TRANSPORTATION

A safe and efficient transportation network is an essential component for the development of a well-functioning and accessible community, with land-use and transportation closely linked. Informed and thoughtful transportation planning is an essential part of guiding development in order to preserve valued features of the community while achieving and enhancing community goals. Bradford's transportation system and its connections to the regional and state network provide access to the goods and services that residents and commerce require. It played a large role in the development of the town, and in defining the town's character. With all future development, balancing the desires of residents to maintain Bradford's rural character will be vital to the town's future.

The existing transportation network has a profound influence on the location and development of land uses throughout the town. Development trends in Bradford have traditionally been influenced by NH Route 103 and NH Route 114. The town's low density residential and undeveloped areas which give the town its distinct rural character, have been, and will continue to be, important elements in what it means to live in Bradford.

> Bradford seeks the improvement of public roads; encourages a transportation system that will meet the mobility needs of all local residents by providing for the safe and efficient movement of people, goods, and services within Bradford and throughout the region; maintains a commitment to the rural and historical character of the community; and seeks to provide a well-maintained and safe transportation system that meets the functional and aesthetic needs of the community, in a cost-effective manner.

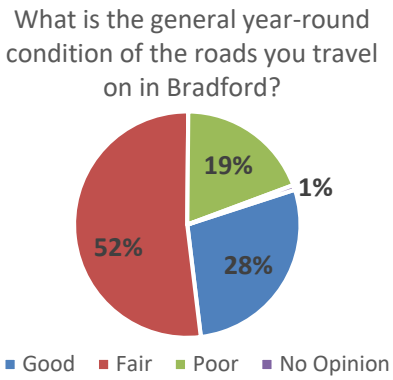
All land use activities, regardless of scale or type require access to adequate transportation routes and are most likely to locate where access is the easiest and least costly. Due to the financial commitment required for the improvement and maintenance of an adequate transportation system and the direct relationship between land use patterns and traffic circulation, the identification and analysis of current transportation needs is crucial to the orderly accommodation of growth and development. This section of the Master Plan is intended to provide such an analysis, while also enabling the Town of Bradford to fully participate in all levels of transportation planning – local, regional, state and federal.

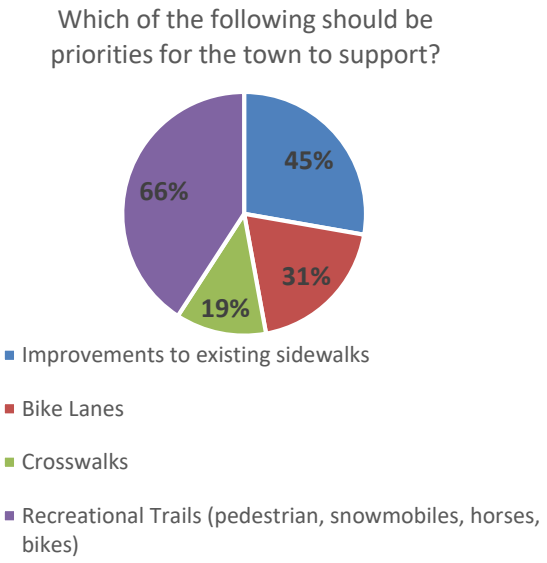
SUMMARY OF COMMUNITY INPUT

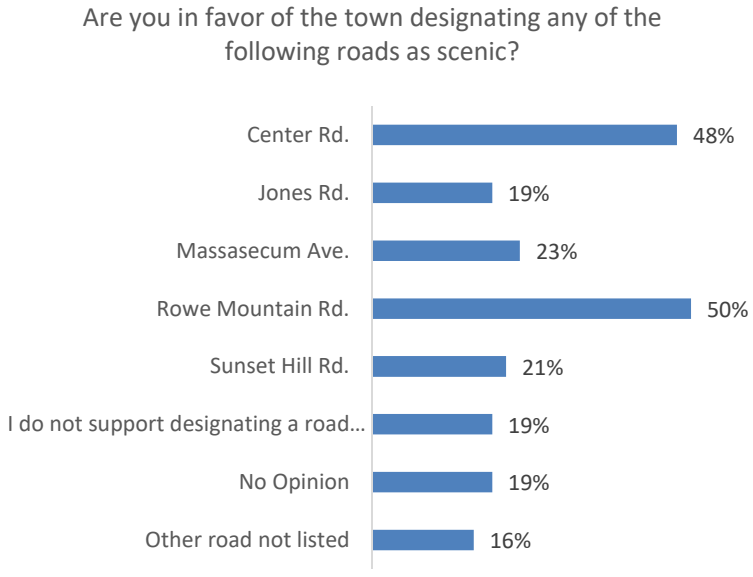
Responses to the Bradford Community Survey and participants at the Visioning Session, done in preparation to the Master Plan, found that nearly 70% of survey respondents consider the town's "small town/rural atmosphere" to be very important. Relating to the rural character of the town, a question within the Community Survey demonstrated a desire to designate Rowe Mountain Road and Center Road as "scenic roads".

Throughout the community input efforts, concerns with road maintenance were brought up, both with gravel and paved roads. Specific concerns with pavement conditions on Cressy Rd, Marshall Hill Rd, Water St and West Rd were noted during the visioning session. The majority of Community Survey respondents felt the town's roads were in fair condition and less than 20% of respondents felt the roads were in generally in poor condition. Within the Community Survey there were echoing responses for West Road needing improvement while additional concerns were well documented for Center Road, County Road, Fairgrounds Road and Jones Road.

During the Visioning Session the conversations about improving and maintaining sidewalks was prevalent, as well as the support for bicycle and pedestrian infrastructure in general. The support was reverberated in the Community Survey with over 65% of respondents feeling recreational trails should be a priority for the town and over 44% feeling similarly about sidewalks.







EXISTING TRANSPORTATION NETWORK

A key component in planning for future transportation improvements in a community is to carry out a complete inventory of the existing transportation infrastructure serving the town. Bradford's transportation network is dominated by NH Route 103 and NH Route 114, both of which are the responsibility of the NH Department of Transportation. However, there are several other town roads which are important to the overall transportation network.

