TOWN OF HARTFORD

MASTER PLAN

Adopted May 27, 2014

Prepared by the

Hartford Planning Commission

with the assistance from the

Hartford Department of Planning and Development Services

Two Rivers-Ottauquechee Regional Commission

and the

Master Plan Steering Committee

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TABLE OF CONTENTS

HARTFORD MASTER PLAN 1
- Introduction 1
- Authority 1
- History of Hartford's Master Plans 2
  - Process 2
  - 2012 Readoption 3
  - Other Planning Studies 3

CHAPTER I 5

HISTORIC AND CULTURAL RESOURCES 5
- Introduction 5
- Goal 5
- Potential Archaeological Areas 5
- Overview of Town History 6
- Results of the Master Plan Community Meetings 7
- Preservation Action to Date 8
- Preservation Tools 10
  - Private Citizens and Organizations 10
  - Certified Local Governments 10
  - Hartford Historic Preservation Commission 11
  - Historic Resources Survey 11
  - National Register of Historic Places 12
  - White River Junction Historic District 13
  - Quechee Historic Mill District 13
  - Hartford Village Historic District 15
  - Wilder Village Historic District 16
  - Jericho Rural Historic District 19
  - Christian Street Rural Historic District 19
  - West Hartford Village Historic District 22
  - Scenic Roads 22
  - Design Review Districts 22
  - Townscape Preservation 24
  - Federal Investment Tax Credits 24
  - State Grants 24
  - Other Preservation Tools 25
- Downtown/Village Revitalization 25
- Resource List 26
- Bibliography 27
- Recommendations 27

CHAPTER II 30

LAND USE 30
- Introduction 30
- Community Vision 30
  - Public Participation Process 30
- Build-Out Analysis 32
  - Existing and Historic Land Use 35
  - Developed Land 35
  - Undeveloped Land 35
- Development and Our Natural Resources 36
  - Surface Drainage 37
  - Wetlands 37

Floodplains 37
Steep Slopes 38
Scenic Areas 39
Parcelization 39
Overlay Districts 40
Rural Lands Overlay District 41
Agriculture Overlay District 41
Wildlife Connector Overlay District 41
Hartford's Villages and Rural Areas 42
White River Junction 42
Hartford Village 43
Wilder 45
Quechee 47
West Hartford 49
Rural North 49
Rural South 52
Recent Land Use Trends 54
Residential Development 54
Non-Residential Development 57
Vision for the Future of Hartford 58
Build-Out Analysis with Proposed Zoning 59
Land Use Plan 61
Village Areas and Growth Centers 61
Downtown Lands 61
General Commercial and Industrial Lands 62
Gateway Commercial Lands 63
Mixed Use Lands 64
Residential Lands 65
Rural Residential Lands 65
Rural Lands 66
Forest Conservation Lands 66
Strategies and Recommendations for Village Areas and Growth Centers 66
Strategies and Recommendations for Rural Areas 68
Recommendations and Strategies that Affect Both Rural and Village Areas 70

CHAPTER III 78

POPULATION 78
Introduction 78
Goals 78
Population Trends 78
Regional Population Trend 81
Population Change Within Hartford 83
Population Trend Of State's Largest Communities 83
Population Density 84
Natural Increase And Migration 85
Household Size 87
Age Distribution 87
Seasonal Population 89
Population Projections 90
Recommendations 91

CHAPTER IV 92

HOUSING 92
Introduction 92
Results From The Master Plan Community Meetings 92

Housing Patterns 93
Housing Characteristics 93
Hartford Population In Housing 98
Cost Of Housing 100
Housing Affordability 102
Housing As A Regional Issue 111
Challenges To The Development Of New Housing 113
Housing Opportunities 115
Recommendations 118

CHAPTER V 121

ECONOMIC DEVELOPMENT 121
Introduction 121
Demographic and Economic Analysis 121
Demographic Profile 122
Economic Performance 123
Economic Structure Analysis 125
Summary and Implications 130
Development Issues and Opportunities 130
Economic Development Assets 133
Economic Development Challenges 134
Economic Development Vision and Goals 136
Economic Development Implementation and Recommendations 137

