



Prepared for:



&



Swanzey NH Route 10 Corridor Study

Prepared by



SWRPC

Southwest Region
Planning Commission

June 2021

The preparation of the *Swanzey NH 10 Corridor Study* was financed in part through a grant from the Federal Highway Administration (FHWA), U.S. Department of Transportation, under the State Planning and Research Program of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Acknowledgements

Southwest Region Planning Commission would like to thank the following individuals that served on and assisted the Swanzey NH 10 Corridor Study Working Group including Michael Gomarlo, Alfred “Gus” Lerandean, Michael Branley, Matthew Bachler, Scott Self, and John Kalfelz.

J. B. Mack, James Weatherly, Henry Underwood, and Lisa Murphy of the Southwest Region Planning Commission staff contributed to development of the *Swanzey NH Route 10 Corridor Study*.

Cover photos taken by Matthew Bachler.

Table of Contents

- Acknowledgements 1
- Introduction 3
- Corridor Use Today 4
 - Transportation 4
 - Motorized Transportation Infrastructure and Trends 4
 - Non-Motorized Transportation Infrastructure and Trends 5
 - Population 7
 - Zoning 10
 - Land Use 12
 - Economic Development 14
 - Housing 16
- Corridor Performance & Outlook 17
 - Motor Vehicle Traffic 17
 - Non-Motorized Transportation 21
 - Population 24
 - Zoning and Land Use 24
 - Economic Development 29
 - Housing 30
- Recommendations 31
- Endnotes 37

Appendices:

1. Swanzey NH 10 Corridor Study Working Group Meeting Materials
2. Summary of Policies, Plans and Studies
3. Vehicle, Bicycle and Pedestrian Traffic Analysis
4. Crash Trends and Intersection Field Review Analysis
5. Land Use and Zoning Analysis
6. Demographic, Economic Activity and Housing Analysis
7. Access Management Analysis
8. West Swanzey Visual Preference Survey and Results

Introduction

New Hampshire Route 10 (NH 10) is an important State highway presently carrying approximately 7,400 vehicles per day at the Winchester Town Line and 14,400 vehicles per day at the Keene Town Line with daily vehicle traffic volumes steadily increasing south to north. Many of those using the corridor are local Swanzey residents and workers, however, NH 10 is a significant regional thoroughfare as well. Beyond the 5.5 mile length of the corridor in the Town of Swanzey, the highway directly connects users to the large employment and service center, Keene, to the north, the Town of Winchester to the south, as well as many other destinations in other parts of Cheshire County, Massachusetts and beyond. Though most highway users are motorists, there is the occasional pedestrian and bicyclist.

While the highway is owned and maintained by the State, and the New Hampshire Department of Transportation (NHDOT) has general performance goals to maintain a highway that gets people quickly and efficiently to their destination, is safe, and is in a good state of repair, effective corridor management cannot happen in a vacuum. Local governments like the Town of Swanzey are responsible for guiding development and permitting the activities accessing the highway from local driveways and local street networks connected to the highway. Both the State and Town have a responsibility to ensure the highway is meeting corridor user needs whether it's a business owner adjacent to the highway, a freight operator making deliveries, a work commuter, or a resident that lives in a neighborhood near the highway. Developing a common understanding about corridor related issues and needs provides a basis for the Town, State and other relevant partners to have a similar frame of reference for coordination and communication.



The State of New Hampshire recognizes NH 10 as a Tier 2 highway or "Statewide Corridor" -- designed to provide a level of mobility just below interstate highways and other limited access highways.

The *Swanzey NH Route 10 Corridor Study* (Study) was undertaken in 2020 and 2021 by Southwest Region Planning Commission (SWRPC) with support from a Town of Swanzey appointed Working Group with a goal to better understand the corridor including opportunities for improvements and challenges to proactively address. In the following report, the Study puts the NH 10 corridor under a microscope to ask the following big questions:

- How is the corridor used today and who is using (living, working, shopping, and traveling through) the corridor?
- Is the corridor meeting the needs and expectations of stakeholders today? Using available trend data and information, what is the direction and outlook for the corridor and is this in line with these needs and expectations?
- Based on these findings, what recommendations does the Swanzey NH Route 10 Corridor Working Group have for future management of the corridor?

Corridor Use Today

In this section, the report starts by asking “How is the corridor used today and who is using (living, working, shopping, and traveling through) the corridor? To answer these questions, we look at motorized and non-motorized transportation use of the corridor, characteristics of the population using the corridor, zoning and land use conditions for guiding development and permitting land use activities, and the state of economic development and housing on the corridor.

Transportation

Motorized Transportation Infrastructure and Trends

Most people using NH 10 in Swanzey drive on the highway, although there is a small fraction of people that walk and ride bicycles along the highway as well. Daily vehicle traffic is an average of 14,400 vehicles per day at the Keene and Swanzey town line and 7,400 vehicles per day at the Winchester and Swanzey town line. Traffic volumes increase incrementally from south to north.

Indeed NH 10 is designed for moving vehicle traffic. The Federal Highway Administration considers NH 10 a minor arterial highway, meaning that it is designed to link larger cities and towns and be part of an integrated network that provides intercounty and interstate service.¹ NHDOT considers NH 10 a Tier 2 highway meaning that is intended for moderate to high motor vehicle traffic volumes.²

From Keene to Winchester, NH 10 is a two-lane rural highway with vehicle lanes ranging from 11 feet to 12 feet wide and shoulders ranging from 1 foot to 10 feet wide. Passing areas exist on the stretch of highway but there are no passing lanes. There are a number of dedicated left-turn and right-turn lanes to several minor streets along the highway, as well as a stretch of two-way left-turn lanes between California Street and Cobble Hill Road in West Swanzey.³ The passing areas and dedicated turning lanes are designed to keep traffic moving and reduce vehicle conflicts.

All interconnecting roadways along the NH 10 Corridor carry low volumes of traffic. The highest traffic volume of any intersecting roadway is at Base Hill Road averaging 2,900 vehicles per day. California/Main Street carries approximately 1,900 vehicles per day and Ash Hill Road approximately 1,100 vehicles per day. All other intersecting roads carry less than 1,000 vehicles per day. Base Hill Road represents the only roadway that connects NH 10 directly to another arterial highway (NH 9). All other roads serve mostly local traffic and occasionally regional traffic. The gravitational effect of the City of Keene as a regional employment and service center has many people living on the intersecting roadways traveling back and forth from the Keene area, resulting in higher traffic volumes on NH 10 the closer the highway approaches Keene.

Town-wide, the percentage of Swanzey residents that typically drive to work is 97%.⁴ This high number is not unusual for Southwest New Hampshire, where most of the local landscape is rural and most transportation trips tend to be too far for walking or bicycling. A SWRPC analysis of people living in housing located just ¼ mile off of NH 10 are estimated to contribute 5,400 trips a day on the highway all by themselves.⁵

Most of the traffic volume on the highway consists of personal vehicles. The proportion of truck traffic (tractor trailers as well as commercial trucks and buses) on the corridor varies ranging from about 2% of traffic on the northern end of the corridor and approaches 7% of the traffic on the southern end of the corridor. At the southern end of the study area, truck traffic reaches over 500 trucks per day. Most of the truck traffic in that location are 2 axle 6 tire single unit (Class 5) trucks rather than tractor trailer trucks.

Among those driving the corridor, different data sources suggest that there is moderate carpooling activity. The Census estimates that a little more than 7% of Swanzey resident workers regularly carpool, meaning that approximately 90% of them drive alone.⁶ SWRPC collects rideshare data as well, the most recent of which is from 2019. On NH 10 south of Base Hill Road during peak hours SWRPC observed the rideshare rate of vehicles with 2 or more people was 13% in the a.m. peak hour and 23% in the p.m. peak hour. The SWRPC data source is different than the Census data in that it counts worker commuting as well as other personal vehicle trips (shopping, etc.), but the data is limited in that it is a snapshot of motorist behavior and there may be some daily or seasonal variability. There are no formal rideshare lots along or near the NH 10 corridor and there is no strong ridesharing promotion in New Hampshire at this time, so most ridesharing is thought to occur informally.

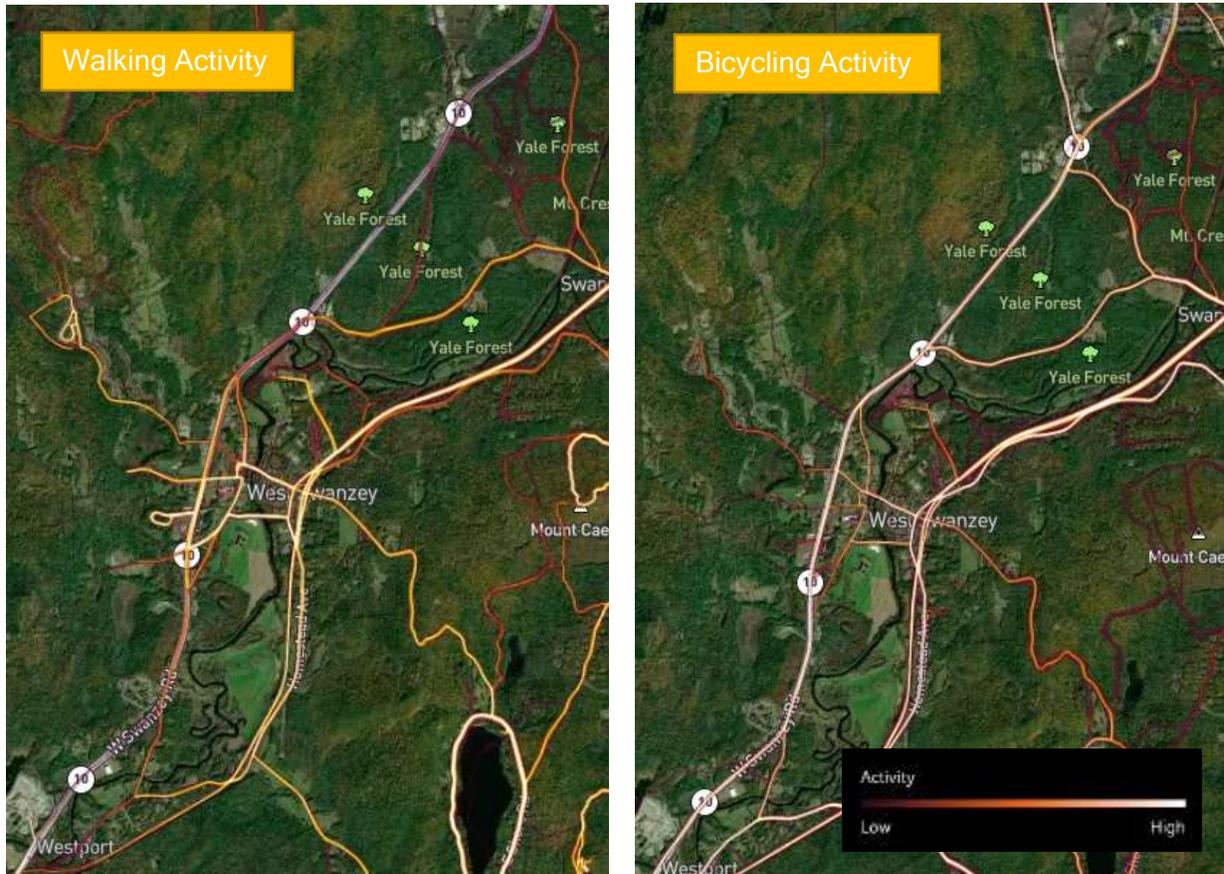
As for transit, there is no fixed route bus service on the corridor except for a shopping shuttle operated by Home Healthcare, Hospice and Community Services that connects Keene and Marlborough residents with the Market Basket grocery store at the northernmost end of NH 10.

Non-Motorized Transportation Infrastructure and Trends

Available data on walking and bicycling along the corridor is very limited. However, Strava, a popular online social network used by athletes, tracks walking and bicycle trips through a global positioning system (GPS) app. In the Strava maps below (Figure 1), the whiter and thicker lines indicate higher walking and bicycling activity. Actual count data is not provided by Strava, but their data can be calibrated with other count data. SWRPC has walker and bicycle volume data on Ashuelot Rail Trail in West Swanzey and recorded an average of 62 daily users in June 2018. On the NH 10 corridor the area between California Street and Cobble Hill Road shows strong walking and bicycling activity, which is probably due to the availability of the only sidewalk on the corridor. Other nearby areas with walking and bicycling activity include the Ashuelot Rail Trail and Homestead Avenue between Main Street and Denman Thompson Highway. While walking activity is not strong along the entire NH 10 corridor, bicycling activity is relatively high and stable all along NH 10, presumably indicating steady use by recreational bicyclers. Walking activity is high on Perry Lane as well as the cross streets connecting NH 10 to the Ashuelot Rail Trail including Main Street, Swanzey Street, West Street, South Winchester Street, and Denman Thompson Highway.