STATE HIGHWAY CLASSIFICATION AND FUNDING

The State Aid classification system, which is identified by NH RSA 229:5 and 229:231, establishes responsibility for construction, reconstruction, and maintenance as well as eligibility for use of State Aid funds. This classification system also provides a basic hierarchy of roadways.

Of the seven possible state classifications, Bradford's roads fall into five of these: Class I, Class II, Class V, Class VI and private roads. Bradford's road system is typical of most New Hampshire towns, in that the most mileage is accounted for by Class V roads. The table below displays roadway mileage by classification.

Table 9.1: State Legislative Classification

Class	Mileage	Percent of total
Class I: State Aid Highways	7.44	9.4%
Class II: State Aid Highways	1.15	1.5%
Class V: Rural Highways	46.51	58.9%
Class VI: Unmaintained Highways	14.07	17.8%
Private Roads	9.82	12.4%

Source: New Hampshire Department of Transportation

CLASS I TRUNK LANE HIGHWAYS

Class I highways consist of all existing or proposed highways on the primary state highway system, except portions of the highways within the compact sections of cities and towns. The state assumes full control and pays costs of construction, reconstruction and maintenance of its sections with the assistance of federal aid. In Bradford, NH Route 103 and NH Route 114 from NH Route 103 south are Class I highways.

CLASS II STATE AID HIGHWAYS

Class II highways include all highways on the secondary state highway system, except portions of the highways within the compact sections of cities and towns, which are classified as Class IV highways. All sections improved to the state standards are maintained and reconstructed by the state. All other sections must be maintained by the city or town in which they are located until brought up to state standards. The same applies to bridges on Class II highways. In Bradford, NH Route 114 north of its intersection with NH Route 103 is a Class II highway.

CLASS V RURAL HIGHWAYS AND BLOCK GRANT AID

This classification consists of all traveled highways that the town has the duty to maintain regularly. The state provides funding to towns for road maintenance on Class IV and V roads in the form of Highway Block Grant Aid (HBGA). Table 9.2 shows the Block Grant Aid Bradford has received over the last five State Fiscal Years (SFY). These funds are distributed by the State of New Hampshire on a yearly basis with partial disbursements made four times a year. The payments are made as follows: 30% in July, 30%

in October, 20% in January and 20% in April with unused balances carrying over. The funds come from a portion of the total road toll (gas tax) and motor vehicle registration fees collected by the State. The funds can only be used to fund or match funding for constructing, reconstructing or maintaining Class IV and V (town maintained) highways as well as equipment for maintaining local roads.

The funds are allocated from an annual apportionment (State Fiscal Year) of not less than twelve percent (12%) of the total highway revenues collected from the preceding year. Half of that total apportionment is distributed based on population and the other half is distributed based on Class IV and V road mileage. This comes out to approximately $1,200 for each mile of Class IV and V highway and about $11 for each person.

A second apportionment of funds is allocated from a sum of $400,000. The formula for disbursement is based on the value of property and roadway miles. The formula is designed to give the greatest benefit to municipalities with low property values (on an equalized basis) and high road mileage.

To ensure Bradford receives the proper allotment it is crucial to provide accurate information regarding Class IV and Class V road mileage to NH Department of Transportation (NHDOT). Highway Block Grant Aid distribution formulas do not take into consideration the condition of roads or the traffic on municipal roads.

On May 20, 2014, Governor Maggie Hassan signed into law Senate Bill (SB) 367, a policy bill that raised revenue dedicated to increasing highway block grant funding to municipalities, increased municipal bridge aid, resurfacing and reconstruction of secondary roads, and completion of the I-93 expansion. Additional funding due to SB 367 is shown in the table below.

Table 9.2: Highway Block Grant Aid payments for Bradford

Year	SFY 2016	SFY 2017	SFY 2018	SFY 2019	SFY 2020
HBGA	$ 78,128.52	$77,779.43	$79,708.08	$ 80,970.04	$82,220.56
SB 367	$10,610.70	$10,660.34	$10,734.53	$10,838.15	$10,965.80

Source: New Hampshire Department of Transportation

Class VI Unmaintained Highways

Class VI roads are roads that are not maintained by the town, may be subject to gates and bars, and normally consist of a gravel or dirt surface. A Class V road can become a Class VI road if the town has not maintained it for five years or more.

Under RSA 674:41, I(c), for any lot whose street access (frontage) is on a Class VI road, the issue of whether any building can be erected on that lot is left up to the Town Selectmen who may, after review and comment by the Planning Board and after a public hearing, vote to authorize building along that Class VI road, or portion thereof. Any work done to Class VI highways shall be approved in advance by the Board of Selectmen, after conferring with the Road Agent. This process is outlined in Bradford's Class VI Road Policy.

Even if the Board of Selectmen does vote to authorize building, the law states that the municipality does not become responsible for road maintenance or for any damages resulting from the road's use. The purpose of RSA 674:41, I(c) is to prevent scattered and premature development.

Table 9.3 displays Class VI roads in Bradford. These roads are a central component of Bradford's transportation network and for potential recreational opportunities.

Table 9.3: Class VI Roads in Bradford

Road	Length (Miles)	Road	Length (Miles)	Road	Length (Miles)
Alder Plains Rd	1.3	Deer Valley Rd	1.4	Massasecum Ave	0.7
Bagley Hill Rd	0.1	E Dunfield Rd	1.9	Old Mountain Rd	1.2
Blaisdell Hill Rd	0.2	Fortune Rd	0.6	Pierce Rd	0.5
Carter Hill Rd	0.9	Halfmoon Pond Rd	0.0	Rowe Mountain Rd	1.4
County Rd	0.5	Jackson Rd	0.3	Smith Rd	1.2
Day Pond Rd	1.1	Liberty Hill Rd	0.5	-	-

Source: New Hampshire Department of Transportation

Federal Functional Classification System

The functional classification system identifies roads by the type of service provided and by the role of each highway within the state system based on standards developed by the US Department of Transportation. While the state aid classification system outlined above is the primary basis for determining jurisdiction, the following system is important for determining eligibility for federal funds.

Recognition of the principal function that a highway, road, or street is intended to serve can reduce potential conflicts between land use activities and traffic movements. For example, from a theoretical standpoint, residential development should not be encouraged to locate along major highways due to the opportunity for direct land use/traffic conflicts. The need for direct access to residential properties causes numerous left turn and crossover movements as well as ingress/egress movements, all of which slow and/or interrupt the smooth flow of traffic, while substantially increasing the potential for accidents to both pedestrians and vehicles.

