New Hampshire DOT
Department of Transportation

Statewide Strategic Transit Assessment

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EXECUTIVE SUMMARY

The Strategic Statewide Transit Assessment (SSTA) is intended to be a guide toward a sustainable future for public transit in New Hampshire. Through more than a dozen separate tasks, the study team, led by Steadman Hill Consulting, Inc., worked with NHDOT's Bureau of Rail and Transit to take a comprehensive look at bus transportation in the state and consider ways that it could better meet the needs of New Hampshire residents. The study was cognizant of the role of demand response transportation and rail as well, but these modes were not the focus of the effort.

Policy

Until now, NHDOT has not had any official, explicit policy regarding public transit. In consultation with the stakeholders committee for the SSTA, the transit providers and the regional planning commissions, as well as taking public input into account, the following policies for operations and capital spending were developed. These are listed in descending order of priority.

Operations

- Basic mobility for transit-dependent people
- Access to employment for transit-dependent people
- Maximizing ridership and efficiency
- Supporting economic vitality
- Attracting millennials/choice riders

Capital

- Transit fleets must be in a state of good repair
- Passenger facilities are an essential part of the public transportation system
- Safe pedestrian access to and from bus stops is essential
- Maximize use of technology

While basic mobility should continue to be the primary goal of public transportation in the state, for future funding over and above the spending levels for currently-provided service, the amount of non-intercity 5311 funding spent on basic mobility should be reduced from 40% of the total to 33% of the total, with additional funds allocated to other policy goals, especially:

- Access to jobs;
- Maximizing ridership; and
- Supporting economic vitality.

Inventory of Existing Services and Capital

Table ES-1 Operating Statistics Summary (SFY 2019)

Service Type	No. of Services	Vehicle Revenue Hours	Vehicle Revenue Miles	Ridership	Operating Cost	Fare Revenue
Fixed Routes	60	196,543	2,680,848	3,196,246	$16,451,113	$1,416,786
Deviated Fixed	7	14,457	211,937	50,130	$815,152	$29,442
Demand Response	21	83,238	876,397	126,054	$5,145,286	$190,710
TOTAL	88	294,238	3,769,182	3,372,430	$22,411,551	$1,738,698

As of June 30, 2019, there were 197 transit vehicles in use by the ten transit providers in New Hampshire. Of those, 104 were small buses or cutaway vans of less than 30 feet in length, while the rest were medium- or heavy-duty transit buses of 30 or more feet in length. The average age of the fleet statewide is 6.1 years.

The inventory of facilities includes small items such as bus shelters and bike racks and large items such as maintenance and administration buildings. There are 128 bus shelters under the jurisdiction of the transit agencies. There are others owned by municipalities or private entities, but these were not included in the inventory. There are about 35 additional benches not associated with shelters, primarily in Concord and Durham. The Nashua Transit System and Advance Transit each have large combined administrative and maintenance facilities. COAST has operations offices and a maintenance garage in Dover and MTA has used its maintenance/administrative building since the 1970s. Tri-County CAP has a much smaller facility with a dispatch center, offices and a two-vehicle garage.

Needs and Gaps Analysis

A critical step in planning for a future sustainable transit system is identifying unmet needs and gaps in the current system. Chapter 4 describes the multi-pronged approach to gathering information about needs and gaps, including meetings with all nine of the regional planning commissions in New Hampshire, data analysis of residential density, employment density, transit propensity and commuting patterns, and examination of population forecasts. Common themes expressed by the regions included the following:

- **Local fixed route/deviated fixed route service**
  - Longer hours needed on weekday evenings
  - More service/some service needed on Saturdays and Sundays
  - Higher frequency of service would be of benefit to existing riders and help to attract new ones
  - Many towns have no service at all; need connections to nearby cities, shopping, and medical facilities
- **Regional service**
  - Commuter connections needed from towns 10-40 miles from major employment centers, such as Manchester, Concord, and Lebanon/Hanover
  - Better intra-state connections needed for other occasional trips, such as medical, court-related, social/recreational
  - East-west connections needed to cities and universities, plus Manchester airport
- **Intercity service**
  - Portions of the state have little or no access to the intercity network
  - North-south connections along the east side of the state—to Dover/Durham—are poor or non-existent
  - Access to intercity service at Portsmouth difficult because of lack of parking capacity
  - Current intercity service not well suited to intra-state travel, especially on I-89 corridor

The analysis identified 15 communities with unmet need for local service and 8 employment centers with missing commuter linkages from communities that are important sources of workers. Seven communities or pairs of communities were identified as lacking needed access to the intercity bus network. These places are listed on pages 23-24 of the main report.

Service Concepts

Although the SSTA is not primarily a service plan, Chapter 5 includes a series of service proposals for local, commuter and intercity routes to address the needs and gaps identified in Chapter 4. These proposals do

not include any suggested changes to existing bus routes, as evaluation of currently-operated services was not part of the scope of this project. These proposals are summarized in the following three tables.

Table ES-2 Summary of Local Service

Route	Headway	Days of Service	Annual Gross Cost	Urban/Rural	Priority Tier
Conway	30/60	100	$150,000	Rural	1
Laconia	60	255	$250,000	Rural	1
Suncook	60	255	$250,000	Urban	2
Milford	60	156	$105,000	Urban	2
Franklin/Tilton	60	255	$250,000	Rural	2
Exeter	60	255	$250,000	Urban	3
Plymouth	40	255	$250,000	Rural	3
TOTAL			$1,505,000		

Table ES-3 Summary of Commuter Service

Route	Annual Gross Cost	Annual Riders	Gross Cost/Rider	Priority Tier
Salem-Londonderry-Manchester	$211,000	42,000	$5	1
Claremont-Hanover	$260,000	26,000	$10	1
Hanover-Concord	$485,000	34,000	$14	2
Rochester-Concord	$312,000	23,000	$13	2
Portsmouth-Manchester	$349,000	26,000	$13	2
Salem-Nashua-Milford	$301,000	19,000	$15	3
Keene-Concord	$386,000	19,000	$21	3*
Laconia-Concord	$234,000	12,000	$19	3*
TOTALS	$2,538,000	201,000	$13	

*If no intercity service is implemented in these corridors, the commuter route should be promoted to Tier 1

Table ES-4 Summary of Proposed New Intercity Service

Route (one-way fare)	Annual Gross Cost	Annual Riders	Annual Subsidy	Priority Tier
Laconia – Concord ($6)	$145,000	7,200	$102,000	1
Claremont – Lebanon/WRJ ($6)	$128,000	6,500	$89,000	2
Hanover – Concord ($10)	$450,000	14,000	$310,000	2
Keene – Concord ($8)	$356,000	13,000	$252,000	2*
Portsmouth – Concord ($8)	$308,000	11,500	$216,000	3
Berlin – Dover ($30)	$778,000	8,000	$538,000	3

*Should be considered for Tier 1 if Keene–Nashua route is not expanded to daily service

Park & Ride

Park & Ride lots in New Hampshire play an essential role in providing access to intercity and other bus routes. The SSTA included a task, performed by RSG, Inc., for a comprehensive review of these lots and recommendations for investments in new capacity.

There are 33 official park & ride lots in New Hampshire. Of these, 27 are owned by NHDOT and the other 6 are owned by various municipalities. Three lots are filled to more than 90% of capacity and five more are at over 75% of capacity. These locations are high priorities for additional capacity (when feasible) or other management strategies.

A number of underserved areas have high residential density, proximity to major roadways, and are more than 10 miles from the nearest park-and-ride facility. These include Littleton (I-93), Berlin (NH 110/NH16), the area around North Conway, Claremont (NH 120/NH 103/NH 11), the Upper Valley (NH 120/US 4), Moultonborough (NH 25), Ossipee (NH 16/NH 25), and Wolfeboro (NH 28/NH 109).

Technology

The SSTA also recognized that technology is having and will continue to have a major impact on transit operations. Schweiger Consulting, LLC, as part of the study team, conducted an assessment of current technology deployment at New Hampshire transit agencies, and developed a hierarchy of technology applications that NHDOT can use as a guide to future investments. The statewide costs for these investments, separated into urban and rural areas, are shown in the following tables.

Table ES-5 Statewide Capital and O&M Costs by Goal Year for Urban Agencies

Goal Year	Total Capital Cost (min)	Total Capital Cost (max)	Total O&M Cost (min)	Total O&M Cost (max)
2021	$152,000	$269,000	$0	$0
2022	923,750	2,238,250	21,200	33,200
2023	1,136,250	2,331,750	228,023	442,240
2024	0	0	447,401	825,188
2025	1,149,000	2,402,000	447,401	825,188
2026	210,250	399,750	697,095	1,220,309
2027	0	0	762,858	1,320,847
2028	416,000	983,000	762,858	1,320,847
2029	507,000	1,194,000	853,371	1,486,297
2030	N/A	N/A	964,709	1,675,997
TOTAL	$4,494,250	$9,817,750	$5,184,916	$9,150,113

Table ES-6 Statewide Capital and O&M Costs by Goal Year for Rural Agencies

Goal Year	Total Capital Cost (min)	Total Capital Cost (max)	Total O&M Cost (min)	Total O&M Cost (max)
2021	$72,000	$162,000	$0	$0
2022	1,221,000	2,721,000	6,963	15,700
2023	1,230,000	2,788,000	270,308	509,205
2024	0	0	519,601	983,856
2025	368,750	737,250	519,601	983,856
2026	53,750	106,250	639,429	1,166,124
2027	302,500	570,500	670,992	1,212,487
2028	130,000	253,000	769,693	1,361,763
2029	914,000	2,159,000	801,518	1,407,763
2030	N/A	N/A	1,001,857	1,760,013
TOTAL	$4,292,000	$9,497,000	$5,199,962	$9,400,767

Performance Evaluation

While NHDOT's funding strategy, which generally applies only to its 5311 subrecipients, will always start with the presumption of continued funding for existing services, NHDOT must also ensure that the funding is being used as effectively as possible. It is therefore necessary for NHDOT to analyze the viability of existing services.

Even though NHDOT only manages the flow of Section 5311 funding, allowing Section 5307 funds to flow directly to the transit agencies in urbanized areas, a series of eight route classes cover all 88 routes and services in New Hampshire. Benchmarks for performance are then set for each class. The three main elements of performance are productivity (ridership per unit of service), cost efficiency (gross operating cost per unit of service), and cost effectiveness (gross or net cost per passenger). The initial benchmarks are set based on the FY19 performance for services in that class. In general, the benchmark separates the lowest performing or highest cost 20-30% of services from the rest of the class. These low ridership or high cost routes could benefit from analysis and planning that should help them improve their performance.

Funding and Sustainability

The sustainability of the transit system ultimately depends upon money and whether the benefits provided by transit services are sufficient to maintain support from decision-makers who control the flow of funding. A peer analysis and responses to the online survey conducted as part of the SSTA provide support for increased funding of public transit in New Hampshire.

With the exception of Advance Transit, all of the urban and rural transit systems in New Hampshire operate substantially less service than their national peers, in spite of the peers serving similar populations and land areas. Most of the urban systems operate about half of the service of the peer agencies, while MTA operates somewhat more than half. CART operates only about a fifth of the service that its urban peers do.

In the rural areas, TCC and SCT operate about a third of the service of their peers, while VNA-HCS in Keene and Concord Area Transit operate somewhat more than 50% of the peer service level. Advance Transit's high level of service, about triple that of the peer group, reflects its strong relationships with Dartmouth College and Dartmouth-Hitchcock Medical Center, its efforts at attracting philanthropic donations, as well as the higher level of financial support it receives from Vermont.

Conclusion

The SSTA has identified some of the most obvious unmet needs for transit service and proposed solutions to address those needs. Investments in new Park & Ride lots and transit technology will help to increase access to the transit system, improving its long-term sustainability. The policy goals articulated in Chapter 2 of this document are intended to help NHDOT and other decision-makers to pursue those investments that are most effective at achieving the priority objectives.

The transit system will not change overnight. This transformation will require a cooperative effort among NHDOT, urban and rural transit providers, regional planning commissions, advocacy organizations, New Hampshire elected officials, and the New Hampshire congressional delegation. A concerted effort to secure additional funding and successful implementation of new services and capital projects will promote the viability of the transit system and allow it to become the attractive travel option that most New Hampshire residents want it to be.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1. INTRODUCTION

The New Hampshire Department of Transportation oversees ten public transit providers, as well as intercity bus transportation supplied by private companies. The transit systems range from those serving rural areas in the north and west to urban systems in the south and east. The providers range from private non-profit corporations, to community action programs, to city departments and authorities, to the University of New Hampshire in Durham. This diversity of operating environments and organizations presents a challenge when it comes to evaluating, coordinating, and funding public transportation at the statewide level.

The Strategic Statewide Transit Assessment (SSTA) is intended to be a guide toward a sustainable future for public transit in New Hampshire. Through more than a dozen separate tasks, the study team, led by Steadman Hill Consulting, Inc., worked with NHDOT's Bureau of Rail and Transit to take a comprehensive look at bus transportation in the state and consider ways that it could better meet the needs of New Hampshire residents. The study was cognizant of the role of demand response transportation and rail as well, but these modes were not the focus of the effort.

This report and its associated appendices are a compilation of the results of the SSTA. The report begins with a chapter on policy, laying out the priorities that will help guide future funding decisions for transit operations, capital investments, intercity bus service, and planning. While there is consensus that there should be continued emphasis on providing basic mobility and access to jobs for transit-dependent people, other objectives such as supporting high-ridership services, promoting economic development and attracting younger riders should receive consideration when allocating newly available funding.

One of the primary tasks in the first phase of the SSTA was to compile an inventory of transit services, vehicles and facilities among all ten providers. This inventory was first compiled for State Fiscal Year 2016 and then updated in three subsequent years. An inventory of transit technology was collected in 2019. A summary of these inventories is provided in Chapter 3.

A critical step in planning for a future sustainable transit system is identifying unmet needs and gaps in the current system. Chapter 4 describes the multi-pronged approach to gathering information about needs and gaps, including meetings with all nine of the regional planning commissions in New Hampshire, data analysis of residential density, employment density, transit propensity and commuting patterns, and examination of population forecasts.

Although the SSTA is not primarily a service plan, Chapter 5 includes a series of service proposals for local, commuter and intercity routes to address the needs and gaps identified in Chapter 4. These proposals do not include any suggested changes to existing bus routes, as evaluation of currently-operated services was not part of the scope of this project. Each section of the chapter includes a priority ranking of the proposed routes into three tiers.

Park & Ride lots in New Hampshire play an essential role in providing access to intercity and other bus routes. The SSTA included a task, performed by RSG, Inc., for a comprehensive review of these lots and recommendations for investments in new capacity. Chapter 6 provides the highlights of this analysis, which is presented in full in Appendix D.

The SSTA also recognized that technology is having and will continue to have a major impact on transit operations. Schweiger Consulting, LLC, as part of the study team, conducted an assessment of current technology deployment at New Hampshire transit agencies, and developed a hierarchy of technology applications that NHDOT can use as a guide to future investments. Chapter 7 includes specific recommendations, by transit provider, for technology procurement over the coming decade.

Proposals for new transit service in New Hampshire are developed in response to solicitations from NHDOT. The solicitations are the primary means the Bureau of Rail and Transit has to incorporate policy goals and performance measures into the process of service expansion. Chapter 8 describes changes to the solicitations and selection criteria to better integrate the policy objectives articulated in the SSTA and work toward improved performance in transit services statewide.

The sustainability of the transit system ultimately depends upon money and whether the benefits provided by transit services are sufficient to maintain support from decision-makers who control the flow of funding. Chapter 9 provides evidence that current funding levels for transit are inadequate to meet the needs for service, based on a comparison with peer agencies across the country. It also shows that there is substantial popular support for additional funding for transit, even among people who do not currently use the system.

Chapter 10 includes some concluding thoughts. A series of appendices, as listed in the table of contents, provide more detailed information for many of the topics covered in this summary report.

2. POLICY

NHDOT has many responsibilities regarding the public transit program in New Hampshire, but the primary one, especially in the non-urban portions of the state, is to decide how federal transit funding is to be spent. NHDOT is the designated recipient of funds from the Federal Transit Administration (FTA) for capital, operations and planning, while all of the rural transit operators in New Hampshire are its subrecipients.

On a year-to-year basis, the great majority—if not all of—the operations spending flowing through NHDOT is dedicated to continuing services that were operated the previous year. On the occasions when new funding becomes available, because of an expansion of federal appropriations or other special circumstances, NHDOT solicits proposals from transit operators for new services or service expansions. Likewise, when capital funding is available, NHDOT seeks proposals from its subrecipients for rolling stock or other projects to enhance the transit system. In such cases, it is useful to have a stated policy about which types of services and capital projects support the goals of NHDOT's transit program.

A policy statement could be codified in statute or it could just be included in the introductory material to a solicitation for service or capital projects. The function of the policy is to offer guidance to the transit providers as to which types of projects best promote the overall goals of the program. The policy can also be incorporated into the scoring of proposals, helping to make the project selection process more objective and transparent.

Until now, NHDOT has not had any official, explicit policy regarding public transit. In consultation with the stakeholders committee for the SSTA, the transit providers and the regional planning commissions, as well as taking public input into account, the following policies for operations and capital spending were developed. Planning funds will continue to be distributed on a case-by-case basis in response to requests from the regions, or otherwise be set aside for coordinated planning efforts, and thus should not be controlled by overall policy goals on operating and capital spending. As part of the process for soliciting proposals for new intercity service, a separate intercity policy was also developed. These policies are laid out below. The process for developing the operations and capital policies are documented in a separate memorandum, included in this report as Appendix A.

Operations

The funds controlled by NHDOT currently support a wide range of types of services across the state from demand response service in rural areas to urban local service and commuter express service. Planning documents on a statewide or regional basis look to a policy statement to provide guidance on how the system should grow; that is, what are the priority needs that should be addressed when new funding is available. The policy elements in descending order of priority are as follows:

- **Basic mobility for transit-dependent people** – This type of service is often called "lifeline" service as it provides mobility for essential needs such as grocery shopping, medical appointments, and other personal business. This service is often focused on people with disabilities, older adults, and low-income individuals, all of whom may be unable to drive or to afford a personal vehicle. For many people these needs are addressed by family members, friends, neighbors, or community volunteers, but some people have no access to such resources.
- **Access to employment for transit-dependent people** – Service that allows people who may not have a car or be able to drive to get to their jobs is extremely valuable to low-income households. Being able to commute to work is the key to upward mobility for these individuals. This policy element is related to basic mobility, but is more focused on the work trip and service during commuting hours.

- **Maximizing ridership and efficiency** – Public transportation works most efficiently in densely developed areas where many people are traveling in specific corridors. In such areas, frequent transit service becomes an attractive alternative to driving, drawing people out of their cars and reducing traffic congestion.
- **Supporting economic vitality** – The availability of public transportation allows for increased development without the need for increased parking. Compact urban design, facilitated by public transportation, is the most sustainable form of economic growth.
- **Attracting millennials/choice riders** – There is strong evidence that the current generation, in their 20s, are delaying purchasing automobiles and are more open to using public transportation. They are also more likely to live near city centers than older people. Providing a convenient alternative to driving for this generation could lead to long-term transit use as they age.

One more policy, which is qualitatively different from the others, but which will apply to all operating grants is as follows:

- **Use of the lowest cost mode** – There are many forms of public transportation and they have a wide range of cost per unit of service provided. A transit provider should seek to use the lowest-cost means of serving demand on a per-passenger basis. For rural areas, this will usually mean demand-response service with volunteer drivers. For small towns it is typically demand-response or deviated fixed-route service. For urban areas, it is likely fixed route service.

Capital

The State of New Hampshire has put an emphasis on investment in capital infrastructure, especially with regard to state-contracted commuter bus service. State policy regarding capital investments includes the following elements in descending order of priority:

- **Transit fleets must be in a state of good repair** – A large component of the public's perception of public transit is formed by the vans and buses that operate the service. In order to promote the concept that transit is for everyone, not just transit-dependent populations, vehicles must be well maintained, kept clean, and replaced in a timely manner. Enhanced amenities, such as comfortable seating, Wi-Fi, and noise reduction, may also be worthwhile investments.
- **Passenger facilities are an essential part of the public transportation system** – While providing the appropriate type and level of service is critical to the efficiency of the system, passenger facilities are essential to making the system attractive and visible to all members of the public. Riders must feel safe and comfortable at bus stops and transit stations. Investments in facilities make the system more visible to all, and help increase ridership by enhancing the passenger experience.
- **Safe pedestrian access to and from bus stops is essential** – Virtually all transit riders become pedestrians at one or both ends of their trip. Sidewalks, crosswalks, crossing signals, and safe places to wait for the transit vehicle are essential elements of a successful public transportation system. As facilities are constructed, provisions must be made for maintenance and snow-clearing during the winter months.
- **Maximize use of technology** – The proliferation of smartphones allows for information about transit operations to be disseminated to the riding public much more cheaply than was possible in the past. Transit providers should make maximum use of this technology to communicate with passengers about bus arrival times, delays, schedule changes, and demand response options. Trip planning software for riders is encouraged for all transit operations.

Intercity Service

Federal regulations governing intercity service specify three primary objectives of the Rural Intercity Bus Program:

1. Support connection between rural areas and the larger regional or national system of intercity bus service
2. Support services to meet the intercity travel needs of residents in rural areas
3. Support the infrastructure of the intercity bus network through planning and marketing assistance and capital investment in facilities.

These objectives comprise a large portion of NHDOT's goals with respect to intercity bus in New Hampshire, but not the entirety of those goals. The Rural Intercity Bus Program in New Hampshire is intended to support the development of a "seamless" network of transportation services linking local transit with intercity modes. Such services can include intercity services or feeder services from areas without intercity bus services. The routes and capital projects funded by the program will support riders traveling from or to rural areas, though the other end of their trips may be in urban areas. Projects will, in general, be funded in the following priority order:

1. Preservation of worthy existing intercity bus services, based on ridership and cost effectiveness
2. Implementation of new services
3. Provision of necessary and appropriate capital facilities and equipment.

Guidance for Future Expansion Funding

The process of drafting and reviewing potential policy goals for public transportation in New Hampshire indicates that there is a desire for an official policy regarding the use of federal funding. While there is not necessarily a consensus on how the money should be spent, there is recognition that different areas have different needs and that some guidance how the funds should be distributed would be helpful.

It seems appropriate that Basic Mobility should be the primary goal of public transportation in the state, and current spending allocations reflect the priority of that goal. The majority of the land area in the state has rural density and there are significant transportation needs in those areas. Under this goal, however, there should be two important provisions:

- Most basic mobility service in low-density rural areas should be targeted toward seniors and people with disabilities and funded with the 5310 program; and
- Service for non-5310 populations in rural areas should be operated with the lowest-cost mode available, specifically volunteer drivers, whenever possible.

For future funding over and above the spending levels for currently-provided service, the amount of non-intercity 5311 funding spent on basic mobility should be reduced from 40% of the total to 33% of the total, with additional funds allocated to other policy goals, especially:

- Access to jobs;
- Maximizing ridership; and
- Supporting economic vitality.

This budgeting and expenditure goal does not affect the allocation of funds for services currently in operation.

Attracting millennials, as a policy goal, received relatively less support than the other goals, and is most relevant to the urban portions of the state. Attracting millennials is a worthwhile goal, but perhaps should not be addressed by either the 5310 or 5311 programs. Instead, 5307-funded services more appropriately address this policy goal.

NHDOT reserves the right to reallocate funding from existing services if they consistently do not meet performance goals and there are no available means of improving service effectiveness. While existing services will be reviewed based on NHDOT's policy priorities once established, it is not NHDOT's intention to cut existing service in favor of a new service without first exhausting all reasonable means by which to improve the existing service.

Public Input on Policy

In the online public survey conducted as part of the SSTA during the early part of Summer 2019, respondents were asked to place a priority ranking on the five operational and four capital policy goals. (See Appendix G for all survey results.) The respondents assigned a rank from 1 to 5 for each of the operations policies and 1 to 4 for each of the capital investment policies, with 1 being the top rank. The average ranks for the operational policies were as follows (a lower number means a higher ranking):

- Basic mobility – 1.98
- Access to employment – 2.24
- Support economic development – 3.35
- Maximize ridership and efficiency – 3.48
- Attract millennials and choice riders – 3.94

The results show a relatively high degree of consensus among the responses, as basic mobility was rated as clearly more important than the three lowest-ranked options. In general, the public agreed with the priority ranking shown earlier in the chapter, though reversing the order of "support economic development" and "maximize ridership and efficiency." The ratings for those two goals were very close together, however, so there is no compelling reason to change the order in the policy statement.

The average ranks for the capital investment policies were as follows:

- More passenger facilities – 2.33
- New buses and vans – 2.40
- Better pedestrian access – 2.56
- More technology – 2.70

The rankings for the capital goals are in a much narrower range, indicating less consensus on which goals are the most important. In the public's view, these goals are somewhat equal in importance.

3. INVENTORY OF EXISTING SERVICES AND CAPITAL

One of the initial tasks of the SSTA was to compile an inventory of services, vehicles and facilities that together comprise the public transit system in New Hampshire. This inventory includes all local bus services plus demand response services operated by the state's transit providers. It does not include intercity bus operations nor demand response services operated by other entities.

With the cooperation of the ten agencies that operate local transit service in New Hampshire, data were first compiled for State Fiscal Year 2016 (which ended on June 30, 2016). The data set was subsequently updated each year for SFY 2017 through SFY 2019. The sections below present summaries of the results. More detailed information is presented in Appendix B.

Services

In SFY 2019, data for 88 distinct services were reported. By service type, these broke out as follows:

- 60 fixed route bus services
- 7 deviated fixed route services
- 21 demand response services

Deviated fixed route services (also known as "flex" routes), operated by Tri-County CAP, CART and Sullivan County Transit, have a designated alignment but also the operational flexibility to leave the route for a pick-up or drop-off within a predetermined buffer. The demand response services included ADA complementary paratransit services, non-emergency medical transportation, services oriented toward older adults and general public dial-a-ride service. Operational statistics by service type are shown in Table 1 below:

Table 1 Operating Statistics Summary (SFY 2019)

Service Type	Vehicle Revenue Hours	Vehicle Revenue Miles	Ridership	Operating Cost	Fare Revenue
Fixed	196,543	2,680,848	3,196,246	$16,451,113	$1,416,786
Deviated Fixed	14,457	211,937	50,130	$815,152	$29,442
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TOTAL	294,238	3,769,182	3,372,430	$22,411,551	$1,738,698

The majority of service included in this inventory is fixed route bus services, reflecting the comparatively large systems in Manchester and Nashua, as well as the smaller systems in the Upper Valley, Seacoast region and Concord. The higher productivity of the fixed route buses is also reflected in the statistics as the fixed route category accounts for 67% of the vehicle revenue hours and 71% of the vehicle revenue miles but 95% of the ridership and 81% of the fare revenue.

Just four systems—Manchester, Nashua, COAST, and Advance Transit—account for two thirds of the service operated in New Hampshire. They account for only 61% of the ridership, primarily because the Campus Connector route, operated by the UNH Wildcat system, with nearly a million boardings, by itself accounts for 28% of the statewide ridership total. If that route is excluded, the four largest systems would account for 85% of statewide ridership.

It is not possible to draw strong conclusions about the trends of service over the past three years because the inventories did not have comprehensive and consistent data for the same set of routes for the entire period. In general, ridership has dropped during the three-year span, following national and regional trends. The Campus Connector route on its own lost over 113,000 passengers because of shifting housing supply and travel demand on the UNH campus, accounting for 46% of the statewide loss in ridership. The amount of service operated has increased slightly (about 2% per year) and the total cost of service has risen by about 4% each year.

Vehicles

As of June 30, 2019, there were 197 transit vehicles in use by the ten transit providers in New Hampshire. Of those, 104 were small buses or cutaway vans of less than 30 feet in length, while the rest were medium- or heavy-duty transit buses of 30 or more feet in length.

The average age of the fleet statewide is 6.1 years. The agency with the oldest fleet (8.1 years on average) is the Manchester Transit Authority, but it also has a high percentage of heavy-duty buses in its fleet and those have longer lifespans (up to 14 years) than smaller buses and cutaway vans (7 to 10 years). All of MTA's Gillig heavy-duty buses were purchased in 2006 through 2008 and are due for replacement in the coming few years. Tri-County CAP has the second highest average age (at 7.5 years), but its fleet is entirely cutaway vans. It is likely that many of its vehicles will need to be replaced in the coming year or two.

