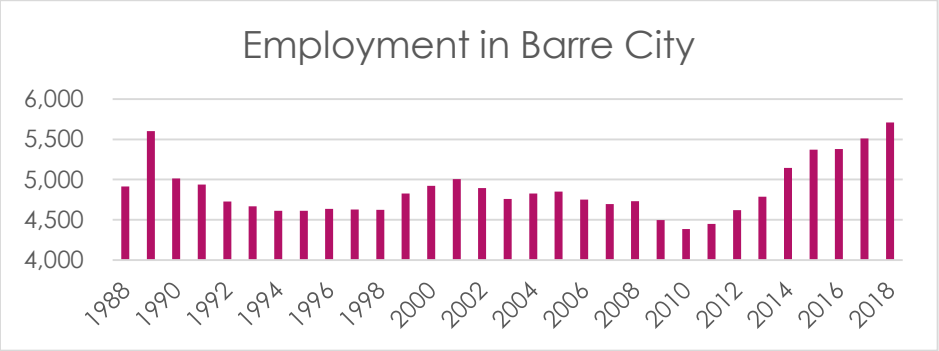
SECTION 3. COMMUNITY PROFILE

local economy

Economic Activity. In 2018, the Vermont Department of Labor reported that there were approximately 5,700 jobs and 468 employers in the city. This figure includes only those workers eligible for unemployment insurance; employment categories such as the self-employed and business owners are not included. If all employment in the city were to be counted, the figure would likely be more than 6,500 jobs.[2] The number of jobs counted by the Department of Labor each year has ranged between 4,000 and 6,000 for the past 20 years since reaching a one-year peak of 5,710 in 2018.

Figure 1. Employment in Barre City 1988 to 2018
Source: Vermont Department of Labor



There has been significant job growth in Barre City since 2010, and in surrounding towns. Berlin has seen the greatest growth in employment, surpassing Barre City in total jobs in 2002, with the trend reversing back to Barre City beginning in 2014.

During the past 20 years, Barre City has experienced growth in the following sectors:

- State Government.
- Education and health services.
- Leisure and hospitality.
- Professional and business services.
- Transportation and Warehousing.

These gains, however, have been offset by losses in the manufacturing, construction, retail trade, and wholesale trade sectors. In 1989, manufacturing accounted for nearly 25% of the jobs in the city and more than 30% of earnings; in 2007, the sector represented only 11% of jobs and 14% of earnings, and in 2018, the sector represented only 8% of jobs and 11% of earnings. Barre City should focus

[2] Estimate based on a comparison of U.S. Bureau of Economic Analysis statistics for Washington County to the Vermont Department of Labor statistics.

economic development efforts on the better performing sectors to create a healthier economy for the city in the 21st century.

Barre City businesses had gross receipts (revenues) of approximately $570 million in 2018 according to the Vermont Department of Taxes, the tenth-highest amount among Vermont municipalities. Barre City ranked eighth in total retail sales during 2018 with receipts of nearly $124 million. Tax receipts for Barre City businesses experienced neither substantial increases or decreases during the 2000's.

Labor Force. In 2018, the Vermont Department of Labor counted the city's labor force at 5,138 people with an unemployment rate of 3.4%. The size of the city's labor force has remained relatively stable during the past 20 years. Barre City's unemployment rate has historically been higher than state and regional averages. Employment has a tendency to suffer sharper declines during economic downturns and rebound more slowly during economic recoveries within the city as compared to the region or state as a whole.

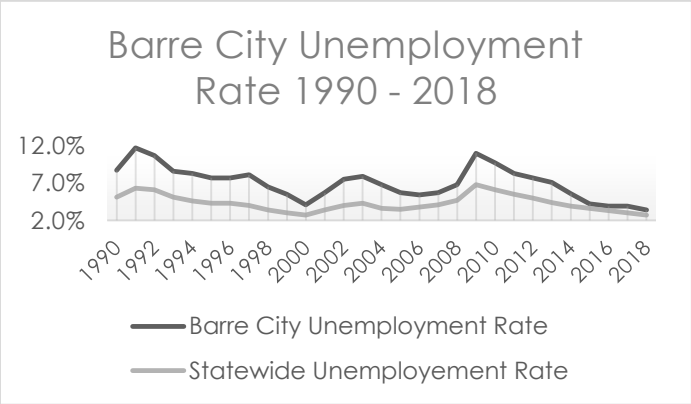


Figure 2: Unemployment in Barre City 1990 to 2018
Source: Vermont Department of Labor

Historically, a majority of employed Barre residents worked within the city. In recent years, that percentage has declined so that currently less than one-third of employed residents are working within the city. The average workforce commuting into Barre City is 66%. Living in close proximity to one's job has numerous benefits for workers, their families and the broader community – all stemming from a shorter commute. The average commute in Barre City remains low by Vermont standards, but has been increasing. Growth in the number of jobs in the city will help attract new residents, including a growing number of people seeking a lifestyle less dependent on driving.

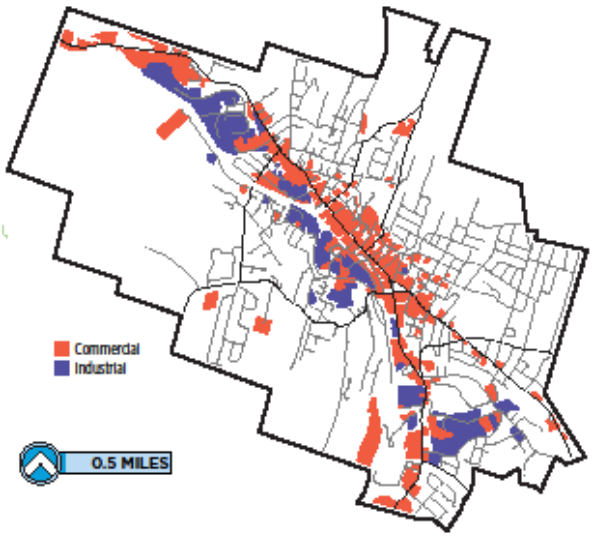
Commercial and Industrial Property. According to the 2009 Grand List, nearly one-quarter of the city's land is developed for commercial or industrial use (approximately 520 acres). Commercial and industrial property accounts for approximately 35% of the city's property tax base. While there are limited opportunities for new "greenfield" commercial or industrial development within the city, there are ample opportunities for: redevelopment of vacant "brownfield" sites; rehabilitation and adaptive re-use of the existing building stock; and full use and occupancy of under-utilized properties.

The limited availability and cost of commercial and office space in nearby Montpelier has led to a realization among some business owners that there is an ample supply of space available at significantly less cost in Barre City, only minutes away from downtown Montpelier.

A revitalization of commercial and industrial property would serve not only to bring jobs into the city, but would benefit homeowners by increasing the value of commercial and industrial property thus reducing the percentage of the property tax burden borne by residential property owners.

Voters approved adopting the Local Option Meals and Rooms Tax, and Alcoholic Beverage Tax in March 2018. It went into effect July 2018, with the first quarterly collection coming in October 2018. This allows for the City to claim 1% of meals, rooms and alcohol sold in the City, minus processing fees by the Department of Taxes, and was originally projected to raise approximately $215,000 annually. Due to errors in the way the Department of Taxes was reporting tax collections on its website, the actual collections are less than projected. The first four quarters saw Local Option Taxes of $146,000 collected. The Department of Taxes has corrected its reporting system, and revised annual projections are $150,000. As per the charter language approved by the voters, all funds received through the Local Options Tax are designated for street and sidewalk reconstruction.

Figure 3. Commercial and Industrial Property Map



downtown revitalization

Overview. Barre City's downtown business district has served as a commercial center for Central Vermont throughout our city's history. Beginning in the 1960's, the downtown's role as a commercial center began to decline as new retail development occurred outside the city around the interstate exits and along highway corridors. Many downtown retailers were unable to adapt to the changes in how and where people shopped, resulting in a cycle of downtown business closures, vacancy and disinvestment.

By the 1980's, the remaining merchants and community leaders recognized that it would take a coordinated effort to break this cycle and turn our downtown around. A non-profit main street revitalization organization was formed in the 1980's. This organization evolved into the Barre Partnership in 1997 and became a designated downtown organization under Vermont's Downtown Program.

In 1961, the BADC (Barre Area Development Corporation) was created, to focus primarily on industrial, commercial and retail development by providing information and support to potential new and existing businesses. BADC is funded annually between Barre City and Barre Town equally, and assists municipal officials in developing public infrastructure that supports community and economic development.

More than two decades later, business, government and civic leaders have completed many downtown projects and improvements. The largest project to date, a complete reconstruction of North Main Street, was completed in 2013. The public infrastructure is now in place to fully support downtown revitalization efforts. With that project complete, the Enterprise Aly street and parking lot redevelopment was completed in 2017, and the Keith Avenue Parking Lot redevelopment project was completed in the fall of 2019. These major public investments are evidence of the city's commitment to the downtown and will result an attractive, functional and quality place that the private sector will also see the benefit of investing in.

Improvements to the public spaces and infrastructure downtown are critical to the success of revitalization efforts; if the city is not willing to invest in improving its downtown, why should we expect the private sector to do so. And now that the city has made some needed improvements, we are calling upon the downtown property owners to do their part and reinvest in our downtown. This strategy is already producing results. A major new building, Barre City Place was completed in 2016 and is fully occupied, and the historic Blanchard Block's renovations were completed in 2017.

Downtown's Future Role. As part of revitalization efforts, there have been several studies done related to the future role of our downtown and the types of businesses that it will have. As part of those planning processes, residents and business owners have been asked to contribute their ideas and preferences for the downtown's future. Opportunities that have been identified as desirable for downtown Barre City include:

- Maintaining core anchor businesses that provide basic goods and services to city residents (grocery, pharmacy, hardware, banking, etc.).

- Attracting more businesses in the professional and business services sectors, which have been expanding in the city in recent years, specifically targeting the type of businesses that cannot afford to start-up or expand in nearby Montpelier given that city's higher rents and lesser availability of space.

- Building upon the community's rich history and industrial arts heritage to become an arts and cultural center (ex. theater, museum, artist studios, galleries, etc.).

- Providing a diversity of quality restaurants that would both serve those working downtown (places for coffee, lunch or to stop by after work) and that would serve to bring people into downtown in the evening for dinner.

While the retail environment has changed considerably in recent decades, it is still important for key anchor stores providing basic goods to residents, such as grocery, pharmacy and hardware, to remain located downtown. Increasing the number of people working and living downtown is needed to help support Main Street businesses like restaurants. An attractive and well-maintained downtown should entice more through-travelers to stop in Barre City, further increasing the customer traffic needed to support Main Street businesses.

Future Public Improvements. With the North Main Street Reconstruction Project, Barre City Place and Blanchard Block completed, the city has turned its attention to the future revitalization of Merchants Row and then for the area between North Main Street and Summer Street. As the primary landowner, the city is leading by example through its actions and plans to re-invest in our downtown.

granite industry

Granite was at the foundation of our city and regional economy for more than a century. By 1890, Barre City was the "granite center of the world" and the workers and artisans that had emigrated from European stone centers had built a vibrant industry and city. The 1900's saw the granite industry transformed by mechanization with associated reductions in the workforce. Even in the mid-1900's, more than 3,000 people were employed in the quarrying of Barre Gray granite in hills above the city and in the cutting, carving and finishing of the stone in the city's granite sheds for use in monuments, memorials, public buildings and more.

While granite will likely remain an important part of our community, it is unlikely that it will ever again be the primary engine of the regional economy. A diversified economy that is not dependent on the success of a single industry is not only a necessity for our city, but will create a healthier and more stable local economy.

The contraction of the granite industry has left a substantial amount of vacant, obsolete or under-utilized land and buildings in the city. While clearly a challenge, these sites and buildings also present an opportunity for new uses and revitalization. The renovation of the Rouleau Granite building on Metro Way points to the potential that exists to adapt former granite sheds to house not only industry, but commercial, service and residential uses as well.

housing stock

There are approximately 4,500 housing units in Barre City. The number of housing units has continued to increase slowly in the last decade, despite the city's decline in total population due to the reduction in household size (fewer people per home). The following is a brief overview of the characteristics of Barre City's housing stock:

- Just about half of the city's dwelling units are detached, single-family homes. The average single-family residential lot in the city is approximately a third of an acre. The median assessment for a detached, single-family home was $143,000 in 2018, compared to $200,515 in Washington County, and $215,000 for the state of Vermont. Compared to surrounding communities, Barre City home purchase prices are very reasonable.

- There are more renters than homeowners living in Barre City. The proportion of rental housing to owner-occupied housing has remained fairly stable in recent decades at roughly 60-40.

- Approximately 23% of rental units are located on the same lot as the landlord's home. Less than half of the properties with two dwelling units and three dwelling units are owner-occupied. It is assumed that rental properties with a resident landlord are less likely to have serious maintenance problems. This assumption should be verified as further data is collected under the city's rental inspection program. Increasing the number of owner-occupied rentals is considered to be desirable and a means of increasing the overall quality of rental properties while also improving the affordability of housing for both owners and renters.

- The 2010 Census counted 330 vacant housing units in Barre City, which was approximately 100 more than found in 2000, making the city's overall vacancy rate 7.3% at that time. A vacancy rate of around 5% is considered ideal for the real estate market. Based on vacant buildings being tracked by the City's Code Enforcement Office, and those homes on the real estate market, Barre City is right on par with approximately a 5% vacancy rate.

affordable and special needs housing

Affordable Housing Stock. The income level of city households and the characteristics of the city's housing stock are interdependent. Barre City has traditionally been a 'blue collar' community with a median income below regional or state averages. Much of the city's historic housing stock is composed of modest, single-family homes on small lots – what would now be described as workforce housing. Along the main corridors in and out of the city and on the streets close to downtown, many single-family homes have been converted to multi-unit rentals. Barre City also hosts a substantial share of the subsidized, elderly and other special needs housing constructed in the region in recent decades.

These factors have combined to make Barre City a major provider of affordable housing in Central Vermont. Thirty-nine percent of all the subsidized apartments in Washington County are located in Barre City (approximately 514 units) and the subsidized units account for 14% of all housing in the city (the 5th highest percentage of all Vermont municipalities).

Affordable Housing Costs. The state's definition of affordable housing is based on a household earning 80% of the county's median family income, which includes nearly 80% of Barre City residents. According to the Vermont Housing Data website, in 2017 for Barre City, nearly 41% of owners were paying 30% or more of their income toward housing costs, and 19% were paying 50% or more of their income on homeownership. Housing costs for renters include rent and utilities; housing costs for homeowners include principal on mortgage payments, interest, property taxes, and insurance. This remains a level that is typically considered unaffordable.

While homes in Barre City are more affordable as compared to homes in nearby municipalities, the city experienced a rapid inflation in housing prices during the mid-2000's similar to most communities in Vermont. Between 2000 and 2007, the average sale price for a primary residence in Barre City increased by 50% above the rate of inflation. While house prices have declined since their peak in 2007, it is still more expensive to buy a home in Barre City today than it was in the early-2000's. The median sale price of a home in 2010 was more than $40,000 higher than it was in 2000 even after adjusting for inflation.

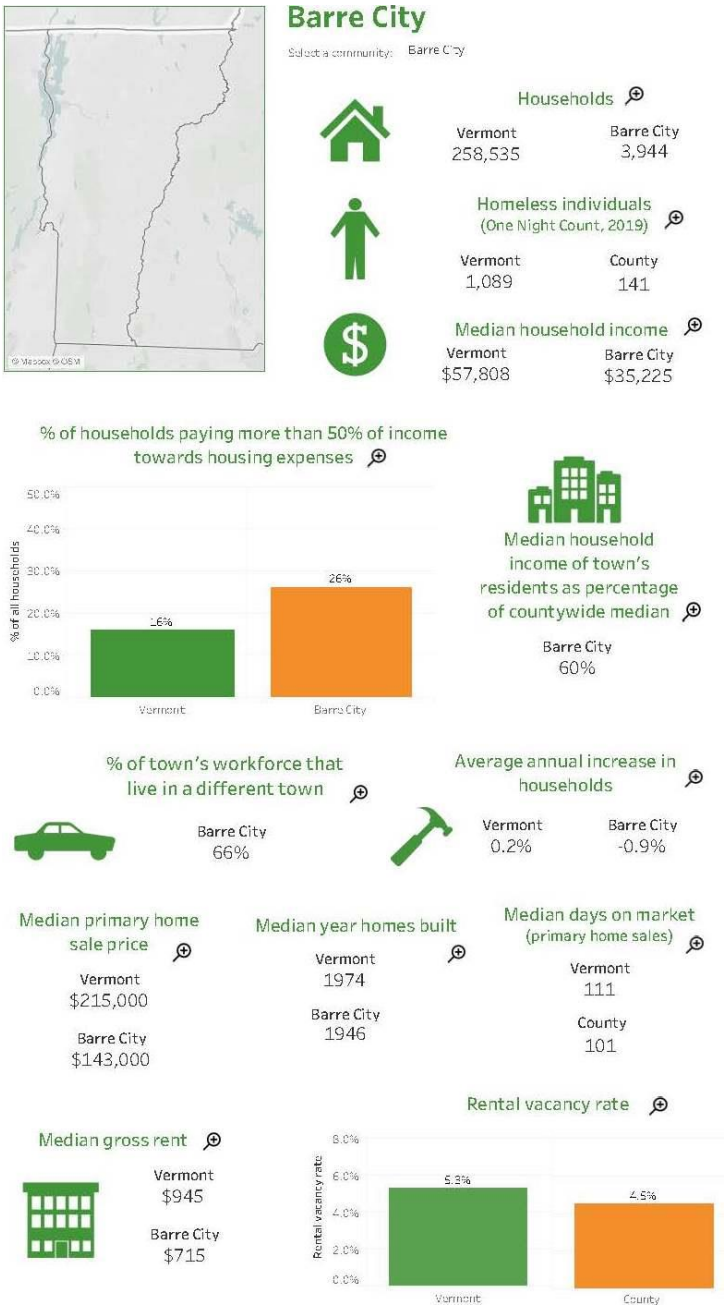


Figure 4. Barre City Housing Infographic
Source: Housingdata.org

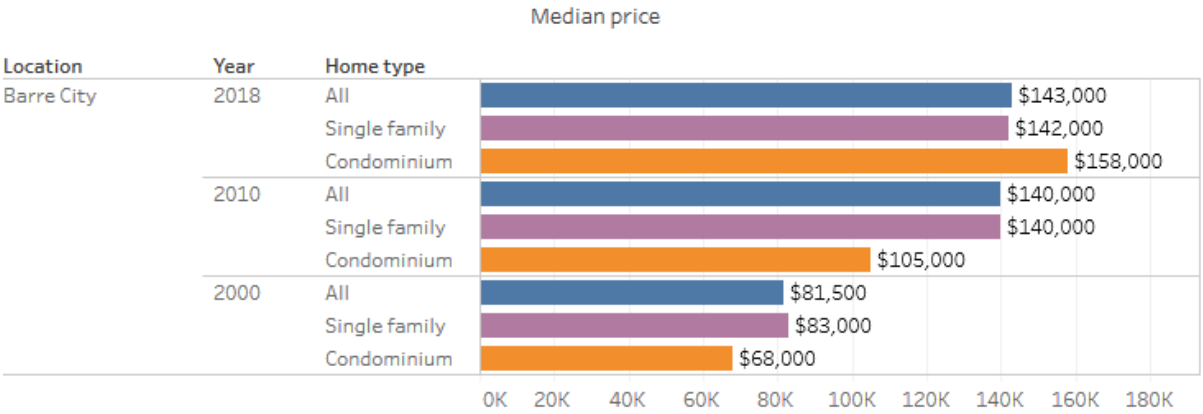


Figure 5: Housing Prices
Source: Housingdata.org

Between 2012 and 2018, there were 160 fair market sales of primary residences in Barre City and the median sale price was $143,000. Approximately three-quarters of both home sales and home assessments were in the $100,000 to $200,000 range that would be affordable to households with an annual income in the $30,000 to $60,000 range.

In the 2017, most of the market-rate apartments being advertised for rent in Barre City were one-bedroom units with a monthly rent ranging between $700 and $1,000; most did not include heat, but did include water, sewer, trash and snow removal. These apartments would be affordable for households with an annual income of $30,000 or more. There were a small number of apartments being advertised for rents between $550 and $700, as well as some larger units with rents of $1,200 or more.

Subsidized and Special Needs Housing. There are over 500 subsidized rental units in Barre City, which represents about 39% of all subsidized rentals in Washington County and approximately 20% of all rental housing in the city. Many of these units are owned and managed by Barre Housing Authority, which was established in 1964 to provide safe, decent and affordable housing for low-income residents, elders and people with disabilities. Barre Housing Authority provides affordable housing in four high-rise buildings in the city (Green Acres, North Barre Manor, Tilden House, Washington Apartments) as well as the low-rise Jefferson Apartments. The Barre Housing Authority has a 22-person staff and is governed by a volunteer Board of Commissioners appointed by the city mayor. Their funding comes primarily from the federal Department of Housing and Urban Development (HUD). Downstreet Housing and Community Development, a subsidiary of Summer Street Housing Partnership built a 27-unit low income building in 2017 and houses their offices on the first floor.

Inadequate funding has resulted in programs not being able to meet the housing needs for residents of limited means or with disabilities, the elderly or homeless, or other groups with special needs both in Barre City and around the region and state. There are waiting lists for subsidized housing units in Barre City. The state and federal government provide most of the funding for special needs housing, and those dollars are becoming increasingly scarce. Inadequate funding is the primary challenge housing organizations face as they work to secure shelter for all city residents. There is also a need for more community education and awareness to reduce community opposition to special needs housing projects.

Housing Services and Programs. The city and several partner organizations are available to assist current or potential residents with a variety of housing issues in Barre City.

- Downstreet Housing and Community Development, formerly known as the Central Vermont Community Land Trust offers programs dedicated to expanding homeownership opportunities for people of all income levels in the region from their NeighborWorks HomeOwnership Center in Barre City. City residents have access to homebuyer education workshops, pre-purchase credit and budget counseling, guidance on affordable mortgage financial products, home maintenance education, financial management education, assistance with home rehabilitation planning, and delinquency consultation services at the center. Buyers in Barre City may be eligible for the Homeland Grant Program, which provides up to $30,000 towards the purchase price of a home. Participating buyers sign a covenant in which they agree to limit the amount they can sell the property for in the future. At the end of 2018, there were 15 homes in Barre City that had been purchased through this program and will remain perpetually affordable. By the end of 2017, Downstreet has purchased an additional 17 homes in the City. Downstreet Housing operates revolving loan funds that can be used to provide down payment assistance for income-qualified borrowers or to finance home improvements to correct health and safety issues, create handicapped accessibility, and make improvements that will conserve energy.

- Capstone Community Action Council, formerly known as the Central Vermont Community Action Council provides energy conservation and weatherization modifications to homes and apartments. These are available at no cost to residents who meet income eligibility guidelines regardless of whether the home is rented or owned.

- USDA's Rural Development program provides direct loans to low-income homebuyers who do not quality for conventional financing. Loan rates are subsidized based upon total household income. Rural Development also offers low-interest lows and grants to very-low income families and individuals who own a home in need of repair.

- Barre City has a rental housing inspection program to establish and maintain a minimum housing quality level that has been operating since 2004. In 2012, the Barre City Fire Department took over responsibility for the inspection program when the Building Department was absorbed into the Planning and zoning office in order to increase staff capacity for this program. The Code Enforcement Office inspects each rental unit every four years and responds to complaints. The city also has a database to track inspections and violations. The first four-year cycle of inspections by Code Enforcement reflected a total of 1,327 housing inspections. Most inspections have resulted in identification of one or more violations that need to be addressed and most have been resolved in a timely manner. Regular analysis of this data should be completed to assess the program's effectiveness at increasing the quality of the city's rental housing and to identify any patterns or issues that the city should focus on in future years.

- The Vermont Housing Conservation Board has a Lead-Based Paint Hazard Reduction Program that provides financial and technical assistance to income-eligible landlords and homeowners to eliminate lead-based paint hazards.

housing needs

Housing Choices. Barre City must be an attractive place for people of all ages across economic and social groups. The displacement of people not being able to afford where they live anymore will lead to gentrification of neighborhoods. To meet the needs of today's residents and to attract future residents, diverse housing choices need to be available that reflect the lifestyles and needs of many different demographics. Providing a mixture of housing types results in an approach that is market-sensitive and flexible. Communities with a variety of housing types are more likely to retain residents even as their lifestyles change.

Barre City's housing stock is largely composed of detached homes including single-family homes, duplexes, and larger homes that have been split up into three or more units. There are detached, single-family homes at a range of price points, although there are more homes available in the low- to mid-range than on the high end. There is a large supply of affordable rental housing, but little higher-cost/higher quality apartments. There are fewer choices for households, such as singles or older couples, who might want a smaller home with minimal maintenance requirements. Some of these segments of the housing market could be met through new housing in the upper floors of downtown buildings. Some of the remaining open land in the outlying portions of the city may be suitable for additional townhouse style development.

Housing and Neighborhood Quality. Homes and neighborhoods have a lifecycle and require periodic improvements and ongoing maintenance as they age. With that investment, historic homes and neighborhoods can continue to offer residents many benefits and provide a very desirable quality of life. However, if not adequately maintained and upgraded, older homes and neighborhoods can slip into decline. This downward cycle can be quickly reversed in its early phases and becomes significantly costlier and difficult to turn around over time.

Investment in the city's homes and neighborhoods can have significant direct and indirect benefits to individual residents, the community as a whole, and to city government. Private investment in home improvements and public investment in community infrastructure and facilities can help:

- Improve a neighborhood's 'curb appeal' resulting in increased home values and residents' pride in their property and neighborhood.
- Preserve affordability through reduced energy costs.
- Reduce the dissatisfaction that could lead to residents moving out of a neighborhood and increasing the neighborhood's ability to attract new residents.
- Generate additional employment opportunities and business revenues.
- Stabilize assessments and taxes.
- Reduce police, fire and code enforcement calls as residents take better care of and pride in their properties and neighborhoods.

The city's efforts to address property maintenance issues are intended to provide a foundation for neighborhood improvement and private investment in the city's housing stock. Homeowners or

landlords considering whether to spend money improving their property want assurance that their property values will not be harmed by the failure of a neighbor to perform adequate maintenance. The city's ongoing investment in the maintenance, upgrading and reconstruction of public infrastructure – largely focused downtown and in the older neighborhoods nearby – is also intended to provide a foundation for neighborhood improvement.

Regional Housing Distribution. In recognition that housing is a regional issue, the Central Vermont Regional Planning Commission adopted a Housing Distribution Plan as part of its Regional Plan in 2008 and updated in 2018 to encourage the development of more meaningful and practical local housing plans and to promote the sustainable and efficient distribution of housing region-wide. CVRPC formulated the Distribution Plan with the aim of ensuring that all municipalities continue to contribute fairly to meeting the region's total housing need, and balancing the burdens and benefits of providing housing among Central Vermont communities.

Another goal of the Distribution Plan was to curtail sprawl and inefficient patterns of growth in Central Vermont. Therefore, regional centers like Barre City (where housing can be built in proximity to jobs, services and transportation networks and can be served by existing infrastructure) are expected to provide a greater share of the region's future housing than outlying rural communities.

CVRPC specifically asked municipalities to include a detailed map identifying the location and number of housing units created since municipality last updated its plan, and a map showing preferred locations for 80% of their housing allocation consistent with current or proposed zoning. Barre City's growth rate is very slow compared to other municipalities of the same size in different counties, therefore, the maps are shown on pages 3-12 and 3-13 have changed very little since 2012.

The Distribution Plan allocates 295 new housing units to Barre City to be built between 2015 and 2020. Residential growth at an average rate of nearly 50 new units per year would be significantly greater than the increase in housing that has occurred in recent years (an average of 3 units per year during the 2000's, and only 1-2 units annually in 2017 and 2018) and would be similar to growth rates last experienced during the 1970's. While the city is seeking to encourage growth in our population and housing stock, it should be noted that the Distribution Plan was developed at the peak of a housing boom and that the subsequent recession has reduced the regional demand for new housing.

CVRPC recognizes that conditions have changed since adoption of the Distribution Plan and it is not their intent that the allocation be interpreted as a quota or target that must be met for this plan and the city's planning processes to be regionally approved. Instead, CVRPC wants municipalities to be more cognizant of where housing growth is occurring and be more proactive in planning where it should occur in the future.

Barre City's first response to the requirements of the Distribution Plan in the 2010 City Plan focused on assessing the availability and suitability of undeveloped land for residential development, and on determining whether there were zoning or other factors within city control limiting potential for residential development. While some minor modifications to city regulations and policies were recommended at that time and then later implemented, it was apparent that market forces were driving housing development in Barre City and that zoning, infrastructure, or other factors within city control were not creating any significant roadblocks. This finding remains valid since the 2014 City Plan and no further changes to city regulations or policies are needed to facilitate housing development.

In the ensuing years, Barre City has been actively engaged with a number of community planning and revitalization efforts. This ongoing work has led to recognition that more 'downtown' housing would have multiple benefits for the city. It has also become apparent that the opportunities for creation of new single-family neighborhoods in Barre City are limited and that future growth will be primarily generated from other types of housing development. We are also actively engaged in efforts to improve the quality of our housing stock, particularly affordable rental housing, so that buildings are not allowed to deteriorate to the point of becoming unsafe and unhealthy places to live.

Consequently, we have refined our vision for future housing growth to reflect a desire to focus more development activity, including construction of new housing units, within our downtown core. We envision that much of the "new" housing in Barre City developed over the life of this plan will be the result of the replacement or major rehabilitation of existing buildings within our downtown core. The land use chapter of this plan discusses specific recommendations for future housing policies at the neighborhood level throughout the city.

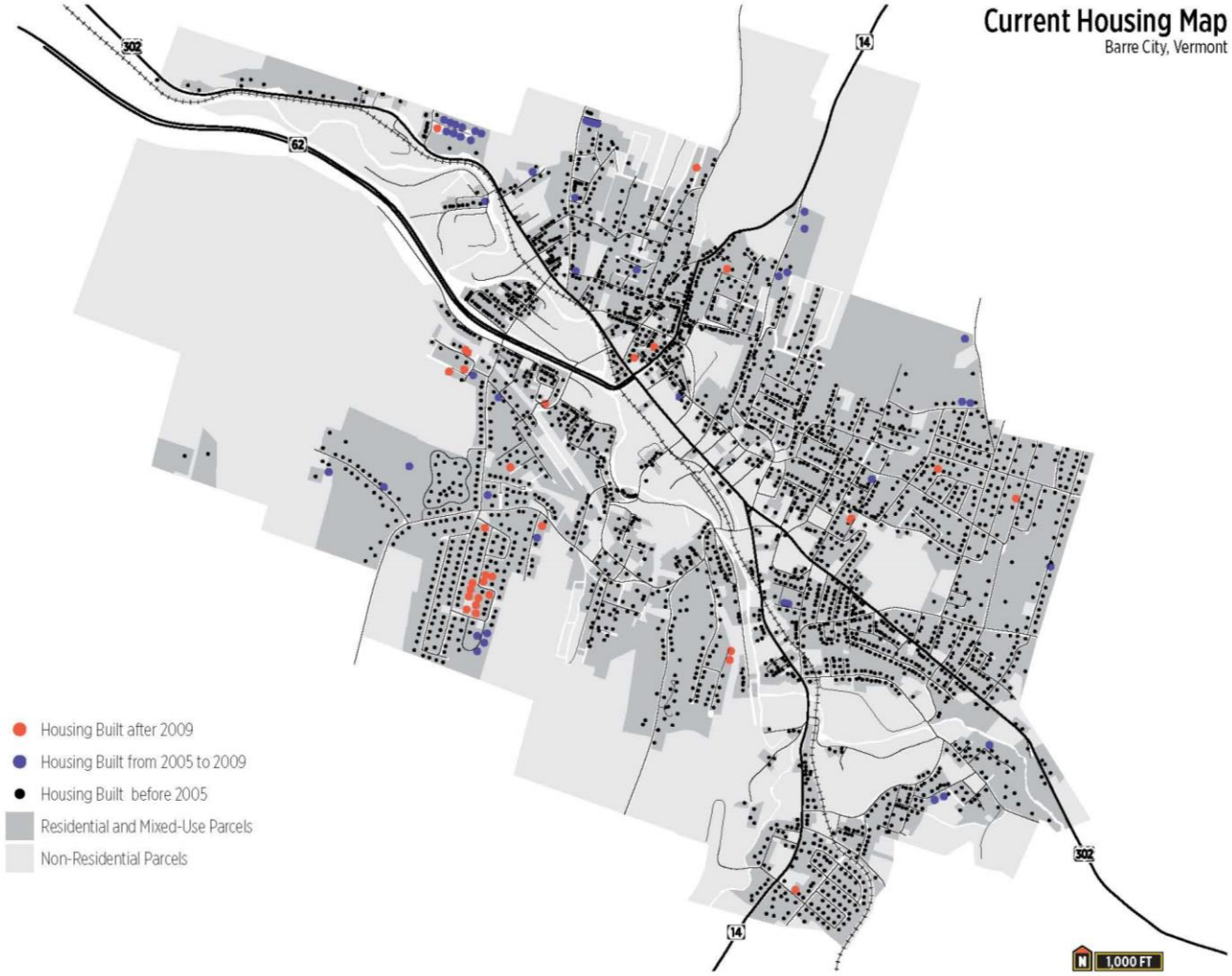


Figure 6: Current Housing Map

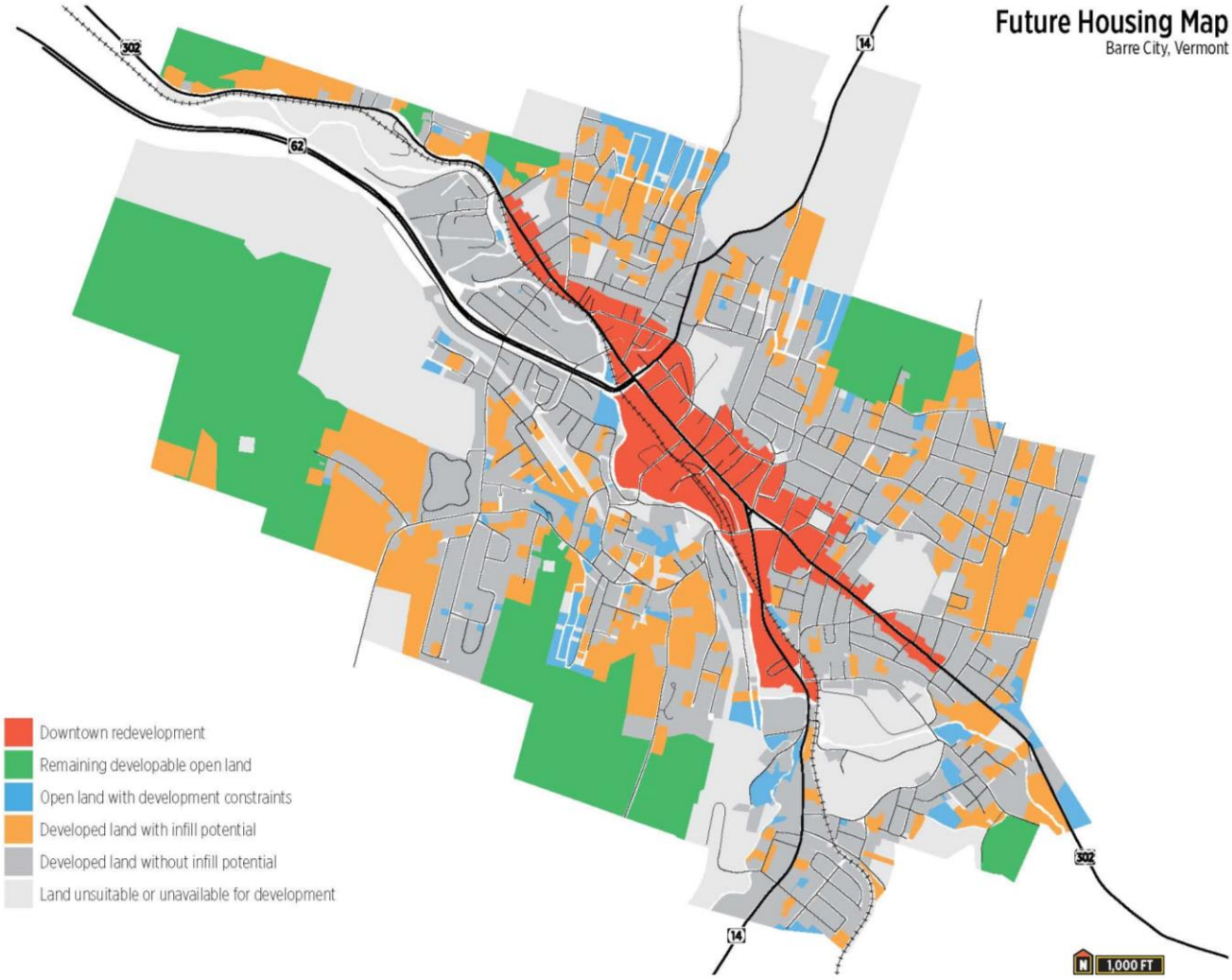


Figure 7: Future Housing Map

transportation infrastructure

Road System. Barre City has a well-established road system that is not anticipated to require major changes in configuration except for limited new residential streets and possible modifications to various intersections to improve traffic flow. There are nearly 50 miles of roads in Barre City, and the city is responsible for the repair and maintenance of more than 47 miles of those roads. The VTransparency website (https://vtrans.vermont.gov/vtransparency) is a good source for ongoing daily traffic counts that reflect activity on our roads.

