

*Draft-Town and Village of Johnson  
Municipal Development Plan  
2024 - 2032*

*Adopted:*

*This Plan was prepared by:  
**The Johnson Planning Commission**  
with technical assistance from the  
**Lamoille County Planning Commission***

## INTRODUCTION TO JOHNSON

Sections of this plan were influenced by the flooding that Johnson experienced in 2023, which impacted many of our friends and neighbors and damaged property and businesses. The Town Municipal Building, Fire Department, wastewater treatment plant, Sterling Market, post office, library and many homes were damaged – some irretrievably. Johnson’s traditional town/village center, which includes commercial and residential properties, lies in the flood hazard zone and the recent floods have made it clear that rebuilding “just as it was” is no longer practical or desirable. This plan attempts to start a dialogue about relocating valuable town/village assets and re-envisioning our town/village center to position Johnson to thrive in the coming years.

Johnson is a town of 3,491 people nestled in the heart of Lamoille County. The town is comprised of approximately 29,492 acres or 46 square miles. Mountains and forest dominate Johnson’s landscape and the spine of the Green Mountains winds through the town northeast to southwest. Butternut Mountain is the highest peak that falls entirely within the town. The peak of the 3,715-foot Sterling Mountain (also known as White Face Mountain) is located just south of the Johnson town line.

The Gihon and Lamoille rivers are a major recreational and scenic resource. In the past, the Gihon provided the foundation for Johnson’s water-powered mill economy. The first generating plant in town was located on the falls just north of the Power House Bridge. Johnson Woolen Mills dates back to 1836, when sheep outnumbered cows, and to date remains a core feature of the Johnson Village business district. Around the turn of the century, talc was the prominent industry in Johnson. Today, trees continue to be Johnson’s largest crop – for fuel, saw logs, pulp, Christmas trees and maple products. The former Lamoille valley railroad that served as a vital east-west transportation corridor primarily transporting dairy products for the Boston market as well as timber, limestone, talc and asbestos from the Northern Vermont forests and quarries has been redeveloped into a year round recreational path known as Lamoille Valley Rail Trail. Stowe and Smugglers Notch Ski Resorts located in neighboring communities of Stowe and Cambridge are major contributors to the regional tourism economy. Businesses in the accommodations and food sectors that support the ski resorts provide about a half of all private jobs in Lamoille County.

Johnson, granted in 1782 to Samuel Johnson and others, was chartered as a town in January 1792. In 1856, Johnson annexed part of the town of Sterling, and in 1894 the Village of Johnson was incorporated. Today, the Village is home to about 43% percent of Johnson’s population. The Town and Village of Johnson remain separate governmental bodies.

Johnson Village represents the community’s cultural, commercial and institutional center. The Village is a compact community that is home to a number of unique businesses, heritage buildings and residential neighborhoods. Johnson residents cherish the vibrancy of our downtown and both the village and the town governments have made great investments in improving the essential downtown infrastructure, whether it is roads, sidewalks, utilities or the creation of spaces for the community’s enjoyment.

Johnson has long been a center for education and today up to 27% of in-town jobs are in educational services. Johnson State College's roots go back to Johnson Academy School, founded in 1828. Today, Johnson State College has approximately 1,145 students.

Founded by artists in 1984, the Vermont Studio Center is the largest international artists and writers' Residency Program in the United States, hosting around 40 artists a month and over 400 artists per year from across the country and around the world. The Vermont Studio Center, in conjunction with Johnson State College's Fine and Performing Arts Program represent a uniquely gifted and diverse artistic community in Johnson year-round.

DRAFT

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## 2024-2032 DEVELOPMENT PLAN FOR JOHNSON

Every eight years, the Johnson Planning Commission undertakes the task of updating a development plan for our community. The plan is an important document that provides a framework for future community decisions. The plan is also a valuable source of information and serves as a reference for local boards, citizens and businesses, and other governmental organizations, such as neighboring towns, state agencies and regional planning commissions.

The 2024-2032 plan is a document that strives to present combined aspirations of two municipalities that together form Johnson. The municipalities are the Town of Johnson and the Village of Johnson, and they each provide services to Johnson residents. The Town, for example, takes care of town highways. The Village maintains sidewalks. The Town contracts for police and ambulance services. The Village - primarily within its boundaries - provides electricity and operates a water supply and sewer systems. Johnson residents, no matter whether residing in the Town or the Village, often utilize and benefit from services provided by both municipalities. The residents of the Town frequent businesses and public amenities within the village while residents of the Village enjoy the scenic character and rural amenities available throughout town. This plan strives to look at the Johnson community comprehensively and outline themes that are important to the community as a whole.

During the writing of the plan, the Johnson Planning Commission encouraged citizen participation in numerous ways. Notices were posted on Front Porch Forum, Friends of Johnson municipal newsletter and the Town webpage seeking involvement and soliciting comment on the plan. The Commission reached out to local committees such as the Conservation Committee, Recreation Committee of School Board for input. The Commission held public meetings, and the Selectboard and the Village Trustees held statutory public hearing to obtain input.

In developing this plan, we reviewed the plans of our neighboring towns of Hyde Park, Eden, Morristown, Cambridge, Waterville and Belvidere and it is our belief that our plan does not counter act with the planning goals of the neighboring municipalities. We also believe that policies and implementation recommendations of this plan support the overall objectives of the Lamoille County Regional Plan which are to: (1) to guide growth into compact settlements; (2) to protect the region's natural and working landscapes by promote thriving, compact village centers surrounded by rural countryside; and (3) to guide growth that promotes sustainability of the region's rural natural systems, valuable agricultural and silvicultural resources, and recreation amenities. In drafting our municipal plan, we found that policies contained in our plan complement the overall objectives of the Regional Plan.

## OVERALL OBJECTIVES OF THE PLAN

Johnson's plan is guided by the following overall objectives:

- To nourish the vibrancy of Johnson's compact village center surrounded by rural countryside.
- To expand economic opportunities by supporting initiatives to make Johnson an attractive place to live, work, and recreate.
- To increase the proportion of owner-occupied housing stock and support equitable regional distribution of subsidized and affordable housing.
- To facilitate access to educational opportunities for all ages, including childcare.
- To provide a safe transportation network.
- To identify important natural and historic resources and encourage the wise use of these resources.
- To encourage the efficient use of energy and renewable energy sources.
- To maintain and enhance recreational opportunities.
- To plan for an efficient system of public facilities and services.
- To incorporate flood resiliency in evaluation of costs and benefits of community & economic development projects.

[Policies and actions](#) listed at the end of each chapter are identified to guide progress towards meeting these Plan objectives. Implementation recommendations are categorized by short-term, medium-term, and long-term goals based on the following general timeframe expected to complete/implement the goal:

Short-term= 1-2 years

Medium-term=3-5 years

Long-term=6-8 years

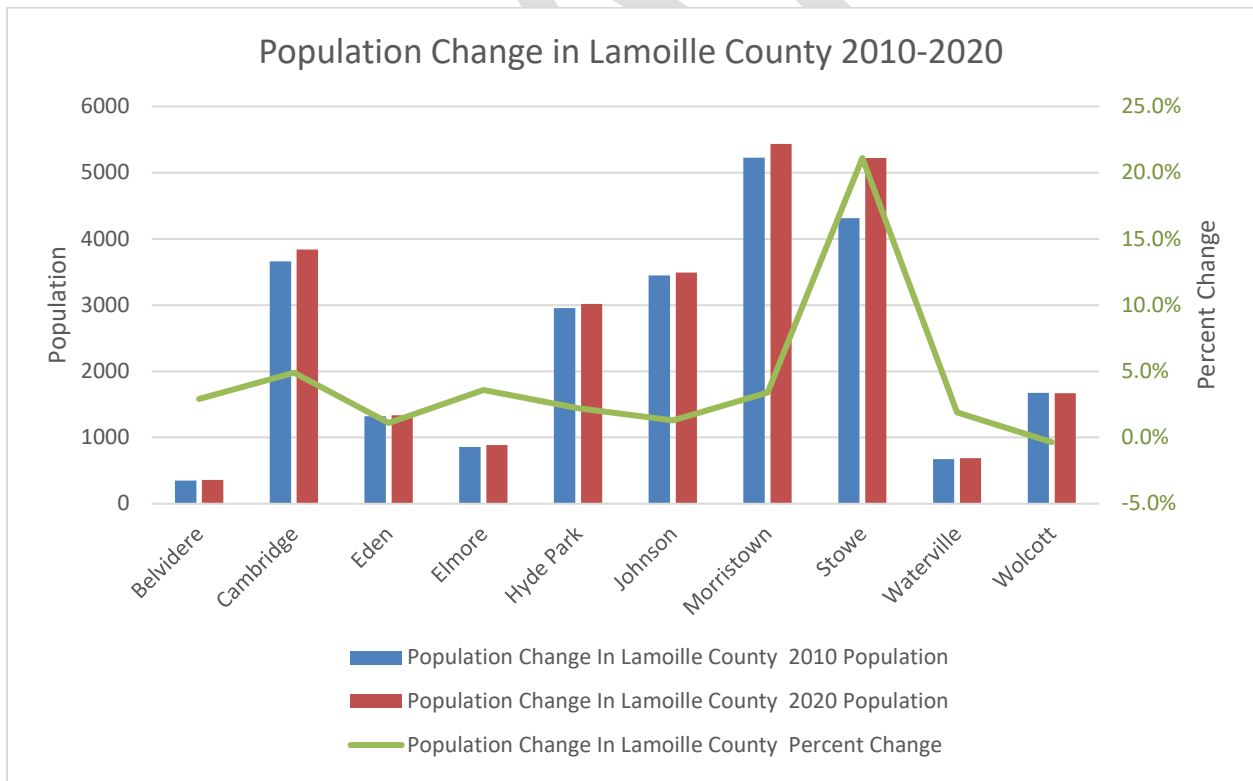
## DEMOGRAPHICS AND HOUSING

### A. DEMOGRAPHICS

Johnson is the fourth most populated municipality in Lamoille County. In 2020, the US Census Bureau counted 3,491 people living in Johnson. This includes the population of Johnson Village which was 1,332 people in 2020.

Between 2010 and 2020, the town’s population grew by 1.3% or by 45 people. The overall Lamoille County growth rate was 6%. The fastest growing towns were Stowe (21.1%), Cambridge (4.9%), and Elmore (3.6%). Compared to the previous Census, the Town of Johnson remains the 4<sup>th</sup> largest Lamoille County municipality. Complete population growth statistics for all towns in Lamoille County are shown in Figure 1 below. The numbers in brackets show increases in total population numbers in different towns.

Between 2010 and 2020 Lamoille County’s growth exceeded growth statewide. While between 2000 and 2010, the County’s population grew by 5.3%, between 2010 and 2020, the growth of the county was 6.0%. The State of Vermont’s overall population only increased by 2.77% between 2010 and 2020; compared to 2.78% between 2000 and 2010.



Population Change In Lamoille County			
Town	2010 Population	2020 Population	Percent Change
Belvidere	348	358	2.9%
Cambridge	3659	3839	4.9%
Eden	1323	1338	1.1%
Elmore	855	886	3.6%
Hyde Park	2954	3020	2.2%
Johnson	3446	3491	1.3%
Morristown	5227	5434	3.4%
Stowe	4314	5223	21.1%
Waterville	673	686	1.9%
Wolcott	1676	1670	-0.4%

Source: 2020 ACS 5-year Estimates

Because of the presence of Vermont State University, Johnson is the youngest town in Lamoille County. The median age is 28.7 years in Johnson (Town and Village), 21.5 in Johnson Village, and 40.1 years in the County. Statewide, the median age is 42.9. This substantial difference places Johnson in a unique situation. The supply of housing, for example, is influenced by the fact that younger individuals require different types of housing than the middle aged or senior households. In Johnson, this specific housing supply manifests itself by ample availability of rental housing units as well as the housing provided in college dorms. In 2020, the college dorms housed about 20 percent of Johnson’s population or 557 residents.

## B. HOUSING

In 2020, Johnson’s residents lived in 1,518 housing units/households plus dormitories by the Vermont State University at Johnson. The average household size was 2.34 people. The majority of the households owned their homes (774 households) while the rest rented their homes (510 households). Approximately 93 housing units were vacant. Among the vacant housing units were seasonal units (0), rental units (48), units for sale (0), and a category defined as “other” (19).

Table 1: Comparison of housing unit characteristics in Johnson (2010 and 2021)

<b>Johnson</b>	<b>2010</b>	<b>2021</b>
Total # of housing units	1,345	1,351
Total # occupied housing units	1,210	1,284
Owner occupied units	749	774
Renter occupied units	461	510
Vacant units	135	67
... Seasonal units	... 64	0
... Rental units	... 20	48
... Units only for sale	... 17	0
Vacancy rate	10%	0
Rental units vacancy rate	4.3%	8.6%



## **Rental Housing**

According to American Community Survey estimates of 2021, Johnson contained 509 (Rental occupied + Vacant rental properties) rentals, which is 37.6 percent of the total housing units. Relative to other comparably sized communities in Lamoille County, Johnson has a higher percentage of renter-occupied housing when compared to Morristown (31.2% renter-occupied housing) and a higher percentage than Stowe (28.1% renter-occupied housing). The percentage of rental housing is even higher in Johnson Village – with 68.9% of units being renter occupied. The Lamoille County average for the renter occupied units is 27 percent.

*\*\* Note: 2021 numbers are based on American Community Survey 5-year Estimates. Methodologies used for the ACS differ from those used for the Decennial Census and may account for some variation in figures.*

## **Housing Affordability**

The Vermont Department of Housing and Community Development (DHCD) housing policy states that housing is “affordable” when the costs (including rent and utilities, or mortgage payments and taxes) are no more than 30% of gross income for a household earning 80% of the county median. According to this definition, housing is not affordable for a significant portion of Johnson’s population. Forty-two percent of all homeowners in Johnson spent 30% or more of household income on housing. Fifty eight percent % of homeowners townwide spent less than 30% of household income on housing. Among renters in Johnson, the percentage was even higher; townwide, 64% of renters spent 30% or more of their household income on housing. In the Village only, approximately 47% of all Village homeowners and 49% of renters spent 30% of their income or more on housing.

## **Subsidized Rental Housing**

The Affordable Housing Database, supported by the Vermont Housing Finance Agency, includes three projects in Johnson. The first one is St. John’s Knoll and is comprised of 20 units dedicated to seniors. The second is Johnson Group home, 7 units reserved for the disabled. The third is 28 units (16 two-bedrooms, 11 one-bedroom, and 1 three-bedroom unit) on Main Street owned by the Lamoille Housing Partnership. Johnson Community Housing, a housing development consisting of 28 affordable housing units for families and seniors on School Street, became available for renting in March 2011.

## **Real Estate Values**

The Vermont Department of Taxes provides data on all property transactions in the Town of Johnson. The Median sale price is broken down by less than and greater than 6 acres. Overall, the median sale price for both types of residential homes has increased in 2022, seeing the largest jump in median sale price. In 2022, an average residential home on less than 6 acres sold for \$242,500. An average residential home on greater than 6 acres sold for \$499,000. The median value of a home in the Town of Johnson has remained relatively stagnant. These trends in median home values and sale prices are also reflected in the Town’s Grand Lists from 2014-2022.

It is important to note that the sale price of a home does not determine the actual value. The median home value for 2022, is not yet available through the American Community Survey. Below is a chart comparing home value to home sale price.

Table 2: Median Home Value and Sale Price for Johnson (2014-2021)

Year	Median Home Value	Median Home Sale: Less than 6 acres	Median Home Sale: More than 6 acres
2014	\$162,200		
2015	\$162,400	\$130,000	\$186,000
2016	\$168,100	\$150,000	\$240,000
2017	\$171,800	\$148,250	\$237,000
2018	\$159,500	\$164,026	\$234,500
2019	\$161,100	\$160,500	\$206,000
2020	\$153,400	\$174,000	\$301,500
2021	\$154,500	\$185,000	\$300,250
2022	N/A	\$242,500	\$499,000

Source: ACS 5-year estimates and VT Department of Taxes

N/A: data not available

### Housing Stock by Structure

According to the American Community Survey 2021 5-year estimates, 43% percent of the total housing units were single-unit structures, 37.3% were multi-unit structures, and 19.6% percent were mobile homes. Johnson Village has a higher percentage of multi-unit structures (66.2%). In this regard, Johnson’s housing stock differs significantly from the rest of the Lamoille County where the proportion of one-unit structures in the County’s is notably higher and the proportion of mobile homes is significantly lower.

Table: Comparison of housing stock by structure.

Housing stock by structure	Johnson (Town & Village)	Johnson Village	Lamoille County
Single unit structures	43%	18.5%	69%
Multi-unit structures	37.3%	66.2%	21.6%
Mobile homes	19.6%	15.3%	9.4%

Of note is the high percentage of mobile homes in Johnson. By state law, municipalities must treat mobile homes the same as other types of housing and must allow mobile home parks in their communities. While mobile homes provide an important source of affordable, detached housing, especially in a rural setting, there are opportunities to improve the value of mobile homes for homeowners. Many older models are not particularly energy efficient or adapted to cold weather climates. Improving the building envelope and overall energy efficiency of older models can help mobile homeowners avoid depreciation in the value of their home. Pilot programs to replace older mobile homes with newer, more energy efficient models that are less likely to depreciate have recently been undertaken statewide.

## Housing Stock by Age

Much of Johnson’s housing stock was built prior to 1980 (56.7% town wide and 67.7% in the Village compared with 51.9% in Lamoille County). The 1980’s are an important threshold, as lead paint was banned in 1978 and most asbestos containing products such as insulation were banned in 1989. In addition to lead paint and asbestos, older housing is less likely to meet modern fire and access code, and less likely to be energy efficient.

Housing stock by age	Johnson (Town & Village)	Johnson Village	Lamoille County
Built 1980 or later	46.4%	25.5%	51.4%
Built 1979 or earlier	53.6%	74.5%	48.6%

Source: 2021 ACS 5-year estimates

In December of 2022, the Town of Johnson issued a public survey to aid the Johnson Planning Commission in updating the policies and recommendations in the 2023 Johnson Town and Village Plan update. Questions were asked regarding the type of housing development community members would like to see more of in Johnson. Eighty six percent of survey respondents were either “strongly in favor” or “in favor” of single-family housing. Approximately 86% were also “strongly in favor” or “in favor” of seeing more senior housing in Johnson. For more information the results of this community survey are posted on the Johnson municipal website at: [Planning Commission | Johnson, VT \(townofjohnson.com\)](https://www.townofjohnson.com/PlanningCommission).

### POLICIES

- Johnson understands that the ability of Johnson residents to affordably rent or purchase a home is directly linked to their income levels. In that regard, the Town will support and implement initiatives that will improve overall economic conditions, increase local employment opportunities, and provide workforce investment training opportunities for Johnson residents. The Town will also support residential developments that are consistent with land use policies stated in this plan and that enable residents of different ages and abilities to live in a broad variety of housing types based on their preferences and what they can afford.
- Johnson does not discriminate against any type of housing and promotes a diversity of housing types to meet the needs of Johnson Town and Village residents.
- Johnson understands that people’s desire to locate their home in Johnson is connected to their perceptions of the quality of life in Johnson. The quality-of-life factors include stable neighborhoods, quality public education, higher education and childcare programs, recreational and cultural opportunities, and services available to Johnson residents (such as town-wide access to broadband), etc. To that end, we are committed to supporting initiatives that make Johnson an attractive place to live, work, and recreate.
- Johnson’s housing stock stands out in Lamoille County statistics in that the proportion of one unit housing structures (i.e. single-family homes) in Johnson is notably lower in Johnson than in Lamoille County. Based on the statistics presented in this chapter, housing affordability is a challenge for homeowners as well as renters. To that end, Johnson is interested in correcting the existing imbalance by working with developers

interested in helping Johnson residents build and rehabilitate single-family homes including duplexes and condominiums.

- There are employers in Johnson that would like to help their employees find a place to live in Johnson that matches their needs. Johnson supports these employers in their endeavors and will support an effort to document the employers' and employees' housing needs and discuss steps that can be taken to address the need.
- Johnson encourages regional and state housing and grant-making agencies to focus their efforts on the rehabilitation of the existing housing stock. Projects that will result in the availability of owner-occupied perpetually affordable housing units are encouraged.

## **IMPLEMENTATION RECOMMENDATIONS**

### Short-term

- 1. Explore extending the boundaries of the Designated Village Center to promote new housing development outside the 500-year floodplain and expand access to state tax credit and incentive programs.
- 2. The Town and Village should actively solicit interest in utilizing the Johnson Revolving Loan Fund with a focus on investment to improve the appearance, structural integrity and flood resiliency of buildings along the major travel corridors in Johnson Village.

### Medium-term

- 3. Explore options for extending Form Based Code to other areas of Johnson Village to increase the number of properties in the Village that are eligible for state tax credits and state incentives programs.
- 4. Explore funding options and the feasibility of locating a senior living facility in Johnson.

### Long-term

- 5. Work with developers and regional partners such as the Lamoille Housing Partnership and Habitat for Humanity to identify funding opportunities for rental housing improvements and new housing developments.
- 6. Work with developers and regional partners to explore opportunities for brownfields clean up and redevelopment of brownfields properties in Johnson.

## ECONOMIC DEVELOPMENT

Johnson's local economy cannot be separated from the larger regional economy within which it is part. Reinforcing this notion is Johnson's geographic location the near center of the region and one of only two municipalities that does not border a neighboring county. Even though a significant portion of Johnson residents work in Johnson, the majority of workers leave town to go to work. Destination counties of workers travelling from Johnson are shown in Table 3.

Table 3. Work Traffic Flow Figures for Johnson

Johnson Workers' Travel Destination	Percentage of Johnson Workers
Lamoille County	79.4%
Chittenden County	19%
Washington County	16%
Franklin County	4%
Caledonia County	4%
Other	9%

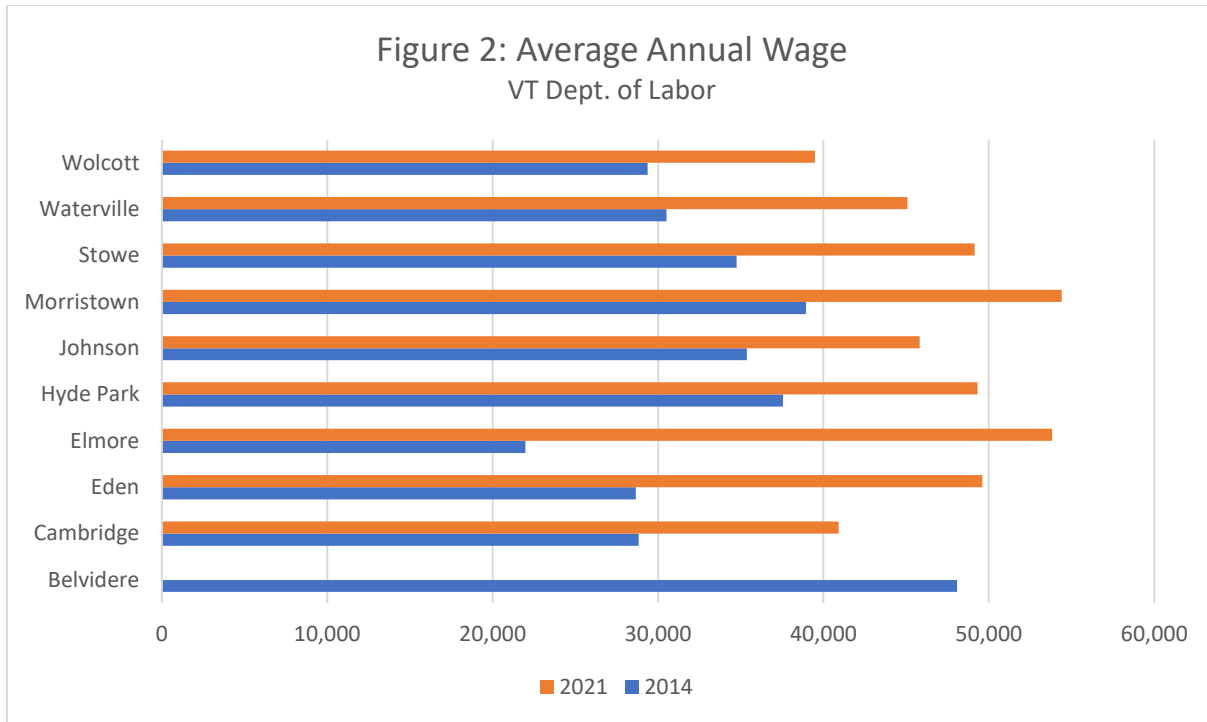
Source: U.S. Census Bureau, Center for Economic Studies; <http://onthemap.ces.census.gov/> (note, self-reported data from the US Census show a higher percentage of Johnson residents working within Lamoille County.)

According to the Vermont Department of Labor data, a significant source of jobs in Lamoille County is the Accommodations and Food Services sector. As of 2021, this sector provides 28.3 percent of all private jobs in the county. This is nearly three times greater than the percentage of private jobs in this sector statewide (10.5%). In only one other sector, Construction, does the County exceed the state average (8% of private jobs in Lamoille County vs. 5.1% of private jobs statewide). Of particular note is the manufacturing sector, which accounts for only 7.5% of private jobs in Lamoille County, vs. 9.8% of private jobs Statewide.

### **In-town Employment**

Johnson is a small town of 3,491 residents. Some residents work in town but, as the Table 3 above shows, the majority commutes to work. However, many people also commute to Johnson for employment. In 2014, there were 1,101 in-town jobs in Johnson. In 2021 the number of jobs in Johnson was 806. According to the Vermont Department of Labor, 59% of those jobs were provided by the Services sector. The Services sector includes establishments such as transportation, utilities, retail, automotive shops, food and beverage stores, gas stations, building materials and garden supply stores, sporting goods/clothing stores, and wholesale trade. From 2014 to 2021 the Services sector in Johnson decreased from 610 to 479 jobs. service industry. Another large Johnson employment sector is educational services. In 2021 the Education Services sector accounted for 217 jobs in Johnson. This is a slight decrease from 2014 when there were 291 jobs in Johnson in the Education Services sector. This data includes both part-time and full-time jobs.

According to the VT Department of Labor, jobs available in Johnson pay in the lower half of Lamoille County towns. In 2014, Johnson was one of the highest paying town but has now been outpaced. Figure 2 compares the 2014 and 2021 annual average wage distribution throughout all ten County towns.



*Note Belvidere Data is unavailable.*

### Johnson’s Workforce

The VT Department of Labor data for 2021 indicates that 2,002 Johnson residents were employed in that year. A total of 174 persons or 5.8% were unemployed. The regional unemployment rate in Lamoille County in 2021 was slightly lower and averaged at 2.7%. Table 2 shows trends in unemployment rates in Johnson and Lamoille County between 2010 and 2014. (Note: Due to a high proportion of regional jobs in the service, recreation and construction fields, the rate of unemployment tends to seasonally fluctuate). The Town and Village of Johnson recognizes the importance of supporting workforce development opportunities to strengthen the local economy. Policies are referenced at the end of this chapter to support this effort. Many economic sectors in Vermont are experiencing challenges in hiring new workers.

Table 4. Unemployment trends in Johnson and Lamoille County 2014-2021

	2014	2015	2016	2017	2018	2019	2020	2021
Johnson	1.9%	3.6%	2.7%	2.7%	5.3%	5.5%	5.0%	5.8%
Lamoille County	3.1%	2.9%	2.7%	2.6%	2.8%	2.5%	2.6%	2.7%

### Income

Since 2014, the Town of Johnson has seen a decrease in jobs in town and is no longer one of the towns with the highest paying wages in the county. The median income of Johnson families (regardless of whether income earners work in Johnson or elsewhere) is among the lowest in the County. The income gap between Johnson and the rest of the County has been grown since 2014. In 1980, the median income of Johnson families was almost at par with the median income of

Lamoille County families. Forty-one years later, the income gap has grown to \$18,299. The gap is even greater when comparing median family incomes in Johnson Village (\$41,542), to the County, where the median family income in the county is \$66,016.

Table 5. Median Family Income

	1979 (1)	1989 (1)	1999 (1)	2009 (2)	2014 (3)	2021
Lamoille County	\$15,766	\$31,772	\$44,620	\$61,701	\$62,101	\$66,016
Johnson (Town and Village)	\$14,892	\$27,270	\$38,224	\$47,625	\$41,402	\$47,717
Gap	\$874	\$4,502	\$6,396	\$14,076	\$20,699	\$18,299
Johnson Family Income as a % of the County Average	94%	86%	86%	77%	67%	72%

(1) U.S. Census Bureau; (2) American Community Survey 5 year estimate for 2005-2009; (3) American Community Survey 5 year estimate for 2010-2004, American Community 5 year estimates for 2021

### Poverty

The American Community Survey 5-year estimate from 2021 shows that 16.5% of Johnson families live in poverty, compared to 10.5% of families in Lamoille County. The poverty rate is significantly higher in Johnson Village, with 22.2% of families living in poverty.

### Local Economic Development Efforts

Since the adoption of the last plan, the Village, the Town, and numerous citizen groups have worked hard on planning and implementing projects to strengthen Johnson’s economy.

- LVRT Trailhead installation and signage at Old Mill Park
- Wayfinding signage installed to bring greater awareness of LVRT
- A Brownfields Area Wide Plan was completed for the town by LCPC in 2017
- Jenna’s Promise businesses were established in the Village
- The installation of a Community Outdoor Oven
- Enhancements to the Village greenspace were completed
- A local health center was established in the Village
- In an effort to maintain the historic character of Johnson Village and support the integrity of the Village’s business district the Town and Village adopted Form based code for portions of the Village.
- The Designated Village Center was renewed and expanded upon. The village business district continues to maintain its Village Center Designation status. The Designation helped Johnson expand economic opportunities and strengthen the vibrancy of the village center.
- Planning for infrastructure improvements at the proposed Johnson Industrial Park are underway.
- Planning for infrastructure and to support the redevelopment of the former Parker and Stearns, and Manchester Lumber sites.

- To support economic development, Johnson Village manages a loan fund that offers low interest building improvement and business loans. In 2017, the Town began offering community development loans. The guidelines for the use of the loan funds are available at [www.townofjohnson.com](http://www.townofjohnson.com). In April of 2002, Johnson Works was established as a non-profit organization. It acts as a local chamber of commerce to support local businesses and community events in Johnson Town and Village. Johnson Works mission is to “promote downtown Johnson and make Johnson a better place to live, conduct business and visit.” For more information on Johnson Works visit: <https://johnsonworks.org>.
- In March of 2018, Johnson was designated as one of the 17 “Opportunity Zones” in Vermont. In 2017, the Tax Cuts and Jobs Act included the creation of Opportunity Zones. This is a new tax incentive aimed at increasing private investment in low-income census tracts. Investors in an Opportunity Zone receive preferential tax treatment when investing in a newly created “Opportunity Fund.” For more information on Opportunity Zones and related resources visit the Vermont Agency of Commerce and Community Development’s website at: [Opportunity Zones | Agency of Commerce and Community Development \(vermont.gov\)](http://OpportunityZones|AgencyofCommerceandCommunityDevelopment.vermont.gov).

The presence of Vermont State University in Johnson Village plays an important role in strengthening Johnson’s local economy and attracting young adults and young families. As the Town continues to grow consideration for local business and amenities that will continue to attract new residents and young families to Johnson should be considered as the Town and Village pursue future planning efforts.

In 2018, Johnson State College and Lydon State College merged to form Northern Vermont University (NVU-Johnson); the Johnson campus is now referred to as Vermont State University-Johnson. On July 1, 2023, NVU merged with Castleton University and Vermont Technical College to form “Vermont State University” (VSU). The merger to form NVU and the subsequent Covid-19 pandemic in 2020-2021 have resulted in a smaller on-campus population – both students and faculty/staff. It is unknown what effect the upcoming merger to form VSU will have on the local campus.

The presence of Johnson State College / VSU-Johnson in our town has historically been a major strength, providing jobs, bolstering the local economy, and adding vitality and culture. For Johnson’s economic health and vitality, it is essential that the Town actively engage with our state representatives and the Chancellor’s Office of the Vermont State Colleges System and advocate strongly for the continued operation of a robust campus in Johnson.

Direct interaction with the administration and faculty/staff here at the local campus is also encouraged. Topics should include ways for the town and school to engage more cooperatively regarding cultural, recreational, and educational events / opportunities for the benefit of both entities.

## **POLICIES**

- Support the expansion and diversification of the Johnson’s economic base in a way that respects the scale and character of the community and protects against sprawl.



- Support efforts that encourage the vitality of Johnson Village as the cultural, residential, commercial and economic hub of the Town. (Cross reference in Land Use Section).
- Encourage efforts that strengthen Johnson’s economic viability through:
  - Establishment of a mixed-use park of appropriate scale and design to increase the tax base, improve access to services, and improve employment and economic opportunities for Johnson and area residents.
  - Continued implementation of projects that capitalize on Johnson’s artistic and educational assets represented by Vermont State College – Johnson and the Vermont Studio Center’s art programs.
  - Implementation of projects that enhance Johnson’s physical infrastructure, tourism and recreation opportunities, visual attractiveness and quality of life. Projects in this category include improvements to pedestrian, bicyclist, and river access infrastructure.
  - Implementation of projects that will improve access to locally grown and produced foods; support agricultural producers in their efforts to produce and distribute food locally and generally strengthen agricultural and forest industries.
  - Implementation of last mile broadband initiatives that will bring high-speed internet connection to every household, business and institution in Johnson. As of winter of 2024, reliable high-speed internet connections were limited to Village residents and residents living along major transportation corridors. It is vital that broadband coverage is expanded and made available to everyone. Lamoille FiberNet is working to expand broadband coverage to all Johnson residents.
  - Branding and marketing of Johnson.
  - Establishment of home-based businesses.
- Support initiatives that provide workforce investment training opportunities.
- Encourage the expansion of public transit service from Jeffersonville to Johnson. (Cross reference in Transportation section).

