Brookfield
Draft Town Plan

Note: For review purposes the following format is being used:

- Clean text = text taken from current plan
- Underlined text = new text
- ~~Strikethrough~~ = deleted text
- Notes are in side margin.
- Line numbers added to aid in editing

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I. Introduction

A. Authorization and Purpose

The Town of Brookfield is authorized to develop a town plan by 24 ~~VSA,~~ V.S.A. Chapter 117. The purpose of this plan is to encourage the appropriate development of the land in Brookfield in a manner that will promote the health, safety, prosperity, comfort, convenience and general welfare of all residents in the town. As conditions change, this plan will be modified to meet new needs ~~and correct inequities~~. The Planning Commission is responsible for revising the Plan a minimum of every five years. Once revised and required public hearings are held, the new Plan is adopted by majority vote of the Selectboard.

The plan attempts to express the intent and desires of the town's residents and is designed to serve as a guide for future growth and development in the town. The plan contains general and philosophical statements on the desired future development and growth of the town and specific policies and directives. ~~The plan is a general and philosophical statement of the desired future growth and development of the town. In the event that it may be inconsistent with or in conflict with more specific bylaws or ordinances of the town, they shall have precedence~~. This Plan should guide the interpretation of the town's bylaws and ordinances. Although the plan may serve as a guide for future public activities or investments, any significant expenditure of town funds will continue to be determined by the voters of the town at meeting assembled.

B. General Philosophy and Objectives

~~The following assumptions underlie the development of this plan:~~

- ~~That the town's population will continue to grow gradually at a pace projected on the table in Section VI.~~
- ~~That continued growth in the number of residential structures will continue as projected in the table in Section VII.~~
- ~~That, unless otherwise guided, development will tend to concentrate in areas that are easily accessible by road and where public utilities are available.~~
- ~~That education and highways will continue to be the major public expenditures.~~

The basic philosophy underlying this plan is that the attainment of the town's planning objectives should be achieved with a minimum of regulation. Any necessary regulation should balance public needs and desires with the rights of property owners and reflect purposes that are ~~should be limited to purposes that are~~ clearly in the public interest. It is also a basic premise underlying this plan that the future growth and development of the town should be guided so that it does not impose undue financial burdens on the taxpayers.

Among the primary objectives of this plan are the following:

1. To promote a safe, healthy, and pleasant ~~pleasant and manageable~~ environment. In doing so, the plan considers the following:

    a. Housing, including affordable housing.
    b. Public health and safety and environmental issues, including water resources, sewage and solid waste disposal.

c. Maintenance of a sustainable, high quality school system.
d. ~~Comprehensive~~ transportation needs.
e. Development of public recreational facilities.
f. Maintenance of an environment conducive to the conduct of home occupations and clean small-scale businesses.

2. To preserve the town's rural character and conserve the town's natural, historic, scenic and cultural resources. In doing so, the plan considers the following:

a. Agricultural and forest lands, wetlands, wildlife habitat and other sensitive natural areas.
b. ~~Plans to assure that~~ future residential, commercial and recreational development ~~is located in appropriate areas.~~
c. ~~Means to encourage effective~~ The effective management of forests and woodlots ~~management~~.
d. ~~The development of an organizational framework for the management and control of existing and future historic sites and areas.~~ Historic sites and areas.
e. ~~Investigating the designation and protection~~ Scenic roads, ridgelines and vistas.

In addition to these broad objectives, the plan enumerates specific goals in some of the succeeding sections.

C. Description of Town

Brookfield was chartered in 1791. It is a predominantly rural and agricultural community of 24,472 acres located in the southwestern corner of Orange County. Over 1,000 acres are publicly owned conservation and recreation lands including: state forests and parks – 825 acres; state fish and wildlife areas – 57 acres; and town forest and town-owned wetlands – 168 acres. The town's topography is quite typical of the area east of the Green Mountains. It ranges from hills up to about 1800 feet elevation on the easterly border of the town through brook valleys slightly below 700 feet elevation, to Bear Hill, the town's highest point, on the west at just over 2100 feet. Ayers Brook and its tributaries and upper Sunny Brook are the major streams in the western part of the town. The Second Branch of the White River drains the eastern valley. Five ponds are designated as state waters because they are over 25 acres in size: Sunset Lake and Baker, Lamson, North and Rood Ponds. In addition to approximately 6 miles of I-89, Brookfield has 17.42 miles of state highway (Routes 12, 14, and 65) and 75.3 miles of town roads: Class II – 19.18 miles, Class III – 38.96 miles, and Class IV – 17.17 miles. A portion of Pond Village is designated a state historic district with smaller historic districts located around the churches in East and West Brookfield.

D. Status of Planning

Planning by an appointed commission began in 1969, and a temporary plan was adopted in 1970. ~~A~~ The first comprehensive town plan was adopted by the Selectmen in 1974. The Plan has been revised every 5 years as required, with the last Plan update being adopted in 2011. ~~The plan was thoroughly reexamined and rewritten in 1992-95 and was adopted by the town on March 29, 1995. The plan was refined and readopted by the selectmen on September 25, 2000. It was again reviewed, refined, and readopted on September 12, 2005.~~

1. Subdivision Regulations were adopted in 1970, and have been amended five times in 1977, 1980, 1999, 2003 and 2005.
2. Interim Zoning was in effect in 1978-80.
3. Flood Hazard Area Zoning was adopted in 1978 and substantially amended in 2006 to allow participation in the national flood insurance program.
4. Shorelands Zoning was adopted in 1980.
5. A Sewage Ordinance was adopted in 1986 and amended in 1991. It is no longer in effect (see ~~Sec. VII.B)~~.
6. The Selectboard has adopted an ordinance regulating parking on town highways during the winter months.
7. In 1990 the Town adopted the Brookfield Development Bylaw and amended it in 1999, 2003, 2005, and 2010.
8. ~~In 2006, the Town obtained approval of Pond Village as a designated village center.~~

II. Demographics

A. Population

Between 1970 and 1980 the town's population grew from 606 to 969, by 1990 the population had risen to 1089 and by 2000 the census recorded a population of 1149. In 2010, when much of Vermont reflected a decline in population growth, Brookfield's population continued to rise.

	2000	2010	% Change
Braintree	1,194	1246	4.4%
Brookfield	1,149	1292	12.4%
Chelsea	1,250	1238	-1.0%
Randolph	4,853	4778	-1.5%
Williamstown	3,225	3389	5.1%
Orange Cty.	28,226	28936	2.5%
Windsor Cty.	57,418	59634	3.9%
Vermont	608,827	625741	2.8%

Figure 1: Population Brookfield and Surrounding Areas, 2000-2010

Population projections assume that conditions that occurred in the past will continue into the future. As such, they can be influenced by externalities that are not predicted for, such as changing economic conditions that result in shifts in national (internal) migration. The nation-wide recession which began in 2008 resulted in a slowing of population growth in Vermont that was counter to

	2010 Population	Scenario A Strong Economy		Scenario B Weak Economy	
		2020	2030	2020	2030
Braintree	1246	1273	1277	1236	1209
Brookfield	1292	1363	1395	1323	1320
Chelsea	1238	1252	1245	1215	1178
Randolph	4778	4745	4666	4606	4413
Williamstown	3389	3575	3658	3472	3463
Orange Cty.	28936	29813	30056	28946	28443
Windsor Cty.	59634	61186	62372	55788	54395
Vermont	625741	653575	670073	628688	620480

Figure 2: Population Projections for Brookfield and Surrounding Towns, 2020-2030
Source: Vermont Agency of Commerce and Community Development

projections. In 2013, the Agency of Commerce and Community Development released new population projections which included two scenarios, one based on a strong economy (Scenario A) and the other based on a weak economy (Scenario B)[1]. With the exception of the neighboring community of Williamstown, Brookfield is the only the town among its neighbors that is projected to see continued population growth in both scenarios.

Like much of Vermont, Brookfield's population of older adults is increasing. When compared to census data from 2000, Brookfield experienced a 25% jump in the number of residents aged 45 and up. While it is likely that during the decade between 2000-2010 few residents moved out of Brookfield, the high increase in age groups 45 and up indicate a steady in-migration of older residents. During this period, Brookfield's median age increased by 15% from 40 to 46.

Figure 3: Brookfield Population by Age Group, 2000 and 2010

For more information on Brookfield's population and demographics, go to:

- **http://www.trorc.org/towns/brookfield/**

[1] For more information: http://dail.vermont.gov/dail-publications/publications-general-reports/vt-population-projections-2010-2030

III. Economic Development

A. Local Economy

Brookfield is not a self-sufficient agricultural community as it was 100 years ago. The advance of the automobiles, technological age of computers, telecommunications and other conveniences has brought Brookfield's once independent community into the regional economy. The majority of its labor force is employed outside of the town, as far south as Lebanon, New Hampshire and to the north in Barre, Montpelier and Waterbury.

In 2010, a plurality of Brookfield's employed residents (32%) reported themselves as being engaged in educational, health care and social assistance service occupations. These types of occupation, by and large, are available outside of the community.

Brookfield contains several farms, local establishments and self-employed businesspersons. According to the Vermont Department of Labor, the number of local establishments in Brookfield declined slightly during the 2008-2010 recession. As of 2013, the number of people employed by local establishments reached a high point (164).

~~Brookfield's commercial uses tend to be very small scale and scattered widely throughout the town.~~ Home occupations are an important component of the non-farm commercial base.

Pond Village is considered by many to be the "town center." Though there is no town green or commercial focal point, this area has a higher population density and the Town Municipal Building, the "Old Town Hall," Town Library, Church, the Floating Bridge and the associated park, Ariel's Restaurant, and Green Trails Inn are located there. The

Type of Occupation	Total
Agriculture, forestry, fishing and hunting, and mining	42
Construction	44
Manufacturing	84
Wholesale trade	16
Retail trade	44
Transportation, warehousing and utilities	6
Information	3
Finance, insurance, real estate, rental and leasing	51
Professional, scientific, management, administrative and waste management services	42
Educational services, health care and social assistance	223
Arts, entertainment, recreation, accommodation and food services	42
Other services, except public administration	57
Public administration	43

Figure 4: Occupations in Brookfield, 2010
Source : US Census, 2010

Local Establishments and Employees		
	Number of Local Establishments	Employed by Local Establishments
2013	27	164
2012	26	151
2011	25	124
2010	23	120
2009	24	117
2008	22	119
2007	24	122
2006	27	131
2005	27	113

Figure 5: Local Establishments & Employees
Source: VT Department of Labor & Industry

town also has three hamlets known as West Brookfield, East Brookfield, and Brookfield Center. ~~A few other sections of town have clusters of houses together, but no formal name.~~

The manufacture and marketing of value added agricultural or forestry products currently exists on a small scale in Brookfield, including craftspeople, farmers who sell products grown or made principally from crops grown or livestock raised on the farm, and the ~~recently formed~~ Floating Bridge Food and Farms Cooperative, which links farms, dining, and lodging.

B. Future Economic Development

It is a policy of ~~the~~ this plan ~~is~~ to maintain and encourage small-scale commercial use and to encourage any proposed commercial development to locate in areas adjacent to existing villages or hamlets. No industrial uses are planned or encouraged. All new commercial uses should be adequately sized, sited and screened so as to be compatible with the residential use found throughout the town.

To encourage continued economic development to locate within Brookfield's villages, it is likely that the town will apply to rejoin the Vermont Village Designation program. Pond Village was previously enrolled in the State's program, which is designed to help revitalize existing villages by offering commercial businesses tax credits for historic preservation and code improvements. The town is also granted priority consideration for several state grant programs.

Village Designation Benefits

The benefits of Village Designation include:

- 10% Historic Tax Credits - Available as an add-on to approved Federal Historic Tax Credit projects. Eligible costs include interior and exterior improvements, code compliance, plumbing and electrical upgrades.
- 25% Facade Improvement Tax Credits - Eligible facade work up to $25,000.
- 50% Code Improvement Tax Credits - Available for up to $50,000 each for elevators and sprinkler systems and $12,000 for lifts. Eligible code work includes ADA modifications, electrical or plumbing up to $25,000.
- Priority Consideration for HUD, CDBG and Municipal Planning Grants
- Priority consideration for Municipal Planning Grants, Transportation Funds and funding from Vermont's Community Development Program.
- Priority Consideration by State Building and General Services (BGS)
- Priority site consideration by the State Building and General Services (BGS) when leasing or constructing buildings.

The rural character of Brookfield's community depends greatly on the continued operation and growth of agriculture and forestry operations. Outside of Brookfield's villages and hamlets, businesses that support the manufacture of value added agricultural and forestry products are encouraged provided that they are at a scale that is consistent with the surrounding area. On-farm diversified agricultural enterprises are also supported by this plan.

C. Goals, Policies and Recommendations

Goal

1. A vibrant rural economy that encourages appropriately scaled small-scale businesses that are compatible with the character of the community.

Policies

1. ~~To maintain~~ Maintain and encourage small scale commercial use. ~~and to encourage~~

2. Encourage any proposed commercial development to locate in areas adjacent to existing villages or hamlets.

3. ~~No industrial uses are planned or encouraged~~ Industrial uses are discouraged.

4. ~~All~~ Size, site and screen new commercial uses ~~should be adequately sized, sited and screened~~ so as to be compatible with the residential use found throughout the town.

5. Maintain the small scale, "in-home" aspect of the ~~T~~town's non-farm commercial base. ~~Discourage~~ Do not site commercial strip development in the ~~T~~town.

Recommendation

1. Encourage the growth and development of diversified agricultural operations and forestry operations that are environmentally sound.

Find selected economic characteristics for Brookfield (US ACS):

- http://www.trorc.org/towns/brookfield/

For more information on the Vermont Village Center Program:

- http://accd.vermont.gov/strong_communities/opportunities/revitalization/village_center

IV. Housing

Type of Unit	1998	2008	2010	2015	1998-2015 Actual Change	1998-2015 % Change	2008-2015 Actual Change	2008-2015 % Change
	Total Units							
Year-Round Residential	354	397	400	426	72	20%	29	7%
Mobile Homes	61	63	62	61	0	0%	-2	-3%
Vacation Residences	159	171	171	150	-9	-6%	-21	-12%
Commercial	12	11	9	8	-4	-33%	-3	-27%
Farms	19	16	17	16	-3	-16%	0	0%
Woodland/Misc.	262	202	200	203	-59	-23%	1	0%

Figure 6: Land Use Change in Brookfield, 1998-2015
Source: Vermont Department of Taxes, Equalized Property Values

A. Background

~~Table 2~~ Figure 6 above reveals a shift in land use over the last 17-years toward more residences. Since 1998~~2~~, the number of year round residences increased by 72~~86~~ or by 20~~7~~%, the number of farms declined by 3~~5~~ or 16~~22~~%, and 59~~63~~ ~~less~~ fewer lots are classified as woodland or other property, a 23~~19~~% decrease. At the present time the town is not heavily subdivided. Many of the 376 lots of ten acres or less in town are undeveloped, so the potential for growth in new houses is clearly present. There has been in the past a demand for seasonal camp lots in the town, and recently some seasonal dwellings have been converted to year-round residences.

Figure 7: Housing Stock in Brookfield, 2010
Source: US Census, 2010

The 2010 Census reported that the bulk of Brookfield's housing stock consisted of single family residences. During the last decade, Brookfield has seen the construction of several large residential structures scattered around town. Because of their size, and in some cases height, these structures can be prominent and potentially inconsistent with the existing character of the areas in which they are located. A specific policy of the plan is that the siting of large residential structures use vegetation and existing topography to reduce the intrusiveness of the homes and that new development in town is not unduly inconsistent with the historic and rural character of the town.

Rental housing represents a small portion of Brookfield's housing stock, and much of it is rented. In 2010, only one percent of the community's total housing stock was available to rent.

~~Also, changes in state regulation may permit development on lands that were previously unsuitable for conventional septic system waste disposal. The state has assumed jurisdiction over the subdivision of all lots in the state regardless of size and the regulation of potable water supply and wastewater system installation on those lots, and amended its regulations to allow more types of wastewater systems potentially to be installed.~~

The intent of this plan is to maintain the current mix of low density housing and viable farms and woodland along existing Class 2 and 3 roads outside the town centers and higher density development within the villages and their immediate periphery. Another intent is to maintain ~~the~~ a mix of permanent and seasonal residences ~~and homes~~ that provide a high quality life style for all residents and nonresidents, while minimizing the cost of services ~~for those residents~~. The clustering of homes to protect open space and to mimic the natural hamlet development of the town is also encouraged.

B. Housing Affordability

The American Community Survey reports that the median household income in Brookfield ($61,641) is higher than in Orange County ($52,407) and Vermont ($53,422). Median monthly costs for homeowners with a mortgage were approximately $1311 or just over 20% of Brookfield's yearly household income, which would indicate that housing in Brookfield is generally affordable.

However, in its 2013 Study "Housing Needs in East Central Vermont," the Vermont Housing Conservation Board estimated that 37.7% of households were spending more than 30% of their income for housing (mortgage and other costs), while 13.4% were spending greater than 50% of their income. The number of residents paying more than 30% or 50% of their income in Brookfield is noticeably higher than Orange County. A household that spends more than 30% of their income for monthly housing expenses is considered "cost burdened," according to standards set by the US Department of Housing and Urban Development. Of the 354 Brookfield families for whom poverty status was determined, 28 (nearly 8%) were below the poverty level.

It is important to ensure the availability of affordable housing, including single-family, rental and multi-family, for residents whose incomes do not meet the median household income. The most appropriate location for higher density multi-unit housing is within or adjacent to Brookfield's villages, including East Brookfield and Pond Village. Any such developments would require adequate land for wastewater treatment and would need to be designed so as to enhance the historic character of the area. In other areas of town multi-family housing development should be encouraged only if the development employs clustering and does not have an undue impact on municipal services or the character of the surrounding area.

The town further encourages affordable housing through the ~~recommended~~ bylaw zoning districts that implement this plan, accessory dwelling units as defined in the development bylaw, and the various land trust mechanisms that are available to create lower cost single family homes. This encouragement is and should continue to be reflected in the bylaws in other ways, including allowing: (1) as conditional uses, multifamily dwellings in the village districts and planned residential development in the agricultural/residential district; (2) as permitted uses in these districts, double family dwellings; and (3) in the agricultural/residential district, manufactured housing anywhere that residential dwellings are permitted.

C. Childcare

An inventory of registered childcare facilities reveals that Brookfield has a very limited amount of childcare available to the community. The State of Vermont has two classifications of regulated childcare:

- Registered Family Child Care Home: A child care program approved only in the provider's residence, which is limited to a small number of children based on specific criteria.

- Licensed Program: A child care program providing care to children in any approved location. The number and ages of children served are based on available approved space and staffing qualifications, as well as play and learning equipment. A Licensed program must be inspected by the Department of Labor and Industry's Fire Safety Inspectors and must obtain a Water and Wastewater Disposal Permit from the Agency of Environmental Conservation. A Licensed program is considered a public building under Vermont Law. Types of licensed programs include: early childhood programs, school-age care, family homes and non-recurring care programs.

	Registered	Licensed
Brookfield	**2**	**0**
Braintree	2	0
Chelsea	1	2
Northfield	0	1
Randolph	4	5
Roxbury	2	1
Williamstown	5	2

Figure 8: Source - Vermont Bright Futures

There are currently only two registered childcare services in Brookfield. Most residents currently arrange for care with relatives, or take their children to childcare facilities beyond the borders of Brookfield to neighboring towns like Randolph or to areas near where they work, such as Montpelier or Lebanon, NH.

D. Goals, Policies and Recommendations

Goals

1. A mix of low-density permanent and seasonal homes, viable farms and woodland that maintains the community's traditional rural character.

Policies

1. ~~the siting of~~ Large residential structures should use vegetation and existing topography to reduce ~~the~~ intrusiveness ~~of the homes~~ and ensure that new development in town is not unduly inconsistent with the historic and rural character of the town.

2. Multi-family housing units are encouraged within or adjacent to Pond Village, East Brookfield and possibly Brookfield Center. In other areas of town, multi-family housing units are only encouraged if they do not pose an undue impact on water quality, municipal services or the character of the area in which they are located.

Recommendations

1. The town should consider the implementation of zoning districts or other bylaw amendments that would allow for continued growth but would encourage the clustering of homes in and around "town centers" and protect open space in outlying districts. These could permit smaller lot sizes in zones around "town centers" and larger lot sizes in outlying districts.

2. The town should identify potential locations for multi-family affordable housing and consider potential ways the community could support its development.

V. Education

A. Background

Children in grades K-6 attend the Brookfield Elementary School, which is located on the Ridge Road in Brookfield. Students in grades 7-12 are transported to the Randolph Union High School and the Area Vocational Center in Randolph.

The three members of the Brookfield Elementary School Board are elected at the annual school district meeting – traditionally held at the time of the March town meeting – at which time the voters act on the school budget for the next fiscal year. Brookfield voters elect one of five members of the Randolph Union High School Board. At the annual meeting of the school district, voters elect the moderator, secretary, treasurer, and three auditors, and adopt the budget for the next fiscal year.

B. Brookfield School

The Brookfield Elementary School for grades K-6 was built in 1967 and enlarged in 1979. In recent years, the School has made various physical improvements, including paving the parking lot, adding a new foyer and doors, exterior and interior painting, new cafeteria tables and walls, and several safety and energy efficiency improvements. From a curricular perspective, Brookfield has been engaged in a three-year K through 6 Literacy improvement project with the University of Vermont (the Bridging Project). In addition, the School Board has continued to invest in technology improvements. The School Club has worked with community members to refurbish the school's playground. To date, new basketball and volleyball courts have been installed and there are plans to replace the play structure. As of this plan, the school is in adequate condition and there are no major investments in the building planned.

Year	Enrollment
2013-2014	58
2012-2013	76
2011-2012	78
2010-2011	80
2009-2010	84
2008-2009	92
2007-2008	90
2006-2007	98
2005-2006	108
2004-2005	106
2003-2004	110

Figure 9: Brookfield School Enrollment (Source: VT Dept of Education)

C. Enrollment

Brookfield students continue to perform well academically and receive a high quality education. However, the long-term sustainability of the Brookfield school is in question. The school has had a steady pattern of declining enrollments between 2004-2014. In the 2013-2014 school year, only 58 students attended the elementary school, 47% fewer students than in 2003-2004.

In response to the drop in student enrollment, the school has continued to reduce costs through adjustments in expenditures and staffing. The 2015 School Report recognized that:

> *One of our most significant challenges as we move into the future is the continued decline in student enrollment. Across Vermont, many small towns such as ours are wrestling with this issue and the resulting impact on taxpayers. It is our responsibility as administrators to respond by adjusting our school budget appropriately to our student numbers while continuing to maintain the quality of education our students deserve*.