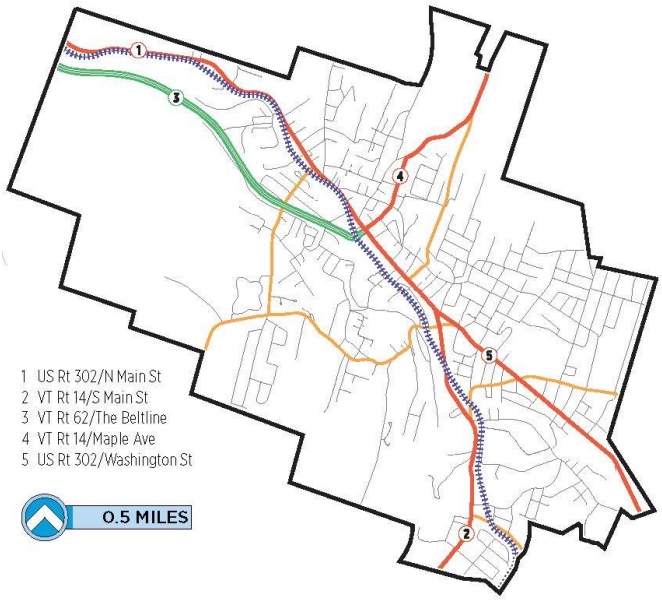


Figure 8. Street Network Map

Approximately 20% of the city's annual budget ($1.7 million in 2018) is allocated to roads, including annual funding for street reconstruction of more than $337,500. The cost of road repair and maintenance is substantially affected by petroleum prices through the cost of vehicle fuel and asphalt. Given that the life span of an asphalt road is typically 10 to 15 years, the city currently needs to resurface 3 to 5 miles each year to keep up with street maintenance.

Highways. The city road system includes two highways, Vermont Route 14 and U.S. Route 302, which function as regional arterial highways carrying the majority of traffic traveling through the region as well as the majority of traffic moving around within the region. Route 14 carries north-south traffic between Royalton and Newport. Route 302 is a popular, east-west route for those traveling to/from New Hampshire and Maine. Another state highway, Route 62, travels five miles between the city and Interstate 89 and is classified as part of the interstate highway and expressway system. These highways are the only examples of the "arterial" road type in Barre City.

Barre City has accepted Route 14 and Route 302 as Class 1 roads, which gives the city greater control over the use and design of these roads, but also makes the city responsible for their repair and maintenance. The state remains in control of and responsible for Route 62.

Road Safety and Congestion. A number of safety and congestion issues have been identified on the city's more heavily traveled streets and at busy intersections:

- Congestion and delays at the intersections along North Main Street have been largely addressed by the North Main Street Reconstruction Project (discussed below).

- The Route 14 and Quarry Street intersection has been studied and a traffic signal will be installed, along with improved turning lanes and the widening of Quarry Street beginning in the summer of 2022.

- No action has been proposed to address concerns at the Route 14 and Circle Street intersection, the Summer and Seminary Street intersection, and the Route 302 and Berlin Street intersection.

The presence of two arterial highways in downtown Barre City generates a substantial amount of through traffic. In 2018, approximately 16,000 vehicles a day travel on North Main Street between Maple Avenue and Washington Street. This traffic is both a blessing and a curse for our downtown revitalization efforts. The highways bring travelers through downtown, many of whom would otherwise not drive into the city and some of whom can be enticed to stop at local businesses and attractions. The highways also bring congestion, noise and dirt, and may discourage some people from walking around downtown. The North Main Street Reconstruction Project has reduced congestion, mitigated the negative impacts of the high traffic volume to some degree, and created a downtown atmosphere that encourages travelers to stop in Barre City.

Despite the recent improvements, the fact remains that the segment of Route 302 running through the downtown has two conflicting uses. As a major transportation corridor it includes both through (transport trucks and other travelers moving within and passing through region) and local (downtown residents, shoppers and workers) traffic. Those motorists whose destination is downtown, then park and become pedestrians. The parking and pedestrian traffic hinders the flow of through traffic, while the through traffic generates noise, dust and odors and hampers pedestrians.

Barre City's response to high traffic volume will be to pursue traffic calming strategies (such as on-street parking, crossing bulb-outs, and lane narrowing), ensuring that the speed of traveling vehicles is low enough to preserve the safety of those who are walking and biking. The priority of the city is to maintain an inviting environment for shopping and recreation, and to protect property values on arterial and connector streets. Enforcement and street deign that support the posted speed limits has a small effect on the total time it takes a driver to cross the city, but a large effect on livability and the value of properties in our densely settled community.

Bridges and Culverts. Barre City is responsible for the maintenance of 15 bridges. Two deficient bridges have been replaced since 2005 – the Granite Street bridge and the Prospect Street bridge. All the bridges over the Stevens Branch have now been replaced, so there are no longer any bridges in the city that are structurally or functionally deficient. The May 2011 flood destroyed the Harrington Avenue bridge over Gunner Brook; and was removed during the flood mitigation efforts completed for that area. The 2009 Stevens Branch Watershed River Corridor Plan includes a list of bridges and culverts that should be improved to address stormwater and flooding issues.

Bridges and culverts are a critical interface between the built and natural environment. During a storm or flood, if the amount of water attempting to pass under or through a bridge or culvert exceeds the structure's capacity, the structure can wash out, and the road infrastructure and nearby development can be damaged. To reduce the potential for storm and flood damage, bridges and culverts need to be sized appropriately to accommodate swollen streams and drainage ways. The city currently requires culverts of a size adequate to carry a 25-year storm in accordance with state and federal requirements. Larger culverts could be required, which would increase initial construction costs, but would reduce the likelihood of future flood damage. At a minimum, the city should consider requiring culverts that will be carrying a stream to be adequately sized for a 50-year storm.

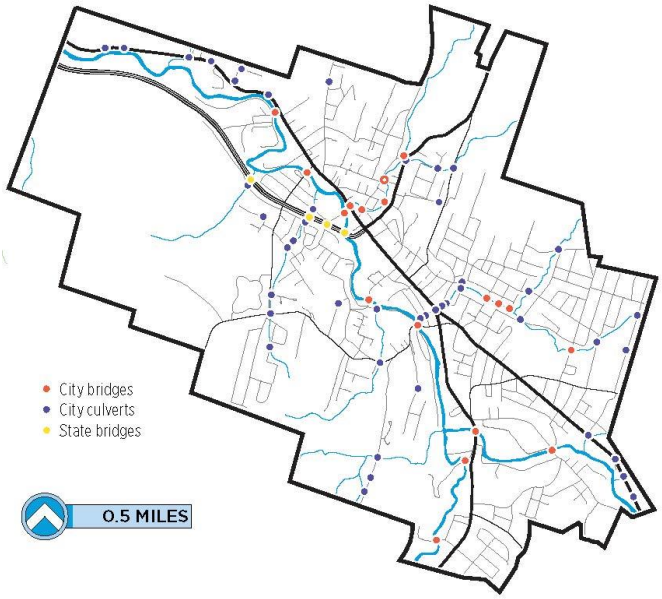


Figure 9. Bridge and Culvert Map

Bridges and culverts also need to be inspected and maintained to remain fully functional. Debris can accumulate under or in bridges and culverts, reducing the amount of water they can accommodate. Preventing debris – yard waste, sediment and trash – from entering drainage ways and rivers can help maintain flows and reduce flooding potential. There are also a number of abandoned abutments located in the city's rivers. These structures reduce the carrying capacity of the stream channels, and create an opportunity for debris to back up and cause upstream flooding.

Neighborhood Streets. The majority of Barre City's road mileage is composed of neighborhood streets. Most of these streets are intended to serve local traffic and it is important to discourage their use by through traffic in order to protect quality of life in the city's residential neighborhoods. Strategies to avoid neighborhood streets being treated as connector streets involve: narrowing travel lanes, designating one-way, and closing streets to vehicle traffic. These streets were built over time to varying standards. To address their deficiencies, the city is engaged in an ongoing street reconstruction project list, which involves taking the street down to its base, replacing underground infrastructure and rebuilding the street. Connector streets in Barre City should be officially designated, and designed to different standards than neighborhood streets. Any street not a designated connector street should be designed to minimize or prohibit through traffic.

Due to historical land development practices prior to the enactment of the city's subdivision ordinance, Barre City has a number of "paper streets" that can create a challenge to building on some lots in the city. A "paper street" is a strip of land that was intended to become a street, but the street was never built and the strip of land remained privately owned despite the fact that adjoining lots were created. Decades later, ownership and therefore the right to use some of these "paper streets" to access adjoining lots or install utilities (thus allowing the lots to be built upon) is uncertain. Tracing the ownership of these strips of land and resolving the uncertainties could facilitate infill development on some of the city's undeveloped lots.

Sidewalks. The recent "Complete Streets" movement has focused attention on the importance of developing roadways that can be used by everyone not just drivers – pedestrians, bicyclists, children, seniors, people with disabilities, etc. Sidewalks are a critical component of a "complete street" and allow people to safely walk both as a means of transportation and as a way to improve health and fitness.

Barre City has approximately 21 miles of sidewalks, but the majority of older neighborhood streets were not constructed with sidewalks. There has not been a recent inventory of the condition of existing sidewalks in the city. The city has also not developed a long-range plan for extending the sidewalk system, although new sidewalks have been built in recent years, usually as a result of grant funding. When sidewalks and other pedestrian infrastructure are installed or repaired, precedence should be given to projects that provide the highest value connection: where demand is great and where an improved walking connection will significantly increase the value of nearby properties in Barre City.

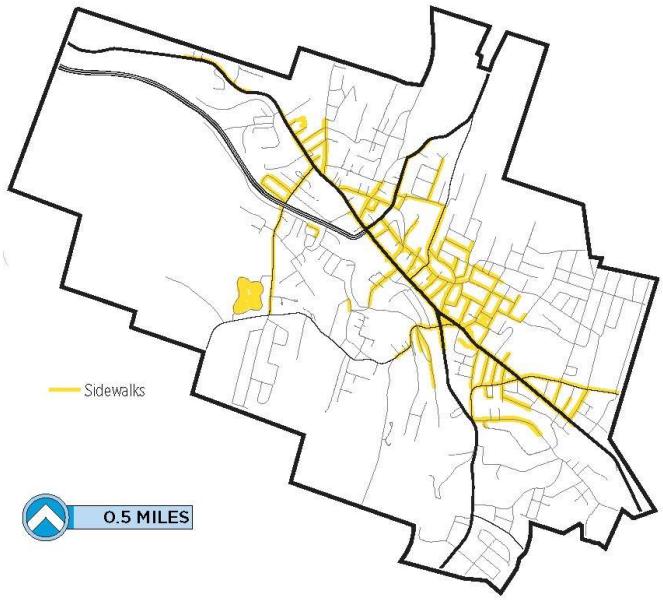


Figure 10. Pedestrian Network Map

Not only is funding needed to build new sidewalks, but existing sidewalks need to be maintained. The lifespan of a typical concrete sidewalk is 20 to 40 years, which suggests that the city should be replacing between ½ and 1 mile of existing sidewalk annually. While the city allocates funds annually for sidewalk maintenance, the amount is not enough to keep up with the need to repair or replace existing sidewalks. Often sidewalks are not replaced due to their condition but for other reasons such as a need to tear up a good sidewalk to access underground infrastructure or a need to meet

accessibility requirements in high traffic areas, etc. Downtown sidewalks are maintained by city staff, and most residential neighborhood sidewalks are maintained by the property owner of which the sidewalk runs through.

The city needs a sidewalk plan or policy that would address the following questions:

- What sidewalks are critical due to high pedestrian traffic?
- What are the key destinations for pedestrians?
- Where are new sidewalks needed?
- What external funding is available for new sidewalk construction?
- Should all new neighborhood streets include sidewalks?
- Who should pay for sidewalk repairs (abutting owners or city)?
- Who should be responsible for clearing snow off sidewalks?
- When should sidewalks be removed?
- What is the process for notice when sidewalk removal is proposed?

Paths and Trails. Both formal multi-use paths and informal trails exist within the city. The paths may provide alternative travel routes for pedestrians and bicyclists, while the trails are primarily used for recreation. The city's multi-use paths are not well-integrated into the transportation system and currently function as individual segments rather than a connected network. As mentioned above, the city has not developed a long-range plan for meeting the needs of pedestrians and bicyclists.

For a number of years, the city has been actively engaged in planning for the Central Vermont Regional Path (CVRP), which when complete will run from the railroad junction in Montpelier, through Montpelier, Berlin, Barre City, and into Barre Town. Some portions of the CVRP are already constructed, while other portions are in various stages of planning and design. Barre City and Barre Town are currently studying the segment of path between Depot Square and the existing Millstone Hill Path in Barre Town (the "City-Town Connector" segment). One segment of the path was constructed at the rear of the newly renovated Enterprise Aly parking lot, and the Metro Way path is to be constructed during 2020. The city continues working on plans for another segment of the CVRP, which will extend between the Granite Museum and Depot Square in downtown Barre (the "Museum" segment).

Since 2005, both Barre City and Town of Barre have established Path Committees to move forward with the implementation of the CVRP. Planning for the CVRP was re-activated as a result of a $500,000 bequest from Charles Semprebon to each community. Both committees have identified potential paths that would support the connection of the two municipalities, as was Charles Semprebon's wish.

The CVRP will enhance recreational opportunities, and will provide links to important cultural and historic resources. It will connect neighborhoods to each other, and residential areas to downtown merchants. The path will provide a mode of access to work, school, and community amenities. It will promote a healthy lifestyle by providing a safe and enjoyable place for families and friends to exercise and socialize. The portions of the CVRP within Barre City could also serve as a backbone for a future bike and pedestrian network within the city.

Parking. The city is the principal provider of downtown parking with more than 500 parking spaces in several municipal lots in addition to on-street parking. The availability of public parking downtown has made it possible to reduce or eliminate on-site parking requirements, which supports our efforts to increase the occupancy of downtown buildings. Today, Barre City has an ample supply of public parking, and with the redevelopment of the Enterprise Aly Parking Lot and the creation of the Keith Avenue Parking lot, supply is good. Those willing and able to park and walk a short distance to their destination will seldom have difficulty finding a space downtown. As the number of people working, living and visiting downtown increase, additional parking will be needed as discussed below. Improvements are also needed to increase the quantity and quality of accessible parking spaces and to provide safe pedestrian access within parking lots.

Additionally, two specific types of parking are needed downtown:

- Short-term parking conveniently located to downtown businesses. Much of this need could be met by relocating long-term parking (for building employees and residents) away from the prime parking spaces during business hours.

- Overnight parking for downtown residents. Parking overnight from November 15 to April 1 is prohibited on all city streets to facilitate snow removal and is limited in public parking lots year-round. The city also restricts the length of time vehicles may remain in most public parking spaces without being moved (some city parking is by permit only and overnight/long-term permits are available for those spaces). Changes to these policies and/or construction of a parking structure (see discussion below) could address the limited supply of overnight parking downtown. Barre City should adopt a modern winter parking policy that allows street parking city-side.

The city's public parking was not enforced during the Main Street Reconstruction Project, and prior to the project, meters and the parking meter program really was not a big priority. When the Main Street project was substantially complete in the fall of 2012, a city staffed parking team was created to ensure that meters, tickets and the parking lots got the attention needed. The city has a plan to improve the Merchants Row area and the area between North Main Street and Summer Street, where much of the public parking is located. The Keith Avenue Parking lot was created from the removal of the Ormsby Computer Store building and lots adjacent to, after the construction of the Downstreet Housing Apartment building was complete. The Pearl Street Parking lot, behind the Downtown Rentals building (fka the City Hotel) and a local tavern is slated to be redeveloped in the summer of 2020, turning the parking spaces ninety degrees, and egress will be onto Pearl Street, rather than Summer Street. These projects will improve traffic circulation, parking organization, pedestrian safety, stormwater management, and aesthetics, and were a significant public investment.

Parking fees were resumed in the fall of 2012 after the Main Street project was substantially complete. A system of varying rates was implemented to encourage desired parking behaviors (ex. making long-term parking in prime spots more expensive or only allowing users to purchase a limited amount of time in a prime spot) and address some of the current concerns about downtown parking. There is a webpage under the Police Department devoted to parking, the meters and enforcement. There are also individual maps of each of the lots that show the different types of parking, from metered rated spaces, to handicapped, to shared use (daytime and overnight parking spaces), as well as the spaces designated by Council to specific parking per parking agreements.

The city included in the TIF District application the locating of a multi-level parking structure downtown to address the increased demand for parking that was anticipated as a result of City Place, Downstreet Housing and further redevelopment of downtown buildings. A parking structure would provide a greater number of spaces in a more compact area, potentially freeing up some of the land now used as parking lots for green space or infill development. As with the improvements to public parking lots discussed above, this is an expensive project that would likely require a revenue stream to offset construction costs and ongoing operation. The city has been able to fund a portion of parking improvements and construction through TIF district revenues through the Enterprise Aly reconstruction, the Keith Avenue development and the Pearl Street redevelopment. The groundwork for a parking structure was created when the Keith Avenue parking lot was completed in 2019. Until parking conditions become might tighter in Barre City, a parking structure or additional parking lots should only be considered after a careful cost-benefit analysis.

Public Transit. Barre City is home to a large number of residents who cannot drive or do not have access to a vehicle. This group includes senior citizens, youth, people with disabilities, people whose driving privileges have been revoked, or people who cannot afford a vehicle and people who have chosen to live without a vehicle. According to the 2010 Census Bureau estimates, there are approximately 620 households living in Barre City without a vehicle (15% of all households in the city, the second highest rate of households without a vehicle in Vermont). For these residents, public transit is a necessity. The result of the 2020 Census will be a good indicator if this gets better or not.

The region's primary public transit provider is Green Mountain Transit Authority (GMTA), which merged with Chittenden County Transportation Authority (CCTA) in 2011. Currently, the city is served by several of GMTA's fixed bus routes – the City Commuter, which travels between downtown Barre and Montpelier, and the Barre Hospital Hill, which travels between Barre City and Berlin. There is also the Hannaford Shopping Special, traveling each Tuesday from N. Main Street onto to S. Main Street into Barre Town, to the Hannaford's Supermarket. The City Route Mid-Day travels the same as the City Commuter during off-peak hours. And finally, the Barre Link Express runs between the UVM Medical Center in Burlington to the District Court House on N. Main Street. Connections are possible from these two routes to other local bus routes and to commuter buses that travel outside the region to Burlington and St. Johnsbury. GMTA also operates several special shuttle routes each week primarily designed to transport residents of the city's senior and public housing to shopping centers and medical services. In 2018, GMTA provided over 30,000 trips to Barre City residents under the special transportation services (deviations), like medical treatment, prescription shopping and Washington County Mental Health needs.

GMTA continually re-evaluates bus stops and routes and is working to better align its routes and service with riders' needs. While the service provided by the existing routes should be maintained, the city recognizes that as it is currently operated, GMTA is not able to meet the transportation needs of some transit-dependent residents. The following needs have been identified:

- A circulator bus route serving Barre City neighborhoods. Montpelier has a circulator route and the estimated cost to Barre City for such service would be $30,000 to $40,000 each year.

- Extension of the City Commuter route to Graniteville, which would serve the employees of Wilson Industrial and the South Main Street corridor.

- Service for those who work second or third shift, weekends or other non-traditional hours.

- More efficient connections between buses.

- Service for high school students, particularly those living too far to walk/bike to school. The lack of public transit for high school students generates traffic congestion within the city at the start and end of the school day.

More formal bus shelters with route maps and schedules would also encourage more people to ride the bus.

GMTA also provides an elderly and disabled transportation program that includes:

- Deviated fixed routes
- Washington Co. Mental Health transportation services
- Medicare transports
- Meals site programs
- Central Vermont Substance Abuse transportation services
- Ticket to ride (an allowance program for non-ambulatory and ambulatory services for disabled persons and their families)
- Ridematch program
- PATH and various other third party transports

Rail. The Washington County Railroad line travels through Barre City largely paralleling Main Street. This line and others built in the 1870's and 1880's made the rapid expansion of the granite industry and associated growth of the city possible by linking the quarries in the region to distant markets. After a long period of dormancy, the rail line was reactivated by the Vermont Rail System and began shipping freight in 2010, and continues, known as the "Granite Train" moving grout between the quarry and a staging area. With higher fuel prices likely in the future, rail access is again becoming an important economic development asset that Barre City can capitalize on.

To accommodate increased freight traffic and future passenger rail service, upgrades to the tracks and road crossings are needed. The rail line crosses 15 streets in Barre City, and most of those crossings are marked only by signage indicating presence of the rail line. Currently, trains must travel very slowly through the city due to the condition of the tracks and crossings.

Fortunately, the use of the land adjoining the rail corridor in Barre City did not change significantly during the period when rail service was suspended. Most of the corridor remains in industrial or commercial use, and there has been little new residential development that would conflict with resumption of rail traffic. However, when trains were not using the rail corridor, people began to use it as an informal pathway through the city. This has created a conflict now that rail service has resumed. The return of trains to the city has also brought increased noise, which people are no longer accustomed to hearing. The city, however, has no control over the use of the rail line and its associated impacts on nearby property and can do little to address the concerns that some citizens have raised about the resumption of rail service.

Passenger rail service is available in Montpelier on Amtrak's Vermonter line, which runs once each day between Washington, DC and St. Albans.

Air. Edward F. Knapp State Airport, a general aviation airport in Berlin, is located four miles from downtown Barre City. The state-owned airport does not offer scheduled airline service, but can accommodate corporate or chartered planes. The airport has fueling and repair facilities. The airport

completed major improvements in 2010, which included constructing a new taxiway, repaving the runway, and expanding the apron near the terminal area. The airport contains two paved runways, one measuring 5,000 by 100 feet and the other 4,000 by 100 feet, and has electronic navigation equipment.

The nearest commercial airport is Burlington International Airport, which located approximately 40 miles from Barre City.

travel patterns & trends

Traffic. The city's most heavily traveled road segment is North Main Street with approximately 15,000 vehicles per day traveling through downtown. Despite perceptions to the contrary, the amount of traffic downtown has not increased significantly in recent decades. Traffic has increased on Route 62, however, due to development near the interstate in Berlin.

Commuting. During the past 20 years, the commuting patterns of city residents have changed. Fewer residents are working in the city and the places that Barre City residents commute to are becoming increasingly varied and distant. This change has implications for residents' transportation needs, and it affects many other aspects of daily life – household budgets, time available to participate in leisure, family or community activities, childcare needs, etc. At the same time that more residents are commuting longer distances, a greater percentage are also driving alone to work. Reversing the current commuting trends would benefit Barre City economically, socially and environmentally.

transportation improvements & planning

North Main Street Reconstruction. The reconstruction of North Main Street from Route 62 to the City Hall Park, completed in 2013, replaced all utilities, street lighting, sidewalks, completely reconstructed the road surface, revitalized the streetscape to improve the appearance of downtown and optimized the timing of the lights to facilitate traffic flow. The North Main Street Reconstruction Project replaced our downtown sidewalks and redesigned the crosswalks to improve pedestrian safety. The revitalized streetscape has greatly approved the appearance of our downtown.

Access Management. Vehicles entering and existing roadways contribute to congestion and create opportunities for accidents. Managing where and how vehicles can safely enter or exit a roadway is particularly important on heavily traveled, densely developed and/or high-speed corridors. Access management is a set of techniques that can be used to control access to such roadways in order to increase the capacity of these roads, manage congestion, and reduce crashes.

Once development occurs, it is often difficult and costly to make changes to vehicular entrances/exits making it important to consider access management during the development review process. Although the city's main roads are already largely developed with only limited access control, new development and re-development should include consideration for access management. The city's revised zoning ordinance includes some access management provisions including limiting the number of driveways per lot and controlling driveway design to some extent.

Involvement in Transportation Planning. The Planning Commission has had only limited involvement in various transportation issues in the city. Most of the transportation planning has been

managed by the City Engineer and the Transportation Advisory Committee. The Planning Commission should become more involved in transportation planning as it relates to land use patterns. The Transportation Advisory Committee, the Paths, Routes & Trails Committee and the Planning Commission will meet not less than quarterly to ensure coordination to improve pedestrian safety and access, decrease traffic congestion and speeding, and align neighborhood development with the goals of the Municipal Plan.

water

Water System. Municipal water is available throughout Barre City. As of 2011, the city water system included the following:

- **Water Supply**. Thurman W. Dix Reservoir and Dam are located approximately four miles east of the city in the Town of Orange. The dam impounds water from the Orange Brook, creating the reservoir that supplies the city with drinking water. Barre City owns the dam, which was built in 1950, the reservoir and 1,200 acres of surrounding land. At normal levels, the reservoir has a surface area of 119 acres and stores 1,070 acre-feet of water. The reservoir has a drainage area of approximately 11.4 square miles. The city has adopted a Source Protection Plan, as required by state law, which was mostly recently updated in December of 2015.

- **Filtration Plant**. A water filtration plant located at 164 Reservoir Road in the Town of Orange, which went online in 1994 and is staffed by 3.3 city employees. The operating cost of the water filtration plant is approximately $1.6 million per year, and has remained steady since 2011. The plant has a maximum treatment capacity of 6 million gallons per day (2 million gallons per day for each of the three filtering units).

- **Distribution System**. There are approximately 78 miles of distribution piping that deliver water to more than 4,100 service connections. There are two pump stations - one for Fire District #8 and one for the Cobble Hill area. System pressure is maintained throughout the remainder of the distribution system by the height of the water in the Clearwell Storage Tank.

- **Storage Tanks**. The water system includes three storage tanks: the 2 million gallon Clearwell Storage Tank located at the filtration plant; the 375,000-gallon Bailey Street Storage Tank located at 190 Bailey Street; and the 1 million gallon Pierce Road Storage Tank located at 23 Pierce Road, which is a cast in place concrete tank built in 2003. The Pierce Road tank was part of a project to upgrade the city's water distribution system to ensure an adequate supply of water to fight a major fire.

- **Fire Hydrants**. There are approximately 270 fire hydrants connected to water system. There are both city-owned and private fire hydrants in Barre City. In recent years, some developments have been required to install hydrants when deemed necessary for firefighting purposes. The city maintains the private hydrants and charges the owners an annual service fee.

Some areas of Barre Town are served by the city water system: South Barre Fire District #2 (Route 14/South Barre Road); Richardson Road area; Route 14/East Montpelier Road area; Cassie Street area; Camp Street area; Trow Hill area; and Tamarack Lane area.

Water Department. The Water Department, which is part of the Public Works Department, has a service department at the Public Works complex on Burnham Street. The Water Department has up

to five employees. The Water Department and Wastewater Treatment Department share one billing clerk and a meter-reader.

System Capacity and Use. The city water system currently supplies an average of 1.3 million gallons of water per day to its customers. The maximum daily water demand in recent years has been approximately 3.4 million gallons. The capacity of the filtration plant is 6 million gallons per day.

Planned Improvements. The Water Department and Wastewater Treatment Department operate on revenues generated from rate payers. City water and sewer rates need be at a level to continue to fund required improvements to keep the departments' infrastructure and operations updated and efficient. Planned improvements to the city's water transmission and distribution system include: water meter replacements, replacement of lines on Quarry Street, upgrades to the west side transmission main loop, and establishing a regular flushing program for small diameter lines. There were significant upgrades made to the water treatment plant between 2008 and 2012, and currently there are no planned improvements for that facility.

wastewater

Wastewater System. Municipal wastewater is available throughout Barre City. As of 2018, the city's wastewater system included the following:

- **Treatment Facility**. The city's wastewater treatment facility, located at 69 Treatment Plant Drive, has the capacity to treat 4 million gallons per day with a current demand of 2.7 million gallons per day. The plant discharges treated liquid effluent into the Stevens Branch of the Winooski River. The facility first went online in 1960 with major upgrades in 1977 and 1995. An upgrade in 2002 increased the plant's capacity from 3.4 to 4.0 million gallons per day.

- **Collection System**. There are approximately 58 miles of sanitary sewer piping.

Barre City's wastewater system also serves parts of the Town of Barre. As of 2011, the town had an allocated of 1.5 million gallons per day and a current demand of 1.1 million gallons per day. The city works closely with the Town of Barre regarding future capacity needs for those areas of the town served by the plant.

Wastewater Department. The Wastewater Treatment Department, which is a division of the Public Works Department, has up to 4.3 employees.

System Capacity and Use. In 2011, our wastewater facility had a committed reserve capacity of less than 0.5 million gallons per day and an uncommitted reserve of nearly 0.9 million gallons per day (enough to serve more than 4,000 additional homes). The wastewater treatment facility is limited to a maximum discharge of 7,306 pounds of phosphorus annually based on the Lake Champlain Phosphorus TMDL (total maximum daily load) established in 2002. Recent upgrades to the treatment plant have greatly improved the plant's effectiveness at phosphorus removal. The plant currently discharges 4.5 pounds per day or 22% of the maximum allowed. It should be noted, however, that the limit on phosphorus does not increase if the plant's flow increases.

Planned Improvements. As with many cities, Barre City faces the challenge of repairing and upgrading our aging water and sewer lines. To the extent feasible, replacement of old pipes should

be coordinated with street reconstruction and scheduled as part of an ongoing capital improvement program. Planned improvements to the city's wastewater infrastructure collection system include: continued replacement or lining of trunk lines, replacing lines on Washington Street and Quarry Street; and siphon replacement. At the wastewater treatment facility, improvements are needed to the primary clarifiers, grit removal, and the dewatering room.

storm sewers

Barre City does not have a municipal stormwater utility, but is responsible for a significant amount of stormwater infrastructure. (Also see discussion of stormwater in the Natural Environment chapter of this plan.)

The city has completed a major upgrade of the downtown stormwater system as part of the North Main Street Reconstruction Project. Stormwater from North Main Street and the buildings along it is now collected and directed to retention ponds. With the completion of this project, a major source of stormwater entering the city's wastewater treatment plant has been eliminated. As a result, the potential for combined sewer overflows during heavy storms (when the amount of stormwater flowing into the treatment plant overwhelms its capacity resulting in sewer back-ups and/or releases of untreated wastewater to the river) has been significantly reduced.

As the city continues to upgrade its underground infrastructure, remaining stormwater drains flowing into the sanitary sewers will be separated so that stormwater is not directed to the wastewater treatment plant.

solid waste

Solid Waste Management. Barre City government does not directly provide trash and recyclable collection and disposal services. City households and businesses can contract with one of several private, licensed haulers that pick up trash and recyclables. Barre City is a member of the Central Vermont Solid Waste Management District (CVSWMD), along with 18 other municipalities in the region. As a CVSWMD member, the city's obligation under state law to plan for solid waste disposal is met by the district. The district's Solid Waste Implementation Plan, as most recently adopted, is incorporated into this plan by reference.

Landfill Siting. The district's waste is being hauled through transfer stations and to the New England Waste Services of Vermont, Inc. Landfill in Coventry, Vermont. The landfill owner recently received approval in 2018 to expand the landfill by an additional 51 acres to accommodate the state's trash. The Moretown Landfill closed in early 2013, making the Coventry landfill the only disposal site in the state.

Barre City's zoning ordinance allows recyclables and solid waste services as conditional uses within the general business and industrial zones only.

In May 2015, CVSWMD proposed amendments to its Solid Waste Implementation Plan including new landfill siting criteria. The new criteria would not allow a landfill within Barre City, however, landfill development in neighboring towns could have a substantial effect on the Barre City road system and city property owners. Thus far, CVSWMD has been unsuccessful in its efforts to site a new lined

landfill disposal facility in the district. It has turned its attention to the zero-waste campaign educating people on recycling, composting, reuse and reducing toxins.

Solid Waste Generation. Each Vermont resident currently generates an average of one ton of waste per year. Currently about one-third of that waste is recycled, reused or composed, while two-thirds is landfilled or incinerated. CVSWMD has adopted a goal of working to achieve "zero waste" in the district and believes that its zero waste goal can help create new businesses and jobs through waste-based economic development, strengthen existing businesses, and protect public health and the environment. It is estimated that landfilling/incineration creates one job per 10,000 pounds of material, while composting creates four jobs, sorting and processing of recyclables creates 10 jobs, remanufacturing 25 jobs, and reuse business between 28 and 296 jobs.

Recycling. CVSWMD has had a mandatory recycling ordinance since 1994 that requires all households and businesses in the district to recycle: glass (all colors), cans (tin, steel and aluminum), foil and pie plates, aerosol cans, plastics #1-#7, newspaper, magazines, catalogs, paperbacks, white and colored office paper, paper mail, envelopes, brown and colored paper bags, boxboard, corrugated cardboard and phone books. CVSWMD is also actively promoting composting. Residents can purchase home composting units from the district at a discounted price, and the district has established programs to compost food waste from schools, restaurants and other businesses.

Act 148, Vermont's universal recycling law went into effect in 2012, and bans 3 major categories of materials from trash bins. They are 1) leaf, yard debris and clean wood; 2) food scraps; and 3) "blue bin" or specific types of recyclables (glass, metal, plastic, etc.). In 2018, the Act was revised for food waste being banned in your trash and in the landfills beginning July 1, 2020, and that haulers must provide for food scraps collection to non-residential customers and to apartment buildings with 4 or more units. And, the 2019 amendment to the law includes the prohibition of single use plastics products such as plastic bags at a point-of-sale situation, some plastic straws and stir sticks, and Styrofoam cups and containers, meat and fish packaging.