Generally, future development in Bradford should be encouraged to take place at locations where the primary road function is appropriate for the type of development proposed. As part of its Site Plan Review Regulations, the Planning Board should consider the functional classification of any road on which development is proposed to ensure that the proposed development is appropriate for the existing roadway function.

Major Collectors

These roadways differ from arterial roadways due to size and general service area. Collectors serve traffic in a specific area, whereas arterials generally serve traffic moving through an area. Thus, average trip lengths on collectors are shorter than trips on arterials. Furthermore, collectors gather traffic from local roads and streets and distribute them to the arterial. In Bradford, NH Route 103 and NH Route 114 from NH Route 103 south are major collectors.

Minor Collectors

These roads provide access to smaller communities within a geographic area or economic region. They may link locally important trip generators, such as shopping centers, to surrounding rural areas. They also serve as links between two or more major collectors. NH Route 114 north from the intersection with NH Route 103 is a minor collector.

Local Roads

These roads and streets are used primarily to provide access to adjacent properties. This includes the majority of roads in Bradford.

Table 9.4: Federal Functional Classification

Federal Functional Classification	Mileage	Percent of total
Major Collectors	7.44	9.4%
Minor Collectors	11.31	14.3%
Local Roads	36.35	46.0%
Class VI or Private Roads	23.89	30.3%

Source: NH Department of Transportation

BRIDGE NETWORK

Bridges are a key component of the highway system. Bridges are the most expensive sections of roads, and a lack of adequate bridges can create transportation bottlenecks, which are often difficult to remedy.

The New Hampshire Department of Transportation (NHDOT) inspects all of the state's municipal and state owned bridges throughout NH. Inspections typically occur biannually with some bridges which are known to have deficiencies inspected more frequently. The state shares inspection reports with towns after they occur in addition to maintaining its own database where bridges are scored using the Federal Sufficiency Ratings (FSR), a nationally accepted method for evaluating bridges. An FSR represents the relative overall effectiveness of a bridge as a modern-day transportation facility. With an FSR greater than 80 a bridge is generally accepted to be in good condition overall. A bridge having an FSR between 50 and 80 is eligible for Federal bridge rehabilitation funding. A bridge with an FSR less than 50 is eligible for either Federal bridge replacement or rehabilitation funding. These ratings are based on modern, federally accepted standards, and often historic bridges do not meet these standards.

NHDOT manages three bridge aid programs including: State Aid Bridge which is state funded, SB 367 which is also state funded and the Municipal Off-System Bridge Rehabilitation and Replacement which is federally funded. Projects begin by the town submitting an application for a preliminary estimate or hiring an approved consultant to do the estimate. NHDOT determines a potential program and year of funds for construction. This process can take several months.

Table 9.5 shows the bridges in Bradford as listed on the 2019 NHDOT Bridge Summary. Structurally Deficient does not mean that the bridge is necessarily unsafe for use, rather refers to a bridge with one or more deteriorated components whose condition is critical enough to reduce the safe load carrying capacity of the bridge. Culverts, bridges 10 years or newer, and bridges 20 feet or less in length do not typically receive deficiency ratings and therefore are defined in the table below as "Not Applicable". The ***Bridges By Ownership Map*** shows the nineteen municipally owned and three state owned bridges in Bradford.

The Town of Bradford completed rebuilding the Pond Brook Bridge on Breezy Hill Road with new beams and decking in 2015. It has been opened with a three-ton weight limit after being closed for several years. Water Street over West Branch Brook was repaired, and the deck was replaced in 2017. Bradford Center Road over the West Branch of the Warner River is programmed to be rehabilitated in FY 2019.

NHDOT's 2017 Bridge Aid Status Report listed the following 3 bridges with 2017 estimates awaiting town action to raise funds and request construction. These are the only three bridges in Bradford on the 2018 NHDOT Municipal Red List that are not in the process of, or have been rehabilitated, reconstructed or replaced already.

- **Blaisdell Lake Rd over Stream** (2 bridges) - $344,000 State share and $86,000 town share (2017 estimate - $430,000)
- **Johnson Hill Road over West Branch Brook** – $260,000 State share and $65,000 town share (2017 estimate - $325,000)
- **West Meadow over Hoyt Brook** - $240,000 State share and $60,000 town share (2017 estimate - $300,000

Table 9.5: Bridges in Bradford

Location	FSR	Structural Deficiency	Owner	AADT	Inspection Date	Year Built /Rebuilt
Newell Rd over West Branch Brook	97.0	Not Deficient	Municipality	88	Sep. 2017	1999
Fairgrounds Rd over West Branch Brook	78.8	Not Deficient	Municipality	463	Sep. 2017	1996
Fairgrounds Rd over West Branch Brook	81.0	Not Deficient	Municipality	436	Sep 2017	2001
East Washington Rd over Hoyt Brook	67.8	Not Applicable	Municipality	1157	Sep 2017	1950
West Rd over Hoyt Brook	80.4	Not Deficient	Municipality	1157	Sep 2017	2010
West Meadow Rd over Hoyt Brook*	34.5	Structurally Deficient	Municipality	92	Aug 2018	1950
West Meadow Rd over Hoyt Brook	98.0	Not Deficient	Municipality	92	Sep 2017	2009
Fairgrounds Rd over West Branch Brook	100	Not Deficient	Municipality	92	Sep 2017	2003
Johnson Hill Rd over West Branch Brook*	16.1	Structurally Deficient	Municipality	92	Aug 2018	1950
Water St over West Branch Brook	66.9	Not Deficient	Municipality	331	Sep 2017	1980, 2017
NH 103 over Lake Todd Outlet	98.4	Not Deficient	NHDOT	4622	Apr 2018	1967, 2002
Center Rd over Hoyt Brook	74.9	Not Deficient	Municipality	536	Sep 2017	1950, 1993
Main St over Lake Todd Outlet	51.6	Not Deficient	Municipality	1062	Sep 2017	1929, 1935
Jewett Rd over Hoyt Brook	38.5	Not Deficient	Municipality	92	Sep 2017	1950
Bradford Center Rd over W. Branch Warner River	26.5	Not Deficient	Municipality	92	Sep 2017	1854, 2018
Jones Rd over Hoyt Brook	86.0	Not Deficient	Municipality	369	Sep 2017	2008
NH 114 over Warner River	73.9	Not Deficient	NHDOT	3775	Apr 2018	1948
Breezy Hill Rd over Warner River	99.0	Not Deficient	Municipality	92	Sep 2017	2016
Blaisdell Lake Rd over Stream*	18.1	Structurally Deficient	Municipality	92	Aug 2018	1950
Blaisdell Lake Rd over Stream	43.2	Not Deficient	Municipality	92	Sep 2017	1950
Breezy Hill Rd over Pond Brook	43.9	Not Deficient	Municipality	294	Sep 2017	1950, 2015
NH 114 over Massasecum Inlet	99.5	Not Deficient	NHDOT	3638	Apr 2018	1958

