

THETFORD, VERMONT TOWN PLAN



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Photos by L. Alschuler, East Thetford

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FORWARD

On November 21, 2006 the Thetford Planning Commission voted to accept DRAFT v0.8 of the Thetford Town Plan and to forward it to the Selectboard for final action and adoption.

This DRAFT Plan is the result of a short period of hard work by this Commission which was convened in June of this year by the Selectboard and the result of decades of cumulative hard work by many past Commissioners, including those who worked hard on the DRAFT 2004 Plan. More than the Commissioners, however, this DRAFT Plan, and the Plan that is eventually adopted by the Selectboard, to the extent that it has value, is a reflection of the hopes and desires of the people who call Thetford their home.

Many of those people contributed directly to this draft. Between the publication of the hearing draft v0.6 on September 14 and its approval by the Commission, 18 individuals and several groups provided comments including the Conservation Commission, Development and Review Board, Thetford Energy Committee and the Two Rivers Ottauquechee Regional Planning Commission. Altogether, 108 comments were logged in a format that tracked the source, date, pertinent section of the Plan, the comment and the disposition by the Planning Commission.

Of these comments and suggestions for change:

- Seven were accepted with modification,
- Forty-two were accepted as non-substantive changes.
- Seven changes were made that were deemed substantive. These actions were taken, despite the Selectboard charge to the contrary, to fix internal contradictions within the Plan – for an example an injunction to increase paved roads which did not consider the rural character of the Town – or to fix statements that did not fit with current conditions, such as the injunction to protect all deer yards as critical habitat when some are critical and some are not.
- Six comments were just that – comments that required no response, mostly approving of the new organization and editorial approach to the Plan.
- Twenty-seven comments were deferred to the next planning cycle. Along with the ideas contained in the 2004 Plan, these comments represent the richest source of inspiration for future work and a crowded agenda for the Planning Commission.
- Seven comments were deferred for consideration as the Planning Commission updates subdivision and zoning ordinances.
- Four comments were questions that need to be addressed outside the planning process.
- Eight comments were rejected because they conflict with State law or regulation, because there was not enough evidence to support the position (that East Thetford is or is not congested) or that the current language in the Plan is adequate to support an agreed-to point of view.

From this rich flow of ideas and opinions, several observations can be made:

1. Thetford residents care deeply about their town, about maintaining the value of their own property and about the greater good.
2. Thetford residents believe the planning process is important and are willing to participate.
3. Opinions are well informed and well reasoned and are based on the issues rather than ideology.

The Planning Commission will publish the comment resolution document along with all written comments on the Town website (www.ThetfordVermont.us) and will continue these discussions as the next planning cycle is initiated.

Respectfully submitted by the 2006 Thetford Planning Commission, November 21, 2006,

Liora Alschuler, Stuart Blood, Hayden Brownell, Heather Carlos, Dennis Donahue, Donn Downey, Lori Howard, Rick Howard, Wayne Parks

INTRODUCTION

PURPOSE

Town Plans guide the development of land, public services and facilities and protect the environment. Planning Commissions are charged with reviewing and amending the Plan and writing zoning ordinances as conditions affecting the municipality change. A Town that has adopted a Plan through its bylaws may define and regulate land development in any manner that the Town establishes in its bylaws, provided those bylaws are in conformance with the Plan and are adopted for the purposes set forth in Vermont Statutes Annotated (V.S.A.), Title 24, Section §4302 (from 24 V.S.A. §4410). Towns that have adopted and approved a Town Plan are eligible to receive State planning funds and have improved legal standing to influence and integrate planning policies with proposed state actions affecting the Town. Town Plans expire every five years. Upon the expiration of a Plan, all bylaws and capital budgets and programs then in effect shall remain in effect, but shall not be amended until a Plan is in effect (from 24 V.S.A. §4387).

BACKGROUND

In Thetford, E.H. Lord-Wood Associates prepared a comprehensive Plan in 1965. This Plan was rewritten and the new Plan adopted in 1977. It was readopted in 1982 for an interim period while the Upper Valley Lake Sunapee Council worked on a Plan update.

The 1986 Master Plan considered and reported on recent demographic and economic trends, community facilities, and community attitudes toward development in the town and land use change. Goals and objectives - the ways to attain those goals - were proposed as recommendations for housing, community facilities and services, public roads and transportation, historic resources, economic development, natural resources, and land use.

The 1993 Plan generally followed the format of the 1986 Plan with the following exceptions: there was no population chapter; historic, natural and aesthetic resources were described in one combined chapter; an economic development chapter was omitted; new chapters on goals and policies, energy, educational facilities, Plan implementation and relationship of the Plan to development trends and Plans for adjacent towns and regions were added. The new format and contents were designed to conform to the standards set forth for a municipal Plan in the Vermont Municipal and Regional Planning and Development Act.

The 1999 Plan was a minor revision to the 1993 Plan. It updated some information from the previous Plan and added a few recommendations.

In 2004, the Planning Commission and other groups, including the Conservation Commission, worked hard to develop a new Plan. The new Draft 2004 Plan was presented and discussed at several well-attended hearings, but the community failed to reach consensus on the changes in the Draft Plan, leaving Thetford without any Plan in place. Recognizing the growing burden placed on a single board charged with both planning and development review, the Selectboard split the combined Zoning Board of Adjustment/Planning Commission into a new Development Review Board and a separate Planning Commission (PC) that reflected both continuity with the previous efforts and several new commissioners.

The Selectboard then charged the new PC with updating the expired 1999 Plan to meet current requirements without making any substantive changes. Thus, this updated 1999 Plan could be re-adopted, meeting the requirements for a Plan and providing a reference point from which future planning could take place.

THE 2007 PLAN

Given the difficulty surrounding adoption of a new Plan in 2004, and understanding the liability incurred by lack of a Plan, the PC accepted the charge from the Selectboard to provide an updated version of the 1999 Plan that could be adopted by the Town with a minimum of delay as there are State grant programs that Thetford could benefit from presently.

The issues raised by the 2004 Draft Plan, while in some respects contentious, require careful consideration. The divided opinion within the Town, clear during the 2004-2005 hearing process, needs to be understood and the degree to which the Town can reach consensus needs to be explored. All this will take time and deserves to be given adequate time and attention by the Planning Commission and the Town as a whole.

The initial steps toward rapid adoption of a Plan based on the 1999 Plan were taken by the Selectboard, Two-Rivers Ottauquechee Regional Planning Commission and members of the former combined ZBA/PC who updated obvious points such as population data and housing figures. That updated 1999 draft was then considered by the Thetford Planning Commission in its meetings in June, 2006. The PC, as stated above, accepted the charge to move the 1999 Plan forward for re-adoption without substantive change, yet the Commissioners felt that the Plan and the Town would benefit from a thorough rewrite and reorganization – again, without making substantive changes to the content and intent of the Plan. This review and reorganization makes the 2007 Plan more accessible and more easily reviewed and understood.

The objective of the Commissioners in making this overhaul of the language and organization of the 1999 Plan is to encourage broad understanding and appreciation of the Plan to the end that when a full review and reconsideration of planning takes place, and when ordinances are proposed based on the Plan, we, as a Town, will have a clear set of positions from which to consider change to the existing ordinances.

Reorganization and revisions to the 1999 Plan

A subgroup of the PC took on the primary task of reorganization and revision. Commissioners consulted the Plans of surrounding towns for both positive and negative models as well as State requirements for Town Plans. At each step, we considered the charge from the Selectboard and PC to promote rapid adoption of the previous Plan, with required updates, clarification and to make no substantive changes.

To that end we:

1. Deleted Chapter 1 that reiterated the substantive recommendations of the subsequent chapters.
2. Restructured most chapters to follow this format:
 - introduction of chapter topic,
 - a discussion of existing conditions,
 - the future presented as Goals, Objectives, Recommended Policies
3. Split historic/natural/aesthetic chapter into three separate chapters
4. Revised the overall ordering of Chapters. (For example, we moved the chapters on the “Relationship of this Plan to the Region” and “Implementation of this Plan” to the end).
5. Restated the key elements of the Plan in a consistent manner. The 1999 Plan itself is stated as sets of Goals, Recommendations, Needs and Policies or narrative paragraphs throughout the draft. Chapters follow different conventions making it difficult to see the intent of the original planners. Those Goals, etc., that are called out are not numbered sequentially, making it difficult to know which one is being referred to across drafts. After reviewing other Plans, we adopted a consistent convention using goals, objectives and recommended policies, meaning roughly the following:
 - **Goals** are long-term aspirations that serve as a broad planning and development guide. A goal describes the end condition that is sought. For example:
 - Goal: Fire and emergency preparedness
 - **Objectives** are measurable components of a goal and may be narrower-in-scope. They can be either short- or long-term and are achieved by implementing one or more policies.
 - Objective: Maintain a well-trained and well-equipped volunteer fire department.

- Objective: Respond quickly and aggressively to extinguish fires, minimizing demand for water
 - **Recommended Policies** are actions that, when enacted, will achieve an objective. Policies are strictly adhered to in all regulatory actions and decisions involving development.
 - Recommended Policies: Home and commercial owners should provide early detection systems
 - Recommended Policies: New homes should provide for year-round access to big, heavy trucks.
6. Removed redundant material. For example, there are six locations in the previous draft that contain a recommendation to create a network of recreational trails. We retained this recommendation in one single location in the draft.
7. Removed material that seemed to have no bearing on future behavior, for example, recommendations that simply follow existing state or federal requirements: From previous draft: “The Town should continue to require building site evaluation and a sewage disposal system design prior to subdivision and zoning permit approval.”
8. Added a Revision History section identifying the date & nature of a set of changes and who actually made them in the draft. This can be deleted when we move to a “Version 1.0”. It is useful for the PC and essential to record the work process.
9. Reformatted the draft, adding named styles in MS Word (e.g., “Goals Heading” instead of adding characteristics like bold, italic, etc.) to maintain a consistent look across the document. This makes the Plan easier to read and understand as well as allows manipulations such as extracting all Goals, Objectives, and Recommended Policies into their own lists for separate review.

This Plan conforms to the standards set forth for a municipal Plan in 24 V.S.A. §4382.

Procedure for adoption of the 2007 Plan

According to 24 V.S.A. §4384, the Planning Commission shall hold at least one public hearing on any proposed Plan or amendment. The hearing must be warned at least 30 days in advance following the date when copies of the completed proposal are available. A substantial revision to the proposal thereafter in response to public comment does not require a subsequent hearing by the Planning Commission. The Planning Commission may then submit the proposal to the Selectboard, which is then required to hold two public hearings, warned with at least 30 days and at most 120 days notice, as described in 24 V.S.A. §4385. Prior to 15 days before the final public hearing, the Selectboard may change the proposal. The Planning Commission would review these changes for consistency with the Plan and any substantial change would require a new public hearing. The proposal shall be adopted by a majority of the members of the Selectboard at a meeting held after the final public hearing. If the proposal is not adopted so as to take effect within one year of the date of the final hearing of the Planning Commission, it shall be considered rejected by the town.

Where to find the Plan and other information

Copies of the current draft are available at the Thetford Town Hall. An electronic copy of the Plan text in PDF format can be downloaded from <http://www.thetfordvermont.us/> or http://www.trorc.org/towns_th.html. Copies of the maps can be downloaded separately from the same sites. Map files are very large, however, and we recommend that you not try to download them unless you have a high-speed Internet connection.

The Planning Commission can be contacted by mail at Thetford Town Office, PO Box 126, Thetford Center, VT 05075, Attention: Planning Commission, or through any individual member. The PC meets every first and third Tuesday of the month at 7:15 PM and the public is welcome. The agenda and minutes of PC meeting are posted in the town hall and on the community listserv (information website, <http://lists.valley.net/lists/info/thetford>; subscribe by sending an email to thetford-subscribe@lists.valley.net).

Respectfully submitted by the Thetford Planning Commission:
Liora Alschuler, Stuart Blood, Hayden Brownell, Heather Carlos, Dennis Donahue, Donn Downey, Lori Howard, Rick Howard, Wayne Parks

CHAPTER I: LAND USE

INTRODUCTION

The way land is used in Thetford is a result of both planned and unplanned efforts by private interests, Town government, and institutions to create a pattern of living that meets the social and economic needs of the community. Existing land use patterns are the physical expression of a number of past decisions and of past failures to decide; existing patterns will in turn influence future land use. Land that can be characterized as suitable for development is a scarce resource. The use of this land should be controlled to ensure its best use.

Thetford's land use plan is based on the premise that Thetford's natural and constructed resources should be preserved and that the future development of the Town should be directed and limited by the ability of the land to support that development. Thetford's natural resources include its forests, open lands, surface and groundwater, wildlife and soils. They present both opportunities for and constraints to development and must be conserved or used with care so as not to preclude their continued use.

Likewise, Thetford's constructed features, roads, schools, and public and private buildings, are valuable resources that must be used wisely and maintained to ensure their usefulness. The architectural resources of the Town include the character of its villages and its historic buildings - they, too, must be protected and maintained. If Thetford is to continue to provide a high quality of life for its citizens, both the natural and manufactured resources of the Town must be considered in future land use decisions.

Land use considerations are closely related to the other topical areas addressed in the subsequent chapters of this Master Plan. In particular, Chapter V contains specific background information related to the issues discussed in this chapter. The land use plan is an attempt to synthesize and balance the goals, policies and recommendations set forth in the other chapters.

The land use plan for Thetford has been developed considering:

- Ability of the community to support development with planned capital improvement, community facilities and services
- Diverse community attitudes toward growth and development in Thetford
- Open space to preserve and enhance the scenic, rural and small-town qualities of Thetford
- Existing land use and current trends in development
- Capability of the land to support development

EXISTING CONDITIONS

The present pattern of land use in Thetford began when Thetford's charter was granted in 1761. People were attracted to mill sites at Thetford Center, Post Mills, Union Village and to the fertile land in the river valley. The meetinghouse on Thetford Hill, built in 1787, served as the nucleus of another village. The town's agricultural base grew, as subsistence farming gave way to sheep raising and then to mixed farming. The pattern of dispersed residences and several village focal points continues to this day.

In 1847, the building of the Boston and Passumpsic Railroad through Town strengthened the local economy by making it easier to transport local products, especially farm and mill products, to a larger market. As Thetford's population dwindled in the latter part of the 19th century, dairy farming continued. The Chubb fishing rod factory in Post Mills and the Ely Copper Mines provided employment opportunities. Summer camps and two small hotels in Post Mills put Thetford on the map as a summer destination.

However, it was not until the construction of the interstate highway and the increased employment opportunities in the Hanover, Lebanon and White River Junction area, that Thetford's population began to grow. Owing to its proximity and accessibility to employment centers in Hanover, White River

Junction and Lebanon, Thetford's population has more than doubled in the past twenty years. Open fields as well as wooded areas have become house lots, reinforcing the traditional dispersed residential pattern of land use and resulting in a more dense settlement pattern throughout the Town.

The taxable property by type as referenced in Table 1 shows that residences and mobile homes with land increased over the nearly two decades between 1987 and 2005. The number of vacation homes and mobile homes without land decreased during this same time period. The conversion of vacation homes to year-round residences may explain this decrease.

	<u>1987</u>	<u>1995</u>	<u>1997</u>	<u>2005</u>
Residential (<6A)	501	553	559	611
Residential (>6A)	263	297	297	376
Mobile Home (w/o land)	36	32	30	18
Mobile Home (w/land)	36	52	55	47
Vacation (<6A)	70	71	75	27
Vacation (>6A)	36	41	47	21
Apartment	0	0	0	0
Commercial	46	49	33	39
Industry	1	0	0	0
Electric Utility	1	3	3	3
Other Utility	1	2	2	0
Farm	10	11	12	12
Woodland	137	94	100	114
Miscellaneous	92	224	163	65

Source: Thetford Listers

The type of development that has occurred in Town over the past twelve years is reflected in the approved subdivisions and zoning permits issued, as shown in Table 2 .

Table 2: Approved Subdivisions from 1994 – 2005

	<u>Plats Approved</u>	<u>Lots Created</u>	<u>Annexations</u>
2005	9	27	3
2004	19	45	3
2003	11	31	3
2002	6	14	1
2001	6	10	4
2000	7	3	4
1999	9	6	5
1998	11	7	5
1997	4	1	3
1996	10	4	5
1995	13	17	2
1994	3	2	1

Source: Thetford Town Report

Based on land use changes in the past twenty years, the trend in Thetford is toward increased year-round residential use of land. The commercial sector, especially in the small home-based businesses, continues to grow, but at a slower pace. Farmland and woodland are being converted to these more intense uses.

Table 3: Zoning Permits Issued

	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Residence	10	23	12	5	19	13	13	14	15
Mobile Home	4	3	4	3	3	4	2	1	3
Additions	15	19	20	12	15	10	16	29	13
Accessory Buildings	24	18	25	30	23	29	28	24	37
Deck/Porch	11	16	9	5	9	12	9	6	8
Home Occupation	2	2	3	4	1	1	1	1	0
Business	7	-	-	-	3	2	4	1	0
Cert. of Approp.	1	4	2	3	-	-	-	-	-

Source: Thetford Town Report

Permits Issued does not necessarily mean that construction took place.

Existing Local Land Use Controls

In Thetford, subdivision regulations, the zoning ordinance, health ordinance and flood hazard bylaw represent the land use controls that regulate the subdivision and use of land. They have contributed significantly to the existing pattern of land use in Town.

Subdivision Regulations

Adopted in 1974, Thetford's Subdivision Regulations provide a procedure and standards for the division of a parcel of land into two or more parcels. The Regulations guard against the creation of lots for residential, commercial or industrial uses unless the land can be safely used for building development without danger to health, or peril from fire, flood, poor drainage, excessive slope or other hazardous conditions. The Development Review Board cannot approve scattered, premature or other subdivisions of land that would involve danger or injury to health, safety or prosperity. Such conditions include, but are not limited to, lack of water supply, drainage, transportation, school, fire protection or other public services. The Development Review Board can not approve subdivisions that require excessive public funds to supply services or to prevent danger or injury to health, safety or prosperity.

Street layout and design, lot and site layout, open space provisions, fire protection and sewage disposal requirements are considered in the Development Review Board's review of subdivision applications. Special procedures have been set forth for expedited review of minor subdivisions and for flexible lot layouts for planned residential and planned unit developments. In recent years, more concern has arisen over fire protection. In 1991 the Planning Commission amended the Subdivision Regulations to require adequate fire protection.

Zoning Ordinance

The Zoning Ordinance controls the type and intensity of land use and the location of structures on a parcel of land. In Thetford, zoning was adopted to:

- protect the public health, safety and general welfare;
- carry out local goals and objectives that foster orderly community development;
- preserve natural resources and retain the beauty and historic character of the Town
- ensure that property owners enjoy unhampered use of their property, provided that such use does not affect the health or safety of their neighbors or unduly impair the value of neighboring property;
- minimize the expense of providing essential Town services to all property

Three types of zoning districts have been established in Thetford. The character of each district is described briefly below; the Zoning Ordinance should be consulted for specific use and size restrictions. Currently, there are no specific boundaries for these districts. Future zoning may seek to define them.

Village Residential District

This district was created to encourage the development of residential centers on land suitable for building development. This district will be a nucleus for future residential growth of the Town. The minimum lot size in this district is 20,000 square feet. The residential character of these centers is reinforced because residential uses, home occupations, churches and customary accessory uses are the only permitted uses. Conditional uses include civic and institutional uses, apartments and business use, limited to convenience-type retail shops, personal service shops, professional offices when accessory to a residence, cultural facilities and restaurants. Thetford's existing village districts include areas of Thetford Hill, Thetford Center, Post Mills, North Thetford, and Union Village. There have been various discussions about broadening the conditional uses in the Village Residential zone and expanding its perimeter to allow for greater flexibility and encourage and focus development.

Rural Residential District

This district was created to maintain low-density rural character primarily as a district of farms, residences and woodlands. The minimum lot size in this district is 80,000 square feet. The permitted uses in this district include all of the permitted uses in the Village Residential District and cemeteries, fairs, auctions, farms, libraries and other cultural facilities, produce stands, riding stables and travel trailer camps. Conditional uses include all of the conditional uses in the Village Residential District, auto mobile service and repair stations, commercial recreation facilities, health care facilities, mobile home parks, planned unit developments, junk yards, local district landfills, retail sales of antiques, art pieces and handicrafts when accessory to a residence and any other commercial or industrial use located on a lot not less than five acres in size. This district covers the areas in Town not designated as Village Residential or Community Business Districts.

Community Business District

The Community Business District was established for the development of business centers at central locations to meet the needs of the community and serve the public. The minimum lot size in this District is 20,000 square feet. Any permitted and conditional use allowed in the Village Residential and Rural Residential Districts is permitted in this District. In addition, more intense uses, such as public and commercial offices, automobile service and/or repair stations, restaurants, motels and hotels are permitted. Conditional uses include planned-unit development, printing shop, woodworking shop and any retail or service use. An area in East Thetford is designated as Thetford's Community Business District. The Planning Commission has given thought to expanding the CB district in East Thetford to encourage and focus development in the zone.

Flood Hazard Area Zoning Bylaw

This bylaw was adopted in 1978 to promote the public health, safety, and general welfare; to prevent increases in flooding caused by the uncontrolled development of lands in flood hazard areas; and to minimize losses due to flood by:

- Restricting or prohibiting uses that are dangerous to health, safety, or property in times of flood, or cause excessive increase in flood heights or velocities;
- Requiring that those uses vulnerable to floods, including public facilities that serve such uses, shall be protected against flood damage at the time of initial construction; and
- Protecting individuals from buying lands that are unsuited for their intended purposes because of flood hazard.