The youngest fleet belongs to Sullivan County Transit at 3.8 years, while Advance Transit, with a fleet mostly consisting of heavy-duty buses has an average age of 4 years. Many of its buses were just replaced in the past three years, though it has three remaining large Gillig buses from 2007 that will need to be replaced in the next few years.

COAST has the largest fleet among the transit providers, with 44 vehicles, and it is a very diverse fleet with four MCI 55-passenger over-the-road coaches, 18 Gillig heavy-duty buses, 12 cutaways and medium-size buses, and 10 minivans. The diversity of COAST's fleet reflects the diversity of its operating environments over its sprawling service area. The oldest buses in the statewide fleet are the four MCI coaches used on COAST's commuter routes. These were purchased in 2000 and 2001 and are well past their useful life.

The second largest fleet belongs to the UNH Wildcat service. Among its 32 vehicles, the majority are 35-foot ElDorado EZ-Rider II buses, many of which carry the large number of passengers on the Campus Connector. The ages in that fleet range from brand-new buses put into service in 2019 to 13-year-old buses purchased in 2006. UNH tends to purchase buses in batches of four, retiring four old buses every two years and replacing them with four new buses.

Facilities

The inventory of facilities includes small items such as bus shelters and bike racks and large items such as maintenance and administration buildings. There are passenger terminals and transit centers in many locations in New Hampshire, but most of these are not owned nor managed by the transit providers. Only the Nashua Transit System includes a transit center among its capital facilities. The rest are primarily owned by the State of New Hampshire and managed and operated by private carrier bus companies such as Concord Coach and C&J Bus Lines, even though many of them are also served by local bus routes.

According to the inventory, there are 128 bus shelters under the jurisdiction of the transit agencies. There are others owned by municipalities or private entities, but these were not included in the inventory. There are about 35 additional benches not associated with shelters, primarily in Concord and Durham.

The Nashua Transit System and Advance Transit each have large combined administrative and maintenance facilities. The construction cost of each is in the range of $5 million and they were built or expanded within the last 12 years. COAST has operations offices and a maintenance garage in Dover with a total construction cost of about $2 million, but they are undersized for its current operation. MTA has used its maintenance/administrative building used since the 1970s. The estimated replacement cost is about $18 million. Tri-County CAP has a much smaller facility with a dispatch center, offices and a two-vehicle garage.

Other agencies either lease their space or share it with other parts of a larger organization (such as the University of New Hampshire in Durham or the Home, Healthcare and Hospice Community Services in Keene).

Technology

As part of a review of Transit Intelligent Transportation Systems (ITS) deployment in New Hampshire, an inventory of existing technology at New Hampshire's transit agencies was conducted. Paratransit scheduling software was installed at all agencies that operate demand response service, and all agencies had some form of communication system with their vehicles, such as a two-way radio.

The list below provides more detail on Transit ITS technology that each agency has procured:

Advance Transit

- Automatic vehicle location (AVL)
- Real-time bus arrival information for passengers
- Third-party smartphone application
- Security cameras
- Maintenance software (to track fleet maintenance)
- Accounting software (expected in 2020)

CART

- Maintenance software

Concord Area Transit

- Maintenance software
- Fuel management software
- Automated fare collection

COAST

- Computer-aided dispatch (CAD)/AVL
- Real-time bus arrival information for passengers
- Third-party smartphone application
- Automated vehicle announcements (AVA)
- On-board tablets for paratransit scheduling and dispatching
- Maintenance software

Manchester Transit Authority

- AVL
- AVA
- Maintenance software

Nashua Transit System

- Limited AVL
- AVA
- Automated fare collection

Sullivan County Transportation

- On-board security cameras (for new vehicles in 2020)

Tri-County CAP

- Maintenance software

UNH Wildcat Transit

- CAD/AVL
- Real-time bus arrival information for passengers
- Third-party smartphone application
- Automatic passenger counters
- Limited vehicle component monitoring
- Maintenance software

VNA-HCS Keene

- No technology beyond paratransit software

Chapter 7 contains a more comprehensive discussion of technology and recommendations for the State and the transit operators to invest in technology over the coming decade.

4. NEEDS AND GAP ANALYSIS

An important component of the Statewide Strategic Transit Assessment was the identification of needs for transit service and gaps in the current transit network. The focus of the study was on bus services rather than demand response transportation, but throughout the process, the role of demand response service in augmenting the coverage of bus routes was recognized.

Information about needs was gathered and compiled through several means. The first effort was a series of meetings with each of the regional planning commissions in New Hampshire to gather information from prior studies and to discuss the needs that RPC staff and other local stakeholders were aware of. The next phase of the analysis was to examine demographic data, primarily from the US Census, to identify areas that had indicators of transit need but no current bus service. Population forecasts were also considered to predict where need would increase over the coming decades. Finally, commuting data were analyzed to identify the most important commuting corridors in the state that had no transit options available.

All of the data inputs were considered for three primary types of transit service:

- Local bus routes
- Regional commuter routes
- Intercity bus routes

The results of each portion of the needs and gaps analysis is presented below and a summary of the identified needs is presented at the end of this chapter.

RPC Outreach

During the summer and fall of 2017, the project team conducted a series of meetings with each of the regional planning commissions in New Hampshire. These meetings were attended by the project manager, and usually another member of the team along with a representative from New Hampshire DOT. In addition to the transportation planner and often the executive director from each RPC, most meetings included representatives from the local transit agency and other organizations involved in demand response transportation. Appendix C contains a memorandum providing more details of the process and notes from each individual meeting.

Needs

In each region of New Hampshire, the transit agency and other organizations providing public transportation service all work to meet the needs of their community with limited resources. No agency feels that it has sufficient resources to address the needs it knows about, much less expand its role in the community so that it can serve as an attractive mobility option for all people. Common themes expressed by the regions included the following:

- **Local fixed route/deviated fixed route service**
  - Longer hours needed on weekday evenings
  - More service/some service needed on Saturdays and Sundays
  - Higher frequency of service would be of benefit to existing riders and help to attract new ones
  - Many towns have no service at all; need connections to nearby cities, shopping, and medical facilities
- **Regional service**
  - Commuter connections needed from towns 10-40 miles from major employment centers, such

as Manchester, Concord, and Lebanon/Hanover
    - Better intra-state connections needed for other occasional trips, such as medical, court-related, social/recreational
    - East-west connections needed to cities and universities, plus Manchester airport
- **Intercity service**
    - Portions of the state have little or no access to the intercity network
    - North-south connections along the east side of the state—to Dover/Durham—are poor or non-existent
    - Access to intercity service at Portsmouth difficult because of lack of parking capacity
    - Current intercity service not well suited to intra-state travel, especially on I-89 corridor

Demand Response Service

Although the focus of the SSTA is on bus services in New Hampshire, demand response service forms an integral part of the public transportation system. In rural areas, demand response may be the only form of transit available, but it plays a major role in urbanized areas as well. Every RPC meeting included at least one representative from an organization involved with demand response service, many of which are non-profit or volunteer-driven agencies.

A common theme across all regions was the difficulty in finding enough volunteer drivers to satisfy the demand for trips. All regions are forced to prioritize medical trips, and even though there are not enough resources to meet all of that demand, the providers recognize the lack of service to address their clients' other needs, such as for shopping and occasional social interactions and entertainment.

Most regions make efforts at coordinating rides, but they all recognize the challenges in doing so, including dealing with restrictions associated with siloed funding, the need to provide individual rides for some clients, and the high degree of communication necessary to achieve coordination. Many programs prefer to have transportation services tailored to their constituents, rather than sharing resources with other programs.

Demand response service is not yet available in all New Hampshire communities. In some regions, the transit provider covers a whole county or several counties, but in other regions, service is more of a patchwork, with several organizations and town-based services combining to offer partial coverage.

Scheduling and dispatch varies across the state. In some regions it is centrally organized by the transit provider. In the southwest region, there is an innovative online tool called Triplist that allows volunteer drivers to choose which trips they will operate. In the southeast region, the Alliance for Community Transportation (ACT) provides a highly-coordinated demand response service supported by 21 member organizations as well as NH Department of Transportation and NH Department of Health and Human Services. ACT operates a centralized call center called TripLink that serves the 38 cities and towns in the region and takes trip requests for six separate programs including the following:

- COAST's ADA paratransit service
- COAST's Route 7 On Demand service
- Portsmouth Senior Transportation
- Community Rides
- Ready Rides
- Rockingham Nutrition and Meals on Wheels.

Park & Ride

All of the meetings devoted part of the time to discussing existing and potential park & ride lots in the region. The Park & Ride Report, presented as Appendix D and summarized in Chapter 6, presents these findings in more detail, but most regions expressed a need for additional park and ride capacity and new lots in strategic locations. The most significant capacity issue occurs at the Portsmouth bus terminal where most of the C&J Bus Lines service originates. Several regions cited difficulties in siting and constructing new lots because of local opposition or ownership issues.

Demographic Analysis

The demographic analysis conducted for the SSTA consisted of an extensive analysis of existing conditions using data available from the US Census. As described below, the density of population and employment was calculated and mapped to identify areas that may be suitable for bus service, and characteristics of the population that are associated with a greater need for public transit were combined in a transit propensity index. Forecasts of population growth at the town level were then used to project need into the future.

Existing Demand

Prior to the compilation and analysis of demographic data for New Hampshire, the state was divided into six analysis regions. The boundaries of these regions coincide with the RPC region boundaries as they existed in 2018, though five regions in the southeastern portion of the state were merged to form two larger analysis regions. Specifically, the Central New Hampshire, Southern New Hampshire and Nashua regions were combined into the "Central Corridor" and the Rockingham and Strafford regions were combined into the "Coastal Region." The resulting regions are shown below in Figure 1.

For each of these regions, a series of three maps were produced:

1. Population density – people per square mile
2. Transit propensity – index based on four characteristics (described directly below)
3. Employment density – jobs per square mile

The population and employment density calculations are straightforward, but the transit propensity index requires more explanation. The four demographic characteristics used were as follows:

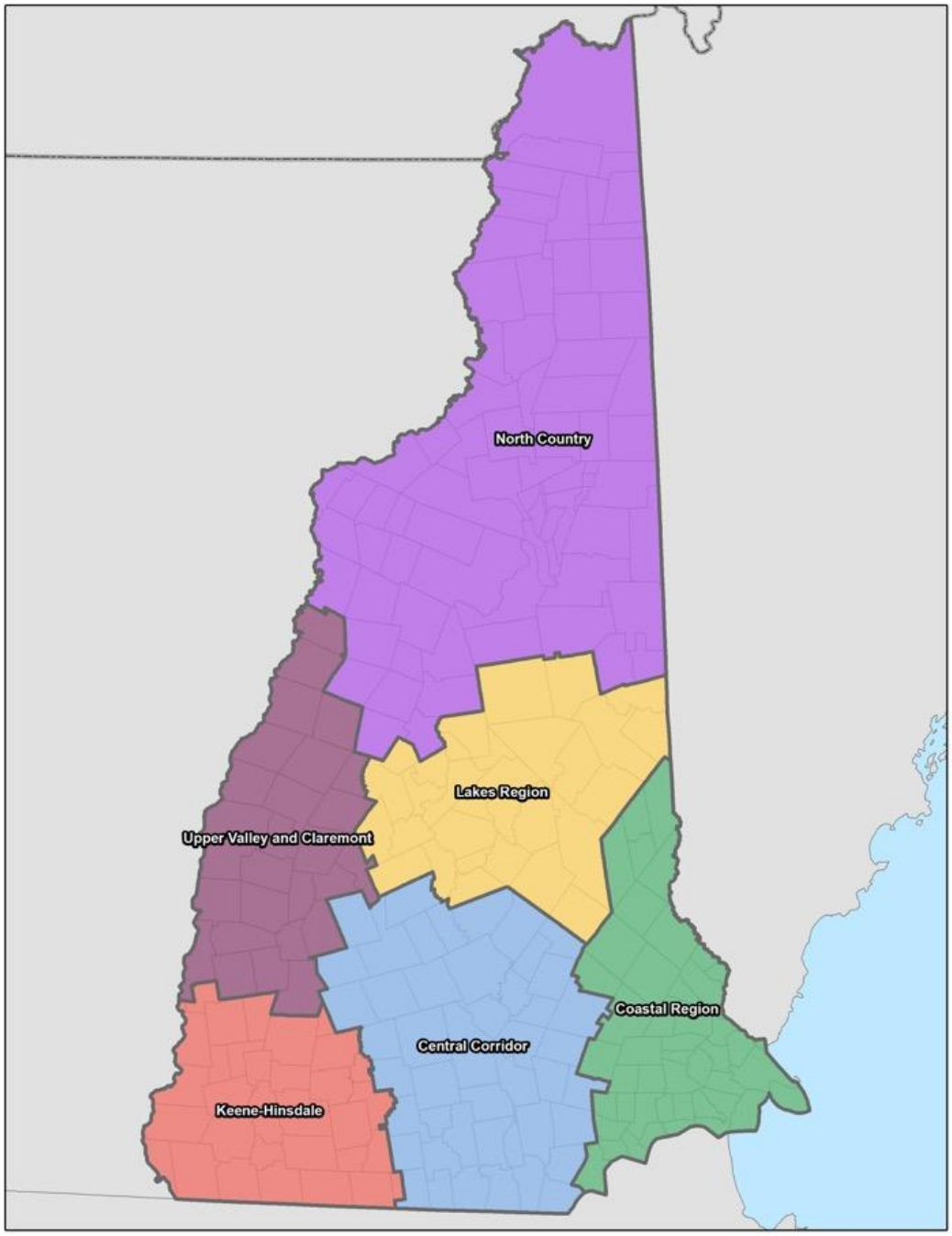
- Population over the age of 80
- People with a disability
- People below the poverty line
- Households with zero cars available

Rather than using the more typical age of 65 to distinguish older adults from the rest of the population, age 80 was used in this analysis. Surveys and anecdotal evidence suggest that most people continue to drive well into their 70s and even 80s until vision and reflexes begin to diminish enough to make driving unsafe. There is no clear demarcation age when people are more likely to stop driving, but there is evidence that that age is closer to 80 than it is to 65. It is also the case that the over-80 cohort will be the fastest growing cohort in the next 10-20 years.

The propensity index was a combination of these four characteristics, comparing the percentage of residents having each characteristic in that block group to the statewide average. A statewide map of transit propensity is shown in the section below on intercity bus analysis.

All of the regional maps and a more detailed explanation of the calculation of the transit propensity index are contained in Appendix E.

Figure 1 Demographic Analysis Regions



Forecast Demand

New Hampshire's Office of Strategic Initiatives produces population forecasts at the county level and then allocates that population to the cities and towns based on past trends. Although forecasts are available at 5-year intervals out to the year 2040, the SSTA considered just the forecast for the year 2030, approximately 10 years out from the present.

The maps below show the projected change in population, first in percentage terms and then in absolute terms. The blue shading in Figure 2 indicates a loss in population, while red shading indicates an increase in population. Grey shading indicates relative stability. According to the forecast, the North Country is

projected to lose residents, while the inland towns in the southeast corner of the state and a cluster of towns in eastern Grafton County (the towns south of Littleton) are projected to grow most quickly. These locations represented relatively undeveloped areas at the fringes of the Boston metro area and the Upper Valley region, respectively. The southeastern towns are, of course, also "suburbs" of Manchester, Nashua, Portsmouth and Concord, the largest job centers in New Hampshire. The southwestern portion of the state shows relative stability from the Massachusetts border through Keene and north toward Lebanon.

Figure 3 tells a slightly different story. While the areas referred to above will be growing most quickly, they are currently sparsely populated, so the absolute number of additional residents there will be small. In contrast, the places in New Hampshire with the greatest absolute numbers of additional residents will be the largest cities: Manchester, Nashua, and Concord, as well as Durham and a cluster of towns on the Maine border northwest of Portsmouth. Other than the Upper Valley and Laconia, all of the significant growth in population is in the southeast corner of the state. The losses in population in the North Country, while significant in percentage terms, are not large in absolute terms. Most of the central portion of the state is projected to attract new residents in the low hundreds in each town, while the southwest corner shows the same stability seen in the percentage change map.

Existing local bus routes are shown on both maps as thin green lines. It can be seen that few of the fastest growing towns show in Figure 2 have any bus service available, while the great majority of the cities and towns with large increases in population in Figure 3 do have existing bus service. The exceptions include Laconia, Franklin and Milford.

It is unlikely that the increase in population in presently rural areas will be significant enough to warrant bus service in the foreseeable future. To the extent that the population growth occurs in town and village centers, rather than being spread throughout the town, it will be easier to serve by future bus routes. The thousands of new residents forecast to live in the largest cities will help to justify increases in the level of service on existing systems and increase ridership on those routes as well.

Figure 2 Population Forecast 2030 by Percentage

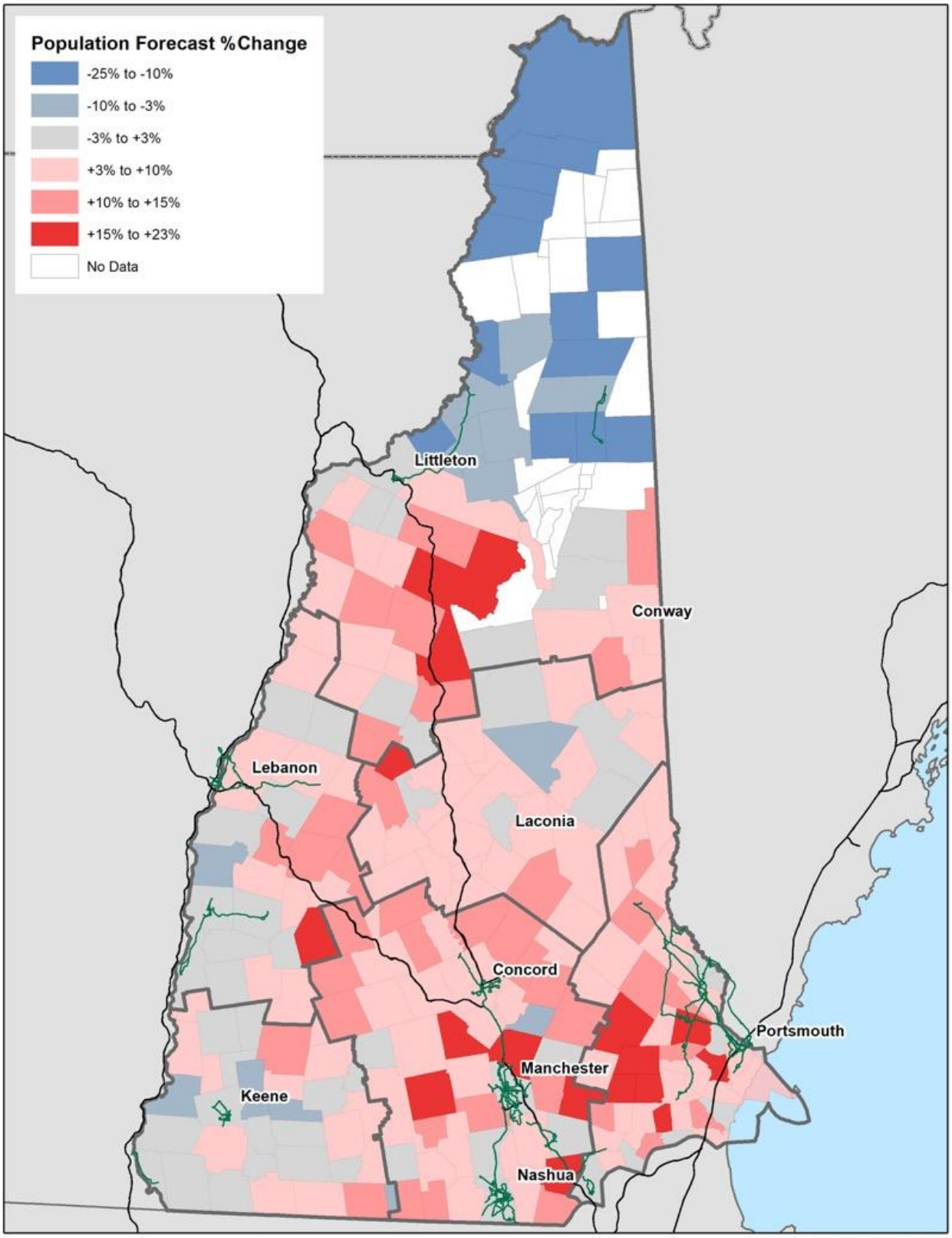
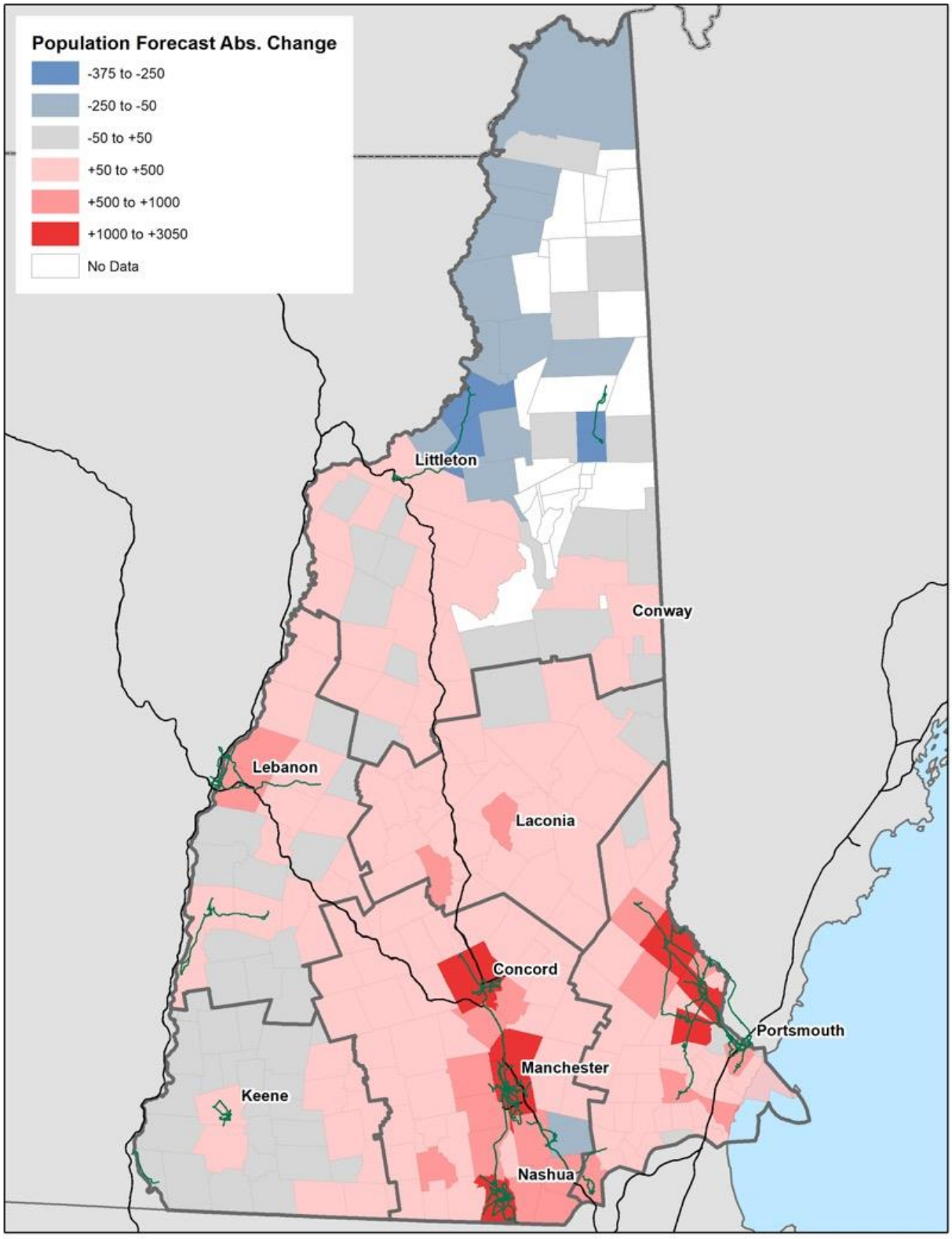


Figure 3 Population Forecast 2030 by Absolute Change



Commuting Analysis

In general, public transit routes tend to be designed around the commuting market, as workers making five round-trips from home to their job every week form the core of the ridership on most bus services. Of course, there are many other reasons that people ride buses, and many workers do not make daily trips to a workplace during "rush hour," but the traditional commuter nonetheless plays a very important role in bus route planning.

In addition to the demographic analysis described above, the SSTA included an analysis of commuting patterns in New Hampshire. Using data from the US Census, the 16 largest employment centers in the state were identified, all with 4,000 or more jobs. The six largest have more than 15,000 jobs. The job centers and their 2015 employment totals are shown in Table 2 below. Note that for the largest job centers and many of the smaller ones as well, the "employment zone" is a specific area within a city or town or an area spanning portions of adjacent towns, rather than a municipality as a whole.

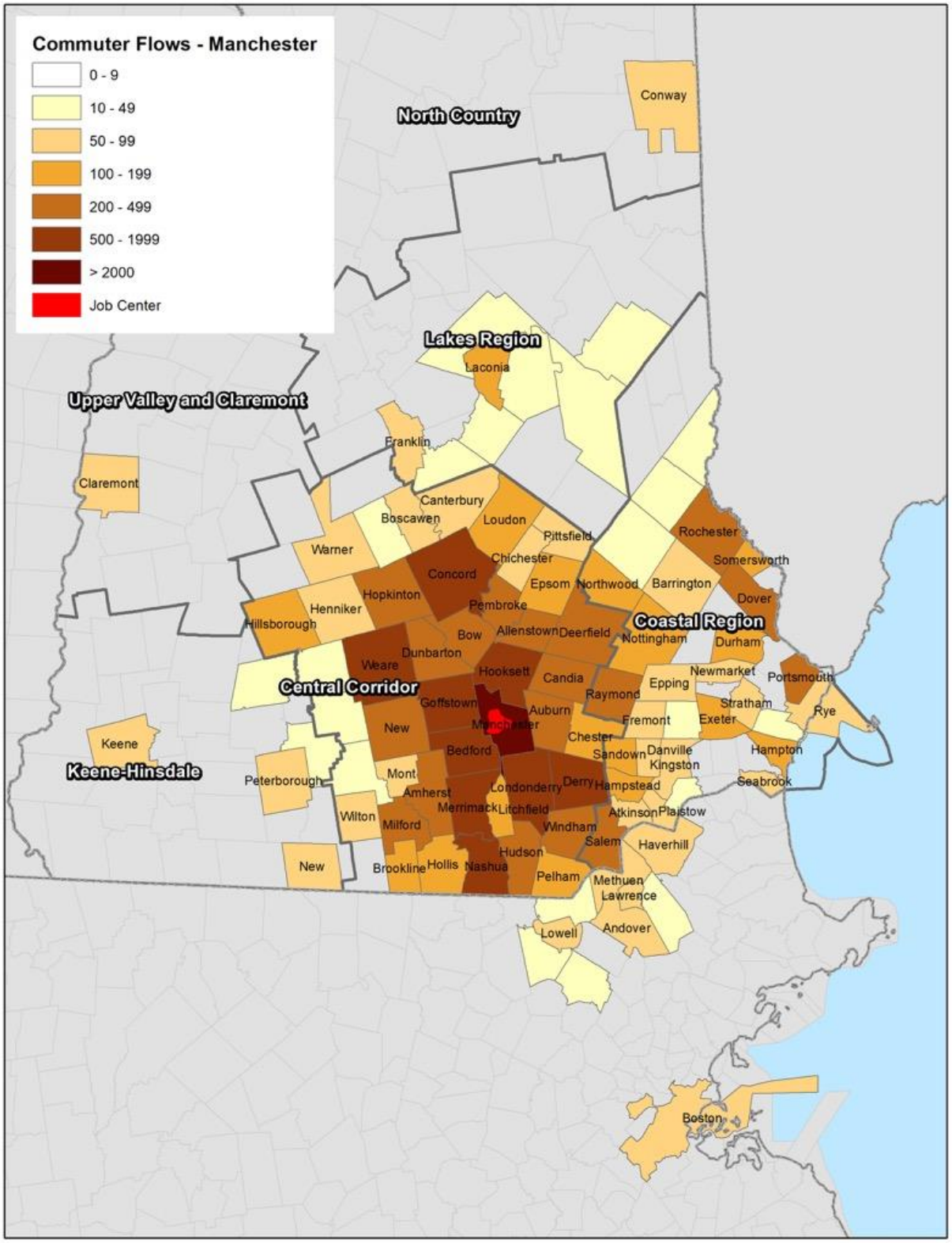
Table 2 New Hampshire Employment Centers

Employment Center	Jobs (2015)
Downtown Manchester	37,860
Downtown Concord	35,677
Upper Valley (Hanover-Lebanon-WRJ)	29,984
City of Keene	18,158
Downtown Nashua	17,201
Downtown Salem	16,920
Derry-Londonderry NH 102 Corridor	11,810
Town of Laconia	9,238
Town of Conway	7,282
Franklin-Tilton US 3 Corridor	6,224
Downtown Dover	6,222
Downtown Portsmouth/Shipyard	6,076
Town of Claremont	5,277
Downtown Durham	5,191
Town of Littleton	4,419
Town of Plymouth	4,099

Appendix F includes maps for each of these employment centers showing both the definition of the employment center and the number of people commuting to that employment center by municipality. An example for Downtown Manchester is shown below in Figure 4. Note that not every community sending workers to Manchester is shown on the map, but all of the ones sending significant numbers (more than 30) are displayed.[1]

[1] All of the commuting maps show the top 100 towns sending commuters to the employment center. For the larger employment centers, there are a number of towns with more than 10 commuters that are not shown, in spite of the indication in the legend.

