Environment) • NH Fish and Game Department • U.S. Fish and Wildlife Service	• Direct loss of endangered and/or threatened species and habitat. • Secondary diminishment of the ecological value of habitat via ensuing development and fragmentation.	• Utilization of context-sensitive project design and design exceptions to avoid/minimize habitat impacts. • Utilization of wildlife and aquatic passages in project design. • Requirement that replacement lands provided via mitigation be of equal or greater habitat value for affected species. • Minimization of construction impacts via time of year restrictions and construction sequencing. • Implementation of improved local land use controls to manage the impact of induced development on habitat. • Implementation of Environmental Compliance Monitoring.

Table 20 (Continued): Agencies, Transportation Impacts, and Mitigation Strategies of Environmental Resources

Environmental Resource	Regulatory or Coordinating Agencies	Potential Transportation Project Impacts	Potential Mitigation Strategies
Floodplains	• Municipal Floodplain Managers • NH Office of Strategic Initiatives • Federal Emergency Management Agency • U.S. Army Corps of Engineers	• Direct impacts to floodplains that reduce flood storage capacity. • Secondary diminishment of floodplains via ensuing development.	• Utilization of context-sensitive project design and design exceptions to avoid/minimize floodplain impacts. • Utilization of floodplain management best practices including elevated structures to minimize the extent of direct impacts. • Requirement that floodplain restoration activities occur in the same watershed. • Implementation of improved local land use controls to manage the impact of induced development on floodplains.
Noise/Quiet Environment	• NH Department of Transportation (Bureau of Environment) • Federal Highway Administration (NH Division)	• Increased noise from vehicles following project construction. • Increased noise during project construction.	• Construction of sound barriers where warranted under the NHDOT "Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise." • Minimization of noise-related construction impacts via time-of-day restrictions and construction sequencing. • Create or retain vegetative buffers (if available).
Parks/Recreation Areas	• Municipal Park/Recreation Departments • NH Department of Natural and Cultural Resources (Division of Parks and Recreation)	• Direct loss of parks/recreation lands. • Secondary diminishment of the recreational value of affected parklands via ensuing development.	• Utilization of context-sensitive project design and design exceptions to avoid/minimize park and recreation land impacts. • Requirement that replacement lands purchased/provided via mitigation be located adjacent to the impact. • Implementation of improved local land use controls to manage the impact of induced development on recreation lands.
Water Resources	• Local River Management Advisory Committees • NH Department of Environmental Services (Water Division) • Environmental Protection Agency (Region 1)	• Increased pollutant contamination from stormwater runoff. • Increased salt/chloride loading from winter maintenance. • Increased sedimentation during project construction.	• Utilization of green stormwater infrastructure and infiltration best management practices. • Expansion of the NH Department of Environmental Services "Green Snow Pro" to educate salt applicators in best management practices and improve efficiency in salt use. • Implementation of project-specific sediment control plans during construction, including silt fencing.
Wetlands	• NH Department of Environmental Services (Wetlands Bureau) • Environmental Protection Agency (Region 1)	• Direct loss of wetlands from project construction. • Increased pollutant contamination from stormwater runoff. • Increased salt/chloride loading from winter maintenance. • Secondary diminishment of the value of adjacent wetlands via ensuing development.	• Utilization of context-sensitive project design and design exceptions to avoid/minimize wetland impacts. • Creation of new wetlands or restoration of impaired wetlands. • Protection of threatened wetlands through acquisition/permanent protection. • Expansion of the NH Department of Environmental Services "Green Snow Pro" to educate salt applicators in best management practices and improve efficiency in salt use. • Implementation of improved local land use controls to manage the impact of induced development on wetlands.

The development of the SNHPC MTP reflects two fundamental principles related to environmental mitigation.

1. When identifying and programming transportation improvement projects, the SNHPC will consider actions that avoid, minimize, or mitigate potential environmental impacts.
2. Throughout the metropolitan transportation planning process, the SNHPC will seek opportunities to restore previously damaged or diminished environmental resources.

To achieve these principles, it is essential for the SNHPC to continue coordinating with partner agencies to develop and enhance high-quality spatial data detailing the location and attributes of natural resources. In recent years, the availability of spatial data covering the SNHPC region has increased. However, gaps remain in the availability of region-wide data detailing the location and attributes of historic and cultural resources.

Data Sources for Identifying Project Impacts and Mitigation Activities

The SNHPC utilizes the data sources detailed below to identify potential environmental resource impacts for proposed transportation projects and develop mitigation recommendations.

SNHPC Regional Vulnerability Assessment: In 2020, the SNHPC completed a region-wide transportation infrastructure vulnerability assessment focused on culverts and small bridges (i.e., stream crossings). In some cases, these stream crossings result in hydrologic impingements that alter watersheds, restrict aquatic organism passage, and present hazard risks during extreme precipitation events.

As part of this effort, the SNHPC developed an Online Stream Crossing Map to assist planners and asset managers in identifying vulnerable stream crossings, developing improvement plans, and planning for adaptation or mitigation activities. The online map provides data about more than 1,600 stream crossings in the SNHPC region and provides attribute data detailing environmental risk factors.

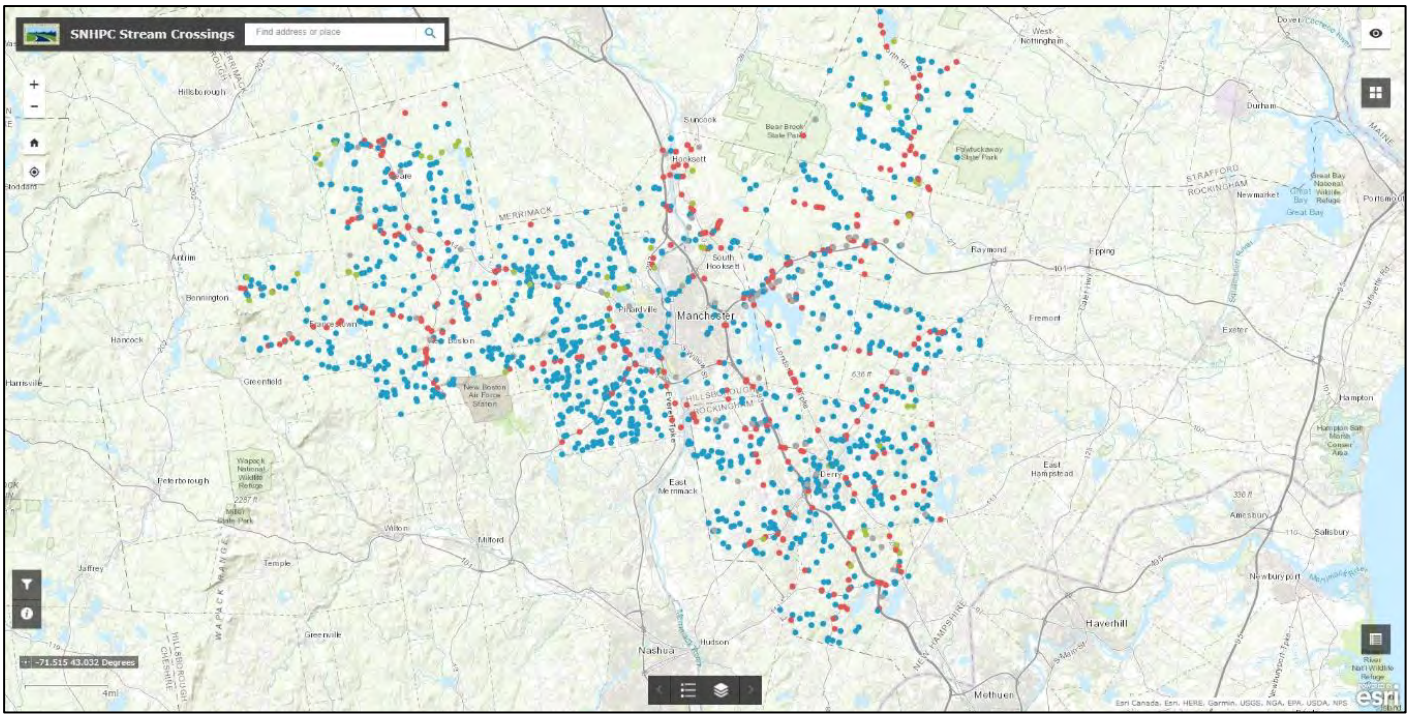


Figure 43: SNHPC Online Stream Crossing Prioritization Map

NH GRANIT: The New Hampshire Geographically Referenced Analysis and Information Transfer System (GRANIT) is an online repository of GIS spatial data for the use of local, regional, and statewide agencies. It is hosted by the University of New Hampshire Institute for the Study of Earth Oceans, and Space. The SNHPC relies on NH GRANIT for access to current transportation and environmental spatial data including public roads, trails, railroads, water resources, watersheds, wetlands, soils, conservation lands, and natural hazards.

NH Wildlife Action Plan: The NH Wildlife Action Plan is developed and maintained by the NH Fish and Game Department in coordination with the U.S. Fish and Wildlife Service and a network of local and regional partner agencies, universities, and ecologists, and volunteers. The Plan provides data and methodologies for identifying the Species of Greatest Need, habitat type, habitat quality, and conservation focus areas. In 2020, the NH Fish and Game Department developed comprehensive update to three of the key datasets in the NH Wildlife Action Plan including Habitat Land Cover, Highest Ranked Habitat by Ecological Condition, and Aquatic Habitats.

NH Historic and Cultural Resource Inventory Data: The NH Department of Natural and Cultural Resources (Division of Historical Resources) serves as New Hampshire's State Historic Preservation Office. Through their "Review and Compliance" role, the Division of Historical Resources is available through a consultation process to advise on potential historic and cultural resource impacts during the planning phase of transportation improvement projects. In addition to requesting project review through the consultation process, the files maintained by the Division of Historical Resources are available for in-person research upon appointment. These files include cultural resource inventories, National and State Historic Register nominations, and archaeological records.

Local Natural Resource Inventories: A number of municipal conservation commissions in the SNHPC region have developed town-specific natural resource inventories. Generally, municipal natural resource inventories utilize publicly available datasets to catalogue and map the location of local natural and cultural resources as a basis for conservation planning. However, in some cases, additional local fieldwork is conducted to build upon and refine the data available from public GIS datasets. The data provided from local natural resources inventories is a valuable supplement to the State and National data provided through repositories like NH GRANIT.

CONSULTING PARTIES FOR IDENTIFYING PROJECT IMPACTS AND MITIGATION ACTIVITIES

As part of considering the impacts of transportation projects on regional environmental resources and identifying potential mitigation strategies, 23 CFR 450.324 (f)(10) stipulates that MPOs shall consult with "applicable Federal, State, and Tribal land management, wildlife, and regulatory agencies."

Table 20 above details some of the agencies with regulatory authority over environmental resources in the SNHPC region. However, the list of agencies detailed in Table 20 does not fully encompass all the affected stakeholders. As such, the SNHPC will solicit input/feedback from the list of agencies identified below in Table 21 when evaluating the impacts of transportation projects on regional environmental resources and identifying potential mitigation strategies.

Table 21: List of potential agencies for coordination of environmental impact mitigation

Agency	Affiliation
Bear-Paw Regional Greenways	Land Trust
Bedford Land Trust	Land Trust
Conservation Law Foundation	Non-Profit
Federal Emergency Management Agency	Federal
Federal Highway Administration (NH Division)	Federal
Francestown Land Trust	Land Trust
Municipal Conservation Commissions	Local
Municipal Floodplain Managers	Local
Municipal Park/Recreation Departments	Local
Nature Conservancy	Non-Profit
NH Department of Environmental Services (Air Resources Division)	State
NH Department of Environmental Services (Water Division)	State
NH Department of Environmental Services (Wetlands Bureau)	State
NH Department of Natural and Cultural Resources (Division of Forests and Lands)	State
NH Department of Natural & Cultural Resources (Division of Historical Resources)	State
NH Department of Natural & Cultural Resources (Division of Parks & Recreation)	State
NH Department of Transportation (Bureau of Environment)	State
NH Fish and Game Department	State
NH Land and Community Heritage Investment Program	State
NH Office of Strategic Initiatives	State
Piscataquog Land Conservancy	Land Trust
Piscataquog River Local Advisory Committee	Local
Society for the Protection of New Hampshire Forests	Non-Profit
Southeast Land Trust of New Hampshire	Land Trust
U.S. Army Corps of Engineers	Federal
U.S. Environmental Protection Agency (Region 1)	Federal
U.S. Fish and Wildlife Service	Federal

SNHPC Technical Assistance Efforts Benefitting Environmental Mitigation

As the region's Metropolitan Planning Organization, the SNHPC provides technical assistance to municipalities on the implementation of Federal transportation programs, including the Congestion Mitigation and Air Quality (CMAQ) program. Through this technical assistance, the SNHPC assists municipalities in identifying, scoping, and evaluating potential CMAQ projects. As part of the CMAQ project development process, the SNHPC develops project-level air quality assessments to assist municipalities in scoping potential CMAQ projects in a way that maximize emissions reductions. Moreover, these project-level air quality analyses inform the statewide process to select and fund proposed CMAQ projects, as the statewide process considers the scale of emissions reduction as a core project prioritization criterion.

Beyond metropolitan transportation planning responsibilities, the SNHPC also serves as one of nine Regional Planning Commissions in New Hampshire and provides advisory technical assistance to its 14 municipalities on matters related to land use. There is an inextricable link between transportation and land

use, and a number of the environmental impacts detailed in Table 20 are secondary impacts that result from the induced development that often follows the construction of transportation improvement projects.

Accordingly, the SNHPC provides technical assistance to municipalities for improving and innovating local land use controls. In partnership with the New Hampshire Department of Environmental Services, New Hampshire Office of Strategic Initiatives, NH Municipal Association, and Regional Planning Commissions, the SNHPC participated in the development of the Innovative Land Use Planning Techniques Handbook, which is a guide for municipalities on the innovative land use regulations authorized under New Hampshire state law including model ordinances.

The Innovative Land Use Planning Techniques Handbook includes chapters for the following types of land use regulations:

- Density Transfer Credit
- Lot Size Averaging
- Feature-Based Density
- Conservation Subdivision
- Village Plan Alternative
- Infill Development
- Agricultural Incentive Zoning
- Urban Grown Boundary District
- Inclusionary Housing
- Permanent Stormwater Management
- Steep Slope and Ridgeline Protection
- Habitat Protection
- Wetlands Protection
- Surface & Groundwater Protection
- Flood Hazard Area Zoning
- Erosion and Sediment Control
- Fluvial Erosion Hazard Area Zoning
- Transit-Oriented Development
- Pedestrian-Oriented Development
- Access Management
- Preserving Dark Skies
- Energy Efficient Development
- Landscaping
- Neighborhood Heritage District

While not all of these land use controls will be applicable or appropriate for every community, the SNHPC will continue to work with its 14 member municipalities on a case-by-case basis to provide technical assistance as necessary to ensure that local land use regulations can effectively address the secondary environmental resource impacts resulting from induced development from transportation improvement projects.

POTENTIAL ENVIRONMENTAL MITIGATION AREAS IN THE SNHPC REGION

Figure 44 overlays the location of listed projects within the MTP and areas of environmental resource within the region. The environmental resources are categorized by type. The figure demonstrates a coarse screen of potential environmental impacts MTP projects may have base and can be a guide for identifying impacts with the public and local stakeholders when individual projects reach a design and engineering phase of work.

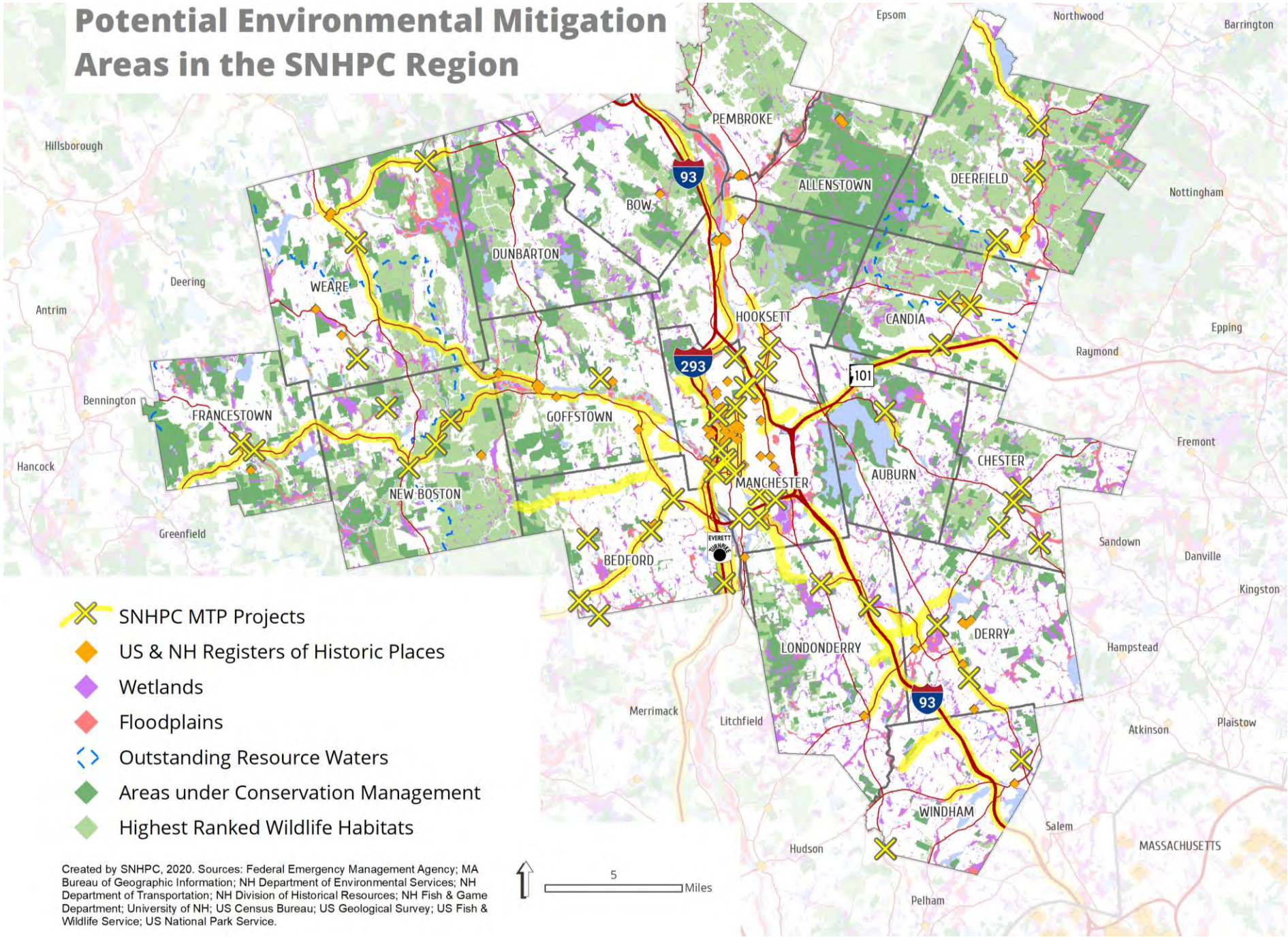


Figure 44: Potential Environmental Mitigation Areas in the SNHPC Region

6.0 FINANCIAL PLAN

In the Fixing America's Surface Transportation (FAST) Act, fiscal constraint requirements have remained a key component for both Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP) development. Fiscal constraint requires that revenues in transportation planning and programming are identified to implement the program of projects detailed in the MTP and the TIP, while providing for the operation and maintenance of the existing highway and transit systems.

Federal metropolitan transportation planning regulations require that the MTP and TIP include a financial plan that provides "sufficient financial information for demonstrating that projects […] can be implemented using committed, available, or reasonably available revenue sources, with reasonable assurance that the federally supported transportation system is being adequately operated and maintained."

The purpose of this section is to demonstrate that the SNHPC FY 2021 – FY 2045 MTP is fiscally constrained and that this plan has been developed to comply with the regulations of 23 CFR 450 and the FAST Act. A number of assumptions were considered in the development of the data used to demonstrate fiscal constraint in this chapter, including funding projections utilizing recent data and historical trends. As with any forward-looking analysis, there is no guarantee that the levels of funding for transportation available to the State of New Hampshire and to the SNHPC MPO region will remain constant or increase in the future. Thus, the assumptions utilized in the fiscal constraint analysis will be reevaluated upon every update of the MTP and TIP. The following section of this chapter presents data on financial resources and projections for highway and transit projects in the region.

6.1 FISCALLY CONSTRAINED TRANSPORTATION PLAN

FISCAL CONSTRAINT ASSUMPTIONS – HIGHWAY/BRIDGE REVENUES AND PROJECT EXPENSES

Table 22 below provides a year-by-year fiscal constraint summary for highway/bridge projects in the SNHPC region during the FY 2021 to FY 2045 period and includes a detailed presentation of the revenues assumed to be available to finance highway/bridge projects in the SNHPC region.

The statewide availability of FHWA for highway/bridge projects for the period FY 2021 – FY 2045 was derived from the adopted New Hampshire Department of Transportation (NHDOT) FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan. From FY 2031 to the horizon year of FY 2045, it is assumed that statewide FHWA revenues will increase at a rate of 1% per year based on historical FHWA funding trends in New Hampshire.*

For the FY 2021-2030 period, the SNHPC region's assumed share of statewide FHWA funding mirrors the federally-funded program of projects in the region detailed in the NHDOT FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan. From FY 2031 to the horizon year of FY 2045, it is assumed that the SNHPC region will receive a maximum of 17.13% of the FHWA funding based on the region's proportional share of statewide population and federal-aid eligible lane miles.

The fiscal constraint analysis also tracks State revenue sources that support the SNHPC region's transportation capital improvement needs, the largest source of which is Turnpike Improvement Program. The SNHPC region includes a portion of New Hampshire's Central Turnpike, which encompasses segments of I-93, I-293, and the F.E. Everett Turnpike. The NHDOT has a standing practice of addressing capital

***Note: The assumed 1% per year increase in Turnpike revenue beyond FY 2031 is simply based on a historic trend extrapolation.**

improvement needs on the turnpike system through the State Turnpike Improvement Program rather than through the use of federal-aid funding.

For the FY 2021-2030 period, the SNHPC region's assumed share of State Turnpike Improvement Program funding mirrors the program of turnpike projects in the region detailed in the NHDOT FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan. From FY 2031 to the horizon year of FY 2045, it is assumed that the SNHPC region will receive a maximum of 16.42% of State Turnpike Improvement Program funding based on the region's proportional share of the overall statewide turnpike system.

Additionally, State revenues support a portion of the debt service related to the widening of Interstate 93 from Salem to Manchester. The State supported portion of I-93 debt service is separate than the federally-supported (i.e., GARVEE Bond) debt service, which is included in the FHWA revenues. Thus, the State revenues supporting I-93 debt service are separately tracked in the fiscal constraint analysis presented in Table 22.

In New Hampshire, most of the local revenues supporting federal-aid highway/bridge projects are match funding for municipally-managed projects. For the FY 2021-2030 period, the SNHPC region's assumed local funding mirrors that prescribed in the program of projects in the region detailed in the NHDOT FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan. From FY 2031 to the horizon year of FY 2045, it is assumed that local match revenues in the SNHPC region will increase at a rate of 1% per year from a baseline amount of $450,000 per year based on historical trends in New Hampshire.

Lastly, it is important to note that most of the state-managed federal-aid transportation projects funded in New Hampshire are matched by Turnpike Toll Credits. Toll Credits accrue as a result of the State of New Hampshire tolling the turnpike system, and then utilizing those toll revenues to support projects on the turnpike system that would have otherwise been eligible for federal aid. Table 22 includes a summary of the estimated toll credits to be utilized during the MTP period. However, the inclusion of estimated toll credits on Table 22 is for illustrative purposes only and these amounts are not included in the fiscal constraint calculations, as toll credits are a non-cash form of match and do not directly offset project costs.

The fiscal constraint analysis presented in Table 22 includes a year-by-year breakdown of costs for highway/bridge projects in the SNHPC region for the period FY 2021 – FY 2045. Project costs for the period FY 2021 – FY 2030, have been derived directly from information from the adopted NHDOT FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan.

From FY 2031 to the horizon year of FY 2045, future project costs are calculated based on "Year of Expenditure" dollar figures that account for the effects of inflation. Future project costs in were inflated at a rate of 2.55% compounded annually to the year of expenditure. This rate was developed cooperatively by the State, MPOs, and public transportation operators.

While this MTP fully programs projects through the horizon year of FY 2045, it should be noted that: 1) NHDOT has not currently committed to funding projects included in the FY 2031 – FY 2045 time period (other than I-93 related debt service); and 2) It is assumed that, given the breakdown of available revenues and project costs in Table 22, as well as the assumptions discussed in this section, funding is reasonably expected to be available for these projects.