CHAPTER VI 143

COMMUNITY FACILITIES AND SERVICES 143
Introduction 143
Goals 143
Results from the Master Plan Community Meetings 143
Municipal Building 145
Police Department 145
Emergency Services 147
Parks & Recreation 149
Hartford Parks & Parks and Recreation Department 149
Facilities and Park Overview 151
Town Facilities 151
Town Parks 153
Conservation Commission Managed Properties 155
Other Public Recreation Facilities 155
Future Needs 156
Capital Improvement Plan 156
Education 158
Facilities 161
Other Facilities 163
Child Care 164
Libraries 164
West Hartford Library (Hartford Town Library) 165
Quechee Library 166
Hartford Library 166
Wilder Club and Library 167
Projected Library Needs 167
Solid Waste 168
Financing the Solid Waste Program 170
Human Services 170
Cemeteries 174

Recommendations 176

CHAPTER VII 180

UTILITIES 180

Introduction 180
Results from the Master Plan Community Meetings 180
Goals 181
Water Supply 181
Wastewater Disposal 186
Electric Service 188
Telecommunications 188
Wireless Communication Facilities and Aesthetics 188
Recommendations 190

CHAPTER VIII 192

PUBLIC ROADS AND TRANSPORTATION 192
Introduction 192
Results from the Master Plan Community Meetings 192
Transportation Planning 193
Regional Transportation Planning 194
Project Development 196
Upper Valley Transportation Management Association 197
Traffic Data 197
Public Road System 200
Local Road Surface Condition 200
Local Public Road Deficiencies 201
State-Controlled Road System 203
Local Public Gravel Roads 203
Class IV Roads 204
Development Review Road Standards 205
Access Management 206
Bridges and Culverts 207
Bicycle Transportation 207
Pedestrian Transportation 209
Traffic Calming 211
Parking 212
Park and Ride Facilities 213
Public Transportation 214
Advance Transit 214
Stagecoach Transportation Services 216
Bugbee Senior Center 216
Upper Valley Rideshare Program 216
Connecticut River Transit 216
Vermont Transit Lines 217
Dartmouth Coach 217
Taxi Service 217
Air Transportation 217
Rail Transportation 217
Roadways and Ecology 219
Recommendations 219

CHAPTER IX 226

NATURAL RESOURCES 226
Introduction 226
Results from the Master Plan Community Meetings 226

Setting 227
Climate 227
Air Quality 228
Geographic Features 230
Geology 230
Soils 230
Earth Resources 234
Hillsides and Ridges 234
Water Resources 238
Water Bodies 238
Watercourses 238
Wetlands and Vernal Pools 239
Aquifers 241
Floodplains 241
Threats and Concerns 241
Forest Resources 242
Agricultural Resources 243
Biological Diversity 244
Defining Biological Diversity 244
Importance of Biological Diversity to Hartford 244
Status of Biological Diversity in Hartford 244
Threats to Biodiversity Resources 245
Invasive Plants 248
Scenic Resources 249
Connecticut River Scenic Byway 249
Scenic Areas 249
Wireless Communication Facilities 251
Wind-Energy Facilities 252
Lighting 252
Open Space and Greenways 253
The Value of Open Space to the Public 253
Present Threats to Open Space and Greenways 256
Recommendations 258

CHAPTER X 262

ENERGY 262
Introduction 262
Goals 263
Municipal 263
Residential, Commercial and Industrial 264
Transportation 264
Land Use and Development Siting 265
Conservation and Energy Efficiency 266
Renewable Energy Resources 266
Wood 267
Solar 267
Wind 268
Hydroelectric 269
Resource Recovery Technology Programs 269
Co-generation 269
Demand Side Management Programs 270
Methane Gas Production and Collection 270
Implementation Strategies 271
Recommendations 271

CHAPTER XI 275

Relationship of plan to development trends and plans for adjacent towns and regions 275