Figure 4 Commuters to Downtown Manchester (2015)



Intercity Analysis

Within the context of the SSTA, the analysis of intercity travel proceeded separately from the rest of the study, since it was part of a prescribed consultation process as required in federal regulations. The analysis of needs was conducted in Spring 2018, leading up to the first meeting of the consultation process in June 2018. At that meeting, the project team presented a draft policy on intercity bus funding (see Chapter 2), existing conditions for rural intercity service, and a needs analysis.

The two most important components of the needs analysis were the tabulation of the transit propensity index (described above) and a listing of colleges and universities in New Hampshire, since college-age students generally form an important part of the intercity bus travel market. The statewide map of transit propensity is shown below in Figure 5. This map also shows existing intercity bus routes, overlaid in blue lines.

There are several block groups in New Hampshire with high or very high transit propensity that do not have easy access to an intercity bus route, including the following:

- Laconia
- Claremont
- Franklin
- Boscawen
- Rochester
- Farmington
- Exeter
- Raymond

In addition, while Keene has a daily intercity bus connection to Brattleboro and White River Junction, the connection to Nashua and Boston runs only on Fridays and Sundays.

Figure 6 shows the location of colleges and universities in New Hampshire, with the size of the circle indicating the number of students enrolled. Many of these campuses are already served by intercity bus routes, including all of the largest ones. Others have a limited number of residential students, who would be more likely to need intercity bus service than a student who commutes to classes each day. Among the 25 college and university campuses in the state, three were identified as having an unmet need for intercity bus service due to a sizable resident student population:

- Lakes Region Community College (Laconia)
    - Approximately 200 residential students
- Franklin Pierce University (Rindge)
    - Approximately 1,000 residential students without cars
- New England College (Henniker)
    - Approximately 500 residential students without cars

While some may argue that it should be up to these institutions to provide access to the intercity network for their students, it is also the case that providing a direct connection via intercity bus would attract more riders, and it is the ridership and associated fare revenue that makes the intercity bus system viable in the long term.

Figure 5 Transit Propensity by Block Group

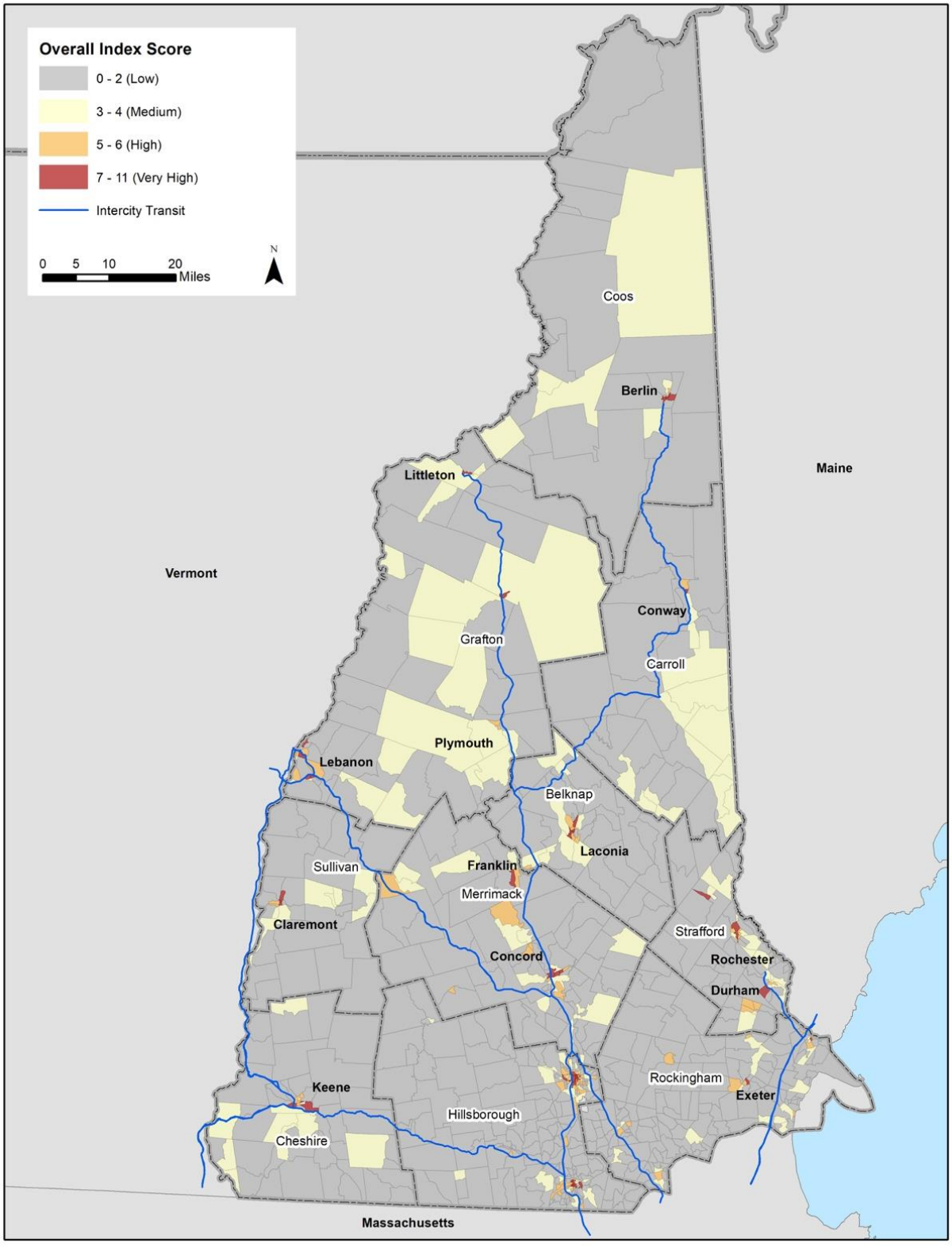
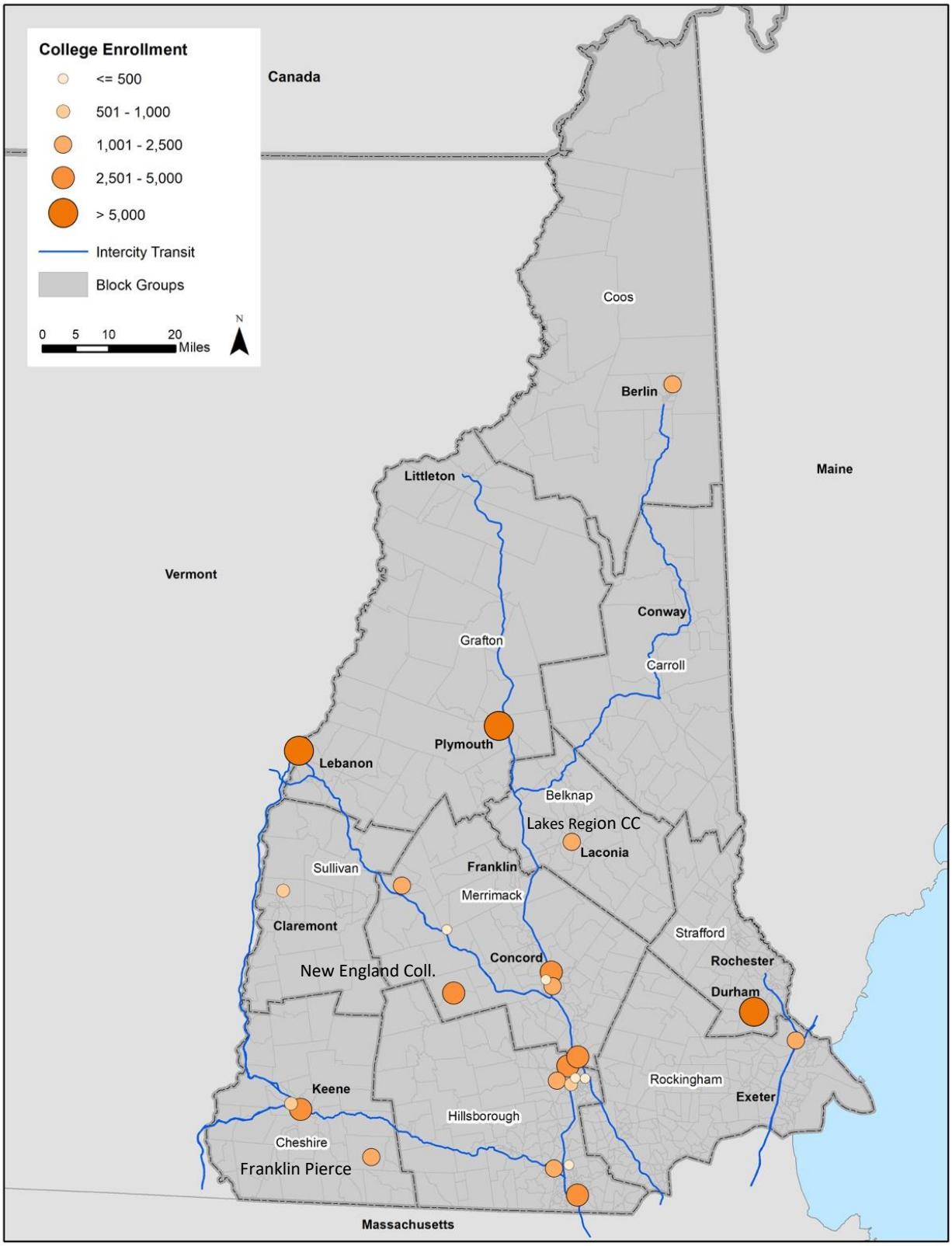


Figure 6 New Hampshire Colleges and Universities



Identified Needs and Gaps

Local

The analysis of residential development patterns and demographics resulted in the identification of the following locations that appeared to have ***significant need for public transit but no existing local bus service***. Note that many of these locations do have access to demand response service, either through transit agency vans or volunteer driver programs.

- North Country
  - Conway/North Conway
  - Plymouth
- Upper Valley/Claremont
  - New London
- Keene/Hinsdale
  - No areas of high need outside of Keene
- Central Corridor
  - Milford
  - Derry
  - Pembroke
  - Allenstown
  - Boscawen
  - Merrimack
- Coastal Region
  - Raymond
  - Hampton
  - Exeter
- Lakes Region
  - Laconia
  - Franklin
  - Tilton

All of these towns and cities had block groups with high or very high transit propensity, as well as moderate to high population and employment density. These indicators taken together suggest that local bus services may be successful in these communities.

It is important to note that some of these communities were served by local bus routes in the recent past. The Winnipesaukee Transit System served Laconia, Tilton, and Franklin until June 2017, and Carroll County Transit served Conway as part of its Blue Loon deviated fixed route. These services were poorly patronized and discontinued by the providers. Part of the reason for their lack of success was that the level of service was very low (only a few trips per day) and that the routes that served these communities were long and circuitous, also serving several other neighboring communities. These characteristics made the routes unattractive for most potential riders.

Commuter/Regional

The result of mapping the commuting patterns for all of the largest job centers was a list of unserved important commuter links. These are shown in Table 3 below.

Table 3 Commuter Linkages

Employment Center	Source Towns
Downtown Manchester	Weare, Goffstown; Portsmouth-Dover-Rochester; Derry-Londonderry
Downtown Concord	Keene, Laconia, Franklin, Rochester-Dover
Upper Valley	Claremont
Downtown Nashua	Milford, Manchester, Lowell
Keene	Manchester, Peterborough, Claremont
Downtown Salem	Nashua, Manchester
City of Laconia	Concord, Franklin
Town of Littleton	Bethlehem, Whitefield, Franconia

It is important to note that these are not the only commuter linkages that are unserved by bus routes, but they appear to have the largest commuting markets and thus offer the best candidates for new commuter bus services.

Intercity

As indicated in the prior section, the analysis of transit propensity and of college and university residential student populations identified several locations with an unmet need for intercity bus service. These locations include the following:

- Laconia (transit propensity and Lakes Region Community College)
- Claremont (propensity)
- Franklin/Boscawen (propensity)
- Rochester/Farmington (propensity)
- Exeter/Raymond (propensity)
- Henniker (New England College)
- Rindge (Franklin Pierce University)

Summary

The needs and gaps identified in this chapter served as the basis for the development of service concepts described in the next chapter. Several communities, most notably Laconia, showed up in more than one component of the analysis: local, commuter and intercity. As will be seen, the appropriate solution is not always a bus route, but investments in new services are well supported by the data and outreach to RPCs conducted in this phase of the SSTA.

5. SERVICE CONCEPTS

While the Statewide Strategic Transit Assessment is not intended to be a service planning study, the scope did include the development of specific service concepts to address gaps identified during the study. For local routes, only areas that had no existing bus service were considered, while for commuter and intercity routes, the only connections considered were those that had no current transit options. The SSTA did not include an assessment of unmet needs within the service areas of existing transit systems nor propose any changes to existing bus routes.

For all of the routes proposed in this chapter, no specific operator is assumed. The routes could be operated by existing transit providers, by the municipalities served, or by a private entity under contract to the State or a regional or local entity. For the purpose of estimating costs, a constant $75 per vehicle revenue hour rate was assumed for all local services. No assumptions were made about fare levels. Among the local routes, unless otherwise specified, it was assumed that the route would operate as a deviated fixed route with a ¼ mile buffer so that ADA complementary paratransit service would not be necessary. Commuter express and intercity routes are exempt from paratransit requirements.

For most proposed routes, a standard level of service is proposed here. Local routes would operate from 6:00 a.m. to 7:00 p.m. Monday through Friday, and commuter routes would operate two morning and two afternoon round trips. If any of these routes is selected for implementation, a closer study of the local market would be worthwhile, with the level of service tailored to the local demand.

Local Routes

Seven new local routes are proposed to serve communities identified in the previous chapter as needing public transit service. Not every community listed two pages prior received a recommendation for a new bus route. Those that did not include the following:

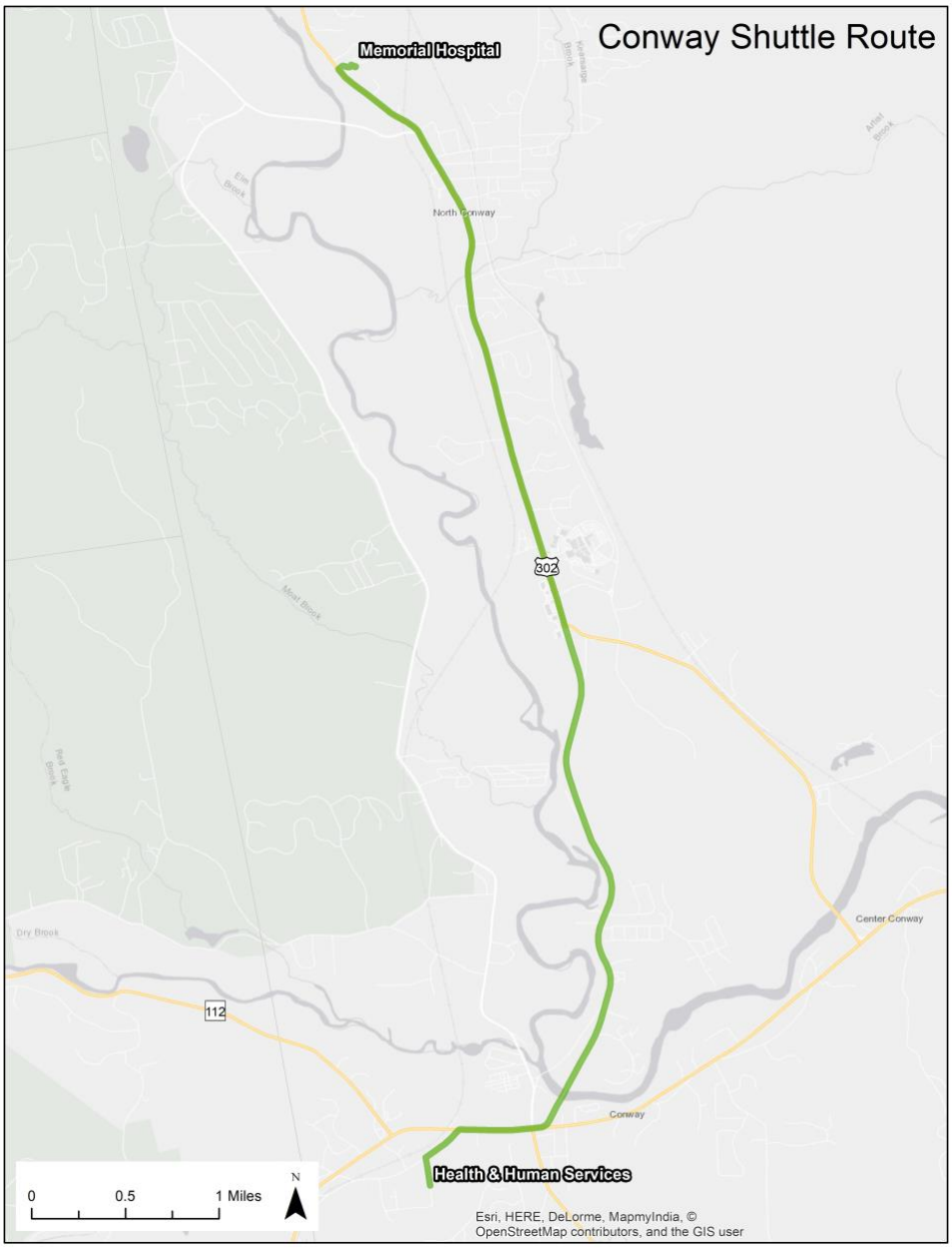
- New London – much of the need is based on the student population at Colby-Sawyer College and these students have access to the intercity network through the Dartmouth Coach stop at the New London Park & Ride.
- Derry – the suburban-style development in Derry does not lend itself to traditional bus routes. A commuter connection to Manchester and local microtransit service[2] would be more appropriate.
- Boscawen – most demand originating in Boscawen is oriented to Concord; thus the most efficient service would be an extension of the CAT Penacook route. Boscawen is also proposed to be served as part of the intercity route from Laconia.
- Merrimack – like Derry, Merrimack has suburban-style development that cannot be served well by a bus route. A commuter service or microtransit would be more appropriate.
- Raymond – in spite of a higher-than-average incidence of poverty, there are few households that do not have vehicles available. There is no obvious corridor or destination for a local bus route.
- Hampton – suburban-style development and an orientation to Boston commuting make Hampton inappropriate for local bus service. It is not close to any existing COAST routes. Microtransit service connecting to commercial areas on US 1 has some potential.

[2] Microtransit is a technology-enabled demand response service that is similar to ridehailing services operated by Uber and Lyft but operates as a shared ride service within a specific service zone. See https://www.apta.com/research-technical-resources/mobility-innovation-hub/microtransit/ for more information.

Conway Service

During the summer tourist season, Conway experiences high levels of traffic congestion. Areas of moderate population density and high transit need at the north end of town indicate the potential for ridership on a fixed route service operating on US 302 and NH 16 (see Figure 7). This route would serve low-income residents seeking to reach jobs at the many retail outlets on the corridor as well as Memorial Hospital and Health & Human Services. It is possible that tourists who do not want to drive in traffic may find the shuttle attractive. Deviations to reach nearby trailheads should also be considered at certain times of day.

Figure 7 Proposed Conway Shuttle



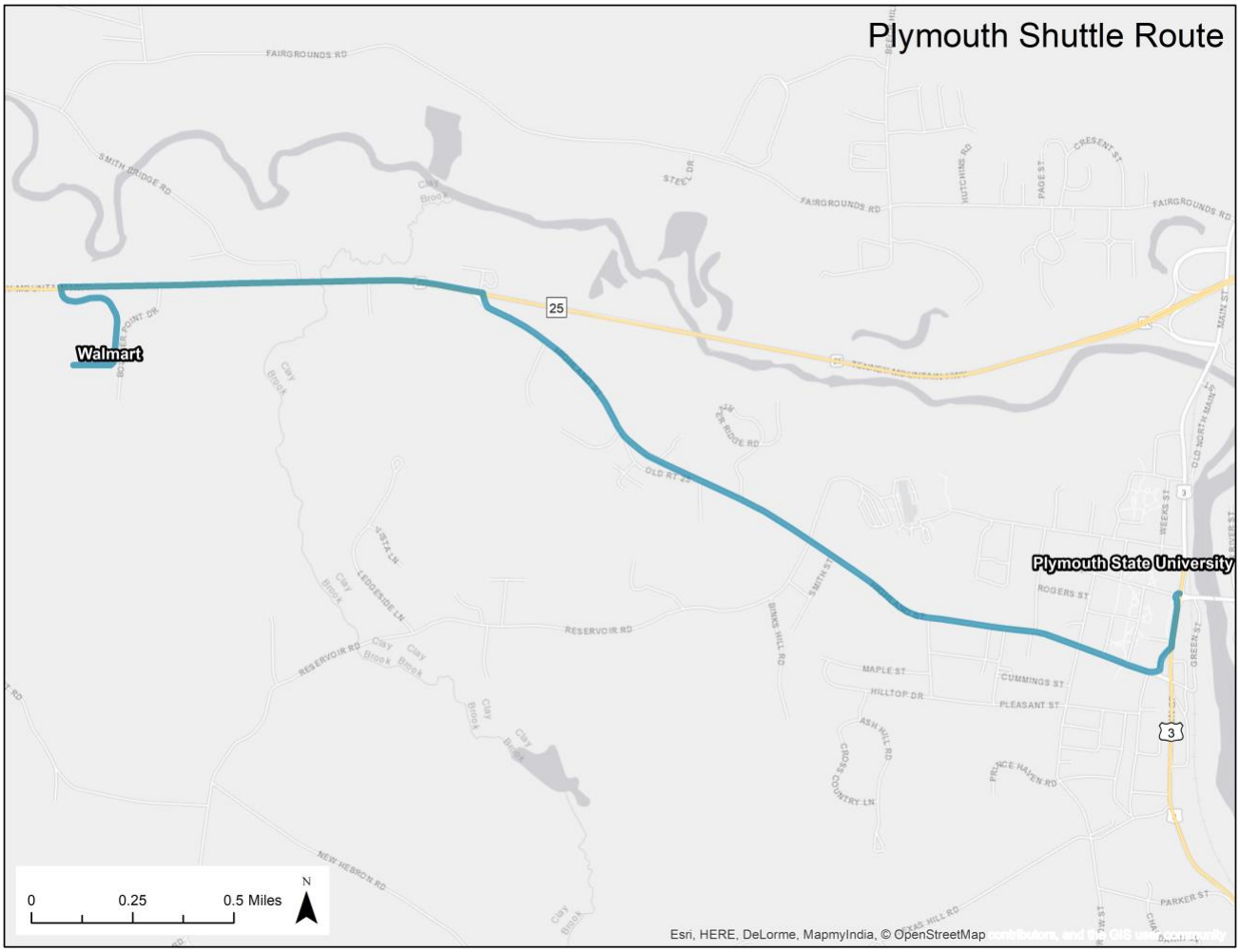
It is recommended that this route operate only from Memorial Day weekend through Labor Day (about 100 service days). During peak demand times, two buses would operate at a 30-minute headway and at off-peak times, one bus would operate at a 60-minute headway. It would operate daily from 6:00 a.m. to 10:00 p.m.

The total annual gross operating cost would be $150,000. If the route proves productive, it could be expanded to full-year service, but likely with only one bus operating during peak periods.

Plymouth Service

The center of Plymouth features moderately dense housing and a large number of Plymouth State University students. PSU already operates several student shuttles, but there is very limited service to the shopping available on the NH 25 corridor. It is proposed to operate a weekday shuttle in cooperation with PSU that connects the Town Common to Walmart, as shown in Figure 8.

Figure 8 Proposed Plymouth Shuttle



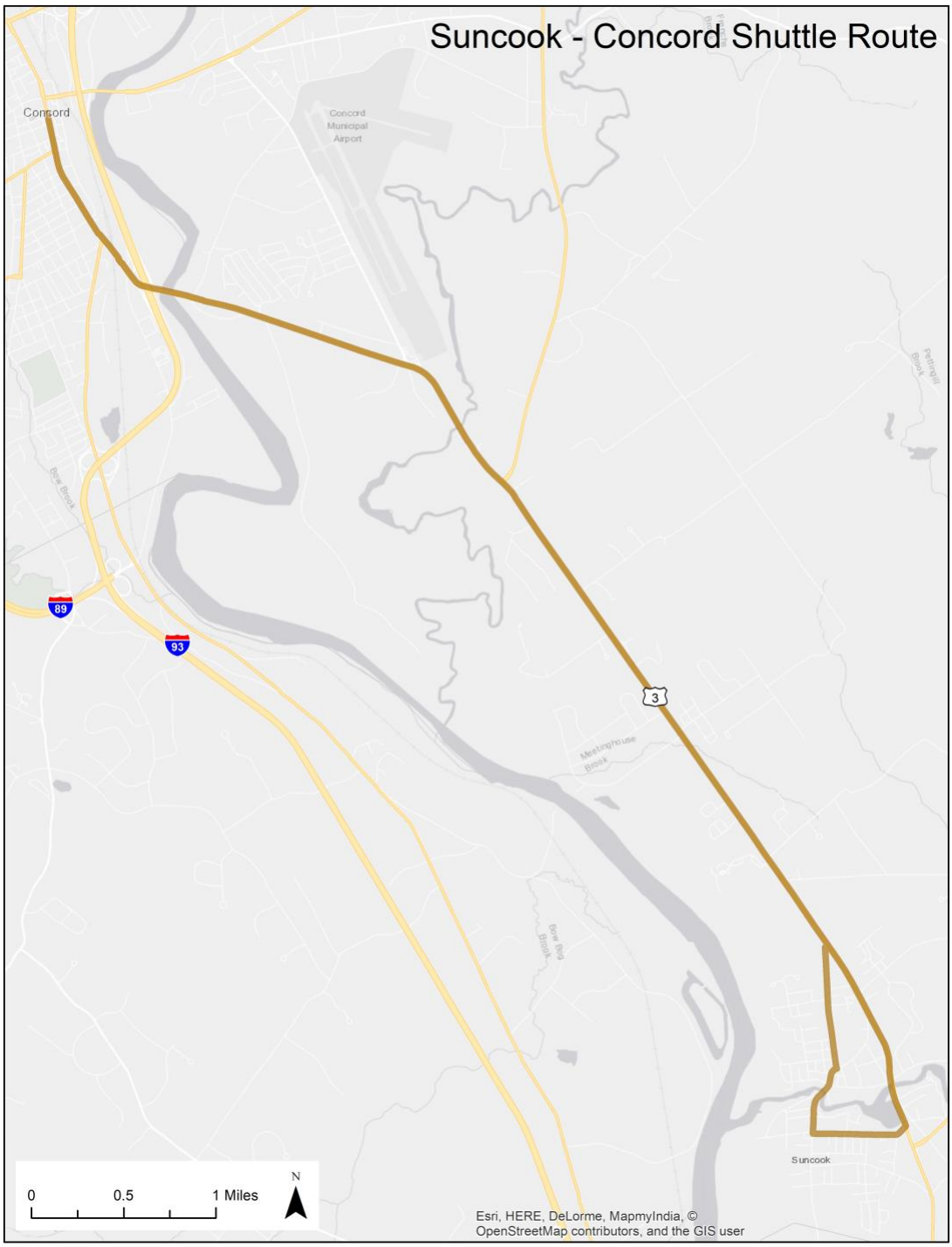
The route would operate with one bus in service running a round-trip every 40 minutes. The service would operate 6:00 a.m. to 7:00 p.m. weekdays only, with a total annual gross operating cost of $250,000.