The Flood Hazard Bylaw is administered like the Zoning Ordinance and applies to all lands within:

- Zone A on the federal Flood Hazard Boundary Map;
- 100 feet of any federal flood hazard boundary; or
- 100 feet from the center line of any stream designated as a flood hazard area on the Flood Hazard Boundary Map.

Non-structural agricultural uses, recreational uses and residential uses are permitted. All other uses are reviewed as conditional uses. Structures and additions to existing structures may be approved if the lowest floor is elevated or flood-proofed to at least one foot above the base flood elevation. All structures, especially mobile homes, must be anchored to resist flotation or lateral movement in the event of a flood. Local approval is usually dependent on State endorsement of a proposal in the flood hazard area.

THE FUTURE

Land Capability

The fundamental premise of the concept of land capability is that the natural features of the environment vary in their ability to support development. Steep slopes, flood-prone areas, wetland soils and the presence of bedrock at or near the surface can serve as major constraints to development.

The capacity of the site to treat sewage effluent properly is a key consideration, if the site lies outside a municipal sewerage area. Inability to treat septic effluent has added excessive nutrients to surface water. Poor site planning can also cause the contamination of private well waters by failed septic systems.

Sewer lines can overcome a number of the limitations, however, natural factors remain an important consideration for road construction, foundation stability, erosion and sedimentation hazards. Slope, soil type and depth to bedrock affect the cost of constructing and maintaining sewer lines.

Soil characteristics of critical natural resources may steer development away from most of these areas. Special controls may be necessary to limit development on agricultural and aquifer recharge soils.

The future land use plan for Thetford has three components: 1) a natural resource and open space protection plan, 2) a residential plan and 3) a plan for accommodating businesses. Thetford's future land use plan is based on the premise that its natural resources should be preserved and that the future development of the Town should be directed and limited by the ability of the land to support that development. Our future land use areas are our zoning districts, including rural residential, commercial business and village residential. This plan is not intended to create new zoning districts. It attempts to match the existing zoning as closely as possible, clarifying uncertainty where it exists.

Natural Resource and Open Space Protection Plan

Thetford's natural resources are described in Chapter V. The presence of these elements in the Town and their relatively unspoiled condition are important to the people of Thetford. Respondents to the 1992 survey (as well as an earlier one), favored strictly controlling development in environmentally sensitive areas and, in addition, did not want development in areas where it is difficult to provide public services. At the Community Profile held in Fall 1997, a great deal of support for these ideas was expressed.

Thetford's existing land use controls do not explicitly protect the Town's natural resources. While the minimum lot size of 80,000 square feet throughout most of the Town controls density, it does not prevent development from occurring in environmentally sensitive areas. The Town cannot rely on the State's land use controls to protect its natural resources because a great deal of development in Thetford does not require State review. Action and enforcement must occur at the local level.

Overlays

Conservation overlays are composed of areas that have been pre-identified as being environmentally sensitive, such as prime agricultural soils or mature tree stands. These areas exist throughout the Town rather than being fixed geographically on a map like a zoning district. By identifying these areas in advance, a special review prior to building and development within them can be required. The main purpose of the review would be to encourage full consideration of the implications of the proposed change in the interest of protecting natural resources.

An additional benefit from the review would be to provide a forum for creative dialogue regarding the alternative ways in which the property owner could achieve the goals of the project while protecting the natural resources of the land. For example, if a property owner within an area of the conservation overlay wanted to add a structure, the property owner would meet with the Development Review Board to discuss the proposed building project. During the discussion, various sites could be proposed and considered, or the advantages and disadvantages of alternative roadways to the site debated. Identification of areas with prime agricultural soil (see Chapter V for a definition of the soil types) and prime forestlands within the Town would be a logical place to begin creating such overlays in Thetford. After the initial overlay was established, steeply sloped areas, highly visible ridgelines, critical views, wetlands, and important wildlife habitat areas could be added.

A water resources overlay, like the conservation overlay, would require a special review prior to building and development. An inventory of sensitive areas would be required to establish the water resources overlay.

Residential Development Plan

Residences will continue to be the predominant form of development in Thetford. New dwelling units must be created to house our growing population. These new residents will significantly increase the need for community facilities and services and place additional demands on the Town's natural resources. Assuming single-family residences on two-acre lots, the conversion of open space to residential use may change the character of the Town visually and may result in the loss of the feeling of "uncrowded living conditions" that residents value so highly. To minimize the loss of Thetford's farmland, fields and forests, a variety of residential development options must be provided.

Recent development has been scattered throughout Town on vacant lots or new lots created by subdivisions of less than 10 lots.

Business Development Plan



The Town of Thetford is not a major economic center. Limitations include lack of municipal services, lack of suitable industrial and commercial locations and the Town's rural character. Many residents of Thetford commute to the larger economic centers in Hanover, Lebanon, and Hartford. Thetford is not a likely location for large capital-intensive businesses. However, small businesses and moderate-sized businesses would be likely to consider Thetford and would be beneficial to the community.

East Thetford and Post Mills offer the best opportunities for business growth, although every village area should be able to support limited business use. Zoning in East Thetford, the community business district, should remain flexible to allow for business development. Although Post Mills is a predominately residential area, its location and good access make it a good area for the development of small businesses.

Historically, the Town’s residents have been against development at the intersection of Interstate 91 and VT Route 113. This question should be among others in a survey to obtain a current opinion.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS
<ol style="list-style-type: none"> 1. Promote the conservation and preservation of Thetford’s natural heritage (see Chapter V.) 2. Preserve the rural character of Thetford and strengthen the identity of Thetford’s villages. 3. Promote a small town quality and character in housing development to preserve Thetford’s villages. 4. Encourage businesses that do not endanger natural resources and place them in areas that do not detract from the rural character of the Town and its villages.

OBJECTIVES	RECOMMENDED POLICIES
NATURAL RESOURCE AND OPEN SPACE PROTECTION	
<ol style="list-style-type: none"> 1. Guide development by the land’s ability to support it. 2. Work with the Connecticut River Joint Commission to protect the River’s water quality and shoreline, and to provide recreational access to the River. 3. Promote the use of conservation easements (and purchase of development rights) to protect natural resources and open space (i.e., with Vermont Land Trust or Upper Valley Land Trust). 4. The Conservation Commission should continue to assemble information about Thetford’s wildlife and this information should be used in development reviews. 	<ol style="list-style-type: none"> 1. Create a new conservation overlay to assure that the Town’s prime agricultural lands and forestlands are changed/developed with extra forethought. 2. Create a water resources overlay to provide protection for the Town’s aquifers, rivers, streams, lakes and ponds. 3. Uses which pose potential for groundwater contamination should not be permitted. 4. Develop an ordinance on placement of aerial communication towers that protects scenic vistas. 5. Consider adding subdivision regulations to exclude very steep slopes and wetlands from the calculation of lot size when determining minimum lot sizes or when calculating allowable density for cluster and multi-unit development. 6. Consider visual impact in subdivision review. Developers should minimize adverse impact using design considerations developed by the Agency of Natural Resources. Where appropriate, vegetation and topography should create visual buffers between roadways and new development.
RESIDENTIAL DEVELOPMENT	
<ol style="list-style-type: none"> 5. Encourage Planned Residential Developments with lot-size averaging (e.g. cluster development). This approach preserves open space and scenic areas, can reduce site development costs for individual homebuilders and can minimize the cost of Town services. 6. Encourage builders and developers to come in early in their planning process to begin reviews with the Development Review Board. 	<ol style="list-style-type: none"> 7. The village residential areas should be expanded only to allow for planned, dense residential development with reserved open space. 8. Residential development should preserve the rural character of Thetford and the identity of the villages. 9. Perpendicular side streets and/or parallel side streets in the villages should be considered to create housing lots within the villages. This could encourage low and medium cost housing options and encourage business growth within the village center rather than at its periphery.

OBJECTIVES	RECOMMENDED POLICIES
	<ol style="list-style-type: none"> 10. Consider adding specific ordinances: <ol style="list-style-type: none"> a. Limit the overall structures density where it is consistent with the goals and objectives of this plan. b. Residential institutions such as homes for the aged, rest homes, extended care facilities, convalescent homes, elderly housing projects and similar types of group living accommodations should be permitted as conditional uses, rather than permitted uses, close to community facilities and services in the village residential and community business zones. c. The density in a mobile home park should not exceed one family per 10,000 square feet. d. The Development Review Board should sponsor programs and distribute literature for homeowners and prospective homeowners. Topics could include energy efficient design and building techniques, approaches to site development, sound home construction, site-sensitive planning, adding living space to a home and fire safety. e. Continue to allow residential dwellings in every zoning district but with special review where soil wetness, steepness of land, high quality agricultural soils, bodies of water and cost of providing Town services indicate residential uses are not advisable.
<p style="text-align: center;">PRESERVE NATURAL AND SCENIC AREAS</p> <ol style="list-style-type: none"> 7. Encourage housing that blends with the natural landscape, thereby preserving the rural character of Thetford. 8. Direct development away from the most sensitive natural areas and integrate it with less fragile natural areas. 9. Discourage development on prominent hills and especially in those areas where the slope makes Town services expensive and seepage and erosion damage severe. 10. Encourage use of landscape screens to reduce the visual and sound impact of human activity and structures in areas of natural beauty. 	<ol style="list-style-type: none"> 11. Do not improve or create roads that open up inaccessible parts of the Town.
<p style="text-align: center;">BUSINESS DEVELOPMENT</p> <ol style="list-style-type: none"> 11. Businesses that create toxic substances, considerable odor, bright lights at night, noise, many large buildings, or a significant increase in traffic should be discouraged. 12. The Community Business District should be designed to accommodate commercial 	<ol style="list-style-type: none"> 12. Add specific ordinances: <ol style="list-style-type: none"> a. Industrial and commercial uses with wastes or products which may contaminate surface water, groundwater or soils, or which may result in air pollution should not be permitted. b. Industrial and commercial uses should

OBJECTIVES	RECOMMENDED POLICIES
<p>and industrial growth.</p> <p>13. Office and commercial uses should be allowed in each of Thetford’s village residential districts.</p> <p>14. Home occupations should be allowed to operate throughout the Town provided they meet the standards set forth in the Town’s Zoning Ordinance.</p>	<p>be reviewed with careful attention to the environmental impacts.</p> <p>c. Performance standards should be developed and used to review office and commercial uses in the village residential districts.</p> <p>d. The provision allowing, on lots of five acres or more in size, any commercial or industrial use in the rural residential district should be eliminated.</p> <p>e. Highway-oriented and traffic-generating industrial and commercial growth should be restricted to East Thetford.</p> <p>f. Automobile service and repair should be a permitted use in the Community Business District and as a conditional use in the Rural Residential and Village Residential Districts.</p> <p>g. Agricultural and horticultural uses should be permitted in the Village Residential Districts.</p>

CHAPTER II: TRANSPORTATION

PUBLIC ROADS

Table 4: Road mileage by functional classification

Type of Road	Miles
Interstate 91 and ramps	8.39
Other state highways	17.94
Class 2 town highways	14.23
Class 3 town highways	49.33
Class 4 (not maintained by town)	9.91
Total	99.80

Source: Vermont Agency of Transportation, Mileage Statistics County/Town 2005

Roads are classified as arteries, collectors, and local roads. In Thetford, the arteries are the primary state highways (Routes 5, 113, and 244) and a state-numbered town road (Route 132). I-91 is a major link between Thetford and the rest of the world, accessed from Route 113 at Exit 14 between Thetford Hill and East Thetford. The bridge over the Connecticut River on Route 113A in East Thetford also serves as an important external link. Town roads serve as local roads and collectors. Local roads primarily serve properties on the road. Collectors “collect” traffic from local roads and connect them with the arterial highways. The road system is shown on the Public and Commercial Uses Map that is available in the Town Offices.

Road Maintenance

The Vermont Agency of Transportation maintains the state highway system and operates a maintenance facility in Thetford on Route 113 to the east of I-91.

The Town of Thetford maintains town roads, using state aid and local funds. Table 5 shows highway expenditures, tax revenues, and the percent of tax revenues for the Highway Department over the period 2000 – 2004. Primarily the timing of equipment purchases and major construction projects, such as bridgework, causes the variability in the values from year to year. The average cost to maintain town roads over the same period is shown in Table 6.

Table 5: Highway expenditures

<u>Year</u>	<u>State & Local Funds</u>	<u>Locally Raised Expenditures</u>	<u>Portion as a % of Total Town Expenditures</u>	<u>Total Monies Voted</u>
2000	\$591,311	\$382,216	8%	\$4,842,317
2001	\$523,061	\$234,745	5%	\$5,050,580
2002	\$555,470	\$432,086	7%	\$5,879,722
2003	\$585,400	\$399,517	6%	\$6,281,986
2004	\$545,170	\$391,763	5%	\$7,155,043

Source: *Thetford Town Reports*

Table 6: Cost to maintain Town Highways

<u>Year</u>	<u>State & Town</u>	<u>Cost Per Mile</u>
2000	\$486,411	\$7,653
2001	\$523,546	\$8,237
2002	\$510,470	\$8,031
2003	\$522,375	\$8,219
2004	\$545,170	\$8,577

The town has established standards for new roads. Thetford's subdivision regulations define a private road as "a privately owned access to three or more lots, sites or dwelling units". It is recommended that all private roads be built to minimum standards for a Town Class 3 road, and Thetford will not consider taking over a road that has not been built to those standards. The Town rarely takes over private roads, and does so only when the road is maintainable and there is sufficient density of land use.

Development on Class 4 roads is discouraged. Those developing on Class 4 roads are required to sign a waiver signifying understanding that certain Town services may be unavailable. In addition, any improvements to a Class 4 town road must be performed up to Town standards, under the supervision of the Road Commissioner. The Class 4 Road Policy was updated and amended to limit improvements on a per case basis.

Safety

The Vermont Agency of Transportation analyzes accidents on state highways in the state in order to detect areas with safety problems. It periodically publishes a compendium of "High Accident Locations." The most recent published volume (2002) is based on 1992 – 1996 data. It lists no Thetford road segments or intersections as high accident locations.

There are several actions that the Town should take to help assure safety. First, driveways should be located with safe sight distances. Any new driveway onto a state highway requires a driveway permit from the Vermont Agency of Transportation that conforms with Standard B-71 for Residential and Commercial Drives (7/8/05). This standard specifies minimum standards for grade, drainage, and corner sight distance. "The corner sight distance is measured from a point on the drive at least 15 feet from the edge of traveled way of the adjacent roadway and measured from a height of eye of 3.5 feet on the drive to a high of 4.25 feet on the roadway."

There are limited corner sight distances at the intersections on Thetford Hill. The corner sight distance from Houghton Hill Road to the right is only 210 feet, and the corner sight distance from the church/day care parking lot to the left is only 250 feet. These limited sight distances have led to the posting of a 30

MPH speed limit with a 25 MPH cautionary area, but these speeds are often exceeded. To ensure safety, it is important to trim vegetation at the corners and to enforce the speed limits.

There are also limited sight distances at the intersection of Route 113 with Route 5 in East Thetford, because of the location of the Wings Market building. The corner sight distance from Route 113 to the left is only 360 feet. The parking ban in front of the Wings Market building must be enforced or the corner sight distance is much less. Although 360 feet barely exceeds the minimum standard for a residential driveway, it falls far short of a minimum of 440 feet given for commercial driveways, or the recommended 750 feet. The town petitioned the state to lower the speed limit through East Thetford village and the speed limit was lowered to 30 MPH.



Congestion

Although traffic volumes will likely increase, it is unlikely that highway capacity will grow. There may be new local roads built to serve subdivisions, and some of the collector roads may be upgraded or paved, but the arterial system comprised of the state highways will likely look very similar in twenty years to what it does today. It is important to note that the state highway system, the I-91 interchange, and the Connecticut River Bridge all serve regional traffic and will be affected by regional growth.

Transportation planners measure congestion on a level of service scale ranging from "A" to "F" as defined in the Highway Capacity Manual, published by the Transportation Research Board. Although no roadways or intersections are congested in Thetford now, and none are expected to be congested soon, policies should be adopted to assure that problems will not arise unexpectedly. Therefore, this plan establishes a minimum acceptable level of service of "D" for the town for the "design hour," defined as the thirtieth highest hour of traffic of the year.

Major proposed traffic generators in the town should provide a traffic study prepared by a qualified professional that demonstrates that the proposed project not cause or contribute to a traffic condition worse than level of service "D." This study should not be limited to the immediate access point, but

should include all roadways that could be adversely affected. If transportation improvements are required, these improvements should be considered the responsibility of the developer.

A major traffic generator in Thetford is defined as a development generating 30 or more one-way (entering or exiting) peak hour trips. Trip generation statistics are provided for many land uses in Trip Generation, published by the Institute of Transportation Engineers. Examples of developments causing 30 peak hour trips would be 30 single-family residences, 50 apartments, 6,000 square feet of retail space, or 15,000 square feet of non-retail commercial space. Certain high traffic generators including fast food restaurants and convenience stores generate greater than 30 peak hour trips regardless of size. These are general guidelines. Traffic impact studies should be required for smaller developments where there are special concerns such as safety on a substandard road. In other cases, the requirement could be waived.

The area that is most likely to become congested is the center of East Thetford village. It lies at the crossing of two state highways between the two important regional links, I-91 Exit 14 and the bridge to New Hampshire. It is the center of the community business district that has been designated as the area to encourage commercial growth. Although not congested now, the traffic capacity in East Thetford is rather limited. Because of the offset between the two Route 113 intersections, capacity probably can't be increased much without a great investment.

TRANSPORTATION ALTERNATIVES

Over the longer term, more comprehensive and more direct bus service would be very desirable for Thetford residents looking to reduce transportation costs and greenhouse gas emissions from automobiles. Possible routes include Route 113 from Post Mills or beyond to Route 5 south to Norwich and Hanover and/or Route 5 from Fairlee through Thetford to Norwich and Hanover. In Hanover, connections can be made to destinations throughout the Upper Valley. Initiation of such a service would require substantial local interest as well as regional considerations and additional subsidy, which may be available from Federal and state sources.

Stagecoach, based in Randolph, provides a wide range of contract bus services throughout Orange County, including Thetford. These buses are also open to the general public. The schedule is subject to change. Current schedules are available at the town office. Stagecoach also operates the Vermont Rideshare program in Orange County. Anyone wishing to provide rides, needs rides, or wants to save money through sharing rides can call 1-800-685-7433 or go to <http://www.vermontrideshare.org/>.

The Vermont Agency of Transportation maintains a park and ride lot on the southeast corner of I-91 Exit 14 for about 30 cars. This lot is well located. It appears to get a fair amount of use, but there is remaining capacity for more users. Bicycle activity is quite significant on the state highways during summer months, particularly on Route 5. Riders include commuters, athletes (e.g. Dartmouth College racers), fitness riders, recreational riders, organized benefit tours, and tourist groups. Additionally, roller skiers and skaters are making increasing use of town roads. The Town of Thetford supports a recommendation to add 4-foot paved shoulders for a bikeway to Routes 5 and 113.

These bikeways would also aid pedestrians. Over the long-term, consideration should be given to pedestrian access in Thetford's villages, particularly in the East Thetford community business district. Many short automobile trips from one business to another in East Thetford village might be eliminated if the area felt safe and comfortable to pedestrians. Pedestrian amenities could include crosswalks and, over the longer term, sidewalks.

SCENIC ROADS

The Vermont Legislature in 1977 enacted a bill "to preserve through planning the scenic quality of Vermont's rural landscape." Through this law, described in 19 V.S.A. 1019, town and state officials have the authority to designate specific routes as scenic roads in order to protect their character. Roads designated as scenic must be managed according to standards set by the State Transportation Board. These standards will help towns reconstruct and maintain their roads in a way that will preserve scenic quality without reducing the level of service or safety.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS	
5. Maintain a safe and durable road system.	
OBJECTIVES	RECOMMENDED POLICIES
<ul style="list-style-type: none"> 15. Require adequate road standards for new subdivisions and discourage development on Class IV roads. 16. Encourage use of public transit and ridesharing. 17. Perform a scenic roads inventory. 18. Prevent congestion on town roads. 	<ul style="list-style-type: none"> 13. Encourage 4-foot paved shoulders for bicycles on Routes 5, 113 and 244. 14. Prior to serving new development, Class IV roads should be improved to Town Road standards. 15. Require that driveways accessing town roads meet state driveway standards. Make sure that there is room to turn around and not back out on a Town Road. 16. Widen the Class III roads to the standards set forth as standards for street design in the Thetford Subdivision Regulations. 17. After weighing economics and desire to maintain rural character, consider more blacktopping (hills, missing sections like T8 Gove Hill, T12 Lake Shore Drive, T10 Cross Street, T11 Robinson Hill Road at the south end of Lake Fairlee). 18. Maintain a minimum level of service "D" on all roads in the town, including state Highways. 19. Require major proposed traffic generators and expansions to prepare traffic impact studies. 20. Improve pedestrian access in Thetford's villages, particularly in the East Thetford community business district. 21. Encourage and enforce lower speed limits in villages. 22. Monitor congestion in East Thetford.

