



**CENTRAL VERMONT REGIONAL PLANNING COMMISSION
TOWN PLAN REVIEW COMMITTEE
REGULAR MEETING**

Central Vermont Chamber of Commerce
33 Stewart Road, Berlin, VT 05602

May 09, 2017
6:30pm

AGENDA

1. CALL TO ORDER

The meeting will be called to order and may include introductions of those individuals who are present.

2. CHANGES TO THE AGENDA

The Town Plan Review Committee should discuss any changes to the agenda.

3. APPROVAL OF MINUTES

Draft minutes from the May 26, 2016 Town Plan Review Committee are included for consideration of approval.

4. PUBLIC COMMENTS

Any members of the public that are present and wish to speak about issues not currently on the agenda will be provided an opportunity at this time.

5. PUBLIC HEARING & DISCUSSION OF THE BARRE TOWN PLAN AMENDMENTS

Barre Town has requested the Regional Planning Commission review and consider approval of amendments to their Town Plan. The amendments include minor changes to their Transportation, Preservation, and Energy Sections. The Committee should open a public hearing to take comments from any members of the public regarding these amendments. Additionally, the Committee should engage the representative(s) from Barre Town regarding specific comments or explanations about the amendments. Following this discussion, the Town Plan Review Committee should provide a recommendation that can be presented to the CVRPC's full commission. A memo from staff with a recommended action and a memo from Barre Town outlining the amendments including copies of the amendments are ***included*** with the agenda.

6. ADJOURNMENT

If there is no additional business the Committee should consider a motion to adjourn.

29 Main Street Suite 4 Montpelier Vermont 05602
802-229-0389 E Mail: CVRPC@CVRegion.com

**CENTRAL VERMONT REGIONAL PLANNING COMMISSION
TOWN PLAN REVIEW COMMITTEE
MAY 26, 2016
MEETING NOTES**

The regular meeting of the Central Vermont Regional Planning Commission's Town Plan Review Committee was held on Thursday, May 26, 2016 at 4:00pm in the Conference Room of the Central Vermont Regional Planning Commission.

Committee Members Present:

George Malek – Town of Orange
Julie Potter – Town of East Montpelier

Others Present:

Matt Rouleau – Town of Williamstown
Margaret Phillips – Town of Williamstown
Eric Vorwald, AICP – CVRPC Senior Planner

CALL TO ORDER

Without a quorum of committee members present the meeting could not be called to order.

DISCUSSION OF THE WILLIAMSTOWN TOWN PLAN UPDATE

At 4:15pm, with still no quorum present, it was decided to have a general discussion regarding the Williamstown Town Plan update since representatives of Williamstown were in attendance. The representatives from Williamstown began the discussion by talking about any issues they encountered while developing the plan. It was noted that one of the biggest challenges was gathering and developing the information for the flood hazard mitigation section. It was also noted that conducting a survey of the community to better understand their needs and interests was the top priority for the planning commission now that the town plan has been updated. The group continued its discussion regarding the Williamstown Town Plan update and included items such as the overall layout, possible constraints to building in the Designated Village Center, and similar issues.

Following the discussion, the committee members present noted that this was one of the best plans they've seen for a small town that did not use a consultant and completed all the work on their own. Specifically commenting on the layout, use of graphics, and use of plain language. As such, the committee members suggested that the full commission approve the 2016 Williamstown Town Plan

ADJOURNMENT

The discussion on the 2016 Williamstown Town Plan concluded at 5:25pm.



MEMORANDUM

TO: Town Plan Review Committee

FROM: Eric Vorwald, AICP
Senior Planner

RE: Town of Barre – Town Plan Amendments

DATE: May 09, 2017

On February 21, 2017, the Central Vermont Regional Planning Commission (CVRPC) received a request from the Town of Barre to review and consider regional approval of amendments to their town plan and planning process. As per the statutory requirements under 24 VSA 117 Section §4350, the CVRPC shall review and approve the town plan or amendments if it finds the plan:

- Contains each of the required elements listed in 24 VSA 117 Section §4382
- Is consistent with the required goals established in 24 VSA 117 Section §4302
- Is compatible with the Regional Plan and the approved plans of other municipalities in the Region

Amendment Overview

Barre Town's current town plan was adopted in May of 2014 and regionally approved in July of 2014 therefore the existing plan is still current and active. In 2016, the Barre Town Selectboard approved amendments to several sections of their plan including Transportation, Preservation, and Energy. The following is an excerpt from a memo that identifies the changes that were made.

Amendments to the plan relate mostly to energy, either the conservation of it or handling renewables. The proposed amendments also include additional language that enhances our efforts to preserve views and vistas important to Barre Town.

Chapter 3, transportation simply adds language that encourage the reduction of fossil fuel use and promotes bicycles, rail, and, shared commuting

Chapter 5, section 5.2 identifies areas important to Barre Town with regard to views and vistas and why the preservation is important in promoting the health and welfare of Barre Town. Section 5.8 identifies areas that are scenic in nature and limits development if of a certain size.

As a result of this new found interest in the Town of Barre for solar development, the Planning Commission is proposing changes to chapter 8, especially section 8.5 renewable energy.

Proposed changes to chapter 8 include:

8.3 – Promote energy conservation, commuter lots, charging stations, use of rail, and professional energy assessments.

8.5 – Support renewable energy projects as long as they represent orderly development

- To clarify the plans position that the extension of overhead 3-phase power into more rural areas to accommodate renewable energy is a negative impact with regard to aesthetics and is not allowed*
- That the most appropriate location for solar arrays is on roof-tops and existing impervious surfaces. Also to encourage the use of existing topography and vegetation to help mitigate views of solar arrays and to avoid the use of agricultural lands for solar development*
- Adds a good neighbor policy so that a landowner developing solar doesn't mitigate their own impacts by placing them on a neighbor*
- Creates siting requirements for solar projects less than 15kW and projects larger than 15kW*
- Prohibits private solar development in the Wilson Industrial Park*
- Prohibits solar projects larger than 500kW*
- Suggest that the Town of Barre create a solar overlay district*
- Requires a decommissioning plan*

Staff Analysis

In general, the amendments to the Barre Town Plan are minor in nature and do not impact the overall intent of the specific plan sections that have been amended. These amendments do not extend the lifecycle of the Town Plan therefore the plan will need to be updated and completely readopted before it expires in May of 2019. As such, the Town will begin the process to update their plan later this year or early next in order to complete the updates before the plan expires.

Finally, related to the amendments of the energy chapter, Barre Town is one of the three municipalities that will be receiving enhanced technical assistance from the CVRPC to develop an energy plan that is compliant with the standards identified in Act 174 of 2016. Based on this, a draft energy plan will be completed by July of 2017 which may recommend additional updates to the transportation and energy

sections of the current town plan and therefore identify additional amendments that could be incorporated into a more comprehensive update of the Town Plan.

Based on the above information, it is staff's opinion that the amendments will not adversely affect the overall intent of the Barre Town Plan. As noted, the town plan will be reevaluated for possible amendments within the next several months with respect to the Energy section and reevaluated within the next 8 to 12 months for all other sections of the plan. To this end, Barre Town will be on the list of municipalities to receive an enhanced consultation through the CVRPC's agreement with the Agency of Commerce and Community Development. This consultation will include a complete evaluation of consistency between the current town plan and all existing statutory requirements.

Requested Action

The Town Plan Review Committee should conduct a public hearing¹ to solicit input on the amendments to the Barre Town Plan and provide any comments or questions to the representatives from Barre Town attending the meeting. For reference, copies of the amendments that include changes noted with strikeouts and underlined language are included. Additionally, the Town Plan Review Committee should be prepared to make a recommendation (if appropriate) to the full Commission at their regular meeting on May 9th regarding consistency of the amendments with the 2016 Central Vermont Regional Plan and statutory requirements.

¹ A public hearing has been warned in conjunction with the Town Plan Review Committee meeting. While this is not the common practice of this committee, due to the statutory timeline required to review and comment on the amendments and the existing agenda for the Commission meeting, it was determined that conducting the public hearing outside of the Commission meeting would work best for this one instance. Future public hearings will be held in conjunction with the regular Commission meetings as has been done in the past.



TOWN OF BARRE

Municipal Bldg.
Lower Websterville, VT 05678
802/479-2595

- ☐ Planning Commission
- ☐ Development Review Board
- ☐ Zoning Administrator

MEMORANDUM

TO: Selectboard of the Town of Barre
Town Clerk of the Town of Barre

FROM: The Planning Commission of the Town of Barre
Chris Violette, Planning Officer

DATE: October 27, 2016

SUBJECT: Town Plan amendments 2016

Please accept this letter as official notification that the Town of Barre Planning Commission has formally voted to pass to the Selectboard of the Town of Barre proposed amendments to the Town of Barre Town Plan. Said decision was rendered after holding a duly warned public hearing on Wednesday, October 19, 2016 in accordance with VSA § 4384 (d).

Enclosed please find a copy of proposed amendments to chapter 3 (transportation, sections 3.1,3.2,3.3,3.4), chapter 5 (preservation, sections 5.2 & 5.8) chapter 8 (energy, sections 8.3 & 8.5,) of the Town of Barre Municipal Plan.

What follows is a brief description of the proposed plan amendments.

Amendments to the plan relate mostly to energy, either the conservation of it or handling renewables. The proposed amendments also include additional language that enhances our efforts to preserve views and vistas important to Barre Town. This can be found in both sections 5.2 and 5.8 of chapter 5.

Chapter 3, transportation simply adds language that encourage the reduction of fossil fuel use and promotes bicycles, rail, and, shared commuting

Chapter 5, section 5.2 identifies areas important to Barre Town with regard to views and vistas and why the preservation is important in promoting the health and welfare of Barre Town. Section 5.8 identifies areas that are scenic in nature and limits development if of a certain size.

The Town of Barre, like many other Vermont communities, has struggled to find the right balance between supporting renewable energy and protecting our residents and the valuable assets of our community. As stated in the first line of the Town plan under

section 8.5, Barre Town continues to support renewable energy. However, The Town of Barre has seen a significant spike in the development of solar generation plants and while solar is a very important contributor to renewable energy; it does not come without impact. As a result of this new found interest in the Town of Barre for solar development, the Planning Commission is proposing changes to chapter 8, especially section 8.5 renewable energy.

Proposed changes to chapter 8 include:

section:

8.3 – Promote energy conservation, commuter lots, charging stations, use of rail, and professional energy assessments.

8.5- Support renewable energy projects as long as they represent orderly development

To clarify the plans position that the extension of overhead 3-phase power into more rural areas to accommodate renewable energy is a negative impact with regard to aesthetics and is not allowed.

That the most appropriate location for solar arrays is on roof-tops and existing impervious surfaces. Also to encourage the use of existing topography and vegetation to help mitigate views of solar arrays and to avoid the use of agricultural lands for solar development.

Adds a good neighbor policy so that a landowner developing solar doesn't mitigate their own impacts by placing them on a neighbor.

Creates siting requirements for solar projects less than 15kW and projects larger than 15kW.

Prohibits private solar development in the Wilson Industrial Park.

Prohibits solar projects larger than 500kW.

Suggest that the Town of Barre create a solar overlay district.

Requires a decommissioning plan.

3. TRANSPORTATION

3.1 HIGHWAY PLAN

Highways form the backbone of the transportation system in Barre Town. Proper location, design, construction and maintenance of this important public investment are essential if economic vitality, environmental preservation and quality of life are to be assured for the Town's citizens. A properly designed highway system contributes directly towards the environmental goal of reducing highway miles traveled using fossil fuels.

The Selectboard maintains an ongoing five-year highway improvement plan that contains specific projects and priorities. Since this is updated on a yearly basis, the improvement plan was not included in this Plan. Those interested in the Highway Improvement Plan should contact the Town Manager's Office.

In 1991, the Selectboard adopted a Highway Ordinance intending to assure new roads are built in accordance with sound engineering practices to protect existing roads from overweight vehicles and to clarify responsibilities for class 4 roads and trails.