## IMPLEMENTATION RECOMMENDATIONS

### Short-term

1. Explore opportunity to “swap” Sterling Market property (owned by Pomerleau) and Jewett Property (owned by TOJ).
2. Design and implement solutions to better interconnect the Lamoille Valley Rail Trail and the Village Center. These solutions include new directional signs, placement of sharrow signs along Railroad Street, and signage promoting downtown Johnson at critical junctures of the Rail Trail and town roads.
3. Expand the boundary of the Designated Village Center district to encourage revitalization, facilitate economic opportunities and strengthen the vibrancy of the village center.
4. Encourage and support citizen committees and groups that strive to enhance Johnson’s economic vitality.

5. Support Economic Development with matching grant funds, LCPC and LEDC assistance, etc. in efforts to bolster community development and planning efforts in Johnson Village and Town.
6. Engage with Lamoille FiberNet Communications Union District (CUD) to promote improvements to broadband coverage in Johnson Village and Town.
7. To help further maintain the historic character of the Village, investigate and consider establishing the Village as a "Certified Local Government."

DRAFT

## NATURAL, SCENIC AND HISTORIC RESOURCES

### LAND RESOURCES

#### Soils

The soil structure attributes in Johnson provide both opportunities and limitations for construction and agriculture. Depending on the physical and natural process that formed it, soils may have differing depth, composition, texture and layering. Soils also vary in how easily they absorb water and their load-bearing capacity. Soils that pose limits to development are often characterized by excessive slope, shallow depth to bedrock, high seasonal water, stability and high erosion potential. Soils also have qualities that make them productive for timber and agricultural products. The five main soil associations found in Johnson are described in Table 6.

Table 6. Major Soil Associations Found in Johnson

Association	Description	Uses/Limitations	Location
Adams/Colton/ Duxbury	Level to steep, excessively drained sandy soil.	Main source of sand & gravel. Steeper areas in woodland. Less steep used for crops and home sites.	Along Lamoille and Gihon Rivers.
Lyman/Tunbridge	Deep, level to steep, well drained to somewhat poorly drained loamy.	Woodland w/farming on lower slopes. Development limited by depth to bedrock & slopes.	Northern uplands & mountains.
Berkshire/Marlow/ Peru	Deep, level to steep, well drained to somewhat poorly drained loamy soil.	Cropping and trees. Pan & slope limit for development. Suitable for wildlife habitat, recreation, woodland.	Across portions of southern uplands and Johnson Village.
Udfluents/Ondawa/ Rumney/Podunk	Deep, level excessively drained to poorly drained loamy soils.	Hay, crops & trees. Limited by seasonal high water table and flooding.	Lamoille River floodplain at Cambridge town line.
Boothbay/Salmon/ Swanville	Deep, level to steep, well drained to somewhat poorly drained loamy soils.	Used mainly for cropping. Limitations are slow permeability, slope and wetness. Suitable for wildlife habitat & woodland.	From East Johnson south into Hyde Park.

Source: USDA Soil Conservation Service. Soil Survey of Lamoille County, Vermont 1981.

### **Forest Resources**

The dominant land use in both Johnson and Lamoille County today is forest. A large portion of land in the Town of Johnson is owned by the State of Vermont such as the Long Trail State Forest and the Vermont State University property. Partnerships with the state should be considered when planning for management and conservation of natural resources and priority forest habitat in Johnson. In regard to forest management, it is important to recognize that the utility provider has the right to maintain the right-of-way to reduce power outages and improve reliability of electric service. Forests benefit the town and the county by providing habitats for numerous game and non-game woodland animals, forest products from timber to maple syrup, jobs both in the woods and the mills, protection of our valuable water resources, and contrast upon the landscape. Forestry is a large part of Johnson's heritage, and it continues to play an important part in shaping both the town's character and its economy.

### **Agriculture**

Farming remains an important part of the economy, landscape, and cultural heritage of Johnson. Once mainly a dairying community, Johnson farms now also produce crops, vegetables, turf, beef cattle and veal. Most of the prime agricultural soils in town are being farmed by either full time or part-time farmers, with the noted exception of the farmland converted to residential development on the Johnson Plains.

The 2021 American Community Survey 5-year estimates indicate that 14 people were employed in farming, fishing, and forestry occupations. Note that these figures understate the extent to which agriculture impacts Johnson, as they may not account for part-time farmers or individuals employed in industries that support agriculture (such as agricultural equipment sales/repair and agricultural related transportation). The Town of Johnson values farmland and property owners' efforts to maintain working lands.

### **Use Value Appraisal Program**

The Use Value Appraisal (UVA) Program was established by the Vermont Legislature in 1977 in recognition that the high tax burdens placed on farm and forest lands was contributing to the rapid development of prime agricultural and forestry lands across the state. The UVA Program allows farm and forest lands to be taxed on their resource production value rather than their value for development purposes.

### **Gravel**

Lamoille County is one of the most gravel rich areas of the state. It is also one of the fastest growing. Since gravel is a non-renewable resource, it is important to plan for its wise use. Gravel resources have a significant economic impact in Johnson and the County. There are two major gravel pits in Johnson. The extraction of gravel resources has an impact on wildlife habitat. Reclaiming and restoring old gravel pits plays an important role in restoring natural habitat. The approximate locations of sand and gravel are identified in the Surficial Geology Resources map.

### **Talc resources**

Talc deposits were discovered in Johnson in 1902. In 1906, a talc mill was built, and ore was extracted from the bank of the Lamoille River. The mill produced between 30 and 40 tons of talc annually. The mill was an economic engine for Johnson. While it was operational, the mill employed as many as 75 people and contributed as much as \$60,000 a year to the local tax base. Underground talc mining in Johnson ended in the mid-1980s due to the changes in the economy making talc mining unfeasible. The extent of the remaining talc deposit and its economic viability today is uncertain.

## **TOPOGRAPHY**

Topographic information is important for planning future land use, transportation, and public facilities and services. Topography will influence accessibility, will provide natural boundaries between areas, and will often determine land use. According to the 2020 U.S Census, the Town of Johnson covers 28,864 acres and has a diverse topography.

Some general guidelines for assessing slope limitations include:

0-3%	Suitable for most development but may require drainage improvements
3-8%	Most desirable for development, least restrictions
8-20%	Suitable for low density housing on large lots with some consideration for erosion control and runoff
21-30%	May be developed with careful siting and off-site wastewater treatment
Over 30%	Avoid all construction. Natural vegetation generally required to prevent soil erosion

Johnson's topographic limitations map illustrates general areas with slopes less than 20%, areas where slopes are between 20 and 30% and those above 30%. The suitability of any particular site for development must be evaluated considering the interaction of slope with other features such as soil type and vegetation with the proposed land use.

## **WATER RESOURCES**

Water resources take on a variety of forms and functions. They provide rivers and lakes upon which to boat, fish and swim, groundwater to drink, and wetlands to store floodwaters and filter natural and manmade contaminants. Water resources provide numerous habitats for a variety of aquatic and riparian plant and animal communities and support numerous economic activities such as fishing and boating. In March of 2021, the Johnson Conservation Commission collaborated with the Vermont Fish and Wildlife Department to host a Community Values Mapping event. The event provided a variety of ways for community members to participate in identifying places they love in Johnson and why they value these locations. Values were mapped and categorized into the following categories:

- Recreation
- Hunting and Fishing
- Scenic
- Community

- Working Landscape
- Historic
- Ecological

This mapping exercise demonstrates how these community values overlap and how public land and scenic resources play an important role in the lives of Johnson residents and visitors. These beauty spots of Johnson should be maintained and preserved for multiple purposes and values as described above. For a copy of the Johnson Community Values Mapping Report please visit the Johnson Municipal website at [Johnson, VT | Our Community \(townofjohnson.com\)](http://Johnson, VT | Our Community (townofjohnson.com)).

Water resources also serve as repositories for runoff and seepage including pesticides, herbicides, sediments, and leaching landfills, septic systems and underground storage tanks. These contaminants kill fish and plants, destroy existing and potential drinking water supplies and preclude recreational activities.

In 2017, the Town of Johnson contracted with Arrowwood Environmental to conduct a Town-wide Natural Resources Inventory, funded by the Vermont Agency of Commerce and Community Development's Municipal Planning Grant. The inventory included mapping and gathering information on natural communities in Johnson including critical forest habitat and aquatic habitat such as wetlands, vernal pools, and riparian areas. Water resources, critical habitat, and significant natural features are detailed below. To view maps and a report on the Johnson Natural Resources Inventory please visit: [Reports | Johnson, VT \(townofjohnson.com\)](http://Reports | Johnson, VT (townofjohnson.com)).

### **Rivers and streams**

The Lamoille River flows westerly through the Johnson landscape for about 7.9 miles. The Lamoille originates at Horse Pond in Greensboro and flows into Lake Champlain at Milton. From its headwaters to the mouth, the river descends approximately 1,200 feet and drains a 706 square mile watershed.

All the streams and rivers in Johnson are part of the Lamoille River drainage basin. Geologic features such as oxbows, potholes and two sets of waterfalls highlight the Johnson section of the Lamoille. The biggest tributary to the Lamoille in Johnson is the Gihon River. The Gihon River played an important role in the history of Johnson. The first generating plant in town was located on the falls just north of the Power House Bridge. Johnson's historic mill economy was literally powered by the Gihon in Johnson Village.

### **Floodplains**

Floodplains provide important ecosystem functions such as floodwater attenuation and also provide important wildlife habitat. A more thorough discussion of floodplains can be found in the "Flood Resiliency" Section of this Plan.

### **Significant natural features**

The Gihon and Lamoille Rivers help create the essential character of Johnson Village. The picturesque rivers can be admired from many scenic locations.

Dog's Head Falls is located along the Lamoille River about 1 mile southeast of Johnson Village and consist of six-foot high twin falls, two large pools for swimming, rocks and outcrops for jumping, picnicking, and sunbathing. An impressive bedrock outcrop forms the "dog's head". Sloping Falls just downstream is another well-used recreation area. It consists of a fifty-foot long cascade, sculptured rocks, undercut ledges, swift current, and several pools. The undertow in the upper area makes it too dangerous for swimming but the lower pool is enjoyed by swimmers.

Ithiel Falls is a picturesque section of the Lamoille River located about 2.5 miles west of Johnson Village and can be accessed from Hog Back Road. The entire area of Ithiel Falls is considered for the purpose of this plan a significant natural feature. This area consists of rapids, pools and runs beginning with 150-yard-long upper rapids in a wooded ravine with occasional rock walls that reach up to 30 feet high. Following a large pool with submerged boulders there is a stretch of rapids with interrupted slanting rock walls up to 20 feet high followed by a large pool in a series of runs, islands and pools. The Ithiel Falls area ends where the Lamoille resumes as a single channel. The Long Trail crosses the Lamoille via a pedestrian suspension bridge within this significant natural area. The area is widely used by both boaters and fishermen.

McCuin Island is a 3.8-acre island located in the Lamoille River, along the Rail Trail. It was donated to the town by the Vermont River Conservancy (VRC) in 2018 and is being managed to protect the island's natural resources. It is located in the middle of a 2.88-mile corridor of conserved riparian land owned by Vermont Fish and Wildlife. The VRC holds an executory interest, similar to a conservation easement, preventing development and protecting public access. The island is considered a Sugar Maple Floodplain Forest, a rare natural community type, which should only be used for low-impact recreation.

In 2015, continuing its partnership with Vermont River Conservancy, the Town was able to acquire and conserve a two-acre parcel on the Gihon River formerly owned by the Beard family. With approximately 600 feet of river frontage, this parcel possesses beautiful shoreline, waterfalls, and swimming spots along the Gihon River and has been a popular recreation destination for decades.

In 2013, the Vermont River Conservancy conserved "Journey's End," a spectacular swimming hole and waterfall carved in the bedrock of Foote Brook. Conserving this land permanently protected public access to the Journey's End swimming hole, provided access for anglers to a 2,500-foot reach of Foote Brook renowned for its high-quality trout habitat, and conserved 25 acres along Foote Brook containing deer yards, songbird habitat, and a forested buffer which protects the ecological values of Foote Brook.

### **Riparian habitats**

Plant life such as trees, shrubs, grasses and herbs along stream banks and river corridors serve to provide both food and shelter for a great many wildlife species. According to a 1986 study on Vermont's rivers, several of Vermont's wildlife groups are highly dependent on riparian areas for their habitat needs. The Lamoille River and Smith, Foote, Joe, Waterman, Belding Pond and French Hill Brooks were all noted in the 1986 study as important deer habitats.

### **Lakes and Ponds**

Belding Pond and French Hill Collector Reservoir, a historically active collection reservoir, are located near the Dry Ridge in the southwest section of town. The Reservoir property is open to the public and owned by the Town of Johnson.

### **Water Quality**

Vermont's waters are classified according to established goals to be attained or minimum standards to be maintained, depending upon the present quality of a particular section of water. The Agency of Natural Resources works to implement activities that restore, maintain or protect the management goals. Until recently, the classification system included two classes A and B. Class A waters were divided into two subclasses: A(1) and A(2). As part of the Water Quality Standards revisions in 2000, the system was changed to allow Class B waters to be divided into three management types: B1, B2 and B3.

Presently, in all basins, waters above 2,500 feet in elevation are classified A(1) by Vermont statute. The management objective for A(1) waters is to maintain their natural condition. Waters used as public water supplies are classified A(2). All the remaining waters are class B waters. A simplification of the B1, B2 and B3 designations would be to say that the spectrum from B3 to B2 to B1 is described as representing "good", "better" and "best" aquatic conditions. All Class B waters must still support the designated uses described in the Vermont Water Quality Standards for Class B waters, which include, among other uses, suitability for aquatic life, boating, fishing, swimming, and drinking with treatment.

On August 16, 2004, the Town Select Board passed a resolution requesting that all streams and rivers in Johnson be classified as B1 waters, with the following exceptions: 1) The mainstream of Lamoille; 2) The brook through Paul McLure's farm, which should be classified B2; 3) The Gihon River downstream from School Street Bridge to the confluence with the Lamoille, which should be B2, 4) Smith Brook below Route 15 to the confluence with the Lamoille River should be B2; and 5) Waters currently classified as A1 or A2.

In 2015, the Vermont Legislature passed the "Vermont Clean Water Act," aimed at significantly reducing the amount of phosphorous entering Lake Champlain. Compliance with the Act will likely require changes, some of them costly, in the way Johnson manages its roadway system and could require expensive upgrades to wastewater treatment facilities. Such upgrades would be extremely expensive and have minimal impacts on phosphorus entering the watershed. Johnson strongly urges the US EPA and Vermont Agency of Natural Resources to consider other, more cost-effective options before mandating such upgrades.



Restoration of streambanks and floodplains is one strategy to reduce phosphorus bound to sediment from entering the watershed. Detailed River Corridor Management Plans have been developed for the Lamoille River, Gihon River, and Foote Brook. These plans and assessments identified and prioritized restoration projects that will reduce sediment and nutrient loading to downstream receiving waters such as the Lamoille River and Lake Champlain, will reduce the risk of property damage from flooding and erosion, and will enhance the quality of in-stream habitat. Many of these projects involve conservation and re-vegetation of riparian areas. Since many of these areas are privately owned property, coordination and collaboration with property owners will be especially important to implement these projects. These plans also identified undersized bridges and culverts that may be constricting the natural flow of water. More information on these plans can be found in the “Flood Resiliency” Section of this Plan.

### **Wetlands**

The term wetland is used to refer to areas that are commonly referred to as swamps, marshes, bogs, fens or other such names. Wetlands serve a number of important functions, including storm water retention, erosion control, ground water recharge, and wildlife habitat. Wetlands share three basic characteristics:

1. The presence of water at or near the ground surfaces;
2. The presence of water dependent plants occurring on site; and
3. Common types of soils that have formed as a result of the presence of water.

The U.S. Department of the Interior has mapped wetlands, and each town has a set of National Wetlands Inventory Maps. These maps were made using aerial photos. They are useful for assessing the general character of a particular area but are not accurate enough to determine the nature of a particular property without a site visit.

Vermont's wetland regulations are based upon the National Wetlands Inventory. They designate all of the wetlands identified by the inventory in Johnson as Class II, meaning the functions they serve - either alone or in conjunction with other wetlands in Vermont are protected by a 50 foot vegetated buffer between the wetland and any adjacent land development. Class I wetlands are those of such high quality and important function that they are considered of statewide significance. In 1992, there were no wetlands in Johnson classified as Class I.

Contiguous class II wetlands (as defined by the Vermont Department of Environmental Conservation), are vital habitats for a wide variety of plants and animals. The state wetland rules protect these wetlands with a 50-foot buffer in which no development is allowed without a permit and fee for impacts. In many cases, a 50-foot buffer is insufficient to protect and maintain wetland functions (ex: flood control, filter pollutants, aquatic and wildlife habitat etc...). To protect these vital functions, this plan recommends development projects be sited in a manner that maintains a vegetative buffer of 100-feet from a wetland boundary.

### **Vernal Pools**

Vernal pools are fragile environments that act as a temporary flooded wetland typically found in a forest landscape. They provide critical habitat for a variety of species including amphibians (ex: frogs) and insects. According to the 2017 Johnson Natural Resources Inventory, the function of vernal pools is directly tied to the condition of upland forests. Trees surrounding vernal pools

provide shade that prolongs the period in which vernal pools are active and wet, allowing species to breed and thrive. Surrounding forests also provide food (leaves) to feed the vernal pool ecosystem. The Significant Habitat map at the end of this chapter and the Energy maps depict vernal pools and the 750 foot Life Zone as identified in the 2017 Natural Resources Inventory. The Conservation Commission recommended this increased buffer to allow these natural communities to thrive. However, the Johnson Planning Commission believes that increasing the required buffer from 50 feet (as required for wetlands) to 750 feet could result in a significant public taking of private property rights since a circle with a 750 ft radius covers 40 acres (Area =  $\pi R^2$   $3.14 \times 750 \text{ ft} \times 750 \text{ ft} = 1,766,250 \text{ sq ft}$ , divided by 43,560 sq ft per acre = 40.55 acres). Accordingly, this Plan recommends vernal pools be protected as described above for Class II wetlands (no development within 50 ft without a state permit, 100 ft buffer recommended).

An additional resource for property owners wishing to identify vernal pools on their property is the Vermont Vernal Pool Atlas, maintained by the Vermont Center for Ecostudies, funded by the Vermont Fish and Wildlife Department. To visit the Atlas and learn more about this resource visit: <https://vpatlas.org>. Property owners can invite Vermont Fish and Wildlife to assist in identifying vernal pools if there is question regarding a vernal pool determination.

### **Groundwater resources**

Groundwater is the source for over 90% of the drinking water for rural communities in Vermont. It is replenished through rain and surface waters which percolate through the soil. Any activity that introduces contaminants directly into the ground (such as leaking underground storage tanks, septic disposal fields, abandoned wells, junk cars and agricultural activities) can affect groundwater quality. Since surface waters may also infiltrate to underground, surface water quality may affect groundwater quality as well.

Groundwater is an important source of drinking water for Johnson residents. For homes outside of the Village Water & Light service area, groundwater is the primary source of drinking water.

Public groundwater sources in Vermont are assigned a Source Protection Area (SPA). SPAs are defined as the surface and subsurface areas from or through which contaminants are reasonably likely to reach a public water system source. The state Agency for Natural Resources (ANR) Water Supply Division is responsible for the Vermont Source Protection Program.

There are five Source Protection Areas in Johnson. The first is an area defined by a 3,000-foot radius around the Wescom Trailer Park well. The second is a hydro geologically delineated area around the Nadeau Well, which is supposed to be a back-up supply well for the Village Water Department but is used daily to meet peak demand. The third and fourth protection areas are in the northeast corner of town and are delineated for the protection of the North Hyde Park Fire District #1 and Mountain View Mobile Home Park. The fifth source protection area surrounds a well built in 2006 and serving the Johnson Village water system. The well is located just west of Johnson Village off Route 15 below the Highland Heights Mobile Home Park and serves as a permanent and primary source.

## **WILDLIFE RESOURCES**

## **Fisheries**

The Vermont Guide to Fishing, published by the Vermont Fish & Wildlife Department, lists the Lamoille River as supporting all warm and cold-water sport fish found in state with the exception of lake trout and smelt. The upper reaches of the Gihon River in Johnson support rainbow, brown and brook trout.

The Vermont Department of Fish & Wildlife owns two sections of a stream bank for public and fishing access on the Lamoille River in Johnson. The first is 11 acres on the southerly bank of the river from the Hyde Park line to the island below Dog's Head Falls. The second section is approximately 0.2 acres on the north bank of the Lamoille on the Johnson/Hyde Park line.

## **Deer wintering areas**

Deer in Vermont live near the northern limit of white-tailed deer range in eastern North America; forcing deer to use very specific winter habitat when severe climactic conditions become a threat to the animals' survival. The availability of quality wintering areas is the limiting factor for deer in most of Vermont. It affords necessary and invaluable shelter which minimizes energy expenditures and provides for energy conservation by deer, thus, maximizing their chances of survival.

Since only about 6% to 8% of Vermont's land base is deer wintering area, the ability to recognize and manage these critical habitats is necessary to ensure the future well-being of the state's deer herd. Valuable yarding areas are lost each year to road construction, housing, and other forms of development. Additional threats are over-cutting of timber and pest outbreaks, such as spruce budworm. Each lost wintering area results in great pressure on the remaining areas of winter range. Wintering areas do not change significantly between years and can be used by generations of deer over several decades if appropriate habitat conditions are maintained.

Johnson has a larger proportion of mapped deer wintering areas than most other Vermont towns. A little over 1% of the land area in Johnson is mapped deer wintering area which amounts to approximately 3300 acres. Deer wintering area maps are available from Vermont Center for Geographic Information (<http://www.vcgi.vermont.gov>) as a GIS layer, or they can be viewed online through the Agency of Natural Resources Atlas (<http://anrmaps.vermont.gov/websites/anra5/>). Maps for specific areas can also be printed out by a Vermont Fish and Wildlife Department District Office.

## **Bear habitat**

The best habitat for black bears in Vermont is a mixture of coniferous trees, hardwoods, wetlands, and variation in terrain, which is readily available within the extensive state-owned land in Johnson. Because they need dense cover to escape danger, the wary and elusive black bears prefer rough and wooded habitats. The habitat should also have a good water supply nearby. Bears require large areas of uninterrupted forestland for breeding. They also require travel corridors to move between resources within their home ranges. These areas need additional protection especially as forested areas may be subdivided and developed. The large proportion of forested area in Johnson provides good habitat for black bear.

## **Core Forest Habitat**

While some species such as deer can accommodate human populations, many others rely on large blocks of unfragmented forest for their mating, nesting, feeding, and denning habitats. These areas are referred to as “Core Forest Habitat” and generally consist of forestlands that are at least 100 meters (328 feet) from significant development such as roads, houses, and active farmland. Species that rely on such areas include hawks, owls, songbirds, fisher cats, moose, bobcats, and black bears. Mammals such as deer, moose, bear, bobcat, fisher cats, and coyote may require very large contiguous forest acreage up to 600 to 7,500 acres. Fragmentation of large forest blocks (Priority Forest Blocks) through subdivision and development diminishes species’ ability to access core habitat functions and may result in a change in species’ composition from species such as moose, bears, hawks, owls, and bobcats, to other species such as pigeons, sparrows, starlings, and skunks. Blocks of core forest habitat are found throughout Johnson with the largest blocks found at higher elevations identified as “Forest” areas on the future land use map.

## **Act 171 and Preventing Forest Fragmentation**

In 2016, Act 171 was passed requiring language in Municipal and Regional Plans to highlight priority forest blocks and habitat connectors (Wildlife Corridors). Act 171 amended Vermont Planning Statutes (Chapter 117) to encourage and allow municipalities to address protection of forest blocks and habitat connectors, while supporting the local forestry industry. In accordance with Act 171, the following section highlights the importance of maintaining and improving forest blocks and habitat connectors and identifies strategies for preventing future forest fragmentation. See the Natural Resources chapter policies and recommendations below for actions the community can take to reduce forest fragmentation, enhance forest health, and support essential ecological functions. For more information, please refer to the Act 171 Guidance document on ANR’s (Vermont Agency of Natural Resources) website: <http://anr.vermont.gov/sites/anr/files/Act171Draft%20121417.pdf>.

## **Wildlife Connectivity**

In addition to the well-known White-Tailed Deer, Moose, Black Bear, Fisher, Red and Gray Fox, Turkey, Blue Heron, Beaver, Mink, a wide variety of birds can be found in Johnson. Maintaining habitat for these species is important for their survival. Habitat connectivity is one way to maintain wildlife habitat and biodiversity. Connecting habitat is land that links large patches of habitat within a landscape, allowing the movement, migration, and dispersal of animals and plants. Riparian habitat along streams and rivers, and forest cover between developed areas represent potential connecting habitat. Often these areas are called “wildlife corridors or habitat connectors.” Habitat connectors act as lifelines for isolated wildlife populations as they:

- Allow wildlife to move freely across their range and connect to larger contiguous habitat blocks (priority forest blocks)
- Allow wildlife to colonize new habitat as climate change, succession, or other ecological processes force them to migrate, reduce the risk of population isolation
- Ensure the exchange of genetic information among populations

- Facilitate seasonal movements (migrations) to essential range or habitat
- Allow adult animals to interact with potential mates, thus improving reproductive success and genetic fitness.

Maintaining habitat connectors and contiguous habitat blocks sustains a healthy forest yielding multiple benefits including:

- Supports recreation and tourism
- Supports local sustainable forestry industries
- Provides clean water and air
- Enhances public health
- Acts a flood control
- Maintains biological diversity
- Provides wildlife habitat
- Mitigates climate change impacts (Ex : flooding, stormwater runoff)
- Preserves cultural heritage

Reduced connectivity between habitats as a result of the fragmentation caused by roads and development has serious impacts on wildlife populations at a variety of spatial scales. In the short term, habitat fragmentation can restrict species' access to seasonal habitat. Roads can act as a barrier between necessary habitats, restricting access or genetic flow between populations. Prominent ridgelines such as Laraway Mountain, Butternut Mountain and the Sterling Mountain Range provide a scenic background to Johnson, both within Town and on approaches from neighboring communities. In addition to their scenic values, these features offer natural resource values. Undeveloped ridgelines are parts of important core habitat, provide important corridors for wildlife, and often also contain head waters of local streams, seeps, and ground water recharge areas. It is possible to locate development in the uplands in a manner that preserves scenic qualities by careful placing of structures below the top-of-ridge and minimizing site clearing and grading.

### **Strategies for Reducing Forest Fragmentation**

One way to maintain connectivity involves conservation or protection of critical linkages and priority forest blocks through conservation easements or outright purchases of land. Other mitigation measures include retrofitting existing underpasses or culverts to allow wildlife passage, or simply installing wildlife crossing signs to alert motorists. The Significant Habitat map found in the back of this plan depicts priority connectivity and interior forest blocks in Johnson. For more information regarding priority forest blocks visit the BioFinder at <http://anr.vermont.gov/maps/biofinder>.

A burgeoning area of biological study is in the movement of flora. It is important to remember that plants migrate just as animals do, although at a much slower pace. Soil bridges ease plant migration and facilitate safe movement of wildlife. Flora migration is particularly evident as climate change affects the ability of flora and fauna to survive in their natural habitats.

The **Northern Appalachians Staying Connected Initiative** is working to help safeguard wide-ranging and forest-dwelling wildlife such as bear, moose, lynx, marten, and bobcat from the impacts of habitat fragmentation and climate change by maintaining and restoring landscape connections across the Northern Appalachians region, which includes the Worcester and Green Mountain ranges in northern Vermont. The network between Northern Vermont, New Hampshire and into Maine is a key connection for wildlife across the northeast. Organizations such as this provide an opportunity for both the Town and private residents to get involved with education and proactive wildlife management.

### **Regulatory considerations**

On a regulatory basis, Act 250 criterion 8(A) mandates that development activity must not “imperil necessary wildlife habitat or endangered species in the immediate area.” According to the Vermont Natural Resource Board, the habitat must be critical to a life stage of a species and be clearly identifiable—as in the case of the mapped deer wintering and bear habitat. Places identified in this Plan will be used as the basis for Johnson comments for potential conflict between Act 250 applications and the Town/Village Plan.

### **Rare, Threatened and Endangered species**

The term endangered generally refers to species whose continued existence as a viable component of the state's wild fauna or flora is in jeopardy. A threatened species is defined as a species whose numbers are significantly declining because of loss of habitat or human disturbance, and unless protected will become an endangered species.

Rare plants and animals are important for a variety of reasons. Some are indicators of unusual habitats or of colder (or warmer) climates in Vermont’s distant past. Some serve as indicators of environmental quality. Some species may provide compounds for medicines or agricultural or industrial products. Finally, some are attractive and add beauty to the natural landscape. Many uncommon species will disappear if not recognized and given some form of protection.

### **Invasive Species**

Non-native, invasive species can cause irreversible impacts on ecosystem health and biodiversity. Three non-native insects which currently threaten Vermont are the emerald ash borer, Asian long horned beetle, and hemlock woolly adelgid. A number of exotic insects and diseases, such as beech bark disease, butternut canker, and gypsy moth, are already established statewide.

Invasive plant growth can lead to loss of native flora and fauna. Japanese Knotweed is one particularly aggressive invasive species that is becoming increasingly prevalent in Johnson. Colonies of Japanese Knotweed can quickly overtake stream banks, empty lots, construction sites, and back- yards. When the plant is disturbed above-ground, a hormone in the root stimulates the growth of new shoots – up to 6 feet away from the “mother” plant. A new colony of knotweed can be established by a chunk of root or stem no larger than a human fingernail. Knotweed quickly outcompetes native vegetation, contributes to soil erosion, especially along stream banks, and has been known to grow through and damage infrastructure such as bridge abutments. Honeysuckle is another invasive plant species you’ll find in Johnson and throughout Vermont that also can outcompete native vegetation.

Conserving genetic diversity within native host species increases potential resiliency in light of invasive pests. Several actions are needed to address non-native invasive species. Among them are preventing new introductions through common pathways such as firewood, nursery stock, and other non-local products. While there are no official State regulations related to firewood used at private homes, the Vermont Department of Forests, Parks, and Recreation recommends that firewood not be transported more than fifty miles. Other important actions needed to address non-native species include preserving the genetic resources of native species that may be impacted by invasive species; working with partners to develop tools for detecting, identifying, evaluating, and managing invasive pests; and responding rapidly if infestations are detected. Local citizens and the Johnson Conservation Commission can play a key role in preventing the spread of invasive species.

### **Johnson Significant Habitat map**

The Vermont Non-game and Natural Heritage Program, in the Fish and Wildlife Department, has an ongoing program of identifying and mapping special natural features of significance in each town. These maps show the approximate boundaries of known deer wintering areas and known locations of rare plants, animals, significant wildlife communities or state natural/fragile areas.

The 1991 revised Significant Habitat Map for Johnson in the back of this plan identifies the approximate boundaries of known deer wintering areas and indicates general areas of black bear habitat. All data is now available online at the Agency of Natural Resources atlas at <http://anrmaps.vermont.gov/websites/anra5/>. The Significant Habitat map also shows priority connectivity and interior forest blocks as described above.

A detailed [natural resources inventory](#) was conducted in 2017 to better understand the full array of wildlife habitat and travel corridors in Johnson. Additional resources not mentioned above to help identify plant species include “[iNaturalist](#)” and “[Picture This](#)” online applications.

### **AIR QUALITY**

The United States Environmental Protection Agency sets National Ambient Air Quality Standards (NAAQS) which set acceptable levels of various types of air pollutants. Areas whose air meets these standards are considered “in attainment,” while areas that do not are considered “out of attainment.” Vermont is currently the only state in which no area is currently designated as non-attainment for the NAAQS. However, Vermont is located in the Ozone Transport Region, and as such must meet additional requirements to reduce levels of ozone and ozone forming pollutants.

Chittenden County is very close to being out of attainment for ozone and fine particulate matter. Despite its rural nature, Lamoille County occasionally experiences “bad-air days” due to high levels of fine particulate matter, especially in winter months when “cold-air inversion” traps emissions in low lying valleys. Local sources of ozone and particulate matter come primarily from transportation and wood combustion, though a good quantity of this and other pollutants migrates to Vermont from other areas of the country. The exact proportion of air pollution generated locally is difficult to quantify. If the County were designated as “non-attainment,” the

State would need to develop regulations that will require the area to take additional actions to reduce emissions of target pollutants.

As noted above, two primary sources of local air pollution include wood stoves and automobiles. Newer wood stoves are now mandated by the EPA to contain pollution control equipment that significantly reduce particulate emissions. Replacing older wood stoves and furnaces will have a positive impact on air quality over time. Automobiles are a second local source of air pollution. Strategies such as reducing driving miles, cleaner burning engines, carpooling/ride sharing, expanding transit options serving Johnson, and using alternative-fuel vehicles all would reduce automobile pollution. Increasing local employment opportunities may also reduce the need to commute.

A novel source of air pollution is the increase in smoke and haze resulting from forest fires in Canada and the American West. Smoke from these forest fires, regardless of how far away they are, presents a serious health issue for Vermonters. Inhaling wildfire smoke can cause airway inflammation and lead to lung conditions like asthma and chronic obstructive pulmonary disease (COPD). There is also a connection between wildfire smoke and cardiovascular disease.

## **SCENIC AND HISTORIC RESOURCES**

Johnson is blessed with its location, beauty and natural resources. Sense of place, determined by historic features, geography of the land and availability of recreation and cultural opportunities are among key determinants for why people choose to live in or visit Johnson.

Among the key scenic resources are scenic backroads that include Hog Back Road, Plot Road, Clay Hill Road and Mine Road; scenic waterways such as Lamoille and Gihon rivers and swimming holes located along Foote Brook and Gihon; and scenic views that include Prospect Rock, views along the Rail Trail, and views visible from backroads such as the intersection of Clay Hill and Ben Ober Hill Roads, the intersection of Upper French Hill and Waterman Roads or the intersection of Plot Road and the top of Foote Brook Road. Highly valued are aesthetic and pristine natural attributes of the Laraway and Butternut Mountain Ranges as well as scenic, intact views of the Sterling Mountain Ridge, especially as viewed from the Route 15 and Route 100C corridors. The Laraway, Butternut and Sterling Mountain Ranges are scenic resources that shall be preserved. The Town of Johnson values working lands and is home to many scenic views as a result of preserved working farmland.

