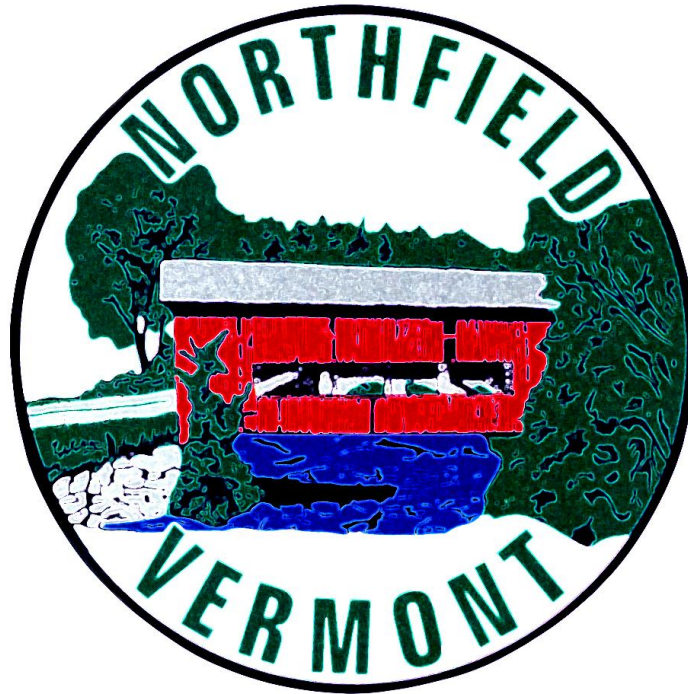


Northfield, Vermont Town Plan



Approved by the
Northfield Planning Commission

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Selectboard

September 9, 2014

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Chapter 1 Introduction

1.1 What is the Northfield Municipal Plan?

The Northfield Municipal Plan is a comprehensive long-range guide to the future of the Town of Northfield. This plan updates the previous municipal plan adopted in 2009. The plan is intended to:

- Identify significant trends that have shaped Northfield's rich and varied history;
- Document current conditions regarding a variety of topics, including housing, transportation, the local economy, community facilities and services, and land use;
- Predict, to the extent practical, the trends that will affect change in the future; and
- Define the goals, policies, and implementation strategies for addressing community change in a way that will benefit current and future generations of Northfield residents.

1.2 Consistency with Vermont Statute

The Northfield Plan was prepared by the Northfield Joint Planning Commission under the authority of Title 24 of the Vermont Statutes Annotated, Chapter 117: The Vermont Municipal and Regional Planning and Development Act. While towns are not required to adopt a plan, those that do must include specific elements (24 VSA 117 §4382). This plan includes all required elements. This plan also addresses the fourteen general state planning goals (24 VSA 117 §4302). Although the plan is consistent with these goals, the background information, goals, and policies presented throughout the document were carefully prepared to meet the unique conditions and needs of the Town of Northfield.

1.3 Regional Coordination

Due to its geography, it makes sense for Northfield to work with adjacent communities to better serve its citizens, especially Roxbury and Berlin, located along the Route 12 corridor in the Dog River Valley. Northfield cooperates with neighboring communities to provide education, emergency services, and services for families, youth, and seniors. That day-to-day cooperation is less practical with neighboring Waitsfield and Warren, which are separated by the Northfield Range to the west, and Williamstown, which is separated by Paine Mountain and the I-89 corridor to the east.

Despite physical and geographic barriers, Northfield also participates in several regional organizations to address such issues of local concern as solid waste management, transportation and transit service, and a variety of social service and economic development functions. Nothing in this plan anticipates scaling back participation in any of these regional organizations or severing existing inter-municipal arrangements with neighboring towns.

Compatibility with neighboring towns is particularly important with regard to land use, where incompatible policies could result in conflicting development activities and land uses along town boundaries. Northfield's land use plan calls for agriculture, forestry, low to moderate density residential development and very limited non-residential uses along the boundaries with Roxbury, Waitsfield, Moretown, Williamston and most of Berlin. A portion of the shared boundary with Berlin, adjacent to historic Northfield Falls, allows a greater mix of uses and higher densities befitting the traditional settlement pattern of this historic growth center. These uses and densities are not incompatible with those allowed in adjacent towns which have

adopted zoning, although Williamstown and Roxbury have not implemented their respective land use plans through development regulations.

In addition to land use, a brief review of neighboring municipal plans does not reveal any notable incompatibility of plan goals or policies. Likewise, no areas of incompatibility between this plan and the Central Vermont Regional Plan have been identified. Thus, it is the position of Northfield that this plan is compatible with all of the adopted plans of neighboring communities and the region.

1.4 Purpose of Town Plan

Simply stated, the purpose of a town plan is to provide a vision for the town and offer strategies for achieving that vision. It provides a useful reference for local and state officials when making decisions affecting the community, and may be used to inform anyone interested in the town of its history, resources, challenges and policies. Important benefits and/or uses of the plan include:

Community Assessment

For Northfield to accommodate growth and change, local officials and residents should be aware of the town's strengths and weaknesses and anticipate the factors that will influence future conditions. The process of preparing a town plan provides a structured process for assessing the community's past, taking stock of current conditions, and predicting future trends and influences. This process of community assessment and debate regarding the town's future can be as important as the plan itself.

Land Use Planning and Development Regulation

Northfield first adopted zoning regulations to implement a community land use plan in 1973. These regulations served the town during two decades of rapid growth. The regulations were updated in 1986 and then revised in 1999, to correct deficiencies and address development pressure. The regulations were again revised in 2006 to comply with changes in state statute. Through these several revisions, the zoning district standards that have been in effect for decades have been left largely intact. As of 2014, this continues to be true. This plan shall serve as the blueprint for a comprehensive rewriting of the municipal zoning regulations in 2014/2015.

Public Facilities and Services

The town plan is useful for identifying desired community facilities and services, projecting future demand for those facilities and services, and setting priorities for meeting those demands in a cost effective manner. In many respects, this is among the most important functions of a town plan.

Open Space & Natural Resource Protection

In the future, Northfield will be presented with opportunities to help set aside open space for future generations. The town plan can help establish the community's conservation priorities and identify those properties, features and/or resources that are most deserving of protection.

Economic Development

Most past economic development initiatives have been the responsibility of private businesses. The town can support economic development, however, through the provision of facilities and services and by creating a regulatory climate that encourages different business activities in appropriate locations. The town plan is an important mechanism for addressing how local government, private businesses and economic

development agencies and associations can coordinate their efforts to foster a healthy local economy.

State Development Regulations

Many state regulations, most importantly Act 250, are administered in a manner which gives some credence to local development policies. One of Act 250's ten review criterion requires that new development be compatible with a locally adopted municipal plan. Northfield's Selectboard and Planning Commission both have "party status" allowing for their involvement during Act 250 proceedings. The policies set forth in this plan address a wide range of topics, and are designed to serve as the town's unambiguous position during the Act 250 and other review processes.

State, Federal and Private Policies & Programs

State development regulations are not the only forum in which it is important for the town to have clearly articulated policies. The decisions and actions of state and federal agencies and non-profit organizations can affect the town's future well-being in areas such as transportation improvements, environmental protection, land conservation, economic development, and. In many instances, public agencies and private organizations seek the guidance of local governments to ensure that their activities are compatible with the community's values and vision. This is especially true regarding increasingly competitive grant programs, where conformance with a local plan is often an important eligibility requirement.

Define Balance Between Conflicting Interests & Articulate a Community Vision

Northfield's population reflects a diversity of opinions and attitudes. The planning process can be a vehicle for forging consensus, identifying issues in which consensus is not possible, and setting forth a process for resolving future conflict. The result of the planning process could be a future vision that reflects, to the extent possible, the hopes and aspirations of the community.

1.5 Organization and Format

This plan includes twelve chapters. The first chapter describes the plan's purpose, the importance of public participation in the planning process, and regional coordination and compatibility of this plan with the plans of neighboring communities. Chapter 1 also includes a brief town history provided by the Northfield Historical Society.

Chapters 2 through 11 address a variety of topics, including the town's population, housing, transportation, natural and cultural resources, and land use. These chapters include background information related to each topic and, where appropriate, projections or anticipated changes and planning considerations. The end of each chapter sets forth related goals, policies and specific tasks and strategies. Chapter 12 covers Plan implementation.

1.6 Planning Process

Northfield residents value their ability to participate in the process of making local decisions. In developing the 2009 plan, the Planning Commission focused on gathering public input to inform the plan. They invited over a hundred stakeholders from municipal departments, local boards, committees, and non-profit organizations to provide their input on the plan. In addition, draft chapters of the plan were posted on the municipal web site for public review.

1.7 What's New in Northfield for 2014-2019?

1. New Zoning Districts

The Zoning Districts have been updated, with a focus on ensuring the continued vitality of the village center and strengthened protections for open space in the rural districts. The total number of districts has been reduced from eleven to seven, which will make land use regulation easier for landowners to understand and simpler for the Town to implement.

2. Town & Village Merger

As of July 1, 2014, the incorporated Village of Northfield ceased to exist, and all of Northfield is one Town. The Town Plan was revised throughout to reflect this change.

3. Prohibition on non-residential development over 1800 feet

The Planning Commission worked with residents concerned about the impacts of potential industrial-scale wind energy facilities on Northfield's scenic peaks and ridgelines. They chose to prohibit all non-residential development over 1800 feet in elevation, to prevent adverse impacts of such development. They are also considering a prohibition on all development, because all development shares similar impacts: expansion of roadways and utility corridors fragments habitat, worsens erosion, and degrades water quality.

4. Enhanced protection of water resources

The community is very aware of the importance of maintaining water quality in the Dog and Winooski River watersheds. The Planning Commission received support from the Regional Planning Commission to include a new stormwater management section and new consideration of protections for riparian buffers.

5. Flood resilience

A new section on flood resilience has been added to the Plan this year. Northfield is very active in mitigating flood hazards in the community, and restricting development in high-risk areas.

6. Focus on Economic Development, Village Center revitalization

The Economic Development Committee has become very active in 2014, and hopes to continue to support expansion and development of business in Northfield. There has been a tremendous amount of work done to revitalize the Village Center in the past five years, and there is increasing community interest in continuing to strengthen the downtown. The community is very thankful to the State of Vermont for bringing the Vermont Downtown Action Team to Northfield to assist with economic recovery from the flooding of 2011, and looking forward to implementing the VDAT recommendations.

A Brief History of Northfield, by the Northfield Historical Society

From 1785 through the 1820s, largely Yankees from Connecticut, Massachusetts, and the older Vermont towns settled Northfield. Next to arrive were the Irish, attracted in the 1840s by jobs on the railroad. The Welsh arrived after the Irish to work in the slate quarries in the 1850s and 1860s. Stonework also brought the next wave. Starting about 1890, Italians, Spaniards, and Scots joined the workforce in the granite sheds. From the 1880s onward, Canadians of French descent came seeking opportunity, many buying up hill farms abandoned in the decades after the Civil War.

The years from 1785 to 1825 saw the development of Northfield's four villages. The first settlement was on East Hill (now Mill Hill), close by Elijah Paine's grist and sawmills. As the population grew, boundaries crept up the hill and northward along Route 12. Clusters of houses became villages, each with its own personality and name: South Village, Center Village, Factory Village, and the Falls.

First to have a distinct identity was South Village, which had numerous small businesses and manufacturing operations through the nineteenth century. Next was Center Village, where the first post office, town clerk's office, and churches were established, and which for many years was the social and political center of town. After the Center came Factory Village (the incorporated¹ Village of Northfield, 1855-2014) named for the woolen mill located there. Last to develop was Northfield Falls, and by the late 1820s it, too, was a thriving community.

With the arrival of the railroad in the 1840s, Factory Village and Depot Square increasingly became the hub of local activity. Residents there began to demand lighted streets, sidewalks, fire and police protection, and they then petitioned the legislature to establish a separate Village of Northfield. The Village of Northfield was incorporated November 14, 1855.

Over the next fifty years, village residents voted taxes on themselves for a variety of services. Sidewalks were laid down, the water department was established and the first electric plant was built (both in 1895), and the first sewer lines were laid (1901-1904). Around 1900 the police department was set up, and the two independent fire companies, which existed from the 1860s, came under village control.

The price of such amenities was high; consequently, as they were increasingly needed outside the village, police, and fire services were taken over by the town. The town and village highway departments were supported by taxes levied separately on the grand lists of the village and town.

Once settlements were established, people turned their attention to making a living. Of necessity, almost everyone was a farmer first, and most lived by barter (goods and services were paid for with other goods and services). Eventually people needed hard cash, and it was this quest for individual and collective economic security that has been the paramount concern in Northfield for two centuries.

Until about 1814, residents made potash on their farms and sent it to mills in America and abroad which used it for everything from finishing wool cloth to making glass. About 1812, as the demand for potash was waning, Elijah Paine built a huge woolen mill on the site of the now closed Cetrangolo Finishing works (which closed in 1999). Paine's woolen mill employed between 175 and 200 workers and was for years the town's largest employer.

When wool prices declined in the 1840s, Elijah Paine's son Charles came to the rescue. As President of the Vermont Central Railroad, Charles Paine pushed the line from Windsor, Vermont to Burlington, finishing construction on the last day of 1849, and locating the railroad's headquarters in Northfield. For fifteen years the Vermont Central Railroad meant prestige for Northfield and prosperity for its citizens – hundreds worked for the line.

In 1852, Paine lost control of his railroad. Over the next decade the new owners gradually moved operations to St. Albans. John Gregory Smith, the new president, said he would "make the grass grow in the streets of

¹ Incorporated Village merged with Town in 2014

Northfield.” He very nearly succeeded. The town’s population, one of the largest in Vermont at the time, dropped precipitously and over fifty houses stood vacant. It took 25 years to recover from the loss.

Slate quarrying and finishing, which started early in the nineteenth century, provided some respite. In the 1860s and 1870s some two hundred men worked for the slate companies, but by the 1880s this industry too was in decline.

The next savior was granite. In 1889 investors built a spur line and a small finishing shed on railroad land and arranged to have granite brought down from the Barre quarries. Several more sheds were eventually constructed, and by the outbreak of World War I, over 525 people were employed in the sheds.

Times changed, and by 1954 only the Rock of Ages plant was left, and that too was closed when the head office decided it was too expensive to ship the rough stone here. In 1999 Cetrangolo Finishing Works, founded in 1955, was the last to close. As of August 2000, the Cetrangolo Finishing Works building had been demolished, and the site remains vacant.²

In the end, economic rejuvenation came from what at first might have seemed an unpromising source. Late in 1886, the faculty and student body of Norwich University arrived in town. Their arrival followed acceptance by Norwich trustees of a bid by a group of citizens to have the college relocated here. It is doubtful that anyone seeing the four teachers and fourteen students arrive imagined that the college would become the town’s largest employer.

Beside the large industries, small-scale manufacturing operations and retail businesses of many kinds flourished here in the nineteenth and early twentieth centuries. This diversity was common in Vermont, and Northfield was no exception. Collectively these stores and manufacturers gave employment to many, and economic health to the community for decades.

The Great Depression hastened the end of many businesses. Henry Ford and his competitors made the demise of other businesses certain. Mass production of the automobile and a revived national economy after 1945 put Vermonters on wheels and took them out of town to work and shop. The importance of the automobile as a bringer of change cannot be overstated. In Northfield, as elsewhere, it meant workers no longer had to depend on local businesses for jobs and shopping opportunities; they could drive anywhere employment was available and goods were for sale.

As manufacturing jobs declined, the importance of Norwich University increased. In the 1950 timeframe, Norwich, Rock of Ages, and the Nantanna textile mill each employed approximately 140 people. By 1963, Rock of Ages, in Northfield, went out of business. Though the college has seen ups and downs over the past 125 years, its presence has been an economic force for the community and a social and cultural life Northfield probably would not otherwise have seen.

Since World War II, population growth has been slow but steady. The town has seen none of the large-scale tourism that has brought mixed blessings to other Vermont towns. While no large industry has come to town, a number of small businesses have sprung up. Slightly more than half of the Northfield labor force worked out of town. Over two centuries, Northfield evolved from farming to manufacturing to a mix of small businesses and a college town economy.

McIntire, Julia. (1981 Fall). *History of Northfield*. Central Vermont Views, 3, No. 1, 28-33.

McIntire, J. W., and Cleveland, R.L. (1985). *Picture Northfield: A Photographic Study*.

The Northfield Town Committee (1974). *Green Mountain Heritage: The Chronicle of Northfield, Vermont*.

² The site was partially developed in 2013 with a variety store.

Chapter 2 Natural Resources

2.1 Overview

Northfield's physical character and identity, its unique sense of place, is defined by both its natural setting and its built environment. Local topography and natural features helped shape historic patterns of development, which in turn offer a framework for future growth. Many of Northfield's most significant natural and historic features remain remarkably intact, and contribute much to the attractiveness of the community and to the overall quality of life in town.

Many American communities have been experiencing tremendous growth, and losing their sense of identity in the process. Rapid development can adversely impact the natural environment, and can be inconsistent with the historic character of the built environment.

Northfield has not felt the intense development pressure that has been prevalent in more metropolitan areas. Giving careful consideration to the town's natural and historic features, and the potential impacts of development on these resources, will continue to be critical to protecting environmental quality and community identity, and to preserving that which makes Northfield a special place to live, work and visit.

2.2 Topography & Drainage

Northfield lies in the heart of the Dog River valley, defined by the Northfield Range to the west, and the Irish Hill ridge, including Paine Mountain, to the east. The Dog River, fed locally by a number of tributaries within the local drainage area, flows northward into the Winooski, west of Montpelier, and eventually into Lake Champlain. Elevations in town range from around 650 feet where the Dog River crosses into Berlin, to over 2500 feet along the town's western border in the Northfield Range. Prominent peaks to the east include Paine Mountain (2411 ft.), Turkey Hill (1888 ft.), and Shaw Mountain (1820 ft.). Around 62 acres of land in the Northfield Range are located above 2,500 feet, and are subject to Act 250 review if developed.

River valleys provided natural transportation routes for prehistoric populations, and early settlers. The "Paine Turnpike" (now called Berlin Pond Road) connecting Brookfield and Montpelier, was first constructed up the Dog River valley in 1799, opening up the town to settlement and trade with the outside world. The Vermont Central Railroad, completed through the valley in 1847, established Northfield Village as an important regional commercial and industrial center.

Historically, settlement was concentrated in the narrow confines of the valley floor in locations where the power of the Dog River and its tributaries could be easily harnessed. Northfield's four historic villages – South Village, Center Village, Factory (Northfield) Village, and Northfield Falls – all developed first as mill sites. Some of these areas lie within the flood plain of the Dog River and as such have been subject to periodic flooding over the years.

As farms extended into the surrounding hills, much of the forests were cleared for agriculture and potash production, the town's earliest industry. Upland areas supported subsistence farming, and for a time commercial sheep and dairy farms. The clearing of steeper slopes, however, also resulted in accelerated storm water runoff and soil erosion, which depleted local soils.

With the abandonment of the hill farms over the last century, most of the town's uplands have reverted to forests. These areas now support logging operations, wildlife populations, and recreational activities such as hunting and hiking, while providing a highly visible scenic

backdrop to the valley below. They are also increasingly attractive for low-density residential development, and high elevation uses such as telecommunications towers and wind generation facilities. If poorly sited and developed, such uses can adversely impact upland forest watersheds that provide surface and groundwater recharge, timber stands, critical wildlife habitat, and scenic views.

Recent changes in the state’s regulations now allow septic systems to be built on slopes up to 20%, opening up more upland areas to development (see map). Site preparation and development on steeper slopes (15% or more) should be carefully managed according to accepted management practices to minimize runoff and soil erosion. Development on slopes in excess of 25% (estimated at 6,570 acres or 21% of the town’s total land area) should be avoided.

Development in areas that are highly visible from public vantage points also should be located and designed to minimize visual impacts: locate structures below prominent peaks and ridgelines, minimize site clearing, conceal structures from view, and use colors and materials that blend into the surroundings.

Figure 2.1 Slope Development Suitability

<u>Slope</u>	<u>Recommended Management</u>
0-3%	Suitable for development, may require drainage improvements
3-8%	Most desirable for development, having the least restrictions
8-15%	Suitable for low-density development with consideration given to erosion control, runoff, and septic design
15-25%	Unsuitable for most development and septic systems; runoff and erosion problems likely; any construction should be carefully managed
25%+	All construction should be avoided; careful land management is required.

Source: USDA Natural Resources Conservation Service.

The citizens of Northfield recognize the value of keeping undeveloped land available for a variety of uses. River valley land is good for bicycle and pedestrian use; more remote areas of town provide access to scenic vistas and hiking and mountain biking. New development needs to consider the multiple values of each area of the town. In addition to valuing the recreation potential of open land, more than two thirds of citizens responding to the 2009 planning survey expressed support for expanded protection of wildlife habitat.

2.3 Natural Resources

Northfield has a wealth of natural resources that contribute to a healthy and diverse environment, and support local economic and community development. The protection and sustainable use of the town’s natural resource base is necessary to maintain the quality of life for existing and future Northfield residents. Many of the resources noted here are shown on accompanying maps, including those provided by Vermont Agency of Natural Resources and the Central Vermont Regional Planning Commission.

Climate Change

Although the full extent of climate change consequences has yet to be realized, indicators are beginning to emerge, as follows: plants leaf out earlier; timing of species in migration is shifting; there is change to, or loss of, habitat; species extinctions could be as much as 1,000 to 10,000 times the background rate of 1-5 species per year (according to the Center for Biological Diversity); species are experiencing community dissociation and ecological uncoupling; and there are shifts in species’ ranges. The Earth has changed and evolved for millions of years – the issue now is that the climate change pressures are immediate and growing, and living plants and animals have little time in which to make adaptations for survival.

The community can help by making policies and taking actions to reduce the vulnerability of the natural systems around us to the impacts of climate change. Successful efforts to realign, manage, or manipulate the natural world in anticipation of change may be helpful in preventing loss and degradation. Critical to increasing the adaptive capacity of all living things are: a) maintaining a mosaic network of natural communities; and b) promoting a connected landscape.

Four principles for natural resource management that can help to mitigate the impacts of climate change include:

1. Reducing non-climate stressors to increase ecosystem resilience;
2. Managing for ecological function and biological diversity even though systems are in flux;
3. Improving habitat connectivity to allow plant and animal species to shift ranges, e.g. removing impediments to improve access to new ranges; and
4. Facilitating ecological transitions through pro-active management and restoration strategies.

The town may pursue these management principles by:

1. Identifying conservation targets within the town;
2. Assessing the town's vulnerabilities to climate change;
3. Identifying management strategies to mitigate these vulnerabilities; and
4. Implementing identified management strategies.

Northfield is rich in natural resources. If the community is mindful of the present and future challenges of maintaining these resources, the wealth and diversity within the Town should remain for generations to come.

Earth Resources

Geologic Features & Hazards. Northfield's many quarries supported a thriving slate industry in the mid- to late 1800s, rescuing the community from economic decline following the relocation of the railroad operations. These quarries, which extend over several acres, are no longer operational. Other rock and mineral deposits are found locally, though not in commercial quantities. Avid recreational panners may find small amounts of placer gold in local streams.

Geologic hazards are minimal, though isolated rock falls and slides are common on steep or unstable slopes. Regional earthquakes, typically centered in the Adirondack Mountains or southern Quebec, occur with enough frequency and strength that public infrastructure, buildings, and utility systems should incorporate basic seismic standards for earthquake resistance.

Ridgelines. Northfield is framed on the east and west by two prominent ridgelines, the Northfield Range, and the ridgeline running from Irish Hill to Paine Mountain and southward to Shaw Mountain. These higher altitude lands provide unique wildlife and flora habitat; they also define the character of the land. These ridgelines are important both regionally and locally and boast the longest contiguous ridgelines in the state not crossed by major roads. Recent volatility in energy cost and concerns about global warming and the environment have raised the potential for these lands to be considered for wind energy generation. According to the 2009 general survey and public forums, the public was interested in exploring the potential for wind power, while maintaining the character of the ridgelines and protecting wildlife habitat. During the 2014 revisions to the Town Plan, public participants raised concerns that, given the experience and visual impacts of recent commercial wind projects elsewhere in the state, there now appears to be less support for wind development on Northfield's ridgelines. Wind

generation projects are regulated by Vermont's Public Service Board (PSB) and are not subject to local review; the PSB must however give due consideration to municipal and regional plans. The PSB standards require that when a town wishes to protect a certain resource, it must specifically identify that resource and include a "clear, written community standard" meant to preserve that resource in the language of the town plan. The state of Vermont now has an online atlas, the Renewable Energy Atlas of Vermont (<http://www.vtenergyatlas.com>), which can be used to map potential wind sites and associated natural resources. The residents of the town should be engaged specifically on this issue to help inform decision making regarding which ridgelines, if any, should be protected and to what extent. Public input and information on the wind potential and ecology of the town ridgelines should be used to formulate clear standards and criteria to guide decision-making regarding wind projects in Northfield.

Sand & Gravel. Sand and gravel deposits, located mainly along the Dog River and its tributaries, supply commercial extraction operations. Based on soil surveys, it is estimated that there are nearly 4,500 acres of potential sand and gravel, though not all may be suitable for extraction. Such operations supply much needed sand and gravel for road maintenance and construction; but if not properly developed and managed, can result in unstable slopes and slides, and adversely affect surface and groundwater quality, aquatic life, local roads, and neighboring properties. Phasing to limit exposed areas, good management practices, and site reclamation can reduce some of these impacts.

Agricultural Soils. Farmland still in production locally is generally confined to the best agricultural soils in town. Northfield has around 4,500 acres of mapped "primary agricultural soils," including soils of federal and statewide importance. These soils are considered by the state to be a critical natural resource for local agriculture and food production, and as such are considered for protection in Act 250 review. In Northfield, they have been given some protection as the basis for agricultural zoning districts. New zoning districts proposed in this plan will continue to provide protection for prime agricultural soils with a 10-acre minimum lot size in rural areas.

Trees. Trees are a vital part of any community. They are the living, breathing, life-sustaining part of our human habitat. Trees in the community increase property values and decrease energy consumption by shading buildings on a hot day. Trees naturally manage runoff and help reduce costly storm water systems and treatment facilities. Trees mitigate climate change by absorbing and storing carbon dioxide as part of the process of photosynthesis. Trees create shaded outdoor spaces for residents' enjoyment. Northfield must ensure that this resource is thriving and maintained so it may continue to thrive through future generations.

Forests. More than 85% of Northfield land cover includes large areas of unfragmented, contiguous forest, which are characterized by no roads, or few Class 3 or Class 4 roads, and little or no development. (See map 4: Wildlife Resources at a Town Scale). Contiguous forest habitat provides a significant contribution to the local community's interests, its natural heritage, identity, and working landscape. These lands represent much of what makes life in this area unique and enjoyable. They provide myriad ecological functions for fish, wildlife, plants and all the natural resources that sustain them. They provide valuable connections for people to enjoy and appreciate the land and its abundant resources.

Among Northfield's forest resources is a Municipal Forest consisting of two forest blocks (Paine Mountain and Dustin's Pasture). These forests provide wildlife habitat, watershed protection, timber production, fish habitat and forest-based recreational opportunities to be open and enjoyed by all and with potential for long term protection.

Water Resources

Groundwater. Upland areas, and glacial sand and gravel deposits, serve as important aquifer recharge areas that replenish local groundwater supplies, including many private wells and the town's well field. Most recharge areas have yet to be mapped, but the state has delineated "source protection areas" (also known as wellhead protection areas) to protect public water supplies.

The delineated source protection area for the domestic water supply encompasses 111 acres. Potential sources of contamination identified by the Northfield Water Department include road salt, accidental spills, failed septic systems, fertilizer, runoff, pesticides, herbicides, and chemicals. The Department has developed a source protection plan that was approved by the Agency of Natural Resources Water Supply Division in 2002 that delineates activities that should/should not occur within the Source Protection Area for the domestic water supply. Extending sewer service to this area would eliminate potential contamination from failed septic systems. Additional protection could be implemented through local land use regulations.

Surface Waters. Northfield has approximately 100 acres of mapped surface waters. Prominent surface waters in town include the Dog River and its tributaries (Cox Brook, Union Brook, Stony Brook, Felchner Brook, Bull Run, Sunny Brook and Robinson Brook) and small upland ponds, including Felchner Pond, and a number of beaver ponds. Surface waters also include upland headwaters that feed local brooks and ponds. Although these often do not show up on maps, headwaters are nevertheless important to sustain local water supplies and maintain water quality. A surface water protection area extending along the Irish Hill ridge to Paine Mountain also has been delineated by the state to protect Berlin Pond (the capital city's drinking water supply) and the headwaters of the Dog River.

Historically, the Dog River suffered the effects of damming, siltation, and direct discharge of industrial and human waste. Today it is one of Vermont's top wild trout streams, supporting natural populations of brown, rainbow, and brook trout. The river and its major tributaries are important cold-water fisheries that are particularly sensitive to changes in stream flow, temperature, and sediment loads. In recent years the trout population has begun to decline. Consequently, in 2010 the Vermont Fish & Wildlife instituted catch and release only and artificial lures only regulations for the stretch of the river from Northfield Falls to Montpelier, effective through Dec. 31, 2015. The Dog is also rated highly for its scenic qualities and for recreational boating below the Nantanna Mill dam. Northfield Falls on the Dog River, which once supplied power for mills in Northfield Falls, is a locally significant, scenic cascade.

In 2008, the Town of Northfield and the Central Vermont Regional Planning Commission completed a Phase 1 Stream Geomorphic Assessment of the Dog River Watershed, and the Town went on to contract with Bear Creek Environmental to conduct Phase 2 assessment work. The report from this project, *Dog River: River Corridor Plan* (Bear Creek Environmental, 2009) identified the following major problems and threats to the river and its tributaries:

1. Numerous natural and manmade obstructions are impeding the passage of aquatic organisms and there are large areas lacking adequate riparian buffers. Pools are generally frequent and offer a range of depths but refuge habitat is lacking overall.
2. Numerous undersized bridges, old abutments and breached dams are causing excessive sediment deposition and/or scouring of the channel bed upstream or downstream of the feature. These channel constrictions are likely responsible for a great deal of aggradation and planform adjustment occurring along the Dog River.
3. Major roads run adjacent to the channel for much of the study area. These managed roads are limiting riparian buffer areas and causing increased runoff during storm events.

4. Railroad tracks commonly run within the corridor of the Dog River. The railroad bed has generally been elevated to a level where it cuts off the channel's natural floodplain access.

Surface water quality in Northfield is generally good. Most waters in town are rated "Class B" by the state, indicating that they will support local fisheries and are generally suitable for recreation, and drinking with treatment. Uses are more limited within the designated "mixing zone" on the Dog River, extending downstream from the wastewater treatment plant outflow. Water quality in this zone and downstream from the wastewater treatment plant generally, should have been substantially improved by the major treatment plant upgrade in 2002.

Other threats to water quality include failed septic systems, storm water runoff, encroaching development, explosive growth in invasive species of plants, and sedimentation from construction sites, roads, and other impervious surfaces. These can be reduced through the use of surface water setbacks, undisturbed buffer zones, and the application of best management practices for storm water management and erosion control.

Stream Buffers and Riparian Habitat. Riparian areas are ecosystems made up of streams, rivers, lakes, and floodplains. Much of the Dog River and its tributaries lack sufficient riparian buffers. Several segments in the watershed (see Map 7: Northfield Riparian Zoning) have 40 percent or more of their reach with little or no buffer on at least one bank. Stream reaches which lack a high quality riparian buffer are at a significantly higher risk of experiencing high rates of lateral erosion. Consequently, many segments have stream banks that are stabilized with rip rap or hard bank armoring where they are adjacent to human constructed infrastructure. The Town is currently focused on reducing these threats to water quality by prioritizing the incorporation of surface water setbacks and undisturbed buffer zones into land use regulations and the application of best management practices for storm water management and erosion control.

The 2009 River Corridor Plan also includes recommendations for improved watershed management, and identifies specific opportunities to improve water quality in priority river reaches. The Friends of the Winooski have sponsored a number of programs and projects in recent years with local volunteers to monitor and enhance water quality, restore riparian habitats, support recreational uses, and learn more about how the river functions. These include:

1. Partnered with Stone Environmental, Inc. to identify and eliminate any contaminated, non-stormwater discharges entering the stormwater drainage system and discharging into the Dog River in Northfield (2009)
2. Funded and organized riparian vegetation restoration projects on Northfield's Well Field property and on private property along the Dog River
3. Held educational workshops on residential stormwater management strategies such as rain gardens and rain barrels and sponsored a rain barrel workshop and raffle with Northfield High School students

Maintaining and/or establishing setbacks and undisturbed, naturally vegetated stream buffers will help mitigate damages from flooding, reduce impacts from development and other uses, protect water quality and aquatic habitat, maintain channel stability, prevent erosion of streambanks, and provide important habitat and travel corridors for ecologically diverse wildlife communities. Vermont Agency of Natural Resources recommends setbacks of at least 50 feet, and in some cases 100 feet, for streams based on the size of the associated watershed; setbacks for some rivers and streams should be wider. [See Appendix for ANR guidelines].

Buffer zones should be at least one half of the setback distance as measured from the top of the bank or top of the slope, depending on the site (i.e. 25 feet of buffer for 50 feet of setback). The wider the setbacks and buffer zones and the higher the percentage of forested cover, the more the desired functions and values of the river corridor are enhanced. Forested buffers are particularly valuable for protecting water quality and wildlife habitat. A 330 foot buffer protects nearly all the functions of riparian habitat, including high-quality cover for wildlife.

It is imperative for the Town of Northfield to continue to plan for and implement strategies that will conserve or provide long-term stewardship for riparian areas. Currently the Northfield Land Use Regulations provide for a 100 foot building setback from any brook or river within the Conservation and Forestry District and Fluvial Erosion Hazard Regulations that restrict development in river corridors. Northfield should consider the future incorporation of the Agency of Natural Resources recommendations for vegetated riparian buffers and restrictions on impervious areas within this setback in land use regulations, clear identification of surface waters protected and referenced maps, and extension of the regulations to all land use districts in order to provide for sufficient protection of riparian resources.

As with ridgelines, Northfield's rivers have some potential for small-scale electricity generation. It may be possible to develop hydropower facilities without impairing water quality. There is interest in exploring this possibility.

Stormwater Management. Stormwater runoff is a threat to water quality in local streams, ponds, and lakes. Stormwater runoff is typically a problem in areas with a significant amount of impervious surface, including roads, parking lots, driveways, and rooftops. These surfaces prevent rainwater from infiltrating into the ground; instead, rain runs across these surfaces, collecting sediment, nutrients, and other pollutants which quickly flow into surface waters. For streams, the result is a higher volume of water during rain events, leading to faster flows and the potential for more erosion and greater flood damage. The amount of impervious surface also reduces opportunities to recharge groundwater, which leads to lower stream flows during dry conditions.

There are a variety of stormwater management techniques that can be used to reduce the impact of impervious surfaces in the watershed. The amount of impervious surface can be limited by regulating the extent of parking areas, driveways, and roads. When surfaces are built, a variety of practices can be employed that capture and slow the runoff, provide opportunity for infiltration, and allow nutrients and sediment to be removed before stormwater is discharged into a stream. There are also erosion control practices that can be used during construction to ensure that open ground is stabilized and to minimize the amount of sediment leaving construction sites.

In addition to collection and treatment of waste, currently the Northfield wastewater system provides for a significant amount of stormwater collection and treatment via clay pipes and manholes. Large storm events typically overwhelm the system and treatment costs increase significantly due to the rapid accumulation of stormwater. Northfield was previously considering completion of a professional engineering study of the combined system and the best course to separate or treat storm water.

The State of Vermont regulates stormwater runoff on construction sites disturbing more than one acre of land and on substantial development and redevelopment projects (typically those creating more than one acre of impervious surface). Although a new development or construction activity may not meet the threshold for permit coverage through the State of Vermont, even a small development or construction project may have the potential to create an adverse impact to surface waters. Factors to consider in development review include size of the impervious surface, drainage pattern, hydrologic connectivity, installation or modification of

drainage or conveyance structures, location of the discharge, and existing stormwater treatment.

