

Economic Opportunity, Environmental Quality

Lakes Region Plan 2015-2020



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Transportation

1. INTRODUCTION

Chapter Design and Outcomes

A balanced and well-functioning transportation system is a key ingredient for successful regional planning and economic development. The regional transportation planning process in the Lakes Region is driven by bottom-up community participation through the Lakes Region Transportation Technical Advisory Committee (TAC) and supported by LRPC and NHDOT staffing. Transportation planning related recommendations are made by the TAC for consideration by the LRPC Commissioners, who approve the regional transportation policies. The TAC membership consists of representatives from LRPC communities who act as a liaison to local City Councils and Boards of Selectmen.

Key elements to the regional transportation planning process are the revised LR Transportation Mission Statement and the vision articulated in the regional bicycle and pedestrian plan as follows:

To provide an integrated, all-mode transportation system in the Lakes Region which offers efficient, effective and safe movement of people and goods, and provides mode choice wherever possible while enhancing and preserving the character and livability of the neighborhoods, ‘quality of water in our lakes and streams as well as’ (added) the natural, socio/economic, and historical environments where transportation facilities are located.¹

“To provide a purposefully connected network of trails, sidewalks, road shoulders, and pavement markings promoting safe and enjoyable bicycle and pedestrian mobility. To provide design and maintenance of livable, complete streets that support transportation, recreation, health, and economic interests throughout the Lakes Region.”² ‘Complete Streets’ are those where bicycle and pedestrian travel ways are accommodated in the planning, development, and construction of transportation facilities and incorporated into transportation plans and programs.

Several methods were used to capture public input during the development of this chapter including a statewide survey, comment cards at prominent locations in each community and through workshops and listening sessions. Common themes expressed fall into three general categories with specific areas of concern within each category as follows:

Transportation Costs	Transportation Options	Infrastructure
Personal	Walking/Biking	Condition
Environmental	Public Transportation	Connectivity
	Commuter Rail	

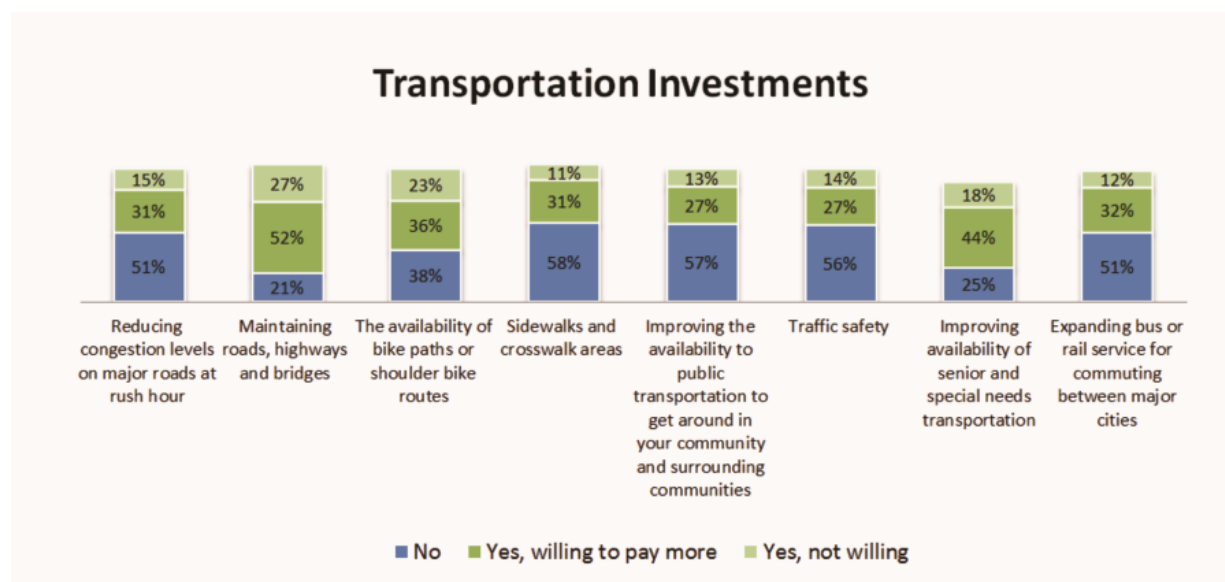
¹ LRPC, *Lakes Region Transportation Plan*, January 28, 2008

² LRPC, *Bicycling and Walking: Transportation Choices for New Hampshire’s Lakes Region*, March 26, 2012

While these concerns were expressed, perhaps the strongest indication of transportation needs and willingness to contribute came from a statewide survey that was conducted by the Survey Center at the University of New Hampshire. As illustrated in Figure 1, more than 50 percent of respondents statewide indicated they would be willing pay more in taxes for maintaining roads, highways, and bridges with an additional 27 percent indicating that this should be a focus for transportation investment, but they are not willing to pay more in taxes. The statewide transportation results mirrored the combined results for the Central and Lakes regions.

The purpose of this chapter is to summarize and integrate information about the transportation planning structure, existing conditions, and public comments within the context of the regional mission and vision statements that lead to the development of recommendations and implementation strategies. A goal of the chapter is to provide information and insight useful for Lakes Region communities in the development of transportation improvement projects and local master plans.

Figure 1: NH Resident's Willingness to Pay for Transportation



Source: UNH Survey Center, Statewide Survey, 2013

2. MAJOR PROGRAMS AND LEGISLATION

Federal Transportation Funding

Established more than 50 years ago the Highway Trust Fund was created to finance the construction of the Interstate Highway System, which was built in partnership with state and local governments. Since its completion in the early 1980s this system is central to surface transportation in the United States. During the post-construction years surface transportation programs expanded broadening the federal role and mission. Today, while most federal surface transportation funds are used for highway infrastructure, a portion of the funding now serves additional transportation, environmental,

and societal purposes. For example, the 2005 federal transportation authorization called the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorized funds for programs beyond the construction and maintenance of highways and bridges. These programs included funding for highway safety, metropolitan and statewide transportation planning, transit, and transportation system enhancements such as pedestrian and bicycle facilities and mitigation of highway impacts to wetlands and wildlife.

Unlike other federal programs which are funded by general revenues such as education, national defense, and homeland security, surface transportation programs are primarily funded with Highway Trust Fund revenues. The revenues are predominately generated by federal motor fuel taxes (also known as the gas tax) and to a lesser extent sales taxes on tires, heavy trucks and trailers. A similar fund, the Airport and Airway Trust Fund (Trust Fund or AATF), was created in 1970 to fund aviation programs. Administered by the Federal Aviation Administration (FAA), this fund receives revenues from a series of excise taxes paid by users of the national airspace system. The purpose was to establish funding that would increase concurrently with the use of the system. It was designed to finance investments in the airport and airway system and to cover operating costs of the airway system to the extent funds were available. Since the creation of the Trust Fund revenues have generally exceeded spending leaving a surplus referred to as the Trust Fund's "uncommitted balance."

In comparison, the Highway Trust Fund has not fared as well as the Aviation Trust Fund. Where in Fiscal Year 2010 the Airport and Airway Trust Fund had an uncommitted balance of \$770 million, Congress authorized the transfer of \$35 billion from the General Fund of the US Treasury to keep the Highway Trust Fund solvent from 2008-2010. In 2008, for the first time, the Highway Trust Fund had insufficient revenues and cash balances to meet its obligations. As a result, Congress authorized an \$8 billion cash infusion from the General Fund of the US Treasury into the Highway Trust Fund. By the end of 2014, a total of \$54 billion will have been transferred from the General Fund into the Highway Trust Fund to maintain its solvency. This includes an \$18.8 billion transfer authorized by Congress last year in MAP-21. Several key factors are associated with the recent and projected shortfalls including:

- Rising fuel efficiency standards, leading to more miles traveled on less fuel tax revenues;
- Exponential increases in highway construction and paving costs;
- Inflation eroding the value of the current fuel tax (gasoline \$.184 per gallon, diesel \$.243 per gallon) last increased by President Bill Clinton in 1993;
- Political environment highly critical of deficit spending;
- An aging transportation infrastructure reaching the end of life expectancy.

In part, the transportation funding debate in congress in 2012 that led to the presidential reauthorization of SAFETEA-LU, focused on 'alternative transportation' programs such as Transportation Enhancements, Transit – including light rail, trolleys, and buses, Safe Routes to School, the Scenic Byways Program, and others as diversions from the funding needed for motor vehicle infrastructure improvements and improved transportation safety. In 2013, the US Chamber of Commerce supported raising the federal gasoline tax to keep the fund solvent.

The Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law by President

Obama on July 6, 2012 and will expire on October 1, 2014. MAP-21 reduces the number of discrete funding programs by two-thirds to roughly 30 programs. Most of this reduction is accomplished by absorbing formerly separate activities and eligibilities into the new core programs discussed below. The core programs also have many areas of overlapping eligibility. Under MAP-21, the five core programs plus metropolitan transportation planning are authorized at \$37.5 billion for Fiscal Year 2013 and \$37.8 billion for Fiscal Year 2014.

- **National Highway Performance Program (NHPP)**

The NHPP has become the largest of the restructured federal-aid highway programs, with authorizations of \$21.8 billion for Fiscal Year 2013 and \$21.9 billion for Fiscal Year 2014. The program supports improvement of the condition and performance of the National Highway System (NHS), combining the former Interstate Maintenance Program (IMP), the NHS Program, and the Highway Bridge Program's on-system component. The NHPP includes projects to achieve national performance goals for improving infrastructure condition, safety, mobility, or freight movement, consistent with state or metropolitan planning; construction, reconstruction, or operational improvement of highway segments; construction, replacement, rehabilitation, and preservation of bridges, tunnels, and ferry boats and ferry facilities; inspection costs and the training of inspection personnel for bridges and tunnels; bicycle transportation infrastructure and pedestrian walkways; intelligent transportation systems; and environmental restoration, as well as natural habitat and wetlands mitigation within NHS corridors. If Interstate System and NHS bridge conditions in a state fall below the minimum conditions established by the Secretary of Transportation, certain amounts of funds would be transferred from other specified programs in the state.

- **Surface Transportation Program (STP)**

The STP remains the federal-aid highway program with the broadest eligibility criteria. Funds can be used on any federal-aid highway, on bridge projects on any public road, on transit capital projects, on non-motorized paths, and on bridge and tunnel inspection and inspector training. MAP-21 authorized \$10 billion for Fiscal Year 2013 and \$10.1 billion for Fiscal Year 2014. Although Transportation Enhancements are funded under the new Transportation Alternatives program, these types of projects can also be funded under STP if a state wishes. Half of each state's STP funds are to be distributed within the state based on population. The remainder may be spent anywhere in the state. MAP-21 included a special rule allowing some STP funds reserved for rural areas to be used on minor collector roads.

- **Highway Safety Improvement Program (HSIP)**

HSIP remains largely as it was under SAFETEA-LU, supporting projects that improve the safety of road infrastructure by correcting hazardous road locations, such as dangerous intersections, or making road improvements such as adding rumble strips. HSIP is funded at \$2.39 billion for Fiscal Year 2013 and at \$2.41 billion for Fiscal Year 2014. The Rail-Highway Grade Crossing Program was continued through a \$220 million annual set aside.

- **Congestion Mitigation and Air Quality Improvement Program (CMAQ)**

Under Map-21, CMAQ is authorized at roughly \$2.209 billion for Fiscal Year 2013 and \$2.411 billion for Fiscal Year 2014. Eligibility was expanded to include demand-shifting projects such as telecommuting, ridesharing, and road pricing.

- **Transportation Alternatives Program: Transportation Enhancements/Non-Motorized Transportation Alternatives (TA)**

In MAP-21, Congress changed the Transportation Enhancements program and other non-motorized transportation programs, compromising between the positions of groups that wanted more funding for these programs and groups that wanted to eliminate these programs entirely. The compromise eliminated certain types of activities from the list of eligible transportation enhancements, renamed the transportation enhancements group of activities “transportation alternatives,” and combined this group of activities with the former Recreational Trails and Safe Routes to School programs under one umbrella program called Transportation Alternatives (TA). TA funds may also be used for “planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.” TA is a set-aside from each state’s NHPP, STP, HSIP, CMAQ, and Metropolitan Planning apportionments amounting to roughly 2 percent of total highway funding. The amount available to each state is equal to the amount the state was required to set aside for Transportation Enhancements in Fiscal Year 2009. MAP-21 reduced the total amount set aside for these programs, from \$1.2 billion in Fiscal Year 2011 to \$809 million in Fiscal Year 2013 and \$820 million in Fiscal Year 2014. There is no specific funding level for any of the programs within this group. States are required to allocate 50 percent of the funds to local entities for obligation. If states do not obligate the remaining 50 percent of funding, they then may use these funds for any TA- or CMAQ-eligible projects once the unobligated amount accumulates to 100 percent of the state’s annual TA set-aside. MAP-21 also makes bicycle facilities and pedestrian walkways eligible expenses under the National Highway Performance Program, the Surface Transportation Program, and the Highway Safety Improvement Program.