In FY 2013, the total school budget was $1,349,879. In 2015, the budget decreased by roughly 8% to $1,243,285. ~~As a result, Brookfield School budgets have decreased steadily during the same period. Specifically, in 2004-2005, the school budget was $1,471,586, while in 2010-2011 the school budget was $1,359,833, or 7.6 percent less. Taking inflation into account, the decrease represents just over a 22 percent decrease for the same period.~~

Despite the approach taken by the Brookfield School, an aging building, increasing diversity in the needs and interests of students and their families, and higher expectations for public education are all contributing to larger conversations about how Brookfield can best educate its children while managing the costs associated with education. Tension remains regarding the cost of education, leading Brookfield's citizens to consider the long-range sustainability of its elementary school.

An extensive process of public discussion and outreach should precede any decision to close down the school and should only be considered if the school is no longer sustainable. Options include consolidation, sustaining the school, closing the school and privatization.

D. Adult Education

Brookfield has a fairly limited amount of adult education opportunities. Most adults take advantage of the opportunities that are available in Randolph as an alternative. These include:

- Vermont Technical College (VTC) - Vermont Technical College is located in Randolph Center. VTC is part of the Vermont State College system and offers full and part time educational opportunities that range from computer technology, to agriculture, to health services. Attendees may choose a two-year program that leads to an Associate's Degree, a four-year program that leads to a Bachelor's Degree, or the college's one-year program that leads to a Practical Nursing certificate.

- Randolph Technical Career Center (RTCC) – Located in Randolph village, the RTCC is part of Randolph Union High School. RTCC offers adult education courses that range from the traditional tech center focuses of mechanical and woodworking, to computer technology, small business management, bookkeeping, as well as arts, crafts, and languages. RTCC's adult education classes are open to all for a fee.

- The Brookfield Free Public Library – The Library offers a number of free services to library card holders, including access to the Internet and online learning.

Other, more extensive, opportunities are available in Montpelier and the Upper Valley as well. ~~Vocational training opportunities for Brookfield residents exist at the Randolph Area Vocational Center and the Vermont Technical College in Randolph.~~

Goals

1. To provide a safe and secure learning environment where quality educational opportunities are provided to all students.

2. To enable the best opportunity to educate our students in a manner that is financially sustainable to the community.

Policies

1. Land development that is likely to result in large numbers of school children needs to be phased to avoid placing an undue burden on the capacity of the town to provide educational services.

VI. Utilities, Facilities and Services

The provision of services and maintenance of facilities is one of the key roles of any municipal government. The cost of services and public facility maintenance can represent a substantial amount of a municipality's yearly budget (not including transportation, which is generally the largest portion).

A. Capital Budgeting and Planning

State statutes enable communities to create a Capital Budget and Program (CP&B) for the purposes of planning and investing in long-range capital planning.

When planning for routine major facilities investments, such as roof replacements, foundation repairs, etc., it is important to also consider making energy efficiency improvements at the same time. The cost to replace or renovate a community facility will only be slightly higher if energy efficiency improvements are done at the same time, rather than on their own.

At present, the town of Brookfield has not adopted a formal Capital Budget and Program (as described in §4443) to help guide investments in community infrastructure and equipment because the community has such limited infrastructure. However, the Selectboard is involved in long-range capital budgeting.

Municipal Building

The Brookfield Municipal Building is located in Pond Village. It houses the office of the Town Clerk, vital records including the town vault and the Brookfield Free Public Library. The building is in good condition and is meeting the needs of the Town Clerk and the Library. Over the past five years, the town has focused much of the work done on the building toward recommendations provided as part of a

comprehensive energy audit. Improvements include replacing the heating system, air sealing doors and some insulation. Additional insulation work needs to be done to complete the process of improving energy efficiency throughout the Municipal Building.

Brookfield Town Garage

The Brookfield Town Garage is a two-bay garage facility located on Route 65. Built in 1975, the structure is reasonably modern. In 2014, energy efficiency improvements were made to the garage's lighting. Space in the building is a challenge. The interior includes a small office where records are kept and a bathroom, the remainder of available space is the garage area where the town keeps three road vehicles as well as the multitude of tools, fuel and other materials. OSHA requirements regarding the storage of materials are increasing the need for additional space. In the long-term, the community may need to consider adding to the building or building a new Town Garage in another location.

B. Other Buildings

Old Town Hall

The Old Town hall was built in 1852. Due to age and deterioration, the building sat unused for roughly 50 years until in 2004 the building was purchased by the non-profit Brookfield Community Partnership with the goal of rehabilitating it for use as a community center. Starting in 2005, major structural renovations were made to the building, including bathrooms, kitchen, etc. The Old Town Hall ~~has begun to function~~ functions as a community center at which residents can informally gather~~, though much work on the building needs to be done~~. It currently offers community events and programs and is available for rental by community members.

Brookfield Free Public Library

The Brookfield Free Public Library is the oldest continually operating library in Vermont. The collection of the library contains 4,625 volumes. The library circulates 3,010 items per year. In addition to paper and digital media, the library offers access to online genealogy research databases, online internet media archives and online classes. The library shares space with the Brookfield Town Office. The Library has been located there since the building was given to the community in 1938.

West Brookfield Meeting House

The West Brookfield Meeting House was built in 1839. The building was purchased in 2011 by the nonprofit West Brookfield Village Trust. Since 2011, many renovations have been made including a new roof, restoring the balcony, stabilizing the carriage shed and painting. The Trust depends on grants and donations to continue renovating the property. The Meeting House is available to use for community events.

C. Services

Solid Waste

Solid waste in Brookfield is managed as part of the Mountain Alliance which includes the towns of Brookfield, Braintree, Northfield and Randolph under an Intermunicipal Agreement. The four communities utilize transfer stations in Northfield and Randolph for self-hauling of trash, recycling, special wastes and household hazardous wastes (the latter during planned semi-annual events). Additionally, all municipal solid waste and recyclables collected by private haulers conducting curbside pickups in each town are brought to the Northfield and Randolph transfer stations. Recycling is accepted free of charge at the Transfer Station. Brookfield does not manage curb-side pickup of trash or recycling. Brookfield encourages all residents and businesses to reduce their wastes through source reduction, reuse and recycling. Trash burning and dumping are banned under state law. The town seeks to enforce these laws and its local zoning ordinances to reduce unpermitted waste disposal.

Sewer and Water

Brookfield has no municipal water or sewage facilities, but studies should be made as to how those needs will be addressed in the future for the Pond Village area. In the event that Brookfield seeks to support higher density residential within Pond Village, shared water and sewage systems might be necessary, whether privately or publicly owned. Buildings outside of the hamlets are widely spaced and have private water and wastewater systems.

D. Recreation

There are over 1,030 acres of publicly owned land in Brookfield, of which 862 acres is owned by the state – Allis State Park, Ainsworth State Park, Baker Pond, and the Rood Pond access area. The town maintains a 170-acre town forest on East Hill, a small park next to the Floating Bridge on Sunset Lake, and owns the 7-acre Sunset Brook Natural Area, a wetland off Route 65. All of this land is accessible for recreational use such as hiking, snowshoeing, and cross-country skiing. Some of the land includes trails for horseback riding and snowmobiles, and the land is open to hunting in season. Camping is available in the summer in Allis State Park.

The town owns a very small “park” for swimming on Sunset Lake, but the intensive use the lake gets for swimming and fishing results primarily from the Floating Bridge crossing the lake. This area receives the most intensive public use in the town from both residents and non-residents, and yet no formal steps have been taken to accommodate or support such use.

Most of the recreational use in Brookfield is on private land. Recreation activities in Brookfield include ~~a byproduct of other land use~~, hiking, snowshoeing, cross-country skiing, and hunting on private land. The informal private network of trails for skiing, hiking, mountain biking and horseback riding probably totals over 50 miles. In addition, all town highways, particularly Class 3 and 4, totaling 60 miles, are used for horseback riding, biking, jogging, hiking, and hunting. So far, a substantial amount of land in Brookfield remains unposted but there has been an increase in recent years in the number of acres posted by private landowners. Several miles of trails in Brookfield are marked and maintained by the Vermont Association of Snow Travelers (VAST) and available for use in the winter by snowmobilers. The town should

consider developing a policy concerning the use of all-terrain vehicles in town taking into consideration other non-motorized uses.

The most important recreation objective is to encourage the informal recreational use provided by private landowners. This use accommodates a large number of people and is an important component of the quality of life in Brookfield. In addition, the town should encourage the creation of public rights-of-way for trail use and make sure that Class 4 roads remain open to public access. If an opportunity to purchase suitable land on Sunset Lake arises, the town should seriously consider it to better accommodate the swimming, fishing, and kayaking that takes place at the lake.

E. Goals, Policies and Recommendations

Goals

1. To plan for, finance, and provide an efficient system of municipal and recreational facilities and services to meet future needs of the citizens and visitors of Brookfield.
2. To provide high quality broadband access for every address in town.
3. That Brookfield residents have access to public and private recreation throughout Brookfield

Policies

1. To provide residents with safe, effective, responsive and affordable municipal infrastructure, facilities and services consistent with other town goals and whenever possible, to encourage and work with other public and private utility or service providers to do the same.

2. Growth and development should not exceed the capacities of local facilities and services.

3. Infrastructure expansion should take place with a minimum impact on the aesthetic quality of the community. Utility lines should be buried wherever feasible.

4. Support continued access to public and private recreation throughout Brookfield.

Recommendations

1. The Selectboard, with assistance from the Planning Commission, should consider the development of a capital budget and program for building maintenance, highways, equipment and fire protection.

2. Continue to support the renovation of the historic Old Town Hall in Pond Village into a community facility that provides a mix of uses~~, including large meeting space with kitchen, stage, smaller meeting rooms or studios, and possibly small offices~~.

3. The Selectboard should continue to support efforts to increase the availability of cable and fiber internet in Brookfield.

4. The town should consider developing a policy concerning the use of all-terrain vehicles in town.

VII. Communications

A. Introduction

This communications plan:

- identifies the current providers of telecommunications and television service to Brookfield;
- discusses the technologies available for telecommunications and constraints posed by Brookfield's topography;
- summarizes current telecommunications regulation; and
- presents goals, policies, and recommendations.

B. Service Provision

Wireline Voice and Data

Fairpoint Communications is the incumbent provider of landline voice communication services in Brookfield. It has lines throughout the town. Residents may choose competing local and long distance providers.

Fairpoint offers digital subscriber line (DSL) service that provides internet access to many residents of Brookfield. However, DSL is not available to all Brookfield residents because of their distance from the switching station. An opportunity currently exists for Fairpoint to expand its DSL service in Brookfield through the Connect America Fund administered by the Federal Communications Commission.

In contrast, Brookfield has little cable access. Comcast lines reach a limited number of residences in town.

Brookfield is a member of the 24-town East Central Vermont Fiber-Optic Network as ECFiber, which is a consortium of 24 towns in East-Central Vermont that have joined together to build a community-owned fiberoptic network to deliver high-speed Internet service. ECFiber offers symmetrical internet access (same upload as download,) and a choice of five speeds that do not vary by time of day or according to the weather. It also offers telephone service. As of this plan, ECFiber services are not available to Brookfield residents. ECFiber currently is constructing lines that will serve residents in the Kibbee Road neighborhood near North Randolph and in a portion of West Brookfield.

Brookfield recently joined the East Central Vermont Telecommunications District, which is made up of the same towns participating in ECFiber. Participating towns formed this district under a law passed in the 2015 Vermont legislative session that allows municipalities to form communications union districts

for the delivery of communications services and the operation of a communications plant. The district is similar to school and solid waste districts in that it is a recognized legal entity for delivering communications services with a governing body composed of representatives of the participating municipalities. However, the district cannot accept funds generated by a member municipality's taxing or assessment authority and has no such authority of its own, and its obligations are payable solely out of its own funds. Proponents of the District argue that its formation will enhance ECFiber's ability to attract larger amounts of capital than it has previously been able to attract.

If and when the revenues of ECFiber exceed its costs, the excess amount will be prorated to the member towns based on the number of customers in town served by ECFiber. Such excess revenue could be applied to reduce property taxes.

Wireless Voice and Data

Verizon Wireless and AT&T provide wireless voice and data communications that reach locations in Brookfield depending on the accessibility of the locations from existing telecommunications facilities built near I-89. In some locations in town, this coverage is good, in others moderate or weak, and in still others nonexistent. In some locations, coverage includes 4G LTE service. Both Verizon Wireless and AT&T have proposed installing new wireless telecommunication facilities in Brookfield that primarily would provide more voice and data service to I-89 and limited additional service to Brookfield itself.

Wireless voice and data is also available from T-Mobile in some locations. T-mobile was the original permittee for the one existing telecommunications facility constructed in Brookfield, on Ridge Road, and that facility now attaches antennae for both T-mobile and AT&T.

The Wireless Open World (WOW) project implemented by the Vermont Telephone Company (VTel) includes making wireless broadband available to Brookfield. As of this plan, Brookfield is listed on the VTel wireless as a location for which service is available.

Satellite Internet providers currently serving Brookfield include Hughesnet and Exede (formerly Wildblue).

Television

Satellite television is available throughout Brookfield. Broadcast television service is available but limited. Cable television is available only to a small number of residents.

C. Available Technologies and Topographic Issues

An assessment of current technologies indicates that wireline technologies will provide the highest quality communication services to Brookfield. Favoring wireline technology is consistent with the goal of the State of Vermont under 30 V.S.A. § 202c(b)(10) for universal availability of broadband of at least 100 Mbps in both directions by 2024. The 2014 State Telecommunications Plan states that currently only fiber technology is capable of meeting this goal.

Below is a discussion of technologies that cites advertised speeds by providers. According to the Federal Communications Commission, in 2014 wireline providers averaged 101 percent of advertised speeds nationally, with results varying by technology. Service delivery of most wireline and wireless providers is often asymmetrical, that is, download speeds are faster than upload speeds.

- According to the FCC, fiberoptic cable transmits data at speeds that significantly exceed current DSL or cable modem speeds, typically by tens or even hundreds of Mbps. For example, at this time ECFiber's highest Internet service offering is 400 megabits per second (Mbps), with basic service at seven Mbps. These speeds are symmetrical. Fiber-optic cables can be long-lasting and, as higher data rates are needed, the provider can replace electronic devices at the end of each fiber to accommodate the faster speeds.

- Cable modem service enables cable operators to provide broadband using the same coaxial cables that deliver pictures and sound to television sets. Most cable modems are external devices that have two connections: one to the cable wall outlet, the other to a computer. Comcast offers cable modem service options ranging from download speeds of three to 150 Mbps, with its higher speeds only available in some areas that it serves.

- DSL transmits data over copper telephone lines already installed to homes and businesses if they are close enough to the relevant telephone company facility. Fairpoint offers residential DSL service options at download speeds ranging from four to 30 Mbps.

- Wireless cellular technology transmits data over a portion of the radio wave spectrum and requires the construction of towers and antennae. Verizon Wireless states that its 4G LTE service provides download speeds between 5 and 12 Mbps and upload speeds between 2 and 5 Mbps. Actual user experience is significantly affected by topography, vegetation, proximity to a tower, and human-made structures that may affect the quality of the signal.

- Satellite access is generally provided either through low earth orbit satellites or geostationary satellites. Signals from these satellites allow a user with a dish to have an Internet connection. Hughesnet offers service options ranging from five to 15 Mbps download and one to two Mbps upload speeds. The quality of the signal is affected by the clarity of the sky and speeds can be significantly reduced during storms.

- Small cell technology can expand the availability of voice and data services provided by either a wireline or wireless network. Small transmitters and receivers with a range of approximately half a square mile can be mounted on utility poles or buildings. Small cells have been installed in other parts of Vermont, including elsewhere in Orange County.

Brookfield's topography presents significant challenges for wireless communications. Because the town already hosts a widespread utility line network and associated rights-of-way, it is better suited for deployment of wireline communications technology augmented by small cells. The vertical nature of Brookfield, with its ridges and valleys, limits the reach of wireless cell towers and encourages either proliferation of those towers or great height, which have a significant effect on the scenic character of this rural town that contains few structures above tree line.

D. Current Telecommunications Regulations

The Town of Brookfield currently regulates wireless telecommunication facilities through a bylaw adopted by the voters at town meeting in 1999. The bylaw states a purpose to protect the scenic qualities of Brookfield's natural environment and to guide development that may have adverse health, safety or visual impacts. It requires conditional use review of proposed facilities. Among other provisions, the bylaw requires that the height of the facility shall not exceed 10 feet above the average height of the tree line on land immediately adjoining the proposed site and removal of abandoned or unused towers. Since adoption, the town has received three applications under this bylaw. One facility on Ridge Road was approved and constructed. Another proposed tower on West Street was approved but not constructed because the applicant filed for bankruptcy. The applicant for the third facility withdrew because it did not have permission of all persons with an interest in the underlying land.

Telecommunications facilities may also require a land use permit under Act 250 (10 V.S.A. chapter 151). Specifically, Act 250 requires a permit to build a support structure that is primarily for communication or broadcast purposes and that extends 50 feet, or more, in height above ground level or 20 feet, or more, above the highest point of an attached existing structure. In 2009, the Act 250 program approved the Ridge Road telecommunications facility, deciding that the Brookfield telecommunications bylaw, including its height restriction, constitutes a clear, written community standard intended to preserve aesthetics and scenic beauty.

A certificate of public good (CPG) may be obtained from the Vermont Public Service Board (PSB) prior to construction or installation of telecommunications facilities under Vermont law (30 V.S.A. § 248a or "Section 248a"). This process was created as an option. Telecommunications facilities approved under the Section 248a option are exempt from Act 250 land use law and local bylaws. Under current law, the option expires July 1, 2017. Before issuing a CPG, the PSB must find that the facility will promote the general good of the state. The PSB is required to give "substantial deference" to the applicable local land use plan and the recommendations of the municipal legislative body and municipal and regional planning commissions, and "due consideration" to most but not all of the environmental and land use criteria found in Act 250.

E. Goals, Policies, and Recommendations

Goal

1. To secure for Brookfield high quality voice and data communications through technologies appropriate to the town's scenic and rural character and encourage the deployment of these technologies in areas of the town that are not served.

Policies

1. Deliver communications services primarily through wireline rather than wireless technologies because of wireline's potential for higher data transmission, a topography that limits the reach of

wireless towers, and the reduced impact of wireline installation on the scenic and rural character of the town in comparison to wireless towers.

2. Encourage the deployment in Brookfield of fiberoptic cable for communications services.

3. Encourage the expansion in Brookfield of cable modem and DSL.

4. Use small cells on utility poles and existing structures to expand the reach of communications networks and provide mobile communications service.

5. Minimize the impact of wireless telecommunications facilities on the town's scenic and rural character. The following policies support the town's regulation of these facilities and, for purposes of Act 250 and Section 248a, constitute specific policies and recommendations of the Selectboard and the Planning Commission. Policies 5a through 5i are intended to conserve the scenic, rural, and natural qualities of Brookfield and as written community standards to preserve Brookfield's aesthetics and scenic beauty:

   a. The height of a wireless telecommunication facility shall not exceed ten feet above the average height of the tree line on land immediately adjoining the proposed site.

   b. Install telecommunications antennae on existing structures such as grain siloes, church steeples, and barns, and on existing telecommunications facilities that comply with policy 5a, above.

   c. To the extent practical with respect to height, color and size, the facility shall be compatible with the existing natural and human-made characteristics of the site.

   d. Existing on-site vegetation shall be preserved to the extent possible or improved, and disturbance of the existing topography outside the physical facility shall be minimized, unless the disturbance would result in a lesser visual impact to the facility on the surrounding area.

   e. No lighting shall be allowed on a tower except as required by FAA regulations. Lighting on the tower, if required, shall be shielded so as not to be visible by a person on ground level anywhere within a 300-foot radius of the tower.

   f. Materials utilized for the exterior of any structures shall be of a kind and positioned on structures so as to minimize visibility of the structure in daylight.

   g. All aspects of the proposed facility, including access roads and utility lines, shall be located and designed to mitigate its visual and natural resource impacts.

   h. The owner of the facility shall post a bond adequate to cover dismantling and removal of the facility and associated improvements and site restoration.

   i. The facility shall comply with the policies found in other sections of this Plan that address visual, scenic, aesthetic, or rural qualities of Brookfield or the protection of natural resources.

   j. Construction of the facility shall be completed within two years of when approval is issued or, if additional time is needed to secure other necessary permissions to construct, of when construction commences. The purpose of this policy is to ensure that, if Brookfield is going to host a facility and experience its impact on the town's scenic character, Brookfield receives such benefits as the facility will provide at the earliest possible date.

Recommendations for Town Action

1. The town should support the East Central Vermont Telecommunications District and the expansion of ECFiber in Brookfield.

2. The town should investigate the opportunities and requirements concerning cable line extensions.

3. The town should investigate the opportunities, such as the Connect America Fund, for expansion of DSL in Brookfield and advocate that Fairpoint or another appropriate provider take advantage of those opportunities.

4. Municipal officials should participate in the Public Service Board's review of new and expanded telecommunications facilities in support of the goals and policies of this plan. If the PSB receives an application for a wireless telecommunications facility that does not comply with one or more of the specific policies stated above, the town should advocate for compliance with those policies. If the application proposes a facility that does not comply with the town's policy on the height of telecommunications facilities, the town also should make the alternative recommendation that in no event should the PSB approve a telecommunications facility at a height that exceeds that policy without:

   - A transparent and clear weighing of the specific benefits to be gained by such a facility against its impact on the scenic beauty and rural character of Brookfield.
   - An investigation by the PSB into the long-term plans of all wireless communications providers for delivery of service from locations in Brookfield leading to an order that ensures the siting of the fewest possible facilities by those providers exceeding the height requirement.

VIII. Health/Emergency Services

A. Health Care Facilities

Health care facilities are essential in the prevention, treatment, and management of illness, and in the preservation of mental and physical well-being through the services that they offer. Rural locations such as Brookfield are served by small facilities that can assist residents with general health care needs but are not suited for more complex acute care services that require specialized services and equipment.

There are no small-scale health clinics located in Brookfield, but residents may utilize services offered at Gifford Family Health Care in Randolph. Gifford Medical Center offers a wide range of services to serve most medical needs. There are also community hospitals in Berlin (CVMC), VA Medical Center in White River and Dartmouth Hitchcock Medical Center in Lebanon, NH. Gifford Medical Center is developing an assisted living facility in nearby Randolph Center.