In cooperation with state, regional, and federal partners, a number of voluntary stormwater management projects are being pursued above and beyond what is required by the state. To begin to analyze and mitigate stormwater issues stemming from existing development, Northfield has had three recent stormwater studies conducted: DuBois & King 2008 Stormwater Drainage Study of the south end of the Village and Town; Stantec study of Northfield Falls; and CVRPC Stormwater Mapping of the Village. Goals for the Stormwater Mapping project included mapping the paths that stormwater runoff travels as it runs off impervious surfaces and creation of Village “stormshed” maps that included existing catchbasins and stormwater pipes, swales, stormshed boundaries, and the surface flow direction of water across the ground. Phase 2 of the project identified Best Management Practice (BMP) stormwater retrofit sites within the Village and recommended particular treatments that could be added to help catch and treat stormwater. Members of municipal staff are now trying to prioritize the recommendations of these studies in order to seek funding for implementation.

Friends of the Winooski River, a watershed group dedicated to the protection and restoration of the Winooski River and its tributaries, has also been coordinating and engaging citizens and Norwich University in a number of site-scale stormwater management projects in Northfield. These include a rain barrel workshop, a tree planting project adjacent to the Dog River, and a stormwater mitigation project at Kenyon’s Hardware Store to direct stormwater into a bioretention swale.

On a community scale, the Planning Commission intends to consider incorporating stormwater regulations into the next revision of the Land Use Regulations.

Flood Resilience

Flooding is Northfield’s most common form of natural disaster and the most costly and dangerous to public health and safety according to the Town’s Local Hazard Mitigation Plan (2011). Historic floods have occurred November 1927, September 1938, June 1973, May 2011 and August 2011 (Tropical Storm Irene) causing significant damage to local infrastructure, historic resources and homes. Since 2005, Northfield has replaced over 100 culverts, and built 10 new culverts to better control runoff when storms occur. Most recently, the Town coordinated the FEMA buyout of 13 properties where homes were destroyed during Tropical Storm Irene.

While floods are inevitable, there are many different approaches that can help reduce flood losses in compact historic village centers that are located adjacent to the river, typical of many communities in Vermont, and along the smaller tributaries in the upper reaches of a watershed. More sustainable approaches to development can help Northfield become more resilient to future flooding by protecting vulnerable undeveloped lands, locating development in safer locations, and designing development so it is less likely to be damaged during flooding.

Northfield lies in the heart of the Dog River valley, which is defined by the Northfield Range to the west and Irish Hill/Paine Mountain ridges to the east, both of which have elevations above 2,400 ft. The most significant body of water and source of flood hazards within the Town is the Dog River, which flows northward along Vermont Route 12 and through Northfield’s three population centers, eventually terminating at the Winooski River in Montpelier. Its tributaries include Cox Brook, Union Brook, Stony Brook, Felchner Brook, Bull Run, Sunny Brook and Robinson Brook.

In order to better understand the flood history of the Dog River, long term peak discharge data from the U.S. Dept. of the Interior, U.S. Geological Survey gauge on the Dog River in the village of Northfield Falls was obtained. According to the Dog River Watershed River Corridor Plan (2009), the record of flow from 1935 to 2009 shows that the 10 year discharge was exceeded in 1952, 1976, 1987 and 1989. During water year 1973, the peak discharge exceeded the projected 50 year discharge. The 2011 floods were not included in this study.

Local flooding has commonly occurred on Water Street in Northfield. Also, in late July and early August of 2008, Central Vermont received an excessive amount of rain over a period of a few days. As a result, many of the smaller tributaries to the Dog River experienced flash flooding events. In the wake of Tropical Storm Irene, FEMA administered \$6,077,685 in Irene Relief and Recovery funds to the residents and the Town of Northfield (see Figure 2.2). Almost one third of the disaster relief funds were used to purchase flood-damaged residential properties. The balance was used for individual assistance; residential flood insurance settlements; and road, culvert, and bridge repair, notably West Hill bridge.

Program	Subtotal	Total
Individuals and Households Program		\$914,009
Housing Assistance	\$794,566	
Other Needs	\$119,443	
Public Assistance		\$1,298,417
Hazard Mitigation Grant Program		\$1,840,000
National Flood Insurance Program		\$2,025,259
Total		\$6,077,685

Special Flood Hazard (Inundation) Areas Local flood hazard areas, including those areas along the Dog River and its tributaries, which have a one percent chance of flooding, are defined on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). Northfield joined the National Flood Insurance Program (NFIP) in 1978 and property owners within mapped flood hazard areas are eligible to purchase flood insurance through the NFIP as long as the town regulates development within these areas as required under state and federal programs

According to the National Flood Insurance Program, many properties within the Town are located within the designated 100-year floodplain. Based on the results of overlaying the FIRM flood maps with the location of the E911 points, there are 108 structures in the 100 year floodplain, representing 6% of the total structures in Northfield, and 33 structures located in the regulatory floodway. The regulatory floodway refers to the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot. Types of structures in the SFHA are listed in Figure 2.3.

E911 Structures in SFHA	
E911 (12/12) SFHA 3/19/2013	
SINGLE FAMILY DWELLING	48
MOBILE HOME	39
MULTI-FAMILY DWELLING	13
COMMERCIAL	3
CAMP	2
OTHER COMMERCIAL	1
OTHER RESIDENTIAL	1
PUBLIC GATHERING	1
Total	108

There are three repetitive loss properties in Northfield. A repetitive loss property is any insurable building for which two or more claims of more than \$1,000 were paid by the National

Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. The Town has applied for Hazard Mitigation funds to elevate repetitive loss homes.

As of October 2013, Northfield has 66 flood insurance policies through the NFIP covering approximately \$10,332,700 in value. Currently there are 37 policies in force for structures in the Special Flood Hazard Area indicating that almost 66% of the structures in the high hazard zone do not have flood insurance through the National Flood Insurance Program. Also, with 2013 flood insurance reforms taking effect, the structures in the SFHA that are not currently insured, but that are pre-FIRM (built before the first FIRM), are no longer going to be subsidized and new insurance policies are expected to be very expensive. Individuals wishing to sell their homes may find that prospective buyers' mortgage lenders will require flood insurance.

As events have made clear, areas beyond the NFIP-designated 100-year floodplain may be vulnerable to these types of hazards. Channel adjustments with devastating consequences have frequently been documented wherein such adjustments are linked to historical channel management activities, floodplain encroachments, adjacent land use practices and/or changes in watershed hydrology associated with conversion of land cover and drainage activities, within and beyond the NFIP floodplain. The Hazard Analysis Map in Northfield's Local Hazard Mitigation Plan identifies the Fire Station, as well as other government buildings, as outside the designated floodplain, but near the river. The waste water facility and town garage are also of concern due to their location in the floodplain. The ambulance bay is located in the town garage, and the Town has applied for Hazard Mitigation funds to move it to the fire station. The sewer system in Northfield is also combined. When heavy flooding occurs, it overwhelms the system and causes untreated sewage to flow into the river – leading to other environmental contamination issues.

Fluvial Erosion Hazard Areas. Flooding, including flash flooding after major storms, may also occur on land outside of FEMA's mapped floodplains, including upland streams. Fluvial erosion is erosion caused by rivers and streams, and can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events. The state has recently created a map of Fluvial Erosion Hazard areas to help the town identify those areas at risk of flood damage that may not be included on the FEMA FIRM. Stream setbacks, buffers, and storm water management requirements under local regulations can help reduce flood hazards in both FIRM and FEH areas

As of a 2009 analysis by CVRPC, there are 225 properties in the fluvial erosion hazard zone. The total estimated value of these properties based on the median grand list value as of 2009 is \$29,967,000. In 2010, the Town adopted Fluvial Erosion Hazard Area regulations based on the most current Fluvial Erosion Hazard Zone Map published by the Vermont Agency of Natural Resources. These regulations prohibit new principal structures, storage and fill in the FEH Zone and require certain conditionally permitted uses to adhere to development standards that avoid increased flood hazards.

River Corridor Protection. A corridor plan for the Dog River was developed by VT Agency of Natural Resources in 2009. The plan assesses the Dog River until its convergence with the Winooski River in Montpelier. The stretch of river in Northfield was rated in "fair" condition; however, the river is undergoing "high" to "extreme" bank adjustments and fluvial erosion. The high rates of adjustment and erosion can be attributed to several factors: straightening of the river channel, development encroachments, high levels of stormwater runoff, historic gravel mining and dredging activities, undersized culverts and bridges, and lack of riparian buffers greater than 25 feet. In Northfield, there are 7 undersized bridges which should be replaced in order to decrease erosion and restore the River's health. In addition to bridge projects, the plan

identifies 21 projects that could be completed in Northfield to restore and renew the River's health. The Town should consider prioritizing and pursuing funding to implement these projects.

The Whole Watershed. Communities that wish to become more resilient to future floods can also implement policies to more effectively manage stormwater throughout the entire watershed. Adopting these policies can help slow stormwater, spread it out over a larger area, and allow it to sink into the ground rather than running off into nearby streams and rivers. Policies that support this goal under consideration in Northfield include adopting stormwater management regulations that include green infrastructure techniques, adopting tree protection measures, adopting steep slope development regulations and adoption riparian and wetland buffer requirements. Riparian buffers are an integral part of river corridors. In addition to reducing flood hazards and stabilizing stream banks, naturally vegetated riparian buffers provide a number of important environmental functions and values including flood attenuation, aquatic and terrestrial habitat, creating wildlife corridors, filtering runoff and adsorbing nutrients, shading streams to keep them cool, and more.

Emergency Response Planning. Currently Northfield has a Basic Emergency Operations Plan that identifies responsibilities during a local emergency.

Environmentally Sensitive Areas

Environmentally sensitive areas are distinct areas that serve important ecological and environmental functions, and are particularly vulnerable to the adverse impacts of development or mismanagement. Development of these areas should be avoided, or carefully managed where encroachments are unavoidable.

Wetlands. Wetlands, once thought to be mosquito-ridden wastelands, are now recognized to serve a number of important ecological and environmental functions, including flood management, and ground and surface water recharge and filtration. They also provide important wildlife habitat, and contribute to the diversity and beauty of the natural landscape. Wetlands are defined by three characteristics. They are inundated or saturated with water at various times during the growing season; they contain wet or hydric soils; and they are dominated by vegetation that is adapted to saturated soils.

The loss of wetlands through draining and development is an issue of state and national concern; significant wetlands are now protected under both state and federal regulations. Wetlands regulated by the state are identified on the Vermont Significant Wetland Inventory (VSWI) map. Not all wetlands appear on this map, and absence from the map does not necessarily exempt a wetland from regulation. There are numerous mapped Class II wetland areas in Northfield, and many smaller wetlands and vernal pools are found throughout town, along the Dog River and its tributaries, and in headwater areas. [See ANR Map 4]. The Vermont State Wetland Rules protect the most significant wetlands (Class I and Class II). Under the rules, Class I wetlands are protected by a 100 foot buffer zone, and Class II are protected by a 50 foot buffer zone.

Vernal pools are small wetlands that occur in forested areas, and which are filled with water for all or a portion of the year. These pools support unique populations of invertebrates and breeding amphibians, many of which are Species of Greatest Conservation Need (SGCN) in the Vermont Wildlife Action Plan. Vernal pools also provide a food source for many animals. The Agency of Natural Resources' guide, "Conserving Vermont's Natural Heritage" recommends establishing buffers of 100-600 feet around high quality vernal pools for robust habitat protection. Northfield is home to at least 40 vernal pools; additional unmapped vernal pools likely exist (see ANR map 1).

An inventory should be conducted of locally significant wetlands and vernal pools in addition to those that are mapped or protected by the state. Wetlands that do not trigger state review should be protected by requiring appropriately-sized buffer zones. Vernal pools should be protected by requiring adequate forested habitat and buffer zones; amphibian dispersal corridors connecting adjacent vernal pools should be protected to maintain and improve the viability of amphibian populations.

Floodplains. Local flood hazard areas, including those areas along the Dog River and its tributaries, which have a one percent chance of flooding, are defined on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). Property owners within mapped flood hazard areas are eligible to purchase flood insurance through the National Flood Insurance Program (NFIP) as long as the town regulates development within these areas as required under state and federal programs.

Flooding, including flash flooding after major storms, may also occur on land outside of mapped flood plains, including upland streams. The state has recently created a map of Fluvial Erosion Hazard areas to help the town identify those areas at risk of flood damage that may not be included on the FEMA FIRM. Stream setbacks, buffers, and storm water management requirements under local regulations can help reduce flood hazards in both FIRM and FEH areas.

Wildlife Habitat. Habitat loss, over-hunting, and environmental pollution led to the extinction of a number of wildlife species locally and statewide, including deer, turkey and beaver populations. Reforestation has allowed for the re-establishment of core and seasonal habitat areas, and connecting (travel) corridors along ridgelines, streams and wetlands, which support diverse wildlife populations, including both game and non-game species. Northfield is home to some of the largest unfragmented and un-roaded, contiguous forested habitat in the state (see Map 4: Wildlife Resources at a Town Scale, Northfield, VT; Jens Hilke VT ANR). Contiguous natural cover includes forests, woodlands, wetlands, old fields, and meadows; larger blocks of contiguous habitat are likely to contain greater biological diversity than smaller blocks, making them important areas for wildlife habitat (see Map 3: State and Regional Scale Biodiversity Scale Biodiversity Resources; and Map 5: Fine Scale Wildlife Resources). Habitat fragmentation and loss, however, from land subdivision, clearing and human use, continue to threaten wildlife populations in the path of development. Critical wildlife habitat areas in town identified to date (see map Town of Northfield: Natural Resources; and Map 5: Fine Scale Wildlife Resources), and considered in state regulatory proceedings include:

- Several large deer wintering areas (more than 5,000 acres), also referred to as “deer yards,” which are critical to the winter survival of local deer populations;
- Seasonal bear habitat (roughly 4,800 acres) located mostly in remote upland areas, including the Northfield Range; and
- A rare plant community (a species of fern) on the slopes of Paine Mountain.

Many other important wildlife areas may exist in town, but have not yet been identified or mapped. Inventories of natural communities in the town should be conducted and mapped by the Northfield Conservation Commission and/or consulting experts. Funding for these inventories is available through Municipal Planning Grants. Landowners can work with the Vermont Department of Fish and Wildlife to better manage the habitat on their property. A more broad-based inventory also could be undertaken through Keeping Track[®], a Vermont-based nonprofit that provides community training in wildlife identification and tracking. Wildlife habitat protection should be incorporated under local subdivision and zoning regulations, especially in those areas identified as important or sensitive. The most important wildlife habitat, such as referenced in Map 3: State and Regional Scale Biodiversity Scale Biodiversity Resources, should receive greater protections (for example, Tier 1 and Tier 2 on Map 3).

2.4 Natural Resource Goals, Policies & Tasks

Goals

Identify, protect and preserve important natural features of Northfield's landscape which help define the community's unique identity and sense of place; and

Ensure that conserved lands and/or lands under long-term stewardship encompass a diversity of landforms; and

Maintain and improve the quality of Northfield's air, water, wildlife, forests and earth and land resources.

Protect life and property from flooding and related natural disasters.

Policies

Generally, development should be regulated to achieve the goals above. Specifically, the following policies regarding sensitive areas, water quality protection, shall be implemented.

1. Sensitive areas
 - a. Sited to avoid prominent ridgelines, upland areas, and hilltops, as viewed from public vantage points;
 - b. Carefully sited, designed and managed in upland areas (e.g., over 1800 ft) to avoid steep slopes and shallow soils, and adverse impacts to headwaters and groundwater recharge areas;
 - c. Sited and carefully managed to avoid the fragmentation and degradation of critical wildlife habitat, including habitat identified as important or critical, including core habitat areas, large blocks of unfragmented forest, and connecting corridors;
 - d. Sited to avoid, to the extent feasible, primary agricultural soils, which should be protected for current and future agricultural use;
2. Water quality protection
 - a. Carefully managed on slopes of 15-25% to minimize surface water runoff and erosion, and prohibited on slopes of 25% or more;
 - b. Sited with adequate riparian setbacks and buffers as needed to protect water quality, riparian habitat, and coldwater fisheries (e.g. 50 foot minimum), as recommended by Vermont Agency of Natural Resources;
 - c. Sited to avoid and/or minimize impacts to designated source and surface water protection areas that supply community or municipal water systems;
 - d. Sited to avoid flood hazard areas to the extent feasible, or where necessary, be designed to minimize flood damage and the loss of life and property;
 - e. Sited and designed to preserve or restore pre-construction runoff conditions.
3. New development in identified flood hazard, fluvial erosion, and river corridor protection areas is prohibited. Improvements to existing development in vulnerable areas must not exacerbate flooding and fluvial erosion.
4. Encourage the protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion.

5. Maintain high-quality flood emergency preparedness and response plans.
6. Strengthen the viability of working lands by promoting a sustainable forest products economy.

Tasks

General

1. Continue to inventory, catalogue and map Northfield's natural features. Establish priorities for protection of unique or valuable natural features, and develop an overlay map of those in order to identify areas that would benefit from special management or protection. [Conservation Commission, Planning Commission]
2. Update local land use regulations as needed to adequately protect Northfield's natural resources. Consider the adoption of overlay districts to protect sensitive resources. [Planning Commission, Selectboard].
3. Develop standards for the preservation and improvement of the natural aesthetics and scenic landscapes of the town and surrounding areas (i.e. enact a policy of installing new utility lines underground wherever feasible, natural screening standards, planting and preservation of trees and other vegetation, etc.) [Planning Commission, Conservation Commission]
4. Formalize the appropriate role of the Conservation Commission in development review. [Conservation Commission, Planning Commission, Zoning Board of Adjustment]
5. Inform the community about natural resources issues before the town and encourage dialogue through surveys and public forums. [Conservation Commission, Planning Commission]
6. Seek grant funding to conduct natural resources inventory. [Conservation Commission, Planning Commission]
7. Explore ways to strengthen implementation of existing land management plans on parcels enrolled in the state's current use valuation program. [Planning Commission, Selectboard]
8. Work with Norwich University to ensure that long-term planning for its open land is consistent with the goals and policies of the Municipal Plan. [Planning Commission, Zoning Board of Adjustment]

Ridgelines

9. Develop a policy on the use of ridgelines for the location of wind energy facilities. Review existing data on wind potential and map the high potential areas with an overlay of sensitive habitats and prominent viewsheds. [Planning Commission, Selectboard]
10. Survey town residents as to which ridgelines they consider important locally, both culturally and ecologically, to help inform decision making regarding which ridgelines are suitable for, and which if any should be protected from, commercial-scale renewable energy development projects such as wind farms. [Planning Commission, Conservation Commission]
11. Develop clear language to be added to the town plan regarding where the town deems it desirable to allow commercial renewable energy projects, such as wind farms, and where the town may want to protect ridgelines or wishes to mitigate impacts caused by development, and to what extent. [Planning Commission, Conservation Commission]

Topography and Drainage

12. Minimize runoff and soil erosion by managing carefully all site development.

Surface Water

13. Enact, through zoning and/or subdivision regulations, measures to preserve vegetated buffers and restrict development or expansion of impervious areas in riparian areas and river corridors along all streams.
14. Review the findings of the Dog River: River Corridor Plan (Bear Creek Environmental, 2009) report, and consider implementation of recommendations regarding Fluvial Erosion Hazard Zone development and storm water management. [Planning Commission, Conservation Commission]
15. Support the Conservation Commission as it seeks to develop river restoration and water quality protection projects, based on the findings of the geomorphic assessment. [Planning Commission, Select Board]
16. Consider the use of river corridor easements to protect rivers and riparian areas.
17. Map existing riparian forest cover that allows for a 330 foot buffer and target high quality areas for protection through the use of planning and easement acquisition. [See *Conserving Vermont's Natural Heritage: A Guide to Community-Based Planning for the Conservation of Vermont's Fish, Wildlife, and Biological Diversity*, 2013, Vermont Agency of Natural Resources]
18. Educate landowners regarding the importance of naturally vegetated areas along rivers and streams. Encourage the replanting and maintenance of buffers.
19. Rivers and streams will be protected in order to maintain their natural conditions and functions. The alteration of stream channels will be restricted and the removal of woody debris from channels will be discouraged. [except where it is an obstruction – see comment previously]
20. Develop hydropower without impairing habitat or water quality.
21. Extend sewer service south along Route 12A to protect the community water supply. [Select Board]
22. Establish requirements for stormwater treatment for development projects that are below the minimum state permitting thresholds.
23. Consider developing site design standards for residential and small scale commercial projects which incorporate “Low Impact Development” techniques such as rain gardens, grassed swales, green roofs, cisterns, and porous pavements.
24. Encourage or require parking lot landscaping, shared parking lots and driveways and encourage creative design approaches that minimize pervious cover while still ensuring public safety and access for emergency vehicles.
25. Review local road standards for barriers to stormwater management practices, and look for opportunities to reduce road widths, increase vegetation in the ROW and minimize erosion.
26. Review local zoning bylaws to ensure the conservation of natural areas through clustered Planned Unit Development, riparian buffers, tree conservation and preservation of native vegetation.

Flood Resilience

27. Recruit and support a community committee to pursue hazard mitigation efforts.
28. Work with Mayo Nursing Home to create evacuation plan
29. Relocate the senior living center to a more appropriate area
30. Work with other emergency responders across the state to ensure adequate training and preparedness for swiftwater rescue scenarios
31. Expand culverts on Jarvis Lane and across railroad
32. Require all mobile homes in flood hazard areas to be anchored
33. Set surface water setbacks and buffer standards in zoning ordinance based on default geomorphic standards and from VT DEC and VLCT model ordinances for all streams and wetlands in Northfield.
34. Prioritize and implement select projects identified in Dog River Corridor Plan
35. Explore participation FEMA's Community Rating System to secure a discount on flood insurance for policy-holders.
36. Work with elected officials, the State ANR and FEMA to prevent any future NFIP compliance issues through continuous communications, training and education.
37. Public outreach – make and distribute NFIP and flood mitigation pamphlets at Town Offices, Fire Department, and Police Department

Wetlands

38. Inventory, clarify location of, and assess all wetlands (Class I, II, and III including vernal pools) in Northfield, with the help of the state and/or consulting experts. [CC]
39. Seek to ensure that wetlands are not adversely impacted by development or other land uses by incorporating protection, such as buffer zones, for wetlands, vernal pools, and associated wildlife travel corridors, in the zoning regulations.[PC, ZA]
40. Consider purchasing or acquiring easements to protect particularly important and vulnerable wetlands. [CC, SB, landowners]
41. As needed, petition the state for more accurate classification of significant wetlands. [CC research process for doing this] Support opportunities to restore wetlands to improve water quality and habitat, and to mitigate effects of stormwater runoff. [PC, SB, ZA, CC]
42. Educate landowners about the importance and vulnerability of wetlands and vernal pools, and how to identify and protect them. [CC]

Forests

43. Identify large blocks of unfragmented and contiguous forest within the town and encourage their conservation and stewardship. [CC, PC]
44. Encourage stewardship for at least two patches of contiguous forest habitat totaling a minimum of 1000 acres within the town. [CC]
45. Ensure the conservation and stewardship of existing contiguous forest habitat and avoid subdivision and fragmentation of that habitat. [PC]
46. Avoid upgrading Class 4 or Class 3 roads in order to preserve the unfragmented characteristic of contiguous habitat. [SB]

47. Seek conservation easements on large tracts of unfragmented forests in order to protect these areas for their wildlife habitat, forestry, and recreation values. [CC]
48. Inform eligible landowners in the community regarding Vermont's current use program, and consider providing tax incentives for those who choose to manage their forest lands instead of developing them. [SB, CC]
49. Offer opportunities for the community to learn best practices in forest stewardship. [CC]
50. Develop a landowner stewardship program to encourage conservation and sustainable management of contiguous forest lands. [CC]
51. Consider establishing a land acquisition fund and land conservation plan that would identify important lands in the town to be conserved permanently. Seek grant funding to develop an inventory and stewardship plan for Northfield's Municipal Forests. [CC, ZA]
52. Seek grant funding to develop an inventory and stewardship plan for Northfield's Municipal Forests. [CC, Utilities Commissions, ZA]

Trees in the Town Community

53. Within the next 5 years, complete an inventory of the trees for which the town is responsible including street trees and those in parks and on other town lands. [CC]
54. Develop a master plan for the town's trees, including: a) an approach to protect trees from invasive insects, primarily emerald ash borer, Asian longhorn beetle, and woolly hemlock adelgid; and b) scheduling maintenance or replacement of trees per year, with the goal of addressing at least the 5% in most need of care; c) a strategy to increase diversity; d) a commitment to increase the planting of new street trees throughout the community. [CC]
55. Educate community, including town officials and staff, on the benefits of street trees. [CC]
56. Consider establishing town tree committee. [SB]

Wildlife Habitat

57. Identify and map important wildlife areas and corridors. [CC]
58. Offer opportunities for the community to learn sustainable habitat management practices. [CC]
59. Include protective guidelines for habitat under local subdivision and zoning regulations.[PC]
60. Ensure animals and plants can move freely for long distances between conserved lands, contiguous forest habitat, and other important habitats, land feature and natural communities in order to meet all survival requirements (breeding, dispersal, adaptation to climate or habitat changes). [CC]
61. Seek opportunities for conservation of larger blocks of unfragmented forest, the level of protection depending upon the size and qualities of the parcels. (See ANR maps 3, 4, and 5 for information currently available). [CC]
62. Seek opportunities for conservation easements to conserve important wildlife habitat and travel corridors. [CC]

Extraction of Earth Resources

63. Research municipal authority to regulate extraction of earth resources. [ZA]

64. Adopt appropriate zoning by-laws to ensure protection of slopes, surface and groundwater quality, aquatic life, local roads and neighboring properties. [PC]

Agricultural Soils

65. Provide maximum protection for critical natural resources for local agriculture and food production. [PC]

Chapter 3 Cultural Resources

Northfield residents have long taken an interest in the town’s historic development. The Northfield Historical Society was established to preserve and interpret local history for present and future generations of Northfield residents. The Society maintains a collection of materials and artifacts in the historic Paine House adjacent to the public library.

Traditional Settlement Patterns

Northfield’s traditional settlement pattern of clustered villages linked by an integrated transportation network, and surrounded by an open river valley and forested uplands has been well-established since the nineteenth century. Northfield’s villages were developed at a scale and density that is pedestrian-friendly, with clearly defined streetscapes and public spaces, prominent public buildings, and a variety of goods, services and employment opportunities, all within easy walking distance of residential neighborhoods.

As noted in the town history, the introduction of the automobile significantly altered the town’s character, yet this traditional pattern of development remains largely intact. Northfield has yet to suffer the effects of large-scale, auto-oriented commercial strip development and low density sprawl that are plaguing other Vermont communities. Issues associated with traffic and parking, and the effects these have on residential neighborhoods, are more common locally. Through the use of local subdivision and zoning regulations, and carefully delineated water and sewer service areas, Northfield can promote types and patterns of growth that are consistent with its traditional character, and help preserve its local identity.

<p style="text-align: center;">Figure 3.1: Structures Listed on National Register of Historic Places</p> <p>Lower Cox Brook Covered Bridge [1974] Northfield Falls Covered Bridge [1974] Slaughterhouse Covered Bridge [1974] Stony Brook Covered Bridge [1974] Upper Cox Brook Covered Bridge [1974] Central Vermont Railway Depot [1975] Old Red Mill [1977] Mayo Building [1983]</p>
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Historic Sites & Structures

Northfield has a wealth of historic resources that includes hundreds of documented historic sites and structures, and many others that have yet to be identified or catalogued. A few of Northfield’s most historic structures, including its five covered bridges, the Vermont Central Railroad Station, the Old Mill Building and the Mayo Building, are listed on the National Register of Historic Places.

A more comprehensive historic sites and structures survey for Northfield, conducted by the state in 1980-81, identified six separate historic districts, with 342 contributing structures (Table 3.1), and 79 other historic structures located throughout town. A structure generally must be at least fifty years old, and retain its historic integrity, to be eligible for listing on state and national registers. Most structures identified to date are historic homes, but also included several school houses, many of Northfield's public buildings, the Vermont Central Railroad engine house, the Nantanna Woolen Mills complex, the Brown Public Library, and the Vine Street and Town Highway 57 bridges. At the time the Northfield survey was conducted, many of these structures were in good to excellent condition.

Not included on the initial survey were potential archaeological sites, including quarry and mill sites along the Dog River; town cemeteries which are an important historic resource, and other types of historic structures such as barns and outbuildings, that have yet to be identified or surveyed, but may also contribute to the town's cultural heritage.

Northfield's six historic districts, and many of the historic structures listed on the state inventory may be eligible for listing on the National Register of Historic Places, and should be considered for nomination. In addition to conferring state and national recognition of historic significance, listed properties are eligible for limited state and federal financial assistance, including historic preservation grants and rehabilitation investment tax credits.

Listing, however, offers very limited protection from demolition or alteration; potential impacts of development on listed properties are considered only for projects that are subject to federal or state review (e.g., Act 250). Act 250 may also trigger an initial site assessment to determine if buried archaeological resources are present. The town could consider adopting historic and/or design review regulations under zoning to further protect the character of individual historic landmarks or designated historic districts.

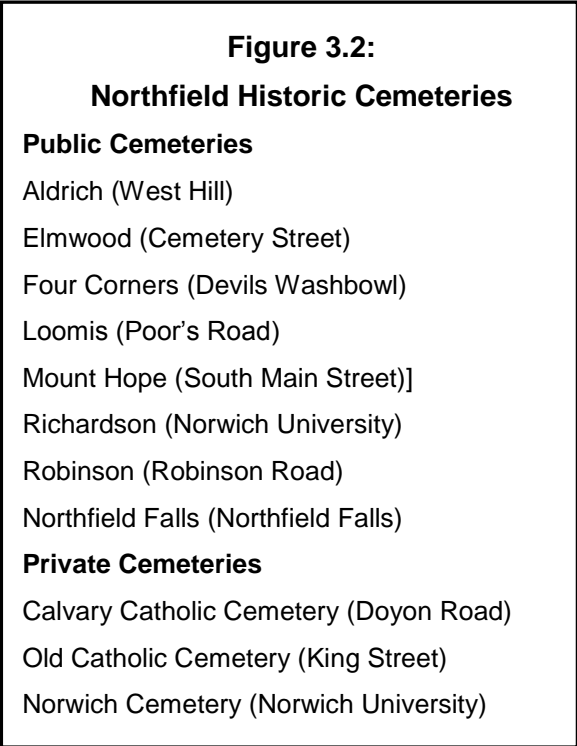


Table 3.1: Northfield Historic Districts

District	Description	Structures	Condition
Northfield Falls Village	Mid-19 th century mill village, first settled in the 1820s; dominated by Greek Revival architecture	40 contributing structures; 13 other structures	20% excellent 40% good 30% fair 10% poor
Water-Pleasant Street	Historic residential district dating from 1840s; 1890s stoneworker housing	54 contributing structures 34 other structures	15% excellent 70% good 10% fair 5% poor
Vine Street	Historic residential district developed between 1840 and 1920; houses represent a range of architectural styles	97 contributing structures 36 other structures	5% excellent 40% good 35% fair 20% poor
Crescent Street	Historic residential district; mostly Greek Revival architecture; face common and Norwich University	11 contributing structures 1 other structure	20% excellent 40% good 40% fair 0% poor
Depot Square	Historic commercial district linking Main Street to the railway; anchored by two 19 th century landmarks, the VCR Rail Station and the United Church; 20 th century infill	12 contributing structures Depot Square 4 other buildings	10% excellent 70% good 20% fair 0% poor
South Main-Central Street	Historic residential district, reflecting prosperity associated with railroad, granite industry; Greek and Colonial Revival	128 contributing structures 16 other structures	50% excellent 40% good 5% fair 5% poor

Source: *Vermont Historic Sites & Structures Survey, Northfield, VT*, Division for Historic Preservation, 1980-81.

Additional state assistance is available for historic properties within designated downtowns under Vermont’s Downtown Program (see Chapter 5), and for preservation projects conducted by “Certified Local Governments (CLGs).” Northfield could apply for CLG status, which extends federal and state preservation partnerships to the local level. CLGs are eligible for additional federal and state preservation grants and technical assistance, and may participate directly in the nomination of historic properties for listing.

Northfield maintains the hallmarks of the classic New England village: the historic nature of some of its buildings, the concentration of activity and structures in the villages, and the presence of Norwich University. Areas throughout the town and the surrounding countryside are

valued for their natural beauty and scenic qualities. These features could be used to more aggressively market Northfield as a tourist attraction. During public forums in 2009, participants repeatedly raised the possibility of developing the municipality as a travel destination. The municipality should consider surveying town residents regarding the desirability of recreational development and should consider conducting an assessment of the potential benefits and impacts of various types of recreational development.

3.1 Cultural Resource Goals, Policies & Tasks

Goals

To identify, protect, and preserve important cultural and historic features of Northfield's landscape and built environment, which help define the community's unique identity and sense of place.

Policies

Development should be

1. Sited and designed to be consistent with Northfield's historic settlement pattern, including traditional densities and scales of development, local street networks, and streetscapes;
2. Compatible with Northfield's historic architectural styles;
3. Designed to minimize adverse impacts to Northfield's historic sites, structures and outdoor recreation areas, and scenic landscapes.

Tasks

1. Consider nominating one or more of Northfield's Historic Districts to the National Register of Historic Places. [Historical Society]
2. Consider application for Downtown and/or Certified Local Government designation to access additional resources and financial assistance for historic preservation. [SB]
3. Explore ways to market Northfield as a destination for travelers interested in historic resources. Create an inventory of events that could be used for marketing. [Historical Society, Municipal Manager]

Chapter 4 Population

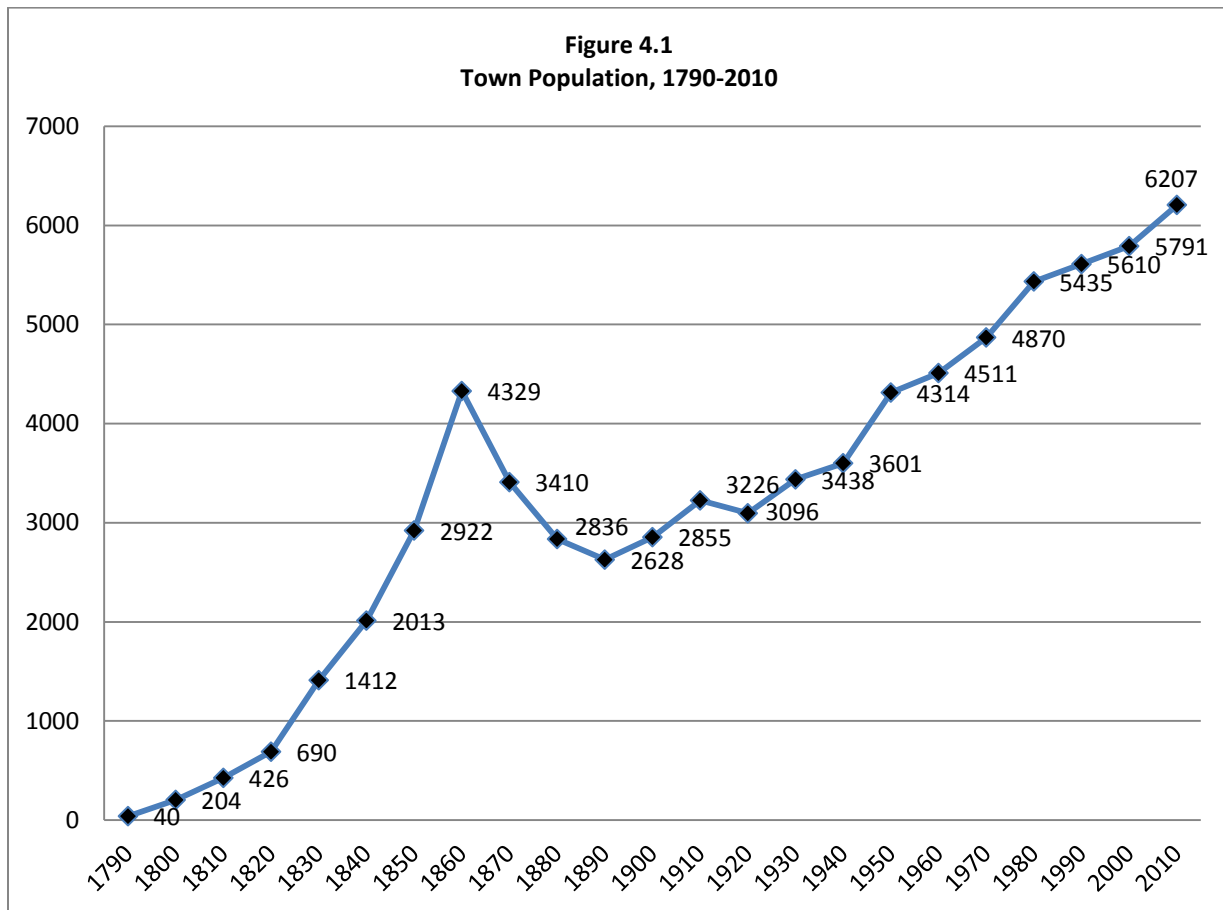
4.1 Overview

The composition and fluctuation of a community's population can have a significant influence on a number of issues of public concern. Generally, rapid population change can stress community services, result in environmental degradation, create or limit economic opportunity, and/or impact housing conditions and values. The presence of a large age cohort (e.g., a large retirement or student population) can place special demands on community services. This chapter examines population trends and characteristics in Northfield, and identifies those likely to affect future conditions in the community.