Highways are classified first as urban or rural, and then into one of four functional categories: controlled access highways, arterial, collector and local. Controlled access highways and arterials are main roads whose primary purpose is the efficient movement of vehicles. Collector highways feed the arterial system and also provide land access to a significant degree. Local highways are primarily oriented toward land access.

Most of the roads in Barre Town fall into the local classification but a significant number are also collectors or arterials. For example, Cummings Road and the Plainfield Brook Road are both Class II roads but in addition, traffic counts indicate that the roads carry high volumes of traffic to/from Plainfield.

- These roads should be reviewed in the future as collector highways needing improvements. A few of the Town highways and all of the State highways passing through Barre Town are classified arterials.

The Selectboard formed the Ancient Roads Committee on January 29, 2008. This committee is designed to research roads which have fallen from use 150 years ago, and over which legal rights for a road remain over the property. The Vermont State Legislature which is trying to clear up this dilemma for towns and property owners. This committee has been researching to declare right-of-ways on all ancient roads in the Town. These roads will be reclassified or retained by the Town at this time.

Federal and State Highways

Two US highways and three State highways lie within Barre Town. With the exception of a short US RT 2 segment which connects to no town highway, these arterial highways are the principal means of access in and out of Barre Town. They provide the principal travel routes for inter-town trips whether for work, shopping or entertainment. Although these highways are of great significance to the Town, maintenance and construction of them is the responsibility of the state. There are 11.572 miles of US and State Highways in the town. US and State Highways within Barre Town are illustrated on the region map in the map section of this document (Map 1).

- US RT 302, arterial highway, runs generally east and west passing through East Barre Village. To the west, it provides a connection to Barre City and access to Berlin and Montpelier. To the east, it runs through the Town of Orange and provides access to the Connecticut River Valley and New Hampshire.
- US RT 2, an arterial, provides a link between Montpelier and St. Johnsbury, has a very short segment which passes through the northwest corner of the Town.
- VT RT 14, an arterial, runs north and south through Barre Town and Barre City. RT VT 14 serves as a vital link

between the northern half and the southern half of Barre Town. It connects to Williamstown and points south, and in the north it provides access to East Montpelier where it intersects US RT 2.

- VT RT 63, an arterial, is better known as the South Barre Access Road and provides important linkage to Interstate 89 (a freeway). VT RT 63 is the only controlled access highway within Barre Town. Access is prohibited except at approved public highway intersections.

- VT RT 110, a collector highway, provides access to the Town of Washington south of East Barre.

Town Highways

The town highway system is the network of roads that all town residents rely on for personal land access, travel to other places within the Town, convenient travel to adjacent towns and connection to the State highway system. All town highways are categorized into one or another of the following classes for the purpose of receiving highway aid:

Class 1 Highways

There are no Class 1 town highways in Barre Town.

Class 2 Highways

Are considered the most important town highways and serve as trunk routes within the Town and between Barre Town and surrounding towns. They are generally the more heavily traveled routes in town. They have an all-weather surface, and provide links between major business and residential centers within town. The Selectboard determines which highways will be designated as Class 2, subject to approval of the State Transportation Board. There are 21.56 miles of Class 2 highways in Barre Town.

Class 3 Highways

Are all traveled highways other than Class 1 or 2. The Selectboard, after conference with a representative of the State Transportation Board, determine which highways will be designated Class 3. Construction and maintenance of Class 3 Town Highways is the primary responsibility of Barre Town but state highway aid is provided to assist in the expense. There are 73.62 miles of Class 3 Town Highways in Barre Town.

Class 4 Highways

Are all other town highways and pent roads. The Selectboard determines which highways will be designated Class 4. There are currently 4.89 miles of Class 4 roads in Barre Town.

Town Highway Bridges

Providing safe and adequate bridges for the highway transportation system is extremely important.

- Adequate periodic maintenance of bridges is essential to avoid catastrophic or costly loss. There are two bridges and 22 major culverts on Barre Town highways. The two bridges are both located in South Barre, one on Snowbridge Road the other on Bridge Street. Long in need of replacement, the Bridge Street Bridge was replaced by the State of Vermont in 2013. Barre Town paid 5% of the total cost.
- Continued maintenance and inspection of bridge and culverts is necessary to ensure an adequate and safe transportation network.

Legal Trails: There are 1.06 miles of legal trails in the Town. The Selectboard is reviewing unidentified corridors for possible inclusion into the Highway system.

Town Highway System Deficiencies (Map 6)

- Identification and prioritization of system deficiencies is necessary to guide Town officials in the effective use of limited highway budgets. Top priority should be placed on projects which will preserve the existing facilities and enhance safety. Periodic inspection of roads and bridges should be carried out to determine those needs. Periodic bridge inspections by the State Agency of Transportation provide critical maintenance information on structures. These activities should continue. In addition, the Town should continue the formal pavement management system to assist in making optimal use of limited resources.
- Secondary priority should be given to those projects which will relieve congestion and provide greater capacity. Identification of those needs requires careful consideration of many factors, including current system capacity, present and future growth, desired lines of travel, and sources and availability of funds, character of the area (i.e. residential neighborhoods). Several alternatives should be investigated in finding solutions to a given problem, and public input into the location and design processes should be actively solicited.
- Present deficiencies which are presently apparent involve the efficient movement of people from major population centers within town to the major arterial highways in the area. Most significant examples are: (1) travel between the Websterville/Graniteville area and I-89, (2) travel between the Websterville/Graniteville area and VT RT 14 in Barre City, and (3) travel between the Trow Hill area and US RT 302 in Barre City.
- Another present deficiency involves travel between the northeast portion of Barre Town and US RT 2 in Plainfield. The improvement of US RT 2 and VT RT 14 in the East Montpelier area may provide an attractive alternative to the present unpaved rural roads connecting these areas. The intersection of VT RT 63 and Miller Road continues to be a high accident location. The Town would like to work with the State of Vermont to figure out a remedy which would increase safety at this site. VT RT 14/Bridge Street/Sterling Hill Road intersection is also a high crash location. Plans are well in the works to perform a slight realignment and make overall improvements to the intersection including signalizing. Finally, Mill Street at VT RT 110 is currently a Y intersection which makes for poor sight distance. Plans call for this intersection to be realigned into a T. All of these projects are important to and highly supported by Barre Town with regard to safety and economic development. It is hoped that the State of Vermont will make these improvements a high priority.
- In addition to these deficient categories, system needs may arise as a result of planned development. These needs should be carefully analyzed to ensure that the developer is assessed a fair share of the costs of needed improvements. All such improvements should be constructed to the Town's established standards.

Recommendations for Future Improvements

- Future improvements to the Town Highway System may come about as a result of relocation or widening of existing facilities or as a result of new development. Relocation or widening should be done within existing rights-of-way whenever feasible. It should be accomplished with minimal disturbance to homes, businesses, streams, ponds, wetlands, schools and public recreational facilities and to important historic and archaeological resources. Highway location and construction should also be accomplished in such a way as to minimize encroachment on agricultural and significant forest areas, and with minimal adverse impact on ground water, scenic trees and vistas. Conservation of resources should be a goal in all highway construction and rehabilitation. The reuse of pavement grindings for surfacing shoulders or parking lots is to be encouraged. New roadways which will eventually be taken over by the Town should adhere to the same location, design and construction standards as indicated above.

3.2 ACCOMMODATION OF TRUCKS, BICYCLES, AND PEDESTRIANS

Trucks

It is important that adequate highways be provided to support safe and efficient truck travel because trucking is vital to the economic vitality of the Town. Therefore, it is necessary to identify those routes principally used by trucks to

ensure that they are properly constructed and maintained for safe use by everyone.

Principal Truck Routes

The principal truck routes on Town highways are (list may not be inclusive):

No excess weight permits necessary (Legal Load Same as State Highway (LASH)):

Quarry Hill Road; Graniteville Road (to #773); Websterville Road; Pitman Road; Parker Road;

Others that would require an excess weight permit:

Farwell Street; Pine Hill Road; Plainfield Brook Road; East and West Cobble Hill Road; Windywood Road; Cummings Road; Hill Street; Airport Road; Upper Prospect Street; Morrison Road; Bridge Street; Church Hill Road; Cogswell Street;

Excess weight permits are issued by the Town Manager.

Bicycles (Map 5)

This section deals with shared use of roads between vehicles and bicycles, not bike paths. Bicycles provide a clean, economical and energy efficient mode of transportation. They are a primary means of transportation for many and have become an increasingly popular form of recreation and transportation for adults. The hilly terrain found in much of the Town does not encourage long, cross-town trips. Therefore, in addition to the limited bike paths that have been constructed to accommodate bicycles, safe and convenient bicycle routes encompassing Town roads should be provided or developed in the Town.

Bicycle traffic can be expected on nearly all, if not all, of the highways within the Town. The reasons for bicycle trips range from commuting to recreational. The commuter rider desires the most direct route with few interruptions, whereas the recreational rider is riding for pleasure and a specific route has less importance. Riding ability differs greatly among bicyclists. Some feel comfortable riding on a busy highway, other riders prefer to ride on a quiet street or rural road.

The planning and design of bicycle facilities whether they are improvements to existing highways, provisions included in new highways, or separate exclusive routes for bicycles need to accommodate a broad range of bicyclists.

- Designating certain roadways as principal bicycle routes can be effective in discouraging bicycle traffic on otherwise hazardous roadways. The principal routes must be generally hazard free in order to encourage the more serious rider to take a less direct route.
- Some bicycle paths are physically separated from the highway and can be either within the highway right-of-way or within a separate right-of-way. If bicycle paths are less than 5 feet from highways, physical barriers such as fences or guardrail should be considered in order to divide the two distinct facilities.
- There is no completed bicycle route network within the Town. Most of the highways used by bicyclists do not have sufficient shoulder width to safely accommodate them. Most of those highways which do have wider shoulders do not have markings or signs delineating a preferred bike route.

Recommendations for Future Improvements

- The Town should identify roads that would be conducive to bike travel that also fit into a master plan of creating interconnected bike routes.
- Future improvements should begin with a needs analysis; facilities should be developed based on the results of

216 this study, as well as accessibility to existing and future facilities in adjoining communities; routes should be
217 located to improve accessibility to natural, scenic areas and bicycle traffic generators such as schools, parks,
218 playgrounds, and major employment centers;

- 219
- 220 • New roadways which are built and existing roadways which are improved should include provisions to safely
221 accommodate bicycles. Old railroad beds and Class 4 Town Highways provide excellent opportunities for bike
222 routes.
- 223
- 224 • Bike path from East Barre to the elementary school created.
- 225
- 226 • Both State and Federal funds are available for construction of bike paths. Cost of long-term maintenance and
227 overall safety of all path users should be considered during the review process of any proposed path, as well
228 as community benefits.
- 229
- 230 • Parking areas for vehicles should be conveniently located along bike routes to accommodate both the
231 recreational rider and the commuter; this is an important consideration given the steep grades which separate
232 much of the Town as well as separating the Town from neighboring communities. Consideration should also be
233 given to a parking area at the bottom of Richardson Road or one in the Cobble Hill area for scenic rural trips. A
234 well planned bicycle path system, with multiple nodes connecting to vehicle park-n-ride will allow residents to
235 minimize their use of fossil fuels.
- 236
- 237 • Any new bike path should be planned with consideration for additional width, signing, and striping in order to
238 facilitate sharing the facility with bicycles, pedestrians, and joggers.
- 239
- 240 • A bicycle path connecting the Trow Hill area to the Websterville area should be planned and constructed.
- 241
- 242 • Adding a bicycle corridor along Route 14 using existing right-of-ways should be considered.
- 243

244 Pedestrians (Map 5)

245
246 Pedestrian walkways are an important and integral part of the transportation system.