B. Fire Protection Services

Primary fire protection is provided by the volunteer fire company based in East Brookfield and by the

Randolph Fire Department for West Brookfield. The Brookfield Fire Department (BFD) shares communications with the Town of Randolph, but a new hi-band frequency has been acquired by the town for the purpose of enabling communication between the BFD and the Road Crew, an essential need in the event of a severe weather event. The Brookfield Fire Department is operated exclusively by volunteers. While coverage is adequate there is always a need for additional volunteers to serve as firefighters, to help raise money, and to help care for the equipment. It can be challenging to find volunteers because a majority of Brookfield's employed work outside of the community, and because of the added challenge of the many State and Federal requirements for training.

Brookfield Fire Station

The Brookfield Fire Station, which is owned by the fire district, is located on Firehouse Lane. The building is in generally good shape. Over the past several years it has had exterior renovations including vinyl siding and replacement doors. It is anticipated that in FY 16 the heating system will be replaced.

C. Police Protection Services

Appointed constables provide limited police security, animal control and traffic control services when needed. Additional police services are provided through agreements with the Orange County Sheriff. The Town of Brookfield does not require a full time police force, but has recently voted to expand police coverage.

D. Emergency Medical Services

Emergency medical services in Brookfield are provided by White River Valley Ambulance, Inc. (WRVA). WRVA is a not-for-profit emergency ambulance and rescue service composed of paid full-time, part-time and volunteer staff. Emergency medical service is provided to a geographical area encompassing 280 square miles and approximately 10,000 residents. In addition to Brookfield, WRVA covers Barnard, Braintree, Bethel, Granville, East Granville, Randolph, Rochester and Stockbridge. WRVA is paid for its services through taxes which are assessed on a per capita basis. It should be noted that those who use the ambulance will be charged on an individual basis in addition to the fees paid by the town.

Response times for EMS have been a concern in parts of Brookfield due to topography and the road network. In 2014, WRVA agreed to work with neighboring communities via mutual aid agreements to improve response time. Results of this effort will be studied and if response times are not improved, it is likely that the community will split coverage between WRVA and Barre's EMS.

E. Emergency Management Planning

The impact of expected, but unpredictable natural and human-caused events to the region can be reduced through proper emergency management. Emergency management is generally broken down into four areas: preparedness, response, recovery and mitigation.

- Preparedness includes emergency personnel acquiring suitable equipment, and conducting training and exercises. Preparedness is also a responsibility of residents, business and government. Simple preparedness measures, like having disaster supplies on hand, installing smoke detectors and generators, having emergency fuel for generators and vehicles and knowing basic first aid will all help to lessen the impact of a disaster. Preparing emergency plans is also a preparedness activity.

- Response is the initial emergency response to save life and property during and immediately after the disaster, and is initiated by local emergency crews and then followed up by outside forces if necessary. Response operations are greatly enhanced by proper preparedness. Most emergencies of any scale will require towns to work together, and often to work with state or federal agencies. Practicing with all of these partners before an actual emergency is critical to smooth emergency operations.

- Recovery is the more long-term process of putting life back to normal, and includes many state and federal agencies, especially the Federal Emergency Management Agency (FEMA) in large disasters. As events like Tropical Storm Irene showed, recovery can take a long time and is hindered if a disaster is severe or widespread.

- Hazard mitigation means any sustained action that reduces or eliminates long-term risk to people and property from natural or human-caused hazards and their effects. Mitigation planning begins with an assessment of likely hazards, and then targets activities to reduce the effects of these hazards. Given that the largest threat in Vermont is flood related, good mitigation measures include proper road and drainage construction, as well as limiting development in flood prone areas.

Local Emergency Operations and Hazard Mitigation Plans

Brookfield, like every town in Vermont, maintains a Local Emergency Operations Plan (LEOP). The LEOP covers the procedures for Brookfield's response to a disaster. In the event of a disaster, the Selectboard will formally declare a state of emergency if the Board feels it exceeds the town's emergency management capacity. This declaration will be faxed to Vermont Emergency Management and a local emergency operation center will be set up in the Town Office and/or Brookfield Fire Station. The Selectboard Chair acts as the town's Emergency Management Coordinator and would be assisted by several people who have been identified in the LEOP in coordinating the town's response to a disaster. The Selectboard should continue to keep the LEOP up-to-date and ensure that all parts of municipal government that are active during a hazard event are aware of what is in it. This includes the Selectboard, Fire and Rescue, Road Crew and Shelter coordinators.

The Brookfield School acts as a shelter, although it is not officially designated as a Red Cross shelter. There is no backup power at the school.

The Selectboard is currently working with the Regional Planning Commission to update Brookfield's Hazard Mitigation Plan. Disaster mitigation covers actions done to reduce the effects of a disaster. For Brookfield, the primary hazard is flooding, with a variety of other lesser hazards. All hazards are considered as part of the town's Mitigation Plan, but the most significant hazards in Brookfield include: Flooding (flash flooding, inundation and fluvial erosion), structure fire and winter weather (extreme cold, snow and ice storms) events. There are many ways that the town can reduce damages, and since a disaster does not always result in state or federal assistance, the town should take sensible steps that can reduce disaster costs, damage to property and loss of life (See Chapter XVI, Flood Resiliency).

F. Goals, Policies and Recommendations

Goals

1. To ensure the protection and safety of the citizens of Brookfield against crime and violations of law.

2. To maintain effective fire and ambulance services.

Policies

1. Support efforts to provide residents with access to high quality physical and mental health care through local providers.

2. Decrease response times for emergency services.

3. Evaluate road and driveway access to proposed developments for fire trucks and other emergency vehicles as part of the permit review process.

4. Maintain Brookfield's relationship with White River Valley Ambulance.

5. Maintain an up-to-date Emergency Operations Plan.

6. Work with the Two Rivers-Ottauquechee Regional Commission to properly plan for hazard events.

Recommendations

1. The Selectboard should update the Local Emergency Operation Plan at least once a year or when key emergency management personnel change.

2. The Selectboard should adopt a Hazard Mitigation Plan with assistance from the Two Rivers-Ottauquechee Regional Commission

3. Install a generator at the Brookfield Elementary School.

4. Develop a methodology to document infrastructure damage after weather events.

IX. Energy

A. Overview

Local land use planning affects how much energy is needed and used in a town. Dispersed and uncoordinated development can waste both land and energy resources and lead to costs, such as additional or upgraded roads, that could have been avoided. Siting and design of buildings and selection of building components and energy systems for energy efficiency can save money over the long run and reduce exposure to volatile energy markets that are driven by state, national, and international forces.

Planning at the local level should encourage energy choices that reduce carbon emissions. Human-induced climate change is an overarching issue that affects all jurisdictions, great and small. It can only be addressed if jurisdictions at all levels take responsible action.

The overall goals of this energy plan are: (1) to promote the installation and use of energy efficiency measures that are cost-effective over their life and (2) to encourage the use of renewable energy to meet the remaining demand.

After reviewing energy use and sources in Brookfield, this plan discusses methods to encourage energy efficiency and the types of renewable energy resources, and follows with goals, policies, and recommendations related to energy.

B. Energy Use

1. **Residential**: Most of the residences in Brookfield use ~~as their primary heat source~~ oil, propane (bottled gas), or wood as their primary heat source. ~~, although some~~ Some homes use electricity as a primary or secondary heat source. In those residences where the domestic water supply is not heated by a central heating system (furnace) it is normally heated by propane or electricity. Some homes use passive solar radiation ~~as the primary heat source, although many depend to a greater or lesser extent upon passive solar~~ for a portion of their heating needs. Residential use of photovoltaic panels, active solar water heating, and small wind turbines has increased.

2. **Agricultural**: Active farms are significant energy users, depending primarily upon electricity for barn lighting, milk cooling and other motor operated barn equipment. Field work is performed by tractors, which are predominantly diesel operated.

3. **Public Buildings**: the Brookfield Elementary School, the Town Office and garage, and the library are heated with oil.

The town does not possess comprehensive data on energy use within Brookfield over time. For example, annualized data on non-electric energy consumption for uses such as thermal heating and transportation is not readily available. For planning purposes, therefore, the town assumes that energy consumption in Brookfield breaks down in a manner similar to energy consumption statewide, which according to one estimate by the Department of Public Service is roughly 38 percent electricity, 34 percent transportation, and 28 percent non-electric heating (e.g., heating oil, propane, wood).

The town has obtained data on electricity use. For example, Figure 10 suggests that Brookfield is on the high end for residential electricity use within the area of the Two Rivers-Ottaquechee Regional Commission.

Figure 10: Residential Electricity Use by Household for 2011, TRORC Region

In addition, Figure 11 shows that total electricity consumption in Brookfield increased slightly during the period 2010 through 2013, with a spike in 2014. The underlying data indicate that the 2014 increase is due to higher consumption primarily by customers served by Green Mountain Power (GMP) in both the commercial and residential sectors and secondarily by residential customers served by Washington Electric Cooperative (WEC). While a single year does not establish a trend, it is possible that energy consumption in 2014 represents an opportunity for installation of cost-effective electric energy efficiency measures in Brookfield.

	2010	2011	2012	2013	2014
Green Mountain Power	3,783,982	3,790,042	3,778,780	3,750,910	4,245,229
Washington Electric Coop.	1,017,062	1,047,515	1,044,542	1,098,872	1,160,373
TOTALS	4,801,044	4,837,557	4,823,322	4,849,782	5,405,602

Figure 11: Electricity Use in Brookfield (kWh) 2010-2014

Based on recent figures from GMP and WEC, Brookfield's peak demand on the system approximates 1.1 MW. Peak demand represents the maximum amount of energy that Brookfield needs from the electric utilities during periods of high electricity use, meaning that the utilities need to be able procure enough power to meet this demand.

This town plan continues the policy established in the 2011 town plan of discouraging the installation of electric generation projects greater than 2.2 MW. The purpose of this policy is to reduce the possibility that electric generation sited in the town would be out of scale with its character while supporting the State's "standard offer" program to promote the installation of distributed renewable generation up to 2.2 MW. Review of the town's peak demand indicates that a 2.2 MW ceiling on an individual project for Brookfield is more than reasonable, since that ceiling is twice the town's own peak demand.

C. Current Energy Sources

1. **Electricity from utilities**: Electricity is provided within their franchise areas by Green Mountain Power (GMP) and the Washington Electric Cooperative (WEC). Most of the town is supplied only with single phase service. The majority of electric consumers in Brookfield are within GMP's territory.

   Developments in applicable state law and utility resource plans focus on increasing the availability of this electricity from renewable resources. This is especially true for those in GMP's territory since all of WEC's energy sources are already from renewable sources.

   Specifically, starting in 2017, GMP and WEC will be subject to Vermont's newly enacted Renewable Energy Standard (RES), which requires each utility to meet 55 percent of its demand through renewable energy, rising to 75 percent by 2032.

   GMP's 2014 integrated resource plan – created before adoption of the RES – projected that 52 percent of its 2017 power mix would be from plants that meet Vermont's definition of renewable energy. However, that plan also indicated that GMP would sell, to other utilities, the renewable energy credits (RECs) associated with some of that power. Power for which a utility does not own the "environmental attributes" embodied by the RECs will not count toward meeting the RES.

   WEC's 2014 integrated resource plan – also created before adoption of the RES – stated that WEC's power mix is entirely from renewable resources and that WEC also sells RECs from some

of these resources. The newly enacted RES contains provisions to encourage utilities like WEC to remain 100 percent renewable in the future, backed by ownership of RECs.

2. ~~**Alternative**~~ **On-site renewable energy**: Some residences and farms generate electricity and heat water or both through the use of renewable energy systems such as photovoltaic panels, solar thermal, windmills, biomass, geothermal, and micro-hydroelectric systems. If the house or farm with a qualifying renewable energy system is connected to utility power, excess power and energy can be provided to the utility by the use of a "net metering system" that allows the owner to ~~"net"~~ deduct the system's ~~output against~~ energy production from the owner's utility bill and obtain credits that can be applied to future bills.

   Brookfield has approximately 15 net metering systems installed in town, based on review of logs available on the Public Service Board website and copies of applications to the Board served on the Planning Commission. Most of these systems appear to be solar electric generation of 15 kW or less, although one farm on West Street recently installed a 30 kW solar net metering system.

3. **Oil**: Heating oil (Number 2) is delivered by several local vendors to the users' storage tanks.

   While the town does not have data on how much heating oil is delivered to its residents, on a statewide basis heating oil makes up approximately 50 percent of the fuel used for heat, and it is reasonable to use this percentage for Brookfield planning purposes.

   The current use of oil for heat means that an opportunity exists to reduce costs and greenhouse gas emissions through implementation of energy efficiency measures and substitution of renewable fuels. One such substitution could be the installation of heat pumps that use renewable fuels. This technology has become more viable for use in Vermont's climate. For example, air source heat pumps are likely to become a net reducer of greenhouse gas emission as Vermont's electricity source mix becomes increasingly renewable. However, the use of heat pumps could significantly increase electric demand, and possibly the need for bigger or more poles and wires, if installed in homes that are not designed for energy efficiency. The RES itself contains provisions that link the installation of heat pumps with ensuring that the structure is energy efficient.

4. **Propane**: Propane is delivered by local vendors to customers, either in form of fully charged cylinders or by tank trucks which meter deliveries into storage tanks at the users' locations.

   Similar to heating oil, the town does not have data on how propane is delivered to its residents. However, on a statewide basis propane constitutes roughly 20 percent of the fuel used for heat and it is reasonable to use this percentage for Brookfield planning purposes. The current use of propane for heating presents an opportunity similar to the one described above for heating oil.

5. **Wood**: Most of the fuel wood is harvested from small privately owned woodlots or purchased from nearby suppliers. While the Town does not have data on how much wood is consumed for energy in Brookfield, on a statewide basis biomass heating accounts for roughly 15 percent of the fuel used for heating.

It is possible that the percentages of oil, propane, and wood used for heating are actually higher in Brookfield than the statewide percentages because natural gas is used for heating in the northwest part of Vermont but is not available in Brookfield.

6. **Motor fuels**. Residents, businesses, and farms typically obtain motor vehicle fuel from service stations located outside of Brookfield.

D. Energy Efficiency

There are a number of ways to encourage meeting Brookfield's energy needs by lowering demand.

Decreasing Energy Use by Implementing Energy Efficiency

Residents, businesses, farms, and town buildings can apply the principles of energy efficiency to use less energy to cost-effectively provide the same level and quality of service. Examples include:

- Have an energy audit done to identify the greatest ways to save energy.
- Implement the air-sealing and insulation recommendations of the energy audit.
- Insulate with high R-value (or heat flow resistance) material.
- Use high efficiency windows.
- Install energy efficient appliances like refrigerators, freezers, front loading washing machines, gas heated clothes driers and heating systems without blowers,
- Use high efficiency lighting,
- Site buildings to make use of existing wind blocks and natural cooling patterns derived from the landscape's topography.
- Site buildings with southern exposure to capture passive solar energy.

Residential development in the State of Vermont is required to comply with Vermont Residential Building Energy Standards (RBES). Examples of development that these standards apply to include:

- Detached one- and two-family dwellings;
- Multi-family and other residential buildings three stories or fewer in height;
- Additions, alterations, renovations and repairs;
- Factory-built modular homes (not including mobile homes).

There is an exception to the RBES for residential construction by the owner, if various conditions are met. Among these conditions is that the owner must disclose the noncompliance in writing to a prospective buyer.

The Department of Public Service (DPS) has developed a residential "stretch" code that promotes energy efficiency measures in buildings that go beyond the minimum requirements. Projects subject to Act 250 (10 V.S.A. chapter 151) have to meet this stretch code and municipalities may choose to adopt the stretch code.

Commercial development is subject to the Commercial Building Energy Standards (CBES). They apply to all commercial buildings and residential buildings four stories or greater. DPS is developing a commercial building stretch code.

Decreasing Energy Use by Changing Behavior

Raising awareness to replace wasteful energy behaviors with energy saving ones can reduce the strain on existing energy resources, and help residents and businesses save money, making the town a more affordable place to live with a higher quality of life.

Examples include:

- Turn off lights when leaving a room.
- Use a programmable thermostat.
- Use a laundry line.
- Use a cold-water laundry wash.
- Consolidating car errands into single trips.

E. Municipal Role in Energy Efficiency

Municipalities can have an impact on energy use within their communities, including their own energy use.

Building Energy

State law requires a municipal administrative officer to provide a copy of the applicable building energy standard (RBES or CBES) when an application to issue a municipal land use permit for a structure is received, although the administrative officer may supply a copy of the DPS residential energy code handbook in lieu of the full residential standard.

In addition, because enforcement is limited at the state level, a municipality may encourage compliance with the building energy standards in its land use review processes to promote energy efficiency.

A municipality may use its general authority to adopt bylaws promoting energy conservation to condition land use permits for development on the submission of the certificate of compliance with the building standards (if applicable) and, in the case of the exception for construction by the owner, the disclosure of noncompliance. These actions would encourage energy efficiency by providing additional avenues to support compliance with the building energy standards and helping to assure that prospective buyers become aware of homes that are noncompliant.

In addition, a municipality may adopt a bylaw that requires compliance with the RBES or CBES stretch codes, or both. This action would encourage energy efficiency in construction that exceeds the minimum requirements of the RBES and CBES. State law specifically allows towns voluntarily to adopt the RBES stretch code. In addition, a town's general authority to adopt bylaws promoting energy conservation would support a bylaw that requires compliance with the CBES stretch code.

Energy Committee

Brookfield has an energy committee. An active energy committee can help the town and residents save money while saving energy by becoming involved in municipal energy efficiency and outreach to homeowners on energy efficiency and renewable energy generation.

Auditing Municipally Owned Buildings

Many towns in Vermont own buildings that are old and inefficient in many respects. For instance, older buildings often have insufficient insulation, wasteful heating and cooling systems, and out-of-date lighting. These kinds of infrastructure problems result in higher energy use with the resulting cost passed onto taxpayers. The Brookfield Town Office & Library has been audited and has led to cost-saving improvements. However, the audit's recommendations have not been fully implemented. In addition, the town could conduct audits on additional town buildings in order to determine what improvements are necessary, and which projects would have the highest cost-benefit ratio in terms of energy and financial savings.

Property Assessed Clean Energy (PACE)

Vermont enacted legislation in May 2009 (Act 45) that authorizes local governments to create town-wide districts known as Property Assessed Clean Energy (PACE). Once created, municipalities can offer financing to property owners for renewable energy and energy-efficiency projects. Eligible projects include the installation of solar water and space heating, photovoltaic panels (PV), and biomass heating, small wind, and micro-hydroelectric systems. PACE financing effectively allows property owners to borrow money to pay for energy improvements. The amount borrowed is typically repaid via a special assessment on the property over a period of up to 20 years; if the property owner wishes to sell the parcel before fully repaying the obligation, then the obligation is transferred to the new property owner at the time of sale. Brookfield is part of the PACE program.

Capital Budget Planning

Given the potential expense of energy efficiency improvements, it is essential to wisely budget town funding to cover these costs. State statute enables communities to create a Capital Budget and Program for the purposes of planning and investing in long-range capital planning. Although most communities have some form of capital account where they save money, many do not have a true Capital Budget and Program. A capital budget outlines the capital projects that are to be undertaken in the coming fiscal years over a five-year period. It includes estimated costs and a proposed method of financing those costs. Also outlined in the Program is an indication of priority of need and the order in which these investments will be made. Any Capital Budget and Program must be consistent with this Plan and include an analysis of what effect capital investments might have on the operating costs of the community.

When planning for routine major facility investments, such as roof replacements, foundation repairs, etc., it is important to consider making energy efficiency improvements simultaneously. The cost to replace or renovate a community facility will only be slightly higher if energy efficiency improvements are done at the same time, rather than on their own.

At present, the town of Brookfield does not have an adopted Capital Budget and Program to help guide investments in community infrastructure and equipment.

Policy Making for Change

In addition to reducing the energy use related to facilities, Brookfield can implement policies that lower energy use by town staff or encourage greater energy efficiency. Examples include:

Energy Efficient Purchasing Policy – A policy of this nature would require energy efficiency to be considered when purchasing or planning for other town investments. For example, purchasing Energy Star rated equipment is a well-documented way to increase energy efficiency. Devices carrying the Energy Star logo, such as computer products and peripherals, kitchen appliances, buildings and other products, generally use 20%–30% less energy than required by federal standards.

Staff Policies – Towns can also implement policies to guide its employees that are designed to reduce wasteful energy practices. Through policy making, local government can set a clear example for townspeople and encourage sustainable behavior that will ultimately result in both energy and financial savings.

F. Renewable Energy Resources

The State of Vermont has adopted a statutory energy policy, codified at 30 V.S.A. § 202a, that encourages the "efficient use of energy resources" and the "wise use of renewable resources and environmentally sound energy supply." It also had adopted various statutory goals that promote increased use of renewable energy to meet the energy needs of Vermonters. These include:

- By January 1, 2017, 55 percent of the State's electricity consumption to be from renewable sources, rising to 75 percent by 2032.
- Reducing total fossil fuel consumption across all buildings by one-half percent each year, leading to a total reduction of six percent annually by 2017 and 10 percent annually by 2025. 10 V.S.A. § 581.
- By 2025, at least 25 percent of all energy consumed in Vermont to be from renewable sources. 10 V.S.A. § 580.
- By 2028, reducing greenhouse gas emissions by 50 percent from a 1990 baseline. 10 V.S.A. § 578.

In the 2011 Comprehensive Energy Plan (CEP), the DPS set out an ambitious goal that, by 2050, 90 percent of all energy consumed in the State be from renewable resources. The CEP sets an energy policy vision for Vermont and issuing the CEP is a statutorily required duty of the DPS.

Vermont law defines renewable energy generally as energy produced using a technology that relies on a resource that is being consumed at a harvest rate at or below its natural regeneration rate. It allows methane or other flammable gases produced by landfills or anaerobic digestion of agricultural or food wastes to be considered renewable, but nuclear, coal, oil, propane, and natural gas may not be considered renewable.

Although initial set-up costs for renewable energy generation systems can be high, these systems can save users money over the long term and minimize their exposure to volatile fossil fuel prices. They reduce the consumption of carbon-based fuels, which helps to protect the environment and reduce reliance on centralized energy. In Vermont, some of these energy sources are more readily available than others and some are more cost effective for the individual energy producer.

While the benefits of renewable energy are clear, renewable energy may have negative environmental and land use impacts.