Table 22: SNHPC Regional Fiscal Constraint Analysis (FY 2021-2045 MTP Highway and Bridge Projects)

		Federal Funding		State Funding				Local Funding	Toll Credits	Fiscal Constraint Summary		
	Fiscal Year	Statewide FHWA Funding[1,2]	Est. SNHPC FHWA Allocation[3]	Statewide Turnpike Improvement Funding[4]	Est. Turnpike Improvement Funding in the SNHPC Region[5]	Other State Funding in the SNHPC Region[6]	State-supported I-93 Debt Service (SB 367)	Est. Local Match (Cash)[7]	Est. Toll Credits Used in the SNHPC Region (Non-Cash Match)[8]	Total Regional Revenues	SNHPC Project Expenses[9]	Balance
NH Ten-Year Transportation Plan (FY 2021-2045)	2021	$ 241,310,000	$ 49,718,176	$ 49,570,000	$ 19,902,286	$ 5,275,350	$ 2,147,107	$ 5,552,763	$ 9,943,635	$ 82,595,681	$ 82,595,681	$ -
	2022	$ 197,090,000	$ 40,861,828	$ 48,900,000	$ 33,377,499	$ 740,709	$ 2,195,000	$ 464,089	$ 8,172,366	$ 77,639,125	$ 77,639,125	$ -
	2023	$ 198,920,000	$ 32,537,543	$ 67,540,000	$ 55,112,473	$ 768,564	$ 2,195,000	$ 340,651	$ 6,507,509	$ 90,954,231	$ 90,954,231	$ -
	2024	$ 195,880,000	$ 33,588,560	$ 59,210,000	$ 52,315,303	$ 907,774	$ 2,197,986	$ 998,690	$ 6,717,712	$ 90,008,314	$ 90,008,314	$ -
	2025	$ 204,370,000	$ 26,189,485	$ 58,730,000	$ 56,701,704	$ 1,852,472	$ 2,192,014	$ 652,548	$ 5,237,897	$ 87,588,223	$ 87,588,223	$ -
	2026	$ 200,940,000	$ 17,631,908	$ 47,560,000	$ 41,263,099	$ 823,526	$ 23,405,706	$ 205,882	$ 3,526,382	$ 83,330,121	$ 83,330,121	$ -
	2027	$ 185,470,000	$ 18,874,686	$ 51,120,000	$ 29,756,904	$ 180,532	$ 23,405,706	$ 45,133	$ 3,774,937	$ 72,262,961	$ 72,262,961	$ -
	2028	$ 189,070,000	$ 33,007,774	$ 63,480,000	$ 29,829,446	$ 1,970,324	$ 23,405,706	$ 492,581	$ 6,601,555	$ 88,705,831	$ 88,705,831	$ -
	2029	$ 185,300,000	$ 22,581,436	$ 42,520,000	$ -	$ 1,920,727	$ 23,405,706	$ 480,182	$ 4,516,287	$ 48,388,051	$ 48,388,051	$ -
	2030	$ 180,480,000	$ 17,076,020	$ 30,940,000	$ -	$ -	$ 23,405,706	$ -	$ 3,415,204	$ 40,481,726	$ 40,481,726	$ -
Metropolitan Transportation Plan "Out Years" (FY 2031-2045)	2031	$ 185,000,000	$ 31,690,500	$ 52,000,000	$ 8,538,400	$ 1,000,000	$ 23,405,706	$ 450,000	$ 6,338,100	$ 65,084,606	$ 65,018,715	$ 65,891
	2032	$ 186,850,000	$ 32,007,405	$ 52,520,000	$ 8,623,784	$ 1,010,000	$ 23,405,706	$ 454,500	$ 6,401,481	$ 65,501,395	$ 65,433,764	$ 67,631
	2033	$ 188,718,500	$ 32,327,479	$ 53,045,200	$ 8,710,022	$ 1,020,100	$ 23,405,706	$ 459,045	$ 6,465,496	$ 65,922,352	$ 65,895,354	$ 26,998
	2034	$ 190,605,685	$ 32,650,754	$ 53,575,652	$ 8,797,122	$ 1,030,301	$ 23,405,706	$ 463,635	$ 6,530,151	$ 66,347,518	$ 66,304,764	$ 42,754
	2035	$ 192,511,742	$ 32,977,261	$ 54,111,409	$ 8,885,093	$ 1,040,604	$ -	$ 468,272	$ 6,595,452	$ 43,371,230	$ 43,319,037	$ 52,193
	2036	$ 194,436,859	$ 33,307,034	$ 54,652,523	$ 8,973,944	$ 1,051,010	$ -	$ 472,955	$ 6,661,407	$ 43,804,943	$ 43,780,203	$ 24,740
	2037	$ 196,381,228	$ 33,640,104	$ 55,199,048	$ 9,063,684	$ 1,061,520	$ -	$ 477,684	$ 6,728,021	$ 44,242,992	$ 44,150,194	$ 92,799
	2038	$ 198,345,040	$ 33,976,505	$ 55,751,038	$ 9,154,320	$ 1,072,135	$ -	$ 482,461	$ 6,795,301	$ 44,685,422	$ 44,655,445	$ 29,977
	2039	$ 200,328,491	$ 34,316,270	$ 56,308,549	$ 9,245,864	$ 1,082,857	$ -	$ 487,286	$ 6,863,254	$ 45,132,276	$ 44,971,168	$ 161,109
	2040	$ 202,331,775	$ 34,659,433	$ 56,871,634	$ 9,338,322	$ 1,093,685	$ -	$ 492,158	$ 6,931,887	$ 45,583,599	$ 45,526,327	$ 57,272
	2041	$ 204,355,093	$ 35,006,027	$ 57,440,351	$ 9,431,706	$ 1,104,622	$ -	$ 497,080	$ 7,001,205	$ 46,039,435	$ 45,856,196	$ 183,240
	2042	$ 206,398,644	$ 35,356,088	$ 58,014,754	$ 9,526,023	$ 1,115,668	$ -	$ 502,051	$ 7,071,218	$ 46,499,829	$ 46,344,930	$ 154,899
	2043	$ 208,462,631	$ 35,709,649	$ 58,594,902	$ 9,621,283	$ 1,126,825	$ -	$ 507,071	$ 7,141,930	$ 46,964,828	$ 46,937,796	$ 27,031
	2044	$ 210,547,257	$ 36,066,745	$ 59,180,851	$ 9,717,496	$ 1,138,093	$ -	$ 512,142	$ 7,213,349	$ 47,434,476	$ 47,426,637	$ 7,839
	2045	$ 212,652,729	$ 36,427,413	$ 59,772,659	$ 9,814,671	$ 1,149,474	$ -	$ 517,263	$ 7,285,483	$ 47,908,821	$ 47,824,147	$ 84,674
	Totals	**$ 4,956,755,674**	**$ 849,092,247**	**$ 1,356,608,568**	**$ 455,700,447**	**$ 30,536,874**	**$ 221,578,461**	**$ 16,476,122**	**$ 160,437,217**	**$ 1,526,477,987**	**$ 1,525,398,940**	**$ 1,079,048**

Notes:

1) Statewide FHWA funding for FY 2021-2030 based on NH Ten-Year Transportation Improvement Plan. Figures for FY 2031-2045 derived from a baseline funding amount of $185,000,000 increasing at 1% per year based on historical FHWA funding trends in New Hampshire.

2) Statewide FHWA figures include I-93 GARVEE Bonds and federally-supported I-93 Debt Service.

3) SNHPC allocation of FHWA funding for FY 2021-2030 based on NH Ten-Year Transportation Improvement Plan. Figures for FY 2031-2045 total 17.13% of statewide FHWA funding based on the SNHPC region's share of statewide population and federal-aid eligible lane miles.

4) Statewide Turnpike Improvement funding for FY 2021-2030 based on NH Ten-Year Transportation Improvement Plan. Figures for FY 2031-2045 derived from a baseline funding amount of $52,000,000 increasing at 1% per year through FY 2045 based on historical trends.

5) SNHPC allocation of Turnpike Improvement funding for FY 2021-2030 based on NH Ten-Year Transportation Improvement Plan. Figures for FY 2031-2045 total 16.42% of statewide Turnpike Improvement funding based on the region's proportional share of the overall NH Turnpike System.

6) Other State funding in the SNHPC Region for FY 2021-2030 based on NH Ten-Year Transportation Improvement Plan. Figures for FY 2031-2045 derived from a baseline amount of $1,000,000 increasing at 1% per year through FY 2045.

7) Local match funding (for municipally-managed federal projects) in the SNHPC Region for FY 2021-2030 based on NH Ten-Year Transportation Improvement Plan. Figures for FY 2031-2045 derived from a baseline funding amount of $450,000 increasing at 1% per year through FY 2045 based on historical trends.

8) State-managed federally-funded projects in the SNHPC region are assumed to be entirely matched with (non-cash) Turnpike Toll Credits. This information is included for illustrative purposes only.

9) Project costs inflated to programmed year-of-expenditure at a rate of 2.55% per year.

FISCAL CONSTRAINT ASSUMPTIONS – TRANSIT REVENUES AND PROJECT EXPENSES

Table 23 below provides a year-by-year fiscal constraint summary for transit projects in the SNHPC region during the FY 2021 to FY 2045 period and includes a detailed presentation of the revenues assumed to be available to finance transit projects in the SNHPC region.

Effective September 20, 2019, the SNHPC's two public transportation providers– the Manchester Transit Authority (MTA) and the Greater Derry/Salem Cooperative Alliance for Regional Transportation (CART)- merged into a single entity, with CART becoming a separately-branded program under the administrative umbrella of the MTA. Thus, the transit funding streams in the region have been consolidated under a single provider, which is referred to in the fiscal constraint analysis presented herein as MTA/CART.

The fiscal constraint analysis presented in Table 23 details anticipated revenues from three different FTA funding programs (Section 5307, 5310, and 5339) as well as State and local matching funds. The FTA Section 5307 program supports the planning, operation, capital equipment, preventive maintenance, and complementary paratransit service for MTA/CART public transportation services in the SNHPC region. The Section 5310 program supports the provision of transportation services for older adults and people with disabilities as well as the recruitment/oversight of volunteer driver programs in the SNHPC Region. The FTA Section 5339 program supports the purchase and replacement of buses (i.e., rolling stock) and the construction of bus-related facilities.

FTA Section 5307 revenues in the SNHPC region are derived from three different sources. The first is the direct FTA Section 5307 apportionment for MTA/CART. Funding amounts for the direct MTA/CART Section 5307 apportionment for FY 2021 and FY 2022 are derived from the SNHPC TIP. Figures for FY 2023 to FY 2045 are derived from a baseline annual funding amount of $2,898,060 increasing at 2% per year based on historical FTA funding trends in New Hampshire. The second source of FTA Section 5307 funding in the SNHPC region is derived from the State apportionment to support transit services in the Boston Urbanized Area. The NHDOT is currently utilizing a portion of these funds to support the Project Development Phase of the NH Capitol Corridor passenger rail initiative as well as operating costs for the Boston Express services on both I-93 and the F.E. Everett Turnpike. The SNHPC region's anticipated share of State FTA Section 5307 Boston Urbanized Area funding mirrors the program of projects in the region detailed in the NHDOT FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan and assumes that the NHDOT will continue utilizing a portion of its FTA Section 5307 funding to support Boston Express operating expenses through FY 2045.

The third source of FTA Section 5307 funding in the region is the result of a recently implemented discretionary transfer of funding from the Congestion Mitigation and Air Quality (CMAQ) program to FTA. Approximately $550,000 per year statewide will be transferred from CMAQ to the FTA Section 5307 program. It is assumed that MTA/CART will receive 40% of the amount transferred to support statewide Section 5307 services, and that this amount will remain level through FY 2045 (i.e., the transfer from CMAQ is not expected to grow in the future).

FTA Section 5310 revenues in the SNHPC region are also derived from three different sources. The first is the direct FTA Section 5310 apportionment for MTA/CART. Funding amounts for the direct MTA/CART Section 5310 apportionment for FY 2021 and FY 2022 are derived from the SNHPC TIP. Figures for FY 2023 to FY 2045 are derived from a baseline annual funding amount of $122,982 increasing at 2% per year based on historical FTA funding trends in New Hampshire. The second source of FTA Section 5310 funding

in the SNHPC region is derived from the State apportionment to support regional elderly and disabled transit services as programmed by the Region 8/9 (Greater Manchester and Derry-Salem) Coordinating Council for Community Transportation. Figures for FY 2021-2045 are derived from a baseline funding amount of $364,464 increasing at 2% per year through FY 2045 based on historical FTA funding trends in New Hampshire.

The third source of FTA Section 5310 funding in the region is the result of a recently-implemented discretionary transfer of funding from the Congestion Mitigation and Air Quality (CMAQ) program to FTA. Approximately $430,000 per year statewide will be transferred from CMAQ to the FTA Section 5310 program to support regional elderly and disabled transportation services. It is assumed that the SNHPC Region will receive 22.3% of the amount transferred to support Section 5310 services, and that this amount will remain level through FY 2045 (i.e., the transfer from CMAQ is not expected to grow in the future).

FTA Section 5339 revenues in the SNHPC region are derived from two different sources. The first is the direct FTA Section 5339 apportionment for MTA/CART. Funding amounts for the direct MTA/CART Section 5339 apportionment for FY 2021 and FY 2022 are derived from the SNHPC TIP. Figures for FY 2023 to FY 2045 are derived from a baseline annual funding amount of $41,938 increasing at 2% per year based on historical FTA funding trends in New Hampshire. The second source of FTA Section 5339 funding in the SNHPC region is derived from the State apportionment. It is assumed that MTA/CART will receive 50% of the NHDOT Section 5339 set-aside for small urban transit providers, derived from a FY 2021 baseline funding amount of $263,855 increasing at 2% per year based on historical FTA funding trends in New Hampshire.

Match funding for FTA Section 5037, 5310, and 5339 funding is provided via a combination of State and local funds. State funding support for transit in New Hampshire has historically been limited to capital expenses. The fiscal constraint analysis presented in Table 23 assumes that State funding support will be limited to half the required match funding for the Section 5339 program (i.e., that there will be no operating support through FY 2045). Additionally, it is assumed that local funding (from the municipalities served) will be available to fully match all available FTA funding in the region through FY 2045.

As with highway/bridge projects, it is important to note that most of the state-managed public transportation projects funded in New Hampshire are also matched by Turnpike Toll Credits. Table 23 includes a summary of the estimated toll credits to be utilized during the MTP period. However, the inclusion of estimated toll credits on Table 23 is for illustrative purposes only and these amounts are not included in the fiscal constraint calculations, as toll credits are a non-cash form of match and do not directly offset project costs.

Table 23: SNHPC Regional Fiscal Constraint Analysis (FY 2021-2045 MTP Transit Projects)

		FTA Section 5307			FTA Section 5310			FTA Section 5339		State Funding	Local Funding	Toll Credits	Fiscal Constraint Summary		
	Fiscal Year	Regional (Direct) FTA Section 5307 Apportionments (MTA/CART)[1]	Regional Share of Statewide FTA Section 5307 Apportionment[2]	Regional Share of Statewide Transfer from CMAQ to FTA Section 5307[3]	Regional (Direct) FTA Section 5310 Apportionments (MTA/CART)[4]	Regional Share of Statewide FTA Section 5310 Apportionment[5]	Regional Share of Statewide Transfer from CMAQ to FTA Section 5310[6]	Regional (Direct) FTA Section 5339 Apportionments (MTA/CART)[7]	Regional Share of Statewide FTA Section 5339 Apportionment[8]	State Transit Capital Support[9]	Local Match (Cash)	Est. Toll Credits Used in the SNHPC Region (Non-Cash Match)	Total Regional Transit Revenues	SNHPC Regional Transit Project Expenses	Annual Balance
NH Ten-Year Transportation Plan (FY 2021-2045)	2021	$ 2,808,516	$ 2,261,600	$ 220,000	$ 120,571	$ 364,464	$ 95,890	$ 41,115	$ 263,855	$ 38,121	$ 1,673,638	$ 1,129,073	$ 7,887,770	$ 7,760,270	$ 127,499
	2022	$ 2,898,060	$ 739,749	$ 220,000	$ 122,982	$ 371,753	$ 95,890	$ 41,938	$ 269,132	$ 38,884	$ 1,721,598	$ 763,722	$ 6,519,985	$ 6,396,536	$ 123,449
	2023	$ 2,956,021	$ 760,462	$ 220,000	$ 125,442	$ 379,188	$ 95,890	$ 42,777	$ 274,514	$ 39,661	$ 1,753,829	$ 784,435	$ 6,647,785	$ 6,528,467	$ 119,318
	2024	$ 3,015,142	$ 781,755	$ 220,000	$ 127,950	$ 386,772	$ 95,890	$ 43,632	$ 280,005	$ 40,455	$ 1,786,706	$ 805,728	$ 6,778,307	$ 6,663,202	$ 115,105
	2025	$ 3,075,444	$ 803,644	$ 220,000	$ 130,509	$ 394,508	$ 95,890	$ 44,505	$ 285,605	$ 41,264	$ 1,820,240	$ 827,617	$ 6,911,609	$ 6,800,802	$ 110,807
	2026	$ 3,136,953	$ 826,145	$ 220,000	$ 133,120	$ 402,398	$ 95,890	$ 45,395	$ 291,317	$ 42,089	$ 1,854,445	$ 850,118	$ 7,047,751	$ 6,941,328	$ 106,423
	2027	$ 3,199,692	$ 849,278	$ 220,000	$ 135,782	$ 410,446	$ 95,890	$ 46,303	$ 297,143	$ 42,931	$ 1,889,334	$ 873,251	$ 7,186,799	$ 7,084,847	$ 101,951
	2028	$ 3,263,686	$ 873,057	$ 220,000	$ 138,498	$ 418,655	$ 95,890	$ 47,229	$ 303,086	$ 43,789	$ 1,924,921	$ 897,030	$ 7,328,810	$ 7,231,420	$ 97,390
	2029	$ 3,328,960	$ 897,503	$ 220,000	$ 141,268	$ 427,028	$ 95,890	$ 48,174	$ 309,148	$ 44,665	$ 1,961,219	$ 921,475	$ 7,473,853	$ 7,381,115	$ 92,738
	2030	$ 3,395,539	$ 922,633	$ 220,000	$ 144,093	$ 435,568	$ 95,890	$ 49,137	$ 315,331	$ 45,558	$ 1,998,243	$ 946,605	$ 7,621,992	$ 7,533,999	$ 87,993
Metropolitan Transportation Plan "Out Years" (FY 2031-2045)	2031	$ 3,463,450	$ 948,466	$ 220,000	$ 146,975	$ 444,280	$ 95,890	$ 50,120	$ 321,637	$ 46,470	$ 2,036,008	$ 972,439	$ 7,773,296	$ 7,690,143	$ 83,153
	2032	$ 3,532,719	$ 975,023	$ 220,000	$ 149,914	$ 453,165	$ 95,890	$ 51,122	$ 328,070	$ 47,399	$ 2,074,528	$ 998,996	$ 7,927,831	$ 7,849,616	$ 78,216
	2033	$ 3,603,373	$ 1,002,324	$ 220,000	$ 152,913	$ 462,228	$ 95,890	$ 52,145	$ 334,631	$ 48,347	$ 2,113,819	$ 1,026,297	$ 8,085,670	$ 8,012,490	$ 73,180
	2034	$ 3,675,441	$ 1,030,389	$ 220,000	$ 155,971	$ 471,473	$ 95,890	$ 53,188	$ 341,324	$ 49,314	$ 2,153,895	$ 1,054,362	$ 8,246,885	$ 8,178,841	$ 68,044
	2035	$ 3,748,950	$ 1,059,240	$ 220,000	$ 159,090	$ 480,903	$ 95,890	$ 54,251	$ 348,150	$ 50,300	$ 2,194,773	$ 1,083,213	$ 8,411,548	$ 8,348,743	$ 62,805
	2036	$ 3,823,929	$ 1,088,899	$ 220,000	$ 162,272	$ 490,521	$ 95,890	$ 55,336	$ 355,113	$ 51,306	$ 2,236,469	$ 1,112,871	$ 8,579,735	$ 8,522,274	$ 57,461
	2037	$ 3,900,407	$ 1,119,388	$ 220,000	$ 165,518	$ 500,331	$ 95,890	$ 56,443	$ 362,216	$ 52,332	$ 2,278,998	$ 1,143,360	$ 8,751,523	$ 8,699,513	$ 52,010
	2038	$ 3,978,415	$ 1,150,731	$ 220,000	$ 168,828	$ 510,338	$ 95,890	$ 57,572	$ 369,460	$ 53,379	$ 2,322,378	$ 1,174,703	$ 8,926,991	$ 8,880,540	$ 46,450
	2039	$ 4,057,984	$ 1,182,951	$ 220,000	$ 172,204	$ 520,544	$ 95,890	$ 58,723	$ 376,849	$ 54,447	$ 2,366,626	$ 1,206,924	$ 9,106,218	$ 9,065,439	$ 40,779
	2040	$ 4,139,143	$ 1,216,074	$ 220,000	$ 175,649	$ 530,955	$ 95,890	$ 59,898	$ 384,386	$ 55,535	$ 2,411,758	$ 1,240,046	$ 9,289,289	$ 9,254,294	$ 34,995
	2041	$ 4,221,926	$ 1,250,124	$ 220,000	$ 179,162	$ 541,574	$ 95,890	$ 61,096	$ 392,074	$ 56,646	$ 2,457,793	$ 1,274,096	$ 9,476,285	$ 9,447,190	$ 29,095
	2042	$ 4,306,365	$ 1,285,127	$ 220,000	$ 182,745	$ 552,406	$ 95,890	$ 62,318	$ 399,915	$ 57,779	$ 2,504,749	$ 1,309,100	$ 9,667,294	$ 9,644,217	$ 23,077
	2043	$ 4,392,492	$ 1,321,111	$ 220,000	$ 186,400	$ 563,454	$ 95,890	$ 63,564	$ 407,914	$ 58,935	$ 2,552,644	$ 1,345,084	$ 9,862,403	$ 9,845,465	$ 16,938
	2044	$ 4,480,342	$ 1,358,102	$ 220,000	$ 190,128	$ 574,723	$ 95,890	$ 64,835	$ 416,072	$ 60,113	$ 2,601,497	$ 1,382,075	$ 10,061,702	$ 10,051,025	$ 10,677
	2045	$ 4,569,949	$ 1,396,129	$ 220,000	$ 193,930	$ 586,217	$ 95,890	$ 66,132	$ 424,393	$ 61,316	$ 2,651,327	$ 1,420,101	$ 10,265,283	$ 10,260,993	$ 4,290
	Totals	**$ 90,972,899**	**$ 27,099,905**	**$ 5,500,000**	**$ 3,861,912**	**$ 11,673,891**	**$ 2,397,250**	**$ 1,316,947**	**$ 15,583,658**	**$ 1,221,036**	**$ 53,341,436**	**$ 26,542,717**	**$ 205,836,615**	**$ 204,072,770**	**$ 1,763,844**

Notes:

1) Direct Section 5307 Apportionments for MTA/CART for FY 2021-2022 based on SNHPC TIP. Figures for FY 2023-2045 derived from a baseline funding amount of $2,898,060 increasing at 2% per year based on historical FTA funding trends in New Hampshire.

2) Assumes that the Boston Express commuter services on the F.E. Everett Turnpike and I-93 Corridor continue through FY 2045. Match is assumed to be toll credits.

3) Assumes that MTA/CART receives 40% of statewide transfer from CMAQ to Section 5307. No growth is assumed in the amount of the statewide CMAQ transfer through FY 2045.

4) Direct Section 5310 Apportionments for MTA/CART for FY 2021-2022 based on SNHPC TIP. Figures for FY 2023-2045 derived from a baseline funding amount of $122,982 increasing at 2% per year based on historical FTA funding trends in New Hampshire.

5) Regional Share based on actual Region 8 (Greater Manchester) and Region 9 (Greater Derry-Salem) distributions for FY 2021 increasing at 2% per year through FY 2045.

6) Assumes that the Region receives 22.3% of statewide transfer from CMAQ to Section 5310. No growth is assumed in the amount of the statewide CMAQ transfer through FY 2045. Match is assumed to be toll credits.

7) Direct Section 5339 Apportionments for MTA/CART for FY 2021-2022 based on SNHPC TIP. Figures for FY 2023-2045 derived from a baseline funding amount of $41,938 increasing at 2% per year based on historical FTA funding trends in New Hampshire.