Pedestrian and bicycle infrastructure is limited along the corridor. NHDOT's Statewide Asset Data Exchange System (SADES) which includes comprehensive data showing New Hampshire sidewalks, crosswalks, curb ramps, and pedestrian access buttons shows that the only pedestrian infrastructure on NH 10 is concentrated in West Swanzey (Figure 2). This includes a stretch of asphalt sidewalk between Cobble Hill Road and West Street on the east side of the highway. The local sidewalk network extends to the west, across NH 10, on West Street, however, there is no crosswalk facility. All other sidewalk connections are on the east side of the highway in West Swanzey Village.⁷ That being said, there are plans to expand sidewalk and bicycle infrastructure

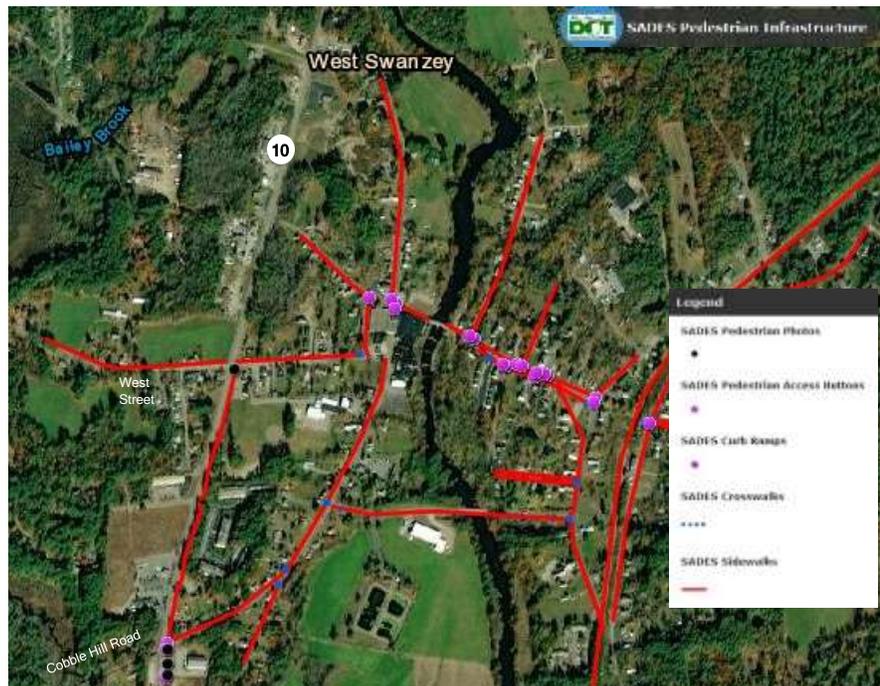
Figure 1: Strava Maps Showing Walking and Bicycling Activity of App Users On and Near NH 10 in Swanzey



Source: Strava Metro, Activity from June 2019 to May 2021

along other parts of the corridor. Sidewalks are currently being improved on West Street and South Winchester Street. In addition, the Town of Swanzey has recommended that an upcoming Keene based highway reconstruction project (#40666), which involves installing sidewalks and bicycle lanes on Winchester Street (NH 10) from NH 101 to the Swanzey town line, be extended to the main entrance of the Market Basket plaza on

Figure 2: SADES Pedestrian Infrastructure Map of West Swanzey Area



Source: New Hampshire Department of Transportation

the northern end of the corridor.⁸

As noted earlier, NH 10's highway shoulders, which are used occasionally by bicyclists and pedestrians, range from 1 to 10 feet wide depending on their location. Highway shoulders less than 4 feet in width are considered unsafe for bicyclists and pedestrians. Locations where shoulders are less than 4 feet include the northern part of the corridor from the Keene and Swanzey town line to approximately the Monadnock Humane Society driveway, a portion of the west side of the highway on the southbound approach to Base Hill Road (the shoulder was replaced with a right-turn lane), and the area consisting of NH 10 from approximately two-tenths of a mile south of Whittemore Farm Road to one-tenth of a mile north of North Winchester Street.

Population

Based on U.S. Census data, SWRPC estimates there are approximately 2,000 people residing within a quarter mile radius of the NH 10 Corridor in Swanzey which is equivalent to more than a quarter of Swanzey's entire population.⁹ Town-wide Swanzey's population grew 70% from 4,254 to 7,230 between 1970 and 2010, which was faster than Cheshire County as a whole (47%), but slower than New Hampshire (78%) over the same period. Between 2000 and 2019, the latest U.S. Census data available, Swanzey's population is expected to have actually decreased by 10 people to 7,220 people. According to the NH Office of Strategic Initiatives, however, Swanzey's population is expected to follow historic trends, growing faster than Cheshire County but slower than the State as a whole. Estimates from the agency show Swanzey growing 5% from 2010 to 2040 or 7,230 to 7,662 people. It is anticipated that the corridor population will grow at least as fast as the Town overall, if not faster due to the available developable land along the southern half of the corridor, public sewer and water availability and the convenience of NH 10 to reach jobs, shopping destinations and services.

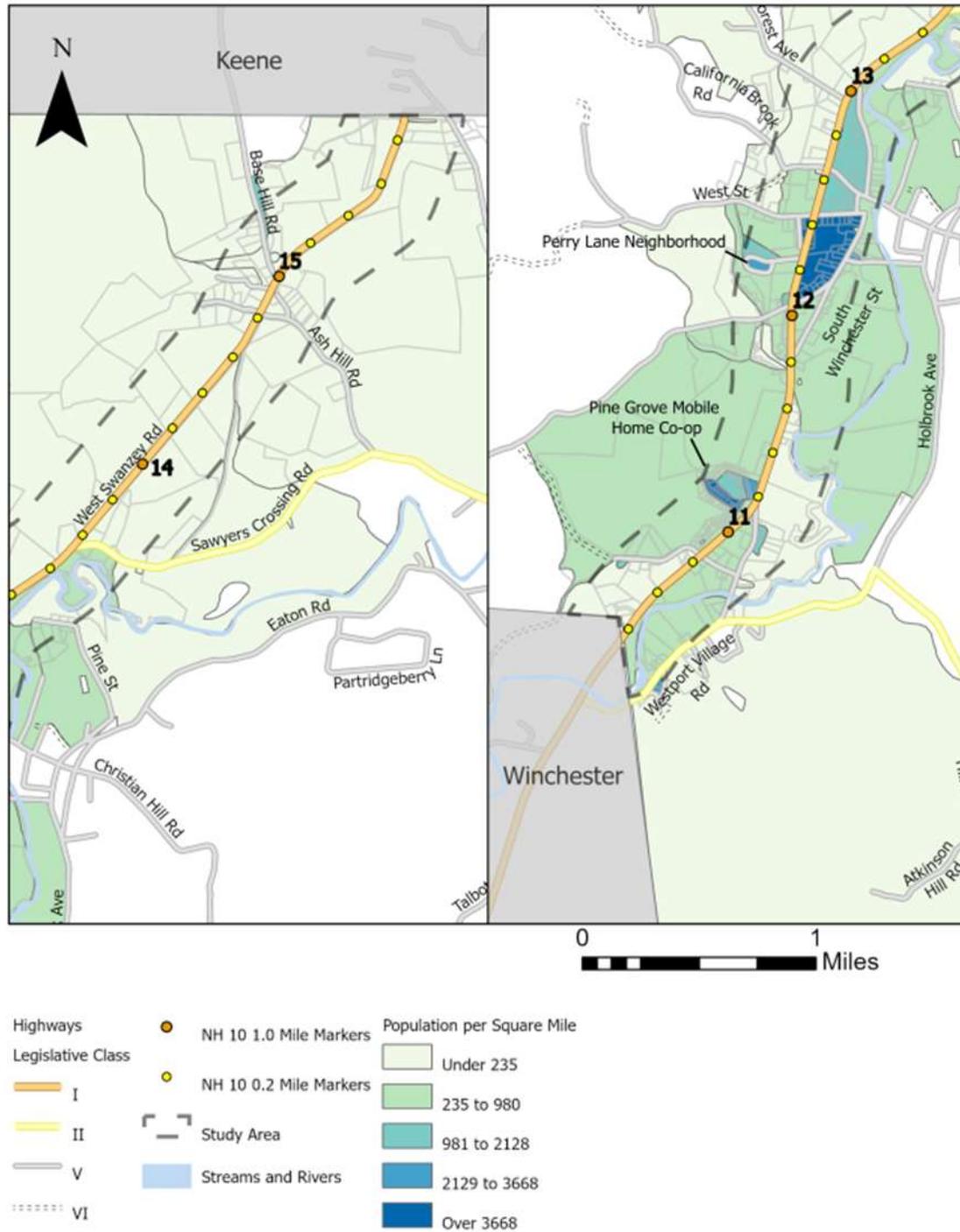
Today population density along the corridor is lower on the northern portion of the corridor (under 235 people per square mile) and denser in the southern part of the corridor (235 people or more). By far the area with the highest density is in West Swanzey Village in an area roughly bounded by North Winchester Street, South Winchester Street, Cobble Hill Road, and NH 10 consisting of over 3,600 people per square mile. The Perry Lane neighborhood and the Pine Grove Mobile Home Park Cooperative also exhibit higher densities ranging from 2,100 to 3,600 people per square mile. Population density can have an important effect on what forms of transportation options are viable, with greater density tending to increase opportunities for walking, bicycling and transit.

Like other parts of Cheshire County, the average age of Swanzey's population is getting older. In the coming years, the proportion of youth is expected to continue to decrease and the proportion of seniors is expected to continue to increase. Town-wide, the median age has increased from 38.4 years in the 2000 Census to 43 years in 2010, and was estimated to be 50.0 in 2019.¹⁰ In 2019, the proportion of youth (younger than 18) living along the corridor was estimated to represent 19% of the population and seniors (65 and over) 27%.¹¹ Based on the 2019 U.S. Census American Community Survey data and assuming the population on the corridor was about 2,000 people in 2019, there were an estimated 380 youth and 585 seniors living on the corridor at that time.

Generally, there is a strong correlation between a person's age and transportation need. Transportation needs of the young and old differ from the middle age population. Youth under 18

Figure 3: Population Density on the NH 10 Corridor in Swanzey

Study Area Population Density



Source: U.S. Census Bureau, 2010 Decennial Census

either cannot drive or if they can drive, vehicle affordability may be an issue. National statistics show that 1 in 5 seniors 65 and over do not tend to drive either.¹² These trends are certain to present increasing challenges for a community that relies almost entirely on personal motor vehicle transportation, especially since the senior population is expected to continue growing to at least 2040.

Another significant population group that is sensitive to the cost of transportation are low-income residents. In 2019, the estimated number of people with a ratio of income to poverty level of 150% or less was about 13% of the population living on the corridor or approximately 255 people.¹³ On NH 10 there are clusters of areas where people may be challenged by income levels and depend on safe walking and bicycling conditions. The U.S. Census provides data for census designated places (CDP), which are areas that are often recognized as places constituting concentrations of population. One such CDP exists on the NH 10 Corridor representing the West Swanzey area. Although median income appears to continue rising throughout Swanzey since 2010, the median income in West Swanzey remains significantly lower than the town-wide median income. In 2019 the median income in West Swanzey was \$58,494 versus \$65,019 town-wide.¹⁴ Outside of West Swanzey Village, there are a number of clusters of low- and moderate-income populations along NH 10 including two housing developments owned by Keene Housing, one housing development on Main Street owned by Southwestern Community Services, as well as the Pine Grove Mobile Home Park and Winchester Woods apartments.

However, transportation is not only expensive for people living close to the federal poverty level. According to the Center for Neighborhood Technology, which estimates annual housing and transportation costs for a median income household across the United States, they estimate that transportation consumes about 24% of household income for people living along the NH 10 Corridor in Swanzey. Combined with high housing costs, which the same entity estimates costs approximately 27% of median household income, transportation is quite expensive.¹⁵



The Google Maps vehicle, which captures continuous street view images along U.S. highways, captured this pedestrian waiting to cross the street from Winchester Woods Apartments to the Market Basket in Swanzey on NH 10. There are no crosswalks or sidewalks in this area today. Image from www.google.com/maps

Another category of the population sensitive to a personal vehicle dominated transportation system are people with disabilities. In Swanzey, the percentage of people with a cognitive, ambulatory, self-care and independent living difficulty (individuals can be categorized in more than one), is 6.9%, 12.1%, 4.1% and 7.3%, respectively.¹⁶ Assuming rates of disability are distributed evenly throughout Swanzey, this would represent up to 240 people living along the NH 10 Corridor.

Zoning

Swanzey’s current zoning, which guides new development and land use activities along the corridor, generally emphasizes a desire for commercial and business related development directly adjacent to the corridor, and de-emphasizes housing adjacent to the corridor (Figure 4). Among the seven zoning districts currently administered in Swanzey, six of these zones are located within a quarter mile radius from NH 10.

Table 1: Total Area Associated with Zoning Districts Within a Quarter Mile of the NH 10 Corridor

Zoning District Name	Commercial/ Industrial	Business	Residence	Rural/ Agricultural	Village Business I	Village Business II	Total
Total Area (Acres)	834	475.7	173.3	133.7	10.2	5.2	1632
Acres as Percent of Total Study Area	51.1%	29.2%	10.6%	8.2%	0.6%	0.3%	100%

Source: Town of Swanzey

With the exception of a small piece of Rural/Agricultural frontage on NH 10 and a stretch of highway on the west side of NH 10 between Anthony Circle and Kempton Road that is zoned residential, frontage on NH 10 is entirely dominated by the Commercial/Industrial and Business Zones. The northern half of the corridor is dominated by the Commercial/Industrial Zone, while the southern half of the corridor is Business.