Suncook Service

The Suncook neighborhood, which covers a portion of Pembroke and Allenstown, has dense residential development and a need for transit access. The shuttle proposed here would connect Suncook to downtown Concord via US 3 (see Figure 9). The Concord-Manchester Transit Feasibility Study from February 2014 recommended a local route from Concord to Manchester through Suncook, offering links to both large

cities. Although such a route would be more expensive to operate due to its length, it would have the benefit of providing access both north and south.

Figure 9 Proposed Suncook Service

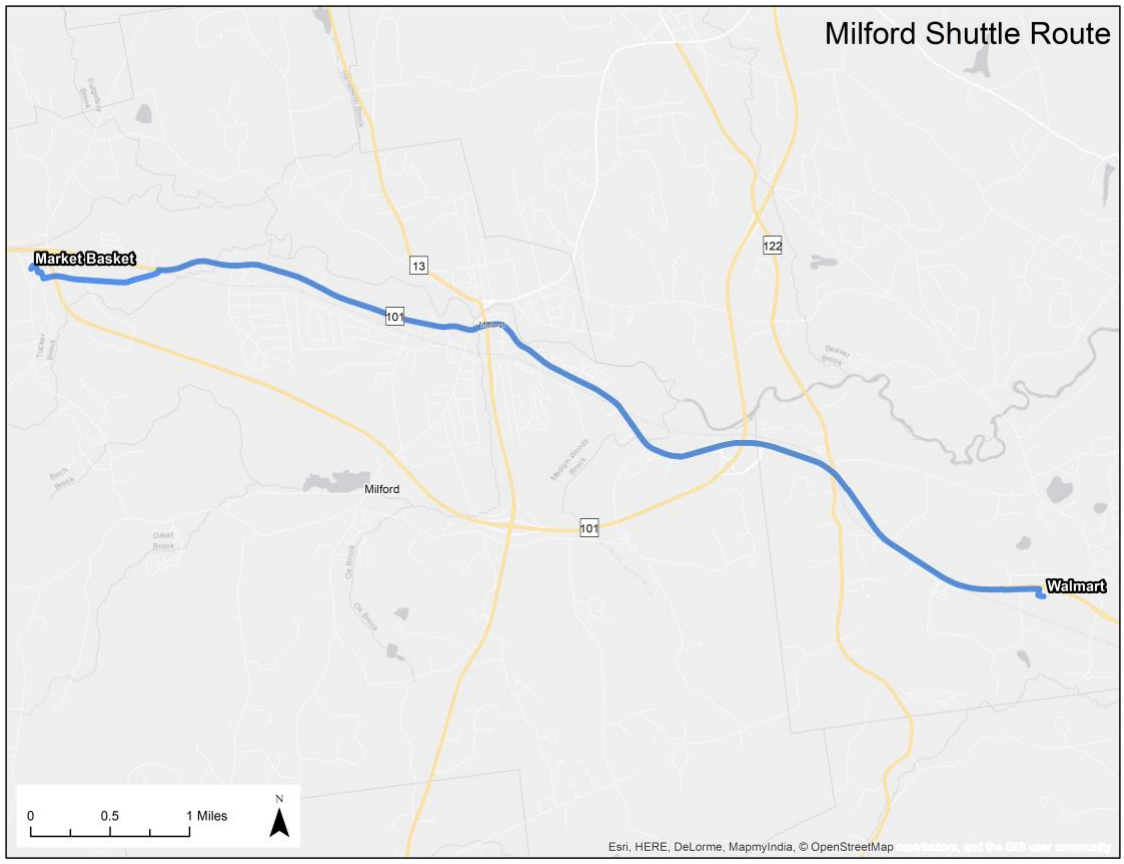


This short shuttle shown above would operate once per hour from 6:00 a.m. to 7:00 p.m. on weekdays only. The estimated total annual gross operating cost would be $250,000. If the long shuttle were operated with the same level of service, the operating cost would be at least twice as much.

Milford Service

The Nashua Transit System operates a route from downtown Nashua to the Walmart in Amherst on NH 101A. This route operates only Tuesdays, Fridays, and Saturdays. It is proposed that a fixed route be operated from the Market Basket in the western part of Milford through the center of Milford terminating at the Walmart in Amherst (see Figure 10). The route would be timed to meet the NTS route to offer convenient transfers into Nashua. This route could be considered an extension of the NTS route 10/10A, or it could be operated as a separate and connecting service. Note that Route 10 only runs as far as Westside Plaza in Nashua; another transfer to Route 2/2A would be necessary to get to downtown Nashua. Route 10A, which operates Tuesday and Friday evenings and all day on Saturday offers a one-seat ride to the center of Nashua. Ideally there would be a one-seat ride from Milford to downtown Nashua at all times, but that would be a very long route; the market first needs to demonstrate its viability with this limited service.

Figure 10 Proposed Milford Shuttle



Coordinated with the NTS 10/10A schedule, this route would operate from 9:00 a.m. to 6:00 p.m. on an hourly basis on Tuesdays, Fridays and Saturdays. The estimated total annual gross operating cost would be $105,000. Because of the length of this route, it could not operate as a deviated fixed route and still make reliable connections. ADA complementary paratransit service would need to be supplied, possibly using existing resources available at NTS's partner agency, SVTC.

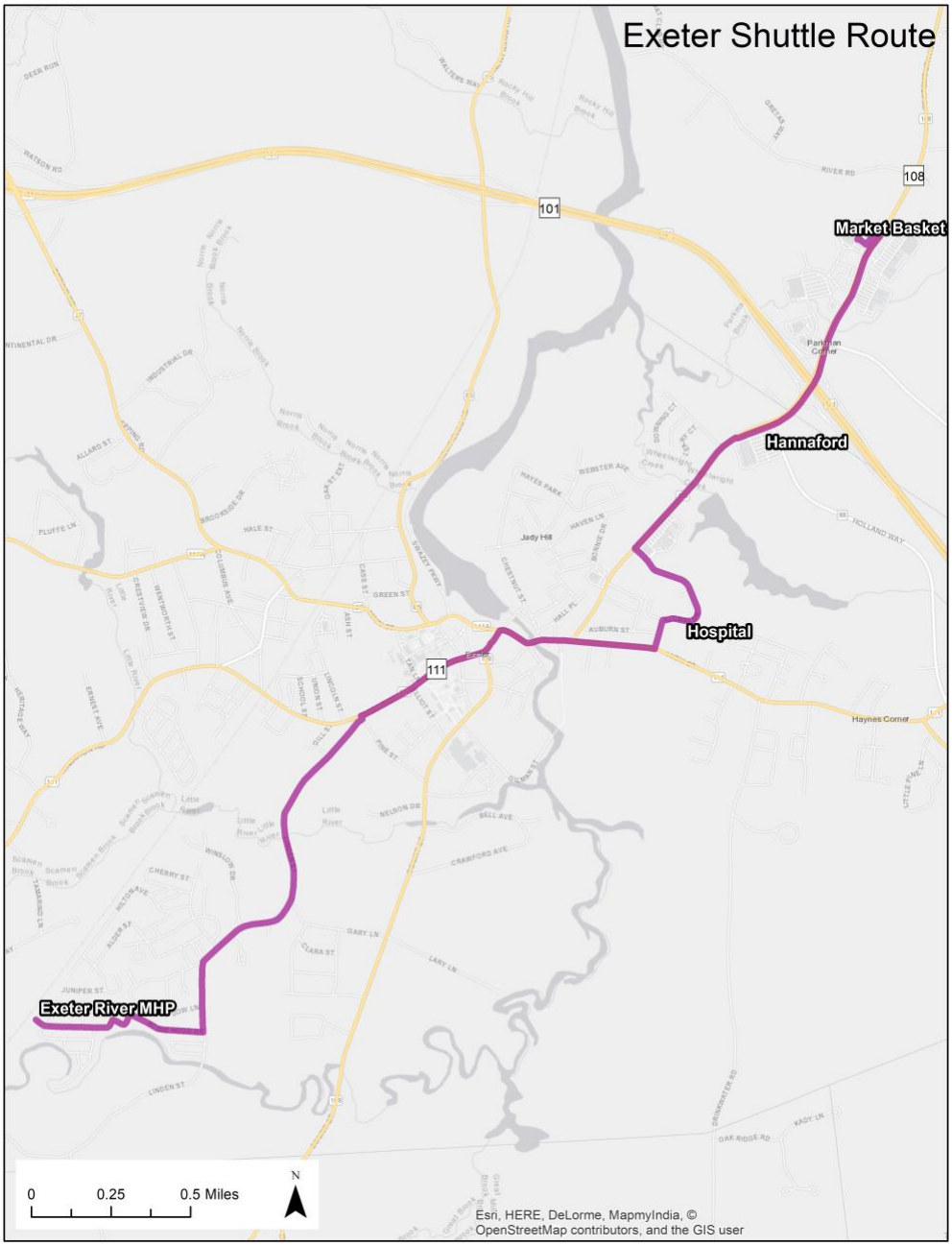
Exeter Service

As of July 2018, COAST converted its prior bus route in Exeter to a fully demand-response service. An advance reservation is needed for all rides, though the route still has designated stops along its former

alignment and a ¾ mile buffer around that alignment. This demand-response service operates Monday, Wednesday, Thursday and Saturday from 9:30 a.m. to 5:15 p.m. and also serves Stratham and Newmarket.

This study proposes a deviated fixed route service focused on Exeter, with an alignment similar to that operated previously by COAST. As shown in Figure 11, the route would originate at the Exeter River Manufactured Home Park, serve downtown Exeter and the hospital before serving Hannaford and terminating at Market Basket.

Figure 11 Proposed Exeter Shuttle

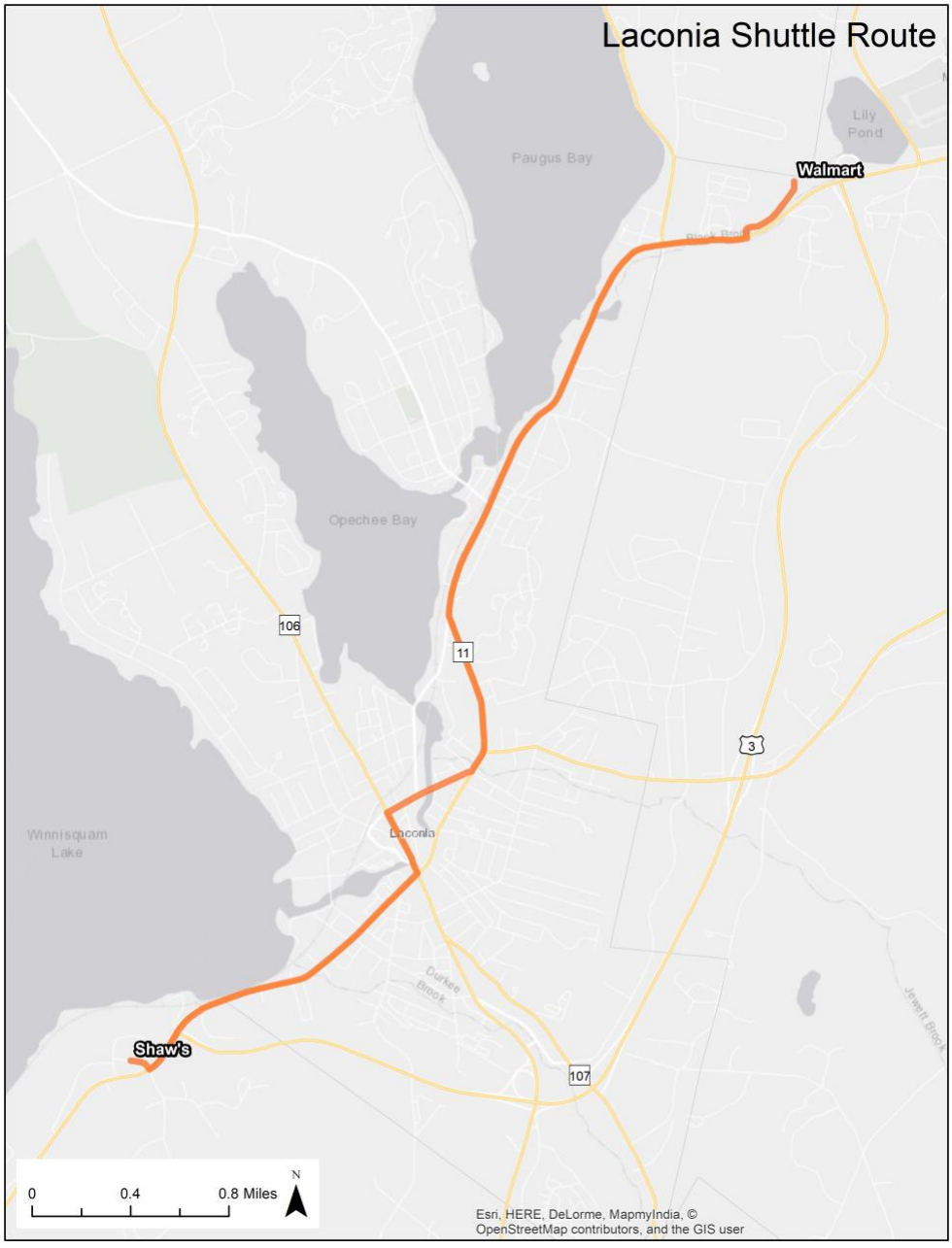


This route would operate one round-trip per hour from 6:00 a.m. through 7:00 p.m. on weekdays. The total annual gross operating cost would be $250,000.

Laconia Service

As noted earlier, Laconia had been served by the former Winnipesaukee Transit System until July 2017. The service level had been poor, however, with only four trips per day and alternating trips extended to Tilton and Franklin. The proposal in this study is for a focused service on Laconia with a higher level of service and a simpler and more direct alignment, as shown in Figure 12. The route would begin at the Shaw's in Belmont, serve downtown Laconia and then travel north to the Walmart in Gilford.

Figure 12 Proposed Laconia Shuttle

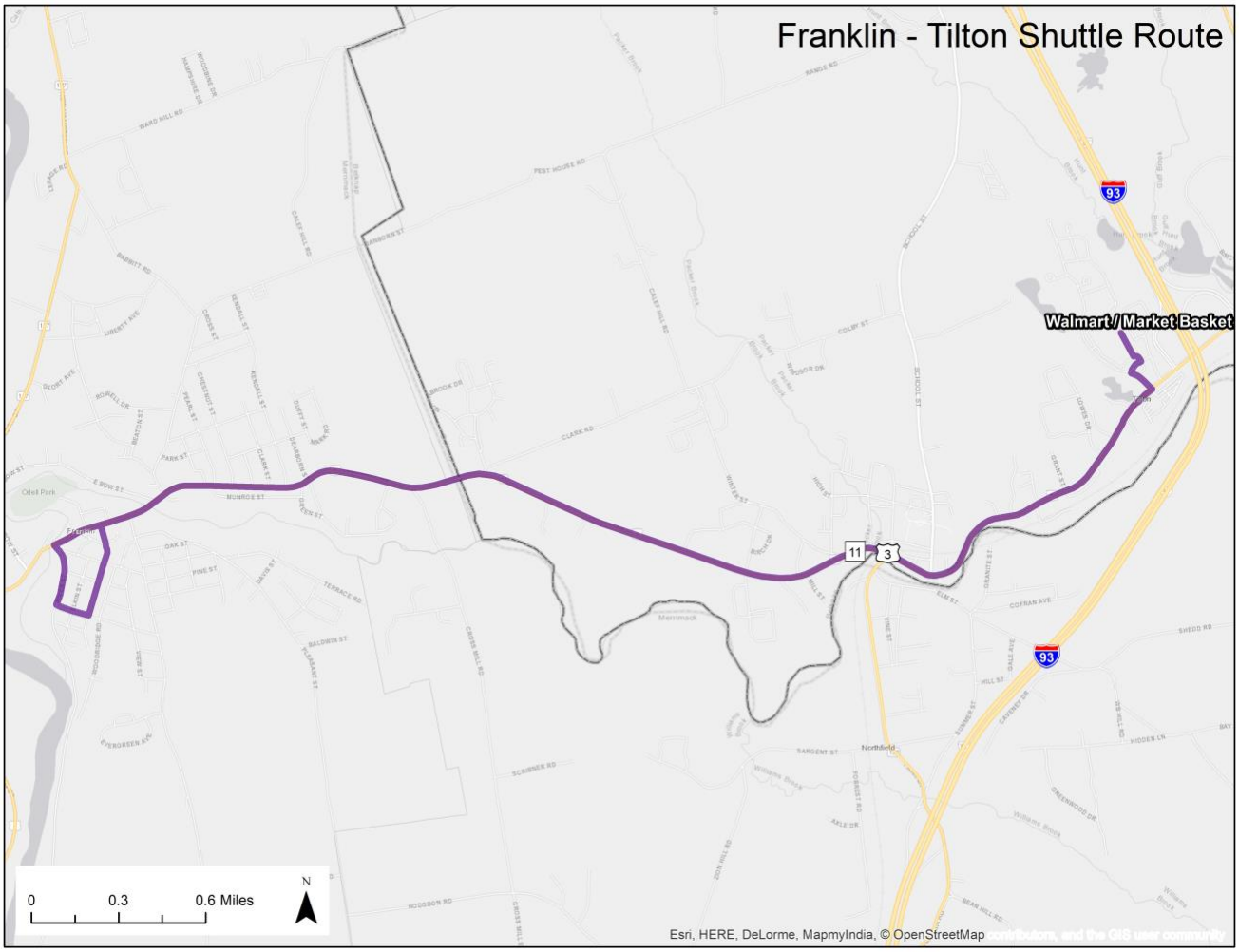


As with most of the other proposed local routes, it would operate one round-trip per hour from 6:00 a.m. to 7:00 p.m. on weekdays. It is intended to serve people commuting within Laconia as well as midday shopping trips and other errands. The total annual gross operating cost would be $250,000.

Franklin-Tilton Service

The proposed service in Franklin and Tilton restores another portion of the Winnipesaukee Transit System, but again in a more focused and direct way, and with a higher level of service. As shown in Figure 13, the route would have a small loop in downtown Franklin and then operate on US 3 to the Walmart and Market Basket in Tilton to the west of I-93. There is possible demand to the rest of the retail area in Tilton on the east side of I-93, but extending the route there may preclude operating it with one vehicle on a 60-minute cycle.

Figure 13 Proposed Franklin-Tilton Shuttle



As with other local routes, this one would operate one round-trip per hour from 6:00 a.m. to 7:00 p.m. on weekdays. It is intended to serve people commuting within Franklin and Tilton as well as midday shopping trips and other errands. The total annual gross operating cost would be $250,000.

Summary of Local Service

Table 4 below provides a summary of the operating statistics and estimated cost for each of the proposed local routes. As stated earlier, the costs are based on a simple $75 per revenue hour cost formula and do not assume any particular operator. Capital costs for operating these routes are not included.

Table 4 Summary of Local Service

Route	Headway	Days of Service	Annual Rev. Hrs	Annual Gross Cost	Urban/Rural
Conway	30/60	100	2,000	$150,000	Rural
Plymouth	40	255	3,315	$250,000	Rural
Suncook	60	255	3,315	$250,000	Urban
Milford	60	156	1,400	$105,000	Urban
Exeter	60	255	3,315	$250,000	Urban
Laconia	60	255	3,315	$250,000	Rural
Franklin/Tilton	60	255	3,315	$250,000	Rural
TOTAL				$1,505,000	

Public Input on Recommendations

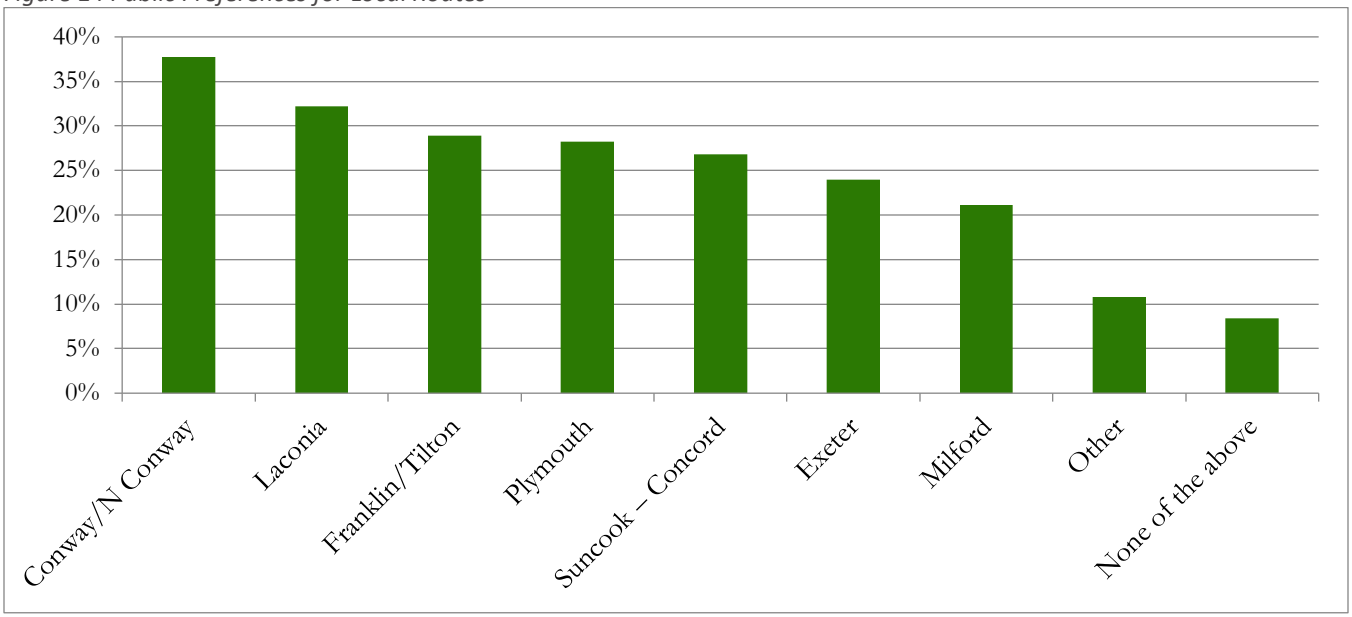
As part of general public outreach on the results of the SSTA, the study team asked New Hampshire residents, through an online survey, their opinions about the merits of the various local service proposals. This survey, conducted in Summer 2019, obtained nearly a thousand responses from a wide cross-section of residents.

Nearly two thirds of respondents said that more bus routes should be operated in parts of the state that currently have no bus service. Only 10% of respondents said service should stay the same or be reduced, and about 23% said that service should be increased on existing routes, rather than introducing new routes in unserved areas.

Respondents were asked to vote for which of the proposed local services should be considered for implementation. It must be noted that the survey was not a statistically valid sample and that preferences for routes likely reflect the number of people from a given region who happened to take the survey. In general, the northern part of New Hampshire was represented more strongly in the survey than the southern portion of the state: three northern planning commission regions (North Country Council, Lakes Region Planning Commission, and Central New Hampshire Regional Planning Commission) together accounted for 425 survey responses, while three southern regions (Southwest Regional Planning Commission, Southern New Hampshire Planning Commission and Rockingham Planning Commission) only accounted for 257 responses, in spite of having many more residents (nearly 550,000 vs. 330,000 for the northern regions).

Recognizing that geographic bias in the results, the proposed services in North Conway, Laconia and Franklin/Tilton were the most popular, while those in Exeter and Milford were less popular. Only 8% of respondents rejected all of the proposed options, and about 11% of respondents suggested other routes, most of which were expansions of service in cities and towns that already had bus service. The results for all of the options are shown in Figure 14 below.

Figure 14 Public Preferences for Local Routes



Priority Rankings of Local Services

Taking into account public preferences, the degree of need established in Chapter 4 and the relative costs of the route, the seven proposed local services are ranked in the following priority tiers:

- Tier 1
  - Conway
  - Laconia
- Tier 2
  - Milford
  - Franklin/Tilton
  - Suncook (to Concord and/or Manchester)
- Tier 3
  - Plymouth
  - Exeter

As additional 5311 funds become available for rural areas, and 5307 or other funds become available for urban areas, NHDOT should consider soliciting the transit agencies and other operators for proposals to implement the top priority routes.

Commuter/Regional Routes

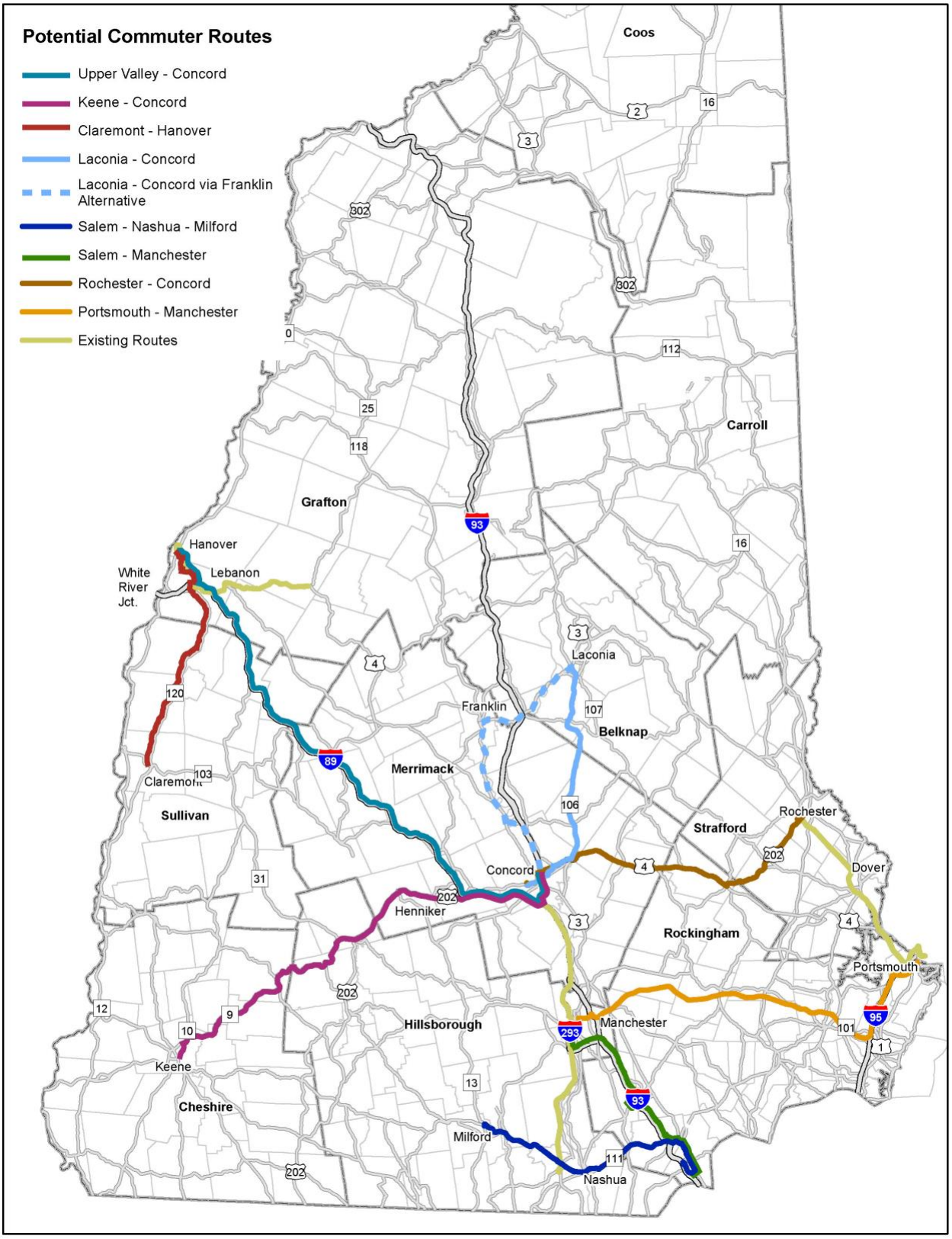
Among the commuting patterns illustrated in Appendix F and the missing links identified in Table 3, the study identified eight potential new commuter routes that should be considered for implementation. It must be noted that the low gasoline prices in effect at the beginning of 2020 make this an inauspicious time to start new commuter services, in spite of the mobility needs of people seeking access to employment. Commuter routes succeed when the cost of driving is high, either because of fuel prices or parking charges, when there are many jobs located near the bus stops at the employment center and there is a walkable environment so that bus passengers feel safe and comfortable getting from the bus stop to the workplace.