- **Solar energy** can provide clean, reliable, safe electricity and water heating in Vermont.
    - The Vermont Energy Atlas (using GIS data) identifies 647 viable locations in the town of Brookfield to develop roof-top solar energy production. One issue in siting solar on roofs is whether the home is "solar-ready." The concept of a "solar-ready" home is one constructed in such a way that installing and connecting a solar energy system (whether photovoltaic or solar thermal) does not require additional wiring, plumbing, or building modification.
    - Ground-mounted solar facilities do not rise above tree line and can be located in areas that are less rural, requiring fewer access roads and reducing adverse environmental impacts. However, if not properly sited, large solar facilities can impact soil and water resources, wildlife habitat and corridors, and scenic beauty, and disrupt historic settlement patterns of more densely developed areas surrounded by countryside. In addition, siting solar generation on agricultural land can have mixed impacts: On the one hand, solar generation may supply the farm with electricity or revenue or both, but on the other hand, solar generation can make land unavailable for agricultural production for the life of the facility.
- **Wind** generates electricity when a wind turbine is installed on top of a tall tower. Towers for home use are generally 80-100 feet in height, while commercial scale wind turbines can reach 500 feet tall or more, including rotor height. The amount of energy produced by a specific wind tower depends greatly on location, height of the tower and proximity to other obstructions. There are multiple levels of potential wind energy generation, ranging from Class 1 (10-11 mph) to Class 7 (19-25 mph). Most potential wind energy generation sites in Brookfield are Class 1, which is suitable for residential energy generation. In very limited areas, Brookfield does have the topography to generate wind energy at a commercial level, but only at a small scale (50 meter towers). However, the areas with the most potential are also some of Brookfield's best wildlife habitat and siting 50 meter turbines in those areas would have negative effects on the town's scenic and rural character because the towers would be significantly above tree line on prominent ridges.

	Class 1 10-11 mph	Class 2 12-13 mph	Class 3 13-14 mph	Class 4 15-16 mph	Class 5 16-17 mph	Class 6 17-18 mph	Class 7 19-25 mph
Residential (30-meter)	9401	122	0	0	0	0	0
Small Commercial (50-meter)	754	16	0	0	0	0	0
Large Commercial (70-meter or more)	0	0	0	0	0	0	0

Figure 12: Potential Wind Energy Generation in Brookfield (in acres)
Source: Vermont Energy Atlas

- **"Biomass"** refers to organic nonfossil material of biological origin constituting a renewable energy source. Examples include agricultural and food wastes, grass, and wood. Biomass can be converted into an energy source to fuel vehicles (e.g. biodiesel), heat homes, or even generate electricity. Brookfield does not have any biomass electric generation facilities or community-scale biomass heating.
    - The most common biomass used in Vermont is wood for heating. Much of Brookfield is wooded, and therefore offers the opportunity for sustainably harvested woody biomass,
    - All use of wood for energy poses the risk of increased emissions of greenhouse gases and other pollutants. Harvesting of wood for energy must be properly managed to ensure that the community's natural resources are not negatively affected and that their consumption for energy reduces rather than increases pollutant emissions.
    - A biomass power plant would require a great deal of space to accommodate the various stages of collection and conversion of the mass into fuel before burning it to produce electricity. Water can also pose a problem as biomass facilities require large quantities to handle the recycling process of waste materials. Materials would have to be transported to and from the facility. Further, burning woody biomass solely to generate electricity is inefficient and expensive.
    - Farms can contribute agricultural wastes to the process of methane digestion (also known as 'Cow Power') to generate electricity or grow crops that can be used for transportation fuels. However, raising crops for transportation fuel takes land out of cultivation for food consumption and often can use more energy than it produces. Cow Power requires a significant upfront financial investment and is generally only effective when utilized by a large scale farm. Both the Sprague Farm and Meadowbrook Farm may have the capacity to utilize a methane digester.
- **Hydroelectric power** divides into two broad categories: (a) run-of-river, which uses the natural flow of water to generate power and (b) facilities that store water behind an impoundment. Run-of-river systems rely on seasonal rainfall and runoff to produce power, resulting in periods of low

production. Impounding water behind a dam allows for control of the water flow, resulting in consistent electric production. Hydroelectric development necessitates balancing priorities. While the benefits of generating electricity from local renewable water resources are evident, they are not without associated costs. Streams and other waters are public trust resources. The power output from a given water must be moderated by environmental considerations. A minimum stream flow that is adequate to support aquatic life needs to be maintained and impoundments need to be designed with water quality, land use, and recreation considerations in mind. Brookfield currently has no active hydropower facilities but impoundments exist on Holden's Pond, North Pond, and Sunset Lake that have the potential to generate electricity. Retrofitting existing sites is likely to have less environmental impact than opening new hydroelectric sites.

G. Energy and Transportation Policy

It is important that communities recognize the clear connection between land use patterns, transportation and energy use. Most communities encourage the development of residences in rural areas, and these are in fact coveted locations to develop because of the aesthetics that make Vermont special. However, this rural development often means much of our population must drive to schools, work and services.

Because transportation is such a substantial portion of local energy use, it is in the interest of the community to encourage any new developments that are proposed in Brookfield to locate adjacent to existing roads. In particular, dense residential developments should be located within or adjacent to existing village centers. Commercial development that requires trucking and freight handling should only locate on roads which can effectively handle the size of vehicle needed.

H. Goals, Policies and Recommendations

Goals

1. To promote the installation and use of energy efficiency measures that are cost-effective over their life and to encourage the use of renewable energy to meet the remaining demand.

2. To reduce energy costs, the community's reliance on fossil fuels and foreign oil supplies, and greenhouse gas emissions.

3. To encourage a continued pattern of settlement and land use that is energy efficient.

4. To promote the construction of energy efficient residential and commercial buildings and increase awareness and use of energy conservation practices through educational outreach to the public.

5. To increase public transportation opportunities throughout the community, including park-and-ride access, biking paths, and sidewalks.

6. To promote greater use of existing public transportation services by community members.

Policies

Overall

1. The ~~T~~town encourages the use of energy sources that are the most efficient and cost-effective and the use of the least environmentally damaging sources of energy. The efficiency, cost-effectiveness, and environmental impacts of energy use and conveyance shall be determined on a life-cycle basis, including all costs related to extraction, processing, refinement, transportation, transmission, reliability, and generation and disposition of waste and pollutants.

Energy Efficiency

2. Promote compliance with RBES and CBES and any RBES and CBES "stretch" codes adopted by the Department of Public Service.

3. Promote newly constructed or renovated residences that elect to use the "construction by owner" exception to file on the land records a disclosure of their noncompliance with the RBES.

4. Use PACE to leverage installation of cost-effective residential energy efficiency measures in Brookfield.

5. ~~The Town encourages~~ Encourage construction of new buildings, additions, and renovations ~~to be constructed so as~~ to utilize the maximum feasible passive solar heating, use high efficiency lighting and appliances, ~~meet the version of the International Energy Conservation Code in effect at the time of construction,~~ and achieve a U.S. Environmental Protection Agency Energy Star rating or the equivalent in energy use. ~~Conformance with this plan requires meeting such standards~~. The installation of on-peak resistance electric heat does not conform to this plan.

6. ~~Residents~~ Encourage residents and owners of existing buildings, including the ~~town with respect to the school and town office~~ town, ~~should be encouraged~~ to obtain a competent energy audit of the buildings with a view toward identifying and making cost-effective improvements in energy efficiency. They should:

    a. Be encouraged to retrofit those buildings to improve their insulation and efficiency.
    b. Be encouraged to install highly efficient heating systems and to maintain and operate their existing heating systems to maximum efficiency possible.

7. ~~Residents~~ Encourage residents and owners of existing buildings, including the town ~~with respect to the school and the town office~~, ~~should be encouraged~~ to acquire and use high efficiency lighting equipment and appliances.

8. Promote energy-efficient travel by residents by encouraging carpooling, increased use of public transportation, telecommuting, home businesses, and safe bike routes.

Energy Sources, Facilities, and Siting

9. ~~The Town encourages the use of~~ Use renewable energy systems for self-generation in both off-grid and net metering ~~systems~~ scenarios. Design new construction to be solar-ready. Install group net metering systems only if the renewable energy credits from the systems are applied toward the Renewable Energy Standard or are retired by the group.

10. Encourage the use of heat pumps to replace fossil fuel heating when:
    a. Installed in structures that comply or are renovated to comply with policies 2 and 5 of this energy plan.
    b. The installation will result a net decrease in greenhouse gas emissions, determined in accordance with policy 1 of this plan.

11. ~~This plan discourages the development of~~ Site power generation projects in town, the purpose of which is primarily to sell power onto the electric grid, ~~unless~~ provided each of the following is true:

    a. ~~(a) the~~ The total capacity of the generation project is no more than 2.2 MW~~,~~.
    b. ~~(b) the~~ The project is proposed to meet the needs of Vermont electric consumers~~,~~.
    c. (~~c) the~~ The generation facilities involved in the project use renewable fuels, and the renewable energy credits from the facilities are applied toward the Renewable Energy Standard.
    d. ~~(d) the facilities and any associated lines are sited and designed so that they do not have an undue adverse impact on the scenic and rural character of the town.~~ The project meets the other policies of this plan.

    For purposes of ~~this paragraph~~ these policies, the term "project" includes all ~~generation~~ energy facilities that are part of a larger undertaking (i.e., multiple wind turbines that are developed according to a common plan) and all access roads, site clearing, power lines, gas mains, substations, fencing, and lighting, and all other land development related to the energy facilities.

12. Site an electric transmission project in Brookfield only to ensure reliability and if the applicant demonstrates that electricity transmitted through the project is more cost-effective and has lower environmental costs than generation and demand-side alternatives, calculated in accordance with policy 1.

13. Site a natural gas transmission or distribution project in Brookfield only if it will provide natural gas service to the Brookfield residents in the vicinity of the line and the applicant demonstrates that the natural gas transmitted or distributed through the project is more cost-effective and has lower environmental costs than demand-side alternatives and alternatives that employ renewable energy, calculated in accordance with policy 1.

14. Site generation and transmission projects in locations that reinforce Brookfield's traditional patterns of growth, that is, compact village centers surrounded by a rural countryside and working landscape that includes farm and forest land. The applicant shall take all feasible measures to minimize the visual impact of the project and its impact on the town's rural character.

15. Exclude new energy generation, transmission, and distribution projects from the following areas because of their distinctive value:

    a. Floodways shown on FEMA Flood Insurance Rate Maps (except as required for hydroelectric facilities)
    b. Fluvial erosion hazard areas shown on Fluvial Erosion Hazard Area maps (except as required for hydroelectric facilities)

c. Wetlands as indicated on Vermont State Wetlands Inventory maps or identified through site analysis.
d. Rare, threatened or endangered species habitat or communities.
e. The town's Conservation and Scenic Protection Districts, except for self- generation of 15 kW of less that uses a renewable fuel.

16. Site and design all new generation, transmission, and distribution projects to avoid or, if no other reasonable alternative exists, to minimize and mitigate adverse impacts to the following:

a. Historic districts, landmarks, sites and structures listed, or eligible for listing, on state or national registers.
b. Public parks and recreation areas, including state and municipal parks, forests and trail networks.
c. Scenic roads, vistas, and viewsheds. Determine the existence of scenic roads and scenic vistas and viewsheds from those roads in accordance with policy 8 under Significant Natural and Scenic Areas.
d. Special flood hazard areas identified by National Flood Insurance Program maps (except as required for hydroelectric facilities)
e. Public and private drinking water supplies, including mapped source protection areas.
f. Primary agricultural soils mapped by the U.S. Natural Resources Conservation Service.
g. Forest land. For the purpose of this policy, fragmentation of forest land constitutes an adverse impact.
h. Necessary wildlife habitat, natural communities, and wildlife migration and travel corridors. For the purpose of this policy, fragmentation of these resources constitutes an adverse impact. Project designers must gather information and analyze the effects of the project on habitat and natural communities in the project area, and wildlife residing in the area and its migratory routes.

17. Use screening to reduce the visual impacts of energy generation, transmission, and distribution projects as seen from public roads and neighboring properties in accordance with the following:

a. Without interfering with the project's function, make the maximum use possible of preexisting vegetation, structures, and topographical features that screen the project.
    i. Assure the continuity of this preexisting screening through site control or agreements with relevant property owners.
    ii. If preexisting screening is lost during the life of the project (e.g., cutting of vegetation that screens from a public road), review the ensuing visual impact and install new screening to mitigate that impact.

b. Install screening such as vegetation or topographic features to distract the viewer from the project and break up the view of the project.

    i. Do not install "solid wall" screening such as a line of arbor vitae.
    ii. Do not install screening that interferes with the project's function. For example, do not install screening that will place shadow on solar electric generation.
    iii. Choose parcels whose size is sufficient for both the project and the installation of screening.

c. When installing vegetative screening, choose a diversity of native species and mix coniferous and deciduous plantings.

d. This policy does not apply to solar installed on rooftops or self-generation of 15 kW or less that uses a renewable fuel.

18. Site biomass electric generation in Brookfield only if it meets the other policies of this plan and the following:

    a. The generation is part of a combined heat and power project with the majority of the energy production used for heating.

    b. ~~Wood energy systems shall be~~ The project is designed and operated to achieve efficient and thorough combustion to minimize polluting emissions.

    c. The project will not have a negative impact on the local road system and will be located close to the fuel source to minimize truck traffic.

    d. The energy produced by the facility will exceed the energy used to harvest the fuel.

    e. The fuel will be harvested according to a management plan that ensures a net reduction in greenhouse gas emissions and is independently certified as sustainable, and the harvesting is monitored for compliance.

19. Develop hydroelectric facilities in Brookfield only if the project meets the other policies of this plan and avoids or, if no other reasonable alternative exists, minimizes and mitigates adverse impacts to riverine ecosystems and water quality.

20. Locate new significant public investments (including schools, public recreational areas, municipal facilities, and major commercial or residential developments) within or in close proximity to the village and utilize existing roads whenever possible.

21. In proceedings before the Public Service Board under 30 V.S.A. § 248 ("Section 248"), apply policies 1, 9, and 11 through 19 of this chapter and the other policies of this Plan as described under State Regulatory Proceedings in Chapter XVIII, Town Plan Implementation. For the purpose of Section 248 proceedings:

    a. These policies constitute recommendations of the Selectboard and Planning Commission.
    b. Policies 14 through 19 are measures to conserve and protect the environment, natural resources, and the scenic, aesthetic, and rural character of Brookfield and policies 14 through 17 are intended as written community standards to preserve Brookfield's aesthetics and scenic beauty.

22. Distribution line reconstructions and extensions subject to Act 250 jurisdiction do not conform to this plan unless the applicant demonstrates that:
    a. Electricity delivered through the distribution line is more cost-effective and has lower environmental costs than on-site electricity generation from renewable sources or a combination of such generation with demand-side measures, calculated in accordance with policy 1.
    b. All feasible measures have been taken to minimize the visual impact and to avoid and, if not avoidable, minimize the natural resource impact of the reconstructed line or line extension.

c. With respect to a line reconstruction or extension outside a village district identified in the development bylaw, the reconstruction or extension will not cause or contribute to additional development.

Recommendations

1. The town should amend the development bylaw to require the filing of RBES and CBES certificates as a condition of land use approval. For structures taking advantage of the owner-builder exception, this amendment should include filing a disclosure on the land records.

2. The town should adopt the residential and commercial "stretch codes" issued by the Department of Public Service.

3. The town should complete implementation of the energy audit conducted on the town office and library and consider conducting audits on additional town buildings.

4. The town should foster awareness among town residents about incentives for energy efficiency and renewable energy.

5. The town should continue its support for PACE.

6. The town should include energy efficiency and use of renewable energy when planning for capital investments and consider adopting a Capital Budget and Program.

7. The town should consider instituting an energy efficiency purchasing policy and a policy to guide town officers and staff in reducing energy use.

8. The Brookfield Elementary School should continue its program that teaches the need for and methods of conserving energy.

9. Woodlot owners should be encouraged to manage their woodlots for multiple uses which would include sustained yield of timber and fuel wood in accordance with the policies of this plan.

10. The town should consider requiring new construction to be solar-ready.

11. The town may consider whether to create incentives for renewable energy systems.

12. Municipal officials should participate in the Public Service Board's review of new and expanded generation and transmission facilities in Brookfield to ensure that local energy, resource conservation and development objectives are identified and considered in future utility development.

X. Natural, Scenic and Cultural Resources

A. Background

Brookfield's forested, farmed, and open land resources as well as its water and wildlife resources are key elements in defining rural character. Brookfield residents value open, working lands that are hospitable to both recreation and outdoor work. The quality and quantity of Brookfield's natural resources and the character of place they create are important ingredients in maintaining our health and economic welfare.

It is the fundamental goal of this Plan to sustain and enhance the integrity and diversity of the natural resource system within Brookfield. Therefore, it is the policy of the town to develop and implement practices that conserve natural resources and to insure that future land use activities are not detrimental to the environment.

Goals

1. To protect the natural and scenic character of Brookfield.

2. To maintain the quality of the landscape for the future and to protect the natural world while allowing the land to be worked safely.

3. To enhance and maintain Brookfield's outdoor environment for both active and passive recreational uses including hiking, fishing, boating, camping, hunting, horseback riding, music, and the arts.

Policy

1. To protect the natural, and scenic character of Brookfield's landscape.

2. Preserve the health of Brookfield's ecosystems.

B. Water Resources

Brookfield has an abundance of high-quality water resources, including its surface waters – lakes, ponds, streams – and its springs, wetlands, and groundwater. Land use planning and regulation can play an important role in the maintenance of the quality of the town's water resources. There are currently no community water supplies in Brookfield. Town residents are self-supplied through wells and springs. Sustainable yields of quality water are necessary for the lives and livelihood of citizens in Brookfield. ~~Brookfield's several villages or future developments may need to consider community water supplies in the future.~~

The health of Brookfield's surface waters is essential to maintaining quality groundwater, as well as an important element for outdoor recreation and natural beauty. Vermont law declares that the lakes and ponds of the state and the lands lying underneath them are held in trust by the state for the benefit of all Vermonters. The state, as trustee, cannot sell or give away these public resources to individuals or corporations for purely private purposes. A permitting program for large groundwater withdrawals was implemented by the state in 2011. Those seeking permits will have to show that their withdrawals will not have an adverse impact on water resources and will be consistent with local and regional plans.

The maintenance of high water quality is important for public health, fisheries, ecosystem health, and water-based recreation. There are currently no permitted point discharges to surface waters in Brookfield. However, nonpoint pollution from inadequate septic systems, runoff from roads and construction projects, and improper agricultural practices are all problems. Other sources of non-point pollution are agricultural runoff, streambank erosion, removal of riparian vegetation, upstream impoundments, and land development. Future land use decisions should evaluate the probable water quality impacts associated with each development proposal, and should be consistent with the water standards promulgated by the State of Vermont.

Stream instability can lead to excessive flooding and other types of damage due to increased flow velocity. Riparian buffers are strips of bankside vegetation along waterways that provide a transition zone between water and land use. Construction or development along shorelines, or removal or disruption of vegetation within these areas can create increased water pollution, higher water temperatures, destabilization of banks, higher soil erosion rates and loss of fish or wildlife habitats. There are a number of state and federal programs that help fund stream-management projects, such as the Conservation Reserve Enhancement Program (CREP). CREP provides funds to farmers for the purpose of preserving lands once used for agriculture, with the goal of introducing and encouraging plant life to prevent erosion and provide habitat. The White River Partnership, a nonprofit organization, has been planting trees and shrubs along tributaries to the White River in Brookfield and other watershed towns to improve water quality and fish habitat.

Replacing deficient culverts and bridges also helps protect water quality – installing appropriately scaled and designed structures that can handle flood events, stormwater runoff, promote fish passage, and minimize the discharge of road sediment.

Goals

1. To maintain or enhance the quality of drinking-quality resources.

2. To allow use of groundwater resources by new development in such a manner to protect the public right to adequate quality and quantity of the resource.

3. To consider surface water and groundwater impacts and effects related to proposed or existing uses of land.

4. To maintain or improve surface water quality.

5. To support the permanent protection of the land around some of these water bodies to protect their water quality and scenic character

Policies

1. Review and monitor land use activities which threaten groundwater to prevent undue loss of groundwater quality, with the cost of monitoring borne by the developer.

2. Preservation of the natural state of streams by:
    - Protection of adjacent wetlands;
    - Maintenance of buffer vegetation and existing streambanks.

3. Set back new structures 75 feet of the top of the bank of rivers streams, ponds and wetlands, except those that by their nature must be located near streams. Do not disturb the ground within 75 feet, excepting that incidental to bridge or culvert construction, or permitted bank stabilization. Locate structures in the Shoreland Overlay Area no closer than 50 feet from the mean water mark.

4. Permit development (as defined in 24 V.S.A. §4302) only if it does not cause any significant environmental degradation and does not result in an adverse impact on ground or surface waters.

5. Permit commercial water withdrawls only if:
    - They will not have an adverse impact on the water sources in Brookfield.
    - Developers maintain a monitoring plan that is properly enforced by the state.
    - They provide some level of remuneration to the community in return for utilizing a public asset.

6. This plan supports the continued restoration of natural riparian vegetation along stream banks and lakeshores.

7. Maintain appropriately scaled and designed structures that can handle flood events, stormwater runoff, promote fish passage, and minimize erosion.

Recommendation

1. Maintain an up-to-date inventory of existing culverts and structures, coupled with a short- and long-range plan for replacement and upsizing.

2. The ~~T~~town should take advantage of state programs to control nonpoint pollution, and should provide input to the State when it is considering any applications for discharge permits in Brookfield.

C. Wetlands and Vernal Pools

The State of Vermont defines wetlands as areas inundated by surface or ground water with a frequency sufficient to support significant vegetation or aquatic life that depend on saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands are ecologically fragile areas. How these lands are managed has a direct bearing on the quality and quantity of water resources. The Vermont Water Resources Board estimates that wetlands comprise less than 5 percent of the surface area of Vermont. In addition to being Vermont's most productive ecosystem, wetlands serve a wide variety of functions beneficial to the health, safety and welfare of the general public, including the following:

- Retaining storm water run-off, reducing flood peaks and thereby reducing flooding;
- Improving surface water quality through storage of organic materials, chemical decomposition and filtration of sediments and other matter from surface water;
- Providing spawning, feeding and general habitat for fish;
- Providing habitat for a wide diversity of wildlife and rare, threatened or endangered plants; and
- Contributing to the open space character and the overall beauty of the rural landscape.

In 1986, Vermont adopted legislation for the protection and management of wetlands [10 V.S.A., Chapter 37]. Determination of whether a wetland merits protection is based on an evaluation of the extent to which it serves the general functions outlined in the bulleted list above.