Overall, the Town of Swanzey’s zoning regulations encourage low-density development. The three most prominent zoning districts of Business, Commercial/Industrial and Residence require a minimum lot size of one acre. Lots even larger than 1 acre are required in the case of properties within the Commercial/Industrial districts with direct frontage to NH 10 or multifamily properties not connected to public sewer.

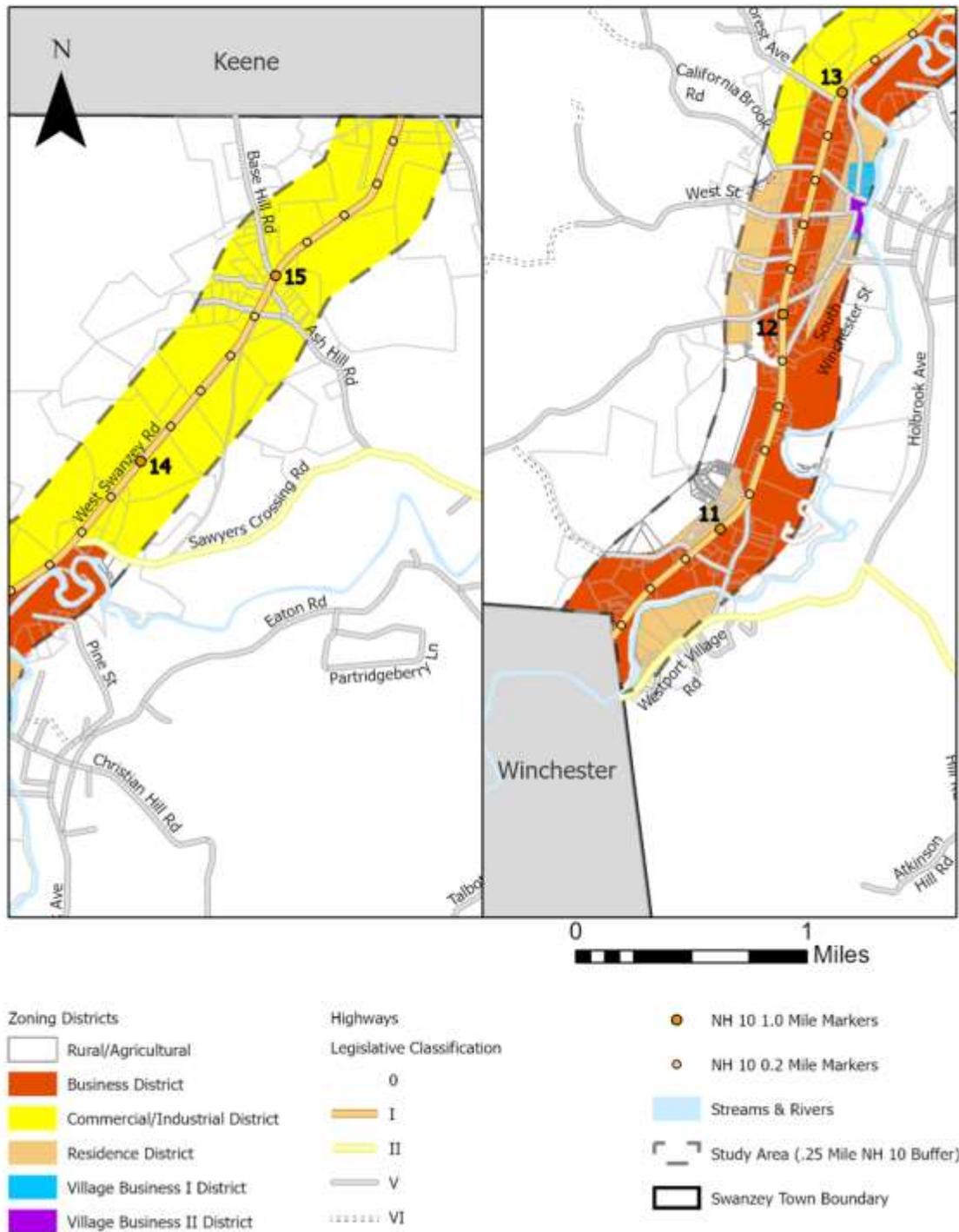
Table 2: Minimum Lot Size, Frontage and Setbacks Associated with the NH 10 Corridor

Zoning District Name	Commercial / Industrial	Business	Residence	Rural/ Agricultural	Village Business I	Village Business II
Minimum lot size (acres)	3; 1 with feeder road	1	1	3	0.5	0.5
Minimum frontage (feet)	225; 125 with feeder road	125	150	225	100	100
Front, side, rear setback (feet)	30, 20, 20	75, 20, 20	30, 20, 20	30, 20, 20	30, 20, 20	30, 20, 20

Source: Town of Swanzey

Figure 4: Zoning Along the NH 10 Corridor in Swanzey

Study Area Zoning



Source: Town of Swanzey

Notable among the zones, the Commercial/Industrial district has an objective to “minimize strip development and encourage off road development on portions of Route 10”. The district promotes its goal by requiring a 3-acre minimum lot size for properties utilizing access to NH 10 while only requiring a 1-acre minimum lot size for parcels using access to “feeder roads”. Allowances for reduced frontage are also available for development that is connected to NH 10 via feeder roads.

The Commercial/Industrial Zone permits land uses such as manufacturing, research facilities, warehousing, educational uses, business and professional offices, restaurants, gas stations, lodging, retail sales and services, and other miscellaneous commercial and industrial type land uses. Housing of any kind is not allowed even by special exception, however, home businesses are allowed for existing residential land uses located within the Zone. In fact, there are no special exceptions allowed in the Commercial/Industrial Zone.

The Business Zone permits many of the same land uses as the Commercial/Industrial Zone, however, it does not allow land uses that are more industrial in nature like manufacturing or research and testing laboratories. The Business Zone allows by special exception all types of housing (single, two-family, multifamily and manufactured housing) and some types of land uses that tend to have large traffic generation such as drive-thru establishments.

The Village Business Districts tend to encourage many of the same business land uses allowed in the other zones with Village Business II allowing for some industrial land uses. Multifamily housing is also allowed as of right in the Village Business II Zone. Village Business I allows single family and manufactured housing as of right, and two-family and multifamily dwellings by special exception.

The Rural/Agriculture Zone allows for low density residential, agricultural uses as well as some other miscellaneous uses (e.g. industrial parks, septage lagoons, gravel pits, recreational uses like camps, etc.). The Residential Zone allows for single, two-family, multifamily and manufactured housing, home based businesses, some agricultural businesses and other miscellaneous land uses. Only single family housing, manufactured housing, and customary agricultural uses are allowed by right.

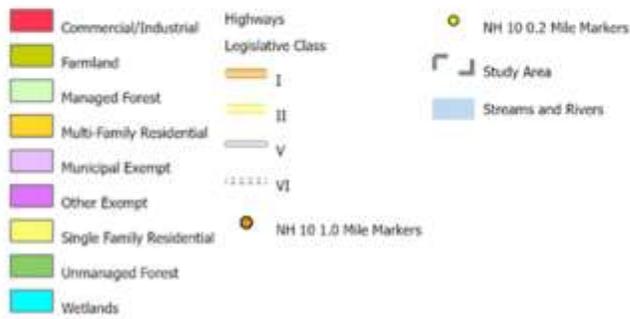
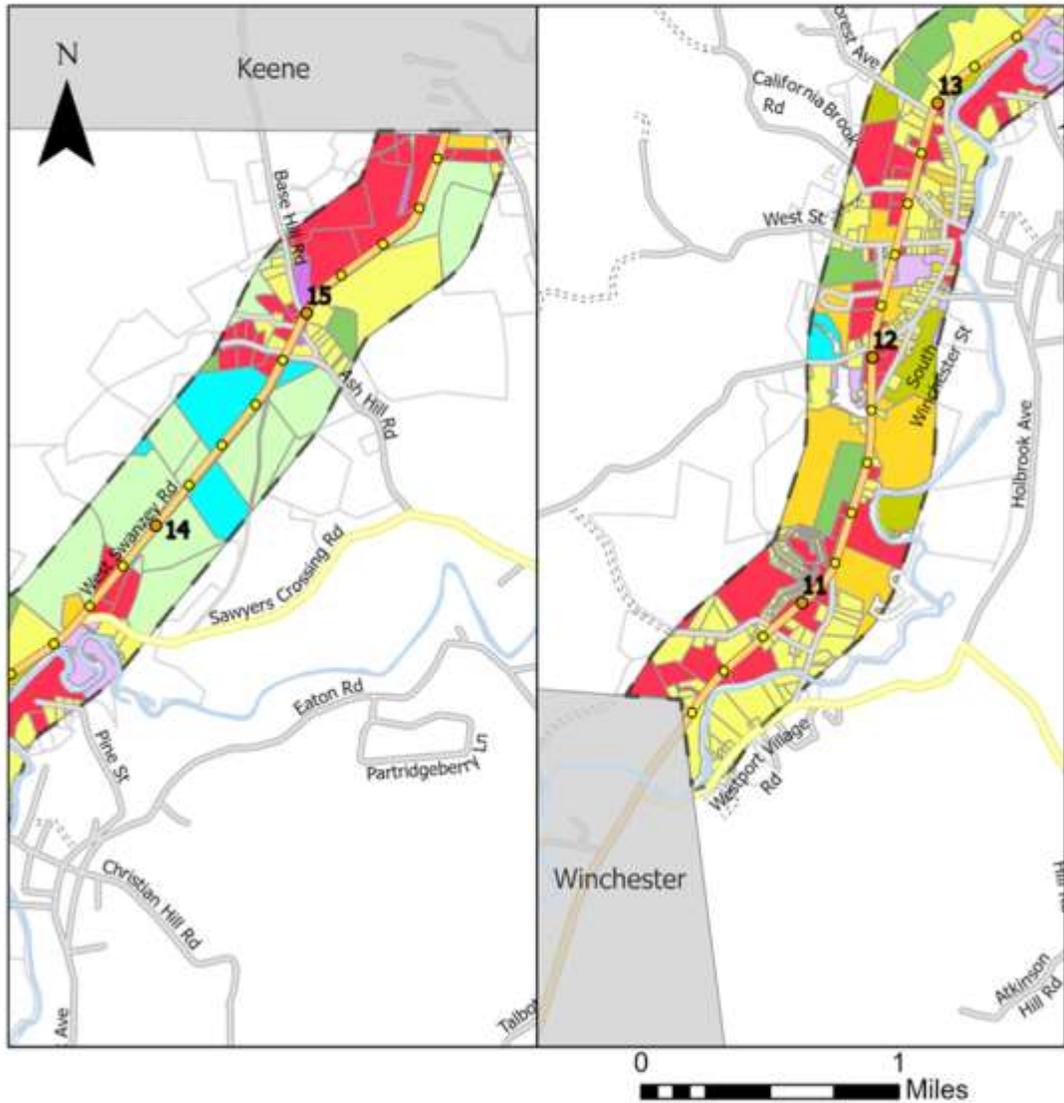
In addition to the five zones adjacent to or near the corridor, there are three overlay districts within a quarter mile radius of NH 10 including the Wetlands Conservation District, Shoreland Protection District and the Flood Plain District. The Wetlands Conservation District applies to scattered sites within the Study Area where wetlands are found, while the Shoreland Protection District applies to areas near the Ashuelot River. The Flood Plain District applies to portions of the Study Area which lie within a FEMA designated flood hazard area. The first two districts are designed to protect the resources for which they are named and the Flood Plain District is intended to ensure the health and safety of the population living or working in areas built in floodplain areas.

Land Use

Transportation activity on NH 10 is derived in part by the land use activities occurring along the corridor. For the Study, SWRPC examined existing land uses ¼ mile radius distance from NH 10, comprising a total of 1,632 acres. In that area there are 527 parcels, most of which are single-family homes, and commercial and industrial properties (Figure 5). Land uses along the corridor are primarily low density meaning that demand for access to the corridor is spread out along the highway for the most part. An exception to this trend is the West Swanzey area, which shows

Figure 5: Land Uses Along the NH 10 Corridor in Swanzey

Study Area Land Use



Source: Town of Swanzey

denser patterns of development in an area built for walkability when houses were constructed before and during the dawn of the automobile age. In addition, there are clusters of denser housing along the highway or just outside of the ¼ mile radius of NH 10 such as Pine Grove Mobile Home Park Co-op located at Anthony Circle (122 units) and California Brook Estates located off of California Street (98 units). In the northern half of the study area land uses are predominately forests managed by Yale University, but there are also a number of low-density commercial and industrial properties, and low-density residential properties. Land uses within the southern half of the study area are more diverse, with a mix of both single-family and multi-family residential, commercial properties, unmanaged forests, and farmland.

Table 3: Characteristics of Land Uses Within a Quarter Mile Radius of NH 10

						
Land Use Type	Single Family Residential	Multi-Family Residential	Commercial/Industrial	Managed and Unmanaged Forest	Wetlands	Other
Parcels	355	30	77	27	10	23
Acres	451	167	386	427	90	53
Average Parcel Size	1.27	5.57	5.01	15.81	9.00	4.96
Acreage as Percent of Total Study Area	27%	10%	23%	26%	5%	5%

Source: Town of Swanzey and Southwest Region Planning Commission

Today, single-family residential properties are the most prevalent land use by number of parcels and acres along the corridor. In terms of acreage, commercial/industrial and managed forest lands make up the other two predominant forms of land use along the corridor. Managed forest accounts for the largest parcels, with only 19 parcels accounting for 341 acres of land within the corridor. Much of the managed forest land is contained within the Yale-Toumey forest, which is protected through Yale University as part of their forestry program.