MAP-21 permits states to transfer up to 50 percent of any apportionment to any other apportionment program. However, no transfers are permitted of funds that are sub-allocated to areas by population (such as STP) or of Metropolitan Planning funds.³

State of New Hampshire Transportation Funding

The Ten Year Plan (TYP) is arguably the most influential transportation document in the State. The TYP identifies and prioritizes the critical transportation projects in New Hampshire in an ongoing effort to address transportation needs at the local, regional and statewide levels. The TYP is updated every two years – allowing transportation priorities to be revisited, existing projects to be removed as appropriate and allowing new projects to be added. With the previous TYP as a starting point, the TYP process includes input from individual communities, development of Transportation Improvement Plans (TIPs) by the Regional Planning Commissions (RPCs), numerous public

³ Congressional Research Service, *Surface Transportation Funding and Programs Under MAP-21: Moving Ahead for Progress in the 21st Century Act (P.L. 112-141)*, September 27, 2012.

hearings by the Governor's Advisory Commission on Intermodal Transportation (GACIT) and review and approval by the Governor and Legislature. Performance measures and conditions such as pavement condition, bridge ratings, congestion levels, crash rates, user surveys and available funding levels are considered in determining project need and prioritizing project implementation.

Once the NH Legislature adopts the TYP, it is considered the final plan until subsequently reviewed and modified in the next cycle. Projects contained in the first four years of the TYP form the basis for New Hampshire's Statewide Transportation Improvement Program (STIP), as required by federal law. Current federal regulations require that the STIP include all projects contained in the Metropolitan Planning Organization (MPO) TIPs, as approved by the Governor. For non-MPO areas such as the Lakes Region, the NHDOT uses the RPC TIPs as guidance, although project-by-project inclusion is not required. The TIP represents a strategy developed at the regional level to meet current and future transportation needs. The STIP development process within the TYP is a two-year cycle. The GACIT plays a key role in the development process by reviewing the plan and providing recommendations to the plan and providing them to the governor.⁴

Efforts have been made in recent TYP updates to manage the amount of projects it contains to a level that more accurately matches with projected revenues. This refinement process began in 2006 when the NHDOT announced because the TYP was over-prescribed; no new projects would be considered for inclusion in the plan. In subsequent updates, the planning commissions were asked to re-evaluate regional priorities and break large projects out into less costly smaller projects that would address key concerns and could be constructed within budgetary constraints. During this same timeframe NHDOT provided compelling information to the Legislature, Governor, and GACIT about the identified transportation needs statewide outpacing available funding. Ultimately, in the absence of additional revenue to meet the needs, the TYP was reduced from approximately \$4 billion in requests for funding to under \$2 billion statewide.

⁴ NH Department of Transportation, *NH Long Range Transportation Plan 2010 – 2030*, July 2010

As illustrated in Figure 2, the effect on the Lakes Region was the removal and reduction of approximately \$88.5 million (construction cost) worth of non-programmatic projects from the TYP over the course of several updates. In addition to non-programmatic or discretionary projects the TYP also contains programmatic projects where funding is specified according to program goals and objectives. For example, the State Aid Bridge (SAB) program has a specific amount of funding, requires a 20 percent local match, etc. The most recent TYP update, which began in 2012, was the first update since 2006 when additional projects were added.

Accompanying the financial shortfalls to make needed transportation improvements was the re-evaluation and prioritization of focus areas of greatest concern. The NHDOT has stated that maintaining existing infrastructure (in favor of building new roads or expanding capacity) and improved safety are the primary areas of focus. The maintenance of existing infrastructure is further prioritized as:

- Highest Priority – National Highway System; needed for healthy economy and mobility.
- Second Priority – Remaining US routes and State numbered routes; maintained at a less than desirable level.
- Last Priority – State unnumbered routes; not being properly maintained due to lack of funding.⁵

Map 1 illustrates the hierarchy of state route maintenance priorities in the Lakes Region as they relate to regional corridors of importance and recent annual average daily traffic. It is estimated that the current backlog to repair all state maintained highways and bridges that are in poor condition is \$1.3 billion.⁶ Snow removal and ice control represent approximately 40 percent of the annual state

Figure 2: Lakes Region Projects Ten Year Plan Comparison – Lakes Region Projects 2007 - 2016 TYP through 2011 - 2020 TYP

PROJECT NAME	PROJECT #	TYP 2007-2016	TYP 2009-2018	TYP 2011-2020
		Proposed Construction Cost (\$M)	Proposed Construction Cost (\$M)	Proposed Construction Cost (\$M)
BARNSTEAD - ALTON Rte. 28 Reconstruction	14121	9.600	5.000	4.125
BELMONT - LACONIA Improve 106/107 Access	2787	11.000	1.500	1.500
MEREDITH Reconstruct Rt 25	10430	12.500	5.000	5.000
OSSIPEE Rte. 28 Recon. 3.36 miles	10431	6.750	3.000	3.000
OSSIPEE 16/25/41 Intersection	13910	1.590	1.590	1.590
OSSIPEE Bridges Reconstruction	14749	9.000	5.000	9.000
ALTON - GILFORD Rte. 11 Bypass	10606	6.350	-	-
ANDOVER NH Rte. 11 Reconstruction	14172	1.235	-	-
ANDOVER US Rte. 4 Flooding	2754	3.500	-	-
BELMONT 140 Safety Improvements	12792	7.000	-	-
DANBURY Rt 4/104 Intersection	3268	3.000	-	-
FRANKLIN - NORTHFIELD Connector Study	1813	1.061	-	-
LACONIA - MEREDITH US 3 Meredith to Weirs	2768	4.500	-	-
MEREDITH Reconstruct Rt 106	3527	3.500	-	-
MOULTONBOROUGH 25 and 25/109 Intersection	2737	6.000	-	-
NEW HAMPTON - MEREDITH NH Rte. 104	3267	8.500	-	-
NORTHFIELD Full Interchange Exit 19	13596	7.500	-	-
WOLFEBORO Rt28 Intersection/drainage	13954	7.000	-	-
TOTAL CONSTRUCTION COSTS (\$M)		109.59	21.09	24.22
Change from Previous TIP (\$MM)			-88.50	3.13

⁵ NHDOT, *The Road to New Hampshire's Future*, Presented at Lakes Region Transportation Workshop, November 12, 2013

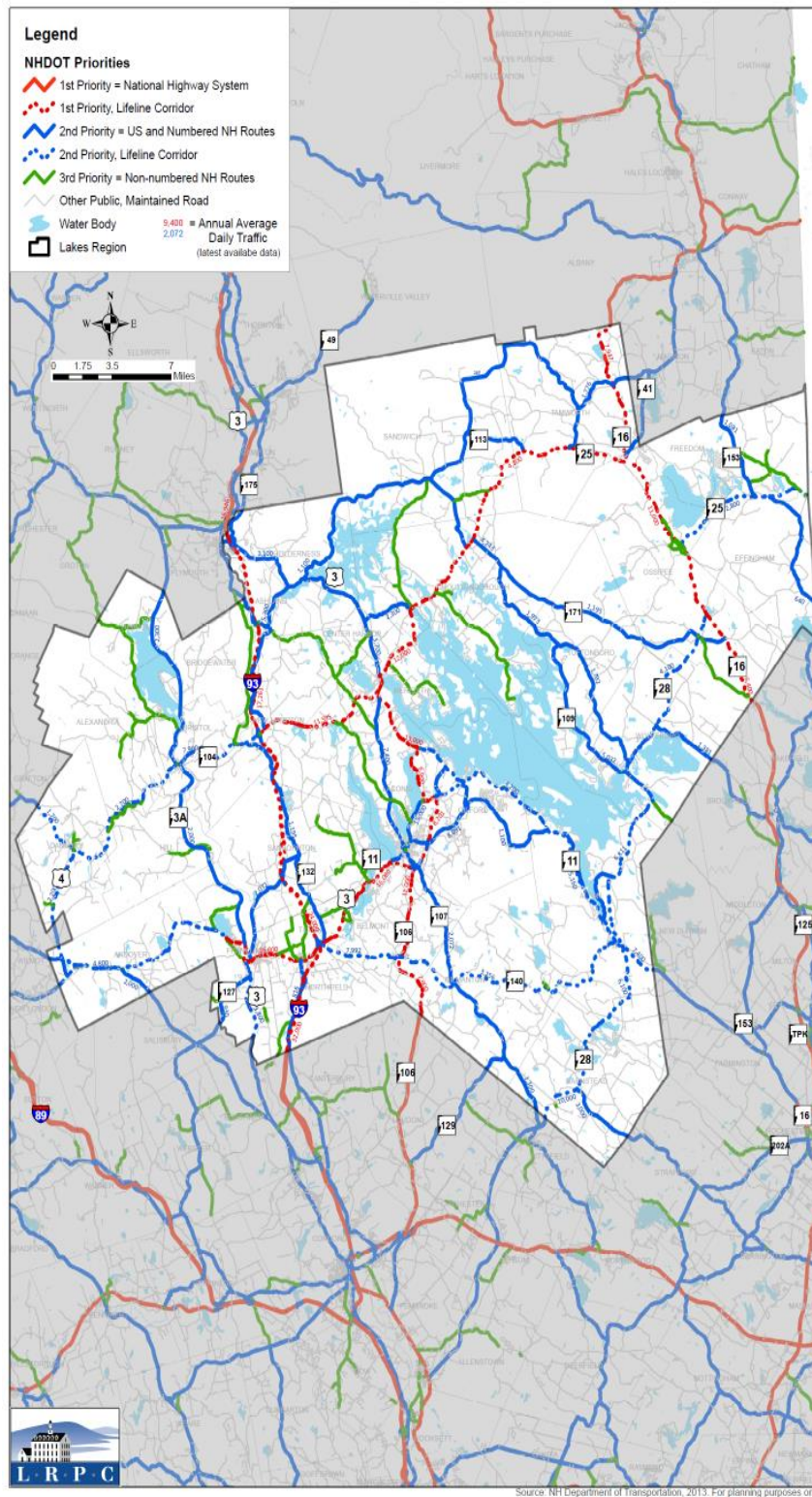
⁶ TRIP, *New Hampshire Transportation by the Numbers: Meeting the State's Need for Safe and Efficient Mobility*, February 2013.

highway maintenance budget (\$32 million in Fiscal Year 2012). Figure 3 outlines the miles of highway in each Lakes Region community by local and state ownership and according to the NHDOT maintenance priority categories for state highways.

Figure 3: Miles of Highway in Lakes Region Communities by NHDOT Maintenance Categories

Municipality	State Highway Miles	Highest Priority - National Highway System	Second Priority - Remaining US Routes and State Numbered Routes	Last Priority - State Unnumbered Routes	Municipally Maintained (Class V) Road Miles	Total Road Miles (State and Cls V)
Alexandria	12.4	0.0	4.4	8.0	43.1	55.5
Alton	38.6	0.0	38.5	0.1	82.2	120.8
Andover	16.3	0.0	16.1	0.2	47.4	63.7
Ashland	17.0	9.0	6.3	1.7	20.3	37.3
Barnstead	13.6	0.0	13.4	0.2	80.5	94.0
Belmont	17.9	8.6	9.1	0.2	67.0	85.0
Bridgewater	10.5	0.0	4.0	6.5	26.3	36.7
Bristol	17.0	0.0	11.1	5.9	36.6	53.6
Center Harbor	11.4	1.6	5.5	4.4	17.5	28.9
Danbury	13.6	0.0	11.4	2.3	49.9	63.5
Effingham	10.8	0.0	10.8	0.0	42.1	52.9
Franklin	27.2	4.2	18.0	4.9	57.2	84.3
Freedom	14.1	0.0	7.0	7.1	43.1	57.2
Gilford	27.4	4.2	23.0	0.2	90.1	117.5
Gilmanton	22.6	1.8	20.4	0.5	71.9	94.5
Hebron	10.2	0.0	3.7	6.5	13.6	23.8
Hill	8.2	0.0	4.7	3.5	25.8	34.0
Holderness	21.7	2.5	19.2	0.0	30.5	52.2
Laconia	30.9	7.7	17.3	6.0	75.3	106.3
Meredith	30.1	14.3	4.9	10.8	89.0	119.0
Moultonborough	31.9	6.7	11.3	13.9	64.8	96.7
New Hampton	31.3	16.5	9.9	5.0	51.0	82.3
Northfield	21.9	11.8	7.2	3.0	42.6	64.5
Ossipee	36.9	16.6	13.0	7.3	83.2	120.1
Sanbornton	35.8	14.9	12.2	8.8	55.8	91.7
Sandwich	30.2	4.1	20.2	5.9	65.1	95.3
Tamworth	30.3	13.9	16.3	0.2	62.6	93.0
Tilton	27.0	12.1	4.3	10.6	11.2	38.2
Tuftonboro	19.0	0.0	19.0	0.0	35.6	54.6
Wolfeboro	25.5	0.0	22.0	3.5	64.0	89.4
Lakes Region Total	661.4	150.3	384.1	126.9	1,545.3	2,206.6