- 247
- 248 • The construction of these facilities should be considered for the safety and convenience of pedestrian and
249 vehicular traffic.
- 250
- 251 • These byways should be provided for in those areas where the volume of traffic warrants the cost and
252 utilization of land for them.
- 253

254 Sidewalks are the most formal means of delineating walkways to separate pedestrian and vehicular traffic. They are
255 generally needed in areas of moderate to high density development. These facilities are found in a wide variety of types
256 as to width and surface materials and should be designed in accordance with acceptable standards to satisfy traffic
257 volumes.

- 258
- 259 • Sidewalk improvements should be planned at the same time that road improvements or other construction
260 projects are planned.
- 261

262 Footpaths are informal pedestrian walkways which may be utilized to move traffic between points or as nature trails
263 and other recreational purposes. These paths generally have specific uses and are not necessarily associated with the
264 need to separate pedestrian and vehicular traffic. Easements should be acquired or dedicated and maintained for the
265 public use of these footpaths.

266
267 Shared use paths serve as part of a transportation circulation system and support multiple recreation opportunities,
268 such as walking, bicycling, etc. Shared-use paths should always be designed to include pedestrians even if the primary
269 anticipated users are bicyclists.

Recommended Future Improvements

- Future improvements may be either in the form of reconstruction of existing transportation facilities or new development.
- Consideration should be given to pedestrian needs, such as provision of wider, raised sidewalks, in the case of reconstruction or relocation of existing highways. The design of highway projects should include an analysis of pedestrian byway needs.
- All new and reconstructed sidewalks should include appropriate ramps at crosswalks and side streets to allow their use by the mobility impaired.
- Sidewalk Improvement - There are areas of the Town that are deficient in providing facilities for pedestrian traffic. Areas of primary concern are South Barre along VT 14 beginning at the existing sidewalk (at the intersection of Sterling Hill Road) north to Barre City at Parkside Terrace and south from the end of the existing sidewalk to Kings Row near the Williamstown town line and also along Richardson Road from the City line northerly to the intersection of Misty Mountain Drive.

Additional areas that should be incorporated into a study of pedestrian traffic facilities are along the through highways in East Barre, Bridge Street to the bridge, Upper Graniteville and Upper Websterville. East Barre is currently being studied for a sidewalk project on Mill Street from VT RT 110 to intersection of Websterville Road and then along Websterville Road to the post office.

3.3 PUBLIC TRANSPORTATION

Public transportation facilities in Barre Town are limited and the terrain of the Town is not conducive to many types. The three types of most significance to Town residents are discussed in the following paragraphs.

Air Transportation

Air transportation services are available at the Edward F. Knapp State Airport in Berlin and the Burlington International Airport in South Burlington. Access to the latter is attained primarily by Interstate I-89. Access to the E. F. Knapp Airport is gained most directly by use of Airport Road and Morrison Road (TH 7). Timely and adequate maintenance of these two routes is very important for a large number of Barre Town residents for airport access and for access to the hospital and shopping mall in Berlin. A twenty year plan for the airport was recently completed. It includes provisions for major improvements and expansion in the future.

Rail Transportation

Passenger transportation via Amtrak is available to Town residents in nearby Berlin. This rail access provides service south to the eastern U.S. seaboard and north to St. Albans. Passenger service within The town itself is not considered feasible at this time.

Rail freight service is presently available via the New England Central Railroad to the Websterville and Graniteville areas. Use of those facilities for hauling granite other heavy industrial products into Barre City and beyond has the potential to relieve the Town highway system of much wear and tear. Moving large, bulky products by rail is far more energy efficient than using truck transportation.

- Continued and expanded use of such facilities should be encouraged.
- Industrial growth should be encouraged primarily in those areas currently served by or close to rail transportation. As demand for rail service develops, the frequency of rail pick-up will increase, making rail transport as reliable as truck transport.

- A common unloading/loading area along the rail line in the Wilson Industrial Park should be explored to allow greater access to the line for business located within the park.

School and Commercial Bus Transportation

School bus transportation for Barre Town Middle and Elementary School students is currently provided at Town expense. This service benefits the Town in several ways. It provides a safe and dependable way to pick up and transport children to school, it is more economical than transportation of children by private automobile, and it reduces the amount of traffic congestion and air pollution which would result from private automobile transportation.

- Although private transportation to the school is becoming more popular, for all the reasons listed previously, public busing should continue to be a high priority.

Public bus transportation services are provided locally by GMTA (Green Mountain Transportation Authority) and other privately owned bus/van companies.

Commuter Services

The State of Vermont currently operates several commuter or ride share parking lots in the area. There is one such lot located along South Barre Road (VT RT 14) in South Barre near VT RT 63 and another just west of East Barre along US RT 302. VTrans also provides ride share parking lots in the adjacent communities of Berlin, Montpelier, East Montpelier, Orange, and Williamstown. This leads to a reduction in vehicle miles traveled.

~~The~~ Green Mountain ~~Transit~~ ~~Authority~~ currently operates a ride share pool and the Wheels Program for seniors. These types of programs greatly increase the mobility of Barre Town residents who are limited in their personal resources or access to family vehicles. This also reduces the demand of private vehicle use and its associated fossil fuel use.

- ~~The~~ GMTA should be encouraged to continue its services and if possible expand them in the future as funding becomes available. One such beneficial expansion to consider would be expanding bus service into South Barre

Other Transportation Proposals

The Town may also wish to look into the following:

- Study functional efficiency of highways as well as quality/materials standards;
- "Flex-time" – staggered work hours at granite manufacturing facilities and Industrial Park businesses to reduce peak hour congestion;
- Specific intersections and roads which need improvements to improve traffic flow/safety and efficiency;
- Support improvements to the Beckley Hill/US RT 302 intersection;
- Continue to support and be involved with the Quarry Hill Road/Quarry Street Intersection upgrade at South Main Street (RT 14) which is proposed for construction in 2016;
- Add Traffic Safety Committee review requirements to Subdivision Regulations;
- Include a review of engineered traffic and warrants for signals
- Developers putting in new roads should continue to pay for stop, speed limit and street signs and traffic

signals as warranted. This should be required as a condition to subdivision approval;

- Developers putting in new curb cuts from driveways should utilize shared driveways design whenever possible to eliminate curb-cuts off the roadways.
- The Town should encourage developers of commercial solar arrays to incorporate a plan to install public access charging stations within Town limits.
- The Town should encourage businesses within the community to install charging stations.

3.4 TRANSPORTATION GOALS

- Preserve existing roads, bridges, and culverts by regular maintenance and continued inspections.
 - Maintain the formal road plans to ensure good quality roads and to help make optimal use of limited resources.
 - Explore whenever practical ways to help reduce deficiencies as noted herein.
 - Road projects should have minimal impact to the public, natural resources, and recreation.
 - All new Town roads developed to a standard as called for by Town Code.
 - Plan road projects with bicycles and pedestrians in mind.
 - Encourage and support public transportation initiatives.
 - Encourage residents to reduce their use of transportation related to fossil fuels
-

5. PRESERVATION

5.1 INTRODUCTION

Barre Town is rich in natural resources and areas of natural beauty as well as in numbers of historic sites and structures within its land mass of 30.70 sq. miles. This plan touches on examples of some of those and recommendations for preserving these unique assets where possible.

Barre Town's early development occurred without much concern for aesthetics. Early settlers' needs were heavily agricultural and deforestation occurred in order to accommodate pastures and fields for livestock and land for growing of food. Granite quarrying developed in the Town during the 19th and 20th centuries further barring the land.

As time progressed – so did appreciation for natural resources and the history of the area and in recognizing our multi-national culture prompted in large part by immigrants who came to work in the granite industry. Within the last 25 years the Town has shown a marked increase in aesthetics and protection of natural areas. Recent development has been conceived and planned with “the view” and “green spaces” as dominant factors. Some developments have incorporated restrictive covenants concerning the height and placement of structures thereby protecting views of neighbors and passers-by. Aesthetics have also made their way into local zoning and state development laws.

5.2 SCENIC AND HISTORIC FEATURES

Quarries

Most notable of all Barre's scenic resources are the quarries from which are built such fine granite structures as the Vermont State House in Montpelier, the renown Robert Burns statue located on the grounds of the Vermont History Center in downtown Barre, thousands of cemetery memorials and commemorative structures throughout the country, and hundreds of other granite-faced, granite-trimmed buildings throughout the world. The Wells-Lamson Quarry, now dormant and owned by the Rock of Ages Corp. is notable because at over 600 ft. deep, it is among the deepest granite quarries in the world. A few “quarries” are not the expected holes in the ground that later quarrying methods came to develop but rather, were “walls” of granite from which stone was taken.

Views and vistas

The Town of Barre is bound on two sides (East and West) by South to North oriented ridgelines with elevations of 1200' to 1800'. The center of town, referred to as Millstone Hill, is elevated with valleys on either side as much as 600' or more below. This geography has blessed Barre Town with a natural “rim” nearly surrounding the valley below. Views from elevated areas of Barre Town are also among the most recognized scenic assets of this community. Notable scenic views include Camels Hump in Huntington, Spruce Peak in Plainfield, the Worcester Mountain range to the North, and the Orange Highlands to the East including the Knox Mountains. The lights of the City of Barre add to the evening and nighttime vistas. Any development within Barre Town that impedes or degrades these views is considered to be a negative impact. ~~which was blessed with a geography that created a natural “rim” nearly surrounding the valley below – once a part of the original Wildersburgh, the lights of the City of Barre now add to the evening and nighttime vistas. Notable within the views are Camel's Hump in Huntington (sometimes shown on maps as “Couching Lion”), Spruce Peak in Plainfield, the Worcester Mountain range to the west, and the Orange highlands including the Knox Mountains to the east.~~

These views sheds are considered an important part of our scenic resources and a valuable part of our quality of life as well as a sense of pride setting Barre Town apart from other towns. People respond positively to places that are visually appealing thus many people live in or move to Barre Town for these wonderful views and what that means to their quality of life. Businesses have also relocated to Barre Town for these same reasons. While scenery is important to the overall quality of our community, scenic vistas and view sheds are often destroyed during rapid change, both by nature and society. Protection of these assets is an important component to smart development and

54 [preserving scenic beauty. In this context, protecting views may be considered an extension of the concept of](#)
55 [promoting the general health and welfare of Barre Town.](#)
56
57

58 59 **Roads and waterways**

60
61 Within the Town are a number of beautiful maple tree-lined dirt roads such as upper Cassie Road, Sunset and
62 Neddo Roads, Phelps Road, Little John Road and Snowbridge Road. Peck's Pond, Bolster Reservoir, Gunner and
63 Scott's Brooks, Jail Branch River, and Windy Wood Pond are examples of other scenic areas.
64

65 **5.3 HISTORIC AREAS**

66 67 **Villages**

68
69 Early development of Barre Town occurred in village areas surrounding employment centers. These villages
70 eventually developed their own names and post offices within the Town - Graniteville, Websterville, South Barre and
71 East Barre. Within them are examples of early quarry workers homes, usually similarly constructed, such as on the
72 east side along Cogswell Street in Upper Graniteville. Another popular house style is the Sears Roebuck and
73 Montgomery Ward early version of pre-fabricated houses (available with plumbing and electrical if one chose to
74 purchase the whole package) such as the house at 54 Brook Street in Websterville. The South Barre village has
75 notable large wood framed houses thought to be custom built - one at the corner of Saeger Lane and South Barre
76 Road (VT RT 14) dating to 1803 and two side by side on the west side of VT RT 14 at 397 and 411 South Barre
77 Road, one of which local lore relates was a safe haven offered as part of the Underground Railroad which moved
78 African American people to safety in the north.
79

80 Also a part of village history is the traditional churches such as the East Barre Congregational Church and First
81 Presbyterian Church in Graniteville. Traditional construction also remains for several grocery stores such as 34
82 Church Hill Road in upper Websterville, now the Millstone Hill Touring Center. Scattered throughout the town are
83 barns that remain though the "farming" may have stopped some years ago – examples are the Swift barn on Swift
84 Road, the Usle "Strawberry Grove" barn at 109 West Cobble Hill Road, and the Paquet Farm at 179 Morrison Road
85 established in 1909 in the South Barre area.
86

87 **Town Forest**

88
89 The newly acquired (2012) Town Forest, 355 acres in size, gives visitors a very real sense of following the paths
90 of industrial history as they ramble on through old railroad beds, over steel cables, and up onto grout piles of long ago
91 that now offer scenic lookouts such as the stunning Empire Lookout at the northeast corner of the Forest. On hot
92 days, visitors can stop by a cool spot created by ice deep inside some of the large grout piles. Throughout the Town
93 Forest are some 70 early and very early quarries that supported small, often family-run, stone businesses.
94

95 **Stone Walls**

96
97 Prized among the "locals" also are the numerous stone walls throughout the Town traversing fields and woods –
98 built to clear fields and mark boundaries of land owners.
99

100 **Cemeteries**

101
102 These are a treasure of the examples of the work of exceptional artisans, present and past. Older stones are of
103 particular interest because they were carved without benefit of modern methods but rather using the very basic tools
104 of the industry at that time. A rich history can be gleaned from the cemeteries of West Hill (Perry Road), Wilson
105 (Websterville Road), Saint Sylvester (Websterville Road), and Maplewood (Farwell Street). Singularly situated off
106 Miller Road is the family plot of Col. Nathaniel Sherman, early settler, whose relative Jonathan Sherman reportedly
107 chose the name "Barre" in the legendary "naming of Barre fight".