CHAPTER III: UTILITIES, FACILITIES AND SERVICES

INTRODUCTION

Community facilities are physical improvements to a town such as the Town offices and roads. Community services include health, safety and educational services and programs that serve the town's residents. They are generally administered by a town department or nonprofit organization, but may include private operations. Community utilities combine both facilities and services with an organization that delivers a commodity such as water. Funding for the operation of these utilities, facilities and services is usually through the general fund, although it is not uncommon for user fees to be a source of funding. Education is covered in another chapter of this Plan.

The extent and adequacy of community utilities, facilities and services, whether publicly or privately operated, play an important role by contributing to the general welfare of residents and the quality of life in Town and by attracting certain types of development to the community. Naturally, the demand is far from static. Existing facilities may become inadequate through structural deterioration or functional obsolescence and the increased and often new demands that accompany population growth and changes in lifestyles.

To plan for future needs, it is necessary to inventory existing facilities. It should be noted that, in this Plan, the primary concern is with physical facilities and not with operating programs. The suitability of the existing facilities and utilities to meet future demands will also be considered.

EXISTING CONDITIONS

Town Hall

The Thetford Town Hall is located on Route 113 in Thetford Center, originally built in 1830 as a one-story red brick meeting hall, it is listed on the National Register of Historic Places. In the 1960s the building was renovated to add town offices including the Town Clerk, Town Treasurer, Records Vaults, Listers, Zoning, Selectboard, Food Shelf and eventually Police Department. In 2003 a major renovation was funded by bond vote to restore and refurbish the original meeting hall and adjacent historic red brick Wallace Vault. A wood frame addition was built to join both brick buildings and provide additional office and storage space, doubling the size of the original facility. The meeting hall is used frequently for public hearings by the Selectboard, Planning Commission, Conservation Commission, and other Town departments, and for community activities such as voting and political caucuses.

All of Town Hall is now centrally wired for voice and data communications providing for computerized functions for all town offices and public access. All offices, meeting hall and restrooms are handicapped accessible. The gravel parking lot has space for about 20 cars.



Churches

The Town of Thetford has a church in every village. The churches serve as both religious and social gathering places. Each church hosts a number of activities other than church services. Among these are important social services needs such as the WIC (Women, Infants & Children) program and Senior Meals. If the churches were not available for use as meeting places, Thetford would be severely lacking in public assembly spaces. Moreover, the sense of village character would be undermined without a place for people to gather in each village. Additionally, the churches are prominent structures in the villages, which contribute significantly to the village character. Development in Thetford's village areas should be sensitive, so as not to visually compromise the setting of Thetford's churches.

Thetford's newest church, the Baptist Church, was established in 1982. The Church building has an interesting history. It was originally constructed in Cambridgeport, Vermont, in 1836. The building was dismantled, moved and reconstructed in East Thetford in 1985. The building has no structural or systemic problems.

The North Thetford Federated Church was established and built in 1860. Serving a United Church of Christ (Methodist/Congregational) congregation, the structure is believed to be unique, as it is thought to be the only church in North America with a gold leaf covered pineapple at the top of the steeple. The pineapple is a symbol of friendship and hospitality. The Church also has a fine Tracker organ, built by Jardine, which merits an annual visit from the New England Organists Society. The parsonage was sold in the late 1980's and is now a private home.

The Thetford Hill Congregational Church was established in 1773. The first services were held in a log building on Garey Road. The Church on Thetford Hill was constructed in 1787. It is notable as the oldest meetinghouse in the State still in continuous use. Today, in addition to church-related and a variety of social activities, Maple Leaf Day Care uses the facility.

Built in 1836, the Timothy Frost Methodist-Episcopal Church in Thetford Center was named after an early minister. The interior was painted in 1984. The maintenance of the clock is funded by a grant from the Thetford Fellowship of Women. The building has no running water.

The Post Mills Congregational Church was begun in 1818 and interior work was completed in 1828. In addition to year-round residents, summer church services are attended by campers from the youth camps on the Lake. The Post Mills Church has a kitchen and a spacious utility room in the basement.

Public Gathering Places

Thetford's historical pattern of settlement, many small villages, has left a legacy of public/ institutional structures scattered throughout the Town. These include: the Thetford Center Community Building, Rice's Mills Community Building, Grange and American Legion Building. These structures are important architecturally, visually, and historically. Each is included in the Vermont Historic Sites and Structures Survey. The American Legion Building and Grange are included in the Thetford Hill National Register Historic District. The Thetford Center Community Building has been nominated as part of the Thetford Center National Historic District. These buildings should be used either for community activities or privately, as long as their appearance is not altered significantly. They contribute to the Town's sense of the past and to the available community facility/institutional space.

The Thetford Center Community Building was built c. 1870 and served Thetford School District #8. It is used now by the Thetford Center Community Association and is rented out for local activities such as day care.

Built c. 1928, the Rice's Mills Community Building was used as a schoolhouse until the construction of the Elementary School on Thetford Hill. In 1961, 12 families bought the building from the Town. It is now used for community gatherings, such as suppers and parties. In the past few years the community association has made substantial repairs, including replacing the roof.

The American Legion Hall was built in 1910 and was the last schoolhouse to serve District #10. Its use as a school was discontinued in 1945 and it was sold to the American Legion in 1952.

The Elementary School and Thetford Academy, as discussed in other sections of this Plan, are also used for community activities.

Police Protection

The Town of Thetford police department consists of a Police Chief and one full-time officer. Dispatching services are provided through Vermont State Dispatch headquartered in Derby, VT. The Town also relies upon the Vermont State Police in Bradford and the Orange County Sheriff's Department in Chelsea, as well as police in neighboring communities for police protection and response to emergency situations. The Town office renovation in 2003 provided new offices, evidence and computer facilities.

Fire and Emergency Protection

The Thetford Volunteer Fire Department, Inc. (TVFD) is a nonprofit organization which provides structural fire protection and emergency medical response to the Town and neighboring communities. The department's members do not receive compensation from the municipality for firefighting, training, or maintenance of equipment. In addition to the volunteer force, Thetford is assisted by mutual aid from 19 neighboring towns. The Town Forest Fire Warden, assisted by members of the Volunteer Fire Department, provides Forest fire protection. Fire dispatch services are provided by the Hanover Police Department.

Thetford has two fire stations: Thetford Hill Station and the Post Mills Station. The Thetford Hill Station is located on a half-acre site on Route 113 near the elementary school. The one-story structure was built in 1967, and expanded and remodeled in 1995; consisting of six bays, a large training/meeting room, kitchen, office and furnace room. When the renovation/expansion was done, the original roof was raised and is now a steeper angle two-pitched roof with a good deal more insulation. The corporation borrowed money for these improvements and is paying for it entirely with fundraised dollars. The building is heated by oil and wood. The Thetford Hill Station houses a tanker, a high-volume Class A pumper acquired in 1999, a forest fire truck and a rescue vehicle.

The Post Mills Station is located on a two-acre site on Route 244. The one-story concrete block structure contains a total of 1,296 square feet. It has two bays and an attic. The building is heated by oil and is insulated. This station houses Thetford's a tanker and a Class A pumper that was acquired in 1991.

The forestry truck was replaced with a low mileage Army surplus 1985 one ton Chevy, purchased with fund-raised dollars, and equipped using volunteer members' labor. Equipment includes a 300 gallon water tank, 250 gpm pump, about a dozen back pack pumps, hand tools and Nomex fire proofed shirts, as well as hard hats and gloves. The truck also carries chain saws and some extra hose. It is used at virtually all calls as an additional personnel transport.

The Department consists of 25 members. Four members are women and two Thetford Academy students are junior members. Sixteen members are Level One certified. Fifteen of TVFD's firefighters are EMTs. Safety and training are priorities for TVFD. Members' commitment to training and emergency preparedness is demanding. In addition to regular monthly drills, members attend several Regional weekend Fire Schools. Several members have attended a 3-day training convention in Baltimore. Officers have also attended an Incident Management course. Other training includes arson investigation, risk management, response to terrorist activity, wilderness EMS, and vehicle firefighting. As of March 2006, three members are enrolled in a Level One class, five others are ready for Level One testing, and several others are maintaining their current Level One certification. There is still a need for non-firefighter members to help with maintenance and fundraising.

Table 7: Major fire-fighting equipment

	<u>Year of Manufacture</u>	<u>Make /Model</u>	<u>Water Tank Capacity (gal)</u>	<u>Water Pumping Capacity (gpm)</u>
<i>Thetford Hill Station</i>				
Engine # 2	1999	HME/Ferrara	1,000	1,250
Tanker # 1	1971	Thibault	1,300	1,000
Forestry	1985	Chevy	300	250
Rescue	2004	Ford	-	-
<i>Post Mills Station</i>				
Engine # 1	1991	International/E-1	1,000	1,000
Tanker #2	1988	Ford	1,600	300

Source Don Fifield, Fire Chief, and <http://www.sover.net/~tofd>

A major hindrance to effective fire protection within the town is the lack of an adequate water supply in some areas. The Fire Insurance Underwriter's Bureau, an agency that establishes the level of rate coverage for community fire insurance, places a 60 percent emphasis upon water supply and a 40 percent emphasis on available equipment. For residential properties, the Bureau requires a water flow of 500 gallons per minute for a two-hour duration and somewhat greater volume and duration for commercial, industrial and agricultural properties. The majority of properties in Thetford are within 3,000 feet of an existing water supply; however, many supplies are inadequate in summer, inaccessible in winter and/or do not have a dry hydrant installed. The feasibility of developing an improved system of water supply, via underground water mains, has been investigated; however, the expense associated with providing such service to six widely separated villages proved to be too great. At the present time, Thetford is the only town on the west bank of the Connecticut River from Wells River to Hartford that does not provide underground water mains for fire protection.

As a partial remedy to this situation, the Town voted at Town Meeting in 1992 to begin raising funds so that the Fire Department could institute a program of installing dry hydrants in existing ponds at key locations around town. This plan has been successful; the Town now has close to twenty dry hydrants. TVFD maintains an overall strategy that includes replacing a truck every eight years, putting the newest pumper on the Hill, the older pumper in Post Mills, and converting the oldest pumper into a tanker. The Town is asked via Town Meeting to purchase the new truck and all further maintenance and conversion is paid for with our fund raising.

Highway Department

The Town Garage is located on a one-acre site on Route 113 in Thetford Center. The one-story wood frame structure, built in 1971, contains a total of 3,200 square feet of space. The garage has five bays and is heated by oil. During 1990 and 1991 the road crew completed insulating the 2nd through 5th bays. Currently, all bays are heated for vehicle maintenance. There is an addition on the rear of the garage - a pole barn/open structure that is used to house equipment. Also located on the site are a salt shed that holds a year's supply of salt, and one diesel fuel tank that holds 2,000 gallons of fuel. This tank was installed in 2005 and meets new State requirements for fuel storage. The highway facility houses a number of major pieces of equipment that are summarized in the Table 8.

Table 8: Major equipment used by Highway Department

<u>Year of Manufacture</u>	<u>Make/Model</u>
2007	Freightliner Dump Truck with plow, wing and sander body
2006	Freightliner Dump Truck with plow, wing and sander body

2006	6715JD Tractor Diamond Mower
2005	Landa pressure washer/culvert thawer
2004	Cat 420D Backhoe
2002	550 Ford Dump Truck with plow
2000	International Dump Truck with plow, wing and sander body
1999	International Dump Truck with plow, wing and sander body
1997	870 Galion Grader
	Valby brush chipper
	8ft Sweepster broom
	York road rake
	PTO post hole auger
	Wisconsin equipment trailer
	Chloride tank trailer

Source: Road Commissioner

In addition, the Town Garage has a wide variety of hand and power tools, chain saws and miscellaneous equipment that is used for road and truck maintenance.

The Highway Department has five full-time employees, including the Road Commissioner. The Road Commissioner does most of the paperwork; telephone calls are taken by the Town Clerk or left on the answering machine at the Town Garage during the day. The Town Clerk can reach the Road Commissioner by radio during the day when he is on the road.

Libraries

The Thetford Library Federation is a coordinated effort by representatives of the Elementary School and Academy libraries, Latham and Peabody libraries, and the two Town historical societies. Latham (Thetford Hill) and Peabody (Post Mills) are the two public libraries in the Federation. Each library has their own board of directors and makes their own policies, but through the Federation resources and funding are shared. On the Federation board are representatives from each of the member institutions. Latham Library serves both as a Town library and a "Latham Library" for the congregational church. Originally, this library board was made up of church members, but at one point in its history, it was united with the Town library board. In the late 1960's, the Library Federation was formed, and at that time the Thetford Center Library was combined with Latham Library. The North Thetford Library chose to remain independent of the Federation. It does not ask the Town for any funding.

Peabody Library

This facility is located on Route 113 in Post Mills. Built in 1867, this woodframe, clapboarded and gable-roofed structure is on the National Register of Historic Places. A warm air and circulating liquid system heats the building, has no water, but does have an electric toilet facility. A major renovation of the library was completed in 2002 with funding from bequests and the Freeman Foundation. Its collection includes the original volumes purchased in 1867, a collection of American fiction and a collection of Indian arrowheads, stuffed birds, a birch bark canoe and a 10-page sermon delivered at the conference of Lucy Niles in 1864. The library staff consists of a part-time librarian with a professional degree and a part-time children's librarian funded through grants.

Thetford Historical and Latham Memorial Library

Built in 1975 by the Thetford Library Federation, the three-story Bicentennial Building on Thetford Hill houses the Thetford Historical and Latham Memorial libraries. Eleven thousand books, including some borrowed on interlibrary loan, were circulated in 1984. The historical collection includes 2,500 volumes that do not circulate. The building, which is heated with oil, is handicapped-accessible and includes a reading room, workroom, two vaults and an exhibit room. The collections include over 13,000 volumes, 40 manuscript collections, a genealogical file, photographs and glass negatives, framed portraits and paintings. Genealogical research, preschool story hour, art exhibits, and library orientation for elementary school students are among the special programs offered by the library. Thanks to volunteers, the library is open more hours and provides a level of service beyond the ability of one part-time librarian.

The Town annually appropriates an amount to cover the operating costs of the Bicentennial Building and provide some funding for the Peabody and Town-Latham Memorial Libraries. Investment income to an annual giving campaign and donations fund the Library Federation's other activities.

The North Thetford Library

The North Thetford Library, located on Route 5 in North Thetford, is open, at this time, by appointment. This library is supported by the efforts of volunteers and its own trust funds.

Child Care

In 2003, the Vermont Legislature added a thirteenth goal to Chapter 117. "To ensure the availability of safe and affordable child care and to integrate child care issues into the planning process, including child care financing, infrastructure, business assistance for child care providers, and child care work force development."

There are several providers in Thetford registered with the State of Vermont for in-home childcare. In addition there is a preschool that operates on a full-time basis. There is an undocumented need for infant care for young families, as well as for additional day care services in Thetford.

Thetford supports the private development of additional facilities to meet the child care needs of its residents and may assist with seeking funding to develop these facilities.

Cemeteries

Thetford has 13 cemeteries distributed throughout Town. Of these, the three cemeteries that are privately owned, North Thetford, Thetford Center, and Post Mills, are the only cemeteries with available space.

Table 9: Town Cemeteries	
<u>Cemetery</u>	<u>Acres</u>
Post Mills	3.8
Sawnee Bean	1.0
North Thetford	3.5
Thetford Center (old)	3.75
Thetford Center (new)	NA
East Thetford	2.75
Rice's Mills	1.5
Follett	15' x 15'
Glebe	15' x 15'
Judd	1.25
Ellis	1.5 – 2
Knox	25' x 25'
Kinney	.5 - .75

Source: Wesley Clay and Arthur Shoppe

Each year, the Thetford Cemetery Commissioners prepare a budget and develop a work program for maintenance of the 10 public cemeteries. Work is either performed by the Commissioners or hired out to other parties. According to the Cemetery Commission, no new or replacement equipment is needed, since the hired help usually provide their own. However, the Commission observes that there are shortages of time and funds to do the necessary maintenance, and of people who have time to do that maintenance in the non-winter months.

Recreation

A number of facilities are available to Thetford residents for recreational use. As the following summary shows, the emphasis in Thetford is on outdoor recreational opportunities. Indoor facilities are available locally at the schools but these facilities are used to capacity by the schools and are not available for Town use. Residents of Thetford, like other Upper Valley towns, are fortunate to have Dartmouth College sponsored programs and College facilities, as well as commercial recreational facilities for their use. However, given Thetford's growing population, it is likely that the demand for locally provided recreational programs and indoor facilities will increase.



Town-owned Recreation Facilities and Areas in Town Used Recreationally

Treasure Island is a Town-owned public recreation area located in the Towns of West Fairlee and Fairlee. The area consists of approximately nine acres of land, including a 500-foot sandy beach on the shore of Lake Fairlee. A guarded swimming beach, two clay tennis courts, 14 picnic areas, toilet and bath house facilities are located at Treasure Island. Swimming lessons are well attended every summer. Volleyball, horseshoes, and swings are among the non-aquatic activities that take place there as well. Boat rentals are also available.

Users pay a daily or seasonal admission fee. An appropriation from the general fund provides additional support for the area. A Land and Water Conservation Fund grant was awarded to the Town which has been used to complete many improvements, including reconstructing the toilet facilities, re-roofing several buildings and enlarging the parking and beach areas.

Along Five Corners Road, near Thetford Center, is the Thetford Town Forest. This 210-acre tract of woodland is leased to the Upper Valley Fish and Game Club, Inc. The Club has cleared a section of land near the road and has set up ranges for rifle, pistol, archery, and trap shooting. Local State Police and County Sheriffs' Departments use their ranges. The Club also sponsors Hunter Safety courses twice a year. Children's fishing derbies have been sponsored at an artificial pond. The forest also has trails for hiking, cross-country skiing and snowmobiling. The range area can accommodate 40 parked cars.

Thetford Elementary School has approximately two acres of playground with parking for 50 cars. Currently, the Thetford Youth Sports organization is expanding and improving the quality of the baseball/softball field at the School.

There are four Town Commons. The common, on Thetford Hill is used for occasional outdoor events such as the Thetford Hill Fair, an annual event. Volunteers assist with the maintenance of this area. A second Town Common was donated to the Town of Thetford by Charles Hughes in 1998. It is the field between the Thetford Center Community Association building and Tucker Hill Road. This property is to be for a village green or common - left as it is - to be used for recreation - with no building to be erected

on it. There is a small common at the junction of Bridge Road and Route 113 in Thetford Center and there is a small common in Post Mills at the junction of Robinson Hill Road and Route 244.



In addition to the fields at the schools, there is one softball field located in the Town and available for use by permission of the owner: Frederick Howard's field in Thetford Center. There is also a Little League field, used and maintained by the Thetford Youth Sports, located in the Post Mills Fire Department field.

Thetford Youth Sports is an organization that evolved from the Thetford Baseball Program. Early in 1998 TYS began acting under the Thetford School District's umbrella for insurance purposes. The organization also took over the soccer and basketball programs from the school. They currently organize teams for boys and girls soccer, boys and girls basketball, softball and baseball. They receive no tax money - registration fees and donations fund the organization. The Thetford Youth Sports has joined the Upper Valley Recreation Association that helps them coordinate programs, camps and scheduling of games. Most teams are active during the school year, with the exception of Babe Ruth Baseball teams.

There is a network of over 80 miles of snowmobile trails maintained within the Town by the Thetford Snowcoasters. These trails extend into Strafford, West Fairlee, Fairlee and Norwich.

The 229-acre Thetford Hill State Park, with access from Academy Road, has a 33-acre picnic area with 14 tables and grills and 40 parking spaces. Additionally, The Thetford Academy cross-country trail runs through the Park.

Adjacent to Houghton Hill Road is the Thetford Hill State Forest, a 262-acre undeveloped tract with trails used for hiking, cross-country skiing and snowmobiling. The Upper Valley Fish and Game Club has logged small areas periodically to create varied wildlife habitat.

A Fishing access point maintained by the State Department of Fish and Wildlife is located on the Connecticut River in North Thetford (see Map 3). It is open to the public without charge.

The U.S. Army Corps of Engineers administers the Union Village Dam, a flood control project along the East and West Branches of the Ompompanoosuc River, including 991 acres of land. Fishing, swimming, hunting, picnicking, hiking, and cross-country skiing take place at this area. It is open to the public at no charge and there are three picnic areas with tables, rest rooms and drinking water.

Recently the Town has received land from several sources. The Post Mills Natural Area was created from 104 acres donated to the town by the State as part of a settlement that provided for capping of an adjacent landfill and provision for a watershed and wellhead protection area for neighboring residences. The land is managed for wildlife with an emphasis on keeping the fields open and allowing the forest to mature. Non-motorized recreation such as walking, birding and skiing are permitted. Parking is available on a right-of-way to the area. A formal Management Plan has been approved for this property by the Selectboard and the Upper Valley Land Trust and is available at the Town Offices or through the Thetford Conservation Commission.

The Hughes Forest is a 280 acre parcel owned by the Town through a donation by the Vermont Nature Conservancy. The property can be accessed from Sawnee Bean Road, Poor Farm Road or Whipoorwill Road. There is a small parking area on Sawnee Bean Road with a walking trail near the pond. The parcel is managed as a woodlot with an equal emphasis on wildlife. A draft Management Plan for this property is available through the Thetford Conservation Commission and will be completed and approved in 2006.