In 1981 the entire town was inventoried by the state Division of Historic Preservation for the Vermont state historic registry. Town-wide, approximately 170 structures were noted for their statewide historic significance. Of these, 125 structures are located within the Johnson Village Historic District. The two remaining covered bridges in Johnson- Power House and Scribner- are listed on the National Register of Historic Places.

The Johnson Conservation Commission plays an important role in conserving natural and scenic resources in the Town of Johnson for residents and visitors to enjoy. The Conservation Commission's mission is stewardship of public lands, advocating for the protection of Johnson's



natural resources for present and future generations. The Conservation Commission maintains the town's properties assigned to them by following the management plan for each site. Key projects regarding properties the Johnson Conservation Commission manages are highlighted below.

- The Gomo Town Forest is managed for multiple uses with the most recent management plan (2009) highlighting wildlife habitat. It was brush-hogged in October 2021 and will be done again in late summer 2023.
- The Talc Mill property natural resources management plan was prepared in September 2007. The Conservation Commission would like to have ecologically informed management plans developed for Gomo Town Forest and the Talc Mill property.
- The management plan for the Beard Recreation Park follows a Vermont River Conservancy developed management plan, as part of their conserving the property and turning it over to the town in 2015. With support from a \$5,000 donation, an ADA trail of approximately 280 feet was installed in June 2021 from the parking lot to the picnic area. A wheelchair accessible picnic table was added along the trail 2022. The trail adds easier access for everyone.
- In regard to McCuin Island, the Conservation Commission is working with the Lamoille Paddler's and the Vermont River Conservancy to find an alternative camping site along the Lamoille River, rather than on this special island, to limit disturbance to this rare natural community.
- Dog's Head Falls now has a clear trail and a bridge providing safe passage with signage for the Dog Head Falls Fishing Access.
- Checkerberry Park/aka Nelson Duba Field is home of the Johnson Arboretum, which was established in 2020, envisioned, created, and maintained by the Johnson Tree Board. Located behind 21 Clay Hill Road, access is a right-of-way walkway between two residences. There are over 60 plus hardy, unusual trees and shrubs planted at the Arboretum. The Arboretum is a quiet place devoted to nature, relaxation and education.
- The Wescom Road East lot is a 3.92-acre lot across Wescom Road from the Skate Park. The Johnson Conservation Commission is working with Bee the Change to plant a one-acre pollinator/native wildflower garden.
- Prindle Lot is a 25-acre natural area located at 1755 Plot Road with access by a deeded right of way. A Natural Resources Inventory was conducted in July 2012.
- Reservoir Property, located off Reservoir Road is a 50-acre forested parcel adjacent to the site of the old reservoir that previously provided drinking water to the village of Johnson. French Hill Brook winds through the property. A Natural Communities of the Reservoir Property survey was conducted in July 2012.
- The 13-acre Judevine Brook headwaters property and surrounding Long Trail in Johnson has been permanently protected by the VT Department of Forests, Parks, and

Recreation in collaboration with several conservation groups with the property being incorporated into the Long Trail State Forest (December 2022.) A much-needed trailhead parking lot is planned along Plot Road with funding from the same sources. The Judevine Brook stems from a small water body north of Plot Road in Waterville and extends south into Johnson, where it enters the Lamoille River southwest of Hogback Road.

## POLICIES

- Agriculture and forestry practices must abide by State Guidelines (Required Agricultural Practices, Acceptable Management Practices).
- The integrity and function of Highest Priority Connectivity and Highest Priority Interior Forest blocks should not be compromised by development or associated infrastructure.
- New roads, driveways, and utilities should be designed to avoid the fragmentation of priority forest blocks and habitat connectors.
- Support efforts that protect long-term viability of agricultural and forest lands; implement sound forest and agricultural management practices; and the use of locally grown food products.
- Protect resources by restricting commercial and residential development:
  - In fragile areas, i.e. areas with topography limitations, soil limitations, areas prone to flooding and wetlands
  - In a minimum of the 50ft Life Zone around Vernal Pools
  - Within 100ft from a wetland
  - On land 1,500 feet above sea level. Forestry, agriculture, recreation or primitive camps can be considered appropriate, providing the proposed use does not adversely impact the land or public water supplies
  - On class III or higher and development roads that are above 1500 feet, or on slopes greater than 25%
  - That would negatively impact bear and moose habitats, winter deer ranges and critical habitat areas.
  - On Laraway, Butternut and Sterling Mountain Ranges for energy generation through wind towers (See Enhanced Energy Plan below for crossed referenced siting policies regarding new development and preserving natural resources) ).
- Site new development near existing town and state highways and utility right-of-ways
- Discourage road construction of town highways, class III roads, and private development roads and driveways that are above 1500 feet in elevation or on slopes greater than 25%. ( See also Transportation section)
- Encourage land use measures that will protect wilderness areas, rare, threatened and endangered species.
- Support efforts that monitor the water quality of Johnson's rivers and streams; maintain or improve the quality of water resources; and take actions to ensure that our rivers and streams are classified and developed in accordance with the Select Board's resolution from August 16, 2004.
- Protect the quality of public drinking water supplies and restrict development in Source Protection Areas.

- Provide for the wise and efficient use of Vermont's natural resources and facilitate the appropriate extraction of earth resources and the proper restoration and preservation of the aesthetic qualities of the area.
- Within Johnson Village, support private and public activities and uses that are oriented to the Lamoille and Gihon riverfronts. This Plan recognizes the importance of the rivers in the Village's history and their continued contribution to the scenic, economic and recreational opportunities in the community.
- Encourage initiatives that conserve and promote the area's historic and cultural assets.
- Encourage initiatives that restore, preserve and continuously use historic structures, especially in Johnson Village

## IMPLEMENTATION RECOMMENDATIONS

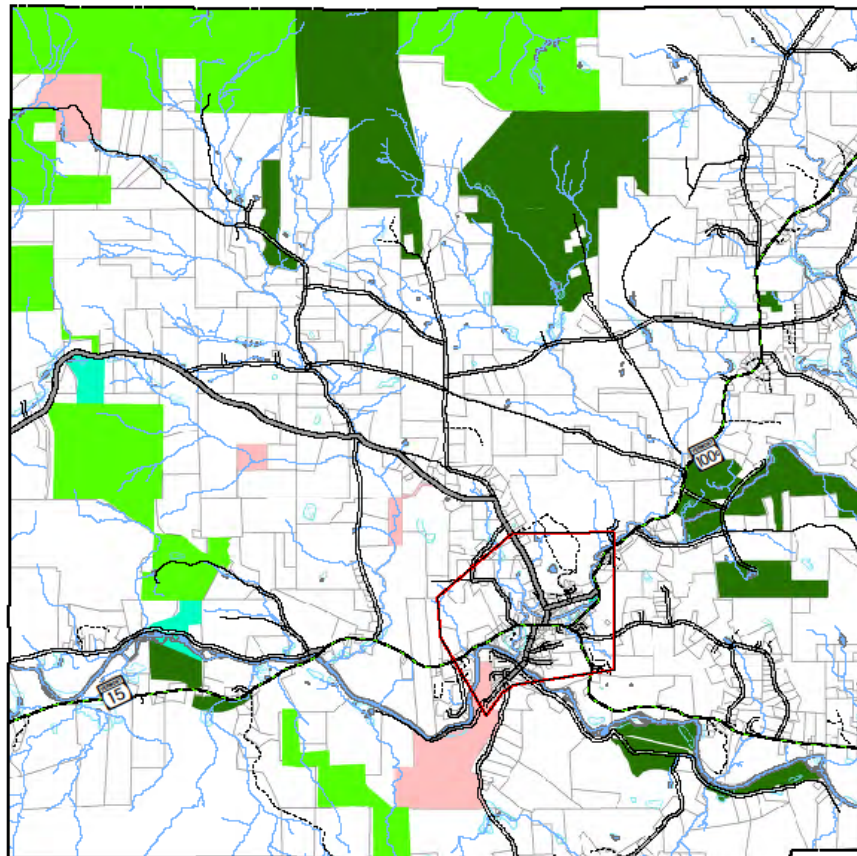
### Short-term

1. Work with landowners interested in the FEMA Buyout Program, and the Town should work creatively on purchased properties to restore riparian and forested habitat and increase public greenspace in Johnson where possible. Work with interested local business owners to increase and enhance greenspace in Johnson Village.
2. Include resources on the Johnson Municipal website to educate landowners about programs and funding that could support restoration of stream buffers, conserve habitat, and other conservation practices.
3. Promote the Vermont Use Value Appraisal Programs (Ex: Current Use Program) to encourage landowners to have a Forest Management Plan and consider the long-term management of priority forest blocks and habitat connectors.
4. Annually review and prioritize fixes for streambank failure and road erosion concerns along municipal roads in the Town right-of-way and restore vegetation in priority eroded streambank locations.
5. Encourage Conservation and River Corridor Easements in Johnson and help connect interested landowners with local resources (Ex: Vermont Land Trust, Vermont River Conservancy, Vermont DEC).

### Medium-term

6. Identify lands desirable for conservation and/or public greenspace and recommend what actions might be taken to conserve identified lands.
7. To maintain scenic views and promote roadside vegetation, the Johnson Shade Tree Committee should work with interested landowners to finalize the Johnson Shade Tree Preservation Plan.
8. Explore opportunities to establish scenic pull-offs in Johnson.

# Town and Village of Johnson Municipal Development Plan Conserved Lands

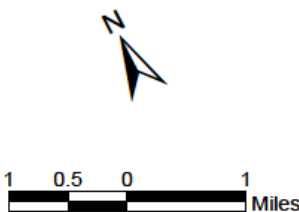


**Legend**

- Vermont Land Trust
- Federal
- State
- Municipal
- Other Non-Profit/ Private Orgs
- Town Boundary
- Village Boundary
- Parcels
- Lake/Pond
- Wetland
- Streams

**Roads**

- State Highway
- State Forest Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Public Road, Undetermined Class
- Unknown / Private Road
- Trail



**DATA SOURCES:**  
 CONSERVED LANDS: VCGI, Vermont Land Trust, 2016.  
 PARCELS: VCGI, 2021.  
 WETLANDS: Vermont Significant Wetlands Inventory, VCGI, 2010.  
 POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.  
 ROADS: 1:5000 E-911 Road Data, VCGI, 2021.  
 SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VFD-USGS, 2001.

Lamoille County Planning Commission  
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 Montpelier, VT 05661-1009  
 802.888.4548 / 802.888.6539  
[www.lcpvc.org/](http://www.lcpvc.org/) June, 2023



Transverse Mercator,  
 VT State Plane, NAD 1983

For planning purposes only.  
 Not for regulatory interpretation.

**Insert  
Soil Limitations map**

DRAFT

**Insert Agricultural Resources map**

DRAFT

**Insert Significant habitat map**

DRAFT

## JOHNSON ENHANCED ENERGY PLAN

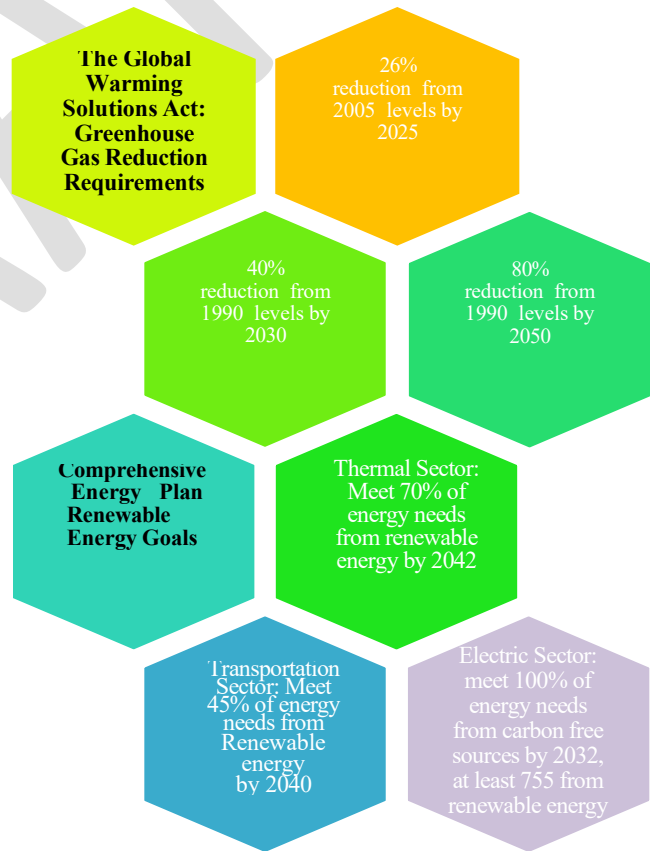
Energy for light, heat, transportation, and the operation of equipment is crucial for the local economy to function and thrive. Energy plays a vital role in our everyday lives and is essential for the well-being of the community. This chapter describes how Johnson residents and businesses use energy in three different sectors – electricity, space heating and transportation. This chapter also highlights energy conservation and efficiency and actions the community can take to promote such efforts. Lastly, this chapter summarizes energy generated in Johnson and outlines Johnson’s preferences for new energy generation facilities. The Energy Plan outlines steps that Johnson can take to align its current energy profile with state energy goals.

Two broad goals set by the State of Vermont are to reduce Vermont’s energy consumption by one third by 2050 and to meet 90% of Vermont’s energy demand by renewable resources by 2050 (90x50). Refer to the Current Energy Consumption section below for a profile of energy consumption in Johnson. Green House Gas emission reduction targets identified in the Global Warming Solutions Act and the 2022 Vermont Comprehensive Energy Plan goals are outlined in the diagram below. The CEP goals are structured to meet the Green House Gas reduction requirements and maintain consistency with the Vermont Climate Action Plan.

One strategy suggested in the initial CAP was implementation of a “Clean Heat Standard.” As of May 2023, this standard was established under the Affordable Heat Act, which incentivizes reductions in greenhouse gas emissions in the thermal sector. Transitioning to heating and cooling systems that reduce carbon emissions is eligible for clean heat credits that can be traded in a competitive clean heat marketplace. Weatherization improvements, installation of heat pumps, and heat pump water heaters are all examples of eligible measures for clean heat credits. Utilities are also required to provide additional opportunities for clean heat fuel sources.

### EQUITY AND ENERGY PLANNING

Johnson’s Inclusivity Statement states “The people of Johnson embrace inclusiveness and together we will build bridges to understanding, ensuring that all who live, work and visit our town feel welcome and safe. We reject racism, bigotry, discrimination, violence and hatred in all its forms. The things we embrace are kindness, gentleness, understanding, neighborliness, peace, tolerance and respect for and toward all. Together we can have a cooperative, sustainable and thriving community where everyone is





honored and valued.” This applies to those of all socio/economic strata when distributing incentives for energy conversion/conservation.

Consideration for equity in energy planning can take many forms. Energy equity known as “energy justice” as described in the 2022 Vermont Comprehensive Energy Plan (VT CEP) “aims to make energy accessible, affordable, cleaner, and democratically managed for all communities.” This section will discuss energy equity as it relates to Johnson, Vermont and the Thermal, Transportation, and Electric sectors. The 2022 Vermont Comprehensive Energy Plan highlights the following types of equity when planning for Vermont’s energy needs. This framework was utilized in the Vermont Comprehensive Energy Plan, and to discuss equity and energy planning considerations in Johnson.

*Distributive Equity* is outcome based. As defined in the 2022 Vermont CEP, it ‘considers the disparities in allocation of resources, benefits, and health outcomes, and the inequities experienced by communities related to living conditions, political power, and the risks and vulnerabilities posed to these communities as a result.’ It considers whether Vermonters, regardless of racial and other socioeconomic factors, equitably share both the benefits and burdens of the energy system.

*Procedural Equity* acknowledges equitable planning and implementation and the right of communities to participate in decision-making around policies and programs. This considers which stakeholders and communities have seats at the table, and voices heard during the public engagement process for siting of new generation facilities and infrastructure and who benefits from those facilities.

*Contextual Equity* recognizes that some communities are more likely to experience adverse impacts because of policies and programs due to vulnerability such as being more vulnerable to natural disasters.

*Corrective Equity* recognizes the need for a clear process to hold decision makers accountable in communities for equity commitments such as Advisory Committees or oversight boards to review clean energy implementation to ensure impacted communities are being appropriately served.

#### Consideration for Equity in Policies and Actions

The policies and action items stated below are meant to serve Johnson residents. The Municipal Plan is a guiding document that provides flexibility for Johnson to determine its own community needs when considering equitable impacts of renewable energy and future development. People living in rural, remote areas of town may be impacted by energy plan policies due to potential power outages and longer response times. Heavy use of electric technology for heating and cooling and transportation needs will put more strain on an already limited grid system in terms of capacity. This could lead to winter blackouts. Grid system upgrades and energy storage are encouraged in the plan policies to reduce this potential impact. Lower-income households will be impacted most by energy policies due to the financial burden to weatherize homes or upgrade heating/cooling systems. Charging stations are more likely to be built in denser areas such as the Village Center, which will be

less accessible for people living in rural areas of the town, but more accessible for people living near, traveling through Johnson Village, and neighboring areas. This Plan encourages the installation of high-speed electric vehicle charging stations in accessible locations to residents and visitors such as in Johnson Village.

### **Energy Burden in Johnson**

According to the 2023 Vermont Energy Burden Report, Vermont households spend around \$7,000 annually on thermal, electric, and transportation fuels. In Lamoille County, Johnson is the Town with the second highest total energy burden at 14.3% as reported by Efficiency Vermont in 2022. This report highlights distributive inequities of total energy burden, where lower income households are experiencing a higher energy burden in terms of household costs for heating/cooling homes, fueling modes of transportation, and electricity costs. While the Efficiency Vermont Energy Burden Report provides a high-level overview of energy burden across the County, there are some differences between municipalities in Lamoille County that are not accounted for in this demonstration of energy burden such as the difference in average commute times when considering energy burden in the transportation sector. For more information on the Efficiency Vermont Energy Burden Report visit: <https://www.efficiencyvermont.com/news-blog/whitepapers/vermonts-2023-energy-burden-report>.

### **Thermal Sector**

#### **Equity & Thermal Energy Use/Weatherization**

According to the 2020-2024 Vermont Housing Needs Assessment and American Community Survey 5-Year Estimates, much of Vermont's housing stock is older than the national average. The average home in Vermont was built in 1974 compared to the nationwide average of 1977. Over a quarter of the housing stock in Vermont was built before 1939. In Johnson 18% of the housing stock was built before 1939. This aging housing stock presents an inequitable distribution of energy burden in Johnson in terms of the number of older homes that could benefit from weatherization services. This outcome is a form of Distributive Equity because of the Town's limited housing stock. An aging housing stock can present inequitable distribution of concerns regarding living conditions. Examples of issues that can arise with an older housing stock include the prevalence of lead paint and asbestos, plumbing and electrical components that do not meet fire and safety codes, and inefficient energy use.

### **Transportation Sector**

#### **Equity & Energy in Transportation**

The 2022 VT Comprehensive Energy Plan (CEP)<sup>1</sup> outlines four core pillars of equity and recommended equity considerations to guide energy planning activities. The VT Agency of Transportation also provides a framework for transportation equity,<sup>2</sup> and how to equitably plan for access to safe, high-quality, affordable, and convenient transportation options for all

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<sup>1</sup> <https://publicservice.vermont.gov/content/2022-plan>

<sup>2</sup> [Transportation Equity | Agency of Transportation \(vermont.gov\)](#)

Vermonters. The VT Health Equity Toolkit also provides policy documents, funding opportunities, and other resources to support transportation equity.<sup>3</sup>

Some of the policies and actions outlined in Johnson's Transportation Chapter help achieve the equitable goals outlined in both the CEP and the VTrans Transportation Equity Framework (see the Johnson Transportation Strategy section).

### **Transportation Energy Burden**

Efficiency Vermont produced an Energy Burden Report in 2019, and again in 2023.<sup>4</sup> Both reports highlight some statistics and trends regarding thermal, electric, and transportation energy spending and burdens experienced by communities across the state. Transportation energy costs are consistently the largest portion of household energy spending and burden statewide. According to the 2023 report, Johnson has one of the highest transportation energy burdens at 7% (compared to the statewide transportation energy burden at 4%). Developing accessible transportation projects guided by the needs expressed within the community can help advance equitable transportation and energy networks. For example, supporting planning efforts to increase access to public transit, access to health care, and educational facilities can help lower regional transportation energy burdens and spending.

### **Transportation Demand Management**

Johnson residents rely heavily upon automobiles as their primary means of transportation. This reliance is reinforced by the separation of employment areas, commercial services, and housing opportunities. Supporting compact, mixed-use development discussed in the Land Use chapter of this plan can help revitalize the region's rural communities and create more walkable, bikeable, accessible places.

According to the 2022 VT Comprehensive Energy Plan, Transportation Demand Management (TDM) involves transportation infrastructure that increases the quality and types of transportation choices available. Public transit, ride share, bicycling, and walking are all alternatives to getting around by single-occupancy vehicles. Johnson should look to enhance mobility by providing transportation alternatives, to provide meaningful transportation choices to children, seniors, residents, visitors, and businesses.

Creating more walkable and bikeable communities can help decrease transportation spending, energy burdens, and emissions, facilitate more access to community assets, and increase health equity. For example, extending sidewalks to local elementary and middle schools could help integrate exercise into daily routines of school-aged children, and catalyze new development in village centers and downtown areas. Improved walking and biking infrastructure can also facilitate safe movement for older adults and households without access to vehicles. Performing walking audits can help identify vulnerable transportation infrastructure and places that need to

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<sup>3</sup> [Health Equity Planning Toolkit - Lamoille County Planning Commission \(lpcvt.org\);  
https://www.lpcvt.org/vertical/Sites/%7B3C01460C-7F49-40F5-B243-0CA7924F23AF%7D/uploads/HE\\_Toolkit\\_Resources\\_Table\\_Revised\\_Mar.2023.pdf](https://www.lpcvt.org/vertical/Sites/%7B3C01460C-7F49-40F5-B243-0CA7924F23AF%7D/uploads/HE_Toolkit_Resources_Table_Revised_Mar.2023.pdf)

<sup>4</sup> [S.255~Anne Watson~2023 Vermont Energy Burden Report~1-25-2024.pdf](#)

be improved for all pedestrians. Walkability in village centers also supports people's ability to age in place.

### **EV Charging Infrastructure**

Improving access to electric vehicles (EV) and EV charging infrastructure can contribute to a cleaner transportation network by reducing gasoline and diesel fuel usage. Efficiency Vermont's 2023 Energy Burden Report indicates that changing from fossil fuel vehicles to a new or used EV or plug-in hybrid could reduce annual household energy burden between 9 – 12% or \$700 - \$900 per year. These energy savings, however, may be offset by the high maintenance costs of EVs (Hertz recently liquidated its fleet of rental EVs for this reason). EV use raises an equity issue because at present EV drivers do not pay road taxes, which are part of the purchase price of gasoline; as EVs become a higher percentage of vehicles on the road, this inequity should be addressed.

### **Equity & Renewable Facilities Development; Distribution of Utilities**

#### **Equity Strategies for Renewable Energy Access & Affordability**

For healthy communities to thrive, local leaders should look to programs and policies that encourage locally generated and managed fossil-fuel-free energy, while prioritizing access and affordability for historically underserved community members. Providing renewable power and services close to where it is used, also known as distributed energy resources (DERs), has multiple benefits including the potential to lower costs for consumers, improve the reliability and resilience of the grid, and increase equity among community members. DERs can promote energy savings and can lead to improved health and equity in Johnson. They are explored in more depth below. Johnson is encouraged to work with LCPC to review local proposed renewable energy projects and how they may meet the goals of the Johnson Enhanced Energy Plan.

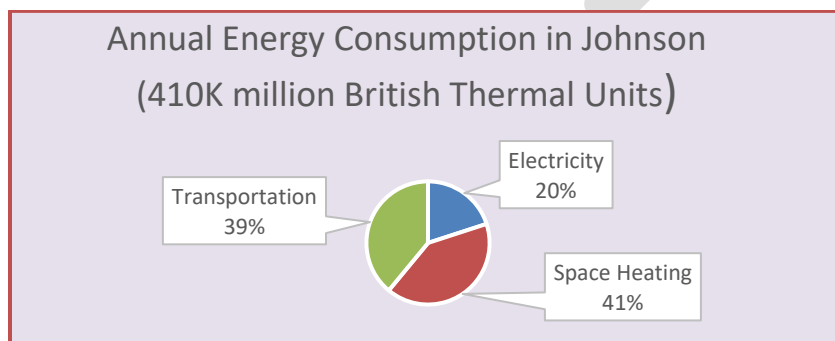
Community-Owned Solar: Community-Owned Solar can provide a number of meaningful benefits to participants and their communities, including increased access for low- to moderate-income households, greater savings on energy costs, energy resilience, community ownership, wealth-building opportunities, and equitable workforce development. For rural areas, solar arrays can have a positive effect when combined with agriculture, also known as agrivoltaics. Additionally, siting renewable generation (combined with storage) in proximity to key food resources like food shelves, community gardens/fridges, grocery stores, etc. can improve access to local, more affordable, and healthier food options.

Microgrids: Microgrids are interconnected, locally controlled power systems that can function while connected to the larger grid or completely on their own. Microgrids enhance the resilience of the power grid by providing localized power generation and storage. They can keep critical community services running during outages caused by extreme weather events or other disruptions. Low-income and disadvantaged communities in Vermont often face more grid reliability issues. These communities spend a higher percentage of their income on energy bills and are more vulnerable to power outages. Microgrids can address these disparities by ensuring reliable energy access during extreme weather events and other instances where the larger power grid is under duress.

## Current Energy Consumption

There are various ways to measure energy consumption. Electricity consumption can be measured in kilowatt hours. Transportation fuel use can be expressed in gallons of gas or diesel. Heating fuel use can be tracked by tons of wood pellets, gallons of propane, gallons of fuel oil, etc. A common measure of consumption that can be calculated for any type of energy fuel is a British Thermal Unit.\*<sup>5</sup> While British Thermal Units (BTUs) may be harder to conceptualize in terms of the volume of energy fuel used, they allow for usage comparisons across all energy sectors.

The figure below shows Johnson's 2023 energy consumption in BTUs. Of all energy used in Johnson, which is about 410,000 million British Thermal Units annually, electricity accounts for approximately 20% (83,517 million BTUs) of the total consumption, transportation for 47.12% (70,110million BTUs) and space heating for 41% (131,888 million BTUs) of total consumption.



Source: Lamoille County Planning Commission (LCPC)\*<sup>6</sup>.

## Municipal Energy Consumption

Energy used by Town and Village Departments represents a fraction of Johnson's energy profile. The Town and the Village own buildings that need heat and electricity. Highway, Fire, Electric, Water, and Wastewater Departments operate trucks and heavy equipment that need transportation fuels. Today, all heating and transportation fuels used by the Town and the Village are petroleum-based, although the Village Electric Department does utilize a waste oil burner. In 2016, the price of petroleum-based fuels were relatively low.\*<sup>7</sup> Fuel prices have seen sharp rises since 2020 and remain relatively high compared to 2016.. While the upfront costs of conversion are high, exploring alternative fuel and energy storage technologies can reduce the Town and Village's vulnerability to fluctuating fuel prices and offer savings over time. When a vehicle or

\*<sup>5</sup> The British thermal unit (Btu or BTU) is a traditional unit of heat; it is defined as the amount of heat required to raise the temperature of one *pound* of water by one degree Fahrenheit. It is part of the British *Imperial* system of units.

\*<sup>6</sup> The LCPC estimates are based on data sources that included the American Community Survey, the Vermont Agency of Transportation, the Vermont Department of Labor, Efficiency Vermont and the Vermont Department of Public Service.

\*<sup>7</sup> As compared to 2012, when residential fuel oil cost was \$4.00 per gallon and propane cost \$3.6 per gallon, the 2016 prices were \$1.85 and \$3.2 respectively. Gasoline cost \$3.62 per gallon in 2012 and \$2.17 in 2016. (Source: US Energy Information Administration)

piece of equipment is replaced, a building renovated or a significant purchase made, the Town and Village should give careful consideration to fuel economy and energy efficiency.

### *Energy Consumption by Sectors*

#### **Electricity Use**

Historically, electricity used by Vermont residents and businesses has been produced by large generators, predominantly located beyond Vermont borders. Hydro Quebec and the Seabrook nuclear facility in New Hampshire are a couple of examples. Electricity produced by these plants was then transmitted to Vermont customers via a robust network of transmission lines. In recent years, Vermont has seen a rise of in-state energy generation and the state's vision is for this trend to continue. Reliance on out-of-state energy sources will remain essential for meeting Vermont's demand for electricity but the vision is that the out-of-state generation will be increasingly matched by Vermont-based generation plants utilizing renewable sources. Electricity can be generated from a variety of sources including hydro, nuclear, and fossil fuels (coal, oil, or natural gas). Other sources of electricity include solar, wind, biomass (wood burning), and methane recovery (from landfills or farms).

In 2022, Johnson's residents and businesses used nearly 16,805,933 kilowatt hours (KWh) of electricity. Households utilized 46.28% of this amount and the remainder was used by businesses (53.72%). \*<sup>8</sup> Throughout the year, residents and businesses took steps to conserve energy and implement energy efficiency measures. Efficiency Vermont reports that in 2022, electric and thermal efficiency measures installed by Efficiency Vermont contractors in Johnson resulted in annual energy cost savings of \$33,624 to homes and \$57,118 to businesses. During 2023, Efficiency Vermont worked on 97 residential projects and 35 business projects. Efficiency Vermont defines a "project" as a collection of one or more energy efficient measures that have been implemented at a customer's physical location. For residential customers, energy efficiency measures primarily focused on the installation of efficient lighting and upgrading electronics and appliances (ex: cooking ranges, refrigerators, washers and driers). For business customers, improvements primarily focused on installing efficient lighting systems.

#### *Johnson Village Water & Light Department*

The Village of Johnson Water and Light Department is a municipal utility that provides electricity to approximately 970 customers in an area associated with, but slightly larger than Johnson Village. The customers range from municipal, institutional, residential, and commercial uses. According to Johnson Water and Light Department 2019 electrical usage data, Johnson State College is the largest user of the electric system, accounting for over 30% of system load. Residential users account for approximately 40% of electrical usage and the remaining electrical usage is consumed by commercial users (24%) and municipal facilities and streetlights (8%). The system has very high reliability records and has historically had some of the lowest rates statewide. The Village Trustees are responsible for oversight and operations of the Water and Light Department and employ staff to maintain the substation and distribution system. According to the Johnson Water and Light Department, in 2023 the largest electrical expenses were derived from the purchase of power (57% of electrical expenses) and administrative costs (24%). Billing and customer service inquiries are coordinated through the Village Clerk's office.

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\*<sup>8</sup> Efficiency Vermont, 2022

The Village Water and Light Department does not own or operate any electric-generating capacity. Rather, since around 1956, the Village has been purchasing all of its electricity from outside sources. The Village is a member of the Vermont Public Power and Supply Authority (VPPSA) which is a Joint Action Agency serving most municipal electric utilities in Vermont. VPPSA aggregates power supply needs of the members and secures the power from the market on behalf of the member municipalities, at a cost savings. With changes in the power supply market, membership in VPPSA has become essential to the continued operation of municipal electric departments all over the state.

#### *Other Electric Service Providers*

In addition to Johnson Village Water and Light, three other utilities have franchise areas in Johnson: Vermont Electric Cooperative (serving broad areas north and south of the Village's franchise area), Hyde Park Electric Department (serving a narrow corridor on the southeastern border), and Morrisville Water and Light (serving a very small area on the extreme north eastern border). For a map of service provider areas in Johnson visit: <https://www.vermontelectric.coop/about-us/service-territory>. According to the latest E-911 data provided by the Vermont Center for Geographic Information, other electric providers serving residents in Johnson provide electricity to approximately the following number of addresses; Vermont Electric Coop roughly 600, Hyde Park Electric Department nearly 100, and Morrisville Water and Light Department around half a dozen.

#### **Space Heating Energy Use**

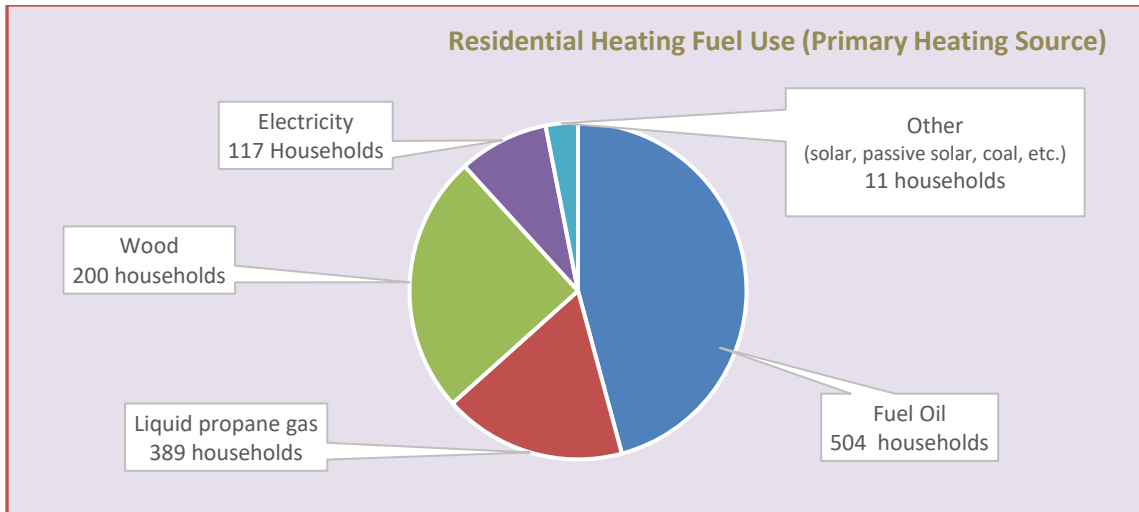
The heating of homes and businesses is an important sector of energy plans, especially here in northern Vermont. Johnson households heat their homes primarily with fuel oil and propane (69.5% of households). Firewood and wood pellets are used in 15.5% of homes. A more detailed profile of heating fuels used in Johnson homes is shown in a figure below. These figures are derived from census data (2021 ACS) representing primary heating sources. According to the Vermont Department of Public Service, approximately 45% percent of homes in Vermont have a secondary heat source, most of which are fueled by firewood (70%) or wood pellets (17%).