Under the Vermont's Wetland Rules, if land development can be expected to impact a protected wetland, such activity cannot commence unless the Vermont Agency of Natural Resources first grants a Conditional Use Determination (CUD). A CUD will be granted when the proposed use will not have an undue adverse impact on the function of the wetland. In many cases, such approvals are granted with conditions to mitigate impacts and to more readily protect wetlands.

For Brookfield, as well as the State, the most significant wetlands have been mapped. These wetlands have been delineated on USGS topographic maps, and by reference are made a part of this Plan (see Appendix B, Map 6, Natural Resources). Other smaller wetlands often do not show on these maps, so a field determination by a qualified biologist is needed for most activities that involve state permits. There are approximately 865 acres of mapped wetlands in Brookfield.

In those towns such as Brookfield, that have zoning or subdivision regulations, final approvals cannot be granted for projects involving wetlands unless the Agency of Natural Resources has first had an opportunity to evaluate the effect of the project on the wetland [24 V.S.A., Section 4409].

Vernal pools (small woodland pools filled with water in the spring) provide important breeding habitat for amphibians, and should be identified and conserved. Fens – rare wetland natural communities – are discussed below.

Goal

1. To identify and encourage land use development practices that avoid or mitigate adverse impacts on wetlands.

Policies

1. Locate structural development or intensive land uses more than 75 feet from wetland.

2. Permit development (as defined in 24 V.S.A. § 4302) only if it does not cause any significant environmental degradation and does not result in an adverse impact on a wetland or its function.

Recommendations

1. The town should consider conducting a wetland and vernal pool inventory.

D. Flora, Fauna and Natural Communities

Brookfield hosts a broad range of communities that exist in the older forests, early successional forests, open fields and valley floors. The breadth and diversity of wildlife and plant communities indicate a healthy, thriving ecosystem. Plants respond to soil structure and chemistry, hydrology, and climate. The effects of unmanaged development can have a negative impact on plant communities, which in turn will harm the overall ecosystem in the area affected. Good management practices, such as requiring developers to locate their projects in less sensitive areas, maintain buffer areas and protect against silt runoff from excavating, are a few of the ways that these communities can be maintained.

Brookfield's fields, forests, marshes, wetlands, riverbanks, ponds, and streams provide habitat to a diversity of flora and fauna. Although nearly all undeveloped land in the town provides habitat for these plants and animals, there are some areas which provide critical habitat that should remain intact. These areas include wetlands, vernal pools, and deer-wintering areas and ecotome (the edge transition zone between two cover types, such as field and forest). Development or logging in or adjacent to these areas should consider wildlife implications during the planning process. Wildlife is one of the primary attractions to the area and provides many citizens of Brookfield with direct and indirect livelihoods from sports, tourism and direct harvest of wildlife.

The Vermont Natural Heritage and Nongame Program of the Department of Fish and Wildlife has mapped 14 known occurrences of rare plant and animal species and six rare natural communities in Brookfield. Five of these rare natural communities are fens, nutrient-rich wetlands characterized by a sedge mat. Many of the rare plant species occur in fens. The other ecologically significant community is Halfway Brook Swamp, a red maple-black ash seepage swamp. The fens, the swamp, and the rare plants that grow there receive some degree of protection under the Vermont Wetlands Rules. Part of one fen has been acquired by the Nature Conservancy.

Brookfield is home to a wide variety of animals, insects, and plants. There are areas in Brookfield which provide critical habitats for certain animals, including white tailed deer, birds, black bear, and bobcat. Every new development in town results in an incremental loss or change to wildlife habitats. Sensitive

land use planning can lessen or mitigate the impact on wildlife habitats. For example, housing development or excessive logging can have detrimental effects on deer wintering areas. If an area proposed for development encompasses a deeryard, utilizing certain planning strategies can lessen the impact on the area. Should the entire area be winter cover, clustering of homes within an area of the project site will still enable deer to retain most of their habitat. State biologists are available to work with landowners and developers interested in planning projects in ways that reduce the impact on critical wildlife habitats, rare and endangered species, and other critical natural communities.

Wintering areas are an important habitat requirement for deer during the critical winter months when snow depth and climate are limiting factors to survival. Typically, these areas consist of mature softwood stands, at low elevations or along stream beds, which provide cover and limit snow depths. Southerly facing slopes are also beneficial due to good sun exposure and may be utilized even in areas of limited softwood cover. More specific factors, such as percent canopy closure, species of softwoods, and stand age, also figure into the quality of the wintering area. Brookfield has approximately of 6834 acres (25% of Brookfield's total acreage) of mapped deer wintering yards.

Wildlife management requires management of human activities around animals as much as management of animals around human activities. Managing for specific species is not as desirable as managing for the entire ecosystem supporting the species.

There comes a point where a species cannot use seemingly adequate habitat because of adjacent development. While certain strategies may lessen the impact on habitat, planners and developers should keep in mind that almost every development will affect the ecological balance. It should be noted, however, that high density or intensive land uses are more likely to have a negative impact on the quality of wildlife habitats.

Large tracts of forest land, rivers, river banks, floodplains, and cliffs are natural communities for many animals and should remain intact as much as possible. Forests provide habitat to a diverse population of wildlife, which are negatively impacted when forested land is fragmented through development. Forest fragmentation affects water quality and quantity, fish and wildlife populations, and the biological health and diversity of the forest itself. When many small habitat losses occur over time, the combined effect may be as dramatic as one large loss. Forest fragmentation can disrupt animal travel corridors, increase flooding, promote the invasion of exotic vegetation, expose forest interiors, and create conflicts between people and wildlife. Habitat loss reduces the number of many wildlife species and totally eliminates others.

To help mitigate the effects of human population growth and land consumption, many scientists and conservationists urge governments to establish protected corridors, which connect patches of important wildlife habitat. These corridors, if planned correctly, allow wildlife to move between habitats and allow individual animals to move between groups, helping to restore or maintain genetic diversity that is essential both to the long-term viability of populations and to the restoration of functional ecosystems. Because of its generally low density, Brookfield maintains a substantial amount of good quality wildlife habitat. In this regard, the habitat ratings shown on Map 6 of 9 (see Appendix B) are relative ratings that should be read in conjunction with the discussion in this chapter.

Goals

1. To sustain the natural diversity of flora and fauna found in Brookfield.

2. To maintain or improve the natural diversity, populations, and migratory routes of wildlife.

3. To encourage sport and subsistence hunting and fishing in accordance with seasons and bag limits determined by the State Department of Fish and Wildlife.

4. To preserve critical habitat areas for wildlife.

5. To preserve these unique species and habitat**.**

6. Large tracts of forest land, rivers, riverbanks, floodplains, and cliffs are natural communities for many animals and should remain intact as much as possible.

Policies

1. Sustain and enhance native wildlife populations and natural diversity.

2. Protect critical habitats through conservation easements, land purchases, leases and other incentives.

3. Design development to protect Brookfield's significant role as an east-west wildlife corridor by:

    - Maintaining large tracts of land.
    - Avoiding fragmentation of habitat
    - maintain connecting links between habitat blocks

4. Minimize development that has the potential to adversely impact wildlife corridors.

5. Give preference to development that utilizes existing roads and whenever possible preserves existing agricultural use.

6. Discourage development in areas identified as critical habitat.

7. Encourage connecting large patches of habitat that will ~~for example with riparian cover along streams,~~ allow for the movement, migration, and dispersal of animals and plants ~~and should also be encouraged.~~

8. Protect sensitive ecological areas such as steep slopes, wetlands, deer yards, and endangered species sites.

Recommendation

1. The remaining large blocks of forest in Brookfield should be identified and their conservation encouraged.

2. The town should consider conducting a natural resources inventory.

E. Invasive Species

Invasive non-native species are a growing problem throughout Vermont. Invasive plants are exotic species that typically spread from disturbed areas into natural communities, but many of these species also encroach on yards, agricultural fields, and working forests. In Brookfield the spread of invasive species negatively affects the rural character of the town, reducing native plant populations and consequently degrading wildlife populations; dominating economically productive plants in agricultural fields and inhibiting reproduction of trees in sugarbush areas and other forests; destroying the scenic quality of roadsides; reducing property values; and potentially posing health risks. Giant hogweed, for example, produces a sap that, in combination with moisture and sunlight, can cause severe skin and eye irritation, painful blistering, permanent scarring and blindness if not handled with gloves.

The greatest threats to Brookfield are posed by wild chervil (fields, roadsides and recently logged areas), Japanese knotweed (streams, rivers, roadsides, yards), and Japanese barberry and buckthorns (forests), but there are increasing threats throughout the region from garlic mustard, giant hogweed, and other invasive species. Some of these invasive species, especially wild chervil and knotweed, proliferated to such an extent that eradication from many sites is impossible. Fortunately, portions of the town are not infested. Diligence is necessary from town residents and employees to prevent the further spread of these species, and the introduction of new species that could pose more serious threats. For example, giant hogweed has been identified in several towns in Central Vermont but so far is not widespread in Brookfield. It is important to prevent the spread of these and other invasive species.

One of the more common ways in which invasive species spread to new locations is when seeds or root segments are transported on vehicles, especially construction and logging machinery, and mowers, among other vehicles. Best management practices have been identified for reducing the accidental spread of invasive species including avoiding using fill from invaded sites, washing of equipment before leaving infected sites, stabilization of disturbed sites, and timing mowing to occur before the plans produce seeds.

Goal

1. To reduce the impact of invasive species on agricultural and forest native ecosystems.

Policy

1. Control occurrences of invasive species to prevent further infestations.

Recommendations

1. Town employees and contractors should become familiar with and implement the best management practices to prevent the spread of invasive species.

2. Time roadside mowing to minimize and reduce the spread of invasive species.

F. Mineral Resources

The use and management of Brookfield's earth and mineral resources are matters of public interest. Maintenance of quantities of gravel, sand, crushed rock, and other materials are essential for state and local highways. Having access to mineral resources is important to the community for the maintenance of roads, but needs to also balance the negative impacts to residents and the environment. Issues related to mineral extraction include creation of excessive dust and noise, increased truck traffic through residential neighborhoods, surface and groundwater contamination, degradation of the site or wildlife habitat, loss of scenic character in the immediate area, and undue deterioration on state and town roads.

Goal

1. To permit extraction and processing of mineral resources only where such activities are appropriately sited (taking into account impacts on natural resources, scenic character and compatibility with this Plan), managed, and the public interest is clearly benefited. Any support shall be balanced against the need to maintain the rural character valued by the citizens of Brookfield.

Policies

1. Consider the potential impacts of pollution, noise and vehicle traffic as part of the decision making process when reviewing proposed gravel extraction projects.

2. Plan, construct and manage existing and proposed mineral extraction and processing facilities:
   - So as not to adversely impact existing or planned uses within the vicinity of the project site.
   - To not significantly interfere with the function and safety of existing road systems serving the project site.
   - To minimize any adverse effects on water quality, fish and wildlife habitats, viewsheds and adjacent land uses.
   - To reclaim and re-vegetate sites following extraction.
   - To minimize noise impacts on adjacent uses including residential areas.
   - To maintain the rural character of the town.

G. Significant Natural and Scenic Areas

All of Brookfield is significant for its beauty and its rural landscape. There are several areas that represent more significant places in town. These areas include:

- **Lakes and Ponds –** Brookfield has several good-sized lakes and ponds which can be seen from town roads and state highways: Sunset Lake, Lamson, Baker, Rood, South, Holdens, Pickles and Twin Ponds. Lamson Pond is also visible from Interstate 89. The Twin Ponds are especially scenic and distinctive as they are nestled in a depression and can be viewed from above.
- **Brooks and Streams –** The Second Branch of the White River, which runs through the Route 14 valley on the east side of town, fed by its tributaries, Sunset and Halfway Brooks are significant to the community.

~~The other major stream~~ Also of importance is Ayers Brook which runs through the Route 12 valley on the west side of town, fed by its tributary, Open Meadow Brook.

- **Significant Cascades –** Significant cascades have been identified along brooks at the following sites: at the outlet of Sunset Lake, at two old mill sites in West Brookfield village and west of this village on Cram Hill Road, and at an old mill site on the outlet stream from Twin Pond.
- **Brookfield & Williamstown Gulf** - Brookfield Gulf, almost three miles long, is found in the western part of town and is traversed by Route 12. Williamstown Gulf, approximately 1 1/2 miles long, is found in the northeast part of town and is traversed by Route 14. Approximately 1/2 mile of the southern portion of Williamstown Gulf is located in Brookfield. These areas are highly scenic due to their natural beauty, their visibility from public roads, and the fact that they are largely undeveloped (except for a handful of structures), and contain no overhead power lines.

  The Brookfield portion of the Williamstown Gulf receives a high degree of protection as it lies almost entirely within Ainsworth State Park. Approximately 1/3 of Brookfield Gulf lies within Allis State Park. The gulfs also receive a degree of protection by inclusion in the town's Conservation District, in which structures are prohibited, and a Scenic Protection District.

In addition to these specific areas, Brookfield has many roads that residents would consider scenic. Town roads are especially scenic where they afford views of the surrounding mountains and hills or of the major lakes and ponds in town, or are lined with stone walls or large sugar maples.

Goals

1. To identify and protect those natural and historic resources that are unique to Brookfield and make it special.

2. To preserve and protect Brookfield's important cultural, scenic and natural resources for future generations.

Policies

1. Allow for compatible development without sacrificing important cultural and natural resources.

2. Review of all development projects carefully to minimize the impact on Brookfield's natural and cultural resources.

3. Protect unique resources through careful planning.

4. Encourage the permanent protection of the remainder of Brookfield Gulf through fee acquisition or conservation easements by the State, town, or private land trusts ~~is encouraged~~.

5. Discourage the widening of town roads and the cutting of large trees (where it would adversely affect the scenic quality) ~~should be discouraged~~.

6. Minimize the adverse impacts development may have on scenic vista(s), by placement of buildings, clustering of buildings or other mechanisms.

7. Minimize the adverse effects of development of ridge tops by careful placement of structures and limiting forest clearing.

8. Preserve and minimize adverse impacts to views from town roads of the surrounding mountains, hills, and fields; of the lakes and ponds listed in the first bullet of this section G; and of stone walls and large sugar maples that line or grow along the roads.

H. Land Protection Strategies

Methods of protecting lands are varied. In general, there are two ways to encourage the preservation of culturally and naturally significant areas: voluntary and regulatory. Voluntary methods allow landowners to:

- Preserve land by placing restrictions on its use, through such tools as conservation easements or mutual covenants.

- Transfer land to a conservation organization (such as the Vermont Land Trust) through donation.

- Sell or donate land with conditions attached, like deed restrictions or conditional transfers.

Brookfield could become an active participant in land conservation through the creation of a conservation fund. This fund, which is generally funded by taxes on a yearly basis, would contain funds that a Conservation Commission could use to purchase land outright, or to assist a land conservation organization with the purchase of a conservation easement. It is safe to assume that there will never be sufficient funding for land protection strategies to acquire conservation easements or ownership for all of the unprotected areas of value.

Regulatory methods use zoning and/or subdivision rules to regulate the location, density and design of development within selected areas to minimize harmful impacts while allowing for a reasonable level of development. Regulatory methods include:

- **Overlay Districts** - The creation of overlay districts is the most common method of regulating specific areas for the purpose of protecting wildlife and other natural resources. Overlay districts can be used to exclude development on or to impose resource protection or conservation standards within overlay areas. These districts can be used to protect many types of resources.

- **Resource Protection Districts** - protect wildlife resources and open space areas or resource-based uses such as farming, forestry, recreation from incompatible development.

- **Large Lot Zoning** - Large lot zoning refers to the designation of a very large minimum lot size within certain zoning districts to accommodate resource-based uses, such as farming or forestry, or to require a pattern of very scattered, low-density development to limit, for example, impervious surfaces and protect surface and groundwater quality.

- **Fixed Area & Sliding Scale** - Fixed area and sliding scale zoning are two zoning techniques (typically applied in association with subdivision regulations) that are used to differentiate allowed densities of development from district lot size requirements.

- **Conservation (Open Space) Subdivision Design** - Conservation or open space subdivision design is a subdivision design process wherein subdivisions are intentionally designed to protect rural character and open space.

Each of these methods has its own set of benefits and pitfalls and all of them should be thoroughly evaluated before they are implemented. However, there are many examples of successful regulatory land protection strategies in Vermont. The key to success is to ensure that the community on a whole supports the regulations.

XI. Agriculture and Forestry

A. Background

The working landscape shapes the character of Brookfield and is valued by those inside and outside of the agricultural and forestry professions. Agriculture and forestry define the character of Vermont and in the past have been major industries in the region. Agriculture and forestry remain crucial to Vermont but the reasons are changing. How one makes a living from the land is not the same as it was decades ago. Fewer, larger farms have become more common. At the same time, smaller farms that combine agriculture, forestry and tourism are on the rise. Artisan practices for adding value to farm products are resurging. How we maintain the working landscape and support the agriculture and forest industries will have a long term impact on our landscape and our local economy.

B. Farm and Forest Land Issues

Land and Taxation

An economic restructuring or a shift away from agriculture to the service and tourism industries has placed economic pressure on farm owners. The higher cost of owning land makes it difficult to rationalize conventional farming. Owners of forestland most often are faced with a tax bill on land that exceeds its economic value for timber production. Along with a need for house lots or development land in general, these factors have prompted landowners to place their land on the market for these purposes.

Current Use Taxation

For farmland and forestland conservation to be successful, the pressures posed by the market value approach to taxation must be solved for both the landowner and municipality. One means to address this issue has been the Use Value Appraisal Program administered by the State. Known as “Current Use,”

this program sets the valuations on farm and forest land based on their productivity values rather than their development values. There are 11,371 acres of land in Brookfield enrolled in Current Use, amounting to nearly 37% of all lands in Brookfield.

C. Agricultural Trends

An analysis of the United States Census of Agriculture data between 2002 and 2007 (2007 being the most recent period of data collected) shows that small farms in Vermont are once again increasing. Between 2002 and 2007, the number of farms in Vermont increased by 6 percent. The average size of farms decreased from 189 acres to 177 acres. Thirty-seven percent of Vermont's farms in 2007 were considered "small-scale" farms that sell under $2,500 in agricultural products per year. While the number of small-scale farms continues to grow, these farms only produce slightly less than 3 percent of Vermont's agricultural income.

However, over the past 10 years a growing movement in sustainable agriculture—involving increased local food production and consumption, value-added processing, and diversified farms—has taken off. In 2009, the State of Vermont passed legislation that created the Farm to Plate Investment program, part of which included the creation of the Farm to Plate Strategic Plan. In 2007, USDA data indicated the estimated agricultural revenue in Vermont to be $673 million per year. That number increased to $2.7 billion when food product output is also considered.

Many other businesses in Vermont depend on the "farm economy." According to the Vermont Farm to Plate Strategic Plan (F2PSP), which was released in 2011, Vermont has at least 457 food processing establishments that employ at least 4,356 people and is the second-largest manufacturing sector employer in the state, behind computer and electronic products. In addition, Vermont has at least 263 wholesale distribution establishments that collectively employ at least 2,288 people. The farm-related food industry is clearly connected to the farm economy.

In Brookfield, as in the rest of Vermont, the scale and style of farming has changed. The most recent Census of Agriculture (2007) reports that there are 28 farm operations in Brookfield. About 42% of these operations utilize more than 50 acres of land. Products grown or produced on farms in Brookfield include vegetables, herbs, dairy, hay, corn, maple syrup, honey, fruit, Christmas trees, cattle, horses, chickens, pigs, goats and sheep.

For census purposes, a farm is defined as "a place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year."

The distinctiveness of the working landscape gives Vermont its beauty. Farms provide open space for wildlife habitat, scenic views and a connection to the land that is hard to find in other places. They also help our towns avoid sprawl and maintain small town and village settlement patterns. To continue to receive the benefits farming has to offer, a community must encourage farming.

D. Forestry Trends

Development pressures, taxes and erratic markets have affected the region's forestland and its productivity. Forests and farms have been subdivided into small lots which threaten the economic

viability of forestry. Development pressure in the region has relaxed since the early 1990s, but the economy is predicted to rebound and the trend of land moving out of forest use to other uses will continue, particularly in those areas where access and development conditions are suitable.

High taxes contribute to a low rate of return on timber sales, and may have prompted some conversion to non-forest uses. Federal and state estate and inheritance tax laws may place family landowners into financial predicaments where they need to subdivide or develop forest land in order to cover taxes. Current tax law bases estate values on the market value of land rather than at use value.

The Current Use Program alleviates some of the tax burden of forest management. By allowing land to be assessed on the basis of current use, family landowners are able to realize a more reasonable return on investment for long-term timber management. The Northern Forest Lands Council has identified funding Current Use as vital to landowners maintaining their patience so as not to over-harvest forests or clear-cut large forest tracts.

Finally, markets for timber and wood are sensitive to changes in supply and demand. While the numbers of sawmills in the region have declined, new markets emerge, including timber exports, pulpwood production, and specialty wood products. Some of these markets make forest management more economically viable. For example, wood used for pulp is usually younger and of a lower quality which allows for thinning in stands that may ultimately produce quality sawtimber.

Despite these challenges, forestry continues to contribute to the state's economy. According to the Vermont Department of Employment and Training, jobs in the lumber and wood products industries have increased statewide.

E. Sustaining Agriculture and Forestry

Planning, policy and implementation efforts should be directed at sustaining agriculture and forestry pursuits and not just conservation of the resource because sustaining those pursuits is the best way to keep the land open and because agriculture and forestry are critical to the town and region.

There are a variety of tools than can be used to conserve these resources. Some are directed primarily at sustaining agriculture, others forestry, some are regulatory in nature, others are compensatory, and others voluntary. It is in the public interest to encourage conservation groups, landowners, local officials, and policymakers to utilize all of these tools.

Conservation Easements

Conservation easements are a common method used to ensure that the working landscape gets preserved. The Vermont Land Trust (VLT), Vermont's largest non-profit conservation organization, has conserved more than 590 parcels of land in agricultural use throughout the state, totaling 145,109 acres. Most land purchased with the intent of applying a conservation easement to it is funded, at least in part, by some form of grant from either state or private sources.

Conservation easements are one potential solution to preserving the working landscape. Other strategies for preserving the working landscape can be found in Section H of chapter X, Natural Resources.

F. Farming, Forestry and the Economy

In addition to preserving Brookfield's working landscape and maintaining the community's scenic beauty, farming and forestry can have an economic impact. Vermont is within easy reach of millions of people in cities like Boston and New York City. Additionally, Vermonters are increasingly seeking locally-sourced, sustainably-produced farm and forest products. Vermont is a national leader in innovative education programs based on local food, agriculture, and healthy eating. It is also widely recognized for its strong network of land trusts and other nonprofits that are models for conserving farm and forest lands.