5.4 HISTORIC SITES

Calvin Smith Farm

277 Morrison Road (now Bond Auto Parts) – where the legendary “naming of Barre fight” occurred in which Jonathan Sherman of Barre, Massachusetts won the fight over Capt. Thompson of Holden, Massachusetts. In actuality, town records indicate the most generous contributor to “a house of worship”, Ezekiel Dodge Wheeler, was given the privilege of naming the town. The farmhouse dates to 1791.

The Morrison Farm

A large two-story brick farmhouse at the intersection of Morrison and Jensen Roads which was the site of the first settlement in what was then called Wildersburgh.

The Goldsbury Site

The site of the first framed house, a cape, built in 1800 and lost by fire in the 1960's is at the east side of Richardson Road near Goldsbury Woods Road. The site was appropriately memorialized in 1969 with a granite marker donated by the Barre Historical Society and the Rebecca Hastings Chapter of the Daughters of the American Revolution.

“Sky Route” Railroad Spur

Built in 1890, a rail spur leading to Millstone Hill (Websterville/Graniteville) from Barre City was used to transport the heavy granite down the hill to numerous granite “sheds” and for shipment abroad. The rail line had a tremendous economic impact on the industry because it made transporting granite much easier. The Sky Route was noteworthy for being the steepest grade rail line east of the Mississippi at the time, climbing 250 feet every mile.

Nine Former Neighborhood School Sites

Many of the early schools were one and two room schools offering education for grades 1 through 8. Locations were Upper and Lower Graniteville, Upper and Lower Websterville, East Barre, South Barre, Trow Hill, Springhouse and Brookside. Many of the old school bells from these sites are on display at the Barre Town Elementary and Middle School on the Websterville Road. School buildings continuing to be re-purposed and used are Brookside (Bates & Murray Inc.), Springhouse (Barre Town EMS Building), and Lower Websterville (Barre Town Municipal Building). Demolished were Trow Hill and Graniteville, both of those sites are now Town playgrounds, and the South Barre and East Barre school locations, now both sites host Town fire stations.

5.5 HISTORIC STRUCTURES

Antique Brick Capes

Many such capes are scattered around the town and were often built by early quarry founders. Most if not all are currently in use as private residences.

Trow Farm

Notable among the antique brick capes is the Trow Farm at 262 Hill St., after which is named the Trow Hill area. At one time, the farm reportedly had 7 barns and offered transportation and overnight accommodations to travelers on the Haverill, NH and Boston to Montreal Stagecoach route disembarking downtown.

The “Granite House”

The first granite house in town is located at 216 West Cobble Hill Road at the intersection with East Cobble Hill Road. Known as the Pliny Wheaton house, granite was used from the Wheaton Quarry a short distance away on Nussl Road

The Nichols House

Located at the intersection of Waterman St. and Little John Road in East Barre, the Nichols House may represent Barre Town’s only structure listed on the National Register of Historic Sites. It is a very early example of this popular building type in Vermont and is one of few remaining dwellings in the area built by a family in the first wave of settlement.

Robin’s Nest Covered Bridge

A privately owned covered bridge over the Jail Branch of the Winooski River at 625 East Barre Road (US RT 302) and that leads to a log home situated on 16 +/- acres, also privately owned. Built in 1962 by the Robbins family and, even though not historic, the bridge is notable for its queen post design, built as a replica to one that stood just downstream and was swept away in the Vermont Flood of 1927. It is of authentic design and construction. In 1990 owners installed steel beams to reinforce the deck. This represents the Town’s only covered bridge.

Washington County Sanatorium

A three story large brick structure at 260 Beckley Hill Road built to house patients with tuberculosis, an unfortunate circumstance from working in granite sheds before modern dust-collecting machinery was available.

5.6 HISTORIC DISTRICTS IN BARRE TOWN

Upper Graniteville, Lower Graniteville, East Barre, South Barre Village

The list of Vermont Historic Sites and Structures, identified for Barre Town, is available in six volumes (not available in digital form) from the Vermont Division for Historic Preservation located at: 1 National Life Drive, Davis Bldg, Basement Level, Montpelier VT 05620-0501. Phone 802-828-3213. Fax 802-3213.

Additional information available at: http://accd.vermont.gov/strong_communities/preservation.

Information from the National list of Historic Structures is available at <http://www.cr.nps.gov/nR/research/index.htm>

5.7 RECOMMENDATIONS

- It is in the best interest of Barre Town to preserve and promote its significant historic resources, architecture, and sites therefore the Town will pursue and encourage maintenance of those currently in existence and plan for future such preservation needs.
- The Town should establish a Town Historical Society and/or join existing Historical Societies or similar groups for the following purposes:
 - Creating a master list of historic structures and sites and making the list readily and locally available to the public.
 - Locating Town historic structures/sites on Town maps to be used for planning and zoning.
 - Providing educational programs to schools and the general public.
 - Encouraging rehabilitation and recognition of historic structures/sites including, for example, a program to put dates of construction on older homes, antique capes, now-extinct neighborhood school sites, and notable historic as well as operating granite quarries.

- Require a local permit and public hearing for the proposed demolition of a listed historic structure/site. As part of that permit, the State Division for Historic Preservation should be consulted prior to the demolition.
- Explore state and federal funding for restoration such as Grants Administration for non-profit or Town-owned historic structures and the Tax Reimbursement Act for Commercial Structures, etc.
- Encourage the preservation of our heritage through support of existing efforts that do that such as the Vermont Granite Museum of Barre, the Barre Heritage Festival, etc.
- Encourage the preservation of stone walls when considering subdivisions.
- Undertake the planting and re-planting of maple trees along roadsides in cooperation with arbor programs and other possible funding.
- Establish and enforce enhanced penalties for damage to cemeteries caused by vandalism and carelessness.
- Take steps to assure public access to "nature" - swimming holes, fishing, trail walking/biking, picnic areas, river parks, etc.
- Encourage stream bank preservation and buffer zones.
- Preserve public use of Ancient Roads – roads appearing on maps but not currently suitable for vehicle use.
- In all matters of historic preservation, Town officials are encouraged to partner with others of the same purpose so as to maximize results toward achieving the goal of preservation.

5.8 SCENIC PRESERVATION

As noted above in 5.2 views and vistas, Barre Town's visual beauty is an asset which must be protected—the Town has to offer to any prospective resident or employer who is considering relocating to the community. The determination of aesthetic value is very subjective. It is very difficult to impose fair and uniform aesthetic standards on proposed projects within any community. Therefore, the Town of Barre's policy regarding aesthetics is one of encouraging enhancement and conservation of natural areas, the environment, and views, and vistas rather than one of imposing penalties and restrictions. Of particular interest are the following areas of town:

Western ridge: Commonly referred to as West Hill, this ridge runs from Vt Rt. 63 north to the boundary line with the Town of Berlin.

Eastern ridge: Encompassing Taplin Hill, Trow Hill, and East Hill, from US Rt 302 in East Barre north to the boundary line with the Town of Plainfield in the vicinity of the Pinnacle (elevation 1821').

Any area that is visible from an opposing ridge or face more than one mile away.

Any development that displaces more than 2 acres of natural land or vegetation is discouraged and at a minimum shall be subject to site plan review with special emphasis on size, bulk, location, heights, setbacks, construction material as they relate to how a project may be seen.

- Development should not be restricted by aesthetics alone.

Any development above the ridgeline shall be limited to established height regulations.

The following are goals and recommendations regarding scenic preservation in the Town of Barre:

- Consider aesthetic upgrades and visual enhancements on Town owned land and right-of-ways.
- Ridge lines have yet to be mapped within the Town but doing so may prove helpful as ridge lines play a greater role in both power production and aesthetics. Those areas which are identified should be protected by zoning and subdivision regulations to preserve natural ridge lines.
- Full size industrial wind turbines are not a good fit for the Town and should not be allowed due to relatively low ridge lines, aesthetics, the absence of large tracts of unpopulated land, and numerous other negative effects (see 8.5 renewable energy). Small to mid-size units have similar concerns and siting criteria must take into account all the potential negative effects before being allowed. An example of a medium size turbine would be the one located at Rock of Ages.
- Overhead power lines can also have a negative effect on aesthetics. The Development Review Board should continue the practice of requiring underground power whenever possible for new development. This would also include transmission lines for both wind and solar projects such as stated above.
- Zoning regulations should continue to control the height of structures to preserve the scenic view of others.
- Tree-lined areas of roadways should be preserved particularly if the trees are old and such areas encouraged by appropriate subdivision regulations and encouragement to property owners. However, new trees along roadways should be set back away from roadways far enough to prevent interference with highway maintenance.
- The Town should promote the development and preservation of public scenic areas such as trails, ponds, swimming areas, picnic areas and railroad beds for continued public use. The Town may wish to consider acquiring these properties if a change of use is contemplated in the future.
- Site plan approval under 24 VSA § 4416 should continue to be used to ensure that landscaping and appropriate screening of all applicable projects occurs. Site plan criteria should be continually evaluated to ensure they are effective.
- Developers of subdivisions and any commercial/industrial development should be required to provide landscaping as a part of their projects. Greenbelts are defined as those areas located between any road and lot or building frontage that designates an area for the planting of grass, shrubs, flowers, trees or landscaping of any other kind. They should be provided in all plans for subdivision, conditional use and site plan, for existing properties or new projects. Greenbelts contribute aesthetic beauty and favorably affect the scenery and character of the neighborhood. Scenic paths and public areas may be required by the Development Review Board (DRB) as appropriate. Those plans shall require approval by the DRB during project review.
- Zoning provisions should be adopted which require appropriate energy efficient project lighting, including, but not limited to LED technology or other subsequent energy efficient technologies
- The Town should explore all sources of funding for the development and acquisition of public scenic areas and also assist landowners with opportunities for funding sources and mediation measures.

5.9 RESOURCES TO BE PRESERVED FOR RECREATIONAL VALUE

The Town supports the preservation of rare and irreplaceable natural areas, scenic and historic features and resources in recognition of the value of recreation. The following opportunities should be continued, maintained, preserved, developed and/or upgraded, including any or all within the Barre Town Forest:

- Playgrounds, basketball courts, skate parks, soccer field, ball fields, tennis courts, a volleyball court, and picnic

shelters.