Map. 1 NHDOT Maintenance Priorities in the Lakes Region



Regional Transportation Priorities

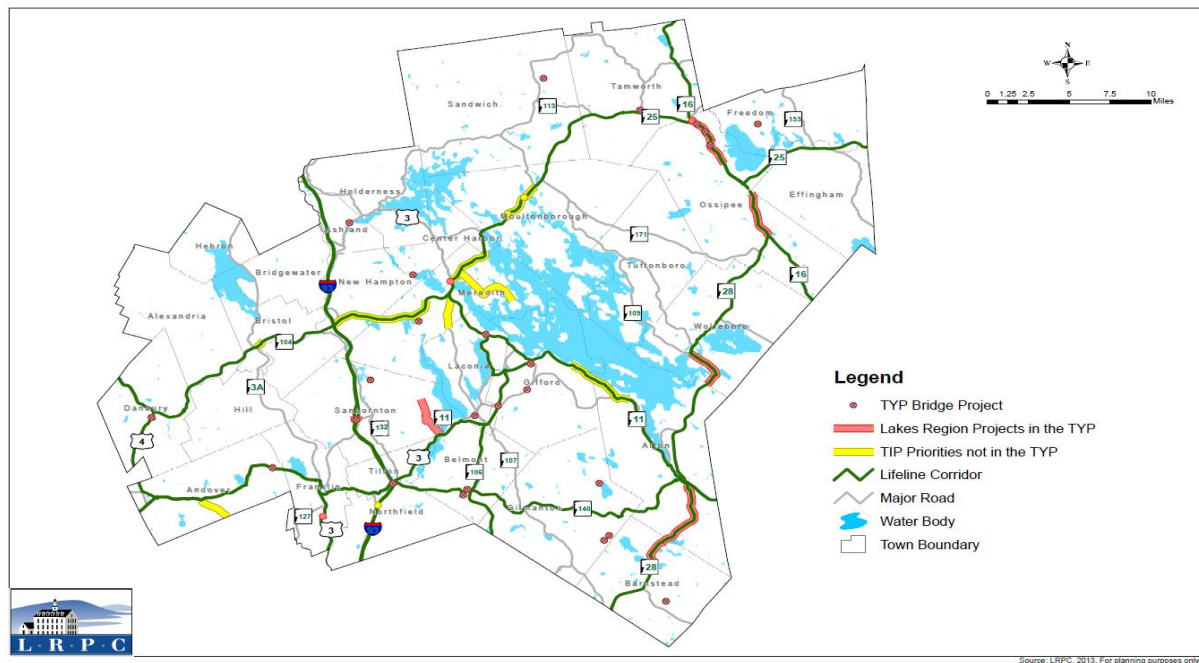
The process to prepare the Lakes Region Transportation Improvement Plan (TIP) usually begins with the LRPC soliciting project requests from local communities, followed by an evaluation process by the Lakes Region Transportation Technical Advisory Committee (TAC) where new and existing projects are prioritized. The prioritized projects are presented to the LRPC Commissioners for adoption. After LRPC approval, they are submitted to NHDOT for consideration in the statewide TYP. Following a series of public hearings held by the Governor's Advisory Commission on Intermodal Transportation (GACIT), and potential modifications of the plan by GACIT and the Governor, the Ten Year Plan is submitted to the Legislature where it may be again amended before adoption. Figure 4 shows ranked primary and secondary TIP projects for the Lakes Region.

Figure 4: Lakes Region TIP 2013: Ranked Priority and Secondary Priority Projects

Priority Status	Construction Cost (millions)	Rank	Project Location	Project Type
Regional Priorities: Existing Ten-Year Plan Projects	\$4.63	1	Meredith US3	Roadway and intersection improvements.
	\$9.00	2	Ossipee NH16/NH25	Replace three Red List bridges and resurfacing.
	\$1.59	3	Ossipee NH16, NH25, NH41	Intersection improvements.
	\$3.00	4	Ossipee NH16 at NH28	Pavement rehabilitation and intersection improvements.
	\$1.38	5	NH Route 28 (Alton Traffic Circle 7 miles south)	Intersection improvement (recommend North/North Barnstead Roads at NH28).
Prioritized projects for inclusion in Ten-Year Plan as funding becomes available	\$7.44	1	Wolfeboro NH28	Base and pavement, drainage, traffic flow, sight distance.
	\$5.72	2	Meredith - Pleasant Street to Center Harbor town line	Safety improvements - priority intersections.
	\$6.35	3	Alton/Gilford NH11	Roadway reconstruction and shoulders.
	\$1.48	4	Bristol NH104	Roadway reconstruction and alignment.
	\$6.00	5	Moultonborough NH25 - Moultonborough Neck to NH109S	Roadway reconstruction.
	\$1.93	6	Meredith NH104	Intersection safety improvements.
	TBD	7	New Hampton/Meredith NH104	Roadway reconstruction.
	\$4.13	8	Meredith NH106	Intersection safety and sight distance improvements.
	\$3.50	9	Andover US4	Resolve potential flooding.
	\$0.15	10	Moultonborough NH25 at Sheridan Road	Intersection safety.
	\$2.68	11	Meredith - Barnard Ridge & Meredith Neck	Full reconstruction.
	\$7.50	12	Northfield - Completion of I-93	Construct full interchange.
	\$0.08	13	Moultonborough NH25 at Saw Mill Road	Intersection safety.

While the state transportation funding debate continues, additional projects have been identified by Lakes Region communities for consideration in the regional Transportation Improvement Plan. Secondary regional transportation priorities include projects previously removed from the TYP and new projects for consideration in the regional TIP. Map 2 illustrates the TIP priorities in relationship to regional “lifeline corridors” or a primary corridor of critical importance to the region. Noteworthy, is that both non-programmatic and programmatic projects are included. The programmatic projects consist mainly of bridge projects, many of which are Red List bridges, which are either functionally or structurally deficient. An exception is Upper Bay Road in Sanbornton which is in the category of preservation and maintenance and required a 33 percent local match for the project to be funded. The lifeline corridors serve the majority of the traffic flow through and within the region, many of which also provide vital connectivity to other regions.

Map 2: Lakes Region Lifeline Corridors, Ten Year Plan and TIP Projects



Structurally Deficient means a highway bridge is classified as structurally deficient if the deck, superstructure, substructure, or culvert is rated in "poor" condition. A bridge can also be classified as structurally deficient if its load carrying capacity is significantly below current design standards or if a waterway below frequently overtops the bridge during floods. Functionally Obsolete means the highway bridge design is outdated -which may have lower load carrying capacity, narrower shoulders or less clearance underneath than bridges built to the current standard.

In preparation for the 2012 TIP update, the LRPC hosted a TAC subcommittee workshop to assess regional focus areas of concern. The process was aided by Decision Lens software which facilitated evaluating a host of factors to determine which are of highest priority. The results for the Lakes Region mirrored the priorities identified by NHDOT. The maintenance and rehabilitation of roadways to reduce long-term costs and safety ranked as the first and third priority focus areas (the leading priorities for NHDOT). In addition, the expansion of other modes of transportation (i.e. transit, pedestrian, and bicycle) was the second highest priority for the region.

3. LAKES REGION TRANSPORTATION SYSTEM

Highway Infrastructure

The highway system in the Lakes Region is comprised of 2,978 road miles: 661.4 miles of state highway, 1,545.3 municipally maintained roads, and 771.2 miles of private roads. There are a total of 271 state bridges, 256 municipal bridges. The road network allows nearly 125,000 residents of Belknap, Carroll, Grafton, and Merrimack Counties to commute each day to work within their county of residence and more than 6,500 people to commute to work in Belknap County from Carroll, Grafton, Merrimack and Strafford Counties. The road network also hosts a significant influx of tourist traveling during the summer and shoulder seasons. Annual Average Daily Traffic (AADT) on the busiest Lakes Region highways ranges from 15,000 vehicles per day on NH Route 25 in Meredith to 25,000 vehicles per day on US Route 3 near the northbound Interstate 93 off ramp at Exit 20.

Most of the “lifeline” corridors have been the focus of recent studies as displayed in Figure 5. While the studies vary in focus, based on local input about the challenges faced, they are generally beneficial to the NHDOT and affected communities for an understanding of: 1) priority road segment and intersection improvements; 2) potential access management concerns; and 3) local land use practices as they relate to future development potential and traveler safety.



Figure 5: Lakes Region Lifeline Corridors

Route	Length (miles)	Year	Study Type	Section	Organization
I-93	59.2				
NH 104	23.6	2007	Access Management Study	New Hampton to Meredith	LRPC
NH 106	9.8	2012	Traffic Impact Study	Concord to Belmont	McFarland Johnson, NHDOT
NH 11/11B	59.2				
NH 140	27.9	2013	Corridor Study	Tilton to Alton	LRPC
NH 16	23.6	2014	Corridor Safety Assessment	Ossipee to Conway	LRPC, NCC
NH 25	37.2	2008	Corridor Study	Center Harbor and Moultonborough	LRPC
NH 28	33.9	2009	Corridor Safety Assessment	Alton to Epsom	LRPC, CNHRPC
US 3	31.4	2013	Demand Management Study	Laconia to Franklin	LRPC
		2009	Context Sensitive Solutions - Study Phase 1	Meredith NH106 to Center Harbor	McFarland Johnson, NHDOT
		2004	Corridor Study	Franklin to Boscawen	LRPC, CNHRPC
US 4	19.7				
Total	325.5				

Highway Infrastructure Challenges

- A leading challenge for the region is the poor state of repair of secondary and unnumbered state routes. At a time when there is a focus on keeping good roads in good condition, which saves maintenance and potential reconstruction costs in the long-run, many examples exist of the potential need for reconstruction today including sections of NH 25B, NH109, NH 113, NH171, NH 175, and the three state routes leading to Freedom village center: Moulton Road, Old Portland Road and Cushing Corner Road.
- Highway improvements in New Hampshire are based on AADT counts. The seasonal influx of traffic in the region can out pace highway capacity. Examples of this include: US Route 3 in Meredith where ten or more week-ends each summer create traffic backed up for several miles, US Route 3 in Tilton where significant traffic delays occur in the summer months, and I93 at Exit 23 where traffic entering NH Route 104 can back-up onto the interstate. While improving highways to accommodate the peak seasonal conditions may not be practical, alternatives are needed for these special conditions such as updated traffic signal timing and optimization for seasonal conditions, improved pedestrian signals, advanced traffic information, etc.
- The integration of pedestrian and bicycle access should be carefully considered for all highway improvement projects. In a rural area where commuting to work by biking or walking is limited due to seasonal conditions, distance from home to employment centers, and safety concerns, there are many opportunities for improvement in the village cores and potentially the routes between village centers where practical.
- Highway drainage and the impacts on water quality is a concern in the region. With few exceptions, highway stormwater is not treated prior to entering surface waters. While drainage swales, stormwater detention ponds, catch basins, etc. can allow for pollutants to settle out from stormwater before entering surface waters these systems can be overwhelmed in storm events and become ineffective. More needs to be done to understand the long-term

impacts on water quality and best management practices to minimize highway stormwater pollution.

- Highway safety is assessed across the state resulting in a priority list of intersections and highway segments based on fatalities and property damage from accident history reports. A challenge is to get funding for safety related improvements at intersections with comparatively few recorded incidents that fall into the category of “accidents waiting to happen.” There are several intersections and highway segments that fall into this category. Communities have the ability to request Road Safety Audits for areas of concern. These assessments are coordinated with the planning commission and NHDOT and can be useful in the identification of low cost solutions for safety improvements.

Public Transit

Currently, there are two public bus systems operating in the Lakes Region; the Blue Loon and Winnepesaukee Transit System. These services provide buses that travel on designated routes according to an established schedule during the day and provide the added benefit to riders of deviating to serve passengers within a quarter mile of the route. Customers can call in advance to schedule a pick-up or drop-off within one-quarter of a mile of the designated route. Like most rural transit systems, the operation of daily buses requires funding support both from the communities where the service is provided and in many cases federal funding is utilized often requiring 20 percent matching funds. State funding for local transit does not currently exist, which creates the need to generate the matching funds often through requests from the municipalities where the services are provided. In 2009, local assistance to match federal funds for local transit was provided by the state in the amount of \$188,000 annually. The Governor’s Advisory Committee on Intermodal Transportation (GACIT) recently recommended reinstating state funding at the 2009 level.

The Carroll County Transit “Blue Loon” public route began operating in January of 2012. Service is provided by 16-passenger wheelchair accessible buses. The Carroll County Transit system includes an all-day flex-route connector service that originates in Wolfeboro running north along Route 28 to West Ossipee and continues north along Route 16, traveling to Conway, and medical facilities in North Conway including Memorial Hospital. The service is provided using two buses running in opposite directions. The public flex



route service, which operates 5 days per week, is complemented by a Door-to-Door service that began in December, 2010. The public route, used in conjunction with the Door-to-Door service, enables people to get to places outside of the Door-to-Door service areas within Carroll County.

Additionally, a fixed-route connector operates twice a day between Ossipee and Laconia with connection to the Winnepesaukee Transit System. Transfer between the Carroll County Transit bus routes takes place in Ossipee. The services being provided are new to Carroll County and require

education and marketing. A sense of trust needs to be built between the riders and the service so that riders know it is a dependable means of transportation for medical appointments, shopping, employment and other activities.

The majority of the ridership consists of the seniors, people with disabilities, and low-income persons. The Advisory Committee for this project is promoting to others who would not normally utilize public transportation by encouraging them to help protect the environment by reducing their carbon footprint. Adequate funding is a challenge in Carroll County.