8) Assumes that MTA receives 50% of the NHDOT Section 5339 set-aside for small urban transit providers increasing at 2% per year from FY 2021 levels.

9) Assumes that State support will be available for half of the required match on Section 5339 funding in the region through FY 2045, and that State operating assistance will not be available.

FISCAL CONSTRAINT ASSUMPTIONS –I-93 WIDENING

The widening of Interstate 93 from Salem to Manchester is the most significant and long-running project in the SNHPC Region. The project involves widening the I-93 mainline and reconstructing interchanges on a 19.8-mile segment between the City of Manchester and Town of Salem. The purpose of the project is to improve transportation efficiency and reduce safety deficiencies associated with this portion of the interstate. The Selected Alternative for the project provides additional lanes in each direction northbound and southbound and improvements to five existing interchanges.

The project has been under construction for nearly 15 years, with the first funding obligations occurring before 2006. Based on the most current I-93 Project Financial Plan, the cost of the project is expected to total approximately $762.5 Million when complete. However, construction phase work is concluding on this project and the SNHPC's FY 2021 – FY 2045 MTP does not include any construction phase projects related to the expansion of I-93. While construction is nearly complete, debt service for the project will continue for years to come. Financing the project was done through the use of federal Grant Anticipation Revenue Vehicle (GARVEE) bonds and a State-backed debt issuance supported by revenues from a State road toll (gas tax) increase enacted via Senate Bill 367 (SB 367) in 2014.

The SNHPC FY 2021 – FY 2045 MTP includes the following debt service projects:

- **Salem to Manchester #14633** - Debt Service for I-93 Capacity Improvements Northern Projects
  - State-funded debt service continuing through FY 2034
- **Salem to Manchester #14800B** - I-93 Exit 5 Interchange Reconstruction (Debt Service for Project 14633F)
  - GARVEE Bond supported debt service continuing through FY 2025
- **Salem to Manchester #14800C** - Exit 3 Area, Project Initiated to Track GARVEE Bond Debt Service (Attributable to the 13933N Project)
  - GARVEE Bond supported debt service continuing through FY 2025
- **Salem to Manchester #14800F** - I-93 Exit 3 Area NB ML Connections, NB Ramps, and NH 111 Relocation (Debt Service Project for 13933H)
  - GARVEE Bond supported debt service continuing through FY 2025

The fiscal constraint analysis presented in Table 22 reflects not only the FHWA revenues that support GARVEE Bond debt service, but also details the SB 376 revenues that support the State-supported debt service. These revenues and expenses were derived from and mirror the current I-93 Project Financial Plan, which was approved on March 4, 2020.

MTP PROJECT SELECTION PROCESS

The SNHPC's transportation project selection process involves three key steps as detailed in Figure 45 below. In general, projects move from concept to construction be first being programmed in the SNHPC Metropolitan Transportation Plan (a federally-required long-range transportation planning document covering 20+ years), then advance to the NH Ten-Year Transportation Improvement Plan (a State-required medium range transportation planning document covering 10 years), then advance to the SNHPC Transportation Improvement Program (a federally-required short-range transportation planning document covering four years). By the time a project advances into the four-year SNHPC Transportation Improvement Program, it is highly likely to advance to construction according to its prescribed schedule.

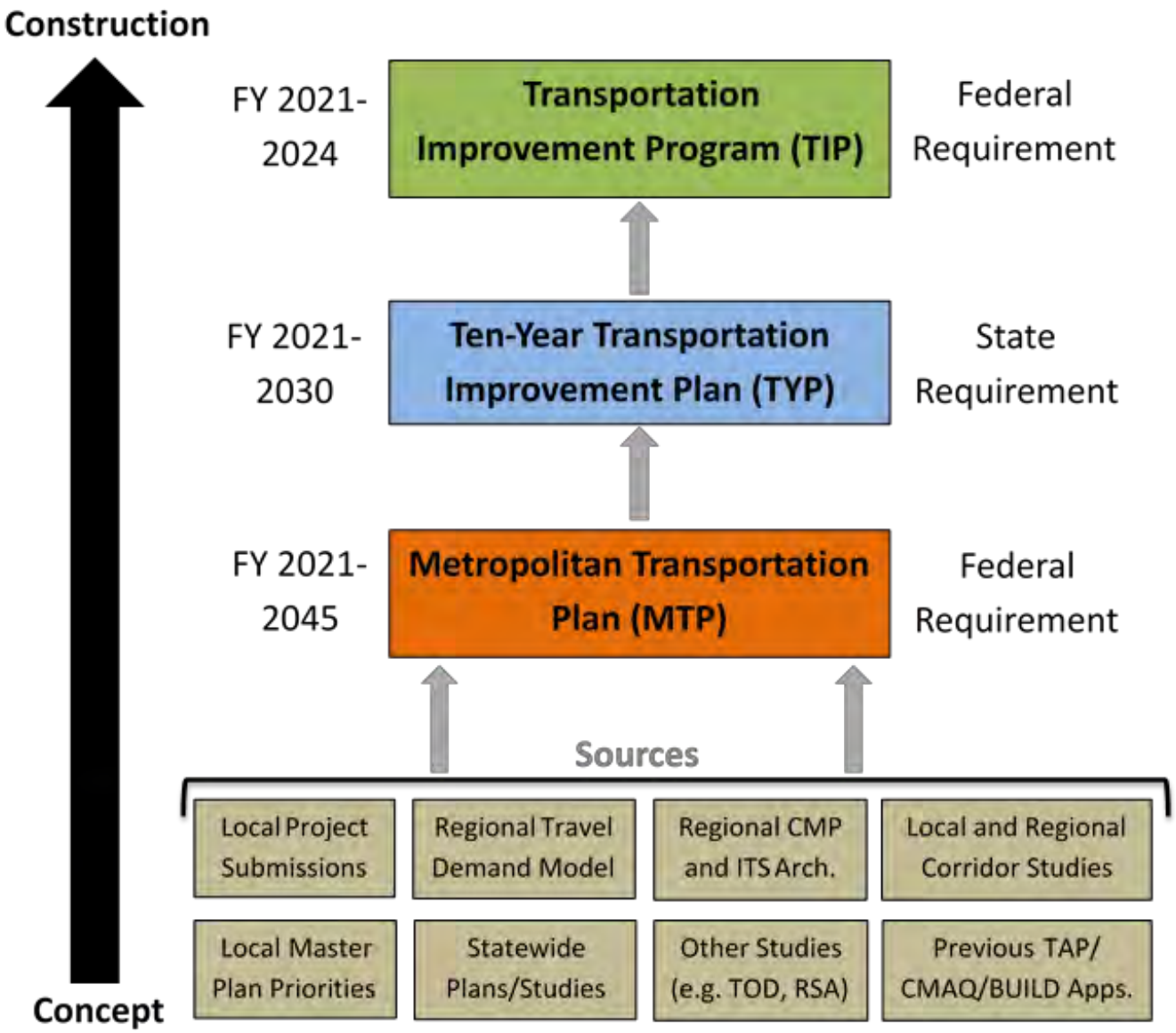


Figure 45: SNHPC Project Selection and Programming Process

`Projects are selected for and programmed in the SNHPC Metropolitan Transportation Plan from a variety of sources. The first is a biennial solicitation for projects from the region's municipalities and transit partner agencies. This solicitation allows the SNHPC to regularly identify new project needs, confirm the importance of currently-programmed projects, and identify any new information that may require revising a currently-programmed project's budget.

In addition to the projects identified from the biennial solicitation of municipalities and transit providers, the SNHPC also identifies projects from the following sources:

- Results of the Regional Travel Demand Model;
- Projects identified in regional plans including the Congestion Management Process and Intelligent Transportation Systems Architecture;
- Projects identified in recently-completed local or regional corridor studies;
- Projects identified as priorities in adopted local master plans;

- Projects identified as priorities in adopted statewide plans including the State Freight Plan and Statewide Strategic Transit Assessment;
- Projects identified in other special studies including Transit-oriented Development (TOD) plans and Road Safety Audits (RSA); and
- Unfunded projects previously submitted by municipalities for Transportation Alternatives (TAP), Congestion Mitigation and Air Quality (CMAQ), or Better Utilizing Investments to Leverage Development (BUILD) program consideration.

As a result of the previously described regional project selection process, a total of 141 projects have been included in the FY 2021 – FY 2045 MTP, including many significant highway, bridge, bicycle, pedestrian, and transit improvements across the entire SNHPC region. Coordination regarding individual projects included in the MTP routinely place between municipalities, transit providers, SNHPC, NHDOT, FHWA, FTA, and other partner agencies. The following paragraphs describe three of the most significant projects proposed for the region during this period.

- I-293/F.E. Everett Turnpike Exits 6 and 7

  The SNHPC's FY 2021 – FY 2045 MTP includes the I-293 Exit 6 and 7 reconstruction project, which is the result of an extensive engineering study of I-293 north of Exit 5 in the City of Manchester. Federal and State stakeholders are now evaluating design alternatives as required under the National Environmental Policy Act (NEPA). The preferred alternative for the project involves widening the I-293 mainline to three lanes in each direction, reconstructing Exit 6 as a Single Point Urban Interchange (SPUI), and reconstructing Exit 7 as a full access interchange north of its current location.

  Funding for the engineering, right-of-way, and construction phases of this project is included in both the SNHPC's FY 2021 – FY 2045 MTP and the NHDOT's FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan. The Exit 6 reconstruction portion of the project is currently scheduled for construction from FY 2025-2028 at a total project cost of $97.86 Million. The Exit 7 reconstruction portion of the project is currently scheduled for construction from FY 2024-2026 at a total project cost of $50.23 Million.

- Widening of the F.E. Everett Turnpike from Nashua to Bedford

  The SNHPC's FY 2021 – FY 2045 MTP includes the widening of all two-lane sections of the F.E. Everett Turnpike to three lanes from Exit 8 in Nashua to the I-293 interchange in Manchester. The preferred alternative for the project involves not only mainline widening, but bridge replacements (to accommodate the widening) in five locations, stormwater treatment improvements, and construction of noise barriers.

  Funding for the engineering, right-of-way, and construction phases of this project is included in the SNHPC's FY 2021 – FY 2045 MTP and the NHDOT's FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan. With $14.8 Million having been spent on project development prior to FY 2021, construction is currently scheduled from FY 2021-2025 with estimated remaining project costs totaling $141.8 Million.

- Construction of I-93 Exit 4A in Derry and Londonderry

  The SNHPC's FY 2021 – FY 2045 MTP includes the construction of I-93 Exit 4A in Derry and Londonderry. The development of this project has been a longstanding cooperative effort between the towns of Derry and Londonderry, the New Hampshire Department of Transportation, and the Federal Highway Administration. The project includes the construction of a new diamond interchange on I-93 north of the existing Exit 4 interchange, which provide access east of I-93 via a 1-mile connector road connecting I-93 with Folsom Road, Tsienneto Road, and ultimately NH Route 102.

  Funding for the engineering, right-of-way, and construction phases of this project is included in the SNHPC's FY 2021 – FY 2045 MTP and the NHDOT's FY 2021 – FY 2030 Ten-Year Transportation Improvement Plan. With $29.2 Million having been spent on project development prior to FY 2021, construction is currently scheduled from FY 2021-2024 with estimated remaining project costs totaling $66.49 Million.

DEMONSTRATION OF FISCAL CONSTRAINT

A comparison of the total revenue and total cost columns in the Table 22 and Table 23 fiscal constraint summaries indicate that, for each year of the period FY 2021 – FY 2045, total anticipated revenues exceed total costs. As a result, the tables indicate that the program of projects in the SNHPC's FY 2021 – FY 2045 MTP is fully constrained, both annually and in aggregate. As noted earlier in this chapter: 1) The fiscal constraint analysis for the SNHPC's FY 2021 – FY 2045 MTP is based on assumptions of availability of Federal and local match funding for projects programmed for these years; and 2) The SNHPC MPO does not possess the resources and information required to independently verify this fiscal constraint and recognizes that some level of uncertainty is inherent in any forward-looking analysis.

6.2 OPERATIONS AND MAINTENANCE NEEDS

Federal regulations (23 CFR 450.324) require that the Metropolitan Transportation Plan "contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain the Federal-aid highways […] and public transportation."

To meet this requirement, Table 24 and Table 25 on the following pages present system level estimates of the maintenance and operations costs and revenue sources for Federal-aid highways and public transportation in the SNHPC respectively.

Estimates for operations and maintenance of the Federal-aid highway system are based on: 1) NHDOT STIP Fiscal Constraint Summary figures for statewide operations and maintenance activities; and 2) Estimates of roadway maintenance and operations needs based on the SNHPC region's proportional share of Federal-aid road mileage.

Estimates for operations and maintenance of the SNHPC region's public transportation system are based on: 1) The amounts of FTA Section 5307 and Section 5310 funding in the region allocable to transit operations and maintenance activities; 2) The amount of local match funding available to leverage those FTA Section 5307 and Section 5310 resources; and 3) MTA/CART operations and preventative maintenance expenses as detailed in the agency's most recently obligated FTA grants.

Table 24: Operations and Maintenance Needs on Federal-Aid Roads in the SNHPC Region

	Fiscal Year	NHDOT Statewide O&M Budget for Federal-Aid Highways[1]	Est. SNHPC Allocation of NHDOT O&M Budget For Federal-Aid Highways[2]	Statewide Turnpike Renewal and Replacement Funding[3]	Est. SNHPC Allocation of Turnpike Renewal and Replacement Funding[4]	Est. Revenues Supporting O&M for Federal-aid Highways in the SNHPC Region	Statewide O&M Cost per Lane Mile	Est. SNHPC Region O&M Costs for Federal-aid Highways[5]
NH Ten-Year Transportation Plan (FY 2021-2045)	2021	$ 142,848,468	$ 19,870,222	$ 24,350,000	$ 3,998,270	$ 23,868,492	$ 19,724	$ 23,135,992
	2022	$ 142,848,468	$ 19,870,222	$ 13,900,000	$ 2,282,380	$ 22,152,602	$ 18,491	$ 21,689,979
	2023	$ 144,276,953	$ 20,068,924	$ 14,400,000	$ 2,364,480	$ 22,433,404	$ 18,719	$ 21,956,832
	2024	$ 145,719,722	$ 20,269,613	$ 13,300,000	$ 2,183,860	$ 22,453,473	$ 18,759	$ 22,004,263
	2025	$ 147,176,919	$ 20,472,309	$ 13,600,000	$ 2,233,120	$ 22,705,429	$ 18,966	$ 22,247,414
	2026	$ 148,648,689	$ 20,677,033	$ 13,800,000	$ 2,265,960	$ 22,942,993	$ 19,163	$ 22,478,744
	2027	$ 150,135,176	$ 20,883,803	$ 14,100,000	$ 2,315,220	$ 23,199,023	$ 19,374	$ 22,725,948
	2028	$ 151,636,527	$ 21,092,641	$ 14,400,000	$ 2,364,480	$ 23,457,121	$ 19,587	$ 22,975,209
	2029	$ 153,152,893	$ 21,303,567	$ 14,700,000	$ 2,413,740	$ 23,717,307	$ 19,801	$ 23,226,547
	2030	$ 154,684,421	$ 21,516,603	$ 15,000,000	$ 2,463,000	$ 23,979,603	$ 20,017	$ 23,479,984
Metropolitan Transportation Plan "Out Years" (FY 2031-2045)	2031	$ 156,231,266	$ 21,731,769	$ 15,150,000	$ 2,487,630	$ 24,219,399	$ 20,217	$ 23,714,784
	2032	$ 157,793,578	$ 21,949,087	$ 15,301,500	$ 2,512,506	$ 24,461,593	$ 20,419	$ 23,951,932
	2033	$ 159,371,514	$ 22,168,578	$ 15,454,515	$ 2,537,631	$ 24,706,209	$ 20,624	$ 24,191,451
	2034	$ 160,965,229	$ 22,390,263	$ 15,609,060	$ 2,563,008	$ 24,953,271	$ 20,830	$ 24,433,366
	2035	$ 162,574,882	$ 22,614,166	$ 15,765,151	$ 2,588,638	$ 25,202,804	$ 21,038	$ 24,677,699
	2036	$ 164,200,630	$ 22,840,308	$ 15,922,802	$ 2,614,524	$ 25,454,832	$ 21,248	$ 24,924,476
	2037	$ 165,842,637	$ 23,068,711	$ 16,082,030	$ 2,640,669	$ 25,709,380	$ 21,461	$ 25,173,721
	2038	$ 167,501,063	$ 23,299,398	$ 16,242,851	$ 2,667,076	$ 25,966,474	$ 21,676	$ 25,425,458
	2039	$ 169,176,074	$ 23,532,392	$ 16,405,279	$ 2,693,747	$ 26,226,139	$ 21,892	$ 25,679,713
	2040	$ 170,867,834	$ 23,767,716	$ 16,569,332	$ 2,720,684	$ 26,488,400	$ 22,111	$ 25,936,510
	2041	$ 172,576,513	$ 24,005,393	$ 16,735,025	$ 2,747,891	$ 26,753,284	$ 22,332	$ 26,195,875
	2042	$ 174,302,278	$ 24,245,447	$ 16,902,375	$ 2,775,370	$ 27,020,817	$ 22,556	$ 26,457,834
	2043	$ 176,045,301	$ 24,487,901	$ 17,071,399	$ 2,803,124	$ 27,291,025	$ 22,781	$ 26,722,412
	2044	$ 177,805,754	$ 24,732,780	$ 17,242,113	$ 2,831,155	$ 27,563,935	$ 23,009	$ 26,989,636
	2045	$ 179,583,811	$ 24,980,108	$ 17,414,534	$ 2,859,467	$ 27,839,575	$ 23,239	$ 27,259,533
	Totals	**$ 3,995,966,599**	**$ 555,838,954**	**$ 395,417,967**	**$ 64,927,630**	**$ 620,766,584**	**$ 518,035**	**$ 607,655,314**

Notes:

1) Statewide O&M Budget for Federal-Aid Highways for FY 2021 & 2022 derived from adopted FY 2019-2022 STIP. Figures for FY 2023-2045 assume a 1% annual increase.

2) SNHPC allocation of Statewide O&M Budget for Federal-Aid Highways estimated to be 13.91% of total based on the region's proportional share of Federal-aid eligible lane miles.

3) Statewide Turnpike Renewal and Replacement funding for FY 2021-2030 based on NH Ten Year Transportation Improvement Plan. Figures for FY 2031-2045 derived from a baseline funding amount of $15,000,000 increasing at 1% per year through FY 2045 based on historical trends.

4) SNHPC estimated allocation of Turnpike Renewal and Replacement funding for FY 2021-2045 totals 16.42% of statewide funding based on the region's proportional share of the overall NH Turnpike System.

5) Based on the SNHPC region having 1,173 miles of Federal-aid eligible roadways.

Table 25: Operations and Maintenance Needs for Public Transportation in the SNHPC Region

		FTA Section 5307		FTA Section 5310		Local Funding	Total Funding	Regional Transit O&M Needs		
	Fiscal Year	Total Section 5307 Funding Available[1]	Total FTA Section 5307 Funding Allocable to Regional O&M Needs[2]	Total Section 5310 Funding Available[3]	Total FTA Section 5310 Funding Allocable to Regional O&M Needs[4]	Local Funding Allocable to Regional O&M Needs	Total Regional Funding Available to Support Regional O&M Needs	MTA/CART Operations Needs[5]	MTA/CART Preventative Maintenance Needs[6]	Total MTA/CART O&M Expenses
NH Ten-Year Transportation Plan (FY 2021-2045)	2021	$ 5,290,116	$ 2,271,387	$ 580,925	$ 24,114	$ 1,377,301	$ 3,672,802	$ 2,791,559	$ 322,689	$ 3,114,248
	2022	$ 3,857,809	$ 2,338,545	$ 590,625	$ 24,596	$ 1,417,885	$ 3,781,026	$ 2,862,744	$ 330,918	$ 3,193,661
	2023	$ 3,936,483	$ 2,382,016	$ 600,520	$ 25,088	$ 1,444,263	$ 3,851,367	$ 2,935,744	$ 339,356	$ 3,275,100
	2024	$ 4,016,897	$ 2,426,356	$ 610,613	$ 25,590	$ 1,471,168	$ 3,923,114	$ 3,010,605	$ 348,010	$ 3,358,615
	2025	$ 4,099,088	$ 2,471,583	$ 620,907	$ 26,102	$ 1,498,611	$ 3,996,296	$ 3,087,376	$ 356,884	$ 3,444,259
	2026	$ 4,183,098	$ 2,517,715	$ 631,407	$ 26,624	$ 1,526,603	$ 4,070,942	$ 3,166,104	$ 365,984	$ 3,532,088
	2027	$ 4,268,970	$ 2,564,769	$ 642,118	$ 27,156	$ 1,555,155	$ 4,147,081	$ 3,246,839	$ 375,317	$ 3,622,156
	2028	$ 4,356,743	$ 2,612,765	$ 653,042	$ 27,700	$ 1,584,279	$ 4,224,743	$ 3,329,634	$ 384,888	$ 3,714,521
	2029	$ 4,446,463	$ 2,661,720	$ 664,185	$ 28,254	$ 1,613,984	$ 4,303,958	$ 3,414,539	$ 394,702	$ 3,809,242
	2030	$ 4,538,172	$ 2,711,654	$ 675,551	$ 28,819	$ 1,644,284	$ 4,384,757	$ 3,501,610	$ 404,767	$ 3,906,377
Metropolitan Transportation Plan "Out Years (FY 2031-2045)	2031	$ 4,631,916	$ 2,762,587	$ 687,144	$ 29,395	$ 1,675,189	$ 4,467,172	$ 3,590,901	$ 415,089	$ 4,005,990
	2032	$ 4,727,742	$ 2,814,539	$ 698,970	$ 29,983	$ 1,706,713	$ 4,551,235	$ 3,682,469	$ 425,673	$ 4,108,143
	2033	$ 4,825,697	$ 2,867,530	$ 711,031	$ 30,583	$ 1,738,868	$ 4,636,980	$ 3,776,372	$ 436,528	$ 4,212,900
	2034	$ 4,925,830	$ 2,921,581	$ 723,334	$ 31,194	$ 1,771,665	$ 4,724,440	$ 3,872,670	$ 447,659	$ 4,320,329
	2035	$ 5,028,190	$ 2,976,712	$ 735,883	$ 31,818	$ 1,805,118	$ 4,813,648	$ 3,971,423	$ 459,075	$ 4,430,498
	2036	$ 5,132,827	$ 3,032,946	$ 748,683	$ 32,454	$ 1,839,241	$ 4,904,641	$ 4,072,694	$ 470,781	$ 4,543,475
	2037	$ 5,239,795	$ 3,090,305	$ 761,739	$ 33,104	$ 1,874,045	$ 4,997,454	$ 4,176,548	$ 482,786	$ 4,659,334
	2038	$ 5,349,146	$ 3,148,812	$ 775,056	$ 33,766	$ 1,909,546	$ 5,092,123	$ 4,283,050	$ 495,097	$ 4,778,147
	2039	$ 5,460,935	$ 3,208,488	$ 788,639	$ 34,441	$ 1,945,757	$ 5,188,686	$ 4,392,267	$ 507,722	$ 4,899,990
	2040	$ 5,575,217	$ 3,269,357	$ 802,494	$ 35,130	$ 1,982,692	$ 5,287,180	$ 4,504,270	$ 520,669	$ 5,024,939
	2041	$ 5,692,050	$ 3,331,445	$ 816,626	$ 35,832	$ 2,020,366	$ 5,387,643	$ 4,619,129	$ 533,946	$ 5,153,075
	2042	$ 5,811,492	$ 3,394,774	$ 831,041	$ 36,549	$ 2,058,793	$ 5,490,116	$ 4,736,917	$ 547,562	$ 5,284,479
	2043	$ 5,933,603	$ 3,459,369	$ 845,744	$ 37,280	$ 2,097,989	$ 5,594,638	$ 4,857,708	$ 561,525	$ 5,419,233
	2044	$ 6,058,444	$ 3,525,256	$ 860,741	$ 38,026	$ 2,137,969	$ 5,701,251	$ 4,981,580	$ 575,843	$ 5,557,423
	2045	$ 6,186,078	$ 3,592,462	$ 876,038	$ 38,786	$ 2,178,749	$ 5,809,996	$ 5,108,610	$ 590,527	$ 5,699,138
	Totals	**$ 123,572,804**	**$ 72,354,674**	**$ 17,933,054**	**$ 772,382**	**$ 43,876,234**	**$ 117,003,291**	**$ 95,973,362**	**$ 11,093,997**	**$ 107,067,360**

Notes:

1) Derived from the transit fiscal constraint analysis in the SNHPC FY 2021-2045 Metropolitan Transportation Plan.