- The Gunner Brook Fishing Derby is an annual tradition for children sponsored by the Barre Fish and Game Club. The fishing derby was the first designated derby in the nation for children under sixteen.
- Traditional links between natural resources and recreation: skiing, cross-country skiing, fishing, sledding, skating, hiking, camping, hunting, snowshoeing, snowmobiling, geo-caching, and four wheeling.
- The Town encourages recreational activities that reflect and celebrate the ethnic origins of Town residents.
- Bicycle/pedestrian paths and abandon railroad rights-of-way.
- Class IV roads and public trails.
- Fishing streams; Stevens Branch, Gunner Brook, Jail Branch and Scotts Brook.

5.10 NATURAL RESOURCES

Natural resources play a major role in the selection process used in deciding to live and work in a location. Some natural resources such as, topography, soils and water resources alter the capability of land to support population. Others, such as forestlands, farms and natural areas present aesthetic features which help define the quality of life for citizens. All natural resources warrant careful consideration in the Town Plan and review of future development in a continued effort to maintain and improve the quality of air, water, wildlife and land resources.

5.11 CLIMATE, TOPOGRAPHY, SOIL, AND EARTH RESOURCES

The Town of Barre enjoys the complete range of seasonal changes and a true New England climate.

Average summer temperatures of ~75F degrees and winter averages around 22F degrees are prevalent, with winter extending from November through April. Winter and spring thaws may create conditions known as "mud season", on unpaved roads which make up approximately 30% of Barre Town's highway system. As a result, transport of heavy loads over some roads is restricted, or may require special permits; this permit period runs from about November 1 to May 1 annually. Deep frost lines also result in a construction season of limited length, especially affecting infrastructure and foundation construction.

Summer, with a growing season of about 110 days, enjoys mild temperatures of 75 degrees to 85 degrees; seldom more than five (5) 90-degree days; lush green landscapes; occasional showers or thunder storms and profuse wild-flower displays. Average annual rainfall is 33+/- inches. Average annual snowfall is 75-90 inches.

The fall colors in Barre Town, enhanced by a topography offering a wealth of panoramic views and tree-lined byways, are some of the most spectacular in the Northeast.

Extreme climate events, such as hurricanes and tornadoes, are rare. However, recent severe and prolonged rainstorms have caused localized serious erosion and road washouts. While we cannot predict with certainty that these events will be the norm in the future.

- It is important to consider the best mitigation measures when repairing and planning Town infrastructure.

Saturated spring soils, valley river branches and alluvial fans can bring moderate flooding. True 100 year floodways are significant only along the valley basin branches which feed the Winooski River and in a few tributary stream beds which tend to be of moderate impact.

Topography and Slope

Barre Town, being a series of hill-tops surrounding valley feeder "branches" for the Winooski River, offers impressive views; lush landscapes; and, steep, winding roadways. Views of Camel's Hump and Spruce Mountain are prized by residents, though more pastoral settings and scenic locations prevail in the community. The railroad on Quarry Hill is the steepest grade in Vermont and revolutionized granite mining for the township. Astride Barre Town's highest elevation are the granite quarries and man-made peaks of granite waste (grout), which highlight this unique scenery. Slopes in excess of 20% are not uncommon, and simultaneously serve to enhance the aesthetic appeal of Barre Town while posing environmental planning challenges for development. The challenges include erosion control, sewage management, site design, road or driveway integrity, surface water run-off and seasonal access. The advantages are: residential privacy, outstanding views, and seasonal beauty. Elevations vary from South Barre at 680', East Barre at 1,130' and Lower Graniteville at 1,269' and Upper Websterville at 1,313' to Upper Graniteville at 1500', which represents the highest of the village centers elevation. The highest elevation of 1,825' in Barre Town is the Pinnacle off Cutler Corner Road.

Soil Types and Earth Resources

Soil Types

The US Department of Agriculture Soil Conservation Service has recorded and mapped soil types throughout Barre Town. Soil types predict the physical capability of the land to handle development and the resource production potential of the land. Unfavorable soil types for development typically contain the following properties excessive slope, shallow depth to bedrock, wet, unstable, and erodible soils. Before development, these soil maps should be reviewed to learn of possible on-site septic limitations, drainage problems, bedrock interference, etc.

For example, in the immediate granite quarry areas, the soils have been removed to facilitate the mining of granite. Beyond that excavation, the soils are Glover-Vershire complex rocky soils. The slopes in this area range from 15 to 35 percent and the soils are composed of soils that are generally unsuitable for septic tank absorption fields and cultivated crops. There may, however, be pockets of suitable soils for on-site septic disposal. Mound systems in areas that are not steep can be utilized.

As the slopes become more gradual, prime agricultural soils can be found throughout Barre Town. These soils are well suited for crops, hay and pasture. Buckland silt loams are found at slopes of 3 to 15 percent and are generally deep to bedrock. It is susceptible to erosion at the steeper slopes and drainage ditches can be used to help control it. The soils have seasonable high water tables at various depths and on-site monitoring should be done to determine suitability for on-site septic disposal. In the South Barre area, between Berlin and Route 63, significant pockets of prime agricultural soils extend down towards Barre City. These soils are valuable to crop production and should remain in farming/low density type uses.

Knowing the soil types on parcels of land, particularly where primary agricultural soils are is a valuable planning tool that benefits the public. Maps should be obtained from the Town of Barre Planning and Zoning Office to assist residents and developers alike.

Earth Resources

Barre Town's earth resources include granite, gravel, sand and topsoil. Barre Town presently owns and operates a sand and gravel pit on VT RT 14, in Williamstown. The quarries provide jobs and yield important materials for construction and manufacturing. The Town of Barre recognizes the granite grout piles as a natural resource and encourages their appropriate use.

While mineral extraction areas do provide important and needed materials for road and building construction as well as manufacturing:

- It is vital that care be taken in the setting and operation of future mining and extraction operations in order to

avoid land use conflicts, environmental damage and habitat destruction.

- Additionally, in residential and conservation areas, standards should be established for the operation, maintenance and ultimate restoration of mineral extraction land.

5.12 FOREST LANDS

By the mid-1800 some 75% of Vermont had been cleared of forested land and since then, much of Vermont has been returned to wooded land

Vermont is now 80% wooded while Barre Town is approximately 48% wooded, (estimated from 1979 composite orthophoto map of the Town). Present uses of forested land include recreation, water quality, scenic backyards, as well as wildlife habitat and wood products (lumber, firewood, maple syrup, etc.). The forest land in Barre Town is presently divided into the following major categories: Protective, Productive, Transition, and Urban.

Protective

(22% of the forested area) is defined as those areas with forest cover identified as natural and fragile area, heron rookery near the East Montpelier town line, forest preserve and aquifer protection areas (cf. well head protection area maps in Utilities and Facilities Plan).

Productive

(8% of the forested area) forest land is all large tracts which in themselves, or when combined, form a major economic unit for long-term timber production.

Transition

(52% of the forested area) forest lands are those resulting from fragmentation of larger tracts. They are intensively used for recreation, wood production, and wildlife habitat. Their value as watershed protection is also recognized. Larger than 25-acre parcels, this forest land category is appropriate for development, particularly rural, residential development, due to its proximity and accessibility to population areas.

Urban

(18% of the forested area) forest land refers to small parcels in or adjacent to the urbanized areas. The land is generally owned by private non-industrial landowners, and is generally used most intensively for recreational purposes. These parcels are less than 25-acres in size and generally not economically viable for long-term timber production.

Development pressure seems to be greatest on previously open or agricultural sites. However, where soils are suitable or where access to public water and sewer are available, the transition and urban forest areas are also under great development pressure.

"Prime" forest land as such has not been identified. However there is a FLESA (Forest Land Evaluation and Site Assessment) process available which could assist the Town in identifying, quantifying, and evaluating its prime recreation, scenic, wildlife, and timber-producing forest land.

Scenic vistas, recreational opportunities, timber production, wildlife habitat, and water protection are important assets that forest lands provide.

- The Town encourages careful and long-term management for the multiple uses of our forest resources.

In Barre Town, forest land may be described today as "maple-beech-spruce climax forest" in second stage generation of 30 to 50 years' growth. While there appears to be no distinct "mature growth forests", some mature, grown trees exist in the second stage woods. Barre Town is generally guided by State GAFP, - "generally accepted forest practices" - for protection and perpetuation of existing forest land.

Beginning in 2012, The Trust for Public Land (TPL) assisted the Town of Barre in obtaining 5 forested properties totaling 355-acres, to be combined with 25.7-acres owned by the Town, to become a new municipal forest in Graniteville and Websterville, Vermont.

A conservation easement over 355-acres was conveyed in 2013 to the Town of Barre by the Vermont Land Trust, the Trust for Public Land, and the Vermont Housing and Conservation Board to protect the Property from development and ensure it is open for public use "in perpetuity". The 25.7-acres previously owned by the Town are part of the Town Forest, and included in this Community Forest Plan, but are not restricted by the easement.

The Town of Barre will manage the Property as a municipal forest for wildlife habitat, timber harvesting and management, public recreation, education, and water quality protection. A conserved Town Forest also ensures public access, safeguards drinking water resources, supports the local timber, recreation, and tourism economies; provides occasional timber revenue to the Town and restores and protects connectivity by assembling parcels that have fragmented ownership. The property's extensive network of trails is a regional destination for mountain biking and other pedestrian recreation, providing unique economic and recreation benefits to the people of Barre Town and surrounding communities.

Conservation and proper management of the Barre Town Forest will also help to ensure the water quality and the safety of two drinking water supplies, specifically:

- 179-acres (69%) of the Source Water Protection Area for the Websterville Fire District #3 that supplies drinking water to 420 people.
- 27-acres (39%) of the Source Water Protection Area for Barre Town Water System that supplies drinking water for 1,210 people.

Wildlife Habitat

Barre Town, like most of Vermont, is home to diverse species of wild animals and with roughly half of the Town forested, habitat is plentiful. Any day while walking or driving around Town, you may have the good fortune of running across white-tailed deer, turkeys, bear, and maybe even a moose or two.

While Barre Town does not have any organized effort to protect wildlife habitat, the State of Vermont does to a large degree by classifying over 1,700 acre of land inside Barre Town as deer wintering land and over 4,000 acres as bear habitat. The deer wintering land has significant development restrictions placed on it and is managed by the Vermont Fish and Wildlife Department. According to the Fish and Wildlife Department, valuable yarding areas are lost each year to road construction, housing, and other forms of development. Additional threats are over-cutting of timber and pest outbreaks, such as spruce budworm. Each lost wintering area results in great pressure on the remaining areas of winter range.

- While not always easy, it is beneficial for communities to find a balance between wildlife habitat and development.
- Barre Town supports wildlife habitat preservation but does not see the need for further restriction beyond what the state already has created.

5.13 AGRICULTURAL LANDS

Agriculture and Farmlands

Barre Town's history has been closely linked to agriculture since it was originally settled. The initial clearing of the land and the construction of roads were accomplished by farmers in the eighteenth century. The rolling hills provided springs for agricultural water supplies, and the streams provided limited power for the processing of agricultural goods.

Barre Town has approximately three active dairy farms and a variety of other farms with crops such as hay, apples, vegetables, beef cattle, Christmas trees, maple syrup and maple products, herbs and perennial flowers. There are several equine operations and boarding stables as well. There are vacant fields, meadows, and pastures which are no longer part of active farms, but which remain as open spaces. In Barre Town, there are 85 landowners, owning approximately 6,085-acres, who are enrolled in the State's Current Use Program. The Current Use Program seeks to preserve forest and agricultural lands through the use of tax reduction incentives.

The remaining farms produce a locally created product, and they provide employment as well. Local farms usually preserve scenic open spaces, recreation during off-season, and wholesome uses of natural resources. Farms sometimes create buffers between differing land uses such as industrial and residential. They also create minimal demands on public services.

- It is the policy of the Town of Barre to encourage the preservation and continuation of economically viable agricultural uses including all of the farms which are currently active.
- Additionally, the Town encourages the creation of new agricultural uses which are economically viable.
- Farm preservation should be accomplished through positive inducements for farmers, rather than restrictions on growth. It is the intent of the Town that the owners of farms enjoy the economic benefits of their investment and ownership.