There is already a growing mix of emerging agricultural and forestry entrepreneurs are adapting to the economy to stay competitive. They are producing artisan cheese, caramel, honey, specialty wood products, produce, breads, and other value-added items. Brookfield encourages the continued development of these industries and seeks to foster local interest in these products. One way Brookfield works to keep these businesses prosperous is its support of the Floating Bridge Food and Farms Cooperative. This organization includes members that are located in the area surrounding Brookfield. Members offer locally produced farm products including locally raised meats, vegetables, farm tours, cooking classes, on-farm workshops, events, farm vacation packages, farm stays, and more. The cooperative gathers together with visitors as a community, hosting seasonal markets and special events.

G. Goals, Policies and Recommendations

Goals

1. To encourage the conservation, wise use, and management of the town's agricultural and forestry resources, to maintain its environmental integrity, and to protect its unique and fragile natural features.

2. To protect the town's rural agricultural character, scenic landscape, and recreational resources.

3. To encourage the economic growth of agricultural and forest operations at a scale that is appropriate for Brookfield.

Policies

1. Discourage the fragmentation of areas where farming or forestry exist, or have significant potential to exist.

2. Keep the best agricultural soils (prime land and land of statewide importance) available for long-term agriculture use.

3. Contiguous forest and significant agricultural areas should remain largely in non-intensive uses unless no reasonable alternative exists to provide essential residential, commercial and industrial activities for the town's inhabitants.

4. The construction of utilities, roads or other physical modifications should skirt tracts of productive agricultural land rather than divide them.

5. Farmers, loggers, and foresters should use Required Management Practices (RMP) and are encouraged to implement Best Management Practices (BMP) in their operations and to minimize point and non-point source pollution.

6. Support the development of value-added, environmentally sound, farm and forest products.

7. Preserve recreational and scenic access by ensuring that at the completion of logging projects all roads are restored to their previous condition.

Recommendation for Action

1. ~~To promote a better understanding of the farming and forestry practices, and natural resource management in general; the industry, conservation organizations, public schools and the tourism and recreation industries should sponsor continuing educational opportunities to the public.~~ Encourage the use of conservation easements to preserve the working landscape.

XII. Recreation

There are over 1,030 acres of publicly owned land in Brookfield, much of which ~~862 acres~~ is owned by the state – Allis State Park, Ainsworth State Park, and Baker Pond~~, and the Rood Pond access area~~. The ~~T~~town maintains a 170-acre town forest on East Hill, a small park next to the Floating Bridge on Sunset Lake, and owns the 7-acre Sunset Brook Natural Area, a wetland off Route 65. All of this land is accessible for recreational use such as hiking, snowshoeing, and cross-country skiing. Some of the land includes trails for horseback riding and snowmobiles, and the land is open to hunting in season. Camping is available in the summer in Allis State Park.

~~The town owns a very small park for swimming on Sunset Lake, but the~~ The intensive use ~~the lake~~ that Sunset Lake gets for swimming and fishing results primarily from the Floating Bridge crossing the lake. This area receives the most intensive public use in the town from both residents and non-residents.

Most of the recreational use in Brookfield ~~is a byproduct of other land use,~~ such as hiking, snowshoeing, cross-country skiing, and hunting, is on private land. The informal private network of trails for skiing, hiking, mountain biking and horseback riding probably totals over 50 miles. In addition, all town highways, particularly Class 3 and 4, totaling 60 miles, are used for horseback riding, biking, jogging, hiking, and hunting. So far, a substantial amount of land in Brookfield remains unposted but there has

been an increase in recent years in the number of acres posted by private landowners. Several miles of trails in Brookfield are marked and maintained by the Vermont Association of Snow Travelers (VAST) and available for use in the winter by snowmobilers. The town should consider developing a policy concerning the use of all-terrain vehicles in town.

The most important recreation objective is to encourage the informal recreational use provided by private landowners. This use accommodates a large number of people and is an important component of the quality of life in Brookfield. In addition, the town should encourage the creation of public rights-of-way for trail use and make sure that Class 4 roads remain open to public access. If an opportunity to purchase suitable land on Sunset Lake arises, the town should seriously consider it to better accommodate the swimming, fishing, and kayaking that takes place at the lake.

Goal

1. To maintain, enhance and expand recreational opportunities in Brookfield.

Policies

1. Encourage patterns of land use that maintain and enhance the opportunity for outdoor recreation.

Recommendation for Action

1. The town should encourage the creation of public rights-of-way for trail use and make sure that Class 4 roads remain open to public access.
2. If an opportunity to purchase suitable land on Sunset Lake arises, the town should seriously consider it to better accommodate the swimming, fishing, and kayaking that takes place at the lake.

XIII. Historic Features

A. General Description

~~Brookfield, settled~~ Settled in 1779, Brookfield has four relatively intact 19th century villages: Pond Village, Brookfield Center, East Brookfield, and West Brookfield. Although some of the early structures are gone, few new buildings have been constructed in these villages during the past one hundred years. In addition to the residences and churches ~~which~~ that currently exist, at one time these villages were the site of many businesses and industries, including sawmills, grist mills, stores, blacksmiths, creameries, cheese factories and other manufacturers. The stonework from several of the old mill sites remains intact. The Vermont Division of Historic Preservation has listed Pond Village, East Brookfield Village, and West Brookfield Village as state-significant historic districts. Pond Village is also listed on the National Register of Historic Places.

Many historic structures and buildings survive in Brookfield, including three churches, several former one-room schoolhouses, homes, barns, and silos. The Vermont Division of Historic Preservation's Historic Sites and Structures Survey includes 98 sites in Brookfield. Noteworthy historic structures include the following:

- The Floating Bridge, Brookfield's chief tourist attraction, was first built in 1820 across Sunset Lake (then Colt's Pond). The bridge was completely re-built in 2015 and is one of the only remaining pontoon bridges in the East.
- The Marvin Newton House, located in Brookfield Center, is owned and operated as a museum by Brookfield Historical Society. The house was built in 1835 and is an example of federal style architecture. It is listed on the National Register of Historic Places.
- The Ebenezer Stratton Tavern, a private home on East Street built in the 1780s, is listed on the National Register.
- The Old Town Hall in Pond Village, now owned by the Brookfield Community Partnership, was built in 1850, and added to in 1902; it is considered historically significant by the state.
- The Fork Shop in Pond Village, now a private residence, was erected in 1866, and was once the finishing plant and shipping office of the Peck and Clark Company's fork factory, which manufactured farm implements. On its south side is the dam on Sunset Lake which provided water power for this and other early industries.
- The First Congregational Church in Pond Village was built in 1846 and is still used regularly for services.
- The West Brookfield Community Church was built in 1840 and has ~~been~~ little changed. It has no central heating, plumbing, or electricity and still has a horse and carriage shed next to the church.
- The East Brookfield Church was built in the late 1800s and is still used regularly for services.

Brookfield has five cemeteries with gravestones dating from the early 1800s. Cemeteries are located in Brookfield Center (two locations), East Brookfield, East Hill, and West Brookfield.

Potential sites for archaeological research in Brookfield include areas of old cellar holes and foundations, particularly those in the vicinity of Brookfield Center and Sunset Lake. Scuba divers have found many artifacts from Brookfield's early settlement ~~well-preserved~~ in the thick layers of mud on the lake bottom. A student project overseen by an archaeologist found some artifacts at the site of the Old Town Hall from its use as a Masonic hall.

Goals

1. To protect the historic character of Brookfield.

Policy

1. Protect the historic character of Brookfield's landscape.

XIV. Land Use

A. Introduction

In terms of planning, one of the most complex discussions is about how land will be used in the future. How a town uses its land and plans for future land development can affect a wide range of issues including the town's character and its ability to provide services adequately and at a reasonable price. In order to ensure that the impacts of future development in Brookfield does not have unintended consequences, the town's growth must be managed to reflect the vision of this plan.

This section discusses both current and future land use patterns and provides goals, policies and recommendations for future implementation. Vermont law requires a town's land use regulations, such as zoning, subdivision and site plan review, to conform with this plan and the statutory planning goals, stating:

> *A municipality that has adopted a plan through its bylaws may define and regulate land development in any manner that the municipality establishes in its bylaws, provided those bylaws are in conformance with the plan and are adopted for the purposes set forth in section 4302 of this title. [24 V.S.A. § 4410]*

The Plan is designed to be used by Brookfield's decision makers to guide growth to the most appropriate locations. The citizens of Brookfield have both a need and a right to review and assess proposed development, and to regulate new building to insure appropriate location and that too rapid expansion of Brookfield does not unreasonably and adversely affect the rural and scenic quality of the town or its ability to pay for the services that increased development requires.

It is the intent of this Plan to provide for the maintenance of the high quality of life in Brookfield by protecting the rural and scenic quality of the town through the appropriate use of land for residential, agricultural, forestry, recreational and small business use. Future development within Brookfield should be guided by and related to the existing settlement patterns and the citizens' desires to maintain the rural and scenic quality of the town, as well as by natural environmental constraints, and the ability of the taxpayers and the land to support the proposed growth.

B. General Goals, Policies and Recommendations

The overall land use goals for Brookfield are listed below:

- Promote the economic and cultural viability of Brookfield's Village Centers;
- Conserve the natural environment by protection, management and judicious use of natural resources;
- Protect the character of rural areas and their natural resources by avoiding incompatible land uses;
- Channel public investments into existing or planned settlement areas to avoid sprawl; and

- Protect wetlands, water resources and aquifers from development.

The following policies apply to all lands in Brookfield:

- ~~Encourage the clustering of houses.~~
- ~~Encourage any new subdivision and construction to maintain the current mix of lot sizes and building setbacks from the road, so as to continue the rural character of the Town; and similarly, to discourage building placement and site design that creates a suburban aspect to the Town.~~
- Site and design development:
    - To maintain the current mix of lot sizes and building setbacks from the road.
    - To complement and be consistent with the town's existing settlement pattern and historic and rural character.
    - Not to create a suburban aspect to the town.
- ~~Have large structures use~~ Use vegetation and existing topography to reduce ~~their~~ the intrusiveness of large structures.
- Use screening to reduce the visual impacts of commercial uses and major subdivisions as seen from public roads and neighboring properties in accordance with the following:
    - Make the maximum use possible of preexisting vegetation, structures, and topographical features that screen the project.
        - Assure the continuity of this preexisting screening through site control or agreements with relevant property owners.
        - If preexisting screening is lost during the life of the project (e.g., cutting of vegetation that screens from a public road), review the ensuing visual impact and install new screening to mitigate that impact.
    - Install screening such as vegetation or topographic features to distract the viewer from the project and break up the view of the project.
        - Do not install "solid wall" screening such as a line of arbor vitae.
        - Choose parcels whose size is sufficient for both the project and the installation of screening.
        - When installing vegetative screening, choose a diversity of native species and mix coniferous and deciduous plantings.

- ~~Assure that new development in town is consistent with the historic and rural character of the town.~~
- Maintain or improve the agricultural and forestry base in the ~~T~~town.
- ~~Focus~~ Site new housing on existing town roads that currently have electric utility service.
- ~~Discourage the conversion of~~ Do not convert Class 4 roads to Class 3 roads unless there are significant advantages to the town.
- Keep the best agricultural soils (prime land and land of statewide importance) available for long-term agriculture use.
- ~~Carefully design~~ Design and review the extraction of earth resources to minimize impacts, assure restoration of the land following extraction, and ensure conformance with the policies of this plan.
- Maintain the small scale, "in-home" aspect of the ~~T~~town's non-farm commercial base.
- ~~Discourage~~ Do not site commercial strip development in the ~~T~~town.
- Protect sensitive ecological areas such as steep slopes, wetlands, deer yards, and endangered species sites.

The following are general recommendations for town action related to land use:

- Maintain the highest quality water resources with a specific goal of not having to provide public infrastructure to provide clean water in the ~~T~~town. ~~Because of the density of population and soil conditions, steps may have to be taken to provide a common system of water or septic treatment for Pond Village.~~
- Encourage the maintenance and improvement of public and private lands in the town for recreational use ~~and make sure that all Class 4 roads remain accessible to the public~~, including the use of Class 4 roads as trails.
- Encourage the creation of appropriate greenbelts in the subdivision process or through other methods by reserving undeveloped portions of land that serve as corridors to connect larger and coherent blocks of undeveloped land.
- Encourage landowners voluntarily to conserve their farm and forest lands through donation and sale of development rights to qualified non-profit land trusts.
- Provide an environment where people can maintain domestic animals.
- Provide an environment where people can conduct home-based businesses and small commercial enterprises.
- Encourage the creation of public recreational land.
- Encourage and improve appropriate recreational fields and facilities at the school for public use.
- ~~The town should consider~~ Consider the implementation of zoning districts or other bylaw amendments that would allow for continued growth but would encourage the clustering of homes in and around "town centers" and protect open space in outlying districts. These could permit smaller lot sizes in zones around "town centers" and larger lot sizes in outlying districts. Maintaining the rural aspect of the town should be encouraged.

C. Current Land Use

Land use in Brookfield is still largely rural, with a strong agricultural presence and a large proportion of the ~~T~~town currently in forested tracts. The town also has a strong residential component since Brookfield serves as a bedroom community for the nearby employment centers of Randolph, Bethel, Northfield, Montpelier, Barre and Waterbury. Another important use of land in Brookfield is either as nonresident second homes or nonresident land investment. Roughly 42% of the homes and land parcels in Brookfield are owned by nonresidents.

Land use regulations in Brookfield are an overlapping mix of various bylaws passed between 1970 and 2010. These regulations include:~~They are listed in this document.~~

- The Development Bylaw ~~is the only comprehensive bylaw~~ regulates land use in Brookfield.
- Subdivision regulations provide for the orderly review of subdivisions creating lots.
- Flood hazard regulations meet federal guidelines limiting construction of buildings in a flood hazard area. They affect about 730 acres in Brookfield.
- ~~The Brookfield sewage ordinance is no longer in effect because the state assumed full responsibility for regulation of all sewage disposal systems in 2007.~~
- The shoreland regulations require a 50 foot setback from the five largest ponds in Brookfield.

Almost ~~all of the~~ the entire town, with the exception of the areas within the villages and a conservation district, has a 5-acre minimum lot size. Wetlands on the National Wetlands Inventory map or otherwise deemed to be Class 1 or Class 2 by the state of Vermont (865 acres) and areas of steep slopes over 25%

(3,227 acres) are deemed undevelopable with structures. There is also a 75-foot setback for buildings near any wetlands or stream (4,749 acres). These regulations provide 8,735 acres of green space in the town, mostly in the form of narrow corridors along watercourses and on high elevation land. Commercial uses are permitted throughout the town, but only after they have received a conditional use permit from the Board of Adjustment. Junk yards, including salvage yards, are prohibited in the town. The Bylaw allows the use of clustering to encourage the protection of additional open space in the town.

D. Future Land Use

Map 2 (see Appendix B) attached to this plan is the future land use map, showing the town's land use ~~districts~~ areas. These ~~districts~~ areas are designed to meet the overall ~~objectives~~ goals and policies of this plan stated in Section ~~V~~ B, above. Each of these ~~districts~~ areas is subject to the specific policies identified in the immediately following section and in other sections.

~~Purposes and additional policies for the land use districts include:~~

Village Areas ~~Districts.~~

There are two Village Areas in Brookfield: Pond Village and East Brookfield. The purpose of the Village Areas ~~districts~~ is to provide for a higher density of activity, ~~both~~ including:

- civic,
- residential and
- business uses, that serve~~ing~~
    - the immediate community within these centers
    - as a focal point for the social and economic life of surrounding rural areas and
    - to preserve the historic significance of existing landmarks.

Density should vary based on the existing scale of development in each village and on the proximity to the core of the village (density decreases as you move farther from the core). Pond Village's core represents the highest density at roughly ½ acre lot size, decreasing to one acre as the overall density decreases. East Brookfield, which is less dense than Pond Village maintains a density of roughly three acres per lot.

This plan directs new development in Brookfield primarily to the village districts, particularly development that is commercial or has a density greater than one dwelling unit per five acres.

Goal

1. To provide a location for high density mixed use development of a character and scale that is compatible with Brookfield's villages.

Policies

1. Single and multi-family residential, appropriately scaled commercial (including primary retail) and civic or governmental uses are appropriate in Brookfield's Village Areas.

2. New development and road construction or reconstruction in the village areas ~~districts~~ must preserve and provide pedestrian access.

3. ~~The policy of the plan is to~~ Maintain and encourage small scale commercial use.

4. ~~and to encourage~~ Locate any proposed commercial development ~~to locate in areas~~ adjacent to existing villages or hamlets.

5. No industrial uses are planned or encouraged.

6. ~~All~~ Size, site, and screen new commercial uses ~~should be adequately sized, sited and screened~~ so as to be compatible with the character and residential use found throughout the town.

Recommendation

1. Because of topographic, geographic, and infrastructure constraints in the area of Pond Village, Brookfield's Zoning Bylaw should continue to include the extended village district along Stone Road which provides a location immediately adjacent to Pond Village into which the existing village area of higher density uses may be expanded in a reasonable manner.

Conservation Area ~~District~~

The purpose of the Conservation Area ~~district~~ is to protect natural resources on lands that are essentially undeveloped or lack direct access to public highways, are important for wildlife and wildlife habitat, or have a physical characteristic such as wetlands or slopes of 25 per cent or greater. ~~or wetlands~~. Development in this ~~district~~ area that has a density greater than one dwelling unit per 25 acres does not conform to this plan. ~~Conformance with this plan requires that development in this district be limited to those uses specified in the development bylaw currently in effect.~~ Appropriate uses in this area include outdoor recreation, maple sugaring and forestry (with a plan approved by the Town Forester or County Forester and in conformance with the State's accepted management practices for logging), single family dwellings and camps.

Goal

1. To protect natural resources, wildlife and wildlife habitat in areas of Brookfield that are essentially undeveloped.

Policy

1. Appropriate uses for this area are limited to outdoor recreational activities, appropriately managed forestry, single-family homes and camps. Commercial or industrial development is not appropriate in this area.

Scenic Protection Area ~~District.~~

The purpose of this ~~district~~ land use area is to protect the scenic beauty and unique undeveloped character of the areas designated, which presently include the Brookfield and Williamstown Gulfs. Both gulfs include winding roads through narrow, undeveloped areas with steep slopes on either side, no commercial uses, and only a few residential uses. The Brookfield Gulf includes Allis State Park along much of the east of Route 12 and the Williamstown Gulf includes the Ainsworth State Park along much of the east side of Route 14 as well as a tributary of the White River (second branch) on the west side.

Development in these districts that has a density greater than one dwelling unit per 25 acres or the equivalent does not conform to this plan. ~~Conformance with this plan requires that development in this district be limited to those uses specified in the development bylaw currently in effect.~~ Appropriate uses in this area include outdoor recreation, maple sugaring and forestry (with a plan approved by the Town Forester or County Forester and in conformance with the State's accepted management practices for logging), single family dwellings and camps.

Goal

1. To protect the scenic beauty and unique character of the Brookfield and Williamstown Gulfs.

Policy

1. Appropriate uses for this area are limited to outdoor recreational activities, appropriately managed forestry, single-family homes and camps. Commercial or industrial development is not appropriate in this area.

Agricultural – Residential Area ~~District~~

The purpose of the agricultural/residential area ~~district~~ is:

- to promote, encourage, and protect farming of all kinds as an important part of the ~~T~~town's economic base and social character;
- to maintain and conserve agricultural lands and lands with potential for agricultural use; and
- to provide areas for residence at a density consistent with the capacity of the soil and topography to furnish potable water supply and accommodate a private waste disposal system for such residences.

The area ~~district~~ consists of all the land ~~area of~~ in the town that is not included in any one of the previously listed ~~districts~~ Areas (Village ~~Districts~~ Area, Conservation ~~District~~ Area, Scenic Protection

~~District~~ Area, or Public Lands ~~District~~ Area). Conformance with this plan requires that development be at a density of one ~~dwelling~~ unit per five or more acres, with the character, scale and density of any commercial uses consistent with the average residential use in the district. Uses in this area may include single-family residential, home occupations, outdoor recreational facilities, small-scale commercial (not including primary retail), and appropriately managed forestry. In addition, small-scale light industrial may be included if compatible with the purpose and character of the area.

Goal

1. To maintain and conserve Brookfield's working landscape and the rural character of the community.

Policy

1. Appropriate uses in this area include agriculture and appropriately managed forestry, single-family residential, home occupations, outdoor recreation, small scale commercial and small – scale light industrial compatible with the purpose and character of the area.
2. Commercial or light industrial development may not have an adverse effect on roads or the character of the area in which it are located.
3. Primary retail development is not appropriate for this area.

Public Lands Overlay Area ~~District.~~

The purpose of this district is to permit appropriate public uses on the large tracts of publicly owned land in Brookfield. This district consists of Ainsworth State Park, Allis State Park, any state owned forest land and the Town Forest. Conformance with this plan requires that development in this Area ~~district~~ be limited to:

a. Camping, picnicking, hiking, hunting, skiing, other outdoor recreational activities, maple sugaring, and forestry with a plan that is approved by the Town Forester or the County Forester and in conformance with the State's accepted management practices for logging; and
b. Structures for public recreational use that are consistent with the objectives and policies of this plan.

Goal

1. To protect public lands and maintain recreational opportunities for Brookfield residents.

Policies

1. Appropriate uses in this area are limited to public recreation and appropriately managed forestry. Limit structural development in this area to those associated with the types of facilities common at State-owned public recreational facilities.
2. Development that has an adverse impact on public recreation is not appropriate in this area.

Shorelands Overlay Area ~~District~~

The purpose of the Shorelands Overlay Area ~~this district~~ is to:

- Further the goals and policies contained in the Natural Resources chapter of this Plan;
- Protect the quality of water in designated ponds and lakes in Brookfield; ~~to~~
- Prevent undue erosion of the shorelands of those ponds and lakes, and ~~to~~
- Control siltation, so that these water bodies may be safe and healthy for recreation, fish, wildlife, boating, and water sports.

The ~~district~~ area presently includes Baker, Lamson, North, and Rood Ponds, Sunset Lake, and any water body in Brookfield determined by the Agency of Natural Resources to cover at least 20 acres.