AADT= Average Annual Daily Traffic, *2018 NHDOT Municipal Redlist

Source: New Hampshire Department of Transportation 2019 Bridge Summary

TRAFFIC COUNT HISTORY

The Central New Hampshire Regional Planning Commission (CNHRPC) maintains an ongoing traffic count program for monitoring the region's transportation network. Each year CNHRPC offers to collect traffic data at up to ten (10) locations for each municipality. In addition, CNHRPC collects traffic count data for the New Hampshire Department of Transportation (NHDOT) in accordance with federal guidelines under the Federal Highway Performance Monitoring System (HPMS).

The ***Average Annual Daily Traffic 2008-2017 Map*** displays the Average Annual Daily Traffic (AADT) volumes for 2008-2017, which can be viewed on the NHDOT Transportation Data Management System interactive map at http://www.nh.gov/dot/org/operations/traffic/documents.htm. AADT is a basic measure of traffic demand for a roadway and represents the volume of traffic travelling in both directions. CNHRPC provides traffic count data to the NHDOT, who then calculates the AADT by applying correction factors to raw data to account for weekday and seasonal variations in traffic volumes.

ROADWAY CONDITIONS

Pavement condition data from 2016 was obtained from the NHDOT's Pavement Management Section for state-maintained (Class I and II) roads and is displayed on the ***2016 Pavement Condition Map***. The pavement condition is rated based on its Ride Comfort Index (RCI), which is calculated directly from the average pavement roughness measured in the left and right wheel paths of roadways. That data indicates that the majority of Class I and II roads are in good condition.

Because the NHDOT data is from 2016, some roads may have been repaired and some roads may have fallen into worse disrepair. According to NHDOT's proposed 2018-2020 resurfacing program, NH 103 from the Warner town line to NH Route 114 and NH Route 114 from NH Route 103 north were programed to be resurfaced in calendar year 2018. NH Route 114 from NH Route 103 south was programed to be resurfaced in calendar year 2019. These were both completed. NH Route 103 north of the intersection with NH 114 is programmed in 2020. In 2015, the town resurfaced Old Warner Rd. In 2016 sections of West Road, Melvin Mills Road, Old Warner Road, Fairgrounds Road and others was paved. In 2016 1.5 miles of Center Road and West Road was paved. Center Road from the covered bridge to Jones Road and Center Road from Cheney Road to Cressy Road was chip sealed.

On local, town maintained roads, surface conditions vary by location. Naturally, there are issues to be addressed in the town's road

STATEWIDE ASSET DATA EXCHANGE SYSTEM (SADES)

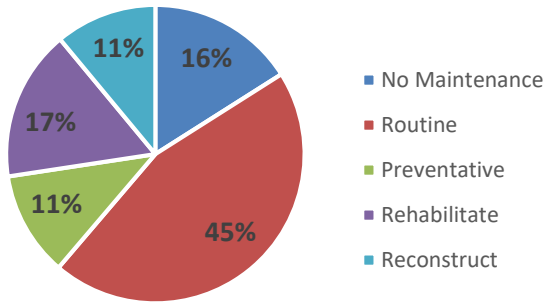
SADES establishes a primary transportation inventory of assets including a maintainable condition assessment process that is universal for many state and local agencies. Its unique approach to statewide asset management efficiently utilizes modern technology and joins efforts for the common good of accurate and sustainable data collection. The newly established system uses iPad Minis to collect data which is then uploaded to a shared server.

Assets such as culverts, guard rails and pedestrian infrastructure are all currently being collected throughout the state. The efficiency of collecting and managing state and local assets through SADES is expected to help cut costs in the long term. CNHRPC is available to complete initial data collection of assets for municipalities at no cost to the town.

network, particularly due to the increasing costs of maintenance. However, the Highway Department and Board of Selectmen are to be commended for taking an extremely proactive approach to local road maintenance, as the town's capital improvement program regularly schedules improvements to the local road network.

In 2011 Bradford worked with CNHRPC to implement a Road Surface Management System (RSMS) to help prioritize road improvements and develop a transparent system for short, medium and long term improvements. RSMS is basically a methodology intended to provide an overview and estimate of a road system's condition and the approximate costs for future improvements. The process involved a windshield survey of all the local road surfaces where numerous distresses where observed over segments of roadway and objectively recorded. The data was entered into RSMS 11, a software developed by Maine Department of Transportation. The program uses algorithms factoring in various distresses, traffic levels and the importance of each roadway to determine whether the road falls into one of five maintenance categories. The program assists towns with limited funding and prioritizing road resurfacing with a focus on preservation and "keeping the good roads good."

Figure 9.1: Percentage of Local Roads by Maintence Category



Source: CNHRPC (2011)

As displayed in Figure 9.1, out of the 46 miles of Class V roads surveyed, 51% of the roads fell into either No Maintenance or Preventative Maintenance categories. Although this data is from 2011, it demonstrates that the majority of Bradford roads were in good condition at the time the data was collected. In the future the data can be used to gauge how the overall road network has changed using Bradford's existing methods for road maintenance.

In 2015 NHDOT, the University of NH's (UNH) Technology Transfer Center (T^2) and all nine of NH's Regional Planning Commissions (RPCs) initiated a new Road Surface Management System under NHDOT's Statewide Asset Data Exchange System (SADES). The new version included many changes from Maine's RSMS 11 to improve the quality, consistency, and efficiency of data collection and the overall value of the product to better guide municipalities with road maintenance. Bradford has begun preliminary discussions with CNHRPC to begin implementing the new SADES RSMS program.