Former City Landfill. Barre City is responsible for the ongoing monitoring of its closed, unlined municipal landfill on Farwell Street. Leachate from this former landfill has contributed to reduced water quality in nearby Gunner Brook, which the state now classifies as an impaired waterway (see Natural Environment chapter of this plan). The site is now known as Tarquinio Recreation Field and has a baseball field and soccer fields, as well as other open space areas.

electric utility

Electric Distribution and Service. Green Mountain Power (GMP) provides electricity in Barre City, including three-phase power to the city's industrial and commercial areas. GMP operates three substations within the city and has a maintenance facility located on Blackwell Street. GMP provides the city with adequate electric services with minimal disruption, and has historically had the lowest average rates for any major investor-owned utility in New England. In recent years, GMP has expanded and upgraded its infrastructure to meet customer demand for reliable and affordable power.

Electric Transmission Infrastructure. VELCO (Vermont Electric Power Company) owns the 115-kV transmission line that brings electricity to the city. The transmission line corridor travels through the city, parallel to Route 62, then crosses Prospect Street and continues in a southeasterly direction.

VELCO's 2009 Vermont Long-Range Transmission Plan included a proposed project to upgrade the Barre substation (in Barre Town on Upper Prospect Street near the city line) and install a second 115/34.5 kV transformer by 2018 to address identified reliability issues, and was completed during the 2019-2020 construction season. Upgrades to the North End Substation on Railroad Street, and South End Substation on S. Main Street were completed in 2017. The project has been worked on throughout 2019 and expects to be done in early 2020.

Efficiency Utility. Efficiency Vermont, the statewide energy efficiency utility, provides technical advice and financial incentives to businesses and homeowners. Efficiency Vermont can assist with identifying cost-effective steps to lower energy costs through energy-efficient buildings, equipment and lighting. Contact them directly at 888-921-5990 or visit their website at www.efficiencyvermont.com. More information about energy usage and conservation is presented in the Energy chapter of this plan.

Power Generation. As of 2011, there were no electricity generating facilities operating in Barre City, but the city has completed a project to generate power at the Nelson Street Pressure Reduction Valve Control Vault (a component of the city's water system). Water arrives at this site from the treatment plant at a high pressure, which must be lowered before the water enters the distribution pipes that serve downtown. The energy produced as a result of this pressure reduction is harnessed to generate electricity. The power is net metered and offsets the electricity used within the city's water system.

telecommunications utilities

Wired Telephone Service. Consolidated Communications provides wired telephone and DSL (digital subscriber lines for high-speed internet) service in Barre City. Their district office within the city is located downtown on Elm Street; this location ensures that DSL service, which is based on distance from the district office, is available throughout the city.

Wireless Telephone Service. Wireless telephone service is available in the city from several national providers. Several companies have antennas mounted on the roof of North Barre Manor and the City Auditorium, which provide coverage throughout most of the city and generate revenue to offset the operating costs of the Civic Center. Cellular antennas have also been mounted on several locations throughout the City, including poles and rooftops. The city encourages the continued practice of mounting antennas on existing structures in a manner that results in the infrastructure being effectively blended into its surroundings and not highly visible.

Cable Service. Charter Communications offers cable service throughout the city. In addition to television service, customers may opt to receive phone service and/or broadband internet service over cable. Charter Communications has a sales and service location downtown on North Main Street.

Satellite Service. Both television and broadband internet service are also available via satellite from multiple national providers. The city's zoning regulations allow such satellite dishes to be installed in residential districts without a zoning permit.

Fiber Optic Cable. FirstLight, a fiber optic company, has multiple miles of fiber optic network across seven Vermont counties, including Washington County, and downtown Barre City. The networks provide high-capacity connections to community anchor institutions (schools, libraries, colleges, state government offices, public safety communications networks, etc.).

Central Vermont Fiber is a nonprofit organization made up of 18 Central Vermont towns, of which the City is a member. The goal is to have fast, dependable and affordable internet to every Vermonter within the member towns. They are currently seeking funding to aid in the planning process, and hope to be a self-sustaining entity once up and running.

Public Wi-Fi. There is a public Wi-Fi network in our downtown business district. As more people are using wireless devices (laptops, smart phones, tablet computers, etc.), they expect to have a connection wherever they are and wherever they need it. A free public Wi-Fi network supports efforts to attract office and professional jobs downtown, and allow those workers to patronize nearby businesses while taking their work along with them.

energy supply and demand

Electricity. Green Mountain Power (GMP) is the utility provider of electricity in Barre City, as described in the Public Utilities chapter of this plan. According to their 2018 Integrated Resource Plan, it states that in 2017, natural gas-fired generation, nuclear, other low- or no-emission sources, and imported electricity (mostly hydroelectricity) provided roughly 99% of our region's electricity. Our share of electricity generated by natural gas increased from about 14% in the year 2000, to over 40% in 2017. The remainder of our region's energy supply comes from a combination of oil-fired, wind, hydroelectric and nuclear power sources, with nuclear the second-largest source at over 20%, despite the closings of nuclear power plants in Vermont and Massachusetts.

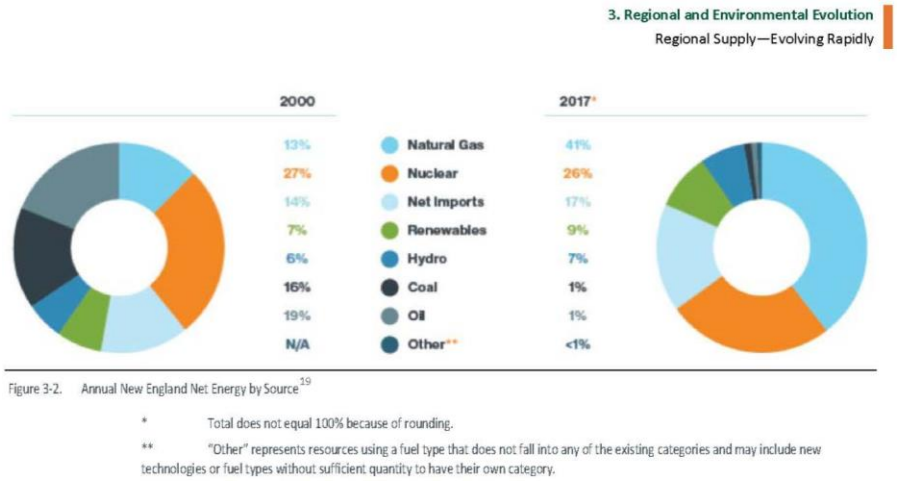


Figure 3-2. Annual New England Net Energy by Source[19]

* Total does not equal 100% because of rounding.

** "Other" represents resources using a fuel type that does not fall into any of the existing categories and may include new technologies or fuel types without sufficient quantity to have their own category.

Source: Green Mountain Power 2018 Integrated Resource Plan – Regional and Environmental Evolution chapter

Table E-1 provides an overview of the current electricity consumption for residential and commercial uses in Barre City. This information is intended to provide a baseline of energy use whereby targets for conservation and efficiency will be based.

Table E-1 – Current Electricity Use by Sector

Use Sector	Current Electricity Use (in megawatts)
Residential	27,033
Commercial & Industrial	43,108
Total	70,141

Source: Efficiency Vermont

Space Heating. Most buildings in the city are heated with fuel oil, which is supplied by a number of private companies including three dealers located within the city. More than 70% of all Barre City residences, and more than 80% of owner-occupied homes, are heated with fuel oil, based on data from the Census Bureau. The remaining buildings are heated with propane, electricity or wood. Heating accounts for about half of the energy consumed in the average Vermont home.

Table E-2 provides an overview of the current fuel sources being used to heat homes in Barre City. The information comes from the 2015 U.S. Census Bureau's American Community Survey. While there are some errors in the data, the information in Table E-2 notes that the majority of homes in Barre City are still using fuel oil as their primary source for home heating. Also, Table E-3 provides an overview of commercial heating. This information will provide the baseline for commercial efficiency targets in each of the three target years.

Table E-2 – Current Residential Heating by Fuel Source

Fuel Source	Number of Households	Percent of Households	Square Footage Heated	Total Annual BTUs (in billions)
Natural Gas or Propane	698	17.1%	837,832	50.3
Electricity	381	9.4%	414,576	24.9
Fuel Oil	2,744	67.5%	4,266,952	256
Coal	19	0.5%	37,696	2.3
Wood	141	3.5%	269,898	16.2
Other (includes Solar)	83	2.0%	136,228	8.2
No Fuel	0	0.0%	0	0
Total	4,066	100%	5,963,182	357.8

Source: U.S. Census Bureau – American Fact Finder – 2015

Table E-3 – Current Commercial Heating Energy Use

	Total Commercial Establishments	Estimated Thermal Energy Use per Commercial Establishment (Millions of BTUs)	Total Estimated Thermal Energy Use (Millions of BTUs)
Commercial Energy Use	444	593	263,292

Source: Vermont Department of Public Service & Department of Labor

Table E-4 identifies the percent increase in efficiency that would be needed in each of the target years (2025, 2035, and 2050) in order for Barre City to meet its residential and commercial thermal efficiency targets.

Table E-4 – Thermal Efficiency Targets by Target Year

	2025	2035	2050
Percent of Residential structures to be weatherized by Target Year	20%	42%	92%
Percent of Commercial structures to be weatherized by Target Year	22%	33%	61%

Source: Vermont Department of Public Service; Vermont Energy Investment Corporation – Long Range Energy Alternatives Planning; U.S. Census Bureau – American Fact Finder – 2015; Vermont Department of Labor

Fuel Supply. At any given time, local distributors of heating fuel and gasoline generally have only enough supply on hand to meet customer demand for a week or less, and are dependent on regular deliveries from interstate and international suppliers. If the supply chain were to be disrupted, local inventory would quickly be depleted.

Transportation. There are approximately 10 gasoline stations in Barre City that provide vehicle fuel. According to the U.S. Census Bureau's American Community Survey (2005-2009), Barre City residents own more than 5,600 vehicles. Approximately 16% of city households do not have a vehicle (2nd highest percentage in Vermont), while around half own two or more vehicles. More than 80% of employed city residents drive alone to work, while only 1% take public transportation.

Fuel consumption related to transportation remains one of the largest uses of energy in Barre City. Table E-5 identifies the amount and cost of energy related to transportation for Barre City.

Table E-5 – Current Transportation Energy Use

Transportation Category	Municipal Data
Total Number of Vehicles	5,549
Average Miles Driven per Vehicle	12,500
Total Miles Traveled	69,362,500
Average Annual Gallons of Fuel Used per Vehicle	576
Total Gallons of Fuel Used per Year	3,729,167
Transportation BTUs (in Billions)	163
Average Cost per Gallon of Fuel	$2.31
Fuel Cost per Year	$8,614,375.00

Source: U.S. Census Bureau – American Fact Finder – 2015; Vermont Agency of Transportation

Information related to fuel switching to address transportation related energy needs will be discussed later in this section. Specifically, Table E-12 provides specific information regarding fuel switching for transportation related uses.

municipal energy use

City government has direct control over its energy use and reducing energy costs has a direct bearing on the municipal budget. One of the most direct public benefits of municipal energy efficiency initiatives (or the generation of below-market rate energy from renewable resources) is that the savings are passed on directly to taxpayers.

Barre City has begun to lead by example on energy efficiency and conservation by conducting energy audits of many city facilities and buildings. The city has been undertaking various recommended improvements to reduce municipal energy use. Energy efficiency upgrades were made at the BOR in 2011 with new energy efficient lighting, and the operating costs' savings are approximately $4,000 per year. There were new chillers installed in the summer of 2019 for efficient ice making and cooling. In the Alumni Hall portion of the building, an air blower test was completed, that resulted in air sealing, insulation added in many locations of the building, and replaced several windows and doors. The need for a new boiler remains high on the list, and it is hopeful to have it replaced in 2020. The city anticipates replacing the inefficient lighting at the Auditorium in the next few years. City Hall just completed the installation of two replacement boilers for the hearing system in 2019, with other needs such as door and window replacement, HVAC duct work reviewed for efficiency and replacement as well.

Most streetlights in the city are owned by GMP and the city is charged a flat rate per light, irrespective of actual energy use. Many Vermont communities have substantially reduced electricity costs by surveying existing streetlights and making adjustments to their location and number to ensure public safety while reducing unnecessary nighttime lighting.

As part of the North Main Street reconstruction project, the utility-owned conventional streetlights were replaced with city-owned energy-efficient lights, and the Enterprise Aly and Keith Avenue

parking lots received new efficient lighting as well. Similar replacements are anticipated as the city moves forward with improvements to Merchants Row and other public properties. Replacing existing streetlights with new LED lights can reduce energy consumption from 25% to 75%, and the LED lamps last up to 10 times longer than conventional technologies. When the efficient streetlights are city-owned, the cost savings can flow directly to taxpayers.

Changes in energy costs from the 2014 Plan to 2018 as shown below, show reductions in electricity due to the Morrison Solar Farm's reductions, City Hall's boiler replacements, and the change in technology for vehicles.

There are a number of opportunities for reducing the amount of petroleum used to power the city's vehicle fleet. Conventional vehicles could be replaced with vehicles that could use alternative fuels or blends, and/or more fuel-efficient vehicles. Fuel could be conserved by reducing the amount of time vehicles are left idling and by reducing miles traveled through improved routing, or combining or eliminating trips.

Figure 11. FY 2018 Municipal Energy Costs

	Electricity	Fuel Oil	Bottled Gas	Vehicle Fuel
City Hall	$ 11,638	$ 32,524		
Auditorium	$ 17,483	$ 16,391	$ 342	
BOR	$ 46,427		$ 9,880	
Public Safety Building	$ 25,629	$ 631	$ 18,681	
Public Works Garage	$ 8,306	$ 13,322		
Street and Traffic Lighting; EV Stations	$ 137,903			
Water Filtration Plant	$ 89,592		$ 15,960	$ 1,413
Wastewater Treatment Facility	$ 123,307	$ 56,247	$ 41	$ 4,397
Fire Department			$ 44	$ 16,684
Police Department				$ 25,412
Street Department				$ 42,973
Water Department	$ 12,387	$ 5,258		$ 6,998
Sewer Department	$ 3,111	$ 1,299		$ 5,165
Facilities Department	$ 4,857	$ 630		$ 8,198

renewable energy resources

Renewable energy can be generated from sunlight, wind, water, organically derived fuels, including wood and agricultural sources, waste heat and geothermal sources. There are many opportunities within Barre City to generate renewable energy, particularly of a scale and type that can be incorporated into the city's higher-density built environment such as solar panels or geothermal systems.

It may be feasible to generate hydropower by re-tooling the infrastructure already in place in the city's rivers and at city-owned sites. Use of waste heat from industrial activities to generate electricity or provide space heating for nearby buildings may be feasible in Barre City. Additionally, the downtown business district may be a suitable location for district heating.

Solar. The potential to generate energy from wind is limited in Barre City, but solar power could be a feasible option, particularly for residences or when incorporated into the design of new or renovated buildings. Solar PV (which generates electricity) and solar thermal (which generates hot water) systems comprise the fastest growing renewable energy sector in Vermont, and there are many in-state incentives available to make these technologies more affordable for homeowners and businesses.

Barre City installed a five-kilowatt solar PV system with Novus Energy in 2016. The first site chosen within the City limits didn't work out due to environmental constraints, therefore, an alternate site within the Town of Barre was chosen. This solar array provides for energy return on the city's municipal buildings. The City has the option to choose a second site, based on the original contract with Novus, and once a site is located, the City should enact on the additional project.

Barre City also signed Resolution 2018-05 on April 24, 2018 joining the State of Vermont and other Vermont communities and businesses in the Vermont Climate Pledge Coalition to embrace sustainable land use and lifestyle principles and practices by encouraging the City to work with committees, third-party contractors and other organizations, along with the general public to minimize greenhouse gas emissions derived from city activities and spending.

Building and Site Design. Building and site design is an important factor in promoting passive solar. Buildings that are oriented close to true south (within 30 degrees) maximize available solar energy, as long as the solar radiation is not blocked. Through the placement of windows on the south wall, installation of thermal mass (such as concrete, brick, quarry tile, or water), and adequate insulation, as much as 60% of a building's space heat can be derived from the sun. Careful design and placement of windows can greatly reduce the energy required for daytime lighting.

Municipal building codes, zoning bylaws and subdivision regulations can all have a direct bearing on the promotion of solar energy through strategic siting, landscaping and building design and construction standards.

Hydro. Barre City owes its existence and location to the availability of waterpower, which was harnessed by early industries. While the city's rivers are no longer generating energy, that renewable resource still exists with potential to be used in new ways that are less disruptive to the natural environment.

The 2007 City of Barre Energy Recovery Study analyzed the feasibility of several low-impact hydroelectric energy recovery projects. As discussed in the Public Utilities chapter of this plan, the city completed work on one of the recommendations, the Nelson Street PRV project. The study also looked at various options for generating hydropower at the Dix and Lower Orange Dam/Reservoir, and concluded that 140,000 to 390,000 kilowatt hours of electricity could be produced annually, while maintaining the site's primary function as the municipal water supply. This could offset the approximately 660,000 kilowatt hours of electricity consumed at the city's water treatment facility each year. The projects would have a payback of 10 to 15 years, which could be reduced if the city obtained grant funding.

Geothermal. Energy can also be generated in urban settings through geothermal systems that take advantage of the relatively constant temperature below the frost line. During the winter, a heat pump extracts heat from water circulated through underground pipes to distribute throughout the building. The system is reversed in the summer, with the heat pump extracting heat out of the hot air in the building and sending warmed water into the earth to be chilled. The installation price of a geothermal system can frequently be greater than that of a conventional heating and cooling system, but the additional costs are typically returned in energy savings in five to ten years.

District Heating. As a dense urban center, downtown Barre City is a suitable location for district heating. District heating systems distribute steam or hot water to multiple buildings. In Barre City, this heat could be generated from a renewable source, like wood chips, or potentially by waste heat from industry. There are a number of potential locations that could be redeveloped for this use including the BOR property and the former coal-gasification plant on Williams Lane. Many district heating systems are also designed to be cogeneration plants that generate electricity as well as heat.

Renewable Generation. Table E-6 provides a list of the existing renewable energy generation by source in Barre City, and Table E-7 identifies the potential generation by source. This data has been developed based on a mapping exercise completed by the Central Vermont Regional Planning Commission. Specific resource maps are included at the end of this section, including locations of existing renewable generation.

Table E-6 – Existing Renewable Generation by Source

Source of Generation	Megawatts	Megawatt Hours
Solar	.4	488
Wind	0	0
Hydroelectric	.01	50.11
Biomass	0	0
Other	0	0
Total Existing Generation	.41	538.21

Source: Vermont Department of Public Service; Central Vermont Regional Planning Commission

As a reference, Table E-8 at the end of this section provides additional information on existing renewable generation.

Table E-7 – Potential Renewable Generation by Source

Source of Generation	Megawatts	Megawatt Hours
Rooftop Solar	6.29	7,709
Ground-mounted Solar	161.92	198,575
Wind	9.89	30,315
Hydroelectric	0	0
Biomass and Methane	Unknown	Unknown

Other	Unknown	Unknown
Total Potential Generation	178.09	236,599

Source: Vermont Department of Public Service; Central Vermont Regional Planning Commission

Table E-8 – Renewable Energy Generation by Target Year

	2025	2035	2050
Total Renewable Generation Target by Year (in megawatt hours)	14,563	23,302	58,255

Source: Central Vermont Regional Planning Commission

The targets outlined in Table E-7 are based on a share of the Central Vermont Region's renewable generation target. This allocation has been provided based on a per capita basis. These targets represent the amount of renewable energy generation needed for Barre City to meet its portion of the Regional energy generation targets by 2050. Barre City should ensure that specific land use policies do not limit the ability for energy generation to fall below these targets.

Additionally, the potential generation identified in Table E-8 represent only a handful of options for renewable energy generation. For example, biomass and methane is listed as an unknown generation potential because these sources are not resource specific. That is to say, a district heat facility could be located in Downtown Barre City and provide a source of renewable heating to be applied towards the generation targets. Since biomass can be transported, the specific generation numbers are unknown, whereas wind and solar have specific conditions that need to be met and can be measured in order to have successful generation of those resource. Based on the targets in Table E-8 and the potential generation in Table E-9, Barre City has adequate resources available to meet their renewable generation targets. Specific maps related to potential energy generation and siting are included at the end of this section.

energy efficiency and conservation

Energy efficiency and conservation are critical components of solving current energy problems because it is more cost effective to reduce energy consumption than to produce more energy. Efficiency measures also have direct economic benefits to municipalities, residents and businesses by lowering energy bills. Improved efficiency is also an economic development strategy. Approximately 80¢ of every dollar spent on energy efficiency remains in Vermont, while approximately 80¢ of every dollar spent to purchase energy leaves the state.

Efficiency Vermont. Vermont was the first state in the nation to create a utility, Efficiency Vermont, to coordinate the state's energy efficiency programs in 2000 (see the Public Utilities chapter of this plan). According to their data reports sent to the Central Vermont Regional Planning Commission, between the years 2016 to 2018, Efficiency Vermont had assisted 5,517 customers and completed 3,540 projects for commercial or industrial building owners in Barre City with efficiency improvements resulting in annual energy savings of almost 2900 megawatt hours of electricity. The utility had also worked with 572 residential property owners in the same timeframe resulting in efficiency improvements that save 4,150 megawatt hours of electricity each year. Based on this data coupled with Capstone Community Action's weatherization program work, 575 housing units in the City have been weatherized and residential customers have collectively saved more than 7,500 MWH of electricity annually. In addition, the City's businesses have completed projects saving more than 3,000 MWH of electricity annually. Assuming an annual average residential electric usage of 6,500

kwh (or 6.5 MWH), the total savings from Barre City (residential plus business) would be enough to power 1,615 homes per year.

Table E-9 – Annual Electricity Efficiency Targets – All Sectors by Target Year

	2025	2035	2050
Increased Efficiency & Conservation	1.5%	7.3%	15.2%

Source: Vermont Energy Investment Corporation – Long Range Energy Alternatives Planning

Weatherization Assistance. EnergySmart is a program of Capstone Community Action, located in Barre City (formerly Central Vermont Community Action Council), a Central Vermont institution that has been operating for more than 50 years. They are part of a large, stable organization that will be around for the long term. Because EnergySmart is a social enterprise of Capstone, they have a unique mission. The energy renovation work helps fund Capstone's endeavors.

Capstone provides weatherization services free of charge to homeowners and renters (with landlord approval) who meet income and other qualifications. For qualified households, Capstone will conduct an energy audit of the home, assist the household with applying for free lighting and appliance upgrades (where applicable) from Efficiency Vermont, and provide renovation construction services from a qualified crew, including materials and supplies. Capstone also offers educational workshops designed to help homeowners understand the steps they can take to make their homes more energy efficient and trains homeowners to make efficiency improvements, which are open to all city residents. For more information, contact Capstone directly at (800) 639-1053, www.capstonevt.org, or contact the EnergySmart division directly at (802) 278-1833, www.energysmartvt.com.

Table E-10 identifies the percentage of renewable energy use for transportation and home heating by each target year. These percentages are targets for Barre City to use as it establishes policies to encourage the use of renewable energy in the transportation and thermal sectors.

Table E-10 – Use of Renewables for Transportation & Home Heating by Target Year

	2025	2035	2050
Transportation Renewable Use	9.6%	31.3%	90.2%
Home Heating Renewable Use	53.2%	66.9%	92.2%

Source: Vermont Energy Investment Corporation – Long Range Energy Alternatives Planning

Building and Site Design. Land use and development regulations can be used to promote greater energy efficiency through incentives or development standards. In addition, certificates of occupancy administered through zoning bylaws can be used to ensure compliance with state efficiency standards that have not been effectively enforced. Finally, municipal building codes may establish local efficiency standards.

Local Action. Several groups and organizations are working on energy efficiency and conservation efforts in Barre City including Capstone, the Barre City Energy Committee and ReSOURCE (Recycle North).

Fuel Switching. One way to help Barre City meet its renewable energy goals is by switching from fossil based fuels to renewable fuels. This includes thermal switching for residential and commercial establishments and switching to electric or biodiesel fuels for vehicles. Table E-11 identifies the number of new efficient wood systems and heat pumps for thermal heating by target year and Table

E-12 identifies the number vehicles that would need to utilize alternative fuels by each of the target years.

Table E-11 – Residential & Commercial Fuel Switching Targets for in Unit Systems by Target Year

	2025	2035	2050
New Efficient Wood Heat Systems	20	19	154
New Heat Pumps (in Unit)	413	1,067	2,020

Source: Vermont Energy Investment Corporation – Long Range Energy Alternatives Planning
U.S. Census Bureau – American Fact Finder – 2015

Table E-12 – Transportation Fuel Switching from Fossil Based Fuel to Electric & Biodiesel Fuels by Target Year

	2025	2035	2050
Electric Vehicles	277	3,293	6,575
Biodiesel Vehicles	831	1,540	2,498

Source: Vermont Energy Investment Corporation – Long Range Energy Alternatives Planning
U.S. Census Bureau – American Fact Finder 2015

Table E-13 provides information from the Energy Action Network related to existing renewable energy generation. This information is based on Certificates of Public Good that have been issued by the Public Utility Commission for renewable energy projects. It also may not be a complete picture of the existing renewable energy development in Barre City, but provides another set of data points to analyze. This information does not include solar for hot water heating, but that information is available from the Energy Action Network. This information should be compared and contrasted with the information in Table E-7.

Table E-13 – Existing Renewable Energy Generation Based on Certificates of Public Good

Category	Sub Category	Number of Locations	Electricity Type	Utility	Capacity kW
Solar	Roof-Mounted PV	88	Net Metered	Green Mountain Power	897,630
Solar	Ground Mounted PV	1	Group Net Metered	Green Mountain Power	23,389
Micro-Hydro	-	1	-	Green Mountain Power	14.3
Building Efficiency	LEED Certified Green Building	1	-	Green Mountain Power	-
Advanced Wood Heat (Biomass)	Community Scale Wood Heat	6	-	Various	-

energy siting and mapping

Barre City supports the responsible development of renewable energy generation throughout the City to meet the needs of its residents including all types and technologies that may be available.

In order to more specifically identify and plan for Barre City's energy needs, information on siting of renewable energy has been developed including resource mapping. The following maps are provided to support the information included in Table E-7 related to potential development of renewable energy. These maps outline the resource area available in Barre City related to solar, wind, woody biomass, and hydroelectric resources. Additionally, maps

are included that identify constraints that have been identified by the State and the Region. These constraints are categorized as known and possible.

Known constraints are those areas where development of a renewable resources is very limited and therefore not likely to occur. Known constraints that have been identified include:

- Vernal Pools (confirmed or unconfirmed)
- River Corridors as identified by the Vermont Department of Environmental Conservation
- Federal Emergency Management Agency Identified Floodways
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- National Wilderness Areas
- Class 1 and Class 2 Wetlands (as noted in the Vermont State Wetlands Inventory or Advisory Layers
- Regionally or Locally Identified Critical Resources

Possible constraints identify areas where additional analysis will need to occur in order to determine if development of renewable energy resources is appropriate. In some cases, conditions may be prohibitive, but in others the conditions may be suitable for renewable energy development. The possible constraints include:

- Agricultural Soils
- Federal Emergency Management Agency Special Flood Hazard Areas
- Protected Lands (State fee lands and private conservation lands)
- Act 250 Agricultural Soil Mitigation Areas
- Deer Wintering Areas
- Vermont Agency of Natural Resources Conservation Design Highest Priority Forest Blocks
- Hydric Soils (soils formed under conditions of saturation, such as flooding or ponding)
- Regionally or Locally Identified Resources

In addition to the items listed above, the Central Vermont Regional Planning Commission, through its Regional Energy Committee, has identified additional constraints to be included. For the purposes of this mapping exercise, all of the regional constraints are considered possible constraints. This is due to the fact that the Regional Energy Committee determined that, like the statewide possible constraints, conditions could be such that developing renewable energy resources in these locations could occur but should be studied further to determine if the specific conditions regarding these locations are suitable. The possible regional constraints that were identified include:

- Elevations above 2,500 feet
- Slopes greater than 25%
- Municipally Owned Lands
- Lakeshore Protection Buffer Areas of 250 feet

Further, Barre City has identified the following local constraints where development, including renewable energy, is not appropriate. These include:

- Areas with important natural, cultural or with scenic value
- Significant natural resource areas such as flood hazard areas, river corridors, high elevation protection zones and prime agricultural soils

Like the regional constraints, these areas will be noted as possible constraints to ensure further evaluation is considered prior to development in these locations. These constraints are noted on maps at the end of this section.

One additional constraint that was added by the Region is a limit on the overall height of wind generation facilities. Specifically, the CVRPC noted that the maximum height for wind generation would be 125 feet as measured to the hub (excluding blades). The CVRPC concluded that any wind facilities over 125 feet tall would be considered industrial scale. Through an analysis of resource areas and existing regional planning policies, there were no suitable lands to accommodate industrial scale wind generation over the planning horizon that was identified in the regional plan. This would still allow residential and commercial scale wind to be established but would limit the industrial scale development that could have greater impacts on the Region overall.

Barre City acknowledges the Regional limitation on the height of wind. Through its local planning priorities and discussions on siting, it may be determined that the City will support industrial scale wind in appropriate locations to meet the City's renewable energy needs or further limit the scale of wind generation consistent with the scale and size of other development options. This would be done through an analysis of available resource areas for wind compared to locations that the City has determined are appropriate for industrial scale development. If the City determines that industrial scale wind can be supported or should be further restricted, the conflict resolution policy that is outlined in the Central Vermont Regional Energy Plan will be followed to ensure that no adverse impacts to regionally identified resources or adjacent municipalities are identified. If through this evaluation it is determined that industrial scale wind can be accommodated or further restricted, the City may consider these options when appropriate.

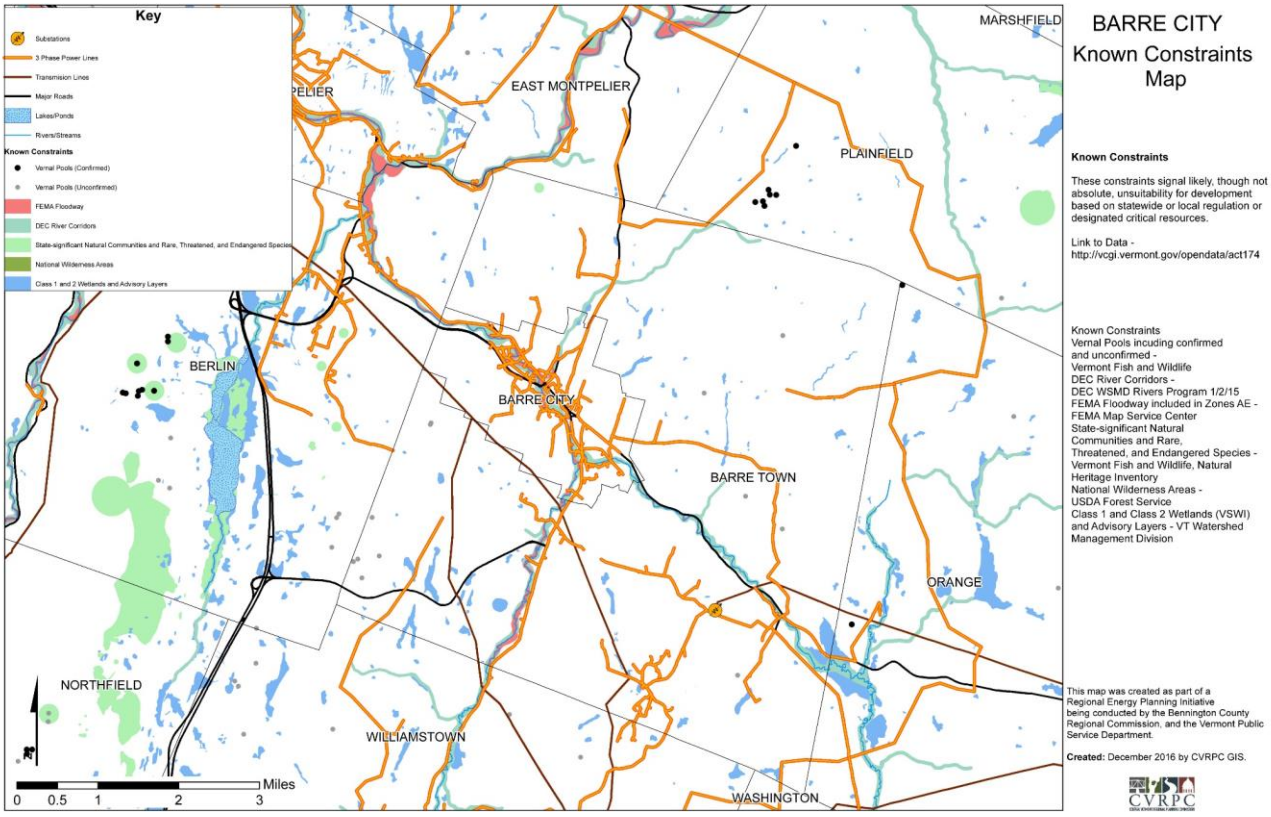
Additional information on the known, possible, and regional constraints, including sources of data and definitions, can be found in the Central Vermont Regional Energy Plan.

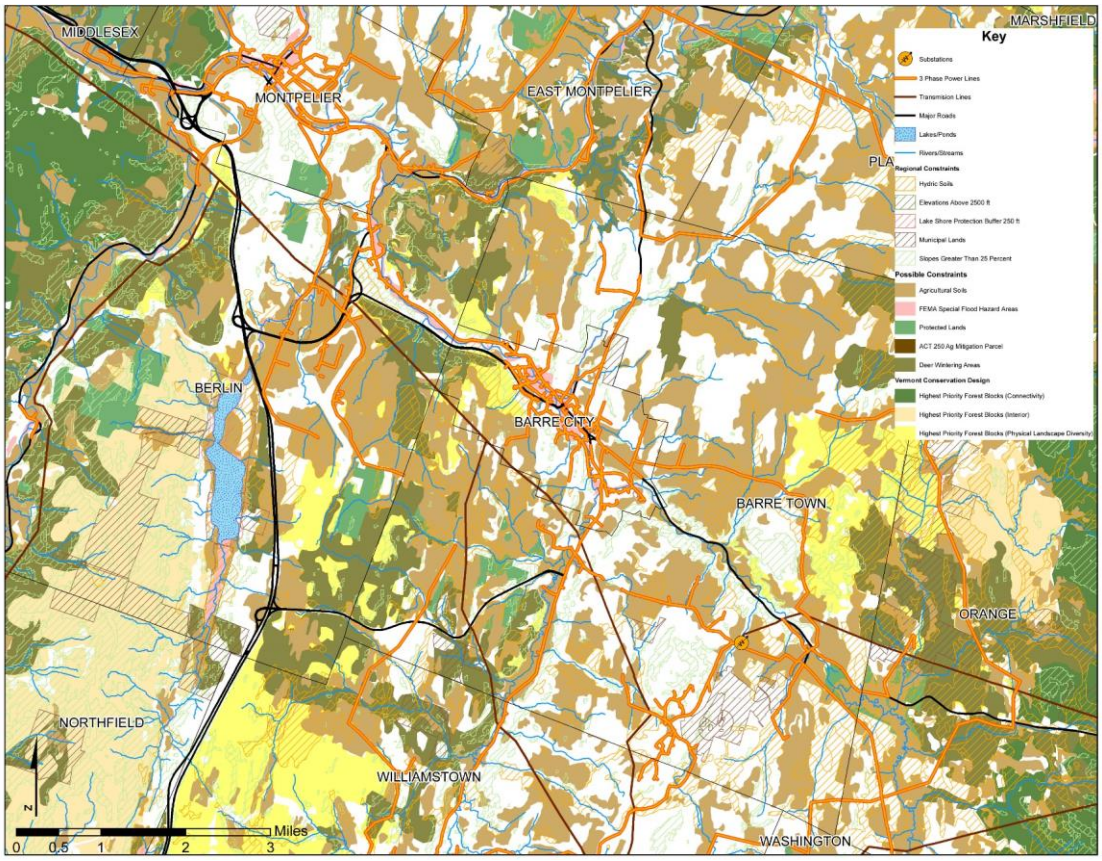
Finally, the state has identified preferred locations for the siting of renewable energy generation. These are areas where renewable energy generation should be considered first before identifying greenfields or agricultural areas. The statewide preferred locations include but are not limited to:

- Parking lots
- Gravel pits
- Brownfield sites as defined in 10 V.S.A. §66428
- Sanitary Landfills as defined in 10 V.S.A. §6602
- Rooftop installations

All of the preferred sites are included on the maps at the end of this section.