As mentioned earlier, the assumed level of service is two round-trips in each peak period. Given the length of the routes, a bus could only complete one round-trip in each peak, and thus two buses would be needed for each route. The estimated operating cost for each route is an average of costs based on $125 per vehicle revenue hour and $4 per vehicle revenue mile. No specific operator is assumed for any route. There are no assumptions regarding fares.

Ridership was estimated for each of the commuter routes based on the size of the commuting markets derived from the 2015 data from the Census Bureau (illustrated in Appendix F). For peak direction travel (toward the primary employment center), it was assumed that the route would capture 4% of the market. For reverse-peak travel and for adjacent communities, it was assumed that the route would capture 1% of the market. These market shares are based on experience with Vermont commuter routes serving similar commuting corridors.

The entire proposed commuter network is show below in Figure 15. Note that no commuter routes are proposed for the northern portion of New Hampshire. The North Country is connected to the southern part of the state by subsidized intercity routes, and there is not enough demand density, especially in an era of inexpensive gasoline, to support more service from sparsely-populated areas in the north to the larger cities in the south.

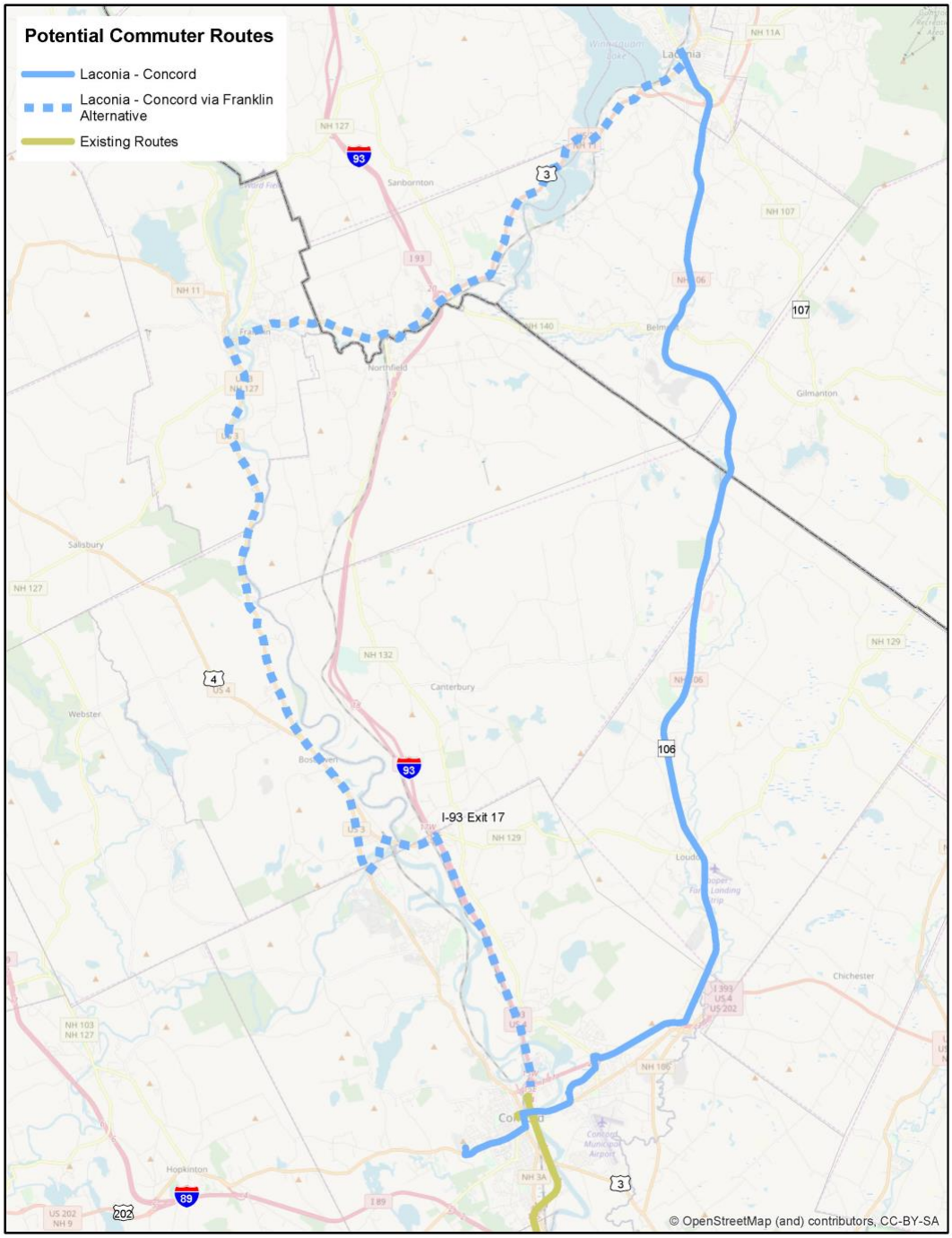
Figure 15 Proposed Commuter Network



Laconia–Concord Route

There is a significant bi-directional commuting market between Laconia and Concord, with 540 people commuting south to jobs in Concord and 252 people commuting north from Concord to Laconia. Two potential alignments are shown in Figure 16: a direct alignment via NH 106 and an indirect one via Tilton, Franklin and Boscawen. The indirect one would take longer to operate, but it would offer access to hundreds of additional commuters to get to jobs in either Concord or Laconia.

Figure 16 Proposed Laconia–Concord Commuter

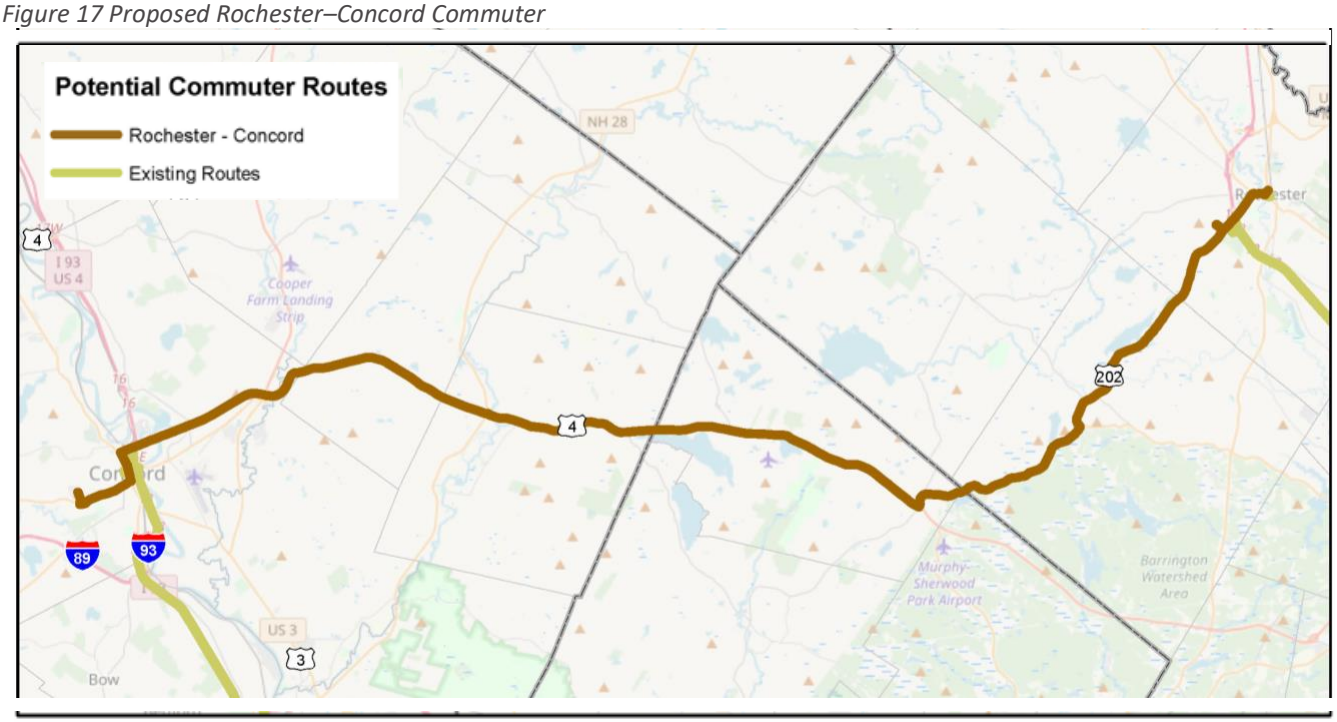


The estimated travel time via the direct route is 55 minutes from end to end. In Concord, the route would serve the State offices on Hazen Drive, downtown Concord and Concord Hospital. The annual gross operating cost would be about $234,000 and the route would be forecast to attract 50 daily riders. The gross cost per rider would be roughly $19.

Rochester–Concord Route

The commuting market from the east along US 4 into Concord is surprisingly strong. The Census data show 402 people commuting from Rochester, 496 from Epsom, and 253 from Northwood. The proposed route shown in Figure 17 provides a direct connection from downtown Rochester and Park & Ride lots along the way to downtown Concord and Concord Hospital.

Figure 17 Proposed Rochester–Concord Commuter



The estimated travel time for this route end to end is 75 minutes. The annual gross operating cost would be about $312,000 and the route would be forecast to attract 90 daily riders. The gross cost per rider would be roughly $13.

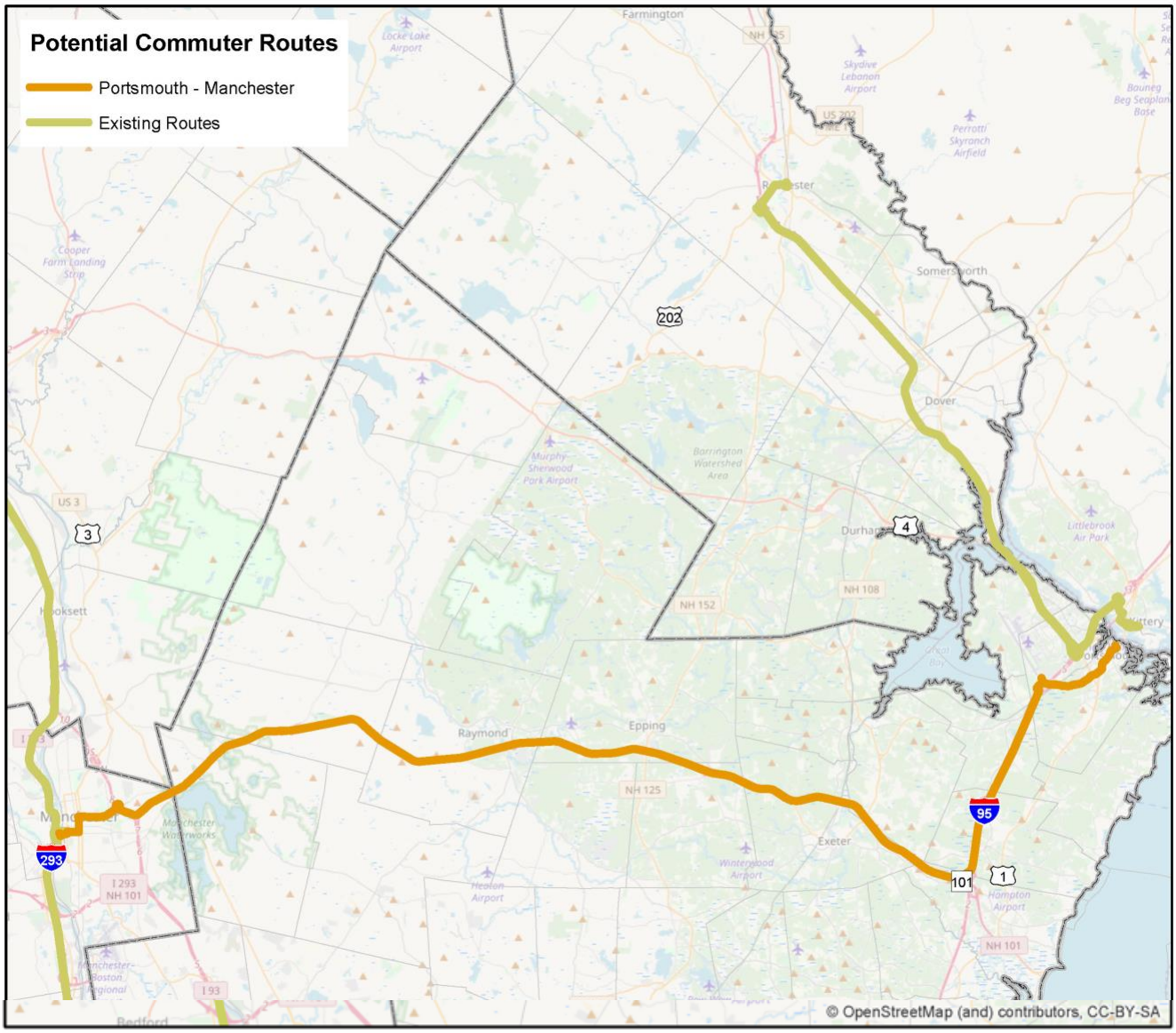
Portsmouth–Manchester Route

In addition to data showing a strong commuting market from Portsmouth and the NH 101 corridor into downtown Manchester, the University of New Hampshire has been seeking to offer better connections between the main campus in Durham and the campus in Manchester. The East-West Express route that connected Portsmouth to Manchester from November 2013 to July 2016 was oriented more toward airline passengers seeking to fly out of Manchester-Boston Regional Airport than commuters based on the schedule and fares that were charged. The route proposed here and shown in Figure 18 would be specifically oriented to commuters, including the UNH Durham-Manchester market.

Some 203 Portsmouth residents work in downtown Manchester, joined by 146 Hampton residents and 323 in Raymond. This route would serve those markets by originating at Market Square in Portsmouth and making stops at the Portsmouth Transportation Center and Park & Rides in Hampton, Epping and

Raymond. It would serve downtown Manchester to connect with MTA routes at Veterans Park and then terminate at the UNH campus in Manchester.

Figure 18 Proposed Portsmouth–Manchester Commuter

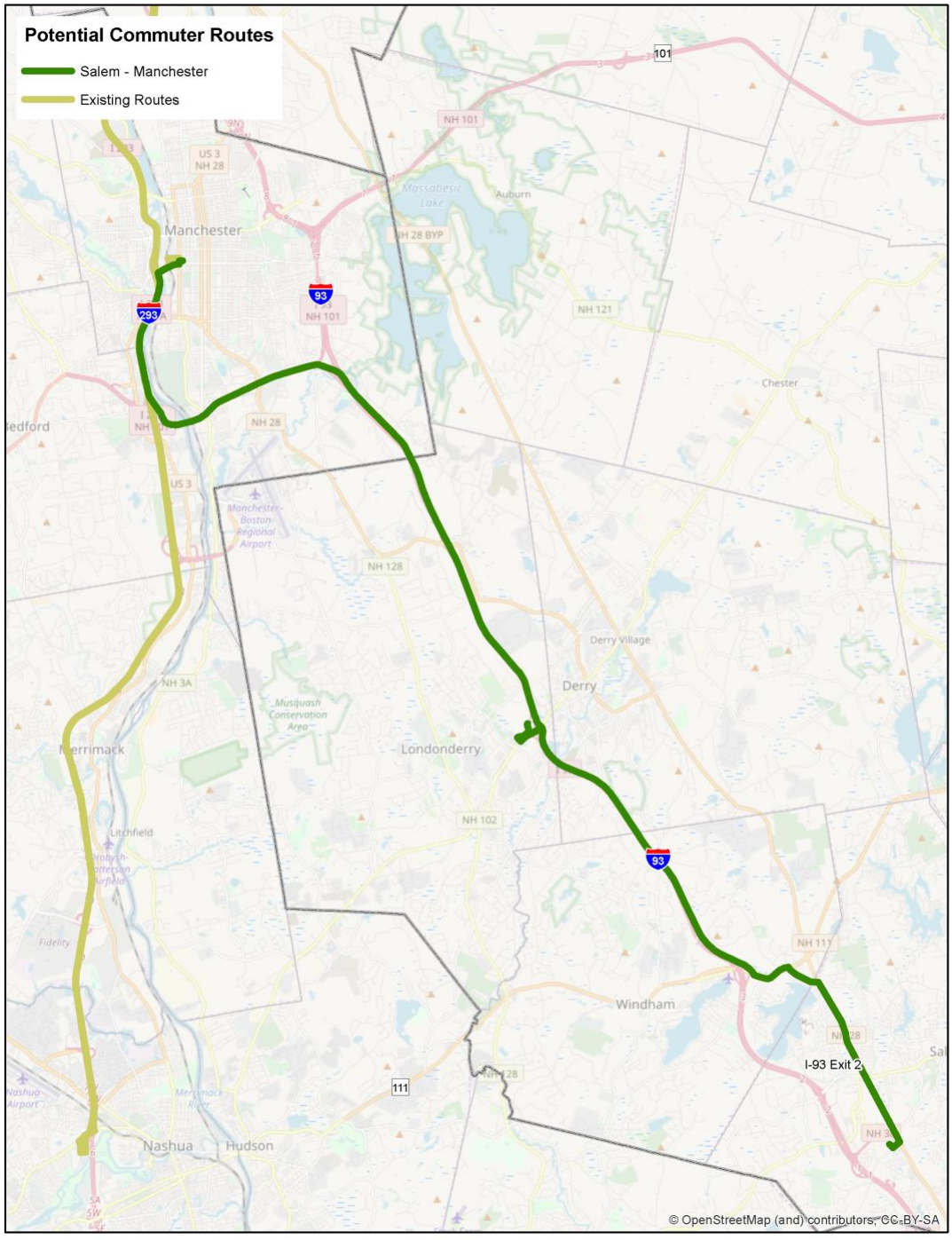


UNH students and faculty that wished to use transit to get from Durham to Manchester would need to use Wildcat Transit Route 4 (not shown in the figure) to get into Portsmouth and then transfer to the new commuter route at Market Square. The total mileage end to end is 47 miles and the estimated travel time is 75 minutes. The annual gross operating cost would be about $349,000 and the route is forecast to attract 100 daily riders. The gross cost per rider would be roughly $13.

Salem–Manchester Route via Windham and Londonderry

The commuter route with the greatest potential among those proposed here is a new service connecting Salem to Manchester via I-93 (see Figure 19). It would make two stops between the terminals: at the Exit Park & Ride in Windham and at the Exit 4 Park & Ride in Londonderry. This corridor already has a large commuting market with 367 Salem residents and 1,093 Londonderry residents working in downtown Manchester, but also 503 Londonderry residents and 973 Manchester residents working in Salem.

Figure 19 Proposed Salem–Manchester Commuter



The key to the future success of this route, however, is coordinating its implementation with major new developments in Salem and Londonderry. Tuscan Village in Salem and Woodmont Commons in Londonderry are large mixed-use developments with hundreds of new housing units. If bus service can be available for new residents as they move in, it will be easier to entice them onto the transit network rather than trying to draw them out of cars after they have established a habit of driving to work.

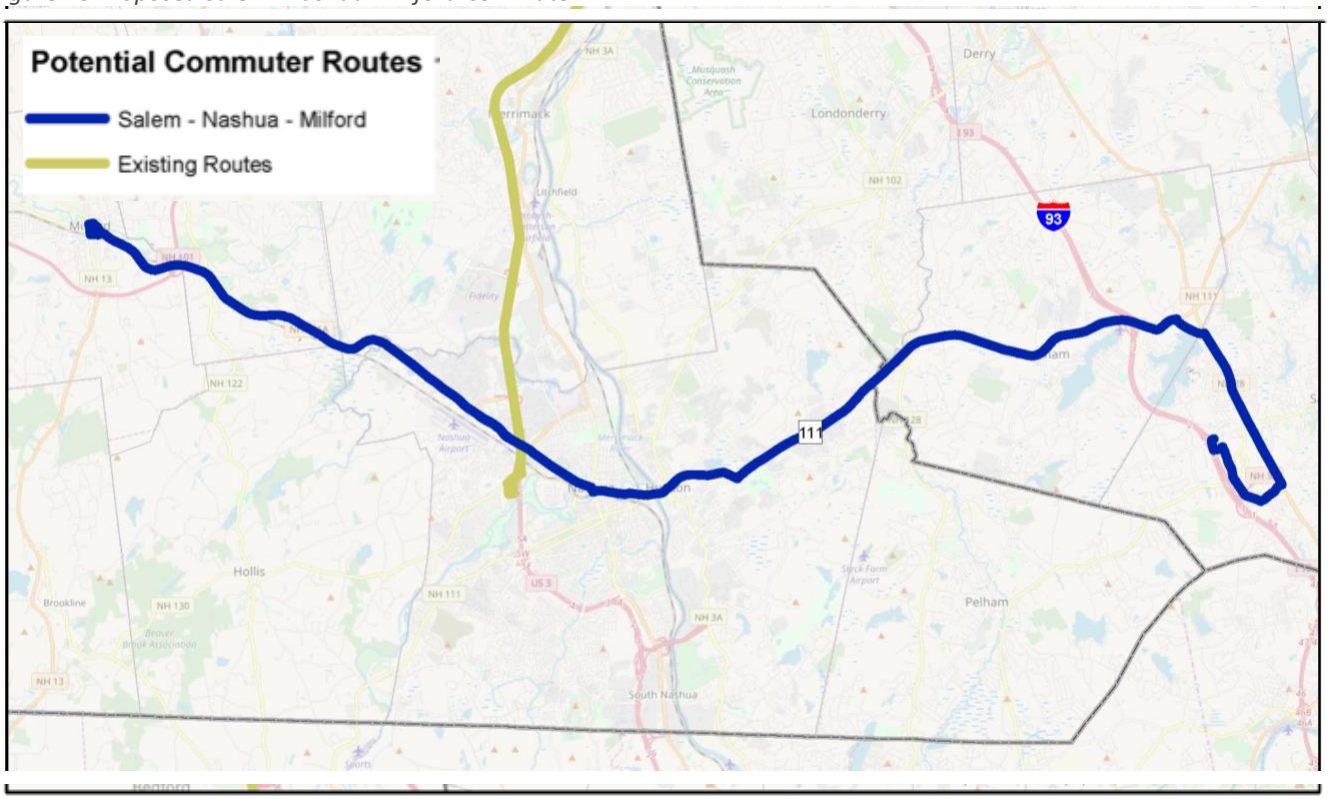
At 26 miles, this is one of the shorter proposed routes, with an estimated end-to-end travel time of 50 minutes. The annual estimated gross operating cost would be $211,000 and ridership could be as high as 160

daily riders. Indeed, if ridership develops as hoped because of the new developments, additional service would have to be operated because of crowding on the buses. This would raise the cost of service, but the cost per rider with the base level of service is only $5, making this by far the most cost-effective commuter route among those proposed in this study.

Salem–Nashua–Milford Route

East-west travel across the southern portion of the state is difficult to accomplish. Among Salem, Nashua and Milford, there are hundreds of commuters traveling in both directions, but no current transit options to carry them across municipal boundaries. The proposed route shown in Figure 20 would provide this connection. Although it has no mileage on express highways, it would operate in a limited-stop fashion rather than a local route. It would originate at the Exit 2 bus terminal, serve densely developed areas in Salem, including the new Tuscan Village development and then operate through the heart of Nashua to Milford. Peak service would be bidirectional given the large numbers of people commuting from Milford to Nashua (537) and from Nashua to Salem (1,011).

Figure 20 Proposed Salem–Nashua–Milford Commuter



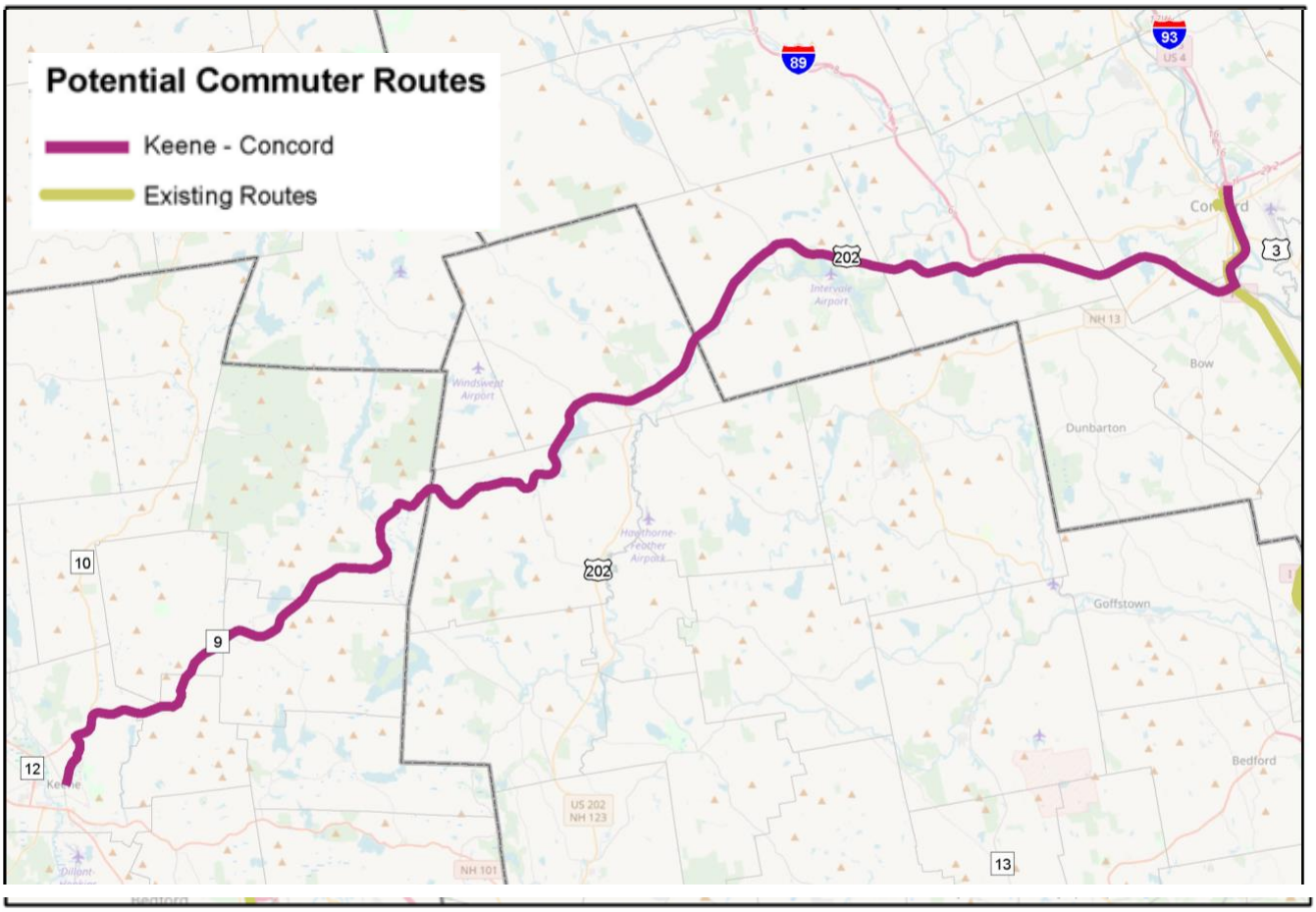
This route is not very long, but it has an estimated end-to-end travel time of 85 minutes due to congested conditions on arterial roads. The estimated annual gross operating cost is $300,000 and estimated daily ridership is 75 passengers, resulting in a gross cost per rider of $15.