MOTOR VEHICLE CRASHES

Motor vehicle crash data from 2011 - 2015 was obtained from NHDOT, who receives the data from the Department of Safety for crashes with over $1,000 in damage. The data represents roughly 80% of all crashes with over $1,000 in damage that took place during this time period; the remaining 20% of crashes are not locatable based on the information contained in the crash reports. Locatable crashes that occurred in Bradford were reviewed and the locations with the most frequent crashes are summarized in Table 9.6.

It is reasonable to assume that a number of smaller crashes may also have occurred during this time period which did not require the intervention of the police department. Any crashes reported in

Bradford are a cause for concern and should be monitored at regular intervals to determine locations where improvements are needed to enhance safety.

Table 9.6: Crashes Hot Spots 2011-2015

State Maintained Highways	Number of Crashes
NH Route 103	13
NH Route 114	11
Town Maintained Roads	**Number of Crashes**
East Washington Road	4
Fairgrounds Road	4
West Road	3
West Main St	3
Center Road	2
Intersection Locations	**Number of Crashes**
NH 103/NH 114	5
W. Main St./ High St./ Fairgrounds Rd.	2
E. Main St./Old Warner Rd./NH 114	2

Source: NH Department of Transportation/NH Department of Safety

Highway Safety Improvement Program (HSIP)

The purpose of NHDOT's Highway Safety Improvement Program (HSIP) program is to achieve a significant reduction in fatalities and serious injuries on all public roads through the implementation of highway safety improvement projects.

The process for which a project receives funding from HSIP for a roadway segment or intersection is highly dependent on data. If data (history of crashes resulting in injuries or fatalities) warrants further examination, a Road Safety Audit (RSA) is typically the next step. The RSA is a collaborative approach to review safety issues and make recommendations for improvements. A cost/benefit analysis is used to determine the best solution for improving safety at the road segment or intersection. CNHRPC assists towns in applying for HSIP funds and completing small scale RSAs that offer safety solutions.

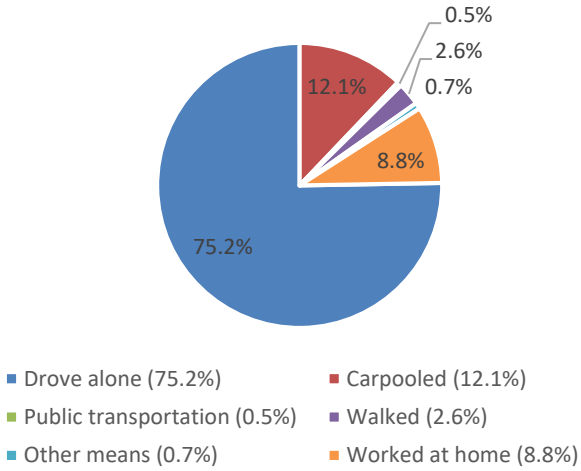
The severity of serious traffic crashes could be reduced through roadway improvements, where appropriate, through measures such as adding turn lanes, removing or shielding obstacles, adding or improving medians, widening lanes, widening and paving shoulders, adding rumble strips, improving intersection layout, providing better road markings, and upgrading or installing traffic signals.

Commuting Patterns

The US Census Bureau's American Community Survey (ACS) is an ongoing survey that provides data every year in the form of 1, 3 and 5 year period estimates representing the population and housing characteristics over a specific data collection period. The ACS differs from the decennial Census in that the Census shows the number of people who live in an area by surveying the total population every 10 years. The ACS shows how people live by surveying a sample of the population every year. ACS collects and releases data by the calendar year for geographic areas that meet specific population thresholds; for areas with populations under 20,000, such as Bradford, 5-year estimates are generated. The most recent release represents data collected between January 1, 2013 and December 31, 2017.

Journey to Work Commuting data from the 2013-2017 5-year estimates for Bradford were reviewed and are displayed graphically in the provided charts. In general, the majority of the working population residing in Bradford drives alone and works outside of the community.

Figure 9.2: Means of Transportation to Work



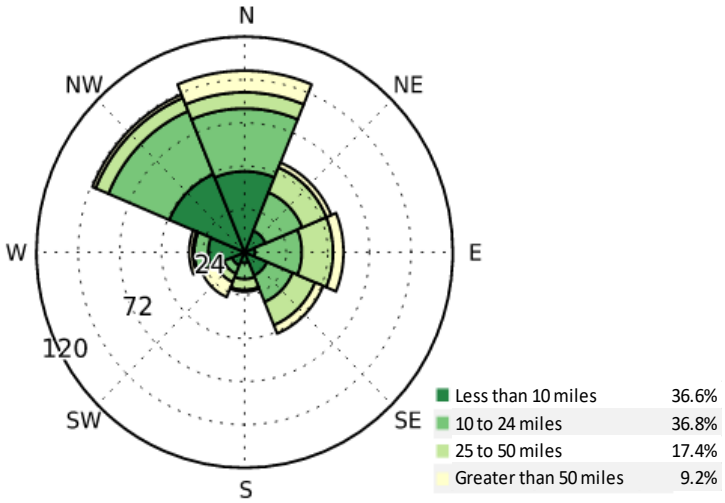
Source: American Community Survey 2013-2017

As is typical in most New Hampshire towns, the most popular transportation option for Bradford residents is the private automobile (75.2%), while carpooling (12.1%) is the second most common option. This is an encouraging sign and points to the usefulness of Park and Ride locations in the state. Working from home (8.8%) is a close third which demonstrates the importance of broadband internet for telecommuters. More information on carpools and alternative modes of commuting can be found at www.commutesmartnh.org.

Figure 9.3 shows employment data from the U.S. Census's Bureau's OnTheMap Application. As shown, over 60% of Bradford's commuting residents travel distances to work in excess of ten (10) miles. This statistic highlights the importance of the arterial and collector road system that serves the town. In all future planning decisions, at the local, regional or state level, Bradford should ensure that the functionality of these important routes is maintained and that future land-use and transportation decisions support the functional characteristics of Bradford's road network to ensure continued ease of access for residents and visitors to the town.