The information included in this section is a beginning and not the ultimate picture. As technologies change and development occurs, Barre City will explore ways to incorporate more renewable generation technologies into land development plans as a way to off-set the needs of local residents and businesses.





BARRE CITY
Possible Constraints Map

Possible Constraints

These constraints signals conditions that would likely require mitigation, and which may prove a site unsuitable after site-specific study, based on statewide or regional/ local policies that are currently adopted or in effect.

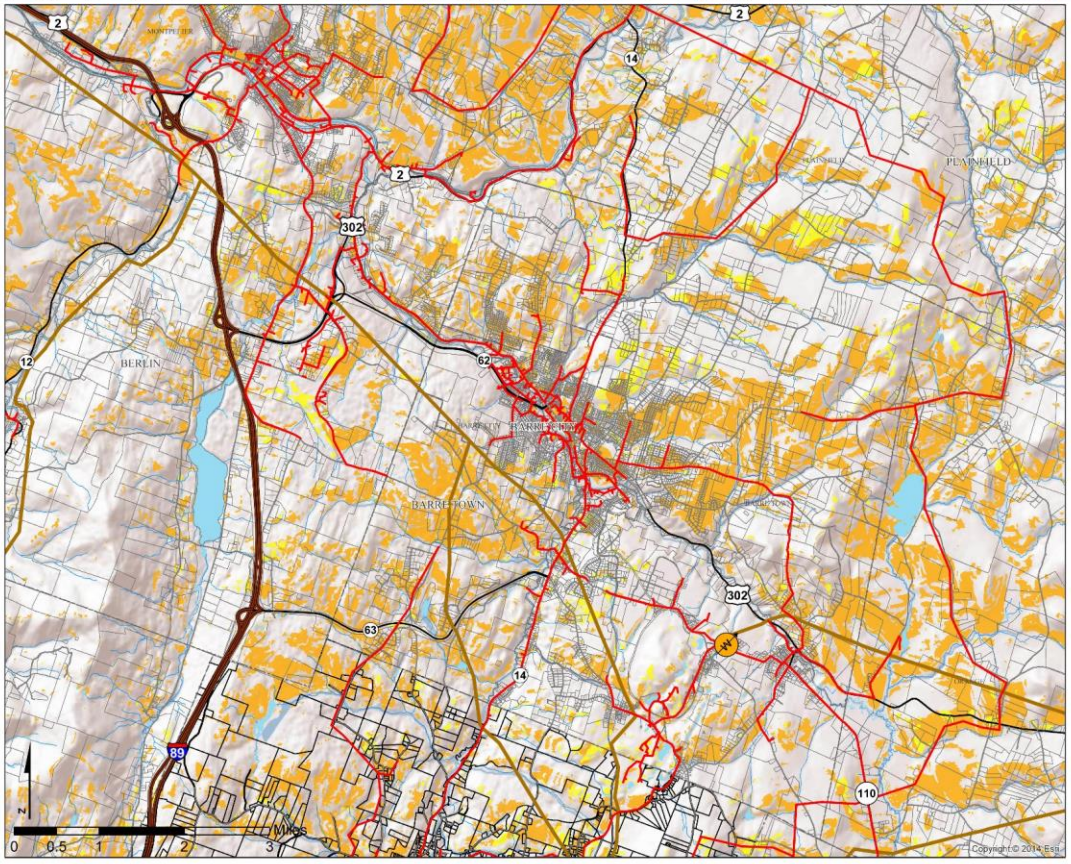
Link to Data - http://vcgi.vermont.gov /opendata/act174

Possible Constraints Data Sources
Agricultural Soils include local, prime and statewide classifications - NRCS
FEMA Special Flood Hazard Areas include Zones A and AE - FEMA Map Service Center
Protected Lands - Include State fee lands and private conservation lands - VCGI
Act 250 Ag Mitigation Parcels include parcel as of 2006 - VT Dept. of Ag
Deer Wintering Areas - VT Fish and Wildlife
Vermont Conservation Design include the following Highest Priority Forest Blocks: Connectivity, Interior, and Physical Landscape Diversity) - VT Fish and Wildlife
Hydric Soils include soils that have hydric named components in the map unit - NRCS

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

Created: December 2016 by CVRPC GIS.

CVRPC



BARRE CITY
Solar Resources Map

Legend
- Substations
- 3 Phase Power Lines
- Distribution Lines

Solar Potential
- Prime (No Constraint)
- Secondary (Possible Constraint)
- Parcels

Roads
- Interstate
- US Highway
- Vermont State Highway
- Town Class 1-3

Known Constraints

Areas not shown on map
Vernal Pools
River Corridors
FEMA Floodways
Natural Communities & Rare, Threatened and Endangered Species
National Wilderness Areas
Wetlands Class 1 and 2

Possible Constraints
VT Agriculturally Important Soils
FEMA Special Flood Hazard Areas
Protected Lands
Act 250 Agricultural Soil Mitigation Areas
Deer Wintering Areas
Highest Priority Forest Blocks
Hydric Soils
Elevations Above 2500Ft
Lake Shore Protection Buffer 250 Ft
Municipal Lands
Slopes Greater Than 25 Percent

Created by: CVRPC GIS 4/4/2017
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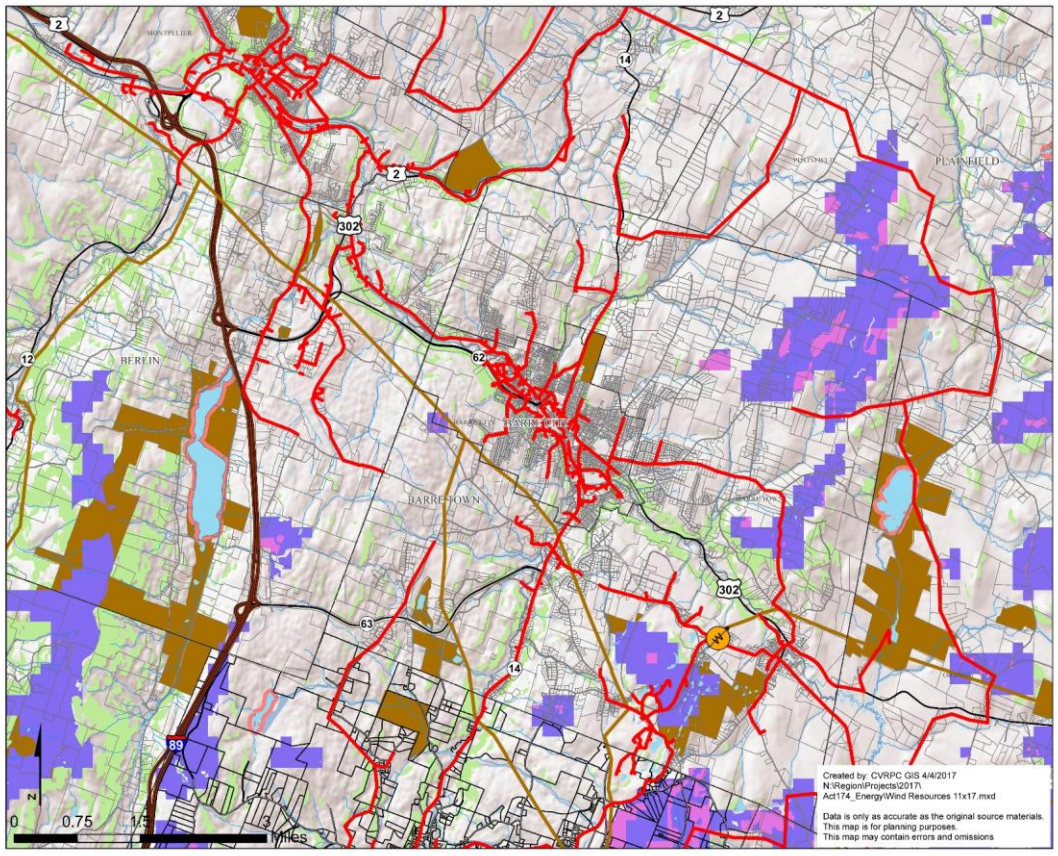
Act174_Energy\Solar Resources 11X17

Data is only as accurate as the original source materials.
This map is for planning purposes.
This map may contain errors and omissions

CVRPC



BARRE CITY
Wind Resources Map

Legend

- Substations
- 3 Phase Power Lines
- Transmission Lines

Wind Potential

Prime Wind (No Constraint)
Hub Height (m)
50 70

Secondary Wind (Possible Constraint)
Hub Height (m)
50 70

- Parcels

Roads

- Interstate
- US Highway
- Vermont State Highway
- Town Class 1-3

Regional Constraints

- Elevations Above 2500 ft
- Lake Shore Protection Buffer 250 ft
- Municipal Lands
- Slopes Greater Than 25 Percent

Known Constraints

Areas not shown on map
Vernal Pools
River Corridors
FEMA Floodways
Natural Communities & Rare, Threatened and Endangered Species
National Wilderness Areas
Wetlands Class 1 and 2

Possible Constraints

VT Agriculturally Important Soils
FEMA Special Flood Hazard Areas
Protected Lands
Act 250 Agricultural Soil Mitigation Areas
Deer Wintering Areas
Highest Priority Forest Blocks
Hydric Soils

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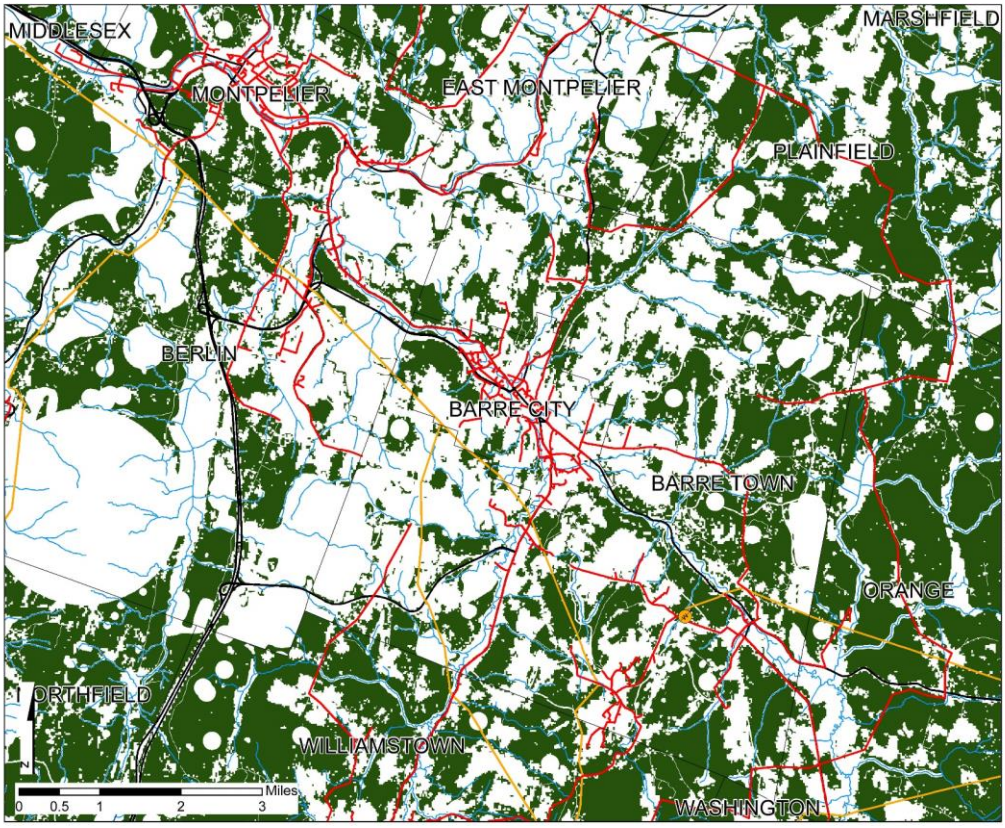

BARRE CITY
Woody Biomass Resources Map

Key

- Substations
- 3 Phase Power Lines
- Transmission Lines
- Major Roads
- Lakes/Ponds
- Rivers/Streams
- Woody Biomass

Methodology

This map shows areas of resource potential for woody biomass, i.e., locations where forested areas are. This map also considers various other conditions, such as ecological zones, that may impact the feasibility of renewable energy/alternative heating source. These conditions are referred to as constraints. This map does not include areas where other types of biomass, such as biomass from agricultural residue, could be grown/harvested.

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

Created: December 2016 by CVRPC GIS.

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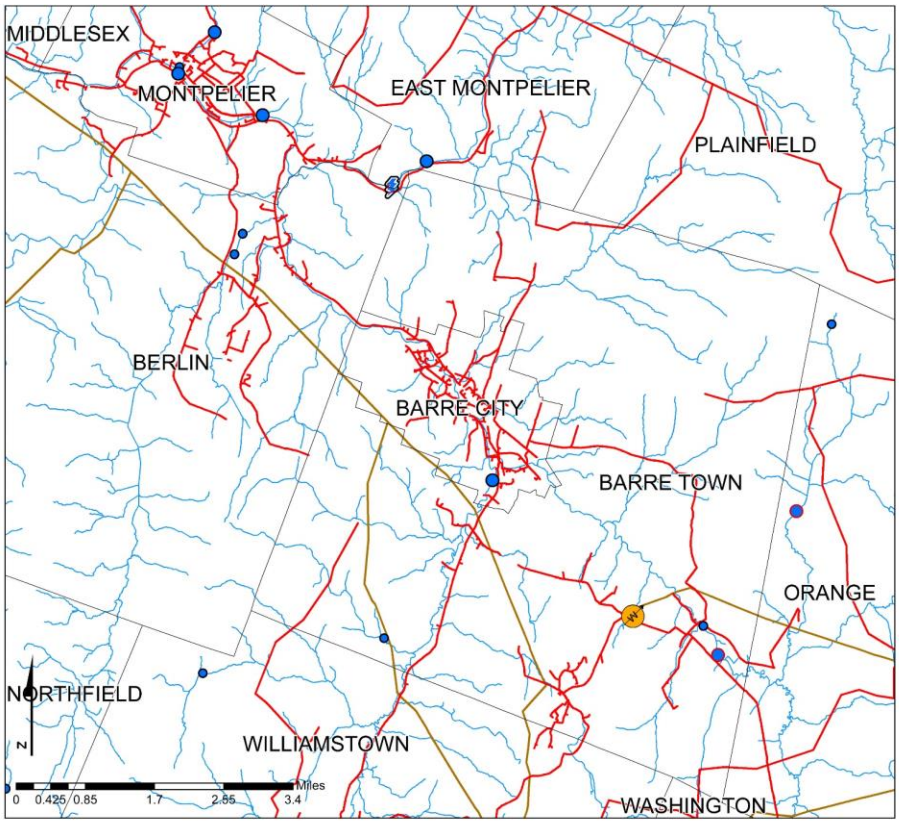
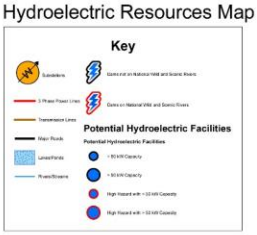


BARRE CITY
Hydroelectric Resources Map



Methodology

This map shows areas of resource potential for renewable energy generation from hydroelectric , i.e., dams that could be converted in to hydroelectric facilities as well as active hydroelectric sites. Existing hydroelectric dam information was extracted from the Vermont Dam Inventory, while potential hydroelectric sites were derived from a study conducted by Community Hydro in 2007.1 Based on estimates conducted within the report, this map categorizes dams based on their potential hydroelectric generation capacity, and the downstream hazard risk that would be involved in hydroelectric production at each site.

High hazard potential dams are those where failure or mis-operation will probably cause loss of human life. The other rankings were grouped together and their failure or mis-operation results in no probable loss of human life, but could cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. These dams are often located in predominately rural or agricultural areas, but could be located in areas withpopulation and significant infrastructure.

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

Created: December 2016 by CVRPC GIS.
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Hydroelectric Resources 11x17.mxd

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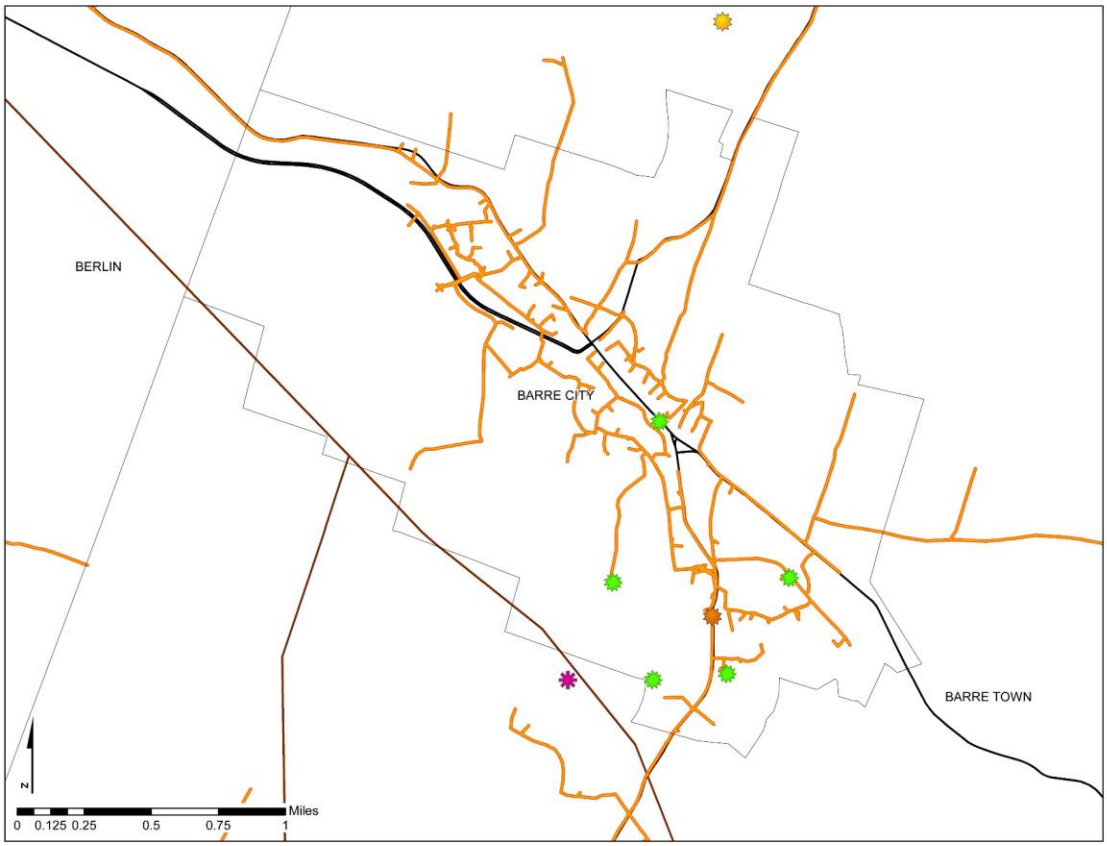
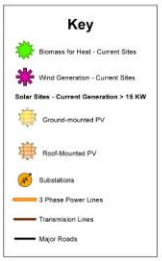


Central Vermont Regional Planning Commission
Existing Renewable Energy Generation
BARRE CITY



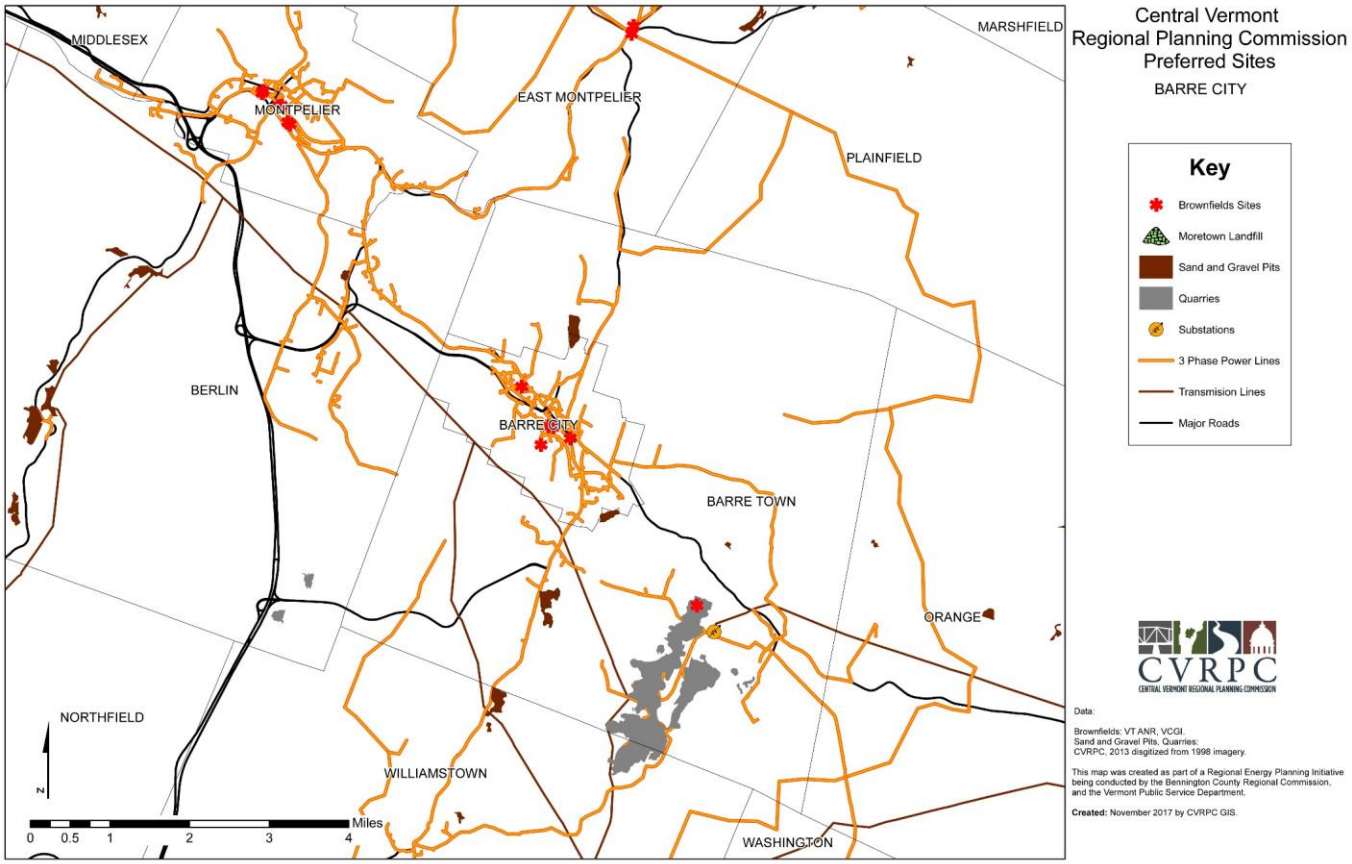
CVRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION

Data:

Wind and Biomass generation:
VT Energy Dashboard
Solar Sites: VT Energy Dashboard

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

Created: November 2017 by CVRPC GIS.


Central Vermont
Regional Planning Commission
Preferred Sites
BARRE CITY
Key
Brownfields Sites
Moretown Landfill
Sand and Gravel Pits
Quarries
Substations
3 Phase Power Lines
Transmision Lines
Major Roads
MIDDLESEX
MONTPELIER
EAST MONTPELIER
MARSHFIELD
PLAINFIELD
BERLIN
BARRE CITY
BARRE TOWN
ORANGE
NORTHFIELD
WILLIAMSTOWN
WASHINGTON
N
0 0.5 1 2 3 4
Miles
CVRPC
CENTRAL VERMONT REGIONAL PLANNING COMMISSION
Data:
Brownfields: VT ANR, VCGI.
Sand and Gravel Pits, Quarries:
CVRPC, 2013 disgitized from 1998 imagery.
This map was created as part of a Regional Energy Planning Initiative being conducted by the Bennington County Regional Commission, and the Vermont Public Service Department.
Created: November 2017 by CVRPC GIS.

city government

Barre City is governed by an elected City Council consisting of a mayor and two councilors from each of the city's three wards. The City Council is responsible for preparing the annual budget, approving all city expenditures, adopting city bylaws and ordinances, establishing city policies and priorities, and appointing various municipal officials and board members.

A City Manager, appointed by the Mayor and City Council, oversees the day-to-day administration of the city. The City Manager is responsible for hiring and supervising department directors and other city employees, negotiating city contracts, and making recommendations to the Mayor and City Council.

An elected City Clerk and Treasurer is part of the government, and is discussed below.

All other municipal government functions are carried out by city departments and their employees including:

- City Clerk/Treasurer's Office is the repository of all City records including deeds, mortgages, vital records, council meeting minutes and election results. This office is responsible for maintaining municipal records, issuing various licenses and permits, administering elections, collecting property taxes, maintaining financial records, and recording the minutes of City Council meetings. They also handle dog registrations and also processes vehicle registration renewals.

- The Finance Department pays all city bills, issues payroll checks, maintains payroll records, balances statements, and heads up the monumental task of preparing for the City's annual audit. They work closely with other departments in monitoring the hundreds of thousands of dollars in federal and state grants the City receives – both for the City and on behalf of other organizations.

- Buildings and Community Services Department is comprised of three small departments. The Cemeteries and Parks Department, the Facilities Department and the Recreation Department. The Cemeteries/Parks Department is responsible for the upkeep of the 3 cemeteries, and the city parks. The Facilities Department provides assistance to groups that rent the civic center facilities (Auditorium, Alumni Hall, BOR), including the set-up and custodial services for each event. They also are responsible for overseeing all city buildings and grounds owned by the City, and includes custodial and maintenance services for City Hall and the Public Safety Building, as well as a number of parks, recreation fields and playgrounds. The Recreation Department is responsible for recreational programming throughout the city and at city facilities, such as ice time, and individual rentals at Alumni Hall. Programs regularly occur such as open gym, open skating, weekly soccer, lacrosse, reading and science camps. The Recreation Department works in tandem with the Town of Barre for the annual east egg hunt.

- Planning, Permitting and Assessing Services was created in 2011 to serve as a one-stop location for all local permits by merging the former Building and Housing Department and

the Planning and Zoning Department. This department has an array of responsibilities including: issuing building, electrical, flood hazard and zoning permits; inspecting zoning projects for zoning certificates of compliance that were approved by the Development Review Board, rental registry billing, coordinating land use planning and community development efforts; grant writing; providing support for the city Planning Commission, Development Review Board, Housing Board of Review and the Energy Committee. The Assessing portion of the Department assesses all real property in the city for tax purposes, and maintains the Grand List and tax maps. The department is located in City Hall and employs a contract assessor who answers to the City Manager, an assessing clerk, a permit administrator and the director.

- The Fire and Emergency Services (EMS) Department consists of a full-time Fire/EMS Chief, a Deputy Fire Chief, the Fire Marshal, Code Enforcement officers, and numerous ranked individuals within the Fire service, all housed at the Public Safety Building. More information about this department is provided below.

- The Police Department consists of a full-time Police Chief, Deputy Police Chief, an Ambulance Billing Clerk, dispatchers, detectives and officers also housed at the Public Safety Building. More information about this department is provided below.

- Public Works Department is responsible for the maintenance and repair of city streets and sidewalks, storm sewers, water and sewer infrastructure, for the operation of the Wastewater Treatment Facility and the Water Treatment Facility, and the engineering and supervising of public improvement projects. See the Public Utilities and Transportation chapters of this plan for additional information related to this department.

Figure 12. City Budget Comparison Table

Fiscal Year	City Budget Raised by Taxes		GF % Change Year Over Year	% General Fund
	Actual	General Fund (GF)		
2010-2011	$ 6,901,174	$ 6,057,373	-	88%
2011-2012	$ 7,322,815	$ 6,360,414	5%	87%
2012-2013	$ 7,583,505	$ 6,583,204	4%	87%
2013-2014	$ 7,859,035	$ 6,912,334	5%	88%
2014-2015	$ 7,977,083	$ 7,001,682	1%	88%
2015-2016	$ 8,058,262	$ 7,230,415	3%	90%
2016-2017	$ 8,567,000	$ 7,535,299	4%	88%
2017-2018	$ 8,578,932	$ 8,042,467	7%	94%
2018-2019	$ 8,636,586	$ 8,114,194	1%	94%
2019-2020	$ 9,078,512	$ 8,494,111	5%	94%

Source: City Annual Reports and calculations by the Finance Director

public safety

Police Department. Barre City has a municipal police department that included 20 full-time and 9 part-time officers and 6 full-time and 1 part-time dispatcher in 2018, with one Outreach Specialist. The department's operating budget in FY2017-18 was $2.4 million, which included $1.3 million in

salaries and $178,000 in overtime pay. The Barre City Police Department responded to approximately 10,471 calls in FY2017-18.

While the total number of officers has somewhat increased from funding from outside sources, the department currently has fewer officers "on the beat" than it did 30 years ago because of prior budget cuts and the outside funded position being a non-patrol position. To be more proactive, the department believes the force would need to consist of 26 full-time officers. Such an expansion would result in an annual budget increase of $552,000 in salaries not including additional costs for vehicles, equipment, uniforms and training.

The Bureau of Justice Statistics (BJS) 2007 Local Police Departments Report indicates that the national average officer-to-resident ratio for police departments serving a municipality of 2,500 to 9,999 residents was 2.5 officers per 1,000 residents. The Vermont average is 3.5 officers per 1,000 residents. That level of staffing would equate to a force of 22 to 31 full-time officers in Barre City. The 2007 BJS report states that the average operating budget for police departments serving a municipality of 2,500 to 9,999 residents was $87,200 per sworn officer, which puts Barre City's police budget in-line with that of similarly sized municipalities around the country.

The police department moved into the newly constructed Public Safety Building at 15 Fourth Street in 2006, which is shared with the Fire Department, vacating the space it had occupied in City Hall for more than a century. While the new building meets the present facility needs of the department, the initial building design was reduced by 5,000 square feet in order to lower construction costs and consequently has little room to accommodate future growth in the department's space needs. Annual debt service for the Public Safety Building is approximately $272,000 per year with approximately 8 years remaining.

As of 2018, the department had a fleet of 13 police vehicles. The department believes that its vehicles should have an average service life of six years, and so would like to replace two vehicles each year. In recent years, the department has not been able to maintain this replacement rate due to budgetary constraints. In 2018, the department had approximately five vehicles at least 6 years old.

Police Calls and Crime Rates. The number of police calls has been increasing slowly, but steadily in recent years. In the five-year period between FY2013 and FY2018, the number of calls increased by 20%. The general perception is that a significant percentage of police calls involve someone recently released by the state Department of Corrections, but there are also other factors leading to the increased number of calls such as the number of individuals with substance abuse and/or mental health issues living in our Community.

More than 75% of calls that the police department has responded to in recent years did not rise to the level of a crime. These included various types of citizen assistance, false alarms, and E911 hang-up calls, among others. A total of 315 crimes occurring in Barre City were included in the 2018 Vermont Crime Report, comprised of 70 violent crimes (homicide, rape, robbery, aggravated assault) and 245 robbery crimes (arson, burglary, larceny theft and motor vehicle theft). The city police department responded to more than 10,400 calls that year. The department is also responsible for administrative activities, and calls for service that are not criminal in nature. Between 2014 and 2018, our crime rates for violent crimes and property crimes have fluctuated greatly.

Property crime consists of arson, burlary, larceny theft and vehicle theft. Violent crime consists of homide, rape, robbery and aggravated assault. State of Vermont statistics are based on 88 reporting

agencies throughout the State, including Barre City. These graphs show reported incidents, not cleared incidents by the enforcement agencies.

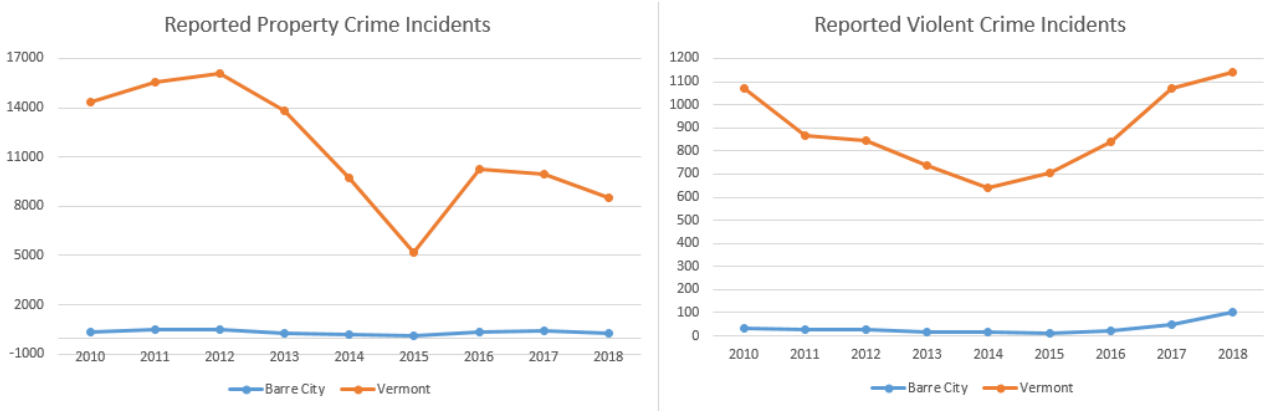


Figure 13. Crime Rates Tables
Source: FBI Crime Data Explorer

Crime statistics vary greatly depending on the entity reporting them and the manner in which they are compiled. One thing that is consistent and a known number is calls for service, and Barre City Police Department's calls for service are continuing to rise annually. This is reflected in a heavier case load for the Officers.

In the fall of 2018 we adjusted our table-of-organization to form a street crimes unit to address drug related criminal activity and this pro-active unit quickly showed its worth in addressing drug activity and drug related crimes.

We have also included the Community Outreach position in our budget (funded from outside sources prior to now) to assist and deal with individuals and complaints that are not criminal in nature and when people need assistance in accessing services through regular methods rather than utilizing the police.

Fire and EMS Department. Barre City has a municipally operated Fire and (Paramedic) Emergency Medical Service (EMS) Transport department. The department consists of a full-time Chief, Deputy Chief, and 16 full-time dual role Fire and EMS providers. We also maintain 5 paid on-call part-time employees. The department's operating budget in FY18 was $1.75M. This budget is offset by approximately $671,000 in revenue from ambulance transports.

In FY2019 the Barre City Fire Department responded to 2,518 calls for service (1,990 Emergency Medical Services calls and 528 Fire calls). This is a slight decrease from FY2018 by 197 incidents.

The station is staffed by four shifts of 4 personnel available to respond at all times. When Fire or EMS are received, off-duty personnel are called in to cover the station to respond to simultaneous calls for service until the on-duty crew returns to the station.

Currently, the department has a fleet of 12 vehicles, including four fire apparatus, three ambulances, a utility truck and four staff vehicles.

Code Enforcement was incorporated into the fire department in 2012. Fire department personnel, including the Fire Marshal and the Electrical Inspector have been cross-trained as NFPA Certified

Fire Inspectors. They are responsible for fire prevention inspections to include: electrical, building and minimum housing. They inspect all rental properties and commercial establishments to ensure compliance with state law and city ordinances related to safety and health, and enforce most city ordinances.