In late 2005, a 21 acre Class 2 wetland was donated to the town, located on Godfrey Road. The Thetford Conservation Commission will inventory the wetland for significant wildlife and plants. The property will be used for educational purposes illustrating the critical role wetlands play in providing habitat for many animals and plants, protecting land from flooding, stabilizing soil, improving water quality by storing organic matter, removing pollutants, and by filtering eroded sediments from surface runoff.

The Taylor recreational fields consist of 36 acres of wooded, open and wetland area adjacent to the Ompompanoosuc River in Post Mills.

Water Supplies

Thetford has several community water systems that supply water for domestic purposes. The Thetford Water Cooperative, Inc. provides water to forty-two residences and nine community organizations on Thetford Hill. The Coop draws water from a drilled well and two dug wells. The drilled well is the Coop's primary source of water and is approximately 500' deep; it was developed in 2001 and is on State Forest land. The dug wells are the Coop's emergency water source and are approximately 16' deep; and are on the Coop's land.

Water from the wells is pumped to a reservoir and is gravity fed from the reservoir to the users, providing on average 6000 gallons of water per day to the users. The water is chlorinated, as needed, to meet State requirements. Water quality is monitored through scheduled testing set by the State of Vermont. Though the yield of the drilled well is below State of Vermont recommendations for the number of users on the system, the Coop has enough water for its users because of water conservation measures which have been in place for many years.

An annual fee of \$450 is assessed for each connection to the Coop's water main. The Coop is currently reviewing how users are billed for water. Additional connections have to be approved by the Water Coop Board of Directors and the State of Vermont. A source protection plan for the Coop's wells are on file with the State of Vermont. Aquifer protection areas are shown on Map 6: Natural Resources and Map 7: Water Features.

The North Thetford Union Water Company serves approximately 23 households. A bedrock spring is tapped to provide water that is gravity fed. The water is chlorinated. Users are unmetered and pay an annual fee of \$60.

The East Thetford Water Company serves approximately 40 people. A new well was provided for the water company in 1990 by the Vermont Agency of Transportation whose salt shed, which was up gradient of the original water source, may have been leaching sodium into the water. The new well is on top of Cobble Hill on land owned by Vaughan Farms. This well has a large capacity and could easily serve more residences.

The North Thetford Water Company split into two water companies in 1995 - the North Village Water Company and the South Village Water Company. There are 8-9 hookups for each water company.

A new well was drilled to supply nine households near the old landfill in Post Mills. The system was installed by the Vermont Agency of Natural Resources using funds collected through a legal action against the Landfill Corporation. The legal action was a consequence of the pollution of local private wells by the landfill. This water system has been built to public water supply standards and has a designated protection area as it may become public in the future. The system is owned and run by the Post Mills Water Association. The well that serves the system is located on a 104 acre parcel which abuts the landfill parcel. This parcel is owned by the Town of Thetford with an easement that protects the land from development and will help to ensure a continuing source of clean water for the water system.

Sanitary Sewer

All sewage, whether domestic, institutional, or industrial, is disposed of by means of on-site systems within the Town. At present there are no areas with sufficient density of housing to warrant the construction of a sewage treatment plant. On-site systems will remain the sole method of sewage disposal for the foreseeable future in Thetford. For this reason, the feasibility of creating building lots rests to a large extent with the land's capability of handling sewage and, at the same time, providing an adequate and safe supply of water for domestic usage.

Since the last revision of this plan, state law has changed the way towns may regulate and permit septic systems. As of July 1, 2007 septic regulations in all towns in Vermont will be superseded by new state rules. These rules have more lenient site requirements, which will increase the amount of land where septic systems could be permitted when they go into effect. The intent of the legislation is that the design and technical standards for potable water supplies and wastewater systems will, by July 1, 2007, be uniform statewide. The effect is that, by statute, a municipality cannot adopt more stringent design and technical standards solely for septic systems and potable water supplies.

Since Thetford is already requiring septic permits that meet the new state technical standards as a condition for town subdivision permits, we are already effectively operating under the rules that will be in place statewide in July 2007. For this reason, references to septic system design and technical standards that have appeared in previous revisions of this plan have been removed.

Solid Waste and Septage



Northeast Waste ships Thetford's mixed waste to a landfill in Lebanon, NH. A majority of residents use the combination recycling center/packer truck to dispose of waste at Thetford's Recycling Center. The Town subsidizes the Recycling Center each year saving space in the landfill. The Town owns the Recycling Center, which is located in Thetford Center, and improvements have been made to streamline the functions and costs of the facility.

Thetford is a member of the Greater Upper Valley Solid Waste Management District. The District coordinates dates with member towns for special

pick-ups of hazardous waste, tires, books, textiles and scrap metal and assists with immediate and long-term planning.

Septage, the material that is pumped from septic tanks, is another type of waste that must be disposed of. Approximately 125,000 gallons are generated annually in Thetford. Haulers dispose of the septage by land spreading at a local farm (after deposition into a lagoon and limited treatment, under stringent oversight by the State) or by hauling it to Hanover to the wastewater treatment plant.

Land application of septage is a commonly used disposal method. Both the nutrient and water content of septage are used to the benefit of the land on which it is spread. The risk of contamination of surface and groundwater is a drawback to land spreading. Careful site selection and responsible site management can substantially reduce these risks. Septage spreading is not permitted when the ground is wet, frozen or snow-covered.

Co-treatment with sewage at a wastewater treatment plant involves higher operating and maintenance costs than does land spreading. In addition, septage adds significantly to the sludge that is generated by primary and secondary treatment plants and must also be disposed of.

Although State law does not require that the Town provide a disposal area for septage, Thetford should consider its disposal needs. Should the Hanover Wastewater Treatment Plant be unable to process septage hauled from Thetford, the local land spreading site could not handle the septage previously accepted in Hanover.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS
<ul style="list-style-type: none"> 6. Support the continued vitality of the community by maintaining and growing shared utilities and facilities without unnecessarily burdening the taxpayers and fiscal resources of the Town. 7. Support private sector child care services and facilities that meet the established needs of residents in a cost effective manner.

OBJECTIVES	RECOMMENDED POLICIES
GENERAL	
<ul style="list-style-type: none"> 19. Maintain all community facilities to avoid costly future repairs. 20. Supply capital reserves for each department or need. 	<ul style="list-style-type: none"> 23. Find new uses for those older community facilities which are underutilized and which might serve new or multiple purposes 24. Board of Selectmen and the Planning Commission should review and revise the list of priorities of the capital reserve funds each year.
POLICE PROTECTION	
<ul style="list-style-type: none"> 21. Maintain a visible police presence. 	<ul style="list-style-type: none"> 25. Provide educational and recreational programs for children and adults emphasizing highway, pedestrian and bicycle safety.
FIRE AND EMERGENCY	
<ul style="list-style-type: none"> 22. Maintain a well-trained and well-equipped volunteer fire department. 23. Respond quickly and aggressively to extinguish fires, minimizing demand for water. 24. Address water supply in all major developments. 25. The Town, TVFD, FAST, Police and the 	<ul style="list-style-type: none"> 26. Home and commercial owners should use early detection systems. 27. Home and commercial owners should consider use of sprinklers. 28. New homes should have year-round access to big, heavy trucks. 29. Develop a wet hydrant system in East Thetford village.

OBJECTIVES	RECOMMENDED POLICIES
<p>Emergency Manager should continue to work on the Emergency Plans including the large-scale evacuation of homes.</p> <p>26. In collaboration with disaster relief organizations, consider development of shelters with generators, food and bedding which will be available in the event of a major weather-related emergency, an earthquake or a major hazardous materials incident. Wherever possible, make use of existing Town resources such as the Elementary School and other facilities.</p>	
HIGHWAY DEPARTMENT	
<p>27. Schedule and budget road improvement program such that it will save taxpayers money in the future.</p> <p>28. Minimize mobility claims for damage to structures close to the road.</p>	<p>30. Continue the PAVER system started in 1991.</p> <p>31. Require applicants to pay their proportion of the cost of upgrading off-site roads.</p> <p>32. Require adequate setbacks for developments.</p> <p>33. Require a 50-foot right-of-way when feasible to allow for road maintenance (plowing, drainage, etc.) to prevent buildings, fences and other structures from obstructing the vision of motorists, pedestrians and bicyclists.</p>
LIBRARIES	
<p>29. Continue to support both the Library Federation and individual libraries fostering cooperation between the libraries in Town and preventing unnecessary duplication of services and efficient use of Town resources</p>	<p>34. Physically improve the Peabody Library, including plumbing, a ceiling fan, more storage and larger parking area, should be developed and implemented.</p> <p>35. Continue to support a Town Librarian who spends part-time in each of the Library Federation's libraries.</p>
CHILD CARE	
<p>30. Support private sector efforts to seek funding to assist with the development of child care infrastructure.</p> <p>31. Work with the Regional Planning Commission to conduct a child care needs assessment.</p> <p>32. Work with developers to consider the childcare impacts of their developments.</p> <p>33. Consider seeking grant funds to assist with the development of childcare infrastructure.</p>	<p>36. Address barriers to increasing capacity created by zoning regulations.</p> <p>37. Maintain an inventory of all childcare providers in Thetford.</p>
CEMETERY	
<p>34. Consider future cemetery expansions to assure adequate space for burial.</p>	
RECREATION	
<p>35. Explore cooperative development of an indoor recreational facility with neighboring towns.</p> <p>36. The Town and schools should cooperate in use of current facilities and development of new facilities.</p>	<p>38. Undertake an in-depth study of recreation to plan for future recreation needs.</p> <p>39. Re-establish the Recreation Committee that disbanded in January 1998.</p> <p>40. Identify a site for an indoor community recreation facility. The site should be land-</p>

OBJECTIVES	RECOMMENDED POLICIES
<p>37. The Town should continue to take advantage of Land and Water Conservation Funds for recreation projects.</p>	<p>banked until the Town is ready to develop it. It should have adequate parking and ideally would include suitable area for playing fields.</p> <p>41. If State or Federal government land should come up for sale in Thetford, investigate its purchase for community use.</p> <p>42. Identify new playground and park areas for development in each village area. Encourage developers to support this policy.</p> <p>43. Develop a network of trails to connect each park and Town, State and Federal open space areas.</p> <p>44. Acquire parcels adjacent to the Town Forest as land comes on the market.</p> <p>45. Initiate a reserve capital improvement account for development of new recreational facilities and programs.</p> <p>46. Develop a Connecticut Riverfront recreation area for water activities and picnicking</p>
WATER	
<p>38. Each village area should develop a water supply plan for residential, business and municipal purposes.</p> <p>39. Prevent contamination of Thetford's water resources by road salt, erosion, agricultural runoff and failed septic systems.</p>	
SANITARY SEWER	
	<p>47. Fund the position of Health Officer, to seek and retain qualified personnel to fill the post, and to provide support for enforcement.</p> <p>48. Amend the zoning ordinance and subdivision bylaw to reflect the new jurisdiction on permitting and enforcement of septic systems.</p>
SOLID WASTE AND SEPTAGE	
<p>40. Support regional solutions in cooperation with neighboring towns in Vermont and New Hampshire.</p> <p>41. Locate suitable sites for landbased disposal of septage.</p>	<p>49. Participate in the Greater Upper Valley Solid Waste Management District.</p> <p>50. Support local recycling efforts including the Recycling Center.</p> <p>51. Study ways to expand participation in recycling, including workshops for elementary and Thetford Academy students.</p> <p>52. Examine the feasibility of curbside pickup for mixed wastes and recyclables.</p>

CHAPTER IV: HISTORIC RESOURCES

INTRODUCTION

A plan for the future without a look into the past is incomplete. Historic structures and sites that survive from earlier periods are the visual record of a town's history. Surviving fragments of history contribute to the individuality of each town, and lend a sense of continuity. Historic resources must be considered for what they are: but one part of our total environmental resources. Like many other sensitive resources, they are nonrenewable, capable of being preserved or vanishing with a single action, and contribute to the aesthetic quality of our town. Many of the concepts and tools discussed in this section are applicable to natural and aesthetic resources as well.



Today, Thetford's historic resources offer a mixture of impressions ranging from a preponderance of early 19th century frame, brick and stone residences to covered bridges crossing the Ompompanoosuc and imposing religious structures in the larger village centers. Thetford's access to two major rivers and the industrial potential afforded by them, along with the extensive impacts of Lake Fairlee and Thetford Academy are features that distinguish the Town, and its historic resources, from other communities. Individual village centers of Thetford Hill, Thetford Center, Post Mills, Rice's Mills, Union Village, East Thetford and North Thetford all retain distinct identities. There is a deepening historic awareness in Thetford, and a desire to respect and preserve our past.

The purpose of this chapter is to discuss existing legislation and tools available to help protect Thetford's cultural heritage (additional tools are listed in Appendix A). Significant local historic sites and resources are identified, with recommendations for their continued preservation. It is the responsibility of the community to plan a program of historical and cultural protection, based on local needs and desires. This chapter does not attempt to be a complete and comprehensive inventory of all local resources, but is intended as a departure point for the future. The present is but a chapter in an ongoing story.

EXISTING CONDITIONS

A variety of individuals and groups have taken responsibility for local preservation and historical activities in recent years.

The Thetford Historical Society was organized in 1945 and currently has approximately 85 members. The Historic Society offers a library cataloged with the State Historical Society and cataloging for manuscripts, letters, ledgers, and photographs, as well as books. Material is encased in acid free folders, boxes, cardboard, or photograph slips. Both genealogical files and subject files are growing. Townspeople and families from all over the country help to keep the files current, and more such contributions are sought. The Society library maintains regular hours during the summer months and is open by appointment the remainder of the year. The Society holds four meetings a year, including an annual meeting in August. In addition to the library, the Society owns the Charles and Fannie Hughes Historical Barn on Route 113 in Thetford Hill which is open five Sundays during August and September for the public and in the early fall to elementary school classes. An outbuilding constructed on the Barn property in 1985 expanded the display and storage capabilities of the Barn. In the summer, the Society also prepares exhibits for a museum opening. Students at both the Elementary School and Thetford Academy are introduced to the collections in the museum and the library. Ongoing activities include collecting and processing manuscripts, answering genealogical questions, and receiving and displaying objects related to Thetford history. The Society also acts as repository for material from a number of local organizations.

In 1979 the Vermont Division for Historic Preservation surveyed approximately 110 buildings and two districts in Thetford significant for their historic and architectural associations. The Latham House in

North Thetford has been photographed by the Historic American Buildings Survey. Within the Town, the Thetford Center Covered Bridge, Union Village Covered Bridge, Peabody Library, Post Mills Church, Thetford Center Historic District (57 structures), and Thetford Hill Historic District (35 structures) are already listed on the National Register of Historic Places. Many other structures are clearly also eligible.

THE FUTURE

To date, the continued appreciation and protection of Thetford's historic resources has been accomplished largely by the actions of individual owners, as well as groups such as the Thetford Hill Improvement Society and the Thetford Historical Society. There seems to be almost community-wide respect for the Town's historic assets. Uniformly high standards of upkeep and maintenance are evident in most of the historic structures within the Town. Currently, the Town controls development through subdivision and zoning. However, zoning alone is rarely successful in protecting important historic resources. It is the private sector that must provide the fuel and support necessary to ensure that the Town's cultural resources remain an integral part of everyday life. It is a broad-based partnership between different levels of support that must be sought for effective historic preservation.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS	
8. Encourage the protection, enhancement and renovation of significant architectural and historic resources.	
OBJECTIVES	RECOMMENDED POLICIES
42. Consider the various vehicles for preservation in order to ensure that Thetford is able to retain its historic assets in the future. 43. Consider the following vehicles for increasing historical interest: <ol style="list-style-type: none"> a. Photographs and murals in public and commercial buildings; b. Markers at key historic structures; c. Brochures describing Town history; d. Tours of historic structures and sites; e. Introduction of a local history course into the school curriculum; f. Continuation of an oral history project; and g. Walking tour of Common possibly with audiocassette guide. One or more historic Thetford Quests as part of the Valley Quest book sponsored by Upper Valley 2001 and beyond, White River Junction, VT. 	53. To protect the architectural integrity of the village, the local historic district on Thetford Hill should be supported. 54. Establishment of design control districts, like that in Thetford Hill, should be explored for Thetford Center and Post Mills. 55. Historic documents should be kept in a secure and fireproof location. 56. Early handwritten records should be reproduced (transcribed, never photocopied) and copies kept in more than one location. 57. Literature should be provided in the Town Offices regarding appropriate rehabilitation techniques which encourage the renovation of older homes and buildings. Take action to preserve and promote historic structures, e.g. conduct an inventory of historic structures throughout the Town, walking tours of historic areas. 58. Historic structures and areas should be considered for listing on the National Register of Historic Places, in particular, the childhood home of Henry Wells (of Wells Fargo) off Miller Pond Road; the Asa Burton House off Route 113; and the old Clay Barn on Clay Road. 59. Utilization of easements, both preservation and rural conservation, should be explored.

CHAPTER V: NATURAL RESOURCES

INTRODUCTION

An understanding of the Town's natural resources is basic to the formulation of a plan to guide Thetford's future growth and development. Thetford's natural resources include:

- Forests
- Surface and groundwater
- Clean air
- Wildlife and vegetation
- Hills
- Minerals
- Soils

They present both opportunities for and constraints to development and must be conserved or used with care so as not to preclude their continued use.

Development in Thetford has shown that some areas are naturally better suited for a particular use than others. If Thetford is to protect its natural resources and provide a high quality of life for its citizens, the capability of Thetford's natural resources to accommodate development must be respected. The recommendations in this plan are based on the premise that Thetford's natural heritage should be preserved and future development of the Town be guided by the ability of the land to support it. This chapter identifies and describes Thetford's natural resources and characteristics of the land that favor and limit development are distinguished. Thetford's critical natural resources, those which must be protected from development, or which hinder development, are discussed.

EXISTING CONDITIONS

Setting and Topography

Located in the northern portion of the Connecticut River Valley, Thetford is situated just north of the confluence of the Ompompanoosuc and Connecticut Rivers. Its boundaries cut a swath of land that rises from fertile river bottom through a markedly varied terrain, a physiographic mix of steep slopes, swampy lowlands, small ponds and upland terraces.

Topography is a way of describing the landform of an area. It is usually expressed as elevation or height above sea level.

Table 10: Elevation of Hills and Villages

	<u>Elevation (feet)</u>
Major Topographic Features	
Potato Hill	High Peak; 1,703
Center Hill	shoulder, 1,520
Mount Tug	shoulder, 1,511
Houghton Hill	1,472
Ely Mountain	1,468
Preston Hill	1,426
Child's Hill	1,320
Center Hill	arm, 1,300
Gove Hill	1,280
The Glebe	1,120
Villages	
East Thetford	408
North Thetford	410
Union Village	427
Rice's Mills	598
Thetford Center	605
Post Mills	695
Thetford Hill	939

Slope

Slope refers to the steepness of land and measures the change in elevation in an area. It is expressed as a percent, so that a 10 percent slope means there is a 10-foot change in elevation for every 100 feet in horizontal distance. Slope is a characteristic of land that influences the feasibility of land use and the economics of site development. Steep slopes (greater than 15%) present severe limitations to building development and, if developed, are likely to cause environmental problems. Site preparation, road maintenance, snow removal, provision of safety services and utility construction and service are more difficult and costly in steep areas. Slope is measured over a reasonable distance so that it does not preclude structures such as walk-out basements.

On steep slopes, soils are usually shallower, the volume and velocity of surface water runoff is higher and the erosion potential is greater than on flatter areas. Consequences of erosion are loss of soil, resulting in sedimentation of surface waters and in the loss of the productive capacity of the land.

Areas with slopes greater than 15 percent are difficult to develop in an environmentally sound and cost-efficient way. Development on slopes greater than 15% should be undertaken with great care to minimize erosion. Land with slopes greater than 25 percent should be left as open space on account of erosion potential and difficulty for development.

Since steepness may preclude the use of large farm equipment, suitable land uses in steep areas are forestry, recreation, wildlife habitat, pasture and farming using small equipment and soil conservation practices to prevent erosion.

Topographic conditions in Thetford are expressed in five slope percentage categories, A: 0-3%; B: 3-8%; C: 8-15%; D: 15-25%; and E: greater than 25%. The Soil Conservation Service has prepared a soil survey that denotes each slope category throughout the Town.

Flat land: slopes of 0-3%

Flat land is, for the most part, located along the Connecticut River floodplain and the Post Mills portion of the Town. Flat lands along rivers are often associated with flood hazard areas; in other areas they indicate land that is likely to have a seasonally high water table. Thetford's best agricultural land is included in this slope classification.

In flat areas, water runoff can be a persistent problem. In areas outside of river floodplains, this condition can be corrected by grading and site drainage.

Rolling land: slopes of 3-8%

Rolling land is generally suitable for building development, providing adequate runoff capability and good building sites. Rolling land occurs irregularly in Thetford and can be found throughout the Connecticut River and smaller valleys adjacent to flat bottomland, in the Stevens District, Thetford Hill, Thetford Center and Post Mills.

Moderately steep hillside land: slopes of 8-15%

Moderately steep hillside land has many of the same assets for building development as the preceding category. However, the probability of erosion is greater; land in the upper range of slope percentage in this category can be severely eroded through improper site development and through extensive, or poorly timed removal of vegetation.

Careful planning and good engineering can generally overcome erosion problems. Prompt revegetation, minimizing the cut into the slope for foundation and driveway construction, and moving earth only during the dry portions of the year are practices that can reduce the erosion problems.