Keene–Concord Route

Stakeholders in the southwest region noted that Keene and other communities in the region are isolated from the rest of New Hampshire with regard to public transit. There is more service to Vermont destinations (two trips per day on Greyhound) than there is to any destination in New Hampshire. The route proposed in Figure 21 would link Keene to the capital city of Concord and a major hub of intercity transportation. The route would also serve stops in Hillsborough and Henniker along the way, each of which send about 325 commuters to Concord daily. Keene sends about 235 commuters to Concord, and

about 120 make the reverse commuting trip. Given the length of the route—about 53 miles—a commuter service could be attractive to these commuters to save wear and tear on their automobiles.

Figure 21 Proposed Keene–Concord Commuter

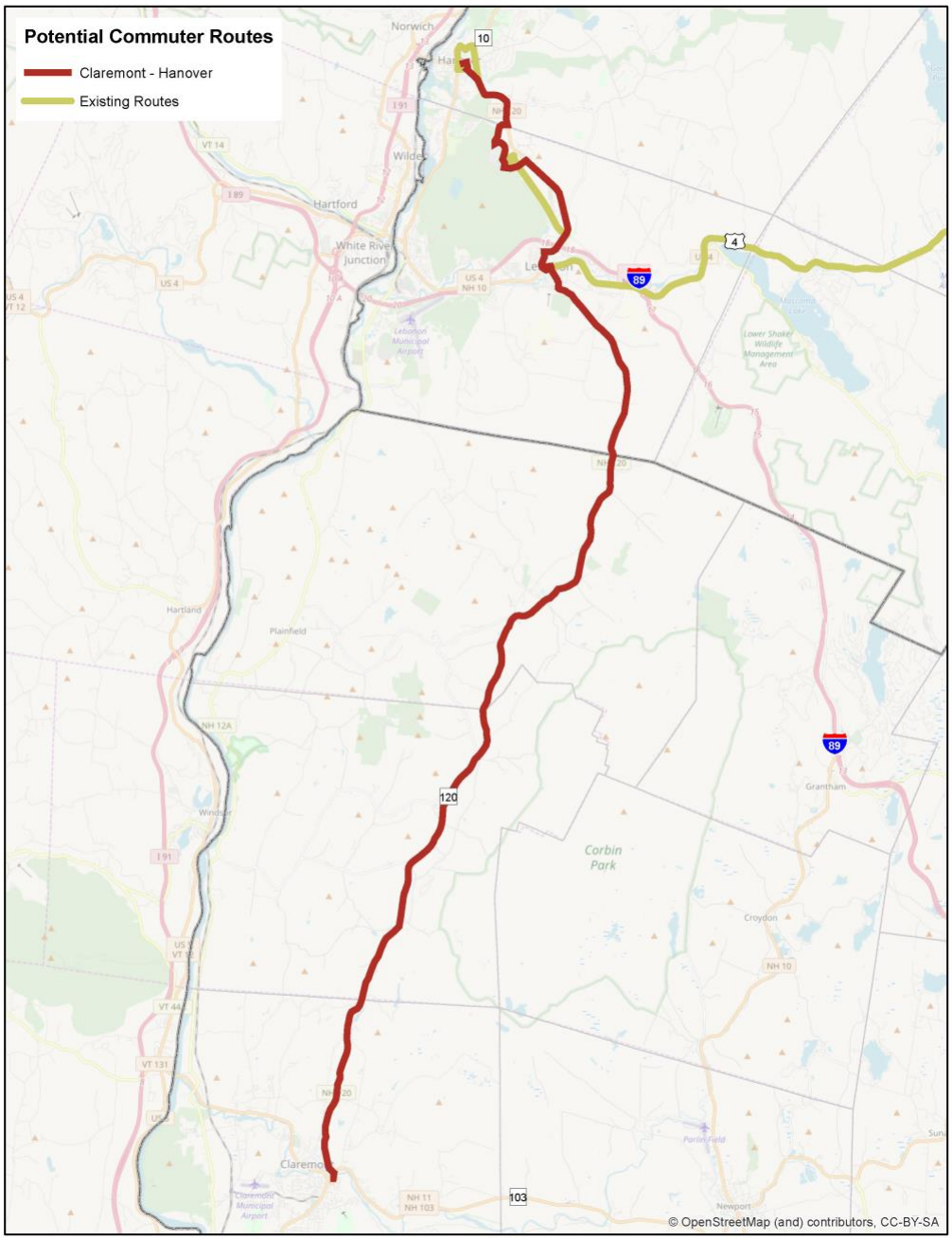


The estimated running time for this route is 80 minutes. The annual gross operating cost would be $386,000 and the ridership estimate, based only on the commuting figures is 75 trips per day. Given Keene's isolation, the other medical and governmental institutions in Concord, and the access to the intercity market this route would offer, it is possible that the route could attract non-commuters as well. Using the conservative estimate of commuters only, the gross cost per rider would be $21.

Claremont–Upper Valley Route

Transit advocates in Sullivan County have long advocated for a commuter route from Claremont into the Upper Valley employment center. In 2011, the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC) conducted a feasibility study for such a service, but to date, no new service has been implemented. The analysis done as part of this project confirms a substantial commuting market, with 903 Claremont residents and 366 Plainfield residents working in the Upper Valley. Unlike several of the other corridors studied, this one does not have a substantial reverse-commute market. The proposed route, shown in Figure 22 would operate on NH 120 from Claremont through Plainfield into downtown Lebanon and then continue on NH 120 to Dartmouth-Hitchcock Medical Center, terminating in downtown Hanover.

Figure 22 Proposed Claremont–Upper Valley Commuter



The estimated travel time for this route is 68 minutes to travel the 28 miles from Claremont to Hanover. An estimated 100 passengers would ride daily on the route costing $260,000 per year, resulting in a gross cost per rider of $10, one of the more cost-effective routes in this study.

Upper Valley–Concord Route

Interstate 89 is an important commuting route for the western side of New Hampshire, carrying large numbers of commuters to the large employment centers that anchor the highway: Concord and the Upper Valley. The northern segment of this corridor was the subject of study conducted by UVLSRPC, looking at commuting from New London and points northwest into Hanover and Lebanon. At the southern end, more than 700 people commute to Concord from Hopkinton and nearly 300 from Warner. According to

the Census, 120 people commute all the way from Lebanon to Concord. Effectively, this route would be three services in one: a commuter service to the Upper Valley, a commuter service to Concord, and a quasi-intercity link between the two employment centers.

The alignment, shown in Figure 23 on the next page, begins in downtown Hanover serves downtown Lebanon and then runs on I-89 south toward Concord. The availability of Park & Ride lots will determine how many stops the bus would make in each direction. Morning southbound trips would not stop until New London at the earliest, though a courtesy stop could be made via on-board request. Similarly, morning northbound trips after leaving Concord would not begin stopping until New London. Note that the New London Park & Ride is already heavily used by intercity bus passengers and carpoolers, so that if this service were implemented, an expansion of that lot would be advisable.

The entire route is 69 miles long, significantly longer than any of the other seven routes described here. The estimated end-to-end running time is 95 minutes. The annual gross operating cost would be $485,000 and the estimated ridership would be 135 daily passengers. These figures result in a gross cost per rider of $14, about average compared to the other proposed commuter routes.

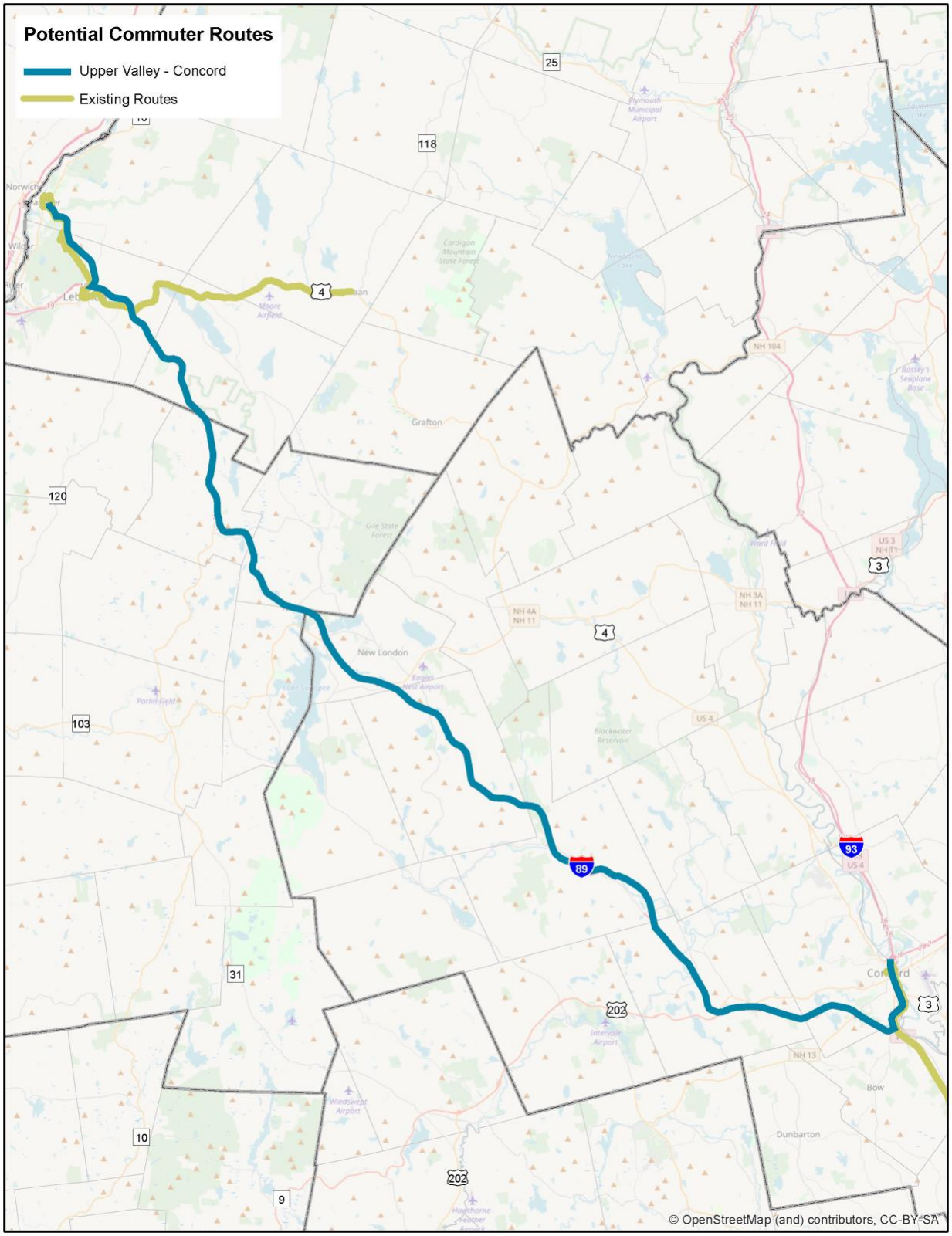
Summary of Commuter Service

Table 5 shows a summary of the commuter services presented above. No assumptions are made about fare revenue, nor about specific operators of the service.

Table 5 Summary of Commuter Service

Route	One-way Miles	Annual Gross Cost	Annual Riders	Gross Cost/Rider
Keene-Concord	53	$386,000	19,000	$21
Claremont-Hanover	28	$260,000	26,000	$10
Hanover-Concord	70	$485,000	34,000	$14
Laconia-Concord	29	$234,000	12,000	$19
Rochester-Concord	37	$312,000	23,000	$13
Portsmouth-Manchester	47	$349,000	26,000	$13
Salem-Londonderry-Manchester	26	$211,000	42,000	$5
Salem-Nashua-Milford	30	$301,000	19,000	$15
TOTALS		$2,538,000	201,000	$13

Figure 23 Proposed Upper Valley–Concord Commuter

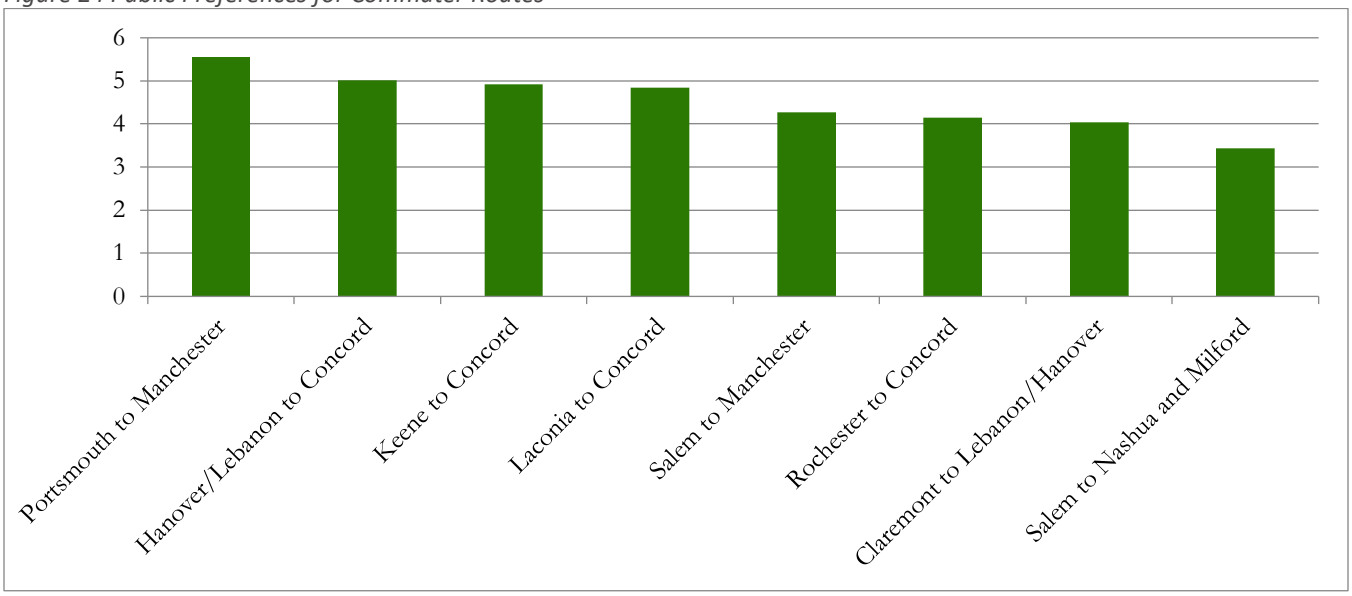


Public Input on Recommendations

In the online survey for the SSTA, only 8% of respondents rejected the concept of increased commuter bus service in New Hampshire. Over 50% endorsed the idea, and the remaining respondents said that they were not sure—that it depended on what service was being proposed. The respondents were then asked to rank their preferences for the eight proposed commuter routes. The top-ranked route would receive 8 points from that respondent, and the lowest-ranked route would receive 1 point.

The results of the ranking are shown in Figure 24 below. The route with the highest average ranking was the Portsmouth–Manchester commuter, followed closely by three commuter routes to Concord. The lowest-ranked route was the one connecting Salem and Milford to Nashua.

Figure 24 Public Preferences for Commuter Routes



Priority Rankings of Local Services

Taking into account public preferences, the ridership potential and the relative costs of the route, the eight proposed commuter routes are ranked in the following priority tiers:

- Tier 1
  - Salem–Londonderry–Manchester (coordinated with Tuscan Village and Woodmont Commons)
  - Claremont–Lebanon–Hanover
- Tier 2
  - Portsmouth–Manchester
  - Hanover–Concord
  - Rochester–Concord
- Tier 3
  - Laconia–Concord
  - Keene–Concord
  - Salem–Nashua–Milford

If intercity connections between Laconia and Concord and Keene and Concord are not implemented in the near term (see next section), those Tier 3 routes should be considered at the same time as the Tier 1 routes.

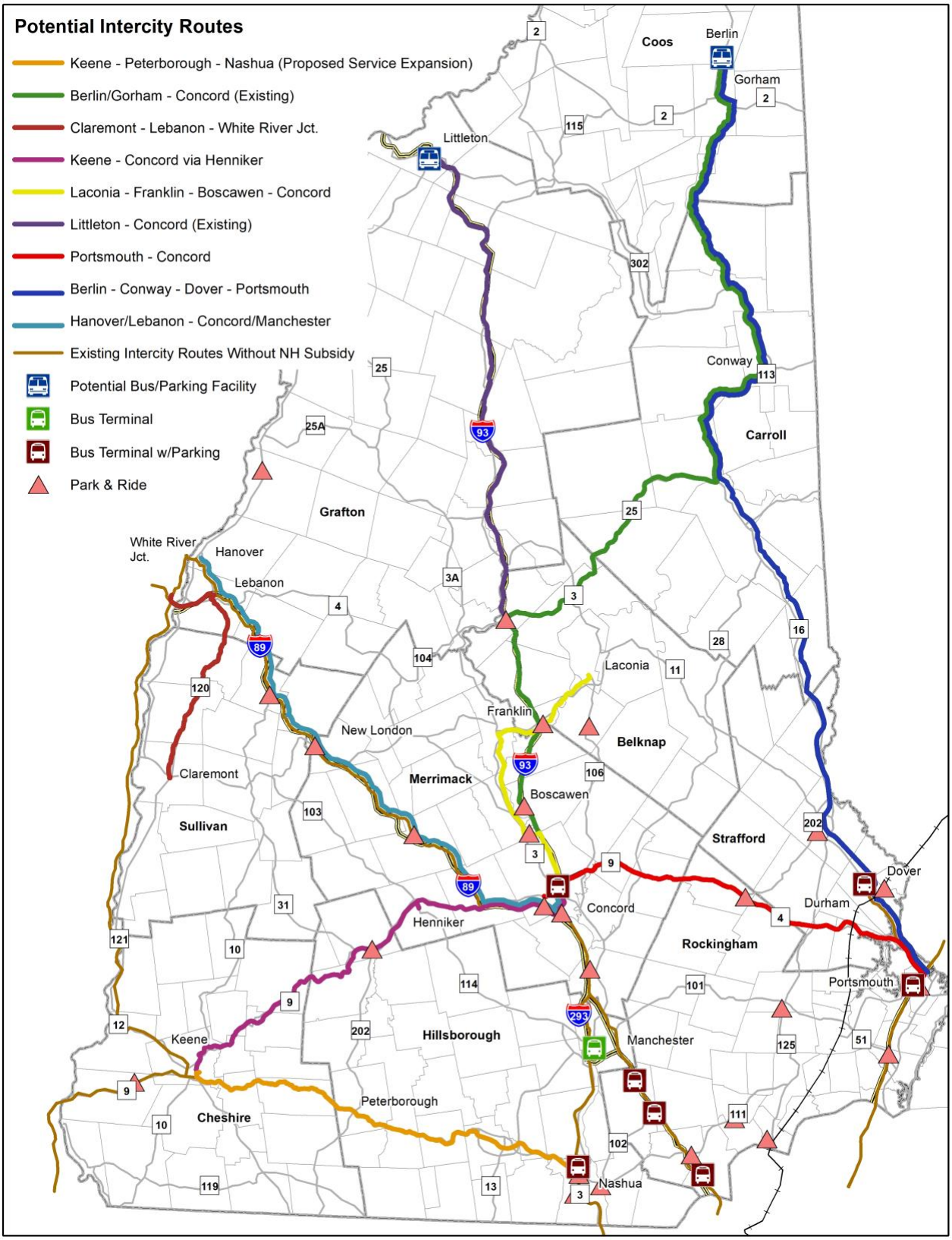
Intercity Routes

Planning for enhanced rural intercity bus services in New Hampshire proceeded on a separate track from the rest of the study, as a new solicitation for intercity service was due to be released by the end of 2018. As prescribed in Chapter VIII of FTA Circular 9040.1G, a formal consultation process was carried out from June through November 2018. Three meetings were held with key stakeholders including representatives of private carriers, regional planning commissions, and state agencies, including the State of Maine.

Route concepts for an enhanced intercity network were based on population density, transit propensity and college locations as described in Chapter 4. The study team took an expansive view of possible routes, considering intra-state line-haul services that connect larger cities within New Hampshire, ways to improve access from rural areas to the existing intercity bus network and shorter feeder routes to primary hubs. The potential intercity network is shown on the next page in Figure 25. The map shows existing intercity routes (both those with subsidy and without subsidy) and seven proposed new routes, one of which is an expansion of existing service between Keene and Nashua. Many of these routes are similar to the commuter routes described in the previous section. This study would recommend implementation of either the intercity link or the commuter link for these corridors, but not both. The existing and proposed subsidized routes are as follows:

- **Littleton–Plymouth–Concord** – This route, operated by Concord Coach, carries about 9,000 riders per year at a net cost of about $120,000. The subsidy per passenger is about $13.
- **Berlin–North Conway–Concord** – This route, also operated by Concord Coach, is two overlapping services that together carry around 7,300 passengers at a net cost of about $180,000. The subsidy per passenger is $33 for Berlin riders and $20 for North Conway riders.
- **Keene–Nashua–Boston** – Greyhound operates two round-trips per week (one on Friday and one on Sunday) between Brattleboro and Boston, serving the Keene to Nashua corridor on the way. These trips receive no subsidy from New Hampshire, but are subsidized by the Massachusetts DOT. This study proposed expanding the Keene-to-Nashua service to operate daily, connecting to Boston Express at the Exit 8 bus terminal in Nashua.
- **Laconia–Franklin–Concord** – This proposed route would be an intercity feeder service operating mainly on US 3 between Laconia and Concord. It is an expanded version of a route recommended in a transit feasibility study for the City of Franklin conducted by the Central New Hampshire RPC in 2017. It addresses high need areas in Laconia and Franklin and also service Lakes Region Community College. It would also serve the County Complex in Boscawen. This route is very similar to the "alternative" routing of the Laconia–Concord commuter route discussed above.
- **Claremont–Lebanon–White River Junction** – This proposed route would be an intercity feeder service on NH 120 and US 4 connecting Claremont and Plainfield to the intercity network in Lebanon and White River Junction. This route is similar to the Claremont–Upper Valley commuter route discussed above. An alternative to this intercity feeder would be to have the Greyhound route in Vermont divert from I-91 to serve Claremont and Charlestown in between the current stops of White River Junction and Bellows Falls.
- **Hanover/Lebanon–Concord** – This proposed route would provide an intercity connection between the Upper Valley and Concord since both of those areas already have excellent access to the intercity network. It is very similar to the Hanover–Concord commuter route proposed above.
- **Keene–Henniker–Concord** – The proposed route serves a high need area and provides intercity access to New England College in Henniker. It serves both intra-state connections and improves access to the intercity network (particularly access to Boston) for the Keene area. It is very similar to the Keene–Concord commuter route discussed above.

Figure 25 Potential Intercity Bus Network



- **Portsmouth–Durham–Concord** – This proposed route, like the Hanover–Concord route, would provide an intercity connection within the state, but both Portsmouth and Concord already have excellent access to the intercity network. A stop in Durham would be made to provide access to the large student population there.
- **Berlin–North Conway–Dover** – This proposed route provides service to the NH 16 corridor on the eastern edge of New Hampshire. It could operate all the way from Berlin, or it could originate in North Conway or West Ossipee to connect to the existing subsidized route from Berlin. It would provide access to health facilities and other activity in the Portsmouth region for residents of the North Country.

In order to estimate costs for these proposed route, it was necessary to make several assumptions:

- There would be a minimum of two round-trips per day for each route
- Routes would operate 360 days per year
- Feeder routes would use small buses (under 30 feet in length)
- Line-haul routes would use over-the-road coach buses
- The cost per mile for feeder buses would be $3.00 (including depreciation costs)
- The cost per mile for coach buses would be $4.50 (including depreciation costs)
- The fare recovery goal for all routes would be 30%

Most of these assumptions are based on the experience of the currently-subsidized routes from Littleton and Berlin to Concord. A summary of the key statistics and forecast costs and ridership for each proposed route are shown in Table 6.

Table 6 Summary of Proposed New Intercity Service

Route (one-way fare)	One-way Miles	Annual Gross Cost	Annual Riders	Annual Subsidy
Laconia – Concord ($6)	34	$145,000	7,200	$102,000
Claremont – Lebanon/WRJ ($6)	30	$128,000	6,500	$89,000
Hanover – Concord ($10)	70	$450,000	14,000	$310,000
Keene – Concord ($8)	55	$356,000	13,000	$252,000
Portsmouth – Concord ($8)	50	$308,000	11,500	$216,000
Berlin – Dover ($30)	120	$778,000	8,000	$538,000

Priorities

As a result of this analysis and input from the stakeholders on the consultation committee, the existing and proposed routes were divided into three priority tiers in order to guide the development of a solicitation for services to be funded with the intercity portion of federal funding for non-urban areas. All existing services were placed in the first tier, as these services perform well and there is a high policy priority on continuing existing routes. Two additional services were included in the first tier as being the top priorities for service expansion.

- Tier 1
  - Littleton – Concord (existing)
  - Berlin – N. Conway – Concord (existing)
  - Keene – Nashua (expansion of existing unsubsidized)
  - Laconia – Franklin – Concord
- Tier 2
  - Keene – Concord
  - Claremont – Lebanon/White River Junction
  - Hanover – Concord
- Tier 3
  - Portsmouth – Concord
  - Berlin – N. Conway – Dover

The solicitation that was released in early 2019 contained the two existing routes and the two new or expanded services in the first tier. The result of the solicitation was that Concord Coach was awarded continuing service of the Littleton and Berlin/North Conway routes, but no bids were received for the Keene–Nashua or the Laconia–Concord routes. NHDOT released a second solicitation for those service in the summer of 2019, but again received no bids on those services. These routes and those in the lower tiers are reserved for possible future solicitations.

The intercity analysis also identified needs for passenger and parking facilities in Berlin and Littleton, at the northern termini of the existing subsidized routes. These have not been funded but could be pursued in future years.

6. PARK & RIDE

Park & Ride lots are essential access points to the regional and intercity transit network in New Hampshire. Many parts of New Hampshire are too sparsely populated to support traditional bus routes and so parking lots are a convenient way to collect passengers from a wide area so that a transit route can operate efficiently in arterial corridors.

The SSTA included a separate task to inventory, evaluate, and prepare recommendations for park & ride lots statewide. The results of that task are contained in Appendix D, but a summary of the findings are presented here. This work was conducted by RSG, Inc.

Inventory

There are 33 official park & ride lots in New Hampshire (see Figure 26). Of these, 27 are owned by NHDOT and the other 6 are owned by various municipalities. Key features of these lots including amenities available, lot capacity, and typical utilization, are presented in

on the next page. Amenities at park & ride facilities provide benefits to users, whether they be transit riders or carpoolers. The primary amenities considered include:

- Lighting
- Bus shelters and transit service
- Surface condition and pavement markings
- Bicycle facilities

Park-and-ride facilities are public facilities, and therefore NHDOT must make reasonable accommodations to make them navigable for people with disabilities. In 2016, NHDOT completed a study (Americans with Disabilities Act Title II Transition Plan) to identify any improvements required on NHDOT facilities to comply with ADA requirements. This document provided a comprehensive review across all facilities, including the state park-and-ride facilities. Fourteen of the lots surveyed in the 2016 NHDOT ADA Transition Plan were found to be in compliance with ADA as noted on Table 7

Needs

As can be seen on the table, there are three lots that are filled to more than 90% of capacity and five more at over 75% of capacity. These locations are high priorities for additional capacity (when feasible) or other management strategies. Most of the highly-used lots are those served by intercity bus routes. This is especially true among the largest lots (over 300 spaces).

A number of underserved areas have high residential density, proximity to major roadways, and are more than 10 miles from the nearest park-and-ride facility. These include Littleton (I-93), Berlin (NH 110/NH16), the area around North Conway, Claremont (NH 120/NH 103/NH 11), the Upper Valley (NH 120/US 4), Moultonborough (NH 25), Ossipee (NH 16/NH 25), and Wolfeboro (NH 28/NH 109). These locations should be prioritized for evaluation for new lots as funding becomes available. Five locations have been identified that would serve as terminus locations for intercity transit service. Two of them (Littleton and Berlin) have also identified as areas of unmet need. The other three (Keene, Peterborough, and Laconia) have been added to the prioritization effort. These locations should be developed in conjunction with intercity transit service.