Johnson businesses and institutions, heat spaces primarily with oil and propane (46%), electricity (45%), and to a lesser degree, wood (9%).<sup>\*9</sup> In 2021, there were 96 commercial and government entities in Johnson. Together, these establishments consumed about 27 percent of space heating energy annually used in the town.<sup>\*10</sup>

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\*9 Vermont Energy Investment Corporation (Long Range Energy Alternatives Plan model)

\*10 Vermont Department of Labor; <http://www.vtlmi.info>. (Note: Agriculture, logging, mining and construction are not included in the count of commercial establishments).



Source: American Community Survey: 2021

Since over 50% of Johnson households use petroleum-based products (oil, kerosene, propane) to heat their homes, it is important to note that overtime prices of these fuels fluctuated significantly therefore causing substantial swings in home and business budgeting. At the time of writing this plan petroleum-based fuels have seen a decrease in cost when comparing 2023 to 2022. When the prices of crude oil products rise again, people and businesses in Johnson will pay more money to obtain the energy they need to meet their demand.\*<sup>11</sup>

Johnson residents and businesses are encouraged to explore efficiency improvements to heating systems by installing modern wood heating systems, heat pumps, and utilizing passive solar design. However, residents should first consider weatherizing their homes prior to investing in new equipment in order to maximize its efficiency. For information on home heating upgrades refer to the Energy Efficiency and Conservation section of this chapter or visit Efficiency Vermont's webpage at [www.encyvermont.com](http://www.encyvermont.com) for available rebates. Vermont Electric Cooperative also offers incentives to customers switching to latest energy technologies.

### Transportation Energy Use

Due to the rural nature of Lamoille County, transportation in Johnson is highly dependent on the personal automobile. According to the 2021 American Community Survey, about 65.4% of Johnson workers commuted to work by car, driving alone. About 18.3% of workers carpooled. A more sustainable approach to commuting can be observed in Johnson Village. Thanks to the Village's compact build-out, a relatively sizeable proportion of workers, approximately 15%, walk to work. Additionally, many Johnson State College students, Vermont Studio Center visiting residents, and senior citizens do not own a car and frequently walk or bike to many village destinations. The Town and Village are mindful of the transportation needs of all people, including those who do not have a car or prefer to utilize alternative means of transportation. The remaining commuters worked at home (6.2%) or took a taxi or motorcycle to work (0.9%). Mean travel time to work was 26.3 minutes. Johnson has been steadily expanding its pedestrian and

\*<sup>11</sup> Prices used to calculate energy expenditures are based on 2023 US Energy Information Administration data.



bicyclist infrastructure, enhancing transportation connections to off-road transportation corridors such as the Lamoille Valley Rail Trail, and encouraging the expansion of public transit. Examples of recent improvements of pedestrian infrastructure are outlined in the Transportation Chapter.

The table below estimates the use of passenger vehicles and gasoline in Johnson in 2021. With a large portion of Johnson residents commuting to work alone by car, the highways are becoming busier during the early morning rush. Adding to the growing problem, Lamoille County towns are experiencing an increase in commuter traffic passing through town. As gasoline prices fluctuate and automobile emissions continue to impact air quality, efforts need to be made to reduce the individual's dependency on the private automobile.

#### Light Duty Vehicle Energy Usage in Johnson

# of Vehicles	1,797
Total Miles Driven	22,087,500
Usage in Gallons	1,021,023
Usage in million BTUs	112,665

Source: American Community Survey 2021 and Vermont Dept. of Public Service, 2023

The key to making improvements in transportation is with energy efficiency – by driving less, using more efficient vehicles, carpooling, using public transportation, and providing charging stations for electric vehicles.\*<sup>12</sup> The Johnson Planning Commission worked closely with the Maplefields developer to ensure the new gas station has a potential site for a future bus stop. Johnson representatives continue to participate in regional discussions regarding extending the GMT (Green Mountain Transit) bus line to Johnson Village to serve both residents and the University (Northern Vermont University). Currently, two electric charging stations are located in Johnson Village. In 2018, the Village of Johnson, in partnership with the Vermont Public Power Supply Authority, will offer its electric customers the opportunity to receive a rebate on the purchase of an electric vehicle (EV). This plan encourages siting future development in a manner that facilitates energy efficiency, by providing safe and convenient access to local employment opportunities and services. New road projects on paved state and town highways should consider pedestrian and bicycle safety and connectivity to other bike /pedestrian facilities (trails, sidewalks, wide road shoulders) as outlined in the 2011 Complete Streets Legislation. For more information on land use and transportation planning efforts to reduce energy consumption refer to the Transportation and Land Use chapters of this plan.

#### *Energy Efficiency and Conservation*

##### **Efficiency & Conservation**

In addition to expanding its portfolio of renewables, Johnson can reduce its overall energy footprint by placing a greater emphasis on energy efficiency and conservation. At the local level, energy conservation can be achieved by promoting energy conservation techniques for residents

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\*12 The use of electricity as a transportation fuel is slowly increasing and as of July 2017, according to [www.driveelectricvt.com](http://www.driveelectricvt.com), an estimated 20-39 electric vehicles and plug-in hybrids were registered in Johnson.

and businesses, introducing energy efficient measures to municipally owned buildings, and planning for development patterns that minimize energy demands.

#### *Energy Efficiency in Residential and Commercial Buildings*

Vermont has long been considered to be at the forefront of promoting energy efficiency, through the efforts of Efficiency Vermont and other public, private and non-profit organizations. Efficiency Vermont provides valuable information on efficiency, conservation, rebate programs and other incentives to the general public. Property owners interested in implementing energy conservation measures can also apply for low interest loan funds from the Johnson Village Revolving Loan Fund. The loans are made for the installation of efficient heating systems, insulation improvements, or replacement of older windows with newer efficient models. The guidelines for applying for a loan can be found at [www.townofjohnson.com](http://www.townofjohnson.com).

To ease the cost of residential renewable energy and efficiency projects several towns implemented PACE (Property Assessed Clean Energy) Financing Districts. Johnson currently does not have a PACE district and the Planning Commission would like to encourage the Selectboard and the Village Trustee Board to study the PACE concept and consider its implementation in Johnson. PACE financing effectively allows property owners to borrow money to pay for energy improvements on a property, including energy efficiency/conservation retrofits as well as on-site renewable energy generation. The amount borrowed is typically repaid via a special assessment on the property's tax bill over a period of up to 20 years. As a result, the loan runs with the property, rather than the individual. Due to the fact that PACE financing is administered through the local property tax system, municipal approval is needed to create a PACE District.

Commercial and residential property owners may also apply for financial incentives through Efficiency Vermont's Energy Star Home Performance and Building Performance programs. Through the Home Performance Program residents can receive up to \$2,000 per household to assist in financing energy efficiency projects. Commercial building owners may receive up to \$5,000 per building for efficiency upgrades. For more information on Efficiency Vermont incentives visit [www.encyvermont.com](http://www.encyvermont.com).

#### *Energy Efficiency in Municipal Facilities and Infrastructure*

While many of Johnson's existing municipal facilities have been newly constructed in the past decade, including the Municipal Offices and the Fire Station, older public facilities such as the library could benefit from financing options for energy efficiency improvements. Financing options for municipal facilities include grants, efficiency incentives, loans, bonds, performance contracts and a tax-exempt lease purchase. One potential grant funding source for municipal building energy efficiency improvements is the Clean Energy Development Fund (CEDF). The Clean Energy Development Fund offers a grant program that finances cost effective environmentally sustainable electric and thermal energy technologies. CEDF grants are available to individuals and organizations. More information regarding CEDF grants can be found at [www.psb.vermont.gov/](http://www.psb.vermont.gov/). Additionally, Efficiency Vermont offers financial incentives for municipalities improving the efficiency of town facilities and services. For more information visit [www.encyvermont.com](http://www.encyvermont.com).

The Village Water & Light Department has been improving the Village's energy infrastructure on a continuous basis. The improvements include a complete rebuild of the electric substation, installation of a "back-up" substation transformer, and the potential for a "backup" 34.5kv transmission interconnection point with Green Mountain Power. The upgrades greatly improved the system's reliability, quality, and safety of employees. The Village also replaced approximately 152 streetlights with LEDs. One hundred of these lights were done with a combination of grant and energy efficient incentives that were no cost to the rate payers; 42 lights were changed as part of the Main Street Project, and 10 lights were replaced on bridges which also received incentive grants.

## **Future Energy Use**

Vermont has a bold goal to meet 90% of its energy needs through increased efficiency and renewable sources by 2050. To model pathways towards this goal, the State (Vermont Public Service Department), in partnership with Vermont Energy Investment Corporation (VEIC), utilized Low Emissions Analysis Platform (LEAP) to projects future energy demand in the state and its regions. Among the most notable trends projected by LEAP are the following:

- Despite a growing population and economy, energy use will decline by nearly 35 percent because of increased efficiency and conservation
- Electricity use will increase with the intensified use of heat pumps as primary heating sources and the use of electric vehicles. Because those choices are powered by electricity, and electricity is three to four times more efficient compared to fossil fuels, overall energy use will decrease.
- Over time, the model projects a near complete elimination of our two principal transportation fuels, gasoline, and diesel, as well as oil, currently the major fuel used for space heating in many parts of the state.

The 2023 version of the LEAP Model places more emphasis on an increase in electrification for heating and cooling needs. The former LEAP modeling placed more emphasis on an increase in wood heating sources.

## **LEAP Projections for Johnson**

To demonstrate the magnitude of changes that would need to take place to align Johnson's energy profile with the state energy goals, LEAP (Low Emissions Analysis Platform) offers specific targets to serve as a guide for Johnson's transitions in energy use and energy generation. The targets, listed below, project one way Johnson can achieve its 2050 energy goals. It is possible that a different modeling scenario, with different targets could be developed. However, because the energy goals are ambitious, projected changes would always need to be significant. New 2023 LEAP modeling projections were derived from the Municipal Consumption Tool, and LEAP Modeling results from the Vermont Public Service Department. These projected targets are based on anticipated increased demand in electrification for heating, cooling, and transportation needs. These targets consider the Vermont Climate Action Plan and Comprehensive Energy Plan goal to meet 90% renewables by 2050. Municipal LEAP targets were proportioned based on total local energy shares estimated by the Municipal Consumption Tool.

There are many strategies that will help Johnson attain the state energy goals but these strategies cannot be achieved by Johnson alone and require the action of the state agencies, regional organizations, public utilities and private individuals. That said, there are measures that Johnson can take to conserve energy and switch from using fossil fuels to renewables. These measures are described in the Policies & Recommendations section of the plan.

**LEAP Targets Based on 2023 LEAP Model**

*Target: Households in Johnson heated with wood*

Year	2025	2030	2035	2040	2050
% households	27%	24%	21%	18%	13%

*Target: Businesses/Institutions in Johnson heated with wood*

Year	2023	2025	2035	2050
% of establishments	9%	12%	17%	25%

*Target: Households in Johnson heated with electric heat pumps*

Year	2020	2025	2035	2050
# households	45	271	499	1073
% households	0%	3%	7%	14%

*Target: Households in Johnson weatherized*

Year	2015	2025	2035	2050
# households	57	247	600	1343
% households	5%	21%	49%	100%

*Target: Businesses/Institutions in Johnson weatherized*

Year	2015	2025	2035	2050
# of households	56	72	139	244
% of establishments	7%	16%	31%	61%

*Target: Households equipped with upgraded (more efficient) electrical equipment (appliances)*

Year	2015	2025	2035	2050
# of households	91	460	795	1,303
% of households	8%	39%	65%	97%

*Target: Passenger electric vehicle use in Johnson*

Year	2015	2025	2035	2050
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Vermont Act 56 establishes requirements for utilities (the Renewable Energy Standard) and how they intersect with energy planning efforts at the municipal level. Act 56 mandates that utilities comply with three Tiers: Tier 1 requires a certain portion of the utility’s power portfolio to come from renewable resources; Tier 2 requires a certain portion of a utility’s power portfolio to come from small-scale (5 MW or less) distributed generation in Vermont; and Tier 3 requires utilities to take active steps to reduce their customers’ fossil fuel use. Utilities will play an integral role in energy planning efforts at the municipal level as they make power portfolio and program decisions over the next 15 years, based on Act 56 requirements.

# vehicles	5	117	1277	2,312
% vehicles	0%	11%	39%	89%

*Target: Renewable electrical generation from facilities located in Johnson*

Year	2016	2025	2035	2050
Total Output (MWh)	717	7,874	15,827	27,755

*Target: Transition to renewables by energy sector*

Year	2015	2025	2035	2050
Heating	26%	34%	45%	73%
Transportation	8%	20%	38%	86%
Electricity	27%	53%	73%	94%

(Note: The targets shown above project an annual population growth of 0.4%).

**Challenges to Meeting LEAP Targets**

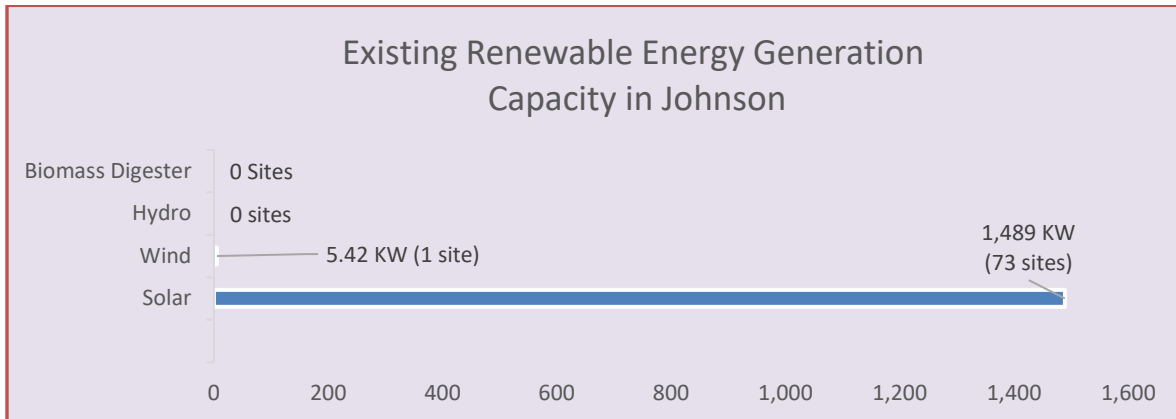
In order to accommodate this level of new power generation and meet statewide energy goals, substantial upgrades to the electrical grid and development of energy storage systems will be required to increase capacity. If Lamoille County communities and the state are going to become more reliant on distributed solar generation, or become a net exporter of renewable energy, public utilities and Vermont Electric Power Company (VELCO) will need to increase the pace of system-wide upgrades. This may be a difficult task to complete without directly impacting ratepayers and the cost of electricity in the County and state. Tax and rate payers in Johnson could be limited by electric grid challenges outside the Town’s control. The transition to renewable energy may continue to put upward pressure on electric rates. Exploring new energy storage technology as well as reducing existing energy demand through conservation, efficiency and weatherization will play a key role in working towards meeting energy targets. An additional challenge to meeting the targets may include the capacity of local contractors and engineers as well as limited skilled workers in the renewable energy field. Johnson supports workforce development and training opportunities in the renewable energy field. Despite the challenges involved, any and all progress toward the goals of this plan is important. For more information on challenges the Town and region face in achieving statewide energy targets, refer to the Lamoille County Regional Enhanced Energy Plan.

***Renewable Energy Generation***

**Existing Renewable Energy Generation in Johnson**

Today, electricity generated from renewables in Johnson comes primarily from solar generation facilities and a few residential-scale wind systems. According to the Vermont Public Service Department, as of March 2024, Johnson was a home to 73 solar sites with total generation capacity of 1,489 kilowatts. The majority of sites are roof top residential installations with generation capacity between 3-52 kW and PV ground mounted systems with generation capacity

between 4-150kW. Currently, there are no hydro or biomass digester sites in Johnson and one residential scale wind (10 kW or less) sites with a total generation capacity of 5.42 kilowatts. \*13



Source: Vermont Public Service Department, 2024

### Future Energy Generation

Johnson has opportunities to generate energy from various resources. Two resources that have the potential to substantially contribute to meeting the state energy goal for Vermont-based generation are the sun and wind. Hydro, biomass and geothermal sources may be feasible for production of modest amounts of electricity but are likely insufficient to solely produce the output required to keep Johnson, and Vermont, on track to meet the 2050 target for energy generation.

### Energy Generation Target for Johnson

The Vermont Public Service Department (PSD) provides a Generation Scenarios Tool to help set targets for renewable energy generation. The 2024 tool models statewide targets for 10%, 20% and 25% in-state generation options in the future. Incremental energy generation targets are outputs of the tool, as well as capacity targets and resource availability, with consideration given to land availability and grid headroom as possible constraints. The LCPC used the 25% in-state generation scenario to align with generation goals set forth in the 2022 Vermont Comprehensive Energy Plan. Statewide targets are broken down by region in the PSD Generation Scenarios Tool. The LCPC broke down the regional Generation Scenario Tool targets to the municipal level proportionally distributed across towns in Lamoille County, based on the average population and suitable land area. Population data used in the Generation Scenarios Tool is from the 2020 U.S. Census.

\*13 Existing generation data is based on information available via Community Energy Dashboard. As new facilities are added, the Energy Dashboard gets periodically updated; <http://www.vtenergydashboard.org>

Rather than using total land area available in each town, which the tool defaults to, LCPC used “suitable” acreage for generation as the land area. Suitable acreage was based on the percentage of total land area that includes both prime and secondary acreage for renewable generation, as displayed in the Regional Enhanced Energy Plan maps. This percentage was then distributed evenly across all towns, for ground-mounted solar and wind generation. Land area does not include area needed to support hydro generation sites or rooftop solar (as these do not occur on land). However, the Generation Scenarios Tool assumes that 1 acre is needed per MW of power produced for hydro projects.

In order to contribute to the goal of 90% renewable by 2050, the LEAP model forecasts that Johnson will need to add new renewable facilities capable of producing an additional 10,112 MWh (10 MW) of renewably generated electricity. Johnson could meet this target with a combination of renewable energy technologies. Ground-mounted solar is the most available generation technology and will likely contribute substantially to the future technology mix for Johnson’s renewable energy generation. Rooftop solar may increase in availability as structures are able to support it. While wind generation potential is limited, there is some land available to support small-scale projects.

**2024 Generation Scenario Tool Targets**

Incremental renewable energy generation targets for Town of Johnson

<b>Town</b>	<b>2023 Existing Generation (MWh)*</b>	<b>2025 Incremental output projections (MWh)</b>	<b>2035 Incremental output projections (MWh)</b>	<b>2050 Incremental output projections (MWh)</b>
Johnson	1,140	2,588.2	6,470.2	10,112.40

Source: VT Department of Public Service, 2024 Generation Scenarios Tool

\*Based on Vermont Public Service Department 01/31/2023 Distributed Generation Survey

Lamoille County Incremental Renewable Energy Capacity 2050 Target

<b>Town</b>	<b>Ground mounted solar: Potential capacity (MW)</b>	<b>Rooftop Solar Potential capacity (MW)</b>	<b>Wind: Potential capacity (MW)</b>
Johnson	4.9	0.8	0.5

The Solar and Wind Resource Maps show areas with energy generation potential as based on presence of the resource (sun or wind) and environmental attributes of the resource areas. “Prime” areas are lands with available resource and no environmental constraints. “Secondary” areas also have the resource but contain environmental characteristics that may pose an obstacle to development, based on statewide regulations or designated critical resources.

In addition to the Solar and Wind Resource Maps developed on the basis of statewide regulations, the Johnson Planning Commission and Conservation Commission identified local preferences to be considered in the planning of renewable energy facilities. Local preferences for sites preferred for generation are shown on the Solar and Wind Potential Resource maps as “Preferred Sites.” Areas unsuitable for generation, and areas where generation projects may face an obstacle due to a locally identified environmental constraint are shown on the solar and wind resource maps as “Local Constraints.” See the Siting of Renewable Energy section below for a more detailed description of state primary/secondary constraints and local constraints.

The maps can be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. They should not take the place of site-specific investigation for a proposed facility.

### **Solar Generation Potential**

The initial mapping analysis identified that there are 7,043 acres of land in Johnson that are potentially suitable for ground mounted solar power generation. Of this number, 1,260 acres (about 18%) are lands with prime solar potential and 5,783 acres (about 82%) are lands with secondary solar potential. The prime and secondary potential areas are shown on the Solar Potential Resource Map.

### *Wind Generation Potential*

The initial mapping analysis identified 2,360 acres of lands potentially suitable for commercial wind energy generation. Of this number, only 1 acre is land with prime wind potential. Lands with secondary wind potential total to 2,359 acres (about 99.9%). The prime and secondary potential areas are shown on the Wind Potential Resource Map.

Johnson has limited areas with wind speeds high enough to accommodate commercial (up to 1 MW of capacity) or utility scale (greater than 1 MW) wind generation facilities. Nearly 100% of areas in Johnson with potential for commercial or utility scale wind speeds, are situated in locations that are constrained by natural or physical conditions which can make wind development challenging, or where the impact on scenic view-sheds is of concern, such as along Laraway, Butternut, and Sterling Mountain ridgelines. The majority of secondary wind resource areas shown on the map are located above 1,500 feet in elevation within state recognized Highest Priority Connectivity and Interior Forest Blocks, identified in this plan as both a local and state constraint to commercial energy development. The integrity and function of Highest Priority Forest blocks should not be compromised by energy development or associated infrastructure.



### *Woody and Non-Woody Biomass Generation Potential*

Electricity can also be generated from other renewable resources, including organic waste (such as manure, brewery waste or food scraps) or woody biomass. Organic waste is processed in bio-digesters. The digesters produce methane gas that fuels an engine to produce electricity. Currently, there are no bio-digester facilities in Johnson.

The burning of woody biomass also possesses energy-generation potential, especially at combined heat and power (CHP) facilities. CHP facilities burn wood to generate electricity and contain a mechanism to capture the excess heat associated with producing electricity. Such facilities represent a local, renewable source of heat and power. In order to be cost-effective, CHP facilities typically require a large consumer of heat. Small scale biomass heating systems (wood stoves, wood pellet stoves, wood burning furnace) are another potential source for producing heat in residences, small businesses, and municipal buildings. Currently, Johnson Elementary School has a wood-fired system fueled by wood-chips. This plan supports biomass heating systems for residential, commercial and municipal buildings, and further investigating the feasibility, demand, and potential health impacts of siting a commercial scale biomass facility in Town.

### *Hydro Generation Potential*

Currently, there are no active hydroelectric sites in Johnson. Historically, the Town of Johnson received a notable amount of its power for electricity from hydro power. The former hydro plant was located along the Gihon River just upstream from School Street and the Power House Covered Bridge. Today, the prospect of restoring hydro power operations in the Village is not economically viable as restoration costs would far exceed alternative local power generation solutions, such as solar arrays. Due to ecological and aquatic habitat concerns, the State of Vermont is no longer promoting the permitting of new hydro power facilities.

### *Siting of Renewable Energy Facilities*

In order to protect natural, scenic and historic resources while encouraging renewable energy development, Johnson developed an inventory of areas that are suitable or unsuitable for renewable energy generation. These areas are described below.

#### **Areas Preferred for Renewable Energy Development**

Types of areas preferred for renewable energy development are the areas identified as preferred by the State of Vermont in Act 174. These areas include parking lots, brownfield sites, landfills, rooftop installations and gravel pits. Specific preferred areas for renewable generation, shown on the Solar and Wind Potential Resource maps are:

- Site renewable energy near existing town and state highways and utility rights-of-way
- Site renewable energy near existing 3-phase power lines and in areas where access to the generation interconnection point is safe and available year-round for utility employees
- Roof top solar on existing and new residential, commercial, industrial, municipal, and storage unit buildings

- Locate ground mounted solar near existing development (industrial, commercial, residential), on gravel pits, brownfield sites, school properties, and in parking lots.
- Biomass heating or generating systems in existing and new residential, commercial, municipal and industrial buildings
- Small-scale wind systems among households and businesses (10 kW or less)

### **Areas Unsuitable for Renewable Energy Development**

Certain types and sizes of renewable energy generation facilities shall not be supported. Areas where certain generation facilities are not supported are shown on the Solar and Wind Potential Resource maps and include:

- No commercial or utility scale energy development on Sterling, Butternut or Laraway Mountain Range (Scenic ridgeline)

These areas are primarily located above 1,500ft in elevation and contain fragile natural environments as well as protect the regions water supply.

- No energy development in the 50ft Life Zone around Vernal Pools

Vernal pools are fragile environments that act as a temporary flooded wetland typically found in a forest landscape. They provide critical habitat for a variety of species including amphibians (ex: frogs) and insects. According to the 2017 Johnson Natural Resources Inventory, the function of vernal pools is directly tied to the condition of upland forests. Trees surrounding vernal pools provide shade that prolong the period in which vernal pools are active and wet, allowing species to breed and thrive. Surrounding forests also provide food (leaves) to feed the vernal pool ecosystem. As a result, a minimum of a 50ft buffer is recommended in order to allow these natural communities to thrive.

- No energy development recommended within 100ft from a wetland.

Contiguous class II wetlands (as defined by the Vermont Department of Environmental Conservation), are vital habitats for a wide variety of plants and animals. The state wetland rules protect these wetlands with a 50-foot buffer in which no development is allowed without a permit and fee for impacts. In many cases, a 50 foot buffer is insufficient to protect and maintain wetland functions (ex: flood control, filter pollutants, aquatic and wildlife habitat etc...). To protect these vital functions, this plan recommends energy projects be sited in a manner that maintains a vegetative buffer of 100-feet from a wetland boundary.

### **Areas Unsuitable for Renewable Energy Development (State Primary Constraints)**

This plan identifies some areas where renewable energy development, based on statewide regulations, will be unlikely due to their natural qualities or due to the importance of protecting our citizens from potential natural disasters. The solar and wind resource maps, name these areas as “solar likely unsuitable” or “wind likely unsuitable”. The areas include:

- Federal Emergency Management Agency identified floodways

- River Corridor Areas as identified by the Vermont Department of Environmental Conservation
- Class 1 and 2 Wetlands as noted in Vermont State Wetlands Inventory or advisory layers
- Vernal Pools (confirmed and unconfirmed)
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- Wilderness Areas, including National Wilderness Areas

### **Areas Potentially Suitable for Renewable Energy Development (State and Town Identified Secondary Constraints)**

The Solar and Wind Resource Maps show areas with energy generation potential as based on presence of the resource (sun or wind) and environmental attributes of the resource areas. “Prime” areas are lands with no environmental constraints. “Secondary” areas have possible environmental constraints that may pose a barrier to the development of renewable energy facilities, based on statewide regulations. In some cases, these constraints may prohibit the development and in others the development may be suitable. The secondary areas shown on the Solar and Wind Potential Resource Maps include the following environmental constraints.

#### State Secondary Constraints:

- Federal Emergency Management Agency Special Flood Hazard Areas
- Prime Agricultural Soils
- Act 250 Agricultural Soil Mitigation areas
- Protected Lands (State Fee Lands and Private Conservation Lands)
- Deer Wintering
- Hydric Soils
- Vermont Agency of Natural Resources Conservation Design Highest Priority Forest Blocks

#### Johnson Town Secondary Constraints:

- Highest Priority Interior Forest and Connectivity Blocks

The western portion of town has large forested blocks identified by Vermont Fish and Wildlife’s Vermont Conservation Design analysis. These areas represent both Highest Priority Connectivity and Highest Priority Interior Forest blocks. The integrity and function of these forest blocks should not be compromised by energy development or associated infrastructure. The integrity of forest blocks is maintained by continuous forest cover and preserving wildlife movement corridors. In the case of energy projects, forest clearing to reduce shade concerns for solar, and infrastructure development (ex: access roads) fragments contiguous forest blocks and hinders wildlife movement. The impact to Highest Priority Forest blocks should be recognized as a potential constraint to energy development and evaluated on a case-by-case basis.

### **POLICIES**

- Energy generated locally in Johnson should be utilized in the Town and/or Village of Johnson or neighboring municipalities.
- Renewable energy credits, when possible, should be utilized locally for Johnson Town, Village, and neighboring municipalities or utilities.
- Small-scale (10 kW or less) wind systems should comply with safety standards and not exceed 45 decibels outside neighboring residential dwelling units.

- Renewable energy should be sited near existing infrastructure (roads, utilities) and buildings to limit the amount of forest fragmentation and clearing necessary for safe operation of a facility.
- Renewable generation should be sited in areas where the point of interconnection to the utility's distribution system can be safely accessed by utility staff year-round.
- All renewable energy generation projects shall be evaluated on a case-by-case basis in accordance with Vermont Section 248. Consider potential impacts to underserved communities when reviewing proposed renewable energy development projects.
  - New development including commercial scale public structures should be designed to accommodate roof top solar wherever possible.
  - Renewable energy projects should be sited in a manner that does not negatively impact primary and local environmental constraints as identified on the renewable energy resource maps.
  - Secondary constraints as identified in the renewable energy resource maps, shall be evaluated on a case-by-case basis in accordance with Vermont section 248.
  - When siting biomass commercial facilities, consider environmental and health impacts.
  - If a proposed system (energy project) is greater than 15kW, the developer should present to the Johnson Conservation Commission, Johnson Planning Commission, and the appropriate municipal board (Selectboard, Board of Trustees) prior to the start of the 45-day public notice period.
  - Ground cover beneath ground mounted solar arrays are encouraged to be pollinator friendly using native seed mixes to minimize mowing between array panels.
  - Strongly encourage a 100-foot buffer around wetlands where the increased buffer does not jeopardize the project due to limited acreage.
  - Maintain or establish vegetative buffers, where possible, to reduce visibility of commercial and utility scale energy systems.
  - The integrity and function of Highest Priority Connectivity and Highest Priority Interior Forest blocks should not be compromised by energy development or associated infrastructure.
  - Johnson supports workforce development and training opportunities in the renewable energy, thermal, and electricity sectors.
  - Consider equity when supporting planning efforts for electric vehicle infrastructure.

## IMPLEMENTATION RECOMMENDATIONS

### Short-term

1. Conduct regular energy audits and upgrade old heating and cooling systems in municipal buildings.
2. Implement low-cost weatherization and energy conservation practices in municipal buildings.
3. Improve signage and advertise public charging stations in Johnson.

4. Promote carpooling/ride sharing services on municipal websites and Front Porch Forum.

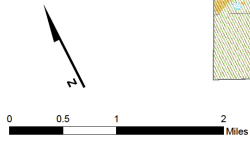
Medium-term

5. Explore funding opportunities for siting solar facilities on municipal buildings/properties.
6. Explore funding for feasibility study for siting a biomass plant in Johnson and the implication of its emissions.
7. Explore energy storage systems for municipal buildings and utilities.
8. Encourage municipally/utility owned or neighborhood/community solar cooperatives in Johnson.
9. Continue to participate in the Lamoille TAC (Transportation Advisory Committee) and work with Vermont State University-Johnson and Green Mountain Transit to survey Johnson residents' commuting patterns and promote a bus stop in Johnson Village to connect to Morrisville and Jeffersonville commuter lines.
10. Promote Lamoille Valley Rail Trail and its connectivity to Johnson Village Center.
11. Explore locations and potential funding for a Park and Ride in Johnson Village.
12. Investigate funding for high-speed charging stations to be located in the downtown shopping area, in areas accessible for residents and visitors.
13. Work with the Lamoille Housing Partnership as opportunities arise to promote solar and energy efficiency in affordable homes in Johnson.

Long-term

14. Study the costs and benefits of switching the Village's electric system voltage from 2400/4160V to 7200/12470V and continue to upgrade existing poles and wires outside the substation.
15. Explore the feasibility of establishing a municipal local tax incentive for new construction and renovations to assist property owners in upgrading energy efficiency standards as outlined in the Vermont Energy Code.

# Town and Village of Johnson Municipal Development Plan Renewable Energy Potential: SOLAR



\*\*\*Parcel boundaries are estimated and do not represent a legal survey.

### Key

- Existing Solar Sites
- Substations
- 3 Phase Power Lines
- Transmission Lines
- Lakes/Ponds
- Rivers/Streams
- Prime Solar
- Secondary Solar
- White Area
- No Solar

#### Local Natural Resource Constraints:

- Wetlands 100ft Buffer
- Vernal Pool 750ft Life Zone
- Vernal Pool with 100ft Buffer
- Highest Priority Connectivity Blocks
- Highest Priority Interior Forest Blocks

#### Preferred Sites:

- Gravel Pit
- Brownfield Site
- Municipal Building
- School
- Transfer Station/Formal Landfill Site

\*\*\*For other preferred general sites please see the energy siting section of this chapter.

### Methodology

This map shows areas of resource potential for renewable energy generation from solar, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints.

### Prime Solar

Areas with high solar potential and no environmental constraints.