Fire Responses. The City of Barre still continues to see a very active level of responses to fire based incidents. Barre is an old city and has a very diverse inventory of structures within the city limits. We are fortunate that many of the older structures related to the granite industry are sprinklered or otherwise protected by an alarm system. We also have a higher than average number of multi-family dwellings and apartment buildings. In FY2019, 30 of the fire responses were to structure fires.

EMS Responses. The number of EMS calls has been increasing steadily in recent years. This coincides with the aging of our resident population and other people with special medical needs living in our city. The lack of a national health care system also contributes to our high number of EMS responses due to the high number of residents who lack access to basic healthcare services.

Figure 14. Emergency Services Calls FY2014 - FY2018

	FY14	FY15	FY16	FY17	FY18
Police	8,589	8,503	8,984	9,435	10,471
EMS	2,256	2,147	2,188	2,558	1,900
Fire	613	592	527	565	528

Source: 2018 Annual Reports

Emergency Management. Emergencies and disasters are unpredictable, but through proactive planning and mitigation the danger, damage and disruptions from these events can be managed or minimized. Floods and severe weather occur quite regularly in Barre City. Many of the aspects of our close proximity to water and the emergencies which go with it are constantly monitored by emergency personnel. This includes the many rivers and streams which flow through our community to meeting with our state and federal partners about the failure and control of the East Barre dam.

Not surprisingly, flooding is the most commonly recurring hazard in Barre City. Our floodplain is highly developed and there are approximately 760 properties located within the 100-year floodplain. There are also properties outside the delineated floodplain that may be vulnerable to flood-related hazards.

As recently as 2015 and 2017 Barre City experienced devastating flood damage. In the previous two decades, flooding also occurred at least 9 other times. While the flood control measures that were put in place after the flood of 1927 and have reduced the severity of flooding in Barre City, the low-lying areas of the city still regularly flood with one to two feet of water during severe storms.

In recent years, more flooding damage has been a result of our stormwater drainage system's inability to accommodate surface run-off than of rivers and streams overflowing their banks.

On an annual basis, Barre City updates and approves its Local Emergency Management Plan (LEMP). The 2017 Hazard Mitigation Plan is incorporated by reference into this plan. Barre City also has adopted Flood Hazard Area regulations that meet the requirements of the National Flood Insurance

Program, which ensures that city property owners will be eligible for flood insurance and potentially federal assistance in event of significant flooding.

parks and recreation

Recreation. Barre City has a municipal Recreation Department within the Buildings and Community Services Department, and operates out of Alumni Hall. The department is responsible for the operation of the recreation facilities, and for offering a variety of year-round recreation programs for residents of all ages. The department's operating budget in FY 2017-18 was $103,335. As a result of contributions from the Semprebon Fund, a number of playgrounds throughout the city have been upgraded with new equipment and other improvements in recent years.

The Recreation Department offers a range of programs throughout the year. The largest is the summer youth program based at Rotary Park where children can enjoy the pool (and take swimming lessons) and other facilities at the park. The program operates weekdays during the school summer vacation period, and serves lunch and a snack to the children. Various organized activities are scheduled for summer youth program participants. A number of private summer camps also use the pool at Rotary Park as part of their program. The municipal pool is currently undergoing a process to refurbish the existing shell of the pool, bring the chemical injection vault into an above-ground structure, and plans to add a splash park are being considered based on budget.

Many of the city's parks and recreation facilities serve not only city residents, but also to residents from surrounding communities. Generally, the Recreation Department's programs are designed to pay for themselves through user fees. The city earned about $14,000 from admissions to the pool at Rotary Park. In addition, the picnic shelters in Rotary Park are rented weekends throughout the summer for parties, reunions, weddings and the like. Most programs have different fees for residents and non-residents. The city earned about $165,000 in FY2017-18 from renting the BOR Shelter and another $614,000 from the Auditorium.

At one time, Barre Town supported recreation facilities and programs in the city, which were then available to town residents on the same terms for city residents. There are few shared programs and coordination between the city and town, and the town has significantly reduced its financial contributions. Given the financial challenges faced by Barre City and its neighboring municipalities, coordinated recreation planning and programs between communities could result in more cost-effective programming, more varied programs and increased use of existing facilities. The Barre City Recreation Department should network with other communities and organizations to provide residents with access to more recreation opportunities.

The Recreation Department should work to respond to the city's changing demographics. While the number of school-age children and teens has declined in recent years, there appears to be a boost in the population of preschool-age children, which suggests that younger families are moving into the city. The department should look at programs and facilities targeted to these youngsters and their parents. The department is also seeing growth in the number of seniors. When upgrading neighborhood parks and playgrounds, the department should to consider the needs and interests of older residents. The department has already begun to add benches to many of the parks, and wheelchair accessible swings.

Cemeteries and Parks. Barre City's Cemetery and Parks Department, which is charged with the operation and maintenance of three city-owned cemeteries and some of the city's parks. The department is based out of a facility at Hope Cemetery. The cemeteries include Hope Cemetery on Maple Avenue, Elmwood Cemetery on Washington Street, and St. Monica's Cemetery on Beckley Street; Hope and Elmwood Cemeteries continue to have lots for sale. The department also maintains City Hall Park, Currier Park, Dente Park, the Stonecutters Monument, and the Robert Burns Monument.

The Cemetery and Parks Department had operated as a separate entity with enterprise funds from lot sales and burial fees providing a bulk of the operating funds until 2011 when it became a city department. One of the reasons for that change was the ongoing decline in the department's revenue stream, which is largely due to more cremations and fewer entombments. At the same time, operating costs have continued to rise, making it difficult to sustain an adequate level of services and maintenance. In future years, funding for cemetery and park maintenance will likely need to be allocated to the department from the city's general revenues to supplement the income generated from these facilities.

Cemetery maintenance is particularly important in Barre City because Hope Cemetery is a showcase of the city's granite carving heritage. Many tourists visit Hope Cemetery annually to view the ornate and unique monuments created by generations of local artisans, and can do so by calling the Buildings and Community Services office. The Cemetery and Parks Department does generate some revenue by offering guided group tours of Hope Cemetery annually. Hope Cemetery is an unparalleled cultural resource that could be more effectively marketed as part of Barre City's efforts to attract visitors.

Education

Education. Every community strives to provide sound educational systems which address the needs of every sector of the population. Planning decisions have significant impacts upon educational services as housing growth, location and type of housing fosters changing demands.

Barre City Elementary and Middle School (BCEMS), built in 1994 and located at 50 Parkside Terrace, is a modern, well-maintained Pre-Kindergarten through Grade 8 facility, that meets Vermont's Public School Approval (PSA) standards. Barre City and Barre Town share a common high school, Spaulding High School, built in 1964 and located at 155 Ayers Street. The Central Vermont Career Center, collocated with Spaulding High School, offers hands-on Career Technical Education (CTE) training programs for high school students and adults from throughout Washington County. Barre City, Barre Town, and Spaulding share a PreK-12 superintendent and central office, located at 120 Ayers Street. Several private schools help round out the choices parents have in the education of their children.

During the 2018-2019 year, under Act 46 of 2015 the Vermont State Board of Education implemented an Order to Merge that merged the Barre Town Elementary Middle and Elementary School, the Barre City Elementary and Middle School, Spaulding High School and the Central Vermont Career Center into one single unified school district effective July 1, 2019, titled the Barre Unified Union School District (BUUSD).

Because Vermont has changed its accountability system with the federal reauthorization of the Elementary and Secondary Education Act, from No Child Left Behind (NCLB) to the Every Student

Succeeds Act (ESSA), the state assessment reporting system has also changed. Accountability information for the Barre schools can be found at: https://schoolsnapshot.vermont.gov/ .

Barre City Elementary and Middle School - With the passage of Act 166, the Universal Pre-Kindergarten law, enrollment for Pre-Kindergarten includes students who attend a qualified private provider center in Vermont, for which the district pays tuition for 10 hours per week, as well as for students who attend the half-day program in the school, which has capacity for 90. While some students are enrolled in private provider centers, the relatively large capacity of the public school PreK program keeps outside enrollment relatively small.

The charts below describe total enrollment over the last decade for BCEMS. Enrollment has fluctuated between the low and high 800's over these years.

PRE-SCHOOL TO GRADE 8 ENROLLMENT/COST PER PUPIL		
School Year	**Student Body**	**Cost per Pupil**
2010-11	876	$9,818
2011-12	855	$10,273
2012-13	861	$10,960
2013-14	898	$11,475
2014-15	895	$11,362
2015-16	882	$11,496
2016-17	875	$11,862
2017-18	892	$12,448
2018-19	898	$12,995
2019-20	887	$13,556
Total Change: 11		
Avg. 10 year cost per pupil: $11,625		

56 percent of BCEMS students were eligible for free or reduced lunch in 2018-19 based on federal guidelines, which is a high percentage as compared to other Vermont schools. Because this exceeds the threshold for the Community Eligibility Provision, all students in the school actually receive a free breakfast and lunch. The school had 102 full-time teachers and a student-teacher ratio of 8.8, which is close to the Vermont average, in 2018-19.

Spaulding High School - Spaulding High School and the attached Central Vermont Career Center provide secondary educational programs for students from Barre Town and Barre City as well as a number of tuition students from surrounding towns. In recent years, improvements to the school include a renovated library, interactive boards in all classrooms, new uni-ventilator heaters throughout the building, renovated bathrooms, and upgraded science labs. The school is fully accredited and meets the Public School Approval requirements.

HIGH SCHOOL ENROLLMENT/COST PER PUPIL		
School Year	**Barre City Students**	**Cost Per Pupil**
2010-11	376	$10,153
2011-12	370	$11,108
2012-13	395	$11,580
2013-14	387	$12,340
2014-15	397	$12,448
2015-16	375	$12,474
2016-17	382	$12,892
2017-18	369	$13,347
2018-19	357	$13,352
2019-20	328	$13,556
Total Change: -48		
Avg. 10 year cost per pupil: $12,325		

Approximately 29 percent of Spaulding's students were eligible for free or reduced lunch in 2018-19 based on federal guidelines, although high school students are historically under-reported. This does not meet the threshold for the Community Eligibility Provision. Spaulding High School had approximately 96 full-time teachers and a student-teacher ratio of 7.5 in 2018-19.

Library. Aldrich Public Library serves the residents of Barre City and Barre Town at two locations, on 6 Washington Street in Barre City and the York Branch, at 135 Mill Street in East Barre. The Libraries serve the community of Barre in the mission to inspire the joy of reading, promote lifelong learning, and develop community. Annually, over 125,000 people visit Aldrich Libraries.

The collection includes over 62,000 physical titles, available throughout both locations or at a specific location by request. The staff of twelve are available to connect patrons to specific information in the library as requested. Additional titles are available with interlibrary loan services. The library website also offers over 25,000 digital titles, as well as encyclopedia and information databases that can be accessed in the library and at home. Aldrich patrons use these items over 88,000 times annually.

Digital access to information and digital literacy training have become a large part of information services, and Aldrich Library offers free Wi-Fi and 20 public computers for patron use throughout both locations. Specialty computer services are also offered on the 3-D printer, microfilm computers, and bulk printer.

The central location and beautiful architecture make the Washington Street location a hub for the community. In 2019 renovations to the Katherine Paterson Children's Library and Milne Community Room were completed with Federal grant funding. Bob Vila, of This Old House Magazine, listed Aldrich Library's Washington Street building as #5 on "The 25 Most Beautiful Libraries in America". Three community meeting spaces are available at the Washington Street building, and many groups use these spaces throughout the year. Aldrich Library staff host additional programs and activities at both libraries and throughout the community, with over 3,000 participants annually.

Aldrich libraries are open a total of 54 hours per week. The location on Washington Street is open Monday through Friday from 11 a.m. to 7 p.m., and Saturday 10 – 2, and the Mill Street location is open Tuesday and Thursday mornings from 9 a.m. to noon, and Sunday afternoon from 12 p.m. to 4 p.m. Aldrich hosts programs throughout the year, including two weekly Children's Storytime programs, before open hours. These special events and library programs can be found at the website, www.aldrichpubliclibrary.org. The current list of trustees, employees, library policies, board meeting information and our strategic plan can also be accessed at the website.

As municipal supporters of Aldrich Library, all Barre City residents are eligible for a patron membership. Barre City contributes $221,550, or $25.59 per resident to the Aldrich Public Library. This meets 35.4% of the operating budget for Aldrich Library. Barre Town, user fees, fundraising activities, community groups, and investment returns complete the Aldrich operating budget of $626,050.

history and culture

Barre City has a wealth of historic and cultural assets that express our community's unique heritage. There are two National Register Historic Districts in the city, as well as a number of individually listed sites and buildings. Our downtown is home to a number of culture and arts institutions. Some of these include:

Barre City Hall and Opera House. The Barre City Hall and Opera House at 6 North Main Street across from City Hall Park is one of our city's most impressive landmarks. Completed in 1899, the Neoclassical building represents an era when a city's civic pride and economic prosperity was manifest by the construction of major public buildings. The building continues to function as it did a century ago when it first opened. Offices for City Hall occupy the basement and first floors, while the Opera House encompasses the upper floors.

When it opened in August 1899, the Opera House was considered the finest theater in Vermont. Today, that space is considered one of the best-preserved late-19th century small theater interiors in northern New England. The Opera House experienced a decline in use after World War I and eventually closed in 1940 for a period of more than 40 years. The Opera House reopened in 1982, although in need of much repair. It was renovated over the next decade, and reopened in 1993. Many of the original interior details remain including the original balcony and ornamented boxes, proscenium arch, art glass fanlight and pressed metal ceiling. The exterior of the yellow and red brick structure, like so many in Barre, features ornamental granite.

Old Labor Hall. A unique National Historic Landmark has been preserved in Barre City – the Socialist Party Labor Hall and the Union Bakery Building at 46 Granite Street. Located in what was Barre City's Italian section, the Socialist Labor Party Hall is a two story flat-roofed brick structure with a gambrel-roofed single story rear hall. Its design reflects no particular architectural style, but its form does illustrate the building's function as an assembly hall. The exterior is simply ornamented with Barre granite details. The most important of these is a carved medallion depicting an arm bearing a hammer, the symbol of the Socialist Labor Party, and the initials SLP.

Volunteers of the Italian community built the building in 1900 as a center for union activity, social events and community support. For nearly four decades, the hall was an epicenter of radicalism and reform. Internationally known political and labor leaders delivered impassioned speeches on

workers' rights and social policy. At a time when Vermont was solid Anglo Saxon, Protestant, Republican, and anti-union, Barre City was a hotbed of anti-establishment, anti-clerical, and anti-capitalist causes – anarchists, socialists, syndicalists, American Labor Party supporters, and Industrial Workers of the World (Wobblies) met at the Labor Hall. When the hall opened in 1900, there were 15 local unions and more than 90% of Barre's workers were union members. The Labor Hall held the offices and meetings of the Granite Cutters International Association, at the time the largest local union of granite workers in the country. For the Italian immigrant community, the Labor Hall was not only a community center, but the Union Cooperative Store was in the basement, and provided a source for Italian foods and ingredients. There was also a bakery and a laundry in the basement, as well.

The post-World War I "red scare" and the notorious trial of anarchists, Sacco and Vanzetti, in 1920 created a national paranoia that dampened the fervor of radical groups. The Labor Hall continued to function under socialist stewardship during the 1930's, although less vigorously, until 1936 when it was sold at auction to the Washington Fruit Company to be used as a warehouse and remained as such for nearly 60 years. A local bank foreclosed on the building in 1994 and a group of local residents, with the support of present-day labor organizations, mobilized to save the building. In doing so, they also revived the defunct Barre Historical Society, which is housed in the hall, and the building is used for community events and, once again, political meetings. The Bakery Building was renovated and finished in 2019, and now houses Rise-Up Bakery, offering fresh baked breads out of a wood fired oven during the week.

Studio Place Arts. The Barre Historical Society and a group of artists developed a plan to save the Nichols Block in downtown from demolition. After major renovations, the building re-opened in 2000 as Studio Place Arts, a community arts space. SPA has become an important regional resource for art making, learning and exhibition, and provides programs that attract people from around the region. SPA's mission includes providing a threefold benefit to the city – economic development, cultural enrichment and community service. Barre City is an ideal location for SPA because it is a city that has a rich cultural history tied to the granite industry and the many artisans who immigrated to the community from Europe to work carving granite. Historically, nearly all of the resource extraction, manufacturing jobs, and creative, skilled work in Barre City were connected to the local stone carving tradition. Resident artists have provided beautiful carvings in the last few years that are installed around the city. They include bike racks, of which one is installed near the Aldrich Library, carvings out in front of the SPA building, and a recent carving placed on the newly completed Pearl Street pedestrian way. These all can be seen while completing the "Art Stroll", a guided tour of art installations throughout the City, and can be found on Studio Place Art's website.

Vermont History Center. In 2000, the Vermont Historical Society acquired the historic, former Spaulding School in downtown Barre City. They have renovated the building to house an exhibition space and administrative offices on the first floor. The building's second floor is the Leahy Library, a center for historical and genealogical research open to the public. The library contains a variety of resources documenting the history and people of Vermont, including a collection of books, pamphlets, letters, diaries, ledgers and scrapbooks dating from the 1770's to the present. Some of Vermont's earliest maps and planning documents are available at the library, as well as an extensive collection of photographs and broadsides. With a special interest in family history, the library has the largest printed genealogical collection in the state. The Vermont Archaeology Heritage Center which serves as the central warehouse for artifacts and archives of Vermont's past moved into the building in the 2017-2018 timeframe. And, the Vermont Department of Libraries moved to the History Center at approximately the same time, that supports libraries in Vermont as they work to insure access to quality information for all library patrons.

Vermont Granite Museum and Stone Arts School. The VGM (Vermont Granite Museum and Stone Arts School) is located on a 12-acre parcel of Route 302 at the northern gateway to the city. The museum is located in the Jones Brothers Company's original 25,000 square foot granite shed built in 1895 (the largest ever built at that time) and restored in 2002 by over 300 central Vermont citizens beginning in 1994.

The granite shed housing the museum is a long timber frame building, which is now supported by steel trusses and a new concrete foundation added during the 2002 renovation. The renovation also built a new exterior over the original, which allowed the building to be fully insulated while preserving the look and feel of the original raw interior timber frame and presenting the exterior as it would have looked originally. The main shed received a new concrete floor with heating and plumbing in 2016. A smaller, 1,600 square foot space extending off the shed was completed in 2008 to house research materials, an exhibit area, meeting room and class room. Part of the main shed houses a state-of-the-art stone carving facility that includes eight carving bankers, two sandblasting rooms and a 7.5-ton overhead crane.

VGM provides tours seasonally throughout the year, and welcomes camp, school, community and bus tour groups. It is a museum committed to providing engaging learning experiences for children, teens and adults. VGM can be rented for private, corporate and community groups for cocktail receptions, luncheons, dinners, meetings, seminars and even wedding receptions. They host a variety of events outdoors, and have installed the historic granite train engine on the grounds, along with the beautifully carved welcome sign at the edge of Route 302.

Barre Downtown Historic District. The Barre Downtown Historic District includes the area around Depot Square, Main Street and Washington Street, and west to the railroad. The commercial and public buildings that form the Barre Downtown Historic District reflect our city's rapid transformation in the 1880's from a rural farming community to an urban, industrial center.

With the arrival of the railroad, downtown was rapidly transformed from a small residential village to a streetscape of multi-story commercial, institutional, and industrial blocks. As a result, most buildings within the district reflect architectural styles popular at the end of the 19th century. The need for accomplished stone workers resulted in a wave of immigrants. In contrast to other Vermont communities, Barre was uniquely shaped by the variety of cultures, political ideas and traditions these immigrants brought with them. Their craftsmanship, as well as those of local artisans, is reflected in the quality and character of the historic district.

After a period of decline in the second half of the 20th century, the Downtown Historic District is enjoying a wave of renewal and reinvestment. Many of the buildings have undergone renovations fostered by federal historic preservation tax credits and strong local support for downtown revitalization. A walking tour of the district is available.

Currier Park Historic District. Currier Park Historic District includes the homes around Currier Park on Park Street, East Street, Academy Street and North Street. It is a well-preserved planned neighborhood dating from the late 19th and early 20th centuries. The land that now comprises the Currier Park Historic District was the last large farm adjacent to the central business district, known as Currier Farm. In 1883, Steadman C. Chubb began developing his land as a new residential neighborhood. He laid out streets and building lots, and donated a two-acre lot at the center of the neighborhood to the city to become Currier Park. Large lots front on tree-lined streets with frame homes built to uniform setbacks characterize the Currier Park Historic District. The large residences

surrounding the park were constructed for wealthy families prospering from the city's economic growth. Many have now been subdivided into multi-family buildings or converted to non-residential uses.

Wheelock Law Office. The historic Wheelock Law Office is a city-owned building at 135 North Main Street that has housed the Barre Senior Citizen Center from 1975 to 2014. The building was constructed in 1871 as a law office and courtroom and pre-dates the surrounding larger block buildings. The Wheelock Law Office is the only residentially-scaled building remaining downtown on North Main Street from the pre-railroad period when the street was a wide tree-lined thoroughfare flanked by imposing residences. Many of the building's original elements remain which characterize the Second Empire architectural style, including a slate mansard roof, projecting entrance tower, deep moldings, and arched and pedimented windows and doors. Although the building has undergone some significant alterations on the first floor, the second floor is still intact. Many small retail businesses have occupied the building throughout its history. Since 1975, it has housed the Barre Senior Citizen Center and an Antique and visitor center. In 2019, The Barre Partnership moved their offices to the front of the first floor space, and the City is working on filling the remaining rear portion of the building with a potential teen center.

Italian Baptist Church. The historic Italian Baptist Church at 10 North Brook Street is a unique example vernacular architecture built between 1906 and 1908. Designed by the church's first minister and built largely by volunteer labor from immigrant Italians, the result was an adaptation of Northern Italian Renaissance style churches. The monumental front on the building, almost entirely comprised of local granite, includes polished granite Doric columns and other granite elements include rusticated granite blocks, smooth granite panels for the walls, and decorative pilasters and frieze.

The Italian Baptist Church also speaks to the role religion played in the assimilation of new immigrants in America. The Baptist Association of Vermont established the church in the midst of the city's Italian neighborhood not only to attract new members, but also to assimilate immigrant cultures and values into American society. By World War I, many Italians immigrants had become Baptist churchgoers but by the 1930's the congregation had dwindled and the building became the meeting hall for a fraternal organization. Subsequently, the building housed other denominations and has been used as a commercial building.

Twing Gristmill. The historic Twing Gristmill is located at 450 North Main Street. The Hill-Martin Corporation used the gristmill for their business offices, and left the space in 2017. The building was built in 1844 as part of an industrial mill and iron castings complex. The brick gristmill, the only building to remain of the large complex, is representative of Barre's pre-railroad industries. For an industrial building, Twing's gristmill was unusually ornamented, especially the interior, with a double spiral staircase, paneled walls, marbleized columns, and wallpaper. Decorative granite trim was liberally applied to the exterior. By 1910, the building had become a storage house. In the late 1970's with virtually nothing remaining of the interior mechanical systems, the Hill-Martin Corporation undertook the rehabilitation of the mill for their offices. Many of the original interior details exist and were adapted into the office space. In the 1990's, other offices were using the space, and by the early 2000's, the buildings were vacant. A devastating fire to the gristmill occurred in 2018, and the owners are working to sell and/or renovate the property.

Childcare. The 2018 estimated Census predicts 1,088 families in Barre City will have children under the age of 18; 47% of those families were married couples and 53% were single-parent families. The percentage of single-parent families in Barre City is much higher than in the state (34%) or county (35%). Of the nearly 600 pre-school age children living in Barre City according to the 2010 and 2018 estimated Census, 560 (95%) had all their primary caregivers in the workforce. There were also around 880 school-age children living in households where all their primary caregivers worked.

While more precise estimates of demand for childcare are not available, it is clear that many parents in the city need childcare services to allow them to work outside the home. There are also parents who are employed in, but do not live in, Barre City who want childcare that is located near to where they work. The availability of quality, affordable childcare is an economic development asset – as many employers recognize that without this service their ability to attract and retain employees will be reduced.

Vermont regulates both daycare centers/programs and home daycare providers, and childcare providers can seek various levels of accreditation as appropriate to the type of services offered. There were 5 licensed daycare centers/programs and 15 registered home daycare providers located in Barre City in October of 2019; the number of providers in the city fluctuates regularly, particularly the number of registered home daycare providers. The licensed daycare providers can accommodate approximately 200 pre-school and school aged children were reporting fewer than 10 vacancies, while the home daycare providers could have accommodated 22 additional children out of the almost 150 available slots in total.

Parents in Barre City seeking a childcare provider or related assistance can contact Child Care Support Services at the Family Center. Their staff can refer parents to childcare providers with openings, and help parents find financial assistance to make childcare more affordable for families. The center also offers support and training to childcare providers in the region.

Seniors. Barre City has a large population of seniors and is a regional provider of elderly housing with approximately 300 senior housing units. Approximately 20% of Washington County residents age 74 or older live in Barre City and those residents account for 5% of the city's total population. According to the 2018 estimated Census, there were 734 city residents age 65 to 74 and 461 city residents age 74 or older. Older residents, particularly the frail and elderly have a greater need for public services like healthcare, EMS and transportation, while more active seniors have leisure time to participate in community activities and enjoy public amenities like parks and recreation programs.

The BASC (Barre Area Senior Center), formerly located on North Main Street, is housed at 133 S. Main Street, fondly referred to as the Wall Street Complex, in which the BASC occupies one of the units. BASC provides seniors with a variety of social, educational and health-related activities. The center has approximately 385 members and is open weekdays from 9 a.m. to 3 p.m. A bequest in 2010 from the estate of Ronald York has allowed the Barre Area Senior Center to hire a full-time director. BASC offers lunch every Tuesday, along with arts and crafts, dance, fitness, singing, book discussion, genealogy and writing classes, board games and technology workshops.

There are also a number of nonprofit organizations working in Barre City that provide various services for older residents including:

- Project Independence is an adult day health services center that offers a program of services and activities designed to promote the health and well-being of frail elders and people with disabilities from a center at 81 North Main Street in downtown Barre City on weekdays from 7 a.m. to 4 p.m. The center serves up to 65 participants.

- Central Vermont Council on Aging (CVCOA) serves adults aged 60 and older living in Central Vermont, with 54 towns in several counties. assists more than 1,300 Barre City seniors annually with community and home delivered meals, health insurance counseling, transportation, family caregiver support and respite, companionship, help with household tasks, mental health services, and legal services.

Healthcare. Bare City residents can access a range of healthcare services within the city and neighboring communities including:

- The Central Vermont Medical Center (CVMC) is a member of the University of Vermont Health Network, and is located off Route 62 in Berlin approximately four miles from downtown Barre. it is the region's primary healthcare provider for the 66,000 people that live and work in the 26 communities of Central Vermont. CVMC includes a 122-bed hospital, which provides 24-hour emergency care, a full spectrum of inpatient and outpatient services, the National Life Cancer Treatment Center, 17 medical group practices (including several practices with offices in Barre City), and the Woodridge Rehabilitation and Nursing Home.

- The People's Health and Wellness Clinic, located at 553 North Main Street, provides primary care to uninsured and under-insured patients who could not otherwise afford healthcare services. The clinic is largely staffed by health practitioners from around Central Vermont who donate their services, and medical and nursing students volunteering as part of their studies. Barre City residents make more than 400 visits to the clinic annually, among the 44 towns that have been served.

- Central Vermont Home Health & Hospice, based in Barre Town, is a full-service, nonprofit Visiting Nurse Association that provides medically-necessary home health and hospice care to Barre City residents regardless of their ability to pay. The agency promotes general health programs in the community such as vaccinations, health screenings, workshops, clinics and caregiver support. Home care services included skilled nursing, home health aides, rehabilitation therapies, medical social services, long-term care services, homemaker service, respite care, private duty nursing, and hospice care for the terminally ill.

NATURAL ENVIRONMENT

physical setting

Barre City developed along the Stevens and Jail Branches of the Winooski River, and the rivers and surrounding terrain have shaped its development pattern. Most of the developed areas of the city are located in the relatively flat river valley with residential neighborhoods extending up into the hills above the downtown within and beyond the city limits. The terrain rises up steeply on the west side of the river, while to the east the valley is wider and the grade climbs more gradually. West Hill to the northwest is nearly 800 feet above the valley floor.

The terrain also defines Barre City's drainage patterns, resulting in three primary watersheds within the city limits with most of the city draining to the Stevens Branch below the Jail Branch. These primary watersheds can be further divided into smaller drainage areas associated with tributaries to the Stevens and Jail branches. The river and stream valleys in the city, and in the surrounding uplands beyond, are relatively narrow – a fact that has contributed to flooding being an ongoing challenge for the city.

Barre is known as the Granite City for the high quality stone that has been, and continues to be quarried in the area. The presence of granite as the predominate bedrock is a result of the geologic history of this part of Vermont. Granite is a very hard, igneous rock and it has remained while softer, metamorphic rocks have eroded away. Millions of years of erosion have lowered and smoothed the terrain, creating the hill and valley topography that exists today. Over this bedrock, the process of glaciation deposited a layer of unsorted tills as the ice receded. In the city, the soils are primarily loams with limited deposits of sand and gravel.

Barre City experiences a moderate climate with a 130-day growing season. Average annual rainfall is 42 inches and average annual snowfall is 89 inches. July is the warmest month with an average high temperature of 81°F and January is the coldest month with an average low temperature of 4°F.

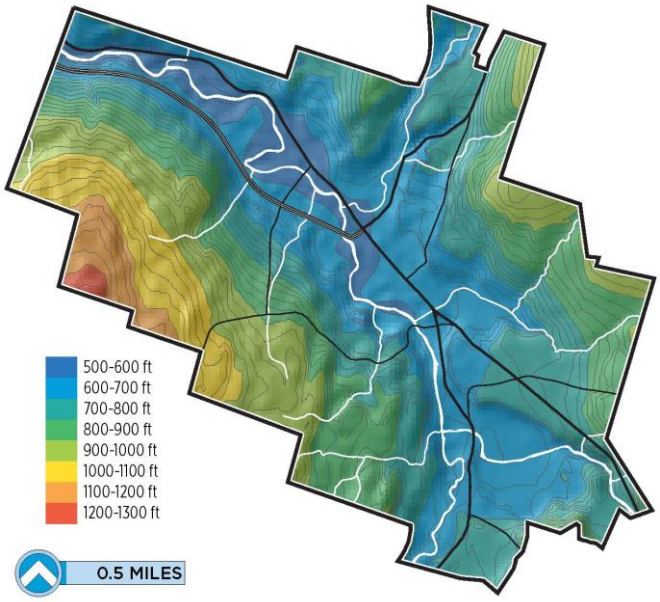


Figure 15. Terrain and Elevation Map

Before widespread clearing in the 1800's, land within the city would have been forested primarily with native Northern Hardwood forest. With perhaps the exception of the steepest slopes, wooded areas within the city are regrowth of land that was cleared at some point during the previous 200 years. While development and fragmentation of habitat has adversely affected the wildlife that would have resided in the native forest, many species are still thriving in the undeveloped land within and just beyond the city limits.

There are approximately 750 acres of primary agricultural soils, as mapped and classified by the Natural Resource Conservation Service, within the city. More than half of these soils have been built upon, but several hundred acres of agricultural soils remain undeveloped on the large tracts of open land left within the city (further discussed under Open Space below). One farm continues to operate within the city used for hay fields by the Fairmont Farm of East Montpelier, Vermont.

water resources

Rivers. Barre City's two primary rivers are the Jail Branch and the Stevens Branch of the Winooski River. The Jail Branch begins in the Town of Washington and flows 16 miles before joining the Stevens Branch behind 121 South Main Street in Barre City. The Jail Branch passes through a retention dam in East Barre built for flood control after the devastating flood of 1927. The Stevens Branch originates in Williamstown and travels 13 miles before emptying into the Winooski River in Berlin. It flows 3.5 miles through the city.

The Jail Branch, Stevens Branch and their tributaries were assessed for their geologic and river characteristics that contribute to stream stability in 2004 (Phase 1 Geomorphic Assessment). That initial assessment was followed up by a more detailed study in 2009 of the least stable sections of the streams (Phase 2 Geomorphic Assessment). The resulting reports, 2004 Stream Geomorphic Assessment of the Stevens Branch and the 2009 Stevens Branch Watershed River Corridor Management Plan, are incorporated as reference to this plan.

Watersheds. The Jail Branch drains nearly 31,000 acres and the Stevens Branch above the Jail Branch drains approximately 22,000 acres. All development and changes in land cover that increase runoff or decrease infiltration rates within these 53,000 acres affect the quality, quantity and velocity of the water flowing through the city. Increase in impervious surface and/or loss of forest cover within these watersheds increase the potential for flooding downstream in Barre City.

Within the city, more than 145 properties abut the two rivers – including a mix of residential, commercial, and industrial uses. The land in the Jail Branch watershed within the city is largely undeveloped and steep. With the exception of the hillside that rises next to Route 62, the terrain is less severe in the areas of the city within the Stevens Branch watersheds and accordingly those watersheds are considerably more developed.

Flood Hazards. Flooding is a fact of life in Barre City, a community built largely in floodplains. While actions have been taken to control the rivers and minimize the destructive force of floodwaters from the inception of development along the riverbanks, the city continues to experience flooding on a fairly regular basis. Historically, river management and flood control focused on engineering solutions like straightening, armoring and/or damming. In recent decades, the focus of river management and flood control has shifted towards restoring the natural functions of river corridors and better management of development within floodways and floodplains.

Water Quality. The Vermont Agency of Natural Resources has placed the lower half-mile of Gunner Brook (a tributary of the Stevens Branch that runs along Farwell Street) on the 303(d) list of impaired waters; this is the only surface water body within the city so designated. Water quality problems in Gunner Brook are a result of leachate from the closed Farwell Street landfill and surface runoff from developed land.

The Vermont Agency of Natural Resources has identified both the Stevens Branch and Jail Branch within the city as priority surface waters in need of further assessment. Problems affecting water quality in these rivers are largely related to surface runoff from developed land, but the state has not yet documented a violation of Vermont's Water Quality Standards that would result in the rivers being placed on the 303(d) list.

States establish water quality standards and identify impaired waters that do not meet those standards under the authority of Section 303(d) of the federal Clean Water Act. Under that law, a TMDL (total maximum daily load) must then be established for the pollutant(s) that are impairing water quality, resulting in a higher level of state regulation throughout the affected watersheds. Keeping additional rivers and tributaries within the city from being placed on the 303(d) list will require careful management of stormwater and hazardous waste, as the primary pollutant of concern is surface runoff from developed land.

Stormwater. Stormwater poses a significant challenge within the city. Historically, stormwater was "managed" solely to remove it from the built environment as quickly as possible – this often meant collecting and piping the water directly to the nearest stream or river. As the amount of development within a watershed increases, this type of management becomes unsustainable. More water is entering streams and rivers more quickly during storms leading to downstream flooding. Stormwater picks up and carries sediments and pollutants as it flows over surfaces, which reduces water quality in the receiving streams, rivers and lakes. Stormwater has little opportunity to infiltrate into the ground and replenish the supply of groundwater.

The amount of development within the city's watersheds has made it necessary to do more than simply remove stormwater from rooftops, streets and parking lots. The water needs to be managed so that sediment and pollutants are removed, so that there is opportunity for infiltration, and so that the rate of release to streams and rivers is controlled to minimize flooding.