Economic Development

The NH 10 Corridor is a significant engine of economic activity in Swanzey. There were approximately 500 jobs within a ¼ mile radius of the NH 10 Corridor in 2018. The most prominent economic sector represented in the area is retail, accounting for 237 or 53% of the jobs on the corridor, followed by other services (excluding public administration) (68 jobs), wholesale trade (43), construction (31) and manufacturing (25).¹⁷ Major retail operations on the corridor include Market Basket, Gomarlo’s Shop n’ Save Supermarket, and many other smaller retail establishments. The category, “other services (excluding public administration),” represents a hodgepodge of



Gomarlo’s Shop n’ Save Supermarket is one of the larger employers on NH 10 located in West Swanzey.

service industries¹⁸ including automotive repair and maintenance for which there are several examples along the corridor including Bob’s West Swanzey Garage, NH 10 Auto Inc. and others. An example of wholesale trade on the corridor is the Tire Warehouse. Construction-oriented businesses include Ingram Construction Corporation, Cheshire Builders Inc., and SUR Construction West, Inc. among several others. Examples of manufacturing businesses include Turmoil Inc. and the West LA Beer Company.

Overall, business activities on the NH 10 Corridor are estimated to make up almost a quarter of the jobs in the Town, particularly if one accounts for jobs just outside of the ¼ mile radius of the highway. Industry sectors in which the number of NH 10 Corridor jobs exceed 25% of the Town’s total jobs and thus have a significant presence in the Town’s economy include retail (37%), accommodation and food services (33%) and other services excluding public administration (67%).

Table 4: Comparison of Jobs Along NH 10 Corridor and Town of Swanzey in its Entirety

Industry	2018		2019	
	Count	Share of Jobs on NH 10 Corridor	Count	Share of Swanzey jobs
Agriculture, Forestry, Fishing and Hunting	0	0%	0	n/a
Mining, Quarrying, and Oil and Gas Extraction	0	0%	0	n/a
Utilities	0	0%	0	n/a
Construction	31	6%	216	14%
Manufacturing	25	5%	221	11%
Wholesale Trade	43	9%	n	n
Retail Trade	264	53%	707	37%
Transportation and Warehousing	16	3%	103	16%
Information	2	0%	n	n
Finance and Insurance	0	0%	0	n/a
Real Estate and Rental and Leasing	3	1%	13	23%
Professional, Scientific, and Technical Services	1	0%	65	2%
Management of Companies and Enterprises	0	0%	n	n
Administration & Support, Waste Management and Remediation	13	3%	70	19%
Educational Services	0	0%	n	n
Health Care and Social Assistance	12	2%	40	30%
Arts, Entertainment, and Recreation	0	0%	n	n
Accommodation and Food Services	22	4%	66	33%
Other Services (excluding Public Administration)	68	14%	101	67%
Public Administration	1	0%	654	0%
Totals	501	100%	2256	22%

n = data do not meet disclosure standards. Note that some “0’s” for the 2018 data set may actually account for such a small number of jobs that they do not meet disclosure standards so the LEHD gave the industry a value of 0 jobs.

U.S. Census Longitudinal Employer-Household Dynamics, 2018 and Bureau Labor Statistics, 2019

The majority of people working along the corridor aged 29 or younger represent approximately 41% of people working in the corridor area. Workers aged 30 to 54 come in a close second at 39% of the workforce, and older workers 55 and over represent the balance at about 20% of the workforce. Forty-eight percent of the workers on the corridor make \$1,250 or less per month, with 31% making \$1,251 to \$3,333 and the remaining 21% making above \$3,333.

Job commuting trends associated with employment on the NH 10 Corridor shows interesting patterns. Among the land uses within a ¼ mile radius of NH 10, there are somewhat more people commuting into the corridor for jobs (491) than people commuting away for jobs (431). Interestingly, there are only 7 Swanzey residents living along the corridor that work on the corridor. Eighty-seven people representing the NH 10 Corridor workforce live in Swanzey, and an additional 123 people live in the neighboring communities of Keene and Winchester. Almost a third (32%) of the people working on the corridor have a round-trip commute of 50 or more miles, suggesting a large proportion of workers are coming from quite far away.

The top employment destination for the 431 residents living along the corridor is Keene (171 people). The distribution of worker’s other job destinations are quite spread out. After Keene, the top job destinations attract only a few workers and are fairly distant including Brattleboro (13), Concord (12), Manchester (7) and Lebanon (6). Like people commuting to work on the corridor, there are a significant number of people that reside along the corridor and commute far away. The proportion of residents making round trip work-related commutes of 50 or more miles is 32%, the same percentage of people commuting into the NH 10 Corridor for work.

Housing

While housing development is not allowed as a permitted use in the Commercial/Industrial Zone and is less of a focus in the Business Zone (the two most extensive zones on the corridor), housing within the ¼ mile radius of the NH 10 highway is nevertheless prevalent today. According to Town of Swanzey assessing data, there are 644 units of housing within the area across 385 parcels. Of those, the majority (58%) of units are single-family homes, followed by multi-family units of four or more units which make up 36% of all units. Duplex and triplex properties comprise 4% and 3% of the housing stock in the area of study, respectively. Of those units in multifamily buildings with 4 or more units, 92 units are subject to some form of income limitation while 137 units are unrestricted units on the private market.

Table 5: Housing Stock Presently Within ¼ mile radius of NH 10 Corridor in Swanzey

Housing Type	Number of Parcels	Number of Units	Housing Type as Percentage of Stock
Single Family*	355	371	58%
Duplex	12	26	4%
Triplex	6	18	3%
Four or more units	12	229	36%
Total	385	644	100%

**Includes 116 units of Manufactured Housing in the Pine Grove Cooperative*

Source: Town of Swanzey

Corridor Performance & Outlook

This next part of the report attempts to answer the question, “Is the corridor meeting the public’s needs and expectations today?” Also, “Using available trend data and information, what is the direction and outlook for the corridor and is this in line with the Town of Swanzey’s vision for the corridor?”

There are a number of ways to evaluate corridor performance and whether aspects of corridor performance are heading in the right direction. Guidance can be found in materials such as:

- Local plans, studies or policy documents that are relevant to or related to NH 10;
- Information collected during the course of the *Swanzey NH 10 Corridor Study*;
- Government partner (regional, state) policies and reference documents that share interest in the proper management of the NH 10 corridor; and
- Best management practices guidance where no other specific guidance is available or known.

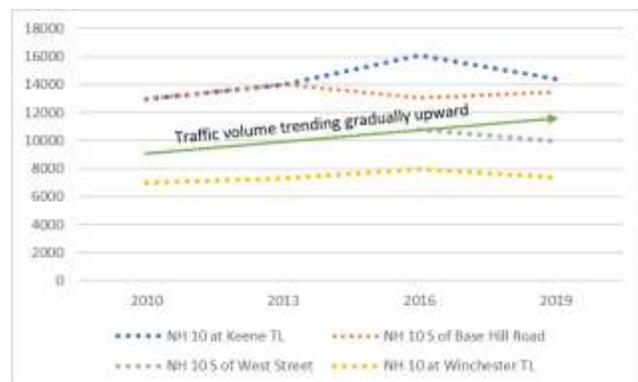
These resources can be helpful in understanding local preferences and attitudes or generally recognized preferences and attitudes relating to corridor management topics. In the following section, the report attempts to evaluate the corridor’s performance or outlook as it relates to motor vehicle traffic, non-motorized transportation, population change, zoning and land uses, economic development, and housing using the aforementioned sources when available.

Motor Vehicle Traffic

The transportation goal in the 2003 Swanzey Master Plan is “to provide a safe, efficient and diversified transportation network that is sensitive to the Town’s rural character.” Safety and efficiency, in particular, are directly related to motor vehicle traffic and highway performance and traffic growth, highway capacity, speeding, and crashes are indicators often considered to evaluate highway safety and efficiency.

In three locations along the corridor, traffic volumes have been tracked for the last decade. This includes NH 10 at the Keene/Swanzey town line, NH 10 south of Base Hill Road and NH 10 at the Winchester/Swanzey town line. Traffic counts at NH 10 south of West Street did not start until 2016, but are also referenced in this analysis. Traffic changes during the past decade show ups and downs with a recent decrease in the last 3 year period for three of the counting sites. However, a regression based trendline show traffic volumes slowly increasing on NH 10 over the entire period.

Figure 6: Traffic Volume Change for Four Locations on the NH 10 Corridor in Swanzey, NH



Source: New Hampshire Department of Transportation

Going back in time even farther would show steady, slow growth in traffic volumes during the 2000s. This slow increase is expected to continue. The NHDOT Bureau of Traffic's model for southwest New Hampshire during the 2010s showed an average annual traffic growth rate of .63% per year.¹⁹ All things being equal, expectations are that slow, increasing growth in traffic volumes will continue into the future on NH 10.

Despite this growth, it is anticipated that most of the highway as built today can withstand additional traffic volume growth given the highway's existing design for vehicle capacity. While an engineering study is recommended for a more specific and accurate evaluation of the corridor's capacity, there are "rules of thumb" that are helpful in understanding capacity at the planning level. For instance, when analyzing peak hour traffic, the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) reference for maximum saturation flow per lane is 1,900 vehicles per hour. In the case of NH 10, the highest measured peak hour on the corridor is at the Keene and Swanzey town line and reaches only about 1,470 vehicles for *two lanes combined*, well below the TRB's saturation flow rate guidance.



While traffic is increasing slowly on NH 10 in Swanzey, there is plenty of capacity for growth.

Another capacity measure that can be used is level of service. When estimating level of service for 2-lane highways with left-turn lanes like NH 10, the TRB's HCM states that a highway's level of service begins degrading (Level D/E) at about 18,300 vehicles per day. While these levels of traffic volumes are occurring on NH 10 in Keene south of the NH 10/12/101 roundabout, they are not approaching those levels in Swanzey. The highest traffic volume recorded on NH 10 in Swanzey in 2019 was at the Keene/Swanzey town line at 14,443 vehicles per day. Though it is possible that significant changes in traffic growth can occur in a relatively short time depending on land use development activities, NHDOT's current average annual growth rate of .63%, if applied to the 2019 ADT measured at the Keene/Swanzey town line, wouldn't reach Level of Service D/E until 2074.

While the level of service on NH 10 performs well today, SWRPC has noticed some vehicle platooning on the highway, particularly as traffic volumes increase toward the northern end of the corridor as traffic builds on the approach to Keene. Platooning refers to the tight spacing and long grouping of vehicles behind each other resulting in very short headways or "gaps" between each vehicle. Platooning can lead to higher incidences of rear-end collisions for vehicles within a platoon especially if vehicles are improperly distanced (tailgating) or in cases of driver inattention. Platooning can also result in side-impact collisions for drivers attempting to enter the highway from driveways or unsignalized intersections and miscalculating safe gaps to enter the highway.

The TRB HCM indicates that gap acceptance depends on a number of factors including prevailing speed, number of lanes on the highway, and what type of traffic movement a vehicle is making from a minor side approach. A right turning movement needs the least amount of time. On a two lane highway, a left turn typically requires an additional second of gap time, and crossing the road

requires a half second more than a right hand turn. Trucks require more time than passenger vehicles. For the study, gap data was assessed in four locations including NH 10 at the Keene and Swanzey town line, NH 10 south of Base Hill Road, NH 10 south of West Street and NH 10 at the Swanzey and Winchester town line. For all the prevailing speeds recorded on NH 10, 6.5 seconds is a point at which gaps become higher risk for drivers even making right hand turns.

Based on the data that was collected, conditions are highest risk for drivers at NH 10 south of Base Hill Road in the p.m. peak hour when the percent of gaps less than 6.5 seconds accounts for almost 75% of the traffic during the peak hour. Other times with sizeable periods of gaps of 6.5 seconds or less include the p.m. peak period near the Keene and Swanzey town line and the a.m. peak period at NH 10 south of Base Hill Road. Based on SWRPC's research, during peak hours at least 50% of the traffic is following a vehicle by less than 6.5% at all locations.