### Secondary Solar

Areas with high solar potential and environmental constraints that may pose an obstacle to development. These areas are shown on the map and include the following constraints:

- Agricultural soils (local, prime and statewide classifications)
- FEMA special flood hazard areas
- Protected lands
- Act 250 agricultural soil mitigation areas
- Deer wintering yards
- Highest priority forest blocks
- Hydric soils

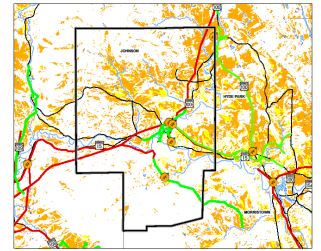
### No Solar

Areas with low solar potential or environmental constraints likely to prohibit development. These areas have been removed and are not shown in any way on this map. These environmental constraints are:

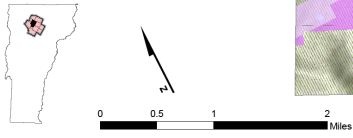
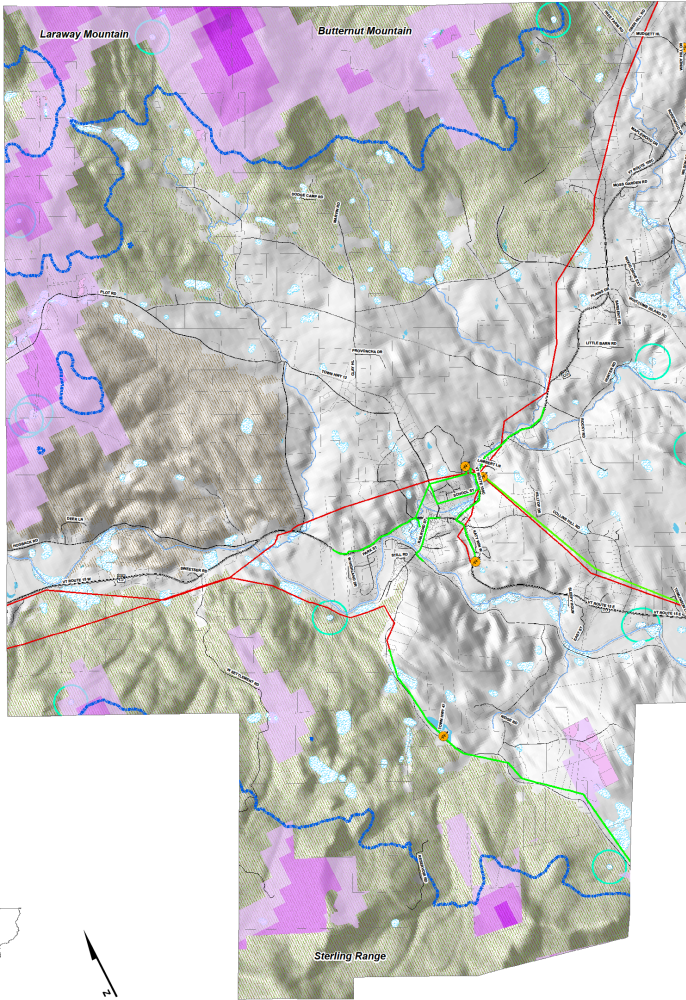
- FEMA floodways
- River corridors
- Federal wilderness areas
- Natural Communities and Rare, Threatened and Endangered Species
- Vernal pools
- Wetlands class 1 and 2

This map was created as part of a Regional Energy Planning Initiative being conducted by Vermont Regional Planning Commissions and the Vermont Public Service Department.

Created by Lamolille County Planning Commission, April, 2024.



# Town and Village of Johnson Municipal Development Plan Renewable Energy Potential: WIND



\*\*\*Parcel boundaries are estimated and do not represent a legal survey.

### Key

- Existing Wind Sites
- Substations
- 3 Phase Power Lines
- Transmission Lines
- Lakes/Ponds
- Rivers/Streams
- Prime Wind
- Secondary Wind
- Darker areas have higher wind speeds.
- Background No Wind Area

#### Local Natural Resource Constraints:

- Wetlands 100ft Buffer
- Vernal Pool with 100ft Buffer
- Vernal Pool 750ft Life Zone
- Highest Priority Connectivity Blocks
- Highest Priority Interior Forest Blocks
- Ridgelines-Elevation Above 1,500ft
- Parcels

### Methodology

This map shows areas of resource potential for renewable energy generation from wind, i.e. locations where renewable energy generation would likely be most feasible according to the natural conditions of an area. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy development. These conditions are referred to as constraints.

### Prime Wind

Areas with high wind potential and no environmental constraints.

### Secondary Wind

Areas with high wind potential and environmental constraints that may pose an obstacle to development. These areas are shown on the map and include the following constraints:

- Agricultural soils (local, prime and statewide classifications)
- FEMA special flood hazard areas
- Protected lands
- Act 250 agricultural soil mitigation areas
- Deer wintering yards
- Highest priority forest blocks
- Hydric soils

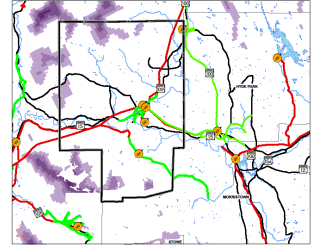
### No Wind

Areas with low wind potential or environmental constraints likely to prohibit development. These areas have been removed and are not shown in any way on this map. These environmental constraints are:

- FEMA floodways
- River corridors
- Federal wilderness areas
- Natural Communities and Rare, Threatened and Endangered Species
- Vernal pools
- Wetlands class 1 and 2

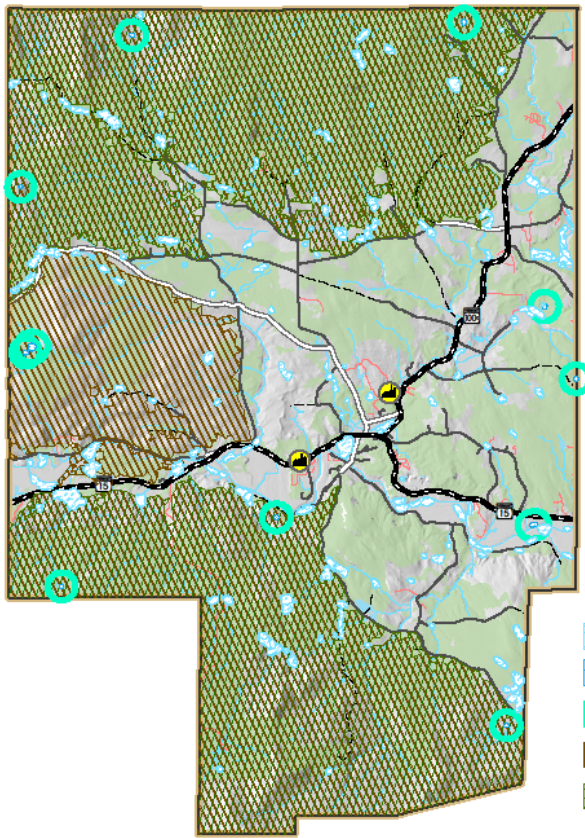
This map was created as part of a Regional Energy Planning Initiative being conducted by Vermont Regional Planning Commissions and the Vermont Public Service Department.

Created by Lamoille County Planning Commission, April, 2024.



**Johnson Town and Village Municipal Development Plan  
Forest Area With Biomass Potential:**

*This map illustrates the potential for energy development but not necessarily suitability*



**Local Natural Resource Constraints**

- Wetlands 100ft Buffer
- Vernal Pool with 100ft Buffer
- Vernal Pool 750ft Life Zone
- Highest Priority Connectivity Blocks
- Highest Priority Interior Forest Blocks

- Potential Woody Biomass Areas
- State Highway
- Class 2 Road
- Class 3 Road
- Class 4 Road
- Legal Trail
- Private Road
- Streams
- Waterbody
- Town Boundary
- Potential Site

This map shows areas of potential for woody biomass harvest and potential locations for combined heat and power facilities fed by woody biomass. The map also illustrates conditions that may limit the feasibility of extensive harvesting of wood for energy use. These conditions are referred to as constraints. Physical features (primary constraints) that make extensive harvesting infeasible which have been extracted from the biomass potential layer in this map include: FEMA floodways, River Corridors, Class 1 and 2 Wetlands, Vernal Pools, State-significant Natural Communities, Rare, Threatened, and Endangered Species, and Wilderness Areas. Secondary constraints not currently shown on this map may also pose limitations to biomass potential in these areas. Secondary constraints include: Agricultural soils (local, prime and statewide classifications) FEMA special flood hazard areas Protected lands Act 250 agricultural soil mitigation areas Deer wintering yards Highest priority forest blocks Hydric soils Secondary constraints should be evaluated on a case by case basis for all energy projects.

**Data has not been field verified and is subject to change. Use for planning purposes only.**

**DATA SOURCES:**  
 VT POTENTIAL WOODY BIOMASS AREA: VCGI, 2017  
 POTENTIAL COMBINED HEAT AND POWER SITES: LCPC 2012 Combined Heat & Power Site Assessment & Feasibility Study White Paper  
 POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.  
 ROADS: 1:5000 VTrans Road Data, 2021.  
 SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.

VCGI



## TRANSPORTATION

Johnson's transportation network is managed through cooperative efforts of the Town of Johnson and the Village of Johnson. The Town's Highway Department, for example, maintains local roads, bridges and culverts. Sidewalks and storm drainage systems within the Village borders, on the other hand, are maintained by the Village's General Department. Additionally, to the local efforts, the State of Vermont maintains two major transportation arteries crossing Johnson, VT Route 15 and VT Route 100C. For information regarding vehicle energy use please view the enhanced energy chapter.

### Traffic Count Report

LCPC conducted two traffic counts in Johnson in 2023. One on River Road near the LVRT crossing and the other on French Hill Road. River Road received an average of 130 vehicles per day going an average of 35 mph. French Hill Road received an average of 237 vehicles going an average of 37 mph. In 2020 Vermont AOT conducted a traffic count on Route 15 with an average daily traffic volume of 5372.

### Classification of local roads

Johnson road guidelines classify all municipal highways as Class 1, 2, 3 or 4, according to their importance and general use. The purpose of each class and the municipality's responsibility thereto are as follows:

- Class I Town Highways are those highways that, while the responsibility of the town to maintain, are extensions of the State Highway System and carry a State Highway route number. Johnson currently does not have any Class I Town Highways.
- Class II Town Highways are the most important highways in each town, serving as important corridors between towns, and consequently often support a large volume of local and regional traffic. Clay Hill/Plot Road, Railroad Street, and Hogback Road are examples of a Class II Town Highway.
- Class III Town Highways, such as the West Settlement Road, Collins Hill and Cemetery Rd - are all year-round travelled other than class 1 or class 2 highways.
- . An example of a Class IV Town Highway would be the Upper end of Coddington Hollow Road, from just beyond Foote Brook to the Waterville boundary is a class IV road. Class IV roads are not maintained by the Town of Johnson beyond the levels required by state statute. Year-round development on class IV roads should be discouraged due to their non-maintained status. The Town has adopted a Class IV Road Policy which addresses the levels of service provided by the Town.
- Trails are rights-of-way owned by the Town or Village that are not considered highways. Johnson is not responsible for any maintenance of trails, including culverts and bridges.

Table 7. Johnson Local Highway Mileage

Class I Highway Mileage	0
Class II Highway Mileage	12.50
Class III Highway Mileage	37.19
Class IV Highway Mileage	12.21

State Highway Mileage	11.35
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*Source: VTrans Road Mileage Map, 2023*

### **Bridges and culverts**

The Town owns and maintains 8 bridges within its boundaries, not including the numerous culverts serving both intermittent streams and larger waterways. A Highway, Bridge and Culvert Inventory completed in 2014 identified 388 culverts on Class 2 and 3 Town Highways ranging in diameter from 6” to 144”. According to the data, 60% of Johnson’s culverts are in good to excellent condition; 31% are in fair condition, while the remaining 9% of the culverts in Johnson are in poor or worse condition. On average, the Johnson Highway Department replaces 10-15 culverts per year, depending on how much grant money is available.

The Town voters approved the creation of a Bridge and Culvert Capital Reserve Fund, which is available for projects and likely will be used to meet match requirements and preliminary engineering costs. Most bridges and larger culvert projects will have grant programs available for construction. The Town will also need to plan for the replacement of driveway culverts as they deteriorate.

In 2020, the Town completed a road erosion inventory report, a assessment of locations at-risk for road erosion which could potentially have a negative effect on water quality. These locations are almost always near or adjacent to bridge and culvert infrastructure. The intent is to utilize this information in conjunction with inventories for bridges, culverts, and road surface conditions in order to inform decisions and priorities for improvement projects and capital planning. This assessment also positions the Town well for addressing new state requirements relating to phosphorus and sediment loading described below.

Requirements mandated by the Vermont Legislature to reduce phosphorus and sediment loading in Vermont’s lakes and streams from highways will have a financial impact on Town and Village budgets. In 2018 the State of Vermont enacted the “Municipal Roads General Permit” (MRGP) to achieve significant reductions in stormwater-related erosion from municipal roads. The MRGP is administered by VT DEC. Information on this program can be found at: [Municipal Roads Program | Department of Environmental Conservation \(vermont.gov\)](#). This mandate will also require different management techniques for highway maintenance, which are not yet fully known. Some of the practices will be relatively easy to implement, such as road grading and ditching methods and removal of roads sand and storm drain cleaning. Stormwater management within the Village will also be affected by these new requirements, the exact details of which are known at this time.

The Town currently maintains approximately eleven miles of paved highways. Increases in the annual paving budgets have not kept pace with increases in the costs of paving. Even though the Town has done well with state grants to augment town funds there is a need to increase local funding to keep up with the maintenance and replacement of existing paved highways.

Before any existing gravel roads are paved, the town should carefully evaluate the cost/benefit and determine if there are sufficient funds to maintain existing and new pavement. Consideration should also be given to the needs of non-vehicular use of the highways for the safety and

convenience of other users, such as pavement and road shoulder widths, signage and pavement markings.

### **Sidewalks**

Johnson Village maintains the network of local sidewalks. The maintenance includes winter plowing, spring sweeping and a general upkeep of the sidewalks. The Village continuously improves the sidewalk network.

In 2012, the Village completed a major downtown revitalization effort, locally known as the Main Street Project. The total of \$3.2 million was invested in downtown beautification and the enhancement of transportation infrastructure. As a result, Main Street gained an extended and improved network of sidewalks and reconfigured parking options which include a new public parking area at the Village Green. The street is lined with new trees and lamp posts. Banners and decorative art adorn the lamp posts. There are park benches, bicycle racks and granite pedestals dedicated to year-round sculpture displays. New way-finding signage points visitors to key Village destinations. As part of the streetscape project, the stormwater drainage system along Route 15 underwent a complete rebuild. Future desired improvements include extending sidewalks west to Jolley's Gas Station and east to the Katy Winn Mobile Home Park.

The implementation of sidewalk improvements is governed by pedestrian improvement plans. The most recent pedestrian improvement plan was completed in 2008 and proposed pedestrian network upgrades along School St, College Hill Road, Clay Hill Road, Pearl Street and Route 100 C. In 2003, Johnson Planning Commission completed a Pathways Plan that identifies popular walking loops and provides a framework for future pedestrian improvements. In 2015, sidewalk improvements were made to extend and improve pedestrian infrastructure in the vicinity of Johnson Elementary School along School Street and College Hill Road. This project is funded by a \$290,000 grant from VTrans. Johnson Village matched the VTrans grant by contributing \$72,500.

### **Municipal Facilities & Equipment Used to Maintain Local Transportation Network**

As previously noted, local highways are maintained by the Town Highway Department. The sidewalks are maintained by the Village General Department. The Town owns a highway garage, storage shed and salt shed, all located in the municipal complex at the end of Railroad Street and along Lendway Lane. The Town owns three tandem and one single axle plow trucks, tractor, one pickup, one grader, one loader, and shares a backhoe with the Village. The Village owns two Bobcat Skid Steer loaders with sidewalk plowing equipment, sander, and street sweeping attachments two light duty single axle dump trucks and three pickup trucks. The Selectboard has a duly adopted five-year Capital Plan for the purposes of phasing major purchases and capital expenditures to maintain and replace essential equipment in a predictable manner. The Village is working on a developing a capital plan.

## **Complete Streets Legislation**

In 2011, Vermont enacted “Complete Streets” legislation, mandating that all new and renovated paved roads and transportation projects consider, alongside the needs of motorists, the needs of bicyclists and pedestrians of all ages and abilities. Examples of design elements encouraged through the Complete Streets program include:

- Adding and maintaining sidewalks that are connected to public services;
- Improving lighting, signage and pavement markings; and,
- Installing curb ramps and sidewalk seating.

Johnson Main Street Project is a good example of compliance with the Complete Streets law and encourages alternative modes of transportation. In outlying areas where there are few public services and little pedestrian or bicycle traffic, Johnson will continue to consider other improvements including but not limited to higher-visibility signage and pavement markings, as determined to be appropriate.

## **Rail**

The nearest passenger service available is AMTRAK with stations in Waterbury, Essex Junction, and St. Albans.

## **Airports**

Johnson residents have access to private and charter aviation services through the Morrisville-Stowe State Airport on VT Route 100 in Morristown. Long-term improvement plans continue to be refined, and the first phase of work to lengthen the runway and improve the surface conditions were concluded in 2014. Commercial airline service is available through Burlington International Airport (BTV) in South Burlington (35 miles from Johnson Village).

## **Regional Trails**

Johnson is a part of three regional trail networks used both as transportation corridors and recreational amenities. The Lamoille Valley Rail Trail (LVRT), Long Trail and the Vermont Association for Snow Travelers’ snowmobile trail network are described in the Recreation chapter of this plan. Enhancing the connection between the Lamoille Valley Rail Trail to downtown Johnson is a focus of the new Johnson LVRT Committee.

## **Public Transportation Services**

Seven human-service organizations in Lamoille County currently provide services that include Johnson residents.

- Rural Community Transportation (RCT) offers a shopping shuttle between Johnson and Morrisville.
- Rural Community Transportation provides transportation services in a collaborative partnership with VTrans and other human resource partners such as the Central Vermont Council on Aging. RCT provides transportation services in Lamoille County for the E & D (Elders and Persons with Disabilities) Transportation Program. This program plays a role filling gaps in existing transportation services for older adults age 60 and above as well as individuals with disabilities as defined by the [Americans with Disabilities Act \(ADA\)](#). The E&D Program assists older adults and persons with disabilities in getting out

of their homes to medical appointments, to local adult day facilities, to senior meal sites, and for essential shopping.

- Central Vermont Community Action Council (CVCAC) has contracted with Rural Community Transport (RCT) to administer a ride referral/ride match program in Lamoille County. RCT also focuses on developing and coordinating transit services and cultivating awareness of and support for public transportation in the region.
- Lamoille County mental Health (LCMH) provides rides for developmentally disabled clients between their homes and the region's treatment and activity centers.
- Vocational Rehabilitation (VR) provides services to clients with disabilities that create barriers to employment. The VR program works to relocate individuals and provide transportation so they can work in the community. VR also serves as an advocate of local and regional transportation planning.
- 'Out and About' is an adult day care program at Copley Hospital which provides transportation to clients through RCT to gain access to and from their home to the day care.
- The VT Association for the Blind and Visually Impaired offers reimbursement to volunteer drivers and also purchases transportation for clients. There are a couple of private taxis in Johnson available to call, some drive long distances.

Johnson residents and employers, including VSU Johnson, have expressed interest in exploring options for additional public transportation services to serve the community. Currently, a daily bus service runs between Jeffersonville and Burlington. Johnson would like to see this service extended to our community with stops in downtown Johnson and Johnson State College. The Town and Village may choose to engage CCTA (for Burlington), GMTA (for Montpelier), or RCT (for Morrisville) in planning discussions for services to these respective destinations which would directly improve current options in Johnson. LCPC is a resource for these discussions.

## POLICIES

- Maintain the existing infrastructure of town roads, village streets, culverts and bridges while conserving their aesthetic and recreational qualities.
- Establish infrastructure inventories and assessments for capital planning purposes.
- Explore implementation options for transportation best practices including but not limited to complete streets, access management, and stormwater management.
- Encourage the expansion of public transit service from Jeffersonville to Johnson (cross reference in Economic Development chapter)
- Support the development of infrastructure needed to accommodate public transit and ridesharing including park and ride lots, bus stop locations, bicycle parking, and EV charging stations. (Cross reference in Energy section)
- Support initiatives to improve travel safety, parking availability, and alternative transportation infrastructure (e.g. for pedestrians and bicyclists).
- Discourage the road construction of town highways, class III roads, and development roads that are above 1500 feet or on slopes greater than 25%.

## IMPLEMENTATION RECOMMENDATIONS

### Short-term

1. Continue to encourage the State to fund needed bridge and culvert repair and replacement projects.
2. Support road maintenance training opportunities for highway crew employees in order to address the State's water quality requirements mandating reductions of road erosion, and sediment and stormwater runoffs.
3. Explore funding opportunities to install high speed Electric Vehicle chargers in Johnson.
4. The Town should make an effort to survey and maintain Class 4 roads as a Town asset.
5. Update or create Johnson trails maps and recreation guides.
6. Identify ways to safely interconnect the Lamoille Valley Rail Trail with the Village Center in order to enable pedestrians, bicyclists and snowmobilers to access to downtown amenities and services.
7. Consider painting and maintaining "sharrow" bicycle signs on paved roads frequently used by bicyclists. Examples of these roads are Pearl Street, School Street, and Railroad Street.

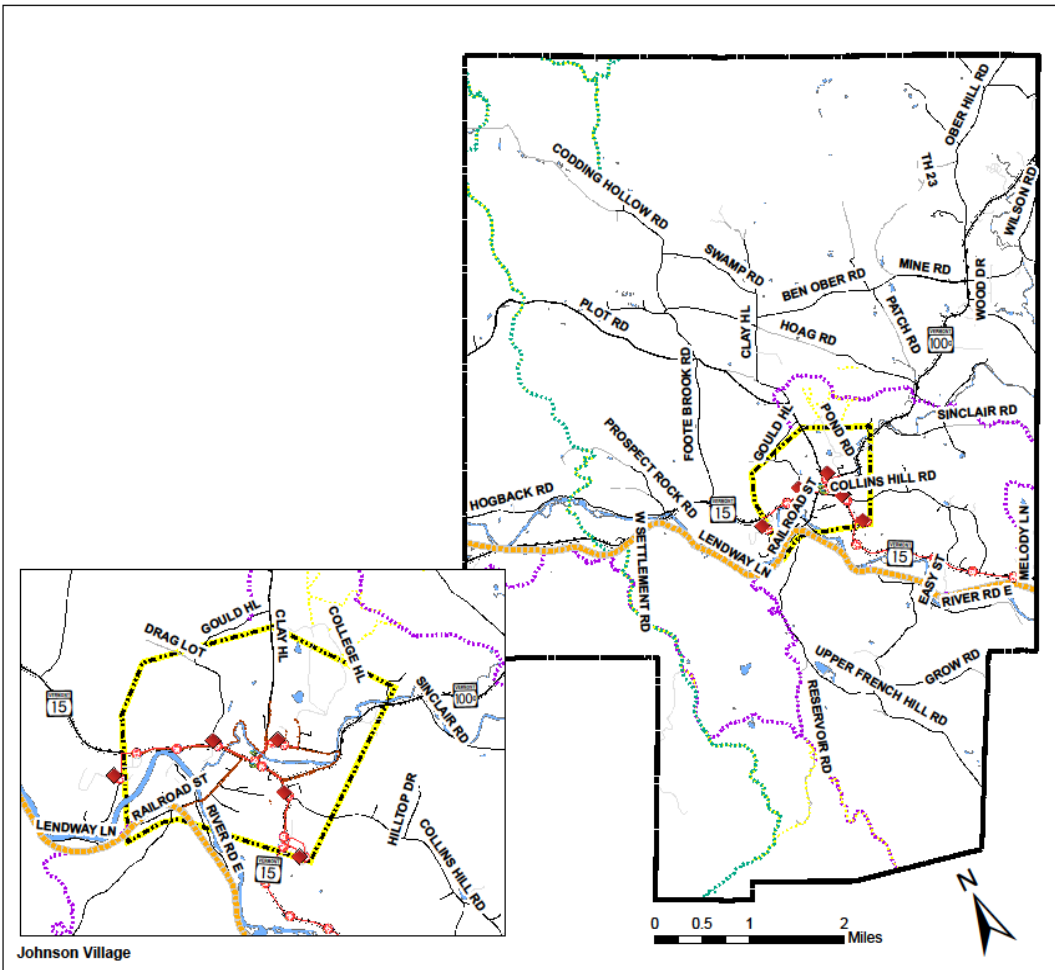
#### Medium-term

8. Maintain and update infrastructure inventories including but not limited to conditions of road surfaces, town rights-of-way road widths, bridges and culverts, retaining walls and other structures, stormwater facilities, sidewalks and curbs, signs, etc., and develop a capital plan to repair and replace these assets.
9. If a proposal exists to alter the location of a town road, the Town should confirm the location of the road right of way and connect with landowners to establish consensus about the road relocation.
10. Identify parcels that can serve as commuter park-and-ride lots and/or public transit bus stops.
11. Explore funding to enhance trail networks and connectivity around Johnson.
12. If Light Industrial Park will contain residential development and/or "Sterling Market", explore funding for pedestrian infrastructure around Route 15.

#### Long-term

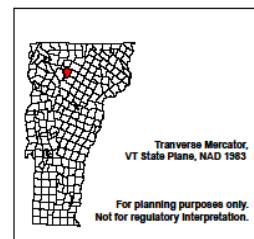
13. Explore traffic calming measures along Main Street in Johnson Village including a traffic study to assess stoplight / blinking light at Main St/Pearl St or Main St/Railroad St.

# Johnson Town and Village Municipal Development Plan Transportation Infrastructure



- Town Boundary
- Public Parking Areas
- Johnson Shopper Bus Stops
- Johnson Shopper Transit Route
- Lamolille Valley Rail Trail
- Long Trail
- Local Trail or Path
- VAST Trail
- State Highway
- Class 2 Road
- Class 3 Road
- Class 4 Road
- Private Road
- Village Boundary
- Lake/Pond
- Stream
- Sidewalks

DATA SOURCES:  
 POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.  
 ROADS: 1:5000 E-911 Road Data, 2019.  
 TRAILS: VCGI, 1991; VAST, 2011; Catamount Trail Association, 2004, Johnson State College, 2004.  
 TRANSIT ROUTE: Digitized by LCPC in 2011 from published RCT route.  
 SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.



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 www.lcpcvt.org / September, 2023

## **PUBLIC SERVICES AND COMMUNITY FACILITIES**

This chapter provides a description of the public services and community facilities available to residents of Johnson.

### **Local Government**

For political purposes, the Town of Johnson and the Village of Johnson are independent, sovereign municipalities under state statute. The Town is governed by a five-member Selectboard and the Village is governed by a five-member Board of Trustees. Each board has the authority to execute administrative, legislative and quasi-judicial functions within its respective municipal boundaries and voters approve annual municipal operating budgets at Town meeting and the Village Annual Meeting. Historically, across the state and region, many incorporated villages were established for the purposes of creating municipal water and light districts. It was to this end that the Village of Johnson was incorporated in 1894, more than 100 years after the Town was chartered in 1792. The Town provides general government, highway and library services. The Village provides electrical, potable water, wastewater and fire protection services as well as sidewalk maintenance. The town contracts police, ambulance and rescue services. The Selectboard and the Village Trustees are supported by a Town Administrator and a Village Manager.

Several staff members are shared employees that work for both the Village and the Town. These include Town/Village Clerk and Treasurer and office employees. During the process of preparing this plan, the Planning Commission discussed possibilities and encourages cooperation between both Boards to find operating efficiencies and financial savings.

### **Buildings Owned by Town and Village**

The Town and the Village jointly own a number of properties. These properties include the Municipal Offices and the Municipal Public Works and Highway complex off Lendway Lane. The complex is comprised of the Village Water & Light Department garage, the Town Highway Department garage, the old Mill house, and a large building that is used for storage by Town and Village departments. In addition, the Village owns and operates the Fire Department building on Main Street, the Wastewater Treatment Facility (WWTF) at Sewer Plant Road, a water system booster pump station on Clay Hill, a water treatment and pump building and eleven acres of land off Wescom Road, a water reservoir off Collins Hill Rd, an electric sub-station within the Johnson State College campus, and a property formerly housing a generating plant located off VT Route 100C. The Town owns the Johnson Historical Society Building on Main Street and Johnson Public Library on Railroad Street.

With the exception of the former generating plant, most of the municipal buildings and properties are all relatively new or rehabilitated and should not require significant capital improvements in the near future. Major investments have been made in sewer and water infrastructure over the last decade and will require modest capital investment for the near term. The Wastewater Treatment Facility (WWTF) is now 20 years old and will require some level of capital improvements as time goes on. The location of the WWTF, Fire Station, Municipal Building, and Public Library in the floodplain is an issue in the event the facilities are damaged during a flood. The Johnson Wastewater Treatment Facility experienced significant flood



damage during major floods in 1995 and July of 2023. The Village is exploring alternative options to reduce future flood damage to the Johnson Wastewater Treatment Facility.

Two small structures recently added to the Town's ownership include a bandstand at Legion Field and a trailhead building (Ted Alexander Welcome Center) at Old Mill Park.

#### *Johnson Public Library*

Johnson Public Library, located on Railroad Street, is one of the buildings owned by the Town and administered by a five-member Library Board of Trustees. The Library Trustees conduct library business, set policies, develop budgets, volunteer in the library and advise librarians. While Johnson Public Library (JPL) is a municipal library, it does receive some private funding. As Johnson's population grows, library use is expected to increase proportionally. In 2013 a renovation took place at the Johnson Public Library to establish an area for children's programs, the addition of a young adults' room, and a conference/adult reading room. To meet the demand for additional space, in 2018 the library renovated an unused room in the basement that now serves for a variety of children's programs. The accessibility to the newly added room is an issue and the Library Trustees feel that in order to meet the building code requirements, the access needs to be improved. The Trustees would also like to see an improved pedestrian access to the library which could be achieved by constructing a new sidewalk on the west side of Railroad Street and also placing a crosswalk across Railroad Street. The library sustained damage during the July 2023 flood. Despite the Town's efforts to floodproof the library in the past, additional alternatives will need to be explored to reduce future flood damage to the Johnson Public Library.

#### *Johnson Historical Society*

Johnson Historical Society is a municipal commission operating out of Dr. Holcomb's house located on Main Street. The building was purchased by the Town in 2014 after the voters approved a loan of \$252,000 to acquire the building and make renovations to the property. While Johnson Historical Society is a municipal commission whose expenses are supported by Johnson taxpayers. The Historical Society conducts its own fundraising activities to support its operations. In 2015, the Historical Society launched a capital campaign, the goal of which was to pay off the loan used to purchase the building. This loan was recently paid off.

### **Open Lands and Parks Owned by the Town and the Village**

The Town and the Village of Johnson own several properties featuring open lands and parks. Most of these properties are used for recreation and are described in the Recreation and Natural Resources sections of this Plan.

### **Municipal Utilities**

#### *Electricity*

Johnson Village owns and runs the Water & Light Department that provides electricity to an area slightly larger than Johnson Village. The Department maintains 28 miles of distribution lines, most of which are above ground. The lines are generally in good physical condition and comprise a reliable distribution system. Since around 1956 the Department has purchased all of its power supplies from outside generation sources. The Department still owns the old hydro generating plant site and land on the Gihon River near the School Street Bridge; however, the

water rights to the original dam were sold. The Water & Light Department’s operations are described in more detail in the Energy section of the plan. The Energy section also lists three other electric companies providing electricity to residents of the Town.

*Wastewater*

The Village owns and operates a municipal Wastewater Treatment Facility (WWTF) built in 1995. The WWTF has a design capacity of 270,000 gallons per day. In 2015, the plant operated at approximately 49% of its design capacity which means that the plant was designed to provide Johnson with the ability to accommodate future needs. In July of 2023 the Treatment Plant sustained substantial flood damage, temporarily reducing the plant’s treatment capacity, signaling the need to examine options to reduce future flood risk.

Currently, the WWTF serves the entire Village (including Johnson State College) plus a couple designated areas in the Town. The process of extending the Village sewer services into the Town is governed by an inter-municipal agreement between the Town and the Village.

Development in the Village is required to connect to the wastewater system if the development is within 100 feet of a sewer line. Outside the Village and the areas of Town governed by the inter-municipal agreement, there are no public sewage treatment facilities available. The Johnson Planning Commission drafted a policy to extend water and sewer service and submitted it to the Selectboard for consideration. All sewage must be handled by private, on-site systems. Under state regulations that came into effect in 2007, permitting for septic systems, leach fields and wells is now delegated to the state. To comply with state regulations, individuals must apply for a Wastewater and Potable Water Supply Permit from the Department of Environmental Conservation.

*Water supply*

The Village of Johnson operates a municipal water system for village residents and the Johnson State College. Connection to the system is regulated by the Village’s Water System Rules and regulations. The municipal water system draws public drinking water from two sources. The first source is the Osgood well just west of Johnson Village off Route 15 drilled in 2004. The Nadeau Well, located southeast of the Village and drilled in 1974, serves as a backup supply.

Although not in service as sources of public drinking water, in the Village’s ownership is a reservoir located on Reservoir Road and historic Cold Spring located on Main Street in downtown Johnson.

Residents outside the Village supply their own water through on-site, private systems (e.g. springs or wells).

*Storm Drainage*

The State of Vermont owns and maintains the storm drain systems along Route 15 and Route 100C. In 2011 and 2012, the stormwater system along Route 15 in

**IMPORTANT TERM**

The term **stormwater** applies to rain and snowmelt that runs off impervious surfaces, including roofs, driveways and paved streets, rather than infiltrating into the ground and natural water cycle. As it flows into streams and lakes, stormwater runoff often picks up pollutants such as oils, fertilizers and sediment. Excess stormwater also contributes to erosion and increases stream volumes during peak storm events.

downtown Johnson was completely rebuilt as part of the Main Street Project. The Village maintains the actual catch basins.

The Town maintains ditches and culverts on the local highway system within the Village.

The Village owns and maintains primary storm drain systems located on Pearl Street and School Street which discharge into the Gihon River by the Pearl Street Bridge, and on Railroad Street which discharges into the Lamoille River. There are a few other locations where village catch basins empty into the state system. The Village has a responsibility to maintain these catch basin systems and annually cleans the catch basins by a trailer mounted Vactor system. The Vactor system is owned by a consortium of four towns that includes Johnson Village and is housed in Johnson.