Community Action Program Belknap-Merrimack Counties, Inc. (CAPBMCI) manages the Winnepesaukee Transit System (WTS). At present, the WTS serves most of the city of Laconia and the US Route 3 corridor through Belmont, the shopping district in Gilford and the business districts of Tilton and Franklin. The WTS honors transfers for customers from the Blue Loon bus. The entire route consists of 11 bus stops with scheduled times and customers can call for a ride from any location to another location (their house, a business, a social services organization, etc.) as long as it is within a quarter mile of the travel corridor. To date, WTS has not refused any deviated trip due to too many requests.

WTS ridership for Fiscal Year 2011 was 3,370 vehicle hours of service, 40,794 vehicle miles recorded serving 7,310 customer trips. Seniors consist of 27 percent of the ridership. Customers report that WTS is their only reliable, affordable transportation option. Since WTS is ADA accessible, it is also one of the only transportation options available in the region for low-income passengers and riders using mobility equipment like wheelchairs, scooters, or walkers. The WTS received funding support from the city of Laconia and the town of Tilton along with private assistance from Franklin Savings Bank in Gilford to support the expansion of service back out to the Gilford shopping district.

C&J Bus Lines provides service to Boston from three New Hampshire locations: Dover, the University of NH in Durham, and Portsmouth. The Portsmouth location also provides connectivity to New York City. There is limited service provided by Concord Trailways with stops in Meredith and Tilton. Unfortunately, the stop times make it difficult to connect with WTS during regular hours of operation. Customers report that they need to travel to Concord for medical appointments, and to make connections to transit services for more southern destinations. The Lakes Region Chamber of Commerce has received several inquiries from tourists needing to travel from Logan Airport to local destinations. WTS will explore the possibility of providing a connector/feeder service for customers needing access to services in Concord.

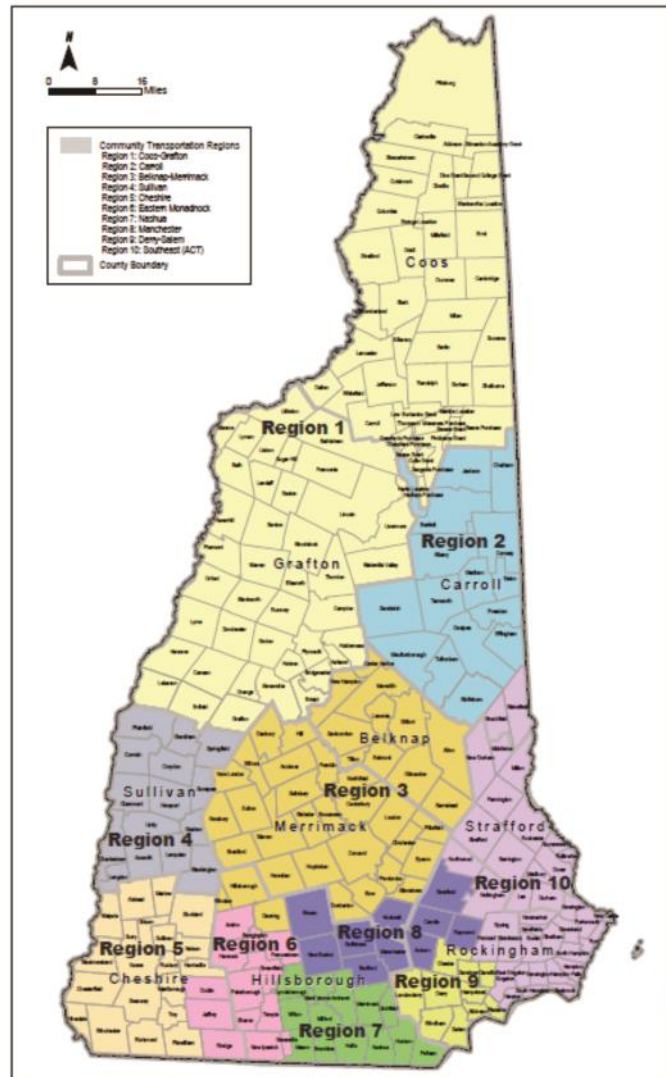
As shown in Map 3 there are ten Regional Coordination Councils (RCCs) in New Hampshire.

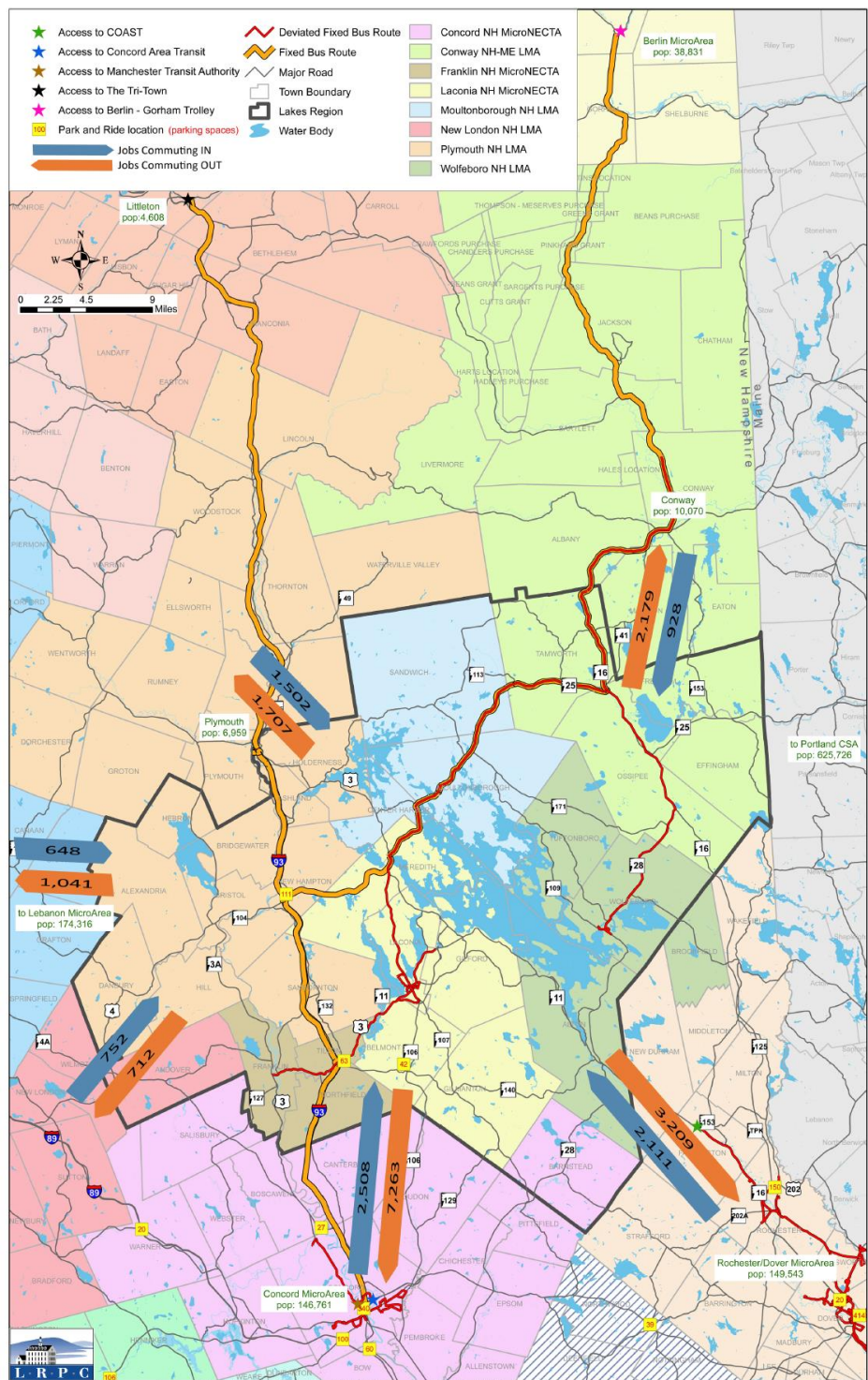
Formed between 2010 and 2012, the RCCs are comprised of local transportation providers, human service agencies, funding agencies and organizations, consumers, and regional planning commission staff. The RCCs work to develop information that is helpful to transportation service users and identify opportunities for coordination between service providers. The Lakes Region is part of three RCC regions: Region 1 Grafton/Coos; Region 2 Carroll County; and Region 3 Mid State. Each RCC maintains a work plan with stated activities they will be engaged in over the course of several years. Each of the three RCCs that the Lakes Region participates in has developed a community transportation resource guide. The guides represent a comprehensive listing of current transit providers from community organizations to volunteer driver programs to taxi companies. An example of the goals associated with RCCs follows from the Carroll County Regional Coordination Council:

- Transportation accessible to all; inviting to all ages and all walks of life;
- Collaboration among human service agencies, municipalities, businesses, and citizens;
- Expanded public transportation services and options, including volunteers, carpooling, taxi services, and rail, bicycle and pedestrian paths;
- Transportation within the counties and connections with other regions.

Map 4 illustrates the public transit and park and ride locations in and around the Lakes Region and commuting patterns for 1) Lakes Region residents to adjacent labor markets outside the region and 2) residents of adjacent labor markets commuting into the Lakes Region.

Map 3: NH Community Transportation Regions





Aeronautics

The state of New Hampshire has 12 airports that are included in the National Plan of Integrated Airport Systems (NPIAS) and eligible for Federal Aviation Administration (FAA) Airport Improvement Program (AIP) funding for capital improvements. NHDOT provides a state match when federal funding is available.

In the Lakes Region, the Laconia Municipal Airport, located in Gilford, is the only NPIAS airport and the only airport eligible for FAA funding. The Laconia Municipal Airport is categorized as a Regional General Aviation Airport by FAA, serving regional and national markets with high levels of activity. General aviation airports provide connections to the larger aviation system while providing access to their respective communities, focusing mainly on specialized services that scheduled airline service cannot provide. At the Laconia Airport these services include emergency medical services, aerial law enforcement and border control, agricultural functions, military training exercises, flight training, aviation and aerospace education, time-sensitive air cargo services, and executive business and personal travel. In 2013, more than 200 aircraft (including several business jets) were based at the Laconia Airport and there were an estimated 43,725 operations including itinerant (non-local) aircraft. A 2007 Economic Impact Study showed that the Laconia Municipal Airport has a \$55 million annual total economic impact to the region; yet it is operationally self-sufficient and not supported by taxpayer funds.

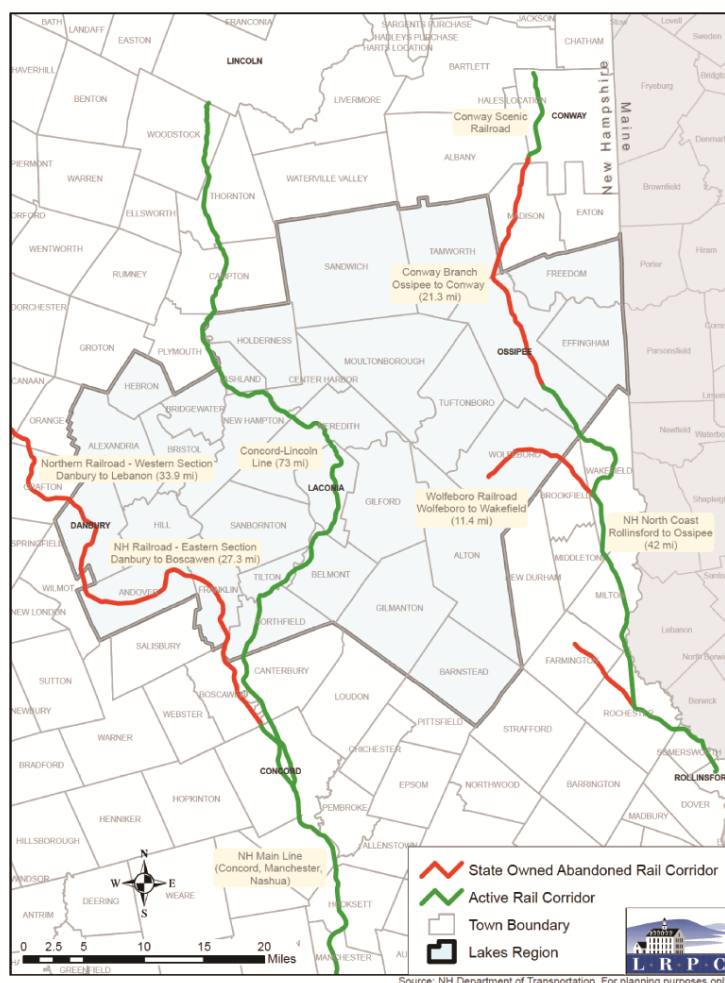
There are another 12 airports in the state that are open to the public. Although they do not qualify for FAA funding, they do qualify for NHDOT funding based on an 80 percent state and 20 percent local split. Due to state budget reductions, there has been no funding for this activity for the past two bienniums. In the Lakes Region, there are three airports in this category: Alton Bay Seaplane Base (Ice Runway), Moultonborough Airport and the Newfound Valley Airport in Bristol. More than 100 privately owned airports, heliports and seaplanes are available for private use in New Hampshire. They are not required to be registered with the State or with FAA. A website, maintained for FAA, is an excellent source of information: www.gcr1.com/5010web/ In the Lakes Region, the following “private” airports are registered with the FAA:

Alton	Meredith	Sanbornton
Longview Heliport	Bossey's Seaplane Base	Ward Field
Barnstead	Morrison Heliport	Gile Pond Airport
Locke Lake Airport	Flying Ridge Heliport	Tuftonboro
Franklin	Smiling Jack Heliport	Loons Nest Seaplane Base
D.W. Heliport	Ossipee	Wolfeboro
Franklin Regional Hospital Heliport	Chickville Airport	Winter Harbor Seaplane Base
	Meader's Heliport	Huggins Hospital Heliport
	Windsock Village Airport	Mountain View Field

Rail

The Lakes Region has limited rail service as illustrated in Map 5. At present there are two operational rail lines serving the Lakes Region: the Concord/Lincoln line extending 73 miles from Concord north to Lincoln; and New Hampshire Northcoast extending 42 miles from Rollinsford, NH north to Ossipee. These active rail lines are used by three operators. New England Central Railroad brings a limited amount of freight to the Laconia area. New Hampshire Northcoast, owned by Boston Sand & Gravel, operates five days a week hauling aggregate material from Ossipee to Rochester for transfer to another railroad for downtown Boston. Aggregate material from the Ossipee pit was used for much of the construction of the I-93 “big dig” tunnel through downtown Boston. The Plymouth and Lincoln Railroad (also known as the Hobo and Winnepesaukee Railroad) serves primarily as a tourist railroad during the summer season with limited service in the fall. It provides limited freight service.