Northfield faces growth in the older segments of the population, and a diminishing youth population. This trend, seen across much of Vermont, will affect many aspects of the community. Housing demand may change as residents want smaller homes located closer to services and amenities in the village center. The aging of the population is also affecting regional employment trends, and may change regional and state funding for and provision of public education.

4.2 Historical Trends

Since its settlement in 1785, Northfield's population change varied from that of most Vermont communities (see Figure 4.1). The town's 19th century population peaked around 1860, at which time Northfield was the state's fourth most populous community. The local decline of the railroad, which began in the 1850s, the American Civil War, and subsequent westward migration, preceded a period of population decline. For much of Vermont, that period of decline lasted through the 1950s. The trend reversed itself much earlier in Northfield, however, which experienced relatively steady population growth since 1890.



4.3 Recent Trends

In recent years, Northfield's population growth rate has varied. During the 1980s and 1990s, the town's population increased a total of 3.2% for each decade: an average annual rate of 0.3%. The town's rate of population growth during that period was lower than that of Washington County as a whole. Over that period, communities located in the western portion of the county saw rapid population growth.

In the first decade of the millennium, Northfield's population growth rate more than doubled that of the previous twenty years to 7.2%.

All of Northfield's neighboring municipalities experienced higher rates of population growth during the previous two decades, although Roxbury's rate of increase slowed considerably

during the 1990s. This is even true with Williamstown that, despite being located some distance from regional population and employment centers, exhibited a significantly higher rate of population growth since 1980. A comparison of population change in surrounding towns is provided in Table 4.1.

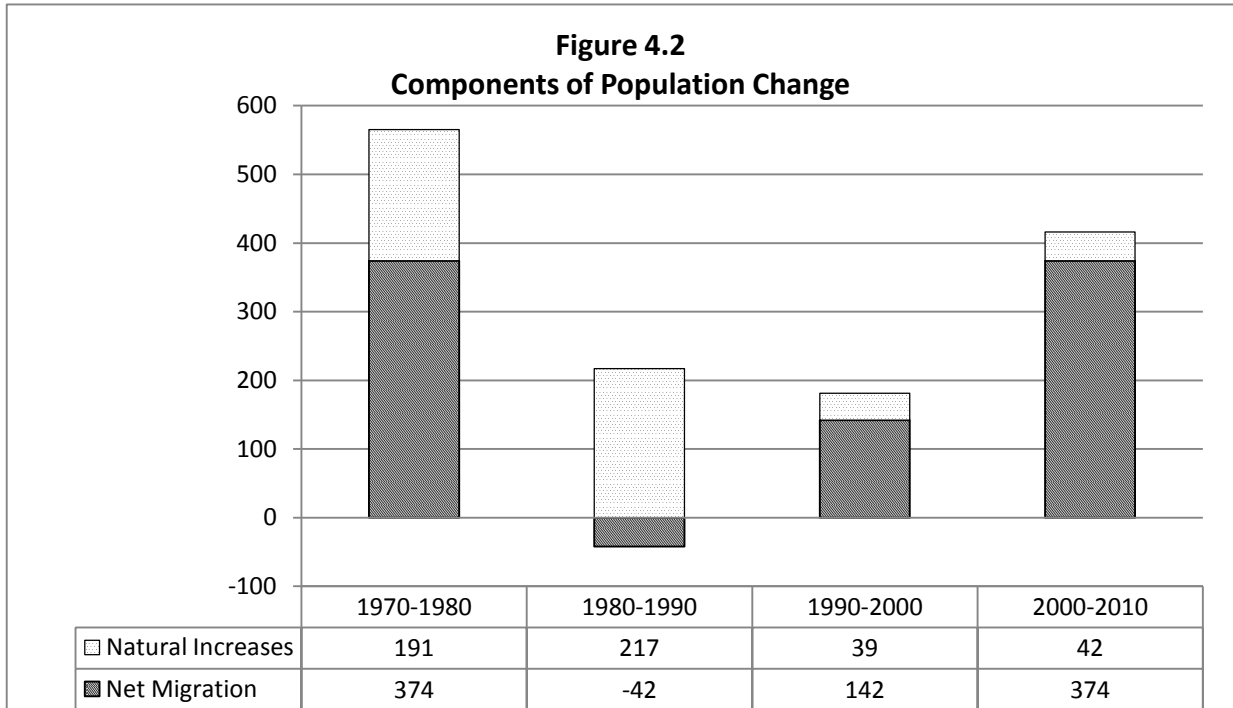
Table 4.1							
Northfield & Surrounding Communities							
Population Trends: 1990-2010							
	1990	2000	2010	Change (#)		Change (%)	
				1990-2000	2000-2010	1990-2000	2000-2010
Berlin	2,561	2,864	2,887	303	23	11.83%	0.80%
Moretown	1,415	1,653	1,658	238	5	16.82%	0.30%
Northfield Town	5,610	5,791	6,207	181	416	3.23%	7.18%
Roxbury	562	576	691	14	115	2.49%	19.97%
Waitsfield	1,422	1,659	1,719	237	60	16.67%	3.62%
Williamstown	2,839	3,225	3,389	386	164	13.60%	5.09%
Washington Co.	54,928	58,039	59,534	3,111	1,495	5.66%	2.58%
Vermont	562,758	608,827	625,741	46,069	16,914	8.19%	2.78%
<i>Source: U.S. Census data, 2010.</i>							

Table 4.2 Northfield Trends 2000 to 2009				
Northfield	'00	'03	'06	'09
Population	5791	5797	5810	5736
Students	778	783	711	634
Households	1819	1851	1831	1868
<i>Source: Central Vermont Chamber of Commerce, Community Profile, 2011.</i>				

4.4 Components of Population Change

According to the University of Vermont's Center for Rural Studies, 66% of Northfield's population growth during the 1970s was due to in-migration (people moving to town). During the 1980s, however, all population growth was attributable to natural increase (the number of local births minus local deaths), with more people leaving town during the decade than moving in.

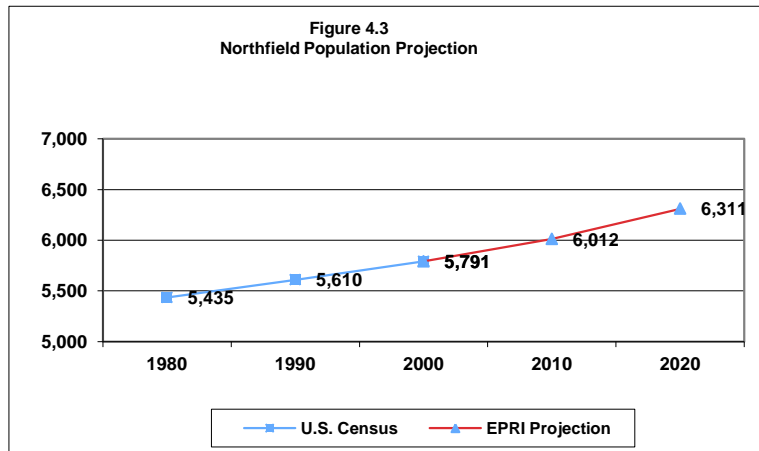
This trend was reversed over the past two decades, as 86.4% of the population increase during the 1990s and 2000s was attributable to net migration.



Source: UVM Center for Rural Studies, VT Department of Health Vital Statistics, 2000-2009

4.5 Population Projections

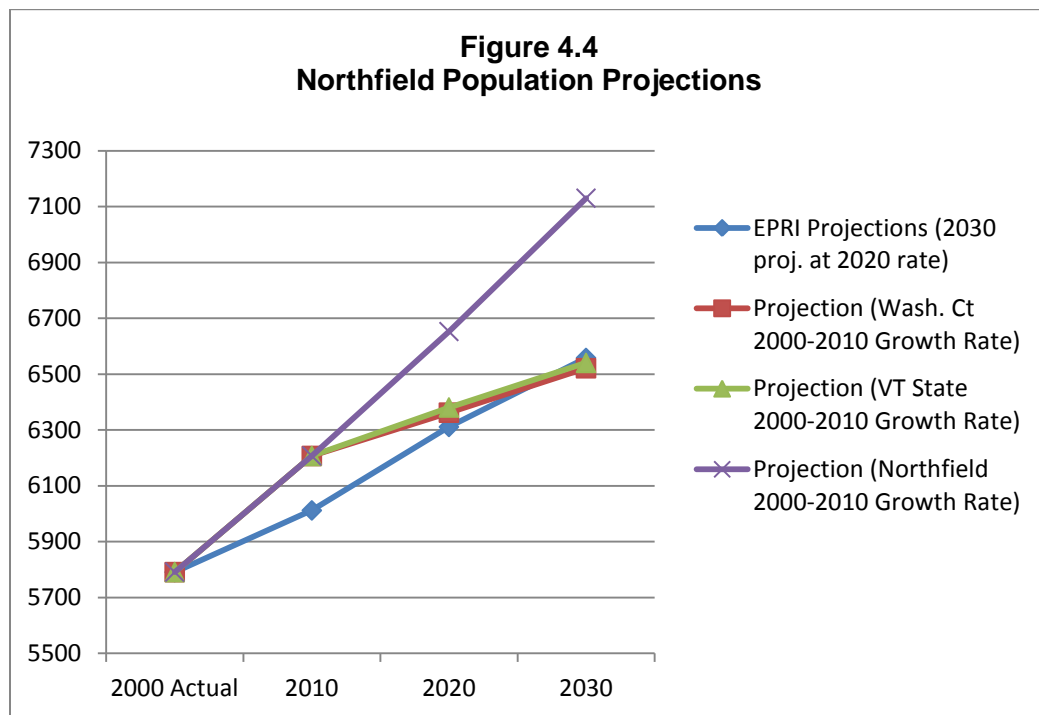
In addition to past trends, future population changes should be considered to avoid unanticipated burdens to the community. In 2001, the Central Vermont Regional Planning Commission contracted with Economic Policy Resources, Inc. (EPRI) of Williston to prepare economic and demographic forecasts for towns in the region through 2020. No more recent information is available. A Vermont Department of Labor study in 2011 (Vermont Economic and Demographic Profile Series) simply applied the growth rate between 2000 and 2010 to the state and Washington County figures for its 2020 and 2030 population estimates. According to the EPRI forecast, Northfield's population was expected to increase by an estimated 221



people by 2010, an average annual rate of growth of 0.4%. As presented above, this forecast was not correct, with Northfield growing at .7% per year, almost twice that rate. Figure 3.3 displays the EPRI forecast, to the year 2020. If the EPRI growth rate for the 2010-2020 period were to be correct, based on actual 2010 population, Northfield could expect the 2020 population to be 6512.

Figure 4.4 shows a variety of Northfield population projections using the EPRI projection brought forward another ten years and applying the growth rates experienced between 2000

and 2010 for the state, Washington County and Northfield specifically. Only the Northfield-specific projection diverges, with the other three models projecting in the mid-6500s for 2030.



The gradual decline of rural economies could lead to greater migration into more urban, service-providing communities. To the extent that Northfield serves as a small hub of regional services, this may bring additional population into the downtown area from more rural neighboring towns. Advances in telecommunications open the possibility that increasing rates of telecommuting will shift population outward toward more rural areas.

Continued growth in enrollment at Norwich University affects the municipality’s population. The expansion of on-campus student housing have already resulted in fewer students living in the community, but also lays a foundation for future growth in the overall student population. Additional staff and related economic development could have a noticeable impact on the municipal population.

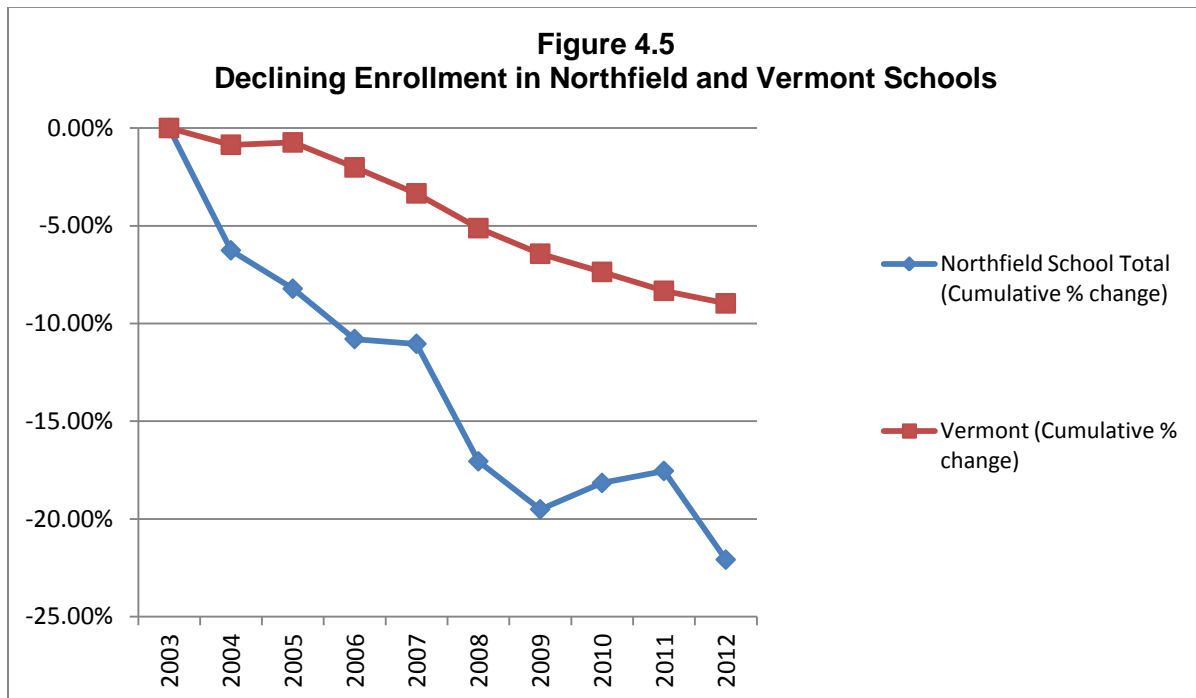
Northfield comprised 10.4% of the county’s population in 2010, a slight increase from the 10% of the county population it comprised in 2000. Since then, there are no more recent town-specific projections.

4.6 Population Characteristics

Northfield’s population seems to be bucking state and national trends, by seeing its average age drop from 30 years to 26.1 over the past decade. A data issue makes historic comparisons difficult: the 2010 US Census uses different age cohorts for delineating the population. The 2000 and previous Censuses appear to use the groupings of age 5-17 and 18-34 whereas the 2010 Census broke up ages 5-19 into three cohorts, then three additional cohorts for ages 20-34.

The Northfield primary and secondary student population has declined over the last 20 years. In 1990 the population was 888, reaching a high of 901 in 1993 and 1994. The population in 2012

was 635. Northfield's decline in enrollment is almost three times the precipitous drop in enrollment statewide. Northfield now serves almost one-quarter less pupils than it did just ten years ago. Figure 4.5 shows the changes in Vermont and Northfield school populations served.



Source: Vermont Department of Education, *Enrollment Report*

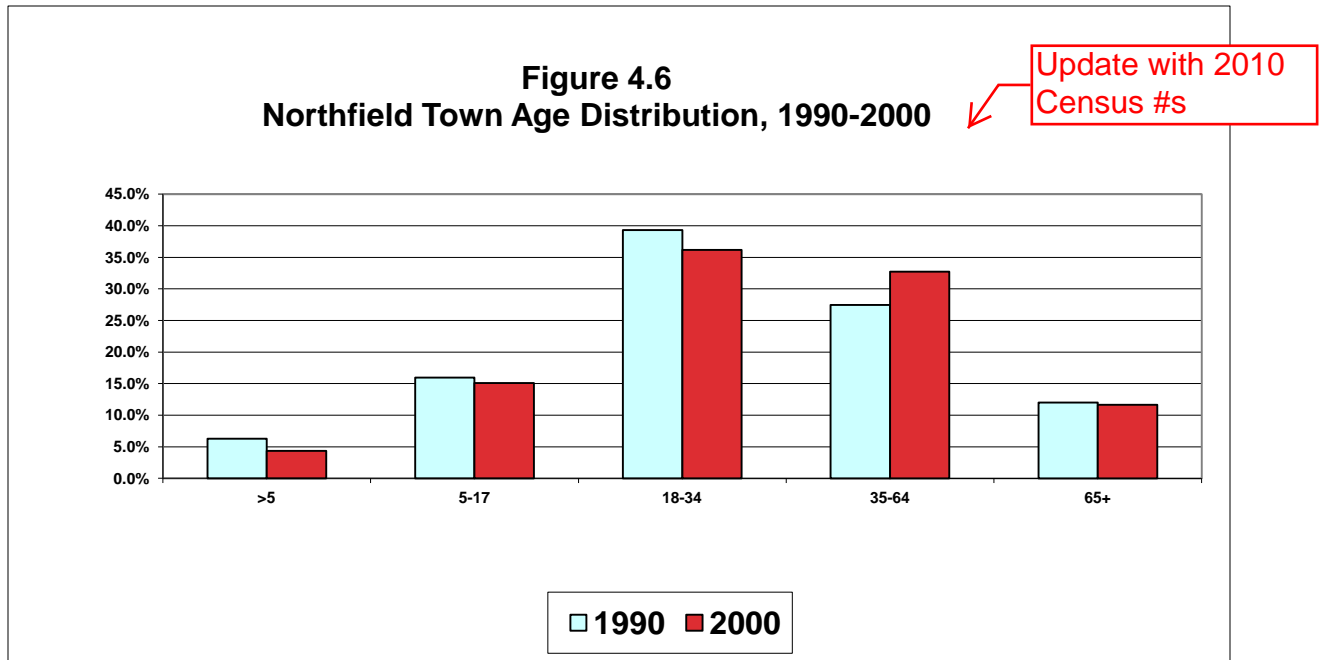
Figure 4.6 shows the impact of Norwich University on Northfield. Well over one-third of the town's population (36.6%) is in the 15-24 year old cohorts reflecting the concentration of college students. This percentage is significantly higher than that of Washington County (13%) and the state as a whole (14.36%)

The next highest group of cohorts is in the 45-64 year old groups with nearly one-quarter of the total (22.4%), possibly reflecting the University's workforce. Assuming that neither group (students here only to attend college and older adults) will be having many children, Northfield schools will continue to lose population and jobs will have to be filled by in-migrants.

In addition to age distribution, the U.S. Census provides a range of current information regarding the characteristics of town and village population. A statistical profile of Northfield's 2010 population is provided in Table 4.3., which reveals several similarities – and some noteworthy differences – between town population and that of the county and state.

In many respects, the town's population characteristics in 2010 were quite similar to the county's and state's population. Similarities exist in median family income, ethnic diversity, formal education level, and family size.

In several other respects, the characteristics of the town's population vary considerably from those of the county and state. This is due to the relatively large number of Norwich students, which makes the town population younger, less wealthy (as indicated by per capita income),



disproportionately male, and less impoverished. If the student population is not included, the town's population is similar in most respects to that of the county and that of the state.

**Table 4.3
Northfield Population Profile**

	Northfield Town	Washington County	Vermont
Population	6207	59,534	625,741
Male	55.60%	49.4%	49.25%
Female	44.4%	50.6%	50.75%
Minority	3.27%	2.21%	3.04%
Born in Vermont	41.0%	55.0%	51.2%
Foreign Born	1.9%	2.9%	3.9%
Veterans	11.7%	10.7%	10.5%
Median Age	35.4	43.8	42.7
Children (< 18 years old)	17.27%	20.18%	19.8%
Elderly (> 65 years old)	14.73%	16.24%	15.99%
High School Graduates	95.1%	93.0%	91.0%
College Graduates	40.2%	38.2%	33.8%
Per Capita Income	\$20,915	\$28,992	\$28,376
Below Poverty Level	14.6%	9.3%	11.3%
Children Below Poverty Level	14.1%	11.7%	13.9%
Elderly Below Poverty Level	9.8%	9.1%	7.5%
Families	1,186	15,410	160,360
Families w/ Children	40.96%	42.93%	41.93%
Average Family Size	2.84	2.81	2.85
Median Family Income	\$71,369	\$69,173	\$66,340
Families Below Poverty Level	8.3%	5.3%	7.1%
Population Living in Group Quarters	1,702	2,410	25,329
Institutionalized Population	.79%	.73%	.8989%
Non-institutionalized Population	26.63%	3.31%	3.16%

Source: U.S. Census data, 2010.

4.7 Special Populations

The 2010 Census identified two significant populations living in group quarters in Northfield. The town had an institutionalized population of 49, which could include residents of local senior care facilities. The number of residents in such facilities declined substantially from the 114 reported in 2000.

Norwich University housed 1,198 students on the campus in 2000. According to university officials, that number had increased to 1,820 in the fall of 2013 with an additional 373 students living off-campus. These commuter students, which include dependents of university employees, reside throughout central Vermont, although many are presumed to live in private apartments within Northfield.

Norwich is planning on a change in housing strategy for its campus-based students by reducing the number of commuter students and increasing the total number of students living on campus. Norwich plans on reaching a steady state in 2019 that will see 2,100 students living on campus and an additional 200 commuter students.

Norwich is to open a new 286 bed dormitory in August 2014. An additional dormitory housing approximately 180 students is planned to open by 2019.

Norwich also has 1,200 students enrolled in its College of Graduate and Continuing Studies. While most CGCS student work is done on line, a robust one week on campus residency is held in June of each year with approximately 500 students and guests in attendance.

4.8 Population (Growth Management) Goals, Policies & Tasks

Goal

To accommodate a reasonable rate of growth to maintain a diverse year-round population and without overburdening facilities and services.

Policies

1. Accommodate a level of development over the next 10 years that results in a minimum average annual rate of population growth of 0.4% (approximately 22 new residents annually), in addition to potential enrollment increases at Norwich University.
2. Encourage, through land use and housing goals and policies, a socially and economically diverse population.
3. Promote a greater increase in year-round population (in excess of the projected 0.4% annual rate of increase) and associated development within municipal sewer and water service areas.

Tasks

1. Track annual permit data, and monitor population and housing estimates prepared annually by the Vermont Department of Health, to identify correlations between housing development and population growth [Planning Commission, Staff].
2. Periodically review and update enrollment projections in relation to population growth and housing development [School Board, Planning Commission].
3. Prepare a Capital Improvement Program (CIP), including an annually updated and adopted capital budget, to identify and schedule needed capital improvements based on anticipated population growth and available financing [Selectboard, in association with the Planning Commission and School Board].

4. Exercise statutory party status in Act 250 and other state regulatory proceedings as appropriate, to ensure that growth needs and limitations are adequately addressed in accordance with municipal plan policies and recommendations [Planning Commission, Selectboard].

Chapter 5 Housing

5.1 Overview

A safe, decent place to live is one of life's basic necessities. For this reason, a main goal of local planning is to ensure sound, safe, and affordable housing for all Northfield residents, now and in the future.

Northfield is fortunate to have a variety of housing that offers new and existing residents a broad range of rental and ownership opportunities. A diverse housing stock supports a diverse community: providing homes for families and individuals in various stages of life, who work in town, support community organizations, and contribute to the local economy. Housing represents a major investment for many local residents. For some, however, household incomes may not be keeping pace with rising housing costs.

Housing also represents an important community investment. Well-constructed and maintained homes, including many of the historic homes that line the village streets, contribute much to Northfield's tax base, historic character, and sense of place. On the other hand, housing that is poorly sited, constructed or maintained can destroy natural resources, overburden public services, reduce property values, increase household operating expenses, and result in unsafe housing conditions and a general sense of decline. Planning to meet community housing needs requires a more careful look at local households, and related housing and market trends.

Northfield lost a significant part of its housing stock as a result of Tropical Storm Irene in 2011 with the town submitting requests for FEMA buyouts for 15 homes.

The dramatic spike in oil prices in 2008 illuminated the relationship between housing stock and energy use. Older homes can be updated to increase energy efficiency while maintaining historic features. The municipality should plan to support residents' efforts to improve existing housing stock in order to meet future energy supply uncertainty.

5.2 Household Trends & Characteristics

How the local population is arranged into households affects the demand for housing, employment, public services and facilities. The number of households in Northfield has increased over the years as the town's population has grown, while the number of people per household has gotten smaller. A snapshot of Northfield's changing households is provided in Table 5.1.

According to the U.S. Census, in 2010 there were 1,906 households in Northfield. During the 2000s, 87 new households were established in town. The number of households has been increasing more rapidly than total population, contributing to the local demand for housing. Between 2000 and 2006, the number of households in Northfield grew from 1819 to 1831.

Table 5.1				
Northfield Household Trends, 2000-2010				
	Northfield Town			
			Change	
	2000	2010	Number	Percent
Households	1,819	1,906	87	4.8
Avg. Size	2.46	2.36	-0.1	-2.1
Family	1,225	1,186	-39	-3.2
Non-family	594	720	126	21.2
65+ living alone	202	225	23	11.4%
<i>Source: U.S. Census data, 2000, 2010; Vermont Housing Data Profiles.</i>				

Following national and statewide trends, household size has been declining in recent decades – the result of an aging population, families having fewer children, the breakup of extended family households, and a relative increase in single parent and non-family households. Northfield’s average household size, as noted above, decreased from 2.6 persons per household in 2000 to 2.36 persons in 2010. Town wide, households were slightly larger than state and county averages, and included a higher percentage of households with children and single parent families.

Table 5.2					
Comparative Household Characteristics					
	Average Size	% Non-family	% w/Children <18 yrs	% Single Parent w/Children	% Elderly (65+ yrs) Living Alone
Northfield	2.36	37.8%	25.2%	8.7%	11.8%
Washington Co.	2.28	38.4%	26.4%	9.1%	10.3%
Vermont	2.34	37.5%	26.2%	8.6%	7.6%
<i>Source: U.S. Census data, 2010; Vermont Housing Data Profiles.</i>					

Non-family households in Northfield include Norwich University students who live independently, off-campus. As noted in the previous chapter, there were around 300 students living off-campus in 2002, about 350 in 2007 and the college states that there are 373 in 2013. Campus housing, consisting of dormitories and barracks (group quarters), served another 1,820 students, up from just 1,198 on campus in 2000. It was not known how many commuter students reside in town. There was concern, however, that off-campus student housing was affecting the condition of the housing stock, the character of some village neighborhoods, and the local rental market. The university considered the management of off-campus housing by private landlords as

contributing to this situation. Additional on-campus housing for civilian students was constructed in 2009.

Norwich is planning on a change in housing strategy for its campus-based students by reducing the number of commuter students and increasing the total number of students living on campus. Norwich plans on reaching a steady state in 2019 that will see 2,100 students living on campus and an additional 200 commuter students.

Norwich is to open a new 286 bed dormitory in August 2014. An additional dormitory housing approximately 180 students is planned to open by 2019.

Norwich also has 1,200 students enrolled in its College of Graduate and Continuing Studies. While most CGCS student work is done on line, a robust one week on campus residency is held in June of each year with approximately 500 students and guests in attendance.

It is anticipated that household size will continue to decline, and that there will be increases in non-family, empty nest, and elderly households. Non-traditional household arrangements may increase local demand for accessory apartments, low-maintenance rental units, and smaller starter or retirement homes. The aging of the population may shift growth pressure away from the undeveloped rural lands and into the more densely-settled village areas.

5.3 Housing Trends

Historically, as a local commercial and transportation hub, Northfield experienced much more residential development than did its neighbors. This held true until 1970, when the rate of housing growth in surrounding communities began to surpass that of Northfield. As reported in 2010, Northfield housing units numbered 2,101, representing 7% of the Washington County's total housing stock. Of its immediate neighbors, only Warren had more housing units as a result of explosive ski area-related condominium and seasonal home development in the 1970s and 1980s (Table 5.3).

**Table 5.3
Comparative Housing Trends: 1980-2010**

	Total Units				%Change		
	1980	1990	2000	2010	1980-90	1990-00	2000-10
Berlin	918	1,022	1,172	1,236	11.33%	14.77%	5.5%
Brookfield	457	565	602	702	23.66%	6.5%	16.6%
Moretown	544	639	727	797	17.55%	13.88%	9.6%
Northfield	1,704	1,877	1,958	2,101	10.22%	4.33%	7.3%
Roxbury	229	335	362	441	46.33%	8.11%	21.8%
Waitsfield	684	831	908	1,011	2121.5%	9.33%	11.3%
Warren	1,337	1,949	2,078	2,232	45.88%	6.66%	7.4%
Williamstown	861	1,133	1,318	1,479	31.66%	16.33%	12.2%
Washington Co.	22,113	25,328	27,644	29,941	14.55%	9.11%	8.3%
Vermont	223,154	271,216	294,382	322,539	21.55%	88.5%	9.6%

Source: U.S. Census data, 2010.

The rate of housing development in Northfield has bounced around in past decades, declining from an average of nearly 40 units per year in the 1970s, to 17 units per year in 1980s, and down to less than 10 units per year in the 1990s before rebounding slightly in the first decade of the millennium to 14.3 units per year. During the last decade, Northfield's rate of housing growth was among the slowest in the area, and less than that of the rest of the county and the state.

Given current population projections through 2020 (~100 additional persons), average household size (2.36 persons per household), and low vacancy rates, it is anticipated that Northfield will need 40 to 50 additional housing units by the year 2010. This represents a decline in the rate of housing development to only one-third of that experienced in the previous decade.

The Central Vermont Regional Planning Commission has requested that municipalities in the region plan to accommodate an assigned proportion of the projected regional housing demand of 8,835 new units between 2000 and 2020. Northfield must demonstrate that the municipality would develop 510 new housing units consistent with its current planning and zoning. With only 143 new units added in the first half of this period, and with the rate of population growth outside of the college-aged cohort declining, this goal seems artificially high and unattainable.

This Plan includes a map showing the distribution of eighty percent of these 510 housing units within existing zoning districts. The location of the units is based on a build-out analysis conducted in early 2009 by the Central Vermont Regional Planning Commission, with funding from the State of Vermont Department of Housing and Community Development Municipal Planning Grant program. The build-out analysis map and report are available for review in the municipal zoning office. The new units are proportionally concentrated in the higher-density residential areas served by existing public infrastructure, in order to maintain state, regional, and local goals of balanced community development and avoidance of expensive, sprawling development patterns.

The public meeting held in 2009 to address housing issues concluded that residents have mixed feelings about planning for new development. Some participants expressed a strong interest in maintaining the current rural character and historic appearance of Northfield, and urged caution in considering efforts to attract future development. Multi-unit construction could minimize land consumed by new development, but would require careful location to avoid altering the character of existing neighborhoods.

5.4 Housing Development

The majority of recent housing development has involved the construction of single family homes on parcels larger than 3 acres. Almost all new construction since 2000 has occurred in the more rural areas of the town.

Change title to 1996-2012

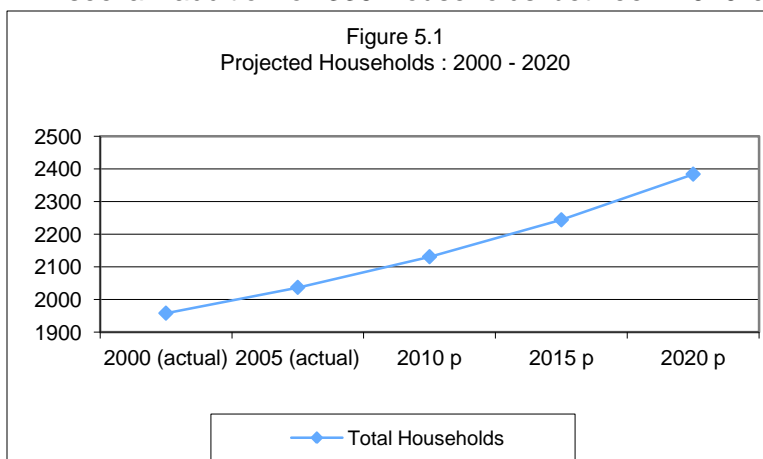
Table 5.4

Northfield Zoning Permits for New Dwelling Units: 1996-2006

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1-Family	7	13	18	14	8	1	2	3	2	1	3
Mobile Homes	5	2	5	5	4	9	8	5	2	5	0
Apartments	0	6	2	2	2	1	9	1	1	2	1

In addition to developing population projections for CVRPC in 2000, Economic Policy Research Inc. also prepared housing demand forecasts for 2020. The number of households in Northfield was projected to increase at an average annual rate of 1.08% for the 20 year period – larger than the 0.71% average annual rate of growth forecasted for Washington County. A total of 426 new housing units are projected between 2000 and 2020 (for a total of 2,384 or 21.7% growth)³. In fact, the number of households grew by only 87 for the first half of the projection period, less than half the projected number. Northfield's projected growth – which translates to 426 new households by 2020, for a total increase of 21.7% – is presented in Figure 4.1. If accurate, it means that Northfield will see an addition of 339 households between 2010 and 2020, almost four times the rate of growth actually experienced for the first half of the projection period.

It is worth noting that the projected increase in the number of households exceeds projected population growth. This indicates that the size and composition of households is expected to change, with smaller households likely to be comprised of older residents and more non-traditional families. If



³ Based on information provided in the CVRPC Northwest Growth Study and Build-out Analysis.

the general make-up and average size of existing households does not change significantly, the projected addition of approximately 339 households between 2010 and 2020 will result in a population increase well beyond the increase of 416 people experienced in the period 2000 through 2010. Based upon the current average household size of 2.36 people, 339 new households would result in an increase of approximately 800 people by 2020.

Monitoring growth in population and households will identify whether changes in average household characteristics are occurring. Without such monitoring, however, a more reasonable rate of household growth, relative to the projected population increase, is an average of no more than 4.8% over the 2010-2020 period (an average of 9 households per year over the 10 year period).

5.5 Housing Characteristics

A summary of local housing characteristics is presented in Table 5.5. In 2000, housing in the town consisted largely of owner-occupied, single family dwellings. Seasonal homes made up a very small portion of town housing.

Local vacancy rates for both sale and rental units have decreased over the past decade, reflecting an increasingly tight housing market. The reported 2000 local vacancy rate for sale units was only 1.3% –compared to statewide rate of 1.4%. The vacancy rate for rental units was 3.4%, compared with a 4.2% rate for the state.

**Table 5.5
Northfield Housing Characteristics, 2010**

	Northfield Town		Washington County	Vermont
Total Housing Units	2,101		29,941	322,539
% occupied	90.3%		83.6%	79.5%
% owner-occupied	65.2%		70.1%	70.7%
% renter occupied	34.8%		29.9%	29.3%
% seasonal	4.4%		11.5%	15.6%
Vacancy rate/sale units	1.6%		1.6%	2.0%
Vacancy rate/rental units	7.2%		7.9%	4.8%
% in buildings with one unit	66.1%		67.2%	70%
% in buildings with two units	7.6%		7.3%	6.4%
% multi-family (3+ units)	19.1%		20.0%	16.6%
% mobile homes	7.2%		5.5%	7.0%
Median # rooms	5.6		5.7	5.6
% w/ >1.0 occupant/room	0.7%		1.3%	1.5%
% lacking complete plumbing	0.0%		1.9%	2.4%
% lacking complete kitchen	0.0%		1.6%	2.4%
% built since 1990	12.8%		10.7%	13.7%
% built before 1939	44.7%		35.4%	30.0%

Source: Vermont Housing Data Profiles, ACS 2006-2010 Data.