5.14 GROUNDWATER RESOURCES AND GEOLOGY

Many residents and businesses in Barre Town obtain their water from groundwater sources. Groundwater comes from both fractured bedrock and from unconsolidated sediment in stream valleys. Any saturated sand and gravel deposits might provide a source of ground water for larger groupings of houses. With expanding commercial development, larger projects may be sited. The nature of the subsurface materials, including depth to bedrock, is of importance when alignment choices are made and effects assessed. Water well and boring data provide a potentially valuable source of data in areas lacking exposures. Depth to bedrock measurements, are reliable aids in determining the thickness of surface materials and can be used to reconstruct the hidden bedrock topography. Water well and other data are being compiled in spreadsheets and will be available from the Vermont Geological Survey office.

"Geology for Environmental Planning in the Barre-Montpelier Region, Vermont" by David Stewart, 1971, contains an extensive set of maps delineating surface materials, ground water potential, solid waste conditions and sand and gravel reserves for Barre Town. In the ground-water potential map, most of Barre Town occupies areas of very low ground-water potential in which most water is available from bedrock sources at depths to 300 feet. Areas of good to moderate potential, where water is available in gravel and sand, follow the valleys of the Stevens Branch and Jail Branch. These areas, containing permeable sand and gravel, are not generally suitable for solid waste and sewage disposal because of the increased potential for leachate to seep through and contaminate ground water. Areas identified by Stewart for solid waste disposal include upland areas covered by thin (less than 25 ft.) impermeable silts and clays.

The surface materials in the region are dominantly of glacial origin and were deposited while the area was covered by an ice sheet and during and shortly after the retreat of that ice. Most of Barre Town is mapped as having a thin layer of till over bedrock and/or exposed bedrock. Thicker surface materials occupy the valleys of the Stevens Branch and the Jail Branch, and the area just west of VT RT 14. The materials, varying from low permeability silts and clay to high permeability sand and gravel, provide constraints on development, land use, and resource availability.

Barre Town is on the Barre West and East Barre 7.5 minute quadrangles in north-central Vermont. The bedrock geology of the area consists of low to moderate grade metasedimentary rocks. The metasedimentary rocks are phyllite's, schist's, limestone's and, of course, granite. Granite is an igneous rock formed approximately 340-360 million years ago. It is Barre Town's most significant natural resource and its commercial extraction has provided the Town with employment opportunities since the early 1800's.

Gravel resources are predominantly restricted to the area along VT RT 14, although not all as is evident along Farwell Street and US RT 302. Sand and gravel deposits, as shown on Stewart's map are limited in extent and nearly half the original reserves are depleted. Stewart estimates, however, that an adequate reserve for the near future remains.

The Vermont Geological Survey has mapped the three-dimensional distribution of surface materials in Central Vermont's largest cities (Montpelier and Barre) and the surrounding rural areas that are experiencing growth. This map will serve as a basis for land use planning that includes identifying and delineating surface aquifers, sand and gravel deposits, areas prone to slope failure, areas suitable for septic systems, and areas underlain by significant thicknesses of low-velocity clay-rich sediments where seismic risks are amplified. New data for the west portion of Barre Town is available. Interested citizens can find this information from the VCGI (Vermont Center of Geographical Information) website through the State of Vermont site located at www.vcgi.org.

Ground Water Protection Plan

A useful resource for ground water protection planning is the report "*GROUND WATER RESOURCES AND PROTECTION FOR THE TOWN OF BARRE, VERMONT*", ("Smith Report") July 1988, prepared by Michael B. Smith, Hydrogeologist for the Vermont Agency of Natural Resources which is still timely and relevant.

- Recognizing the importance of protecting present and potential future ground water resources to provide for water consumption by Town citizens, it is recommended that the Town adopt a ground water protection policy. This policy should be implemented by a Ground Water Protection Strategy which includes the following:

Public Education:

- Town should take active role in making its citizens aware of the need and benefits of protecting groundwater resources.

Ground Water Resources Inventory

- Should be taken to determine all available ground water resources. This data should then be looked at alongside other (e.g. ground & surface) water resources currently in use and being developed. This total resource picture should then be measured against the Town growth projections and land use plan in order to determine the need. The Town Ground Water Protection strategy then should be developed in response to that need.

Land Use Inventory

- An inventory of current land uses is essential to determine whether ground water resources are subject to existing dangers and whether available and accessible for community use. (cf. Smith Report, Appendix 4, Model ordinance, p.4, list of business activities which represent a potential danger to ground water drinking water supplies.)

Amend Town Code

- Amendments to the Town code should include Hazardous Materials Ordinance (cf. Smith Report, Appendix 4,

Model ordinances, pp. 6-13.)

Draft Amendments to Town Zoning Bylaw and Subdivision Regulations

- As needed, calling for an Aquifer Protection Area Overlay District to insure all zoning and subdivision applications are checked for potential impact on ground water resources. (See Appendix 4 of Smith Report.)

Consider other Zoning Amendments

- Designed to protect identified well-head protection areas which serve as an existing or potential municipal water supply. Boundaries of any districts created should be based on geological data (contact point of sand and gravel deposit with surrounding till or bedrock materials). Within that area, land uses should be **restricted** within the cone of depression of an existing well, while the rest of the recharge area (to the boundaries) should be **protected** from incompatible land uses or mismanagement. Consultation with an expert is essential to lay out this two-district zoning.

Ground Water quality should be checked first

- If an aquifer is already contaminated by industrial, commercial or densely developed residential uses, zoning will serve no purpose. Likewise, if ground water resource is not of sufficient quantity to meet present or future needs, over protection may not be warranted.

Zoning

- Is best suited for regulating prospective land uses, since present uses are "grandfathered" in. Please see Smith Report, Appendix 4, Model Ordinances, pp. 14 - 19 for model Water Resource Protection District language for Zoning Bylaw. This model should be studied for its suitability for Barre Town; then, if suitable, adapted as needed and proposed for adoption.

Subdivision Amendments and Other Proposals

The Smith Report contains model subdivision amendments and other regulations besides those cited herein. These are available for perusal and possible proposal by interested citizens.

- Town's involvement in ground water protection and accessing should, of course, be coordinated with fire districts in which said areas may lie, or with other public water systems.

Surface Waters

Barre Town is entirely located within the Winooski River watershed. All the water of the Winooski River watershed flows north into Lake Champlain. Barre Town has a wide variety of waterways and manmade ponds. Two rivers flow through Barre Town, the Stevens Branch, flowing along VT RT 14 from the Williamstown Town line north to the Barre City line, and the Jail Branch which flows north along US RT 302 from the Orange Town line to the Barre City line.

The Stevens Branch is listed by the Vermont Agency of Natural Resources, Department of Environmental Conservation, Water Quality Division as one of seven important tributaries of the Winooski River. The Winooski River originates in the Town of Cabot and flows northwesterly approximately 90 miles to Lake Champlain with a total drainage area of 1,080 square miles which is 11.9 percent of Vermont. The Stevens Branch is 14.7 miles long of which approximately 2.6 miles are in Barre Town with a total watershed of 129 square miles.

The Jail Branch is a tributary to the Stevens Branch and originates in the Town of Washington. Collecting water from a 49 square miles area, the Jail Branch travels 14 miles, 4 of it in Barre Town, to its confluence with the Stevens Branch just south of Barre City's downtown.

Both the Stevens and Jail Branch Rivers offer Town residents a variety of recreational opportunities. The opportunities include but may not necessarily be limited to swimming and fishing. According to the State of Vermont Water Quality Division, there are no recognized swimming holes on either the Stevens or Jail Branch Rivers in Barre Town. However, while the Jail Branch does not offer many opportunities due to terrain and speed of the river, the Stevens Branch does and is used for swimming in the South Barre area. Fishing is popular on both rivers with wild brook trout the prominent species of fish although you may find brown and rainbow trout as well.

Testing of the water in both rivers is done periodically by the Department of Environmental Conservation as well as local high school science classes. Water quality is reported to generally be good. The Stevens branch has had negative impacts on it over the years but remedial efforts have proven successful in protecting the water quality. Some of the hazardous sites that have impacted the Stevens Branch in Barre Town or upstream over the years include the former Unifirst dry cleaning plant in Williamstown, The Williamstown land fill where sludge was dumped that had contaminants from the Unifirst site, South Barre MiniMart/Barre Home Supply, and Quarry Hill Quick Stop. All of these sites have had remedial programs to mitigate contaminates.

The Jail Branch River has not been subject to the same types of hazardous contaminates that the Stevens Branch has. The Jail Branch is impacted by the East Barre Dam which was constructed between 1933 and 1935 in response to the flood of 1927 when water from both the Jail and Stevens Branch Rivers decimated much of Barre City. Construction was done almost entirely with hand labor by the Civilian Conservation Corps. Flooding upstream of the dam is common which is by design. Most of the flooding occurs in the Town of Orange.

There are other smaller tributaries to both the Stevens and Jail Branch Rivers that since the installation of the East Barre Dam have proven to be more troublesome than the rivers themselves when it comes to flooding. These brooks include both Gunner Brook and Honey Brook.

Aside from the undeveloped Pecks Pond, Barre Town does not have any formal bodies of water such as lakes or ponds, the woods in the Millstone Hill Area (Graniteville & Websterville) are riddled with small and medium sized abandoned granite quarries. Now filled with ground water, these quarries provide their own uniqueness and opportunities. Many of these old abandoned quarry holes are contained within the Barre Town Forest and will be preserved for future generation to enjoy and learn about Barre Town's heritage.

The health of a river is vital to a community's well-being whether it be for recreation or aesthetics. Barre Town should take measure whenever possible to protect rivers and streams. Some of these methods to protect surface water may include:

Surface water protection goals:

- Although the State of Vermont now regulates on-site septic systems, Barre Town should remain active in the siting of these systems. Identification of failed systems and helping homeowners find remedial solutions when feasible should also be done.
- Proper stormwater management and erosion control should be considered for all development. Non-point pollution surface run-off from impervious surfaces and erosion can threaten water quality and the health of streams. Runoff can harm water quality through the addition of petro-chemicals, heavy metals and other toxins from parking areas and other facilities and can cause excessive sedimentation that endangers fish habitat.
- A minimum of a 50 foot buffer from significant streams banks should be maintained to help protect them. Buffer management plans should also be required for development close to or within a 50 foot buffer zone. Maintaining a vegetated buffer along all streams is important to the overall health and well-being of the river because it provides shade, stabilizes stream banks, and provides habitat for a variety of wildlife.

Special Surface Water Concerns

Flood Hazard Areas and Floodways

A special flood hazard area is defined in terms of likelihood of damage impact's in a one-hundred (100) year period. A floodway is the pathway and watercourse that must be reserved to carry flood water away during the 100 year incident. These areas in Barre Town have been mapped by the Federal Emergency Management Agency (FEMA) and used as part of the National Flood Insurance Program showing flood hazard areas on Flood Insurance Rate Maps (FIRM's), which indicate flood hazard locations. Properties located near the primary rivers (Stevens Branch and Jail Branch) are subject to floodway regulations. Flood hazard regulations are incorporated in the Town's Zoning Bylaw enforced by the Zoning Administrator. These FEMA maps are available in the Barre Town Planning and Zoning Office.

Soil composition, slope and contours, also create pockets of minor (though problematic) flood impact due to spring thaws and intense rainfall. Sections of Lower Graniteville; Websterville Road, East Barre, and Quarry Hill, for example, can be vulnerable to "spot" flooding, basement impact, storm sewer over-capacity and road erosion.

The greatest impact to Barre Town with regard to flooding typically comes from flash flooding. Barre Town's hills and valleys allow for water to be collected at higher elevations in numerous tributaries, brooks and streams, to both the Jail Branch and the Stevens Branch Rivers. Elevation change between the heads of these brooks or streams and the rivers can create tremendous fluvial erosion. Fluvial erosion is the removal of soil and rock from the bank of a water channel and is a concern throughout Vermont including Barre Town.