Map 5: Active Rail and State Owned Abandoned Rail Corridors in the Lakes Region



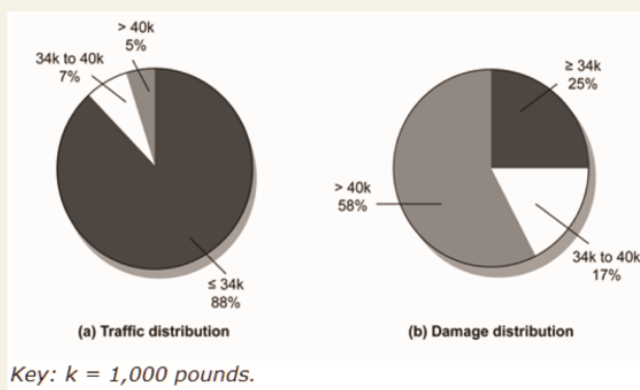
The state of NH has debated the future of rail both for passenger and freight service and, at present, there is no clear policy direction as how to proceed. For further information on rail, see the NH State Rail Plan, 2012.⁷ The future of rail in NH will in part be guided by the *NH Capitol Corridor Alternatives Analysis and Service Development Plan* which is being developed and may provide future links to the Lakes Region. The analysis in this plan, which is currently being developed, will include an assessment of freight and the impacts on the Lakes Region.

New Hampshire has recently been awarded a \$1.4 million TIGER (Transportation Investment Generating Economy Recovery) grant to upgrade a section of freight rail line from Rochester to Ossipee. This section of rail is owned by the New Hampshire Northcoast Corp., a subsidiary of Boston, Sand and Gravel. Companies currently ship gravel and propane on the rail line parallel to Route 16. The railway will also put in \$450,000 to improve the line, complemented by state funding

⁷ <http://www.nh.gov/dot/org/aerorailtransit/railandtransit/documents/FinalStateRailPlan.pdf>.

of \$150,000. The upgrade will enable the tracks to carry more cars and freight; potentially aiding economic development opportunities in Ossipee and reducing the amount of truck traffic on NH Route 16, leading to less congestion and road wear.

Traffic distribution by tandem axle weight groups and corresponding damage distribution



Source: Maine and Vermont Interstate Highway Heavy Truck Pilot Program

For pavements, it is more important to control axle-load limits than gross vehicle weight because pavement performance is very sensitive to axle-loads. The figure to left shows damage distribution by axle-weight groups. Both the effects of load intensity and frequency are included. As shown in the graph, 88 percent of tandem axes are at or below the current tandem-axle load limit of 34,000 pounds while 5 percent are heavier than 40,000 pounds. However, the 5 percent of heavy tandems cause 58 percent of the damage.

4. NOTEWORTHY TRENDS

Automobile Dependence

*“The burden of owning and operating vehicles is increasing for the lowest-income families. Transportation was the third-highest household expense in the 1970s; today it is the second highest. For affluent households, this change reflects personal preferences. For families with lower incomes, however, particularly those living in automobile-dominated metropolitan areas, costs for transportation compete in magnitude with those for housing. In many low-income households in low-density suburbs, 25 percent of household income is spent on transportation.”*⁸

Automobile dependency refers to a condition where it is challenging to access services and activities without using an automobile. Automobile dependency can be the result of land use practices that focus attention on the automobile as a predominant or sole focus for access and as a result of location. Consider a shopping mall on a major highway that makes access by automobile the only practical means. Or, the example of a regional school built on the outskirts of town. The school may be centrally located for those communities that share the resource, but the location may not be accessible by foot or bike. This could be due to lack of sidewalks or road shoulders or perhaps the street carries a relatively high volume of traffic and high speeds make getting there by foot or bike uninviting or unsafe. Automobile dependency is also a reflection of our society. There are many examples of schools within walking distance (generally considered one mile or less) that struggle with traffic management at arrival and departure times because of a preference to be transported by

⁸ *Critical Issues in Transportation 2002*, Transportation Research Board, 2002

automobile. The number of children that bike or walk to school fell 75 percent between 1966 and 2009 while during the same period the percentage of obese children rose 276 percent.⁹

While as a society we are highly dependent on the independence automobiles provide, there is a growing body of compelling information about the personal health and community social, environmental and economic benefits associated with systems that provide multi-modal opportunities. This allows people to use the best mode for each trip: walking and cycling to reach local destinations, public transport for travel on major travel corridors, and automobile when it is truly optimal. There are many programs, advocacy groups, and public policies that support and promote biking and walking such as: Healthy Eating Active Living NH (HEAL), Safe Routes to School, Bike-Walk Alliance of NH, Newfound Pathways, WOW Trail, Complete Streets, Smart Growth Principles, and Transportation Demand Management. Each provides an opportunity to integrate multi-faceted transportation options that may diminish automobile dependence and at the same time improve air quality and better individual and community quality of life. These policies and programs may be having an impact. A recent study by the Alliance for Biking and Walking indicates that from 2000 to 2009, the number of commuters who bicycle to work increased by 57 percent. At the same time more than one quarter of all trips (27 percent) are shorter than one mile and 62 percent of these trips are made by car.¹⁰

The Lakes Region contains a mix of opportunities for enhancements to a transportation system that is comprised of a mixed level of automobile dependency from one municipality to the next. The National Conference of State Legislatures (NCSL) collected and analyzed information about state policies and state statutes that promote walking and biking for physical activity. The result of the data collection was a total of 18 policies, that when analyzed, were refined to a list of five policies having the greatest potential to increase walking and biking:

Experiencing Automobile Dependency

If you are a typical motorist, try this experiment: Give up driving for two typical weeks. This period should require normal travel for work, shopping, socializing and family obligations. You'll discover that non-drivers face many obstacles, including limited travel options, high financial and time costs, and poor service. As a result you may travel less, foregoing some trips and choosing more convenient destinations for others. You may experience embarrassment when asking for a ride or when you use stigmatized modes such as transit, bicycling and walking.

The problems you experience as a non-driver depend on where you live. If your community is highly automobile dependent you will experience significant difficulties. You may have trouble getting to a store or even crossing busy streets. If your community is multi-modal, with good transit service, bicycle and pedestrian facilities, you may experience few problems.

After two weeks you may be glad to drive again. You may also have experienced some benefits during the period of abstinence. You may discover unexpected joys from walking and bicycling, reduced stress, increased exercise, and friendship with fellow car pool or transit passengers. You may have appreciated being more home-centered and community oriented. You may take pride in reducing pollution, and saving energy.

Source: <http://www.vtapi.org/tdm/tdm100.htm>

⁹ Alliance for Biking and Walking, *Bicycling and Walking in the United States: 2012 Benchmark Report*, Facts Sheet

¹⁰ www.PeoplePoweredMovement.org/benchmarking

Incorporating sidewalks and bike lanes into community design

Providing funding for biking and walking in highway projects

Establishing safe routes to schools

Fostering traffic calming measures

Creating incentives for mixed-use development

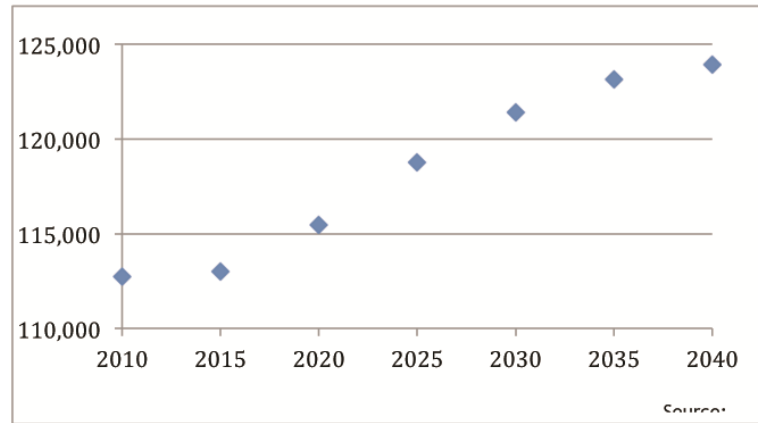
In a recent Lakes Region workshop (2011) hosted by NHDOT to assess customer satisfaction, municipal officials rated the ‘accessibility to alternative modes of transportation’; among several other performance measures. The results indicate 66 percent of the participants are dissatisfied or very dissatisfied with the level of alternative modes accessibility, while 16 percent were satisfied or very satisfied. The perceived need for improvement is supported by the federal transportation legislation – Moving Ahead for Progress in the 21st Century (MAP-21) and the Partnership for Sustainable Communities, a collaborative between the departments of Housing and Urban Development, US Department of Transportation, and the Environmental Protection Agency. MAP-21 contains eight Planning Emphasis Areas, three of which may be linked to the promotion of a multi-modal transportation system, these include focus on: increase access and mobility, promoting efficient management and operation, and protecting the environment, energy conservation, increasing quality of life, consistency with state and local plans. The Partnership for Sustainable Communities maintains the more clearly related mobility goals to: “provide more transportation choices” and “develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.”



Figure 6: Lakes Region Population Projections 2010-2040

Demographics

Population projections prepared by the NH Office of Energy and Planning indicate an upward growth trend from 2010 to 2040. The projected percent population increase will be significantly less than that experienced in recent decades. Figure 6 displays the population projections for the Lakes Region which reflect a 0.3 percent annual increase.



Within the total population projections are interesting characteristics that will play a significant role in future transportation planning efforts. Figure 7 indicates population projections by age group for the four counties within the Lakes Region. While the over-all trend is for a slow population increase; the rate of growth for those 65 years of age and older is the leading age group that will experience growth. In fact, the projections suggest this is the only age group that will experience growth in the next 27 years.

Research indicates that the travel patterns of those 65-75 years of age often do not differ from other adults; though reduced mobility due to driving cessation is widespread nationally and will continue to increase dramatically as baby boomers (born 1946-1964) age. While mobility challenges will not affect all older adults (65 years of age or older) equally, the Lakes Region is an area with few transportation alternatives with an aging population. Four broad segments of the elderly population may develop:

- 1) Those that depend primarily on non-auto modes of transportation like walking and transit;
- 2) Those that continue driving, muddling through by self-regulation;
- 3) Those that forge informal transportation supports, securing rides from family and friends; and
- 4) Those that are left with minimal to no formal alternatives and few community connections.¹¹
- 5)

Figure 7: Population Projections 2010-2040 by County and Age Group

Belknap County

Age Group	Percent of Population 2010	Percent of Population 2040	Percent Change 2010-2040
0-19	23%	19%	-7%
20-44	28%	23%	-5%
45-64	33%	26%	-12%
65+	17%	32%	113%
Total	100%	100%	12%

Carroll County

Age Group	Percent of Population 2010	Percent of Population 2040	Percent Change 2010-2040
0-19	20%	15%	-17%
20-44	24%	18%	-13%
45-64	35%	25%	-19%
65+	21%	42%	137%
Total	100%	100%	15%

Grafton County

Age Group	Percent of Population 2010	Percent of Population 2040	Percent Change 2010-2040
0-19	23%	19%	-10%
20-44	32%	26%	-12%
45-64	30%	22%	-21%
65+	15%	33%	126%
Total	100%	100%	7%

Merimack County

Age Group	Percent of Population 2010	Percent of Population 2040	Percent Change 2010-2040
0-19	25%	19%	-16%
20-44	31%	26%	-7%
45-64	31%	25%	-13%
65+	14%	30%	143%
Total	100%	100%	9%

Source: NHOEP

¹¹ *Transportation Planning Options for the Elderly*, Holly Chase, MIT City Planning Masters Candidate, May 2011.