In general, the age and condition of the Village owned storm drain system a weak link in infrastructure. Some of the system was replaced during water, sewer and bridge projects undertaken in the last ten years but for the most part the system would benefit from upgrades. . Catch basins on Railroad Street beyond Lamoille View were replaced around 2005-2006.

A stormwater infrastructure mapping project was completed for the municipality in 2012 by the Agency of Natural Resources Ecosystems Restoration program to supplement the existing drainage data collected by the town and with the intention of providing a tool for planning, maintenance, and inspection of the stormwater infrastructure. The principal goal of this project was to develop up to date municipal drainage maps. A secondary goal was to establish potential locations for Best Management Practice (BMP) stormwater retrofit sites. These are sites where stormwater treatment structures could be added and where they would be most cost effective and efficient for sediment and phosphorus or nitrogen removal. Despite the system's age and condition, the stormwater mapping revealed no illicit discharges or significant water quality issues. Wastewater and stormwater were separated years ago and during the Main Street Project careful attention was paid to insuring there were no cross connections to the storm-water system.

#### *Solid waste facilities*

Johnson is a member of the Lamoille Regional Solid Waste Management District (LRSWMD), a municipal district formed to serve the towns of Lamoille County as well as Craftsbury and Worcester. Solid waste and recycling from Johnson is brought to the Johnson drop off site at the former Johnson landfill. From there, waste is hauled to a landfill in Coventry.

In 2013, the Vermont Legislature passed Act 148 (H.485), a phased-in law aiming to increase the amount of material we keep out of the landfill by mandating recycling and composting. Several important milestones of the mandate included the following:

- July 1, 2014: Transfer stations/drop off facilities must accept residential recyclables at no extra charge. This was temporarily tested out, but not permanently implemented due to cost concerns of maintaining solid waste services and transfer stations.
- July 1, 2015: When trash containers in a public building or on public land are provided, an equal number of containers shall be provided for the collection of mandated recyclables. Public bathrooms are exempt from this requirement
- July 1, 2017: Transfer stations/drop off facilities will have to accept food scraps.

In 2017 through a Northern Borders Regional Commission Grant, Johnson established a composting facility to collect and process compostable and organic materials into compost. This facility (Lamoille Soil) is located at the Johnson transfer station. The compost facility is operated by the Lamoille regional Solid Waste Management District. Training opportunities for residents and businesses to educate about the requirements of the law would be encouraged.

#### *Public Wi-Fi*

In 2014, The Town of Johnson and a local business group called Johnson Works Community Organization entered into a partnership that provides a public Wi-Fi service in downtown Johnson. The Town owns and maintains the wireless routers and Johnson Works funds the cost of the internet service for the Wi-Fi. Wi-Fi is available along Main Street, approximately between Johnson's Sterling Market and Johnson Woolen Mills. Daily, approximately 180 people utilize the Wi-Fi. The Town of Johnson joined the Lamoille FiberNet Communications Union District (CUD) to enhance coverage of high-speed internet.

#### *High-speed Internet*

The Town of Johnson joined the Lamoille FiberNet Communications Union District (CUD) to enhance coverage of high-speed internet throughout the Town and Village. CUDs are municipalities created by Vermont statute to allow towns to join forces for economy of scale to help bring high-speed internet services to addresses that are currently unserved or under-served by commercial internet service providers. All ten towns in Lamoille County are members of Lamoille FiberNet. CUDs are funded by grants, donations, bonds, etc., and are not able to levy taxes. Lamoille FiberNet selected Fidium Fiber, a division of Consolidated Communications, to build, operate and maintain the network. As of this writing, negotiations are underway, and construction is scheduled to begin in 2024.

### **Public Safety**

#### *Law enforcement*

There are two levels of police coverage in Johnson: the Lamoille County Sheriff's Department, and the Vermont State Police. Town Constables are appointed by the Selectboard and do not currently have any law enforcement authority.

The Lamoille County Sheriff's Department provides enforcement of all laws that fall within the local jurisdiction, emergency dispatching services and requested back up in emergency situations. A minimum level of service is provided to all ten towns in the county; however, an additional level of service is provided to Johnson (on a contractual basis for twenty-four hour police protection; response to emergency fire and rescue calls; and to serve in the civil legal process. The Sheriff is elected to the position by Lamoille County voters.

The Vermont State Police provide a second level of police protection and support for Johnson residents. The State Police provide emergency and back-up coverage as requested by the Sheriff's Department, criminal laboratory services, and the service of officers who are trained in special areas (i.e. homicide, arson or drug enforcement).

### *Rescue Services*

Rescue services in Johnson are provided by the Northern Emergency Medical Services Division of Newport Ambulance Service, a nonprofit ambulance service that provides immediate response emergency medical care, backup emergency response services (to volunteer rescue squads) and medical transfer services. The ambulance is dispatched either through 911 calls received at the sheriff's department or through direct calls to the service itself. The ambulance service is a not for profit, fee for service organization that is supported, in part, with municipal funds.

### *Fire*

The Johnson Fire Department is a volunteer fire department providing twenty-four-hour fire, rescue protection and HAZMAT (Hazardous Materials) response to a Community Service Area defined by the Village of Johnson and the towns of Johnson, Waterville and Belvidere. The Fire Department also operates a water rescue team that is on a rapid response team with Vermont Emergency Management.

The Johnson Fire Department (JFD) is administratively responsible to the Village Trustees and receives part of its funding from the Village. Service to the towns of Johnson, Belvidere and Waterville is by annual contract for fire protection coverage. Johnson State College typically pays a contribution for services as well. JFD is dispatched through the County Sheriff's 911 emergency call service. Over the past years, the volume of calls has been on a steady increase. In 2022, the department responded to 134 emergency calls in Johnson. . The Department is supported by an Auxiliary that, among other things, provides food and refreshments during extended or large calls.

In February 2004, JFD fire station was destroyed by a structural fire. This tragedy resulted in the loss of the fire station, gear and most of the equipment, personal gear and memorabilia, awards and trophies of the firefighters. The construction of the new Fire Station was completed in December 2005.

The Fire Department has developed a Capital Plan for replacement of both large and small equipment. The Capital Plan is used by the Village Trustees and the Fire Department for annual budget planning and operation. Following the procedures outlined in the large equipment plan, the Fire Department recently replaced a tanker. This was the second equipment purchase since the establishment of the large equipment fund in 2001. The small capital fund was established in 2009 to fund the purchase of small tools is projected for 2016.

### *Fire department concerns*

One issue identified by the Fire Department is a challenge to access outlying structures located along steep and narrow driveways. The Fire Department has set up their fleet and equipment in a manner that provides more than one access choice. Nonetheless, access by emergency vehicles to the outlying structures remains a challenge and should be taken into account when considering new development.

Another cause for concern is the limited access to stable water sources. To overcome this challenge, the Fire Department has been working with the Vermont Association of Conservation District's Rural Fire Protection Program to place dry hydrants in outlying areas of the Town.

Within the Village's hydrant district, fire suppression capability has been improved by installing new hydrants as part of a larger water mains replacement project.

In recent years, the Fire Department received an increased number of false alarm phone calls caused by failing smoke detectors and carbon monoxide alarms. The State Division of Fire Safety provides educational materials about proper installation and replacement of aged detectors and carbon monoxide alarms.

### *Emergency Management and Planning*

The Town and Village of Johnson adopted an update of its Local Hazard Mitigation Plan (LHMP) in September of 2022. This plan contains background information, hazard inventory and mitigation strategies. The primary hazard in Johnson is flooding, which is described in detail in the Flood Resilience chapter.

Johnson has developed two important emergency plans to organize and coordinate responses to disasters in town:

- The Local Emergency Management Plan (LEMP) describes the basic mechanisms and structures by which the Town and Village of Johnson will respond to potential and/or actual emergency situations. The primary purpose of the EOP is to initiate, coordinate, and sustain an effective local response to disasters and emergency situations. Secondary to this is to make each organization and department aware of its responsibility in all-hazard emergency operations. This plan, upon being implemented, provides the basis for coordinating protective actions prior to, during, and after any type of disaster. The EOP is available at <http://townofjohnson.com/documents/plans/>.
- The Rapid Response Plan (RRP) is a product of the EOP effort. The RRP consists of a collection of different contact lists, procedural checklists that organize the information on functional areas of disaster response, the agencies responsible and how to contact them. They are meant to be filled out, followed and kept on hand in the case of a disaster.

### *Emergency Operations Centers / Emergency Shelters*

Johnson's Emergency Operations Centers and Emergency Shelters assist disaster victims and emergency workers and help those affected by disaster to access other available resources. Johnson currently has 2 designated EOCs: Fire Station and Municipal Offices, and 2 designated shelters: Johnson State College and Johnson Elementary School.

The Town should continually enhance the capacity of its Emergency Operations Center / Shelter, and coordinate with the Red Cross in an emergency.

### **Health facilities & services**

The primary health care facility serving Johnson and the whole Lamoille County is Copley Hospital in Morristown. Copley Hospital is a 53-bed acute care hospital that serves as an emergency care center for local emergency services and provides inpatient and out-patient service, long-term care, and family-oriented birthing center. Copley functions as part of the larger Vermont health care system, with the Medical Center Hospital of Vermont (MCHV) in Burlington acting as the major tertiary referral hospital.

Copley sponsors a Wellness Center for the community. The Wellness Center focuses on proactive prevention versus reactive treatment, offering flu vaccines, birthing classes, diabetes educators, and dietitians, among efforts. Copley Hospital also operates: Mansfield Orthopedics, the Health Center Building, Lamoille Area Housing Coalition, and Copley Terrace and Copley Woodlands (housing for elderly populations).

The Lamoille Health Partners in Morrisville is a federally qualified health center which offers quality medical, dental, and behavioral services to residents of Lamoille County regardless of their ability to pay. Their primary and specialty care practices include Morrisville Family Health Care, Women’s Center, The Behavioral Health & Wellness Center, and the Community Dental Clinic.

Agencies and services not affiliated with Copley include the Department of Health (Morrisville District Office), Lamoille Family Center (Morrisville), Johnson Health Center (Johnson), Johnson Senior Center, Lamoille Valley Mental Health Services, Manor Nursing Home, Clarina Howard Nichols Center, and Lamoille Home Health and Hospice. In addition, the Central Vermont Council on Aging provides many services including free transportation for seniors to health care appointments, and nutritional dinners delivered to homebound residents through Meals on Wheels or served at various community sites. The Johnson Senior Center hosts Community Meals on Tuesdays and Thursdays. These services enable adults with disabilities and seniors to stay in their home and community. Central Vermont Community Action Council and the United Way of Lamoille County support a variety of programs including Head Start, home weatherization, emergency fuel assistance and provide family/ community support.

Vermont 2-1-1 is a simple three-digit telephone number to dial for information about health and human service organizations in one’s community. By dialing 2-1-1 Vermonters receive free access to community resources through information and referral. This access includes personal assistance by telephone or is online at [www.Vermont211.org](http://www.Vermont211.org) through a searchable database of services.

In Johnson, the Johnson Health Center serves the general population. Johnson also has mental health counselors and physical therapists. Vermont State University has a Wellness Center for students which provides counseling services and facilitates medical appointments. The University also hosts periodic opportunities for area veterans to connect with service providers. There is a need in the community for a better access to health care services. The municipality has made efforts to host a federally qualified health center but so far, those efforts haven’t come to fruition. The community is also in need of a pharmacy. Today, Johnson residents have to drive nine miles to either Morrisville or Cambridge to access a pharmacy.

**Cemeteries**

There are six cemeteries in the Town and Village of Johnson. Three Cemetery Associations, a Cemetery Commissioner and the Johnson Selectboard oversee the care of these cemeteries.

Table 8. Johnson Cemeteries

Cemetery	Size	Capacity Status
Evergreen Ledge	+/- 1.1 acres	App 20-25 plots available (2015 data)

French Hill or Grow Cemetery	+/- .45 acres	Uncertain, but likely at or near capacity
Lamoille View	5-6 acres	At 60% capacity; should not reach full capacity for 10-20 years
Plot Cemetery	1 acre	Uncertain, considered full
Whiting Hill	Unknown	Considered full
Old Catholic Cemetery	Unknown	Considered full. Some research will be required to determine the future of this area.

*Source: Johnson Utilities and Facilities Report 2000.*

## POLICIES

### *Public Buildings, Lands and Utilities:*

- Continue developing long-term plans for maintenance, improvement and expansion of utility infrastructure and management plans for public buildings and lands.
- Promote energy efficiency and conservation in the design, construction, and use of municipal facilities. (Cross reference in Energy Section)
- Support the installation of renewable energy generating systems in municipal buildings. (Cross reference in Energy Section)
- Create a system that will assist the community with the implementation of Act 148 which mandates recycling and composting.

### *Health services:*

- Encourage efforts that improve access to local health care services.
- Encourage efforts to attract a pharmacy to Johnson.

### *Public Safety:*

- Consider the recommendations of the Hazard Mitigation Plan in future land use planning decisions
- Evaluate fire protection capabilities town-wide and consider planning for additional acquisition of dry hydrants where they would significantly improve fire suppression capabilities (e.g. rural areas with multiple structures and limited access by emergency vehicles)
- Support the development of new driveway standards which would meet emergency vehicle requirements for property access.

### *Local Government:*

- Encourage the Boards to find operating efficiencies and financial savings.

## IMPLEMENTATION RECOMMENDATIONS

### Short-term

1. Continue to regularly update emergency planning documents.

### Medium-term

2. Develop and regularly update a comprehensive Capital Improvement Program for all major Town / Village equipment, infrastructure and public investments.
3. Evaluate and consider the expansion of dry hydrant installations; pursue dry hydrant grant funding to implement expansion if deemed necessary.



4. Consider locating at least one Emergency operations Center (EOC) outside the floodplain.

Long-term

5. Explore flood resiliency alternatives including relocation for critical facilities out of the floodplain to reduce future flood damage.

DRAFT

**Insert Public Services map here**

DRAFT

**Insert Water/Sewer map**

DRAFT

## EDUCATION

### Early Childhood Education & Child Care

Data tells us that 76.1% of Vermont children under the age of six have all parents in the workforce.<sup>14</sup> These parents rely on care outside of the home for their children for up to 40 hours a week. High quality early childhood experiences lay a foundation for children's success in school and in life. When we help our children grow to become productive adults, we also support our current workforce of parents, strengthen our community, and invest in prosperity now and in the future.

The Step Ahead Recognition System (STARS) is Vermont's quality recognition system for child care, preschool, and afterschool programs. Programs that participate in STARS are stepping ahead – going above and beyond state regulations to provide professional services that meet the needs of children and families. Parents and guardians can look to STARS as one indicator of quality when choosing child care.

Building Bright Futures, a program of the Vermont Department of Children and Families, operates an online childcare directory (see [www.brightfutures.dcf.state.vt.us](http://www.brightfutures.dcf.state.vt.us)). It currently lists seven registered in-home child care facilities and three licensed child care centers. The licensed child care centers are the Turtles and Tots child care center, the pre-kindergarten program at Johnson Elementary School (JES) and the Beyond the Bell program for JES students grades K-6. While Johnson is fortunate to have prekindergarten available at the elementary school, this program does not provide full-week care and parents of children enrolled in the program often must make additional childcare accommodations for when their children cannot attend the program at JES.

The Lamoille Family Center (LFC) in Morrisville offers a range of early education services through a coordinated service network known as Children's Integrated Services (CIS). Programs offered through this network include Maternal Child Health, Early Childhood and Family Mental Health, and the Early Intervention Program for children with development delays. For more information visit the Lamoille Family Center's website at [www.lamoillefamilycenter.org](http://www.lamoillefamilycenter.org).

### Elementary School Education

Johnson students, pre-kindergarten through sixth grade, attend classes at Johnson Elementary School (JES) located on School Street in Johnson Village. JES is operated by a five-member School Board. The School underwent a major renovation in 1997 and was expanded by the addition of a gymnasium, 11 classrooms, a library, and a kitchen. As a result of the expansion, the school now has a capacity for approximately 350-360 students. Table 9 shows that the enrollment at Johnson Elementary has averaged approximately 260 students over the past 10 school years. During this time, the enrollment has been as low as 226 and as high as 296 in 2018-2019. Despite statewide trends of declining student enrollments, JES enrollment has remained stable over the last decade.

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<sup>14</sup> Census Bureau, American Community Survey 2017-2021, Percent of Children under 6 years old with all parents in the labor force.

Table 9: Johnson Elementary School Enrollment 2012-2022

Year	2012-13	2013-14	2014-15	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Total	252	257	257	249	255	291	296	277	246	226

Source: Vermont Dept. of Education Student Enrolment

Act 46 and its Impact on Johnson Elementary School

Act 46, signed into law in 2015, provides tax incentives to encourage small school districts, such as Johnson’s, to dissolve and together form new, larger districts that have 900 or more students. It also provides penalties for districts that did not choose voluntarily to unify, and, by 2018, will empower the Agency of Education to force smaller districts to merge with others in order to achieve the target district size. Any decision to form a new union school district can ultimately be decided only by the voters at a special election.

JES Capital Improvements

The Elementary School operating budget for 2022-2023 was around 3.5 million. In 2015, the Town received a \$1,115,000 bond to begin some much needed facility repairs such as new stage flooring and new kitchen flooring, and technology upgrades including rewiring the entire technology system and adding new wireless access points. Other facility renovations include a new roof on the oldest portion of the school building as well as a new gym floor, upgrading the dry sprinkler system and updating the HVAC controls to become more efficient.<sup>15</sup>

**Middle and High School Education**

After graduating from Johnson Elementary School, 7 through 12 grade students attend Lamoille Union Middle & High School in the neighbouring town of Hyde Park. High school juniors and seniors also have access to career training and educational opportunities at Green Mountain Technology and Career Center (GMTCC), located on the same campus as Lamoille Union Middle and High School. GTMCC offers technical programs in thirteen areas of study. Noteworthy and award-winning programs include forestry and land management, automotive technology, culinary arts and HVAC.

The Lamoille Union Middle & High School facilities currently serve students from six towns of Johnson, Belvidere, Cambridge, Eden, Hyde Park, and Waterville. As of the 2021-2022 school year, 781 students attended the School. Since opening a new wing of the building in 2002, the facilities are considered to have sufficient capacity to accommodate reasonable growth projections across the district.

Lamoille North Modified Unified Union School District

Administratively, the Middle and High School is governed by the Lamoille North Modified Unified Union (LNMUU). LNMUU is governed by a 12-person board of directors; at present five of the Directors are from Johnson. The purpose of the Supervisory Union is to coordinate educational efforts, enable increased economies of scale, enhance cost efficiencies, and expand educational opportunities for students.

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<sup>15</sup> Town of Johnson Annual Report, 2014.

Vermont cities and towns are experiencing serious declines in student enrollments, which must translate into reductions in workforce and other budget items. However, in LNMUU that is not the case. This trend is likely to continue with slight variations over the years ahead.<sup>16</sup>

### **Post-Secondary & Adult Education**

Green Mountain Technology and Career Center (GMTCC) provides adult workforce education and training programs that provide individuals with skills that are valued in the workplace. Multiple GMTCC courses are eligible for college credit. Along with the GMTCC, there are two other local institutions offering college-level instruction in Lamoille County. Vermont State University offers a variety of graduate and undergraduate degree programs, as well as continuing education services. The Community College of Vermont (CCV) operates a campus in Morrisville, offering Associate Degrees, certificate programs and online instruction in various pre-professional concentrations. Finally, additional educational opportunities are available at Central Vermont Adult Basic Education (CVBAE) in Morrisville, which offers free literacy programs to adults and out-of-school youth.

Vermont State University (Johnson Campus) Vermont State University is one of five colleges belonging to the statewide network of Vermont State Colleges. The Vermont State University Johnson Campus features a range of programs in Behavioral Sciences; Biology and Environmental Science; Business and Economics; Education; Fine & Performing Arts; Health Sciences and Outdoor Education; Hospitality and Tourism Management; Humanities and Liberal Arts; Mathematics; Wellness & Alternative Medicine; and Writing and Literature.

In conjunction with the Fine & Performing Arts program, Vermont State University offers high quality cultural programming available to the entire community. Dibden Center for the Arts houses theater, music and dance. Events range from local to nationally known performers. Performances are open to the community. The Center also houses the Julian Scott Memorial Gallery that hosts student, faculty and touring art exhibits. Through the leadership of VSU staff and students, an annual outdoor sculpture show is held in downtown Johnson in summer and fall.

As of fall 2023, Vermont State University Johnson Campus had a student population of approximately 1,100 students. Of this number about 675 students attended on-campus undergraduate and graduate classes and about 425 students were enrolled in external, off campus undergraduate programs.

Vermont State University's Willey Library and Learning Center in Johnson has a large selection of books, movies and recordings, an extensive children's collection, internet access and related amenities enabling reading, study and/or research. The Library offers free membership to area residents.

The presence of Vermont State University in Johnson Village plays an important role in strengthening Johnson's local economy and attracting young adults and families to the area.

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<sup>16</sup>Lamoille North Modified Unified Union School District 2022-2023 Annual Budget Report

In 2018, Johnson State College and Lydon State College merged to form Northern Vermont University (NVU-Johnson); the Johnson campus is now referred to as Vermont State University-Johnson. On July 1, 2023, NVU merged with Castleton University and Vermont Technical College to form “Vermont State University” (VSU). The merger to form NVU and the subsequent Covid-19 pandemic in 2020-2021 have resulted in a smaller on-campus population – both students and faculty/staff. It is unknown what effect the upcoming merger to form VSU will have on the local campus.

The presence of Johnson State College / VSU-Johnson in our town has historically been a major strength, providing jobs, bolstering the local economy, and adding vitality and culture. For Johnson’s economic health and vitality, it is essential that the Town actively engage with our state representatives and the Chancellor’s Office of the Vermont State Colleges System and advocate strongly for the continued operation of a robust campus in Johnson.

Direct interaction with the administration and faculty/staff here at the local campus is also encouraged. Topics should include ways for the town and school to engage more cooperatively regarding cultural, recreational, and educational events and opportunities for the benefit of both entities.

### **Other Educational Options**

#### *Private schools and home schooling*

Outside the local public school system, residents may elect to send their children to one of several area private schools—most notably the Bishop John A. Marshall School, a Catholic school in Morrisville offering pre-kindergarten through 8th grade. Some residents also choose to home-school their children, or customize an education plan that allows for a mix of home-learning and school participation.

#### *Alternative Education*

Laraway Youth and Family Services operates an independent school approved for special education. The school serves 4 to 12 grade students who have special emotional and behavioral circumstances that keep them from being successful in their own schools. Laraway also runs a substitute care program, a behavioural treatment program that serves youth who experience problems that make it difficult for them to live in their own communities. Laraway provides services designed to support children, adolescents and their families as they identify effective ways to address those problems. Finally, Laraway is a Licensed Child Placing Agency administering a statewide Foster Care program that provides daily care, intensive care management, treatment and crisis intervention services.

#### *Vermont Studio Center Art Residencies*

The Vermont Studio Center (VSC) is a nonprofit, year-round, international creative community serving artists and writers from across the country and around the world. Each month, approximately 40 artists and writers participate in 4-12 week independent studio residencies. Throughout the year, VSC also offers exhibitions, public lectures and readings to the community.

Since it was founded in 1984, VSC has offered a free summer art program for children, and since 1998, a community arts program for teenagers and adults. In addition, VSC's Community Arts Director teaches art classes at the local Johnson Elementary School. As part of her teaching program, she is often assisted by VSC residents, and monthly, VSC international residents are invited to participate in special projects with the students.

#### *Johnson Public Library Programs*

Johnson Public Library provides high quality educational programs for youth of all ages that have consistently been growing in popularity. The programs vary by season but typically include story time, Lego Club, tinker labs, etc. We recognize the importance of the Public Library as a resource for Johnson residents and visitors of all ages.

#### POLICIES

- Johnson recognizes the importance of high-quality childcare and early childhood education within the community and supports the expansion of these services. We encourage efforts that strive to provide safe, affordable and high quality care and integrate child care issues into regional and local planning processes.
- Johnson recognizes that its K-16 educational system is central to our community's quality of life and its continued prosperity.
- Johnson encourages efforts that broaden access to educational and vocational training opportunities for adult and high school learners.
- Johnson supports access to higher education and recognizes the importance of Vermont State University in providing higher education, community events, and education services.
- Continue to maintain the Johnson Public Library as a resource for residents and visitors.

#### IMPLEMENTATION RECOMMENDATIONS

##### Short-term

1. ST - Support initiatives to develop childcare facilities where a need has been proven.
2. ST - Continue to provide representation from Johnson on the Board of Directors for the Lamoille North Modified Unified Union School District.
3. ST – Accelerate efforts to build the relationship between Johnson Town, Village, and the Vermont State University- Johnson Campus.

##### Medium-term

4. MT - Collaborate with community partners, regional workforce organizations, educational facilities, local employers, and the business community to evaluate workforce development needs, strategies, and trends.



## RECREATION

To many residents and visitors alike, Johnson's sense of place is defined by the community's recreation assets. Johnson's recreation assets are beautiful and abundant. They include recreation parks, open parcels of land, rivers, trails and indoor recreational facilities. Johnson's scenic beauty and natural resources attract new students to the Vermont State University-Johnson Campus.

A comprehensive list of Johnson's recreational opportunities is available in the Recreation Facilities Plan completed by the Johnson Planning Commission in 2005. The Recreation Facilities Plan also examines the most pertinent recreation issues and outlines future priority actions. This plan focuses on describing the recreation facilities owned by the municipality. Johnson Recreation Committee utilizes these facilities by offering a broad range of recreation programs including soccer, baseball, lacrosse, gymnastics, basketball and a Memorial Day Fun Run. In addition to this chapter and the 2005 Recreation Facilities Plan, the Natural Resources chapter of this Town/Village Plan highlights areas of scenic beauty that are publicly owned in Johnson.

### **Recreation Parks**

#### *The Old Mill Park*

The Old Mill Park is a 22-acre athletic park located at the end of Railroad Street. The site was previously owned by Luzenac America and formerly served as a talc-processing site. In 1995, after the company ceased its operations, the premises were converted to recreational use. The Town of Johnson acquired the property by donation from Luzenac in 2011.

The park consists of three baseball and softball fields, and three soccer fields. The central part of the park features swing sets and a gravel path that circles the outskirts of the entire park. The gravel path underwent a complete reconstruction in 2015.

The park is adjacent to the Lamoille Valley Rail Trail and serves as Johnson's primary access point to the Rail Trail. In 2015, the Town built a trailhead facility that serves both Rail Trail and Old Mill Park users. The facility provides parking, an ADA accessible port-o-let, a drinking fountain and information displays about Johnson.

#### *The Johnson Arboretum*

- The Johnson Arboretum is located at the Nelson Duba Field in the heart of Johnson Village. Located behind 21 Clay Hill Road, this property can be accessed through a right-of-way walkway between two residences. The 2.9-acre parcel stretching along the northern bank of the Gihon River was purchased by the School District in 1924 and was previously home to a baseball field. In 2015, the School District donated the parcel to the Town of Johnson. The Arboretum was established in 2020. It was envisioned, created, and is maintained by the Johnson Tree Board. In 2021, the arboretum was opened to the public. The arboretum is home to a wide variety of tree species both native and non-native to Vermont. The arboretum is in its infancy, with saplings spread around the former baseball diamond. There are over 60 plus hardy,

unusual trees and shrubs planted at the Arboretum. The Arboretum is a quiet place devoted to nature, relaxation and education.

#### *River Park Skate Park & Bike Track*

River Park is a 10-acre recreation area located on the west end of the Village and intersected by Wescom Road. The eastern border of the River Park meanders along the Lamoille River. A portion of the area has been developed into a skateboard park and a bike track. The Skatepark and Bike Track Committee oversees the operation of the skatepark and is in charge of the park's improvements. The remainder of the River Park is undeveloped. Due to its location in the floodplain, the park land can only be used for recreational purposes. The undeveloped portion of the River Park currently hosts community garden space for Johnson residents. The Johnson Conservation Commission implemented wildlife habitat enhancement projects in the River Park adjacent to the Lamoille River including planting pollinator habitat and installing bat houses. One potential use for the land could be to develop it into a river access site for paddlers, anglers and the community at large.

#### *Legion Field*

The Legion Field is a 1.6-acre parcel located on School Street in proximity to Johnson Elementary School. The *Johnson Pathways Plan* acknowledges the Legion Field as an "extremely important town facility often serving as a town common for special events." Parking is available along School Street and on a nearby College Hill parking lot.

The central location of the Legion Field in the heart of the Village lends itself to the field's frequent use. Annually, the field hosts baseball games, Johnson Elementary School physical education classes, Winter Carnival and the Tuesday Night Live summer concert series. Tuesday Night Live has grown to be a very popular event and prompted the Town to enhance the field by building a permanent timber-frame bandstand. Additionally, Johnson Recreation Committee equipped the field with a small toddler playground. In the winter, Johnson Fire Department floods the field and converts it into an ice rink. The hillside of the field functions as a sledding slope.

#### *Lamoille County Field Days*

The Lamoille County Field Days is located on a 14.6-acre parcel and host an annual fair in the Town of Johnson. The Lamoille County Field Days are hosted about 2.5 miles north of Johnson village, off the intersection of Route 100c and Wilson Road. The fair is held for one weekend in July. Attractions include farm animals, Bingo, tractor pulls, amusement rides, tent shows, among other attractions. Additionally, the Fair Grounds can be rented out for special events such as weddings.

#### *Gomo Town Forest*

Gomo Town Forest is a 141-acre parcel of land located in the northwestern corner of Johnson; VT. Vermont's Long Trail passes through the Town Forest.

### *Beard Recreation Park*

Beard Park is a riverside park with about 600 feet of frontage along the Gihon River that includes a waterfall and a swimming hole. Beard Park is a short walk from Johnson's village and center and is next to the 150-year-old Powerhouse Covered Bridge. Beard Park provides recreational opportunities for all ages and abilities including swimming, angling, walking, and picnicking.

### *Dog's Head Falls*

Dog's Head Falls now has a clear trail and a bridge providing safe passage with signage for the Dog Head Falls Fishing Access.

### *Prindle Lot*

Prindle Lot is a 25-acre natural area located at 1755 Plot Road with access by a deeded right of way.

### **Undeveloped Lands and Swimming Holes**

The Town and the Village own several parcels of open land that are mostly used for unstructured recreation. Among these parcels are the Village Green on Main Street, the Prindle lot (25 acres off Plot Road), the Gomo Farm Town Forest (141 acres off Codding Hollow Road), Former Talc Mill Property (195 acres off Lendway Lane), and French Hill Reservoir Land (50 acres off Reservoir Road). In recent years, the Johnson Conservation Commission developed management plans for several of these properties. The Johnson Planning Commission conducted a study of potential uses of the former Talc Mill Property. The Talc Mill Property study can be found at <http://townofjohnson.com/documents/plans/>

The two most recent open land acquisitions by the Town include a 25-acre Journey's End parcel located off Plot Road and along Foote Brook, and a 2-acre Gihon riverfront parcel on School Street (Beard Recreation Park noted above). Conservation easements placed on both properties afford permanent public access to two popular swimming holes and angler destinations.

### **Gymnasium and Playground at Johnson Elementary School**

The gymnasium and the playground are owned by the School District and are integrated into a greater Johnson Elementary School campus located on School Street. The gymnasium was built in 1998 as a part of a larger building addition project. The playground, completely rebuilt in 2015 through the efforts spearheaded by the Johnson Playground Committee, features equipment for elementary school students as well as toddlers, a basketball court and a grass-covered play area.

The gymnasium, added to the original school building in 1997, is an essential part of Johnson's indoor recreational facilities. The demand for its use is greater than the school's ability to accommodate it. Youth basketball games, gymnastics and dance, all sponsored by the Johnson Recreation Committee are held here. The annual town meeting is held here in the spring. Some community celebrations, such as Winter Carnival, take advantage of this indoor space and organize activities that complement the outdoor activities.

## Regional Trail Networks

*The Lamoille Valley Rail Trail (LVRT)* is a 98-mile four-season multiuse recreational trail between Sheldon Junction and St. Johnsbury. The section of the trail in Johnson closely follows the Lamoille River. This presents a threat of flooding and erosion during periods of heavy rain. In 2015, fifteen miles of trail improvement work was conducted in Johnson, Cambridge, Hyde Park and Morrisville. In the spring of 2023, the trail was completed. The trail provides a year-round, safe and enjoyable travel alternative for all non-motorized modes of transportation including but not limited to pedestrians, bicyclists and equestrians, while in the winter the trail allows for snowmobiling and non-motorized use. The LVRT is the property of the State of Vermont and is currently used by the Vermont Association of Snow Travelers (VAST) in the winter months. The Town of Johnson is responsible for providing trailside amenities for trail users. In 2015, the Town built a trailhead facility at the Old Mill Park recreational fields. The facility provides visitor parking, safety and tourism information, a water-fountain and port-o-let facilities. The trail also provides business opportunities in the recreational sector. In 2015, Lamoille Valley Bike Tours opened in Johnson and provides visitors with bike tours of the trail. In summer 2023, the section of the trail between Cambridge and Wolcott, which includes Johnson, was closed due to damage from flooding. This section of the trail was reopened in September 2023.

*Snowmobile trail network:* The Vermont Association of Snow Travelers maintains an extensive network of snowmobile trails on private and public lands across the state. VAST trails in the Johnson area comprise of a 37-mile network and are maintained by the Sterling Snow Riders club. Currently, there is no access trail for snowmobiles to reach the village center. An interest exists to find a solution that would provide connectivity between the current trail network and downtown amenities and services.

*Long Trail:* Johnson's stretch of the 270-mile Long Trail consists of 15 miles of main trail and 1.5 miles of side trails. The trail descends the north side of Whiteface Mountain, through Bear Hollow, along Smith Brook Basin, crosses Route 15 and the Lamoille River, ascends to Prospect Rock, up and over Roundtop Mountain, crosses the Plot Rd, winds into Coddington Hollow, then continues its way north to Laraway, Butternut and Bowen Mountains. The trail includes three overnight shelters: Bear Hollow, Roundtop and Corliss Camp. Long Trail access points in the Johnson area include Route 15 just west of West Settlement Road where there is also a parking lot, Basin Road off of Coddington Hollow Road, also known as Davis Neighborhood trail, as well as a small 2 car pull-off where the Trail crosses Plot Road.