These objectives are all difficult to accomplish in areas that are densely developed. Low impact development (LID) techniques can be used to integrate stormwater management more effectively into the built environment. These techniques include rain gardens (small green spaces designed to collect, treat and infiltrate stormwater), green roofs (which collect and hold rainwater), and pervious paving (which allows water to infiltrate). More effective management of stormwater on individual properties will forestall the need for costly municipal infrastructure improvements or other significant city actions to address stormwater.

The simplest approach to stormwater management is to minimize the amount of impervious surface within the watershed. There are many opportunities within the city to reduce the amount of impervious surface as private properties and public spaces are revitalized and redeveloped. Not only is this beneficial in reducing stormwater runoff, but increased greenspace within the city is beneficial for the microclimate, for aesthetics, for wildlife, and for residents' quality of life.

Wetlands. The Vermont Agency of Natural Resources has mapped and classified less than 3 acres of wetlands within the city. The amount of hydric soils within Barre City suggests that many wetlands were filled and built upon as the city developed, as was common practice until recent decades.

Science has now shown that wetlands provide essential ecological services and the loss of wetlands to development exacerbates flooding and water quality problems within a watershed. Wetlands function like a sponge, holding excess water that runs off from adjoining uplands or that overflows the banks of flooded streams and rivers. They store that water, allowing it to slowly infiltrate into the ground or seep into adjacent water bodies. By reducing the rate of surface flow, sediment and pollutants drop out of the water and are deposited in the wetland.

Within the city, there are locations where wetland functions can be protected or restored. One example is the Canales Wetland, a two-acre parcel of land at the corner of Pleasant Street and Fortney Place, which was purchased by the Capital Area Land Trust to preserve a significant wetland and which is now city owned. Plans call for using this property as a small wooded park with walking trails.

River Corridor Revitalization. Historically, Barre City's riverfront was developed as an industrial and transportation corridor. The Main Street buildings turn their backs to the river. For much of the city's history, there has been limited physical and visual access to the river. Changes in development and land use along the riverfront are making it possible for the river corridor to have a new life as a natural, recreational and scenic asset within the city.

Within the downtown, the Stevens Branch runs through an industrial area that is anticipated to be redeveloped with a new mix of uses over the next decade. This redevelopment presents an opportunity to improve the appearance of the riverfront with public walkways, landscaping, and lighting. Such improvements would allow residents to rediscover this natural resource. Riverfront improvements would require acquisition of public easements over private land and considerable public investments in walkways.

brownfield remediation & redevelopment

A brownfield is land that has been contaminated, usually as a result of industrial activity or the intentional or unintentional spilling/dumping of hazardous materials. Many brownfields have been left essentially "ownerless" as companies have gone out of business, leaving the responsibility for clean-up to federal, state and local governments. It is often difficult to sell brownfield sites as potential purchasers can have difficulty securing financing for a contaminated site. In recent years, Barre City has successfully obtained state and federal funding to assist with brownfield remediation with the goal of transforming blighted properties into sites suitable for private redevelopment.

Hazardous Waste Sites. As of 2019, the state Agency of Natural Resources had identified 90 hazardous waste sites within the city, the majority of which had been remediated or required no further action. Many of these are locations, such as gas stations, where small spills occur from time-to-time; several such incidents are reported within the city each year and with appropriate response most pose little threat to environmental quality or human health.

The state has identified four high-priority sites within the city that have more serious contamination issues. These include the Barre Coal Tar site on Williams Lane, the former Howe Cleaners site on Depot Square, the Enterprise Aly Redevelopment Area, and one private residence that experienced a major fuel oil spill. The Bonacorsi and Sons site on Prospect Street has been dropped to a medium priority site. Remediation at these sites is in various stages of planning and implementation.

- **Williams Lane**. A 0.87-acre parcel at the end of Williams Lane next to the Stevens Branch currently is listed as a brownfield site due to coal tar remaining in the soil. The state currently operates wells to monitor the movement of the coal tar from the site. The area cannot be disturbed to any degree, although indications are that the coal tar movement is limited. "Capping off" the site with an impervious surface would further reduce the potential for the coal tar to migrate off the site and potential into the adjoining river. Currently, there is no funding to remove the hazardous materials. This site must continue to be monitored until such time that it can be remediated or capped off and be redeveloped.

- **Enterprise Aly Redevelopment Area**. This is a 0.05-acre parcel, part of the new parking lot redevelopment, that also includes 9 Depot Square. A Corrective Action Plan was implemented. Significant soil excavation occurred in combination with redevelopment activities. We are currently implementing insitu chemical oxidation, and soil vapor extraction is in place to manage migration of vapors from site plume to adjacent properties. The 9 Depot Square/Former Howe Cleaners site has been combined with this site, since they were essentially the same.

- **Depot Square**. The property at 9 Depot Square is listed as a brownfield because it is contaminated with dry cleaning chemicals. It was once considered a Superfund site and there were legal battles over cleanup costs. The building on the property was destroyed by fire in 2008. The city acquired the property and final remediation is occurring as part of the Enterprise Aly Redevelopment Area above.

Large Undeveloped Tracts. Approximately 480 acres of undeveloped land in large tracts remain within Barre City. Some of this land is suitable for development, but a significant amount has natural resource constraints (primarily steep slopes) that limit development potential. Much of this land is forested and some has been logged over the years. The remaining land is farmland with open fields, some of which remains in agricultural use. These lands provide a diverse and productive mix of habitat types supporting abundant wildlife, including turkey, deer, fox, porcupine, rabbit, and many other species of birds such as hawks and owls.

Forest fragmentation is when our forests and wooded lots are threatened by the conversion to other uses and parcelization (subdivision of land). Conversion of forest blocks can occur when there is a change in landowner objectives and development, or even a new property owner, or property tax burden. Forest blocks, when fragmented, impacts wildlife habitat, and the integrity of natural communities.

The Current Use Program administered by the Vermont Department of Taxes allows for the valuation and taxation of farm and forest land based on its remaining in agricultural or forest use, instead of its value in the market place. Currently, the Valsangiacomo lands off Berlin Street, Booth Brothers lands off Allen Street, and Quantum Keyes land off North Main Street near the Berlin town line have enrolled their lands in the program, and manage their forest integrity according to the program.

Forest and Habitat Terminology

- Forest Fragmentation: the division or conversion of a forest block by land development other than by a recreational trail or use exempt from regulation.
- Forest Block: a contiguous area of forest in any stage of succession and not currently developed for non-forest use. A forest block may include recreational trails, wetlands, or other natural features that do not themselves possess tree cover.
- Habitat/Wildlife Connector: land or water or both that links patches of wildlife habitat within a landscape, allowing the movement, migration and dispersal of animals and plants and the functioning of ecological processes.

The framework for protecting forest integrity focuses on protecting priority interior forest blocks and priority habitat connectivity blocks, as defined and mapped by the Agency of Natural Resources. The State has identified general goals for interior forest conditions:

Avoiding permanent interior forest fragmentation resulting from development;

Undertaking forest management activities that maintains forest structure; and

Conserving interior forest blocks that support ecological processes as well as viable populations of Vermont's native fish and wildlife.

The ANR's Biofinder map shows there is a very large chunk of Priority Interior Forest Blocks on the Valsangiacomo lands which, besides being in Current Use (as stated previously) also has a forest management plan and have agreed to keep the woodland undeveloped. These forest blocks extend into the Town of Berlin, so they are part of a larger whole.

The Planning Commission completed a study of undeveloped land called the 2005 Vacant and Underdeveloped Land Use Study, and was a part of the 2005 Municipal Plan. This was updated in 2011 while preparing the 2014 Plan; the study is incorporated into this plan as an appendix. The

study examined the opportunities and constraints for future use of not only these large tracts, but other undeveloped or vacant lands within the city.

These lands also serve an important function in their undeveloped state as open space. This open space provides a range of environmental services, including wildlife habitat and erosion and runoff control. These lands also provide opportunities for passive or low-impact recreation, allowing city residents to enjoy outdoor activities more typically associated with rural living. Further, greater interest in the local food movement may make continued agricultural use of some of the open land once again an economically viable option. For all these reasons, the large, undeveloped tracts contribute positively to the quality and character of the community as a whole – making Barre City a more attractive place to live, work or visit.

City-Owned Land. Barre City owns a significant amount of open and green space available for public access or recreation. Some of this land is developed as parks and formal recreation areas, but much of it is undeveloped land including a former rail bed, which is planned to be redeveloped as a bike path through the city, and the 'Cow Pasture' (see discussion of this property in the Land Use Chapter below). The undeveloped municipal land includes two large parcels: the closed 20-acre landfill off Farwell Street and a 10-acre lot north of Rotary Park. In addition to these larger parcels of land, there are miles of mature street and shade trees within the public right-of-way. These trees fall under the responsibility of the City's Tree Warden, with the assistance from Public Works. They provide cultural value, shade, reduce dust and control soil erosion.

The Cow Pasture property is a 67-acre municipally owned property has a 2017-2027 Management Plan, and has been endorsed by the City Council. This property was pasture for the City's work horses in the late 1800's. It now has a complete list of allowed uses, such as hiking, dog-walking, running, cross-country skiing, sledding, berry-picking and snowmobiling. There is also a complete list of what is not allowed, and that includes hunting or tapping, fires, camping, among other things. The Cow Pasture contains an extensive trail network from wide mowed paths to single-track wooded trails. There is a small parking area at the end of Maplewood Avenue that allows visitors to access the trail network from the south. This management plan is incorporated as reference into this plan.

Other Open and Green Space. The city and other civic entities own more than 140 additional acres of land that also serve as open and green space. This includes 90 acres within cemeteries, including the 55-acre Hope Cemetery, whose memorials reflect Barre City's stone working and sculpting heritage. The school district owns approximately 35 acres, including developed recreation fields and facilities. There are also a number of privately-owned properties that include formal green space and many more developed properties that have retained undeveloped natural areas.

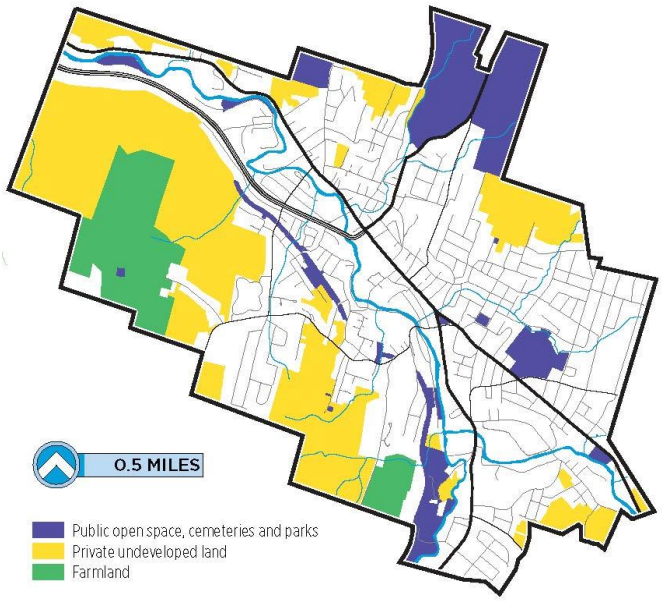


Figure 16. Open Space Map

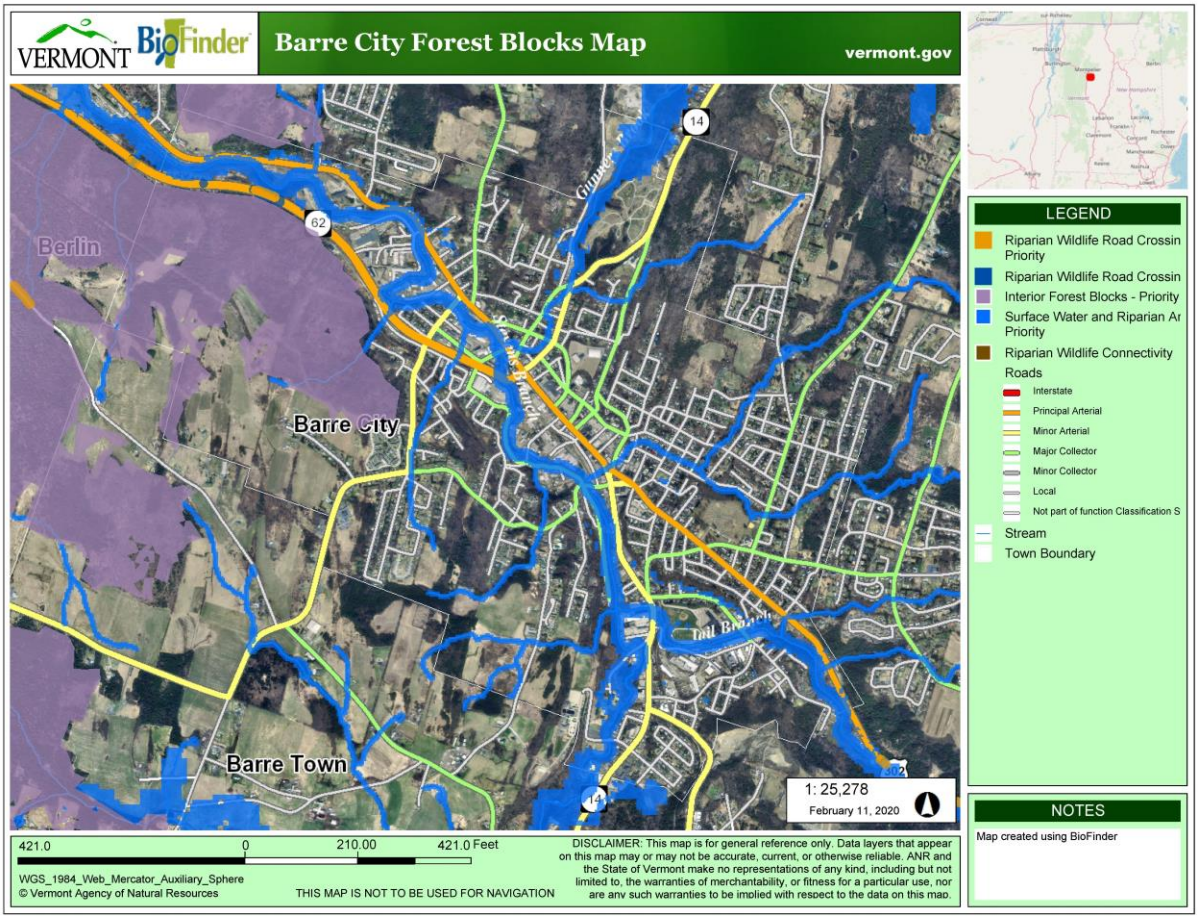


Figure 17. Forest Block Map

planning areas & neighborhoods

Planning Areas. This chapter of the plan assesses current land use and development patterns in Barre City and provides guidance for the future development and redevelopment of our city. The city can be viewed as a mosaic of neighborhoods, each of which has its own unique history, opportunities and constraints.

While each neighborhood is discussed separately, there are a number of general land use types and patterns in the city that can be found in multiple neighborhoods. Seven general planning areas are shown on the Future Land Use Map (opposite) and described below. These areas should not be interpreted as zoning districts. The land use recommendations from the 2014 plan were implemented, and most of these areas include a number of zoning districts tailored to their neighborhoods. Within each planning area the zoning districts will share a common DNA that originates from the general vision for each area described below.

- **Urban Centers Areas**. Our urban centers are comprised of our core downtown area along North Main Street, as well as areas flanking the downtown urban core, including gateway areas into the city. This area is envisioned to remain a traditional downtown center composed of multi-story, mixed-use buildings fronting directly on the sidewalk. Future development will follow the historic pattern.

- **Industrial Areas**. This area includes several developed areas along the rivers and rail line that house intensive industrial uses. Due to the nature of the industrial and compatible business activities occurring in these areas, they are not suitable locations for residential development or other uses that would conflict with the industrial nature and purpose of the area.

- **General Business Areas**. This area includes the blocks extending outward from the Downtown Urban Center District, the lands along the main travel corridors through the city, and some of the less-intensive or more mixed industrial sites along the rivers and rail line. These lands include a mix of manufacturing, office, flex space, business services and limited retail uses.

- **Mixed Use Areas**. These planning areas include some small, pre-existing commercial sites associated with residential neighborhoods scattered around the city. These are areas where the city needs better control over the scale, intensity, impact and appearance of development than the current zoning provides. The overall goal would be to establish and maintain neighborhoods with a complete mix of residential, retail, service and office uses. They also provide for a buffer between business and industrial areas and adjoining residential neighborhoods.

- **Residential Areas**. These areas are primarily for residential blocks with various density standards and a variety of housing types. There are four residential areas laid out in the City.

    - **High-Density Residential**. This area primarily includes the residential blocks closest to downtown. While once predominately single- or two-family homes, the construction of apartment buildings and the conversion of single-family homes to multi-family homes has resulted in much higher density neighborhoods. This plan envisions that these areas will

continue to become higher density through infill, conversion and redevelopment. The overall goal is to promote higher quality development and redevelopment that will create safe, healthy and attractive residential options within close proximity to downtown Barre City.

- **Moderate-Density Residential**. This area also includes established residential neighborhoods characterized by a gridded street network with primarily single- or two-family homes on small lots with more green space to preserve neighborhood character. These blocks are facing, or are envisioned to face, increased demand for conversion of single-family, owner-occupied homes to multi-unit, rental buildings.

  This plan recognizes the changes to the zoning that will tailor the district standards to better match the specific characteristics of individual neighborhoods. These neighborhoods were established and built out over more than 100 years and in different physical settings. As such the neighborhoods display a range of lot sizes, building types and sizes, building placement on the lot - all of which combine to create a particular character. The overall goal is adjust to zoning to provide some opportunity for infill and support extensions into some currently undeveloped land, but generally to not allow significant changes in the density and development pattern of these neighborhoods.

- **Low-Density Residential**. This planning area includes developed land, some of which has moderate natural constraints (such as slopes). These areas include predominantly single-family housing and few converted apartment houses have irregularly placed lots and inconsistently placed buildings in order to fit development to the site.

- **Very Low-Density Residential**. This planning area includes a mix of undeveloped land which typically has more serious natural constraints (such as steep slopes) and the bulk of the housing neighborhoods. With careful site selection and special construction techniques these areas could include a number of very attractive single-family house sites. Planned unit developments would be appropriate in this planning area to cluster housing on developable portions of properties that likely contain many unsuitable areas. As these areas generally do not contain services at this time (roads, power lines, water and/or sewer lines) construction in these areas will be more expensive than elsewhere in the city. It is not expected that these areas will be cost effective in the near future due to current market conditions and the additional cost of development but, unlike the conservation area, these lands should be considered developable in the future.

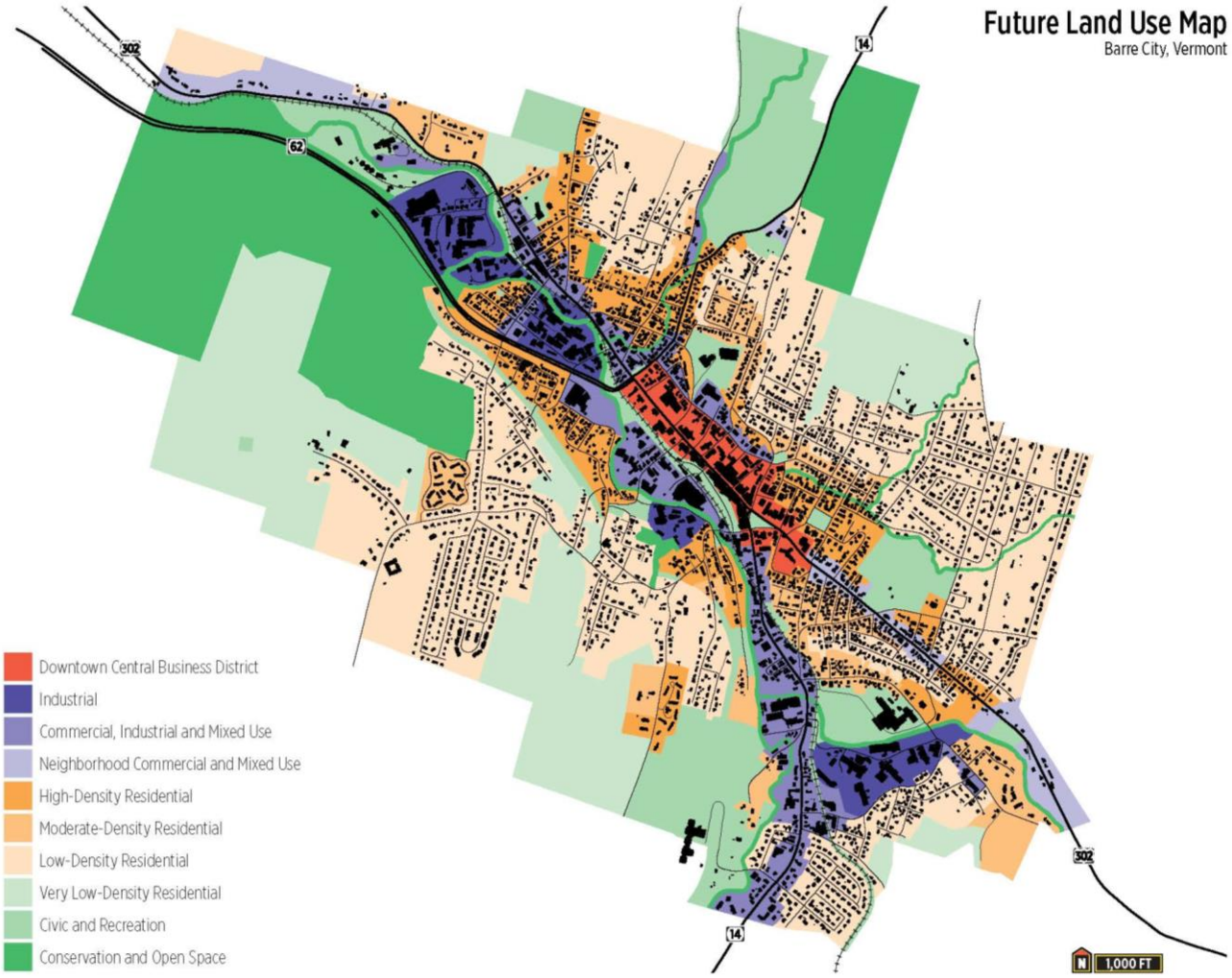
- **Civic and Recreation**. This planning area is a restrictive, conservation zoning district for the purposes of protecting and preserving important natural resources and open space, and discouraging development of land with significant development constraints including steep slopes, shallow soils, floodplains and wetlands. It includes several types of land including city-owned properties, parks, cemeteries and schools. This plan envisions that the civic and recreation lands will continue in public or quasi-public ownership and use.

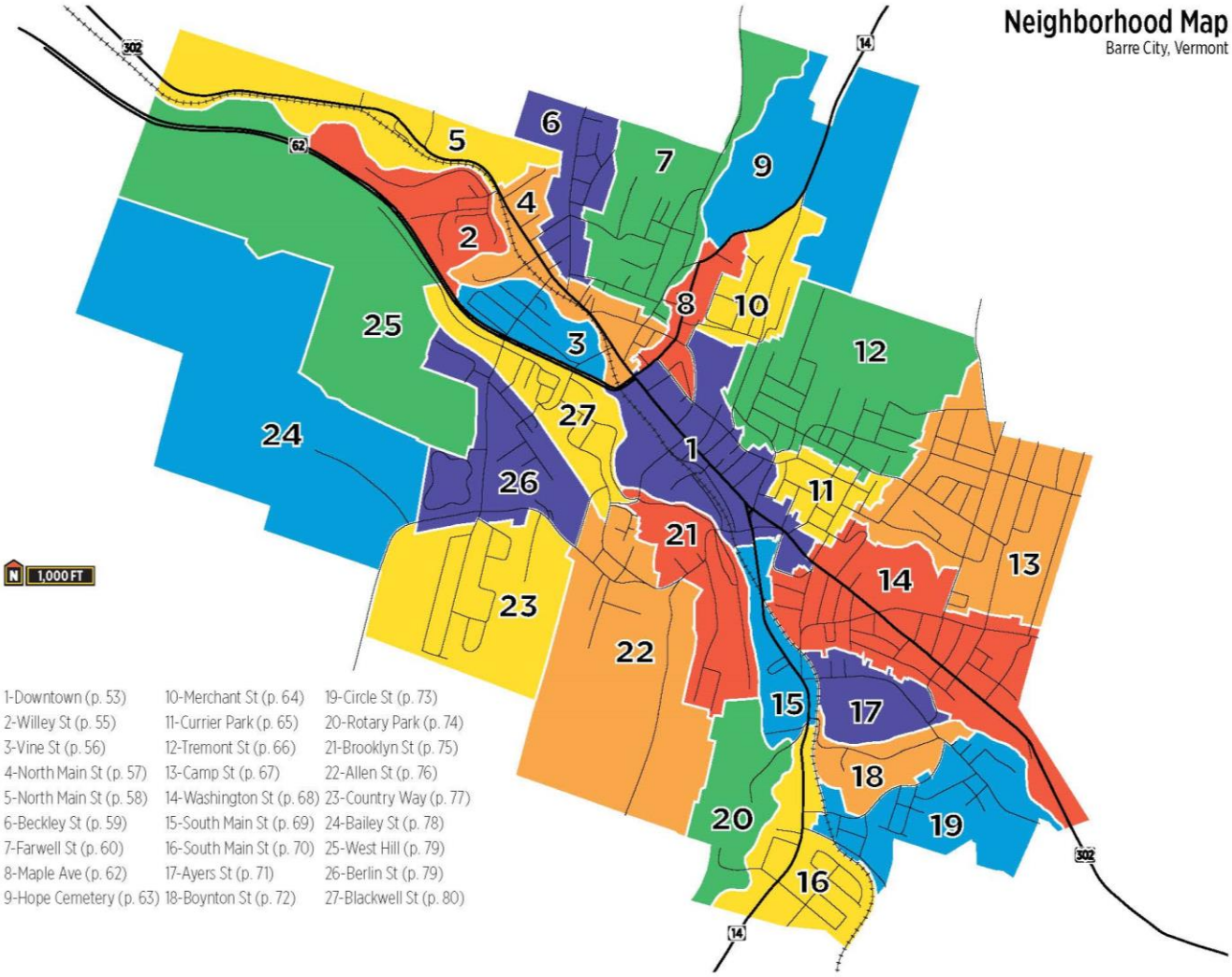
- **Conservation and Open Space**. This planning area contains those lands that face severe challenges, such as steep slopes, limited access or floodplains, and are largely unsuitable for development. This plan envisions that these areas will remain largely undeveloped or, if already developed, will not be further developed.

  This planning area also includes a buffer along the rivers and their tributaries through the city, as well as established bike path routes. While there is already significant development in portions

of these corridors, as recommended in other chapters of these plans, it is other goal to restore natural vegetation along the rivers and streams and pull development back from them to the greatest extent feasible. This will both have environmental benefits and reduce the hazards associated with flooding and erosion.

What follows in this chapter of the plan, is a neighborhood-by-neighborhood discussion of current and future land with specific recommendations for regulatory changes and physical improvements. As planning efforts continue, we envision that additional neighborhood redevelopment plans will be prepared to supplement this chapter.





Note: sidewalks shown on the following neighborhood maps are based on best available data and need to be confirmed through a complete streets assessment. The flood hazard areas shown on these maps is for general information only and the official FIRM maps must be referred to for all official purposes.

Downtown

Location. Downtown Barre includes the property that fronts on North Main Street from the Route 62 and Maple Avenue (Route 14) intersection to the City Hall Park triangle formed by the intersection of Washington Street (Route 302) and South Main Street (Route 14). It also includes the land between North Main Street and the Stevens Branch, and the blocks between North Main Street and Summer Street. A steep bank on the east side of Summer Street separates downtown from residential neighborhoods beyond.

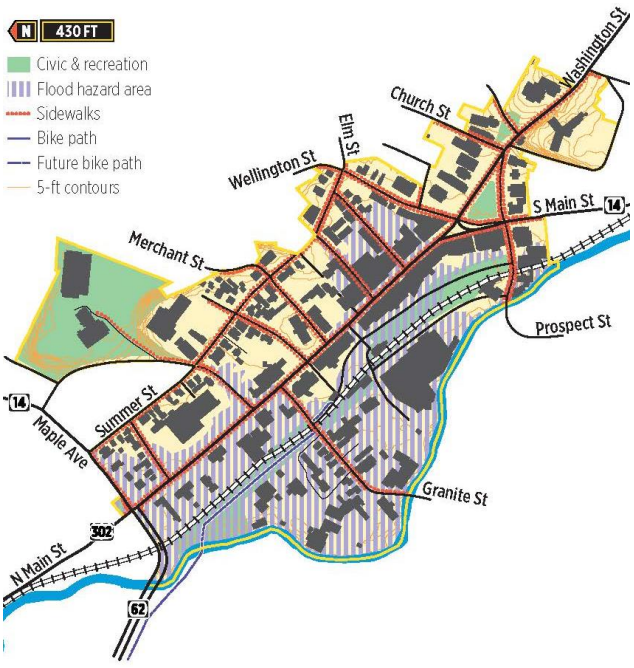
Current Land Use and Development Patterns. The historic commercial blocks and major civic buildings remain largely intact around City Hall Park and along North Main Street to Depot Square. Beyond Depot Square, historic buildings are mixed with more recent construction some of which does not match the traditional development pattern of multi-story, brick-faced, block buildings built to the edge of the sidewalk. Between North Seminary Street and Maple Avenue / Route 62, the historic pattern has been significantly altered by more recent development with parking rather than

buildings along most of the street frontage. There are almost 90 street-level storefronts along North Main Street from Maple Avenue to Elm and Prospect Streets.

In recent years, the city has made significant investments in our downtown. The $17.5 million North Main Street reconstruction project has completely replaced all infrastructure within the street right-of-way from the water and sewer lines below ground to the streetlights and traffic signals overhead. This project has provided a complete face-lift to the Downtown Business District's public realm. The City Place project also helped with downtown revitalization.

The Merchants Row area on the west side of North Main Street was created when the river was straightened and relocated further away from the downtown commercial blocks in response to ongoing flooding. The Merchants Row area is primarily used for public parking and is largely an undifferentiated expanse of asphalt. A number of downtown businesses have a secondary customer entrance from Merchants Row.

The Granite Street area along the river developed as the center of the city's granite industry in the late-1800's. The Old Labor Hall, a National Historic Landmark built in 1900 as a meeting hall for the Socialist Labor Party, is located on Granite Street with Rise-Up Bakery building along with a number of other residential buildings that remain from when this area initially developed. Most of the remaining industrial structures were built during later periods. In recent years, there has been significant private reinvestment in the Metro Way area. It is now a mixed-use area with residential, office, commercial and industrial activities.



The city owns the 10-acre Auditorium Hill property, which serves a variety of recreation and public functions. It overlooks the north end of downtown. At the south end of downtown, the Vermont State Historical Museum and the McFarland House (state office building) on either side of Washington Street overlook and serve as part of the gateway to our downtown. Two public spaces with monuments, which speak to our city's granite-working heritage, also mark the entrances to downtown.

Future Land Use and Development Patterns. Downtown Barre is the heart of our city; it is a center of commerce, culture and public life. Decisions about the future of the downtown should consider how to support and reinvigorate commercial activity and bring more people to live, work, shop and do business in our downtown. Specifically, this plan recommends the following land use policies, actions and projects:

A. We are fortunate to have retained a downtown with a unique image and identity, which is created by the form and character of our historic streets, blocks and buildings. These assets should be reinforced and enhanced through rehabilitation of historic buildings and redevelopment that is compatible with historic patterns.

A-1. Where there are 'tears' in the downtown fabric, these areas should be 'mended' with new infill development that is harmonious with the surrounding development and adds to downtown vitality (as exemplified by the City Place building). Historic building facades that have been obscured by 'tacked-on' treatments should be restored to reveal their historic quality.

A-2. New development should be oriented and scaled to pedestrians, and should avoid the pitfalls of blank walls adjacent to sidewalks, poorly detailed, 'throwaway' architectural quality, and parking lots disrupting the continuity of shops and attractions along North Main Street. The North Main to Summer Street Master Plan includes specific design guidance for downtown buildings, parking areas and streetscapes that were incorporated into the city's land use regulations, and any amendments going forward.

B. In 2010, a master plan was prepared for Merchants Row in anticipation of major improvements being made once the North Main Street Reconstruction project was completed. The Merchants Row Master Plan is incorporated by reference into this plan. Efforts to implement the estimated $3 million in recommended improvements in 2010, and now estimated much higher now and should be continued. The plan calls for:

B-1. The creation of a continuous sidewalk along the rear entrance of the North Main Street buildings and a recreational path paralleling the railroad tracks (one of the segments of the Central Vermont Bike Path connecting Barre City and Montpelier) is called the Metro Way path segment and is being built by the City during the 2020 construction season.

B-2. A redesign resulting in nearly 300 parking spaces, a simplified traffic pattern, and drop-off and loading zones behind the downtown buildings, as well as landscaping, which will create a more comfortable, pleasant and attractive environment.

C. In 2011, a master plan was prepared for a portion of the Summer Street area that recommends infill development along street frontages with connected 'parking courts' in the center of the blocks. The North Main to Summer Street Master Plan is incorporated by reference into this plan and the city's land use regulations were revised to implement its recommendations. This Master Plan is approximately 8 years old, and it is intended to be updated. That plan calls for:

C-1. Primarily new residential development on Summer, Merchant and Elm Streets, which would replicate historic patterns with respect to building setbacks, proportions, rooflines and materials.

C-2. Residential buildings on these streets to be wood-framed, two- to three-story detached structures oriented to the street with a shallow front yard or garden space.

D. The area around Granite Street, particularly the properties fronting on Granite Street, is a natural extension out from the urban center district. This plan recommends development of a master plan for the area, similar to those completed for Merchants Row and Summer Street. That plan should include specific recommendations for:

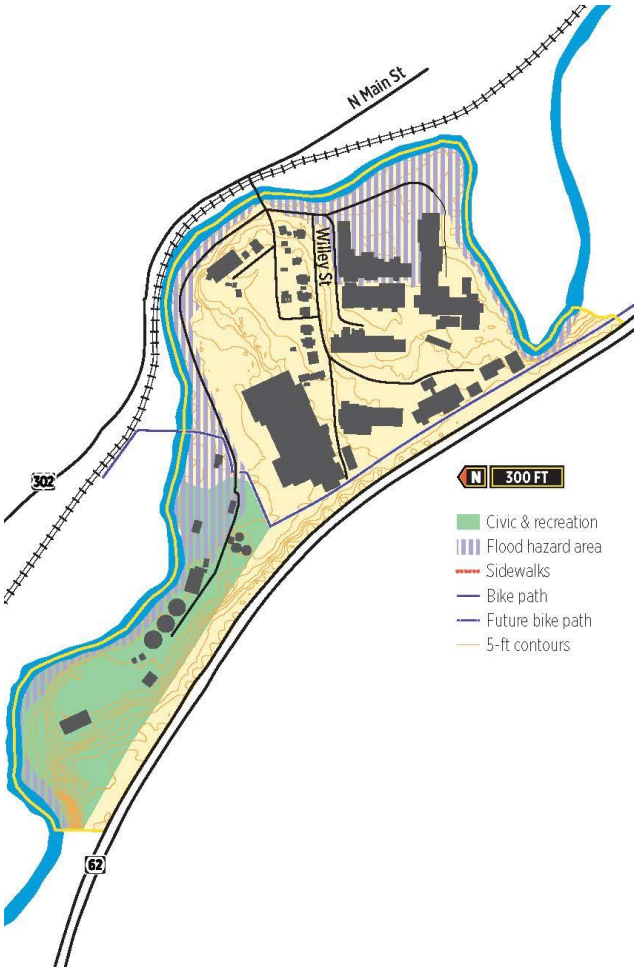
D-1. Improved pedestrian access from North Main Street across Merchants Row and down Granite Street.