Automobile Costs

Over 60 percent of New Hampshire's major rural roads are in poor to mediocre condition. Nearly one third of New Hampshire's rural bridges are structurally deficient or functionally obsolete. Driving on poor roads costs New Hampshire's motorists an extra \$259 per driver (\$267 billion annually).¹² Each year Bankrate estimates the annual cost of car ownership for each state. Figure 8 provides a means of comparing NH with other New England states and the three states with the highest costs. In 2012, New Hampshire ranked 40 in the US for the highest cost of automobile ownership. The most significant cost difference was the taxes/fees category which in comparison to Georgia was 61.5 percent less or a savings of \$1,200 annually. New Hampshire will consider a bill in 2014 to tie the gas tax to inflation, increasing it by about four cents next year should it pass.¹³

It is interesting to note that while our national economy is highly petroleum dependent, the sale of gasoline and diesel does little to enhance local economies. Unlike other commodities and services, petroleum and other energy sources are generally produced elsewhere. As a result, when fuel is purchased at the local gas station, the majority of the purchase price leaves the local economy. A portion of the remaining cost is represented by the fuel tax or "road toll" as it is sometimes referred.

New Hampshire's motor vehicle registration fees were raised in 2010 and 2011 as a short-term solution to the budget shortfall of \$124 million in the state's Highway Fund. The \$30 surcharge increased average registration fees, depending on vehicle class and weight, from \$30 to \$42 per vehicle per year and up to \$57 for SUVs and trucks, and raised nearly \$86 million over the biennium. Although all surcharge revenues went into the state's Highway Fund, cities and towns benefitted by an overall municipal distribution of \$5 million by the 12 percent share of these total funds.

Figure 8: Annual Cost of Automobile Ownership

Rank	State	Repairs	Taxes/fees	Gasoline	Insurance	Total
1	Georgia	\$385	\$1,952	\$1,129	\$767	\$4,233
2	California	\$390	\$1,809	\$980	\$786	\$3,966
3	Wyoming	\$324	\$1,341	\$1,643	\$630	\$3,938
4	Rhode Island	\$371	\$1,717	\$826	\$999	\$3,913
8	Massachusetts	\$358	\$1,475	\$856	\$936	\$3,625
13	Maine	\$328	\$1,425	\$1,144	\$605	\$3,502
14	Connecticut	\$385	\$1,177	\$960	\$963	\$3,485
35	Vermont	\$270	\$814	\$1,215	\$656	\$2,954
40	New Hampshire	\$328	\$751	\$1,008	\$739	\$2,826

Source: Bankrate.com

¹² Building America's Future, *New Hampshire Quick Facts*, www.BAFuture.org/NH

¹³ <http://www.planetizen.com/node/66397>, December 9, 2013

Commute Times

The mean (average) travel time for commuters traveling from home to work has been increasing in the state of New Hampshire. A comparison of data from the American Community Survey suggests that the amount of time an average person living in New Hampshire spends commuting to work increased 5.6 percent between the years 2000 and 2012. Since 2006, the mean commuting time has increased by over one percent every year. A result of increased commute times is increased vehicle expenses, congestion, greenhouse gas emissions, and deterioration of infrastructure.

Vehicle Miles Traveled

Vehicle travel on New Hampshire's major highways increased 32 percent between 1990 and 2008, rising from 9.8 billion vehicle miles traveled (VMT) in 1990 to 13 billion vehicle miles traveled in 2008. The amount of VMT has a strong relationship to the state of the economy. As illustrated in Figure 9, from 2001 to 2011 the peak year VMT total was in 2006 the year that is generally associated with the height of the economy in NH followed by an economic down-turn and on-going period of recovery. Figure 9 also indicates that annual fuel consumption per registered vehicle has not returned to pre-2006 consumption levels. This could be associated with fuel economy improvements, conservation due to higher gas prices, and a recovering economy. In part, this trend illustrates decreasing gas tax revenues - a limiting factor for highway maintenance funds.

Figure 9: Vehicle Miles Traveled, Autos per Driver, Fuel Usage 2012

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
NH Vehicle Miles Traveled (billions)	12.315	12.578	12.953	13.543	13.429	13.614	13.459	13.040	12.975	13.065	12.720
Automobiles per Licensed Drivers	0.73	0.71	0.68	0.68	0.65	0.57	0.63	0.63	0.62	0.6	0.56
Fuel Use per Registered Vehicle (gallons)	707.3	707.42	711.86	703.15	691.07	763.67	696.21	665.62	661.02	667.21	616.81

Source: Office of Highway Policy Information, FHWA, 2013

Coordinated Trip Reduction Programs

Until recently, carpooling and ride sharing have been organized by the NHDOT through the Rideshare program. A recently formed group known as Commute Green New Hampshire (CGNH) has worked to organize statewide events to promote opportunities for NH residents to reduce fuel consumption by carpooling, biking, and walking to work. CGNH is a partnership of businesses, schools, transit agencies, regional planning commissions and other volunteers dedicated to encouraging people to choose transportation options other than driving alone. CGNH provides easy ways for people to try green commuting for the first time and to celebrate their efforts and those of people who already green commute.¹⁴ One such campaign is "Don't Drive One-in-Five" which encourages NH residents to pledge not to drive one in five work days during specified time periods. For such programs to have a meaningful impact on emissions and reductions in VMT, requires complementary employer policies and effective tools for drivers to match commutes in order to share rides. As a result of funding cuts, NHDOT has recently stopped managing the statewide Rideshare program. Currently, the regional planning commissions



¹⁴ <http://www.commutegreennh.org>

and CGNH are working cooperatively with NHDOT to explore the possibility of managing and expanding the Rideshare program. Envisioned is outreach to regional business leaders to explore their role and possible contributions to an effective program. Stay tuned for more information!

5. TRANSPORTATION AND THE ENVIRONMENT

It is important to understand the link between transportation and the environment. The effects of transportation infrastructure can impact stormwater drainage, air quality, and the introduction of chemicals and other materials that can be harmful to the environment. Also of importance is an understanding of the effects that the environment can have on transportation.

Salt Application

Winter road maintenance in the Lakes Region typically includes the application of road salt (sodium chloride). Applying road salt to pavement reduces the adherence of snow and ice and promotes public safety. Road salt is a popular choice for many Lakes Region communities because it is inexpensive and easy to handle, store and apply. However, road salt application can have adverse effects on the environment and on infrastructure. Chloride is toxic to aquatic life. The sodium in road salt can alter soil chemistry and release calcium, magnesium and potassium into groundwater and surface water.¹⁵ In addition to these, many road salts include additives such as ferro cyanide which is listed as a toxic pollutant under section 307(a) of the Clean Water Act.

Chloride ions increase the conductivity of water and accelerate corrosion. Chloride can penetrate and deteriorate concrete on bridge decking and parking garage structures, and damage reinforcing rods, compromising structural integrity. It damages vehicle parts such as brake linings, frames, bumpers, and other areas of body corrosion. It impacts railroad crossing warning equipment and power line utilities by conducting electrical current leaks across the insulator that may lead to loss of current, shorting of transmission lines, and wooden pole fires.¹⁶ The cost of corrosion damage and corrosion protection practices for highways and the automobile industry have been reported to cost a staggering \$16-19 billion a year.¹⁷

At this time, the only way to prevent chloride from reaching surface and ground water without compromising safety is to reduce the amount applied to our roadways and parking lots. The Bureau of Highway Maintenance indicates a reasonable reduction would be two percent yearly with a total maximum reduction of 20 percent over the long term.¹⁸ NHDOT recommends road salt application rates specific to parking lots and roads per lane mile. Reference guides have been published by NHDOT in cooperation with the Technology Transfer Center at UNH to help instruct and educate applicators on best management practices for winter road maintenance. The New Hampshire Green SnowPro Certification program offered by UNH provides courses focused on efficient and environmentally friendly winter maintenance practices including salt reduction.

¹⁵ Road Salt and Water Quality, NHDES, 2011

¹⁶ des.nh.gov/organization/divisions/water/wmb/was/, accessed November 21, 2013

¹⁷ City of Madison Wisconsin, Report to Salt Use Subcommittee, Commission on the Environment, 2006

¹⁸ Balanced Scorecard, NHDOT, 2011

Storm Water, Catch Basins, Treatment

Managing stormwater is an important consideration for any type of development and especially for transportation systems. Impervious surfaces such as roads and parking lots can prevent rain and snowmelt from soaking into the ground as they do in a natural environment. Without adequate drainage mechanisms in place, the damage to infrastructure can be costly and severe. The condition of drainage and stormwater protection should be monitored regularly and closely and upgraded whenever the opportunity arises. Improper stormwater management can also adversely affect public health and the natural environment. As stormwater drains from impervious surfaces it can become polluted by dirt, oil, fertilizers and other contaminants. If left untreated, these pollutants enter rivers, lakes and coastal waters impairing water quality.

In 2008, municipalities in New Hampshire were given legal authority to form stormwater utilities under RSA 149-I. Under the statute, stormwater utilities must address flood and erosion control, water quality management, ecological preservation, and annual pollutant loads contained in stormwater discharges. Utilizing catch basins can be an effective method of dissipating the energy of incoming runoff and provides an opportunity for coarse sediments to settle. Vegetated buffers are areas of natural or established vegetation allowed to grow with minimal to no maintenance. Buffers reduce the velocity of runoff as it flows through the vegetation. Buffers also provide a permeable area where runoff can infiltrate the soil. They promote groundwater recharge, filter out sediments, and create shade to maintain water temperatures. They can also provide wildlife habitat and connect habitat corridors.¹⁹

CO₂ Emissions

It is estimated nationally that transportation is responsible for 24 percent of these emissions.²⁰ The Environmental Protection Agency has identified greenhouse gases as responsible in part for changing climatic conditions. Strategies to slow or stabilize climate change might include reducing the number of vehicle miles travelled (VMT) which totaled over 13 billion miles statewide in 2010 and has increased by nearly nine percent per-capita since 1990.²¹ This reduction can be accomplished through the promotion of existing programs such as NH Rideshare, which matches travelers for regular commutes as well as one time trips, and utilization of public transportation systems such as Winnepesaukee Transit System and Carroll County Transit, both of which offer regular flexible service in the Lakes Region.

NHDES has identified idling automobiles as a significant contributor to air pollution in New Hampshire. According to an estimate of the Federal Highway Administration motor fuel usage in the state totaled over 812 million gallons in 2010. Additionally, the number of registered vehicles in New Hampshire increased 20.6 percent between the years 2006 and 2011.²² With such a drastic influx of

¹⁹ New Hampshire Stormwater Manual, NHDES, 2008

²⁰ National Greenhouse Gas Emissions Data, US EPA, April 2013

²¹ United States Department of Highway Statistics, 2011

²² Office of Highway Policy Information, FHWA, 2013

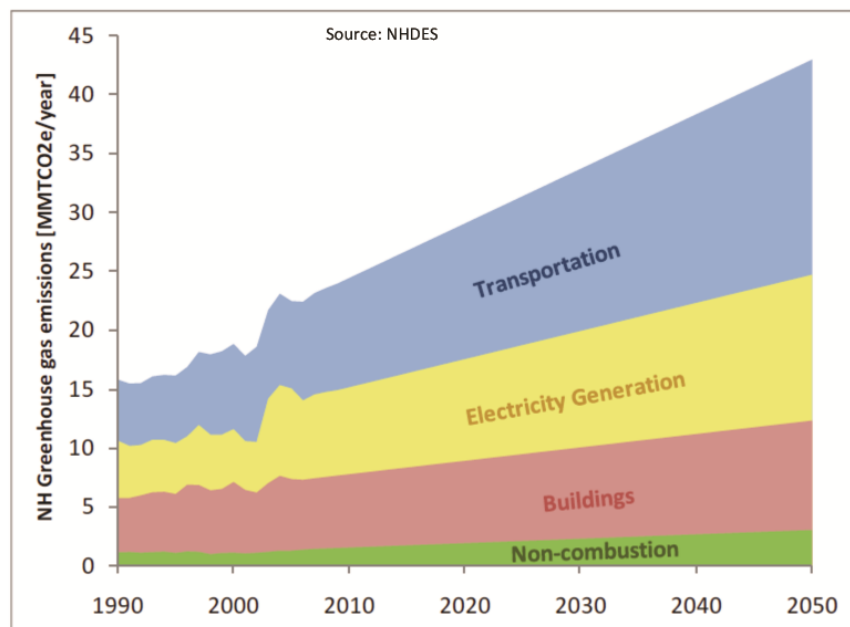
vehicles, maintaining reasonable levels of service on Lakes Region roadways becomes increasingly challenging. Congestion and capacity issues are a concern along certain transportation corridors in the Lakes Region. Travel demand management practices such as access controls and keeping capacity in harmony with development can help to reduce congestion and minimize CO₂ emissions. It has been a long time goal of the NH Department of Environmental Services (NHDES) to reduce pollution emissions to always meet air quality standards. In the summer of 2013, there were three days in New Hampshire when air quality exceeded ozone standards. Ozone is the principal ingredient of smog, is typically a warm weather air pollutant that forms when nitrogen and volatile organic compounds mix in the presence of strong sunlight and warm weather. It can have pronounced effects on healthy individuals and can aggravate respiratory conditions such as allergies, asthma, and emphysema.²³

The US Environmental Protection Agency (EPA) estimates nearly 7.5 billion metric tons of greenhouse gases were emitted from fossil fuel combustion in 2011. This represents a downward trend since 2007 when 8.2 billion metric tons of greenhouse gases were emitted. The NH Department of Environmental Services (NHDES) indicates the transportation sector is the most significant single source of greenhouse gas emissions in New Hampshire, and its relative contribution is projected to increase further based on current trends (see Figure 10).