2) Estimated based on three-quarters of the direct Section 5307 MTA/CART allocation and CMAQ transfer to Section 5307 allocable to the region.

3) Derived from the transit fiscal constraint analysis in the SNHPC FY 2021-2045 Metropolitan Transportation Plan.

4) Estimated based on one-fifth of the direct Section 5310 MTA/CART allocation.

5) MTA/CART operations expenses assumed to grow at 2.55% per year from FY 2021 level.

6) MTA/CART preventative maintenance expenses assumed to grow at 2.55% per year from FY 2021 level.

6.3 Observations and Conclusions

Based on the information contained in this chapter, the following observations and conclusions can be made regarding the fiscal constraint of the SNHPC FY 2021 – FY 2045 MTP:

- Revenues from various Federal, State and local sources available for funding transportation projects have been identified in this chapter. These resources are reasonably expected to be available for implementation of regional projects contained in the SNHPC FY 2021 – FY 2045 MTP. Estimates of highway and transit funding assumed to be available for the period from FY 2021 – FY 2045 have also been included. The financial information in this chapter, which reflects realistic assumptions concerning the availability of funding, has been developed through a cooperative process between the SNHPC MPO, NHDOT, MTA/CART, and other partner agencies. This financial plan demonstrates the fiscal constraint of the SNHPC FY 2021 – FY 2045 MTP.

- As the SNHPC FY 2021 – FY 2045 MTP is fully programmed in accordance with anticipated revenues, it is evident that, in order to both expand the regional transportation infrastructure in the future and effectively preserve the existing system, additional revenues or funding sources may be required. Potential options for increasing available revenues include increases in the gas tax, increased tolls, or pursuit of additional funding through public-private partnerships.

- The transit funding projections included in this section are considered to be sufficient for maintaining the current service levels and replacement of capital. Additional dedicated sources of funding would be required in order to substantially grow or expand the region's public transportation system. It is anticipated that local match funding for transit will continue to be available from municipalities receiving MTA\CART services.

7.0 Project List

Project list provided on the following pages.

Table 26: Metropolitan Transportation Plan Project List

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
TOWN OF AUBURN										
29316	Griffin Mill Road	Bridge Rehabilitation- Griffin Mill Road Over Maple Falls Brook (Bridge #095/127)	2023	$ 140,552	$ 5,284	$ 268,423	$ -	$ 840,118	SAB, Local	State Aid Bridge Project
			2024	$ -	$ -	$ 425,859	$ -			
AUB-01	NH Route 121	Construction of Multi-use Path Along NH Route 121 from Eaton Hill Road to Shore Drive	2031	$ 100,807	$ -	$ -	$ -	$ 789,985	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2032	$ -	$ 689,178	$ -	$ -			
AUB-02	NH Route 101	Construction of Noise Barrier on NH Route 101 Eastbound between MP 61.6 and 62.0	2043	$ -	$ -	$ 1,566,128	$ -	$ 1,566,128	NHPP, Toll Credit	Noise Mitigation Project
TOWN OF BEDFORD										
13692C	NH Route 101	Rehabilitation or Replacement of Bridge #090/065 Carrying NH Route 101 Over Pulpit Brook	2021	$ 127,963	$ -	$ 3,110,184	$ -	$ 5,480,026	Bridg-T1-2-Rehab-Rcn, Other Fed Aid, Toll Credit	Bridge Replacement on Federal-aid System
			2022	$ -	$ -	$ 2,241,879	$ -			
16100	F.E. Everett Turnpike	Improvement to Bedford Main Line Toll Plaza to Institute All Electronic Tolling	2023	$ -	$ -	$ 8,450,000	$ -	$ 10,450,000	Turnpike	Electronic Tolling Project for Congestion Mitigation
			2024	$ -	$ -	$ 2,000,000	$ -			
21684	Catesby Lane	Bridge Replacement - Catesby Lane Over McQuade Brook (Bridge #102/098)	2021	$ 92,520	$ 5,140	$ 210,740	$ -	$ 625,435	SAB, Local	State Aid Bridge Project
			2022	$ -	$ -	$ 317,035	$ -			
24217	Beals Road	Bridge Replacement - Beals Road Over Baboosic Brook (Bridge #105/055)	2022	$ 159,718	$ 5,284	$ 443,849	$ -	$ 1,155,297	SAB, Local	State Aid Bridge Project
			2023	$ -	$ -	$ 546,446	$ -			
40664	U.S. Route 3	U.S. Route 3 Widening from Hawthorne Drive North to Manchester Airport Access Road	2023	$ 1,673,016	$ 280,188	$ -	$ -	$ 12,997,431	None-Highway, Toll Credit	Capacity Expansion of Bottleneck Segment, Potential EA/EIS
			2026	$ -	$ 3,115,750	$ 5,013,814	$ -			
			2029	$ -	$ -	$ 2,914,663	$ -			
42268	NH Route 101	Rehabilitate 90" Structural Plate Pipe Under NH Route 101/Boynton Street	2021	$ -	$ -	$ 446,666	$ -	$ 446,666	CRDR	Drainage Repair
BED-01	U.S. Route 3	Supplemental Construction Funding for U.S. Route 3 Widening from Hawthorne Drive North to Manchester Airport Access Road	2031	$ -	$ -	$ 6,008,506	$ -	$ 6,008,506	STBG, Toll Credit	Supplemental Funding for Project #40664
BED-02	NH Route 101	Construction of Noise Barrier on NH Route 101 Eastbound between MP 53.2 and 53.8	2041	$ -	$ -	$ 3,958,815	$ -	$ 3,958,815	NHPP, Toll Credit	Noise Mitigation Project
BED-03	NH Route 101	Construct Left Turn Lanes and Add Signals on NH Route 101 Between Joppa Hill Rd. and Elk Dr. per the Intent of the NH Route 101 Corridor Study	2031	$ 729,356	$ 128,634	$ 4,862,375	$ -	$ 5,720,365	NHPP, HSIP, Toll Credit	Safety Improvement Project
BED-04	NH Route 101	Construct Bicycle/Pedestrian Bridge across NH Route 101 at the Intersection of Bell Hill Road/Nashua Road/NH Route 101	2031	$ 385,903	$ 6,432	$ -	$ -	$ 2,107,223	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2032	$ -	$ -	$ 1,714,888	$ -			
BED-05	NH Route 101	Widening of NH Route 101 from Wallace Road to the Amherst Town Line	2032	$ 2,077,652	$ -	$ -	$ -	$ 51,543,809	NHPP, Toll Credit	Capacity Expansion, Potential EA/EIS
			2033	$ 2,130,632	$ 3,652,513	$ -	$ -			
			2034	$ -	$ 3,745,652	$ 12,978,684	$ -			
			2035	$ -	$ -	$ 13,309,640	$ -			
			2036	$ -	$ -	$ 13,649,036	$ -			
BED-06	NH Route 101	Construct a 10' Multi-use Path Along NH Route 101 from Wayside Drive to the Amherst Town Line	2039	$ 1,258,728	$ -	$ -	$ -	$ 9,894,352	STBG, Toll Credit	Bicycle/Pedestrian Improvement Project
			2040	$ -	$ 2,016,915	$ -	$ -			
			2041	$ -	$ -	$ 6,618,709	$ -			
BED-07	NH Route 101	Engineering Study of Grade Separated Design Alternatives at the Intersection of NH Route 101/NH Route 114/Boynton Street	2032	$ -	$ -	$ -	$ 329,786	$ 329,786	NHPP, Toll Credit	Corridor Engineering Study
BED-08	U.S. Route 3	Implement Adaptive Signal Control or Signal Performance Measures on U.S. Route 3 (River Rd.)	2035	$ 213,398	$ -	$ -	$ -	$ 1,964,116	CMAQ, Local	Congestion Mitigation and ITS Project
			2036	$ -	$ -	$ 1,750,718	$ -			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
BED-09	U.S. Route 3	Construct a Bicycle Lane on U.S. Route 3 in the Town of Bedford from the Merrimack Town Line to the Manchester City Line	2036	$ 437,680	$ -	$ -	$ -	$ 4,898,966	STBG, Toll Credit	Bicycle/Pedestrian Improvement Project
			2037	$ -	$ 673,261	$ 1,870,168	$ -			
			2038	$ -	$ -	$ 1,917,857	$ -			
BED-10	New Boston Road	Construct a Bicycle Lane on New Boston Road from NH Route 114 to the New Boston Town Line	2033	$ 338,196	$ -	$ -	$ -	$ 3,635,966	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2034	$ -	$ 416,184	$ -	$ -			
			2035	$ -	$ -	$ 1,422,654	$ -			
			2036	$ -	$ -	$ 1,458,932	$ -			
TOWN OF BOW										
29641	NH Route 3A	NH Route 3A Corridor Safety Improvements	2022	$ -	$ -	$ 3,272,018	$ -	$ 3,272,018	None-Highway, Toll Credit	Safety Improvement Project
TOWN OF CANDIA										
41592	NH Route 27/NH Route 43/Raymond Road	Safety and Operational Improvements on NH Route 27/NH Route 43/Raymond Road	2022	$ 174,369	$ -	$ -	$ -	$ 5,868,122	None-Highway, Toll Credit	Safety and Village Center Improvement Project
			2025	$ 189,430	$ 126,287	$ -	$ -			
			2028	$ -	$ -	$ 5,378,036	$ -			
CAND-01	NH Route 101	Construction of Park-and-Ride Facility at NH Route 101 Exit 3	2040	$ 201,692	$ 161,353	$ -	$ -	$ 1,720,757	NHPP, CMAQ, Toll Credit	Congestion Mitigation Project
			2041	$ -	$ -	$ 330,935	$ -			
			2042	$ -	$ -	$ 678,749	$ -			
			2043	$ -	$ -	$ 348,028	$ -			
CAND-02	NH Route 27 and NH Route 43	Construct Sidewalks and Improve Drainage Along NH Route 27 and NH Route 43 in the Candia Four Corners Village Area	2036	$ 364,733	$ -	$ -	$ -	$ 2,787,161	STBG, Toll Credit	Bicycle/Pedestrian Improvement Project
			2037	$ -	$ 149,613	$ 1,122,101	$ -			
			2038	$ -	$ -	$ 1,150,714	$ -			
CAND-03	NH Route 27	Intersection Improvements at NH Route 27/Healey Road/South Road	2037	$ 187,017	$ 74,807	$ -	$ -	$ 1,335,824	STBG, HSIP, Toll Credit	Safety Improvement Project
			2038	$ -	$ -	$ 1,074,000	$ -			
TOWN OF CHESTER										
41848	NH Route 102	NH Route 102/NH Route 121 Intersection Safety Improvements	2021	$ -	$ -	$ 1,130,800	$ -	$ 1,130,800	HSIP, Toll Credit	Safety Improvement Project
CHES-01	NH Route 102	Intersection Safety Improvements at NH Route 102/North Pond Road	2031	$ 160,793	$ 32,159	$ -	$ -	$ 1,314,225	STBG, HSIP, Toll Credit	Safety Improvement Project
			2032	$ -	$ -	$ 1,121,273	$ -			
CHES-02	NH Route 102	Intersection Improvements at NH Route 102/Webster Lane	2034	$ 173,410	$ 34,682	$ -	$ -	$ 1,203,950	STBG, Toll Credit	Intersection Improvement Project
			2035	$ -	$ -	$ 995,858	$ -			
CHES-03	NH Route 121	Intersection Improvements at NH Route 121/Pulpit Rock Road	2036	$ 182,366	$ 36,473	$ -	$ -	$ 1,266,133	STBG, Toll Credit	Intersection Improvement Project
			2037	$ -	$ -	$ 1,047,294	$ -			
TOWN OF DEERFIELD										
24477	NH Route 107	NH Route 107 Over Freese's Pond - Replace Bridge #137/116	2021	$ -	$ 56,540	$ -	$ -	$ 1,219,002	Bridg-T3-4-Rehab-Rcn, Toll Credit	Bridge Replacement on Federal-aid System
			2022	$ -	$ -	$ 1,162,462	$ -			
DEER-01	NH Route 107	Roundabout Conversion at Intersection of NH Route 107, Church Street, and Candia Road	2031	$ 295,859	$ 50,167	$ 1,964,245	$ -	$ 2,310,271	STBG, Toll Credit	Intersection Improvement Project
DEER-02	NH Route 107	Traffic Calming and Bicycle/Pedestrian Improvements on NH Route 107 in Deerfield Town Center	2037	$ 598,454	$ -	$ -	$ -	$ 4,085,809	STBG, Toll Credit	Safety, Bicycle/Pedestrian, and Village Center Improvement Project
			2038	$ -	$ 383,571	$ 1,687,715	$ -			
			2039	$ -	$ -	$ 1,416,069	$ -			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
DEER-03	NH Route 107 and NH Route 43	Intersection Improvements at NH Route 107/NH Route 43	2034	$ 208,092	$ 138,728	$ -	$ -	$ 1,769,474	STBG, Toll Credit	Intersection Improvement Project
			2035	$ -	$ -	$ 1,422,654	$ -			
DEER-04	NH Route 43	Intersection Improvements at NH Route 43/South Road	2042	$ 169,687	$ 42,422	$ -	$ -	$ 1,240,476	STBG, Toll Credit	Intersection Improvement Project
			2043	$ -	$ -	$ 610,790	$ -			
			2044	$ -	$ -	$ 417,577	$ -			
DEER-05	NH Route 43	Pavement Rehabilitation on NH Route 43 from NH Route 107 to the Candia Town Line	2036	$ -	$ -	$ 2,188,398	$ -	$ 2,188,398	Other Fed Aid, Toll Credits	Pavement Rehabilitation Project
DEER-06	NH Route 107	Pavement Rehabilitation on NH Route 107 from NH Route 43 to the Epsom Town Line	2035	$ -	$ -	$ 3,556,635	$ -	$ 3,556,635	Other Fed Aid, Toll Credits	Pavement Rehabilitation Project
TOWN OF DERRY										
DERR-01	Derry Rail Trail	Extension of Derry Rail Trail from Madden Road to Londonderry Town Line	2031	$ 147,929	$ -	$ -	$ -	$ 1,084,521	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2032	$ -	$ -	$ 936,592	$ -			
DERR-02	NH Route 28	Intersection Safety Improvements at NH Route 28/Lawrence Road/South Range Road	2031	$ 160,793	$ 32,159	$ -	$ -	$ 1,314,225	STBG, Toll Credit	Intersection Improvement Project
			2032	$ -	$ -	$ 1,121,273	$ -			
DERR-03	NH Route 28	Shoulder and Drainage Improvements on NH Route 28 in the Town of Derry	2037	$ 448,840	$ -	$ -	$ -	$ 5,877,527	Other Fed Aid, Toll Credit	Roadway and Drainage Improvement Project
			2038	$ -	$ 767,143	$ 2,301,429	$ -			
			2039	$ -	$ -	$ 2,360,115	$ -			
DERR-04	NH Route 28	Implement Adaptive Signal Control or Signal Performance Measures on NH Route 28 (Crystal Ave)	2038	$ 230,143	$ -	$ -	$ -	$ 1,646,212	CMAQ, Local	Congestion Mitigation and ITS Project
			2039	$ -	$ -	$ 1,416,069	$ -			
DERR-05	NH Route 102	Engineering Study of the Intersection of NH Route 102/NH Route 28B in Derry to Identify Potential Operational Improvements	2044	$ -	$ -	$ -	$ 356,903	$ 356,903	NHPP, Toll Credit	Engineering Study
TOWN OF FRANCESTOWN										
15765	South New Boston Road	Bridge Replacement - South New Boston Road Over S. Br. Piscataquog River (Bridge #149/058)	2021	$ -	$ -	$ 564,299	$ -	$ 564,299	SAB, Local	State Aid Bridge Project
FRAN-01	NH Route 136	Pavement Rehabilitation on NH Route 136 from NH Route 47 to the Greenfield Town Line	2038	$ -	$ -	$ 2,301,429	$ -	$ 2,301,429	Other Fed Aid, Toll Credits	Pavement Rehabilitation Project
FRAN-02	NH Route 136	Pavement Rehabilitation on NH Route 136 from NH Route 47 to the New Boston Town Line	2037	$ -	$ -	$ 2,244,202	$ -	$ 2,244,202	Other Fed Aid, Toll Credits	Pavement Rehabilitation Project
FRAN-03	NH Route 136 and NH Route 47	Traffic Calming and Pedestrian Improvements in Francestown Village Center	2031	$ 192,951	$ 64,317	$ -	$ -	$ 1,576,412	TAP, STBG, Local	Village Center Improvement Project
			2032	$ -	$ -	$ 1,319,144	$ -			
TOWN OF GOFFSTOWN										
41597	Center Street	Bridge Replacement - Center Street Over Harry Brook (Bridge #129/116)	2025	$ 156,138	$ 5,741	$ 757,721	$ -	$ 919,600	SAB, Local	State Aid Bridge Project
GOFF-01	NH Route 114	Operational and Capacity Improvements on NH Route 114 from Goffstown/Bedford Town Line to Henry Bridge Road	2031	$ 964,757		$ -	$ -	$ 25,176,498	STBG, Toll Credit	Capacity Expansion, Potential EA/EIS
			2032	$ 989,358	$ 1,319,144	$ -	$ -			
			2033	$ -	$ 1,352,782	$ 10,145,869	$ -			
			2034	$ -	$ -	$ 10,404,588	$ -			
GOFF-02	Goffstown Rail Trail	Completion of the Goffstown Rail Trail from the Piscataquog River to the Manchester City Line	2032	$ 197,872	$ -	$ -	$ -	$ 1,550,654	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2033	$ -	$ -	$ 1,352,782	$ -			
GOFF-03	Various (Sidewalks)	Construction of Sidewalk Improvements on South Mast Street, Church Street, Warren Avenue, Eden Street, Daniel Plummer Road, and St. Anselm Drive	2037	$ 149,613	$ 37,403	$ -	$ -	$ 1,414,445	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2038	$ -	$ -	$ 1,227,429	$ -			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
TOWN OF HOOKSETT										
29611	U.S. Route 3	Reconstruction and Widening of U.S. Route 3 from NH Route 27/Whitehall Road/Martin's Ferry Road to West Alice Ave./Alice Ave.	2021	$ 59,461	$ 208,111	$ -	$ -	$ 14,621,783	None-Highway, Toll Credit	Capacity Expansion, Potential EA/EIS
			2022	$ -	$ 2,445,007	$ -	$ -			
			2024	$ -	$ -	$ 5,872,583	$ -			
			2025	$ -	$ -	$ 6,036,621	$ -			
HOOK-01	NH Route 3A	Engineering Study of NH Route 3A from Hackett Hill Road to Main Street	2031	$ -	$ -	$ -	$ 385,903	$ 385,903	STBG, Toll Credit	Engineering Study
HOOK-02	Interstate 93	Construction of Noise Barrier on I-93 Southbound between MP 8.2 and 8.6	2044	$ -	$ -	$ 1,124,245	$ -	$ 2,277,158	NHPP, Toll Credit	Noise Mitigation Project
			2045	$ -	$ -	$ 1,152,913	$ -			
HOOK-03	U.S. Route 3	Widening of U.S. Route 3/NH Route 28 from Legends Drive to Hunt Street in Hooksett	2036	$ 729,466	$ -	$ -	$ -	$ 19,288,829	NHPP, Toll Credit	Capacity Expansion, Potential EA/EIS
			2037	$ 748,067	$ 1,122,101	$ -	$ -			
			2038	$ -	$ 1,150,714	$ 7,671,430	$ -			
			2039	$ -	$ -	$ 7,867,051	$ -			
HOOK-04	U.S. Route 3	Implement Adaptive Signal Control or Signal Performance Measures on U.S. Route 3 (Hooksett Rd)	2038	$ 191,786	$ -	$ -	$ -	$ 1,765,196	CMAQ, Local	Congestion Mitigation and ITS Project
			2039	$ -	$ -	$ 1,573,410	$ -			
HOOK-05	Hooksett Riverwalk Trail	Completion of the Hooksett Riverwalk Trail	2038	$ 191,786	$ -	$ 1,380,857	$ -	$ 1,572,643	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
HOOK-06	NH Route 3A	Construct a Bicycle Lane on NH Route 3A from Main Street to the Manchester City Line	2035	$ 426,796	$ -	$ -	$ -	$ 4,303,725	STBG, Toll Credit	Bicycle/Pedestrian Improvement Project
			2036	$ -	$ 510,626	$ -	$ -			
			2037	$ -	$ -	$ 3,366,303	$ -			
HOOK-07	NH Route 28A	Intersection Improvements at NH Route 28A/Alice Avenue and NH Route 28A/Zapora Drive	2034	$ 208,092	$ 69,364	$ -	$ -	$ 2,071,645	STBG, Toll Credit	Intersection Improvement Project
			2035	$ -	$ -	$ 1,155,906	$ -			
			2036	$ -	$ -	$ 638,283	$ -			
TOWN OF LONDONDERRY										
41593	NH Route 28 and NH Route 128	Safety and Operational Improvements at the Intersection of NH Route 28/NH Route 128	2023	$ 179,252	$ -	$ -	$ -	$ 1,672,335	None-Highway, Toll Credit	Intersection Improvement Project
			2026	$ 194,734	$ 66,599	$ -	$ -			
			2027	$ -	$ -	$ 1,231,750	$ -			
41715	NH Route 28	Operational and Capacity Improvements at the Intersection of NH Route 28/Stonehenge Road	2021	$ -	$ -	$ 1,365,188	$ -	$ 1,365,188	None-Highway, Non-Participating	Intersection Improvement Project
42508	Various	Construct a 1 Mile Multi-use Path Along the Side of Harvey Road, Webster Road, and Grenier Field Road	2021	$ 41,120	$ 30,840	$ -	$ -	$ 1,026,818	TAP, Local, Non-Participating	Bicycle/Pedestrian Improvement Project
			2024	$ -	$ -	$ 954,858	$ -			
LON-01	NH Route 28 and NH Route 128	Supplemental Funding for Safety and Operational Improvements at the Intersection of NH Route 28/NH Route 128	2031	$ 412,273	$ 171,598	$ 4,371,249	$ -	$ 4,955,120	STBG, Toll Credit	Supplemental Funding for Project #41593
LON-02	NH Route 28	Increase Capacity on NH Route 28 from Symmes Drive/Vista Ridge Drive to the Intersection of NH Route 128	2035	$ 889,159	$ -	$ -	$ -	$ 16,837,829	NHPP, Toll Credit	Capacity Expansion, Potential EA/EIS
			2036	$ 911,832	$ -	$ -	$ -			
			2037	$ -	$ 1,122,101	$ -	$ -			
			2038	$ -	$ 1,150,714	$ -	$ -			
			2039	$ -	$ -	$ 5,978,959	$ -			
			2040	$ -	$ -	$ 6,454,129	$ -			
			2041	$ -	$ -	$ 330,935	$ -			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
LON-03	NH Route 102	Expand Capacity of NH Route 102 from I-93 Exit 4 to NH Route 128	2033	$ 2,029,174	$ -	$ -	$ -	$ 36,426,651	NHPP, Toll Credit	Capacity Expansion, Potential EA/EIS
			2034	$ 2,080,918	$ -	$ -	$ -			
			2035	$ -	$ 2,489,645	$ -	$ -			
			2036	$ -	$ 2,553,131	$ -	$ -			
			2037	$ -	$ -	$ 13,465,210	$ -			
			2038	$ -	$ -	$ 13,808,573	$ -			
LON-04	Pillsbury Road	Construction of 4,300 LF of Sidewalk along Pillsbury Road from Ash Street to Gilcreast Road	2031	$ 173,656	$ -	$ -	$ -	$ 1,228,971	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2032	$ -	$ -	$ 1,055,315	$ -			
LON-05	Londonderry Rail Trail	Construction of Phase 7 of the Londonderry Rail Trail from NH Route 28 to the Derry Town Line	2033	$ 169,098	$ -	$ -	$ -	$ 1,257,504	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2034	$ -	$ 34,682	$ 520,229	$ -			
			2035	$ -	$ -	$ 533,495	$ -			
CITY OF MANCHESTER										
15401	Goffs Falls Road	Bridge Replacement - Goffs Fall Road Over B&M Railroad (Bridge #188/092)	2021	$ -	$ -	$ 835,250	$ -	$ 835,250	SAB, Local	State Aid Bridge Project
15837	U.S. Route 3	Bridge Rehabilitation - U.S. Route 3 Over B&M Railroad (Bridge #144/075)	2028	$ 521,699	$ 30,331	$ 1,910,875	$ -	$ 4,863,814	SAB, Local	State Aid Bridge Project
			2029	$ -	$ -	$ 2,400,909	$ -			
16099	F.E. Everett Turnpike	Preliminary Engineering and ROW for Reconstruction of the F.E. Everett Turnpike at Exits 6 and 7	2022	$ 1,959,789	$ -	$ -	$ -	$ 13,369,120	Turnpike	Turnpike Improvement Project, EA Pending
			2023	$ 1,375,196	$ 3,929,133	$ -	$ -			
			2024	$ -	$ 6,105,002	$ -	$ -			
16099A	F.E. Everett Turnpike	Reconstruction and Widening of F.E. Everett Turnpike Exit 6 in Manchester	2025	$ -	$ -	$ 8,587,581	$ -	$ 97,858,468	Turnpike	Turnpike Improvement Project, EA Pending
			2026	$ -	$ -	$ 29,684,537	$ -			
			2027	$ -	$ -	$ 29,756,904	$ -			
			2028	$ -	$ -	$ 29,829,446	$ -			
16099B	F.E. Everett Turnpike	Reconstruction of F.E. Everett Turnpike Exit 7 in Manchester	2024	$ -	$ -	$ 15,555,124	$ -	$ 50,234,494	Turnpike	Turnpike Improvement Project, EA Pending
			2025	$ -	$ -	$ 23,100,808	$ -			
			2026	$ -	$ -	$ 11,578,562	$ -			
24206	Salmon Street	Bridge Rehabilitation - Salmon Street WB Over RD, BMRR, and Merrimack River (Bridge #106/072)	2021	$ 500,000	$ -	$ -	$ -	$ 8,288,389	MOBRR, Local, Toll Credit	Bridge Rehabilitation on Federal-aid System
			2022	$ 102,800	$ -	$ -	$ -			
			2028	$ -	$ 6,066	$ 5,088,770	$ -			
			2029	$ -	$ -	$ 2,590,753	$ -			
24212	Salmon Street	Bridge Rehabilitation - Salmon Street EB Over RD, BMRR, and Merrimack River and Adjacent Ramp "E" (Bridge #107/072 and Bridge #107/071)	2021	$ 500,000	$ -	$ -	$ -	$ 10,060,497	MOBRR, Local, Toll Credit	Bridge Rehabilitation on Federal-aid System
			2022	$ 195,320	$ -	$ -	$ -			
			2023	$ 211,357	$ -	$ -	$ -			
			2024	$ -	$ 10,864	$ -	$ -			
			2025	$ -	$ -	$ 5,583,962	$ -			
			2026	$ -	$ -	$ 3,558,994	$ -			
28336	Queen City Avenue	Bridge Rehabilitation - Queen City Avenue Over I-293, BMRR, and Merrimack River (Bridge #151/065)	2021	$ -	$ -	$ 4,577,838	$ -	$ 4,577,838	SAB, Local	State Aid Bridge Project
40428	Various	Construct Multi-use Path Along Baker St, Brown Ave, Dubisz St, and Sundial Ave.	2021	$ -	$ -	$ 699,276	$ -	$ 699,276	TAP, Local	Bicycle/Pedestrian Improvement Project
41414	Huse Road	Rehabilitate Red List Bridge Carrying Huse Road Over I-293 and NH Route 101	2021	$ 169,620	$ -	$ 2,827,000	$ -	$ 2,996,620	Bridg-T3-4-Rehab-Rcn, Toll Credit	Bridge Rehabilitation on Federal-aid System