Road construction in areas with slopes of 8-15 percent may limit the development potential of these areas. Roads must be sited and designed to minimize erosion. Roads or driveways with greater than eight percent slope may be difficult to negotiate in winter months; grades of 12 percent require intensive sanding and plowing during severe winter weather and may hinder efficient delivery of safety services such as police and fire.

Areas of 8-15 percent slope occur frequently in Thetford along the lower flanks of most hillsides.

Steep hillside land: slopes of 15-25%

Steep hillsides are found all over Town. Although on any slope greater than 15 percent, excessive erosion and soil instability may be a problem, it is often economically and environmentally practical to use erosion control techniques during and after site development to minimize the risks of these problems. Road construction through areas of 15 to 25 percent in slope will be very difficult and expensive. Traversed (switch-back) road construction is normally required. Extreme care must be used during construction so that as little existing vegetation as possible is disturbed during site development.

Very steep hillside land: slopes greater than 25%

Very steep hillsides are located throughout Town but are particularly associated with Potato Hill, Houghton Hill, Child's Hill and along the east side of the Ompompanoosuc River Valley. The potential in these areas for severe soil erosion and damage to watershed quality is very great.

Soils and Farmland

Soils are the product of a parent material (rock), topography, climate, biotic forces and time. Soils are an important natural resource, since it is soil properties, such as depth, permeability, wetness, slope and susceptibility to erosion that define the land's capability to support development. The history of Thetford's soil began 500 million years ago when New England lay under the Atlantic Ocean. Marine sediments, mud, sand and gravel, were deposited on the floor of the ancient ocean. Over time, the pressure from the upper layers heated the lower and the sediments were converted into sedimentary rocks, shale, sandstone and conglomerate. Volcanic lava eruptions deposited igneous rocks. Crustal uplift and metamorphic activity were followed by erosion and another period of submersion.

Around 350 million years ago, heat and pressure created during a long period of mountain building metamorphosed both older and newer sedimentary and volcanic rocks. Magma intrusions cooled within these old rocks. A second crustal uplifting permanently elevated New England above sea level. Mountains lined the edges of the European and North American continents following the collision of the two landmasses. The White and Green Mountains and Connecticut and Hudson River Valleys follow the north/south orientation of crumpled North American shoreline.

Approximately 20,000 years ago, a continental glacier that left a legacy of glacial till, clays and boulders, covered Thetford. As the glacier receded, melt water held behind till dams created Lake Hitchcock, stretching from Connecticut to the Upper Valley. The width of the Lake varied from nearly 10 miles at its toe to the south to about a mile in the Upper Valley. Varved clays and silt were deposited on the lake bottom. Streams running under and from the glacier left gravel ridges and sand deposits. The effects of climate and biotic activity have contributed to soil building and erosion over time, leaving the soils present in Thetford today.

Six soil associations are prevalent in Thetford. Each of the soil associations has differing suitability for development as they may apply to farmland and woodland use, septic system operation, and road construction. The reader is referred to the Soils of Orange County published by the Soil Conservation Service (now the Natural Resource Conservation Service) for detailed descriptions, characteristics, and locations of these soil associations in Thetford. The prevalent associations and their viability for typical uses are shown in the table below, from the Orange County Soil Survey.

Table 11: Soil Associations

Soil Association	Farming	Woodland	Buildings With On-site Sewage	Local Roads and Streets	Recreational Developments
Hadley-Winooski-Limerick	Good	Good	Poor: floods, frost action, wetness	Poor: floods, frost action, wetness	Fair to poor: floods, wetness
Belgrade-Hartland	Good	Good	Fair to poor: Slope, frost action, wetness	Poor: slope, frost action; wetness	Fair to good: floods, wetness
Merrimac-Agawam Windsor	Good	Fair: Droughty	Good	Good	Good
Vershire-Glover – Buckland	Fair to poor: Slope, depth to rock	Good	Poor: slope, depth to rock, frost action	Poor: slope, depth to rock, frost action	Fair to poor: slope, depth to rock
Tunbridge-Woodstock-Colrain Buckland	Fair to poor: Slope, depth to rock	Good	Poor: Slope, depth to rock	Poor: Slope, depth to rock	Fair to poor: Slope, depth to rock
Tunbridge-Woodstock-Buckland	Fair to poor: Slope, depth to rock	Good	Poor: Slope, depth to rock, wetness	Poor: Slope, depth to rock, frost action	Fair to poor: Slope, depth to rock

Source: Orange County Soil Survey

Shallow-to-bedrock Soils

Shallow-to-bedrock soils, where bedrock is within two feet of the ground surface, are found throughout the Town. Many are associated with upland and steep slope areas. Development where there is a thin soil layer may present both economic and environmental problems. Since the water table is usually high in these soils, septic system and building development is difficult and often not practical. Groundwater contamination and erosion are the major environmental risks associated with development on shallow-to-bedrock soils. Forestry, pasture and recreation are appropriate uses for land with shallow-to-bedrock soils.

Agricultural Soils

Thetford has been generously endowed with soils that have the potential for agricultural use. Soils in Vermont have been classified into four categories with respect to their potential for agriculture. The soils in the “highest” and “good” categories qualify as prime agricultural soils as defined in Act 250. The classification depends on the limitations and capabilities of the soils, the risk of damage when they are used, and the way they respond to management when they are used for common field crops and pasture plants.

Agricultural soils in Vermont are rated by the Agency of Natural Resources. The best are those in the “highest” and “good” categories based on their physical and chemical characteristics. Size, location, accessibility and current land use are not considered in the ratings. The ANR listing is a starting point in the process of determining if a specific area is primary agricultural soil according to Act 250. Onsite review is needed to determine if the potential of the soil can be achieved and if it is feasible to use the soil for agriculture.

Highest potential soils have the best combination of physical and chemical characteristics for producing food, feed, forage, and fiber. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. In general, these soils have an adequate and dependable water supply from precipitation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no surface stones. They are permeable to water and air. They are not excessively erodible, do not flood frequently, or are protected from flooding.

To qualify for the “highest” potential category, a soil must meet all of a number of technical conditions established by the Agency. Soils that are subject to one or more technical limitations may be classified as “good”. Details regarding these conditions may be obtained from the Agency.

For the purposes of administration of the Federal Farmland Protection Policy Act and other federal policies, good potential soils are designated as "Farmlands of Statewide Importance."

Characteristics such as slope, depth to bedrock and seasonal high groundwater table of land that contribute positively to its potential for farming also factor positively into the land's development potential. Loss of farmland to uses that destroy the land's usefulness for growing crops in the future is a great concern. Every year, more farmland is converted to uses that preclude its use as farmland in the future.

Preservation of farmland is more than a romantic notion. Land with a high or good potential for agricultural uses is a natural resource that is being depleted and cannot be replaced. Our present food production system functions in a way that it is now more cost-effective to rely on land out of the region. However, economies change, often rapidly, as was experienced during the oil embargo in 1973. Productive land is certain to be more highly valued because of this characteristic in the future. It would be unwise and unfair for our generation to make future generations in Thetford more dependent on food and fiber produced elsewhere due to the lack of tillable, productive land.

Farmland protection strategies are discussed in Chapter I- Land Use. Further information is available in the Vermont Department of Agriculture publication "Sustaining Agriculture: A Handbook for Local Action."

Before implementing these strategies, it may be helpful for the Town to survey its farmland. While a quantitative strategy for land evaluation has been developed by the Soil Conservation service, it is not clear that this is the best technique for our town to evaluate land. In addition to soil quality, sufficient area, proximity to other preserved land, and visibility from key scenic viewpoints and roads may contribute to preservation value. Whatever the method, it would be valuable for the Town to have a means of identifying critical agricultural land. This allows us to focus our preservation efforts appropriately. An agricultural zoning overlay is recommended in Chapter II; however, this is but one-way to encourage farmland preservation.

Farmland resources can also be preserved by the use of conservation easements that legally limit the development potential of designated parcels. The State of Vermont encourages this process by the funding of the Vermont Housing and Conservation Trust Fund from which moneys are awarded to community or private land trust organizations to enable purchase of development rights from eligible farmland owners. Several parcels in Thetford have already been protected in this manner, including currently operating farms such as the LaMountain, Palmer and former Stone (Cedar Circle) farms, and the land around Childs Pond, and also former farms now preserved as open land, such as the former Perrin and Asa Burton homesteads. Currently, there are at least 16 parcels under conservation easement, covering a total area of 1000+ acres. UVLT is the predominant holder of conservation easements in Thetford, followed by The Vermont Land Trust. The first transfer of development rights in Thetford were gifted to the Town in 1982 by Noel Perrin, which included the Thetford Center village landmark known as Bill Hill. The development rights for Bill Hill and surrounding pastures were subsequently transferred to UVLT by vote at town meeting in 1999. The Thetford Conservation Commission is able to facilitate such projects for interested landowners.

Water Resources

Thetford's water resources include its aquifers, surface waters and wetlands. With reports of water shortages and aquifer contamination across the State, Vermont towns are becoming increasingly concerned about their water resources. Thetford needs to become more protective to ensure continued potability of its groundwater and continued use of its surface waters by people and wildlife.

All of Thetford's residents, except for those who take water from Lake Fairlee, Norford Lake or ponds in Town, rely on groundwater for drinking. While most households tap groundwater, very little is known about aquifers in Town. An aquifer is simply a water-bearing geologic formation. Water moves into and out of an aquifer. If water is pumped from an aquifer more quickly than it is recharged, residents may experience a dry well. Sand and gravel deposits usually contain a lot of water and are therefore high-

yielding aquifers, but many good wells have been sunk in bedrock where water collects in rock fractures and is tapped.

Thetford has several State-designated Aquifer Protection Areas (APA). APAs have been delineated across the State for all municipal water systems that serve 10 or more connections, 25 or more people for more than 60 days per year. The APAs in Thetford comprise about 450 acres, the drainage area for the springs and unconsolidated material from which Thetford’s five community water systems draw water.

Underground fuel storage tanks have been identified as major threats to water quality. Studies have shown that the average tank will develop leaks within 15 years. The State has adopted regulations to monitor and test tanks with a capacity of 1,100 gallons or greater. These tanks must be registered with the Town Clerk. Any tank not in use must be removed within one year of its discontinuance. Responsibility for tank closure lies with the person who owned the tank prior to closure. The rigid set of State standards makes tank replacement more economical than maintenance and testing of a substandard tank.

Since most residential, farm and small noncommercial fuel and motor fuel storage tanks are smaller than 1,100 gallons, the Town should adopt complementary regulations which would require installation of high quality tanks and require monitoring and testing of both existing and new tanks for other potentially toxic substances.

Thetford’s ponds, brooks, streams and the Connecticut River are another type of water resource: surface water. Historically, surface water, being easily accessible, was used for domestic purposes, to water farm animals and for waste disposal. Today, surface waters are best appreciated for their recreation and scenic value. They are important for firefighting and wildlife.

Lake Fairlee straddles three town lines and is Thetford’s largest water body. Covering 427 acres, the Lake collects water from a watershed of 22 square miles and is 51 feet at its deepest point. The Lake drains into the East Branch of the Ompompanoosuc River. The watershed of the Lake is predominantly forested with some open pasture. The shoreline is moderately developed with residences and summer youth camps.

The water quality of Lake Fairlee is excellent. The Lake supports good vegetative and fish production and is used extensively for watersports during the summer months. Unfortunately, protective measures to prevent the introduction of Asian Milfoil were not successful and there is now an on-going Milfoil control program. Forsythe Pond, Childs Pond, Lake Abenaki (Mud Pond) and Norford Lake are the Town’s other major water bodies. Limited development has occurred on Lake Abenaki and Norford Lake.



**Table 12: Water Resources by Watershed
Ompompanoosuc River Watershed**
Norford Lake
Avery Brook
East Branch
Barker Brook
Lake Abenaki
Forsythe Pond
Lord Brook

Thetford’s streams and brooks drain two major watersheds. Ultimately, all Thetford’s surface water flows into the Connecticut River. Table V-1 lists Thetford’s named streams and brooks and other water resources by watershed.

Lake Fairlee
 Gillette Swamp
 West Branch
 Fulton Brook
 Abbott Brook

Connecticut River Watershed

Roaring Brook
 Gun Brook
 Child's Pond
 Conant Swamp
 Zebedee Brook

The Connecticut River is Thetford's most underutilized natural resource. Since the river water quality has markedly improved due to the installation of sewage treatment plants upriver and more careful use of the riverbank, Thetford has a clean, virtually untapped recreation resource along its entire eastern border. Road salts, erosion, agricultural runoff and failed septic systems still pose pollution threats to the River. Efforts should be made to control these sources of contamination. Thetford should continue its participation in the bi-state Connecticut River Joint Commissions (CRJC) program to maintain the Connecticut River water quality and to properly manage the riverfront. For example, this plan encourages the adoption of the comprehensive shore land protection act that is described in the CRJC's Connecticut River Corridor Management Plan; Volume IV: Upper Valley Region (June 1997). This management plan is slated for a significant revision in 2007.

As shown on Map 6: Natural Resources (and several of the other maps), Thetford has a significant number of wetland areas. As listed on the National Wetlands Inventory, there are twenty-seven major wetlands in Thetford whose functions have been classified and which are protected by the provisions of the Vermont Wetlands Protection Act. For a long time, wetlands were considered to be useless, but now are appreciated as valuable for flood control, wildlife habitat, groundwater recharge and recreation. Wetlands include high water table soils, marshes, bogs and floodplains. Development should in no circumstance occur in or close to wetland areas. Groundwater contamination, disruption of natural drainage systems and wildlife, and flooding are possible consequences of development in wet areas.

In addition to protecting against new sources of water pollution, Thetford has a stake in the control and remediation of existing sources such as the pollution plume from the former Upper Valley Regional Landfill Corporation landfill, now closed. There are significant water quality concerns in the West Branch of the Ompompanoosuc River due to mine drainage from the former Elizabeth copper mine (a federal Superfund site) just over the Strafford line.

Flood prone areas are those areas adjacent to rivers, streams, ponds, lakes or wetlands that are likely to be flooded due to snow melting, severe rainstorms and other saturation of the soil during prolonged periods of rain. The federally defined flood hazard areas along the Connecticut and Ompompanoosuc Rivers are shown on the Flood Insurance Rate Maps, prepared and updated by the Federal Emergency Management Agency, available at the Town Offices.

Building construction in areas endangered by seasonal flooding should not be permitted except under stringent controls. The Flood Hazard Bylaw, adopted by the Town in July 1978, restricts development in the flood hazard area. Continued enforcement of these regulations is essential to enable the property owners in the flood hazard area to qualify for subsidized flood insurance.

Wildlife and Vegetation

Thetford's forests, fields, marshes, streams, riverbanks and ponds are home to a variety of species of wildlife and vegetation. Every development in Town results in the loss or change of some habitat. While no single development will decimate Thetford's wildlife and vegetation, the cumulative effect of many small decisions might over time. Nearly all open space provides habitat for game and non-game species. There are, however, some areas in Thetford that provide critical habitat that must remain intact. These areas include wetlands, vernal pools, some deer winter yards, and edge (the transition zone between two

cover types, such as field and forest). Development or logging in or adjacent to these areas must consider wildlife implications during the planning process.



Critical habitat is sometimes shared between towns as habitat does not respect political boundaries. This is readily apparent with Lake Fairlee but other habitats are not so visibly shared.

Planners are encouraged to work with neighboring towns to keep such habitat intact and functioning.

At some stage a point is reached where a species cannot use seemingly adequate habitat because of adjacent development.

While certain strategies may lessen the impact on habitat, planners and developers should keep in mind that almost every development will affect the ecology of the area. Agriculture and forest practices generally have minimal (or even positive) effects on most native species.

The following discussion of white tailed deer winter range considerations when planning human development was written by the Vermont Department of Environmental Conservation.

Wintering areas are an important habitat requirement for deer during the critical winter months when snow depth and climate are limiting factors to survival. Typically these areas consist of mature softwood stands, at low elevations or along streambeds, which provide cover and limit snow depths. Southerly facing slopes are also beneficial due to good sun exposure and may be utilized even in areas of limited softwood cover. More specific factors such as percent canopy closure, species of softwoods, and stand age also figure into the quality of the winter area.

Housing developments and excessive logging have detrimental effects on deer wintering areas. If an area proposed for development encompasses a deeryard, utilizing certain planning strategies may lessen the impact on the area. Should the entire area proposed be winter cover, clustering of house lots is a planning consideration. This may minimize negative impacts by reducing area consumed and maintaining a larger continuous area of cover for utilization by deer than if house lots were scattered. When a proposed area is not entirely winter cover, development outside of the softwood cover, or utilized area, is recommended. Planning developments outside of softwood cover that has the potential as a future deer wintering area is also a consideration. It is important to note that attempts to negate the impact of human development on winter deer range do not always accommodate the needs of the deer. As always, a wildlife biologist from the Vermont Fish and Wildlife Department should be consulted before implementing any proposed plans.

Forest Resources

Most of the land in the Town of Thetford in forest use is in small, privately owned tracts of less than 200 acres. Nearly all of Thetford's forestland is capable of growing repeated forest crops. Along with this economic potential, Thetford's forests provide additional benefits: high quality water, oxygen, wildlife habitat, recreation opportunities and aesthetic appeal. Planning for the conservation of Thetford's forests should be considered a priority.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS	
<p>9. Promote conservation and preservation of Thetford's natural heritage including its wooded hilltops, aquifers, streams, brooks, lakes and ponds, wetlands, agricultural soils, forest resources, wildlife and scenic resources.</p> <p>10. Development in Town should be guided by the land's ability to support it.</p>	
OBJECTIVES	RECOMMENDED POLICIES
<p>44. Control sources of contamination of the Connecticut River. Continue to participate in the bi-state program to maintain Connecticut River water quality and to properly manage the riverfront.</p> <p>45. Consider the economic, biotic and social communities associated with forests and the rights of landowners when assessing conservation efforts.</p> <p>46. The Planning Commission should review the State Department of Environmental Conservation draft guidelines for forest planning and management and consider adapting them to the present zoning regulations.</p> <p>47. The Planning Commission should give priority to the completion of a Natural Resources Inventory.</p> <p>48. Allow development only if the development is sensitive to and considerate of Thetford's natural resources.</p> <p>49. Priority should be given to a study of farm and forestland values in Thetford.</p> <p>50. Protect important agricultural lands should from development that would destroy their future use for crops.</p> <p>51. Prevent contamination of Thetford's water resources by road salt, erosion, agricultural runoff and failed septic systems</p> <p>52. Insulate rare plants and animals from disruptive land use.</p> <p>53. The Selectmen, Planning Commission, Development Review Board and Highway Department should consult with the Conservation Commission whenever a decision is being made that might significantly affect an important natural resource.</p> <p>54. Provide guidelines to promote optimal siting of new structures, i.e. energy efficiency, visual buffers, architectural design, etc.</p> <p>55. The Thetford Conservation Commission should continue its wetlands program focused on the smaller unclassified wetlands, including inventories of flora and fauna, and identification of the wetlands functions.</p>	<p>60. Regulations should be adopted to restrict activities that present contamination risks to the water in the APAs and other areas of dense settlement where residents rely on private wells and systems.</p> <p>61. An aquifer protection overlay zone should be created and adopted as part of the Zoning Ordinance. Examples of protective measures that should be incorporated are:</p> <ol style="list-style-type: none"> a. Prohibit home occupations which use or store hazardous materials (e.g., auto repair, furniture refinishing); b. Allow clear cutting of timber on small parcels, as well as those covered by state regulations (in excess of 40 acres) only if a strict erosion control program ensures recharge by preventing runoff. c. Prohibit intensive uses which generate large amounts of sewage effluent to be disposed of within the APA; d. Prohibit commercial and industrial activities which use or store hazardous materials (e.g., junkyards, auto service and repair, landfill). <p>62. Adopt regulations which require installation of high quality fuel and motor fuel storage tanks on residential, farm and small noncommercial smaller than 1,100 gallons.</p> <p>63. Require monitoring and testing of both existing and new fuel and motor fuel storage tanks smaller than 1,100 gallons for potentially toxic substances.</p> <p>64. Consider protection of the aesthetic quality of Lake Fairlee through limitations in high-speed watercraft such as jet-skis.</p> <p>65. As protection against pollution and sedimentation, buffer zones should be required between all development and wetlands and surface water. The distance of the setback should vary depending upon the type of development and site characteristics.</p> <p>66. Any development within 125 feet of wetland or surface water should be evaluated by the Vermont Department of Fish and Wildlife and/or Water Resources to determine a reasonable setback that</p>

OBJECTIVES	RECOMMENDED POLICIES
<p>56. Conservation Commission overlay maps should be used to evaluate the impact on wildlife of development proposals.</p> <p>57. An in-depth study of Thetford's aquifers should be undertaken to identify recharge areas, aquifers and subsurface movements of water. Consideration should be given to land banking areas of high water yield near existing settlements for use as a well field should individual wells no longer be suitable sources of drinking water.</p> <p>58. All three bordering towns should promote the maintenance of Lake Fairlee's water quality by restricting development that would have adverse impacts on the Lake's water.</p> <p>59. Give special attention to older septic systems that contribute to the degradation of Lake water quality.</p> <p>60. Building construction should not occur in flood prone areas.</p> <p>61. A natural or recreation area should be identified and purchased if necessary for each of Thetford's villages.</p> <p>62. The Town should adopt policies that will prevent the decimation of wildlife and vegetation habitat through the cumulative effects of incremental development.</p>	<p>protects wildlife habitat and water quality.</p> <p>67. The Planning Commission should promote the preservation of these buffers and, where possible, use the buffers to create greenways to protect these water resources, create and preserve wildlife habitat and provide recreational opportunities.</p> <p>68. Where roads are laid out along stream beds, the Town should control activities related to road construction and maintenance, including salting, sanding, bridge repair and culvert cleaning, that jeopardize the quality of water resources.</p> <p>69. The Planning Commission through the Town Office, and local builders and architects should provide a booklet of recommendations on optimal siting of new structures. (HIGH PRIORITY)</p> <p>70. Do not permit uses that pose potential for water contamination in flood hazard areas.</p> <p>71. Add specific ordinances to ensure that construction of buildings and roads on slopes of 15-25 percent be considered a conditional use.</p> <p>72. Slopes greater than 25 percent should be left undeveloped because of high erosion potential and difficulty for development. Slope considerations should be added to the Zoning Ordinance. (PRIORITY)</p> <p>73. Adopt an overlay zone to protect agricultural lands.</p> <p>74. Uses which present a significant risk to groundwater quality should not be permitted anywhere in Town.</p> <p>75. Land bank areas of high water yield near existing settlements.</p> <p>76. Establish protection zones to preserve these resources.</p> <p>77. Adopt ordinances which require monitoring and testing of above and below ground storage tanks for hazardous materials and which set standards for the installation of new tanks.</p> <p>78. Create and adopt a water resources protection overlay zone.</p> <p>79. Conditional use applicants whose proposal may present a threat to water quality must submit plans for the protection of the groundwater. Implementation of approved plans should be a condition of the approval.</p> <p>80. Lot coverage by buildings should not exceed 20% to assure continued water recharge and to minimize drainage problems on abutting lands.</p> <p>81. Review of proposed areas for excavation should ensure that pits are finished safely</p>

OBJECTIVES	RECOMMENDED POLICIES
	<p>and revegetated and that excavation does not jeopardize water quality.</p> <p>82. The Conservation Commission should review the State's guidelines for forest planning and management and adapt them for amendment to the Zoning Ordinance.</p> <p>83. The Conservation Commission should continue to assemble additional information about Thetford's plant and wildlife resources to be used in development reviews.</p> <p>84. The Planning Commission should consider ways to further accommodate wildlife by providing some protection under the Zoning Ordinance.</p>

CHAPTER VI: SCENIC RESOURCES

INTRODUCTION

One of Thetford's most important assets is the way the Town looks. Its varied terrain and traditional settlement pattern are of high visual quality. Individual landscape elements, as well as the overall pattern of structures, open space and vegetation contribute significantly to the quality of life. Landscape quality is an elusive but important consideration in land use decision-making. There are several benefits to be derived from identifying, retaining and improving key elements of the Town's visual quality:

- Retaining a high quality landscape encourages community pride. Thetford's desire for thoughtful use of its land is closely linked to the high quality in the Town's landscape;
- When seeking to attract development that will enhance the Town's tax base, a community that has retained a high quality landscape will have an advantage over a Town that has not chosen to do so;
- The development of tourism and tourist related services in a community having an attractive landscape are often possible if the community preserves its landscape.