D-2. Opportunities to capitalize on the recreational and scenic opportunities created by the river and the historic features related to Barre City's granite industry and role in the Labor Movement. The concept of a river walk behind the Urban Center 1 District has been suggested in plans since the city's first Master Plan in 1964. There is also interest in improving the historic walking tour of Barre City, and this area should serve as the starting/ending point for that route.

D-3. Facilitating further mixed-use redevelopment of this former industrial area.

Willey Street

Location. The Willey Street neighborhood is a self-enclosed area bounded by Route 62 and the Stevens Branch with Willey Street as its only means of access.



Current Land Use and Development Patterns. The Willey Street neighborhood was developed in the early 20th century as the city's granite industry was thriving and remains in active use by several granite businesses. There is approximately 300,000 square feet of space in the area's granite sheds, in addition to space in multiple outbuildings.

In the midst of the industrial sites are 11 residential properties, which were originally constructed as duplexes to provide housing for granite workers. two of the homes are single family, and the rest remain duplexes; four are owner-occupied.

The city's sewage treatment plant is located on a 12-acre site along the river at the north end of the neighborhood. While this neighborhood is bounded by the river, most of the developed lands are above the flood elevation. The proposed route of the Central Vermont Bike Path travels through this neighborhood paralleling Route 62 and crossing the river to the Granite Museum.

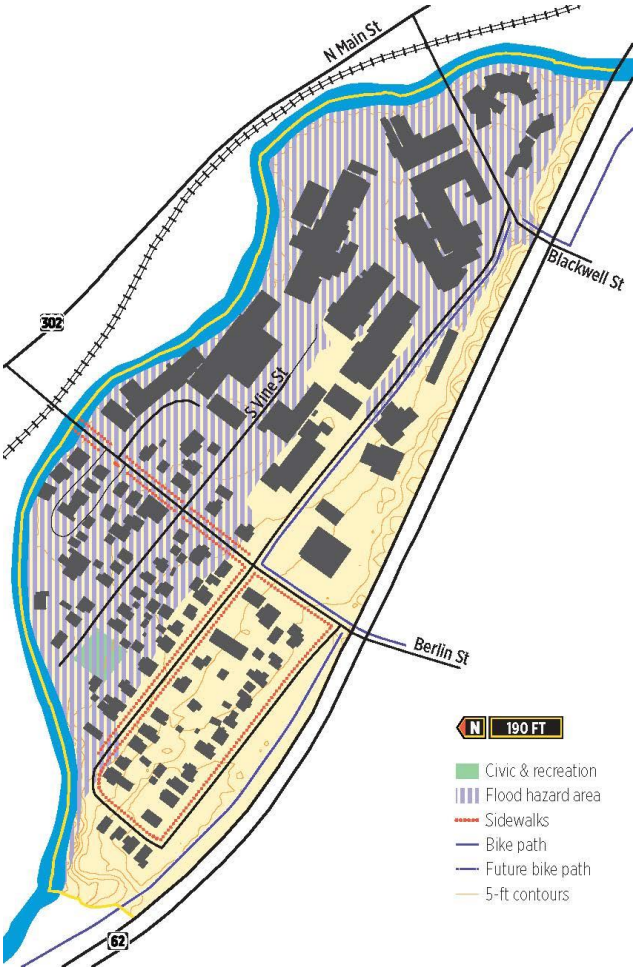
Future Land Use and Development Patterns. Willey Street has historically been a mixed-use neighborhood. Decisions about future land use and development should seek to balance the suitability of this land for continued industrial activities with reasonable protections for nearby residents. Specifically, this plan recommends the following land use policies, actions and projects:

A. The Willey Street neighborhood is visible from Route 62, with several industrial buildings backing up to the highway. Since they are among the first structures travelers entering the city

on Route 62 see, the rear facades of these buildings create a poor 'first impression' of our community. Opportunities for rehabilitating these buildings and/or screening them with landscaping or public art should be explored to create a more attractive gateway to Barre City.

B. Given the primarily industrial character of the neighborhood, the land use regulations were revised to allow for expanded live-work and/or non-residential use on currently residential properties and to limit further residential development.

Vine Street



Location. The Vine Street neighborhood is also bounded by Route 62 and the Stevens Branch. It is accessed and bisected by Berlin and Blackwell Streets.

Current Land Use and Development Patterns. This is neighborhood was also established in the early 20th century as the city's granite industry expanded. South of Berlin Street is industrial with approximately 240,000 square feet in what were once granite sheds and outbuildings. While there continues to be stone-working, the industrial activities have diversified to include trucking, warehousing, and fuel storage and distribution.

Along and north of Berlin Street is a residential area of around 65 residential properties and 100 dwellings. This includes around 50 single-family homes, 10 duplexes and several multi-unit buildings. The modest single-family homes and duplexes on small lots were constructed as housing for granite workers and their families, and remain primarily owner-occupied.

There is a small city park on Vine Street with a playground. The proposed route of the Central Vermont Bike Path crosses from the west side of Route 62 at Blackwell Street and travels through this neighborhood along Smith Street, and continuing along the east side of Route 62. There are sidewalks along Berlin Street and some of the residential side streets. A large portion of the developed land in this neighborhood is below flood elevation. The homes around Scampini Square are particularly vulnerable to flooding and have sustained repeated flood damage.

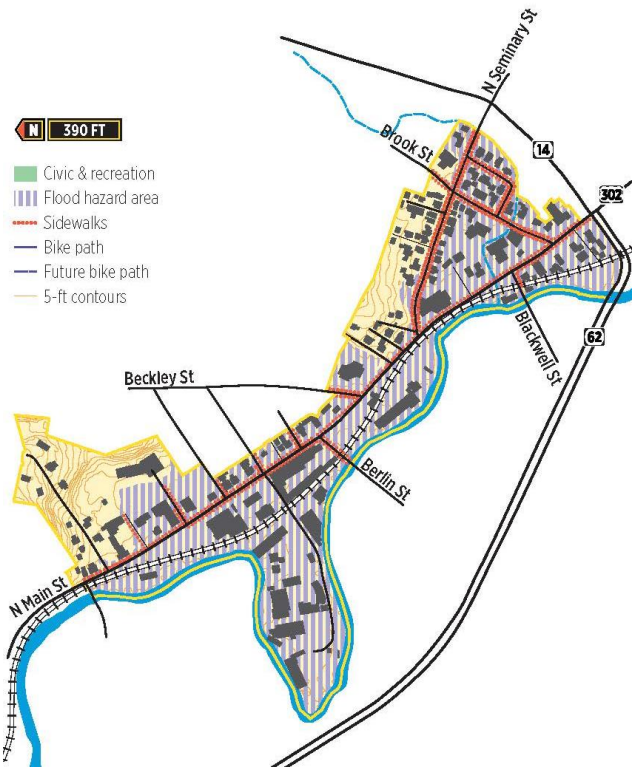
Future Land Use and Development Patterns. The Vine Street neighborhood should continue to accommodate both industrial and residential uses. To maintain or enhance the compatibility of these uses, this plan recommends the following land use policies, actions and projects:

A. A landscaped buffer should be established and retained between the residential and industrial properties. New or expanding industrial uses will be required to meet performance standards (noise, vibration, dust, etc.) to protect quality of life for neighborhood residents. Heavy industrial uses that have the potential to be a hazard for neighborhood residents should be discouraged and directed towards other industrial areas of the city where homes are further away.

B. Higher-density housing in multi-unit structures should be allowed along Berlin Street to establish a transitional zone between the industrial area to the south and the single-family homes to the north. On the side streets, residential density should not increase, particularly within the flood hazard area.

C. The industrial properties should be accessed from, and truck traffic routed onto, Blackwell Street to the greatest extent feasible.

North Main Street | Route 62 to 6th Street



Location. This diverse neighborhood is located along North Main Street from Route 62 to 6th Street and is bounded by the Stevens Branch to the west. Gunner Brook flows into the Stevens Branch just north of Blackwell Street. Most of this neighborhood is below flood elevation and these areas face the most significant flooding challenges in the city.

Current Land Use and Development Patterns. The frontage on North Main Street through this neighborhood is largely developed with commercial uses such as a used car sales business, a motel, and industrial uses. This neighborhood also includes an industrial and commercial area on West Second Street where two granite businesses remain in operation as well as a lumberyard and warehousing activities.

There is a high-density residential neighborhood along North Seminary, Brook and Laurel Streets that is composed primary of duplexes, triplexes and quadplexes (180 dwellings altogether). Most of these multi-family units are not owner-occupied. North Barre Manor, with 120 units of affordable housing, is located on North Main Street. Sixth Street is the most recent addition to this neighborhood with around 10 single-family homes built in the 1990's and early 2000's. The Public Safety Building and adjoining Wobby Park is located on 4th Street.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. While this segment of North Main Street is anticipated to remain a commercial and light industrial corridor that accommodates auto-dependent and high-traffic retail uses, efforts should be made to reduce the expanses of asphalt along property frontages and better control access to reduce congestion, improve motorist and pedestrian safety, and create a more attractive street.

B. The land use regulations should encourage more community-serving businesses that are oriented primarily to providing goods and services to city residents to locate in this area. The regulations should continue to support higher-density, multi-family housing in this neighborhood.

C. Given the density of residential development at the south end of this neighborhood, including elderly, disabled and affordable housing, accessible and safe pedestrian routes are critical so residents can walk to nearby businesses up and down North Main Street. Many residents in this neighborhood have little to no private outdoor space associated with their home. Residents in this neighborhood should have convenient access to a community park where people can gather and recreate. Given flooding issues, there may be a future opportunity to acquire land along the river that could become such a park.

D. The likelihood of recurrent flooding within the lower portion of this neighborhood must be recognized. Buildings should be designed with the expectation that basements will flood.

North Main Street | City Line to 6th Street

Location. This area is part of the gateway to Barre City for southbound travelers on Route 302. It is bounded by the Stevens Branch to the south and the city line to the north and west. On the south side of Route 302, the rail line travels through the narrow corridor between the highway and the Stevens Branch. The terrain, with a fairly high and steep bank on the north side of Route 302 creates a natural break in the development pattern along the highway to the west in Barre Town.

Richardson Road provides access to a residential neighborhood, which is largely located in Barre Town. Jones Brothers Way provides the only access to the land between the railroad and the river.

Current Land Use and Development Patterns. There is a mix of small-scale commercial and single-family residential properties along this segment of North Main Street. The residential development on Jorgensen Lane is one of the most recent in the city and includes around a dozen single-family homes built between 2008 and 2010.

While there are sidewalks on the east side of North Main Street in portions of this area, they are disconnected from the rest of the city's sidewalk network. There is a missing segment north of Sixth Street and south of Richardson Road where the terrain adjacent to the road is steep.

A principal land use in this neighborhood is the Granite Museum, which sits on a 12-acre parcel that is a visible gateway to the city on Route 302. The museum is located in the Jones Brothers Company's original 25,000 square foot granite shed built in 1895 and restored in 2002. The museum has exhibits on all aspects of the region's granite heritage - geology, technology, tools, and culture - hands-on education and training, and a sculpture garden. The planned bike path between Barre City and Montpelier would cross the Stevens Branch and enter the Granite Museum property. The open land along the river also serves a critical flood control purpose by essentially 'storing' floodwaters that would otherwise back up into the developed portions of the city.

Future Land Use and Development Patterns. Given existing natural resource constraints, this plan recommends the following land use policies, actions and projects:

A. The land in this neighborhood was rezoned to avoid a continuation of highway commercial strip development from Berlin into the city and to recognize that much of the land is poorly suited for the types of development currently allowed.

   A-1. The land use regulations should facilitate use of this land by the museum and for flood control. This land also creates an opportunity for greater public recreational access to the river.

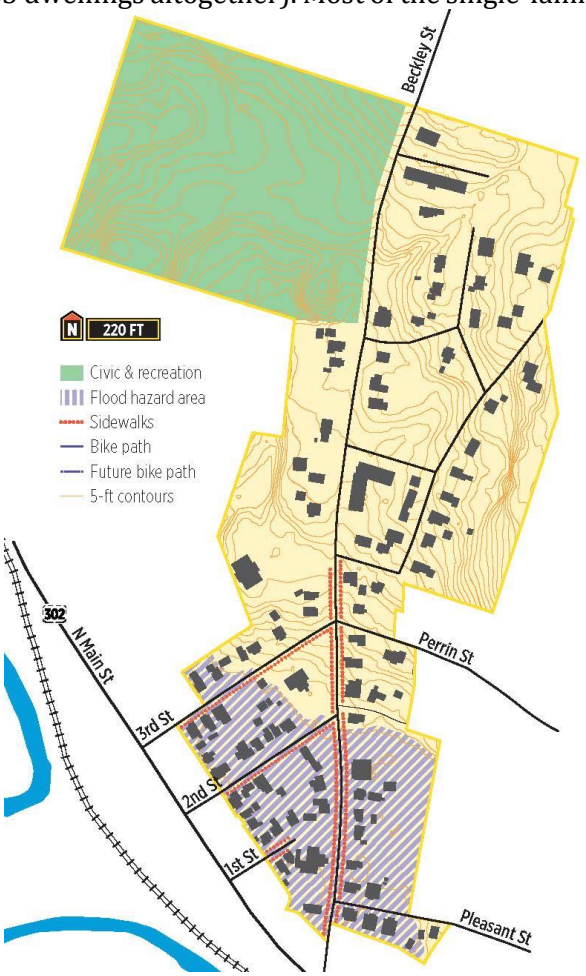
   A-2. There is a 15-acre undeveloped field at the city line behind the lots fronting on North Main Street. Some of this land is steep, but portions may be suitable for residential development. A planned unit development (PUD) with cottages or townhomes could be thoughtfully sited on the hillside with homes that would enjoy a view out over the river valley.

B. Efforts should be made to connect the sidewalks in this neighborhood to the city sidewalk network, and to complete the bike path to the museum and beyond through Berlin to Montpelier. The amount of traffic and lack of shoulders on Route 302 make the highway poorly suited for bicycling.

Beckley Street

Location. The Beckley Street neighborhood extends north from the east side of North Main Street to the city line. It includes land fronting on Beckley Street and a number of intersecting side streets.

Current Land Use and Development Patterns. This neighborhood is primarily residential and includes a mix of multi-and single-family homes (165 dwellings altogether). Most of the single-family homes are owner-occupied, while most of the multi-family properties are not owner-occupied. There are two civic properties in this neighborhood - St. Monica's Cemetery and the Mutuo club.



The pre-war neighborhoods along First, Second and Third Streets are densely developed with homes on very small lots. Most of this end of this neighborhood is below flood elevation. The homes further up the hill along Beckley Street were generally built in the second half of the 20th century on larger lots than those closer to North Main Street. There are also several larger, multi-unit buildings.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. This neighborhood should remain primarily residential with single-family and multi-family buildings at a scale and density that generally reflect the pre-war development pattern at the southern end. At the far northern end of this district, there are areas with steeper slopes and limited access where a lower residential density would be appropriate.

B. There are opportunities for infill residential development throughout this neighborhood. Infill development should follow traditional neighborhood development patterns and should be compatible with the surrounding built and natural environment. Front yards should be maintained as green spaces and should not be converted to parking for multi-unit buildings.

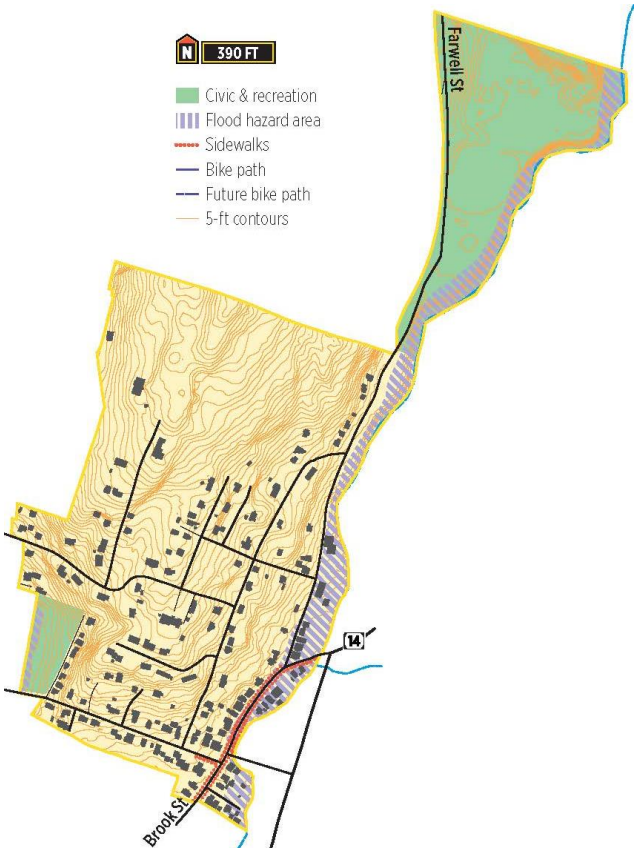
C. Multi-unit residential structures should be allowed with standards to ensure that they will be compatible with the neighborhood and if the buildings are of a size and character fairly similar to single-family homes.

Farwell Street

Location. The Farwell Street neighborhood includes the area between Beckley and Farwell Streets from Pleasant Street to the city line. Gunner Brook defines the neighborhood's eastern boundary. The brook flows at the base of a steep slope in the northern end of the neighborhood, which separates the city's former landfill site from Hope Cemetery.

Current Land Use and Development Patterns. There are around 170 dwellings in the Farwell Street neighborhood, 65% of which are single-family homes. Of the 130 residential properties, 83% are owner-occupied. There is a small commercial area in this neighborhood near the intersection of Farwell Street and Maple Avenue.

Canales Park, a 2-acre natural area off Pleasant Street, is located in this neighborhood. At the top of Farwell Street is a 21-acre property owned by the city that includes the closed landfill and a baseball field, known as Tarquinio Park. Only a limited portion of this neighborhood along Brook Street and Maple Avenue have sidewalks.



Around 15 acres of hillside land adjacent to the city line remains undeveloped and largely wooded. This land was historically laid out for residential lots with planned extensions of streets like Colby Street, Beech Street and Pine Street further up the hillside. However, steep slopes and shallow depth to bedrock pose significant natural limitations that make it unlikely that these lands can be developed as planned on paper.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. This neighborhood is envisioned to remain predominately residential.

A-1. There are opportunities for infill residential development in this neighborhood. Infill development should follow traditional neighborhood development patterns and should be compatible with the surrounding built and natural environment. Multi-unit residential development may be compatible with this neighborhood if the buildings are of a size and character similar to single-family homes.

A-2. There may be opportunities for new residential development on some of the undeveloped land in this neighborhood. Such development will need to be carefully sited and designed in response to the environmental constraints posed by steep slopes, shallow depth to bedrock, and streams. PUD's with cottages or townhomes that would fit small footprint buildings into the terrain more effectively would be more appropriate than extending the street grid and lot pattern further up the hill as once envisioned.

A-3. Some of the undeveloped portions of Elmwood Extension, Pine and Beech Streets are "paper streets" as described in the transportation section of this plan. A resolution to that problem will be required to permit development on these streets.

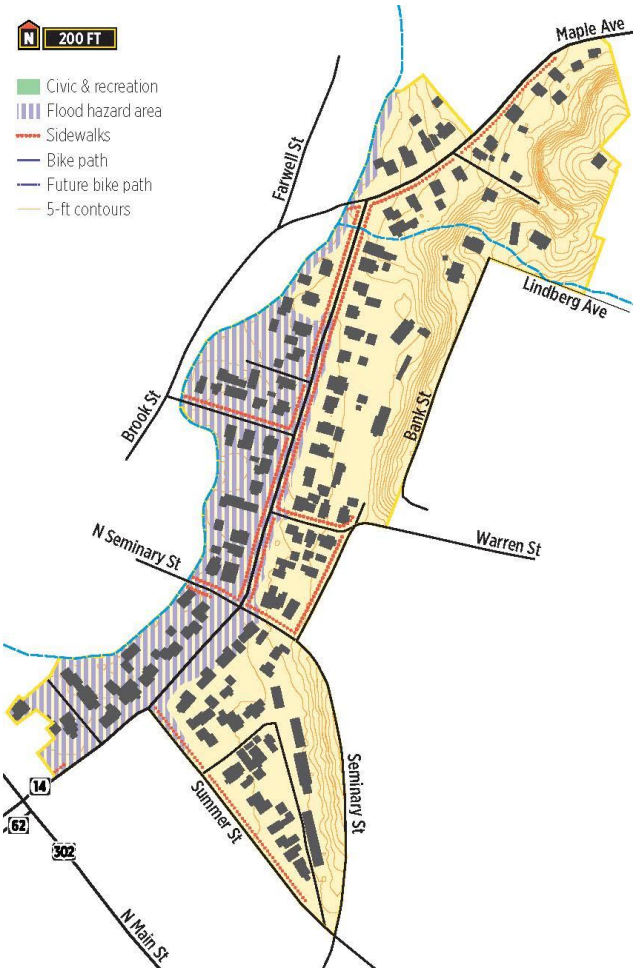
B. The existing commercial area should remain at its current extent and level of intensity given its location within a flood zone. Further commercial development beyond the current business

properties should be limited to home-based businesses that can operate without reducing the quality of life for nearby residents. Businesses that would generate significant traffic on residential streets or noise, light, odors or other similar impacts noticeable at the property line would not be suitable in this neighborhood.

C. When major repairs or upgrades are made to neighborhood streets, sidewalks should be added or restored, particularly along the through streets such as Pleasant Street, Farwell Street, Perrin Street and Elmwood Avenue. Canales Park should be maintained in its natural state as a city park under the management of the city Recreation Department. Recreational use of this property should be encouraged by improving trails and providing amenities like benches and bike racks. Opportunities for re-use of the former landfill site such as production of renewable energy should be explored.

Maple Avenue

Location. The Maple Avenue neighborhood is bounded by Gunners Brook to the west, a steep slope to the east and Hope Cemetery to the north. To the south, the neighborhood includes land fronting on Summer Street and Seminary Street. Maple Avenue (Vermont Route 14) is a heavily traveled street with both local and through traffic (Route 14 connects downtown to U.S. Route 2).



Current Land Use and Development Patterns. The northern portion of the Maple Avenue neighborhood is primarily residential, while the southern portion has some offices and small businesses mixed with residential uses. The southernmost properties fronting on Maple and Summer Street are part of the designated downtown. Most of the land to the east of Maple Avenue is below flood elevation.

There are around 190 dwellings in this neighborhood, the majority of which are in multi-unit structures and are rentals. Only around 60 of the residential properties are owner-occupied and 70% of dwellings are rentals. Along Maple Avenue, many of the buildings were historically constructed as duplexes. Some single-family homes and duplexes in this neighborhood have been further divided to create three or four unit buildings. Buildings fronting on Maple Avenue are built at or close to the edge of the sidewalk.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The middle to southern end of this neighborhood is envisioned to become increasingly mixed-use and higher density as downtown revitalization spurs growth expanding outward from the central business district.

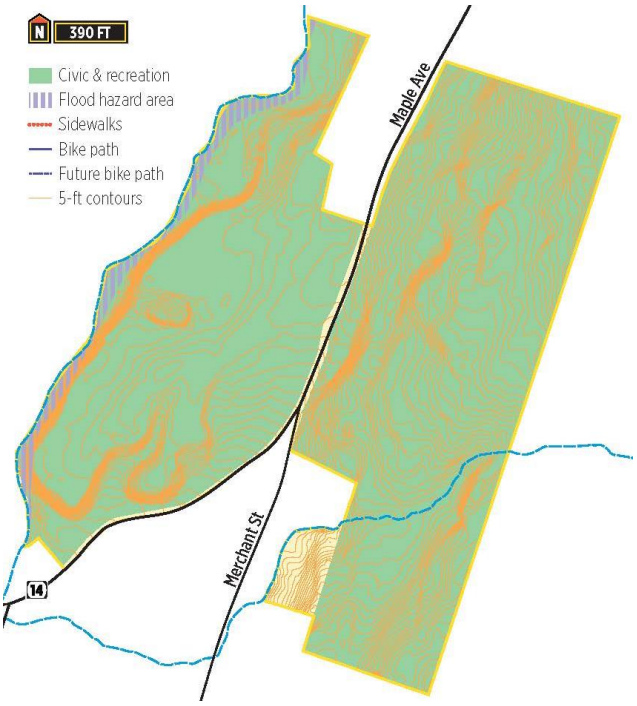
A-1. Many of the structures along Maple Avenue, particularly at the southern end, are in poor condition and are candidates for tear-down and replacement.

B. The northern end of this neighborhood is envisioned to remain primarily residential. Outside of the flood hazard area, moderate-density multi-family housing should be allowed with appropriate standards to maintain and enhance the visual character of this corridor into downtown.

Hope Cemetery and Cow Pasture

Location. This neighborhood is primarily composed of two large publicly owned properties at the city line on either side of Maple Avenue. On the west side of Maple Avenue is the 54-acre Hope Cemetery and on the east side is approximately 67 acres of undeveloped, city-owned land known as the "Cow Pasture."

Current Land Use and Development Patterns. Hope Cemetery is discussed in several places in this plan, including in the Community Services and Amenities chapter.



The Cow Pasture serves important ecological functions in its undeveloped state. This open space provides a range of environmental services, including watershed protection, and associated stormwater and erosion control, and habitat for a variety of plant and animal species. The land also serves important social functions by providing opportunities for passive or low-impact recreation, allowing city residents to enjoy outdoor activities more typically associated with rural living. The undeveloped tract of land contributes positively to the quality and character of the City.

Recreation is a primary use of the Cow Pasture. The pasture hosts a network of trails in excess of two miles. There is a single designated public access point at the end of Maplewood Avenue. Common recreation activities include trail walking and running, dog walking, bird and wildlife watching, snowshoeing and cross country skiing, berry picking, exploring with children, mountain biking, and sledding. In addition, the Cow Pasture provides winter connectivity to the VAST trail network from Barre City, with trail maintenance provided by the Barre City SnoBees.

The Cow Pasture is bounded by several large, private, undeveloped properties. Many of the recreation trails extend beyond the Cow Pasture's boundaries. Recreational access to neighboring properties is an integral part of the Cow Pasture's recreation experience. Continuity with bordering undeveloped properties is an important element of the Cow Pasture's ability to provide ecological services.

The Cow Pasture Stewardship Committee completed a 2013 Inventory, Assessment and Recommendations report that describes the property and resources, providing recommendations to help the City steward and plan for the future of the property. In 2017, a 10-year Management Plan was created to help the volunteer-run Committee maintain the property for open space, recreation and aesthetic enjoyment, and to support the property's ecological integrity and biodiversity. The City Council approved this Plan on April 4, 2017, and is incorporated for reference into this Plan.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. Hope Cemetery serves as a gateway to the city and its potential to bring visitors to our community is not being fully realized. The opportunity to develop a Visitors' Center and gateway signage on the city-owned property across from the cemetery should be explored.

B. Creation of the Cow Pasture Stewardship Committee is a strong statement of support for the pasture's management.

    B-1. Future planning of the Cow Pasture must establish it as an enduring conservation and recreation resource supported by the resources, policies, and institutions necessary to maintain its ecological and social qualities.

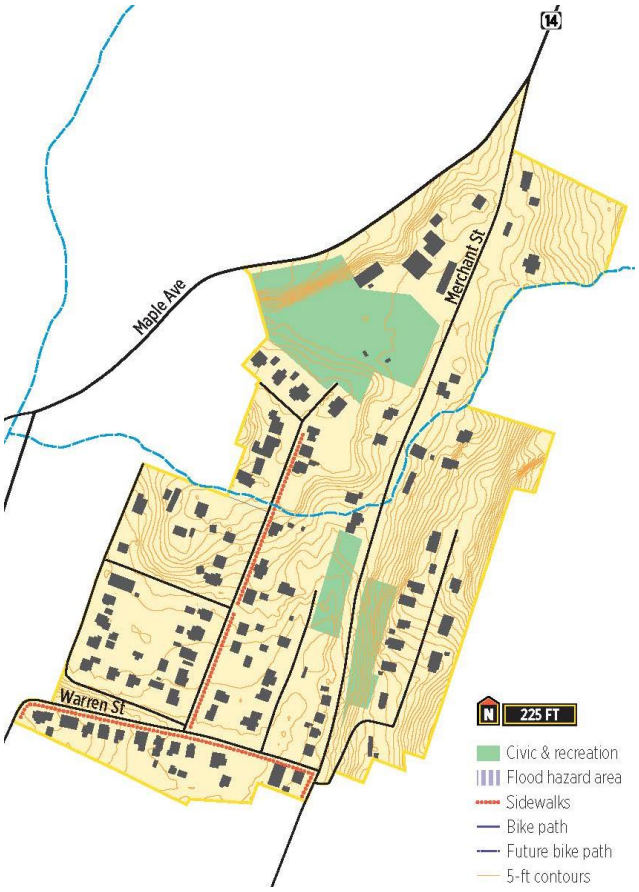
Merchant Street

Location. This neighborhood includes land along Merchant Street and Warren Street. Much of this area is separated from adjoining neighborhoods by significant changes in elevation.

Current Land Use and Development Patterns. The Merchant Street neighborhood is primarily residential with around 100 homes. About 80% of the residential properties in this neighborhood are owner-occupied. About 60% of the dwellings in this neighborhood are single-family homes. Multi-family structures in this neighborhood contain two to four units.

There is a small commercial area with several businesses near the intersection of Maple Avenue and Merchant Street. There are two baseball fields used by local youth teams adjacent to the businesses. The land used for the fields remains privately owned.

The city owns several parcels of undeveloped wooded land on Merchant Street. The parcels on the east side of the street are part of a steep hillside with no development potential, but the parcels on the west side is only moderately sloped.



Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. This neighborhood is envisioned to remain predominately residential.

A-1. This neighborhood is currently zoned for a lower density of residential development than presently exists and multi-family housing is allowed, which creates opportunities for the conversion or replacement of existing single-family homes with multi-unit buildings. While some infill potential and small multi-family buildings may be desirable, the land use regulations were revised to maintain a density and scale of residential development that is not substantially greater than what currently exists. Front yards should be maintained as green spaces and should not be converted to parking for multi-unit buildings.

A-2. The feasibility of developing the city-owned parcels on the west side of Merchant Street for affordable housing should be explored.

A-3. Non-local traffic from Route 14 onto Merchant Street should be discouraged.

B. The existing commercial area should remain at its current extent and level of intensity given its location in a residential area. Further commercial development beyond the current business properties should be limited to home-based businesses that can operate without reducing the quality of life for nearby residents.

Currier Park

Location. This neighborhood, just beyond the downtown urban center districts, includes Currier Park and the properties that face the park, as well as blocks to the north and west of the park. A stream flows through this area.

Current Land Use and Development Patterns. The Currier Park neighborhood is primarily residential with around 265 homes. This neighborhood has experienced a significant conversion of residential properties from single-family to multi-family and from owner-occupied to rental units in

recent decades. Currently there are only around 30 single-family homes remaining and about 45% of residential properties are owner-occupied in the neighborhood. The change in the character of this neighborhood is a harbinger of what could occur in other residential neighborhoods in the city that are similarly zoned to allow for higher density residential than currently exists and multi-family buildings with few limitations on their scale.

There are a few non-residential uses in the neighborhood, but these are primarily businesses operated from a residential property such as professional offices or personal services. There is also a city-owned playground across from the former Mathewson School on Elm Street.

Currier Park, Barre City's formal 'village green', is located in this neighborhood. The properties around this green form the Currier Park Historic District, which is listed in both the state and national historic registers.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The properties fronting on Currier Park and adjacent to the downtown business district are suitable for a mix of residential and compatible, low-intensity business uses such as professional offices or personal services. Residential character and historic buildings within this district should be maintained. Front yards should be maintained as green spaces and should not be converted to parking for nonresidential or multi-family buildings

B. While there should be flexibility in the use of the existing buildings, efforts should be made to retain the historic structures and character in the Currier Park District. The city's design review district was extended to include the properties within the historic district.

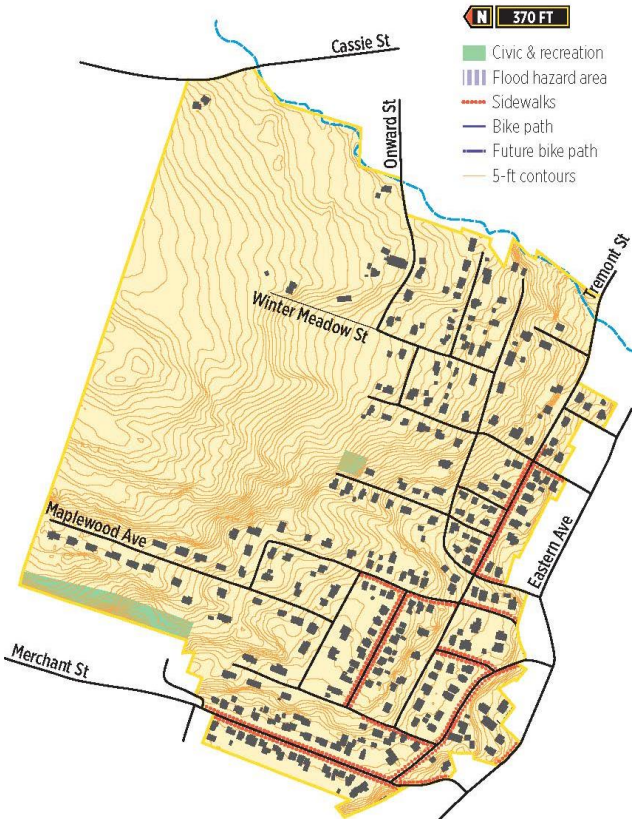
Tremont Street

Location. The Tremont Street neighborhood includes property adjacent to Tremont Street and north to the city line. A stream forms the eastern boundary of the neighborhood. Most of the land within this area has moderate to steep slopes.

Current Land Use and Development Patterns. The Tremont Street neighborhood is entirely residential with around 325 homes. Approximately 80% of residential properties in this neighborhood are owner-occupied. Around 60% of the dwellings in this neighborhood are single-

family homes and 40% are in multi-unit buildings. Most of the multi-family units are in buildings with four or fewer units.

There is a major parcel of privately-owned, undeveloped land in the northern portion of this neighborhood, the Perrin farm, which includes around 47 acres at the city line. A small portion is fairly steep and wooded, but most of the land is gently to moderately sloped open pasture.



Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. This neighborhood is envisioned to remain predominately single-family, owner-occupied homes and multi-unit buildings.

A-1. Most of this neighborhood is currently zoned for a medium density of residential development than presently exists and multi-family housing is allowed, which creates opportunities for the conversion or replacement of existing single-family homes with multi-unit buildings. While some infill potential and small multi-family buildings may be desirable, the land use regulations were revised to maintain a density and scale of residential development that is not substantially greater than what currently exists. Maintaining or increasing the owner-occupied percentage of housing units to maintain the neighborhood character of the area would be desirable. Front yards should be maintained as green spaces and should not be converted to parking for multi-unit buildings.

A-2. If the Perrin farm were to be developed, it would be desirable to extend the existing city street network and continue the existing traditional neighborhood development pattern into this property to the extent feasible given the terrain. Returning some or all of the property to more active agricultural use should also be encouraged, particularly for local food production. Portions of the property could be considered prime agricultural soils. Other portions may not be possible to develop due to the terrain and soil type. It would be desirable to allow the Tremont Street and Camp Street neighborhood residents access to the Cow Pasture property. Many residents currently access the Cow Pasture property through the Perrin property. In the case of new development, care should be taken to minimize stormwater run-off, protect wetland functions and meet the open and green space goals outlined in the Natural Environment chapter of this plan.