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
41594	Interstate 293	Operational Improvements at the I-293 Exit 1 Interchange	2024	$ 184,271	$ -	$ -	$ -	$ 2,274,584	None-Highway, Toll Credits	Congestion Mitigation and ITS Project
			2026	$ 194,734	$ 66,567	$ -	$ -			
			2028	$ -	$ -	$ 1,829,012	$ -			
41747	Granite Street and South Willow Street	Implement an Adaptive Signal Control System on Granite Street and Upgrade South Willow Street Signal Performance	2022	$ -	$ -	$ 1,294,560	$ -	$ 1,294,560	CMAQ, Local	Congestion Mitigation and ITS Project
42509	Various	Construct ADA Compliant Pedestrian and Bicycle Trail Along Perimeter Rd, South Willow St, and Harvey Rd.	2021	$ 51,400	$ 25,700	$ -	$ -	$ 1,024,252	TAP, Local	Bicycle/Pedestrian Improvement Project
			2025	$ -	$ -	$ 947,152	$ -			
42881	South Willow Street and Weston Road	Construct a NB Right Turn Lane and Modify Lane Utilization at South Willow St/Weston Rd Intersection	2021	$ 200,000	$ -	$ -	$ -	$ 1,042,549	CMAQ, Local	Congestion Mitigation Project
			2022	$ -	$ 100,000	$ -	$ -			
			2023	$ -	$ 2,800	$ 739,749	$ -			
42886	River Road and Bicentennial Drive	Construct a roundabout at entrance of Derryfield School at River Rd/Bicentennial Rd intersection	2021	$ 120,000	$ -	$ -	$ -	$ 1,907,085	CMAQ, Local	Congestion Mitigation Project
			2024	$ -	$ -	$ 1,787,085	$ -			
MAN-01	Interstate 293 and Second Street	Engineering Study of Second Street and I-293 Corridor from Exit 5 to NH Route 101	2031	$ -	$ -	$ -	$ 2,572,685	$ 2,572,685	Turnpike	Engineering Study
MAN-02	Campbell Street	Improvements to the Intersections of Hooksett Rd./Campbell St. and Hamel Dr./Campbell St.	2031	$ 383,330	$ 217,392	$ 2,168,130	$ -	$ 4,992,270	STBG, Toll Credit	Intersection Improvement Project
			2032	$ -	$ -	$ 2,223,418	$ -			
MAN-03	Interstate 93 and Wellington Road	Operational, Capacity, and Bicycle Improvements on Wellington Road/I-93 Exit 8 Interchange	2031	$ 879,858	$ 38,590	$ 4,012,103	$ -	$ 9,044,962	NHPP, Toll Credit	Congestion Mitigation, Bicycle, and ITS Project
			2032	$ -	$ -	$ 4,114,411	$ -			
MAN-04	NH Route 101	Construction of Noise Barrier on NH Route 101 Westbound between MP 0.4 and 0.9	2041	$ -	$ -	$ 3,226,621	$ -	$ 3,226,621	NHPP, Toll Credit	Noise Mitigation Project
MAN-05	Interstate 93	Construction of Noise Barrier on I-93 Northbound between MP 22.1 and 22.9	2041	$ -	$ -	$ 4,534,643	$ -	$ 5,051,340	NHPP, Toll Credit	Noise Mitigation Project
			2042	$ -	$ -	$ 516,697	$ -			
MAN-06	Interstate 93	Construction of Noise Barriers on I-93 Southbound between MP 107.0 and 107.8, 108.4 and 108.8, and 108.9 and 109.7.	2040	$ -	$ -	$ 6,958,357	$ -	$ 14,094,153	NHPP, Toll Credit	Noise Mitigation Project
			2041	$ -	$ -	$ 7,135,796	$ -			
MAN-07	F.E. Everett Turnpike	Construction of Noise Barrier on F.E. Everett Turnpike Southbound between MP 18.9 and 19.2	2042	$ -	$ -	$ 1,272,654	$ -	$ 1,272,654	Turnpike	Noise Mitigation Project
MAN-08	Interstate 293	Reconstruction of the I-293 Exit 4 Interchange	2039	$ 6,293,641	$ -	$ -	$ -	$ 133,980,610	Turnpike, NHPP, Toll Credit	Interstate Interchange Reconstruction, Potential EA/EIS
			2040	$ 6,454,129	$ 8,067,661	$ -	$ -			
			2041	$ -	$ 8,273,386	$ -	$ -			
			2042	$ -	$ -	$ 25,240,964	$ -			
			2043	$ -	$ -	$ 25,884,608	$ -			
			2044	$ -	$ -	$ 26,544,666	$ -			
			2045	$ -	$ -	$ 27,221,555	$ -			
MAN-09	Interstate 293	Expansion of the I-293 Mainline to Three Lanes in Each Direction from Exit 5 to the NH Route 101 Interchange	2039	$ 3,933,526	$ -	$ -	$ -	$ 90,738,633	Turnpike, NHPP, Toll Credit	Interstate Capacity Expansion, Potential EA/EIS
			2040	$ 4,033,830	$ 6,050,746	$ -	$ -			
			2041	$ -	$ 6,205,040	$ -	$ -			
			2042	$ -	$ -	$ 16,968,715	$ -			
			2043	$ -	$ -	$ 17,401,417	$ -			
			2044	$ -	$ -	$ 17,845,154	$ -			
			2045	$ -	$ -	$ 18,300,205	$ -			
MAN-10	U.S. Route 3	Implement Adaptive Signal Control or Signal Performance Measures on U.S. Route 3 (Second Street, Elm Street, and Hooksett Road)	2031	$ 385,903	$ -	$ -	$ -	$ 3,683,764	NHPP, CMAQ, Local, Toll Credit	Congestion Mitigation and ITS Project
			2032	$ -	$ -	$ 3,297,861	$ -			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
MAN-11	NH Route 28	Implement Adaptive Signal Control or Signal Performance Measures on NH Route 28 (Beech and Maple Street)	2034	$ 346,820	$ -	$ -	$ -	$ 3,192,128	STBG, CMAQ, Local, Toll Credit	Congestion Mitigation and ITS Project
			2035	$ -	$ -	$ 2,845,308	$ -			
MAN-12	Queen City Avenue, Cilley Road, and South Willow Street	Convert the Queen City Avenue/Cilley Road/South Willow Street Interchange to a Dual Roundabout System	2031	$ 964,757	$ -	$ -	$ -	$ 7,566,843	NHPP, Toll Credit	Intersection Improvement Project
			2032	$ -	$ 857,444	$ 2,836,160	$ -			
			2033	$ -	$ -	$ 2,908,482	$ -			
MAN-13	Manchester-Lawrence RR Corridor	Convert the Former Manchester-Lawrence RR Corridor into a Vehicular Roadway with Multi-Use Path from South Commercial St. to Queen City Ave.	2034	$ 1,040,459	$ -	$ -	$ -	$ 19,071,642	STBG, Toll Credit	New Roadway, Potential EA/EIS
			2035	$ 1,066,991	$ 711,327	$ -	$ -			
			2036	$ -	$ -	$ 8,024,125	$ -			
			2037	$ -	$ -	$ 8,228,740	$ -			
MAN-14	Granite Street and Commercial Street	Construct Pedestrian Bridge at the Intersection of Granite and Commercial Street	2036	$ 437,680	$ -	$ -	$ -	$ 8,655,516	STBG, Toll Credit	Bicycle/Pedestrian Improvement Project
			2037	$ 448,840	$ -	$ -	$ -			
			2038	$ -	$ 383,571	$ 3,461,733	$ -			
			2039	$ -	$ -	$ 3,923,692	$ -			
MAN-15	New Roadway	Establish a New North-South Roadway from South Commercial Street to Sundial Avenue as Proposed in the Manchester Transit-Oriented Development Plan	2036	$ 729,466	$ -	$ -	$ -	$ 11,617,399	STBG, Toll Credit	New Roadway, Potential EA/EIS
			2037	$ 748,067	$ 1,122,101	$ -	$ -			
			2038	$ -	$ 1,150,714	$ -	$ -			
			2039	$ -	$ -	$ 7,867,051	$ -			
MAN-16	Multimodal Center	Construct Multimodal Transportation Center in Downtown Manchester as Identified in the Manchester Transit-Oriented Development Plan	2040	$ -	$ -	$ 4,033,830	$ -	$ 8,170,523	STBG, Toll Credit	New Multimodal Capital Facility
			2041	$ -	$ -	$ 4,136,693	$ -			
MAN-17	U.S. Route 3	Engineering Study of to Identify Design Alternatives to Improve Operations at U.S. Route 3/NH Route 28/Webster Street	2042	$ -	$ -	$ -	$ 339,374	$ 339,374	NHPP, Toll Credit	Engineering Study
MAN-18	South Manchester Rail Trail	Supplemental Funding to Construct Multi-use Path Along Baker St, Brown Ave, Dubisz St, and Sundial Ave. to South Manchester Rail Trail	2035	$ 355,664	$ -	$ -	$ -	$ 3,183,439	TAP, STBG, Local	Supplemental Funding for Project #40428
			2036	$ -	$ 583,573	$ -	$ -			
			2037	$ -	$ -	$ 2,244,202	$ -			
MAN-19	Second Street	Construction of Second Street Bicycle/Pedestrian Improvements as Proposed in the 2015 Second Street Corridor Study	2031	$ 643,171	$ 482,378	$ -	$ -	$ 6,296,100	TAP, NHPP, Local	Bicycle/Pedestrian Improvement Project
			2032	$ -	$ 494,679	$ 2,308,503	$ -			
			2033	$ -	$ -	$ 2,367,369	$ -			
MAN-20	Manchester Riverwalk Trail	Expansion of the Manchester Riverwalk from the Piscataquoq Trail to North Commercial Street	2031	$ 771,806	$ 241,189	$ -	$ -	$ 6,745,340	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2032	$ -	$ 82,447	$ 1,246,591	$ -			
			2033	$ -	$ -	$ 4,403,307	$ -			
TOWN OF NEW BOSTON										
14771	Gregg Mill Road	Bridge Replacement - Gregg Mill Road Over South Branch Piscataquog River (Bridge #132/138)	2024	$ 162,956	$ 5,432	$ 540,471	$ -	$ 1,376,142	SAB, Local	State Aid Bridge Project
			2025	$ -	$ -	$ 667,283	$ -			
15505	Tucker Mill Road	Bridge Replacement - Tucker Mill Road Over Middle Branch Piscataquog River (Bridge #087/150)	2025	$ 167,519	$ 5,584	$ 555,604	$ -	$ 1,414,674	SAB, Local	State Aid Bridge Project
			2026	$ -	$ -	$ 685,967	$ -			
27729	NH Route 13	Culvert Replacement for Red List Bridge Carrying NH Route 13 Over Cochrane Brook (Bridge #122/120)	2023	$ 179,252	$ -	$ -	$ -	$ 1,687,815	Bridg-T3-4-Rehab-Rcn, Toll Credit	Bridge Replacement on Federal-aid System
			2024	$ 245,694	$ -	$ -	$ -			
			2025	$ -	$ -	$ 1,262,869	$ -			
NEWB-01	NH Route 13 and NH Route 136	Construct Village Center Improvements as Envisioned in New Boston Context Sensitive Solutions Analysis	2032	$ 329,786	$ 131,914	$ -	$ -	$ 2,152,678	STBG, Toll Credit	Safety, Bicycle/Pedestrian, and Village Center Improvement Project
			2033	$ -	$ -	$ 1,690,978	$ -			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
NEWB-02	NH Route 136	Pavement Rehabilitation on NH Route 136 from NH Route 13 to Francestown Town Line	2036	$ -	$ -	$ 3,282,596	$ -	$ 3,282,596	STBG, Toll Credits	Pavement Rehabilitation Project
NEWB-03	NH Route 13	Shoulder and Drainage Improvements on NH Route 13 from New Boston Village Center to the Goffstown Town Line	2031	$ 353,744	$ 321,586	$ -	$ -	$ 4,302,977	STBG, Toll Credit	Roadway and Drainage Improvement Project
			2032	$ -	$ -	$ 3,627,647	$ -			
TOWN OF WEARE										
14338	Lull Road	Bridge Replacement - Lull Road Over Peacock Brook (Bridge #082/045)	2026	$ 118,021	$ 5,901	$ 219,519	$ -	$ 569,106	SAB, Local	State Aid Bridge Project
			2027	$ -	$ -	$ 225,665	$ -			
41471	NH Route 77	Address Bridge Carrying NH Route 77 Over Canal 2 Choate Brook in the Town of Weare	2022	$ 116,246	$ -	$ -	$ -	$ 4,065,702	Bridg-T3-4-Rehab-Rcn, Toll Credit	Bridge Replacement on Federal-aid System
			2024	$ 122,847	$ -	$ -	$ -			
			2026	$ 129,823	$ -	$ -	$ -			
			2027	$ 266,916	$ -	$ -	$ -			
			2028	$ -	$ -	$ 3,429,870	$ -			
WEA-01	NH Route 77	Pavement Rehabilitation on NH Route 77 from NH Route 114 to the Dunbarton Town Line	2036	$ -	$ -	$ 4,012,062	$ -	$ 4,012,062	STBG, Toll Credits	Pavement Rehabilitation Project
WEA-02	NH Route 114	Traffic Calming and Pedestrian Improvements in Weare Village Center	2034	$ 242,774	$ 69,364	$ -	$ -	$ 1,805,925	TAP, STBG, Local	Village Center Improvement Project
			2035	$ -	$ 71,133	$ 1,422,654	$ -			
TOWN OF WINDHAM										
40665	NH Route 28 and Roulston Road	Intersection Improvements at NH Route 28/Roulston Road	2022	$ 87,185	$ -	$ -	$ -	$ 1,540,753	None-Highway, Toll Credit	Intersection Safety Improvement Project
			2023	$ 20,913	$ -	$ -	$ -			
			2024	$ 30,712	$ -	$ -	$ -			
			2025	$ -	$ 11,050	$ -	$ -			
			2026	$ -	$ -	$ 1,390,893	$ -			
41632	Castle Hill Road	Bridge Replacement - Castle Hill Road Over Beaver Brook (Bridge #057/051)	2021	$ -	$ -	$ 308,400	$ -	$ 308,400	SAB, Local	State Aid Bridge Project
WIND-01	NH Route 111	Expansion of NH Route 111 to a 4-lane Divided Road Between Wall St. and Hardwood Rd. and Constructing 2-lane Roundabouts at Four Intersections	2031	$ 2,894,271	$ -	$ -	$ -	$ 32,676,692	NHPP, Toll Credit	Capacity Expansion, Potential EA/EIS
			2032	$ 989,358	$ 1,319,144	$ -	$ -			
			2033	$ -	$ -	$ 8,928,364	$ -			
			2034	$ -	$ -	$ 9,156,038	$ -			
			2035	$ -	$ -	$ 9,389,517	$ -			
WIND-02	Windham Greenway Trail	Construction of the Windham Greenway Trail from North Lowell Road to Old Mill Road	2036	$ 218,840	$ 29,179	$ -	$ -	$ 2,118,187	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2037	$ -	$ -	$ 1,870,168	$ -			
REGIONAL AND MULTI-TOWN PROJECTS										
10418X	Interstate 93	Final Design and ROW for I-93 Salem to Manchester Corridor Post September 4, 2014	2021	$ 163,966	$ -	$ -	$ -	$ 163,966	Other Fed Aid, Toll Credits	Remaining PE and ROW for Interstate 93 Widening
13065	I-93 Exit 4A	I-93 Exit 4A - Preliminary Design, Final Design, ROW, and Construction of New Interchange and Connecting Roadway	2021	$ -	$ 5,991,938	$ 21,336,187	$ -	$ 66,489,570	Other Fed Aid, Non-Participating, Toll Credit	New Interstate Interchange, Supplemental Draft EIS Complete
			2022	$ -	$ -	$ 14,161,445	$ -			
			2023	$ -	$ -	$ 12,500,000	$ -			
			2024	$ -	$ -	$ 12,500,000	$ -			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
13761	F.E Everett Turnpike	F.E. Everett Turnpike Widening of 2-Lane Sections from Exit 8 in Nashua to I-293 in Bedford	2021	$ 1,028,000	$ 4,112,000	$ 10,963,826	$ -	$ 141,804,196	NHPP, Toll Credit	Capacity Expansion, Potential EA/EIS
			2022	$ -	$ -	$ 30,673,734	$ -			
			2023	$ -	$ -	$ 41,358,144	$ -			
			2024	$ -	$ -	$ 28,655,177	$ -			
			2025	$ -	$ -	$ 25,013,315	$ -			
13692D	NH Route 101	Traffic and Safety Improvements Consistent with the Intent of the 2002 Corridor Study in Wilton, Milford, Amherst, and Bedford	2021	$ 478,603	$ -	$ -	$ -	$ 7,556,863	Other Fed Aid, Toll Credit	Corridor-wide Safety Improvement Project
			2022	$ -	$ -	$ 2,895,720	$ -			
			2023	$ -	$ -	$ 4,182,540	$ -			
14633	Interstate 93	Debt Service Project for I-93 Capacity Improvements - Northern Projects	2021	$ -	$ -	$ 2,147,107	$ -	$ 221,578,461	SB367-4-CENTS	Debt Service Project (Supported with State Funding from SB 367 Road Toll Increase)
			2022	$ -	$ -	$ 2,195,000	$ -			
			2023	$ -	$ -	$ 2,195,000	$ -			
			2024	$ -	$ -	$ 2,197,986	$ -			
			2025	$ -	$ -	$ 2,192,014	$ -			
			2026	$ -	$ -	$ 23,405,706	$ -			
			2027	$ -	$ -	$ 23,405,706	$ -			
			2028	$ -	$ -	$ 23,405,706	$ -			
			2029	$ -	$ -	$ 23,405,706	$ -			
			2030	$ -	$ -	$ 23,405,706	$ -			
			2031	$ -	$ -	$ 23,405,706	$ -			
			2032	$ -	$ -	$ 23,405,706	$ -			
			2033	$ -	$ -	$ 23,405,706	$ -			
			2034	$ -	$ -	$ 23,405,706	$ -			
14800B	Interstate 93	I-93 Exit 5 Interchange Reconstruction - Debt Service for Project 14633F	2021	$ -	$ -	$ 7,562,852	$ -	$ 36,698,677	GARVEE Debt Service, RZED	Debt Service Project
			2022	$ -	$ -	$ 7,475,956	$ -			
			2023	$ -	$ -	$ 7,354,902	$ -			
			2024	$ -	$ -	$ 7,224,007	$ -			
			2025	$ -	$ -	$ 7,080,960	$ -			
14800C	Interstate 93	Exit 3 Area, Project Initiated to Track GARVEE Bond Debt Service Attributable to the 13933N Project	2021	$ -	$ -	$ 2,575,491	$ -	$ 12,497,550	GARVEE Debt Service, RZED	Debt Service Project
			2022	$ -	$ -	$ 2,545,899	$ -			
			2023	$ -	$ -	$ 2,504,675	$ -			
			2024	$ -	$ -	$ 2,460,099	$ -			
			2025	$ -	$ -	$ 2,411,386	$ -			
14800F	Interstate 93	I-93 Exit 3 Area- NB ML Connections, NB Ramps, and NH 111 Relocation - Debt Service Project for 13933H	2021	$ -	$ -	$ 778,823	$ -	$ 3,779,233	GARVEE Debt Service, RZED	Debt Service Project
			2022	$ -	$ -	$ 769,874	$ -			
			2023	$ -	$ -	$ 757,409	$ -			
			2024	$ -	$ -	$ 743,929	$ -			
			2025	$ -	$ -	$ 729,198	$ -			
16165I	Various	Resurfacing Various Tier 2, 3, and 4 Roadways in NHDOT District 5	2021	$ -	$ -	$ 1,009,372	$ -	$ 1,009,372	Pave-T2-Resurf, Pave-T3-4-Resurf, Toll Credit	Pavement Resurfacing Project
40042	Central Turnpike	Drainage Rehabilitation Along the F.E. Everett Turnpike	2022	$ -	$ -	$ 743,976	$ -	$ 743,976	Turnpike	Turnpike Improvement Project
41821	Central Turnpike	Paving on the F.E. Everett Turnpike	2021	$ -	$ -	$ 3,798,460	$ -	$ 3,798,460	Turnpike	Turnpike Improvement Project
41859	NH Route 114	Corridor Study of NH Route 101 in Bedford to Henry Bridge Road in Goffstown	2021	$ -	$ -	$ -	$ 385,000	$ 385,000	CORRST	Corridor Engineering Study