NH participates in The Greenhouse Gas Emissions Reduction Fund (GHGERF) as a partner with ten Northeast and Mid-Atlantic States. The program is aimed at reducing carbon dioxide emissions in the electric power sector. While a comparable program does not currently exist for the transportation sector, the NH Climate Action Plan (2009) contains several transportation recommendations including:

- Encourage appropriate land use patterns that enable fewer vehicle-miles traveled.
- Reduce vehicle-miles traveled through an integrated multimodal transportation system.

Figure 10: Greenhouse Gas by Sector 1990-2050



²³ NH Department of Environmental Services, *Environmental News*, November-December, 2013

- Reduce vehicle miles traveled through state actions such as those recommended by the NH Climate Action Plan Taskforce, including: adopting California Low Emission Vehicle (CALEV) standards; creating a Point-of-Sale Financial Incentive for Higher-Efficiency Vehicles; installing retrofits to address Black Carbon Emissions; and implementing Commuter Trip Reduction Initiative.

Climate Change – Infrastructure Vulnerability

New Hampshire has experienced a number of changes in recent years as a result of changing climate patterns. In October 2012 Hurricane Sandy drove a catastrophic storm surge into the northeastern states resulting in 147 direct deaths and causing nearly \$50 billion in damage.²⁴ Besides more frequent and severe storm events, other locally observed changes include precipitation patterns and intensity, increased average temperature, changing seasonality, rising sea-level, summer drought, and micro bursts.²⁵ These changes create challenges for maintaining safe and efficient transportation systems and infrastructure.

Efforts to mitigate damage to infrastructure caused by a changing climate require a level of adaptation and might include using alternative construction techniques and materials. Adaptation might mean augmenting and reinforcing bridges and drainage structures before a damaging weather event strikes. It has been estimated that the costs of reactionary adaptation outweigh those of anticipatory adaptation by a factor of four to one.²⁶

Wildlife Fragmentation

Fragmentation of habitat by highways occurs when animals avoid the area of the road, are unable to cross the road, or are killed on the road. Transportation infrastructure can result in habitat loss which limits the natural movement of wildlife to support their life-cycle requirements. Fragmentation can cause animals in a given area to experience physical isolation and eventual extirpation. The fragmentation of wildlife habitat may also be a safety concern as vehicle collisions with wildlife become more likely.

The following safety recommendations to minimize wildlife–vehicle interactions were compiled from a variety of sources:

²⁴ Blake, Eric S., et al., Tropical Cyclone Report: Hurricane Sandy, National Hurricane Center, February 2013

²⁵ The New Hampshire Climate Action Plan, NHDES, March 2009

²⁶ Tools for Mainstreaming Disaster Risk Reduction: Benson, Twigg, Rossetto, 2007

- Right-of-way clearing can reduce animals' desire to graze roadside and increase motorist visibility as they approach the area of concern. Special care should be taken when removing vegetation in order to minimize impact on the environment.
- Conserve highest ranking habitat lands (as ranked by New Hampshire Fish and Game) surrounding the area of concern. Habitat loss, reduction, and fragmentation changes could increase the likelihood that wildlife must cross road to find new habitat and foraging grounds.
- Improvements to infrastructure or structures should not restrict, degrade, or negatively impact habitat or impede wildlife movement.
- Maintain an inventory of vehicle collisions with wildlife as well as reported wildlife sightings to aid in the identification of high priority wildlife corridors.



6. OTHER ASPECTS of the TRANSPORTATION SYSTEM — HISTORICAL AND CULTURAL

Covered Bridges

At one time there were over 10,000 covered bridges in the United States, and today 54 of the remaining 750 are located in New Hampshire. Located throughout the state, each bridge is unique to its town and design. Because of their beauty and the history behind them, covered bridges became the first type of historic structures specifically protected by state law in New Hampshire.²⁷ A "historic" bridge is any bridge that is listed or determined eligible for listing on the National Register of Historic Places. Created by the National Historic Preservation Act of 1966 and administered by the National Park Service under the Secretary of the Interior, the National Register is this country's basic inventory of historical resources.

Covered bridges in the Lakes Region on the National Register of Historic Place include: Cilleyville (#16) and Keniston (#15) Bridges in Andover, Sulphite Railroad Bridge (#62) in Franklin, Whittier Bridge (#46) in Ossipee, Durgin Bridge in Sandwich (#45), and Tilton Island Park pedestrian bridge in Tilton (uncovered). The Whittier Bridge is currently the subject of a restoration project funded by a \$100,000 grant from the New Hampshire Land and Community Heritage Investment Program, and by appropriations from NHDOT and the town of Ossipee.



²⁷ www.visitnh.gov/what-to-do/covered-bridges.aspx, accessed November 12, 2013

Transportation Museums

Historic preservation not only protects the irreplaceable physical resources in our built environment, but also protects the vitality, quality of life, and sense of place in our communities. The creation and perpetuation of transportation museums is a great way to connect to the past. The Presby Transportation Museum in Whitefield, NH showcases a collection of antique tractors and other agricultural equipment that are a part of the history of the area. Within the Lakes Region, the American Police Motorcycle Museum in Meredith showcases historic police motorcycles, parts and literature.

Rail Stations/Architecture

Railroads played an important role in the history of industry in the Lakes Region. Evidence of this is still prevalent in many communities where repurposed or abandoned rail stations stand as a reminder of this importation time in the region's growth and development. The Ashland Railroad Station, Laconia Passenger Station, and Alton Bay Railroad Station, among many others are preserved as part of the National Register of Historic Places and serve as monuments to the history and culture for us as well as future generations. The train depot on Main Street in Center Ossipee is currently a restaurant.

Scenic Byways – Recreation

There are many roadways in the Lakes Region that present travelers with scenic vistas. In fact, that is what draws many visitors to the area. Many communities have designated 'scenic roads', resulting in an extra layer of protection for trees and stone walls along these roads.

The Lakes Region Tour Scenic Byway is a 97-mile State Scenic Byway, designated under RSA 238:19 "... to provide the opportunity for residents and visitors to travel a system of byways which feature the scenic and cultural qualities of the state within the existing highway system, promote retention of rural and urban scenic byways, support the cultural, recreational and historic attributes along these byways and expose the unique elements of the state's beauty, culture and history."

The Lakes Region Tour circumnavigates Lake Winnepesaukee and includes portions of US3, NH11, NH25, NH25B, NH106, NH109, and NH175, as well as Lakeside Avenue, Scenic Drive, Watson Road, and Roller Coaster Road in Laconia. The byway travels through the communities of Alton, Ashland, Center Harbor, Gilford, Holderness, Laconia, Meredith, Moultonborough, Ossipee, Sandwich, Tamworth, Tuftonboro, and Wolfeboro. The Lakes Region Tour joins the River Heritage Tour Scenic Byway in Plymouth and provides access to both the Kancamagus and White Mountain National Scenic Byways via Conway.

Through this designation, these roadways are eligible to seek federal funds for interpretive centers, scenic overlooks, safety improvements, and marketing materials. Because the region's economy relies so heavily upon tourism, it is essential that travel throughout the region be an enjoyable experience; infrastructure and capacity must be maintained.

Commercial Boat Operations

Lake Winnepesaukee has a rich history of commercial boat operations. The earliest commercial boats served industrial purposes delivering goods to be exported on the railroads. Man- and horse-powered paddle wheel boats were eventually replaced with steam technology. The first steamboat on Winnepesaukee, named the Belknap, was 96 feet long and was launched at Lakeport in 1833. Others followed to complement the growing railroad business around Lake Winnepesaukee.

Today, most commercial boat operations are centered on tourism. Commercial boat operations are a popular way to see and experience what the Lakes Region offers. Cruise boats such as the Mount Washington, M/V Doris E., and others provide a unique glimpse of the local culture. The US Mail Boat, Sophie C. is the oldest floating post office in the United States and provides seasonal mail service on Lake Winnepesaukee, a tradition dating back to 1892.²⁸



²⁸ www.cruisenh.com/sophie.php, Accessed November 22, 2013

7. LOCAL TRANSPORTATION PLANNING AND LAND USE

The components of transportation — roads, sidewalks, intersections, paths, rails, stations, stops, travel time — affect your commute, your recreational opportunities, your shopping trips, your child’s trip to school, the character and size of your town, the beauty of the countryside, and you and your family’s safety. A key to success in doing more with the existing road network is careful land use planning that optimizes traffic efficiency and minimizes potential conflicts. Access management involves the planning and coordination of the location, number, spacing and design of access points from a roadway to adjacent land. On state highways, which also serve as Main Street for many Lakes communities, access is permitted by NHDOT through the use of driveway permits. Where communities have specific access management plans in place, coordination with NHDOT is required to consider and achieve local goals in the permitting process (see Figure 11).

Figure 11: Coordinated Access Management on State Highways



Access management features concentrated nodes of development along transportation corridors where open space is preserved between nodes and integrated pedestrian walkways and bicycle pathways that provide a means of reaching work, shopping and leisure destinations within nodes. Successful access management can facilitate reduced vehicle trips, traffic delays and congestion and improve air quality, roadway capacity, and compact development patterns.

The implementation of the regional vision:

“To provide an integrated, all-mode transportation system in the Lakes Region which offers efficient, effective and safe movement of people and goods, and provides mode choice wherever possible while enhancing and preserving the character and livability of the neighborhoods, quality of water in our lakes and streams as well as the natural, socio/economic, and historical environments where transportation facilities are located.” – cannot be achieved unless supported locally through complementary land use practices and absent “local champions to move concepts to reality. The region is fortunate to have many such examples contributing to the regional vision. A few of the examples include:

Belmont and Bristol Downtown Improvements — Both the towns of Belmont and Bristol have made recent roadway, parking, pocket park, and pedestrian accessibility improvements in their downtowns. The foundation for improvements in Bristol Square was articulated in the community master plan, the focus of a planning charrette, and provides pedestrian connectivity through the Square to the adjacent river and nearby lake. Both improvements include water and sewer upgrades during the roadway reconstruction efforts.



The WOW Trail — The Winnepesaukee-Opechee-Winnisquam (WOW) Trail is a multi-use, non-motorized recreational pathway in the City of Laconia. The proposed pathway is just over nine miles long, stretching the length of the City to the Meredith and Belmont town lines. The WOW Trail has recently hired a Director and has produced many successful local fund raisers to advance the project including WOW Fest. The WOW trail represents a portion of a larger regional vision for a connector trail from Andover to Meredith with a water connection to the Cotton Valley Trail in Wolfeboro. Several sections of the trail are currently built and several are scheduled for construction. The WOW trail is unique in that portions of the trail share an active rail bed. The result is an added significant cost of fencing required by the state to segregate the shared uses.

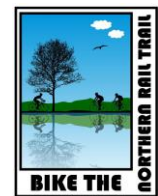


Northfield and Moultonborough Safe Routes to School — Both Moultonborough and Northfield worked with the LRPC to develop a Travel Plans identifying ways to improve the walking and bicycling environment for kindergarten through eighth grade students to travel safely from home to school. Each plan contains recommendations for sidewalk improvements in the downtown centers.



Newfound Lake Pathways — has a stated mission to create a 17-mile pathway around Newfound Lake to encourage walking, running, and cycling as a safe, healthy, and environmentally sound means of recreation and travel. The group received status as a non-profit corporation in November 2012.

Northern Rail Trail — has worked on promoting economic development. The inn to inn bike tours offer an enjoyable experience for the bicycle enthusiast, a casual biker, a locavore, nature lover, and history buff. New Hampshire is a cyclist's paradise, and the bike tours combine biking on the Northern Rail Trail with the luxury and convenience of being able to relax nightly in gracious inns, followed in the mornings by a gourmet breakfast before you hit the rail trail again. Seven historic inns throughout the Lakes and Dartmouth-Lake Sunapee regions of New Hampshire are connected by the Northern Rail Trail and are offering inn-to-inn packages.



Meredith Planning Board — work with developer towards the installation of a HAWK beacon (High-Intensity Activated crossWalK) on NH 25 in Meredith. A HAWK beacon is a traffic signal used to stop road traffic and allow pedestrians to cross safely. It is officially known as a “pedestrian hybrid beacon.” The purpose of a HAWK beacon is to allow protected pedestrian crossings, stopping road traffic only as needed. Research has shown motorists' compliance with the HAWK

beacon at up to 97 percent, higher than with traditional un-signalized crossings. This may be the first example of a HAWK beacon installed in New Hampshire.

Scenic Byway Corridor Management Plan — Alton, Gilford, Laconia, Meredith, and Wolfeboro have dedicated professional planning assistance to work with the LRPC towards the development of a scenic byway management plan that will explore vehicle, pedestrian, and bicycle safety around Lake Winnepesaukee and local characteristics of the byway that make it a special place to visit.