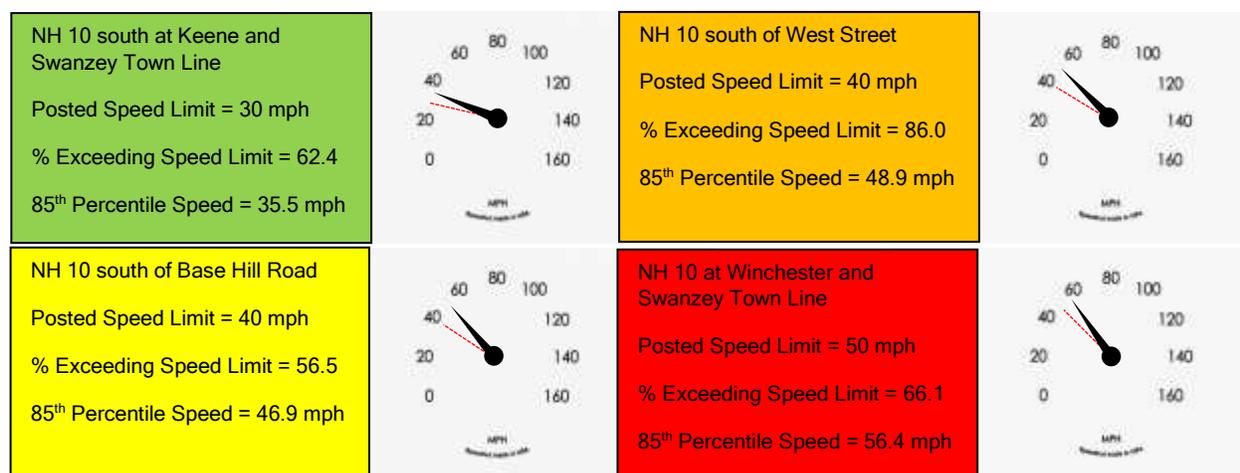
Table 6: Morning and Afternoon Peak Hour - Percent of Vehicle Gaps Less Than 6.5 seconds on NH 10 in Swanzey

Location	Peak Hour	Prevailing Speed (mph)	% of Gaps Less Than 6.5 Seconds
NH 10 at Keene line	8-9 a.m.	37 NB, 35 SB	56.9
	4-5 p.m.	36 NB, 34 SB	73.4
NH 10 south of Base Hill Road	7-8 a.m.	43 NB, 48 SB	71.6
	5-6 p.m.	49 NB & SB	74.2
NH 10 south of West Street	7-8 a.m.	51 NB & SB	52.4
	4-5 p.m.	49 NB & SB	62.2
NH 10 at Winchester line	7-8 a.m.	56 NB, 57 SB	49.6
	4-5 p.m.	56 NB & SB	58.6

Source: Southwest Region Planning Commission

Readers may be surprised to see in the previous table that even during peak hours some of the prevailing speeds are up into the high 50 mph range. Speeding, indeed, appears to be pervasive throughout most of the corridor. Transportation engineers typically consider the 85th percentile speed as "prevailing speed" and therefore it is often used to inform the design speed and posted speed limit of a road. Among the four sites where speed data was collected, most drivers' prevailing speed exceed the posted speed limit. The difference between the prevailing speed and posted speed limit is greatest at the Winchester and Swanzey town line, by almost 13 mph. South of West Street the prevailing speed limit is nearly 9 mph greater than the speed limit. Speeding is a concern, because it tends to have a significant influence on crash severity. Speeding is particularly dangerous for pedestrians and bicyclists.

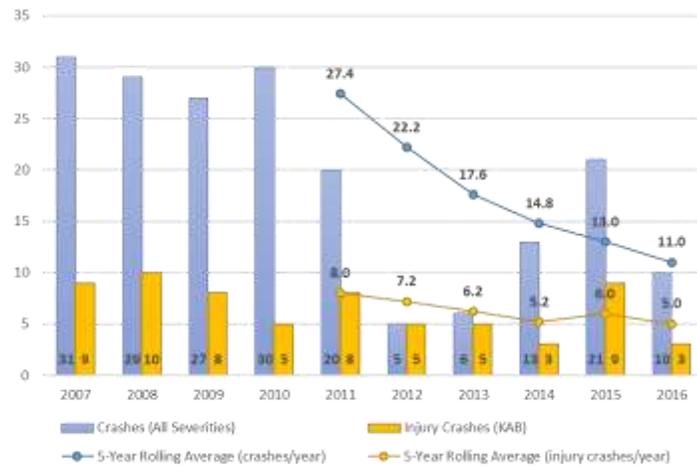
Figure 7: Speed Data Associated with Four Locations on the NH 10 Corridor in Swanzey



Source: Southwest Region Planning Commission

According to data collected by the NH Department of Safety, there were 192 crashes on the Swanzey portion of NH 10 between 2007 and 2016. During that period crash incidents were on a downward trend, decreasing from 40 to 13 on an annual basis. This is consistent with a downward trend observed for the entirety of the town over the same period. The change in injury and fatality crashes also shows a decline over time, however, the trend is less variable, ranging from 10 to 3 annual crashes. Fortunately, among the 65 injury and fatality crashes, there were only 3 fatalities and 4 serious injuries during the period. All other injuries were listed as minor.

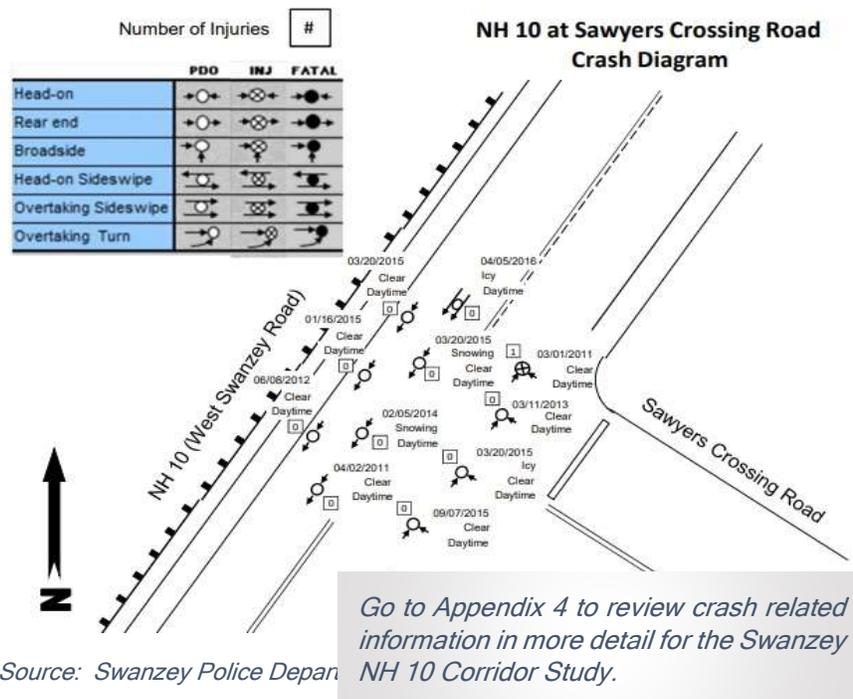
Figure 8: Number of Crashes on NH 10 in Swanzey, 2007-2016



Source: NH Department of Safety

The location of fatalities included the area north of the intersection of NH 10 and Base Hill Road, and two additional locations between North Winchester Street and Sawyer's Crossing Road. Serious injuries were reported on NH 10 in front of the Market Basket, on a straight stretch of highway three-tenths of a mile south of Whittemore Farm Road, at the intersection of Sawyer's Crossing Road, and at the intersection of North Winchester Street. SWRPC analyzed each of the fatality and serious

Figure 9: Crash Diagram for NH 10 and Sawyer's Crossing Road, 2007-2016



Source: Swanzey Police Department

crash locations for the study and observed that the only place showing obvious patterns of similar crash configurations was at the intersection of Sawyer's Crossing Road where in addition to the serious injury there were three other broadside collisions between vehicles pulling out of Sawyer's Crossing Road and northbound NH 10 traffic. Even with the crash patterns, there was only one injury recorded between 2007 and 2016.

In addition to conducting an analysis of the crash patterns at the locations of fatalities and serious injuries, SWRPC reached out to the Swanzey Police Department for additional candidate

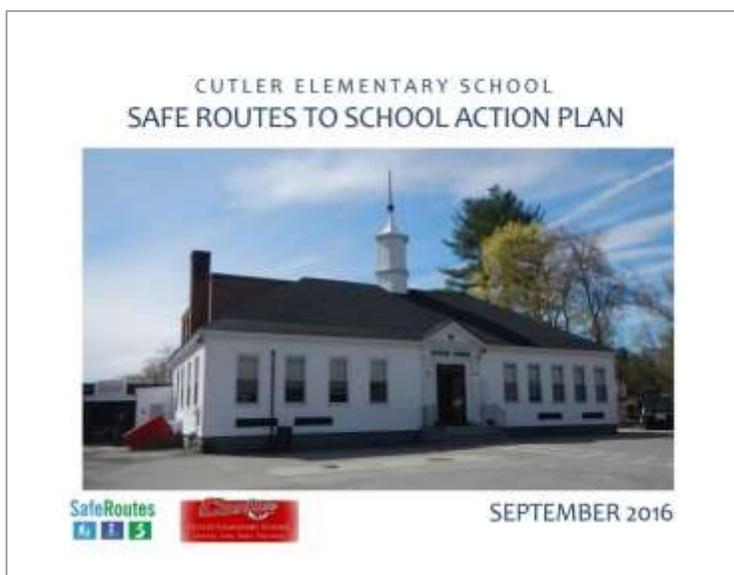
locations where the police recalled higher than average call responses to crashes. The locations referred by the police included NH 10 at Base Hill Road including driveways associated with the nearby Citgo Station, the intersection of Sawyer's Crossing Road, the area between Sawyer's Crossing Road and North Winchester Street, the intersection of North Winchester Street, the intersection of California Street and the intersection of West Street. Among those locations, recognizable crash patterns were observed at the intersection of Base Hill Road, Sawyer's Crossing (discussed above), California Street and West Street. As part of the study effort, a team from the Swanzey NH 10 Working Group investigated the data from those sites and conducted a field review for the four sites with recognizable crash patterns. Information from those reviews led to recommendations, which follow in the next section of the report.

Other observations with the NH Department of Safety crash data are that after "no improper driving" (39%) the most common reasons for cause of accident are "driver inattention/distraction," "failure to yield right-of-way," "following too close," "physical impairment," "skidding," and "illegal/unsafe speed" (collectively 37%), in that order. The most common location of first harmful event occurred "along the road" (48%), followed by "at intersection/intersection related" (28%), and "along road at driveway access" (21%). Most crashes involved a collision with another vehicle (65%), occurring in dry conditions (72%) during daylight hours (68%) on clear days (63%).

Non-Motorized Transportation

For non-motorized transportation performance, SWRPC focused on safety and accessibility. Swanzey's Master Plan, which calls for a "diversified" transportation system as well as the Town's 2015 adoption of a Complete Streets Policy and Complete Streets Design Guidelines, suggest that pedestrian and bicycle safety and accessibility are important local goals for non-motorized transportation. A 2016 Safe Routes to School Action Plan for Cutler Elementary School also discusses the importance of pedestrian and bicycle safety and accessibility as it relates to NH 10.

In the 2007-2016 crash dataset referenced earlier in the report, there was only one pedestrian and one bicycle crash recorded by the NH Department of Safety during the period. The pedestrian crash occurred south of Sawyer's Crossing Road near Swanzey Self-Storage and was listed as a serious injury. Apparently, an intoxicated pedestrian was walking home from Keene and may have stepped in the roadway when they were hit by a southbound vehicle. The bicycle crash occurred at the intersection of California Street and NH 10. According to police reports, the bicyclist was heading north on NH 10 and was hit by a southbound vehicle turning left on California

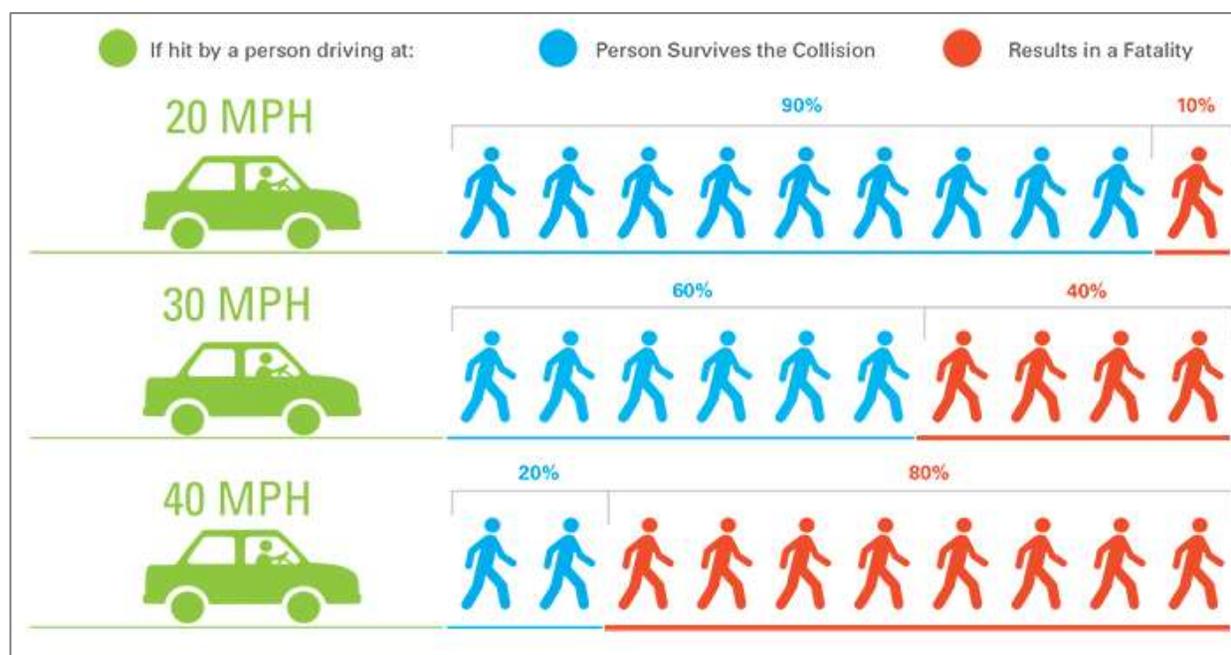


Cutler Elementary School's 2016 Safe Routes to School Action Plan noted that 10.5% of the student body lived within walking and bicycling distance of the school on the west side of the NH 10, but that NH 10 crossing conditions are currently unsafe.