Much of Northfield's housing stock, including many of its historic village homes, was built prior to 1939 – the median year of construction for Northfield housing units is 1944. Older homes, while lending to the town's historic character, are often more difficult and expensive to heat and maintain because of their age, size and condition. Renter occupied units are much older with their median year of construction 1939 with owner occupied units averaging a 1961 construction date. No comprehensive survey of local housing conditions has been conducted recently, but 2013 Vermont Housing Finance Agency data suggest that all homes in town have been upgraded over the years to include complete plumbing and kitchen facilities. Overcrowding is also not a problem; less than 1% of units house more than one occupant per room.

The general condition of housing varies in the community. There is concern that the conversion of older single-family homes into rental units is leading to their deterioration. This perceived trend could be more clearly evaluated and documented through a local housing survey.

Special Needs Housing

Group Housing. As noted, Norwich University provides on-campus housing for 1,820 resident students. The need for additional student housing was addressed in the university’s 2011 Campus Master Plan Update.

There are also two licensed Level III residential care facilities in town: the Four Seasons Care Home on South Main Street, and the Mayo Assisted Living on Water Street. Mayo Nursing Home on Richardson Avenue offers an advanced level of long-term care. These homes have a combined capacity to serve up to 133 elderly men and women and adults with disabilities. Services, provided on a fixed-fee basis, include room, board, help with personal care, 24-hour non-medical supervision, and limited nursing assistance.

Subsidized Housing. There are currently 112 publicly subsidized housing units in Northfield, which provide housing for low-income families and individuals (Table 4.6). These units, located in eight housing developments, represent 4.3% of the town’s housing stock, and 5.0% of the county’s total supply of subsidized housing. The four largest developments, accounting for 98 of the 112 units, are managed by the Vermont State Housing Authority. The others are managed locally. One-bedroom units available for elderly housing make up 44.6% of the total. Only 5 of the 112 units (4.46%) are three-bedroom units, which can house larger families.

Table 5.6 Subsidized Housing						
Development	Units	Bedrooms			Elderly	Handicapped Accessible
		1	2	3		
28½ Vine	2	0	2	0	0	0
Dogwood Glen I	32	16	16	0	0	0
Dogwood Glen II	20	12	8	0	20	20
Green Mt Apts	30	30	0	0	30	30
Vine Street Apts	7	1	3	3	0	7
37 Water Street	3	0	3	0	0	0
Water St. Apts	2	0	0	2	0	0
Fairgrounds Apts	16	16	0	0	0	0
Total	112	75	32	5	50	57
Source: http://www.housingdata.org/doarh/ , 10/13.						

Mobile Home Parks. Seven of Washington County’s 26 mobile home parks are located in Northfield, which include 21.1% of the county’s total inventory of leased mobile home lots (Table 4.7). All but two of Northfield’s parks were established prior to 1975, and all are privately owned

and managed. Monthly lot rents in 2012 were generally less than state (\$304) and county (\$343) medians, and varied in part based on the number and types of services provided.

Table 5.7
Northfield Mobile Home Parks

Park	Year Est.	Lots			Mobile Home Ownership		Lot Rent [2012]
		Total	Leased	Vacant	Park	Leaseholder/ Other	
North Main MHP	1994	6	6	0	0	6	\$315
North Main MHP	2000	7	7	0	0	7	\$315
Northfield Falls MHP	1965	51	37	9	1	39	\$345
Smith's Trailer Park	1970	6	6	0	2	4	\$190
Trombly's Trailer Park	1973	15	15	0	9	6	\$305
Tucker MHP	1975	32	28	4	4	24	\$295
Winch Hill MHP	1966	13	13	0	1	12	\$240
Total		130	112	13	17	98	NA

Source:

<http://accd.vermont.gov/sites/accd/files/Documents/strongcommunities/housing/2012%20Mobile%20Home%20Park%20Matrix.pdf>

Mobile home parks are viewed by the state as a means of providing safe, sanitary, and affordable housing for low and moderate-income households. Given the age of many parks, the rate of their sale and conversion to other uses, the lack of new park development, and limited vacancy rates statewide, retaining and improving mobile home parks have become matters of state policy. As such, a number of laws and programs have been adopted in recent years to improve and protect existing parks. This includes the "Mobile Home Park Law (Act 252)" which requires that park residents be given notice of any intent by the owners to sell the park. Residents then have a limited period of time to consider purchasing the park, with some assistance from the state, either through a resident cooperative or a nonprofit housing agency.

There is concern that a large mobile home park in the vicinity of the town's well field, which is not connected to the municipal wastewater system, may pollute the public water supply. A line extension to serve these homes has been designed, and its construction is a top priority of the town, both to protect the water supply and to support expanded development opportunities on publicly-served utilities.

5.6 Housing Affordability

When viewed statewide, housing in Northfield is less expensive than housing elsewhere in Vermont (Table 5.8). According to U.S. Census data, the median reported value for a house in Northfield in 2000 was \$96,700, which represents 94% of the county median, and only 87% of the statewide median. It is important to note that census values, as reported by individuals, represent personal estimates that do not necessarily reflect current sale prices or assessed values. For Northfield, the median sale price in the first half of 2013 of a primary residence was \$147,500. The average assessed value for R1 property on the 2012 grand list was \$160,068.

Housing in the village generally was more affordable. Reported monthly mortgage and owner costs for local homeowners were also generally lower than county and state medians; however, local monthly rental rates were higher than the county median.

Table 5.8			
Housing Cost Comparisons, 2007-2011			
	Northfield Town	Washington Co.	Vermont
Median Household (HH) Income	\$71,369	\$69,173	\$66,340
Median House Value ⁴	\$149,100	\$197,600	\$208,400
Median Monthly Owner Costs (MMOC)	\$1,219	\$1,213	\$1,195
MMOC > 30% HH Inc (% units)	25.2%	33.4%	33.1%
Median Monthly Gross Rent	\$818	\$802	\$843
Rent > 30% HH Inc (% units) ³	32.8%	27.8%	30.9%
Source: Vermont Housing Data, VHFA, 2007-2011.			

Relative affordability, however, is also determined by household income. According to federal and state definitions currently in use, housing is affordable when households at or below the median income level spend no more than 30% of their gross household income on housing costs. In 2000, 27% of Northfield homeowners, and 33% of local renters, were paying in excess of 30% of their incomes on housing. By 2011, housing ownership was affordable to a slightly larger portion of the population with those paying more than 30% of income dropping to 25.2% and renters to 32.8%. This indicates that housing still may not be affordable for at least a portion of the local population, and particularly for local renters who generally have lower household incomes.

An affordability analysis based on federal and state 2011 income and housing cost data (summarized in Table 5.8) , though somewhat dated, suggests that local housing is affordable for all but Northfield's very low-income households, but that housing became less affordable than the 2008 figures used in the previous plan update. This analysis, however, assumes household incomes based on two wage earners. Single wage earner households and households on fixed incomes may also be expected to have difficulty keeping up with rising housing costs.

⁴ Northfield Village figure, 2006-2010.

Table 5.9
Housing Affordability Analysis, 2013

Income Level Estimates (2011)	Given an annual household Income of ...	And that total monthly housing costs should not exceed 30% of income, or ...	The maximum price of a house that could be purchased (with 10% down) would be...	Given the median value of a house in 2012 was \$170,000, the difference (gap) for homeownership would be...	Given the fair market rent (HUD) in 2013 for a 2-bdrm apt is \$967, the difference (gap) for renting would be...
Nfd. (2011) ²					
Median Income	\$61,818	\$1,545	\$204,500	\$34,500	\$578
Low (80%)	\$49,454	\$1,236	\$163,600	(\$6,400)	\$269
Very Low (50%)	\$30,909	\$772	\$102,250	(\$67,750)	(\$195)
MFAGI**(2011) ³					
Median Income	\$60,548	\$1,514	\$200,400	\$30,400	\$547
Low (80%)	\$48,438	\$1,234	\$160,320	(\$9,680)	\$267
Very Low (50%)	\$30,274	\$757	\$100,200	(\$69,800)	(\$210)
Avg Wage (x2) (2010) ⁴					
Average Income	\$77,192	\$1,930	\$255,495	\$84,505	\$963
Low (80%)	\$61,754	\$1,544	\$204,370	\$34,370	\$577
Very Low (50%)	\$38,596	\$965	\$127,730	(\$42,270)	(\$2)

Notes:

1. Housing is defined as "affordable" when households with incomes at or below median income pay no more than 30% of their gross household income on housing costs; low income=80% median, very low income=50% median.
2. Nfd. income is the median household income from U.S. Census, 2007-20011.
3. Median Family Adjusted Income, as reported by the U.S. Census, 2011
4. Average annual wage as reported by VDET for Northfield in 2010; doubled to estimate household income from 2 wage earners.
5. Mortgage amount assumes financing for 30 years, at a fixed rate of 4.335% with median monthly housing costs of \$578 per month.

Source: <http://www.housingdata.org>

It appears that homeownership may be financially out of reach for some low- and moderate-income Northfield residents. Home purchase programs are available for income-qualified local residents through the Central Vermont Community Land Trust and the Vermont Housing Finance Agency. County residents with household incomes less than \$86,000 (or \$100,000 for a family of three or more) currently may qualify for low interest Vermont Housing Finance Agency mortgages to finance existing or new homes selling for up to \$300,000. These figures are updated annually in relation to reported incomes and rising housing costs.

5.7 Regulating Housing

Vermont municipalities may regulate residential development, but cannot exclude certain types of housing, such as mobile homes and mobile home parks, from the community. Towns are also

required to address local housing needs, and to provide for their share of regional housing, as determined for Washington County by the Central Vermont Regional Planning Commission.

Under “equal treatment of housing” provisions in state law, the town must also allow for mobile homes, other types of manufactured housing, and small group homes (serving six or fewer residents), in the same manner that conventional single family homes are allowed. “Accessory apartments” to single-family dwellings, to house elderly or disabled family members, must also be allowed subject to review under local zoning. To encourage the development of more affordable housing statewide, state law allows municipalities to grant density bonuses of up to 50% for affordable housing within planned residential or planned unit developments. Northfield’s current zoning allows for planned residential and planned unit development to encourage a variety of housing types and clustered residential development, but does not allow for any increases in density.

At present, it appears that Northfield is generally providing for its fair share of local and regional housing; however, local regulations should be reviewed to make sure they are consistent with state housing definitions and requirements, and to allow for the development of affordable housing as needed in areas supported by infrastructure and services. Local regulations could also be updated to define and better address affordable and elderly housing, accessory apartments, group homes, residential care facilities, mixed use buildings (that could include apartments), mobile home parks, and the conversion of single family to multi-family dwellings.

Participants in the public meetings that contributed to the development of this plan remarked that the current zoning district requirements are inconsistent with existing land uses. This not only makes improvements to existing properties difficult, it discourages new development that is consistent with existing settlement patterns. This is particularly true in the more densely settled areas, and may impede future growth.

5.8 Housing Goals, Policies & Tasks

Goal

To ensure the availability of safe and affordable housing for all Northfield residents.

Policies

1. Housing should be encouraged to meet the needs of a diversity of social and income groups, particularly for Northfield residents of low and moderate income.
2. New and rehabilitated housing should be safe, sanitary, and located near employment and commercial centers.
3. Housing development should be coordinated with the provision of necessary supporting public infrastructure, services, and facilities.
4. Housing development should be consistent with the goals and policies of the Central Vermont Regional Planning Commission, the State of Vermont Department of Housing and Community Affairs, and the surrounding municipalities.
5. Sites for manufactured and multi-family housing should be made available in locations similar to those used for conventional single-family dwellings. Higher densities of residential development should be considered in areas served by municipal water and wastewater facilities.
6. Accessory apartments should be allowed within or attached to single-family dwellings to provide affordable housing, supervision and care for elderly or disabled relatives.

7. Off-campus student housing should be monitored and regulated locally as needed to minimize adverse impacts to residential neighborhoods proximate to campus. Any expansion in student enrollments at Norwich University should be accommodated through the development of on campus housing.
8. Northfield's existing affordable housing stock, including subsidized housing units and mobile home parks, should be managed, maintained and improved as needed to ensure their long-term availability and affordability.
9. The character of Northfield's historic homes and neighborhoods should be preserved and enhanced through historic designations, voluntary preservation efforts, and/or historic or design review criteria that ensure compatible development.
10. There should be a variety of housing choices for all residents, particularly to meet the needs of older residents.

Tasks

1. Conduct a local housing survey, funded through a state municipal or community development planning grant, to evaluate local housing conditions, and to identify ways to address affordable or substandard housing [Selectboard in association with the Planning Commission and Staff].
2. Conduct public education on housing issues by mailing residents on issues such as fire safety and lead paint [Selectboard in association with the Planning Commission and Staff].
3. Participate in the *Home Share* program coordinated by Central Vermont Council on Aging to match elderly homeowners needing limited services with tenants who are willing to provide services [Selectboard, Central Vermont Community Land Trust.]
4. Identify and support unique housing development opportunities, such as the adaptive reuse of historic buildings, which potentially could be funded through Community Development Block grants [Selectboard and Staff, Planning Commission].
5. Maintain representation on, and work with Norwich University's facilities planning committee to address on-campus student housing needs; and work with university officials, local landlords, and neighborhood groups to monitor and address off-campus student housing impacts on residential neighborhoods. Update and enforce noise and parking ordinances as needed [Selectboard and Staff].
6. Extend municipal wastewater services to existing mobile home parks within the vicinity of Northfield's well fields, to abate failing on-site systems, and to protect the town's public water supplies [Selectboard].
7. Consider nomination of a "Northfield Village Historic District(s)," to the National Register of Historic Places to provide tax credit options to interested homeowners for the renovation and improvement of historic properties [Planning Commission, Historical Society].
8. Update and revise local zoning regulations for consistency with state equal treatment of housing requirements, incorporating improved definitions and criteria for manufactured homes, mobile home parks, group homes, and licensed residential care facilities. [Planning Commission]
9. Implement zoning or other ordinances or implementation measures to accomplish the following.

- Density bonus provisions for affordable housing within planned residential or planned unit developments, as allowed under state law,
 - The establishment and/or expansion of mobile home parks in appropriate locations,
 - Allowing multi-family dwellings and Planned Residential Developments (PRDs) in additional districts (e.g., with a cap on the number of dwelling units per structure in lower density districts or residential neighborhoods),
 - Elimination of incompatible or low density residential uses in principally industrial zoning districts,
 - Increased density and/or reduced lot size requirements for multi-family dwellings in higher density (e.g., village) zoning districts,
 - Provisions for mixed-use buildings that may include apartments, in appropriate districts (e.g., village and commercial districts),
 - Reduced parking requirements for elderly and/or affordable housing development, and for accessory apartments,
 - Wastewater allocations for elderly and/or affordable housing development within a defined sewer service area, and for pollution abatement (e.g., for mobile home park connections) outside the service area,
 - Additional standards for the conversion of single family to multi-family dwellings to address potential infrastructure and neighborhood impacts, and
 - Historic or design review criteria (e.g., regulatory standards or advisory guidelines) to encourage the preservation of historic homes, or to require compatible development within historic neighborhoods. [Planning Commission, Selectboard, Staff]
10. Review housing recommendations, and any regional fair share allocations, included in the next Central Vermont Regional Plan or related regional housing studies, for consideration within local housing programs and/or regulations as appropriate [Planning Commission, Staff].
 11. Consider the adoption of building codes and code enforcement to ensure the safety of housing. [Select Board]
 12. Create a task force to study and possibly initiate design review, including identifying criteria to consider in such review and defining a potential design review district. [Planning Commission]
 13. Revise zoning district requirements to ensure that they are consistent with existing patterns of land use. [Planning Commission]

Chapter 6 Local Economy

6.1 Overview

The Town of Northfield has long supported an economic climate in which local residents have access to meaningful employment within the community. Not only does a healthy economy directly benefit Northfield citizens, economic development can benefit the community by expanding the municipal property tax base. Although taxes to support local schools are no longer based solely upon a community's property wealth, municipal services and facilities are still funded through locally levied property taxes. This section addresses economic trends and conditions, and provides background regarding the community's ongoing economic development efforts.

Discussions with Northfield citizens in 2009 highlighted the role of Northfield in the regional economy. Many residents work in other parts of the state, such as Montpelier, Waterbury, and

Burlington. Many come to Northfield to work, and return home to neighboring communities. In considering future economic development projects, it will be critical to bear in mind the regional nature of the economic system.

The 2009 public forums also revealed tensions between a focus on developing local economic activity and a focus on developing the capacity to participate more in global economic activity. Northfield has ample natural resources to use in local food production, thereby decreasing the tendency to spend money elsewhere on these necessities. On the other hand, advances in telecommunications are integrating Northfield into broader economic systems; residents do not need to leave their homes to be part of the global economy.

6.2 Economic Trends

Labor Force

Northfield's resident labor force is composed of residents aged 16 and above, excluding full-time students, retirees, and others who choose not to work for wages or salary. Of the 5,391 Northfield residents aged 16 and over, 3,200, or 59.4%, are in the labor force⁵. This relatively low percentage (compared to 70.3% for the state and 71.8% for the county) is largely attributable to Norwich University's student population.

According to the 2010 U.S. Census, approximately 35% of local workers are employed in education, health, and social services, which is a much larger percentage than that of the county and state. This includes local residents employed by Norwich University, the town's largest single employer. A breakdown of the labor force, by industrial sector, is presented in Figure 6.1.

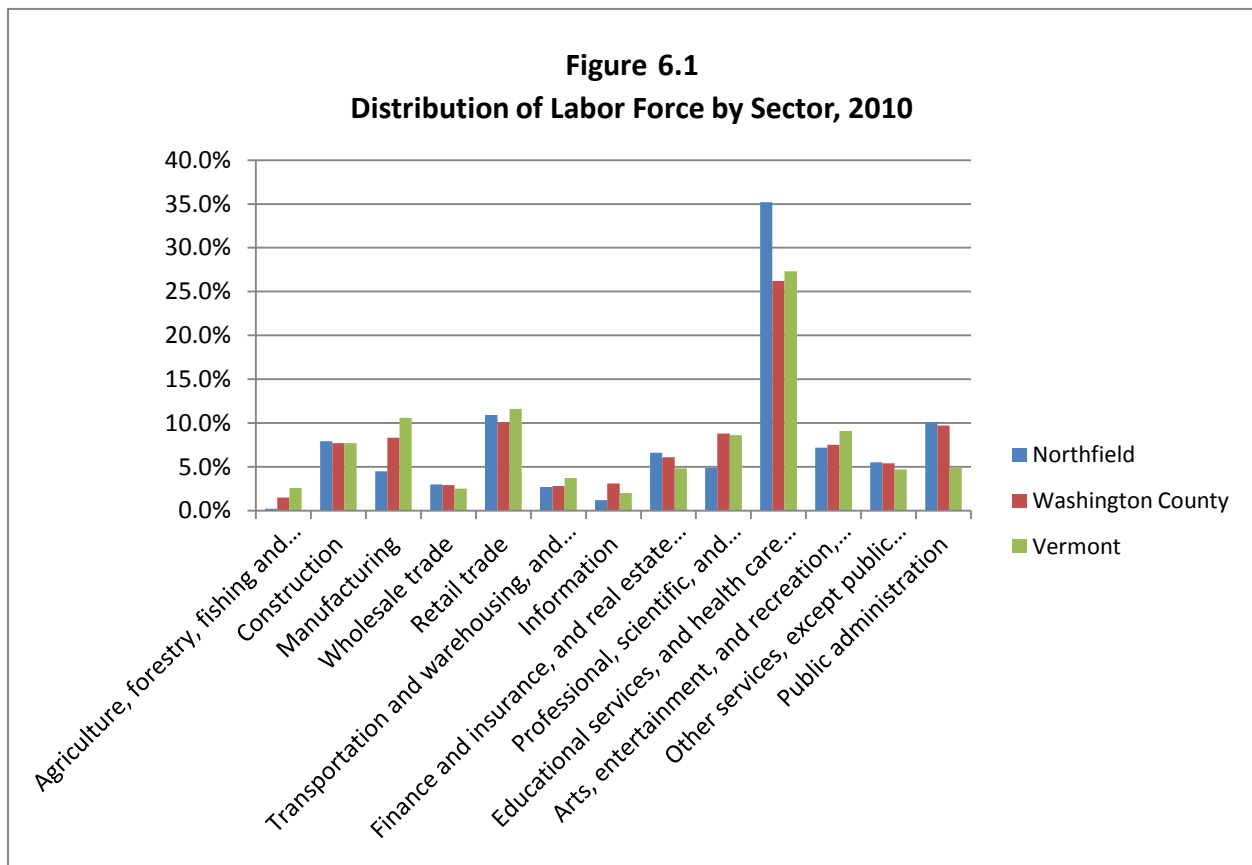
As of August 2013, the unemployment rate in Northfield was 4.4%, compared with a rate of 3.8% for the Barre-Montpelier labor market and 3.9% for the state as a whole. Like the state and labor market area, Northfield's rate of unemployment has seen a drop from a year ago.

Table 6.1: Town in which Northfield Residents Work

	#	%
Northfield town Washington Co. VT	1239	42.2%
Montpelier city Washington Co. VT	420	14.3%
Barre city Washington Co. VT	230	7.8%
Berlin town Washington Co. VT	204	6.9%
Barre town Washington Co. VT	101	3.4%
Randolph town Orange Co. VT	83	2.8%
Waterbury town Washington Co. VT	52	1.8%
Lebanon city Grafton Co. NH	50	1.7%
Burlington city Chittenden Co. VT	50	1.7%
Roxbury town Washington Co. VT	45	1.5%
Williamstown town Orange Co. VT	35	1.2%
Warren town Washington Co. VT	34	1.2%
Middlesex town Washington Co. VT	22	0.7%
Waitsfield town Washington Co. VT	22	0.7%
Hartford town Windsor Co. VT	20	0.7%

Journey to work data, compiled by the Census Bureau, identify where local residents are employed. The 2010 Census shows that there are 2619 workers working in Northfield and 2799 workers living in Northfield, with 180 more workers commuting out of town for work than commute to work in Northfield, a 2.9% reduction. It estimates that 49.9% of workers living in Northfield also work in Northfield. Montpelier, on the other hand, has 4074 workers living there but has 5508 net commuting workers swelling its daytime population.

It is noteworthy that the average commute to work for town residents in 2006-2010 was 18.2 minutes⁶. In 2000, the average commute was higher at 21.1 minutes. This likely indicates that a larger percentage of local residents are now employed within the community. Such a conclusion is supported by employment data reported for the town.



Covered Employment

In contrast to the resident labor force, which is composed of all workers living in Northfield, regardless of their place of work, covered employment⁷ is composed of jobs located within the town regardless of the employees' place of residence. Covered employment increased by 5.7% between 2000 and 2007, reflecting the creation of 101 new jobs. This represents an average

⁶ American Community Survey, US Census 2010

⁷ Covered employment includes only jobs covered by unemployment insurance and typically excludes self-employed persons.

annual rate of job growth of slightly less than 0.82%, which is higher than the annual average of 0.23% experienced by Washington County during the same period. Total covered employment, by type of industry, is provided in Table 6.2.

Table 6.2				
Employment by Sector				
Industry Title	2000	2010	2000-2010	2000-2010
Agriculture, Forestry & Fishing	not published	60	n/a	n/a
Construction	52	227	+175	336.5%
Manufacturing	271	129	(-142)	(-52.3%)
Trade & Transportation	196	477	+281	143.4%
Information	56	34	(-22)	(-39.3%)
Financial Activities	(np)	188	n/a	n/a
Professional & Business Services	47	141	+94	200.0
Education & Health Services	736	1,007	+271	36.8%
Leisure & Hospitality	254	205	(-49)	(19.3%)
Other services except public admin	45	158	+113	251.1%
Public Administration	98	290	+192	195.9%
Total Covered Employment*	1,765	2,862	+1097	62.2%
*totals include sectors not published due to small number of reporting business units				
Source: VT Dept. of Employment & Training				
Source: Vermont Department of Employment & Training				
Source: US Census, 2007-2011 American Community Survey				

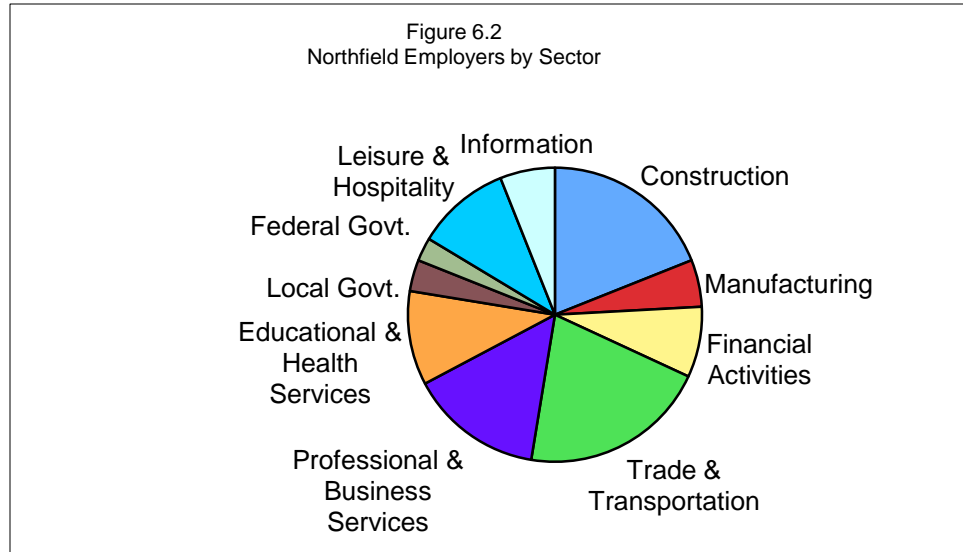
Most job growth during the 2000s occurred in the Trade and Transport, Education & Health Services, Public Administration and Construction. Education & Health Services, which accounts for over 35% of Northfield's total covered employment, experienced job growth primarily in local services. Manufacturing, which in 2000 accounted for 15.4% of total employment, it dropped to 4.5% in 2010. Manufacturing lost the greatest number of individual jobs and experienced the largest percentage decrease during this period.

The broad services category accounts for nearly 39% of covered employment in the community. This category includes a variety of small businesses. In addition, Norwich University, the mainstay of the local economy, currently employs approximately 574 workers.

Local Employers

The total number of reporting units⁸, or *employers*, also decreased slightly in Northfield from 134 reporting units in 2000 (125 of which were private businesses) to 126 reporting units in 2007 (119 of which were in the private sector). Most of the increase in new businesses was in general services (+7) information (+2) and financial activities (+2), with manufacturing (-2), retail (-2), federal government (-2), other services (-10) and trade & transportation (-4) all showing a decline in the number of businesses operating in the community. The breakdown of all employers, by sector, is presented in Figure 6.2.

While Norwich University is the most important local service industry employer in terms of total jobs, there are an additional 46 service sector employers in town, making this the most dominant employer category. Trade & Transportation was second, with 24 businesses in

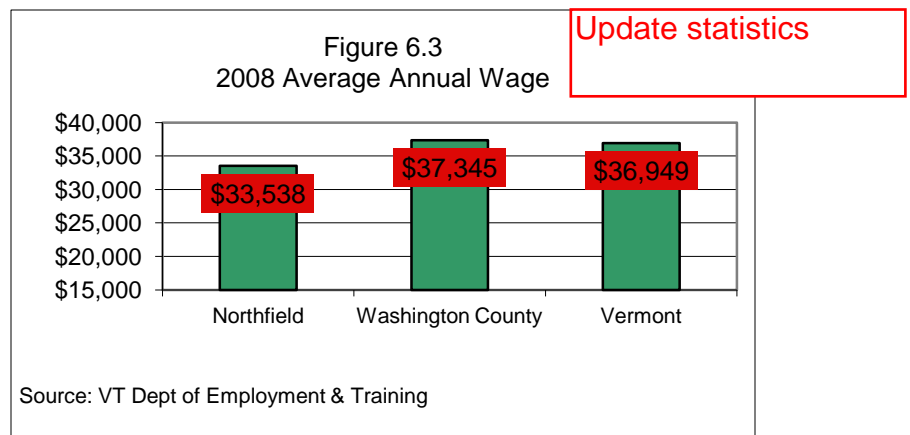


2007, and construction was third with 22 businesses primarily composed of tradesmen and small builders. Each of the other categories was composed of fewer than 10 reporting units.

Northfield has suffered the loss of several significant employers in the past ten years: Wall-Goldfinger moved to Randolph following the flooding after Tropical Storm Irene; TDS telecommunications closed their Northfield administrative offices; Microcheck moved to the Midwest; Northfield Savings Bank has announced its intention to relocate its operations office to Berlin. The bank expects to maintain a branch and a reduced work force in its current location.

Average Wages

The relatively slow rate of job growth in the community is coupled with lower than average wages compared with the county and state. In 2010, the average wage for covered workers employed in Northfield was \$38,596, or \$18.56/hour. This wage is less than



⁸ As is the case with covered employment, reporting units only include those businesses, agencies, and governmental entities that employ workers covered by unemployment insurance. It does not include sole proprietors or other exempt employers whose employees are exempt from unemployment insurance coverage.

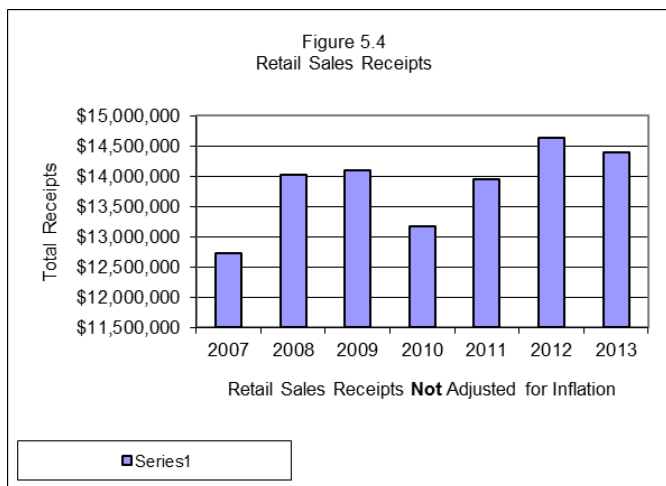
94.5% of the county and 98% of the state average. Average annual wages for the town, county and state in 2010 are compared in Figure 6.3.

There is widespread concern in Vermont regarding the ability of full-time workers to earn an income sufficient to meet a family's basic needs. This is commonly referred to as a "livable wage." The Vermont Joint Fiscal Office has identified that an annual livable wage for a family of four with two working parents in 2012 ranged from \$18.72/hour average per earner (\$77,875 household income) in rural areas to \$18.56/hour average per earner (\$77,210 household income) in urban areas. The range of a livable hourly wage for a single parent with one child ranged from \$23.41 to \$25.29, while that for a single person was \$15.74 to \$15.81.

Based upon the Joint Fiscal Office's study, many local wage earners may be earning less than a livable wage, especially if workers lack adequate health insurance coverage. Focusing economic development activities on the creation of well-paying jobs is especially critical in Northfield to ensure that local residents can meet their basic needs.

Sales Receipts

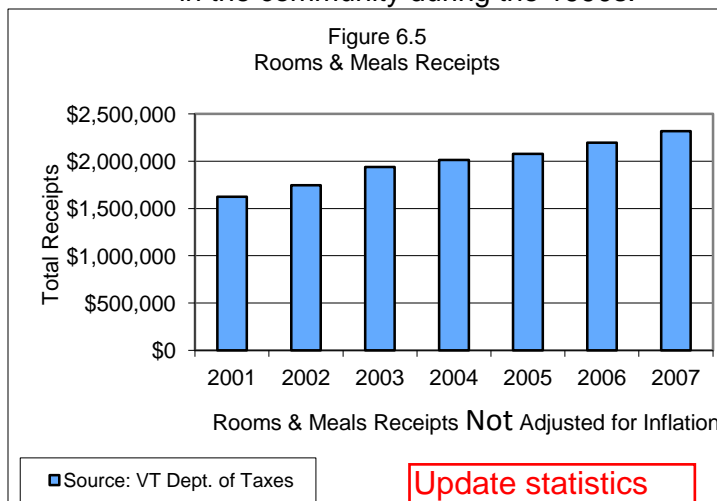
In addition to employment and wages, another useful measure of economic activity may be found in the retail sales, restaurant receipts, and commercial accommodation rentals generated by Northfield businesses. Figure 6.4 shows total retail sales receipts reported by local businesses for each fiscal year between 2007 and 2013.



Total retail sales receipts, not adjusted for inflation, increased a total of 13.0% between 2007 and 2013. In comparison, retail sales within the county increased nearly 19.5% during the same period. In 2007 retail sales in Northfield accounted for 3.50% of total retail sales in the county. In 2013, Northfield's share of the county total decreased to 3.31%, indicating a lesser share of the local retail sector relative to the county. After rising in the earliest part of the millennium, this is a reversion to the decline in retail establishments sales receipts experienced in the community during the 1990s.

In addition to retail sales, the Vermont Department of Taxes also reports total lodging and restaurant sales that are subject to the state's rooms and meals tax. Total annual rooms and meals receipts for 2007 through 2013 are presented in Figure 6.5.

Rooms and meals receipts experienced up and down growth similar to retail sales during the Great Recession years, with the net increase since 2007 being 12.7% (not adjusted for inflation).



Update statistics

6.3 Economic Outlook

Northfield's history is marked by economic diversity and innovation in responding to changing circumstances and opportunities. In recent years, however, economic activity in the community has lagged behind that of the county and state. Although a high percentage of town residents are able to work within the community, average wages remain below the county and state average (employer benefits are not factored into wages – health, retirement – total compensation package) and the rate of local job creation and business growth have remained relatively flat.

Although a detailed economic forecast was not prepared as part of this planning effort, there are several reasons for optimism regarding the community's economic outlook that may offset many of the concerns discussed above. The causes for optimism include several recent developments that combine to create a much stronger environment for community and economic development efforts. These include:

- Recent and projected enrollment increases at Norwich University, coupled with the apparent stability of the school's employment base;
- Infrastructure improvements at Norwich University including new outdoor athletic stadium, new dormitories to accommodate expanding student body, new medical office building developed in partnership with Central Vermont Medical Center, new outdoor recreation trail system, the expansion of the university's cyber-counterterrorism program;
- Infrastructure improvements in the village center, including renovation of the Northfield Common sidewalks and store entrances for improved foot traffic safety and accessibility;
- Redesigning layout of parking and crossing areas for improved safety and aesthetic appeal;
- Vermont Downtown Action Team's work on branding and redesign of the downtown area
- Knotty Shamrock and Paine Mountain brewery
- The growth of La Panciata bakery with state contract for WIC bread
- Cabot Hosiery growth, and employment stability
- Redevelopment of flooded residential area on Water Street

Any one of these projects is an enhancement to the community. Taken together, they serve to increase the community's capacity to accommodate additional growth in a well-planned manner, attract new visitors to the community, expand cultural and recreational opportunities for residents and visitors, and reinforce the village center district as the community's commercial, civic and residential center. This can form the foundation for future economic and community development efforts.

Community & Economic Development

Effective community and economic development programs typically require the cooperation of a variety of groups and individuals. Most important is that municipal officials and local businesses communicate openly and work together in a cooperative and coordinated fashion. During the public forums in 2009, many participants suggested that the Northfield Business and Professionals Association ought to be revived, and ought to take on a leadership role in downtown revitalization and economic development. The Northfield chapter of Rotary International is very active in the community. A recently formed community group called Go! Northfield is working on efforts to market the Town and contribute to the revitalization of civic infrastructure. The Town Economic Development Committee is meeting monthly and developing strategies for supporting existing businesses and opportunities for growth.