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
42893	Various	Debt Service for Statewide Projects - Issuance 2021	2021	$ -	$ -	$ 2,000,000	$ -	$ 38,700,000	2021 GARVEE Bond	Debt Service Project
			2022	$ -	$ -	$ 2,100,000	$ -			
			2023	$ -	$ -	$ 2,100,000	$ -			
			2024	$ -	$ -	$ 2,000,000	$ -			
			2025	$ -	$ -	$ 2,000,000	$ -			
			2026	$ -	$ -	$ 2,000,000	$ -			
			2027	$ -	$ -	$ 6,800,000	$ -			
			2028	$ -	$ -	$ 6,700,000	$ -			
			2029	$ -	$ -	$ 6,500,000	$ -			
			2030	$ -	$ -	$ 6,500,000	$ -			
42894	Various	Debt Service for Statewide Projects - Issuance 2026	2026	$ -	$ -	$ 1,900,000	$ -	$ 44,204,080	2026 GARVEE Bond	Debt Service Project
			2027	$ -	$ -	$ 10,576,020	$ -			
			2028	$ -	$ -	$ 10,576,020	$ -			
			2029	$ -	$ -	$ 10,576,020	$ -			
			2030	$ -	$ -	$ 10,576,020	$ -			
REG-01	Various	Rehabilitation and/or Replacement of Non-Federal Aid Eligible Municipal Bridges in the SNHPC Region via the NHDOT State Aid Bridge Program during the period FY 2031-2045	2031	$ -	$ -	$ 1,000,000	$ -	$ 16,096,896	State Aid Bridge	Grouped Project (Programmatic) for State Aid Bridge Investments from FY 2031-2045
			2032	$ -	$ -	$ 1,010,000	$ -			
			2033	$ -	$ -	$ 1,020,100	$ -			
			2034	$ -	$ -	$ 1,030,301	$ -			
			2035	$ -	$ -	$ 1,040,604	$ -			
			2036	$ -	$ -	$ 1,051,010	$ -			
			2037	$ -	$ -	$ 1,061,520	$ -			
			2038	$ -	$ -	$ 1,072,135	$ -			
			2039	$ -	$ -	$ 1,082,857	$ -			
			2040	$ -	$ -	$ 1,093,685	$ -			
			2041	$ -	$ -	$ 1,104,622	$ -			
			2042	$ -	$ -	$ 1,115,668	$ -			
			2043	$ -	$ -	$ 1,126,825	$ -			
			2044	$ -	$ -	$ 1,138,093	$ -			
			2045	$ -	$ -	$ 1,149,474	$ -			
REG-02	NH Route 101	ITS Improvements on NH Route 101 East of I-93, Including Dynamic Message signs, Closed Circuit Cameras, Roadway Detectors, and Wireless Communication Improvements	2031	$ 385,903	$ -	$ -	$ -	$ 2,364,619	NHPP, Toll Credit	ITS Project Improvement Project
			2032	$ -	$ -	$ 1,978,716	$ -			
REG-03	Goffstown Rail Trail and New Boston Rail Trail	Construct Connection Between the New Boston Rail Trail and the Goffstown Rail Trail	2031	$ 385,903	$ 321,586	$ -	$ -	$ 3,015,992	TAP, STBG, Local	Bicycle/Pedestrian Improvement Project
			2032	$ -	$ -	$ 2,308,503	$ -			
REG-04	NH Route 114	Engineering Study of NH Route 114 from Weare Village Center to Goffstown Village Center	2031	$ -	$ -	$ -	$ 385,903	$ 385,903	STBG, Toll Credit	Corridor Engineering Study
TRANSIT PROJECTS										
40818	NH Capitol Corridor	Design, Environmental Review, and Financial Plan for Commuter Rail Extension from MA to NH	2021	$ -	$ -	$ -	$ 1,542,000	$ 1,542,000	FTA Section 5307, Toll Credit	Project Derived from Statewide FTA Section 5307 Boston Urbanized Area Program

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
68039O	Boston Express	Boston Express - Operating Expenses for F.E. Everett Turnpike Commuter Service	2021	$ -	$ -	$ -	$ 51,400	$ 1,825,566	FTA Section 5307, Toll Credit	Project Derived from Statewide FTA Section 5307 Boston Urbanized Area Program
			2022	$ -	$ -	$ -	$ 52,839			
			2023	$ -	$ -	$ -	$ 54,319			
			2024	$ -	$ -	$ -	$ 55,840			
			2025	$ -	$ -	$ -	$ 57,403			
			2025	$ -	$ -	$ -	$ 59,010			
			2027	$ -	$ -	$ -	$ 60,663			
			2028	$ -	$ -	$ -	$ 62,361			
			2029	$ -	$ -	$ -	$ 64,107			
			2030	$ -	$ -	$ -	$ 65,902			
			2031	$ -	$ -	$ -	$ 67,748			
			2032	$ -	$ -	$ -	$ 69,645			
			2033	$ -	$ -	$ -	$ 71,595			
			2034	$ -	$ -	$ -	$ 73,599			
			2035	$ -	$ -	$ -	$ 75,660			
			2036	$ -	$ -	$ -	$ 77,779			
			2037	$ -	$ -	$ -	$ 79,956			
			2038	$ -	$ -	$ -	$ 82,195			
			2039	$ -	$ -	$ -	$ 84,497			
			2040	$ -	$ -	$ -	$ 86,862			
			2041	$ -	$ -	$ -	$ 89,295			
			2042	$ -	$ -	$ -	$ 91,795			
			2043	$ -	$ -	$ -	$ 94,365			
			2044	$ -	$ -	$ -	$ 97,007			
			2045	$ -	$ -	$ -	$ 99,724			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
68039P	Boston Express	Boston Express - Operating Expenses for I-93 Commuter Service	2021	$ -	$ -	$ -	$ 668,200	$ 23,732,355	FTA Section 5307, Toll Credit	Project Derived from Statewide FTA Section 5307 Boston Urbanized Area Program
			2022	$ -	$ -	$ -	$ 686,910			
			2023	$ -	$ -	$ -	$ 706,143			
			2024	$ -	$ -	$ -	$ 725,915			
			2025	$ -	$ -	$ -	$ 746,241			
			2025	$ -	$ -	$ -	$ 767,135			
			2027	$ -	$ -	$ -	$ 788,615			
			2028	$ -	$ -	$ -	$ 810,696			
			2029	$ -	$ -	$ -	$ 833,396			
			2030	$ -	$ -	$ -	$ 856,731			
			2031	$ -	$ -	$ -	$ 880,720			
			2032	$ -	$ -	$ -	$ 905,380			
			2033	$ -	$ -	$ -	$ 930,730			
			2034	$ -	$ -	$ -	$ 956,791			
			2035	$ -	$ -	$ -	$ 983,581			
			2036	$ -	$ -	$ -	$ 1,011,121			
			2037	$ -	$ -	$ -	$ 1,039,433			
			2038	$ -	$ -	$ -	$ 1,068,537			
			2039	$ -	$ -	$ -	$ 1,098,456			
			2040	$ -	$ -	$ -	$ 1,129,212			
			2041	$ -	$ -	$ -	$ 1,160,830			
			2042	$ -	$ -	$ -	$ 1,193,334			
			2043	$ -	$ -	$ -	$ 1,226,747			
			2044	$ -	$ -	$ -	$ 1,261,096			
			2045	$ -	$ -	$ -	$ 1,296,407			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
MTA5307	MTA/CART	MTA/CART Operating, ADA, Capital Preventative Maintenance, and Planning Activities Utilizing FTA Section 5307 Funding (Matched by Local Funding)	2021	$ -	$ -	$ -	$ 4,212,774	$ 136,457,523	FTA Section 5307, Local	Direct FTA Section 5307 Allocation for MTA/CART (Matched by Local Funding)
			2022	$ -	$ -	$ -	$ 4,347,030			
			2023	$ -	$ -	$ -	$ 4,433,971			
			2024	$ -	$ -	$ -	$ 4,522,650			
			2025	$ -	$ -	$ -	$ 4,613,103			
			2025	$ -	$ -	$ -	$ 4,705,365			
			2027	$ -	$ -	$ -	$ 4,799,472			
			2028	$ -	$ -	$ -	$ 4,895,462			
			2029	$ -	$ -	$ -	$ 4,993,371			
			2030	$ -	$ -	$ -	$ 5,093,238			
			2031	$ -	$ -	$ -	$ 5,195,103			
			2032	$ -	$ -	$ -	$ 5,299,005			
			2033	$ -	$ -	$ -	$ 5,404,985			
			2034	$ -	$ -	$ -	$ 5,513,085			
			2035	$ -	$ -	$ -	$ 5,623,347			
			2036	$ -	$ -	$ -	$ 5,735,814			
			2037	$ -	$ -	$ -	$ 5,850,530			
			2038	$ -	$ -	$ -	$ 5,967,541			
			2039	$ -	$ -	$ -	$ 6,086,891			
			2040	$ -	$ -	$ -	$ 6,208,629			
			2041	$ -	$ -	$ -	$ 6,332,802			
			2042	$ -	$ -	$ -	$ 6,459,458			
			2043	$ -	$ -	$ -	$ 6,588,647			
			2044	$ -	$ -	$ -	$ 6,720,420			
			2045	$ -	$ -	$ -	$ 6,854,828			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
MTA5310	MTA/CART	Transit Services for Seniors and Individuals with Disabilities in CART Service Area Utilizing FTA Section 5310 Funding (Matched by Local Funding)	2021	$ -	$ -	$ -	$ 150,714	$ 4,827,406	FTA Section 5310, Local	Direct FTA Section 5310 Allocation for MTA/CART (Matched by Local Funding)
			2022	$ -	$ -	$ -	$ 153,728			
			2023	$ -	$ -	$ -	$ 156,803			
			2024	$ -	$ -	$ -	$ 159,939			
			2025	$ -	$ -	$ -	$ 163,137			
			2025	$ -	$ -	$ -	$ 166,400			
			2027	$ -	$ -	$ -	$ 169,728			
			2028	$ -	$ -	$ -	$ 173,123			
			2029	$ -	$ -	$ -	$ 176,585			
			2030	$ -	$ -	$ -	$ 180,117			
			2031	$ -	$ -	$ -	$ 183,719			
			2032	$ -	$ -	$ -	$ 187,394			
			2033	$ -	$ -	$ -	$ 191,141			
			2034	$ -	$ -	$ -	$ 194,964			
			2035	$ -	$ -	$ -	$ 198,864			
			2036	$ -	$ -	$ -	$ 202,841			
			2037	$ -	$ -	$ -	$ 206,898			
			2038	$ -	$ -	$ -	$ 211,036			
			2039	$ -	$ -	$ -	$ 215,256			
			2040	$ -	$ -	$ -	$ 219,561			
			2041	$ -	$ -	$ -	$ 223,953			
			2042	$ -	$ -	$ -	$ 228,432			
			2043	$ -	$ -	$ -	$ 233,000			
			2044	$ -	$ -	$ -	$ 237,660			
			2045	$ -	$ -	$ -	$ 242,414			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
MTA5339	MTA/CART	Capital Vehicle and Equipment for CART Service Area Utilizing Section 5339 Funding (Matched by Local and State Funding)	2021	$ -	$ -	$ -	$ 51,394	$ 1,646,199	FTA Section 5339, Local, State	Direct FTA Section 5339 Allocation for MTA/CART (Matched by Local and State Funding)
			2022	$ -	$ -	$ -	$ 52,423			
			2023	$ -	$ -	$ -	$ 53,471			
			2024	$ -	$ -	$ -	$ 54,541			
			2025	$ -	$ -	$ -	$ 55,632			
			2025	$ -	$ -	$ -	$ 56,744			
			2027	$ -	$ -	$ -	$ 57,879			
			2028	$ -	$ -	$ -	$ 59,037			
			2029	$ -	$ -	$ -	$ 60,218			
			2030	$ -	$ -	$ -	$ 61,422			
			2031	$ -	$ -	$ -	$ 62,650			
			2032	$ -	$ -	$ -	$ 63,903			
			2033	$ -	$ -	$ -	$ 65,181			
			2034	$ -	$ -	$ -	$ 66,485			
			2035	$ -	$ -	$ -	$ 67,815			
			2036	$ -	$ -	$ -	$ 69,171			
			2037	$ -	$ -	$ -	$ 70,554			
			2038	$ -	$ -	$ -	$ 71,966			
			2039	$ -	$ -	$ -	$ 73,405			
			2040	$ -	$ -	$ -	$ 74,873			
			2041	$ -	$ -	$ -	$ 76,370			
			2042	$ -	$ -	$ -	$ 77,898			
			2043	$ -	$ -	$ -	$ 79,456			
			2044	$ -	$ -	$ -	$ 81,045			
			2045	$ -	$ -	$ -	$ 82,666			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
RCC5310	Region 8/9 RCC	Transit Services for Seniors and Individuals with Disabilities in Greater Manchester and Greater Derry-Salem Area as Determined by the Region 8/9 Coordinating Council for Community Transportation (Matched by Local Funding)	2021	$ -	$ -	$ -	$ 455,580	$ 14,592,364	FTA Section 5310, Local	Allocation from Statewide FTA Section 5310 Program for Regional Elderly and Disabled Transportation Services (Matched by Local Funding)
			2022	$ -	$ -	$ -	$ 464,692			
			2023	$ -	$ -	$ -	$ 473,985			
			2024	$ -	$ -	$ -	$ 483,465			
			2025	$ -	$ -	$ -	$ 493,134			
			2025	$ -	$ -	$ -	$ 502,997			
			2027	$ -	$ -	$ -	$ 513,057			
			2028	$ -	$ -	$ -	$ 523,318			
			2029	$ -	$ -	$ -	$ 533,785			
			2030	$ -	$ -	$ -	$ 544,460			
			2031	$ -	$ -	$ -	$ 555,349			
			2032	$ -	$ -	$ -	$ 566,456			
			2033	$ -	$ -	$ -	$ 577,786			
			2034	$ -	$ -	$ -	$ 589,341			
			2035	$ -	$ -	$ -	$ 601,128			
			2036	$ -	$ -	$ -	$ 613,151			
			2037	$ -	$ -	$ -	$ 625,414			
			2038	$ -	$ -	$ -	$ 637,922			
			2039	$ -	$ -	$ -	$ 650,680			
			2040	$ -	$ -	$ -	$ 663,694			
			2041	$ -	$ -	$ -	$ 676,968			
			2042	$ -	$ -	$ -	$ 690,507			
			2043	$ -	$ -	$ -	$ 704,317			
			2044	$ -	$ -	$ -	$ 718,404			
			2045	$ -	$ -	$ -	$ 732,772			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
MM5310	Region 8/9 RCC	Regional Mobility Management Services in the Greater Manchester and Greater Derry-Salem Area (Matched by Toll Credits)	2021	$ -	$ -	$ -	$ 95,890	$ 2,397,250	FTA Section 5310, Toll Credit	Regional Mobility Management Services (Matched by Toll Credits)
			2022	$ -	$ -	$ -	$ 95,890			
			2023	$ -	$ -	$ -	$ 95,890			
			2024	$ -	$ -	$ -	$ 95,890			
			2025	$ -	$ -	$ -	$ 95,890			
			2025	$ -	$ -	$ -	$ 95,890			
			2027	$ -	$ -	$ -	$ 95,890			
			2028	$ -	$ -	$ -	$ 95,890			
			2029	$ -	$ -	$ -	$ 95,890			
			2030	$ -	$ -	$ -	$ 95,890			
			2031	$ -	$ -	$ -	$ 95,890			
			2032	$ -	$ -	$ -	$ 95,890			
			2033	$ -	$ -	$ -	$ 95,890			
			2034	$ -	$ -	$ -	$ 95,890			
			2035	$ -	$ -	$ -	$ 95,890			
			2036	$ -	$ -	$ -	$ 95,890			
			2037	$ -	$ -	$ -	$ 95,890			
			2038	$ -	$ -	$ -	$ 95,890			
			2039	$ -	$ -	$ -	$ 95,890			
			2040	$ -	$ -	$ -	$ 95,890			
			2041	$ -	$ -	$ -	$ 95,890			
			2042	$ -	$ -	$ -	$ 95,890			
			2043	$ -	$ -	$ -	$ 95,890			
			2044	$ -	$ -	$ -	$ 95,890			
			2045	$ -	$ -	$ -	$ 95,890			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
MTA 5339	MTA/CART	Capital Vehicle and Equipment for MTA Supported by NHDOT Section 5339 Program Allocation for Small Urban Providers (Matched by Local and State Funding)	2021	$ -	$ -	$ -	$ 329,819	$ 10,564,201	FTA Section 5339, Local, State	Allocation from Statewide FTA Section 5339 Program to Support MTA/CART Capital Needs (Matched by Local and State Funding)
			2022	$ -	$ -	$ -	$ 336,415			
			2023	$ -	$ -	$ -	$ 343,144			
			2024	$ -	$ -	$ -	$ 350,007			
			2025	$ -	$ -	$ -	$ 357,007			
			2025	$ -	$ -	$ -	$ 364,147			
			2027	$ -	$ -	$ -	$ 371,430			
			2028	$ -	$ -	$ -	$ 378,858			
			2029	$ -	$ -	$ -	$ 386,436			
			2030	$ -	$ -	$ -	$ 394,164			
			2031	$ -	$ -	$ -	$ 402,048			
			2032	$ -	$ -	$ -	$ 410,088			
			2033	$ -	$ -	$ -	$ 418,290			
			2034	$ -	$ -	$ -	$ 426,656			
			2035	$ -	$ -	$ -	$ 435,189			
			2036	$ -	$ -	$ -	$ 443,893			
			2037	$ -	$ -	$ -	$ 452,771			
			2038	$ -	$ -	$ -	$ 461,826			
			2039	$ -	$ -	$ -	$ 471,063			
			2040	$ -	$ -	$ -	$ 480,484			
			2041	$ -	$ -	$ -	$ 490,094			
			2042	$ -	$ -	$ -	$ 499,896			
			2043	$ -	$ -	$ -	$ 509,893			
			2044	$ -	$ -	$ -	$ 520,091			
			2045	$ -	$ -	$ -	$ 530,493			

Table 26: 2021-2045 Metropolitan Transportation Plan Project

Project #	Road	Scope	Year	PE	ROW	CON	OTHER	Total Cost	Funding Sources	Comments
CMP5307	MTA/CART	Operating, Capital Preventative Maintenance, and Planning Activities for the Implementation of Transit Services Recommended in the SNHPC CMP and NHDOT SSTA Utilizing FTA Section 5307 Funding (Matched by Local Funding)	2021	$ -	$ -	$ -	$ 202,500	$ 6,486,136	FTA Section 5307, Local	Regional Transit Expansion Initiative (Matched by Local Funding)
			2022	$ -	$ -	$ -	$ 206,550			
			2023	$ -	$ -	$ -	$ 210,681			
			2024	$ -	$ -	$ -	$ 214,895			
			2025	$ -	$ -	$ -	$ 219,193			
			2025	$ -	$ -	$ -	$ 223,576			
			2027	$ -	$ -	$ -	$ 228,048			
			2028	$ -	$ -	$ -	$ 232,609			
			2029	$ -	$ -	$ -	$ 237,261			
			2030	$ -	$ -	$ -	$ 242,006			
			2031	$ -	$ -	$ -	$ 246,846			
			2032	$ -	$ -	$ -	$ 251,783			
			2033	$ -	$ -	$ -	$ 256,819			
			2034	$ -	$ -	$ -	$ 261,955			
			2035	$ -	$ -	$ -	$ 267,194			
			2036	$ -	$ -	$ -	$ 272,538			
			2037	$ -	$ -	$ -	$ 277,989			
			2038	$ -	$ -	$ -	$ 283,549			
			2039	$ -	$ -	$ -	$ 289,220			
			2040	$ -	$ -	$ -	$ 295,004			
			2041	$ -	$ -	$ -	$ 300,904			
			2042	$ -	$ -	$ -	$ 306,922			
			2043	$ -	$ -	$ -	$ 313,061			
			2044	$ -	$ -	$ -	$ 319,322			
			2045	$ -	$ -	$ -	$ 325,709			

APPENDIX A: TRAVEL DEMAND MODEL DATA INPUTS AND OUTPUTS

LIST OF TABLES AND FIGURES

Base Year (2015) Socio-Economic Data for SNHPC Region

	Retail (Jobs)	**Service** (Jobs)	**Industry** (Jobs)	**Government** (Jobs)	**Agriculture** (Jobs)	**Total Empl.** (Jobs)	**Households** (Dwellings)	**Population** (Persons)
Allenstown	141	323	213	51	13	741	1,773	4,304
Auburn	35	1,076	635	41	0	1,787	1,923	5,315
Bedford	2,585	10,816	2,080	357	0	15,838	7,614	22,236
Bow	381	1,664	1,769	111	0	3,925	2,799	7,693
Candia	65	441	260	37	1	804	1,464	3,909
Chester	7	215	78	59	7	366	1,620	4,887
Deerfield	15	326	115	41	47	544	1,581	4,413
Derry	1,326	5,496	1,028	320	12	8,182	12,657	32,948
Dunbarton	10	129	86	21	0	246	1,047	2,797
Francestown	7	86	29	41	0	163	613	1,562
Goffstown	605	3,033	511	323	19	4,491	6,206	17,846
Hooksett	2,162	7,360	2,528	157	25	12,232	5,242	14,473
Londonderry	1,778	8,306	6,870	620	73	17,647	8,627	24,891
Manchester	7,085	43,181	8,041	2,374	0	60,681	46,483	109,419
New Boston	37	500	101	96	13	747	1,978	5,457
Pembroke	216	852	866	93	23	2,050	2,728	7,088
Weare	103	1,256	378	72	0	1,809	3,199	8,811
Windham	534	2,326	543	109	1	3,513	5,015	14,301
Total	**17,092**	**87,386**	**26,131**	**4,923**	**234**	**135,766**	**112,569**	**292,350**

Table A1: Complete Base Year (2015) Socio-economic Data for SNHPC Region

*Cross-Classification Table of Trip Rates**

# of HH Vehicles	Home Based Work	Home Based Shop	Home Based Social	Home Based School	Home Based Other	Non-Home Other Trip
Greater than 1 person per household but less than 2						
0 to 1	0.25	0.56	0.23	0.24	1.27	0.79
1 to 2	0.86	1.12	0.38	0.24	1.58	1.32
2 to 3	1.12	0.84	0.43	0.24	1.58	0.78
3 to 4	1.13	0.85	0.4	0.24	1.58	0.92
4 to 99	1.88	0.85	0.4	0.24	1.58	0.92
Greater than 2 persons per household but less than 3						
0 to 1	0.63	0.56	0.23	0.16	1.27	0.79
1 to 2	0.85	0.83	0.51	0.37	1.72	1.39
2 to 3	1.39	1.04	0.52	0.37	1.83	2.2
3 to 4	1.59	0.96	0.58	0.37	1.83	1.47
4 to 99	2.4	0.96	0.58	0.37	2.03	1.47
Greater than 3 persons per household but less than 4						
0 to 1	1.26	0.56	0.23	0.41	1.53	1.57
1 to 2	1.62	0.9	0.47	0.5	1.78	1.82
2 to 3	1.63	0.87	0.51	0.43	2.32	2.55
3 to 4	1.75	0.96	0.58	0.39	1.4	2.49
4 to 99	2.2	0.99	0.63	0.51	1.59	3.61
Greater than 4 persons						
0 to 1	1.26	0.56	0.47	0.65	1.53	1.84
1 to 2	1.47	0.56	0.58	0.81	2.12	2.1
2 to 3	1.5	0.87	0.6	0.88	1.65	2.99
3 to 4	1.49	0.69	0.4	1.01	1.68	2.77
4 to 99	2.04	1	0.65	0.58	1.91	3.33

Table A2: Cross-Classification Table of Trip Rates

**Note: This table refers to the rate in which trips to discrete destination types are generated by any one Traffic Analysis Zone.*
For a description of how this data is applied to the trip forecasting model, see Section 4.3 of the Metropolitan Transportation Plan.

*Trip Attraction Rates***

Trip Type	Total Employ	Retail	Service	Government	Industrial	Households
Home Based Work	0.25	0.56	0.23	0.24	1.27	0.79
Home Based Shop	0.86	1.12	0.38	0.24	1.58	1.32
Home Based Social	1.12	0.84	0.43	0.24	1.58	0.78
Home Based Other	1.13	0.85	0.4	0.24	1.58	0.92
Non-Home Based	0.63	0.56	0.23	0.16	1.27	0.79

Table A3: Trip Attraction Rates

***Note: This table refers to the rate in which any one Traffic Analysis Zone will attract trips from other discrete trip types.*
For a description of how this data is applied to the trip forecasting model, see Section 4.3 of the Metropolitan Transportation Plan.