Figure 26 Locations of Park & Ride Facilities

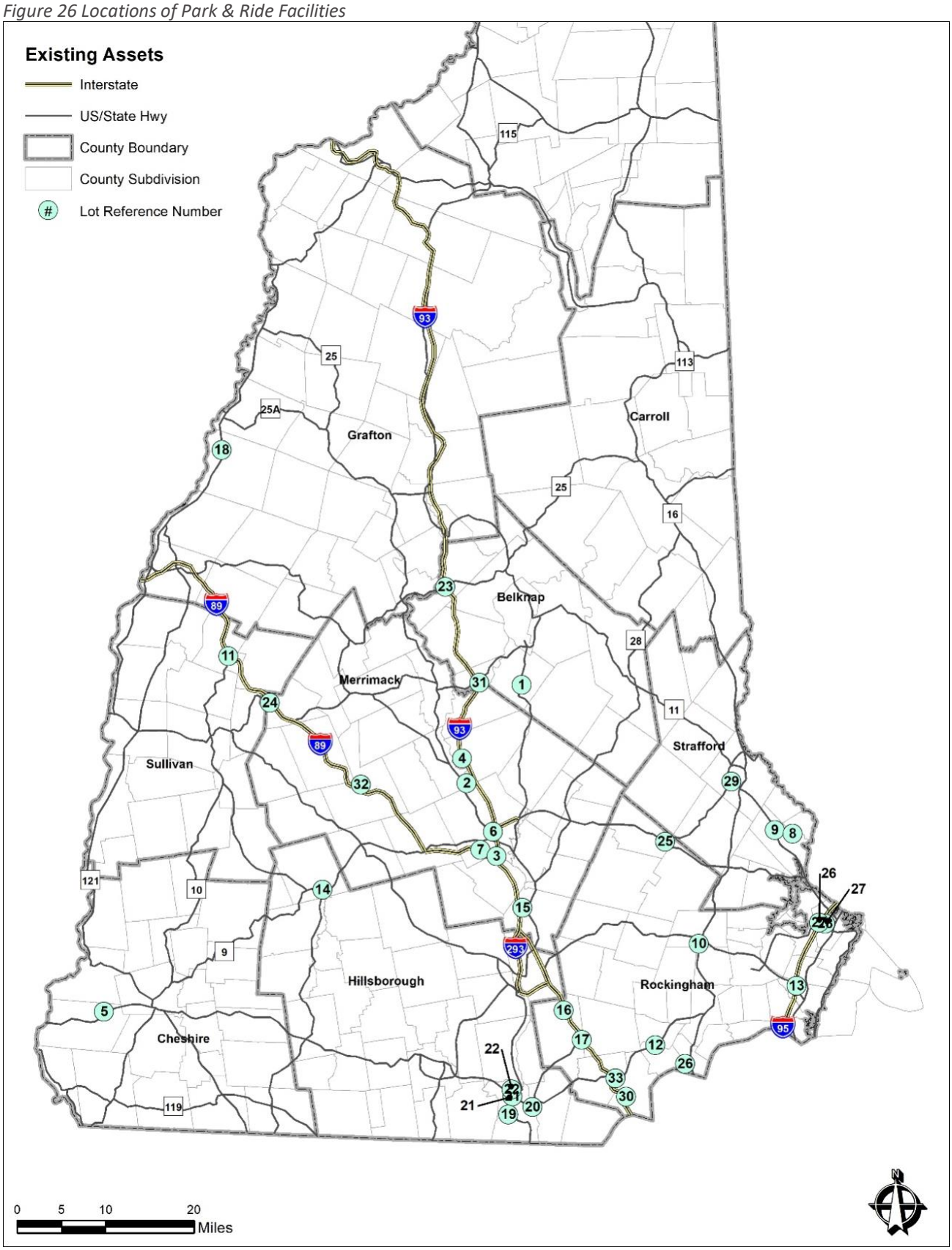


Table 7 Inventory of Park & Ride Facilities

ID	Municipality	Ownership	Bus Shelter	Bike Racks	Local Transit	Intercity Transit	Spaces	Utilization	ADA Compliant?
1	Belmont	Town of Belmont					42	52%	not available
2	Boscawen	NHDOT					42	50%	
3	Bow	NHDOT					60	95%	
4	Canterbury	NHDOT					10	70%	
5	Chesterfield	NHDOT					45	16%	
6	Concord (Clinton St.)	NHDOT					100	86%	
7	Concord (Stickney Ave.)	NHDOT					580	81%	
8	Dover (Ice Arena)	City of Dover					230	43%	not available
9	Dover (Rt. 16)	NHDOT					414	93%	
10	Epping	NHDOT					246	23%	
11	Grantham	NHDOT					53	21%	
12	Hampstead	NHDOT					104	3%	
13	Hampton	NHDOT					104	59%	
14	Hillsborough	NHDOT					106	9%	
15	Hooksett	NHDOT					45	51%	
16	Londonderry (north)	NHDOT					728	67%	
17	Londonderry (south)	NHDOT					452	29%	
18	Lyme	NHDOT					10	60%	
19	Nashua 5W	City of Nashua					10	26%	not available
20	Nashua (Crown St.)	City of Nashua					243	not available	
21	Nashua 7E	NHDOT					50	34%	
22	Nashua 8	NHDOT					377	84%	
23	New Hampton	NHDOT					111	36%	
24	New London	NHDOT					132	88%	
25	Northwood	Town of Northwood					39	21%	not available
26	Plaistow	NHDOT					275	15%	
27	Portsmouth (PTC)	NHDOT					1248	98%	
28	Portsmouth (Rt. 33)	City of Portsmouth					50	24%	not available
29	Rochester	NHDOT					200	34%	
30	Salem	NHDOT					476	72%	
31	Tilton	NHDOT					63	16%	
32	Warner	NHDOT					23	57%	
33	Windham	NHDOT					140	27%	

Recommended Investments

In order to relieve the capacity pressure at the eight over-utilized lots, expansions are recommended as shown in **Error! Not a valid bookmark self-reference.**. This table includes order-of-magnitude cost estimates for both surface lot expansions and structured parking.

To address the lack of park & ride facilities in underserved areas, for preliminary planning, medium-size lots of about 50 spaces, which are estimated to cost approximately $400,000 to construct, are recommended for four of locations of unmet need (Littleton, Berlin, Claremont, and the Upper Valley). Small lots of approximately 25 spaces are recommended for the remaining four areas of unmet need (North Conway, Moultonborough, Ossipee, and Wolfeboro). The small lots are estimated to cost approximately $200,000 to construct. The sizes of park-and-ride facilities constructed to support intercity transit should reflect analysis of probable ridership and associated parking demand.

Table 8 Recommended Investments at Over-Utilized Lots

Lot	ID	County	Current Utilization	Additional Spaces	Median Cost (Surface)	Median Cost (Garage)
Bow	3	Merrimack	95%	28	$210,000	$532,000
Concord (Clinton St.)	6	Merrimack	86%	33	$247,500	$627,000
Concord (Stickney Ave)	7	Merrimack	81%	143	$1,072,500	$2,717,000
Dover (Route 16)	9	Strafford	93%	179	$1,342,500	$3,401,000
Nashua 8	22	Hillsborough	84%	111	$832,500	$2,109,000
New London	24	Merrimack	88%	47	$352,500	$893,000
Portsmouth (PTC)	27	Rockingham	98%	634	$4,755,000	$12,046,000

7. TECHNOLOGY

The impact of technology on transit operations and the passengers' experience grows every year. Applications such as real-time bus arrival information, which in the past was affordable only to large transit systems in major metropolitan areas, has now become a feasible investment for small rural systems. Riders' expectations are also growing so that the transit industry needs to keep pace with new technological developments in information and convenience if it hopes to attract and retain younger riders.

Schweiger Consulting, LLC, part of the study team for the SSTA, produced two technical memoranda on technology. The first memorandum included an inventory of technology applications already deployed at New Hampshire transit providers, summarized in Chapter 3 above, and an overview of all available technologies for rural, urban and large urban transit properties. The second memorandum, which is included in this report as Appendix H, contains recommendations and cost estimates for future technology investments in New Hampshire. These results are summarized below.

Hierarchy of Investments

Table 9 is a brief listing of the range of technologies considered for deployment at transit agencies in New Hampshire. They have been organized into a hierarchy of investments divided into six tiers. Each of the tiers has a general theme:

1. Communications and operational/passenger information
2. Data collection, scheduling and security
3. Vehicle monitoring and maintenance
4. Fare collection
5. Operational reliability
6. Intelligent vehicle operations

Essential to any procurement of technology is an understanding of the dependency of any given application on other "core" technologies. The most important core technology is voice and data communication.[3] Figure 27 shows all of the core technologies and how they relate to each other.

Table 9 Tier Technology Components

Tier	Technology Component
1	Communications technologies
1	Automatic vehicle location (AVL)
1	Computer-aided dispatch (CAD)
1	On-board automated voice announcements (AVA)
1	En-route/wayside traveler information, including real-time arrival/departure information in a variety of dissemination media
1	Technology integration
1	Third-party smartphone applications
1	Open data for third-party application development
2	Automatic passenger counters (APCs)
2	Scheduling (fixed-route and paratransit) systems

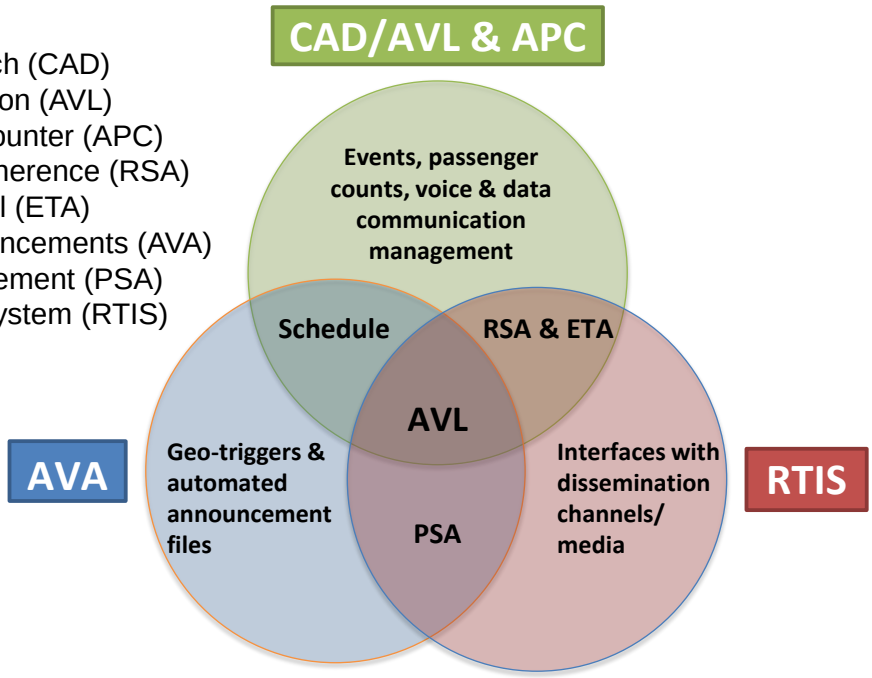
[3] Most NH agencies have this already, although a few agencies may be moving away from radio frequency (RF) communication and toward cellular communication.

2	Mobile (on-board and exterior) and fixed video surveillance
2	Covert emergency alarm and covert live audio monitoring
2	On-board digital video recorders
2	Geographic information system (GIS) application
2	Service coordination facilitated by technology (includes paratransit CAD/AVL)
3	Vehicle component monitoring (VCM)
3	G-force monitoring (EDRS)
3	Maintenance software to schedule and track scheduled and unscheduled maintenance activities, and manage parts inventory
3	On-board Internet access for passengers
3	511, 311 and 211 systems, and Google Transit
4	Automated fare media (e.g., magnetic stripe cards, contact smartcards, contactless smartcards and smartphone-based payment methods)
4	Automated fareboxes and faregates
4	Ticket vending machines
5	Transfer connection protection (TCP)
5	Transit signal priority (TSP)
5	Data management and reporting
6	Intelligent vehicle technologies (e.g., collision warning and precision docking)
6	Lane control technologies

Figure 27 Core Technology Dependencies

Abbreviations:

- Computer-aided dispatch (CAD)
- Automatic vehicle location (AVL)
- Automatic passenger counter (APC)
- Route and schedule adherence (RSA)
- Estimated time of arrival (ETA)
- Automated voice announcements (AVA)
- Public service announcement (PSA)
- Real-time information system (RTIS)



New Hampshire transit agencies that do not already have the core technologies shown in Figure 27 (most of Tier 1) should consider deployment of these specific technologies first, particularly CAD/AVL, which provides the backbone needed for the use of the other core technologies. Procuring the core technologies together can be less costly than purchasing them separately and having to integrate them. For example,

computing and providing real-time information to customers can only be accomplished when the system knows where transit vehicles are located (requiring AVL) and where they should be located according to the schedule (can require scheduling software for larger agencies). Once real-time information is available, it can be disseminated using a wide variety of media, such as websites or a third-party smartphone application.

Tier 2 technologies are mostly related to safety and security. On-board digital video surveillance, while not dependent on other technologies is often integrated with AVL in order to identify the specific location(s) where an event or events of note have taken place. Also, buses can be procured with camera systems already installed, which can be less expensive than procuring them later.

The next most desirable technologies (Tier 3) are in the Maintenance, Safety and Traveler Information categories. In the Maintenance category, there typically is no dependence on other technologies – technology integration with, for example, CAD/AVL, is not required. However, real-time vehicle component monitoring (VCM) requires integration with the on-board vehicle area network so that if on-board technologies experience out-of-tolerance conditions, the situation can immediately be communicated to dispatch/operations and maintenance.

Tier 4 consists of automated fare payment technology. With the advent of account-based and mobile fare payment, the cost of fare collection and payment has been reduced over the past five years. However, equity and accessibility issues must be addressed when utilizing technology-enabled fare payment. For example, customers who can only afford to pay on a trip-by-trip basis or do not have a smartphone will need a way to add cash to their fare payment media or pay using media other than a smartphone (e.g., smartcard).

The next group of technologies (Tier 5) relate to operational reliability. They include transfer connection protection (TCP) to facilitate customers' transfers between bus routes and transit signal priority (TSP). TSP can help reduce bus travel times in congested areas by allowing a bus to pass through a busy intersection via an extended green light. Overall it can improve reliability by reducing the variability of delay at intersections.

The final technologies to be considered for deployment (Tier 6) are intelligent vehicle technologies (e.g., collision warning) and lane control technologies. Collision warning is available for detecting side and front objects, as well as passenger detection when the vehicle is turning. Lane control technologies assist with vehicle operation on highway lanes, particularly when operating in a breakdown lane (which is less wide than a normal highway lane). These technologies may become standard in transit buses in the near future due to their standardization and deployment in the passenger car market.

Recommendations and Cost Estimates by Transit Agency

The following set of tables show the specific technology recommendations for each agency within the next 10-year period. It is assumed that budgets and procurement capacity will be consume with implementing tiers 1 through 3 during that span, and so there are no recommendations for technologies from tiers 4 through 6, with the exception of Advance Transit, which currently is interested in TSP at one location in Lebanon, NH. If a communications system is recommended, the cost of a communications system is not included in the figures because of the uncertain cost associated with communications systems. The technology components of a communications vary widely as do the operations and maintenance (O&M) costs.

A statewide cost summary by goal/deployment year is included in Table 20 for urban agencies and in Table 21 for rural agencies at the end of this section. Actual spending might happen in increments leading to the deployment year, but for the purpose of simplicity, all capital spending is assumed to be a lump sum in the deployment year. Annual O&M costs begin in the year after the deployment year.

Table 10 Advance Transit

Tier	Elements	Goal Year	Total Capital Cost (min)	Total Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• AVA • Open data • Technology Integration	2022	$118,000	$211,000	$20,000	$31,200
2	• APCs • Covert emergency alarm • Covert live audio monitoring	2025	107,250	196,750	33,488	49,688
3	• VCM • G-force monitoring • Fuel management	2029	257,000	607,000	55,688	95,000
5	• TSP[4]	2021	72,000	162,000	6,963	15,700

Table 11 COAST

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• Open data • Technology Integration	2022	Not available	Not available	Not available	Not available
2	• APCs • Covert emergency alarm • Covert live audio monitoring • On-board video surveillance • GIS • Service coordination facilitated by technology	2025	$633,000	$1,236,000	$104,755	$164,935
3	• VCM • G-force monitoring • Fuel management	2029	268,000	631,000	56,850	97,400

[4] Assumes one intersection equipped with appropriate infrastructure. The infrastructure cost is included in the capital cost.

Table 12 MTA

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• CAD • Traveler information • Open data • Technology Integration	2022	$395,750	$1,012,250	$101,148	$201,445
2	• APCs • Covert emergency alarm • Covert live audio monitoring • Fixed video surveillance	2025	76,250	143,750	32,388	47,788
3	• VCM • G-force monitoring • Fuel management	2029	250,000	585,000	55,488	94,400

Table 13 Sullivan County Transit

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• Communications technology (see earlier note regarding the cost of this technology) • AVL • CAD • AVA • Traveler information • Third-party smartphone applications • Open data • Technology Integration	2023	$564,000	$1,282,000	$122,355	$232,468
2	• APCs • Covert emergency alarm • Covert live audio monitoring • Fixed video surveillance • GIS • Service coordination facilitated by technology[5]	2026	53,750	106,250	31,563	46,363
3	• VCM • G-force monitoring • Maintenance management	2029	407,000	962,000	89,563	163,450

[5] Included in CAD/AVL in Tier 1

	• Fuel management					

Table 14 Tri-County CAP

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• Communications technology • AVL • CAD • AVA • Traveler information • Open data • Technology Integration	2023	$666,000	$1,506,000	$126,938	$242,183
2	• APCs • Covert emergency alarm • Covert live audio monitoring • On-board video surveillance • Fixed video surveillance • GIS • Service coordination facilitated by technology[7]	2027	92,250	170,750	32,938	48,738
3	• VCM • G-force monitoring • Fuel management	2029	250,000	590,000	55,088	93,800

Table 15 VNA –– Home Healthcare HCS

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• Communications technology • AVL • CAD • AVA • Traveler information • Third-party smartphone applications • Open data • Technology Integration	2022	$585,000	$1,326,000	$123,265	$234,425
2	• APCs • Covert emergency alarm • Covert live audio monitoring • On-board video surveillance	2027	210,250	399,750	65,763	100,538

	• Fixed video surveillance • GIS • Service coordination facilitated by technology7					

Table 16 Nashua Transit System

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• AVL • CAD • Traveler information (including a third-party smartphone application) • Open data • Technology Integration	2022	$528,000	$1,226,000	$105,675	$207,595
2	• APCs • Covert emergency alarm • Covert live audio monitoring • On-board video surveillance • Fixed video surveillance • GIS • Service coordination facilitated by technology7	2025	171,750	384,250	56,063	85,598
3	• VCM • G-force monitoring • Maintenance management • Fuel management	2028	416,000	983,000	90,513	165,450

Table 17 CART

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• Communications technology • AVL • CAD • AVA • Traveler information • Third-party smartphone applications • Open data • Technology Integration	2023	$585,000	$1,326,000	$123,265	$234,425
2	• APCs • Covert emergency alarm • Covert live audio monitoring • On-board video surveillance • Fixed video surveillance	2026	210,250	399,750	65,763	100,538

	• GIS • Service coordination facilitated by technology[7]					
3	• VCM • G-force monitoring • Fuel management	2029	239,000	563,000	54,488	92,300

Table 18 Concord Area Transit

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• AVL • CAD • AVA • Traveler information • Third-party smartphone applications • Open data • Technology Integration	2022	$518,000	$1,184,000	$120,080	$227,880
2	• APCs • Covert emergency alarm • Covert live audio monitoring • On-board video surveillance • Fixed video surveillance • GIS • Service coordination facilitated by technology[7]	2025	261,500	540,500	86,340	132,580
3	• VCM • G-force monitoring	2028	130,000	253,000	31,825	46,000

Table 19 UNH Wildcat Transit

Tier	Elements	Goal Year	Capital Cost (min)	Capital Cost (max)	Annual O&M Cost (min)	Annual O&M Cost (max)
1	• AVA • Open data • Technology Integration	2021	$152,000	$269,000	$21,200	$33,200
2	• APCs • Covert emergency alarm • Covert live audio monitoring • On-board video surveillance • Fixed video surveillance • GIS • Service coordination facilitated by technology	2023	551,250	1,005,750	96,113	148,523
3	• VCM • G-force monitoring	2025	268,000	638,000	56,488	96,800

	• Fuel management					

Table 20 Statewide Capital and O&M Costs by Goal Year for Urban Agencies

Goal Year	Total Capital Cost (min)	Total Capital Cost (max)	Total O&M Cost (min)	Total O&M Cost (max)
2021	$152,000	$269,000	$0	$0
2022	923,750	2,238,250	21,200	33,200
2023	1,136,250	2,331,750	228,023	442,240
2024	0	0	447,401	825,188
2025	1,149,000	2,402,000	447,401	825,188
2026	210,250	399,750	697,095	1,220,309
2027	0	0	762,858	1,320,847
2028	416,000	983,000	762,858	1,320,847
2029	507,000	1,194,000	853,371	1,486,297
2030	N/A	N/A	964,709	1,675,997
TOTAL	$4,494,250	$9,817,750	$5,184,916	$9,150,113

Table 21 Statewide Capital and O&M Costs by Goal Year for Rural Agencies

Goal Year	Total Capital Cost (min)	Total Capital Cost (max)	Total O&M Cost (min)	Total O&M Cost (max)
2021	$72,000	$162,000	$0	$0
2022	1,221,000	2,721,000	6,963	15,700
2023	1,230,000	2,788,000	270,308	509,205
2024	0	0	519,601	983,856
2025	368,750	737,250	519,601	983,856
2026	53,750	106,250	639,429	1,166,124
2027	302,500	570,500	670,992	1,212,487
2028	130,000	253,000	769,693	1,361,763
2029	914,000	2,159,000	801,518	1,407,763
2030	N/A	N/A	1,001,857	1,760,013
TOTAL	$4,292,000	$9,497,000	$5,199,962	$9,400,767

8. PERFORMANCE EVALUATION

Policy Context

NHDOT has a stated policy priority of maintaining existing services and recognizes the importance of ensuring all public transit systems are viewed as being reliable in order for the traveling public to trust the public transportation network. Any cessation/reduction of services must be avoided to the extent practicable to ensure that trust is not breached. As such, NHDOT's funding strategy, which generally applies only to NHDOT's 5311 subrecipients, will always start with the presumption of continued funding for existing services.

At the same time, NHDOT must also ensure that the funding is being used as effectively as possible. It is therefore necessary for NHDOT to analyze the viability of existing services. NHDOT will continue to collect annual data related to service cost and ridership as has been done during the SSTA. Any service that has cost ratios (cost per hour/mile/passenger) that far exceed those of its peers, or ridership (per hour or mile) that is far less than its peers, will be further analyzed to identify potential improvements.

Such analyses will be at NHDOT's discretion and will generally consist of NHDOT working with the affected Regional Planning Commission(s) to ensure funds are earmarked as necessary to conduct a detailed service study. After a study is conducted and recommended changes are implemented, the service will be further scrutinized for two additional years. If no significant performance improvements are seen, NHDOT will then consider reallocating the funding to maintain other existing services based on escalating costs, provide an opportunity for an expansion elsewhere, etc.

The same methodology for evaluating service performance may be used to determine funding priorities for other FTA-funded programs administered by NHDOT. It is worth noting that direct recipients of FTA Section 5307 funding will continue to be able to set their own performance measures and benchmarks for all services other than those funded via NHDOT.

Evaluation Framework

Traditional performance measures focus on productivity and cost efficiency. Productivity is the ratio of ridership (boardings) to the amount of service provided. Depending on the type of service operated, the unit of service provided could be a revenue hour, a revenue mile, or a revenue trip. Cost efficiency measures how much money it takes to operate the service. Again, depending on the service it could be best measured by cost per revenue hour, cost per revenue mile, or possibly administrative cost as a percentage of operating cost. A third measure, which combines the other two, is cost per passenger. It can be calculated either as the gross cost per passenger or the net cost per passenger, if fare revenue is taken into account. The more cost efficient a provider is, and the more productive its services are, the lower the cost per passenger will be.

It is one thing to calculate performance measures, but it is another to determine whether the resulting productivity and cost-efficiency are poor, acceptable, or successful. To allow for such ratings to be applied, benchmarks must be set; however, one set of benchmarks cannot be applied to all routes and services in New Hampshire. Bus routes in densely-developed urban areas would not be expected to have productivity comparable to routes in rural areas, much less demand response services.

A series of route classes are proposed below. Even though NHDOT only manages the flow of Section 5311 funding, allowing Section 5307 funds to flow directly to the transit agencies in urbanized areas, these route classes cover all routes in New Hampshire. As stated above, the primary use of the evaluation framework is to help identify transit services that would benefit from analysis and planning. As NHDOT has the ability to

distribute planning funds to any transit agency, or to provide planning services through a statewide contract, it is to the benefit of all providers to have the evaluation framework apply on a statewide basis.

The benchmarks for each route class do not represent a "make or break" threshold. They are rather intended to help separate underperforming routes, which could benefit from analysis and planning, from routes and services which are performing satisfactorily or successfully. That is not to say that planning would not be beneficial for all routes in the state, but rather that the priority focus of planning efforts should be on the poorest performers.

Route Classes

As the first step in this process, the 88 routes and services operated by the eleven transit systems in the state were grouped into a series of route classes. While each provider faces a unique set of circumstances in its area, it is nonetheless possible to create classes of roughly similar routes.

The proposed route classes are listed and defined below:

- **Urban** – Routes in the Urban class operate larger cities (population of 40,000 or more). This class contains most of the service operated by Manchester Transit Authority (MTA), Nashua Transit System (NTS), and Concord Area Transit.
- **Small Town** – Routes in smaller cities and towns of 10,000 to 40,000 population. This class contains routes operated by Advance Transit, those in Keene, and most of the COAST system.
- **Rural/Flexible** - Routes in towns with population of less than 10,000 or those lacking a significant trip generator, or those using flexible route service model. Services in this class include those operated by Sullivan County Transit, Tri-County CAP, and flex routes operated by Cooperative Alliance for Regional Transportation (CART).
- **Urban Demand Response** – All demand response services that are in areas served by routes in the Urban class.
- **Rural Demand Response** – All demand response services that are in areas served by Small Town and Rural routes.
- **Commuter** – Routes that operate primarily during peak commuting periods and are oriented toward work trips. These routes may have limited stops or express segments. This class contains routes in the COAST and MTA systems.
- **Circulator/Parking** – Routes that circulate in retail districts in cities or shuttle between parking lots and large employers or retail districts. This class contains routes operated by NTS, COAST, and Advance Transit.
- **Targeted Shuttles** – Routes that primarily serve college students or other special purpose routes. This class contains the UNH Wildcat routes, the Keene Campus Shuttle and seasonal and shopping routes operated by MTA.

It must be noted that there is some overlap in these classes, and there was some judgment involved in how to classify the existing routes and services. Many routes have more than one function or serve both more-developed and less-developed areas.

Three productivity measures and two cost measures were mentioned above. Rather than applying all of these measures to all of the route classes, it is proposed to choose one of each type of measure to apply, as most appropriate, to each route class. In general, for more urban areas dealing with traffic congestion, measures per mile are more appropriate, and for more rural areas, measures per hour are more appropriate. Boardings per trip are appropriate for commuter bus services with little ridership turnover.

The proposed measures by class are shown in the Table 22 below. In addition to these measures, all routes and services would be measured by cost per passenger.

Table 22 Route Classes and Measures

Class	*Productivity Measure*	*Cost Efficiency Measure*
Urban	Boardings per revenue mile	Cost per revenue mile
Small Town	Boardings per revenue hour	Cost per revenue hour
Rural/Flex	Boardings per revenue hour	Cost per revenue hour
Urban Demand Response	Boardings per revenue mile	Cost per revenue mile
Rural Demand Response	Boardings per revenue hour	Cost per revenue hour
Commuter	Boardings per trip	Cost per revenue hour
Circulator/Parking	Boardings per revenue mile	Cost per revenue mile
Targeted Shuttles	Boardings per revenue hour	Cost per revenue hour

Benchmarks

For each route class, a benchmark is set based on the FY19 performance for services in that class. In general, the benchmark separates the lowest performing or highest cost 20-30% of services from the rest of the class. As noted earlier, these benchmarks are intended to be used as a diagnostic tool to help identify routes and services that could benefit from analysis and planning. This applies both to services funded by NHDOT and services operated by urban agencies using their direct funding from FTA.

Table 23 shows the routes and services that are members of each of the classes and the proposed benchmarks for productivity and cost efficiency for each class. For cost effectiveness, benchmarks for both gross cost per passenger and net cost per passenger are proposed so that either measure can be used depending on an agency's fare policy.