Figure 9.4 shows over fifty-six (56.9%) percent of the work force in Bradford commutes to locations categorized as "All Other Locations." In reviewing the raw data, the "All Other Locations" are widely distributed to many communities in New Hampshire and Massachusetts. The closest employment centers (New London and Concord) attract almost fourteen (13.7%) percent of the commuters.

Figure 9.3: Distance and Direction to Work

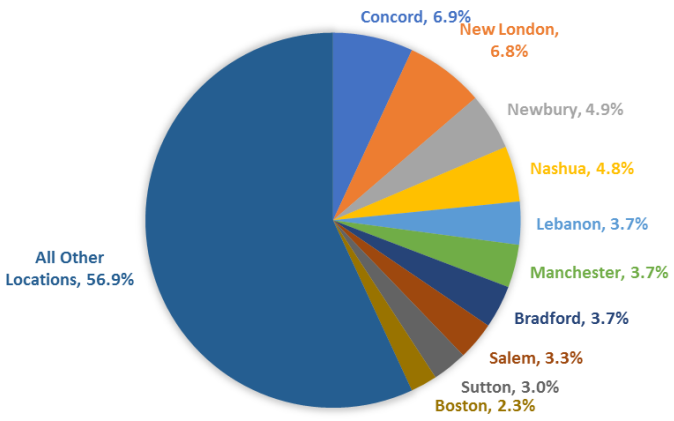


Source: U.S. Census Bureau, OnTheMap Application (2015)

Understanding the commuting patterns of the labor force in the community can assist in planning roadway improvements that will make important travel routes more efficient, safe, and promote

economic growth in a sound and coordinated fashion. Similarly, local residential roads that are not suited for heavy commuter traffic should be identified and this "through traffic" should be minimized wherever viable alternatives can be provided. Traffic counts should be reviewed and analyzed to identify roads that have shown an increase in traffic over the years. Finally, yearly traffic counts should be carried out on roads that the town sees as a concern in order for reliable usage patterns to be analyzed.

Figure 9.4: Place of Work



Source: U.S. Census Bureau, OnTheMap Application (2015)

LAND USE AND TRANSPORTATION

NEW COMMERCIAL AND RESIDENTIAL DEVELOPMENT

New development is often phased over extended periods of time and the ultimate, as well as the immediate, impacts of development on traffic volumes and transportation systems should always be considered. The magnitude of new development obviously determines the traffic impacts that the development will have. Depending on existing roadway traffic volume, distribution patterns, and road conditions, small scale as well as large scale development can often have significant impacts on the surrounding roadway network. By requiring transportation/traffic impact studies for new developments of a certain size or for developments located in areas where significant transportation problems are known to exist, the Planning Board can effectively evaluate the scope of impacts associated with any new development. Through this kind of scrutiny, recommendations for project phasing and developer participation in necessary improvements can be developed and problems of safety, congestion, and expensive upgrading of poorly planned roads can be avoided.

ACCESS MANAGEMENT

Access management involves providing (or managing) access to land development while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity, and speed. It is the practice of coordinating the location, number, spacing, and design of access points to minimize site access conflicts and maximize the traffic capacity of a roadway. Applicable opportunities for access management include possible connections between existing and future subdivisions, the consideration of shared driveways when possible, and consistent coordination and communication between the town and NHDOT District 2 when considering driveway access applications on State Highways. An option for improving communication is the development of a memorandum of understanding between the Planning Board and NHDOT District 2 that standardizes the communication between the Planning Board and District 2 staff during the consideration of each driveway access permit. In addition, more detailed access management requirements may be added to the subdivision and site plan review regulations as appropriate.

TRAFFIC CALMING

Traffic calming on local roads can be a significant challenge. Lowering speed limits is a well-established method of improving pedestrian safety and other non-motorized modes of travel. The minimum speed limit a town can impose on town maintained roadways is 25 miles per hour based on an engineering study. Limits can be made lower at intersections (RSA 265:63) and in school zones (RSA 265:60). Traffic calming can involve road design techniques using active or physical controls (bumps, barriers, curves, rumble strips, etc.) and passive controls, such as signs and traffic regulations, to reduce vehicle speeds. Traffic calming measures foster safer and quieter streets that are more accommodating to pedestrians and cyclists and enhance neighborhoods and downtown environments. The potential benefits of traffic calming include reduced traffic speeds, reduced traffic volumes – by discouraging "cut-through" traffic on residential streets – and often improved aesthetic quality of streets. Examples of some effective and applicable traffic calming techniques include:

Speed Humps, Speed Tables, and Raised Crosswalks: All of these techniques involve raising the height of the pavement in a more subtle fashion than with a speed bump, allowing vehicles to pass over them at the intended speed of the road, but preventing excessive speeds and alerting drivers to the existence of non-motorized users.

Chicanes or Medians: These devices effectively narrow road width and slow down traffic by placing a physical impediment either in the middle of the road (median) or on the side of the road (chicane). These traffic-calming devices lend themselves to landscaping and improve the visual experience for all users of the road, as well as reducing speeds. Both techniques can provide additional safety for crossing pedestrians. Medians may serve as a refuge by allowing pedestrians to cross one lane of travel at a time, while chicanes provided at crosswalks reduce the overall distance from one side of the road to another and slow down traffic at those crossings.

Narrow Lane Widths: A low-cost way of reducing speeds is to narrow the roadway lane through the use of edge lines and centerlines. A number of jurisdictions across the country have installed this type of pavement marking application to create 9 to 10-foot-wide lanes. Narrow lanes force drivers to operate their vehicles laterally closer to each other than they would normally be accustomed to. Slower speeds are a natural result.

Roundabouts: Gaining more popularity in New Hampshire, this is an intersection treatment that forces motorized traffic to slow down to speeds under 25mph in order to negotiate a center island that can be landscaped. Such speeds allow pedestrians to safely cross around the perimeter of the roundabout and cyclists to safely become a part of the circulating traffic.

SCENIC ROADS

A major component of a town's rural character can be its unpaved and scenic roads. These roads help to retain a sense of history and rural quality that Bradford's residents have indicated a strong desire to maintain. RSA 231:157 allows towns by a vote at town meeting to designate any road other than a Class I or II highway as a Scenic Road. A municipality may rescind its designation of a scenic road using the same procedure.