A high quality Town landscape is one that can be viewed and appreciated by both residents and visitors. In order to prevent important visual elements of the Town from being destroyed or compromised, they should be inventoried and their aesthetic qualities identified and understood.

EXISTING CONDITIONS

Roads

Entranceways, the sequence of views as one arrives into, or departs from, Thetford's village areas are critically important to the visual quality of the Town. Entranceways are where first impressions about a place are formed and are often the visual character nonresidents associate with the Town. The views from Thetford's heavily used village and recreation areas directly impact the experience of those places. Views to the wooded hillsides and natural skyline add to the historic character of Thetford's villages and the rural character of the roads in Town.

The Town and State Scenic Roads program is detailed in the Chapter IV: Historical Resources. The Thetford Conservation Commission has developed a program for inventorying the scenic road resources in Town, and has completed studies of over 40 miles of town and state roads. Out of this effort, Academy Road has been designated as a Town Scenic Road, particularly because of its panoramic views looking East and the significant amount of open farmland.



In contrast to town and state scenic roads, are the National Scenic Byways; Thetford should consider carefully the possible negative ramifications before supporting the Byway proposed along the Connecticut River; it is possible that such a designation could lead to traffic problems, heavy RV use of Route 5, and increased attractiveness to strip development (fast food chains, convenience stores, and other through motorist services). The net result could be a serious degradation of the very scenic nature we so value.

Landscapes that take centuries to develop can be changed in an afternoon. Thetford's visual quality contributes greatly to the quality of life in Town. Conventional land use regulations cannot alone control

the threats to the scenic resources of the Region. One alternative approach has been to adopt a design control district on Thetford Hill. Other measures, described below, could involve siting, buffers, and/or architectural review, rather than outright denial of the development proposal.

Design Considerations

Given the importance of scenic resources in the Town for environmental, quality of life and economic reasons, the Planning Commission should be an advocate for review of development to determine the impact on visual resources and for use of techniques to mitigate any adverse impact on statewide, regional or local scenic resources. It is recommended that the design considerations developed by the Vermont Agency of Natural Resources Design Issues Study Committee in 1990 be used in evaluating local development proposals; this document suggests constructive responses to the issue of development in scenic areas. A copy of these design considerations is available at the Town Offices.

Ridgeline Development Controls and Communication Towers

The hills of Thetford are a key element to the aesthetic environment for much of Thetford, and their unbroken ridgelines are of extremely high value to the Town. Views from key locations are important; such locations include each of the villages, the rivers, designated scenic roads, and the interstate. For this reason, the Town should be involved in a proactive manner in protecting our most valuable hills from visible development, including tall structures such as communications towers. Where necessary, we would like to help find potential tower locations with small visual impact. We hope to be able to open a dialog with communications companies early in their planning process in order that we both direct our efforts into finding the most mutually satisfactory solutions rather than engaging in litigation.

Minimization of Outdoor Light Pollution

Dark clear skies and bright stars are a resource that contributes strongly to the rural beauty of our town. The increasing use of outdoor lighting such as security lighting by private residences, institutions, and businesses contributes to a light pollution condition. This may indirectly degrade the night sky over large regions of our town by creating an overall light haze. It may also be invasive and offensive to neighbors in direct line of sight. Improperly shielded ridgeline lighting has the potential to be particularly damaging to the night viewscapes. The impact of outdoor lighting can be reduced through the use of proper shielding and screening (making sure the light is directed downward where it is needed and not up at the sky or into other residences), as well as through reduced intensity, where possible, and use only where truly necessary. Providing educational material to property owners would be valuable in many situations. In addition, it is recommended that the Town adopt a lighting ordinance. Present code addresses only sign illumination (Sections 523/524).

Competing Aesthetic, Safety and Expedience Issues

Many groups have a role in our aesthetic resources. Segmentation of responsibilities is natural, but sometimes counter productive; it would be easy for only the Town Conservation Commission to deal with resources that are primarily scenic, only the road crew to consider transportation resources, only the Historic Preservation Committee to consider historic aesthetics. However, it is important that we understand how closely our resources are interrelated. Whereas preservation of a fence line may be the highest priority of the historic committee, resulting view obstruction may seem dangerous to the road crew. While widening or paving a rural road may seem expedient to highway workers, it could seriously degrade the scenic quality and also cause an increase in traffic speed, making it less pedestrian friendly. In a village center, rather than enforcing minimum setbacks and making wide road shoulders for safety (common planning commission and road crew strategies in other towns), we might instead consider narrow roads with sidewalks and houses close to them; this is known to cause a natural slowing of traffic. Removing triangle intersections at the end of roads may make plowing easier, but it is just such features that give our town character. It is the overall aesthetic feeling of the Town, not just the feeling of designated scenic roads, that is important here. The Conservation Commission, Planning Commission, Development Review Board, Selectboard, Town road crew, state road crews, and power line crews could all benefit from an awareness of the tradeoffs inherent in these competing issues.

Roadway improvements often contribute positively to the local, regional and statewide economy. In 1997, the Vermont State Standards for the Design of Transportation Construction, Reconstruction and Rehabilitation on Freeways, Roads and Streets were developed. The Standards are flexible and allow and encourage creative methods that minimize impacts on important resources. Transportation projects should minimize environmental impacts and maximize the public benefit of transportation improvement investments.

Aesthetics of Business Districts

It would be unfortunate to work exclusively on the aesthetic quality of our historic, natural and rural resources and not also plan for the aesthetic development of our business districts. Features that slow traffic and give a village character are aesthetic assets. Concentration of businesses in a village is good and shared driveways are recommended.

GOALS, OBJECTIVES AND POLICIES

GOALS	
11. We should protect our aesthetic heritage and most important views.	
OBJECTIVES	POLICIES
<ul style="list-style-type: none"> 63. The Town should give priority to completing the inventory and analysis of Thetford's visual resources. 64. Subdivision regulations should mitigate adverse impacts of development on Thetford's aesthetic heritage. 65. Planning and new zoning should address the visual impact of communication towers and any other development which may threaten our ridgelines and viewscapes. 66. Aesthetic maintenance and improvement is a responsibility of the town road crew. State road crews and power line crews should adhere to this policy, especially for scenic roads. Communication between these groups should be enhanced. (PRIORITY) 67. The Town should consider the impact of excessive outdoor lighting on the aesthetic quality of the community. (PRIORITY) 68. The Town should designate and protect Town scenic roads and other scenic features., (PRIORITY) 69. The Town should encourage a village feel in our business districts and avoid strip development along Routes 5 and 113. (PRIORITY) 70. Transportation projects should minimize negative impacts on natural resources, historic, scenic or other community values, while also providing reasonable roadway widths, grades, sight distances, etc. 	<ul style="list-style-type: none"> 85. The Town should evaluate development proposals using the design considerations developed by the Vermont Agency of Natural Resources (ANR) Design Issues Study Committee in 1990. 86. The Town should consider visual impact in subdivision review; developers should minimize adverse impact. 87. If appropriate, vegetation and topography should create visual buffers between roadways and new development. 88. To the extent possible, the Town Planning Commission and Development Review Board should discourage ridgeline development, and should take an active role in site determinations where such development is to proceed. Consider ridgeline zoning.

CHAPTER VII: EDUCATION FACILITIES PLAN

There are two principal educational facilities in Thetford, the Thetford Elementary School and Thetford Academy, and one other small school, Open Fields School.

Thetford Elementary School

Located on Route 113 on Thetford Hill, the Thetford Elementary School is a public school serving students in grades K-6. The school has a reputation for excellence in the Upper Valley area. The educational program is sound, with curriculum and instruction that are developmentally appropriate. Its professional climate has attracted well-qualified teachers who strive to help children reach their potential.

In 2003 a major renovation project was completed. Included in this project was a new gymnasium, multi-purpose room, kitchen, music room, classroom, and nursing office. Also, heating and ventilation and lighting systems were upgraded.



Two major challenges face the Thetford Elementary School. First, Thetford residents join other communities in asking whether their schools are adequately preparing students for the future.

The second challenge is the funding for our children’s education. Act 60 has been adopted to provide a solution. In design, it provides for an equitable funding statewide. At the same time, it calls for a series of steps to improve the quality of education in the immediate future and through long-range planning. This will help ensure better communication between the school and the community.

Table 13: Thetford Elementary School Enrollment

	<u>K</u>	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>	<u>6th</u>	<u>Total</u>
2005/06	35	27	20	35	37	41	33	228

2004/0	2	21	36	36	44	36	33	232
5	6							
2003/0	1	35	37	38	34	33	30	226
4	9							
2002/0	3	41	35	37	34	33	47	259
3	2							
2001/0	4	36	32	34	31	54	36	264
2	1							

Thetford Academy

Founded in 1819, Thetford Academy is Vermont’s oldest continuously operating secondary school, as well as the state’s first co-educational academy. As a “private school with a public mission,” it has maintained independent governance while serving students from local communities. Originally granted formal state approval in 1907, the Academy has continued to shape its purposes and curriculum to meet local needs; it is currently the only Approved Independent School that also meets standards for Public School Approval in Vermont. The Academy also has full accreditation through the Independent Schools Commission of the New England Association of Schools and Colleges.

The school serves day students in grades 7-12. (Boarding facilities, used primarily by students from nearby towns during the school week, were discontinued in 1952.) The Academy is the designated public high school for Thetford and Strafford. Thetford is the largest Town School District served, and the only one with a formal commitment to sending all its students to the Academy. The Academy also has a partnership agreement with the Town School District of Lyme, New Hampshire. In 1996, in an effort to manage the growing size of the student body, the Academy adopted an admissions policy guaranteeing admission only to students from towns with accepted designation or partnership agreements, while others may apply for available spaces. Currently, about one-third of Academy students come from towns outside Thetford, with the majority of those from Strafford, Lyme, Corinth, and Topsham. There are twenty-four seats on the Board of Trustees, including three reserved for representatives of designating or partner town school boards.

The Academy, located on Academy Road on Thetford Hill, consists of five school buildings, four of which are brick-faced concrete-block structures and one wood frame structure with aluminum siding. Four buildings have oil-fired hot water heat while one has an oil-fired steam heating system. Only the White Building is fully insulated. New boilers and lighting installed in 1991-92 with a federal grant, and new double-paned windows installed in Anderson Hall and the White Building in 1996 and the Annex in 2004, have increased overall energy efficiency. Asbestos removal has also been carried out in all buildings. Renovations of entrances and lavatory facilities have made four buildings fully accessible to the handicapped; one building, the Annex, is not.

The Academy has 19 general purpose classrooms, four science lab/ classrooms, an agriculture shop, industrial arts shop, small theater space, art room, music room, family and consumer science room, special education learning center room, nurse's office, guidance area with three offices and a conference room, main office with four separate areas, faculty room and two other faculty office spaces, a library with capacity for 6,500 volumes, two computer laboratories, all purpose room and gymnasium with kitchen, weight training room and two locker rooms. The gymnasium bleachers can hold 400 spectators while the floor can accommodate 500 people in chairs. However, occupancy is limited by fire regulations to 565 persons at any one time. Since 1990, the school has sponsored a hot lunch program served in Anderson Hall. Instructional technology includes approximately 150 networked Macintosh computer stations linked to Thetford Elementary School and Latham Library through a fiber-optic Local Area Network installed in 1997.

The area occupied by the buildings, parking lots and fields is about 41 acres. The Academy also owns another 330 acres in woodlots, including a parcel donated in 1992. Outdoor recreational facilities include two regulation soccer fields, a baseball field, and several adjacent sports practice areas. A 5 km cross-country course, suitable for running and skiing, was completed in 1992 and is partially located in the Thetford Hill State Forest. The parking lot can accommodate 150 cars, with a field across Academy Road that can accommodate overflow parking for large events.

In 1992, the Academy began a facilities renovation program with a comprehensive inventory of existing facilities by a local architectural firm. The first phase of renovation in 1995 installed a new, pitched roof and a new science classroom in the Science-Agriculture Building, added accessible entryways and lavatories in the Arts Building; installed an elevator and replaced ceilings, doorways, and wiring in Anderson Hall; and placed electrical conduit underground. The second phase, completed in fall 1996, was an extensive renovation of the White Building, including full handicapped access, a new modern library, offices and classrooms. The third phase, carried out in the summer of 1998, created new driveways, expended parking lots and a central courtyard area, in order to improve traffic safety and site drainage. Septic and underground oil storage facilities were also upgraded at this time. A fourth phase in summer of 2004 replaced exterior siding, windows, and heating units in the Annex, and installed a new pitched roof.

Recognizing that some areas of the physical plant still need substantial attention, the Trustees decided to conduct a new, comprehensive review. In October 2003, Master Facilities Planning Committee was formed and charged with creating a plan for improvements over the next 20-40 years, keeping in mind the condition and uses of current facilities as well as needs of the Academy’s educational programs. This Plan will provide guidance for renovation and financing decisions well into the future and should help trustees and community members see the full range of needs and financial implications.

In 2004-2005, the Academy had 28 full-time teachers, 8 part-time teachers (with appointments ranging from .5 to .8 full-time equivalents), 9 paraprofessional staff (with 6 of these working in special education), one half-time and four full-time administrators, three office support staff, one full-time and one part-time Food Service staff, two maintenance workers, one full-time and one part-time custodian, contracted cleaning services, and a part-time nurse.

Table 14: Thetford Academy Enrollment

<u>Year</u>	<u>Grade</u>						<u>Total</u>
	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	
2005-2006	3	4	7	8	7	6	386
2004-2005	3	5	8	7	6	6	378
2003-2004	5	0	4	9	3	7	385
2002-2003	4	5	6	6	7	6	379
2001-2002	9	1	5	9	7	8	355
	4	3	6	7	6	6	

Home Schooling

According to the State of Vermont Board of Education’s 1997 figures, Home Schooling accounts for about 1.5% of the total students in Thetford.

Open Fields School

Open Fields School is a small private school located on Academy Road on Thetford Hill, established in 1971. The school serves about 20-25 preschool and elementary-age students. The building is a three-story wood frame structure with three rooms on the first floor, four classrooms on the second floor, and an apartment on the third floor. The building has oil-fired forced hot air heat and recently replaced its roof. The quarter-acre site has parking for 4-6 vehicles, with staff size of four full-time teachers and one part-time teacher.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS	
<p>12. Provide excellent schooling in adequate facilities that meet or exceed the minimum state standards.</p>	
OBJECTIVES	RECOMMENDED POLICIES
<p>71. The schools and town should continue to cooperate and share recreation and meeting room facilities to maximize the public benefits and minimize costs.</p> <p>72. Develop a Capital Improvements Program (including annual and long-term plans) for Thetford Elementary School and encourage that a similar plan be prepared for Thetford Academy.</p>	<p>89. Provide and encourage handicapped access at all school facilities in the Town of Thetford.</p>

CHAPTER VIII: ENERGY PLAN

STATEMENT OF PURPOSE

Recent events – global warming, wars in the oil rich Middle East, awareness of "peak oil" concerns, electricity shortages and blackouts and skyrocketing energy prices – have led to an understanding that the sources of energy that we have become so dependent on are not limitless. The reality is that most of our energy comes from nonrenewable, finite sources. The unprecedented and continuing rise in human population (increasing from approximately 1.65 billion to 6 billion over the course of the 20th century) creates additional pressures on these resources. If demand continues to increase, our supply of energy will only become scarcer, and more expensive, putting a drain on our economy, and degrading our environment.

In order to plan for the long-term energy security of our Town, we must first understand that it is not energy itself that we want or need, but the services that energy provides. We do not demand heating oil; we need heat for our homes. We do not need gasoline; we want cheap transportation. We do not require electricity; we need light for our work place. The energy security of Thetford depends on being able to provide these energy services consistently, sustainably, and at the lowest expense to the townspeople.

Sustainability must be the basic principle of a long-term energy plan. We cannot rely on nonrenewable energy sources indefinitely. Nonrenewable sources are by definition unsustainable. Nor can we rely on energy sources that degrade our natural environment. In fact, renewable, sustainable energy resources often depend on a healthy ecosystem.

Currently, the Town is highly dependent on imported sources of energy. On average, towns in Vermont consume 74% of their energy in the form of fossil fuels (oil, natural gas, and propane), and another 17% in the form of electricity. And these figures don't even include transportation, which is almost entirely fossil fuel based. Because these nonrenewable forms of energy are produced outside our region, most of the money spent on that energy is exported from our local economy.

Local energy sources, (wood, wind, solar, and hydropower) offer distinct advantages over nonrenewable energy sources. For every dollar spent on fuel wood, only 18% of that dollar leaves the local community. The rest remains in our own region, creating jobs and buying goods locally. On the other hand, for every dollar spent on nonrenewable energy sources, 85% of that dollar flows out of the community. Another point to consider is the long-term availability of local energy sources. Once developed, these resources are not subject to politically induced shortages, nor to interruptions in the distribution network. In contrast, foreign fuel sources are insecure and unstable, subject to huge price swings and supply shortages beyond our control.

Any energy plan must include the most abundant local energy "source" available to us: conservation. Every kilowatt of electricity we don't use is that much more money in our pockets, that much more money that stays in the local economy. Increased efficiency means more viable businesses, and greater economic security. And this is available to us with no reduction in the quality of service or the standard of living, and with no degradation to our natural environment.

Therefore, the Town of Thetford resolves to take action that will create a sustainable energy future; one that minimizes environmental impact, supports our local economy, emphasizes energy conservation and efficiency, and emphasizes the increased use of local and regional renewable energy sources.

ENERGY RESOURCES AVAILABLE



Non-renewable Sources

Electricity

In the previous twelve months, Central Vermont Public Service Company (CVPS) provided 34,420,393 kWh to 1463 Thetford accounts (i.e. meters). One substation supplies the entire town (1344 accounts) except for Union Village (119 accounts). The energy usage quoted above is the primary substation output increased proportionately to include Union village. Three-phase power lines run along:

- Route 113 from the Connecticut River to the Tucker Hill Road
- Route 113 south of the landfill through Post Mills along Route 244 to the Fairlee town line
- Pavillion Road a short distance south of the northerly intersection with Route 5
- Route 5 from the northerly intersection with Pavillion Road to the Fairlee town line
- Academy Road from its intersection with Route 113 to the covered bridge.