Street and failing to yield to the bicyclist's right-of-way. The Swanzey Police noted that the bicyclist was hit directly by the vehicle, and sustained injuries to their shoulder.

Despite the low number of pedestrian and bicycle crashes, safety is a concern on the highway especially in areas that are more urban and are likely to attract more foot and bike traffic. This is even more of a concern considering that speeding is pervasive on the corridor (See Figure 10). Presently, NH 10 bifurcates parts of the corridor that may otherwise be naturally connected and accessible by pedestrians and bicyclists. These locations, which include somewhat dense mixes of housing, retail and employment include the West Swanzey area and the very northern section of the corridor near the Keene and Swanzey town line. In West Swanzey, there are no pedestrian crossings on the highway despite a mix of housing and destinations including places of employment, a grocery store, a post office, and an elementary school on either side of the highway. While there is some sidewalk infrastructure along NH 10, it is only located on the east side of the corridor between Cobble Hill Road and West Street, opposite of popular locations like the supermarket and post office. California Street has sidewalks approaching NH 10 but they do not fully reach the corridor. Another location that doesn't quite reach NH 10, South Winchester Street, is currently being addressed by a Swanzey improvement project.

Figure 10: Relationship Between Speed and Pedestrian Safety



Source: Institute of Traffic Engineers

In addition to the West Swanzey area, the northern part of the corridor near the Keene border is another location where housing density is higher and places of employment and shopping are within walking and bicycling distance, but the area is separated by NH 10 without safe crossing opportunities. The Town of Swanzey has recommended pedestrian and bicycle improvements for this section of NH 10 as part of a project that NHDOT and City of Keene are addressing for the area. Both of these areas are top candidates for improved pedestrian and bicycle safety and improved accessibility.

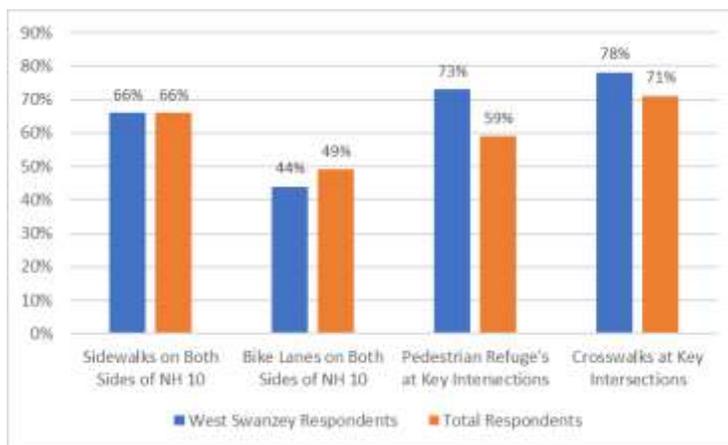
The minimum safe recommended shoulder width for on-road bicycling is four feet unless facing a guardrail, curb or other roadside barrier, in which case 5 feet minimum is recommended.²⁰ On NH 10, shoulder widths less than 4 feet along the corridor are located from the Keene and Swanzey town line to approximately the Monadnock Human Society driveway as well as west side of the highway where a right turn lane was created for southbound traffic turning on Base Hill Road. Shoulders appear to be 4 feet wide in the area starting about two-tenths of a mile south of Whittimore Farm Road to about a tenth of a mile north of North Winchester Road which contains a good deal of guardrail. Shoulders in the West Swanzey area appear to be 4.5 feet.

Even with appropriately wide shoulders, however, other factors can diminish bicyclist safety. The current draft NHDOT Pedestrian & Bicycle Transportation Plan, which grades statewide highways on a number of factors (posted and prevailing highway speeds, shoulder width, roadway configuration, etc) considers all of NH 10 in Swanzey a Bicycle Level of Traffic Stress (BLTS) of 4, the poorest grade for any highway that allows bicycling. BLTS 4 describes “roadways with no designated bikeways, multilane traffic, and motor vehicles traveling at high speeds. [These roadways] are [s]uitable to a limited number of adults.”²¹

Despite gaps in pedestrian accessibility and less than safe conditions for most bicyclists along NH 10, Strava data (discussed in the last section) demonstrates that some members of the general public are bicycling in numbers along the corridor and walking in the West Swanzey area in the vicinity of NH 10. Demand for walking and bicycling may continue to grow as infrastructure conditions improve. Currently, the Town of Swanzey is upgrading much of the existing sidewalk network in West Swanzey and was awarded a federal Transportation Alternatives Program grant to upgrade the Ashuelot Rail Trail. Both of these projects, and an initiative by the Monadnock Region Rail Trail Coalition to bring wayfinding signage on to the Ashuelot Rail Trail, are designed to make walking and riding conditions more comfortable, safe and attractive.

As part of the Swanzey NH 10 Corridor Study, SWRPC conducted a visual preference survey that asked West Swanzey residents and other users of the corridor what they thought about improvements to pedestrian and bicycle accommodation and safety on the stretch of NH 10 from North Winchester Street and South Winchester Street. Potential improvements included installing sidewalks on both sides of NH 10, introducing bike lanes on either side of NH 10, and installing pedestrian refuges or crosswalks at key locations like the intersections of California Street, West Street, Cobble Hill Road and South Winchester Street. All of the improvements proved popular with West Swanzey residents and all users of the highway, but especially the pedestrian improvements.

Figure 11: Percent of Survey Respondents Indicating Preference for Pedestrian and Bicycle Infrastructure Improvements Over Existing Conditions for NH 10 Area Between N. and S. Winchester Streets 1



Source: Southwest Region Planning Commission

Population

Previously it was noted that there are some segments of the population that may require alternative transportation choices either due to age, ability, or income. Youth under driving age, without a parent or guardian chauffeuring them, require safe walking and bicycling environments as a transportation alternative. As previously established, one out of five seniors 65 and older tend to not drive and may require some form of transit. People with ambulatory or other disabilities may also need transit services. Low income households or young people that do not yet have access to a vehicle may find driving too expensive and can make their budget stretch further if inexpensive forms of transportation are available to them like sidewalks, bikeways and transit.

In addition to the already identified need for pedestrian and bicycle infrastructure in the West Swanzey area and the northern part of the corridor, SWRPC developed an estimate of transit demand based on a methodology created by the Community Transportation Association of America (CTAA). The methodology assumes that 15% of the population 65 and over as well as the population living in poverty have a need for transportation assistance and will need to make at least one one-way trip every nine days. This is equivalent to a person needing transportation assistance to make 41 trips per year, a very conservative estimate. Based on the most recent population data from the US Census for the census block groups surrounding the NH 10 corridor, SWRPC estimated that the equivalent demand for the study area would be approximately 4,700 trips needed per year. Keep in mind that this level of service is meant to accommodate people needing occasional rides to medical appointments, shopping, banking and other basic needs. It is not meant to accommodate people seeking transportation to employment. Employment transportation is covered later in the Economic Development section of this report.

As noted earlier, transit is currently not available on the NH 10 corridor. Volunteer driver programs, however, such as the Community Volunteer Transportation Company (CVTC), do offer services to people needing rides. Rides typically require the rider to notice CVTC of their need for a ride at least 5 days in advance and ride availability is contingent on the availability of volunteer drivers. While this can be helpful for occasional riders, a more substantial transit service that doesn't require such a large notice would improve convenience for more non-drivers.

Zoning and Land Use

Earlier in the report, it was noted that there are two zones that extend along most of the NH 10 Corridor: the Commercial/Industrial Zone and the Business Zone. In Swanzey's Zoning Ordinance, the Commercial/Industrial Zone's stated intent is "to minimize strip development and encourage off road development on portions of Route 10." The Business Zone's purpose is to "provide for the development of commercial uses that are oriented to the traveling public or are traffic generators of such size as to be more properly located on a highly accessible highway network." Both of the zones' stated purposes are noteworthy in that they imply the need to balance maintaining highway mobility with land use development. This is an excellent framework for managing the corridor into the future.

One way for the Town of Swanzey to work with the state to balance mobility with land use access is through access management. Access management describes the systematic control of the location, spacing, design and operations of all access points to a roadway including driveways,

medians, and intersections. Driveways, in particular are a domain in which NHDOT and Swanzey share responsibility on NH 10, though medians and intersections can be addressed by the coordination efforts between the State and town to mitigate major traffic impacts. NHDOT regulates driveway permits for new curb cuts or changes of land use along the highway, and Swanzey can influence access management through its site plan and subdivision review processes. For the *Swanzey NH 10 Corridor Study*, SWRPC evaluated current driveway configurations in light of existing state permitting requirements and learned that there were 2 parcels that have smaller road frontage than what is currently required by NHDOT, 13 parcels that fall under NHDOT’s corner clearance requirements and 9 parcels with driveways wider than what is allowed by NHDOT. Furthermore, SWRPC found 8 suspected parcels that may be nonconforming with NHDOT’s rule about not allowing miscellaneous objects in the highway right-of-way and 3 parcels that may be nonconforming with NHDOT’s rule disallowing parking, loading, vending or servicing in the highway right-of-way. These findings could be used to inform future driveway permitting along the corridor and rectify unsafe curb cuts or improve the design of those curb cuts.

Go to Appendix 7 to review the full access management analysis conducted for the Swanzey NH 10 Corridor Study.

Noted above is Swanzey’s strategy in the Commercial/Industrial Zone to encourage feeder roads off of NH 10 to minimize strip development and encourage off road development. According to the Swanzey Department of Planning and Economic Development, there is only one known example of this occurring since the provision was introduced to the zone, specifically the development of Whittemore Farm Road



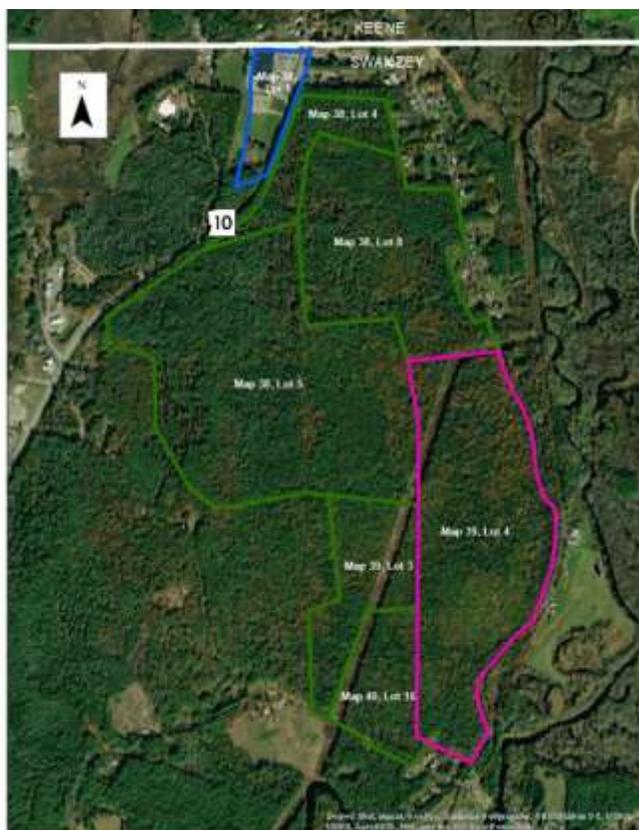
Whittemore Farm Road is a successful example of the Swanzey Planning Board’s strategy to encourage commercial and industrial growth while preserving safety and mobility on NH 10. The road serves a number of businesses through one access point and successfully attracted several businesses. Photo Credit: Google Maps

which today provides access to a number of businesses including The Cheshire Horse, Cheshire Builders, and First Student, Inc. among others. Whittemore Farm Road is a good example of this type of development, but why aren’t there other examples? One of the primary reasons is probably due to the fact that most of the zone is made up of conservation land or well protected forest like the Yale-Toumey Forest. In Figure 12, below, the Commercial/ Industrial Zone is mostly in the northern part of the corridor shown on the left panel of the map. Although this land is not

encumbered with conservation easements, it is likely to remain a working and learning forest for years to come and therefore, off-limits to commercial and industrial uses.