Center Harbor and Sanbornton Road Standards — The town of Center Harbor recently identified an update to the town road standards as a recommendation in their 2012 Master Plan. The project was completed later that year as an update to the town Subdivision Regulations by LRPC, the Road Agent, and Planning Board. The revised standards provide additional road construction oversight for all roads created in town helping to ensure roads are built to a standard the town can maintain should maintenance become a town responsibility. Additionally, both communities have variable pavement width requirements based on estimated volume of traffic served. For Sanbornton the revised road standards are being developed in consideration of housing development costs. Housing prices are dictated in part by land development costs, of which road construction can represent a significant portion. Graduated road construction standards based on volumes of traffic served and conservation subdivisions may contribute to lower housing prices.

Workforce Housing — Several communities have recently worked to improve the stock of workforce housing including Laconia, Meredith, and Wolfeboro. Like the Harriman Hill project in Wolfeboro, recent Laconia and Meredith projects boast an ‘in village’ location that serves the purposes of access to public utilities and close proximity to services and employment.

Context Sensitive Solutions — Meredith and Wolfeboro are reviewing US Route 3/NH Route 25 and NH Route 28 potential highway improvements within the context of how the highway fits in a rural village center. The Meredith project is one of several pilot projects sponsored by the NHDOT; the Wolfeboro project is municipally funded. A stated goal for both seasonally congested highways and municipal main streets is the slow, steady, safe movement of traffic while providing access to village destinations and opportunities for people to feel comfortable walking or cycling. Both state highways are major collectors providing vital regional linkages which currently exceed capacity especially in the peak summer season.

Road Safety Audits (RSA) — Ashland, Center Harbor, Gilford, Meredith, and Ossipee, and Tilton have participated in formal safety assessments at challenging intersections and road segments. Applications for RSAs are supported by data collected by the regional planning commission including turning movement counts, crash diagrams supported by local accident records, and aerial photos. The RSAs are conducted by a multi-disciplinary team and result in recommendations for safety improvements supported by cost/benefit analysis.

Road Surface Management Systems (RSMS) — Barnstead, Moultonborough, Ossipee have participated in recent RSMS inventories which aid the community in prioritizing road improvements and costs. It is estimated that each dollar spent on road maintenance eliminates spending \$6-\$14 on roadway reconstruction. Minor pavement maintenance before the road’s 15th year will generally restore pavement to condition for about five years. However, if treatment is delayed for another three years it will cost four to five times more

than a minor treatment.²⁹ A RSMS inventory conducted by LRPC provides communities simple pavement condition assessments leading to a prioritized list of recommended maintenance. The RSMS process can be integrated with the local Capital Improvements Program and provides a quantitative assessment of needed improvements and costs. This tool is based on maintenance for good roads before they deteriorate beyond maintenance and into much more costly reconstruction. Transportation infrastructure costs for municipalities are a significant investment and in many communities these cost are second only to the cost of providing schools. Deferred maintenance even for short periods of time can present significant future funding challenges.

Elected officials and agency staff have a responsibility to make transparent decisions regarding bicycles and pedestrians. Too often, this is not the case. Funding choices are based on criteria set without public input or scrutiny; streets are repaved without a thought of adding bicycle lanes; and school properties are bought far away from walkable and bikeable neighborhoods.³⁰ Worthwhile considerations are the creation of a local pathways committee or Bicycle and Pedestrian Advisory Committee (BPAC) and the development of a community pathways master plan. BPACs can provide a strong mechanism to provide the needed accountability and many other benefits for residents. A community pathways master plan describes, illustrates, and promotes walking connectivity between business and municipal services, civic organizations, and recreational opportunities. A community pathways master plan is similar in function to a Travel Plan developed through the Safe Routes to School program which evaluates travel needs and safe walking and biking routes between residential neighborhoods and school. Such plans help to identify, enhance, and prioritize needed infrastructure and safety improvements to link essential community elements.

In addition, land use practices and policies can influence the implementation of the regional vision to promote an integrated system for all modes of transportation. Following are considerations for local land use regulations and ordinances:

Zoning:

- Provide mixed use and higher intensity residential zones when appropriate.
- Require streets, sidewalks, and walkways to connect to adjacent properties, including properties not yet developed.
- Require sidewalks on both sides of the street in new developments.
- Require bicycle parking facilities within 50 feet of primary and well-used entrances for all office, multifamily, and freestanding commercial uses in appropriate zones.

Subdivision Regulations:

- Define appropriate zones where new subdivision roads would be accommodated with sidewalks and crosswalks where appropriate

²⁹ Associated General Contractors of New Hampshire, *Rebuilding Our Neglected Roads: Sooner is Much Cheaper than Later!*, December 2006.

³⁰ Advocacy Advance, *Making Bicycling and Walking a Norm for Transportation Agencies: Best Practices for Bicycle and Pedestrian Advisory Committees*

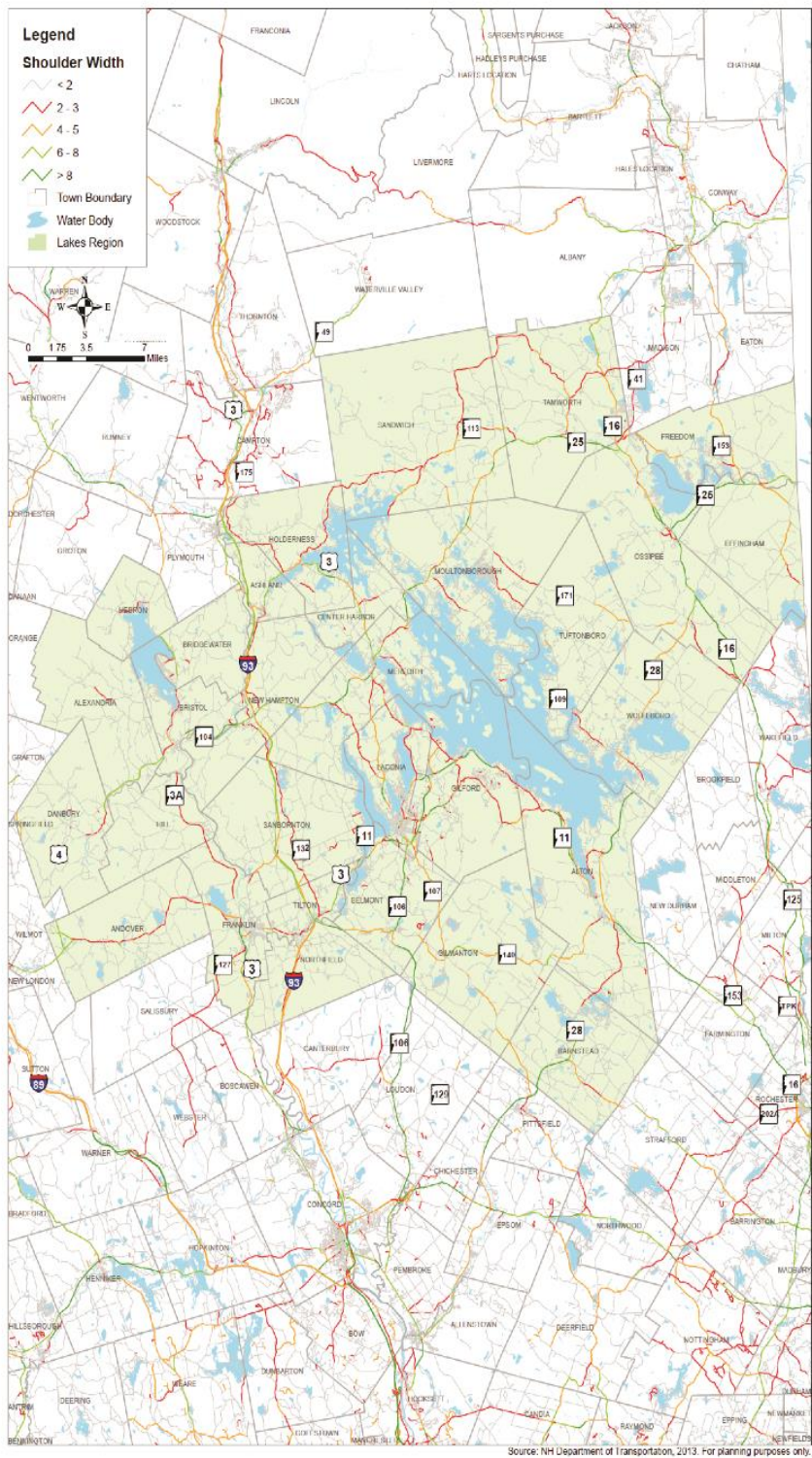
- In rural areas where sidewalks are not required, ensure adequate right-of-way widths to accommodate future sidewalks as needed
- Require new subdivision developments that have sidewalks also connect with existing sidewalk facilities
- Within new subdivision projects require a road design and driveway locations that minimize the number of conflict points and hazards between automobiles and bicycles/pedestrians

Site Plan Review:

- Ensure pedestrian walkways are clearly visible and delineated to assure the selection of effective walking routes to and within a site
- Ensure pedestrian facilities are designed for ease of maintenance
- Require appropriate amenities (e.g. landscaping, trees, benches) to enhance the walking experience
- Require street lighting and clear sightlines to maximize pedestrian safety
- Require that special needs (ADA, children, the elderly) are considered in pedestrian facility designs
- Require bicycle parking for appropriate land uses based on established standards

On state routes, municipalities are encouraged to consider opportunities for coordination with NHDOT to provide local walking and biking connections. In many instances this may be accomplished within existing paved areas. For example, NHDOT has indicated the potential to re-stripe highways with reduced lane widths when repaving projects take place, if requested by a municipality. Reducing lane widths from 12 feet to 11 feet where practical can provide an additional two feet of shoulder space and increase bicycle and pedestrian safety. Map 6 shows the shoulder widths for state routes in the Lakes Region. A focus point for the map is areas with existing 2-3 foot shoulders where adding an additional foot of shoulder on each side of the road by re-striping would provide 3-4 feet, generally the minimum amount needed for safety.

Map 6: Shoulder Widths on State Routes in the Lakes Region



8. IMPLEMENTATION PLAN

Transportation Recommendations and Performance Measures

Safety

Performance Measures

- The number, frequency, and severity of accidents in the crash data updated by NHDOT as a general indicator of safety.
- Number of safety improvement projects initiated in the region.
- The number of state and municipal ‘red list’ bridges in the Lakes Region and their status.

Recommendations

- Improve safety and resilience by promoting adaptation of vulnerable infrastructure in anticipation of increasingly frequent and severe weather events.
- Improve safety for all modes of travel starting with the creation of a comprehensive list of safety projects.

Project Development

Performance Measure

- Average length of time a project exists on the Lakes Region Transportation Improvements Program (TIP) before funding is secured.

Recommendation

- Continue to evaluate and provide supporting documentation for identified projects in the Lakes Region TIP towards advancing the improvements with appropriate funding sources.

Demand Management

Performance Measures

- Travel time and travel delay information.
- American Community Survey “Means of Transportation” data.

Recommendations

- Continue to work with NHDOT and other regional planning commissions to promote Commute Green NH and associated transportation demand management goals designed to encourage alternatives to single occupancy vehicle use.
- Promote the use of transportation demand management through collaboration with human service agencies, municipalities, businesses and citizens.

Public Transit

Performance Measures

- Public transportation ridership and expansion of service.
- Number of RCC meetings and advancement of RCC work plan strategies.

Recommendation

- Promote the use and expansion of public transit services through collaboration with human service agencies, municipalities, businesses, and citizens.

Advocacy

Performance Measure

- Local, agency, and organization participation as members of the Lakes Region Transportation Technical Advisory Committee.
- Number of communities that participate in Road Surface Management Systems.

Recommendations

- Continue advocacy for increased transportation funding to meet regional and local needs through the NH Association of Regional Planning Commissions.
- Support a transportation strategy that conserves and maximizes the existing transportation network through infrastructure maintenance, enhancements, and management.

Walking and Biking

Performance Measures

- Successful Transportation Alternatives applications from the region.

- Miles and condition of sidewalks.

Recommendation

- Improve accessibility to alternative modes of transportation by increasing the safety and connectivity of bicycle and pedestrian infrastructure and promoting the expansion of public transportation where appropriate.

Planning

Performance Measures

- Travel-time and delay measurements as indicators of the effectiveness of transportation demand management efforts.
- Number of recommendations implemented in the Scenic Byway Corridor Management Plan.
- Communities participating in UNH Technology Transfer training on salt application and stormwater mitigation.

Recommendations

- Encourage independence from automobiles by supporting nodal development patterns near services. Consider local opportunities to apply innovative land use practices such as: Transit Oriented Development, Pedestrian Oriented Development, and Access Management, which are outlined in the *Innovative Land Use Planning Techniques: A Handbook for Sustainable Development*, October 2008.
- Local consideration for dedicating a portion of motor vehicle registration fees to transportation projects in accordance with NH RSA 261:153 Fees for Registration Permits.
- Increase service life of transportation infrastructure while reducing the introduction of harmful chemicals into the environment by encouraging municipalities to adopt the best management practices for winter road maintenance published by NHDOT in cooperation with the Technology Transfer Center at UNH.
- Market the Lakes Region Tour Scenic Byway through a standing committee of regional and local stakeholders.
- Improve local awareness, understanding, and participation in transportation issues through education and public involvement within and between communities, the region, state, federal government and related organizations.