Thetford CVPS customers include approximately 1100 households as well as businesses with multiple accounts. Households average 600 kWh per month statewide, equivalent to just under 1kW average power or 7,200 kWh/year. Therefore, households account for roughly 8,000,000 kWh or 23% of the total electrical power consumption in the town.

CVPS derives its power from nuclear (51%, Vermont Yankee and Milestone 3), hydro (35%), wood (3.6%), oil (1.7%), cow power (0.1%), sun and “unspecified” sources (8.6%), according to its 2005 annual report. No generators are located in Thetford. CVPS representative Bob Morey gave a slightly different breakdown for 2006: Vermont Yankee (i.e. Entergy Corp, 45%); Hydro Quebec (30%); hydro in state (6%); joint projects with other utilities (gas, wood, oil, 13%); independent producers (hydro, wind, solar, 6%). He also explained that CVPS’s contracts with Entergy and Hydro Quebec expire in 2010 and 2012

respectively. Due to volatility in the energy market, future contracts will likely be limited to three-year terms.

Many fuel distributors provide liquid fossil fuels (oil, kerosene, fuel oil, gasoline, diesel fuel, and propane). Together they are capable of supplying the Thetford fuel demand. However, none carry large amounts of inventory and all would run out of fuel within a week of a shut off of interstate and international fuel delivery. The only significant amount of storage is the fuel in resident’s tanks.

Renewable Resources

Wood

Thetford is largely forested. Prior to the wide-scale use of fossil fuels, all of Thetford was wood heated. Thetford contains enough forested land that it could produce sufficient fuel wood for the entire Town on a sustainable basis.

Hydro Generation

Early Thetford settlers relied on hydropower for grinding flour and sawing lumber. Subsequently, Thetford Center, Post Mills, Rice’s Mills, and several other locations in Town became thriving communities based on waterpower. No electricity is currently produced by hydropower but the potential still exists for projects at Union Village (600-1500 KW), Thetford Center (350 KW), Post Mills and Rice’s Mills (100 KW) and the head of Lake Fairlee (50 KW). Together these projects could produce enough energy annually to supply Thetford’s households, given 1kW per customer, but not its businesses.

Solar

Solar power has the potential to provide space heating, water heating, and photovoltaic electricity. Currently one resident has a moderate solar array providing electricity for his residence and selling a small amount of surplus to CVPS. There are households that are not serviced by CVPS and have independent solar arrays. These projects usually provide sufficient electricity to run a small number of lights and electronics, but considerably less than most modern houses utilize. One household has sufficient panels to provide most modern conveniences.

Wind

Wind power has never been utilized on any large scale in Thetford.

Geothermal

Geothermal energy is not widespread but some residents utilize earth / water-based heat exchangers but the economics of such projects have been questioned in northern latitudes.

Transportation

Transportation through the Town of Thetford is primarily by private vehicle at this time. Because road maintenance and school bus services make up the greatest portion of the Town’s energy costs, the Town should limit expansion of its road system, and provide school busing through a policy that maximizes energy efficiency, while maintaining safety considerations.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS
13. Reduce our dependence on nonrenewable and imported energy sources.
14. Maximize cost effective development of local renewable energy resources.
15. Reduce energy consumption in all Town and school buildings and operations.
16. Encourage energy conservation and efficiency and the sustainable development of local renewable sources of energy.
17. Protect the Town’s renewable energy resources.

OBJECTIVES	RECOMMENDED POLICIES
ENERGY PLAN	
<p>73. Evaluate our patterns of energy use. Modify as indicated for energy efficiency.</p>	
ENERGY - RESIDENTIAL, COMMERCIAL, INDUSTRIAL, AND PUBLIC BUILDING PROGRAMS	
<p>74. Investigate and consider cost-effective energy conservation and efficiency measures for use in all Town buildings and operations.</p>	<p>90. Require that developers quantify and evaluate the energy impact of all major development proposals.</p>
<p>75. Encourage the sustainable development and use of local renewable energy resources for all Town and school buildings and operations.</p>	<p>91. Efficiency standards should be at least equivalent to Energy Rated Homes of Vermont 4-star level.</p>
<p>76. Continue on-going energy audits of all Town buildings to: Identify areas of energy waste and areas of potential savings; Determine whether the end-uses of energy are properly matched with the types of energy sources used; Recommend cost-effective energy conservation and efficiency measures and modifications that could make use of renewable energy; Prioritize these modifications and incorporate them into the Town's Capital Budget; and Implement programs as prioritized by the previous steps.</p>	<p>92. Encourage landlords to bring apartment buildings up to Town standards for efficiency, especially those in which tenants are responsible for their own heating bills. The Town might consider offering a one-time only property tax credit for the purchase and installation of retrofit conservation materials such as insulation, caulking and weather-stripping.</p>
<p>77. Consider energy consumption when performing life cycle cost planning and least-cost planning.</p>	<p>93. Support local and regional funding for energy audit and cost-effective weatherization services on all existing homes, with special emphasis on low-income housing.</p>
<p>78. Promote energy-efficient lighting.</p>	<p>94. Support emergency energy supply programs, with special emphasis on low-income households.</p>
<p>79. Engage in long-range planning for the sustainable use and acquisition of energy.</p>	
ENERGY - TRANSPORTATION	
<p>80. Promote cost-effective energy efficiency in future transportation planning.</p>	<p>95. Cooperate with local communities to: Increase access to bus routes especially during peak transit hours and encourage education programs on the benefits of using public transportation.</p>
<p>81. Educate the public about energy-efficient transportation.</p>	<p>96. Encourage major employers in the Town and the region to promote energy-efficient commuting.</p>
<p>82. Coordinate land-use and transportation planning which promote energy-efficient transportation.</p>	<p>97. Promote the development of commuter parking lots as viable transportation components, with particular attention given to connecting schools, recreation facilities, shopping centers, major places of employment, and mass transportation facilities. This could be accomplished through tax incentives or by acquiring easements.</p>
<p>83. Promote and implement strategies to encourage ridesharing, public transit, bicycling, and walking.</p>	<p>98. Provide shelters, where needed, for pedestrians and bicyclists at bus stops and rideshare pickup locations.</p>
<p>84. Increase the efficiency of all Town vehicles.</p>	<p>99. Consider bicycle paths, pedestrian walkways, and mass transportation access in the review of all proposals for commercial development and new Town</p>

OBJECTIVES	RECOMMENDED POLICIES
	<p>recreation facilities.</p> <p>100. Adopt zoning regulations that support development of mixed-use growth centers containing daily residential services, thereby reducing transportation needs.</p> <p>101. Consider transportation efficiency issues and bicycle use when making road expansion decisions.</p> <p>102. Encourage the schools to:</p> <p>103. Teach and promote cycling in the schools as a viable transportation alternative,</p> <p>104. Teach the true costs of various energy options, including car ownership, and</p> <p>105. Teach energy-efficient driving techniques in driver's education.</p>
ENERGY – LAND USE	
<p>85. Encourage and support settlement patterns and densities which reduce travel requirements for work, services, shopping and recreation.</p> <p>86. Encourage growth centers - co-mingled residential development, employment areas, commercial districts, shopping areas, and ride share lots with access to mass transit - in order to discourage land use that would create or lead to energy inefficient sprawl and strip development.</p>	<p>106. Encourage, through site review, the use of these energy conservation measures, such as:</p> <ul style="list-style-type: none"> a. Vegetation as winter wind buffers and summer shading, b. Building development on southern slopes, in order to take advantage of natural light and heat, c. Building development orientation to the south through any combination of street, lot, or building layout, in order to take advantage of natural light and heat, d. Protection of solar access for existing buildings from shadows cast by new structures, and e. Building development in areas sheltered from the wind.
RENEWABLE ENERGY RESOURCES AND RECOVERY TECHNOLOGIES	
<p>87. Promote the Use Value Tax Program for stimulating sustainable fuel-wood production, and for improving the management of forests.</p>	<p>107. Manage Town properties, where possible, to provide fuel-wood and other wood products, recreation uses, and wildlife habitat, for the benefit of the Town and its residents in a sustainable manner.</p>

CHAPTER IX: HOUSING

INTRODUCTION

Thetford is home to about 2,600 people. For most of us, our home is the central locus of our life. Home is where we concentrate our efforts. It is where we eat, sleep, grow and raise our children. Home is the place we return to at the end of the day. These facts make housing one of the most significant elements of this community.

In addition, housing is a major user of land and a major contributor to the tax base. Residential settlement patterns are influenced by the natural environment, pre-existing land use, the availability of public services, the road system and the economy. These aspects must be considered when planning for increasing the housing stock in Thetford. Each of these is described in other sections of this Master Plan.

During the summer of 1992, the Planning Commission conducted a community attitude survey to better understand the preferences of the town's people with regard to the future of Thetford. The results of the survey were synthesized together with prudent development policy to provide the goals and recommendations for housing in Thetford at the end of this chapter. The remainder of this chapter provides a summary of housing characteristics, occupancy patterns, and housing costs within Thetford based on the 2000 Census. In the following discussion, dwelling unit, housing unit, and household are used interchangeably.

EXISTING CONDITIONS

Housing Stock

Between 1990 and 2000, the total number of dwelling units in Thetford increased from 1,136 to 1,193, an increase of 5% (Table 15). The growth in Thetford's housing stock was slower than that of Orange County, Vermont, Hanover or Lyme, New Hampshire; it was closer to the growth rate of Windsor County, Vermont.

Thetford experienced a slower rate of conversions from seasonal housing units to year-round housing units than Hanover or Lyme, New Hampshire, but a higher rate than experienced throughout Orange or Windsor Counties.

In the five years from 1996 through 2000, zoning permits were issued for 55 residences and 13 mobile homes. In the five years from 2001 through 2005, zoning permits were issued for 74 residences and 13 mobile homes.

Table 15: Change in Total Housing Units and Seasonal Housing Units 1990 - 2000

	<u>Total Units</u>		<u>Change</u> <u>1990 - 2000</u>		<u>Seasonal Units</u>		<u>Change</u> <u>1990 - 2000</u>	
	<u>2000</u>	<u>1990</u>	<u>Units</u>	<u>%</u>	<u>2000</u>	<u>1990</u>	<u>Units</u>	<u>%</u>
	Thetford, VT	1,193	1,136	57	5%	117	141	-24
Hanover, NH	2,989	2,623	366	14%	111	166	-55	-33%
Lyme, NH	750	693	57	8%	44	79	-35	-44%
Orange County, VT	13,386	12,336	1,050	9%	1,850	2,123	-273	-13%
Windsor County, VT	31,621	29,849	1,772	6%	6,243	6,446	-203	-3%

Source: US Census

The national trend toward smaller households has had an impact on the type of housing being constructed in Thetford (Table 16 and Table 19).

Table 16: Number and Sizes and of Households 1990 – 2000

Household Type	<u>2000</u>		<u>1990</u>		<u>Change 1990 - 2000</u>	
	<u>Households</u>	<u>%</u>	<u>Households</u>	<u>%</u>	<u>Households</u>	<u>%</u>
1 person	239	23%	201	21%	38	19%
2 person	364	35%	327	35%	37	11%
3 person	166	16%	177	19%	-11	-6%
4 person	187	18%	157	17%	30	19%
5 person	59	6%	58	6%	1	2%
6 or more person	17	2%	21	2%	-4	-19%
Total	1,032	100%	941	100%	91	10%

Source: US Census

Table 17: Types of Housing Units 1990 - 2000

	<u>2000</u>		<u>1990</u>		<u>Change</u> <u>1990 - 2000</u>	
	<u>Units</u>	<u>%</u>	<u>Units</u>	<u>%</u>	<u>Units</u>	<u>%</u>
Single-Family Units	1,018	85%	922	81%	96	10%
Multi-Unit Housing	77	7%	96	9%	-19	-20%
Mobile Homes	95	8%	82	7%	13	16%
Other	3	0%	36	3%	-33	-92%
Total	1,193	100%	1,136	100%	57	5%

Source: US Census

Table 16 shows that nearly sixty percent of the households in Thetford are one- or two-person households. The need for the creation of more physically smaller dwelling units is accomplished by conversion of larger homes to apartments or the construction of multi-unit housing such as apartments or condominiums. As shown by Table 17 the most popular type of housing in Thetford is single-family housing; eighty-five percent of the housing stock is single-family. There was actually a 20% decrease in the number of units in multi-unit structures between 1990 and 2000. Multi-family housing helps meet the demand created by singles who postpone marriage and having children, divorced singles, long-lived widows and young people who cannot afford to purchase or build a single-family home of their own. The number of mobile home residences grew by 16% from 1990 - 2000.

Changes in 2004 to the Vermont Statutes permit owner-occupied single-family residences to develop one accessory dwelling unit on their property, whether or not it will be inhabited by blood relatives. When utilized, this increases the supply of housing for smaller families and individuals.

Table 18: Number of Rooms per Housing Unit 1990 - 2000

Rooms	2000		1990		Change 1990-2000	
	Units	%	Units	%	Units	%
1	8	1%	20	2%	-12	-60%
2	33	3%	15	1%	18	120%
3	65	5%	89	8%	-24	-27%
4	196	16%	241	21%	-45	-19%
5	200	17%	239	21%	-39	-16%
6	208	17%	184	16%	24	13%
7	213	18%	179	16%	34	19%
8	142	12%	88	8%	54	61%
9 or more	128	11%	81	7%	47	58%
Total	1,193		1,136	100%	57	5%

Source: US Census

As shown in Table 18, the percentage of housing units with six or more rooms increased over the past decade while the supply of smaller housing units (with one or three rooms) has decreased. The supply of housing units with two rooms more than doubled over the decade.

According to the 2000 Census, 14.4% of Thetford's housing stock was built between 1990 and 2000. This was a slower rate of growth than was experienced in either of the decades between 1970 and 1990.

	<u>Units</u>	<u>%</u>
1990 - March 2000	172	14%
1980 - 1989	197	16%
1970 - 1979	264	22%
1960 - 1969	105	9%
1940 - 1959	114	10%
1939 or earlier	341	29%
Total Housing Units	1,193	100%

Source: Census 2000

Table 20: Percentage of Housing Units the Lacked Plumbing, Complete Kitchens or Phones

	<u>Total Housing Units</u>	<u>Lacking Complete Plumbing</u>	<u>Lacking Complete Kitchens</u>	<u>No Phone Service</u>
Thetford, VT	1,193	1.6%	1.1%	1.8%
Norwich, VT	1,505	1.2%	0.0%	0.4%
Orange County, VT	13,386	1.4%	1.1%	1.8%
Windsor County, VT	31,621	0.6%	0.8%	1.6%

Source: Census 2000

The percentages of Thetford's housing units that lack complete plumbing or kitchens, or have no phones, are consistent with the percentages of Orange and Windsor Counties; they are slightly higher than the percentages in Norwich.

Residential Occupancy

The percentage of housing units that are owned in Thetford grew over the 1990s while the percentage of housing units that are rented decreased. From 1970 - 1990 the percentage of housing units for rent constituted 25% of the housing stock; by the 2000 Census, that percentage dropped to 20%.

Table 21: Tenure of Occupied Units 1990 - 2000

	2000		1990		Change 1990 - 2000	
	<u>Units</u>	<u>%</u>	<u>Units</u>	<u>%</u>	<u>Units</u>	<u>%</u>
Owner-occupied	826	80%	711	76%	115	16%
Renter-occupied	206	20%	230	24%	-24	-10%
Total Occupied Housing	1,032	100%	941	100%	91	10%

Source: US Census

Like most communities in the Upper Valley, Thetford's residency pattern is predominately owner-occupied, single-family homes. While Lyme (82%) has a greater incidence of owner-occupancy, Norwich (71%) has a slightly lower rate than does Thetford (Table 21).

Table 22: Vacancy Rate 1990 - 2000

	2000		1990		Change 1990 - 2000	
	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>	<u>Amount</u>	<u>%</u>

Occupied Housing Units – Total	1,032	941	91	10%
Vacant Housing Units – Total	161	195	-34	-17%
Vacant Year-round Housing Units	44	54	-10	-19%
Vacancy Rate for Year-round	4%	8%		
Total Housing Units	1,193	1,136	57	5.0%

Source: US Census

Housing Costs

According to the 2000 Census (based on samplings of the housing stock) the median housing value in Thetford was higher than those of Orange or Windsor Counties, but significantly lower than Norwich, Vermont or Lyme, New Hampshire.

Along with vacancy rates, housing costs are indicative of the "state" of the housing market. Higher housing costs may be the result of a market which can barely supply the demand for housing. In addition to these market indicators, other factors such as the amount of land and the size and quality of the structure contribute to differences in housing costs.

Table 23: Housing Costs

	<u>Thetford</u>	<u>Norwich</u>	<u>Lyme, NH</u>	<u>Orange County, VT</u>	<u>Windsor County, VT</u>
Number of Owner-Occupied Housing Units in the Sample	453	646	322	4,273	10,634
Less than \$50,000	2%	0%	2%	5%	3%
\$50,000 - \$99,999	25%	5%	12%	53%	41%
\$100,000 - \$149,999	39%	22%	30%	30%	31%
\$150,000 - \$199,999	21%	16%	16%	8%	12%
\$200,000 - \$299,999	10%	36%	24%	3%	8%
\$300,000 - \$499,999	3%	14%	12%	1%	4%
\$500,000 - \$999,999	0.0%	6%	4%	0%	1%
\$1,000,000 or more	0.0%	1%	0%	0%	0%
Median Housing Value	\$129,100	\$222,800	\$168,300	\$94,300	\$108,500

Housing affordability is a serious issue which the Town must address in its land use controls and proactively by an affordable housing group, if such a group can be organized.

Thetford's housing costs are higher than average compared to the remainder of Orange County and the Region. Costs are higher in Norwich and in Lyme which also experience the demand for housing from workers in the Hanover/Lebanon/White River Junction employment center. In 1990, the median value for a home in Thetford was \$107,900 compared to \$130,400 in Lyme and \$185,100 in Norwich.

Table 24: Selected Monthly Owner Costs as a Percentage of Household Income - 2000

	<u>Amount</u>	<u>%</u>
Less than 15%	124	27%
15.0% - 19.9%	103	23%
20.0% - 24.9%	70	16%
25.0% - 29.9%	60	13%
30% - 34.9%	36	8%
35% or more	60	13%
	453	100%

Source: Census 2000

Table 24 represents a comparison of owners' housing costs with income. Spending more than 28-30% of gross household income on housing is viewed as excessive by lending institutions. Twenty-one percent of the 453 households in the sample spent 30% or more of their gross household income on their housing costs.

Table 25: Gross Rent as a Percentage of Household Income – 2000

	<u>Amount</u>	<u>%</u>
Less than 15%	34	21%
15.0% - 19.9%	26	16%
20.0% - 24.9%	12	7%
25.0% - 29.9%	30	19%
30% - 34.9%	16	10%
35% or more	29	18%
Not Computed	15	9%
Total	162	100%

Source: Census 2000

Table 25 represents a comparison of renters' housing costs with income. Nearly 38% of the 162 households in the sample spent 30% or more of their gross household income on their rental housing costs.

GOALS, OBJECTIVES AND RECOMMENDED POLICIES

GOALS

18. Provide a range of affordable housing for a variety of people, including those starting their first home, the elderly and the handicapped.
19. Accommodate the expansion of affordable housing without jeopardizing Thetford's rural areas and existing village character.
20. Prevent excessive expenditure of public funds for municipal services.

OBJECTIVES

88. Encourage safe, energy efficient and well-constructed housing which blends with the natural landscape, preserving the rural character of Thetford.
89. Consider expansion of the village areas to allow for dense residential development that strengthens their identity.
90. Promote a small town quality and character in housing development to preserve Thetford's villages.
91. Direct residential growth to planned subdivisions with reserved natural areas.
92. Direct development away from the most sensitive natural areas and integrate development with less fragile natural areas.
93. Discourage large scale residential development in out-lying areas of Town, far from community facilities and services.
94. Concentrate high density housing within the water service area.
95. A water supply plan for domestic and firefighting services should be developed for each village.

RECOMMENDED POLICIES

108. Prohibit strip development along major road corridors.
109. Discourage subdivisions which pose excessive financial burden to the Town.
110. Provide incentives for cluster development, with reserved natural areas to provide open space and reduced cost for delivery of Town services.
111. Discourage development on prominent hills, especially in those areas where the slope renders development and maintenance of town services expensive and where seepage and erosion damage would be severe.
112. Educate the community on sound home construction, topography sensitive site planning and fire safety.
113. Limit building height or require Class A fire resistant construction.
114. Residential institutions such as homes for the aged, rest homes, extended care facilities, convalescent homes, elderly housing projects and similar types of group living accommodations should be located close to community facilities and services in the village residential and community

OBJECTIVES	RECOMMENDED POLICIES
	<p>business zones. These should be permitted as conditional uses.</p> <ul style="list-style-type: none"> a. Rooms without separate cooking facilities may be rented in any owner-occupied dwelling unit to not more than three persons, subject to septic review. Off-street parking shall be provided. Two off-street parking spaces per dwelling unit plus an additional parking space per bedroom after the first bedroom should be required. Rooms should not be rented in non-owner-occupied dwelling units. <p>115. Mobile home parks should be permitted as a conditional use in the rural residential district only.</p> <p>116. Allow conversion of large houses to apartments when adequate water and sewage disposal are available on-site and when other zoning requirements can be satisfied.</p> <p>117. Add regulations to the Subdivision Regulations:</p> <ul style="list-style-type: none"> a. Subdivisions that pose excessive financial burden to the Town should not be permitted. b. Major subdivisions should not be approved unless existing or proposed fire protection facilities are deemed to be adequate by the Fire Department. c. Subdivision roads should be built according to specifications for private roads and should remain as such, maintained by users of the road, not the Town. d. Where access to a subdivision is via a Town road that does not meet Town road specifications, the developer should be required to contribute to the costs of upgrading the road. The portion to be contributed should be commensurate with the additional use generated by the proposed subdivision. e. Development in flood plain areas should not be permitted; substantial improvements to existing structures in the flood plain area should be flood proofed. f. To assure adequate fire protection, limit building height or require Class A fire resistant construction and be sure that a source of water suitable for fire protection is located close by.