Table 23 Route Class Members and Proposed Benchmarks

Class	System	Routes	Productivity	Cost-Efficiency	Gross Cost/Pass	Net Cost/Pass
Urban	NTS	1, 2, 2A, 4, 5, 6, 6A, 7, 8, 9, 10, North, South, Central	0.5 boardings per mile	$7 per mile	$11 per passenger	$10 per passenger
	MTA	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12				
	CAT	Heights, Penacook, Crosstown				
Small Town	AT	Blue, Brown, Orange, Red	7.5 boardings per hour	$100 per hour	$12 per passenger	$11 per passenger
	COAST	1, 2, 6, 33, 40/41				
	VNA-HCS	City Express Black & Red				
Rural/ Flex	TCCAP	Berlin-Gorham, Tri-Town	2.0 boardings per hour	$65 per hour	$20 per passenger	$20 per passenger
	SCT	Charlestown, Claremont, Newport				
	CART	Salem, Derry-Londonderry/ Hampstead				

Class	System	Routes	Productivity	Cost-Efficiency	Gross Cost/Pass	Net Cost/Pass
Urban Demand Response	NTS	ADA paratransit	0.12 boardings per mile	$8 per mile	$60 per passenger	$60 per passenger
	MTA	Rte 48, 49, ADA paratransit				
	CAT	ADA paratransit, Senior Transit				
Rural Demand Response	NTS/SVTC	Demand response	1.0 boardings per hour	$90 per hour	$50 per passenger	$50 per passenger
	AT	ADA paratransit				
	COAST	ADA paratransit, Route 7, Portsmouth Senior, NEMT				
	TCCAP-NCT	Senior Wheels, Freedom Express, LRH Care-a-van				
	TCCAP-CCT	Senior Wheels, Freedom Express				
	SCT	Dial-a-ride				
	CART	Demand response				
	VNA-HCS	Friendly Bus, Medical Express				
Commuter	COAST	Clipper Routes	7 boardings per trip	$140 per hour	$20 per passenger	$18 per passenger
	MTA	Concord Express, Nashua Express				
Circulator/ Parking	AT	Dartmouth/Downtown, DHMC Shuttles	.75 boardings per mile	$9 per mile	$10 per passenger	$10 per passenger
	COAST	Portsmouth Parking, Portsmouth Vintage Trolley				
	MTA	Green Dash				
	NTS	Downtown Connector				
Targeted Shuttles	MTA	42-45 Shoppers, 31 Hampton Beach, 32 Deerfield Fair	8 boardings per hour	$100 per hour	$10 per passenger	$10 per passenger
	NTS	Extra services				
	UNH	3, 4, 5, Campus Connector				
	VNA-HCS	Campus Shuttle				

Application of Evaluation Measures

As described above, NHDOT intends to use the evaluation framework as an ongoing tool to assist New Hampshire transit providers to improve their services. Additionally, these measures will be incorporated into grant application forms for new service proposals. Agencies will be asked to place their proposed service into one of the above classes and then demonstrate, through ridership and cost forecasts, that the service will achieve at least the minimum performance benchmarks within three years. A template for such a grant application is provided in Appendix I.

9. FUNDING AND SUSTAINABILITY

Excluding intercity bus services,[6] the total annual operating cost for bus service in New Hampshire operated by transit agencies is about $17 million. These agencies spend an additional $5 million on demand-response transportation.

To support that expenditure of $22 million, the state receives approximately $7 million in federal funding for operations in urban areas (section 5307) and $4 million in federal funding for non-urban areas (section 5311). Some 15% of the non-urban funding is set aside to support rural intercity bus service. There is an additional $1.1 million in federal funding for the Enhanced Mobility of Seniors and Individuals with Disabilities program, but that is mainly used for capital and purchase of service, rather than direct operating expenses. NHDOT also "flexes" about $800,000 in federal highway funding to the transit program for the purchase of additional demand response service. Federal operating funds need to be matched with non-federal funds at a one-to-one ratio (50/50 federal), but funds for capital and purchase of service require a match of only one non-federal dollar for each four federal dollars (80/20 federal).

Besides the federal funding, the transit service is paid for through fare revenue (about $1.7 million) and other forms of local financial support, including municipal contributions, institutional partnerships (such as with hospitals and universities), and other private sector donations from individuals or corporations. The University of New Hampshire pays directly for the service it operates, in the amount of $2,745,060 in SFY2019. In State FY2020, the New Hampshire legislature approved $200,000 in State funds to support transit operations after many years of spending no State dollars on transit.

Throughout the public outreach process in the SSTA, stakeholders and members of the general public asserted that the level of transit service in New Hampshire was inadequate, both in terms of there being large areas of the state with no service at all, and that the areas that do have service are underserved with buses not running long enough hours or frequently enough. The analysis and development of service concepts in chapters 4 and 5 addressed some of the most prominent geographic gaps in service. The next section compares the level of service operated by New Hampshire transit agencies to their peers across the nation.

Peer Analysis of Existing Service Levels

The goal of the peer analysis was to compare the amount of service operated by New Hampshire transit providers to other agencies in the US that serve areas with a similar population and geographic extent. The National Transit Database (NTD) provides information on the service area population and square mileage for all urban transit operators. While not all agencies calculate population and service area in exactly the same way, and another region with similar population and extent may not be a perfect analog for a portion of New Hampshire (because of development patterns and economic conditions), the comparisons using the NTD are the best available basis for judging the relative adequacy of transit service in New Hampshire.

The study team developed a separate set of peers for each of the four urban transit agencies in New Hampshire, and then developed a peer group for the three larger rural agencies and one more for the two smaller rural agencies. Tri-County CAP was treated as one transit agency, rather than two separate ones (North Country Transit and Carroll County Transit). A set of peers was not developed for UNH Wildcat service, since its operations are not funded through NHDOT, and it is also a university-focused system rather than one designed for the general public.

[6] The annual subsidy for Concord Coach is about $300,000 and the subsidy for Boston Express is about $1.5 million. The subsidy covers about 60% of Concord Coach's cost for the two North Country intercity routes (roughly $500,000). The operating cost for Boston Express is much higher, over $16 million, but fare revenue covers more than 90% of the cost.

While the peer comparisons for the three large urban systems are robust, with 17-20 peer systems in each group, the comparisons for CART and for the rural systems are more tenuous. CART is an unusual system for an urbanized area, and so only 9 peer systems were found. On the rural side, there were 10 peer systems found for each of the two groupings, but these peers are urban reporters, while the New Hampshire systems are rural reporters. The rural reporting status of the New Hampshire systems means that the service area and population needed to be estimated (and thus was not developed on the same basis as the NTD peers). The Rural NTD does not gather and publish enough information to allow for a direct comparison of New Hampshire rural systems to other rural systems on the basis of population and geographic area.

With those caveats in mind, the analysis nonetheless tells a consistent story about the level of investment in transit service in New Hampshire compared to the rest of the country. With the exception of CART, all of the statistics presented below concern bus service and exclude demand-response service. For CART, since a large portion of its service is demand response the peer data include both bus and demand response.

Manchester Transit Authority

A set of 19 peer agencies was selected for MTA. As can be seen in Table 24, the average service area size among the peers matches MTA's exactly and the population is within 8% of the Manchester figure. Despite those similarities, MTA operates only about 60% of the amount of service operated by the peers, in terms of peak vehicles and annual operating expense. The total vehicle revenue hours operated by MTA is closer to the peer average, nearly 80% of the peers.

Table 24 MTA Statistics and Comparison to Peers

Item	MTA	Peer Average
Service Area	63 sq. mi.	63 sq. mi
Population	135,366	124,996
Bus VOMS*	13	22
Annual VRH**	48,529	60,719
Annual Operating Expense	$3.29 m	$5.55 m

* Vehicles operated in maximum service
** Vehicle revenue hours

These comparisons indicate that MTA's service is more consistent through the day than the peer agencies, as it operates a higher number of hours per peak bus. Indeed, all of MTA's routes have a consistent headway for the entire day, with no boost in peak service. In addition, the cost per hour for MTA is somewhat lower than that of the peers: about $68/VRH vs. $91/VRH for the peers.

Agency	State
City of Huntsville	AL
Solano County Transit	CA
Mesa County	CO
Transfort	CO
Bay County Transportation Planning Org.	FL
Macon-Bibb County Transit Authority	GA
Sioux City Transit System	IA
Springfield Mass Transit District	IL
South Bend Public Transportation Corp.	IN
Topeka Metropolitan Transit Authority	KS
Greater Portland Transit District	ME
Duluth Transit Authority	MN
City of Columbia	MO
Town of Cary	NC
UNH - University Transportation Services	NH
Las Cruces Area Transit	NM
City of Murfreesboro	TN
City of Tyler	TX
Wichita Falls Transit System	TX

Nashua Transit System

A set of 17 peers was selected for NTS. As can be seen in Table 25, the average service area size among the peers is within 9% of the area of Nashua, and the population is within 3% of the Nashua figure. Despite those similarities, NTS operates only about 40% of the amount of service operated by the peers, in terms of peak vehicles and annual operating expense, and about 53% in terms of revenue hours of service. Thus, Nashua only operates about half as much service as its peers do. Among the 17 peers, only the City of Turlock operates fewer buses than Nashua does in peak service.

Table 25 NTS Statistics and Comparison to Peers

Item	Nashua	Peer Average
Service Area	32 sq. mi.	35 sq. mi
Population	86,933	89,207
Bus VOMS*	9	21
Bus WD VRH**	113	215
Annual VRH	32,981	62,284
Annual Operating Expense	$1.86 m	$4.99m

* Vehicles operated in maximum service
** Weekday vehicle revenue hours

Agency	State
City of Scottsdale - Scottsdale Trolley	AZ
City of Turlock	CA
Iowa City Transit	IA
Decatur Public Transit System	IL
Bloomington Public Transportation Corp.	IN
Gary Public Transportation Corporation	IN
City of Lawrence	KS
City of Plymouth	MN
St. Cloud Metropolitan Transit Commission	MN
ART (Asheville Redefines Transit)	NC
Mid Mon Valley Transit Authority	PA
Beaumont Municipal Transit System	TX
Cache Valley Transit District	UT
Greater Roanoke Transit Company	VA
Yakima Transit	WA
Eau Claire Transit	WI
Kenosha Transit	WI

As in Manchester, the fact that vehicle revenue hours operated is a bit closer to the peer average than VOMS or operating expense reflects the fact that Nashua's schedule does not have any additional service in peak periods, but rather consistent service throughout the day.

COAST

A set of 20 peers was selected for COAST. The service area for COAST sprawls over 368 square miles, by far the largest service area in New Hampshire. Many of the peer agencies are whole counties. As can be seen in Table 26, the average service area size among the peers is within 5% of COAST's area, and the population is within 3% of the COAST figure. Similar to Nashua, COAST operates only about half as much service as its peers do, on average. All of the statistics in the table are between 49% and 56% of the peer averages. Only three agencies operate fewer peak vehicles than COAST: Lebanon Transit Authority in Pennsylvania and Medina County and Delaware County in Ohio.

Table 26 COAST Statistics and Comparison to Peers

Item	COAST	Peer Average
Service Area	368 sq. mi.	351 sq. mi
Population	166,975	171,654
Bus VOMS*	14	29
Bus WD VRH**	154	276
Annual VRH	41,941	81,237
Annual Operating Expense	$3.82 m	$7.05 m

* Vehicles operated in maximum service
** Weekday vehicle revenue hours

Agency	State
Butte County Association of Governments	CA
Imperial County Transportation Commission	CA
Transit Joint Powers Authority for Merced County	CA
Southeast Area Transit	CT
Indian River County	FL
Chatham Area Transit Authority	GA
Madison County Transit District	IL
Berkshire Regional Transit Authority	MA
Cape Cod Regional Transit Authority	MA
County Commissioners of Charles County, MD	MD
Bay Metropolitan Transit Authority	MI
Cape Fear Public Transportation Authority	NC
Tompkins Consolidated Area Transit	NY
Delaware County Transit Board	OH
Laketran	OH
Medina County Public Transit	OH
Portage Area Regional Transportation Authority	OH
Beaver County Transit Authority	PA
County of Lebanon Transit Authority	PA
Chattanooga Area Regional Transportation Auth.	TN

CART

A set of 9 peers was selected for CART. The service area for CART is relatively large, but still only half that of COAST. As can be seen in Table 27, the average service area size among the peers is within 8% of CART's area, and the population is within 2% of the CART figure. Among all of the urban providers, CART operates the least amount of service in comparison to its peers. Even including both bus and demand-response service (for both CART and the peers), CART only operates 36% as many vehicles and 21% as many revenue hours. The total operating cost is also only 22% of the peer total.

Table 27 CART Statistics and Comparison to Peers

Item	CART	Peer Average
Service Area	172 sq. mi.	187 sq. mi
Population	112,897	110,873
Bus VOMS*	8	22
Annual VRH**	6,912	33,467
Annual Operating Expense	$539,811	$2,494,992

* Vehicles operated in maximum service
** Vehicle revenue hours

Agency	State
Tuscaloosa County Parking and Transit Auth.	AL
Peoria Transit	AZ
Douglas County Rideshare	GA
River Parishes Transit Authority	LA
Lake Erie Transit	MI
Cape May County Fare Free Transportation	NJ
Cleveland Area Rapid Transit	OK
Shenango Valley Shuttle Service	PA
Fredericksburg Regional Transit	VA

Larger Rural Systems

Three of the rural systems in New Hampshire were grouped as larger systems based on the estimated size of their geographic reach and service area population. These systems are Advance Transit, Tri-County CAP (including both North Country Transit and Carroll County Transit) and Sullivan County Transit. The estimated sizes are shown below in Table 28. These service areas and populations do not include territory served only by demand response transit (which for Tri-County CAP covers three entire counties). Overall, the 10 peer systems chosen have a somewhat smaller service area and a somewhat higher population; the resulting higher population density reflects the fact that the peers are urban systems rather than rural ones.

Among three New Hampshire rural systems, Advance Transit is clearly different from the other two, and indeed, Advance Transit is different from every other transit system in New Hampshire. While TCC and SCT operate about a third of the service of the 10 peer systems, Advance Transit operates 50% more peak vehicles, nearly three times as many revenue hours and spends almost 4 times as much in operating expenses.

Table 28 Larger Rural Systems Statistics and Comparison to Peers

Item	Peer Avg.	AT	TCC	SCT
Service Area	28 sq. mi	45 sq. mi.	45 sq. mi.	36 sq. mi.
Population	30,670	30,000	15,000	20,000
Bus VOMS*	12	18	4	6
Annual VRH**	15,011	43,068	5,782	4,127
Annual Operating Expense	$927,124	$3,698,664	$276,066	$254,981

Agency	State
Intracity Transit	AR
Citrus County Transit	FL
Liberty Transit	GA
Michigan City Transit	IN
Goldsboro-Wayne Transportation Auth.	NC
Municipality of Barceloneta	PR
Bristol Tennessee Transit System	TN
Asotin County PTBA	WA
Wausau Area Transit System	WI
Weirton Transit Corporation	WV

* Vehicles operated in maximum service
** Vehicle revenue hours

Smaller Rural Systems

The two rural systems grouped in the "smaller" category are VNA-HCS in Keene and Concord Area Transit. Compared to the set of 10 peers, Keene is smaller and Concord is larger, both geographically and in population. The service levels of both agencies are lower than the peers with both operating fewer than half the peak vehicles of the peers, but Keene operating about 60% of the service and Concord operating about 70% of the service.

Table 29 Smaller Rural Systems and Comparison to Peers

Item	Peer Avg.	VNA-HCS	CAT
Service Area	13 sq. mi	8 sq. mi.	18 sq. mi.
Population	25,120	20,000	30,000
Bus VOMS*	7	3	3
Annual VRH**	11,280	7,184	8,241
Annual Operating Expense	$822,186	$455,659	$531,026

Agency	State
Twin Cities Area Transportation Authority	MI
Southeast Missouri State University	MO
East Windsor Township	NJ
City of Kingston Citibus	NY
Watertown CitiBus	NY
Steel Valley Regional Transit Authority	OH
Anderson Transit Authority	SC
Bristol Virginia Transit	VA
City of Winchester	VA
City of Beloit Transit System	WI

* Vehicles operated in maximum service
** Vehicle revenue hours

Summary of Peer Findings

With the significant exception of Advance Transit, all of the urban and rural transit systems in New Hampshire operate substantially less service than their peers, in spite of the peers serving similar populations and land areas. Most of the urban systems operate about half of the service of the peer agencies, while MTA operates somewhat more than half. CART operates only about a fifth of the service that its urban peers do.

In the rural areas, TCC and SCT operate about a third of the service of their peers, while VNA-HCS in Keene and Concord Area Transit operate somewhat more than 50% of the peer service level. Advance Transit's high level of service, about triple that of the peer group, reflects its strong relationships with Dartmouth College and Dartmouth-Hitchcock Medical Center, its efforts at attracting philanthropic donations, as well as the higher level of financial support it receives from Vermont.[7]

Survey Results on Funding

The online survey conducted as part of the public outreach effort in the summer of 2019 included several questions aimed at gauging public support for an expanded transit system. While the survey was not a statistically valid sample, the respondents represented a broad cross-section of the state and not just transit advocates. Among the 988 total responses, some 200 cities and towns were represented, with somewhat higher representation among the counties in the northern tier and somewhat lower representation along the southern tier. Almost all of the respondents (92%) had a car available for their use, and most of the respondents (58%) had never used public transit in New Hampshire. Another 24% said they used some form

[7] An analysis similar to the one performed here shows that Vermont transit properties operate about double the amount of service compared to national peers. This is possible because of the $8 million in State funding that Vermont spends on transit as well as the nearly $20 million in federal highway funding that Vermont flexes into the transit program.

of public transit only once a year. Thus 82% of the respondents rarely or never use public transit services. Only 5% of respondents said they were frequent users of public transit (riding once a week or more).

Three specific questions related to the issue of public support for more transit service. Question 3 asked "What types of changes would you like to see to local bus services, either in your area or on a statewide basis?" As mentioned earlier in the section on proposed local routes, only 4% said that local service should be reduced and 6% said that the system should stay as it is. The other 90% of respondents supported an increase in service, either with more service on existing routes (23%) or wholly new bus routes in currently unserved areas (67%).

Question 9 asked more generally about the role of public transportation in New Hampshire. Respondents were given three options to choose from. The results are shown in Figure 28 on the next page. Only 12% of respondents felt that public transit should be limited to a role as a social service. Another 22% said that transit service should be mainly limited to urbanized areas. Two-thirds of respondents felt that public transit should be a viable option for all New Hampshire residents, even people living in rural areas.

The third question asked, "What should happen to government spending on public transportation in NH?" As shown in Figure 29, an overwhelming majority felt that spending should rise, and nearly a third of respondents felt that spending should rise significantly (more than 25%). Only 6% of respondents felt that spending should drop from current levels.

Taken together, these responses are strong evidence for public support of expanded service. Given that most New Hampshire transit systems are operating at about half the level of their national peers, a persuasive case can be made that increased investment in public transit would be a popular initiative and that transit is currently underfunded.

Figure 28 Role of Public Transit in New Hampshire

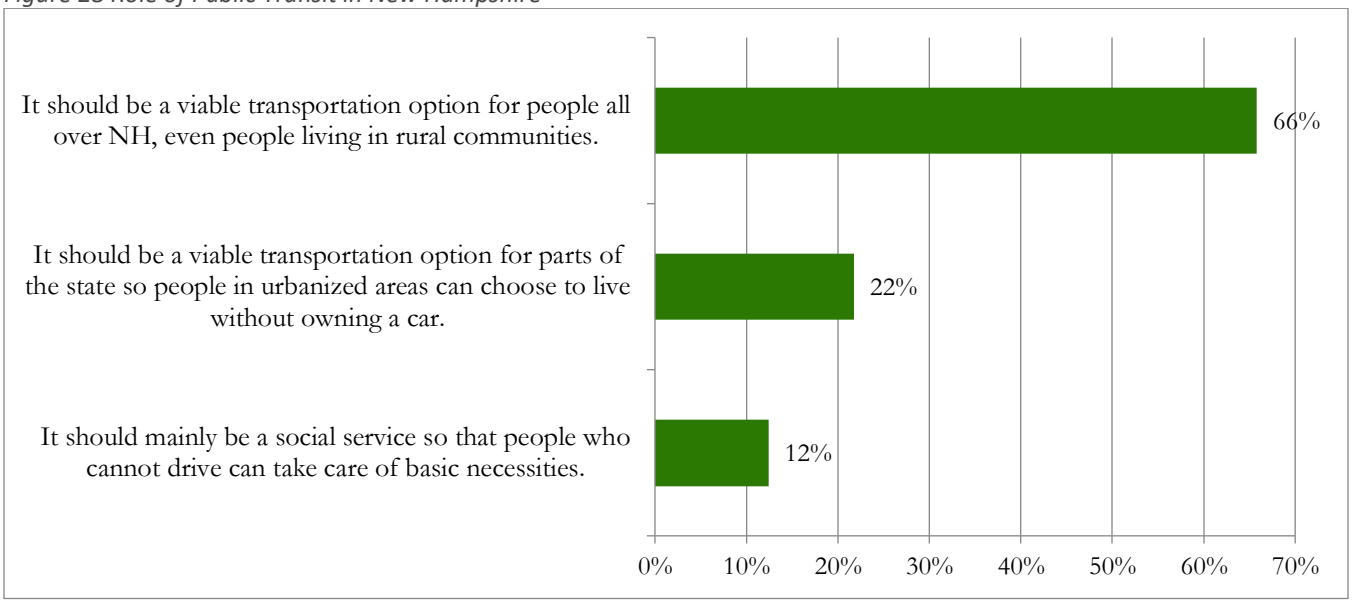
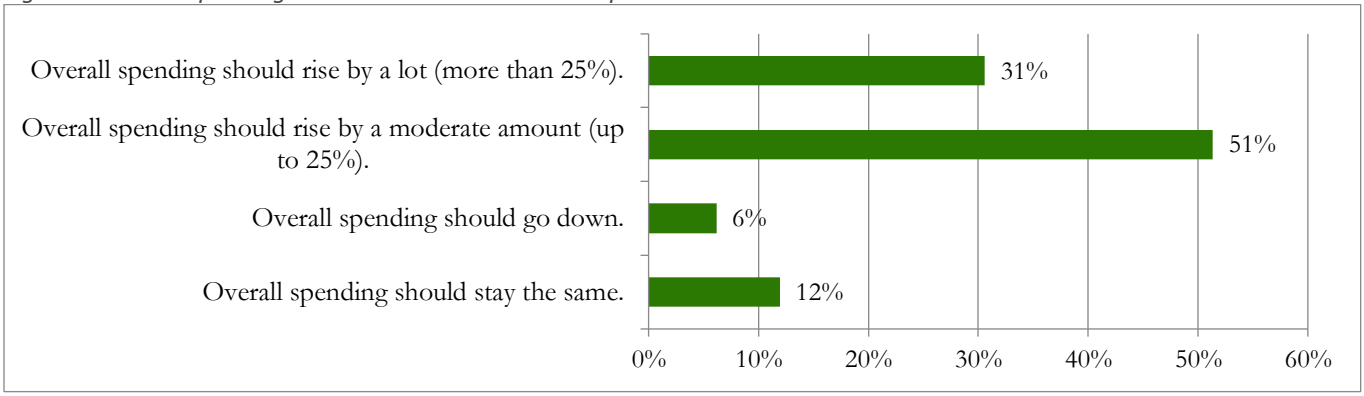


Figure 29 Future Spending on Public Transit in New Hampshire



Current Status of Funding

The operating budget of the public transit program in New Hampshire currently depends almost entirely on funds from the Federal Transit Administration (FTA), matched by local dollars as necessary. Some $800,000 is transferred from the federal highway program to support demand response transit service. For the first time in many years, New Hampshire allocated some State funds to support public transit, with $200,000 approved.

For the sake of comparison, Table 30 below shows the primary sources of public funding for transit in New Hampshire and its two closest peer states, Vermont and Maine. These figures for fiscal year 2019 exclude capital funding and planning funds and thus represent operational funding for bus and demand response service. The figures include subsidies for rural intercity bus routes. It is important to note that allocations from FTA are set by national formulas based on population and other factors. Other than through Congressional action, the states exert no control over the amounts of these allocations.

Table 30 Northern New England Operating Funding Comparison (FY 2019)

Funding Source	New Hampshire	Vermont	Maine
FTA Urban (5307)	$7,391,160	$3,396,472	$5,250,000
FTA Rural (5311)	$4,551,832	$3,650,000	$5,300,000
FHWA Flex (CMAQ, STP, Other)	$2,019,137	$15,057,613	$1,200,000
State	$200,000	$7,092,903	$900,000
Local	$5,850,000*	$6,080,720	$10,700,000
TOTAL	$20,012,129	$35,277,708	$23,350,000

*Estimated

State funding for public transit in Vermont comes from the Transportation Fund, which derives its revenue from motor fuels taxes, the purchase and use tax, and vehicle registration fees. The fund generates about $280 million annually; thus, about 2.5% of the fund pays for transit operations. State funding for public transit in Maine comes from a rental vehicle tax, which generates about $9 million annually; public transit thus gets about 13% of that revenue.

Local funding for all three states is a mixture of municipal funding and private sector and institutional funding. Municipal funds come either exclusively or primarily from property taxes depending on the state and municipality. In Vermont, some cities and towns have local option sales taxes that can generate revenue. Vermont communities also have the option of redirecting funds from the state-funded Town Highway

Program to public transit, but none currently do so. In New Hampshire, cities and towns collect vehicle registration fees and are permitted to add $5 to each fee to be kept by the town and used for transportation purposes, including funding public transit. As of the summer of 2017, some 34 communities chose to impose this fee, mostly at the $5 level and used a portion to support public transit. In Maine, property taxes are the sole source of municipal funding. In all three states, transit agencies work with hospitals, universities, employers and donors to generate additional local funding.

Options for Future Funding

NHDOT is currently pursuing an additional $2 million per year in flexible highway funding to be used for public transit in its Ten-Year Transportation Improvement Plan. Approval is anticipated later in 2020.

Every year, FTA releases Notices of Funding Opportunities for grant programs, many of which promote innovations and experimentation in new types of services. New Hampshire has applied for some of these and been successful, and should consider and pursue future opportunities as they come available. Few of these support direct operations, but many of them can be used for pilot projects.

A range of state and national studies have considered other options for funding public transit at the state and local level. Almost all of them include new taxes or fees of some type. A recent study in Vermont identified the following options:

- **Set-aside for transit from new statewide revenue source**
- **Member assessments from new regional transit authorities**
- **Dedicated regional sales or payroll tax**
- **Local vehicle registration fees**
- **Local mortgage recording tax**
- **Local development contributions**
- **Employer-based unlimited access programs**
- **Local option sales tax**

Of these, the local vehicle registration fee option is already available in New Hampshire, but most of the others would require enabling legislation from the New Hampshire legislature. All of these options are currently employed somewhere in North America.

10. CONCLUSION

The future of public transit in New Hampshire is up to the voters and their political leaders. There is ample evidence that transit is underfunded statewide, with low levels of service in the largest cities relative to their nationwide peers and significant gaps in service in the more rural parts of the state. While demand response service fills some of the gaps in the rural areas, it, too, according to input received during this project (see page 12), does not fully meet the needs of New Hampshire's vulnerable populations.

By a large majority, respondents to the online survey stated that public transit should not just be a social service, but should rather be a viable transportation option for all residents of the Granite State. They also voiced strong support for increasing the amount of spending on public transit.

The SSTA has identified some of the most obvious unmet needs for transit service and proposed solutions to address those needs. Further, investments in new Park & Ride lots and transit technology will help to increase access to the transit system, improving its long-term sustainability. The policy goals articulated in Chapter 2 of this document are intended to help NHDOT and other decision-makers to pursue those investments that are most effective at achieving the priority objectives.

The transit system will not change overnight. This transformation will require a cooperative effort among NHDOT, urban and rural transit providers, regional planning commissions, advocacy organizations, New Hampshire elected officials, and the New Hampshire congressional delegation. A concerted effort to secure additional funding and successful implementation of new services and capital projects will promote the viability of the transit system and allow it to become the attractive travel option that most New Hampshire residents want it to be.