### **Vermont State University - Johnson recreation resources available to the community**

Vermont State University (VSU) has a broad range of recreation facilities that are available to the community. These include the SHAPE Center, which has a fitness center, weight room, indoor swimming pool, exercise rooms, racketball courts and an indoor climbing wall. SHAPE offers membership to Johnson residents at a reduced rate. There are also four outdoor tennis courts; a network of hiking, biking and running trails; two soccer fields, a baseball diamond, and a rugby field; and a disc golf course. All outdoor recreation assets are available to the public at no cost. The Upper Pond is a popular walking destination. Free campus maps can be picked up at the Admissions Office.

Throughout the year, the College hosts performances, guest speakers and countless other events at Dibden Center for the Arts and other campus venues. Virtually all of these events are open to the public – many of them free, others for a nominal fee. In addition, all home varsity games are open to the public and free of charge. VSU competes in NCAA Division III and fields 15 varsity teams, including soccer, basketball, volleyball and lacrosse. Area residents also enjoy free access to the Willey Library & Learning Center. The College welcomes and encourages community members to take advantage of the many programs and resources on campus.

### **Rivers and Trails**

The Gihon and Lamoille Rivers are part of the essential character of Johnson. The picturesque rivers can be admired from many scenic locations including the Power House Bridge and an area located near the United Church. Fishermen and swimmers are among the most frequent river users. Johnson also attracts Kayakers during warm months. Johnson has an ongoing interest in improving access to its rivers to increase the appreciation and use of these unique natural resources. The Lamoille River Paddlers Association strives to build a viable paddlers' trail with access points and camp sites along the length of Lamoille. In Johnson, there are 2 publicly maintained access points to the Lamoille River. The first is at Dog's Head Falls, which allows access to anglers. The second is at Crossing Falls, which provides a ramp to the river.

In September 2020, the Town of Johnson in conjunction with the Town of Waterville supported the purchase of a Coddington Hollow parcel by the State of Vermont and its subsequent conservation easement purchase by the Green Mountain Club. The Coddington Hollow easement is now an essential part of Johnson's recreational amenities as a vital connector of the Long Trail.

The Long Trail, the Lamoille Valley Rail Trail and VAST snowmobile trails are three major state trail systems that pass through Johnson. The Transportation chapter of this plan describes these trail systems in more detail.

### **Local Businesses**

Local businesses in Johnson benefit from the Town's natural beauty and its proximity to the Lamoille Valley Rail Trail where it intersects with Railroad Street. Local businesses in Johnson provide E-bike tours of the rail trail, bike rentals/equipment, and offer dining services and variety of stores where local products can be purchased while LVRT travellers enjoy their journey along the trail.

### **POLICIES**

- Encourage efforts to revisit and/or implement recommendations of the 2005 Recreation Facilities Plan. These efforts include the following strategies:
  - Encourage the expansion of trail-based infrastructure to improve connectivity and pathway networks expansion including connectivity between the LVRT and downtown Johnson.

- Facilitate access to and improve the publicity for recreation programs, facilities and policies governing the use of the facilities.
- Preserve and encourage recreational uses of rivers, streams and ponds.
- Support and actively pursue strategies assuring long-term public access to recreation resources.
- Support efforts that maintain and facilitate access to private lands. Continue to develop and enhance community greenspace and recreation opportunities for all ages and abilities and promote healthy community design.
- Support protection of undeveloped floodplain access and increase greenspace in Johnson Village to mitigate flooding impacts and stormwater runoff, while providing outdoor recreation opportunities.

## IMPLEMENTATION RECOMMENDATIONS

### Short-term

1. Priority tasks identified by the Planning Commission in 2023 are:
  - a. Create and maintain access to all municipally owned recreational resources.
  - b. Improve signage to municipal recreational facilities.
  - c. Improve river access for paddlers, anglers and the community at large.
  - d. Publicize recreation/community events that take place in Johnson.
  - e. Explore funding opportunities to increase/enhance community greenspace in Johnson.
  - f. Explore funding opportunities to support floodplain restoration projects to provide outdoor recreation opportunities that mitigate flooding.
2. Explore opportunities for enhanced access / recreational options at VSU-J.

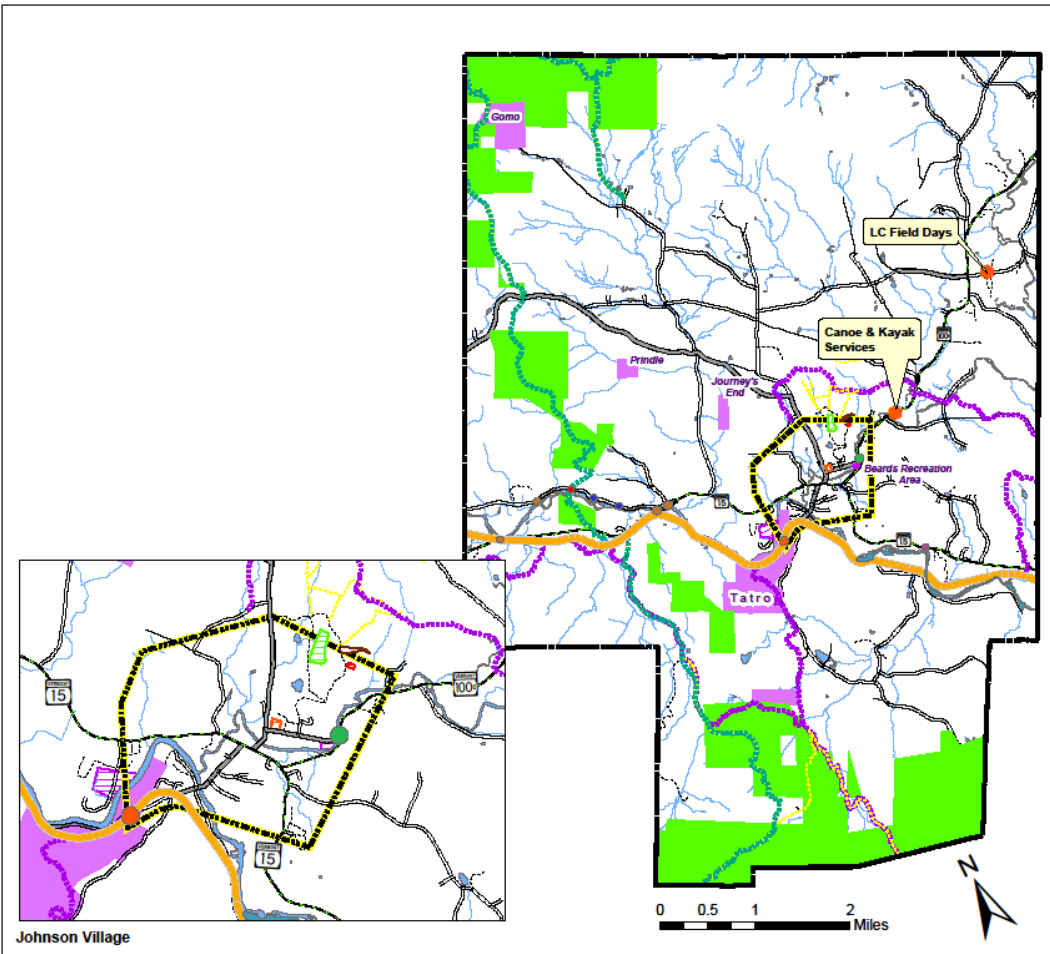
### Medium-term

3. Periodically review recommended implementation tasks outlined in the 2005 Recreation Facilities Plan, update as needed and, where applicable, determine which are feasible for implementation.

### Long-term

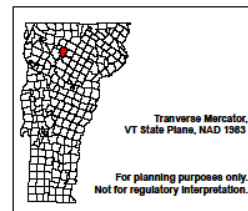
4. Explore funding for lights for the ball fields at Old Mill Park

## Johnson Town and Village Municipal Development Plan Recreation



- |                                   |                            |
|-----------------------------------|----------------------------|
| Town Boundary                     | Lamoille Valley Rail Trail |
| <b>Recreational Access Points</b> | Long Trail                 |
| parking                           | Catamount Trail            |
| parking/fishing                   | Local Trail or Path        |
| parking/fishing/boating access    | VAST Trail                 |
| parking/fishing/canoe access      | Athletic Field             |
| parking/river overlook            | Recreational Field         |
| recreational area                 | Tennis Courts              |
| residential camp                  | Terrain Park               |
| <b>Roads</b>                      | Village Boundary           |
| <b>CLASS</b>                      | River park                 |
| State Highway                     | State Owned                |
| State Forest Highway              | Town/Village Owned         |
| Class 2 Town Highway              | Lake/Pond                  |
| Class 3 Town Highway              | Streams                    |
| Class 4 Town Highway              |                            |
| Public Road, Undetermined Class   |                            |
| Unknown / Private Road            |                            |
| Trail                             |                            |

**DATA SOURCES:**  
**POLITICAL BOUNDARIES:** 1:24000 USGS Quadrangles, VCGI, 1991.  
**ROADS:** 1:5000 E-911 Road Data, 2021.  
**TRAILS:** VCGI, 1991; VAST, 2011; Catamount Trail Association, 2004, Johnson State College, 2004.  
**SURFACE WATER:** On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI for VHD-USGS, 2001.  
**CONSERVED LANDS:** UVM Spatial Analysis Lab, 2009.  
**TOWN OWNED LANDS:** Town of Johnson, 2014.  
**RECREATION ACCESS POINTS:** LCPC, 2005.



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## FLOOD RESILIENCY

This Plan recognizes that the Town and Village of Johnson contains diverse landscape features and development types. As a result, the community requires a holistic and varied approach to flood resiliency. For that reason, this section will lay out a “Landscape Based Approach” for flood resiliency. Under this landscape-based approach, Johnson will work to protect and secure existing settlements, especially Johnson Village, from future flooding, will plan for new development in less-flood prone areas with appropriate infrastructure, will minimize new construction in floodplains and river corridors that are currently undeveloped, and will manage and conserve upland forests to maintain and enhance floodwater attenuation.

### Existing Settlements

Johnson Village is an existing historic settlement that has developed over the last two centuries. The built environment of Johnson Village represents a significant long-term investment in both public infrastructure and private structures. However, due to the Village’s location at the confluence of the Gihon and Lamoille Rivers, much of its developed landmass is located within a 100-year floodplain, river corridor, or both. Unless appropriate measures are taken to protect existing and new structures from flooding, the village’s location has the potential to create a conflict between the planning goals of focusing growth into existing compact settlements and flood resiliency.

. Generally, the State of Vermont is encouraging:

1. redevelopment and infill (increased development density in already developed areas) and
2. that new structures in the 100-year floodplain should be elevated to at least the base flood elevation and ideally two feet above the 100 year floodplain or to the 500 year floodplain elevation, whichever is greater.

These recommendations do not suit Johnson. Infill development in the downtown area would put more people and properties at risk of flooding by

### **IMPORTANT TERMS**

**Floodplain:** Land area susceptible to inundation by water during a storm event. Floodplains are measured by different intervals (100 year, 500 year, etc) based on how much rain falls during a given storm event. A **100-year floodplain** is the flooding which results from a storm that has a 1% chance of occurring in any given year. A **500-year floodplain** is the flooding which results from a storm that has a 0.2% chance of occurring in any given year. A 500-year flood is larger than a 100 year flood.

**Floodway:** The channel of a river during a 100-year flood needed to efficiently carry and discharge the flow of water during a flood. The floodway is typically narrower than the floodplain.

**Base Flood Elevation (BFE):** Predicted water levels during the 100-year flood. If the BFE is 400 feet, the surface of water during the 100-year flood will be at least 400-feet above sea level. *Note that the methodology used to calculate the BFE does not account for some of the major causes of flooding in Vermont, such as ice and debris jams or blockages caused by undersized bridges and culverts.*

**Freeboard:** Additional elevation above the BFE, usually expressed in feet. Freeboard provides added protection for flooding caused by factors not considered when calculating the BFE, such as ice and debris jams.

**River Corridor:** The land area adjacent to a river that is required to accommodate the movement/meander of the river over time.



increasing the Base Flood Elevation, and requiring elevated structures, without compensatory flood storage elsewhere, would further exacerbate the flood risk to adjacent properties.

The heart of Johnson has traditionally been in the Village with businesses and municipal buildings clustered in the downtown area – which unfortunately is located in the 100 and 500-year floodplain. With the recent increase in frequency and severity of flooding (the two of the four largest floods in our history were in 2023), Johnson needs to consider whether our traditional “town center” is sustainable. Short and long-term planning efforts should include not only the possibility of relocating strategic municipal buildings/assets – but also the potential to relocate the visual and cultural heart of Johnson.

Another way to reduce flooding in highly developed areas is to employ low impact development (LID.) LID is defined as an approach to land development that works with nature to manage stormwater as close to its source as possible. Johnson can introduce LID in the Village Center and other developed areas to improve flood resiliency.

It may not be technically feasible or cost effective to elevate all existing structures in the Village to these elevations. Efforts to improve the flood resiliency of existing structures are strongly encouraged, especially when these structures are substantially improved. This may include elevating electrical systems, utilities, and mechanical equipment above the base flood elevation; using flood damage-resistant materials (as described in FIA-TB-2-93, or the most recent FEMA technical guidance available) on all areas of the structure located below the base flood elevation; relocating contents vulnerable to flooding to areas of the structure above the base flood elevation; creating positive drainage, where the grade allows water to drain away from the building; filling in basements or wet flood-proofing basements in accordance with FEMA guidelines; and/or installing floodwalls or flood gates to protect openings such as windows that are located below the base flood elevation.

It will also likely not be possible to maintain an undeveloped area along the full width of the River Corridor (which usually consists of three stream widths plus fifty feet on either side of the riverbank) as this

***IMPORTANT TERMS (cont.)***

***Substantial Improvement:*** Any reconstruction, rehabilitation, addition, or other improvement of a structure the cost of which, equals or exceeds fifty percent (50%) of the market value of the structure.

***Flood-proofing:*** Any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents.

***National Flood Insurance Program (NFIP):*** A program administered by the Federal Emergency Management Agency (FEMA) that provides flood insurance protection to property owners. In order for residents of a community to participate in the NFIP, the local government must adopt local floodplain regulations meeting minimum standards. Under these minimum standards, development may only occur in the floodplain if it is located outside the ***floodway*** and the lowest floor is elevated above BFE. Elevation may be accomplished through use of fill or structural support/piers.

***Community Rating System (CRS):*** A voluntary program in which property owners in participating communities are eligible for reduced flood insurance premiums. In order to participate in CRS, a community must receive a certain number of points. Communities can receive “points” by including adopting local flood hazard regulations that are more stringent than NFIP minimums, conducting public outreach related to flood hazards and flood hazard mitigation, tracking development within the floodplain, actively working to conserve land within the floodplain, and similar measures.

would require removing most existing structures in Johnson Village. Where possible, vegetation along riverbanks should be re-established. This may involve working with willing property owners to convert lawns to more naturalistic vegetation. Existing surface parking areas, recreation fields, and other locations may be regraded or lowered to provide for additional flood storage.

In some cases, upstream and downstream encroachments, such as undersized bridges and culverts, berms/floodwalls, or other structures within the floodplain, may increase flood levels within the Village. Removing these impediments may alleviate some flood risks within the Village (see road/river conflicts section below).

### **Flood Resiliency and Public Infrastructure**

As noted in the Utilities Section, Johnson Village owns and operates a municipal wastewater treatment plant and a municipal water supply system. Municipal water supply sources and distribution systems and wastewater treatment and collection systems are frequent victims of flooding, particularly remote pump stations that are not adequately flood proofed. In the past, the Village has made several upgrades to make these systems more resilient, including:

- Replacement and construction of water mains and hydrants and new 350,000-gallon storage reservoir for improved domestic water and fire service in the Village.
- Improvements to the existing Nadeau well to serve as a back-up supply.
- Replacement of the two existing water booster pump stations.
- In 2011 and 2012, the stormwater system along Route 15 in downtown Johnson was rebuilt as part of the Main Street Project.

In addition, following an insurance claim for damages to the wastewater treatment facility in the amount of \$112,268, the Village implemented significant measures to mitigate damage from future flood events when replacing equipment covered by insurance.

### **Safer Areas**

The core of Johnson Village is surrounded by several neighborhoods which are less vulnerable to flooding. However, many of these areas have other limitations such as steep slopes or lack of public sewer and water infrastructure. In order to maintain Johnson, the community should work to identify appropriate areas for new development including medium density residential, and mixed-use. Ideally, these areas should be within walking distance of the core of Johnson Village and should be served by sewer and water infrastructure. In identifying potential areas, additional issues such as neighborhood character, traffic congestion, and pedestrian safety and connectivity should also be addressed.

### **Undeveloped Floodplains and River Corridors**

Undeveloped floodplains play a critical role in protecting existing settlements during flood events. The Lamoille River floodplain upstream and downstream of Johnson Village is largely undeveloped. Much of this area is used for agriculture due to favorable, alluvial soils and large flat fields which are absent in the more mountainous terrain in other areas of Town. Provided Required Agricultural Practices (RAPS) are followed, agriculture is an appropriate use of these floodplain areas. Best management practices, such as establishing vegetated buffers along stream banks, are strongly encouraged. In addition to improving water quality by filtering

agricultural runoff before it reaches the stream, vegetative buffers also improve floodwater attenuation and may capture sediment and debris during large flood events, helping to mitigate downstream debris jams.

Due to the Lamoille River floodplain's proximity to Route 15, it is experiencing higher development pressures than the Gihon River and Foote Brook. Conservation efforts to protect the Lamoille River floodplain from further development should be given higher priority.

While the FEMA mapped floodplain is primarily related to inundation hazards, historically most flood-related damage in Vermont has been caused by fluvial erosion rather than inundation. However, inundation flooding is an increased risk. Fluvial erosion occurs as rivers and streams meander across the landscape and can range from gradual bank erosion to drastic changes in river channel location and dimensions during a large flood event. The area in which a river or stream is likely to meander is referred to as a "River Corridor." The VT Agency of Natural Resources has delineated "River Corridors" for all rivers and streams in Vermont. It should be noted that these maps are developed at a coarse, statewide level. As a result, the State mapped river corridors may over-depict the actual erosion hazards in some areas and under-depict them in others. Unless more accurate maps are developed, these river corridor maps should not be used for regulatory purposes but may serve as a guide for identifying areas for further study. River corridor protection efforts should focus on those areas that have a past history of flooding or erosion that poses an actual public safety hazard.

More detailed River Corridor Management Plans have been developed for the Lamoille River, Gihon River, and Foote Brook. These plans and assessments identified and prioritized restoration projects. These projects will reduce sediment and nutrient loading to downstream receiving waters such as the Lamoille River and Lake Champlain, will reduce the risk of property damage from flooding and erosion, and will enhance the quality of in-stream habitat. Many of these projects involve conservation and re-vegetation of riparian areas. Since many of these areas are privately owned property, coordination and collaboration with property owners will be especially important to implement these projects. These plans also identified undersized bridges and culverts that may be constricting the natural flow of water. These are discussed below.

### **Road/River Conflicts**

The term "Road/River Conflict Area" refers to areas where the natural flow of a river comes into conflict with the transportation network. This can cause damage to both the river and the roadway. For example, when a culvert is undersized, water may pond close to the road and undermine the roadbed. Undersized bridges and culverts may result in downstream erosion that destabilizes stream beds and banks and may even change the path of the stream, possibly damaging other roadways. Rivers may meander into roads, while roads may transport sediment and other contaminants into rivers. The Town of Johnson maintains inventories of culverts and roadside erosion and is working to reduce Road/River Conflicts.

The River Corridor Management Plans referenced above identify several bridges that could be either retrofitted or replaced to reduce conflicts with the river. Bridges identified include:

- The Route 15 Bridge over the Foote Brook is undersized and causing minor localized geomorphic instability. It is possible that this could be addressed through other actions, such as conservation and restoration of the floodplain upstream and downstream of the bridge.
- The Route 100C Bridge (The Twin Bridges) over the Gihon River immediately north of the Village formerly had a narrow span —37% of the bank full channel width, while 120% is generally recommended. The narrow span of the bridge caused some change to the river's flow. The Twin Bridges along Route 100c in Johnson were replaced with wider span bridges to accommodate increased flow of flood waters and reduce streambank erosion.
- The Scribner Covered Bridge on Rocky Road is undersized and irregularly aligned over the River. The Covered Bridge is also an important piece of Johnson's history and is one of only a few remaining covered bridges in Johnson. Any effort to improve the flow of the river in this area should also respect the historic integrity of the Bridge. The Town has been actively exploring options, such as low water crossings, that will address this road/river conflict while retaining the covered bridge, which is an important piece of Johnson's history.

While not specifically identified in a River Corridor Management Plan, the Route 15 Bridge over the Gihon River in Johnson Village has been identified locally as a choke point in the river that can contribute to flooding in the Village. It bears further study to evaluate how this choke point can be addressed through infrastructure improvements such as widening the bridge span, installation of overflow/bypass culverts, or softer measures such as upstream and downstream floodplain restoration.

Before undertaking an effort as large as retrofitting and replacement of a bridge or culvert under Town jurisdiction, the community will need to weigh if it is the most effective means of addressing the issue or if there are other actions that are more cost effective.

Approximately 12% of the entire road network in Johnson (11 road miles, including the local roads and state highways) is located in the 100-year floodplain or river corridor area. These are areas with a higher likelihood of road/river conflicts. During a major flood event, these road segments may be overtopped with water or subject to washout which can disrupt the flow of traffic, frustrate rescue efforts, and isolate residents.

### **Upland Forests**

While discussions of flood resiliency usually focus on areas immediately adjacent to rivers and streams, it is important to realize that all areas are part of the watershed. Upland forests play a critical role in attenuating floodwaters. Forested land can absorb and hold water much more effectively than cleared or developed land. Maintaining intact upland forests is an important component of flood resiliency. As discussed in the Land Use Section, this Plan identifies all lands above 1,500 feet and the West Settlement Area as the Forest District, which is specifically designated for forestry, watershed protection, wildlife habitat, and low impact recreation.

### **Why Resiliency? Why Now?**

Town-wide (including the Village), there are approximately 140 structures in the FEMA special flood hazard area. This represents 9% of all structures in Johnson, 60 are in the Town (areas of Johnson outside the Village) and 84 in the Village. This is largely due to the fact that Johnson Village serves as the hub for commerce, culture, and community. Strengthening the resiliency of Johnson Village will allow it to continue to serve as the community’s center.

The Johnson Hazard Mitigation Plan contains extensive background and data regarding flooding and other natural hazards. The Hazard Mitigation Plan is incorporated into this Plan by reference. The Hazard Mitigation Plan also contains a summary of past flooding events in the Town and Village of Johnson. As most residents are aware, Johnson has a history of flooding. The following represents a history of flooding related declared disasters impacting Johnson since 1990. This list demonstrates when Johnson received public assistance funding from FEMA for flood related disasters since 1990.

Disaster Recovery (DR) Number	Public Assistance Funding Received	Description of Declared Disaster
August 1995 (DR 1063)	\$496,594	Record setting heavy rains caused flooding in six north-central counties. Preliminary damage assessments indicated individual losses greater than damages to public infrastructure. Flood levels exceeded the 500-year event in several areas along the Lamoille River.
January 1996 (DR 1101)	\$5,290	A mid-winter flood event brought statewide destruction of private and public property with eleven counties included in the declared disaster area. This event left more than 150 communities eligible for public assistance
July 1997 (DR 1184)	\$137,334	Excessive rain in several northern Vermont counties caused flash flooding and destruction of public and private property
July 1998 (DR 1228)	\$7,262	Eleven of the fourteen Vermont counties experienced severe damage from excessive rainfall. The torrential rains came in much the same pattern as they had in the summer of 1997, but occurred further south than the 1997 floods. The flash flooding left many homes destroyed, roads and bridges damaged, and communities cut off from the rest of the state.
July 2008 (DR-1790)	\$104,954	Severe storms and flooding caused a federal disaster to be declared in Addison, Caledonia, Essex, Lamoille, Orange, Washington, and Windsor counties on September 12, 2008. More than \$104,954 in federal public assistance funds was used to repair flood damaged public infrastructure.
April/May 2011 (DR-1995)	\$68,985	Excessive rain and severe floods swept across northern Vermont, with a federal disaster declared for Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, and Orleans counties. At the height of the storms on April 27, much of the Village of Johnson was inundated with flood waters from the Lamoille River. The Grand Union grocery chain – which served residents of Johnson, Hyde Park, Cambridge, Waterville, and Belvidere– ceased operations following the flood. As part of the recovery effort, Johnson worked extensively to recruit a new store operator.

		<p>Between the Town and Village there was \$91,980 of eligible damage claims submitted to FEMA, of which FEMA reimbursed 75% or \$68,985.</p> <p>In addition, the Village had an insurance claim for damages to the wastewater treatment facility (WWTF) in the amount of \$112,268. The Village implemented significant measures to mitigate damage from future flood events when replacing equipment covered by insurance.</p>
August 2011 (DR-4022)	\$19,622	High wind and flooding associated with Tropical Storm Irene devastated southern Vermont, causing localized damage to structures and property in northern parts of the state. While the impact was far less severe in Lamoille County than elsewhere in the state, Johnson experienced limited road, culvert, and power line damage from rain and high winds. The Town and Village had a combined expense of \$21,802, of which FEMA paid a 90% share of \$19,622.
May 29, 2012 (DR-4066)	None	Numerous thunderstorms with heavy rain, damaging lightning and some isolated large hail and strong winds resulted in flash flooding in Lamoille, Addison and Orleans counties with radar estimated storm total rainfall of 3 to 5 inches. Johnson did not submit a claim for this event.
May 23, 2013 (DR-4120)	none	Heavy rainfall produced flash flooding across Lamoille and Chittenden Counties. Excessive runoff in the steep terrains washed out bridges, culverts, and roads. Gradually the flash flooding transitioned to a flood event as larger rivers such as the Lamoille and Browns River responded to the increased flows. Johnson did not submit a claim for this event.
April 15, 2014 (DR-4178)	\$369,000	Heavy rainfall and snowmelt caused widespread minor to moderate flooding across Lamoille County, along and west of Route 100. Numerous highways were flooded and there was widespread damage to gravel roadsides and many culverts failed in Johnson, Belvidere, Cambridge, and Waterville. In Johnson, a washed-out culvert stranded six families in the Coddling Hollow neighborhood for two days until a temporary bridge could be installed. The Lamoille River in Johnson exceeded its flood stage of 13 feet and crested at 14.16 feet. Total public assistance received to repair damages was \$1,844,155. Johnson received \$21,000 to repair damages to Rocky Road and was approved for public assistance funding of \$348,000 to repair and upgrade the culvert on Coddling Hollow Road.
Oct. 29, 2017 (DR-4356)	none	Rain began on October 29th and became heavy on October 30th. Total rainfall in Johnson was about 1.3 inches. Sustained winds of 25 to 35 mph with frequent wind gusts of 50 to 70 mph occurred during the early morning hours of October 30th across portions of Vermont due to fully mature

		mountain waves. A peak wind gust of 115 mph was observed at the summit of Mount Mansfield. The severe storm and rainfall caused flooding across the region, with a federal disaster declared for Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orange, Orleans, Washington, and Windham counties on Jan. 2, 2018
May 2, 2018 (DR-4380)	\$4,650	Rain started overnight on May 4th and increased on May 5th. Total rainfall in Johnson was around 1 inch. The severe storm and rainfall caused flooding across the region, with a federal disaster (FEMA-4380-DR-VT) declared for Chittenden, Grand Isle, Lamoille, Orange, and Orleans counties on July 30, 2018.
Oct. 31, 2019 (DR-4474)	\$28,651	Steady rain developed during the night of October 31st and became heavy at times through November 1st. Rainfall amounts ranged from 1.5 to 4 inches across Vermont. Numerous flooded streams and washed-out roads were reported. Several large rivers flooded, including the Lamoille. In addition to the large rain amounts, high winds were reported throughout the county. Gusts more than 50 mph caused downed trees and power outages. Roads and structures were damaged by trees being blown over.
July 7, 2023 (DR-4720)		Severe rainstorms and flooding began on July 7, 2023, across the State of Vermont, severely impacting Lamoille County and Johnson Village especially where flood levels were recorded up to the 500-year floodplain. At the peak of the flood, flood waters in Johnson Village by Sterling Market reached nearly 8ft. The Johnson Wastewater Treatment Plant also experienced 8ft of inundation flooding at the peak of the flood. Other public facilities impacted by the flood include the Johnson Public Library and Municipal Building. Numerous residents and local businesses along Main Street, Railroad Street, Pearl Street, Library Street, Wescom Rd and other locations in the Village, were impacted by the July flood.

This list includes only FEMA-declared disasters and funds and is not an exhaustive list for more localized weather events. Information on localized weather events is not documented in the same way as FEMA disasters.

### **Preparing for the Next Flood**

Given that many areas of Johnson are vulnerable to flooding, especially within Johnson Village, preparation is an important element of flood resiliency. Johnson maintains an up-to-date Local Emergency Management Plan to ensure that public officials and emergency responders are prepared for flooding and other emergencies.

Businesses and residents can also take steps to prepare for flooding. According to FEMA, nearly 60% of businesses close within a year of experiencing a significant flood. While not all businesses or residents may be able to afford to elevate or flood proof their properties, they can still take smaller, lower cost steps to prepare for flooding, such as storing perishable items in upper shelves, anchoring fuel tanks, and utilizing attics rather than basements and cellars for storage.

Adequately protecting homes and businesses against future flood damage requires a pool of contractors and design professionals with specialized skills in flood mitigation techniques, knowledge of FEMA rules and regulations, and experience working with “flood resistant” building materials. Vocational and post-secondary education that includes these skill sets is critical to meeting the following flood resiliency goals:

- Continue to maintain an up-to-date Local Emergency Management Plan
- When a disaster occurs, conduct an After Action Report to reflect on disaster response and ways to improve future response to natural or man-made disasters.
- Educate resident and businesses about the wide range of flood mitigation options
- Work with organizations providing vocational education to increase the pool of contractors and design professionals with skills in hazard mitigation

Another important step to preparing for the next flood is reviewing and updating Johnson’s Flood Hazard Area Bylaws as appropriate. This review process will help ensure compliance with the latest National Flood Insurance Program standards and provide an opportunity to strengthen the Town and Village Flood Hazard Area bylaws to reduce future flooding impacts.

## POLICIES

- The community will continue to investigate appropriate areas for development. Johnson discourages new development of structures in the 500-year floodplain. If new structures are to be constructed in the floodplain, they should be elevated to at least the base flood elevation and, ideally, elevated to two feet above the base flood elevation or the 500-year flood elevation, whichever is greater. New developments and redevelopment projects should allow for compensatory storage to ensure there is a no net rise in flood elevations. Efforts to improve the flood resiliency of existing structures are strongly encouraged. The Town and Village should undertake a Town-wide discussion regarding regulation of development in the 100 and 500-year floodplain.
- Development within floodplain and river corridors should be avoided, whenever possible. If new developments are built in such areas, they should not exacerbate flooding and fluvial erosion. Johnson Town and Village have concerns regarding the methodology used by the State to map River Corridors. The primary focus should be on protecting areas with a known history of flooding and that represent a hazard to public safety. The Lamoille River floodplain should be given priority for land conservation efforts.



- Existing floodplain encroachments caused by the transportation network should be mitigated whenever possible. This may involve upsizing bridges and culverts and/or restoring floodplain areas disturbed by past infrastructure investments.
- Upland forests should be maintained and managed to attenuate floodwaters.
- The integrity and function of Highest Priority Connectivity and Highest Priority Interior Forest blocks should not be compromised by development or associated infrastructure.
- New roads, driveways, and utilities should be designed to avoid the fragmentation of priority forest blocks.
- Continue to regularly update emergency planning documents.
- Consider the recommendations of the Hazard Mitigation Plan in future land use planning decisions.
- Support protection of floodplain access to provide flood storage and reduce future flooding impacts.
- Increase community greenspace in Johnson Village to mitigate flooding impacts and stormwater runoff, while providing outdoor recreation opportunities.

## IMPLEMENTATION RECOMMENDATIONS

### Short-term

1. Ask the State to reevaluate the delineation of River Corridors in Johnson. Unless local - on the ground - conditions are considered, these river corridor maps should not be used for regulatory purposes, but may serve as a guide for identifying areas for further study.
2. In order to ensure that Johnson property owners remain eligible for flood insurance, regularly review and update as needed the Town and Village Flood Hazard Regulations to ensure that they meet the minimum requirements of the National Flood Insurance Program (NFIP). Consider incorporating a requirement for one or two feet of freeboard into the regulations to provide additional protection against larger flood events, and conditions not considered in NFIP Minimum Standards, such as ice and debris jams.
3. Consider updating the criteria for Johnson's revolving loan fund to include elevation and flood proofing of existing structures within the floodplain, with priority given to structures located in Johnson Village.
4. Investigate constrictions or chokepoints along the Gihon and Lamoille Rivers that contribute to flooding. Evaluate the most effective measure of mitigating these constrictions.
5. Participate in regional flood resiliency discussions.
6. Identify and prioritize undersized bridges and culverts located on Town Roads; identify funding sources for upgrades.

7. Annually review and prioritize fixes for streambank failure and road erosion concerns along municipal roads in the Town right-of-way and restore vegetation in priority eroded streambank locations.
8. Explore flood resiliency alternatives including relocation for critical facilities in the floodplain to reduce future flood damage.
9. Consider revising the Johnson Form Based Code to allow for exemptions for installing flood resiliency measures.
10. Install a light/siren pole warning system throughout town to warn residents/visitors of a flood, fire, tornado, etc.