The effect of designation as a scenic road is that, except in emergency situations, there shall be no cutting of trees with a circumference of 15 inches at 4 feet from the ground or alteration of stone walls by the town or a public utility within the right-of-way without a hearing, review, and the written

approval of the Planning Board. This law does not affect the rights of individual property owners; nor does it affect land uses as permitted by local zoning.

In recognition of the fact that the state law is not very stringent, the statute was amended in 1991 to allow towns to adopt provisions other than what is spelled out in the law. These additional regulations could include giving protection to smaller trees or by inserting criteria for the Planning Board to use in deciding whether to grant permission. RSA 231:157 is an important piece of legislation for the preservation of culturally important and scenic roads in Bradford.

REGIONAL AND STATE PLANNING

TRANSPORTATION ADVISORY COMMITTEE

The regional transportation planning process in the Central NH Region is driven by bottom-up community participation through the Planning Commission's Transportation Advisory Committee (TAC). The TAC is an advisory committee to CNHRPC and is comprised of representatives from all twenty (20) Central NH communities. TAC representatives vary from municipal staff, such as town planners and road agents, to municipal officials, such as planning board members and selectmen. CNHRPC and NHDOT work collectively to inform all members of the TAC regarding transportation at the local, regional and state level. The members act as liaisons between CNHRPC, municipal and state officials as well as the general public.

TAC Members provide input on transportation related issues and the needs of the local and regional communities in Central New Hampshire. This is done partially by assisting CNHRPC staff with the development of transportation related plans and programs, including the regional Transportation Improvement Program (TIP). The regional TIP is the process undertaken in each of the State's nine regional planning commissions where projects originate for the statewide Ten Year Plan (TYP). 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 including, roads, bridges, transit, rail and aviation projects to be added.

CNHRPC staff also work with the TAC to solicit and provide guidance on local projects such as Road Surface Management Systems and Road Safety Audits. A well informed, well represented Transportation Advisory Committee is essential in regional coordination and the success of CNHRPC transportation planning activities.

STATE OF NH TEN YEAR PLAN

The New Hampshire Ten Year Plan 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 including, roads, bridges, transit, rail and aviation projects to be added.

With the previous TYP as a starting point, the Plan process includes input from individual communities, development of regional Transportation Improvement Plans (TIPs) by the Regional Planning Commissions (RPCs), numerous public hearings by the Governor's Advisory Commission on Intermodal Transportation (GACIT) and review and approval by the Governor and Legislature before it is adopted.

Performance measures and conditions such as pavement condition, traffic volumes, bridge ratings, congestion levels, safety issues, economic impacts, user surveys and available funding levels are considered in determining project need and prioritizing project implementation.

The process to prepare the Central NH Regional Transportation Improvement Plan (TIP) begins with the CNHRPC soliciting project requests from local communities, followed by an evaluation process by the Planning Commission's Transportation Advisory Committee (TAC) where new and existing projects are prioritized.

The Regional TIP update process gives a clear indication of the different transportation needs in the Central NH Region. Just as the TYP is established as the transportation project guide for the state, CNHRPC will utilize this regional TIP to full effect to plan for current and future transportation needs in the Central NH Region.

OTHER TRANSPORTATION NETWORKS

BICYCLE & PEDESTRIAN INFRASTRUCTURE

Residents of Bradford value the rural and historic character of the town. Pedestrian facilities, such as paved sidewalks and gravel walking paths are valuable features for roadways with high volumes of traffic or high speeds. The primary purpose of sidewalks is to improve safety for pedestrians by separating them from travel lanes of roadways. In addition to this, sidewalks can also serve as a source of recreation for residents, a non-motorized mode of travel, serve to beautify an area, or stimulate economic activity in rural and village settings.

In 2009 Bradford was successfully granted Transportation Enhancement funds to install sidewalks and bicycle lanes on East Main Street. However, the crumbling concrete sidewalks on West Main Street have not been awarded any grants. Over forty (40%) percent of respondents in the community survey were in support of improving sidewalks in Bradford. Many respondents acknowledged that sidewalks on West Main Street would encourage development.

Similar to the provision of pedestrian infrastructure, planning for a bicycle network requires a different approach from that of motorized transportation planning. Bicyclists have different needs from those of motorists, including wider shoulders, better traffic control at intersections, and stricter access management.

As the concern over air quality, traffic congestion, and other issues increases, the need and desire for a well-maintained

SAFE ROUTES TO SCHOOL (SRTS)

In 2015, Bradford adopted a Safe Routes to School (SRTS) Travel Plan that emphasized constructing pedestrian and bicycle infrastructure in addition to educating and encouraging students to walk and bike safely.

The SRTS Travel Plan proposed the following five projects to make walking and bicycling safer to and from school:

- Improvements around the school campus
- A multi-use trail from the school to NH 114 and NH 103
- NH Route 114 sidewalks
- West Main Street Sidewalks
- Old Warner Road bicycle lanes

and safe bicycle & pedestrian route system will continue to grow from a luxury into a necessity. By creating adequate local bicycle & pedestrian infrastructure, members of the community will have the ability to travel within town for employment, education and recreational purposes without driving. Consideration should be given to adding pedestrian and bicycle facilities to town roads to allow for safe access to existing schools and recreation areas in the community for non-motorized transportation.

PUBLIC TRANSPORTATION

The closest public transit service to Bradford is the New London Park and Ride which is served by Dartmouth Coach. There is also a Park and Ride in Warner without bus service. The Mountain View Senior Center also offers transportation to seniors and people with disabilities Monday thru Friday.

The Mid-State Regional Coordinating Council (RCC) works with the Community Action Program Belknap and Merrimack Counties Inc. which runs the Volunteer Driver Program that also serves the region's elderly and disabled populations. The primary purpose of these trips are for essential social services and medical appointments (including long distance medical). Currently Mid State RCC's volunteer drive program does not charge for rides although donations are accepted.

CLASS VI ROADS & TRAILS

Class VI roads are roads that are not maintained by the town, may be subject to gates and bars, and normally consist of a gravel or dirt surface. A Class V road can become a Class VI road if the town has not maintained it for five years or more. Under RSA 674:41, I(c), for any lot whose street access (frontage) is on a Class VI road, the issue of whether any building can be erected on that lot is left up to the town Selectmen who may, after "review and comment" by the planning board, vote to authorize building along that Class VI road, or portion thereof. Without such a vote, all building is prohibited.