CHAPTER X: RELATIONSHIP OF THIS PLAN TO THE REGION

An important premise behind planning is the necessity of looking beyond a single community's borders, if not to coordinate and complement, then to mitigate any negative influence of growth and development on neighboring communities.

Thetford is a member of the Two Rivers-Ottawaquechee Regional Commission (TRORC) and shares borders with five towns: West Fairlee, Fairlee, Norwich, Sharon, and Strafford. Based on a review of the six plans listed below, the Thetford Plan is both consistent with and compatible with the plans of the adjacent towns and the region.

Fairlee Town Plan, adopted June 2001. Based on a review of current and proposed land uses and goals, as well as the plan's relationship to neighboring town plans, there is no conflict with the Thetford Town Plan.

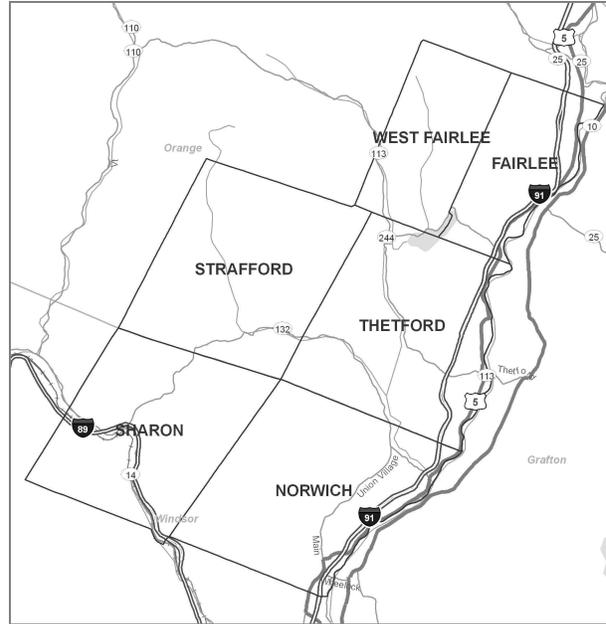
Norwich Town Plan, re-adopted June 2001. Based on a review of land use goals, objectives and policies in the Norwich Town Plan, there is no conflict with the Thetford Town Plan.

Sharon Municipal Plan, adopted March 2005. Based on a review of current and future land uses and goals, and the plan's relationship to neighboring town plans, there is no conflict with the Thetford Town Plan.

Strafford Town Plan, adopted January 2003. The current and proposed land use sections of the Strafford Town Plan and map were reviewed. They show floodplain areas that extend to the Thetford town line. Future development in Thetford where it abuts Strafford should take these areas and related policies into account.

West Fairlee Town Plan, adopted August 2005. The future land use sections of the West Fairlee Town Plan and maps show a conservation district, low and medium density rural districts, a shoreland district, and floodplain areas abutting the Thetford town line. Future development in Thetford where it abuts West Fairlee should take these neighboring districts and related policies into account.

Two Rivers-Ottawaquechee Regional Plan, adopted June 2003. The TRORC Regional Plan was reviewed for consistency with Thetford's proposed Town Plan, particularly land use goals and policies, and plan implementation. Based on this review there is no conflict with the Thetford Town Plan.



CHAPTER XI: IMPLEMENTATION OF PLAN

The goals and objectives of this Plan lay a foundation for the future development of Thetford. This Plan will be effective for five years from the date of adoption (24 V.S.A. §4387). During that time, the Planning Commission may move to implement the Goals of the Plan and the related Objectives and Recommended Policies through several regulatory and nonregulatory tools including, but not limited to, those listed here (see 24 V.S.A. § 4401- 4403 for a complete list).

Regulatory Approaches to Implementation

The Town's Zoning and Subdivision Regulations are currently out of compliance with State law (24 V.S.A. Chapter 117).

- **Zoning Regulations:** Zoning is a legal process designed to protect the health, safety, and welfare of a community by control of the use of land. A municipality may adopt zoning regulations to permit, prohibit, restrict, and determine land development
- **Subdivision Regulations:** Subdivision regulations set forth the procedures, requirements and specifications for the division of land into two or more parcels. Such things as design of streets and lots, installation of utilities, and reservation of park or school land are normally contained in a subdivision bylaw.

As soon as a Plan has been adopted, the Planning Commission can propose changes that put the Town back into compliance with State law and which carry out the intent of the Plan. Adoption or amendment of these bylaws requires at least two public hearing and approval by a majority of the members of the Selectboard (24 V.S.A. §4442).

Act 250

Vermont towns may provide input into the State's regulation of land development through Act 250, Vermont's Land Use and Development Law (Chapter 151, 10 V.S.A.). By law, the Selectboard and the Planning Commission have full party status in all Act 250 proceedings involving Thetford; they may testify on each of the criteria, offer witnesses to present evidence and appeal decisions with which they disagree.

This Plan provides a standard for local review and comment on Act 250 applications. In a broad sense, it establishes a basis for Town testimony on the first nine criteria relating to specific subject areas. Specifically under criterion 10, a proposed project must be found to be in conformance with the Plan before a Land Use Permit can be issued. In this manner, the Plan has the potential to become a major factor in the regulations of land development that falls under the jurisdiction of Act 250.

Nonregulatory Approaches to Implementation

Implementation of the Plan requires public involvement and coordination between the various interest groups in the community.

Private initiatives and nonregulatory approaches to land use such as tax stabilization agreements, land purchase, conservation easements, and gifts of land can supplement regulation. Such efforts may be supported by groups like Thetford's Conservation Commission, Energy Committee and Historical Society as well as private non-profit organizations such as conservation foundations, historical societies, land trusts and watershed associations.

Continuing the Planning Process

The Planning Commission has the primary responsibility for maintaining and updating the Plan. This process will start well before the five year period has lapsed and will include significant input from the citizens of Thetford.

Education on the value of community planning needs to continue. This will be accomplished through a variety of means including newsletters, community forums and media announcements.

The Planning Commission meets at 7:15pm on the First and Third Tuesdays of the month at the Town Hall. The Planning Commission welcomes your input and a public comment period is scheduled at the beginning of each meeting. Written comments are also welcome and may be submitted to any member of the Planning Commission.

APPENDIX A – PRESERVATION TOOLS

Private Citizens and Organizations

Private individuals or groups undertake much of the responsibility for historic preservation. Considering the Town's high proportion of older housing units, pride in ownership and regular maintenance alone can be responsible for remarkable results. Unfortunately, improvement work undertaken with good intentions can often result in techniques or materials inconsistent or insensitive to an older building. As a result, the integrity of the building is compromised and work done may actually damage the building it was intended to preserve, often proving more expensive than the proper treatment.

Historic Resources Survey

Preservation through documentation is perhaps the most basic, essential and non-controversial of preservation strategies. There are several advantages in undertaking an historic resources survey. In addition to providing a permanent written and photographic record of a Town's architecture, a good inventory is the foundation for other preservation tools and can be used to establish design control districts or to prepare nominations for the listing of historic structures in the National Register of Historic Places. Data gathered in a survey may encourage a greater appreciation of the built environment by local citizens. Historic resource assessments are also necessary for accomplishing environmental reviews required in projects receiving Federal funding. As the beginning of a comprehensive historic preservation strategy, information gathered should act as a firm base for future decision-making, by identifying buildings suitable for and worthy of rehabilitation. Since the late 1960's the Vermont Division for Historic Preservation has conducted the State Historic Sites and Structures Survey on a systematic town-by-town basis. State and Federal law mandates the survey. About 90 percent of the State has been inventoried, and the survey contains information on more than 20,000 of the State's historic resources. In 1979 the Division prepared a survey of over 100 individual structures and two districts in Thetford that were felt to have historical and architectural significance.

National Register of Historic Places

The National Register of Historic Places is the official list of the Nation's cultural resources worthy of preservation. Established by the National Historic Preservation Act of 1966 and administered by the National Park Service within the Department of the Interior, the Register lists properties of local, State and/or national significance in the areas of American history, architecture, archeology, engineering and culture. Resources may be nominated individually, or in groups, as districts, or multiple resource areas and must generally be older than 50 years.

Properties in Vermont are nominated to the National Register by the Division for Historic Preservation. Property owners or Town officials request that a potential property or district be reviewed for National Register eligibility. It is the State Advisory Council on Historic Preservation; a board appointed by the Governor and composed of private citizens with expertise in preservation-related areas that makes this determination. Matching grants are awarded on a competitive basis by the Division for the hiring of an architectural historian to prepare eligible district nominations. For individual properties, the owner must generally hire the architectural historian. Following review at the State level for the nomination, detailed and carefully researched National Register forms, maps and photographs are sent on to Washington, D.C., for final review, approval and listing.

The benefits of National Register listing include:

- Recognition of local, State or national significance, often stimulating appreciation of local resources and encouraging pride in ownership;
- Provision for review and amelioration of effects which any Federally funded, licensed or assisted project might have on the property; and
- Qualification for Federal and State preservation grants when funding is available.

Once nominated, a National Register District must have the approval of a majority of property owners, with each owner having a single vote regardless of the number of eligible properties he may own and regardless of whether the property contributes to the district's significance. For a single privately owned

property with one owner, the property will not be listed if the owner objects. Listing in the National Register does not interfere with a property owner's right to alter, manage, dispose of or even demolish his property unless for some reason Federal funds are involved. Nor does National Register listing require that an owner open his property to the public. Within the town, the Thetford Town Hall, the Thetford Center Covered Bridge, the Union Village Covered Bridge, Peabody Library, the Post Mills Church, Thetford Center Historic District, and the 35-structure Thetford Hill Historic District are currently listed on the National Register.

National Register listing can be an important tool for identifying and planning the future of significant resources. Listing can act as a catalyst to change public perception and improve an area's image, but cannot in itself prevent major detrimental alterations or even demolition. It remains an important psychological first step toward historic awareness, respect and protection.

Local Historic Districts, Design Control Districts, & Transferable Development Rights

In Vermont, as authorized by the "Vermont Townscape Preservation Act" of 1985, any municipality may adopt zoning regulations including provisions for the establishment of design control districts, historic districts and landmarks (individual structures worthy of preservation). These mechanisms are currently the most comprehensive preservation tools available to local governments to protect historic resources.

The enabling legislation empowers the planning commission to establish design control and historic districts following preparation of a report describing the particular planning and design problems of the district and setting forth a plan for the areas. A design control district can be created for any area containing structures of historical and architectural merit. In the absence of specific historic district legislation prior to 1985, several Vermont communities, including Montpelier, Woodstock, Manchester, and Hartland, applied the design control district concept to protect areas of historical significance. A design review board may be appointed by the legislative body of the municipality to advise the planning commission. Unfortunately, the effectiveness of such a board is often diminished by its strict advisory role in the respect to the planning commission.

As in design control districts, within an historic district no structure may be rehabilitated, substantially altered, restored, moved, demolished or changed and no new structure within an historic district may be erected, without the approval of the plans by the planning commission. A local historic district has been created on Thetford Hill to protect the architectural integrity of the village. The boundaries of this district coincide with those of the National Register Historic District. Proposals to build new structures or modify the exterior of or demolish an existing structure within the district are reviewed by the Thetford Historic Preservation Committee. Guidelines for the review are set forth in the Zoning Ordinance.

An important concept also included in the historic district legislation is the transfer of development rights. This concept addresses the importance of maintaining certain areas important to a community's character, such as open space, despite the fact that existing structures and lands often have a development potential far beyond their current use. In response, owners of land may sell their right to develop open space or residential parcels to others wishing to develop land in other more appropriate sections of the community. By purchasing the development rights, a developer is allowed to construct a development at a higher density than would be possible if he did not possess these transferable development rights. The result is higher density in a "receiving area" and lower density in the area from which the development rights were sold. Although the concept is complex, it holds much promise for the preservation of cultural resources and open space.

Revolving Funds

Revolving funds are self-replenishing loan pools. The money in the pools is composed mostly of donations and is used to restore buildings. The fund revolves when the restored building is sold. With a revolving fund, a nonprofit organization can acquire a deteriorating building, restore it and then sell it or make low interest loans available to those who need to restore their historic buildings.

The first building restored by a revolving fund should be a highly visible one, so that donors can see their money at work. A building should be endangered, well worth saving and have a high resale potential

before it should be considered eligible for a revolving fund. Besides donations, an organization administering a revolving fund can solicit sources of revenue from private foundations and government subsidies such as Community Development Block Grants.

Scenic Road Designations

Vermont's country roads constitute an important statewide resource. To prevent the elimination of scenic roads, the Vermont Legislature in 1977 enacted a bill "to preserve through planning the scenic quality of Vermont's rural landscape," with a goal of combining both aesthetic and functional concerns. Through this law, Town and State officials are given the authority to designate specific routes as scenic roads in order to protect their character, a character that often derives from historic structures as well as stonewalls, forests, mountains, and other natural features.

The responsibility for a scenic roads program rests primarily on local citizens and their officials. After volunteers conduct a survey of scenic features on the Town's roads, they recommend to the selectmen that, if any, of these roads should be officially designated as scenic. The selectmen then hold a public hearing and make the designations as described in 19 V.S.A. 1019. Roads designated as scenic must be managed according to standards set by the State Transportation Board. These standards will help towns reconstruct and maintain their roads in a way that will preserve scenic quality without reducing the level of service or safety. Only State or Town owned roads may be officially designated.

Designation of scenic roads enables a town to preserve the rural environs around its historic structures. A scenic road designation also stimulates pride in, and respect for, the existing landscape. This is an especially important tool for Thetford's rural areas, where the bond between architecture and landscape is inseparable. In Thetford Academy Road is designated as a town scenic road and Route 5 is part of the Connecticut River Cultural and Scenic Byway.

Easements

Across the country, preservation easements have proven to be an effective tool for protecting significant historic properties. An easement is a property right that can be bought or sold through a legal agreement between a property owner and an organization eligible to hold easements. In Vermont, the Preservation Trust, Division for Historic Preservation, and local organizations are all eligible to receive easement donations. Property owners have found that easements provide them with two important benefits. First, the character of a property is protected in perpetuity. In addition, the donation of an easement may make the owner eligible for certain tax advantages. If the property is listed in the National Register, in return for giving an easement, a property owner is eligible under the Tax Treatment and Extension Act of 1980 to make a deduction from his taxes. If the easement is considered a lifetime gift, then the property owner could receive a deduction for up to 50 percent of his adjusted gross income. Donation of an easement may also reduce estate and local property taxes.

Costs of such a program may be significantly lower than buying properties outright to protect these valuable resources, particularly when easements can be acquired by donation. Significant historic resources remain in private hands but are protected from inappropriate alteration as the organization holding the easement is given the right to review any proposed changes to the structure.

Two major types of preservation easements have been employed in the past. First of all the property owner could donate an exterior facade easement. This could include air rights, exterior maintenance, alterations, etc. The second type of preservation easement is rarely used for it is difficult to enforce and also to acquire. An interior easement can restrict all or part of the interior. The facade of and open fields surrounding the Asa Burton homestead are protected by a conservation easement held by the Upper Valley Land Trust, Inc.

On a single village street, it is important to maintain open space between buildings to provide country vistas. The pleasant open vistas viewed from the Thetford Center Covered Bridge are a good example.

In rural areas, conservation easements can play a vital role in preserving the lands around historic sites. Typically, a conservation easement can be donated to protect open spaces, scenic areas, waterways, wildlife and farmland. Examples are given later in this chapter, in the section on Agricultural Soils.

Land trusts with both historic preservation and conservation interests are instrumental in safeguarding both natural and architectural features. Harrisville, New Hampshire, is an example of one rural community that has established a program to protect both settings and buildings. If properly administered, easements are a superior method of conserving and protecting land, water and historic resources because they are permanent and therefore last longer than zoning or locally designated historic districts.

Covenants

A covenant is a contractual agreement whereby the owner agrees to maintain the historic and architectural character of his home. A covenant can either be in the form of an affirmative provision or a negative provision. An affirmative provision requires the owner of an historic structure to provide for certain upkeep of the exterior appearance of his home. A negative provision, or a restrictive covenant, contracts the owner to abstain from changes to his historic building that would alter its historic or architectural integrity. The right to enforce a covenant is normally granted to a preservation agency. The general difference between easements and covenants is that easements are considered to be an interest in real estate, whereas covenants are only a contractual obligation. Under certain circumstances, however, covenants become binding upon future owners as well, thus blurring the difference between the two.

State Grants

Limited grants are sometimes available from the Department of Historic Preservation, National Life Building, Drawer 20, Montpelier, VT 05620-0501.

Technical assistance and small grants for project organization may also be available from the Preservation Trust of Vermont, PO Box 177, Windsor House, Windsor. Foundation funding should also be explored for worthy projects.

Potential Archeological Areas

Areas with proximity to water, such as the Connecticut and Ompompanoosuc Rivers and smaller brooks in the case of Thetford, logically hold great potential for prehistoric and historic archeological areas. Historically these water bodies were lined with mills seeking to harness their waterpower. Throughout town, cellar holes bear silent witness to early settlers; their houses abandoned as the families moved downhill or in other cases were destroyed by fire. Investigation of these areas, as well as the dock sites that once lined the bank of the Connecticut River and prehistoric sites, could yield much useful information relating to the lifestyles of Thetford's early settlers. The record of these ancient times is fragile and, no doubt, much has already been lost through vandalism, builders, farmers, road construction, and the inherent acidic nature of waterfront soils. Since this report clearly deals primarily with the Town's architecture, investigation by qualified archeologists is necessary to determine the actual potential of these areas. No comprehensive survey of Thetford's archeological resources has been prepared thus far. For more information, contact the State Archeologist at the Vermont Division for Historic Preservation.

APPENDIX B – MAPS

The attached maps are an integral part of this plan (24 V.S.A. §4382). However, the maps are not intended to be a precise representation of the features of Thetford. Rather, they are intended to give the reader a sense of Thetford. Although much map data is now available digitally, it is not always updated on a timely basis. For instance, the aerial photos which serve as a base in many of the maps date to the summer of 2003, however the Tax Parcels shown on Map 5 have not been updated in many years (see below for more information about the quality and timeliness of the map data). Despite these inaccuracies, the maps can serve as a planning tool. A brief discussion of each of the maps follows:

Map 1: Land Use – This map shows Thetford’s large forested and agricultural tracts as well as the distribution of houses, businesses and other buildings (collectively referred to as E911 Structures). As discussed in Chapter I, three types of zoning districts have been established in Thetford: Rural Residential, Commercial Business and Village Residential. Currently, there are no specific boundaries for these districts, the Current and Future Land Use polygons shown on this map are not meant to define or create new districts, rather to give a sense of the approximate location of these districts. Wetlands which have been identified as Class II wetlands (there are no Class I wetlands in Thetford) under the Vermont Significant Wetlands Inventory (VSWI) are shown as they are specifically protected under the Vermont Wetlands Rules (10 V.S.A. §905(7)). Additionally, public lands owned by the Federal government, State of Vermont and the Town of Thetford are also shown.

Map 2: Transportation – This map shows the transportation network within Thetford. See Chapter II for more information about Transportation.

Map 3: Utilities, Facilities and Services – This map is intended to illustrate the items covered in Chapter III. However, due to the limited availability of digital data, not all items discussed in the Chapter appear on the map.

Map 4: Slope – This map calculates slopes (defined as rise over run) throughout the Town. The data used to create these maps come from the National Elevation Dataset which has a resolution of approximately 100 feet (i.e. each pixel is ~100ft on each side). This map is NOT a definitive map of slopes in Thetford, rather, it gives a sense of areas that may be steep. See Chapter V for a discussion of slope.

Map 5: Parcel Information – As stated above, the Tax Parcel data shown on this map is out of date and is incomplete (current parcel information is available at the Town Hall), however, the map is intended to give a reader a sense of where large and small parcels may exist. Parcels that are enrolled in the Use Value Program during 2003 are also shown on this map. Private lands which are covered by an easement (often through the Upper Valley Land Trust) are also displayed; however in many cases the easement does not cover the entire parcel. The nature of the easement varies for each parcel.

Map 6: Natural Resources – As discussed in Chapter V, open land provides critical habitat for both game and nongame species. The relatively undisturbed areas shown on this map illustrate open areas which are at least 500ft from a road or a structure. Additionally, sites of rare species and significant natural communities that have been identified under the Vermont Nongame and Natural Heritage Program are shown on this map. This inventory is not complete and other sites likely exist in Thetford.

Map 7: Water Features – As discussed throughout this Plan, a clean, safe water supply is imperative. Additionally, water is needed for emergency management and is a significant natural resource for both recreational pursuits and ecology. This map illustrates water features which are both naturally occurring (e.g. wetlands, rivers, lakes) and constructed (e.g. wells, dams).