As changes in the economy lead to turnover in Northfield's industrial and commercial spaces, the Town needs to support property owners in redevelopment of those spaces. One critical step

in the process of redevelopment of former and current industrial/commercial properties is to undertake Brownfields planning and analysis. The State Brownfields program and CVRPC both offer opportunities for the Town to gain insight into the history of these sites, and help owners prepare for future business activities. The Town should take action to assist property owners with assessments to better understand whether any obstacles to redevelopment might exist, and how to clear the way for new businesses.

In addition to local groups and individuals, several regional organizations are available to provide a range of assistance to local officials and businesses. Such organizations include the Central Vermont Economic Development Corporation, which assists with business recruitment, financing, and marketing, and the Central Vermont Revolving Loan Fund, which provides financial and technical assistance to local businesses that employ persons of low and moderate income. Other programs available to local businesses include various tax credits and property tax abatement (from the education portion of the property tax bill) may be available through the Vermont Economic Progress Council, which grants incentives to eligible businesses.

To date, no comprehensive economic development strategy or program has been developed in Northfield. However, the increased emphasis on the community's economic needs has prompted local officials to assume a more active role regarding business development. Typically, successful economic and community development programs are tailored to meet the unique needs and opportunities present in a particular community. In the case of Northfield, opportunities that should be the focus of future economic development efforts include:

- Enhancing the vitality of the downtown
- Reuse and development of existing industrial and commercial facilities
- Continued collaboration with and support for Norwich University
- Targeted infrastructure development to maintain capacity for new development

Downtown Vitality

Northfield's earliest years were marked by the creation of four district villages. With the establishment of the woolen mill industry and subsequent opening of the railroad, Northfield (formerly "Factory") Village emerged as the town's dominant commercial, industrial, civic, and residential center. At the core of this village is the downtown area, which is built around the historic common.

The economic vitality of the downtown is an issue of widespread public concern. The need to focus the community's attention and resources on the downtown was one of five top priorities identified during the January 2002 Northfield Community Visit sponsored by the Vermont Council on Rural Development. Participants at the community visit emphasized the need for a downtown planning committee and called attention to the *Northfield Village Downtown Plan*, prepared by the Cavendish Partnership in 1997.

The public forums of 2009 also identified the revitalization of the village center as a high priority for the community. The Vermont downtown program offers financial and technical resources to communities that plan for the revitalization of downtowns, villages, and community centers. Part of Northfield's center village area achieved Village Center Designation in 2010, and the Town intends to renew that designation in 2015. The Village Center Designation has been extremely beneficial, especially in giving the Town access to flood recovery funds and services following Tropical Storm Irene in 2011.

The Town hired DuBois & King to design a comprehensive rehabilitation of the Village Common in 2005. The DuBois & King report presented a three-phase project: the north and west sides of Depot Square, the south side, and East Street. The south side had a failing retaining wall, and the water line under the sidewalk needed replacement, so that phase was completed in 2009,

using a combination of ARRA funds and a VTrans structures grant. The Town incorporated stepped seating in the new retaining wall, and decorative lighting to match the lamps on the green at the center of the Common. In 2010, the Town was awarded \$200,000 through the very competitive Transportation Enhancements grant program, largely as a result of the priority consideration of the Designated Village Center. These funds were used in 2014 to complete the north and west side sidewalk construction.

As part of the state's Irene recovery effort, the Vermont Downtown Action Team conducted a three-day charette process in Northfield in 2014, providing the community with a market analysis, brand development, retail consulting, riverfront placemaking workshop, and other downtown redevelopment assistance. The consultants drew conceptual designs to enhance handicapped accessibility of the storefronts around the Common, created new gateways to the Common area, and designed a riverfront park on Water Street, where flood-damaged properties were acquired by the Town. Northfield was one of eight communities chosen to benefit from this project because of economic damage to designated village centers or downtowns as a result of Tropical Storm Irene.

The Planning Commission is proposing, in this Plan, a new zoning district specific to the Village Center District, for the purpose of maintaining "historic characteristics that support retail, commercial, and high density residential uses, centered on the village common as a public gathering area." The Economic Development Committee has set aside funds to support expansion of existing businesses and development of new ones. The Village Center has several new businesses, including a bicycle shop, a restaurant, and a brewery, and the Town intends to focus investment in this area to continue to enhance its vitality.

Since the downtown program was launched, 24 of Vermont's largest cities and town centers have secured downtown designation. The goals and benefits of the downtown program are not limited to cities, however, and many smaller village centers are also eligible. Ninety-three villages have received village center designation, including Northfield. Changing Northfield's Village Center District to a Downtown District would provide greater access to funding for a variety of infrastructure and capital improvement projects, and would allow the town to recapture some tax revenues that would otherwise go to the state.

Priorities that were identified in that process included better connecting the recreational trails on Paine Mountain with the village center; expansion of dining sector, redevelopment of the flooded portion of Water Street into a community park, enhanced accessibility for retail outlets around Depot Square, and improved pedestrian safety along Route 12 from Plumley to Route 12A.

The rehabilitation of the historic Northfield Falls General Store has enhanced the Falls village area. Continued work in this village center should include pedestrian safety efforts. If the General Store prospers, it could lead to a desire to revitalize this area, and the Town might consider pursuing Village Center Designation for Northfield Falls Village.

Norwich University

Norwich University serves as an important economic engine within the community. Not only is the University the town's largest employer, but also the student population accounts for approximately 25% of the town's residents.

In 2014, the University has 777 employees, about an increase of 50% since 2009. Of this total, 674 work in Northfield, and 240 of these employees live in Northfield. In addition, approximately 120 individuals are employed by contractors operating the campus dining services, bookstore and barber shop.

As stated in Chapter 4, university officials continue to project an increasing enrollment. Strengthening physical connections to the college with the development of a path along the Dog River should serve to enhance the vitality of downtown businesses.

With recent on-campus construction, increased traffic, including short-term visitors and larger student populations, should also support local retail businesses and related amenities, such as restaurants and lodging facilities. The University's recent projects are listed below.

- Renovation of the old Armory by Norwich University to create office space for the College of Graduate and Continuing Studies. (2005)
- Construction of the Sullivan Museum and History Center at Norwich University (2007)
- Construction of the Wise Campus Center at Norwich University (including the renovation of Harmon Hall) (2008)
- Construction of the 283 bed South Hall dormitory at Norwich University (2009)
- Construction of Doyle Hall at Norwich University (2011)
- Construction of the Shaw Outdoor Center at Norwich University (2012)
- Complete renovation of Sabine Field and stadium at Norwich University (2013)
- Construction of a wood chip plant at Norwich University (2013)
- Construction of 286 bed West Hall dormitory at Norwich University (to open August 2014)
- Green Mountain Family Practice's new facility (to open spring 2015)
- Norwich University Applied Research Institutes (NUARI) facility in the Freight Yard industrial park

Efforts by municipal officials to include the university in continuing discussions regarding community and economic development will ensure open communication, and also take advantage of the human resources that the University has to offer the community.

Finally, the presence of Norwich University, with its well-educated workforce, creates additional opportunities for economic development beyond providing educational services. Opportunities for collaboration between businesses, the municipality, and the university may strengthen local entrepreneurial efforts. Alumni, who remain committed to the University, and the community, may also be a resource that could benefit development efforts in Northfield.

Industrial & Commercial Development

Physical reminders of Northfield's industrial history are plentiful. The former Cabot facility, several buildings within the Northfield Business Park (railroad property) and the Nantanna Mill have been used and reused for a variety of industrial and commercial activities. In addition, the Bean Industrial Park, established in 1995, includes eight potential building lots served by municipal water and sewer. Additional land adjacent to the park is available for expansion. Anchoring the park on the only developed lot is the 53,000 square foot Cabot Hosiery facility, which was relocated from its former Main Street location with the assistance of a community development grant from the state. Cabot Hosiery has expanded into a national brand, its growth supported by substantial government contracts and the development of its "Darn Tough" line of premium wool sport socks.

The Bean Industrial Park, Nantanna Mill, and the Freight Yard industrial park all offer a variety of facilities for the location and/or expansion of many types and sizes of industries and businesses. Presently, these areas are included in the regional database of available commercial and manufacturing space, and are marketed by the Central Vermont Economic Development Corporation. The community has designated these areas as industrial sites within local zoning bylaws, which allow a wide range of commercial and industrial uses. In addition, all

of these facilities are presently served by municipal water, sewer, and three-phase power, and have good access to Route 12, the state highway serving the community.

Infrastructure Improvements

Issues associated with community facilities and services are addressed in detail in Chapter 7, and transportation is addressed in Chapter 6. The local economic climate is, however, partly dependent upon the availability of infrastructure, including transportation facilities. It is critical that planning for community facilities, transportation and land use be integrated with the community's economic development goals.

Several infrastructure needs associated with the downtown were described above. Examples of other key considerations in Northfield, which are addressed elsewhere in this plan, include improvements to Route 12 north of the village center to provide a safer, more efficient highway access to the Barre-Montpelier area; protection of the municipal water supply from potential contamination; and, upgrade of the wastewater treatment facility.

Finally, it should be noted that business decisions regarding location or expansion are made by entrepreneurs who may be influenced as much by the amenities, or quality of life, offered by a particular community. Ensuring that the community is a safe, attractive, and comfortable place to live and work, promoting excellence in the public school system, and having fundamental retail and professional businesses for local shopping and entertainment may be the most important economic development policy the community can pursue.

Sustainable Economic Development

Sustainable development is commonly described as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The state of Vermont has recognized that creating quality jobs and conserving and protecting the social and natural environment are of primary importance to the economic vitality and quality of life in the state⁹, a concept it recognizes as sustainable economic development. Local communities are increasingly recognizing the importance of sustainable economies that focus on local markets and resources. In so doing, communities become more resilient in the face of changing economic outlooks and the potential impacts of climate change.

Northfield has a wealth of natural resources that could be further developed in ways that strengthen the local economy while maintaining and even improving the standard of living, both socially and environmentally. These resources include: food and agricultural products; recreation; and cultural, educational, historic, natural, and scenic resources. Northfield should consider further development of resources, technologies, and services that have potential for growth in developing sectors such as wood and forestry products, local and specialty food products, sustainable agriculture, and environmental and pollution abatement technologies.

6.4 Economic Development Goals, Policies & Tasks

Goal

A strong local economy, characterized by: 1) well-paying jobs for area residents, 2) a vibrant downtown, 3) business opportunities for local entrepreneurs, and 4) a broad tax base, and 5) a high quality social and natural environment.

⁹Vermont Statutes Title 10, Chapter 15A, the Sustainable Jobs Fund Program.

Policies

1. Encourage strongly the expansion of existing businesses, and establishment of new businesses that pay a livable wage and reinforce the community's historic settlement pattern.
2. Expand municipal efforts to plan for and promote economic and community development, including efforts to:
 - Improve the local economic climate and quality of life;
 - Support the expansion of existing businesses;
 - Recruit new businesses to the community which are compatible with the goals and policies of this plan;
 - Focus efforts to strengthen the vitality of the downtown;
 - Identify and secure funding sources from regional, state, federal and private sources to support community development activities;
 - Strengthen relationships between existing businesses to create an environment of mutual reliance in the community.
3. Support reinvestment and revitalization of downtown properties to enhance the economic vitality of the downtown as the community's civic, cultural, and commercial center. Implement recommendations of the 2014 V-DAT report.
4. Encourage additional industrial development within the Bean Industrial Park.
5. Continue to support regional development organizations to the extent that those organizations are serving the needs of local businesses and are making a positive contribution to enhancing Northfield's economic climate.
6. Reinforce Northfield as a destination for visitors by encouraging the development of a downtown hotel, to be designed to enhance the area's pedestrian-scale and urban fabric.
7. Reinforce, through the capital budgeting and facility allocation policies, existing land use and development policies by focusing economic activity in designated village centers, commercial/industrial districts, and Norwich University.
8. Support the efforts of restaurants and other food services to serve locally produced foods.
9. Promote the local production of agricultural products to make Northfield more self-sufficient and ensure long-term employment that meets basic needs.
10. Leverage the expertise of Norwich professionals and alumni as a source of ideas, capital, and innovation to provide the municipality with a long-term strategy for developing new businesses and attracting entrepreneurial capital. Potential projects for partnership include training for small businesses and advanced training for public school teachers, and development of new economic growth sectors such as innovative technologies for energy conservation and generation, and collaboration with Northfield Middle/High School to develop advanced academic opportunities.
11. Support the work of local artists and artisans to strengthen the local economy, consistent with national trends showing the creative economy as a growing sector.
12. Expand and enhance telecommunications network throughout the municipality to ensure that residents and businesses have the tools to succeed in the global economy.
13. Consider ways to more effectively utilize the rail line and the interstate highway exchange; these continue to be vital connections for economic activity.

Tasks

1. Explore Downtown designation. [Planning Commission, Staff]
2. Implement recommendations of 2014 Vermont Downtown Action Team report.
3. Support community organizations to accomplish the following tasks.
 - Strengthen and expand the farmers market to encourage consumption of local agricultural products.
 - Develop a calendar of events that draw visitors (such as the sock sale, t-shirt sale, Labor Day, and Norwich cultural and sporting events), and capitalize on these opportunities to make the municipality a travel destination.
 - Partner with other communities in the region to develop a self-guided Covered Bridges tour.
 - Identify prime undeveloped land or underutilized properties for potential commercial use; ensure the zoning is appropriate; work with the regional economic development staff to produce marketing materials for these parcels. [Municipal Manager]

Chapter 7 Transportation

7.1 Overview

Northfield's historic development has been shaped by transportation, especially the railroad in the 19th century followed by the automobile in the 20th. The location, condition, and capacity of the regional transportation network and transportation facilities and services continue to influence Northfield's land use patterns, economic development, and the use of resources. This chapter provides an overview of how the existing transportation network functions and how it might be improved.

7.2 Travel Patterns

As is the case throughout Vermont, the private automobile is the dominant mode of transportation in Northfield. According to the 2000 Census, 68.6% of Northfield's labor force commuted to work in a single occupancy vehicle (i.e., they drove alone). A relatively high percentage (14.7%) walked to work, while 12.3% carpooled. Less than 1% bicycled on a regular basis, and 3.0% worked at home. The average commute in 2010 was 18.2 minutes (down from 21.1 minutes in 2000).

In 2011, of all of the 1,737 jobs in Northfield, 31.1% are held by Northfield residents. The rest commute from surrounding towns: 7.1% from Montpelier, 5.0% from Barre town, 4.5% from Barre city, 3.5% from Roxbury, 3.3% from Berlin, and 3.3% from Williamstown. Other towns in the region each contribute fewer than 2.5% of the community workforce.

7.3 Roads & Highways

Northfield has over 93 miles of public highways, including over 82 miles of municipal roads. A breakdown of roads, by classification, function, and location, is presented in Table 7.1.

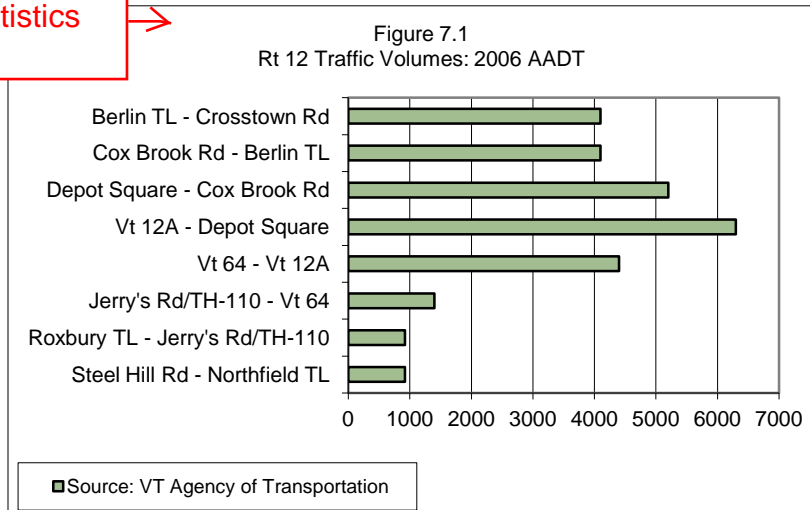
State Highways

The principal arterial highway serving Northfield is Route 12, which follows the Dog River and connects the community with Berlin, Montpelier, and several important transportation corridors to the north, and Randolph to the south. Route 12A diverges from Route 12 just south of Norwich University and provides access to Roxbury before rejoining Route 12 at Randolph. These highways run parallel to one another until they re-converge in Randolph. Route 12A provides access to the neighboring Town of Roxbury.

Traffic volumes on Route 12 are heaviest in the village center, especially in the vicinity of Depot Square. The highest volumes outside of the village center are along the segment of highway between its intersection with Route 12A and Route 64 – which provides access to Interstate 89 – and north of the village center into Berlin. Traffic south of the Route 64 intersection is relatively low (see Figure 7.1).

Classification	Function	Mileage
State Highway	Arterial	11.1
Class 1 (Village)	Arterial/Collector	1.2
Class 1 (outside Village)	Arterial	0.9
Class 2 (Village)	Collector	0
Class 2 (outside Village)	Collector	4.8
Class 3 (Village)	Local Access	9.5
Class 3 (outside Village)	Local Access	57.47
Class 4	Access/Recreation	8.34
	TOTAL	93.7

Update statistics



Traffic on Route 12 to the north of the village center has declined in recent years, with the Average Annual Daily Trips (AADT) between Depot Square and Cox Brook Road declining from 5,600 trips in 1986 to 5,200 trips in 2006, a reduction of 7.1%. North of Cox Brook Road, the AADT declined from 4,950 trips to 4,600 trips in 2006, a reduction of over 7%. Volumes south of the village center, however, have increased over the same period. Most

significant has been the increase in traffic volumes along the segment of Route 12 from its junction with Route 12A to the intersection with Route 64, which has increased 21.2% from 3,640 trips in 1986 to 4,400 trips in 2006, indicating that a growing number of motorists are opting to use I-89, rather than Route 12, for out-of-town travel.

Although Interstate 89 brushes Northfield, Exit 5 is located just east of the town boundary in Williamstown. This important highway is accessed via Route 64, a limited access highway constructed as part of the interstate highway system. Route 64 intersects with Route 12 approximately 2.7 miles west of Exit 5. Traffic on Route 64 has increased steadily in the past 15 years. According to VTrans, traffic along the portion of highway between Route 12 and the Williamstown town line increased from 1,630 trips in 1986 to an estimated 3,400 trips in 2006 – an increase of 86%.

Traffic on Route 12A has also increased, with traffic volumes in 2006 estimated to have reached 2,700 trips between Lovers Lane and Stony Brook Road (TH-8), and 1,600 trips between Stony Brook and Little Northfield (TH-61). These changes, along with increased traffic volumes on Route 64, indicate the growing importance of Route 12A and Lovers Lane as key connections to I-89 from Northfield and surrounding communities.

The 2008 pavement condition on each of the three state highways is rated as poor or very poor, except a short section of Route 12 near the Berlin town line. No major construction projects or highway upgrades are presently included in the State Transportation Improvement Plan (STIP). The condition of Route 12 north of the village center raises concerns regarding traffic safety, access, storm water drainage, and potential disincentives for future economic development in the community. The portion of the road in the vicinity of Northfield Falls is characterized by:

- Narrow shoulders and inadequate bicycle lanes
- Several sharp curves
- Poor drainage
- Pavement in poor condition
- Numerous locations with restricted sight distance, and
- Ledge outcroppings within the highway right-of-way which inhibit sight distances and pose a risk to motorists, prevent the installation of bicycle lanes and make snow removal difficult which exacerbates potential safety hazards

Some ledge was removed in 2008, which has somewhat mitigated associated concerns. The town would like to continue to work with VTrans to develop a plan to upgrade this section of highway, including some widening and/or straightening of travel lanes and shoulders, ledge removal and the installation of traffic calming to mitigate potential adverse impacts of such an upgrade.

Municipal Roads

Northfield maintains approximately 82 miles of local roads. These include heavily used regional collectors, quiet streets serving village neighborhoods, lightly used rural roads providing access to a few homes, and a few roads not maintained for year-round traffic. The road network includes 24 bridges over twenty feet long, including six covered bridges (one privately owned) addressed separately below. Four of the bridges over twenty feet long are rated “structurally deficient” by VTrans, and six are rated “functionally obsolete”. No town bridges are included in the 2008-2011 STIP for replacement or rehabilitation.

**Table 7.2
Summary of Road & Highway Improvement Projects**

Projects on VTrans TIP	Description	Schedule	% State Funding
Bridge #46/TH29	Replace bridge over Union Brook	Completed	90%
Bridge #54/TH12	Replace bridge over Cox Brook	Completed	90%
Bridge #50/TH25 & Bridge #34	Reconstruct bridge over Stony Brook	Unscheduled	90%
Bridge #59/TH60	Reconstruct bridge over Stony Brook	Unscheduled	90%
Projects identified by municipality	Description	Schedule	
Lovers Lane upgrade	Upgrade to accommodate Rt. 64 – Rt. 12A cut-off	Unscheduled	State share
Main Street bridge	Reconstruct bridge over Dog River	Unscheduled	State share
Route 12/Northfield Falls	Ledge Removal/install Bike Lanes & Sidewalk	Unscheduled	State project
RT 12 Northfield Center	Construct Bike Lane & Sidewalk	Unscheduled	State project

In Vermont, municipal roads are designated as Class 1, 2, 3, 4, or trail. Class 1 roads include all state highways under the jurisdiction of municipalities – typically state routes through village centers. Class 2 and 3 roads are defined for the purposes of state aid and must be negotiable, under normal conditions, year-round by a standard passenger car. The state determines which town roads are Class 2: roads which typically provide access to neighboring towns. Class 4 roads are not generally maintained on a year-round basis. Class 3 and 4 roads are designated by the local Select board. Roads are shown by classification and surface type on the Transportation Map.

The Selectboard adopted new Road and Bridge Standards for the Town of Northfield on January 28, 2014. These standards are modeled on the State-Approved Town Road and Bridge Standards of 2013, and they equal or exceed State of Vermont road standards. It is important that the Town maintain up-to-date Road and Bridge Standards to provide the highest level of value, performance, and environmental protection. The Town also benefits financially by maintaining eligibility for the State Emergency Relief and Assistance Fund (ERAF). ERAF provides matching funds for infrastructure repairs following federally-declared disasters. Towns can access a significantly greater percentage of matching funds by meeting ERAF eligibility requirements, including Road and Bridge Standards.

Although Northfield’s roads are generally in good shape and adequate to accommodate current traffic volumes, several improvement projects are planned to address existing deficiencies. Projects listed in Table 7.2 are included on VTrans “Transportation Improvements Projects” (TIP) list and are in some stage of project design and scheduling. Other projects identified by the municipality but not included on the TIP are also shown.

For the most part, identified improvement projects include the rehabilitation or replacement of bridges. These improvements are part of an aggressive effort on the part of the town over the past several years to upgrade several deficient bridges. It is anticipated that these projects are eligible for the states town highway bridge program, which provides 90% state funding. The town has allocated money in reserve funds on an annual basis to fund bridge improvements.

Northfield has 45 bridges on the Town Highway System. Adequate funding and maintenance should be continued.

Other projects, including the proposed ledge removal on Route 12 North and the need to upgrade Lovers Lane to accommodate increasing through traffic using this road as a short cut from I-89 to Route 12A south to the Roxbury Mountain Road, would need to be undertaken by VTrans under a different funding program. Both of these projects should, however, be supported, and funded by VTrans because they are either part of, or directly serve, the state highway system. The Lovers Lane project is especially critical to the community, given its use as a regional connector.

In addition to existing deficiencies, it is important that the municipality monitor development to ensure that the local road network is not overburdened by anticipated growth in the community. An effort to monitor traffic and road conditions on an ongoing basis, and standards to identify and mitigate the impacts of new development on the road network, can avoid future problems.

Covered Bridges

The five covered bridges in public use in Northfield deserve special note. Three of these bridges are located along a half-mile segment of Cox Brook Road, which is the highest concentration of covered bridges along any road in Vermont. Each of the five bridges continues to provide the function they were designed for in the 19th century, which not only contributes to the community's character but also represents a wise financial investment. The West Hill Bridge was rebuilt to new condition and the Third Covered Bridge on Cox Brook had steel beams repaired and greased. New I-beams were installed on Gib Lane Bridge. A new deck was installed on the Stony Brook covered bridge, and new tread planking was installed on Cox Brook's Second Covered Bridge.

It is important that there be continued protection from damage caused by overweight and/or oversized vehicles. All of Northfield's covered bridges are historic structures and are now eligible for federal funding to cover the cost of future rehabilitation.

Road Maintenance

Maintaining and enhancing the local road network in a safe and cost effective manner is an important community responsibility. The town highway department is responsible for maintaining town highways. The total cost of road maintenance to the town is second to education in terms of annual expense to the community.

In 2013, the town budgeted \$1,062,086 for operation and maintenance of the highway department.

The highway department is based out of the town garage, located on Dogwood Drive. In addition to the highway department, the garage also houses the Ambulance Service and provides storage for other municipal departments and social service agencies. Recent renovations included a roof replacement, new garage doors, and a new heating system. With the exception of the need for some site work, including resurfacing the parking and work-area around the garage, the facility is adequate to meet the foreseeable needs of the community. A new sand and salt storage facility has been constructed on municipal property on Burnham Road.

There is an ongoing need for a stable and affordable source of gravel to maintain the town's roads. Contracts with local vendors have minimized the high cost of hauling that has driven up the cost of gravel in other communities. The long-term availability of gravel, however, is not

guaranteed. The town may want to consider the acquisition of a gravel source to avoid future gravel shortages and/or severe price fluctuations.

Highway Access Management

The frequency, location, and design of highway accesses and curb cuts for driveways and parking lots have a direct bearing on the safety and efficiency of both town roads and state highways. The design of curb cuts also is important with regard to storm water management and road maintenance. Managing access can improve safety and better maintain highway capacity over time. Several techniques may be applied through Northfield's zoning regulations, road policies and ordinances, and additional land use regulations (e.g., subdivision regulations). These include requirements for:

- Minimum sight distance at a driveway or street intersection,
- Maximum number of driveways per lot,
- Mandatory shared driveways,
- Maximum width of curb-cuts,
- Minimum and maximum driveway lengths,
- Minimum or maximum on-site parking, shared-parking, and parking design,
- Minimum area for loading and unloading, and
- Landscaping and buffers to visually define and enhance access points.

Local development regulations (e.g., zoning, subdivision regulations) and road ordinances are effective tools to manage access. Future attention to access management, and the implementation of the strategies listed above, will enable local boards to balance the needs of motorists, pedestrians and bicyclists and improve highway safety and efficiency.

Traffic Management & Traffic Calming

As stated above, state and local roads are generally adequate to meet current demand. Over time, however, traffic volumes are likely to increase due to the cumulative impacts of ongoing, small-scale development. Efforts to monitor traffic volumes on an ongoing basis would help the community plan for future capacity deficiencies.

One category of techniques to maintain relatively slow traffic speeds in settled areas, enhance pedestrian safety, and improve the overall environment is often referred to as traffic calming. Such techniques include narrow vehicle traffic lanes, wide sidewalks, medians, on-street parking, roundabouts, raised and/or textured crosswalks, bulb-outs, street-tree plantings, and street furniture. The recent renovation of the north side of the Common includes bulb-outs to reduce the length of the crosswalk on Route 12 to increase pedestrian safety and to promote traffic calming.

Downtown parking

Public parking in downtown appears adequate to meet current demand. Better management and/or organization might make more efficient use of available space. Since current demand increased, however, the downtown businesses needed to explore options for expanding parking. One major cause of increased demand came as a result of Norwich acquiring and occupying the old armory building. To satisfy the increased demand, a piece of ground behind the Legion was purchased and the Holland Place parking lot was created (approx. 30 spaces). Also, with the construction of the new police station, additional parking is available next to the station.

The Central Vermont Regional Planning Commission (CVRPC) has assisted other communities in the region to study parking demand and availability in villages and downtowns, and may be available to assist Northfield with the preparation of a downtown-parking plan. Such a plan

should look at existing and anticipated demand, the current use of available spaces and, if appropriate, alternatives for creating additional public parking opportunities.

Outside of the downtown area, land uses that require access by employees, customers, residents, and/or visitors are required to provide off-street parking adequate to meet anticipated demand. Current parking requirements should be reviewed to determine whether existing standards are sufficient. In addition to the number of spaces required, the location, configuration, and design of parking facilities can have a significant impact on the community's character, as well as on the safety of motorists and pedestrians. As the population ages more handicapped parking should be considered.

Residential Neighborhoods

One issue of special concern is the extent to which the conversion of single-family homes in historic neighborhoods to multi-family housing (in particular, high-density off-campus student housing) can limit the availability of on-street parking. The Town enforces a parking ordinance to minimize such impacts, and zoning standards could require that adequate off-street parking is provided for all dwelling units. The continued update and enforcement of these tools should avoid problems for residents and homeowners in Village neighborhoods.

Commuter Parking

The only formal commuter parking lot serving local residents is located adjacent to Exit 5 of I-89 in Williamstown. VTrans is planning to upgrade and expand this facility in the coming years, which should benefit Northfield commuters. The town, in conjunction with the Central Vermont Regional Planning Commission, should also explore the feasibility and benefits of establishing a small lot to serve commuters headed north on Route 12 or west to the Mad River Valley.

7.5 Pedestrian & Bicycle Circulation

In the village area, where historic settlement patterns reflect a pedestrian scale and orientation, an extensive sidewalk network exists. The presence of the existing sidewalk network has a significant impact on traffic volumes, as indicated by the nearly 15% of local commuters who walk to work, a rate that is significantly higher than the 5.2% of commuters who walk to work statewide.

In recent years, many sidewalks that had fallen into a state of disrepair were upgraded, and some key sidewalks were extended to strengthen pedestrian connections. Recent improvements include the extension of sidewalks to the school, which provides better access for students. This project was funded in part through a VTrans enhancement grant.

The extension of the existing sidewalk system, and/or the creation of connected walking and bicycling paths outside of the village center, could decrease congestion and increase options for local residents, including children, students, and the elderly. A priority connection is a multi-purpose path linking Memorial Park with Northfield Falls Recreation Fields. Such a path, which would preferably run parallel to Route 12 outside of the highway right-of-way, would also provide a connection from the village center to the Bean Industrial Park. Another possible connection would involve the construction of a path adjacent to the Dog River, providing an additional link from the village center to Norwich University.

There are no sidewalks outside the village center. Most of Northfield's rural roads, both paved and unpaved, have little or no shoulder. Because of generally low traffic volumes and vehicle speeds, however, they are generally safe for walking and bicycling. Future increases in traffic volumes or speeds could result in safety concerns. Bicycle and pedestrian use of Route 12, particularly students, seems to be increasing, and needs to be accommodated in the future.

One strategy might be the expansion of bicycle lanes, or construction of an off-street bicycle path, along Route 12 and Route 12A concurrent with the planned extension of municipal sewer lines and drainage improvements.

7.6 *Transit & Public Transportation*

Local Transit

In addition to providing increased service to seniors and individuals with disabilities, GMTA has worked diligently to support the growing need of transportation for the community at large. It has secured funding from the State of Vermont to support a free one day per week shuttle, available to all within the community. The Northfield Community shuttle, which began operation January 7, 2009, is designed to transport people to the local Grand Union grocery store, the area food shelf, the food stamp outpost, the Northfield Green Mountain Clinic, the pharmacy and any other Northfield location upon request.

GMTA will not only provide an easily accessible route for all Northfield residents, but will also provide a deviation service which can pick up/drop off people directly at their home, all at no charge to the rider. The municipal government should monitor use of this shuttle service to understand how Northfield residents' transportation needs might be better met in the future.

In the 2013-2014 budget year, voters authorized the expenditure of \$21,000 to fund 20% of the cost to reestablish the Northfield-Montpelier GMTA Commuter Bus Service. The Northfield Commuter runs five times daily between the Department of Labor and Norwich University. Approval for the 2014-2015 year is pending a vote at Town Meeting Day.

Regional Transit

Green Mountain Transit Agency (GMTA) is a private, non-profit agency providing a range of public transportation services in Washington, Lamoille and Franklin Counties and towns of Orange, Williamstown and Washington in Orange County. GMTA is a full service public transportation provider offering fixed route, deviated fixed route and demand response bus services, commuter routes, shopping shuttles, meal site service, Medicaid transportation, Reach Up transportation and transportation services for the elderly and the disabled. The GMTA enhances the quality of life in central Vermont by delivering safe, convenient and more environmentally efficient transportation solutions.

The GMTA receives funding from the State of Vermont, the Federal Government and local support from the 25 municipalities where it provides service. Local municipal fund requests are based on a fair share equation using general population, elderly and disabled population, percentage of low income residents and the type of services provided. Through a contractual relationship, GMTA is managed by the Chittenden County Transportation Authority (CCTA), Vermont's largest and only public transportation authority.

GMTA provides medical transportation service to those who qualify for either Medicaid, Elderly and Disabled funds, or both. It offers those in need the scheduling and payment of rides and provide service through volunteer drivers or bus and/or cab service. GMTA collaborates with area organizations, such as the Central Vermont Council on Aging, to offer rides for medical treatment, meal site programs, senior center and shopping trips. GMTA not only provides the means of transportation, but also the administration and operational skills required to coordinate service.

Inter-Regional Bus Service. The interest in this service was noted in the public forum on transportation in 2009. In July 2013, the Green Mountain Transportation Authority reinstated a bus route between Northfield and Montpelier. Buses operate during commute hours (morning

and evening) and midday, and provide options for connecting with buses to Barre and Burlington. This effort was funded by a federal grant to GMTA combined with matching funds from the town which were approved by voters in March 2013. The Town should continue to support efforts to provide public transit connections between Northfield and surrounding communities.

Rail Service. The New England Central Railway, Inc. owns and maintains the railroad network through Northfield. Historically, the railroad provided important freight service to Northfield industries, although such use is presently limited. The availability of freight service, however, has the potential to influence the location of future industries

Amtrak presently provides passenger train service. The *Vermont* provides daily service to and from New York and Washington D.C., with trains departing mid-morning and returning in the evening. Although the trains travel through Northfield, the nearest scheduled stops are in Montpelier and Randolph. Given the high student population and likelihood that transient visitors to Northfield will increase in the coming years, Amtrak should include scheduled service to Northfield. Respondents to the survey and participants in the public forums in 2009 strongly supported the creation of an Amtrak stop in the village.

Air Transport. The Burlington International Airport (BIA), located in South Burlington, provides regional and international airline service. BIA has expanded both facilities and service in recent years. Manchester, N.H., airport also provides regional and international flights. Due to service from discount airlines, the Manchester airport has become popular with Vermont travelers. Commercial service also is provided by the Knapp Airport in Berlin.

7.7 Transportation Goals, Policies & Tasks

Goal

The maintenance and enhancement of an efficient, cost effective, and multi-modal transportation network to serve the needs of Northfield residents, visitors, and businesses

Policies

1. Town road systems should continue to be maintained in a manner that maintains safe and efficient traffic conditions for current and future demand. Town Road and Bridge Standards should be maintained to ensure ERAF eligibility.
2. Major road improvements and associated capital improvements will continue to be scheduled through the municipal capital budgeting program, and securing alternative funding sources to finance transportation projects will remain a priority of the town.
3. New roads, including private roads serving new development, shall be constructed to the *Vermont State Standards for the Design of Transportation Construction, Reconstruction and Rehabilitation of Freeways, Roads & Streets*. Construction to such standards, however, does not obligate the Town to take over new roads. Decisions on the acceptance of new roads shall be at the discretion of the Selectboard. Private roads will only be accepted if it is clearly in the public interest and will not place an undue burden on local taxpayers and meet the required standards.
4. Northfield's five covered bridges not only serve an important transportation function, they contribute to the community's heritage and unique character. These bridges should be maintained to continue serving their historic function.