Even if the Board of Selectmen does vote to authorize building, the law states that the municipality does not become responsible for road maintenance or for any damages resulting from the road's use. The purpose of RSA 674:41, I(c) is to prevent scattered

CONCORD TO LAKE SUNAPEE RAIL TRAIL (TILLEY WHEELER RAIL TRAIL – BRADFORD)

The Concord to Lake Sunapee Rail Trail (CLSRT) is a proposed rail trail connecting downtown Concord to Lake Sunapee along the abandoned Concord to Claremont Railroad bed. The planned trail would pass through the towns of Concord, Hopkinton, Warner, Bradford, and Newbury. There are teams in each community along the corridor working simultaneously to open pieces of trail in their town. The trail is envisioned to be an economic development opportunity, tourist attraction, a historic resource, a recreational amenity, and a non-motorized transportation corridor connecting town centers and open spaces. A non-profit board has formed to help advance the project.

In Bradford, the .3 mile long Tilly Wheeler Trail in Whitman Park makes up part of the larger CLSRT. In 2018 the trail was extended and a new bridge was constructed parallel to Route 103 crossing over Lake Todd. Much of the abandoned rail bed in Bradford has been taken up by Route 103, while other parts of the corridor are in private ownership. The town should work with NHDOT, private land owners, volunteers, and the non-profit board to create a trail along this corridor using the former rail bed when possible.

and premature development. It seems that the residents of town are in agreement with this law, as a strong view was represented during the community survey and visioning sessions that future development should be limited in remote areas of town and on Class VI roads.

Across the State, some communities are beginning to look at Class VI roads as candidates for designation as Class A and Class B Trails. These roads have little or no development associated with them, are scenic, have no inherent liability concerns, public access is already allowed, and also serve to connect large areas of open space, conservation, and/or agricultural lands. Class A and Class B Trails are subject to public trail use restrictions although the main difference between the two is that abutting landowners are allowed more access rights with Class A designation. Class B trails do not allow vehicular access for abutters. By reclassifying certain roadways that meet these criteria to Class A or B Trails, the community could be taking a step in creating a community-wide system of greenway trails. Unlike Class VI roads that the town does not maintain, towns, at their option, may conduct maintenance on Class A or B Trails. The town of Bradford also has a number of recreation trails including snowmobile trails. Per the Bradford Community survey, sixty-eight (68) percent of respondents stated they would like to see further trail development on town-owned land.

It is important to stress that reclassification of Class VI roads to Class A or B Trails will not inhibit the access rights of landowners along the roadways. In the case of a Class A or B trail, landowners can continue to use the trail for vehicular access for forestry, agriculture, and access to existing buildings. However, under such classification, new building development as well as expansion, enlargement, or increased intensity of the use of any existing building or structure is prohibited by New Hampshire Statute. The town and owners of properties abutting Class VI roads are not liable for damages or injuries sustained to the users of the road or trail.

Class VI roads are an important component of a town's transportation infrastructure due to their rural character and potential recreational opportunities.

SUMMARY

The Transportation Chapter summarizes community input related to transportation and describes the existing bridge and road network, specifically highlighting bridge needs. Further data included in the chapter include a review of motor vehicle crashes and commuting patterns, a discussion of the impact of land use on transportation, and a summary of potential traffic calming tools.

The chapter also summarizes the regional and state transportation planning process and provides information related to bicycle and pedestrian infrastructure, public transportation, and Class VI roads. Finally, a series of recommendations that address the different transportation modes are outlined. Key recommendations relate to the town's participation in the regional and state transportation planning process, and continued support for a diversified transportation system that includes the provision of sidewalks and other bicycle and pedestrian facilities.

OBJECTIVES AND RECOMMENDATIONS

OBJECTIVE 1

Ensure a safe, reliable, and efficient system of roads and bridges that will meet the transportation needs of residents, businesses and travelers through the region.

- → Actively engage with the Central New Hampshire Regional Planning Commission and the New Hampshire Department of Transportation to ensure that Bradford's transportation needs and priorities are adequately represented in the both the Regional and the Statewide Transportation Improvement Programs by participation on the CNHRPC Transportation Advisory Committee and the Ten Year Plan process.
- → Have a plan for monitoring the local road network conditions and prioritize investments to preserve roads. When possible, work with CNHRPC to implement the SADES RSMS program.
- → Review NHDOT bridge inspection reports regularly to monitor bridge conditions and ensure that bridges are maintained, repaired and/or replaced when needed.
- → Encourage the Police Chief, Fire Chief, Public Works Department and associated staff/committees to annually review crash locations and determine enhancements that could be made to improve safety.

OBJECTIVE 2

Support a diversified transportation system within the Town of Bradford and ensure the public is well informed of the transportation options available.

- → Continue to maintain existing sidewalks in addition to seeking out funding for construction and reconstruction to improve sidewalks and connectivity of sidewalks.
- → Work to construct additional sections of the Concord to Lake Sunapee Rail Trail including the expansion and maintenance of the Tilley Wheeler Trail.
- → Continue to carry out the Safe Routes to School Travel Plan and partner with the Police Department, Public Works Department and the Bradford Elementary School to promote and educate the public on pedestrian and bicycle safety.
- → Look for opportunities to widen shoulders and improve bicycle infrastructure.
- → Work with the Community Action Program Belknap-Merrimack Counties Inc. to maintain and enhance their transportation programs including the Volunteer Driver Program, the Rural Transit Service at Mountain View Senior Center and the Regional Mobility Manager.

OBJECTIVE 3

Preserve corridors for their intended function and encourage development to take place in appropriate areas with safe and suitable access.

- → Incorporate additional access management provisions in the Subdivision and Site Plan Review Regulations to improve access to existing properties during road construction projects, redevelopment or proposed expansions of existing businesses.

→ Evaluate roads, such as Rowe Mountain Road and Center Road, that may be suitable for Scenic Road designation.

→ Discourage inappropriate, scattered and premature development along Class VI roads in Bradford.

→ Utilize available traffic count data from NHDOT & CNHRPC to identify corridors and routes that may become impacted by future development trends.