Projected Horizon Year (2045) Socio-Economic Data for SNHPC Region

	Retail (Jobs)	**Service** (Jobs)	**Industry** (Jobs)	**Government** (Jobs)	**Agriculture** (Jobs)	**Total Empl.** (Jobs)	**Households** (Dwellings)	**Population** (Persons)
Allenstown	155	421	233	53	16	877	1,847	4,357
Auburn	38	1,402	693	43	0	2,176	2,570	6,062
Bedford	2,835	14,090	2,271	373	0	19,569	8,968	25,785
Bow	418	2,168	1,932	116	0	4,633	3,133	8,853
Candia	71	574	284	39	1	970	1,533	4,035
Chester	8	280	85	62	8	443	2,202	5,758
Deerfield	16	425	126	43	56	666	2,054	5,064
Derry	1,454	7,160	1,123	334	14	10,085	13,091	33,300
Dunbarton	11	168	94	22	0	295	1,189	3,434
Francestown	8	112	32	43	0	194	655	1,660
Goffstown	663	3,951	558	337	23	5,533	6,637	19,065
Hooksett	2,371	9,588	2,760	164	30	14,913	6,594	18,119
Londonderry	1,950	10,820	7,502	647	87	21,006	11,297	27,100
Manchester	7,770	56,251	8,780	2,479	0	75,281	51,263	114,344
New Boston	41	651	110	100	16	918	2,648	6,461
Pembroke	237	1,110	946	97	28	2,417	2,808	7,849
Weare	113	1,636	413	75	0	2,237	3,438	9,706
Windham	586	3,030	593	114	1	4,324	6,520	17,277
SNHPC Total	**18,744**	**113,837**	**28,534**	**5,141**	**280**	**166,535**	**128,447**	**318,228**

Table A4: Projected Horizon Year (2045) Socio-economic Data for SNHPC Region

Projected Percent Change in Socio-Economic Data Over the Planning Horizon (2015-2045)

	Retail (Jobs)	**Service** (Jobs)	**Industry** (Jobs)	**Government** (Jobs)	**Agriculture** (Jobs)	**Households** (Dwellings)	**Population** (Persons)
Allenstown	10%	30%	9%	4%	20%	4%	1%
Auburn	10%	30%	9%	4%	0%	34%	14%
Bedford	10%	30%	9%	4%	0%	18%	16%
Bow	10%	30%	9%	4%	0%	12%	15%
Candia	10%	30%	9%	4%	20%	5%	3%
Chester	10%	30%	9%	4%	20%	36%	18%
Deerfield	10%	30%	9%	4%	20%	30%	15%
Derry	10%	30%	9%	4%	20%	3%	1%
Dunbarton	10%	30%	9%	4%	0%	14%	23%
Francestown	10%	30%	9%	4%	0%	7%	6%
Goffstown	10%	30%	9%	4%	20%	7%	7%
Hooksett	10%	30%	9%	4%	20%	26%	25%
Londonderry	10%	30%	9%	4%	20%	31%	9%
Manchester	10%	30%	9%	4%	0%	10%	5%
New Boston	10%	30%	9%	4%	20%	34%	18%
Pembroke	10%	30%	9%	4%	20%	3%	11%
Weare	10%	30%	9%	4%	0%	7%	10%
Windham	10%	30%	9%	4%	20%	30%	21%
SNHPC Region	**10%**	**30%**	**9%**	**4%**	**20%**	**14%**	**9%**

Table A5: Project Percent Change in Socio-Economic Data Over the Planning Horizon (2015-2045)

Model AADT Traffic Counts and Assignments Base and Horizon Years				
Count Location ID #	**2015 AADT Counts (SNHPC)**	**2015 AADT Assignments No-Build**	**2045 AADT Volumes No-Build**	**2045 AADT Volumes Build**
1	15,000	15,000	17,748	17,748
2	8,200	8,192	9,673	9,673
3	900	899	1,061	1,061
4	2,800	2,782	3,244	3,244
5	2,800	2,787	3,261	3,261
6	290	287	335	335
7	3,100	3,078	3,581	3,581
8	80	79	92	92
9	3,000	2,982	3,483	3,483
10	35,000	39,780	46,512	46,512
11	850	845	988	988
12	420	418	487	487
13	1,100	1,093	1,272	1,272
14	310	307	357	357
15	2,500	2,486	2,899	2,899
16	260	259	303	303
17	1,600	1,588	1,847	1,847
18	6,500	6,459	7,528	7,528
19	1,800	1,791	2,091	2,091
20	15,000	14,985	17,687	17,687
21	2,300	2,296	2,705	2,705
22	9,000	8,987	10,594	10,594
23	16,000	15,929	18,660	18,660
24	12,000	12,986	15,327	15,327
25	86,000	85,597	100,227	100,228
26	5,000	4,967	5,790	5,791
27	15,500	15,455	18,168	18,168
28	600	597	693	693
29	4,900	4,876	5,699	5,699
30	1,630	1,619	1,879	1,879
31	15,000	14,918	17,441	17,441
32	3,500	3,472	4,034	4,033
33	2,000	1,986	2,314	2,314
34	10,000	9,926	11,547	11,547

Model AADT Traffic Counts and Assignments Base and Horizon Years				
Count Location ID #	**2015 AADT Counts (SNHPC)**	**2015 AADT Assignments No-Build**	**2045 AADT Volumes No-Build**	**2045 AADT Volumes Build**
35	13,000	12,931	15,114	15,113
36	60,000	59,627	69,563	69,562
37	2,500	2,483	2,884	2,884
38	1,200	1,193	1,389	1,390
39	2,000	1,987	2,315	2,316
40	2,000	1,987	2,310	2,310
41	710	707	823	824
42	260	259	302	302
43	19,000	18,904	22,142	22,142
44	790	784	912	912
45	690	685	798	798
46	100	101	118	118
47	3,100	3,091	3,632	3,632
48	1,200	1,196	1,404	1,404
49	150	150	174	174
50	1,200	1,196	1,404	1,404
51	1,200	1,393	1,630	1,630
52	200	199	231	231
53	1,500	1,492	1,747	1,747
54	240	238	278	279
55	2,500	2,491	2,919	2,919
56	840	838	984	984
57	910	903	1,049	1,050
58	9,400	9,332	10,865	10,866
59	700	697	814	814
60	43,000	42,940	50,643	50,642
61	3,800	3,785	4,434	4,433
62	69,600	70,855	83,488	83,488
63	14,000	13,929	16,308	16,307
64	5,400	5,390	6,347	6,347
65	14,000	13,922	16,275	16,275
66	8,500	8,467	9,931	9,931
67	1,400	1,392	1,619	1,619
68	60	59	68	68

Model AADT Traffic Counts and Assignments Base and Horizon Years				
Count Location ID #	**2015 AADT Counts (SNHPC)**	**2015 AADT Assignments No-Build**	**2045 AADT Volumes No-Build**	**2045 AADT Volumes Build**
69	190	189	221	221
70	22,500	22,299	26,377	26,377
71	7,600	7,545	8,787	8,787
72	400	398	463	463
73	800	799	944	944
74	690	686	800	800
75	500	497	578	578
76	200	200	235	235
77	6,900	6,860	8,010	8,010
78	2,900	2,891	3,286	3,613
79	24,500	24,921	27,821	29,098
80	2,900	3,821	4,429	4,622
81	16,000	13,424	16,093	13,122
82	24,500	25,620	28,518	30,862
83	3,200	2,496	3,248	3,039
84	2,300	2,860	3,475	3,335
85	5,300	5,489	6,683	6,565
86	19,000	20,844	23,861	24,469
87	8,800	7,812	9,539	9,401
88	30,000	25,707	28,374	28,266
89	17,000	17,183	17,726	17,738
90	22,000	25,014	27,354	26,503
91	16,000	20,171	23,329	22,282
92	32,500	33,999	35,327	40,457
93	32,500	32,826	35,198	40,089
94	30,500	31,881	34,544	39,155
95	25,000	25,815	32,637	27,625
96	30,500	34,637	36,818	39,586
97	28,000	29,105	33,728	42,120
98	41,000	39,278	42,964	43,231
99	41,000	39,769	46,459	46,043
100	41,500	38,148	46,873	46,212
101	41,500	38,730	42,791	43,478
102	25,000	21,667	16,536	16,013

Model AADT Traffic Counts and Assignments Base and Horizon Years				
Count Location ID #	**2015 AADT Counts (SNHPC)**	**2015 AADT Assignments No-Build**	**2045 AADT Volumes No-Build**	**2045 AADT Volumes Build**
103	14,000	11,697	13,865	15,127
104	3,300	2,675	2,867	2,431
105	31,000	28,558	34,844	33,860
106	38,000	41,739	70,277	70,676
107	38,000	41,761	69,399	69,691
108	6,600	5,780	3,747	3,521
109	15,000	12,925	12,260	12,140
110	43,500	40,335	52,452	52,384
111	43,500	41,920	54,268	53,684
112	9,000	9,968	11,547	11,223
113	10,000	9,315	11,235	11,583
114	3,000	2,196	766	693
115	11,000	10,672	11,848	11,787
116	10,000	9,222	13,554	13,773
117	10,000	9,360	13,197	13,139
118	5,900	4,934	7,394	7,158
119	5,500	5,070	7,620	7,738
120	35,500	38,110	63,224	62,643
121	35,500	37,766	57,576	59,823
122	2,500	2,380	3,055	2,812
123	1,500	1,459	1,709	1,708
124	7,500	7,777	8,943	8,682
125	1,900	2,201	2,428	2,437
126	2,800	2,554	3,212	3,521
127	5,800	4,698	6,537	6,770
128	2,600	3,140	3,622	3,371
129	12,000	7,907	8,253	8,617
130	3,200	3,149	4,870	9,388
131	6,700	8,123	9,573	9,229
132	980	1,190	1,318	818
133	10,000	8,370	8,322	8,892
134	19,500	16,050	19,450	21,668
135	19,500	16,378	19,338	23,842
136	24,500	23,538	29,009	28,265

Model AADT Traffic Counts and Assignments Base and Horizon Years				
Count Location ID #	**2015 AADT Counts (SNHPC)**	**2015 AADT Assignments No-Build**	**2045 AADT Volumes No-Build**	**2045 AADT Volumes Build**
137	22,000	22,920	28,074	29,418
138	14,000	12,248	13,382	4,584
139	10,000	13,088	13,284	16,016
140	12,500	12,925	13,930	13,492
141	22,000	23,041	26,667	34,358
142	16,000	15,852	18,983	16,162
143	15,000	18,969	21,613	21,258
144	17,000	18,691	20,150	20,043
145	3,200	1,779	2,486	2,260
146	32,500	33,677	39,117	39,369
147	32,500	33,450	39,367	38,418
148	14,000	15,295	15,856	15,187
149	24,500	24,731	29,091	29,815
150	38,000	39,061	46,009	46,935
151	38,000	39,926	46,203	46,310
152	36,000	38,439	44,557	44,600
153	36,000	36,518	43,208	43,327
154	17,000	23,334	23,353	24,351
155	10,000	11,490	13,366	13,526
156	4,300	3,973	6,252	6,526
157	26,000	24,335	29,470	31,789
158	6,900	8,282	10,047	9,820
159	27,000	26,077	32,564	32,492
160	1,800	1,606	1,964	1,796
161	15,000	13,433	15,420	13,612
162	12,000	10,123	11,287	4,584
163	7,500	7,500	8,874	8,874
164	14,000	13,771	15,450	15,266
165	29,000	29,076	33,992	32,591
166	29,000	27,541	31,105	30,660
167	26,500	28,067	31,463	31,347
168	26,500	27,522	31,078	31,134
169	3,000	3,440	4,839	4,856
170	5,200	5,751	2,999	2,913

Model AADT Traffic Counts and Assignments Base and Horizon Years				
Count Location ID #	**2015 AADT Counts (SNHPC)**	**2015 AADT Assignments No-Build**	**2045 AADT Volumes No-Build**	**2045 AADT Volumes Build**
171	25,000	24,670	28,277	28,349
172	25,000	25,286	28,249	28,261
173	35,500	36,984	56,853	57,348
174	35,530	36,996	55,416	56,961
175	7,000	5,838	7,785	7,770
176	8,000	11,077	13,848	13,887
177	20,000	19,890	23,256	23,256
178	20,000	19,890	23,256	23,256
179	120	114	142	142
180	1,600	2,400	2,726	2,765
181	5,500	3,840	4,555	4,551
182	5,400	4,820	5,994	5,965
183	5,200	5,862	6,609	6,610
184	3,400	4,819	3,090	3,446
185	8,600	8,879	9,841	9,929
186	8,200	6,834	10,647	10,601
187	9,300	11,717	3,321	3,307
188	3,800	3,501	2,611	2,252
189	5,400	5,631	1,706	1,407
190	16,000	18,233	9,691	10,074
191	11,000	9,667	8,104	7,234
192	12,000	8,872	10,986	11,223
193	11,000	12,400	7,992	7,046
194	9,000	12,654	10,876	9,797
195	4,000	3,614	2,477	2,450
196	12,000	13,796	6,497	5,630
197	1,400	1,072	1,424	1,389
198	4,000	3,133	2,593	2,593
199	5,000	5,579	840	924
200	1,600	1,622	1,975	1,740
201	9,600	9,037	10,465	10,591
202	14,000	18,322	21,033	21,041
203	7,200	7,568	8,967	9,639

Model AADT Traffic Counts and Assignments Base and Horizon Years				
Count Location ID #	**2015 AADT Counts (SNHPC)**	**2015 AADT Assignments No-Build**	**2045 AADT Volumes No· Build**	**2045 AADT Volumes Build**
Total	2,656,800	2,682,361	3,147,646	3,170,002
Extenal	609,870	614,786	720,857	720,858
Internal	2,046,930	2,067,574	2,426,789	2,449,144

2015 Daily Traffic Volumes

Location	AADT	Location	AADT	Location	AADT
1	15,000	54	238	136	23,538
2	8,192	55	2,491	148	15,295
3	899	56	838	149	24,731
4	2,782	57	903	150	39,061
5	2,787	58	9,332	151	39,926
6	287	59	697	152	38,439
7	3,078	60	42,940	153	36,518
8	79	61	3,785	154	23,334
9	2,982	62	70,855	155	11,490
10	39,780	63	13,929	156	3,973
11	845	64	5,390	157	24,335
12	418	65	13,922	159	26,077
13	1,093	66	8,467	160	1,606
14	307	67	1,392	163	7,500
15	2,486	68	59	167	28,067
16	259	69	189	168	27,522
17	1,588	70	22,299	169	3,440
18	6,459	71	7,545	170	5,751
19	1,791	72	398	171	24,670
20	14,985	73	799	172	25,286
21	2,296	74	686	173	36,984
22	8,987	75	497	174	36,996
23	15,929	76	200	175	5,838
24	12,986	77	6,860	176	11,077
25	85,597	78	2,891	177	19,890
26	4,967	83	2,496	178	19,890
27	15,455	84	2,860	179	114
28	597	85	5,489	180	2,400
29	4,876	86	20,844	181	3,840
30	1,619	87	7,812	182	4,820
31	14,918	88	25,707	183	5,862
32	3,472	89	17,183	184	4,819
33	1,986	90	25,014	185	8,879
34	9,926	91	20,171	186	6,834
35	12,931	92	33,999	187	11,717
36	59,627	93	32,826	188	3,501
37	2,483	98	39,278	189	5,631
38	1,193	99	39,769	190	18,233
39	1,987	106	41,739	191	9,667
40	1,987	107	41,761	192	8,872
41	707	108	5,780	193	12,400
42	259	120	38,110	194	12,654
43	18,904	121	37,766	195	3,614
44	784	122	2,380	196	13,796
45	685	123	1,459	197	1,072
46	101	124	7,777	198	3,133
47	3,091	125	2,201	199	5,579
48	1,196	126	2,554	200	1,622
49	150	127	4,698	201	9,037
50	1,196	128	3,140	202	18,322
51	1,393	129	7,907	203	7,568
52	199	131	8,123		
53	1,492	132	1,190		

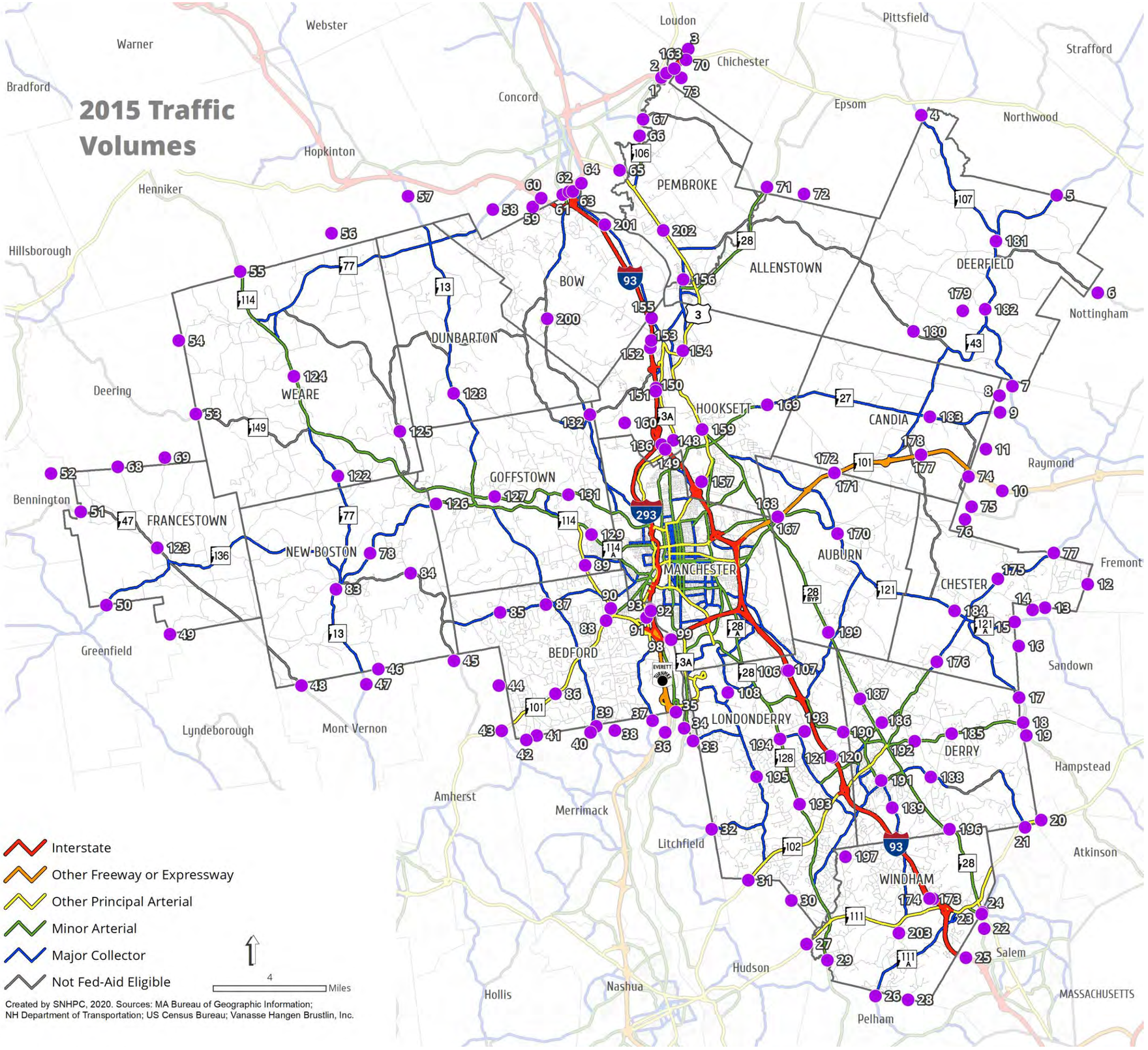
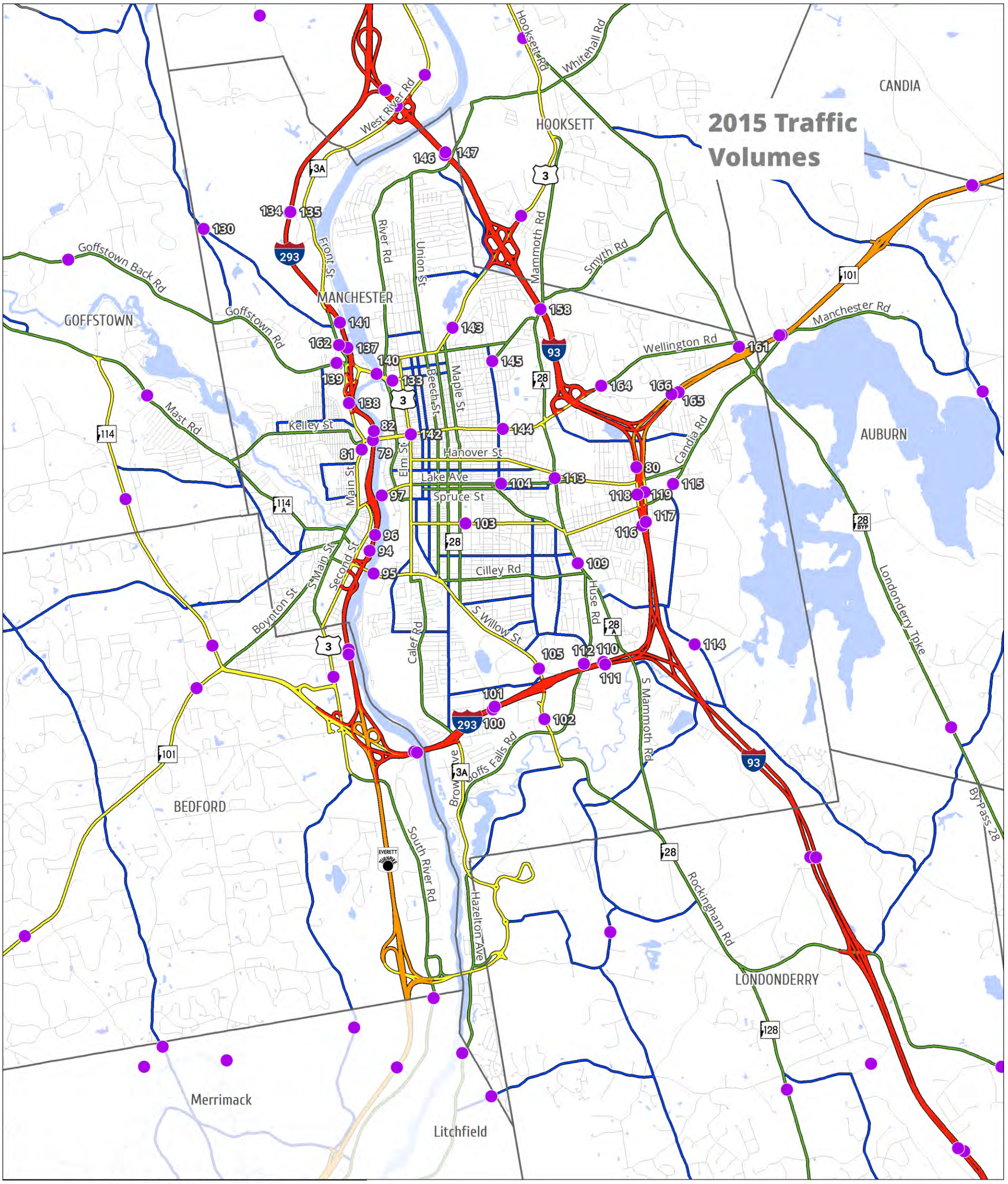


Figure A1: 2015 Average Annual Daily TrafficAssignments – Model-Wide



2015 Daily Traffic Volumes

Location	AADT	Location	AADT	Location	AADT
79	24,921	111	41,920	140	12,925
80	3,821	112	9,968	141	23,041
81	13,424	113	9,315	142	15,852
82	25,620	114	2,196	143	18,969
94	31,881	115	10,672	144	18,691
95	25,815	116	9,222	145	1,779
96	34,637	117	9,360	146	33,677
97	29,105	118	4,934	147	33,450
100	38,148	119	5,070	158	8,282
101	38,730	130	3,149	161	13,433
102	21,667	133	8,370	162	10,123
103	11,697	134	16,050	164	13,771
104	2,675	135	16,378	165	29,076
105	28,558	137	22,920	166	27,541
109	12,925	138	12,248		
110	40,335	139	13,088		

Created by SNHPC, 2020. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey; Vanasse Hangen Brustlin, Inc.