5. To ensure pedestrian safety and the long-term efficiency of the local road network, access to state and local roads should be carefully controlled and existing deficiencies (e.g., excessive or oversized curb-cuts) eliminated.
6. New development shall not adversely impact traffic or pedestrian safety or result in a significant decline in the level of service of the impacted road network. The cost of mitigation to avoid such impacts will be the responsibility of the developer.
7. Northfield's transportation needs should be considered when decisions regarding the regional and statewide transportation network are discussed and enacted. These transportation needs may change as a result of increasing fuel costs and the aging of the population.
8. Road improvements and development projects in Northfield Falls, downtown, and Northfield Center should maximize pedestrian safety through site design and traffic calming.
9. Safety improvements to Route 12 north of the village center should be implemented, to include additional ledge removal, road widening, and the installation of pedestrian/bicycle lanes.
10. Lovers Lane, which is subject to deterioration due to through traffic accessing I-89 to and from Route 12A south of Northfield, should be upgraded and maintained with the assistance of the VTrans.
11. Encourage shared-transit opportunities for local commuters.
12. The provision of an integrated and well maintained pedestrian and bicycle path network is a key feature of the local transportation network. This system should be expanded through path connections from Memorial Park north to Bean Park and Northfield Falls and south along the Dog River to Norwich University.
13. Parking in residential neighborhoods shall be controlled to prevent nuisances to residents of those neighborhoods stemming from excessive on-street parking.
14. New development should provide adequate off-street parking to accommodate employees, residents and/or patrons, unless the development is located in an area where alternative parking exists (e.g., off-site parking lot, on-street parking).
15. If feasible, passenger rail service (Amtrak) should be re-established with a stop in Northfield.
16. Install sidewalks connecting Northfield Falls and Northfield Center.
17. Improvements should be continued on Northfield Common.
18. Determine whether it is possible to make additional, multi-purpose use of school buses and other multi-passenger vehicles.

Tasks

1. Continue to designate a representative to the Central Vermont Regional Planning Commission's Transportation Advisory Committee (CVRPC-TAC), and be active in transportation proposals. [Selectboard]
2. Seek to have local project priorities identified in this plan placed on the regional and state Transportation Improvements Project (TIP) lists. [CVRPC-TAC representative]
3. Continue planning for pedestrian path improvements, and solicit Agency of Transportation funding assistance under the Enhancements Project Grant Program,

Safe Routes to School grant program, and other relevant funding opportunities. [Staff]

4. Explore the feasibility of regional bus service, and negotiate with relevant entities to develop a contract to provide a stop in Northfield.[CVRPC-TAC representative, Staff, Selectboard]
5. Review existing land use regulations and consider whether revisions are needed to ensure that:
 - New development will not overburden local roads;
 - Adverse impacts to pedestrian and traffic safety will be mitigated or avoided;
 - Development within designated village centers will maintain pedestrian safety; and
 - New roads will be constructed in a manner that meets minimum standards so that roads are laid out in a manner that creates an interconnected road network. [Planning Commission]
6. Continue to review municipal road policies and make revisions as needed to manage access in a manner that maximizes highway safety and efficiency and eliminates, over time, existing deficiencies. [Selectboard, Staff]
7. Reduce barriers to bicycle and pedestrian circulation in and around the villages by implementing zoning and road maintenance policies that support these modes of transportation. [Planning Commission, Selectboard, Highway Superintendent]
8. Monitor the usage of the new shuttle service to characterize the transportation needs it addresses, and include it as part of an overall strategy to reduce dependence on single occupancy vehicles.[Municipal Manager, Selectboard]

Chapter 8 Community Facilities & Services

8.1 Overview

The Town of Northfield provides or supports a full range of municipal services to local residents and businesses. Each facility or service addresses a particular public need, which is partly determined by demographic and economic conditions. During the 2009 public forums to consider Northfield's future, the participants highlighted the importance of community services in supporting new economic development. As community dynamics and economic conditions develop, the municipality must manage these services with the goal of enabling local businesses to pursue emerging opportunities.

During all of the public forums held in 2009, participants suggested that closer coordination of Norwich University and municipal planning could result in the development of enhanced local services and programs. University staff has expertise to contribute to the municipality's efforts to address potential future challenges. A public survey of nearly 250 residents showed that 80% recognize the value of increased coordination between the university and the municipal government.

This chapter briefly describes existing facilities and services and their respective capacities. It also describes associated costs and factors underlying municipal or public financing. Consideration of the capacity of existing facilities and services in relation to associated costs provides the foundation for shaping growth so that desired levels of service are maintained or enhanced without placing an undue financial burden on taxpayers.

8.2 Municipal Government

Northfield has long consisted of two municipal entities: Northfield Town, which encompasses all land within the municipal boundaries; and Northfield Village, incorporated in 1855, which is located in the center of the town. Village residents have voted in both the town and village, and village landowners have paid property taxes to both entities. Northfield's other historic villages were never incorporated as separate municipalities.

Beginning July 1, 2014, the Village of Northfield and the Town of Northfield will be merged into one municipality. There will be one five-member selectboard, a water and sewer commission, and an electric commission.

The town is responsible for emergency services (see below), recreation, planning and zoning, maintenance of property records and, under contract with the village, highway maintenance. The water and sewer facilities and electric utility (see Chapter 9) have been operated by the Village. Most services that are open to the public, including the manager, town clerk, zoning administrator, public works supervisor and utility office are located in the municipal building on Main Street. Other services and facilities are located in and around the village (see Facilities Map).

Like most Vermont communities, Northfield is heavily reliant on citizen volunteers for many important government functions. In addition to the governing body, the following elected positions include:

- Town Moderator
- Delinquent Tax Collector
- 5 School Directors
- Town Clerk/Treasurer
- 3 Listers
- 14 Justices of the Peace
- 7 Library Trustees

In addition, several appointed positions depend upon volunteers to fulfill municipal functions, including a planning commission, zoning board of adjustment, a Conservation Commission, and a recreation board.

Cost of Government

An issue of particular concern to Northfield residents is the local property tax burden. Partly as a result of Act 60, local education taxes in Northfield are comparable to those of surrounding communities (see Chapter 8).

Municipal taxes, however, are generally higher than in neighboring communities. This is largely due to the fact that Northfield residents enjoy a higher level of municipal service than most neighboring towns. Such services include a full-time police department, recreation facilities (including a municipal swimming pool), staffed fire and ambulance services, and exceptional road maintenance.

When compared with municipalities that share similarities with Northfield (such as a comparable population, the presence of a large tax-exempt property owner, and/or a community that provides a broad range of public services and facilities) local tax rates are not unusual.

Northfield's tax rate tends to be higher than those of neighboring communities because the Grand List includes a higher than average percentage of properties that are exempt by law from property taxes. The 2013 Annual Report of the Division of Property Valuation and Review states that Northfield has \$167,518,339 (104 properties) worth of real estate exempt from the property

tax, and only \$325,918,000 worth of taxable property. (There will be a town-wide property value reappraisal scheduled to be complete by 2015.) About one third of the property in the municipality is tax-exempt, so the full burden of municipal and education services falls on the owners of only two thirds of the property. Maintaining the balance between the obvious benefits of the university and the demand for services it places on the community will be an important component of the town's ability to continue providing quality services without overburdening local property owners.

In addition, strategies aimed at promoting additional economic development, especially the creation of new industrial facilities in established industrial parks and the revitalization of the downtown (Chapter 6) should serve to expand the municipal grand list, thereby spreading the tax burden among a greater number of taxpayers. It should be noted, however, that few Vermont communities have managed to "outgrow" a heavy tax burden. Development strategies should be broadly focused on promoting activities that pay high wages and enhance the local quality of life, in addition to expanding the tax base.

Northfield has sufficient capacity in infrastructure and services that additional development could increase the tax base without the need for additional spending to increase the level of services. This is true at least for sewer, water, school, and electricity.

Another important strategy for financing public facilities and services as efficiently as possible is generating alternative, non-tax revenues. The town has been aggressive in pursuing a range of grant programs from such sources as the Vermont community development program, VTrans enhancements program, VTrans local bridge program, Vermont municipal planning grant program, and other project-specific grant programs. In addition, the community has demonstrated an ability to raise private funds to support worthwhile projects, such as the recent expansion of the Brown Public Library that was supported, in part, with donations. Continued focus on alternative revenue sources as was currently done successfully by the Gray Building Coalition will continue to be an important local goal.

Capital Budget & Program

Another strategy that the town has used effectively to stabilize spending, and therefore tax rates, has been capital budgeting and programming and the associated use of reserve funds. By anticipating the need for future capital projects, multiple purchases may be coordinated, and funds set aside in reserve accounts, to equalize the burden over several years. This avoids sharp fluctuations in local tax rates, allowing residents and businesses to plan ahead with a greater degree of certainty. In addition, the capital improvement program is a necessary tool to have in place, should the community consider enacting impact fees or require the phasing of large developments.

8.3 Emergency Services

Fire Department

The Northfield Fire Department is one of three emergency response providers serving the entire community. The department operates from the fire station located adjacent to the downtown on Wall Street. This facility is adequate to meet current and projected needs.

The Northfield Fire Department responded to 173 calls in 2012, up twenty-five percent (25%) from the previous year. The department is a member of the Capital Fire Mutual Aid system, which obligates the department to assist neighboring departments in responding to major fires in exchange for assistance in fighting major fires in Northfield.

The fire department is presently staffed by 20+ volunteer firefighters, which is considered adequate to meet current needs. Firefighters are paid for time spent responding to calls and volunteer for training and administrative duties. Operating costs are funded through a combination of town allocations (\$70,694 budgeted in 2013), proceeds from the department's fundraising efforts, including the popular annual duck race, and state and federal grants.

Capital equipment is generally replaced on a ten-year cycle. In recent years, the department has upgraded its self-contained breathing apparatus, replaced its ladder truck, acquired a new pumper and thermal imaging camera, and improved the fire station. The town has established several reserve accounts to cover the cost of capital equipment replacement, including vehicles, although no major expenditures are anticipated within the next five years.

Ambulance Service

The Northfield Ambulance Service is a municipally owned (paid / volunteer) agency that provides emergency medical coverage for the communities of Northfield, Roxbury, and parts of West Berlin, Moretown, and Brookfield Vermont. Northfield Ambulance Service provides all Emergency Medical, non-emergency transport, Standby event coverage and Rescue services. The staff is a primarily a volunteer organization staffed with 30 volunteer members and 1 full-time paid staff administrator. In addition, Northfield Ambulance provides back up service for Montpelier City, Berlin, Williamstown, Barre Town, Granville and Randolph.

Over this past year, the Northfield Ambulance Service District responded to nearly 625 calls for service in the towns of Northfield, Roxbury, West Berlin, and Moretown. These calls include 911 emergencies, non-emergency transports, and stand-by at events, including Labor Day Festivities, Northfield High School sports, and Norwich University sporting events. The Northfield Ambulance Service along with the Northfield Fire Department and Police Departments were busy this year with several smaller projects to improve the response of the department. This includes transition towards National EMS Training as well as new State of Vermont EMS rules. The town budgeted \$241,065 in 2013 for operating expenses.

Northfield Ambulance operates with 2 "Advance Life Support" Ambulances, 1 Rescue Truck (Jaws of Life Equipped), 1 ATV and Rescue Toboggan, and 1 Mobile Command/Mass Casualty Trailer. Northfield Ambulance works closely with Norwich University's "Mountain Cold Weather Rescue/Combat Training Team".

Along with all EMS operations, the Northfield Ambulance Service also houses the Northfield Ambulance Rescue Team. This highly trained volunteer team handles motor vehicle rescue, off-road and back-trail rescue, assists with search and rescue operations (in conjunction with the Vermont State Police), and is trained in confined space rescue and evacuation. In the past five years, the ambulance service has handled numerous motor vehicle incidents, search and rescue incidents, and off-trail rescue situations. They also provided significant support in responding to the flooding associated with Tropical Storm Irene in 2011.

Currently the Northfield Ambulance Service is housed in the Town of Northfield Highway Facilities on the northwest corner of the building. Space at the town garage is limited, and conflicts exist between emergency response and maintenance operations on the same site. The Town is developing plans to locate the ambulance service on the same property as the fire and police buildings on Wall Street.

Police Department

Law enforcement services are provided by the Northfield Police Department, a full-time, full service law enforcement agency. The department is staffed by a chief of police, six full-time

officers, and occasionally part-time officers. All officers have received training at the Vermont Police Academy.

The year 2012 saw an increase in overall calls for service from 2011. The department handled 2,189 calls for service, which was up from 2,064 in 2011. There were 43 DUI arrests this year and 153 total arrests. A total of 127 underage alcohol tickets were issued, which was second in the state behind only Colchester Police Department. A total of 487 traffic tickets and 181 warnings were issued. The department also handled 40 traffic accidents in 2012. The Northfield Police Department (NPD) conducted numerous DUI Enforcement checkpoints and seat belt enforcement campaigns within the community to improve traffic safety within the community. All of these campaigns were on grants and were of no cost to the taxpayers.

The NPD also received grant funding of approximately \$70,000 for the purchase of two additional mobile data terminal vehicle computers, an ALPR (Automatic License Plate Reader), and a Morpho-Trac Computerized Fingerprinting Machine. This equipment will help the officers to be more effective in their duties and were also no cost to the citizens of Northfield.

The department, which is served by an on-site dispatcher during regular working hours and a state police dispatcher after hours and on weekends, responds to an average of 1,909 calls per year. Annual operating costs for the department were budgeted at \$722,865 in 2013.

In addition to the police department, Norwich University provides private, on-campus security services. This has the effect of reducing the burden on the police department. The unique law enforcement needs associated with hosting a college in the community, however, place ongoing off-campus pressures on the department. As the university – and community – grow, it is likely that an additional full time officer will be required to maintain existing coverage; one addition has already been budgeted.

Enhanced 911

A state board supervises the operation of Vermont's Enhanced-911 system, instituted in the 1990s. This includes monitoring and auditing E-911 databases for street addresses, contact information and responders, the E-911 network, and four public safety answering points (PSAPs) which take calls, and forward them to local dispatchers. The system depends on regular information updates from municipalities to ensure complete coverage. In Northfield, the ambulance service is responsible for maintaining the local "E-911" emergency response system.

8.4 Water & Sewer Facilities

Water System

Northfield Village maintained a public water system since establishing a water department in 1895 (State of Vermont Public Water System Number 5275). The town-owned water system serves the village center, Northfield Falls, and all of Norwich University. There are approximately 1200 connections that serve a total of 4000 residents.

All of the water is pumped from the well field on Vermont Route 12A; there are three shallow, gravel-packed wells located there. Well # 1, drilled in 1940 is capable of 400 gallons per minute (GPM). Well #2 drilled in 1946 is capable of 600GPM and Well #3 drilled in 1998 is capable of 1000 GPM. Due to piping sizes and constraints, only one well is pumped at a time.

The wells pump into the distribution system and, once demand is satisfied, the water fills the three reservoirs: two 250,000 gallon concrete tanks on Cheney Farm and a 1,000,000 gallon concrete reservoir located on Garvey Hill. The system uses in the vicinity of 450,000 GPD and,

with the present storage, allows for about three days emergency supply. The system also provides for fire protection, with 165 fire hydrants and sprinkler connections on the larger buildings.

Energy efficiency is obtained through automatic pumping and level controls and off-peak pumping at night. The distribution system originally was constructed in 1906, and it was expanded several times over the past one hundred years. It consists of approximately twenty-five miles of mains, which include 12", 10", 8", 6", and 4" cast iron and various sizes of copper (1/2" through 2").

The entire system is metered, and the loss of approximately 20% of water is accounted for by leaks, hydrant flushing, fire, etc. The water is chlorinated, fluoridated, and treated for pH adjustment. All of this required for public health.

In 2003, a new 12" ductile iron main was installed from the new 1,000,000 gallon reservoir on Garvey Hill to North Main Street.

In 2008 8500' of new 12" ductile iron main was installed from the new 12" main on North Main Street to Moody Lane in Northfield Falls, replacing an aged 6" main. This improvement provided increased residual pressure, eliminating backflow problems as well as increasing fire-fighting flows.

In 2009 4500' of new 12" ductile iron pipe was installed from South Main St. at the common running west on Wall St. to Pleasant St., from Pleasant St. to Union St. from Union St. to Cross St. from Cross St. to the 12" water main that services the Garvey Hill reservoir on Cemetery St. This project replace aged 6" and 8" cast iron mains this created a much needed loop to connect the new reservoir to South Main St.

In 2011 2800' of new 8" ductile iron water main was installed starting at South Main St running east on Slate Ave. to Highland Ave. from Highland Ave. to Prospect St. were it was connected to the 12" cast iron main that serves the Cheney Farm reservoirs. This project replaced an aged 4" cast iron main.

In 2012 7500' of 12" ductile iron pipe was installed from Central St. and South Main St. to the Well field and up Rt. 12 to Terrace Dr. This project replaced aged 6", 8", and 10" cast iron pipe.

Plans have been developed for more improvements on the system, which will require votes for bonds.

The most important improvement concerns protection of the water supply at the well field. This would require installing a waste water collection system to prevent contamination of the water source from the one hundred or so septic systems located in the well field area. In the survey of residents completed in 2009 protection of the well field received strong support. There may also be support among citizens for expansion of both water and sewer service in this area to direct growth and more fully utilize the existing investment in municipal infrastructure.

Water Department Five Year Plan goals:

- Complete new 12" water main on Central St.
- Complete new 8" water main on East St. and King St.
- Study construction of a new reservoir at Cheney Farm
- Complete an automatic meter reading system (AMR) for water meters.
- Continue leak detection.
- Continue mapping program
- Continue water main replacement for low flow areas.

Wastewater System

Like the water system, Northfield's wastewater treatment facility is owned and operated by the rate payers. It consists of two parts: the collection system and the wastewater treatment facility.

Located adjacent to Route 12 the facility's service area includes the entire village center and most of Northfield Center, including Norwich University.

The collection system consists of clay pipe and manholes. There is one pumping station on the system with two other privately-owned pump stations. The original wastewater treatment facility (WWTF) was built in 1966 and, with the construction of an interceptor, collected almost all the wastes from Northfield Center and the village center.

In 2004 the WWTF was upgraded, automated, and phosphorous removal incorporated in the process. This was a \$7,000,000 upgrade with approximately half of this amount paid by the State and Federal governments. The upgraded facility includes treatment utilizing sequential batch reactors; an equalization basin; sludge removal; chlorine contact chamber; and dechlorination before discharge into the Dog River. The system processes approximately 450,000 gallons per day (GPD). The facility is capable of treating up to 1,000,000 GPD, which will allow for the expansion of the system in main areas.

The priority to the south is to protect the well field and the other priority is to the north to collect the waste from Northfield Falls. There are several smaller areas that could be included for future development as well.

The collection system is combined, which allows storm flows to the WWTF. This should be studied and more separation done.

The wastewater treatment facility performs well and meets all State and Federal treatment parameters, thus protecting the environment.

Outside of the sewer service area, residences and businesses are responsible for disposal of waste water through in-ground systems. Since 2002, all new systems require a permit from the Vermont Agency of Natural Resources and must comply with state design standards. Alterations to existing systems have required a state permit since 2007.

Sewer Department Five Year plan Goals

- Finish final design and Construct a wastewater collection system on Vermont Route 12, and 12A to Norwich University to protect the water supply (highest community priority) which also will increase the customer base. The engineering plans are at 90% completion
- Complete a professional engineering study of the combined system and the best course to separate storm water.
- Continue the cure in place pipe lining (CIPP) to cut down on inflow and infiltration (I&I) into the system to better control the costs of the treatment. plant
- Continue mapping of the system.
- Continue maintenance of the system for reliability

Water & Sewer Department

Although the town maintains separate water and sewer departments for budgeting purposes, the two systems share supervisory, technical, and administrative staff. Presently, the water and

sewer departments are staffed by four full-time workers who are cross-trained as licensed water and wastewater facility operators, under the direction of the Utility Superintendent.

In 2011 the staff of the water and wastewater departments erected a 2000 square foot building at the sewer plant to finish the maintenance consolidation of the two departments and allowed the water department to move from the bottom of the municipal building to the sewer plant.

8.5 Recreation

Northfield residents enjoy a variety of public recreation facilities and programs not available in smaller communities. Recreation facilities and programs are overseen by a seven-member Recreation Committee (appointed by the Selectboard) and several local volunteer organizations. The Municipal Manager hires a seasonal recreation director to coordinate the use of the pool by the summer program and the swimming program, and to oversee the operation of the municipal pool and maintenance of other facilities. Lifeguards and maintenance workers are also hired on a seasonal basis. The total recreation budget in 2013 was \$41,857.

The two developed recreation facilities are:

- **Memorial Park**, which includes the municipal outdoor swimming pool and playing fields suitable for baseball, softball, and soccer; and
- **Northfield Falls Fields**, which include playing fields suitable for soccer, Little League baseball and softball, as well as volleyball courts.

Combined, these facilities provide adequate space and facilities to serve existing demands for organized field space and less formal youth recreation. A short-range plan of the Recreation Committee is to connect the two facilities with the construction of an off-road, multi-purpose recreation path. Such a path would also provide a pedestrian and bicyclist connection between Northfield Falls and the village center. In addition, the proposed path connection between the downtown and Norwich University, and associated development of an “eco-park” along the Dog River, would further enhance recreation and transportation opportunities (see Chapters 5 and 6).

In addition to developed facilities, Northfield also boasts a well developed network of winter trails maintained by the Vermont Association of Snow Travelers (VAST), excellent fishing opportunities in the Dog River and tributary streams, good hunting (in large part made possible by private landowners); and hiking trails on Paine Mountain.

Paine Mountain is great source of enjoyment in the town, and for generations has been valued for the recreational opportunities it provides. The benefits that the residents of Northfield and the surrounding areas have derived from the mountain and its many trails were documented in the book, *Paine Mountain Guidebook*, written by local author William E. Osgood, which is available through the Northfield Historical Society. The mountain is also valued for its natural beauty and ecosystems, and provides habitat for a diversity of wildlife including a rare plant species (see Maps 3, 4 and 5). The lands on Paine Mountain include Northfield’s Municipal Forest, lands owned by Norwich University that have been developed as a recreation center, and lands owned by the telephone company. The Paine Mountain area should be protected from development other than that associated with recreation, conservation, or forestry so that these uses are not diminished and can be enjoyed by future generations.

At the 2009 public forum on Northfield’s community infrastructure, there was enthusiastic discussion of the possibility of building on Northfield’s rich recreational resources to bring in future economic development. There is interest in marketing the municipality as a recreation destination, particularly for hiking, biking, and fishing. Development of the town as a recreation

destination requires careful and vigilant protection of the town's natural resources. Two-thirds of residents surveyed favored additional protection of land for recreation purposes.

8.6 Solid Waste Management

Northfield is one of eight member towns forming the Mad River Resource Management Alliance. In 1994, an Interlocal Agreement for the Management of Solid Waste created the Mad River Solid Waste Alliance (MRSWA). In 2007, MRSWA changed its name to Mad River Resource Management Alliance (MRRMA) to reflect a shift from waste management to resource and commodity management. The board includes representatives appointed by each of the municipalities, and is served by a part time administrator. MRRMA operation are guided by a Solid Waste Implementation Plan, approved by the Vermont Agency of Natural Resources. This plan will undergo major changes following the adoption of the Vermont Materials Management Plan, which is expected to be approved in 2014 as a replacement for the State Solid Waste Implementation Plan.

The Town of Northfield owns a transfer station located at 69 Dog River Drive that is currently operated by Earth Waste Systems. The transfer station accepts mixed paper, corrugated cardboard, newspaper, boxboard, magazines, phone books, paperback books, mixed glass, plastics, recycling; collection of tires; bulky wastes; used oil; scrap metal; electronic waste; organic collection; leaf and yard waste and municipal solid waste (MSW). There are also several private haulers that offer curbside collection of solid waste and recyclables and provide Saturday Morning "Fast Trash" collections. The Northfield Elementary School and the Middle/High School are participating in a food scrap composting program with a local farmer. A truckload sale of backyard compost bins is held annually in the spring. MSW is currently disposed of at the Waste USA Landfill in Coventry, Vermont.

As a stakeholder in the Product Stewardship Institute (PSI), MRRMA works with other entities to reduce the environmental and health impacts of a variety of consumer products. This is accomplished by looking at the life cycle impacts of products and their packaging, including energy and materials consumption, emissions during manufacturing, toxicity, worker safety, and waste disposal. As a result of product stewardship initiatives, products like computers, printers, monitors, televisions, mercury thermostats, fluorescent lamps and latex paint are no longer in the waste stream in Vermont.

The Mad River Resource Management Alliance holds two household hazardous waste collections each year, one on the second Saturday in May and one on the first Saturday in October. Northfield residents can bring up to ten gallons of liquid or ten pounds of solid household hazardous waste to these events at no charge, as well as an unlimited amount of pesticides, latex and oil-based paints, and compact fluorescent lamps at no charge.

The current fee for participating in the MRRMA is \$2.75 per capita. In 2014, Northfield's fee is \$17,069. There is no additional surcharge on trash disposal.

8.7 Health & Social Services

There have been dramatic changes over the past several years in health care and in service and insurance industries, resulting in rising costs and increased differentiation among service providers to access available federal and state funding. Many industry problems, including rising health care costs, are beyond the reach of municipalities and local organizations to address, but affect local businesses, workers, residents, and municipal budgets. Coordination and collaboration between funding agencies and service providers to ensure the effective delivery of services is more important than ever, and could be improved through local information and

referral services. It is also reasonable to expect that volunteer efforts, and municipal funding and support for local service organizations, will become more important given anticipated cuts in state and federal programs.

A variety of private, state and nonprofit agencies provide health and social services to Northfield residents. Of particular importance locally are services provided to Northfield's elderly population, and to children and families in need. State and regional services are generally based in Montpelier or Barre. Many area nonprofits, described below, have a local presence, and depend in part on volunteers, municipal funding, and donations for support. Non-budgeted municipal appropriations to requesting organizations are decided annually by town voters.

Health Care Services

Northfield residents have access to general health care services locally through several private practitioners, Green Mountain Family Practice, and several dental practices. The People's Health and Wellness Clinic in Barre also offers health care services to area residents who are uninsured.

The Mayo Health Care facility serves as a 50-bed Level I/II nursing home that provides intensive and intermediate residential nursing care and therapies. There are also two state-licensed Level III care facilities in town – Four Season Care Home and Mayo Assisted Living – which provide room and board, personal care, 24-hour non-medical supervision, and limited nursing services to seniors and adults with disabilities. The two facilities have a combined capacity of 133 residents.

The Central Vermont Medical Center in Berlin is the region's full-service hospital, providing patients with emergency, medical, surgical, psychiatric, pediatric and social services, including counseling and referrals to area health and welfare agencies. A variety of outpatient services are also available. Northfield residents also have access to the Gifford Memorial Hospital, located in Randolph. Both hospitals are associated with the Dartmouth-Hitchcock Medical Center, in Lebanon, New Hampshire.

Social Services

Locally, Community Emergency Relief Volunteers (CERV) provides food, clothing, utility, and other emergency assistance to residents in need. CERV also runs the local food shelf, located in the town's ambulance garage. It receives no public funding and operates through the generosity of the Northfield community and local businesses.

The Central Vermont Community Action Council (CVCAC), based in Berlin, offers a wide range of programs to serve the needs of low-income households and residents in the region – including food assistance, emergency fuel and weatherization, family support, Head Start, welfare-to-work, and community economic development programs. Community Action offers emergency assistance, to help offset the immediate impacts of poverty, and also long-term support for those working their way out of poverty. In 2013, CVCAC helped 555 Northfield residents and 262 families.

Senior Services

The Greater Northfield Senior Citizens, Inc, a publicly-supported non-profit charity, owns and operates a center on Wall Street, which serves the senior population of West Berlin/Riverton, Roxbury, Williamstown, and Brookfield, as well as Northfield. A variety of nutritional, preventive health, and recreational programs are offered, often in association with other area agencies. The center serves a hot mid-day meal on site (donations accepted) and provides home delivery as part of "Meals on Wheels". In the aftermath of Tropical Storm Irene, the center was operated

as a support facility for the relief workers clearing flooded homes in the Water Street neighborhood, providing them with meals and a rest area.

The Central Vermont Council on Aging (CVCOA) is a private, nonprofit group that provides support services for seniors, directly or under contract with local groups and organizations, to live independently in their homes and communities. The Council also contracts annually with the Northfield Senior Center to provide community and home delivered meals (“Meals on Wheels”). Meals are served at the center Monday through Friday, for a donation.

The area’s Retired and Senior Volunteer Program (RSVP) organizes opportunities for seniors to volunteer their services to a variety of community groups. Monies raised locally are used to help offset the cost of supporting volunteer activities.

One of the more certain changes that Northfield faces is the aging of its population. The fact that Baby Boomers are entering their retirement years means that greater attention is necessary to ensure that Northfield seniors receive necessary services. There is also potential for economic development associated with providing for the needs of senior citizens; one idea presented in a public forum was that Norwich University could consider developing a retirement community for their alumni, such as other schools have begun doing. Planning for transportation planning and commercial development should consider the dynamics of the aging population.

Youth & Family Services

The Northfield Boys & Girls Club was established to provide a supervised place for youth to congregate that is safe and secure from dangerous and/or illegal substances; provides youth an opportunity to plan and take part in social, recreational, and educational activities and community service; and allows youth to experience democracy by exercising self governance under the guidance of an adult advisor. The Club’s credo is “Honor Youth.” The Club, which is open to any youth from Northfield, Roxbury, and Riverton, provides a number of programs including community service. It is located in the Gray Building.

The Northfield/Roxbury Drug Free Communities Support Program is funded by the U.S. Department of Justice. The program’s goals are to reduce substance abuse among youth and to form a coalition of community groups whose members will focus on helping to provide resources to create a healthy environment with emphasis on the prevention of substance abuse. To achieve these goals, grants are awarded to youth-serving groups in support of their programs designed to reduce risks that lead to substance use and abuse. Other strategies include coalition building with adult leaders and youth, increased media attention and the evaluation of youth use and attitudes towards alcohol, tobacco, and other drugs.

Good Beginnings of Central Vermont, based in Northfield, is a nonprofit program that provides volunteer support and education to new parents and their newborn or adopted babies, to help ease the transition into parenthood. Volunteers visit all families with infants, and also work with local libraries to distribute information. The Washington County Youth Service Bureau provides crisis intervention, parenting, family counseling, substance abuse services, and transitional living programs for runaway and homeless youths. In 2007, services were provided to 51 Northfield youths and family members. Circle (formerly the Battered Women’s Services and Shelter) opened in 1990 in Montpelier, provides services to more than 1500 victims of domestic violence annually. The closest homeless shelter is the Good Samaritan shelter in Barre.

Child Care

Families in Northfield require access to affordable, high-quality day care for young children. The town of Northfield provides public pre-school for one year prior to kindergarten. The town should ensure that its policies encourage, rather than impede, provision of other private services. It is

important that these facilities are integrated appropriately into neighborhoods, especially where traffic, parking, noise, and other potential impacts would not present unsafe or nuisance situations.

The Family Center of Washington County, based in Montpelier, is the area's child care resource and referral agency. The Center also provides preschool and after-school child care services, play groups, parent education and support activities, training for child care providers, and assistance to parents to pay for child care services. In 2012, the Center served 173 Northfield residents.

The Bright Futures Provider directory lists over 20 registered home day care providers located within ten miles of Northfield, including three in Northfield and one in Roxbury. A child care home that is registered with the State of Vermont is a child care program approved only in the provider's residence, which is limited to a small number of children based on specific criteria (e.g., "no more than six full-time children").

The cost of child care has increased due to the increased cost of living, liability insurance, and supplies. Child care is difficult to find, especially infant and after-school care. Vermont has the highest percentage of women with children under the age of six in the workplace in the United States, making the provision of child care especially important.

Local establishments provide public space and activities appropriate for pre-school age children. The Brown Public Library hosts a weekly story hour in addition to unscheduled activities. The Northfield school property has been used for several preschool programs, early childhood music, science, and reading programs facilitated by Kindermusik, Mother Goose Programs, and Success-By-Six. There are undoubtedly more opportunities for activities and interactions in public settings that would enrich young citizens' development and support their parents' childrearing responsibilities.

There are several private day care centers in Northfield. The town will work to improve the child care infrastructure. This may well be achieved independently or in conjunction with neighboring towns.

8.8 Communications Services & Facilities

Northfield is served by both traditional and more modern forms of communication that inform the community and connect residents with each other and the wider world.

Newspapers

The *Northfield News*, the local weekly newspaper, was first established in 1878, and is one of the municipality's official newspapers for public warnings, notices, and announcements. Many Northfield residents also get their news from the *Times-Argus*, central Vermont's daily paper based out of Barre, which offers some local coverage. Norwich University's newspaper, *The Norwich Guidon*, also covers some local events. These papers also are available online.

Telecommunications

Technology and deregulation have blurred the lines between the formerly distinct, separately regulated services of telephone and cable television. An array of integrated networks now provide broadband Internet access, voice and data integration, video conferencing, distance and on-line learning, and telecommuting. Trans-video, Inc., TDS Telecom, Verizon, and AT&T cellular are the primary service providers in Northfield. Brown Public Library provides public Internet access.

Telephone Service. The Northfield Telephone Company, first established in 1896, is the area's local exchange company, and a subsidiary of Telephone and Data Systems Inc. (TDS Telecom), a national telecommunications provider. TDS provides a variety of phone, data, Internet, and satellite television services to Northfield and Roxbury area businesses and residents for monthly fees. TDS provides broadband Digital Subscriber Line (DSL) services, and participates in "Link Up Vermont" that provides subsidized phone installation services for income-eligible residents.

Cellular Phone Services. Cellular phone service is also improving, but because of local topography, remains spotty in the Dog River valley. AT&T (formerly Unice) has a tower installed at Norwich University that provides cellular coverage in a significant portion of the Northfield area. Verizon recently installed a tower on Camp Road off of Union Brook Road. Providers are actively pursuing tower sites throughout Vermont to expand cellular coverage. Northfield, under the federal 1996 Telecommunications Act, cannot exclude such facilities, but can regulate their location and appearance through local zoning bylaws. Emissions, including related interference and health considerations, are regulated separately by the Federal Communications Commission (FCC).

Radio, Television & Cable. As a result of the mountainous terrain, Northfield residents without cable or satellite service get limited broadcast radio and television reception. Norwich University's noncommercial radio station, WNUB (88.3 FM), has been broadcasting to central Vermonters for 35 years. The station's signal is transmitted from a 30-foot tower located on the roof of Jackman Hall, and reaches listeners within a 10-mile radius.

Trans-Video Inc., based in Northfield, provides cable television, phone, and internet packages for a monthly fee. Trans-Video also provides two channels for public, educational, and government (PEG) use, as required by the Vermont Public Service Board (e.g., Channel 7 and 14). Currently, meetings of the Selectboard are broadcast on Channel 7, but other local programming is limited. Northfield residents outside the cable service area have access to other satellite television services, including TDS Telecom (through DISH network).

Vermont Interactive Television offers videoconferencing services to businesses, government, nonprofit organizations, and schools at fifteen sites around the state. The closest sites to Northfield are at the Vermont Technical College in Randolph Center, and at the Department of Labor offices in Montpelier.

Internet & Web Services. Increasingly, more information and services, including government and educational services, are being provided through web sites, accessed through the Internet. Most of the town has broadband access, but some more remote residences do not. The Town subscribes to Front Porch Forum, a town-specific internet classified and bulletin board service. The Senior Center offers classes and online access for senior citizens.

The Internet is increasingly important as an educational tool for information access and on-line ("distance") learning opportunities. Northfield schools have broadband access to online services and resources through "K12net," an extension of Vermont's GOVnet, which supports local and distance learning programs. The Washington South Supervisory Union and both Northfield schools maintain basic web sites, and participate in VITA-Learn, the Vermont Information Technology Association for the Advancement of Learning, which encourages the use of information technologies to meet Vermont educational standards. Norwich University has also established on-line courses, including an on-line MBA program for business professionals.

8.9 Cultural Facilities & Activities

Brown Public Library

The mission of the Brown Public Library is to enrich and improve lives by providing access to resources in support of education, recreation, and culture. The library creates and supports programs that encourage life-long learning for children and adults through access to written material and information technology. The library upholds the American Library Association Bill of Rights and the Freedom to Read Statement

The Brown Public Library has been serving the Town of Northfield for over 100 years. The library's material holdings include approximately 22,000 print materials and 2,500 audio and video items. In addition, through its association with the Green Mountain Library Consortium and the Vermont Department of Libraries it is able to subscribe to various online databases that provide downloadable audio books and eBooks along with access to over 500 continuing education courses and 27 online databases.