Goal

1. To protect the quality of water in designated lakes and ponds by limiting the potential for erosion and other damage.

Policies

1. Development located within the Shorelands Overlay area shall be set back from the water body a minimum of 75 feet.

2. The Brookfield Development Bylaw shall continue to require setbacks from wetlands, rivers, streams and ponds.

Flood Hazard Overlay Area ~~Floodplains~~

~~Areas of special flood hazard in the Town are shown on the most current flood insurance studies and maps published by the Department of Homeland Security, Federal Emergency Management Agency, National Flood Insurance Program, as provided by the Secretary of the Agency of Natural Resources. The purpose of these areas includes minimizing and preventing the loss of life and property, the disruption of commerce, the impairment of the tax base, and the extraordinary public expenditures and demands on public services that result from flooding and other flood related hazards. Design and construction of development in these areas must be accomplished in a manner that minimizes or eliminates the potential for flood and loss or damage to life and property. Development within the regulatory floodway may not occur unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice by a registered professional engineer certifying that the proposed development will result in no increase in flood levels during the occurrence of the base flood.~~

Some lands adjacent to the White River as well as its tributaries are subject to periodic flooding. Floodplains and Fluvial Erosion Hazard Areas are unsuitable for development because of the high loss

potential for life and property as well as the limited ability of septic systems to perform adequately during periods of high water.

It is the purpose of this land use area to:

- Avoid and minimize the loss of life and property, the disruption of commerce, the impairment of the tax base, and the extraordinary public expenditures and demands on public services that result from flooding related inundation and erosion;
- Ensure that the selection, design, creation, and use of development in hazard areas is safe and accomplished in a manner that is consistent with public wellbeing, does not impair stream equilibrium, flood plain services, or the stream corridor;
- Manage all designated flood hazard areas.
- Make the Town of Brookfield, its citizens, and businesses eligible for federal flood insurance, federal disaster recovery funds, and hazard mitigation funds as may be available.
- To protect the environmental and recreational value of Brookfield's rivers and streams.

As of the date this Plan was adopted, Brookfield's Flood Hazard Regulations have been designed to meet the minimum standards (for more information, see Chapter ##, Flood Resiliency) set by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP). Current Flood Hazard Bylaws do not allow new development within the floodway, but do allow some development within the 100-year floodplain on issuance of a conditional use permit. Uses currently allowed with a conditional use permit include single and multi-family residences, commercial businesses, public buildings, quarries and home occupations to name a few.

Goal

1. To protect the citizens of Brookfield and the quality of our waterways as natural and recreational resources by using sound planning practices within designated Flood Hazard Areas.

Policies

1. Allow only agriculture, recreational and open space uses in floodplains.

2. Do not site new development within the 100-year floodplain except properly designed outbuildings and renovations that meet the requirements for flood hazard regulation as stipulated by the Federal Emergency Management Agency.

Recommendations

1. The Planning Commission should regularly review the flood hazard bylaw to ensure that it remains up-to-date with the requirements of FEMA and the NFIP.

2. The Planning Commission should examine additional protections for the Flood Hazard Area, and areas outside the FHA, such as river corridors, that are prone to flooding or flood damage. These should be incorporated into the Brookfield Flood Hazard bylaw.

3. The Planning Commission should revise the flood hazard bylaw to prohibit new development within the floodplain except properly designed outbuildings and renovations that meet the

requirements for flood hazard regulation as stipulated by the Federal Emergency Management Agency.

XV. Transportation

Land use, energy, and transportation are related. Land use, both within and outside Brookfield's borders, can drive the need for improvements to the transportation system. At the same time, transportation build-out without consideration of land use can drive sprawl that imposes costs on local governments and undermines a town's scenic and rural character.

Local land use goals must be facilitated in part by providing the necessary transportation facilities to accommodate growth where growth is desired. In addition, a given land use can have very different impacts on the transportation system depending on how it is sited and designed. Land use and transportation are both linked to the town's economic well-being. Poorly planned land use patterns increase transportation costs and also the tax rate, while well planned development can add to the tax base of the town, providing additional funds for the transportation system.

A. Public Highway System

Highway classifications determine the amount of state aid available to assist with repair and maintenance. The Vermont Agency of Transportation (VTrans) and the Selectboard determine road classes. Criteria include traffic volume, road condition and function. Class two highways are the major connectors linking villages with each other and with state highways, and they receive a higher rate of State aid than Class 3 highways.

Miles of Roads in Brookfield	
Class 1	0
Class 2	19.18
Class 3	41.83
Class 4	12.78
Total Town Roads	**73.79**

Figure 13: Miles of roads in Brookfield (*Source: Vtrans*)

Twenty-six percent (26%) of Brookfield's roads are Class 2, including the Ridge Road, West Street, Crossover Road, Stone Road, Schoolhouse Road, and Northfield Road. The remaining roads in Brookfield are either Class 3 or 4.

Class 3 highways are other town roads, including most gravel roads, that are maintained in a manner enabling them to be driven under normal conditions in all seasons by a standard car. The majority (57%) of Brookfield's roads are Class 3.

Seventeen percent of Brookfield's highways are Class 4. Class 4 highways are generally in poor condition and are not maintained. No state aid is available for work on Class 4 highways. While not suited for regular traffic, Class 4 roads do represent a valuable asset for the town from a recreation standpoint. Such town-owned corridors will help ensure that there will continue to be a place to enjoy snowmobiling, cross country skiing, walking, hunting, horseback riding and other outdoor recreation.

Apart from education costs, public roads have been and will continue to be Brookfield's largest town asset requiring significant financial investments paid through municipal taxes. Transportation funding comes from numerous combinations of the local tax base, state and federal gas tax receipts, state and federal allocations and registration fees. The most significant funding comes from the federal transportation bill. This funding is distributed to towns by the Agency of Transportation. The federal and state governments pay a percentage of project costs and the community pays the remainder. This funding applies only to Class 1-3 roads. Maintenance of Class 4 roads is funded exclusively by the community.

The Two Rivers-Ottauquechee Regional Commission has compared programs throughout the region and recommends a program of early intervention using preventative maintenance, because such a program has proven to be 75-85% less costly than larger reconstruction work after significant deterioration has occurred. Such a program should be a part of an adopted Transportation Capital Budget and Transportation Program.

Proper and timely road and drainage systems maintenance can help protect these systems from most severe weather events. Maintaining a reliable and up-to-date inventory of existing culverts and structures, coupled with a short and long range plan for replacement and upsizing is essential. Replacing deficient culverts and bridges also helps protect water quality – installing appropriately scaled and designed structures that can handle flood events, stormwater runoff, promote fish passage, and minimize the discharge of road sediment. These upgraded culverts and bridges, operating in greater harmony with the natural environment, will also be less likely to fail during storm events.

B. State and Federal Highways

State highways in Brookfield include Route 12, Route 14 and Route 65. Interstate 89, a significant North-South travel corridor, passes through Brookfield with no direct access in the town except for emergencies. The most significant impact I-89 has on the community is for emergency services: Brookfield's fire and rescue teams must respond to accidents on the Interstate.

State/Federal Roads in Brookfield	
State Highways	17.42
Interstate Highways	6.17
Total State/Federal Roads	**23.59**

Figure 14: Miles of State/Federal roads in Brookfield (*Source: Vtrans*)

C. Class 4 & Trails

Class 4 roads and trails primarily offer access to town and conservation resources and provide unique insights into an agrarian landscape long abandoned. Many Class 4 roads have been incorporated into the natural landscape, with very little development occurring along these roads. Class 4 roads are not maintained except for some culvert and bridge work to ensure access for emergency vehicles. The town also does not plow these roads during the winter. Public utility services or other municipal infrastructure that typically accompany roads are nearly nonexistent. Often these roads are scenic travel corridors for hikers and bicyclists and provide limited access to hunting and conservation lands.

Trails are used exclusively for recreational purposes and are not intended for vehicle access, and therefore they are not maintained. According to the Vermont Agency of Transportation in 2015, Brookfield had 1.88 miles of publicly owned trails.

D. Development Review Road Standards

The town currently uses highway rules and regulations based on state standards that were adopted by the Selectboard in April of 2013. This policy details road construction standards and policies for road classifications, right-of-way, access, road acceptance, and numerous other construction and maintenance related activities. The responsibility of ordinance implementation rests with the Selectboard and the Brookfield Road crew.

The following planning considerations should continue or be expanded upon in future policy updates:

- Emergency management services will have guaranteed safe access to all development.
- Roads should be designed with multi-modal transportation safety (pedestrian, bicycle, etc.) in mind.
- Since local and state road construction follows State of Vermont design standards, private roads should be constructed to those standards, thereby minimizing changes if the road is accepted by the town at a later date.
- Road design and construction should adhere to the relevant town plan goals and objectives - land use, natural resources and transportation elements.
- All roads will reflect a context-sensitive design that preserves and enhances the adjacent land uses and transportation system.
- Private road and driveway standards should be adopted to ensure stormwater is not discharged onto public highways or drainage systems.
- The development of private roads should be approved by the Selectboard after review of the proposed road by the town road Supervisor and a designated representative of the Fire Department that serves the town.

Major transportation projects often place a greater emphasis on contemporary engineering design standards. However, in some instances, the design and engineering of our roadways and bridges fail to consider the town's unique historical and natural landscapes. While engineering sufficiency criteria are important factors for road and bridge improvements, compatibility with existing and future development patterns also are important considerations.

E. Access Management

Access management is an important process to provide reasonable accessibility to adjacent land uses while maintaining a safe and efficient flow of traffic. The town recognizes the value of access management and can implement access management strategies through its planning and public works related ordinances and policies. The following are strategies for all public and private transportation and development projects:

- Utilize State of Vermont design standards for all temporary and permanent access, to include emphasis on drainage, sight distance, and access for emergency services.
- Encourage use of shared driveways and/or permitting access that may result in a future shared driveway.
- Require the review of access for existing development whenever a change of use or other application process is brought before the town.

- Encourage commercial properties to use existing development nodes in order to preserve or create road segments with few accesses, unless additional replacement access better meets access management goals.
- When practical, approve subdivisions with private and public road designs that allow shared access with other adjacent subdivisions and/or have the private rights-of-way reserved so an access may be built to connect to existing and future development.
- Encourage permanent landscaping and roadside enhancements to visually define access points and contribute to the roadway's aesthetic character.
- Use sight-distance standards based on the actual travel speeds and not the posted speed limits. If no such data exists or is not current, then the town may work with the Regional Planning Commission to obtain the appropriate data.

F. Other Modes of Travel

Bicycles and Pedestrians

Many residents bike or walk on town roads in Brookfield. In the more rural areas of town bicycle and pedestrian travel is reasonably safe. Routes 12 and 14 are a common location for bicycle travel, but in some areas, travel is less safe due to higher traffic volume and speed, lack of available shoulders and poor pavement quality.

Public Transportation

Brookfield has limited access to a small regional public transportation system, Stagecoach, Inc. Stagecoach offers regular transportation to West Lebanon, NH and Montpelier, VT. Its southern route to West Lebanon (the 89er) stops in nearby Randolph. In addition, a weekly “shopping route” to West Lebanon is offered that also stops in Randolph. Stagecoach also offers limited public transportation in the form of special requests for individuals who need transportation for medical reasons. Brookfield residents can take advantage of Stagecoach's "Ticket to Ride" Program which helps pay a substantial percentage of the cost of rides for senior citizens (60+) and persons with special needs when there is not available transportation in the household or the person requesting the trips is unable to drive on the day of the trip. Ticket to Ride is available for a broad array of destinations, such as medical services, shopping, errands, and social purposes.

Given that Brookfield's senior population is growing, there is an important need for an affordable source of public transportation that can bring the seniors to major medical facilities like Dartmouth-Hitchcock and larger commercial centers for day-to-day shopping.

Rail Facilities

Brookfield has no rail service. The nearest railroad is the New England Central Railroad (NECR) line, which serves both freight and Amtrak passenger traffic. The nearest passenger station is in Randolph.

G. Goals, Policies and Recommendations

Goals

1. To provide and maintain a safe, energy-efficient and well-maintained transportation network in a cost-effective manner, integrating all modes of travel (auto, pedestrian, bicycle, and mass transit) and meeting the needs of the public in a manner consistent with the other goals, policies and recommendations of this Plan.

2. To maintain the rural and scenic character of the back roads and byways thereby protecting the rural scenic quality of the town whenever possible.

Policies

1. Maintain the existing road system, while discouraging the expansion or addition of new roads.

2. Consider public input prior to a decision to substantially change the maintenance level, surface treatment, or class of a town road.

3. Evaluate traffic volume and maintenance costs against other factors when deciding whether or not to pave a road, such as the up-front cost of paving and base improvements that may be necessary to support a paved surface and the potential quality-of-life impacts to residents.

4. Replace undersized culverts and bridges with appropriately sized infrastructure whenever financially feasible, when addressing improvements on roads that are Class 2 or 3.

5. Integrate land use and transportation planning by concentrating growth in areas served by an adequate highway system, utilizing land use regulations and appropriate highway access management techniques to control the impacts of development on the transportation system, and making transportation improvements in areas where growth is desired.

6. Limit the number of access points during new development along highways to reduce driver confusion and traffic congestion and to minimize conflicts between through and local (turning) traffic via provisions on further subdivision in new access permits.

7. Work with other communities in the region through the TRORC and its Transportation Advisory Committee to ensure that the region's transportation system is developed in a well-coordinated manner that recognizes and balances the needs and desires of each community.

8. Consider the relationship of a road to surrounding features of the landscape when planning improvements needed to safely accommodate increasing traffic.

9. Combine widening of roadways to accommodate safe use by bicyclists with traffic slowing measures and enforcement of speed limits to ensure that traffic speeds do not increase.

10. Retain Class 4 roads, trails, and other public rights-of-way as public resources.

11. Require development on private roads to adhere to town access standards and to provide safe year-round access for town services, particularly fire and rescue.

12. Any plan for changes to roads, including Routes 12, 14, and 65, must not unduly compromise the historic, scenic, rural and cultural characteristics of these areas. Economic development objectives or new growth that create increased demand for upgrading of routes must preserve and enhance Brookfield's Village Areas and planned expansion areas.

13. Maintain a reliable and up-to-date inventory of existing culverts and structures, coupled with a short and long range plan for replacement and upsizing.

14. Actively participate in any process or project which would result in significant changes to Routes 12, 14 or Route 65.

15. Support efforts to sustain, expand, or enhance existing public transportation.

Recommendations

1. The town should consider developing a town highway capital plan and schedule that will guide maintenance and road infrastructure investments in the future.

2. Continue participation in the Regional Transportation Advisory Commission as well as the TRORC Road Foreman's meeting program.

3. The Selectboard should actively explore the purchase and utilization of simple to use rural road maintenance software for maintaining roads and drainage systems.

XVI. Flood Resilience

A. Background

Following the impact of Tropical Storm Irene in 2011, the Vermont Legislature added a requirement that all communities address flood resilience as part of their municipal plans. Interpreted broadly, "resilience" means that an entity—a person, neighborhood, town, state, region or society— when faced with a particular situation or event, has the ability to effectively return to its previous state or adapt to change(s) resulting from the situation or event without undue strain. As such, "resilience" means an overall preparedness for a future event. For the purposes of this chapter, flood resilience will mean the ability of

Brookfield to effectively understand, plan for, resist, manage and, in a timely manner, recover from flooding.

Types of Flooding

Generally speaking, there are two types of flooding that impact communities in the state of Vermont—inundation and flash flooding. Inundation flooding occurs when rainfall over an extended period of time and over an extended area of the river's basin leads to flooding along major rivers, inundating previously dry areas. This type of flooding occurs slowly, but flood waters can cover a large area. Inundation flooding is slow and allows for emergency management planning if necessary. However, unlike during a flash flood, it may take days or weeks for inundation flood waters to subside from low areas, which may severely damage property.

Flash flooding occurs when heavy precipitation falls on the land over a short period of time. Precipitation falls so quickly that the soil is unable to absorb it, leading to surface runoff. The quick-moving runoff collects in the lowest channel in an area—upland streams, in small tributaries, and in ditches—and the water level rises quickly and moves further downstream. Flash flooding typically does not cover a large area, but the water moves at a very high velocity and the flooding manifests quickly, making flash floods particularly dangerous. Due to the velocity of the water, a flash flood can move large boulders, trees, cars, or even houses.

The collecting of water in channels in steep areas also causes fluvial channel erosion, which can severely damage roads and public and private property. Fast moving water in the stream channel may undermine roads and structures and change the river channel itself, predisposing other roads and structures to future flooding damage. Flash floods can also mobilize large amounts of debris, plugging culverts and leading to even greater damage. In Vermont, most flood-related damage is caused by flash flooding and fluvial erosion (erosion of stream banks). Due to its topography, Brookfield is vulnerable to flash flooding and fluvial erosion.

Causes of Flooding

Flooding is caused by a small number of distinctive types of weather, and also by the cumulative impact of a weather event and the conditions on the land at the time the flooding occurs. By far the most common type of weather event to occur in the region is a severe storm. Severe storms may include thunder, lightning, hail, high winds, and precipitation with varying degrees of intensity. Severe storms with particularly heavy precipitation have the ability to create flash flood conditions. However, over an extended period of time, severe storms may cause inundation flooding due to the cumulative effects of continuous rain, saturated soils and a high water table/high aquifer levels.

The main hazards associated with hurricanes and tropical storms are high winds and flooding. By the time most hurricanes reach Vermont, they have been downgraded to tropical storms, but that is not to say they are less dangerous. Due to the steep slopes and narrow valleys in the region, heavy precipitation from a hurricane or tropical storm tends to cause severe flash flooding and widespread destruction. The

speed that the hurricane or tropical storm is moving across the area and the pockets of varying severity have an impact on the rainfall totals observed from town to town. Storm impacts can be greatly magnified by previous rains.

Hurricanes and tropical storms occur during the summer and into the fall months, but ice jams and the combination of melting snow and rain leave the region vulnerable to the impacts of flooding in the winter and early spring. Ice jams typically occur during the spring when river ice begins to break up and move downstream, but may occur during a thaw period in the winter months. Sheets of ice become hung up on a narrow portion of the stream or river, such as under a bridge, culvert or another obstruction, creating a "dam" and additional ice and water begin to back up behind the hung-up ice sheets. This creates inundation flooding immediately adjacent to the site of the "dam," and additional inundation flooding upstream. Once the "dam" breaks free, flash flooding may occur downstream as well. Ice jams in the region typically cause minimal damage, but they can damage road infrastructure and flood homes and businesses.

The combination of melting snow and rain can lead to flooding in Brookfield. Flooding is worsened by land uses that create impervious (or bare) surfaces that lead to faster runoff, and past stream modifications that have straightened or dredged channels, creating channel instability.

Historic Flood Events

One of the worst flood disasters to hit the Town of Brookfield, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by up to 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. Eighty-four Vermonters, including the Lieutenant Governor, were killed. The flooding in the White River valley was particularly violent, with an estimated 120,000 to 140,000 cubic feet/second (cfs) flowing out of the White River at West Hartford, Vermont. Like many towns in the region, the Town of Brookfield received heavy precipitation, seeing roughly 7-9 inches of rainfall over the storm period.

A more recent flood event that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, as well as hundreds of millions of dollars of home, road, and infrastructure damage. Due to the strong winds, 50,000 Vermont residents were initially without power, and many did not have electricity restored to their homes and businesses for over a week.

Tropical Storm Irene caused damage to property and infrastructure in the Town of Brookfield, and no lives were lost. It is estimated that Tropical Storm Irene dropped 5-7 inches of rain over the Town of Brookfield in a very short span of time, mirroring the average precipitation totals for Orange County.

A number of Brookfield's roads and bridges were damaged by the storm, including parts of: Route 65, Stone Road, and West Brookfield Road. Relatively few culverts, approximately 10, were damaged or blown-out during Tropical Storm Irene. The county-wide damage for Orange County totaled over $5 million. Following the flood damage, the State of Vermont and FEMA have been coordinating on the home buy-out process across the state; however, there are no home buy-out properties in Brookfield.

Brookfield received less damage from Tropical Storm Irene than other towns in the Region. However, flood events that occurred between June and July 2013, identified as DR-4140[2] VT, caused more damage in Brookfield. Approximately 20 culverts were damaged, and significant erosion occurred on Bear Hill Road. Sections of East Hill Road, Taylor Hill Road, Rowley Road, Lower Twin Pond Road, Old Cross Road, Crossover Road, Chelsea Road, Ridge Road and Eagle Peak Road were also damaged.

B. Flood Hazard and River Corridor Areas in Town

Flood Hazard and River Corridor Areas

There are two sets of official maps that govern development in floodplains in Vermont. They are the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRMs) and VT Agency of Natural Resource's river corridor area maps. The FIRMs show the floodplain that FEMA has calculated would be covered by water in a 1% chance annual inundation event, also referred to as the "100 year flood" or base flood. This area of inundation is called the Special Flood Hazard Area (SFHA). FIRMs may also show expected base flood elevations (BFEs) and floodways (smaller areas that carry more current). FIRMS are only prepared for larger streams and rivers. Brookfield has FEMA FIRM maps that are used in Flood Hazard Bylaw administration. They are out-of-date and do not contain elevation data.

Recent studies have shown that a significant portion of flood damage in Vermont occurs outside of the FEMA mapped areas along smaller upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. Since FEMA maps are only concerned with inundation, and these other areas are at risk from flash flooding and erosion, these areas are often not recognized as being flood-prone. It should be noted that although small, mountainous streams may not be mapped by FEMA in NFIP FIRMs (Flood Insurance Rate Map), flooding along these streams is possible, and should be expected and planned for. Property owners in such areas outside of SFHAs are not required to have flood insurance. Flash flooding in these reaches can be extremely erosive, causing damage to road infrastructure and to topographic features including stream beds and the sides of hills and mountains, and creating landslide risk. The presence of undersized or blocked culverts can lead to further erosion and stream bank/mountainside undercutting. Change in these areas may be gradual or sudden. Furthermore, precipitation trend analyses suggest that intense, local storms are occurring more frequently.

Vermont ANR's river corridor maps show the areas that may be prone to flash flooding or erosion, which may be inside of FEMA-mapped areas, or extend outside of these areas. In these areas, the lateral movement of the river and the associated erosion is a greater threat than inundation by floodwaters. Elevation or floodproofing alone may not be protective in these areas as erosion can undermine structures. In the Town of Brookfield, there are 6 commercial structures, 21 mobile homes and 30 residential structures located in the mapped Fluvial Erosion Hazard zone. The river corridor area is not subject to specific regulatory conditions in the Brookfield Zoning or Flood Hazard bylaws, but the Planning Commission may adopt new language that provides river corridor protection.

[2] FEMA disaster designation

In Brookfield, there are 654 acres of mapped floodplain, with no mapped floodway (the deepest, fastest flowing area in a flood). 2% of the town is the floodplain. Less than 2% of town (463 acres) may be in the developable portion of the floodplain (not including wetlands).