Figure A2: 2015 Average Annual Daily Traffic Assignments – Manchester

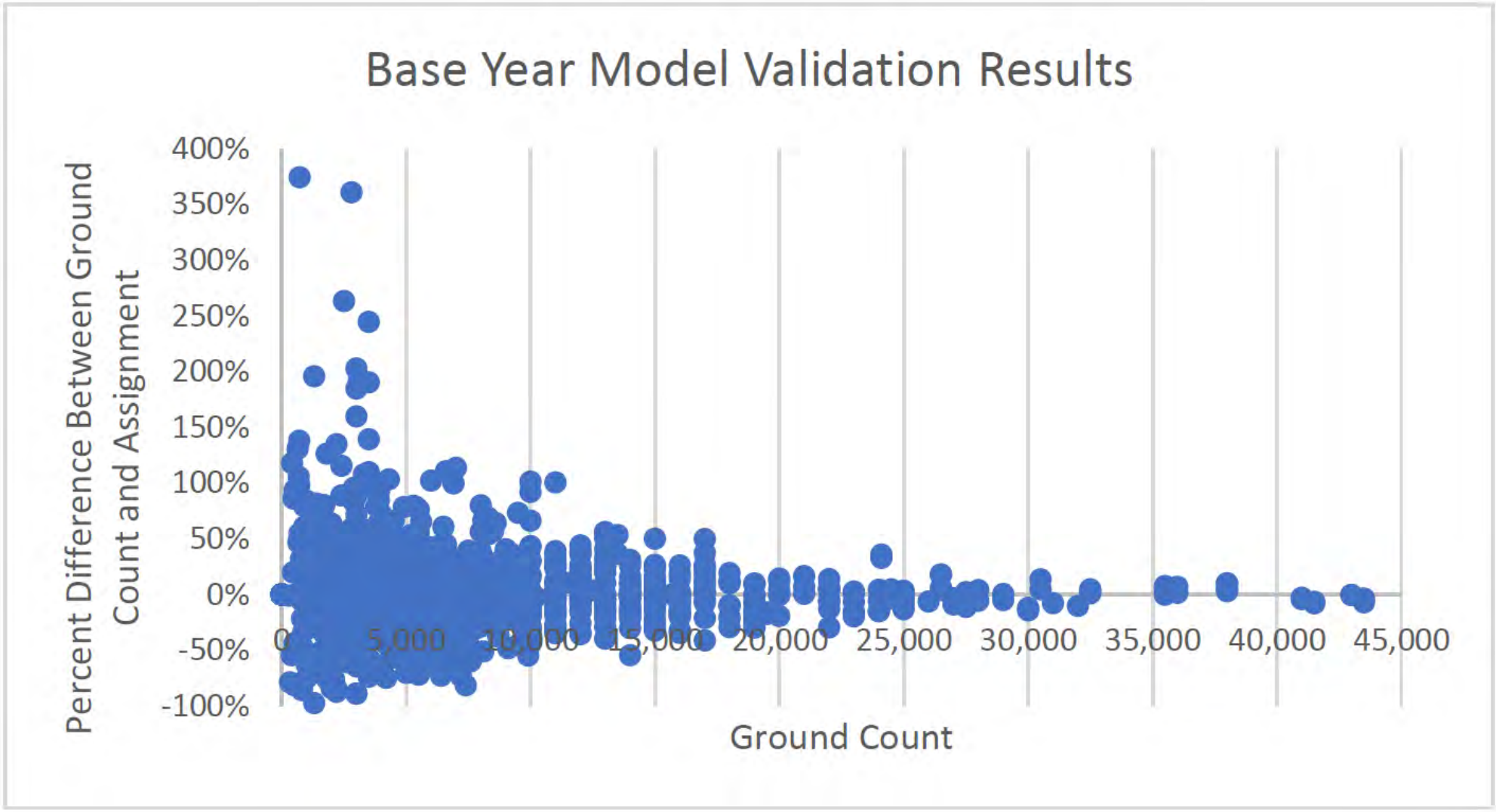


Figure A3: Base Year Model Validation Results by Ground Count Volume

2045 Daily Traffic Volumes

Location	AADT	Location	AADT	Location	AADT
1	17,748	54	279	136	28,265
2	9,673	55	2,919	148	15,187
3	1,061	56	984	149	29,815
4	3,244	57	1,050	150	46,935
5	3,261	58	10,866	151	46,310
6	335	59	814	152	44,600
7	3,581	60	50,642	153	43,327
8	92	61	4,433	154	24,351
9	3,483	62	83,488	155	13,526
10	46,512	63	16,307	156	6,526
11	988	64	6,347	157	31,789
12	487	65	16,275	159	32,492
13	1,272	66	9,931	160	1,796
14	357	67	1,619	163	8,874
15	2,899	68	68	167	31,347
16	303	69	221	168	31,134
17	1,847	70	26,377	169	4,856
18	7,528	71	8,787	170	2,913
19	2,091	72	463	171	28,349
20	17,687	73	944	172	28,261
21	2,705	74	800	173	57,348
22	10,594	75	578	174	56,961
23	18,660	76	235	175	7,770
24	15,327	77	8,010	176	13,887
25	#####	78	3,613	177	23,256
26	5,791	83	3,039	178	23,256
27	18,168	84	3,335	179	142
28	693	85	6,565	180	2,765
29	5,699	86	24,469	181	4,551
30	1,879	87	9,401	182	5,965
31	17,441	88	28,266	183	6,610
32	4,033	89	17,738	184	3,446
33	2,314	90	26,503	185	9,929
34	11,547	91	22,282	186	10,601
35	15,113	92	40,457	187	3,307
36	69,562	93	40,089	188	2,252
37	2,884	98	43,231	189	1,407
38	1,390	99	46,043	190	10,074
39	2,316	106	70,676	191	7,234
40	2,310	107	69,691	192	11,223
41	824	108	3,521	193	7,046
42	302	120	62,643	194	9,797
43	22,142	121	59,823	195	2,450
44	912	122	2,812	196	5,630
45	798	123	1,708	197	1,389
46	118	124	8,682	198	2,593
47	3,632	125	2,437	199	924
48	1,404	126	3,521	200	1,740
49	174	127	6,770	201	10,591
50	1,404	128	3,371	202	21,041
51	1,630	129	8,617	203	9,639
52	231	131	9,229		
53	1,747	132	818		

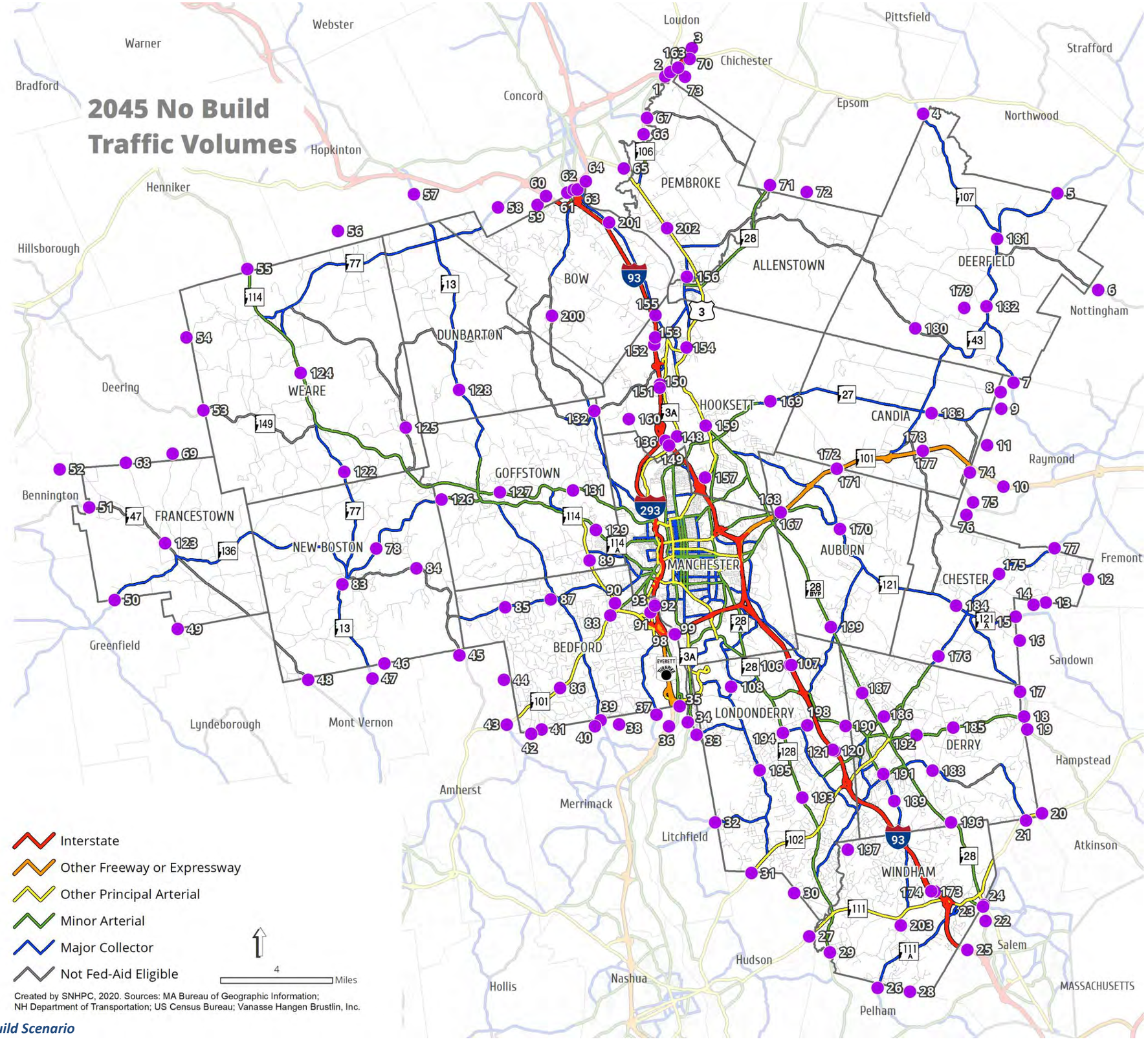
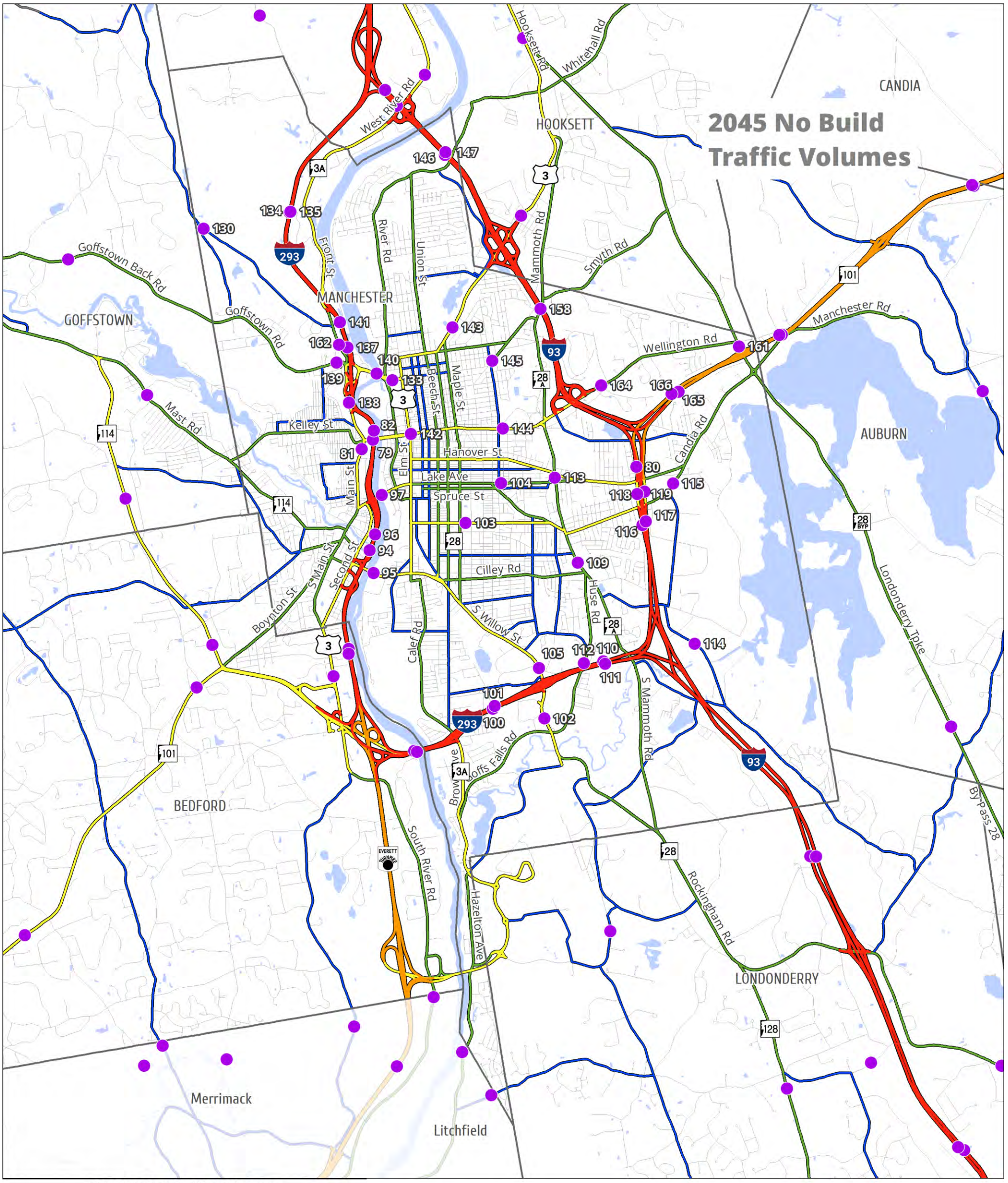


Figure A4: Horizon Year Projected Average Annual Daily Traffic – No-Build Scenario



2045 Daily Traffic Volumes

Location	AADT	Location	AADT	Location	AADT
79	27,821	111	54,268	140	13,930
80	4,429	112	11,547	141	26,667
81	16,093	113	11,235	142	18,983
82	28,518	114	766	143	21,613
94	34,544	115	11,848	144	20,150
95	32,637	116	13,554	145	2,486
96	36,818	117	13,197	146	39,117
97	33,728	118	7,394	147	39,367
100	46,873	119	7,620	158	10,047
101	42,791	130	4,870	161	15,420
102	16,536	133	8,322	162	11,287
103	13,865	134	19,450	164	15,450
104	2,867	135	19,338	165	33,992
105	34,844	137	28,074	166	31,105
109	12,260	138	13,382		
110	52,452	139	13,284		

Created by SNHPC, 2020. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey; Vanasse Hangen Brustlin, Inc.

Figure A5: Horizon Year Projected Average Annual Daily Traffic Manchester – No-Build Scenario

2045 Daily Traffic Volumes

Location	AADT	Location	AADT	Location	AADT
1	17,748	54	278	136	29,009
2	9,673	55	2,919	148	15,856
3	1,061	56	984	149	29,091
4	3,244	57	1,049	150	46,009
5	3,261	58	10,865	151	46,203
6	335	59	814	152	44,557
7	3,581	60	50,643	153	43,208
8	92	61	4,434	154	23,353
9	3,483	62	83,488	155	13,366
10	46,512	63	16,308	156	6,252
11	988	64	6,347	157	29,470
12	487	65	16,275	159	32,564
13	1,272	66	9,931	160	1,964
14	357	67	1,619	163	8,874
15	2,899	68	68	167	31,463
16	303	69	221	168	31,078
17	1,847	70	26,377	169	4,839
18	7,528	71	8,787	170	2,999
19	2,091	72	463	171	28,277
20	17,687	73	944	172	28,249
21	2,705	74	800	173	56,853
22	10,594	75	578	174	55,416
23	18,660	76	235	175	7,785
24	15,327	77	8,010	176	13,848
25	#####	78	3,286	177	23,256
26	5,790	83	3,248	178	23,256
27	18,168	84	3,475	179	142
28	693	85	6,683	180	2,726
29	5,699	86	23,861	181	4,555
30	1,879	87	9,539	182	5,994
31	17,441	88	28,374	183	6,609
32	4,034	89	17,726	184	3,090
33	2,314	90	27,354	185	9,841
34	11,547	91	23,329	186	10,647
35	15,114	92	35,327	187	3,321
36	69,563	93	35,198	188	2,611
37	2,884	98	42,964	189	1,706
38	1,389	99	46,459	190	9,691
39	2,315	106	70,277	191	8,104
40	2,310	107	69,399	192	10,986
41	823	108	3,747	193	7,992
42	302	120	63,224	194	10,876
43	22,142	121	57,576	195	2,477
44	912	122	3,055	196	6,497
45	798	123	1,709	197	1,424
46	118	124	8,943	198	2,593
47	3,632	125	2,428	199	840
48	1,404	126	3,212	200	1,975
49	174	127	6,537	201	10,465
50	1,404	128	3,622	202	21,033
51	1,630	129	8,253	203	8,967
52	231	131	9,573		
53	1,747	132	1,318		

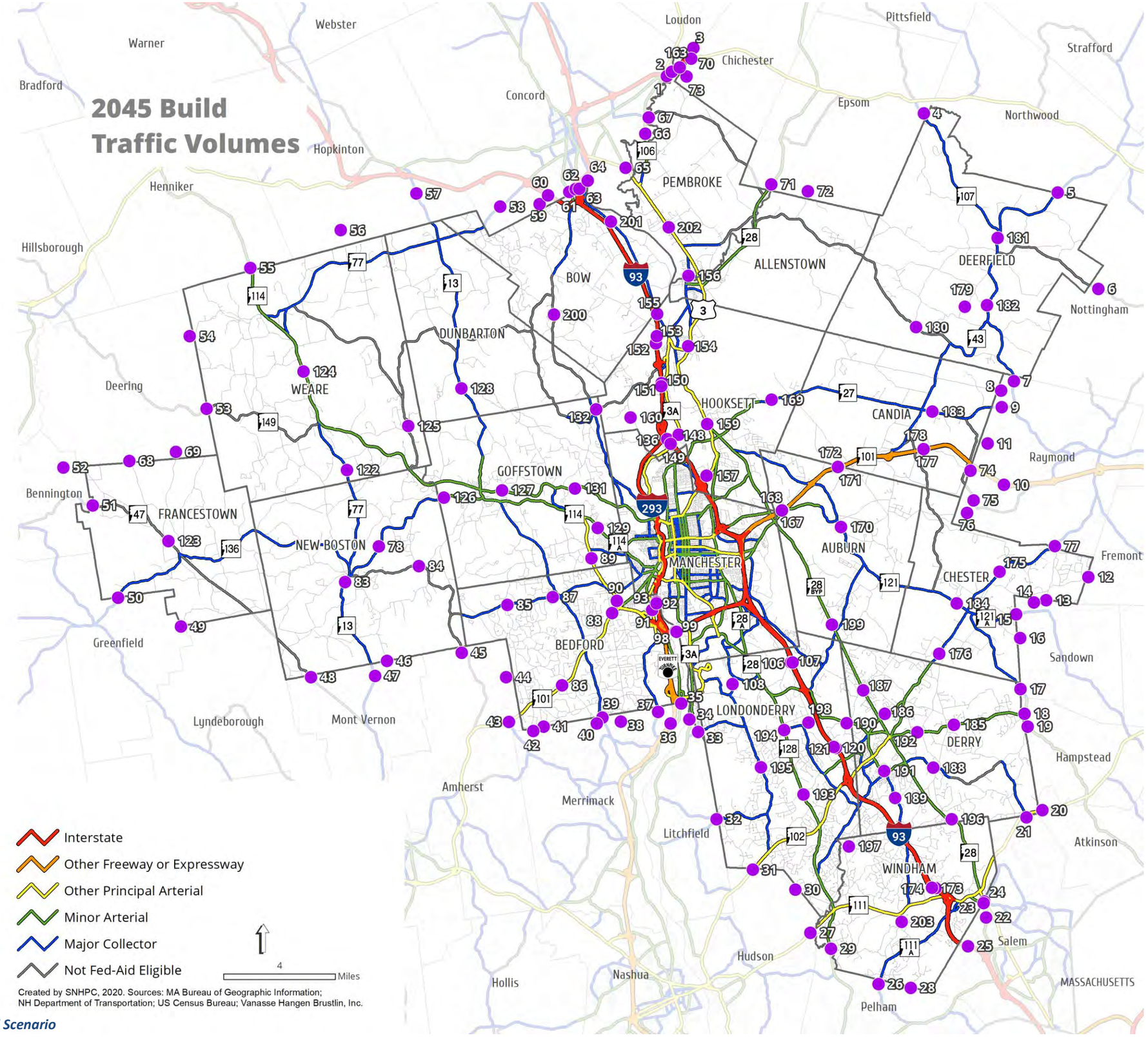
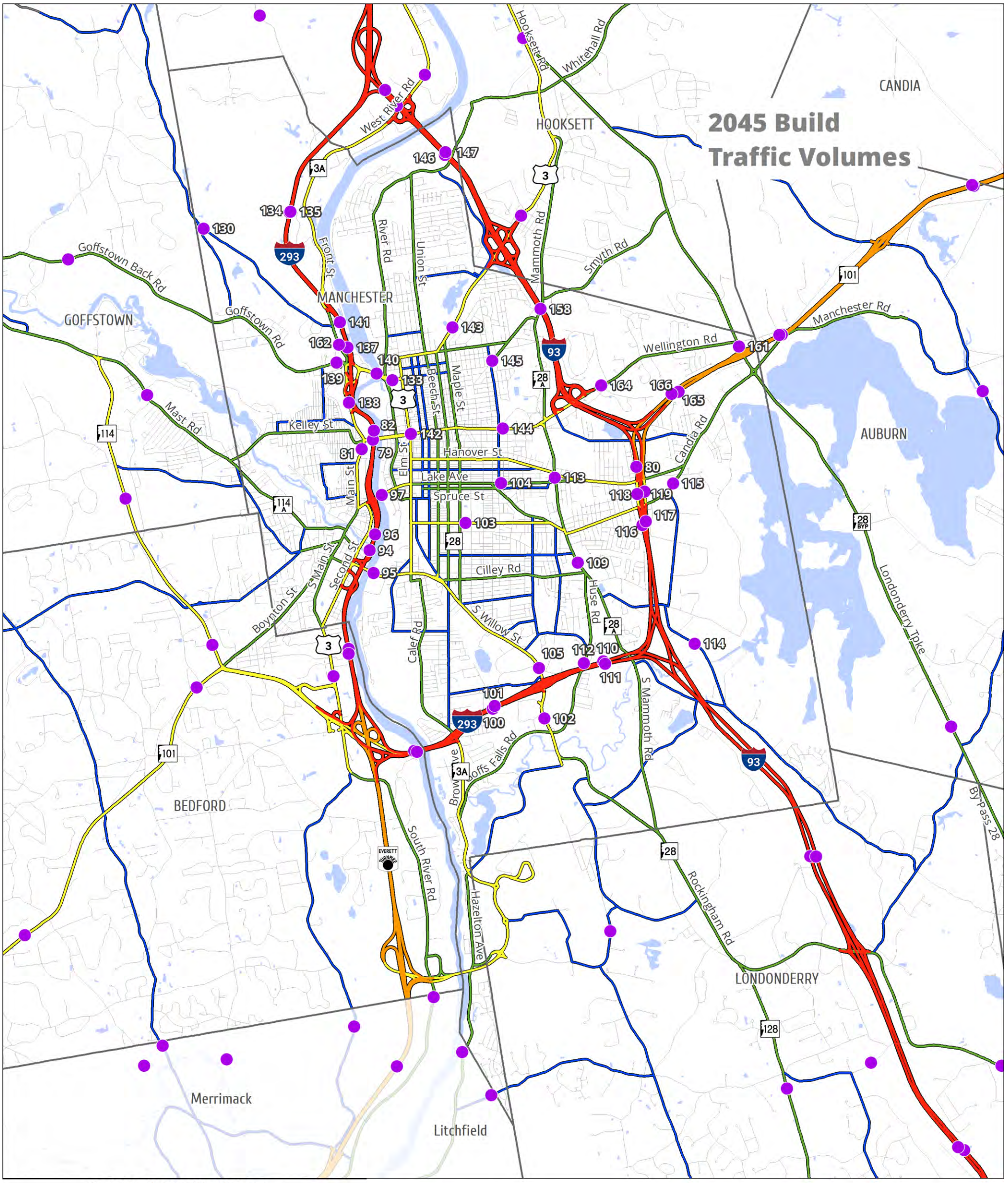


Figure A6: Horizon Year Projected Average Annual Daily Traffic – Build Scenario



2045 Daily Traffic Volumes

Location	AADT	Location	AADT	Location	AADT
79	29,098	111	53,684	140	13,492
80	4,622	112	11,223	141	34,358
81	13,122	113	11,583	142	16,162
82	30,862	114	693	143	21,258
94	39,155	115	11,787	144	20,043
95	27,625	116	13,773	145	2,260
96	39,586	117	13,139	146	39,369
97	42,120	118	7,158	147	38,418
100	46,212	119	7,738	158	9,820
101	43,478	130	9,388	161	13,612
102	16,013	133	8,892	162	4,584
103	15,127	134	21,668	164	15,266
104	2,431	135	23,842	165	32,591
105	33,860	137	29,418	166	30,660
109	12,140	138	4,584		
110	52,384	139	16,016		

Created by SNHPC, 2020. Sources: NH Department of Transportation; US Census Bureau; US Geological Survey; Vanasse Hangen Brustlin, Inc.

Figure A7: Horizon Year Projected Average Annual Daily Traffic Manchester – Build Scenario