The library's dedicated staff and volunteers keep the library open six days (43 hours) a week. Library programming includes preschool story hours, a summer reading program for children, adult reading/discussion series, and other programs of interest to the community. The library offers 10 public access computers and free WIFI through the networking access that is generously provided by Trans-Video. The library's hardware, software and internal networking support is provided through a contract with a local IT support company, specializing in services to municipalities, public libraries and small businesses within Vermont.

The Brown Public Library is not only a lending library, offering high-interest materials to a diverse community, but it is the preschoolers' door to learning and, for older children and adults, a center for lifelong learning and independent study. The library has a strong commitment to patron services, and the need to maintain an informed and competent staff, as it continues to make new information technology and resources available to its patrons.

More people are coming to the library, especially to use the public access computers. The patrons' of the library have become more sophisticated, which puts demands on the library for more timely information in a wider variety of formats. The library also continues to be a center for providing services other than library material by providing access to printing, faxing, scanning and tax forms.

The Brown Public Library has been fortunate in receiving about 85% of its operating funds from the generous support of the Northfield citizens. The remainder is obtained through contributions from civic groups, corporations and fundraising. The long-range goal is to seek Town funds for approximately 83% of the operations costs.

The Brown Public Library is also grateful to have the support of Friends of the Brown Public Library. The Friends is a membership-based nonprofit group organized to support the activities of the library through fundraising activities and volunteer efforts. The organization is financed through annual membership dues, the sale of book bags, and other items. The Friends, in consultation with the librarian and library trustees, use funds raised to purchase books and equipment, and to support library programs.

The Brown Public Library's vision is to be an increasingly integral part of the Northfield community.

Community Organizations & Events

Northfield is home to nearly forty service, educational, and community organizations that support a wide variety of local activities and cultural events, and contribute much to community

life. Norwich University also supports community activities through its community service and youth mentoring programs, and by making university facilities available for use by community groups.

Paine Mountain Arts Council is a non-profit community organization dedicated to presenting professional artists of all genres as well as providing a venue for local amateurs. Its yearly schedule includes chamber music concerts, youth orchestra concerts, an annual art show, poetry readings, and an informal outdoor summer series.

Annual events that attract both local residents and visitors include the weekly Farmers Market held on the village common, Summer on the Common entertainment series held Tuesday evenings through July and August; Labor Day Observances and Parade, a three-day festival held on the village common; and Ellie's Farm Market Jack-o-Lantern Show, a 30-year local Halloween event. Northfield also is known for the annual Cabot Hosiery Sock Sale, held each fall at the Cabot sock mill and the Barry T. Chouinard, Inc. tee shirt sale held at the National Guard Armory.

The Todd Lecture Series brings important, significant lecturers to Norwich University. Programs are always free and open to the greater Vermont community. Past Todd Lecture Series speakers hosted on campus since the series started in fall 2008 include:

- Dean Kamen (inventor, entrepreneur, and advocate for science and technology);
- David Walker (former Head of the Government Accountability Office);
- Adm. Thad Allen (former Commandant of the Coast Guard and National Crisis Expert) ;
- James Carville and Mary Matalin (political consultants and CNN commentators);
- Peter Diamandis (Chairman and CEO of the X Prize Foundation);
- Bill McKibben (educator and environmentalist); and
- Rebecca Skloot (best-selling author).

Cultural events attracting outside visitors present Northfield in a positive light, and also contribute to the local economy. Northfield Observances, which has organized the annual Labor Day weekend festivities since 1977, has estimated that this event alone draws thousands of people to the community and provides significant annual revenues to businesses and organizations that set up booths on Depot Square, and also supports other Northfield businesses.

The Northfield Business & Professional Association (NBPA) was created in 1978, but has been inactive since 2005. The NBPA promoted member businesses, local economic development, and Northfield as a tourist destination; it also took a broader interest in larger issues affecting the community. NBPA sponsored community events, recognized outstanding community service, represented the community in regional organizations, and provided information and positions on issues affecting the community. Participants in the 2009 public forums repeatedly raised the topic of reviving the NBPA to serve as an engine for economic development and downtown revitalization.

8.10 Community Facilities & Services Goals, Policies & Tasks

Goal

The provision of effective and cost efficient community services, facilities, and utilities is needed to meet present and future demands of Northfield citizens and visitors.

Policies

1. Provide municipal services and facilities in an efficient and cost effective manner to ensure a high level of service without creating an undue financial burden on taxpayers. To this end:
 - Alternatives to the property tax to fund local services (grants, user fees, etc.) will be considered wherever practical;
 - Capital expenditures will be programmed to avoid sharp fluctuations in the property tax rate;
 - The municipality will coordinate with neighboring communities to share services and associated costs to the extent practical;
 - Expansion of not-for-profit institutions, including Norwich University, shall be planned in a manner that does not place an undue burden on municipal services and facilities or result in an undue adverse impact on the property tax rate.
 - Norwich University services should be considered as potential resources to supplement municipal services, more efficiently fulfill municipal responsibilities, and better meet community needs.
2. Plan for adequate facilities and services to accommodate anticipated future demands, so that those demands do not create an unreasonable burden. To this end:
 - The scale and timing of development shall be controlled to ensure that the resulting demand for services and facilities does not exceed the municipality's ability to provide them;
 - In the event new or expanded public facilities required to accommodate new development are not available or planned, the developer shall reimburse the municipality for the proportional cost of the facility(s) needed to accommodate the new development, unless the municipality determines that the proposed development will provide community benefits which outweigh or offset the cost of facilities; and,
 - Consider that the manner in which services are delivered in the future may be affected by the aging of the population.
3. Make the most effective and efficient use of existing services, structures, facilities, and utilities before expanding capacity or constructing new buildings or facilities.
4. Coordinate the provision of facilities and services with local land use and development goals and policies outlined in this plan.
5. Continue to staff municipal departments at levels adequate to maintain and/or enhance existing municipal services.
6. Provide municipal water and sewer facilities to customers within defined service area boundaries. The extension of facilities to customers outside of those service area boundaries shall be limited to instances in which the extension is necessary to address a threat to public health and safety or to reinforce and support local land use and development policies unless extension is paid for by customers.

7. Allocate municipal water and sewer capacity in accordance with the goals and policies of this plan, including those related to land use, economic development and housing.
8. Operate the municipal wastewater system in a manner that ensures the highest practical level of protection to the Dog River.
9. Continue the Northfield Common's function as the civic and cultural center of the community. To this end, municipal offices and emergency services should continue to be located in the village center.
10. Implement the 2014-15 Capital Improvements Budget proposed by the Select Board.
11. Pursue transportation and economic development policies regarding the construction of pedestrian and bicycle paths between Memorial Park and Northfield Falls, the downtown and Norwich University, in order to enhance recreation opportunities.
12. Manage the municipal forest, including land associated with the municipal water supply, for dispersed outdoor recreation in a manner that is consistent with other functions of the property (e.g., water supply, forest management) with the assistance of the Conservation Commission.
13. Protect the Paine Mountain area for its recreation, wildlife habitat, biodiversity, watershed, and forestry value.
14. Maintain municipal recreation facilities, including Memorial Park and Northfield Falls ball fields, in order to provide recreation facilities to local residents on an ongoing basis. The upgrade or expansion of those facilities should occur in accordance with a long-range recreation plan.
15. Encourage the creation and maintenance of a network of recreation trails, including hiking trails and winter recreation trails maintained by VAST. Class IV town roads should be available for recreation, including snowmobile trails, on a case by case basis providing the Select board determines that such use will not result in a hazard to public safety. The recreational use of All Terrain Vehicles (ATVs) on town properties should be prohibited due to adverse impacts to the environment and natural resources¹⁰.
16. Continue the Dog River Depot's function as the municipality's solid waste transfer facility and continue providing a full range of recycling and waste disposal options to local residents and businesses.
17. Continue to participate in the Mad River Resource Management Alliance and support the Alliance's efforts to promote recycling and reduce waste generation.
18. Encourage private day care facilities and allow their use in all zoning districts (subject to appropriate conditions) in which residential and/or business uses are allowed.
19. Encourage the Northfield Boys & Girls Club to continue to serve as a safe setting for local youth to congregate and take part in supervised social, recreational, educational and community oriented activities.
20. Encourage the Greater Northfield Senior Center to continue to serve as a gathering place and service center for area seniors.

¹⁰ Impacts include those to water quality, streams, wetlands, and land through erosion, wildlife, and noise impacts on people. For research see <http://atfiles.org/files/pdf/ohvbibliogVT00.pdf>

21. Encourage the Paine Mountain Arts Council to continue its “Summer on the Common” entertainment and expand its schedule of arts presentations.
22. Maintain an up-to-date emergency management plan that addresses both potential natural disasters and man-made disasters (e.g., flooding, multi-building fire, major accidents). The emergency management planning process should consider coordinating the use of existing public and private infrastructure (e.g., school, senior center, Green Mountain Family Practice) to provide emergency care, shelter, and relief.
23. Ensure that the E-911 emergency response system is maintained on an annual basis and that addresses are accurate and current.
24. Consider funding on an annual basis private entities and non-governmental organizations that provide social services to Northfield residents.
25. Encourage the development and maintenance of state of the art telecommunications infrastructure, including broadband internet access, provided such infrastructure, especially telecommunications towers and related facilities, is developed in a manner which minimizes or mitigates potentially adverse impacts to public health and safety and scenic resources.
26. Make full use (by municipal boards and committees) of available media outlets, including the *Northfield News*, the *Times Argus* and the *Washington World*, local cable access, Front Porch Forum, and the municipal web site, to increase public awareness and participation in community events.

Tasks

1. Maintain and update the Capital Budget and Program on an annual basis. [Municipal Manager, Selectboard]
2. Continue to explore opportunities to coordinate and share the responsibility for providing municipal services and facilities between the municipality and the university. [Municipal Manager, Selectboard]
3. Review proposals for development to determine what impact they will have on the ability of the municipality to provide adequate services and facilities without an undue adverse impact on local tax payers, and place appropriate conditions on new development regarding the timing of construction and provision of services or facilities. [Planning Commission, Board of Adjustment]
4. Review studies regarding the impact of new development on tax rates and utility user fees. If Northfield’s services and infrastructure continue to have excess capacity, future development may not result in tax rate or user fee increases. [Planning Commission]
5. Maintain representation on, and work with Norwich University’s facilities planning committee to address the impact of new development and enrollment expansion on the municipalities’ ability to provide services and facilities and impact on the local tax rate. [Selectboard and Staff].
6. Conduct an assessment of municipal office space and related facilities to identify current and anticipated space needs for all municipal departments, and determine strategies for addressing those needs. [Municipal Manager, Selectboard,]
7. Prepare a wastewater allocation ordinance that ensures that reserve capacity is allocated in a manner that reinforces the land use, development, and natural resource protection policies of this plan [Planning Commission, Municipal Manager]

8. Evaluate the potential to market Northfield as a destination for recreation. Study other towns that have succeeded in doing this. Identify the key recreational assets that could be developed to strengthen the municipality's appeal as a destination, while showing appreciation for, and minimizing adverse impacts to, the town's important natural resources. [Recreation Committee, Planning Commission]
9. Evaluate existing and anticipated recreation programs and facilities and prepare a plan for the long-range management and, if appropriate, upgrade or expansion of those facilities. [Recreation Committee]
10. Continue to ensure that public meetings are broadcast on community access television.[Trans-Video, Selectboard, School Board]
11. Adopt cellular telecommunications provisions under local zoning that require:
 - Providers to demonstrate existing gaps in coverage, and coverage improvements that will result from the installation of a new facility;
 - Facilities to be collocated where feasible;
 - Telecommunications towers to be removed if not in use (e.g., for 18 months or more);
 - New facilities to comply with standards to minimize potential environmental and visual impacts resulting from such facilities; and
 - Small facilities to be located within existing structures (e.g., church steeples).[Planning Commission, Selectboard]
12. Evaluate current user fee structures and potential alternative funding sources for local services and facilities to reduce reliance on the local property tax. [Municipal Manager]
13. Evaluate water distribution system rehabilitation for the water system.[Municipal Manager, Water and Sewer Superintendent]
14. Develop a stewardship plan for the Municipal Forest and seek grant funding for the stewardship planning process [Conservation Commission].
15. Continue to protect the Paine Mountain area through zoning and subdivision regulations to further the uses of recreation, conservation, and forestry.
16. Explore the possibility of obtaining conservation easements that allow for the perpetual use of Paine Mountain for forestry and recreation.

Chapter 9 Local Education

9.1 Overview

The Northfield School system encourages the highest quality educational system for all students of Northfield. The municipality works toward this goal through the Northfield School Board, volunteer organizations, and the Washington South Supervisory Union, which, together with the Town of Roxbury, helps to oversee the elementary schools in each community and the Northfield Middle/High School. This chapter provides brief background information regarding the school system, and identifies issues likely to affect the system in the coming years.

9.2 Education Goals

Global Ends Policy E.00: District Mission: *"It is the foremost responsibility of the Northfield Town School District to educate students within the community's available resources and to graduate those students as informed citizens."*

The five-member Northfield Board of School Directors has adopted the Policy Governance model for the operation of the school district. The policies adopted under this model are formed to attain the ends summarized in the Global Ends policy, and delineated in the supporting ends policies of academic, character, and citizenship competence. The Executive Limitations policies give direction to the superintendent and staff in the implementation of practices designed to meet the ends identified by the community and adopted by the Board.

9.3 School Facilities

Northfield educates pre-kindergarten through grade 12 students at a central location on Cross Street. Northfield serves many of its youngest children ages three and four in its community preschool at the elementary school. The preschool program also offers a collaborative program with Head Start. In addition to the school campus, the municipality owns property at 72 Garvey Hill, which hosts the STAR Program and the adjacent 160-acre acreage, located to the northwest of the schools, which is used for a variety of outdoor activities and conservation education.

The Northfield School District maintains an annual and long-term maintenance plan to ensure regular and proper care of the community's assets. The District has extensive athletic fields. A collaborative effort between the Town Recreation Department and the schools oversee the fields. The Garvey Hill acreage offers many benefits to the school. A soccer field built in 1976 allowed for easy access for school activities. In addition, a trail system was developed and is in the planning stages of further development and improvement. It has the potential of offering a 5K cross-country trail which will allow NMHS to host athletic meets for its expanding cross-country teams. Experiential learning opportunities abound within the Garvey Hill acreage. A timber project, overseen by state foresters, has produced a small revenue that the Northfield School Board of Directors allocated to further develop outdoor and physical education activities for the students.

Elementary School

Students in pre-kindergarten through grade 5 attend the Northfield Elementary School. A summary of recent trends and conditions regarding school participation and class size presented in The School Report Card for Washington South Supervisory Union, Northfield and Roxbury.

Northfield Elementary School provides a varied elementary school program to meet the needs of approximately 300 students in grades PreK – 5. The school provides core academic studies in reading, writing, mathematics, science, and social studies as well as classes in art, music, physical education, guidance, and library. It provides Title 1 reading services for students who have demonstrated a need for additional reading support. The teachers use flexible groupings to meet the academic and social needs of students. Increasing student engagement in learning is a priority for teachers and administration.

Northfield Middle & High School

Northfield Middle & High School is located in a shared facility adjacent to the elementary school. The facility provides educational services for middle school (grade 6-8) and high school (grade 9-12) students from Northfield (Roxbury students may attend Northfield schools beginning in grade 7). A summary of recent trends and conditions regarding school participation, class size, and graduate aspirations is presented in The School Report Card for Washington South Supervisory Union, Northfield and Roxbury.

The Northfield Middle & High School serves approximately 320 students. Approximately ten percent of the school population is from surrounding towns on a tuition basis or school choice.

The Randolph Technical Career Center is one of sixteen vocational centers serving local high schools around the state which NHS students (grades 10-12) may also attend. Dual Enrollment opportunities are becoming more readily available for all students. Partnerships with and colleges and universities, including Norwich University, allow students the ability to take courses for college credit while attending high school. In addition, the school offers Advanced Placement courses in English, Calculus, History, and Biology. Students also are able to access the high school courses through offerings from the Vermont Virtual Learning Cooperative (VTVLC). An educator from NMHS partners with VTVLC offering a course online and, in exchange, NMHS students are able to participate in tuition-free offered by VTVLC.

NMHS offers students an alternative route to graduation through the STAR program (Students Taking Alternative Routes), addressing current trends in education such as “Flexible Pathways” to graduation, Personal Learning Plans, “Real World” experiences, 21st century skills, and service learning. The program benefits students by offering highly individualized programming, a supportive environment, experiential learning opportunities, service-learning in school and with local community partners, and project-based learning.

School Effectiveness

Every school in the nation encounters difficulties and challenges. The Northfield School District is not unique in that respect. Northfield schools have been identified by the Vermont Agency of Education as being in need of improvement. The district has a significantly increasing population of student who qualify for free and reduced lunches (over half of the students essentially live below the poverty level), changes required as a result of the adoption of the *Common Core of State Standards*, and changes in state-wide assessments and technology advancements to keep abreast of yearly. It is clear that the schools need to function in a continual improvement process. Both schools develop annual School Effectiveness plans. The plans set goals and benchmarks to measure their progress. As a district, WSSU continues to focus on the possibilities and strive to improve educational programs so that all students learn and are prepared to be successful in the global community.

9.4 Washington South Supervisory Union Initiatives

After-school Program

The Washington South Supervisory Union (WSSU) received a 21st Century grant in the 213-2014 school year which funds an after-school enrichment program- *Bridges*. The K- 8 *Bridges* after-school program began in the fall of 2013 and will continue for five years. Program activities are offered at all three schools in the supervisory union, NES, NMHS and Roxbury Village School. The goal of the after-school program is to keep children safe, inspire them to learn and help working communities. The five year grant award can be extended to June 30, 2018 if annual requirements are met and federal funds are available each year. The program collaborated with the NES PTO, Norwich University, and the Washington County Youth Service Bureau. The after-school programming will be made available at NES K-5; NMS Grades 6-8; and Roxbury Village School K-6. The program will include academic support followed by enrichment activities designed to enhance key academic areas including reading/language arts, math and science. In subsequent years, it is planned that summer programming will be expanded to provide additional academic support and enrichment.

Technology

Every three years the WSSU is required to develop a Technology Plan. The 2012-2015 WSSU's Technology Plan is designed to increase the capacity, use, and integration of technologies throughout the respective schools' classrooms. The plan addresses: Student Centered Learning/Personalized Learning; Leadership in a student Centered environment; Flexible Learning Environments; and Engaged Community Partners.

A Technology Committee guides the supervisory union's *work over time* on the direction of the use, integration, purchase, and assessment of technology which encompasses all educational programs and creates a technology plan that:

- Articulates clear outcomes
- Collaborates the redesign structures and processes for effectiveness, efficiency and flexibility
- Monitors and measures performance
- Provides accountability for meeting objectives.

The schools have made progress towards meeting the goals in the plan and continue to build upon and expand their capacity to utilize technology to enhance the learning environment for all of students. Beginning in the fall of 2013, every student in grades 9-12 received a school-owned laptop. Grades K-8 students also have technology readily available to them, including rolling carts equipped with up to 24 laptops and iPads, as well as computer labs.

Table 9.1					
Northfield Elementary School					
	2008-09	2009-10	2010-11	2011-12	Vermont (most recent)
Participation					
Total Enrollment*	293	307	331	325	89,428 (K-12)
Attendance Rate*	95.82%	94.78%	94.02%	94.42%	N/AV
Class Size					
Student/Teacher Ratio*	12.31	14.62	12.98	13.10	10.62
Eligible Special Education*	9%	13.1%	15.1%	14%	N/AV
Home Study (number)	N/AV	5	2	8	N/AV
*Source: VT Agency. of Education; N/AV=Data not available					

Table 9.2					
Northfield Middle & High School					
	2008-09	2009-10	2010-11	2011-12	Vermont (most recent)
Participation					
Total Enrollment	383	349	336	347	89,428 (K-12)
Attendance Rate	94.07%	93.94%	93.4%	93.59%	N/AV
Class Size					
Student/Teacher Ratio	9.73	9.54	11.28	10.91	11.13
Eligible Special Education	18%	14.3%	16.4%	14.4%	N/AV
9-12 Dropout Rate (4-year cohort)	5.71%	12.9%	8.89%	11.11%	N/AV
Home Study (number)	N/AV	8	8	10	N/AV
Mean SAT Scores					
Verbal	525	542	492	533	519
Math	506	528	483	527	518
47% of the seniors who go on to college attend 4 year schools (Classes 2009-2012)					
16% of the seniors who go on to college attend 2 year schools (Classes 2009-2012)					
2% of graduates enter the military (Classes 2009-2012)					
Source: VT Agency. of Education					

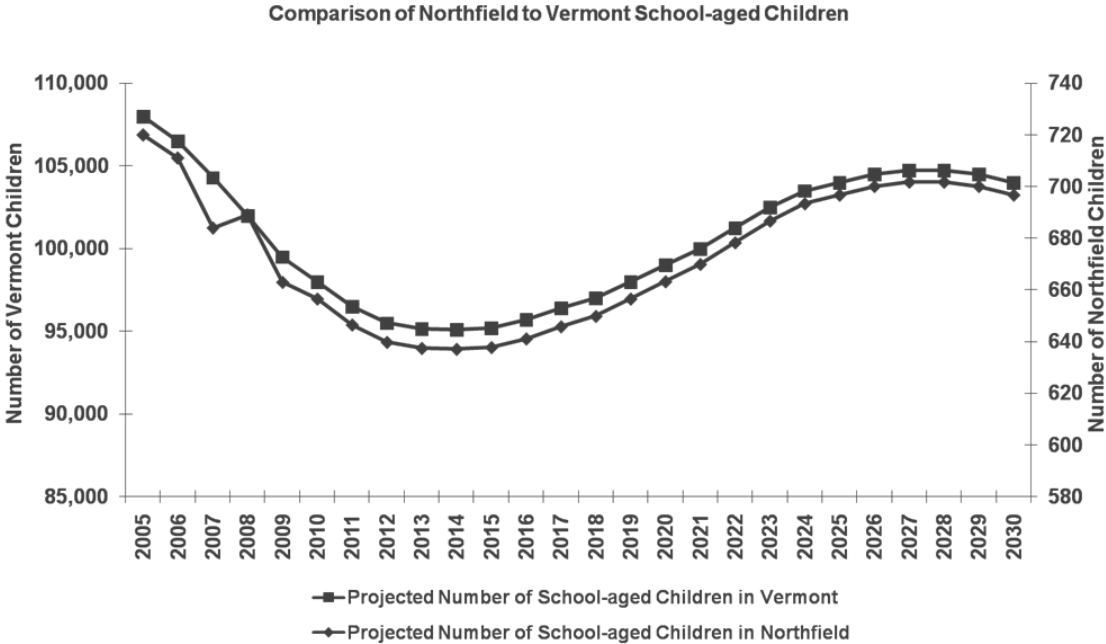
Table 9.3				
Northfield School District Personnel (PreK – 12)				
	2008-09	2009-10	2010-11	2011-12
Classroom Teachers	58.45	56.8	56.1	56.4
Special Ed Teachers	9	10.3	9.3	11.9
Instructional Assistants	28.8	26.8	28.2	29.04
Licensed Administrators	2.5	2.5	2.5	2.5
Administrative Support	5	5	5	5
Other Staff	N/AV	N/AV	12.2	7.5

Avg. NES Teacher Salary	\$47,149.16	\$59,394.52	\$49,785.20	\$43,785.20
Avg. NMHS Teacher Salary	\$45,412.17	\$48,648.93	\$56,790.97	\$53,840.04

9.5 Enrollment Trends

Enrollment in both the elementary and middle/high schools has declined in recent years. State projections show this downward trend reversing by 2016.

Figure 9.1. Comparison of Northfield to Vermont School-aged Children



Development trends in the community and surrounding region, and municipal economic and community development policies and programs, can influence future enrollment trends by encouraging job creation and residential development in the community. Such growth would be beneficial to the school by helping to maintain a consistent student body while enhancing community vitality.

9.6 Northfield Schools & the Community

The Northfield Parent-Teacher Organization’s (PTO) focus is on grades Pre-K to 6. The PTO’s mission is to provide services, information, and funding to develop programs that meet the diverse educational needs of the children and the community. Core programs involve school community members in character development and support curriculum enrichment that help children to reach their full potential. PTO efforts serve to unify teachers and administrators with the goal of building an inclusive, engaged, and energized community. The organization is composed of volunteer parents, teachers, school administrators and community members. A variety of activities are sponsored by the PTO, including the Discovery Project, Garden Club,

the Elementary School Store, Family Fun Nights, and fundraisers. These events help enhance the school curriculum and classroom activities.

Both the elementary and middle/high school students are active in community events and organizations. Local businesses and the Senior Center host student internships and visits for service learning. Partnerships with the PTO, Norwich University, and Washington County Youth Service Bureau helped make possible the 21st Century After-School Program Grant award. The program is a five-year project that is intended to strengthen community partnerships while offering extended educational learning opportunities for the children and youth in the Northfield community.

9.7 Cost of Education

Funding local education is the largest single expenditure for most Vermont municipalities, typically accounting for between 65% and 90% of all local tax dollars. With the passage of Act 60 in 1997 (first implemented in FY99), the state instituted a statewide property tax to fund education, and an income-sensitivity factor that limits the amount of education property tax to be paid by income-qualified Vermont residents.

The statewide property tax is calculated for each community using an “Equalized Education Property Tax Grand List,” as determined by the state based on estimates of the fair market value of all listed real property in the community. This is used to measure the property wealth of a school district. The 2013-14 equalized statewide education tax rate is \$.94 and the equalized pupil general state support grant is \$9,151. Almost all districts spend above the grant, so a local share tax is imposed in addition to the statewide tax. This is the case in Northfield. The local share tax is determined directly from per pupil spending above the block grant. Northfield’s effective tax rate for education is \$1.53 in 2014. Added to the tax rate is a calculation for the Common Level of Appraisal (CLA). The CLA adjusts tax rates based on a state wide formula for measuring the accuracy of the grand list. In 2014 this calculation increased the tax rate by \$.20. The citizens of Northfield passed a budget of \$10,418,881 for the support of education for the 2013-14 school year. Of this amount, \$1,928,645.14 (18.5%) came from local resident property taxes. The balance came from businesses, second homes, grants and aid from the State of Vermont and the Federal Government. During the past four years, the Northfield School District Board of Directors has brought to Town Meeting budgets ranging from an increase of 1% - 2%.

9.8 Adult Education

Adult Education opportunities for Northfield residents are available locally through Norwich University and at various regional centers.

Regional Adult Education

The Community College of Vermont (CCV)’s Montpelier campus provides a variety of courses and degree programs. In addition, the Vermont Technical College in Randolph, the University of Vermont, and several other colleges in the Burlington area provide higher education opportunities for local residents. A growing number of opportunities for “distance learning” are available online and through the Vermont Interactive Television (VIT) site in Springfield.

A variety of adult basic educational programs are also available through Central Vermont Adult Basic Education, with offices in Barre, Montpelier, Randolph, Bradford, and Morrisville. A variety of instructional opportunities are available to adults in the program, including one-on-one tutorials, small group sessions, and regular classes. All of the available services are offered on a regular and flexible schedule. Basic education programs serve those who wish to improve

their reading, writing, and math skills for use on the job or in daily life, those who are studying for their high school equivalency degree (GED) or adult diploma, or those who would like to learn English as a second language. Central Vermont Adult Basic Education also offers a family literacy program, a college readiness program, a work readiness program, and a computer training program.

Norwich University

Norwich University is the nation's oldest private military college. The student body is composed of the Corps of Cadets and civilians, with the majority belonging to the Corps of Cadets. The ROTC program at Norwich is represented by all branches of the armed services. The University offers state-of-the-art science, engineering, communications, nursing architecture, sports medicine, humanities, criminal justice, and liberal arts undergraduate degree programs, including several online post-graduate degree programs.

Norwich also offers comprehensive on-line based education through its College of Graduate and Continuing Studies. There are presently 1,200 students enrolled in a variety of CGCS programs including master degree programs in business administration, history, military history, diplomacy, civil engineering, nursing, public administration and information security & assurance.

Higher Education Collaborative

The University of Vermont, Johnson State College and the Department of Education, through a collaborative effort, offer opportunities for continuing education beyond the Bachelor's degree in the field of education studies.

Chapter 10 Energy

10.1 Overview

Reliable, affordable, and sustainable sources of energy are vital to Northfield's economy, social welfare, and future development. Every individual, home, office and business in town relies on a variety of energy sources for transportation, heating, lighting, and the operation of equipment and appliances. International events and rising fuel prices are reminders, however, that too heavy a reliance on any one source of energy can leave the nation, and local residents and businesses, vulnerable to market changes and shortages. There is mounting evidence that the current patterns of energy consumption are contributing to global warming and climatic change which, if unchecked, will dramatically affect Vermont's climate over the next several decades.

Factors influencing the cost and availability of energy, at present, are largely beyond the control of the local community. Changing technologies, and evolving national and state energy policies – including utility deregulation, demand side management, infrastructure investment, and the promotion of more efficient and renewable “green” energy sources – all have an effect on local energy supplies. There are several things Northfield, and its residents and businesses, can do to influence the energy outlook, particularly to promote energy conservation and efficiency, and to encourage the development and use of alternative energy sources and technologies.

10.2 Demand

Statewide Trends

Information included in *Vermont's Energy Future*, the state's 2011, comprehensive energy plan, indicates that overall energy demand grew 17% from 1990 to 2009 while the state's population grew 10%. During this time, the state's gross domestic product grew by 51% and vehicle miles

driven grew by 31%, fueling the increasing demand for energy. Although energy demand grew at an average annual rate of 1.8% from 1990 to 1999, the period 2000-2009 saw no increase in demand. The state's comprehensive energy plan attributes the leveling of energy demand growth during this period to a combination of state energy efficiency programs and the economic recession of 2007-2009.

Transportation currently accounts for about 34% of Vermont's total energy use, residential (primarily heat and hot water fuel and electricity) for 31%, and commercial and industrial usage for 36%. Demand also varies by energy source. Petroleum currently represents 52% of total energy use in Vermont. Future petroleum consumption is difficult to predict due to growing uncertainties regarding long-term oil supplies and crude pricing, as well as uncertainties about the potential impact climate change mitigation efforts will have on future supply and demand. Total electrical energy use rose steadily during the 1990s and early part of the century. However, from 2004 to 2007 electrical energy consumption actually declined. Although some of this decline is attributable to economic recession, significant declines from 2004-2007 can be attributed to the state's investments in electric energy efficiency.

The associated impacts of increased energy use are increasingly well documented. Motor vehicles fueled by petroleum sources are the state's largest source of toxic and carcinogenic air pollutants – the average vehicle emits about a half ton of air pollution each year. Vehicle emissions pose a health threat locally (even at low levels), contribute to acid rain, and can cause widespread damage to crops and forests. "Green house gases" such as carbon dioxide, emitted from motor vehicles and oil-fired furnaces also contribute to climatic warming.

The State of Vermont has set a goal of meeting 90% of the state's energy needs from renewable sources by 2050. Achieving this goal will require virtually eliminating petroleum consumption and relying instead on a combination of enhanced energy efficiency and greater reliance on renewable energy sources.

Local Demand

There is much less information available regarding local energy use – particularly commercial and industrial use – but given available data, local use generally reflects state and national consumption patterns.

Municipal Energy Expenditures. According to annual report information, the Town and Village of Northfield spent in excess of \$300,000 on energy – electricity, gasoline and diesel fuel, and heating fuel – in 2007-08. The water and sewer operations accounted for 78% of total expenditures for electricity, and the highway operations accounted for 70% of the gasoline and diesel fuel expenditures.

Transportation. According to Vermont Agency of Transportation data, vehicle miles traveled annually on state routes through Northfield increased by nearly 3,300 miles (8%) between 1990 and 2000 – much less than the 15% increase in vehicle miles traveled countywide. Nevertheless, recent U.S. Census data suggest that Northfield residents are more auto-dependent than ever (Table 10.1).

Update statistics in Tables 10.1 & 10.2 - now can only access this datapoint via the American Community Survey 5-yr estimates

Table 10.1 Transportation Indicators, 1990-2000				
	1990	2000	Change	% Change
Vehicles Available (# households)				
None	174 (10.4%)	112 (6.1%)	-62	-35.6%
One	565 (33.7%)	594 (32.6%)	29	5.1%
Two	718 (42.8%)	859 (47.1%)	141	19.6%
Three or more	219 (13.1%)	259 (14.2%)	40	18.3%
Commuting to Work (# employed)				
Drove alone to work	1,645 (67.8%)	2,017 (68.7%)	372	22.6%
Carpooled to work	282(11.6%)	361 (12.3%)	79	28.0%
Took public transportation	0 (0.0%)	5 (0.2%)	5	--
Walked or worked at home	441(18.2%)	520 (17.7%)	79	17.9%
Mean travel time to work (min)		21.1		
Aggregate travel time (min)	43,900.0	60,100.0	16,200	36.9%
Source: U.S. Census.				

The number of cars per household has grown, and 68% of Northfield's population continues to drive to work alone. Total commute time increased by 37% over the last decade. The number of employed working at home, walking, and carpooling also increased, but continued to represent approximately 30% of the town's working population. Of those walking or working at home in 2000, 86% lived in Northfield Village.

Home Heating. Home heating methods used by Northfield households are also reported in the U.S. Census (Table 10.2).

Table 10.2 Home Heating, 1990-2000				
Home Heating Fuel (# occ. units)	1990	2000	Change	% Change
Fuel oil, kerosene, etc.	1,076 (64.2%)	1,374 (75.3%)	298	27.7
Bottled, tank or LP gas	85 (5.1%)	217(11.9%)	132	155.3
Electricity	147 (8.8%)	80 (4.4%)	-67	-45.6
Wood	327 (19.5%)	151 (8.3%)	-176	-53.8
Solar	--	--	--	--
Other	3 (0.2%)	2 (0.1%)	1	-33.3
Source: U.S. Census.				

These data suggest that while fuel oil continues to be the predominant home heating fuel in Northfield, as it is throughout New England, there has been a shift from relatively expensive and inefficient electric space heating to more efficient and cleaner burning propane heat. These standards apply to commercial buildings, including multi-family dwellings, all new homes, and to residential additions over 500 square feet.

Wood, though a renewable and locally available fuel, has fluctuated in importance as a primary heating source. There has been growth in the use of wood pellets and pellet stoves in recent years. Solar energy is insignificant as a primary residential heating source, however new construction often incorporates passive solar orientation and techniques to reduce space-heating requirements.

10.3 Energy Supply

Electricity

Northfield Electric Department is one of fifteen municipal utilities in Vermont chartered to provide electric service within its established service area. The department's territory now includes most of Northfield and parts of Roxbury and Berlin. A small area of Northfield is served by Green Mountain Power, the state's largest electric utility, and Washington Electric Cooperative. Northfield Electric purchases approximately 5 MW of electricity for distribution to its customers under contracts through the Vermont Public Power Supply Authority.

The department serves approximately 1,600 residential and 180 commercial customers, and maintains two substations and approximately 25 miles of distribution lines within its territory. There are currently no commercial generating facilities in town. Line maintenance is contracted through Green Mountain Power. A recent substation transformer upgrade is expected to provide requisite capacity and reliable electric service for several decades. The capital budget anticipates continuing line and substation circuit upgrades, and pole replacements.

Fossil Fuels

Vermont has no petroleum infrastructure, and relies on tank trucks for its petroleum supplies. Residences and businesses are supplied by local fuel oil and propane distributors. Several gasoline stations in town serve local motorists and the traveling public.

Fuel prices are typically higher in northern New England, and have fluctuated dramatically in recent months. International events highlight New England's reliance on limited sources of fuel to supply most energy needs, and leave local residents – particularly low income residents – very vulnerable to fuel shortages and price fluctuations.