A potential opportunity for opening up more land to commercial/industrial uses while retaining the important conservation land for Yale-Toumey Forest is to examine opportunities to conduct a land exchange with town owned land that can be used by the forest. Land appropriate for forestry off the corridor and contiguous with current conservation land could potentially be “swapped” for land along the corridor where commercial and industrial land is desired. For instance, the Town of Swanzey owns approximately 140 acres adjacent to Yale-Toumey Forest with its holding of tax map 39, parcel 4. To the west side of the Swanzey owned land all of the land is held by Yale-Toumey Forest and one of the parcels, tax map 38, lot 5, approximately 177 acres, has approximately one quarter mile of frontage on NH 10. The parcel’s assessed taxable value was only \$129,544 in 2020. The assessed taxable value for the 16.4 acre Market Basket property, just north of the site, was more than \$7 million.²²

Figure 12: Land Ownership on the Northern End of NH 10

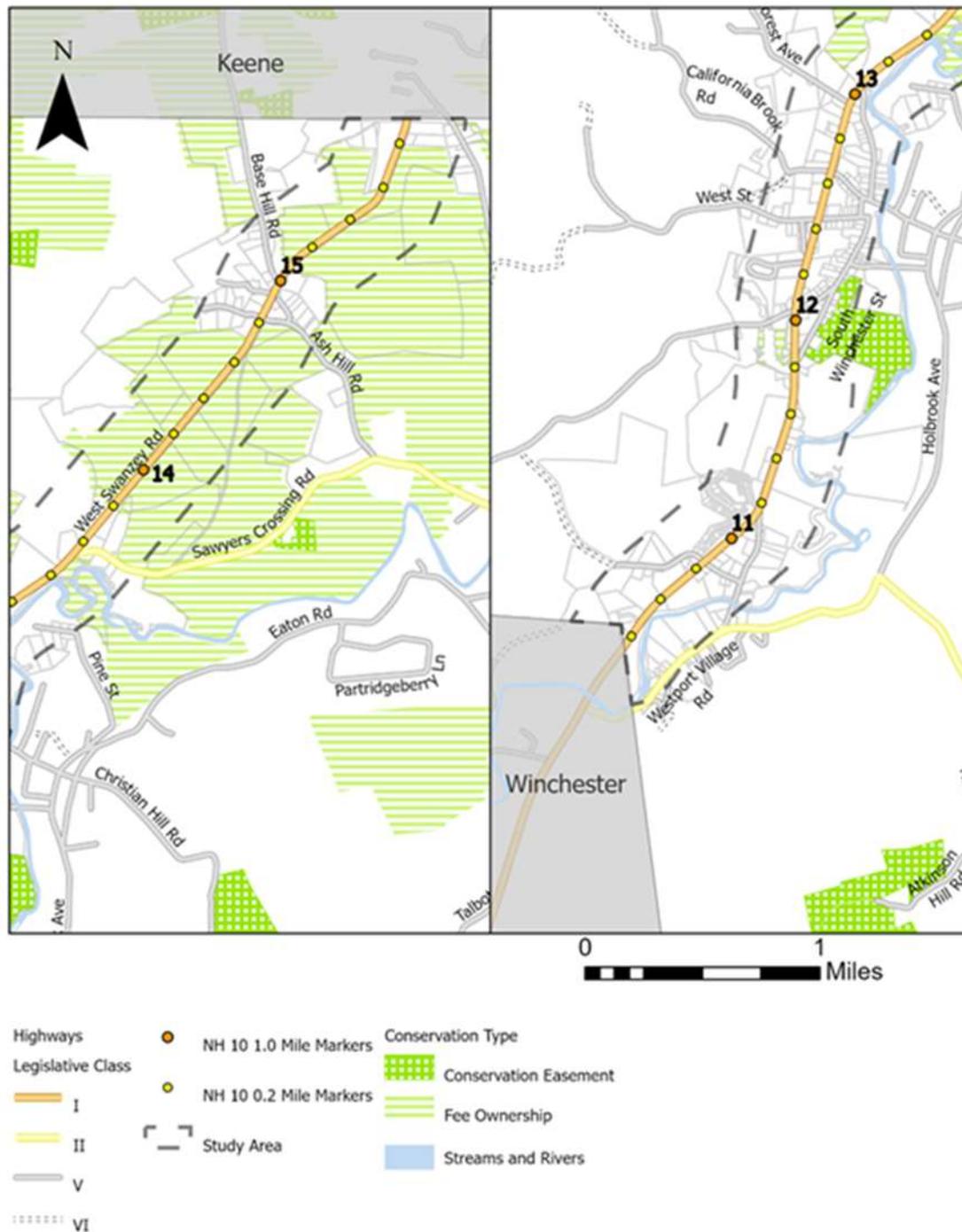


Yale-Toumey Forest owns a number of parcels adjacent to NH 10 (in green). One way for the Town of Swanzey to facilitate more commercial/industrial development on the northern part of the corridor is to consider a land swap. A parcel owned by the Town of Swanzey (in pink) lies adjacent to the Yale Toumey Forest. The cost valuation of land owned now occupied by the Market Basket plaza (in blue) cost valuation rose over 6,000% when the property was developed in 2010.

At the time of writing, the Town of Swanzey Planning Board is evaluating its zoning framework and whether it is meeting the Town’s goals. Earlier in the report, SWRPC observed that the Town has a strong interest in attracting economic development to the corridor as evidenced by the land uses that it permits in its various zones along the corridor.²³ Despite the emphasis on commercial and industrial development uses, SWRPC observed that the majority of existing parcels consist of housing. Although most housing along the corridor is not dense, average housing parcel sizes are relatively small on the corridor when compared to average commercial parcel sizes, 1.27 acres to 5.01 acres. To facilitate growth and change on the corridor, it may be challenging to allow for commercial and industrial development after “low hanging fruit” larger parcels are developed. Additional development may require the assembly of several smaller parcels. The expansion of existing public water and sewer on much of the corridor in parts of West Swanzey and the northern part of the corridor may be one way in which the Town can be assistive in creating an incentive for combining parcels as well as allowing for greater density along the corridor to accommodate the growth that it desires. The water system in the village of West Swanzey is owned and managed by the private West Swanzey Water Company. Water infrastructure that extends from the Keene City line to Market Basket is a public water line.

Figure 13: Conservation Land Along the NH 10 Corridor in Swanzey

Study Area Conservation Lands



Source: Southwest Region Planning Commission

If increased density is a strategy that Swanzey wants to embrace to accommodate growth in West Swanzey, much of the existing development pattern in the area provides a template for that density. However, SWRPC noted that current zoning dimensional requirements other than the Village Commercial Districts do not align with existing land use patterns. In West Swanzey the majority of parcels are zoned either Residential or Commercial/Industrial, and both of those zones require a minimum lot size of 1 acre. However, an analysis of parcel sizes in West Swanzey identified at least 73 parcels of just over 100 that are under 1 acre in size. In addition, 31 parcels were under half an acre. This indicates that there is an existing pattern of development in West Swanzey Village that is not allowable under current zoning regulations.

Go to Appendix 8 to review the full results of the Swanzey NH 10 Corridor Study Visual Preference Survey.

However, some existing zoning guidance may be preferred by the majority of the population. In the visual preference survey that was conducted by SWRPC for this study, three zoning related questions were asked relating to setbacks, parking orientation, density, and connectivity. Overall, 53% of respondents indicated that an intervention to reduce setbacks was either “Worse” or “Much Worse” than existing conditions. The alternative setback showed a street view of Woodstock, VT where seating is approximately 10-15 feet close to the highway and there is on-street parking. In another question 42% of respondents indicated that they prefer parking in front of commercial locations rather than to the side or behind a building. Only 29% percent thought the arrangement would be better and 28% percent stated that they had no preference. Another zoning change proposed the increased use of shared driveways, multistory buildings and increased connectivity as an alternative to current strip development (Figure 14). The reference image used was the Mad River Taste Place and surrounding neighborhood in Waitsfield, VT. Overall, respondents had mixed reactions to the commercial density intervention with 48% viewing the intervention favorably while 34% were opposed to the intervention. West Swanzey residents responded similarly, with slightly higher support than opposition.

Figure 14: Images Used for Swanzey NH 10 Corridor Study Visual Preference Survey



Source: Google Maps

The question about density will continue to be a balancing act for the Town of Swanzey where a majority of the public have identified the goal of keeping the Town’s rural character, but also want community vibrancy and economic growth. While the Master Plan Sub-Committee agreed to uphold the rural character sentiment in their 2003 Master Plan, the authors included a caveat:

“Swanzey is a town of many parts. The overall impression of these 45 square miles may be “rural,” but included herein are the “village business districts” of West Swanzey and North Swanzey. The Master Plan Sub-Committee does not seek to turn the clock back on these densely-settled, and relatively industrialized, districts to uphold an arbitrary definition. Rather, we feel it reasonable to capitalize on the municipal infrastructure already in place to “channel” future high-density residential and commercial projects to those neighborhoods.”²⁴

Economic Development

Between 2010 and 2018, the number of jobs along the NH 10 Corridor increased by 267 jobs or 114%. The vast majority of these new jobs (213) were in the retail sector. This likely reflects the development of Market Basket within the northern section of the Study Area and to a lesser degree the Dollar General in the southern section of the Study Area since 2010. During the same time, the corridor added 56 other services (excluding public administration) jobs, 23 manufacturing jobs, 13 wholesale trade jobs, 16 transportation and warehousing jobs, and there were small gains in other sectors as well. Industries with losses in jobs included construction (-3), real estate, rental and leasing (-4), educational services (-45), accommodation and food services (-11) and public administration (-7). Overall, the share of low wage jobs (\$1,250 per month or less) increased by more than 15% and the share of high wage jobs (more than \$3,333 per month) decreased by about 7%. The increase in low wage jobs is probably associated with the large increase in retail jobs.

Go to Appendix 6 to review the full results of the Swanzey NH 10 Corridor Study Demographic, Economic Activity and Housing Analysis



Market Basket, a retail supermarket, is one of the largest new employers to locate on NH 10 in Swanzey in the last decade.



One of the big takeaways from the economic development data discussed earlier in the report was that it showed that 42% of the workers employed one quarter mile from NH 10 lives in Keene, Swanzey and Winchester. This statistic alongside other findings suggests that there may be synergies for developing transit service along the corridor. For instance, if low wage jobs continue to grow along the corridor there may be a benefit to developing more affordable transportation options for those workers such as public transit. Moreover, existing and prospective employers along the corridor may be attracted to alternative transportation offerings to help with worker retention and absenteeism. Another consideration is that most of the residents living on the corridor work in Keene (40%), and that there are large numbers of Winchester residents commuting to Keene as well (25% of Winchester residents and 26% from downtown Winchester residents).²⁵ This dynamic suggests that there may be demand for transit going both ways on the NH 10 corridor from Winchester to Keene. Indeed,

this was a finding from a SWRPC transit feasibility study conducted in 2008, called the *Route 10 Job Access Study*. That study included surveys of residents living along NH 10, including residents living in Swanzey Township Housing (Southwestern Community Services), Pine Grove Mobile Home Park, and Keene Housing developments', Riverbend Apartments and Evergreen Knoll Apartments. Among the findings from the study's surveys is that 50% of workers reported that they would likely use public transit.

Housing

According to its 2003 Master Plan, "it is Swanzey's goal to provide for a full range of safe and adequate housing to meet the needs of all Swanzey residents of all ages and income levels, and to contribute our 'fair share' to regional needs."²⁶ In the previous section of the report, SWRPC determined that there were 644 units of housing along the quarter mile buffer area on either side of NH 10. The mixture of housing available is more diverse than many other places in Cheshire County. While most housing units are single-family homes (371), there are a number of units that fall into the category of duplex, triplex and multi-family housing (273). Some units were built for low income working families including housing units located in Swanzey Township Housing, Riverbend Apartments, Evergreen Knoll Apartments and some of the units in Winchester Woods Apartments. In this respect, there does appear to be a good mixture of housing available to people of different income levels. One caveat is that although there appears to be a sizeable senior population living on the corridor, SWRPC is unaware of any senior housing developments available on the corridor. Given what is known anecdotally about the target populations for the low income housing listed above, it is anticipated that most seniors living near the corridor are residing in single family homes including manufactured homes.

Despite the mixture of housing types, there does appear to be very low vacancy rates in the area. In 2019, Swanzey had an estimated 6.5% vacancy rate for all housing units, however Swanzey also had an estimated 0% vacancy rate for rental units in the Town. While this number is an estimate, and is a town-wide figure, it indicates that there is a severely low vacancy rate in the Town for rental housing. By comparison, the estimated rental vacancy rate in the State of New Hampshire is 3.9%, and 3.4% in Cheshire County. For owner occupied units in Swanzey, there is a 1.8% vacancy rate, which is on par with Cheshire County and the State of New Hampshire, though still quite low. The low vacancy rate may provide part of the explanation for one of this study’s economic development findings, which found that 30% of the people working along the corridor have a round trip commute of 50 or more miles.

Relative to this vacancy issue, is the previously mentioned finding that new housing development tends to have more hurdles among the zones bordering the NH 10 Corridor and a question as to whether existing contributes to slow growth in housing, particularly multifamily developments. The Commercial/Industrial zone does not allow any form of housing by right or special exception, the Business zone only allows housing by special exception and multifamily dwellings are only allowed by right in the Village Business District II (multifamily housing is allowed by special exception in the Residence, Business and Village Business I districts).