Flood Hazard Regulations

The Town of Brookfield has a standalone Flood Hazard Area Bylaw, and also has a Shoreland Bylaw. These regulations were adopted on 2007 and 1980, respectively. The town's Flood Hazard Area Bylaw sets standards for development in the town's floodway and floodway fringe areas, prohibiting development in floodways unless it has been determined it will result in no increase in flood levels during the occurrence of the base flood through hydrologic and hydraulic analyses. The flood hazard bylaw requires a permit for all proposed construction or other development, including the placement of manufactured homes, in areas of special flood hazard. In the areas regulated by that bylaw, conditional use approval by the Board of Adjustment is required for new buildings, substantial improvement of existing buildings, and development in a floodway. The Shoreland Bylaw, meanwhile, restricts development on bodies of water that cover no less than 20 acres, which applies to the Baker, Lamson, North, and Rood Ponds as well as Sunset Lake. As of the date this Plan was adopted, Brookfield's Flood Hazard Regulations have been designed to meet the minimum standards set by the Federal Emergency Management Agency (FEMA) and the National Flood Insurance Program (NFIP).

Two Rivers-Ottauquechee Regional Commission has determined that approximately 26 structures (including 20 houses and 6 businesses) are located within the mapped flood hazard areas. The severe damages and complete loss of homes caused by Tropical Storm Irene in 2011 highlighted the need for Brookfield to reevaluate the requirements of the Flood Hazard Area, both in terms of uses allowed and in terms of the area designated as Flood Hazard Area.

There are 16 residential and 3 commercial/industrial/public structures in the 500-year floodplain. In addition, the Brookfield Fire Station is located in the Special Flood Hazard Area. If all of the residential and commercial/industrial/public properties were damaged/destroyed in a severe flooding event, the damage would equal $3,299,318. Disruption of the fire station within the 500-year floodplain could drastically hamper future response and relief efforts in the town, and cause major disruption to continuity of operations. In an effort to help protect structures and road infrastructure, it is important to restore floodplain, improve areas and/or increase the number of areas for retention of floodwaters to reduce the risk to structures and road infrastructure wherever possible.

National Flood Insurance Program (NFIP)

Under the provisions of the National Flood Insurance Act (1968), the Federal Emergency Management Agency (FEMA) has conducted a series of evaluations and hydrologic engineering studies to determine the limits of flood hazard areas along streams, rivers, lakes, and ponds expected to be inundated during the 100-year base flood, meaning that the flood level has a 1% chance of being equaled or exceeded in any given year. The calculations do not take into account the impact of ice dams or debris, and may, therefore, actually underestimate the areas which are subject to flooding damage.

FEMA has prepared a Flood Hazard Boundary Map for the Town of Brookfield, which includes flood hazard areas for the White River and for major streams and ponds. This map is on file at the Town Office

and at the Two Rivers-Ottauquechee Regional Commission. The Flood Hazard Area is indicated in Map #2, Future Land Use (see Appendix B). Contact the Brookfield Administrative Officer to determine if a proposed development is in the Flood Hazard Area.

FEMA also administers the National Flood Insurance Program, which provides flood hazard insurance at subsidized rates for property owners in affected areas. In order to qualify for federal insurance, towns must adopt and retain a by-law to control land development within these areas. Minimum standards must be included and approved by FEMA. Coverage is only available to landowners in town if a town elects to participate in the program. The Town of Brookfield incorporates Flood Hazard regulations as part of its Zoning Bylaws, and is recognized as a participating community in the National Flood Insurance Program.

C. Promoting Flood Resilience

Flood Hazard Regulation

The following changes to the Flood Hazard Bylaw would help protect the citizens of Brookfield from further damages from a severe flooding event:

1. Prohibit all new development in the 100-year floodplain.

2. The prohibition on new development would not apply to small out-buildings or similar structures provided they are properly flood-proofed and meet the thresholds required by the National Flood Insurance Program for flood hazard regulation. The prohibition would not apply to renovations to existing structures unless the proposed renovations expand the footprint of the existing building or exceed the substantial improvement thresholds required by the National Flood Insurance Program for flood hazard regulation.

3. The best and most appropriate uses within the Flood Hazard Area on the White River are those that are recreational and agricultural (using Required Management Practices). Minimizing development within these areas will help protect both public and private investments as well as the natural and scenic quality of Brookfield's waterways.

4. Prohibit new development within mapped river corridor areas.

Revisions to Brookfield's flood hazard bylaw will require input from the community regarding the level of regulation it believes is necessary to protect citizens and their buildings from severe flood hazard events. Provided that all parts of the flood hazard bylaw continue to meet the minimum requirements of the NFIP, communities have a broad range of flexibility in regulating the flood hazard area.

Non-regulatory approaches

Easements

Brookfield could pursue riparian easements as a way to protect floodplain from development and preserve flood storage.

Culvert Maintenance

Brookfield maintains an up-to-date list of culverts and culvert condition, and has engaged in culvert upgrading since the 2010 Brookfield Annex was drafted. Approximately 30 culverts have been upgraded since Tropical Storm Irene occurred in 2011. During the summer of 2015, the town will be replacing a major culvert on Old Cross Road with FEMA funding. A hydrologic and hydraulic (H&H) analysis was completed on major structures to determine the appropriate size for an upgraded structure. The process of upgrading culverts is currently underway.

D. Goals, Policies and Recommendations

Goals

1. To enhance and maintain use of flood hazard areas as open space, greenways, non-commercial recreation and/or agricultural land.

2. To ensure no net loss of flood storage capacity in an effort to minimize potential negative impacts. These impacts include the loss of life and property, disruption of commerce, and demand for extraordinary public services and expenditures that result from flood damage.

3. To allow Brookfield to be resilient in the event of a severe flood.

4. To protect municipal infrastructure and buildings from the potential of flood damage.

Policies

1. Use sound planning practices to address flood risks so that Brookfield's citizens, property, economy, and the quality of the town's rivers as natural and recreational resources are protected.

2. Prohibit all new fill and construction of buildings in Brookfield's mapped floodways and flood zones (*Mapped areas, unless corrected by FEMA).*

3. Limit permitted land uses within Brookfield's River Corridor Areas to non-structural outdoor recreational and agricultural uses due to the dangerous erosive risk in these areas.

4. Prohibit commercial, industrial, and residential uses within ANR's mapped river corridor areas.

5. Move or abandon roads that often experience serious flood damage when there other cost effective solutions.

6. Design culverts and bridges at minimum, to meet VTrans Hydraulics Manual and ANR Stream Alteration Standards and to respect the historic character and scenic nature of the community.

7. Do not build Brookfield's emergency services, power substations, and municipal buildings in the Special Flood Hazard or River Corridor Areas.

8. Maintain vegetated buffer strips in riparian zones bordering streams and rivers. Rock rip-rap and retaining walls should only be used to the minimum extent necessary and when bioengineering techniques may not be adequate to prevent significant loss of land or property.

9. Maintain Brookfield's upland forests and watersheds predominately in forest use to ensure high quality valley streams and to ensure that flood flows reduced.

10. All wetlands which provide flood storage functions shall remain undeveloped. In the long term, restoration and enhancement of additional wetlands should be pursued in order to improve Brookfield's flood resilience.

11. Maintain culverts to ensure that they are effective during severe weather events.

12. That post-event recovery and reconstruction within the river area should be managed according to the Vermont River Program's best practices in order to avoid negative impacts downstream.

Recommendations

1. Revise Brookfield Flood regulations to prohibit new development in the 100-year floodplain (excluding small ancillary structures).

2. Brookfield should work with VTrans and the Regional Planning Commission on advocating for and improving the flood capabilities of state or town-owned transportation infrastructure.

3. Brookfield should continue working to develop flood mitigation plans, and emergency preparedness and recovery procedures.

4. The Selectboard should continue to send a representative to regularly attend and participate in the region's Local Emergency Planning Committee (LEPC #12).

5. The town should continue to maintain and update town bridge and culvert inventories. This information should be used to develop a schedule to replace undersized culverts.

6. The town should identify and purchase suitable a piece of land for the future relocation of the Fire Station and Emergency Services that is not prone to flooding.

XVII. Relationship to Other Plans

A. Relationship to Municipal Plans

The Municipal Plan focuses primarily on development and policy within the community's boundaries. However, it is important to recognize that how a community grows and changes can be affected by development that takes place outside the community. An example from the past is the many places that had large and vibrant villages that declined because the railroad tracks were laid elsewhere.

In order to analyze the potential for outside impacts on Brookfield, the Planning Commission worked with Two Rivers-Ottauquechee Regional Commission to review the Municipal Plans and, if available, the land use regulations of surrounding towns for consistency with this Plan. These communities include:

- **Braintree** – The Town of Braintree has had an adopted plan since the 1990s, which has been revised regularly, as well as a recently adopted Unified Bylaw (zoning and subdivision). The pattern of development promoted by the Braintree Town Plan along Brookfield's border is very similar to the pattern outlined in the Land Use chapter of this plan. Uses encouraged in Braintree are likewise similar. There are no potential conflicts between these plans.

- **Chelsea** – The Town of Chelsea most recently adopted their Town Plan in 2015. The shared border between Chelsea and Brookfield represents similar patterns of land use, primarily focusing on rural residential, home occupation and appropriately scaled services. The only potential conflict between these two plans relates to density. Where the Rural Agricultural areas in this Plan limit density to five acres per development, Chelsea allows one acre lot sizes. It is possible, although unlikely, that a dense development could be permitted in Chelsea in an area immediately adjacent to Brookfield that might negatively impact the rural character of the community.

- **Northfield** – The area of shared border between Brookfield and Northfield is limited in scale. Northfield's Municipal Plan, which was adopted in 2014, indicates that the area which borders Brookfield is rural residential in nature. Uses within the limited area of shared border between Northfield and Brookfield are similar and therefore compatible. No conflicts are foreseen.

- **Randolph** – Randolph has had a long history of land use planning including zoning and subdivision regulations. Randolph and Brookfield share two significant municipal north-south corridors, the Ridge Road and Route 14. Randolph's municipal plan calls for slightly greater density in areas immediately adjacent to these roads (three acres per unit), but uses are largely compatible with those in Brookfield. Other areas where the two communities meet are similar in density and use. Conflicts are unlikely.

- **Williamstown** – Williamstown has no land use regulations beyond Flood Hazard regulations. As of the drafting of this Plan, the Williamstown Municipal Plan was in the process of being revised. It is likely that the patterns of development in their previous plan will continue forward in the next iteration of their Plan. Like Brookfield, Williamstown's rural areas favor residential development with agricultural uses, open space and natural resource protection. Density is primarily low-density and uses are limited to some small businesses, home occupations and forestry and agricultural uses. Conflicts between these two plans are not anticipated.

B. Relationship to the Regional Plan

Brookfield is a member of the Two Rivers-Ottauquechee Regional Commission (TRORC). It is one of thirty (30) municipalities that comprise the Region. The TRORC Region covers northern Windsor County, most of Orange County and the Towns of Pittsfield, Hancock and Granville. The Commission was chartered in 1970 by the acts of its constituent towns. All towns are members of the Commission, and town representatives govern its affairs. One of the Regional Commission's primary purposes is to provide technical services to town officials and to undertake a regional planning program. As is the case in many areas of the State, the extent of local planning throughout the region is varied. Some municipalities are more active than others. Thus, the level of services to each of the towns changes with time.

The Regional Commission adopted its Regional Plan in September of 2015. It will remain in effect for a period of eight years. This Plan was developed to reflect the general planning goals and policies expressed in the local plans. It is an official policy statement on growth and development of the Region. The Regional Plan contains several hundred policies to guide future public and private development in the Region. Policies for land use settlement are identified. These areas are: Town Centers, Village Settlement Areas, Hamlet Areas, Rural Area, and Conservation and Resource Areas. Delineation of each land use area is mapped or charted.

C. Goals, Policies and Recommendations

Goal

1. To work with neighboring towns and the region to encourage good land use and environmental policy that benefits the citizens of Brookfield.

Policies

1. Encourage continued communication and cooperation between Brookfield and its neighboring towns.

2. Continue participation in the Two Rivers Ottauquechee Regional Commission.

3. Exchange planning information and development data with neighboring communities.

XVIII. Town Plan Implementation

Vermont law requires a Town Plan to contain a "recommended program for the implementation of the objectives of the development plan." [24 V.S.A. §4382(7).] While it is not required by law that communities implement any of the policies or recommendations in a municipal plan, it is important to recognize that in order to meet the vision of the Plan, it must be implemented wherever possible.

Implementation can be approached in multiple ways some regulatory and some non-regulatory, they include (but are not limited to) the following:

Regulatory	Non-Regulatory
Zoning & Subdivision bylaws	Design a Capital Budget & Program
Strengthening Town Plan language to clearly influence state regulatory proceedings (use of direct language)	Advisory Committees (i.e. Conservation Commissions or Energy Committees)
Official Map	Education/Outreach on important issues
Access Permits - Town Highways Only (Selectboard)	Purchase or acceptance of development rights
Flood Regulations & National Flood Insurance Program	Follow-up on recommendations for action in Plan

A. Regulatory Implementation

Regulation of land use and development through rules adopted by the town is one possible method of Plan implementation. Well recognized and utilized means include, but are not limited to, zoning bylaws and subdivision regulations. Examples of potential implementation tools include:

Zoning Bylaws

Zoning bylaws are a commonly used method for guiding development at the local level. Zoning may regulate:

- Uses of land,
- The placement of buildings on lots,
- The relationship of buildings to open space, and
- The provision of parking, signs, landscaping and open space.

Brookfield has a zoning bylaw that establishes districts or zones that have a different set of uses, densities, and other standards for development. Zoning districts must be reasonably consistent with this Plan, and it is the responsibility of the Planning Commission to implement changes to the bylaw that are proposed in this Plan.

Subdivision Bylaws

Brookfield has had subdivision bylaws since the 1970s. Subdivision bylaws govern the division of parcels of land and the creation of roads and other public improvements. Furthermore, subdivision regulations can ensure that land development reflects land capability and that critical open spaces and resources are protected from poor design or layout. It is the responsibility of the Planning Commission to implement any changes to subdivision regulations that are proposed in this Plan.

Flood Hazard Bylaws

Under Vermont law, the Town of Brookfield adopted flood hazard bylaws to regulate the use of land in a defined flood hazard area adjacent to streams and ponds. These bylaws were established to ensure that design and construction activities within the limits of the 100 year floodplain are designed so as to minimize potential for flood damage and to maintain use of agricultural land in flood-prone areas. As noted in the Natural Resources section of this Plan, property owners are eligible for federal flood insurance on buildings and structures at relatively low federally subsidized premium rates. However, such insurance cannot be obtained for properties in Brookfield unless the town has in effect a flood hazard bylaw which, at present, Brookfield has. The current flood hazard bylaw is designed to meet the minimum standards required for a community to be part of the National Flood Insurance Program. The town should strengthen these regulations as recommended in Chapter XVI (flood resilience).

State Regulatory Proceedings

This plan has a role in land use proceedings before state agencies and it is therefore important for this Plan to address implementation through those proceedings. Case law indicates that state agencies are most likely to apply provisions of a plan that are specific and clear.

For example, in proceedings under Act 250 (10 V.S.A. chapter 151 ~~(Act 250~~) and before the Public Service Board under 30 V.S.A. §§ 248 (siting of electric generation and transmission, natural gas facilities) and 248a (siting of telecommunications facilities), provisions of this plan may be treated as written community standards intended to preserve the aesthetics and scenic beauty of an area.

All of the ~~goals and objectives~~ policies of this plan that address the visual, aesthetic, scenic or rural qualities of Brookfield are meant to be written community standards intended to preserve the aesthetics and scenic beauty of Brookfield. These include, without limitation, the policies addressing these qualities in Chapters VII (communications), IX (energy), X.G. (significant natural and scenic areas), and XIV (land use). The Brookfield telecommunications bylaw specifically constitutes and is incorporated into this plan as such a written community standard~~, including but not limited to those provisions that regulate the height of telecommunications facilities~~.

Also, in Act 250 proceedings, a district commission will determine whether a proposed development or subdivision conforms to the specific policies of this plan. The goals and objectives of this plan that guide the location, siting, and design of land development in Brookfield are intended to constitute specific policies for the purpose of such determinations. These policies include, without limitation, the policies addressing location, siting, and design in Chapters VII (communications), X (natural, scenic, and cultural resources), XI (agriculture and forestry), XII (recreation), XIII (historic features), and XIV (land use). The telecommunications bylaw is incorporated into this plan as a specific policy.

Further, in the above-referenced Public Service Board proceedings, the Board will give due consideration to the land conservation measures contained in this plan and the recommendations of the Brookfield Selectboard and Planning Commission. In the case of telecommunications facilities, the Board is required to give these measures and recommendations substantial deference.

For the purpose of applying the term “land conservation measures” to this plan, the Planning Commission intends that all ~~goals and objectives~~ policies of this plan that address the conservation, preservation, or protection of land that possesses natural, agricultural, forestry, historic, and scenic

resources be treated as such measures. These policies include, without limitation, the policies addressing these resources in Chapters VII and IX through XIV.

Moreover, all ~~goals and objectives~~ policies of this plan that guide the location, siting, and design of land development in Brookfield constitute recommendations of the Selectboard and Planning Commission to which the Public Service Board should give due consideration or, in the case of telecommunications facilities, substantial deference. These policies include, without limitation, the policies set out in Chapters VII and IX through XIV. Additionally, the Selectboard or Planning Commission may make recommendations that are specific to a project at issue.

For the purposes of Public Service Board proceedings on telecommunications facilities, the ~~height and other dimensional and decommissioning~~ requirements of the telecommunications bylaw specifically are incorporated into this plan as measures to conserve the scenic qualities of land in Brookfield and as recommendations of the Selectboard and the Planning Commission.

Highway Ordinances

Brookfield has in effect a Highway Ordinance setting forth the standards and conditions for the maintenance, improvement, discontinuance, laying out and acceptance of Town highways. In addition, the ordinance includes provisions related to the reclassification of town highways (Classes 2, 3 and 4).

Lastly, Brookfield does have, through its Selectboard, the ability to regulate private access to municipal roads through the issuance of "curb cut" permits to landowners. "Curb cuts" are places where a private driveway or road connects to a town highway. In granting a cut onto town roads, the Selectboard can give consideration to safety issues such as adequacy of sight distance and proximity to intersections as well as conformance with this Plan.

B. Non-Regulatory Implementation

Capital Budget & Program

The creation of a capital budget and program has been discussed in several chapters of this Plan. A capital budget and program is a financing approach that benefits the town greatly in the selection, prioritization, timing and costing of capital projects. Under the capital budget, a project is selected (e.g. bridge refurbishment), a funding source determined (e.g. general taxes, and general obligation bonds) and a priority year given for each activity. Collectively these capital projects make clear when public facilities will be placed to accommodate projected growth.

In addition, it is noted that under Vermont's Act 250 law, in granting a Land Use Permit for a major development or subdivision, the District Environmental Commission must first find that the project is in conformance with the town's capital budget. [See 10 V.S.A. Section 6086(a)(10).] Accordingly, this mechanism gives the town an indirect method of implementing its policies and priorities as set forth in the Plan.

While Brookfield has an informal system of capital programming, the Town should consider establishing a Capital Budget Committee to work with the Selectboard and Planning Commission in the development of a list of capital needs and expenditures, and to create a Capital Budget and Program for review.

Advisory Committees

State statute authorizes a community, by vote of the Selectboard, to create advisory committees. These committees can have differing roles, some provide advice to the Planning Commission or Development Review Board regarding development (for example, a historic review committee as part of a design review district), but more often advisory committees are created to focus on a specific topic in the Plan. The most common advisory committees are the Conservation Commission and the Energy Committee. These groups (outlined in the Natural Resources and Energy chapters respectively) can assist the Selectboard and/or Planning Commission with the creation of policy, but they can also act as the primary source of outreach and education relating to their primary focus point.

Coordination of Private Actions

Citizens and private enterprise have a vested interest in the well-being of Brookfield. The actions of the private sector, such as the construction of homes and businesses, land conservation, and the use of land for recreation and agriculture, should relate positively to the goals and policies as set forth in this Plan.

It is in the interest of Brookfield to develop a cooperative relationship with investment activities that may have a significant impact on the community values and policies set forth in the Plan. By working together in a cooperative venture early in the process of planning for a project, an adversarial relationship can be avoided. Examples of contacts that could be maintained include the following:

- State agencies such as the Vermont Housing and Conservation Board and the Agency of Natural Resources,
- Green Mountain Economic Development Corporation
- Vermont Land Trust and Upper Valley Land Trust
- Twin State Housing Trust
- Owners of significant properties of high resource or development value, and
- Major employers in Brookfield.

Conservation Activities

Conservation programs are an effective means of securing protection of valuable farm and forestland or significant natural resources. Techniques available involve voluntary direct work between non-profit conservation organizations and affected landowners such as donation of conservation easements, bargain sales of land, and limited development schemes.

The land trust movement has grown immensely during the past twenty years, particularly in Vermont. Land trusts offer viable means of bringing together the needs of property owners with the community interests. The Vermont Land Trust and the Nature Conservancy are particularly well-recognized organizations. Several organizations are also involved in water quality protection. It is the intent of this Plan to implement its policies through coordination and the involvement of these organizations and others dedicated to public purposes.

Vermont Community Development Program

Since the mid-1970's, the Vermont Community Development Program (VCDP) has made grant funds available to towns for community projects. Historically, the major focus of the program has been on housing rehabilitation and affordable housing projects benefiting low and moderate-income families, but the program also offers funding for municipal infrastructure investments.

Brookfield should investigate the Vermont Community Development Program and its potential to assist the community in addressing its housing and infrastructure needs. The Regional Commission and the Vermont Agency of Commerce and Community Development are resources available to assist.

Vermont Local Roads

The Vermont Local Roads program offers technical assistance to communities, which focuses on transportation infrastructure and maintenance.

C. Responsibility for Implementation

In order to ensure that the policies of this Plan are implemented, it is essential to identify what municipal panel, organization or citizen is most suited to act on them. Throughout this Plan, the Planning Commission has identified recommendations for action. Generally, responsibility for implementation of the Plan will rest with the Planning Commission in areas relating to land use such as implementing changes to land use bylaws and to the Selectboard in areas such as implementing municipal policy for town roads. However, advisory committees as well as other community organizations could also have responsibilities for implementation.

In addition to assigning responsibility, the Planning Commission should also keep track of progress made toward implementing the goals, policies and recommendations of this Plan. This information will be useful to identify areas where additional effort needs to be applied to achieve implementation. It can also be used to describe how successful the community has been at implementation in the next iteration of this Plan, and to guide future policy.

In order to track the progress of implementation, the Planning Commission has included a chart that identifies the policy or recommendation, the responsible party and the progress. See appendix A.