The environmental impacts of such dependence on fossil fuels are also prompting state efforts to diversify Vermont's energy portfolio, to include the use of cleaner, more efficient natural gas systems, co-generation systems that produce electricity and heat, and greater reliance on renewable energy resources, including wood, hydro, and wind power.

Renewable Energy

Renewable energy resources found in Northfield include wood, wind power, solar, and hydropower. The extent to which these renewable resources can be harnessed and used to replace other sources of energy must be investigated. Net metering, which allows utility customers with small-scale renewable energy systems to sell excess power back to the utility, may promote increased use of renewable sources.

Wood. Wood is a biomass fuel that is the town's most abundant renewable energy source. For much of Northfield's history, wood was the town's principal source of heat. It is a relatively low cost, renewable energy source that is not disrupted by embargoes, high transportation costs, or tariffs. The heavy use of wood for heating, however, can result in environmental degradation and air pollution.

Northfield has considerable forested land – including municipal forests – that under effective management could serve as a renewable source of wood heat. Extensive wood harvesting, however, if not properly managed, can cause increased storm water runoff and soil erosion, sedimentation, ground water and surface water pollution, and habitat loss. Woodlot management (and adherence to state accepted management practices for logging operations) reduces the adverse impacts of harvesting operations, and it can enhance local timber stands to meet a variety of landowner objectives – including fuel production and wildlife management.

Newer high efficiency wood stoves and furnaces, if properly installed and maintained, provide effective home heating. Stoves sold since 1990 must be airtight and meet EPA emission standards. The addition of catalytic converters reduces harmful emissions and particles that are released into the atmosphere. As noted, however, the number of homes in town using wood as a primary heating source has fluctuated in recent years. Though wood-burning technologies have improved, wood heat remains less convenient than oil or gas heat. It is anticipated that as heating oil prices increase, more households will use wood as a primary or supplemental heating source.

Wood is not currently used to heat Northfield's school or municipal buildings, but several other Washington County schools have shifted over to biomass (wood chip or pellet) heating systems under state-sponsored programs. Norwich University converted their main heating plant to biomass in 2013. Automated, wood-fired systems are proving to be an affordable heating alternative to conventional oil systems in such settings.

Wind. Wind is an emission-free renewable energy source that, with rapidly improving turbine technologies, is receiving increased interest statewide. In the late 1990s, the Public Service Department, with Green Mountain Power and other energy interests, conducted a statewide wind assessment to determine the potential for commercial wind energy development. This work was updated in 2002 to support the department's efforts to promote utility-based wind energy, and to address related installation issues. The State Comprehensive Energy Plan (2011) includes a detailed review of wind energy potential and limitations across the state. Areas identified as having wind energy potential include the ridgeline extending from Irish Hill to Paine Mountain, and south to Shaw Mountain east of Route 12, and the Northfield Range west of Route 12. Elevations between 2000 and 3500 feet above sea level are ideal for maximum power production. Wind energy potential in Vermont is limited by the technical, cultural, and environmental considerations of industrial-scale development, which requires transmission lines, substations, and access roads.

Potential impacts of such facilities include aesthetic impacts associated with highly visible ridgeline development; potential impacts to wildlife and wildlife habitat in the vicinity; and potential safety hazards, when sited in close proximity to other development. Some of these impacts can be mitigated through careful site selection and design, as discussed in the Department's 2002 guide, *Wind Energy Planning Resources for Utility-Scale Systems in Vermont*, and related documents. The extent to which local zoning can regulate wind generation facilities is limited, since such facilities are regulated by the Public Service Board (PSB) and must be issued a Certificate of Public Good by the state. The state permitting process requires the PSB to give due consideration to the municipal and regional plans of the affected area. The Town must identify any specific natural resources that it wishes to protect from development,

and include in the town plan a clear community standard that describes the protections the resources are to be given. The state of Vermont has developed an online atlas, the Renewable Energy Atlas of Vermont (<http://www.vtenergyatlas.com>), which can be used to map potential wind sites and associated natural resources.

Hydropower. The Dog River and its tributaries provided waterpower for Northfield's earliest mills and manufacturing plants. Today these industries are gone, but the potential remains for small-scale hydropower development. This was long considered a particularly clean source of renewable energy. The environmental impacts of dam construction, operation and management – including the effects of changing water levels on river flow, stream habitat and water quality, and on adjoining riparian areas – are now given much more weight in federal and state dam licensing procedures. There are few sites within Northfield that are suitable for utility-scaled power plants, but there may be opportunities to develop smaller “micro-hydro systems” to supply individual users, which would have much less impact on the local environment.

Solar. Solar energy, like wind and hydro, is one of the few energy resources that are not depleted with use. Advances in solar technology have made it easier, and increasingly affordable, for solar energy to be harnessed for residential space and water heating, and for electrical generation. Building orientation and site exposure are critical to access available energy. Northfield has some south-facing slopes that could provide access for both solar heating and solar power on individual building sites.

The contribution of solar energy to Northfield's total supply is likely to increase few. More structures are being designed to take advantage of passive solar energy for heating and light; however not all structures can support the panels and systems needed to collect and store solar energy. Upfront costs for materials and installation can be prohibitively expensive for the average homeowner, but those costs are declining rapidly. State, federal and utility incentives have made grid-connected, net-metered PV systems more affordable. In addition, companies are offering leased solar energy systems that require little or no upfront investment from the homeowner. Passive solar building design can significantly reduce heating costs. Technological advances, including the incorporation of photovoltaic components in roofing and building materials, should make solar power an even more attractive source of electricity in the near future.

10.4 Conservation

The state's energy conservation efforts since 1990 have focused on “Demand Side Management” (DSM) to increase energy efficiency, reduce energy demand, and in effect increase available energy supplies. In 1990, under order of the Public Service Board, electric utilities were required to develop a variety of demand side management programs for their customers, which have since been consolidated into one statewide energy efficiency utility – Efficiency Vermont. In recent years the state also passed energy standards for commercial and residential construction, which are administered and enforced through the Department of Labor and Industry. Net-metering to encourage the use of more decentralized, renewable energy resources went into effect in 1998, and legislation is now pending to promote greater energy efficiency and renewable sources through the use of tax credits and other state support programs. Legislation is also currently being considered that would establish minimum statewide outdoor lighting standards.

The need for increased energy efficiency and conservation, in part to reduce energy costs, is also recognized locally – particularly for Northfield's older, historic homes and public buildings. For example, LEEDS Gold certification is the goal for the new dormitory at Norwich University. A

number of programs are available to local residents and businesses to increase energy efficiencies and reduce costs.

Efficiency Vermont

Efficiency Vermont, created by the Public Service Board in 1999, consolidates the energy conservation programs offered by individual utilities into one statewide energy efficiency utility – a first in the nation. Vermont’s “Invisible Power Plant” to date has saved the equivalent of 11.8 MW during the peak winter period, and 6.2 MW at summer peak. Its efficiency programs are financed by the state’s electric utilities through an “energy efficiency charge” that appears on electric bills. There is a variety of programs available from Efficiency Vermont that can be found at their website at www.encyvermont.com.

Transportation

Few alternatives currently exist that would allow Northfield residents to become less dependent on automobiles for transportation. Nevertheless, as gasoline prices climb and vehicle emissions continue to erode air quality, reasonable efforts should be made to promote ridesharing, alternative modes of transportation, and less auto-oriented patterns of development. The Green Mountain Transportation Authority provides information on carpooling, ridesharing, vanpooling, and special public transportation needs. In July 2013, the Green Mountain Transportation Authority reinstated a bus route between Northfield and Montpelier. Buses operate during commute hours (morning and evening) and midday, and provide options for connecting with buses to Barre and Burlington. This effort was funded by a federal grant to GMTA combined with matching funds from the town which were approved by voters in March 2013. The town should continue to support efforts to provide public transit connections between Northfield and surrounding communities.

Local initiatives that could help reduce the number of vehicle miles traveled include the completion of the proposed bicycle and recreation path between Northfield Falls and Northfield Common, and the development of a local park and ride facility. Northfield could also take advantage of municipal programs offered through EVermont, a nonprofit organization affiliated with the Agency of Natural Resources, which advocates for the use of cleaner, more energy efficient, alternative fuel vehicles (AFVs). AFVs include vehicles powered by electricity, compressed natural gas, propane, and biodiesel fuels.

Land Use & Development Patterns

As shown by the number of local residents who walk to work in Northfield, concentrated development can reduce reliance on the automobile, vehicle miles traveled, and inherent system energy costs, including energy costs associated with maintaining roads and related infrastructure. Clustering development in the vicinity of existing development and infrastructure, including roads and power lines, generally disturbs less land, and requires less energy to construct and maintain. Sidewalks and connecting paths encourage people to walk, rather than drive, to destinations within a quarter to a half-mile of where they live.

At the site level, a southern building orientation and landscaping can effectively reduce energy demand. Clustering, and other energy efficient development patterns can be encouraged, and/or required through local zoning and subdivision regulations.

Buildings & Equipment

In addition to the adoption of energy codes for residential, commercial, and public buildings, there are a number of other programs offered by the state to promote municipal energy

efficiency and the use of renewable energy resources. These include but are not limited to the various programs offered through Efficiency Vermont, EVERmont electric vehicle leases, the School Energy Management Program (SEMP) targeted to school administrators, and programs to support the conversion of school heating systems to wood-burning systems.

Municipal energy savings can be realized through regular energy audits of municipal buildings and the use of “life cycle costing” practices that incorporate long-term energy savings in the fiscal analysis of facility construction and equipment purchases. Such costing methods often demonstrate that long-term energy savings more than offset the higher initial purchase or construction cost of energy efficient equipment and building improvements.

10.5 Assistance Programs

Rising energy costs for heat, electricity, and transportation are particularly hard on low-income households who can least afford them. Programs administered through the Central Vermont Community Action Council, which are specifically targeted to help income-eligible residents, include seasonal and emergency fuel assistance, supported in part through the WARMTH donations collected by private utilities, and free weatherization services to help reduce heating costs. Northfield can assist such programs by providing program information locally, and by continuing to support Community Action. Limited emergency fuel assistance is also available locally through Community Emergency Relief Volunteers (CERV), which at present receives no municipal funding.

10.6 Energy Goals, Policies & Tasks

Goal

The availability of affordable energy supplies to meet the needs of current and future Northfield residents in a manner that maximizes energy conservation, maximizes the use of renewable resources, and reinforces traditional land use patterns and municipal development policies.

Policies

1. The availability of electric energy at reasonable cost to local customers through active involvement in the state’s formulation of electric utility policy will continue to be ensured, to the extent of the municipalities’ abilities.
2. Energy efficiency and conservation will be a primary consideration in new municipal construction projects, equipment purchases, and operations. Life cycle costing shall be used by the town in evaluating energy-related capital expenditures as appropriate.
3. Programs to assist low-income residents in meeting or reducing energy costs, including weatherization, rehabilitation, and affordable supply programs, will be supported by the town in relation to local need.
4. Reliance on single-occupant vehicles should be reduced through:
 - Maintaining, and improving, the local transit program (see Chapter 7);
 - Improvements to the Exit 5 Park & Ride Facility in Williamstown and the creation of a municipal commuter parking facility in or near the village center (see Chapter 7); and
 - Greater pedestrian opportunities, including the construction of the Memorial Park-Northfield Falls bike/pedestrian path and the Dog River path connecting the village center with Norwich University.
5. Renewable energy generation facilities in the community should be permitted after the community has developed clear standards to ensure such facilities will have minimal

adverse impact to wildlife populations and water quality; will mitigate to the extent possible aesthetic impacts; will not cause a nuisance to the surrounding area (e.g., due to excessive noise) and will not result in undue risk to public health and safety (e.g., through a lack of security or uncontrolled access).

6. A land base adequate to generate biomass for heating will be maintained through continued stewardship of public forest land, support for current use tax abatement programs for managed woodland, and land use regulations which discourage the fragmentation of large tracts of productive forest.
7. All decisions of Northfield's municipal government will require an increasing focus on the implications of energy use, cost, and transmission. Northfield will need to identify which energy challenges should be addressed by the municipality, and should adopt strategies to ensure that residents and businesses can continue to thrive.
8. Northfield citizens should determine the degree to which Northfield should focus on energy issues for action. There are many possibilities, although few that can be accomplished easily.

Tasks

1. Undertake an energy audit of existing buildings, and street light fixtures, to determine whether cost savings could be realized through greater efficiencies. [Staff]
2. Assess current energy use in Northfield to serve as a baseline for future planning and to enable more sophisticated cost estimation so that the municipality can respond effectively to energy use, cost, and transmission dynamics, and to estimate the dollar impacts of current and future energy choices. [Energy Coordinator]
3. Review and update as needed existing town policies, bylaws and ordinances to promote energy efficiency and conservation; to protect renewable energy resources and access for their sustainable use; and to support settlement patterns and site designs that minimize energy consumption. [Planning Commission]
4. Include an assessment of energy efficiency in the housing survey (see Chapter 4) to identify opportunities for significant energy savings. [Energy Coordinator]
5. Identify the potential for Northfield residents to participate in local activities that result in greater levels of weatherization or the switch towards wood as a heating fuel. [Energy Coordinator]
6. Evaluate local knowledge of, and access to, Efficiency Vermont programs to determine if local electric customers could make greater use of available programs. [Electric Department]
7. Investigate the potential role for a municipal energy coordinator to assist the town in understanding state and federal energy management resources, build awareness in the community of energy efficiency and potential alternative generation concepts, and coordinate the adoption and implementation of an energy plan. [Planning Commission]
8. Support the continued activity of the Northfield Energy Action Team. Encourage coordination with the Vermont Climate Action Network to monitor activities in other municipalities. [Energy Coordinator]
9. Examine the role of the municipal electric utility in promoting energy efficiency and in developing new energy sources. [Electric Department]
10. Encourage the use of renewable energy and energy-efficient technologies and materials

in residential, commercial, and municipal development projects.

11. Explore opportunities for biomass-fueled combined heat and electricity generation. [Planning Commission]
12. Identify potential locations for solar power installations, such as the roof of the school, and municipal buildings and facilities. [Energy Coordinator]
13. Identify strategies to decrease reliance on single occupant motor vehicles as residents' primary mode of transportation. [Energy Coordinator]

Same data as 2009 Plan; cite date (will check with Dan Currier)

Table 11.1 Northfield Current Land Use	
Land Use Category	Total Acres
Agriculture/Open Land	3,701.2
Cemetery	24.9
Commercial/Service	45.3
Forest Land	37,331.0
Industrial	70.3
Government/Institutional	10.8
Outdoor Recreation	215.6
Residential	695.5
Roads/Pavement	10.5
Quarries/Gravel Pits	12.1
Schools	108.5
Scrub/Shrub	605.8
Surface Waters	94.7
Wetlands	23.5
Barren/Other	9.8
Source: Central VT Regional Planning Commission	

Chapter 11 Land Use

11.1 Overview

Historically, land use and development patterns were largely influenced by dominant transportation networks and economic systems. As Northfield's economic base has changed, and transportation networks have become more dispersed, land use patterns have become less dependent upon these factors.

To address modern development pressures in a manner that protects the health and safety of local residents and promotes community interests, such as maintaining a healthy environment and a vibrant economy, the Town has enacted rules and regulations to guide land use and development. A principal purpose of the municipal plan is to provide the foundation for those regulations, and to identify other policies and actions that can be taken to support the future land use plan. This is especially important today, as the Town is poised for a period of renewed growth and new development.

11.2 Settlement Patterns

Although significant changes have occurred over the past 100+ years, a citizen of 19th century Northfield would likely recognize the community today. The historic settlement pattern remains largely intact; it is characterized by four village centers built adjacent to power and transportation networks, and surrounded by rural countryside, including scattered homesteads in more accessible stream valleys and limited or no development in rugged, inaccessible upland areas.

Village Centers

Linear, automobile-oriented development along the Route 12 corridor has blurred the boundaries of Northfield's historic village centers. The four villages are distinct in character and function, and, in combination, continue to serve as the civic, commercial, cultural, industrial, and residential centers of the community.

Beginning to the north, along the Berlin Boundary, Northfield Falls retains much of its historic character. With the exception of a handful of small commercial businesses located along Route 12, “The Falls” is a predominately residential neighborhood. The boundaries of Northfield Falls are fairly well defined. The rural Dog River Valley stretches north toward Riverton. A rugged, ledge terrain and the Dog River form a physical and visual break from Northfield Village to the south; steeper terrain, and four covered bridges, forms a clear boundary to the east and west.

Northfield Village Center is the main hub of the community. Centered on Depot Square, Northfield Village Center functions as the community’s downtown, and is the site of historic residential neighborhoods. The incorporated boundaries of the Village stretched well beyond the downtown and surrounding neighborhoods, nearly a mile north along Route 12, and encompassed the community’s principal industrial and commercial development.

The historic Center Village, home to Norwich University, may at first appear to a motorist heading south on Route 12 as an extension of Northfield Village Center. The physical presence of the University, however, sets this area apart from the Village Center. With over 1800 students living on campus, coupled with surrounding houses and apartment buildings, the population of Center Village may nearly equal that of Northfield Village while school is in session. The land use pattern of Center Village is as much created by the campus setting, with buildings oriented more toward, and relating to one another, and to formal open space (e.g., quads, parade grounds), than to the street as is the case in Northfield Village.

South Village, centered on the Interstate 89 access road, is the least developed, and least defined, historic center.

The four villages have all served as historic centers for community growth. They also are well suited to serve as the focus of much of the growth and development anticipated in future years.

Rural Areas

Historic development in Northfield’s rural areas outside of the four villages has primarily consisted of single-family dwellings associated with agriculture and resource-based commercial activities (e.g., sawmills, gravel extraction). Most of this activity occurred in the small valleys formed by major tributaries to the Dog River, including Cox, Union, Stony, and Felchner Brooks, and on the most level land in upland areas. Large areas of farmland remain open.

With the decline of agriculture – and the decline of the steam engine and its thirst for fuel wood – came the return of the forest. Forests now cover the vast majority of the total acreage of the town, covering nearly all of the steep hillsides and mountainous land in the Northfield Range and on Turkey Hill and Paine Mountain. Despite all other changes the Town has experienced, the return of the forest may well be the greatest land use change of the past century.

Forest land – whether actively managed for timber production or large tracts of wooded land associated with rural-residential uses – is by far the dominant land use in the community, encompassing nearly 87% of the total land area of the Town.

Agricultural and open land is the second most common land use – in terms of total acreage. Although there currently are no working dairy farms, other commercial agricultural enterprises presently exist in Northfield, including but not limited to vegetable, flower, and sheep, pig, and goat farms. Open land associated with residential uses continues to contribute to the rural character and scenic beauty of many of Northfield’s back roads and rural neighborhoods. This sentiment is apparently shared by many local landowners who are responsible for keeping the land open.

The dominant land use in terms of total parcels is for residential purposes. Much of Northfield’s residential development is concentrated in village neighborhoods – especially in Northfield

Village Center and Northfield Falls (see Chapter 6). In recent years, however, the majority of the new residential development has occurred outside of the traditional centers. Primarily consisting of single-family homes on large lots, most residential development is expected to continue to occur in areas outside of the villages unless additional opportunities for village-scale development, such as in-fill development and redevelopment of village sites, can be facilitated.

Land owners of large parcels are encouraged by the Town of Northfield to enroll their property into the Vermont Department of Taxes current land use value appraisal program. They may also consider working with a land conservation group such as Vermont Land Trust to ensure that the scenic beauty and open land outside of the village centers is preserved into the future.

Subdivision of large parcels of land in areas that are designated as conservation areas by the Town of Northfield should be done in a way to cluster the development and allow for the remaining land to stay open for recreation, wildlife habitat and scenic preservation.

Industrial development encompasses 70 acres, and additional vacant land has been identified for industrial development and is served by municipal facilities. Industrial areas include the Nantanna Mill, Bean Industrial Park, and Freight Yard Industrial Park.

Commercial land uses are largely found in the downtown and north of the downtown in a low-density linear pattern along Route 12 and, to a limited extent, in Northfield Falls and South Village. Educational uses include the Northfield schools and Norwich University campus, while most other governmental and institutional uses are located in the village center. An estimate of current land use, by general category, is contained in Table 11.1, above.

11.3 Current Land Use Regulation

The Town has been actively guiding land use and development in the community for several decades through the use of development regulations. The current zoning regulations are generally designed to reinforce Northfield's historic settlement pattern of an urban core along the Dog River/Route 12 corridor north from the Berlin Town boundary south to the area surrounding intersections of Route 12 and Route 12A, and Route 12 and Route 64. This core area encompasses each of the four historic villages.

Outside of the urban core, land is generally designated for moderate to low-density residential uses and such land-based uses as agriculture, forestry, and outdoor recreation. Two limited commercial areas are also located outside of the urban core, although neither is served by municipal water or sewer. A brief description of current land use districts is provided in Table 10.2.

The Town also does not have well-developed subdivision regulations. As more residential development occurs in the rural districts, more effectively regulating land subdivision could help to achieve the zoning districts' purposes while ensuring the orderly layout of new development and coordinated extension of facilities and roads.

Within the urban core, site development standards could address how new buildings and associated improvements (e.g., lighting, parking, sidewalks) relate with the surrounding area, enhance streetscapes, and contribute to the pedestrian-scale, urban fabric of the community. This is especially important as in-fill development and redevelopment occurs in and around the downtown and along the Route 12 corridor.

Options for improving Northfield's land use and development regulations to achieve the assorted policies of this plan, including those related to economic development, housing, transportation, and the protection of natural and cultural features, are described in the following section.

**Table 11.2
Northfield Land Use Districts**

District	Purpose
Low-Density Residential	Preserve open land for agriculture and forestry, and maintain traditional settlement patterns. Support and regulate agricultural entrepreneurship. Provide more robust protection of source water areas, endangered species habitat, and ridgelines. Additionally limit development in upland areas (elevations of 1,800' and above) characterized by steep slopes, thin soils and poor access, best suited for forestry, agriculture, recreation and low-density residential development.
Medium-Density Residential	reinforce historic residential neighborhoods with an emphasis on single family dwellings.
High-Density Residential	support moderate to high density residential development within and immediately surrounding Northfield's downtown area, where public water and sewer are available to provide the needed infrastructure for many smaller lot sizes, multifamily housing, and neighborhood scale commercial uses that serve the immediate area.
Village Center	Maintain downtown Village Center with special conditions based on historic characteristics that support retail, commercial, and high density residential uses, centered on the village common as a public gathering area. Regulate and maintain downtown walkability and pedestrian access.
Mixed Use	support a full range of mixed commercial and high density residential uses along the route 12 corridor served by town water and sewer, while maintaining the downtown as the prominent commercial area.
Industrial	support mixed commercial and manufacturing uses in appropriate locations, including historic industrial sites and planned industrial parks, with consideration to impacts on adjacent properties
Institutional	Unique land use for developing where diverse uses and multiple structures apply to a parcel or groups of parcels that all support a common institutional mission, such as, universities, schools, municipal uses.

11.4 Future Land Use

Urban Core Growth Center

Northfield's historic settlement pattern of compact villages surrounded by rural countryside has served the community well for nearly 220 years and should continue to support a vital and diverse community. Although concentrating development in village, or "growth," centers is not as

important for economic and transportation purposes as it once was, supporting growth centers is good public policy in that it:

- Is cost-effective by limiting expensive facility extensions into un-served areas,
- Maintains the community's historic character,
- Is an efficient use of land and resources,
- Promotes transportation alternatives, thereby conserving energy and ensuring that all citizens have access to services and employment,
- Promotes economic vitality, and
- Avoids social isolation and fosters a healthy, safe community.

The urban core as presently defined should continue to accommodate a majority of the community's residential growth and nearly all of its commercial and industrial growth. Existing land use regulations could, however, better achieve this objective – and strengthen existing settlement patterns – through the following:

- Development of a Village Center zoning district, to correspond to the designated Village Center. The district should include dimensional and other site design standards that reflect existing patterns. Current setbacks, building coverage and on-site parking requirements discourage a high density of development and likely cause many important buildings that contribute to the character of the downtown to be non-conforming.
- Maintenance of the Industrial District by carefully considering the allowed uses to ensure that adequate space is available for manufacturing and related business and that industrial districts are not dominated by retail uses that could detract from the downtown or existing shopping centers.
- Review of Planned Unit Development (PUD) provisions to ensure that they are practical, provide a reasonable incentive to applicants to seek application, and will allow for attractive, high quality master-planned development in appropriate areas. Consideration should also be given to developing specific PUD standards to address different development contexts (e.g., university campus, industrial park, downtown development).

Rural Character

Land use and development is currently regulated with the intent to maintain the rural character of the countryside that surrounds – and stands in contrast to – the village centers. As the community grows, it is anticipated that much of the pressure for residential development will focus on these areas due to the availability of land, transportation technology that allows access to remote locations (e.g., prevalence of four-wheel drive vehicles), and a desire of many homebuyers for a rural lifestyle. Methods to achieve this goal while accommodating anticipated residential development include:

- Review the effectiveness of the secondary agriculture district. While established to maintain agricultural land, the only significant difference from the rural residential district is density (the rural residential district allows 3 acre lots within ¼ mile of town roads, compared with a 5 acre minimum lot size in the secondary agriculture district).
- Review of the Conservation and Forestry District to determine whether additional standards are needed to achieve the purpose of the district, including standards to address development on steep slopes and associated erosion and runoff.
- Consider (in addition, or as an alternative to, the options described above) the adoption of subdivision regulations to guide emerging settlement patterns in a way that reinforces the objectives of each respective zoning district, and ensures that

development patterns, infrastructure and roads are extended in an orderly, coordinated manner.

- Review industrial and commercial districts and consider whether uses allowed within these districts are best suited for locations within the urban core where municipal sewer and water facilities presently exist.
- Review Planned Unit Development (PUD) provisions and consider whether they adequately address rural residential land use concerns, and whether they could be strengthened to foster clustered residential development which encourages clustering and the preservation of open space.
- Protect the rural character of the town, adjacent property values, and ecological resources, by limiting development above 1800' elevation to residential uses only.

11.5 Land Use Goals, Policies & Tasks

Goal

To maintain historic settlement patterns, while managing development in a manner consistent with the other Goals and Policies of this Plan.

Policies

1. Development will be encouraged, through land use regulations and related policies of this Plan, to locate within the urban core, defined as the land use districts identified in Table 10.2 and depicted on the Land Use Districts Map (which comprises this Plan's future land use map), and to accommodate land uses outside this core in a manner that maintains those areas' natural resources and rural character.

Table 11.2

2. Infrastructure and transportation improvements will be coordinated with land use policies to ensure that growth and development occurs at a rate and scale that does not overburden community facilities or services or undermine the community's historic character.

3. Continue to support the Village Center's role as the cultural, civic, and industrial center for the community.

4. Development in traditional village settings should be designed to reflect the traditional, pedestrian-scale of development, maintain an aesthetic streetscape, and contribute to the historic character and pattern of development.

5. The downtown area's central commercial, civic and cultural community function will be reinforced through a concentrated mix of land uses at high densities and an urban pattern of development.

6. The vitality of Norwich University should be supported in a manner that enhances the attractive campus setting, efficiently uses existing land, and discourages encroachment into nearby residential neighborhoods.

7. The historic heritage of Northfield Falls and neighborhoods in the village center should be maintained while accommodating compatible commercial uses that do not detract from the surrounding residential character.

8. Designated industrial facilities and land should be developed and/or occupied before designating new areas for industrial development.

9. Development in the Conservation and Forestry District should be carefully controlled in order to avoid adverse impacts to water quality from erosion and storm water runoff, and to avoid the fragmentation of wildlife habitat. Consider developing an overlay district to protect ecologically sensitive resources (see Chapter 2, Task 2).

10. Residential development and associated land subdivision in rural districts should ensure that it occurs in a manner that does not result in an undue adverse impact to natural and

cultural resources described in Chapter 2.

11. The clustering of development and preservation of open space associated with residential subdivisions outside of the urban core is strongly encouraged.
12. Land use regulations shall be administered in a fair, efficient, and impartial manner.

Section 11.4

Tasks

1. Undertake a review of the current zoning regulations and consider making revisions outlined in Section 10.4 of this chapter (such revisions are not referenced as a policy of this Plan; they are a guideline for community consideration after Plan adoption). [Planning Commission]
2. Consider regulatory incentives for the provision of affordable housing and the preservation of historic resources, as outlined in Chapters 2 and 5 of this Plan. [Planning Commission]
3. Consider adopting subdivision regulations to better guide settlement patterns and the extension of facilities. [Planning Commission]
4. Monitor development activity and actively represent the Town before state regulatory proceedings (e.g., Act 250) to ensure that determinations of a proposed project's compliance with this plan are accurate and reflect community consensus. [Planning Commission, Selectboard, Staff]
5. Maintain a database of recent development and permit trends on an annual basis. [Staff]
6. Change the development review process from PC/ZBA to PC/DRB [Selectboard]
7. Prohibit all non-residential development, and consider prohibiting all development, above 1800 feet in elevation until the Town establishes clear criteria, standards, and policies for the siting of such development, particularly wind-energy facilities. [Planning Commission]

Chapters 3 and 5

Chapter 12 Implementation

12.1 Overview

Community change is the result of countless individual and collective decisions and actions of citizens, businesses, and public officials. When those decisions and actions are based on a shared vision of the future, a community can achieve that vision. Previous chapters of this plan set forth the planning background, and the goals for each plan element which, taken together, constitute a vision for Northfield's future. Achieving those goals will require the cooperation of many people and public and private agencies, using a variety of mechanisms over the next five, ten and twenty years. This section briefly describes the different tools and programs available to implement the plan.

12.2 Plan Adoption

Adoption by the Northfield Selectboard, pursuant to the procedures established in 24 V.S.A. Chapter 117 §4384 and §4385, is the first step in putting the plan into action. Through adoption, the Selectboard accepts this document as the guide for future physical growth and change in the Town.

12.3 Central Vermont Regional Planning Commission (CVRPC) Approval

Approval by the CVRPC allows for greater regional planning and cooperation among towns in addressing mutual problems and challenges, maintains the Town's eligibility for municipal

planning funds as well as its authority to enact certain programs (e.g., impact fees). Once the plan is approved by the Selectboard, it should be submitted to CVRPC for regional approval.

12.4 Ongoing Planning

Ongoing planning is one of the most important elements of the process of keeping a town plan up to date and relevant. The Planning Commission, Selectboard, and municipal staff should use the plan on an ongoing basis to ensure that its goals and policies are integrated in day-to-day decisions concerning public facilities and services, transportation, land use, and development in the town.

The Planning Commission is responsible for maintaining and amending the plan. As conditions change and new information becomes available, amendments may be needed to keep the plan current. Special studies, public forums to consider specific issues, and regular meetings between local boards are effective ways to sustain an ongoing planning process. The plan automatically expires five years from adoption. Before the Plan expires, it should be thoroughly reviewed, and information on which the plan is based should be updated.

12.5 Municipal Land Use & Development Regulations

This plan should serve as the blueprint and policy guide for future revisions to the Northfield Zoning Regulations. Several suggestions for revisions, or for additional study, were described in various chapters of the plan, most importantly Chapter 10. In addition to consideration of revisions to the current zoning regulations, it is recommended in Chapter 10 that consideration be given to adopting subdivision regulations.

Chapter 11



12.6 Other Municipal Policies & Programs

Local land use regulations are not the only means with which Northfield can implement various sections of this plan. Other ordinances and policies can also serve to carry out policies and strategies described in previous chapters. For example, the municipal sewer allocation policy and local road policies were both identified as important tools to implement various policies of the Plan. Throughout the plan are several specific references to appropriate local implementation policies, as well as guidance to regional organizations and state agencies as to how their programs can best meet local needs and ensure consistency with local policies.

12.7 State Permit Procedures

Presently, any commercial development involving one or more acres of land, and any residential development or subdivision resulting in the creation of 6 or more dwelling units or lots, requires Act 250 approval. If the town did enact subdivision regulations, in addition to having zoning and a town plan in place, then the threshold triggering Act 250 review would increase to 10 acres and 10 dwelling units.

chapters 2-11



The 10 criteria that projects must meet to comply with Act 250 is that the development be in conformance with the town plan. In the case of Northfield, conformance should be determined by whether the proposed development is consistent with specific policies listed at the end of chapters 2-10. If a project is not consistent with a specific policy, it should be determined to be not in conformance with the plan.

Both the Planning Commission and Select Board have party status to participate in all Act 250 review processes. Both bodies should monitor project applications, which are reported to the town by the District 5 Environmental Commission, and participate in those processes whenever appropriate. Other state and federal regulatory processes, for example Section 248 (related to

public energy facilities) and the National Environmental Protection Act (related to federally funded projects) also provide opportunity for local participation and review against the policies set forth in this plan.

12.8 Public Spending

Like most small Vermont towns, Northfield has a limited capacity to raise and spend tax dollars on local government initiatives. Spending decisions are among the most important means with which municipal government can implement the plan. Fortunately, the Town has a history of planning for major expenditures through the annual preparation of a capital improvement plan and program. It is not only fiscally responsible to maintain the capital budgeting process, but it is required for eligibility for state community development programs.

In addition, Northfield has been able to secure assistance for specific projects through public and private grant sources. The development of this plan in 2004 and the public process in 2009, for example, were both funded through the Vermont Municipal Planning Grant Program. The Town has also been successful competing for a variety of VTrans assistance programs. All local boards should keep themselves informed of funding opportunities that further the policies of this plan.

Capital projects and facilities are not the only important consideration related to public spending. A key policy and task of this plan is to expand the local community and economic development capacity through the creation of a position of Community Development Director. The creation of this position will be a good public investment in that a local person and/or entity focused on the promotion of economic development in Northfield will reap many positive benefits, including growth in the local grand list and job base.

12.9 Implementation Tasks

Most of the tools summarized above are described in greater detail elsewhere in the plan. At the end of each preceding chapter, implementation tasks list specific actions that can be undertaken by one or more specified bodies. These form the basis of the Planning Commission's action plan in the coming years, and should be periodically reviewed as a measure of the Commission's success implementing the plan.

APPENDIX

Maps

1. Map 1: Conserved Land and Water Resources, Northfield, VT (ANR)
<https://drive.google.com/file/d/0B5yiMGU40FybVW9SRGdEV2RrNXc/edit?usp=sharing>
2. Map 2: Land Cover (2006), Northfield, VT (ANR)
<https://drive.google.com/file/d/0B5yiMGU40FybaVZRQUNfQUs0OTA/edit?usp=sharing>
3. Map 3: State and Regional Scale Biodiversity Scale Biodiversity Resources, Northfield, VT (Biofinder Tiered Contribution to Biodiversity) (ANR)
<https://drive.google.com/file/d/0B5yiMGU40FybWjN2RkctUIZvaFE/edit?usp=sharing>
4. Map 4: Wildlife Resources at a Town Scale, Northfield, VT (ANR)
<https://drive.google.com/file/d/0B5yiMGU40FybbmtPa0hJTFNWd1U/edit?usp=sharing>
5. Map 5: Fine Scale Wildlife Resources, Northfield, VT (ANR)
<https://drive.google.com/file/d/0B5yiMGU40FybOExiZWRIWDBhWG8/edit?usp=sharing>
6. Map 6: Physical Features, Northfield, VT (ANR)
<https://drive.google.com/file/d/0B5yiMGU40FybM1VEN0N0NzR2OUE/edit?usp=sharing>
7. Northfield Riparian Zoning (CVRPC)
<https://drive.google.com/file/d/0B5yiMGU40FybRFc1WnBlbFVwQ1U/edit?usp=sharing>
8. Town of Northfield: Natural Resources (available at Northfield municipal website)
<https://drive.google.com/file/d/0B5yiMGU40FybM2ZfYWhzTEhLUE0/edit?usp=sharing>

Tables

1. Riparian Setback Guidelines: VT Agency of Natural Resources

Watershed	Valley Slope	Minimum Setback Width	Setback Measured From:
<2 sq. miles	Any	50'	top of bank
> 2 sq. miles	≥2 %	100'	top of bank
> 2 sq. miles	< 2 %	one half meander belt width plus buffer width	meander centerline

From *River Corridor protection Guide*, VT Agency of Natural Resources (2008), at www.vtwaterquality.org/rivers/docs/rv_RiverCorridorProtectionGuide.pdf