Wetlands

Wetlands may be defined as areas which are inclined to retain sufficient ground and surface water to support significant types of vegetation and aquatic life, which depend on consistently saturate soil conditions. Wetlands provide wildlife habitat and are important as indicators of possible groundwater contaminates.

Wetlands, regulated by both the State and Federal government, are identified on the Vermont Significant Wetland Inventory Map. There are many available sources to review the wetland maps including the Planning and Zoning Office and on the State of Vermont Water Quality website (www.vtwaterquality.org). Barre Town has no category #1 wetlands. Category # 3 wetlands are considered to be less significant than category # 2 wetlands, however, both represent significant environmental assets. Barre Town has several significant wetland areas, some of which have been protected by private landowners. In recent years, wetlands, regardless of their category, mapping, or size, have been considered significant. This is important because all uses where impact to a wetland is possible should use care before disturbing the wet area.

- Developers and homeowners should consult with a wetland consultant.
- Barre Town's Zoning Bylaw regulates wetland development but may need to be amended to include additional language regarding the importance of even non mapped wetlands.

Storm Water Management

Much of Barre Town is comprised of hilly areas that are like the rim of a bowl, the center of which is Barre City. Storm water runoff traveling down the hills impacts on the City. It also impacts areas of Barre Town by its adverse impact on homes, leach fields and driveways as well as roadways. Uncontrolled runoff can create a variety of problems. These problems are often made worse when new development reduces the amount of vegetation which controls the absorption of the ground water. Examples of the problems are: silt deposits; erosion and/or undermining of private property, roadways, railroad beds and bridges; accumulations of water that will flood or freeze which produce hazards on driveways or roads; and flooding and contamination damage

to basements, yards or streams.

Presently the Town Public Works Department controls storm water runoff by a system of ditches, culverts, and catch basins. Most of the runoff not absorbed into the ground eventually flows into natural waterways. The primary purpose of the existing storm water control system in the Town is for highway maintenance.

Reports of maintenance needs for the storm water control system are handled by the Town Highway Department as part of the routine maintenance of town roads.

The Town should insure that all plans for future construction within the Town are reviewed for storm water runoff impact on adjacent property owners and municipalities to insure the health and safety of the public. Wherever appropriate, the Town will require the developer to provide a right of way, an easement or retain necessary private property for the maintenance of the storm water control system.

There are fluvial erosion concerns throughout Barre Town. Of specific concern are areas on both side of East Barre Road (US RT 302) from the Barre City line to East Barre. This area has experienced significant fluvial erosion creating ravines in several locations. Repairing these ravines may be difficult and expensive; however, controlling runoff may be a manageable way to help slow erosion. Development, where stormwater runoff is collected and travels through these ravines should be reviewed for stormwater management, controlling the rate of runoff.

There are also problems with the infiltration of storm water into the domestic sewer lines which need to be resolved as well.

The State of Vermont has a storm water and construction permit process; the process refers to one to five acre developments. The developers must obtain a state permit referred to as a 3-9020. This permit deals with low risk sites and erosion issues on the sites; prevention and sedimentation control. All developments one to five acres must submit a preliminary notice of intent per new state law.

Recommendations regarding Water Runoff and Drainage

- The Development Review Board should review plans regarding storm water management for new subdivision proposals to ensure that new development will not adversely affect the community.
- Allowable volumes of storm water run-off need to be calculated using State standards for 10, 25, and 50 year storms. Calculations in subdivision applications, detention areas, throttling devices for all storm water run-offs need to be provided to the Development Review Board at the time of new development.
- Town should consider a no disturbance buffer/setback area around steep slopes of 20% or greater.
- Buffer areas for streams and wetlands.
- Consider a fluvial erosion plan.

Air Quality

The quality of the air we breathe can be as important to the vitality of a community as much as anything else. Communities tend to thrive better when the air is clean and health issues are not a concern and visibility is generally good. Most of Vermont air quality concerns are generated from out of state.

Similar to most parts of Vermont, Barre Town is considered to be in attainment/unclassified status with regard to air quality as determined by the State of Vermont, Air Quality Division through their Air Quality Implementation plan. This means that Barre Town is assumed to have attained the standard but that there really isn't a classification. Barre Town's

air quality, again like most if not all of Vermont is considered to be excellent.

While Barre Town's air quality is excellent, it can be affected by many different things including industrial uses, traffic, heating systems, and some agricultural uses. In Barre Town, most industrial uses are under ACT 250's jurisdiction and as such must meet State of Vermont air quality standards in order to get a permit.

- That may not be the case for all uses and as such, if not already under some form of air quality review, uses being considered during the permit process should be carefully reviewed for air quality concerns and if necessary be required to show how standard air quality standards are being met.

5.15 NATURAL RESOURCES GOALS AND OBJECTIVES

- Enlist the communities' support in protecting and enhancing the natural resources and amenities in Barre Town and affected surrounding municipalities.
- To build the information base relating to description its natural resources and to be included on the Town's website.
- To assure long-term, sound stewardship of natural resources through reliable planning and management practices.
- To ensure that development is in harmony with the natural features of each site and limited where development is imprudent and/or questionable due to excessive negative impacts.
- The Town will encourage and enlist the assistance of residents, landowners, schools, businesses and other entities to study inventory, manage, preserve, protect and enhance natural assets.
- The Town should enlist existing organizations and board such as; the Recreation, and Housing Committees; Development Review Board the Planning Commission, and the Traffic Safety Committee to propose and implement policies to protect natural resources and enhance natural features throughout Barre Town.
- Mapping and natural resources information should be readily available to applicants as part of any review process. Expectations, as well as opportunities, for appropriate management practices and development choices should be offered to applicants. This information should also be accessible to the public.
- The Town should encourage the appropriate siting and reclamation of any future mining and/or extraction operations to avoid land use conflicts, and minimize environmental damage and habitat destruction.

Suggested Actions & Initiatives

- The Town should take a proactive approach to prioritizing protection of natural resources in the interests of expanded development amenities, respect of property rights, and incentives of developers and landowners. These may be reflected in ordinances, pursuit of planning and implementation project funds, community demonstration programs, and /or open space/recreation/tax/site design incentives, for example.
- The Town should encourage protection of mature landscape and geological features (i.e., native rock and ledge) seasonal and indigenous waterways, privacy screens, recreation space, etc. to serve the goals of the Town Plan while increasing marketability of developments and confidence in applicant planning capacity. Applicants should be advised to incorporate mitigation measures to protect natural resources, rather than to delay proposals strengthening planning considerations.
- The Town should encourage Barre Town businesses, through the Zoning Bylaws and Subdivision Regulations to landscape with native vegetation and materials.

8. ENERGY

8.1 OVERVIEW

Energy is an important component of any town's vitality. An energy plan is important to promote numerous benefits which include municipal cost savings, increased revenues, a strong economy, greater energy independence and security, local influence over energy facility siting, more efficient communities, healthier communities, a clean environment, and regional coordination and collaboration. State incentives may be available to communities that have energy plans.

To a large degree, energy costs are not controlled by a municipality; they are dictated by outside sources. The number one demand for energy use in Vermont is in transportation. Heating is second followed by electrical use. So, while Barre Town and its residents may not be able to control the cost of energy, they can always look toward conservation and fuel switching as a way to cut cost and meet many of the benefits mentioned above.

- Other methods of energy conservation can also be encouraged such as the use of renewable energy sources and energy efficient buildings. Promoting these things can also lead to job creation for the local work force.

8.2 ENERGY OPPORTUNITIES

Most of the opportunities for energy savings are within the confines of the private sector in transportation, homes and commercial and industrial properties. However, there are a few opportunities for the municipality to save energy as well. They include the following:

- Encourage cluster housing and neighborhood commercial services along established transportation routes;
- Encourage the development of pedestrian and bike paths and park and ride facilities throughout town;
- Promote public transportation and ride-sharing;
- Promote the use of energy efficient street lights in the community;
- Purchase the most energy efficient or alternative powered municipal vehicles that will, at the same time, perform the necessary functions of the particular department.

8.3 ENERGY CONSERVATION

The greatest impact on reducing dependence on fossil fuels, both domestic and foreign, is to decrease the overall demand for energy through conservation. Conservation also produces the most economic gain because it represents money not spent for energy. Basic conservation efforts involve little or no monetary investment, but most likely will involve changes in both culture behavior and life style. Additional efforts require an investment in reducing the energy requirements of buildings.

While the Town of Barre cannot require energy conservation by citizens of the Town, the Town can certainly actively promote energy conservation measures. This can be achieved through zoning bylaws, encouragement and listing resources in the Town Newsletter, and on its Town website.

Transportation

Private Sector

While public transportation; buses and trains provide minimal opportunity in Barre Town for energy conservation, there are several options available to residents to reduce the use of private motor vehicles. The first is to utilize formal "park and ride" lots for carpooling. There are two established VTRANS commuter lots in Barre Town. One is located on US RT 302 in East Barre, near the intersection of VT RT 110. The second is located on VT RT 14 adjacent to VT RT 63 (across from McDonald's). Though while not located in Barre Town, ~~a third VTRANS lot is located in Berlin on VT RT 62~~

and ~~Paine-Turn-Pike~~ commuting lots are also located in Berlin, Montpelier, East Montpelier, Orange, and Williamstown. Use of these ~~well-maintained-managed~~ (well-lit and maintained year-round lighting, snow-removal) lots is free, and they are provided to promote carpooling

Another option for setting up a carpool can be found at www.connectingcommuters.org, which helps those seeking carpooling opportunities find car or vanpooling partners. For carpool matching, vanpools, and bus routes please call 800-685-7433 or visit their website.

Within the Town, development of multiple charging station locations will encourage the conversion from fossil fuel vehicles to plug-in hybrid and full electric alternatives.

Commercial Sector

Businesses are encouraged to utilize rail transport when available. The Town's Wilson Industrial Park (WIP) and areas of Quarry Hill, Websterville, and Graniteville have rail service connecting to Montpelier via the New England Central Railroad.

Lighting

Street Lights

Barre Town completed a public street light survey in 2012 of all lights that the Town pays for. It was a great opportunity to survey the lights in use and to make recommendations for additions or deletions to the street light inventory. The goal was to replace existing street lights which are generally either mercury vapor, or high pressure sodium, with LED lights. The changeover will be conducted in co-operation with Green Mountain Power. Expected savings are around \$10,000 per year for the Town. In all, there were 86 existing lights removed and 24 added for a net loss of 62.

There was no charge to the Town for the conversions. Because the Town pays Green Mountain Power a fixed fee per street light (covers pole, light fixture, and maintenance), the town will not directly see the savings in either electric use reduction or the reduced cost of electricity. However, Green Mountain Power will, by virtue of having to purchase less electricity to operate the street lights.

This survey did not inventory privately owned outside lighting.

- Homeowners and businesses are encouraged to replace or upgrade current outside lights with LED's or current technology.
- There may be funds available to pay for some or all of the light conversions from Green Mountain Power or Washington Electric Co-op. or through Efficiency Vermont (www.efficiencyvermont.com).

Interior Lights

Homes and businesses have several light replacement options available.

- Incandescent light bulbs can be changed out with CFL's or LEDS. Old fat tube (T-12) fluorescent tubes and fixtures can be replaced with more efficient T-9 and T-7 (skinny) tubes and fixtures.
- ~~LikewiseLikewise~~, halogen and metal halide lights should be replaced with more efficient lighting. Efficiency Vermont can assist with this. T-12 tubes are essentially no longer available so new construction will by default use the newer more efficient skinny tubes.
- New construction of homes and businesses is encouraged to utilize energy efficient lighting.

Building Energy Audits

Home and business owners:

- Are encouraged to have a ~~whole-building- professional~~ energy ~~audit- assessment~~ performed by a ~~certified home~~certified home energy specialist ~~or- ENERGY STAR®~~ ~~to~~contractor to determine both energy losses from the building and to have a plan developed to correct energy and heat loss deficiencies.
- Contact Efficiency Vermont for a list of certified contractors.