B. When major repairs or upgrades are made to through streets in this neighborhood, sidewalks should be added.

Camp Street

Location. The Camp Street neighborhood encompasses the residential blocks in the northeast corner of Barre City. The neighborhood is bounded by a stream on the west and Elmwood Cemetery to the south.

Current Land Use and Development Patterns. The Camp Street neighborhood is entirely residential with nearly 280 homes. Around 95% of the residential properties in this neighborhood are developed with single-family homes and 92% are owner-occupied. The residential areas in this neighborhood continue north into Barre Town. The city's sidewalk network does not extend into most of this neighborhood.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. This neighborhood is envisioned to remain predominately single-family residential.

B. When major repairs or upgrades are made to through streets in this neighborhood, sidewalks should be added. Camp Street particularly would benefit from sidewalks as it carries a greater amount of, and faster moving traffic between Barre City and Barre Town than other streets in the neighborhood.

Washington Street

Location. The Washington Street neighborhood includes the properties fronting on Route 302 east of the Mixed Use Districts -1 and -3, and the adjoining blocks of residential districts. A steep elevation change defines the southern boundary of this neighborhood.

Current Land Use and Development Patterns. The Washington Street neighborhood is a mixed-use area. There are a number of small offices, primarily in converted residences, along Washington Street, as well as a few other small businesses.

There are about 565 residences in this neighborhood of which about 40% are single-family homes. Around 71% of residential properties are owner-occupied, including a substantial number of owner-occupied rental properties (90% of multi-unit structures are owner-occupied).

Elmwood Cemetery, which is owned by the city, is located in this neighborhood. Adjacent to the cemetery is a small city-owned park, which is developed with a baseball field.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The properties fronting on Washington Street as it extends outward from the downtown business district are suitable for a mix of residential and compatible, low-intensity business uses such as professional offices or personal services. Current zoning along this segment of Washington Street was revised to allow appropriate nonresidential uses, primarily within existing buildings.

B. The gateway along Washington Street at the city's eastern boundary is constrained by steep slopes and the river defining a narrow corridor. This corridor is envisioned to remain a mix of residential and small, low-intensity commercial uses. Efforts should be made to improve the aesthetic character of this gateway to the city. The current Mixed Use-1 zoning district along this segment of Washington Street was revised to provide better control over the scale, intensity and character of development.

C. The city owns two acres of parkland adjacent to Elmwood Cemetery, which is only partially occupied by the baseball field. Opportunities for fully utilizing this property for recreational use by neighborhood residents should be explored.

South Main Street | Downtown to Mill Street

Location. The South Main Street neighborhood south of downtown includes land along South Main Street (Vermont Route 14). The Stevens Branch forms the western boundary of the neighborhood. A steep hillside and the railroad form the eastern boundary. The convergence of the Jail Branch with the Stevens Branch of the Winooski River occurs within this neighborhood.

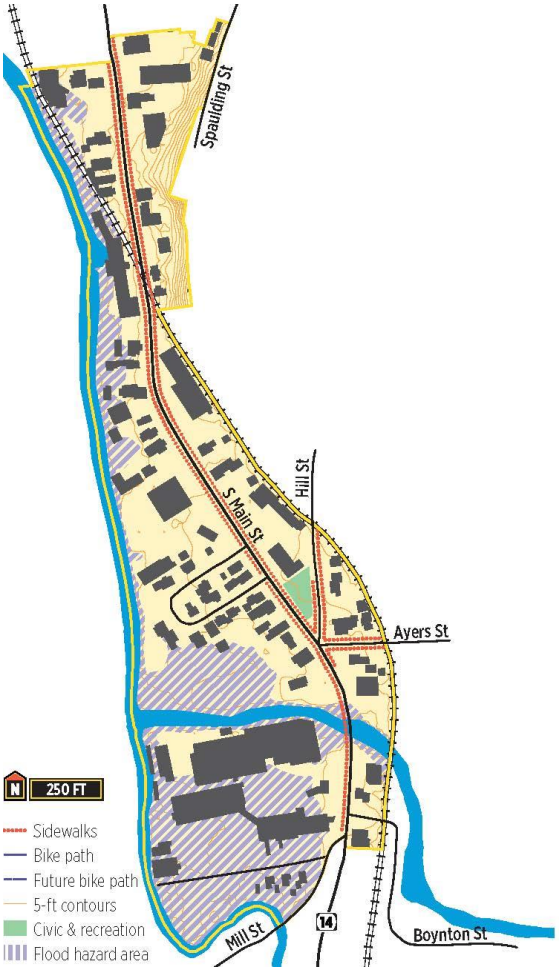
Current Land Use and Development Patterns. The South Main Street neighborhood is a mixed-use area with industrial, commercial and residential uses interspersed. There is more than 200,000 square feet of commercial and industrial space in this neighborhood, including the industrial complex on Wall Street and several former warehouse buildings along the rail line.

There are about 190 residences in this neighborhood; approximately 40% of the dwelling units are located in Barre Housing Authority's Tilden House, an apartment building that provides affordable housing to low income, elderly and disabled residents. Around 31% of residential properties are owner-occupied; around 92% of dwellings in the neighborhood are rental units.

The city owns a 0.2-acre parcel at the corner of South Main Street and Hill Street that is a parking lot, unmetered and used by the locals in the area to frequent the businesses along South Main Street where parking is lacking. There are sidewalks along South Main Street through the neighborhood.

However, in many locations the sidewalks are poorly delineated due to undefined parking areas and/or excessively wide access to adjoining properties.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:



A. This neighborhood is envisioned to remain mixed use with industrial, commercial and multi-family residential uses. The land use regulations encourage more community-serving businesses that are oriented primarily to providing goods and services to city residents to locate in this area. The regulations should continue to support higher-density, multi-family housing in this neighborhood.

B. Streetscape, sidewalk and access management improvements are needed along South Main Street throughout this neighborhood. Efforts should be made to reduce the expanses of asphalt along property frontages and better control access to reduce congestion, improve motorist and pedestrian safety, and create a more attractive street.

C. Given the density of residential development in this neighborhood, including Tilden House, accessible and safe pedestrian routes are critical so residents can walk into downtown and to nearby businesses up and down South Main Street.

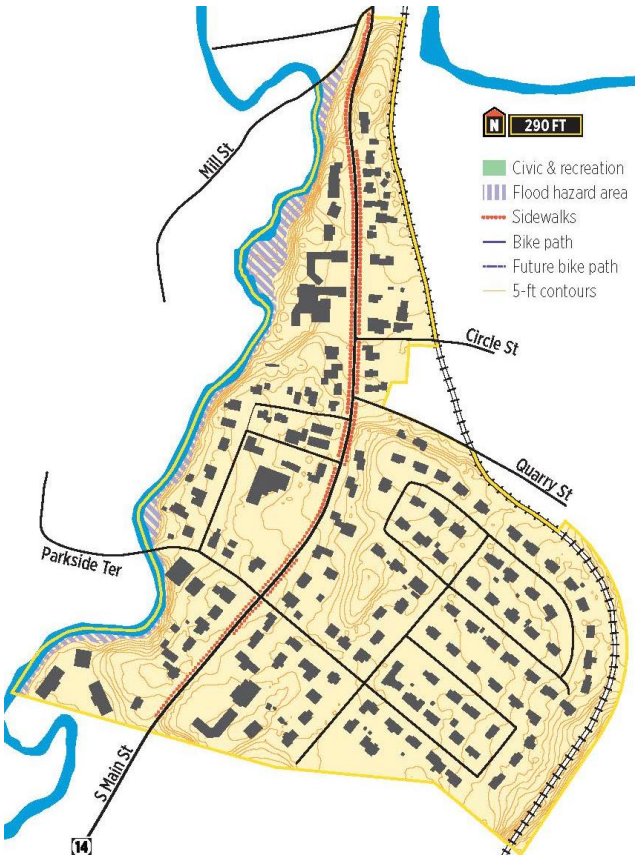
D. There is very little greenspace within this neighborhood and many residents in this neighborhood have little to no private outdoor space associated with their dwelling. The need for the city parking located at the Hill Street intersection should continue be assessed.

E. Given its level grade, South Main Street is the ideal walk/bike connection between downtown and Spaulding High School and surrounding neighborhoods. Options for creating a safe walk/bike corridor for all ages should be explored.

South Main Street | Mill Street to City Line

Location. This neighborhood includes the land between the Stevens Branch and the railroad along South Main Street. The northern boundary of this neighborhood is defined by a steep hill and the southern boundary is the city line.

Current Land Use and Development Patterns. The South Main Street neighborhood from Mill Street to the city line includes a mix of uses along the South Main Street and residential blocks behind South Main Street. The businesses in this neighborhood are primarily offices and personal services, including one of Central Vermont Medical Center's primary healthcare offices.



There are about 150 residences in this neighborhood, mostly single-family homes. Around 75% of residential properties are owner-occupied. The residential blocks east of South Main Street were developed in the mid-20th century, largely with ranch homes. This neighborhood is close to the Barre Elementary and Middle School, Rotary Park, and Spaulding Union High School making it an excellent area for families with children. However, the neighborhood streets were constructed without sidewalks and the hill makes it a challenging walk to the elementary school and park.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The blocks to the east and west of South Main Street are envisioned to remain predominately single-family residential with only limited growth in the number of homes. The city's regulations were revised to limit opportunities for conversion of single-family homes to multi-unit buildings.

B. The properties fronting on South Main Street in this neighborhood were rezoned to Urban Core 3 to avoid conversion to a highway commercial strip. If commercial uses are to be allowed, they should be small-scale and should maintain an attractive gateway to the city.

C. When major repairs or upgrades are made to neighborhood streets, sidewalks should be added or restored along most through streets.

Ayers Street

Location. The Ayers Street neighborhood includes Spaulding Union High School and is bounded to the south by the Jail Branch and to the north by a steep bank.

Current Land Use and Development Patterns. The Spaulding Union High School occupies a 21-acre site along the Jail Branch that includes the school and associated sports fields. The district offices are located on a half-acre lot across the street from the school. There are sidewalks along Ayers Street from the school to South Main Street, but there remain opportunities for improved pedestrian connections to the school from surrounding neighborhoods and within the school property itself.

Ayers Street is developed with a small residential neighborhood of around 65 homes. Around 75% of residences are in multi-unit structures, mostly duplexes. About 64% of residential properties in the neighborhood are owner-occupied.

There are several businesses located in this neighborhood.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. This neighborhood is envisioned to remain predominately residential with only limited growth in the number of homes and buildings.

B. Locating or expanding businesses on Ayers Street that would increase traffic and interfere with access to, and activities at the school should be discouraged.

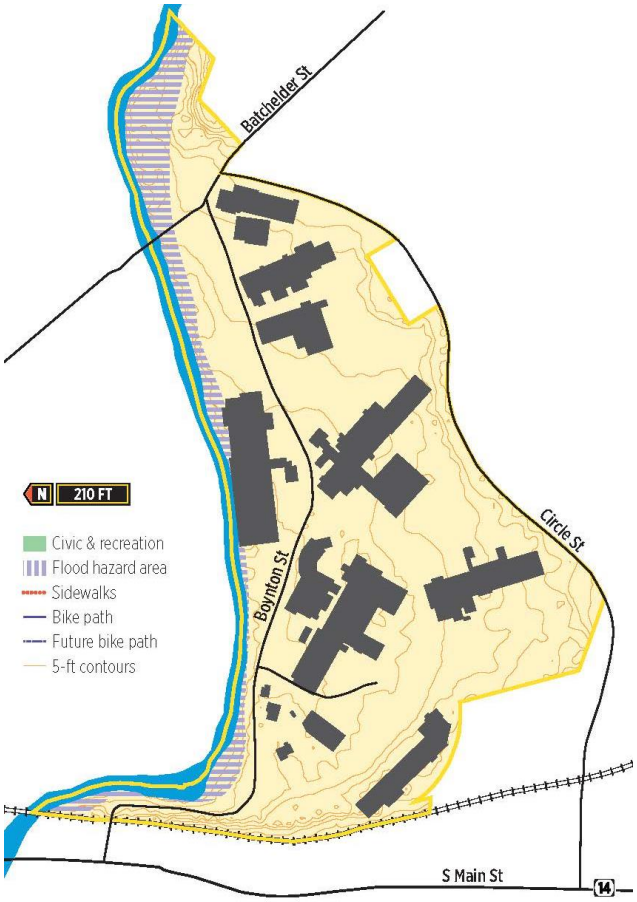
C. Pedestrian and bicycle connections to the school should be improved with sidewalks extended from Ayers Street to surrounding neighborhoods.

Boynton Street

Location. The Boynton Street neighborhood is primarily an industrial area south of the Jail Branch and east of South Main Street.

Current Land Use and Development Patterns. Several heavy industrial uses are located in the Boynton Street neighborhood including a trucking depot and granite manufacturing. There is approximately 300,000 square feet of industrial space in this neighborhood. Unlike some of the other industrial areas in the city, there are few residential properties within or close by this neighborhood that have the potential to be negatively affected by heavy industrial activities. The neighborhood sits at a lower elevation than the residential blocks south of Circle Street. Several of the industrial properties have a wooded buffer along Circle Street, which also reduces impacts. The primary opportunity for conflict with the adjoining residential neighborhood is truck traffic. While the industrial properties front on Boynton rather than Circle Street, a railroad underpass prevents truck access to the industrial properties via Boynton Street.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:



A. This neighborhood is envisioned to remain available for continued heavy industrial use with no more residential uses allowed.

B. The existing vegetative buffer that exists between the industrial properties and adjoining residential lots should be maintained and enhanced as needed to minimize the impact of heavy industrial activity on residents. The riparian buffer along the Jail Branch should also be maintained and enhanced to reduce run-off and pollutants entering the stream from industrial lands.

C. Opportunities to improve access to the industrial properties in this neighborhood via Boynton Street should be explored as a means of reducing truck traffic on Circle Street.

D. Opportunities for 'greening' the school's overflow parking lot on Batchelder Street and demonstrating low impact development techniques for managing stormwater should be explored.

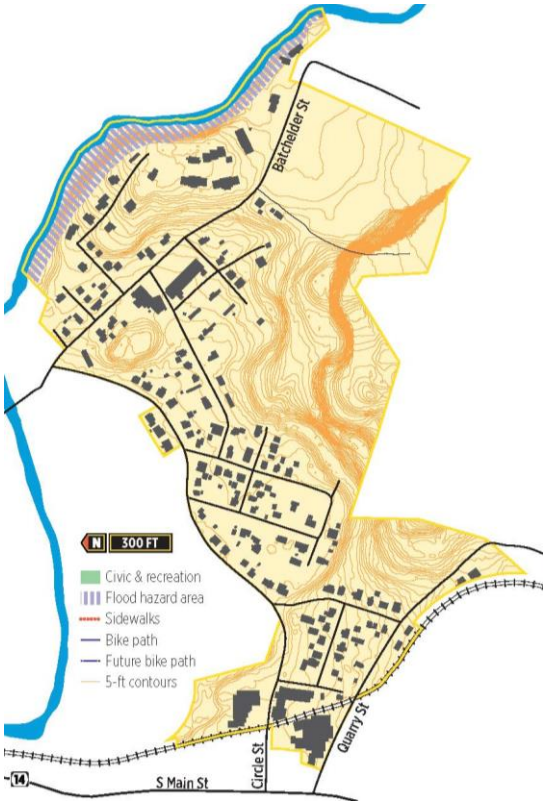
Circle Street

Location. The Circle Street neighborhood includes the residential blocks south of Circle Street and along Batchelder Street in the southeast corner of the city. The steep banks of the Jail Branch form the northwest boundary of this neighborhood. Much of the undeveloped land in this area is extremely steep leading up to a quarry across the city line in Barre Town.

Current Land Use and Development Patterns. The Circle Street neighborhood is largely residential. There are two industrial areas used for granite manufacturing in this neighborhood: one at the intersection of Batchelder and Lewis Streets and the other at the end of Circle Street near South Main Street. The neighborhood includes about 160 dwellings. Around 83% of residential properties are owner-occupied. About 60% of residences are detached, single-family homes. Westview, which is a 30-unit condominium development, is located off Batchelder Street. There is 11 acres of undeveloped wooded land off Batchelder Street that is relatively level. It backs up to the quarry across the city line in Barre Town.

This neighborhood is close to the Barre City Elementary and Middle School, Rotary Park, and Spaulding Union High School making it an excellent area for families with children. However, like the other residential blocks east of South Main Street, there are no sidewalks connecting this neighborhood to the nearby schools, parks and other destinations.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:



A. This neighborhood is envisioned to remain predominately residential with the two existing industrial sites continuing in their current use and extent but not expanding further into the residential neighborhood.

B. There are opportunities for residential infill and new development in this neighborhood, particularly Planned Unit Developments with cottages or townhomes that would fit small footprint buildings into the remaining undeveloped land.

C. When major repairs or upgrades are made to neighborhood streets sidewalks should be established along most through streets.

Rotary Park

Location. The Rotary Park neighborhood is located on the west side of the Stevens Branch at the south end of the city. Spaulding Falls, a very scenic section of the river, is located in this neighborhood at the northern boundary of Rotary Park.

Current Land Use and Development Patterns. The Rotary Park neighborhood is largely comprised of land owned by the city and school district. The Barre City Elementary and Middle School straddles the line between Barre City and Town. The city-owned Rotary Park includes 22 acres developed with a variety of recreation facilities, including the municipal pool. The park includes a significant amount of frontage on the river.

The Central Vermont Bike Path travels past the school and through the park on a former railbed. This one-mile segment of the path begins at Bridge Street in Barre Town and currently ends at Fairview Street. Besides the path, which is currently incomplete, pedestrian access to the school and park from other city neighborhoods is challenging.

This neighborhood also includes several acres of undeveloped, private land at the end of Brooklyn Street, most of which is steep. There are around 15 homes and a small industrial area near the river accessed via Mill Street. A couple of acres of undeveloped land above the flood elevation remain along Mill Street that have potential for infill development.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

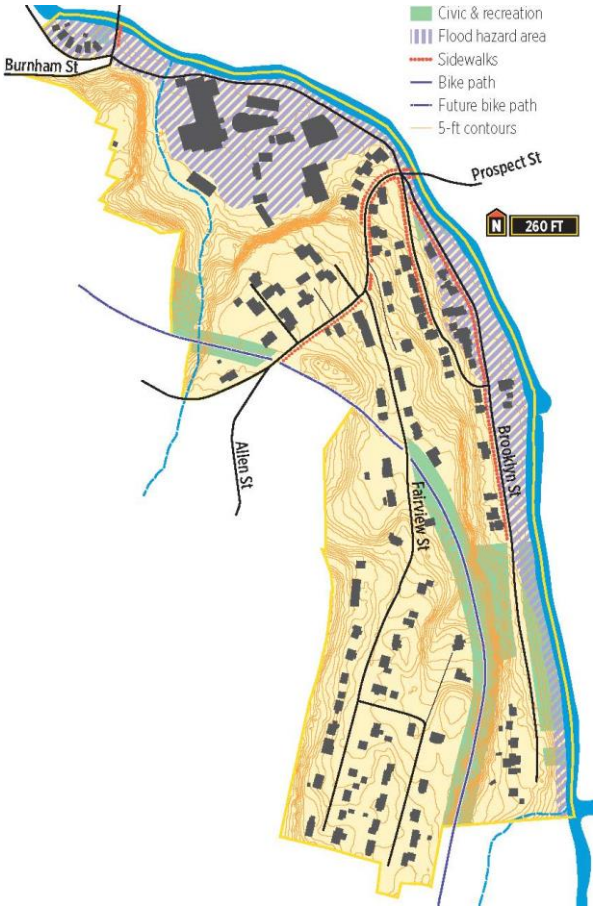
A. This neighborhood is envisioned to remain predominately used for conservation and civic purposes with a small residential neighborhood that has some growth potential. This neighborhood would be particularly well-suited for family housing given the proximity to the school and park. The industrial site along Mill Street is entirely below flood elevation and is not envisioned to expand.

B. Pedestrian and bicycle access to this neighborhood should be improved to the greatest extent feasible, including the completion of the bike path through the city, formalizing the connection from Brooklyn Street to the park and school, and creating access from Allen Street.

C. An area adjacent to the school on Allen Street should be designated to complete a secondary access to the school.

Brooklyn Street

Location. The Brooklyn Street neighborhood is bounded by the Stevens Branch to the east and a rising slope to the west. It includes the residential areas along Brooklyn Street, Fairview Street and Prospect Street, as well as the industrial area on Burnham Street.



Current Land Use and Development Patterns. This is a neighborhood that includes a developed industrial area along the river with residential streets extending up the surrounding hillside. The industrial area includes around 80,000 square feet of space, including the city's highway and public works facility.

There are about 170 homes in this neighborhood and around one third of those are single-family homes. Of the multi-unit residential properties, around 30% are owner-occupied. Most multi-unit buildings in this neighborhood have two to four units.

A segment of the Central Vermont Bike Path travels on the former railbed north from the school to Fairview Street. Between Fairview Street and

Prospect Street, a short portion of the railbed was sold back to adjoining landowners when the rails were removed. The city owns the rail bed to the north of Prospect Street.

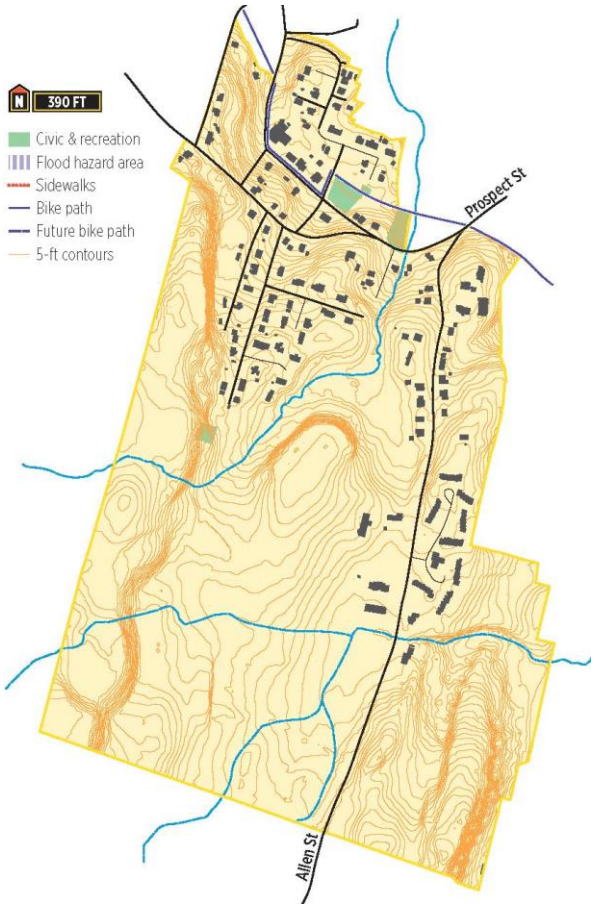
Future Land Use and Development Patterns. The Brooklyn Street neighborhood should continue to accommodate both industrial and residential uses. To maintain or enhance the compatibility of these uses, this plan recommends the following land use policies, actions and projects:

A. A landscaped buffer should be established and retained between the residential and industrial properties and the riparian buffer should be maintained or enhanced along the river. New or expanding industrial uses are required to meet performance standards (noise, vibration, dust, etc.) to protect quality of life for neighborhood residents.

B. Higher-density housing in multi-unit structures should be allowed along Prospect Street to establish a transitional zone between the industrial area to the north and the single-family homes to the south.

C. When major repairs or upgrades are made to neighborhood streets, sidewalks should be established along most through streets. The pedestrian connection from Brooklyn Street to the park and school should be formalized and improved. To continue construction of the bike path, the city will need to either acquire a right-of-way across the privately-owned segment of the former railbed or re-route the path. Completion of the bike path is a high priority for the city.

Allen Street



Location. The Allen Street neighborhood includes the land along Allen Street and Prospect Street south to the city line.

Current Land Use and Development Patterns. The Allen Street neighborhood is primarily a residential and agricultural area. There is a single industrial property at the end of Granite Street that continues to be used for granite manufacturing.

There are about 180 homes in this neighborhood including 49 affordable townhouse units in Barre Housing Authority's Green Acres development. About half of the residences in this neighborhood are single-family, detached homes and these properties are almost entirely owner-occupied. Around 87% of all the residential properties in the neighborhood are owner-occupied.

There are approximately 70 acres of undeveloped land in the southern portion of this area at the city line, 45 acres of which is part of the Booth Brothers farm. Another 20 acres has been subdivided with the original intent of establishing a business park, but is

now zoned for residential use. The remaining five acres includes steep wooded land to the south and east of Portland Street that is poorly suited for development.

The city-owned Garfield Playground is located on Lincoln Avenue and the city also owns a small, steep, undeveloped parcel nearby. These properties back up to the former railbed, which is a planned spur route for the Central Vermont Bike Path. The segment of former railbed through this neighborhood was acquired by adjoining property owners, which will likely necessitate some re-routing of the bike path in this area.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The Allen Street neighborhood is envisioned to remain a primarily residential neighborhood, and greenfield areas should be maintained.

B. Pedestrian and bicycle access to the elementary and middle school should be established from Allen Street.

C. Efforts should be made to provide safe pedestrian access from Allen Street to Prospect Street.

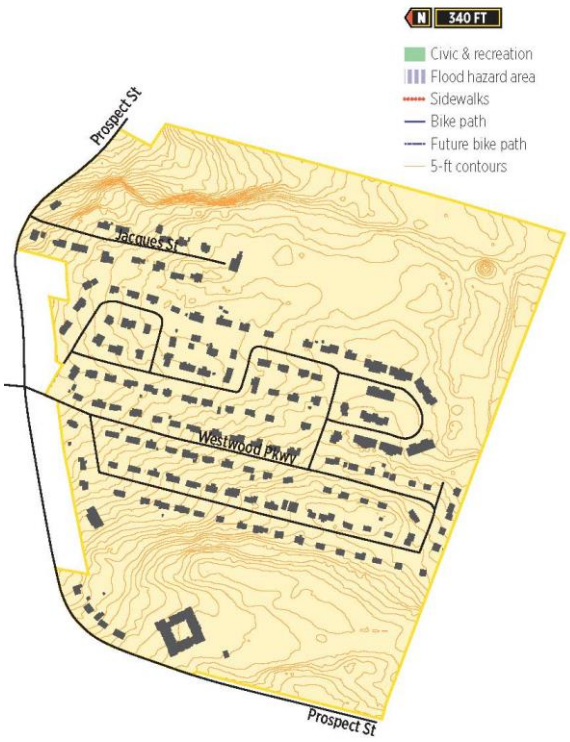
D. If land is subdivided resulting in infrastructure to be created, it should be compact and connected and close to the minimum lot sizes with efficient use of the public infrastructure.

Country Way

Location. The Country Way neighborhood includes land south and east of Prospect Street to the city line.

Current Land Use and Development Patterns. The Country Way neighborhood is predominately residential and includes some of the most recently constructed homes in the city. A major residential subdivision began development in this part of the city in the 1990's and very few vacant lots remain within the subdivision.

There are around 180 homes in this neighborhood, approximately 135 of which are detached single-family homes that are almost entirely owner-occupied. The 36-unit Fecteau Circle townhouse development is also part of this neighborhood. Non-residential uses in this neighborhood include the Barre Gardens for Nursing Rehabilitation, LLC located off Prospect Street and a radio station located at the end of Jacques Street, and the lands owned by Vermont Transco (VELCO).



There are around 34 acres of undeveloped land in this area most of which would be suitable for residential development. Development of this property might be a continuation of the existing subdivision. It is likely that access to the remaining undeveloped land would be from Country Way rather than from Prospect Street given the terrain. The undeveloped land on the east side of Prospect Street is associated with the electric substation located across the street in Barre Town. Should the existing substation need to be expanded or replaced, it is likely the new facility would be located on this land.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The Country Way neighborhood is envisioned to remain a single-family residential neighborhood with further residential development compatible in density and form with the existing homes.

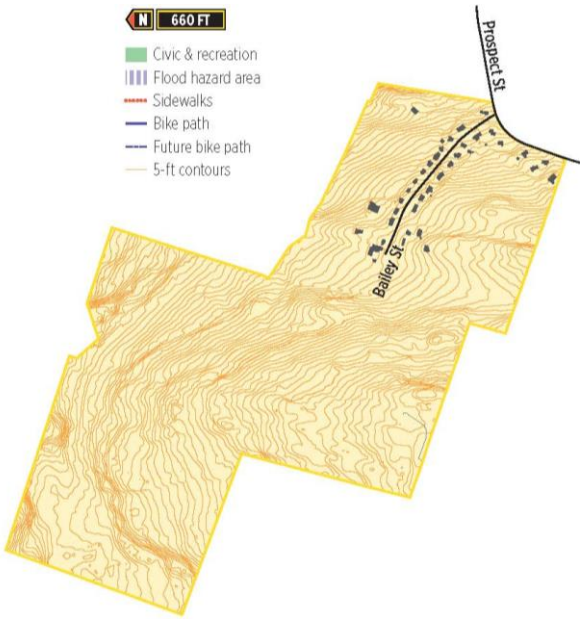
B. If a significant number of additional homes are to be accessed via Country Way, there should be consideration of creating a second access point to the subdivision to ensure adequate emergency access.

C. The streets built as part of the Country Way subdivision did not include sidewalks. Future streets or major upgrades should incorporate sidewalks.

D. If land is subdivided resulting in infrastructure to be created, it should be compact and connected and close to the minimum lot sizes with efficient use of the public infrastructure.

Bailey Street

Location. The Bailey Street neighborhood includes portions of the former Bisson farm in the southwest corner of the city.



Current Land Use and Development Patterns. This neighborhood is largely undeveloped agricultural land. There has been some fairly recent residential development along Bailey Street, but around 200 acres of land remains in agricultural use and is leased to the Booth Brothers Farm (located across the city line in Barre Town). There are approximately 35 homes along Bailey and Prospect Streets in this neighborhood. These are almost entirely owner-occupied, detached, single-family homes.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The Bailey neighborhood is envisioned to remain residential and agricultural. There is

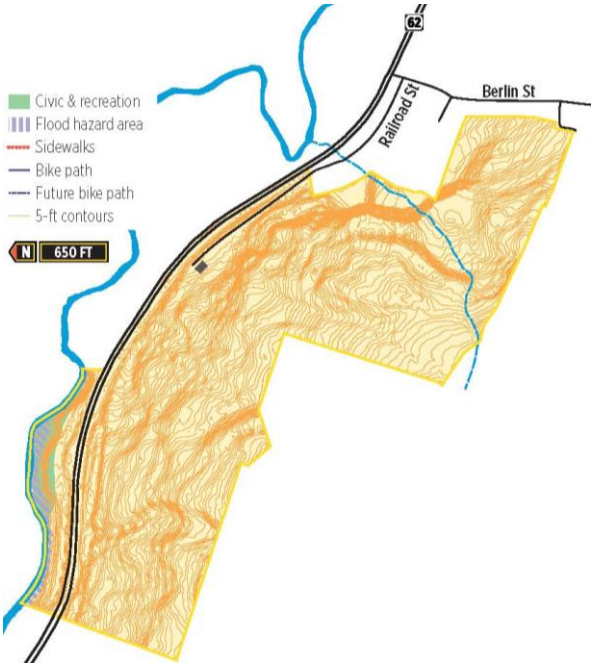
opportunity for new low- to moderate-density residential development that could include higher-end housing in a rural setting with views out over the river valley. This neighborhood would be a suitable location for a planned unit development that would cluster homes and conserve open space.

B. Consideration should be given to the benefits of preserving farmland, and the ability to produce local food, in close proximity to the city.

C. This area is part of the State mapped Forest Block, and consideration should be given also to maintaining these lands for their wildlife habitat benefits as well as their forested areas.

West Hill

Location. The West Hill neighborhood includes the steep lands south of Route 62, as well as a narrow strip of city-owned land on the north side of Route 62 between the highway and the river.



Current Land Use and Development Patterns. This neighborhood is almost entirely undeveloped woodland. This area was once the site of a small ski center, which operated into the 1970's. The single building at the end of Railroad Street was constructed as the lodge, and now serves as a duplex with a business in the back. Given the steep terrain and limited access, this area of the city has very limited development potential.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. The West Hill neighborhood is envisioned to remain essentially undeveloped. Opportunities for using this land for recreation should be explored.

Berlin Street

Location. The Berlin Street neighborhood includes land north of Prospect Street between Berlin Street and Bassett Street.

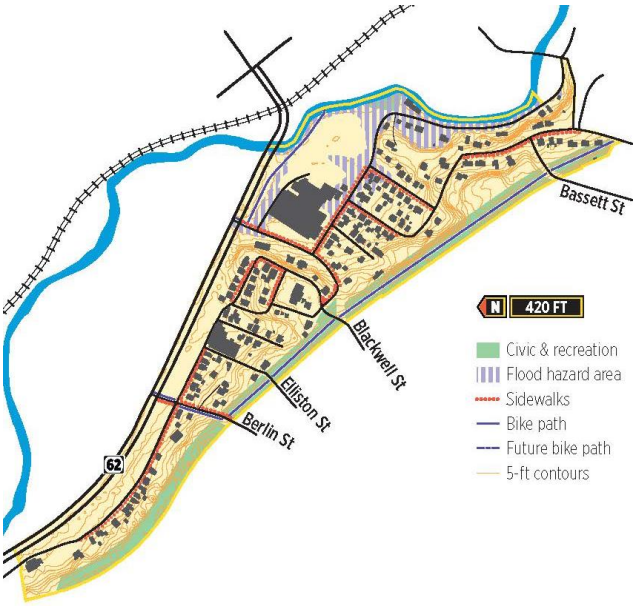
Current Land Use and Development Patterns. The Berlin Street neighborhood is entirely residential. There are 225 dwelling units in this neighborhood, which includes 120 units of affordable housing in the Highgate Apartments. The remaining homes are primarily owner-occupied, detached, single-family homes. Most of the undeveloped land remaining in this area is quite steep and has limited potential for further residential development.

Future Land Use and Development Patterns. This plan recommends the following land use policies, actions and projects:

A. Little additional development is anticipated to occur with the Berlin Street neighborhood.

B. When major repairs or upgrades are made to neighborhood streets, sidewalks should be established along most through streets.

Blackwell Street



Location. The Blackwell Street neighborhood is bounded by Route 62 and the Stevens Branch to the east and the former railroad bed to the west.

Current Land Use and Development Patterns. This is a mixed-use neighborhood with industrial, commercial and residential uses in close proximity. There is about 70,000 square feet of industrial space in this neighborhood.

There are approximately 160 dwellings in this neighborhood, 60% of which are single-family homes. Of the multi-unit residential properties, most are between one and four units and around half are owner-occupied. This is one of the highest density single-family neighborhoods in the city.

Future Land Use and Development Patterns. The Blackwell Street neighborhood should continue to accommodate both industrial and residential uses. To maintain or enhance the compatibility of these uses, this plan recommends the following land use policies, actions and projects:

A. A landscaped buffer should be established and retained between the residential and industrial properties. New or expanding industrial uses should be required to meet performance standards (noise, vibration, dust, etc.) to protect quality of life for neighborhood residents. Given the existing mixed-use nature of this district, re-zoning the industrial property to allow for commercial uses in addition to industrial uses should be considered.

B. Given the residential density of this neighborhood, improved access to parks and pedestrian/bicycle routes is important. When major repairs or upgrades are made to neighborhood streets, sidewalks should be established along most through streets. Completion of the bike path would connect neighborhood residents to other parks and greenspace.