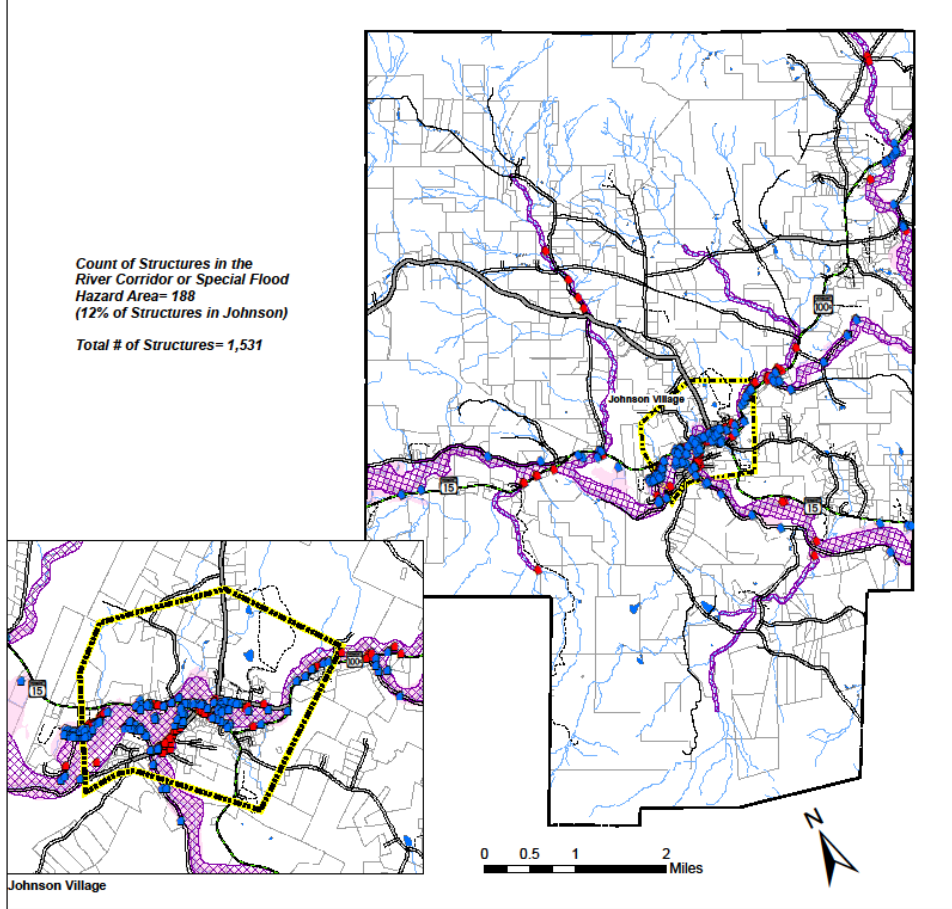
#### Medium-term

11. Consider participating in the Community Rating System (CRS) as a tool to reduce flood insurance premiums. Evaluate whether the reduced flood insurance premiums available to property owners through the CRS program justify the expense of the additional administrative requirements.
12. Identify organizations (either local or regional) to take the lead in implementing the restoration projects identified in River Corridor Management Plans, and flood modeling studies.
13. Work with interested landowners in the Forest District to maintain large blocks of unfragmented, upland forest.
14. Work with landowners interested in Buyout Programs to restore riparian and forested habitat and increase public greenspace in Johnson where possible. Work with interested local business owners to increase and enhance greenspace in Johnson Village.
15. Include resources on the Johnson Municipal website to educate landowners about programs and funding that could support restoration of stream buffers, conserve habitat, and other conservation practices.
16. Support Conservation and River Corridor Easements in Johnson and help connect landowners with local resources (Ex: Vermont Land Trust, Vermont River Conservancy, Vermont DEC)
17. Continue to revisit and prioritize actions from the Johnson Local Hazard Mitigation Plan.

#### Long-term

18. Begin long-term flood resiliency planning efforts focused on relocating the “Town Center” out of the floodplain and reimagining the current downtown area.
19. Continue to make investments including relocation, that reduce the vulnerability of the Village sewer and water systems and municipally owned buildings (Johnson Municipal Building, Fire Station, Library, Wastewater Treatment Plant) to flooding.

## Johnson Town and Village Municipal Development Plan Structures Vulnerable to Flooding



**Johnson Town and Village Municipal Development Plan  
Transportation Infrastructure Vulnerable to Flooding**

**Culverts in River Corridor or Special Flood Hazard Area**

**Town Boundary**

**Road in Special Flood Hazard Area**  
**Road Within River Corridor**

**Roads CLASS**

- State Highway
- State Forest Highway
- Class 2 Town Highway
- Class 3 Town Highway
- Class 4 Town Highway
- Public Road, Undetermined Class
- Unknown / Private Road
- Trail

**River Corridor**  
**100 Year Flood Plain**  
**Village Boundary**  
**Lake**  
**Stream**

**DATA SOURCES:**  
POLITICAL BOUNDARIES: 1:24000 USGS Quadrangles, VCGI, 1991.  
PARCELS: VCGI, 2021.  
ROADS: 1:5000 E-911 Road Data, 2021.  
SURFACE WATER: On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material, VCGI

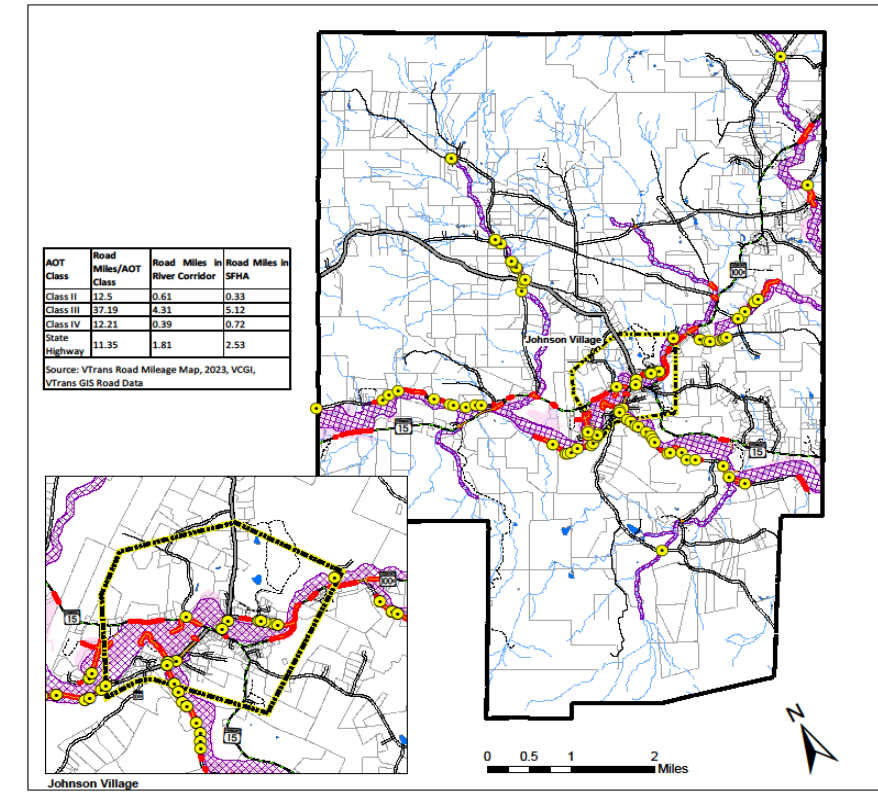
**Transverse Mercator, VT State Plane, NAD 1983**

**For planning purposes only. Not for regulatory interpretation.**



**Lamoille County Planning Commission**  
Denham Building, 2nd Floor  
32 Portland Street, P.O. Box 1637  
Morrisville, VT 05661-1039  
802.888.4548 / 802.888.8938  
www.lcpd.org November, 2023

AOT Class	Road Miles/AOT Class	Road Miles in River Corridor	Road Miles in SFHA
Class II	12.5	0.61	0.33
Class III	37.19	4.31	5.12
Class IV	12.21	0.39	0.72
State Highway	11.35	1.81	2.53

Source: VTrans Road Mileage Map, 2023, VCGI, VTrans GIS Road Data






# Johnson Town and Village Municipal Development Plan 100 and 500 Year Flood Zones and River Corridors

-  Town Boundary
-  Village Boundary


## Roads


### CLASS


-  State Highway
-  State Forest Highway
-  Class 2 Town Highway
-  Class 3 Town Highway
-  Class 4 Town Highway
-  Public Road, Undetermined Class
-  Unknown / Private Road
-  Trail


-  Streams
-  Lake

-  River Corridors

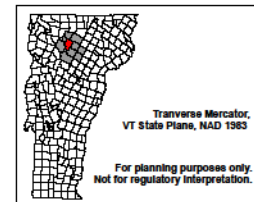
-  Wetland

-  100-Year Flood Zone

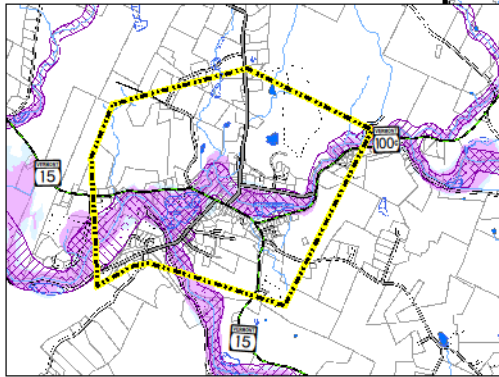
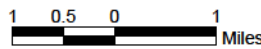
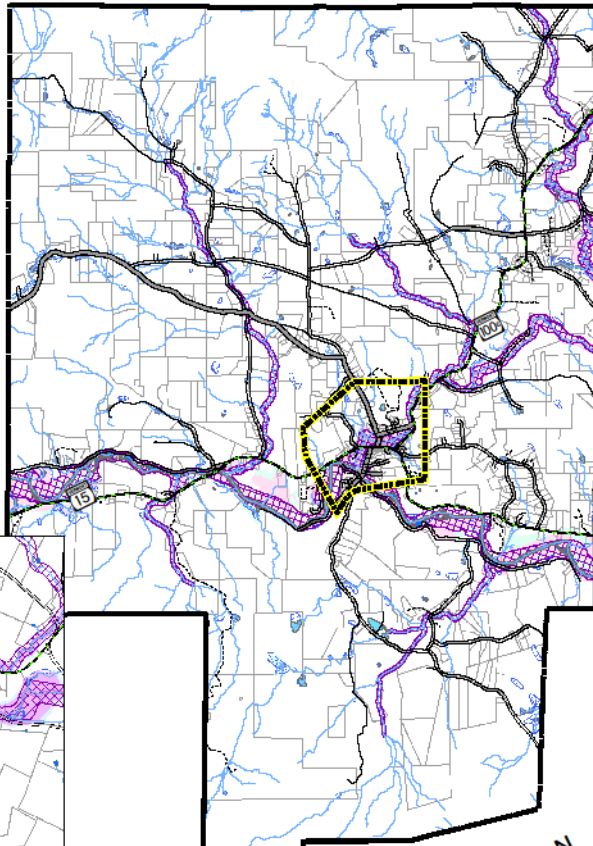
-  500-Year Flood Zone

-  Parcels

**DATA SOURCES:**  
**POLITICAL BOUNDARIES:** 1:24000 USGS Quadrangles, VCGI, 1991.  
**SURFACE WATER:** On-screen digitized from 1:5000 digital orthophotos using USGS 7 1/2' quadrangles and 1:20000 color infrared aerial photography as additional source material. VCGI for VHD-USGS, 2001.  
**STATEWIDE RIVER CORRIDOR:** ANR Natural Resource Atlas, 2018.  
**WETLANDS:** Vermont Significant Wetland Inventory, VCGI, 2010.  
**100-YEAR AND 500-YEAR FLOOD PLAIN:** Digitized from FEMA Flood Insurance Rate Maps, LCPIC, 1993. Floodplains for planning purposes only. Refer to the VANR-DEC, Water Quality Division, Floodplain Coordinator for official floodplain determinations. (802) 241-3759.



Lamoille County Planning Commission  
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 802.888.4546 | 802.888.6938  
 www.lcpvt.org | November, 2023



Johnson Village

## LAND USE

For the purposes of discussing objectives and policies contained in this plan, this plan envisions the following land use districts within Johnson Village and within the Town of Johnson outside the Village boundaries. These districts are conceptual; Johnson has no land use zoning, This plan describes the boundaries for each of these districts, and their current and envisioned land development patterns. Finally, various strategies implementing the policies for each of these districts are presented. A map showing the approximate district is attached to this plan.

The Village land use districts include:

- Main Street Mixed Use (West)
- Commercial-Mixed Use
- University
- Lower Village
- Upper Village

In addition, this plan establishes an overlay district to protect the Village's flood hazard areas.

The Town land use districts include:

- Town Sewer Service Area
- Village
- Highway
- Residential
- Rural Residential / Agricultural
- University
- Agricultural
- Forest

Form Based Code

While not discussed in detail in this chapter because it does not affect land use, it should be noted Johnson implemented Form Based Code zoning in a portion of the Village in 2018. Three districts were established:

- Village Storefront
- Village General
- Village Neighborhood

Please refer to the Form Based Code on the Town website at

<https://townofjohnson.com/documents/ordinances-policies-bylaws/>. **Johnson's land development regulations**

With the exception of flood hazard zoning bylaw, Johnson currently does not have zoning or subdivision bylaws to regulate its land use. This plan is the principal tool that provides guidance for land development in Johnson.

In 2014, Johnson voters at Town Meeting tasked the Selectboard to explore Form Based Code as a potential tool for regulating land development. In 2015, a citizen-based Committee tasked with exploring the code, drafted a Form Based Code proposal for Johnson. The Town of Johnson hired Paul Dreher, former Newport, VT Zoning Administrator to assist the Committee in drafting Form Based Code for Johnson. The Johnson Planning Commission further refined the code before bringing it to a Townwide vote at Town Meeting Day. The Johnson Form Based Code

was adopted by the Town of Johnson Selectboard in May of 2018. The Code further specifies the land use framework outlined in this plan, particularly in the Main Street Storefront District, Main Street General District, and Lower Village and Upper Village Districts. The Form Based Code regulates the character and form of buildings in a portion of Johnson Village. It seeks to preserve the historic character of Johnson Village Center while providing guidelines to achieve this goal. It does not regulate land use. Attached to the end of this chapter is a map depicting the Form Based Code Districts. To review the Johnson Form Based Code visit the Town of Johnson website at: <https://townofjohnson.com/documents/ordinances-policies-bylaws/>

## **FORM-BASED CODE DISTRICTS WITHIN JOHNSON VILLAGE**

**Village Storefront District.** The purpose of this district is to maintain and enhance the historic character of Main Street by encouraging construction projects that will replicate the form and scale of historic buildings in the district. Redeveloped and new buildings should accommodate a wide range of commercial, service, cultural and residential functions. Building facades shall be inviting for people walking on Main Street and frequenting Main Street businesses. Municipal water and sewage disposal is available, and compact development on small lots will be encouraged to take advantage of these services as well as to maintain the traditional pattern of development. This district is regulated under the Johnson Form Based Code. The Form Based Code outlines Building Envelope Standards including window glazing, lot coverage, setbacks, building height requirements, parking location, and streetscape standards.

### **Village General District**

This district is an extension of the Main Street Storefront district and as such supports commercial, cultural, service, and residential roles of the Storefront district. Similarly to the Storefront district, the purpose of the Main Street General District is to maintain and enhance the historic character of Main Street. Buildings undergoing substantial renovation or buildings to be newly constructed should focus on replicating building forms similar to the form and scale of the existing buildings. Building facades should be inviting for people walking on Main Street and frequenting Main Street businesses. This district is also regulated under the Johnson Form Based Code. The Form Based Code outlines Building Envelope Standards to guide new development and substantial improvement projects.

### **Village Neighborhood District**

This is the third district regulated under the Johnson Form Based Code. The purpose of this district is to maintain a mixed-use neighborhood with a street oriented public realm. This district encourages a medium density multipurpose/ mixed use-built environment. Small-scale commercial and multi-family and single-family housing make up this district. See the Johnson Form Based Code document referenced above for Building Envelope standards.

## **LAND USE DISTRICTS OUTSIDE FORM BASED CODE**

### **Main Street West Mixed-Use District**

This district recognizes the existing mixed residential commercial land use patterns and the potential for future light industrial/commercial development and or re-development of existing

residential development. The district has access to transportation, water, sewer and electric services.

### **Lower Village District**

This proposed district encompasses the downtown areas, which are not within the Main Street, College, or industrial districts. Land uses in these areas are medium density residential, business, professional and institutional uses. Mixed-use buildings are less common but present and mixed-use properties should be encouraged, provided they are compatible with the neighborhood. Municipal services are available, so development on small lots should be encouraged to take advantage of the services. Where a neighborhood has many historic structures, new construction should reflect the style and character.

In determining the appropriateness of new development, its scale and design should be evaluated in relation to the scale and design of existing uses and structures, and the effect of the proposed development on the continued enjoyment of existing uses in the district. For new structures, building location within the lot could be required to be compatible with the location of existing uses in the district.

The Lower Village District is more residential than the Main Street District, therefore consideration should be given to the impacts on the enjoyment and use of existing properties when new development is proposed. The buildings within this district tend to be primarily historic structures. Any construction or reconstruction should be consistent with the styles and designs of the neighborhood.

### **Upper Village District**

This proposed district intends to provide opportunities for medium density residential development. These areas, in combination with the other village districts, should meet local needs for residential and commercial growth into the near future. Some parcels or portions of parcels, which fall within the designated district, might, upon closer inspection, be limited in their suitability for development. Planned Unit Developments should be highly encouraged in order to cluster development on the developable land without significant loss of development opportunity. Multiuse properties should be encouraged.

Where different types of land uses adjoin one another, larger lot sizes, increased setbacks, or landscaping can be appropriate in order to buffer adverse impacts. Development should be planned to minimize the number of access points onto town and state highways to maintain smooth traffic flow.

### **University District**

This district accommodates the special needs of Vermont State University - Johnson and related uses, while maintaining the character of the Village of Johnson.

### **Commercial-Mixed-Use District**

The two areas within this land use district include areas south of the Railroad Street Bridge, and north of Route 15 west at the proposed Johnson Industrial Park property. This District, formerly

known as the Industrial District due to its past concentration of industrial uses, has municipal services and 3-phase power. The presence of this infrastructure makes it a desirable area to focus future development and create a new civic anchor of the village. Development south of the Railroad Street Bridge may be limited in areas within this district that reside within the Special Flood Hazard due to the proximity to the Lamoille River. A mix of residential, commercial, and light industrial development should be encouraged and supported in this district. Housing units do currently exist in this District along Railroad Street. Future development should consider the potential health impacts of current residents of the district.

This area has historically been the industrial district for the village with the talc and lumber mills and rail yard. With the closing of the talc mill, the end of rail use, and increased residential development in the area, future land uses should be evaluated considering this shifting trend. Truck traffic is of primary concern as the only access to the area is via Railroad Street. The Town of Johnson is currently in the process of planning for a light Industrial Park/mixed use development on a parcel purchased by the Town off Route 15 West, across from Jolley's Gas Station. In 2023, the Town of Johnson received a Northern Borders Regional Commission Grant to fund construction of infrastructure for the light Industrial Park. The Industrial Park property is located outside the Special Flood Hazard Area.

### **Flood Hazard Overlay District**

The purpose of this district is to prevent development that might increase flooding and to reduce losses as a result of damage from flooding. Designation of this district is also required for property owners within the District to be eligible for the National Flood Insurance Program. This district should encompass all areas in Johnson identified as areas of special flood hazard on the National Flood Insurance Program maps. This district will be an overlay zone and will be superimposed on the other districts proposed in this plan.

## **LAND USE DISTRICTS WITHIN JOHNSON TOWN**

### **The Village District**

In the Village of Johnson are neighborhoods that support and enhance the village. As these neighborhoods are close to the village center, areas not in the floodplain should be given first consideration for future Town development.

The Village Districts are those neighborhoods identified on the land use map as village (VIL) areas. Some district boundaries are defined by property boundaries while others are defined as all land within 500 feet of a specific road. The Village District includes parts of Gould Hill, East Johnson, West Johnson, and French Hill, and the Railroad Street Extension.

The purpose of the Village District is to support the role of the Village of Johnson as the focus of many social and economic activities in the community and to provide for residential, commercial, and other compatible development that serve the needs of the community. Such development shall be constrained to maintain the traditional, social, and physical character of the village including its historic and scenic resources, and that will not exceed the capabilities of the districts' municipal services. Facilities and services should be planned for these areas to accommodate medium density development.



These areas are primarily residential and may include forestry, agriculture, recreation, wildlife habitat, light industry, and commercial uses.

This district should continue to be used as described in the preceding paragraph. In Village District neighborhoods, light industrial and large commercial uses should be generally discouraged and restricted to areas where they would minimally impact on the designated uses for these neighborhoods.

### **The Highway District**

The Town of Johnson has three primary highways: Vermont Routes 15 and 100C and the local Class II road Hogback Road. Development along the highway corridors should balance the goal of having a smooth flow of traffic with the needs of neighboring property owners to get access. Development should be restricted to a scale commensurate with the neighborhood it is located in.

For the most part the District is defined as those lands within 500 feet of the stated roadway. Some lands within 500 feet of the highways are not included in the District as they may be on the opposite side of the Lamoille River or other feature.

The Highway District is established to maintain a safe, efficient travel corridor and to permit some commercial and industrial development.

These areas are primarily used for residential uses but other uses also exist including agriculture, recreation, wildlife habitat, light industry, heavy industry, and commercial purposes.

This district should continue to be used as described in the previous paragraph although the scale and density of use will be limited by the neighborhood in which it is located. While much of the land in this district is developable, future land uses should be constructed based on specific site considerations. Development should be encouraged on land that is not greater than 30% slope that avoids flood hazard areas and has soil that can support the proposed activity, and activities that will not threaten or impair water quality.

### **The Town Sewer Service Area District**

This district encompasses a Town Sewer Service Area established by the Town and The Village for the purposes of extending sewer service to the area. The district has good access to transportation, water, sewer, and electric services.

This district recognizes the existing mixed residential commercial land use patterns and the potential for future light industrial/commercial development and re-development of existing residential development.

Additionally, the district is adjacent to the Main Street Mixed Use West District located in the Village. The Town Sewer Service Area District and the Main Street Mixed Use West District should be treated as one land use district for planning and development purposes, regardless of the town/village boundary and as having mutually compatible land use goals and policies.

### *Well Head Protection Town Sewer Service Area District Overlay*

The purpose of the district overlay is to serve a significant public benefit by protecting the public health and investment of public funds in the Osgood water supply by limiting land uses to those that will not harm the Public Water Supply.

### **The Residential District**

Away from the village and major highways are some areas of medium density residential development. These areas include the neighborhoods of Foote Brook, Collins Hill, and the Gihon River neighborhood. Residential development should be permitted in these areas as they are relatively close to the village center and generally have good soils for onsite systems and close access to major travel corridors.

The Residential Districts are those neighborhoods identified on the land use map as residential (RES) areas. Some district boundaries are defined by property boundaries while others are defined as all land within 500 feet of a specific road.

The purpose of the Residential Districts is to provide for medium density residential development in areas that are located within a short distance of the village which are serviced on site with water and wastewater systems. These areas are identified to allow for the development of safe and pleasant residential settings, away from busy highways but within easy access. A variety of residential uses are appropriate including single family, duplexes, and multifamily housing.

These areas are presently used primarily for residential uses, but other uses also exist including forestry, agriculture, recreation, wildlife habitat, and some limited light industry and commercial uses. Each neighborhood has a different level of development.

This District should continue to be developed for residential uses. Where constraints to development exist, future land uses should be constructed based on specific site considerations. Some considerations include development of land that is not greater than 30% slope, avoids flood hazard areas, has soils that can support the proposed activity, and activities that will not threaten or impair water quality.

Within the Foote Brook neighborhood any development should provide protection to the riparian habitat and water quality of the brook as well as protection to the deer habitat in the area.

### **The Rural Residential/Agricultural District**

Johnson identified large parts of town for future rural residential development. Divided into two neighborhoods, the Rural Residential/Agricultural District (RRA) includes the Uplands neighborhood in the north and Sterling in the south.

Three quarters of the town's area is contained within the Rural Residential/ Agricultural District which includes a broad swath north of the Hogback Road and Village of Johnson extending from Waterville and Cambridge to Hyde Park and Eden in the east. To the south of Route 15 and

Johnson Village, the RRA district also includes a large area southeast of French Hill to Sterling Mountain.

The purpose of the Rural Residential/Agricultural District is to provide residential and other compatible uses at densities appropriate with the physical capabilities of the land and the availability of community facilities and services on the land outside of the village areas. Planned Unit Developments (i.e. clustered housing), open space preservation, and other techniques for preserving rural character of these areas should be considered. . Development should take place in such a way that any irreplaceable, unique, or scarce resources and natural areas are not harmed.

Due to the size and extent of the district, many land uses exist within its borders. The district includes much land that is still used for forestry, agriculture, and earth resource extraction (gravel pits). There is also recreational, wildlife habitat, and some limited commercial and light industrial activities. Low density residential development is scattered throughout the district although it is almost entirely within a few hundred feet of a road.

This District should continue to be used as described above. The issues with future land use in this District lie with the amount and scale of development. Development should respect environmental and physical constraints that exist on site including slopes, soils that support proposed activity, and wildlife habitat. Preservation of open space for continued use in forestry and agriculture is desired as well.

#### **The University District**

Located within the Town and Village of Johnson is Vermont State University - Johnson. The University properties have been given their own district due to the special circumstances that exist in managing land use changes on campus.

The University District includes those lands owned by the Vermont State University system. The purpose of the University District is to accommodate the unique needs of Vermont State University and related uses.

This area is presently used primarily for educational purposes including the associated high density residential housing, recreational uses, wildlife habitat, and some commercial activities.

This District should continue to be used for all the purposes stated above. As long as this District continues as a public educational campus it should continue to receive its own district with some latitude in order to achieve its mission.

#### **The Agricultural District**

The Lamoille River is an important aspect of land use planning in Johnson. The frequent flooding events of the Lamoille and its tributaries cause great amounts of damage to the village area but also provide some of the best agricultural soils in the area. The Agricultural District has been identified to provide the best use for these flood prone areas and to ensure that development on lands outside of the flood plain does not conflict with these uses.

Some District boundaries are defined by property boundaries while others are bordered by a road or defined as land greater than 500 feet of a specific road.

The purpose of the Agricultural District is to protect flood prone areas around the Lamoille River that have an economic capability for agriculture. These areas are now predominantly undeveloped except for uses associated with agriculture or forestry.

The Agricultural District is now predominantly undeveloped except for uses associated with agriculture or forestry and a few houses. There also exist some areas of wildlife habitat and recreational uses.

This District should continue to be usable for all the purposes stated above. There is very limited development potential in these areas because soil types are not suitable for septic and substantial flood hazards exist.

### **The Forest District**

The Forest District consists of the Mountain area, all lands above 1,500 feet, and the West Settlement area which is defined by past and present land use (see Land Use Map). These areas are best suited for timber management and wildlife habitat, and are unsuitable for large-scale development due to steep terrain and distance from roads and utilities. To conserve the resources of the Forest District, the Town should encourage and promote responsible management practices, such as those defined by the State of Vermont Accepted Management Practices (AMPs).

Historically, Johnson's forestlands have provided significant employment and income for area residents. In addition, the forestlands provide excellent opportunities for all-season recreation. The Forest District includes portions of the Long Trail, State Forest areas, and V.A.S.T. trails.

Specifically, within the Forest District, Johnson encourages the use of its forestlands for sustainable forestry. Residential development and other land uses that conflict with commercial forestry are to be discouraged. Looking to the future, Johnson is aware that the increase in development throughout the country will make land for forestry, agriculture and wildlife habitat a valuable resource. The Town therefore has identified this area of unfragmented forests for uses such as timber, recreation, and wildlife habitat.

### **Village Center Designation**

A portion of Johnson Village is recognized as the "Designated Village Center." This area spans from Jenna's Promise to the east, westerly along Route 15/ Main Street to just past the Johnson Municipal Building, north to the Johnson Elementary School, and south down Railroad Street to the Johnson Public Library. Village Center Designation status was approved by the Vermont Downtown Board with the Vermont Agency of Commerce and Community Development. This designation provides eligibility for state tax credits for income producing property owners within the Designated Village Center. Tax credits can help local business owners, nonprofits, and other

income producing property owners fund building renovations including code improvements (electrical, plumbing, fire safety, ADA compliance), and front façade. To learn more about tax credit benefits and the Village Center Designation program visit:

<https://accd.vermont.gov/community-development/designation-programs/village-centers>

## POLICIES

- Manage growth and development in a manner that is respectful of Johnson’s rural character, natural resources and their environmental, recreational and economic functions, and its infrastructural capacity.
- Support efforts that encourage and expand the diversity and vitality of the Village as the residential, cultural, commercial-service and economic hub of the Town.
- Encourage shared highway access and minimize strip development.
- Consider flood resiliency of all new proposed development or substantial improvements to existing structures in Johnson.

## IMPLEMENTATION RECOMMENDATIONS

### Short-term

1. Expand the boundary of the Designated Village Center district to encourage revitalization, facilitate economic opportunities and strengthen the vibrancy of the village center.

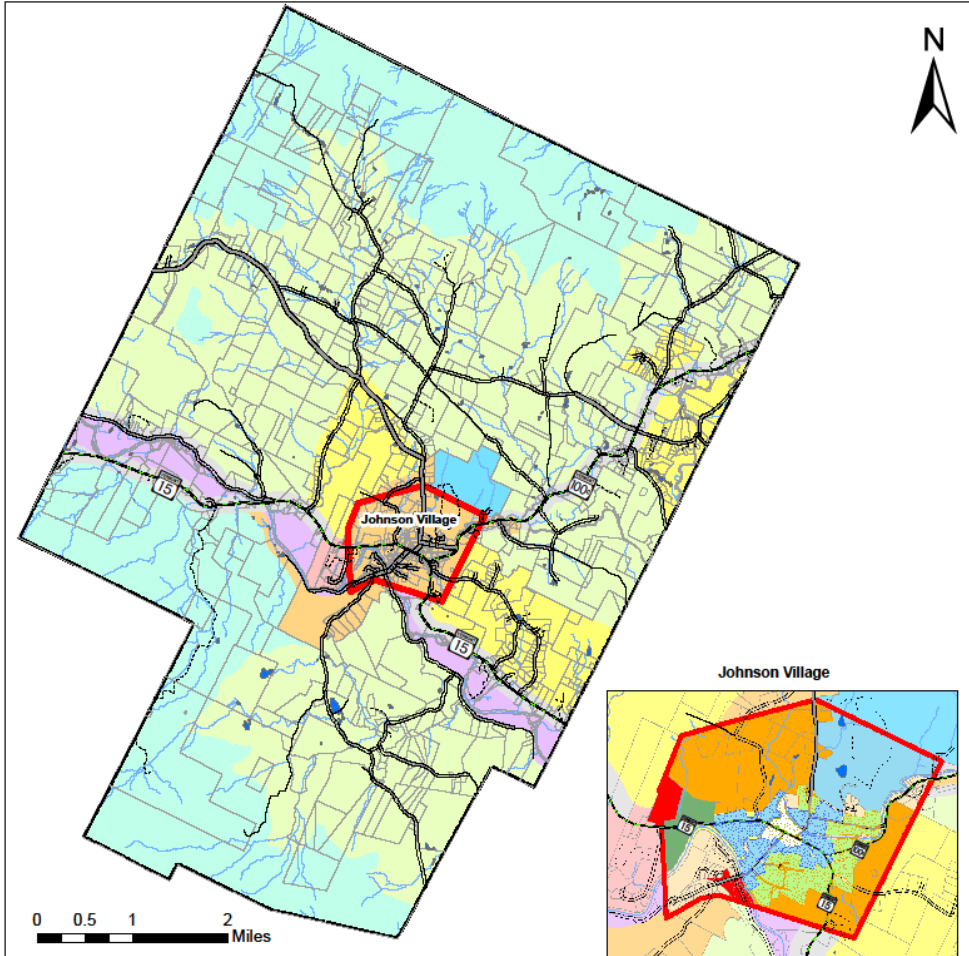
### Medium-term

2. Utilize existing development controls and state regulatory proceedings in an effort to implement the vision, and address the needs, conclusions and policies of this plan

**Insert Land Use Districts Map**

DRAFT

# Insert 2024 Designated Village Center Boundary Map



## Johnson Town and Village Municipal Development Plan Land Use Districts

### MAP LEGEND

#### Johnson Form Based Code Districts

- VILLAGE GENERAL
- VILLAGE NEIGHBORHOOD
- VILLAGE STOREFRONT

#### Johnson Village Land Use Districts (Outside Form Based Code)

- MAIN ST MIXED USE WEST
- UNIVERSITY
- COMMERCIAL-MIXED USE
- LOWER VILLAGE
- UPPER VILLAGE

#### Johnson Town Land Use Districts

- TOWN SEWER SERVICE AREA DISTRICT
- VILLAGE
- HIGHWAY
- RESIDENTIAL
- RURAL RESIDENTIAL/AGRICULTURAL
- UNIVERSITY
- AGRICULTURAL
- FOREST
- Village Boundary
- Parcels
- Town Boundary
- Lakes
- Streams

DATA SOURCES:  
 POLITICAL BOUNDARIES: 1:24000  
 USGS Quadrangles, VCGI, 1991.  
 ROADS: 1:5000 E-911  
 Road Data, 2021.  
 SURFACE WATER: On-screen  
 digitized from 1:5000 digital  
 orthophotos using USGS 7 1/2"  
 quadrangles and 1:20000  
 color infrared aerial photography as  
 additional source material.  
 VCGI for VHD-USGS, 2001.  
 PARCELS: Town of Johnson, 2021.  
 LAND USE DISTRICTS: Town  
 and Village of Johnson, 2016

Transverse Mercator,  
 VT State Plane,  
 NAD 1983  
 Lamolite County Planning Commission  
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