Other

- The use of power strips to fully turn TV's, computers, and other electronic devices off is encouraged. Turning off unnecessary lights and electronic devices, turning down the thermostat, reducing the hot water temperature, using water saving faucets, and shower heads are some of the other options.
- Using an outside clothes line or inside clothes bars can greatly minimize the need for an electric clothes dryer. Older electric appliances can be replaced with newer energy star rated efficient units.

8.4 TOWN BUILDINGS

Barre Town owns ~~a-number-of~~several municipal buildings which represent an opportunity for both energy savings and a reduction in operating costs.

The East Barre Fire Station has had lighting upgrades done (both interior and exterior), and the heating plant was converted from #2 heating oil to propane in the fall of 2013.

The South Barre Fire Station needs interior light upgrades but most of the exterior lights were upgraded to LED in 2013. The heating plant was converted from #2 heating oil to propane in during the summer of 2013. An energy audit is needed to determine insulation needs.

The Town Office Building has been subject to several energy upgrades in the past. Currently work is in progress for weatherization and insulation of the front part (the oldest part) of the building. An insulation project is under consideration for the new part of the building. Changes to the heating plant are under consideration for the future. Some of the exterior lights have been converted to LED's.

The EMS building has updated lights and the heating and hot water system is propane. The last area of concern would be insulation, and an energy audit would be beneficial.

8.5 RENEWABLE ENERGY

In general the Town of Barre supports the use of renewable energy systems to the extent that it does not over burden the town with a of its disproportionate share of the State's renewable energy goals and provided that they fit into the goals of the Town Plan, taking into account noise, scenic vistas, location, and negative -impacts on residents's quality-of-life, and represents an orderly development of renewable energy systems.

Renewable energy sources ~~These sources~~ are represented by wind, solar, wood, geothermal and hydro. While renewables represent a chance to move away from fossil fuel sources, they are not without their own negatives such as; aesthetics, noise, cost, reliability, and availability.

It is a long-standing practice within the town to have utility lines placed underground as opposed to above ground to minimize their overall visual impact and reliability. Therefore, any extension of 3-phase power lines must be underground.

Wind Turbines

Wind turbines are relatively expensive, can be high maintenance, have siting issues (works best at higher elevations, and on ridgelines), require significant setbacks, may cause noise issues, moving shadows, etc. with adjacent property owners, may negatively affect property values, and of course only works when there is sufficient wind speed. Aesthetics are a major concern.

- As a result of the factors listed above as well as the Town's relatively low elevation (ridgelines less than 1800')full), full size industrial wind turbines (greater than 300' tall) are not a good fit due to their overall size relative to the topography for the Town and should not be allowed are prohibited. Small to mid-size turbines, such as the one currently located on property owned by Rock of Ages, also have some of the same potential impacts and will should only be supported allowed if compliant with preservation efforts noted in chapter 5 on a case-by-case basis if siting criteria take into account all potential negative effects and setbacks.
- Set back requirements for all net metered wind turbines shall should at a minimum comply with the most recent Public Service Boards net metered rules be established for wind turbines, so that blade and tower failures do not impact adjacent properties.

Solar Energy

Solar energy is represented by both solar hot water heating systems (domestic hot water), and solar electricity (~~photo-voltaics~~ photovoltaics - PV). The most appropriate location for solar arrays is roof tops, or existing impervious surfaces, or industrial/earth resource land (identified by the Town) not well suited for conventional development. Any new ground mounted solar array should utilize existing topography, development, or vegetation on site to break up the visual mass of the arrays.

Renewables cannot be sited in predominately visible locations on hillsides or ridgelines and shall be sited to preserve open space.

Renewables shall be constructed using earth tone colored materials for panel frames, structural supports, and fences. All Surfaces shall use non-reflective materials. Use of bright metallic materials is prohibited.

With the goal of maintaining the Town's rural character, protecting rural open space and agricultural heritage, removal of productive agricultural lands and greenfields for solar development is prohibited.

Lot coverage for solar panels is defined as the area encompassed by the panels when viewed from above.

Solar Hot Water

Solar hot water systems require minimal space and can be located on roofs or ground mounted Solar arrays need full sun and to be pointed south for the best performance. Essentially all of the solar heat generated is stored in a hot water pre-heater tank. Payback on the systems is fairly short term given that there are both state and federal rebates/incentives available. These systems would also be appropriate for heating in ground pools, and c Could be located all zones. Solar hot water systems are subject to setback requirements (same as any accessory building). Roof Also roof-mounted arrays are subject to building height requirements and need to be sensitive to neighborhood aesthetics.

Photovoltaics (PV)

PV requires a much larger array of panels and will have a more visual impact on surrounding properties. Residential PV systems are more expensive than hot water and even with incentives, payback can be up to 20 years. As with solar hot water systems, can be roof mounted or ground mounted.

- Ground mounted residential systems (<15kW) would shall be compatible in most zones but should be subject to the same property line set back requirements as other structures.

Conflicts about the use of solar panels may arise with adjacent property owners. Issues would be the sun reflecting off from a solar panel into an adjacent home, or a neighbor who plants a tree or trees, constructs a building or other structure that blocks the sun from reaching the panels.

The Town of Barre supports a "good neighbor policy". The design and siting of a solar array shall be done in such a manner that the array creates no greater burden on neighboring property owners or public infrastructure than it does on the property on which it is sited. As an example, a landowner may not site an array on his or her property in a location calculated to diminish the visual impact of the array from his or her residence or business, but place the array immediately within their neighbor's or the public's viewshed. Locating a solar array in a manner designed to reduce impacts on neighbors, or public viewsheds constitutes reasonable mitigation.

Lands adjacent to a solar development can be developed in conformance with existing Town and State regulations regardless of the impacts.

Conflicts about the use of solar panels may arise between property owners. Potential issues would include the sun reflection into adjacent homes, or blocking views. Or a neighbor, who plants a tree or trees, constructs a building or other structure that blocks the sun from reaching the panels.

Commercial-scale PV systems are larger in scope and generally require using large areas previously open land. These could have a visual impact on both the area they are located in and on views within the town. Electric transmission lines may also need to be expanded or constructed to carry the electricity produced from a commercial PV system, which is another potential impact on the town. The siting of large solar arrays may be in conflict with the Town's goals of preserving scenic vistas and natural resources.

- The planning commission should address commercial PV systems to determine appropriate allowable zones, and restrictions (if any).

Visual Mitigation

Residential on-site net-metered systems (<15kW) should be sited to minimize aesthetic impacts, minimize reflection of light into an adjacent home, and avoiding blocking a neighbor's view.

Larger systems (>15 kW) must meet the setback requirements of Act 56 and the Public Service Boards net metering rules. Additionally, these systems would be located on an existing impervious surface or brownfield in an area that minimizes direct view from adjacent businesses, homes, and roads. In the absence of existing natural vegetation, solar arrays must be screened by native plantings beneficial to wildlife and pollinators that will grow to a sufficient height and depth to provide effective screening within a period of 5 years. These arrays are not permitted in "green fields" (actively used agricultural sites or sites with prime ag soils). They shall provide for an orderly development of solar within the Town and be compatible with adjacent property uses, and be sited to preserve rural cultural aesthetics

Private development of solar arrays are prohibited in the Wilson industrial park or within the Town's TIF District (should the Town designate one). Siting of arrays in commercial zones (East Barre Commercial, Highway Commercial, Office Building Retail, and Office Building Business) are also prohibited, unless being used for on premise electric needs. All of the above zones were established to encourage the growth of new businesses and create jobs, both of which bolster the local economy and grow the grand list. The business zones (with exception to Town owned lands) generally follow the major highways (Rte. 14 and Rte. 302) in town and are relatively shallow in depth. Land suitable for industrial and business development is a scarce commodity within the Town.

Commercial solar arrays larger than 500 kW would encompass a land mass greater than any other structure within Barre Town and even with somewhat rolling topography cannot be screened or mitigated to blend into the Town's landscape or rural cultural aesthetics and are therefore prohibited.

The Town should develop a delineated "solar overlay district" based on the current availability of 3 phase power and current land use. This district should contain a provision for allowing "proximity solar development", as well as allowing fringe siting along wetlands or in wetland buffer zones.

276 All solar projects shall be decommissioned at the end of their useful life and the property shall be restored to its
277 pre-project condition. Developers of all projects 150kW or greater shall provide the municipality with appropriate
278 assurances to guarantee funding exists to decommission the project. Decommissioning includes, but is not limited
279 perpetuo, proper disposal and/or recycling without burdening the Town.
280

281
282 For the purpose of this plan, either the Selectboard or the designated appropriate municipal panel shall be deemed
283 to represent the voice of the communities "average person" with respect to the "Quechee Test" when evaluating the
284 aesthetics of a proposed solar array.
285

286 Wood

287
288 Wood is available as both firewood and pellets. ~~Generally~~Generally, firewood is produced in or within a few miles of
289 Barre Town which minimizes transportation costs and supports a local economy. Firewood removal from forest land is
290 also an important tool for forest, wild life, and agricultural land management. While using fire wood for heat in stoves and
291 inside boilers is a logical step to replace or supplement fossil fuels, outside wood boilers have their own particular set of
292 issues. ~~Generally~~Generally, the flue pipe (smoke stack) is short and in certain meteorological conditions can cause
293 significant ground level smoke plumes to the detriment of the neighbors. Outside wood boilers used in the summer for
294 hot water production can also create low lying smoke plumes.
295

- 296 • There may be zones where these devices may not be compatible (high and very high residential).
- 297 • Zoning regulations should be reviewed to define the appropriate use of outside wood boilers.

298
299 Pellets at this point are not produced locally so not unlike fossil fuels there is transportation cost associated with
300 them. But still they are a renewable energy source and do replace fossil fuel usage. ~~Pellets burn~~Pellets. burn more
301 efficiently than firewood and hence is less of a concern for contributing to chimney fires reducing demands on the fire
302 department
303

304
305 At this ~~time~~time, there is little opportunity for hydroelectric production due to small size of the streams and rivers in
306 the Town, and the extensive and expensive permitting (state and federal) required.
307

- 308 • Should Barre Town ever establish a larger water supply system (from wells), an in-line electric generating
309 system in the water transmission pipe may be worth considering
310

311 Geo-thermal heating is a clean, emission free technology which has minimal impact on adjacent property owners
312 and Town services. Federal tax incentives may be available to installing a geo-thermal heating system. A state permit
313 may also be required to operate a geo-thermal system.
314

315 **Recommendations:**

- 316 • Continue to inform the public through zoning of State Residential Energy Standards and the requirement that
317 new construction meet those standards.
- 318 • The Development Review Board should encourage developers (residential and commercial) to utilize energy
319 efficient insulation, weatherization, heating and lighting in all projects.
- 320 • The Town should encourage the use of the Energy Efficient Mortgage Program which helps home owners
321 finance energy efficiency improvements at lower than normal interest rates. The Town also encourages use of
322 CAPSTONE Community Action (802-479-1053) CVCAG-Weatherization and Energy Efficiency Services
323 Programs for eligible residents;
- 324 • The Town should encourage developers to design subdivisions for appropriate solar orientation and the use of
325 solar hot water systems and photovoltaics when appropriate.
326
327
328
329
330

- Building designs should include roof construction capable of supporting solar panels.
- Selectboard should create an Energy Committee comprised of Town citizens and officials to explore ways to make the Town government operations more efficient in the use of energy.
- Encourage homeowners to have a whole house energy audit performed to review: lights, insulation, weatherization, heating, appliances.
- The public should be encouraged to use more efficient transportation methods.
- The public should be encouraged to utilize renewables whenever appropriate.
- The Town should encourage developers of commercial solar arrays to incorporate a plan to install public access charging stations within Town limits.
- The Town should encourage businesses within the community to install charging stations.