Table 7: Housing Permitted in Zoning Districts Along NH 10 Corridor in Swanzey

District	One Family Dwelling	Manufactured Home	Two Family Dwelling	Multifamily Dwelling
Rural/Agricultural	By Right	By Right	By Special Exception	Not Permitted
Residence	By Right	By Right	By Special Exception	By Special Exception
Business	By Special Exception	By Special Exception	By Special Exception	By Special Exception
Village Business 1	By Right	By Right	By Special Exception	By Special Exception
Village Business 2	Not Permitted	Not Permitted	Not Permitted	By Right
Commercial/Industrial	Not Permitted	Not Permitted	Not Permitted	Not Permitted

Source: Town of Swanzey Zoning Ordinance, 2021

Recommendations

Reflecting on the findings of the NH 10 Corridor Study, the Swanzey NH 10 Corridor Study Working Group developed four broad goals that it believes can help the Town and its partners improve the NH 10 corridor by addressing challenges and taking advantage of opportunities. The goals are:

- A. Improve highway safety;
- B. Improve highway and land use coordination;
- C. Make improvements that will foster sustained economic vitality; and
- D. Improve pedestrian and bicyclist access particularly in higher density areas of the corridor.

An assortment of capital project and action recommendations were developed to follow through on these goals in the following table. These represent higher priority projects and actions that the Working Group believes merit consideration. Projects and actions are categorized as short term (1-3 years), medium term (4-10 years) and long term (10 or more years). In addition, the table includes lead parties that the Working Group believes would ensure project or action success, as well as potential funding sources to conduct the work. Many of the recommendations revolve

around making two areas of the NH 10 corridor, the northern section of corridor near Keene and West Swanzey into areas of activity (nodes) where there would be a greater sense of place, and where vehicle traffic would slow down and not bifurcate the highway as it does in other parts of the corridor. Between those nodes of activity, vehicles would have a more traditional rural highway driving experience.

A. Improve highway safety			
1. Capital Projects			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>
a. Build raised median at Citgo Station near Base Hill Road. Consider rumble strips in short term	NHDOT/ Town of Swanzey	Long Term	NHDOT Ten Year Plan/ NHDOT Betterment Program
b. Adjust skewed angle for westbound Sawyer's Crossing Rd vehicles turning left (southbound) on NH 10	NHDOT/ Town of Swanzey	Long Term	NHDOT Ten Year Plan/ NHDOT Betterment Program
c. Consider 11 foot lanes throughout corridor to decrease corridor speeding	NHDOT/ Town of Swanzey	Short Term	NHDOT Resurfacing Program
d. Consider installation of vegetative median and left turn pockets in place of two-way left-turn lane in West Swanzey	NHDOT/ Town of Swanzey	Long Term	NHDOT Ten Year Plan
2. Actions			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>
a. Address brush clearing sight distance issue at southeast quadrant of California Street and NH 10	NHDOT/ Town of Swanzey	Short Term	Town of Swanzey Department of Public Works Budget
b. Develop plan for consistent speed enforcement including consideration of speed feedback signs	Town of Swanzey Police Department	Medium Term	Town of Swanzey Police Department Budget/ National Highway Traffic Safety Administration grants
c. Consider opportunities to make land use development changes (e.g., shorter setbacks, density changes, changes to architectural standards) to provide a visual cue for motorists that they are entering a shopping/activity area	Town of Swanzey Planning Board	Short Term	Town of Swanzey Planning and Economic Development Budget
B. Improve highway and land use coordination			
1. Capital Projects			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>

a. Construct gateway signage on NH 10 on northbound and southbound approaches to West Swanzey providing a visual cue to motorists that they are entering a shopping/activity area	NHDOT/ Town of Swanzey	Medium Term	Town of Swanzey/ Civic Club or Business Donations
b. Consider development of volunteer landscaping program for West Swanzey area signaling that motorist are entering a shopping/activity area	Town of Swanzey	Medium Term	Civic Club or Business Donations
c. Schedule any sewer or water upgrades with planned highway improvements	Town of Swanzey/Sewer Commission	Short Term	Private Development/ Water and Sewer District Budgets
2. Actions			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>
a. Draft and execute a memorandum of understanding between NHDOT and Town of Swanzey formalizing the driveway review process between the two entities	NHDOT/ Town of Swanzey	Short Term	NHDOT District IV Budget/ Town of Swanzey Planning and Economic Development Budget
b. Create a database or reference document of parcels along NH 10 that can be flagged and addressed for future change of use driveway permits, site plan and/or subdivision reviews	NHDOT/ Town of Swanzey	Short Term	NHDOT District IV Budget/ Town of Swanzey Planning and Economic Development Budget
c. Consider nodal development (place creation) strategy for corridor, potentially for West Swanzey area and northern portion of corridor, that plans for density of uses, pedestrian and bicycle trips, and transit stops	Town of Swanzey	Medium Term	Town of Swanzey Planning and Economic Development Budget
d. Reassess incentives and disincentives for Commercial/Industrial district feeder roads and implement changes as necessary	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development Budget
e. Explore potential for land swap in Commercial/Industrial district that preserves conservation land, but opens up land along corridor for feeder roads and development	Town of Swanzey	Medium Term	Town of Swanzey Planning and Economic Development Budget
C. Make improvements that foster economic vitality and sustainability			
1. Capital Projects			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>

a. Seek grant funding to build “middle mile” sewer and water infrastructure development for West Swanzey and northern part of corridor	Town of Swanzey/Sewer Commission	Medium Term	Northern Border Regional Commission, USDA, EDA, NHDOT Ten Year Transportation Plan
b. Construct gateway signage for West Swanzey area alerting motorists about local businesses and amenities	Town of Swanzey	Short Term	Civic Club or Business Donations
2. Actions			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>
a. Conduct feasibility study with Winchester and Keene on NH 10 based transit service	Town of Swanzey/SWPRC	Short Term	Federal Transit Administration 5305e planning grant
b. Develop water and sewer build out plan and policy framework for West Swanzey area and northern part of corridor; Conduct feasibility study of acquisition of West Swanzey Water Company	Town of Swanzey/Sewer Commission	Medium Term	Town of Swanzey Planning and Economic Development Budget
c. Create and implement landscaping requirements for land uses along NH 10 in West Swanzey area and northern part of corridor	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development Budget
d. Create and implement restrictions on % of impermeable surface allowances for new development in West Swanzey in vicinity of aquifer	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development Budget
e. Reassess diversity of land uses allowed along Business and Commercial/Industrial zones including allowances for housing	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development Budget
f. Consider opportunities to create connectivity and synergies between neighboring land uses such as the creation of shared driveways, sidewalk connectivity in site plans and subdivision proposals, and the promotion of a diversified mix of land uses for the West Swanzey and northern part of the corridor	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development Budget
g. Develop brand and marketing materials to advertise businesses and cultural institutions in West Swanzey	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development

			Budget/ Local Businesses
h. Identify important cultural, natural and commercial attractions along NH 10 that would benefit from wayfinding signage	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development Budget/ Local Businesses
i. Consider reductions in dimensional requirements to allow for patterns of development that mirror historic development patterns in West Swanzey	Town of Swanzey	Short Term	Town of Swanzey Planning and Economic Development Budget
D. Improve pedestrian and bicyclist access particularly in higher density areas of the corridor			
1. Capital Projects			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>
a. Install sidewalks and consider bike lanes for NH 10 from Keene and Swanzey town line to Market Basket entrance; As part of project consider mid-block crosswalk installation at Winchester Wood Housing and Market Basket traffic light	NHDOT/ Town of Swanzey	Medium Term	NHDOT Ten Year Transportation Plan
b. Consider installation of crosswalks with potential pedestrian refuges and/or rectangular rapid flashing beacons at NH 10 intersections with California St, West Street, Cobble Hill Rd. and South Winchester St.; As part of project consider installation of sidewalks on west side of highway between California St. and South Winchester St., as well as sidewalk gap improvement on California St. approach to NH 10	NHDOT/ Town of Swanzey	Medium Term	Transportation Alternatives Program, Congestion Mitigation Air Quality Program, NHDOT Ten Year Transportation Plan
c. Widen highway and shoulders for bicycle accommodation on the northern part of the corridor from the Keene Town Line to approximately the Monadnock Humane Society.	NHDOT/ Town of Swanzey	Medium Term	NHDOT Ten Year Transportation Plan/ Betterment Program
d. Consider shifting road on NH 10 southbound approach to Base Hill Road by narrowing painted median and reintroducing shoulder next to right-turn lane.	NHDOT/ Town of Swanzey	Short Term	NHDOT Resurfacing Program
2. Actions			
<i>Recommendation</i>	<i>Lead Party</i>	<i>Time Frame</i>	<i>Potential Funding Sources for Implementation</i>

<p>a. Evaluate connectivity and wayfinding to West Swanzey for pedestrians, bicyclists and others using Ashuelot Rail Trail and vice versa</p>	<p>Town of Swanzey</p>	<p>Short Term</p>	<p>Town of Swanzey Planning and Economic Development Budget/ SWRPC UPWP</p>
<p>b. Integrate walking and bicycling infrastructure requirements for new development or changes of use in the West Swanzey area and northern part of the corridor</p>	<p>Town of Swanzey</p>	<p>Short Term</p>	<p>Town of Swanzey Planning and Economic Development Budget/ SWRPC UPWP</p>

Endnotes

1

https://www.fhwa.dot.gov/planning%20/processes/statewide/related/highway_functional_classifications/se ction03.cfm#Toc336872984 accessed 5/28/2021.

² Tier 2 is the category just under Tier 1 highways which include interstate highways and other limited access highways. See

<https://nh.maps.arcgis.com/apps/webappviewer/index.html?id=1d83377ccf4d4236bb11f3de2b82eab5> for a map of Tier highways in New Hampshire. For NHDOT's Tier definitions see

https://www.nh.gov/dot/org/commissioner/amps/documents/tier_definitions.pdf, both accessed 5/28/2021.

³ See Appendix showing Access Management findings.

⁴ U.S. Census Bureau, American Community Survey 5 Year Estimates, 2019, Table S0801. An additional 6% of Swanzey workers work at home, leaving only 4% of the working population using another mode of transportation such as walking or bicycling. This figure measures all Swanzey residents as opposed to Swanzey residents only using NH 10.

⁵ See appendix with land use and zoning analysis.

⁶ U.S. Census Bureau, American Community Survey 5 Year Estimates, 2019, Table S0801. This figure measures all working Swanzey residents as opposed to Swanzey residents only using NH 10.

⁷ See <https://www.arcgis.com/apps/webappviewer/index.html?id=6ce5a2afccc843ceb872cf8a4dd8a3ad>

⁸ This project extension was also recommended by the SWRPC Transportation Advisory Committee for the draft FY 2023-2032 Ten Year Transportation Improvement Plan. The Plan will be reviewed by the Governor and Legislature between December 2021 and June 2022.

⁹ The official 2010 Census Block count for the study area was 2,038 people which is based on census blocks located within a quarter mile of NH 10. Please note that Census Blocks differ greatly in size and shape, and some larger rural blocks included in this Study Area population calculation include people living outside of the quarter mile radius from NH 10. At the time of writing the report, 2020 data was not yet available. The official 2019 ACS 5 Year Estimate count for census block groups 9709 1 and 4, which comprises western Swanzey and includes all of NH 10 was 2,582 people.

¹⁰ US Census, Table S0101, 2019: ACS 5-Year Estimate Tables.

¹¹ US Census, Table B01001, 2019: ACS 5-Year Estimate Tables based on 77% of population in Census Block Groups 9709 1 and 4.

¹² "Travel Trends for Teens and Seniors," National Household Travel Survey Report, February 2019.

¹³ US Census, Table C17002, 2019: ACS 5-Year Estimate Tables based on 77% of population in Census Block Groups 9709 1 and 4.

¹⁴ US Census, Table S1901, ACS 2018 5-year estimates, Table S1901 for West Swanzey CDP.

¹⁵ <https://htaindex.cnt.org/map/> accessed on 6/16/21. Data is from census block groups 9709 1 and 4.

¹⁶ US Census, Table S1810, 2019: ACS 5-Year Estimate Tables for Town of Swanzey (smaller geographic data is not available).

¹⁷ Longitudinal Employer-Household Dynamics data, 2018.

¹⁸ <https://www.bls.gov/iag/tgs/iag81.htm> accessed 6/16/21. The US Bureau of Labor Statistics defines it as establishments that are "...primarily engaged in activities, such as equipment and machinery repairing, promoting or administering religious activities, grantmaking, advocacy, and providing drycleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services."

¹⁹ See <https://www.nh.gov/dot/org/operations/traffic/documents/20-0529-updated-2009-2019-growth.xlsx>

²⁰ See <https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/chapt14.cfm>

²¹ Alta Planning and Design, *NHDOT Pedestrian & Bicycle Transportation Plan - DRAFT Summary of Level of Traffic Stress Analysis*, 2020.

²² Town of Swanzey Assessing Department. Note that the parcel just north of 38-5, 38-4, is 28 acres and has almost a half mile of frontage on NH 10 directly across the street from the Market Basket. The property's assessed tax value was only \$2,736 in 2020. A tradeoff of the land swap idea is less undeveloped land would be available in the area of North Swanzey. Yet the area is growing organically as Keene runs out of its own developable land and growth extends into Swanzey.

²³ The Commercial/Industrial and Business Zones are in line with the 2003 Swanzey Master Plan Update's Economic Development section which states that the Town wants to continue to raise the percentage of total valuation that is commercial/industrial. See 2003 Swanzey Master Plan, p. 24.

²⁴ 2003 Swanzey Master Plan, p. 5.

²⁵ Longitudinal Employer-Household Dynamics data, 2018.

²⁶ 2003 Swanzey Master Plan Update, p.6.