CHAPTER XII....277
IMPLEMENTATION PROGRAM 277

Table of Maps

Map I-1 White River Junction Historic District 14
Map I-2 Quechee Historic Mill District 15
Map I-3 Hartford Village Historic District 17
Map I-4 Wilder Village Historic District 18
Map I-5 Jericho Rural Historic District 20
Map I-6 Christian Street Historic District 21
Map I-7 West Hartford Village Historic District 23
Map I-8 Historic Districts 29
Map 9 BO-1 (Existing Zoning Maximum Build-out) 34
Map 10 CLU 1 (White River Junction & Hartford Village) 44
Map 11 CLU 2 (Wilder) 46
Map 12 CLU 3 (Quechee & West Hartford) 50
Map 13 CLU 4 (Rural North) 51
Map 14 CLU 5 (Rural South) 53
Map 15 BO-2 (Proposed Zoning Maximum Build-out) 59
Map 16 FLU-1 (Future Land Use) 73
Map 17a FLU-2 (Current Zoning) 74
Map 17b FLU-2 (Current Overlay Districts) 75
Map 18 (Downtown Districts) 76
Map 19 (State Designations) 77
Map 20 VI-1 (Community Facilities) 144
Map 21 VII-1 (Sewer & Water Service Areas) 182
Map 22 (Transportation) 195
Map 23 (Traffic Volumes) 199
Map 24 (Road Conditions) 202
Map 25 (Transportation for Bicyclists and Pedestrians) 210
Map 26 IX-1 (Aerial Base) 229
Map 27 IX-2 (Agricultural and Habitat Features) 233
Map 28 IX-3 (Slopes) 237
Map 29 IX-4 (Water Features) 240
Map 30 IX-5 (Wildlife Habitat Fragmentation) 246
Map 31 IX-6 (Wildlife Habitat Suitability, Roadkill & Crossings) 247

HARTFORD MASTER PLAN

INTRODUCTION

According to the book, "Essentials of Land Use Planning and Regulation" by the Vermont Land Use Education and Training Collaborative, "the municipal plan is the visionary document that assesses the current status of a community and lays out a vision for the future." Used interchangeably with the term "Master Plan", it is an in-depth, comprehensive, long range study that provides the framework for future decisions regarding land use, transportation, community facilities and services, utilities, natural resources, historic resources, and housing. It is a guide that establishes a strategy on how to grow while managing the community's resources and maintaining a high level of quality of life. The Master Plan provides the basis for public and private investment. It also establishes an implementation program that provides a means of achieving the community vision.

AUTHORITY

The authority for developing and adopting a plan for the municipality comes from state statutes, specifically V.S.A. 24, Chapter 117 §4382-4387. The Planning Commission is responsible for the preparation of the Master Plan and the Selectboard is charged with adopting it. Although Master Plans are optional in Vermont, a municipality with an expired Master Plan cannot amend its bylaws and capital budgets and programs until the Master Plan is in effect. In addition, there are some grant programs that do not allow applications from municipalities with an expired Master Plan. To comply with State statutes, the Master Plan must be updated every five years.

State statutes also require that the development of municipal bylaws, such as Zoning Regulations and Subdivision Regulations conform with the Master Plan. In addition, the Master Plan has standing in the Act 250 process. The following are the required elements as stated in Section 4382 of Chapter 117.

	Required Element per 24 V.S.A. §4382	Addressed in Current Master Plan
1	Objectives, Policies & Programs	Each chapter
2	Land Use Plan	Primarily Chapter II & other chapters
3	Transportation Plan	Chapter VIII
4	Utility & Facility Plan	Chapters VI & VII
5	Policies for Special Resources	Chapters I & IX
6	Education Plan	Chapter VI
7	Implementation Program	Chapter XII
8	Relationship to Adjacent Towns/Region	Chapter XI
9	Energy Plan	Chapter X
10	Housing Plan	Chapter IV
11	Economic Development Plan	Chapter V
12	Flood Resiliency Plan	Incorporated by Reference

HISTORY OF HARTFORD'S MASTER PLANS

For nearly fifty years, Hartford has demonstrated a commitment to municipal planning. The first official Master Plan was prepared by planning consultant Carl Stelling Associates through the federal Urban Renewal Administration Grant Program in 1959. The Master Plan led to the adoption of Hartford's first Zoning Regulations in 1962. Subsequent revisions to the Master Plan have occurred in 1965, 1974, 1980, 1987, 1993, 1998, 2003, 2007 and 2012.

Process

Since the 1998 Master Plan was a modest update of the 1993 Master Plan, the 2003 update was a significant overhaul. Due to the large scope of the update, the Master Plan was divided into two phases. Phase I included the following elements:

- Historic and Cultural Resources
- Population
- Economic Development
- Community Facilities and Services
- Utilities
- Natural Resources
- Energy

From the beginning of the update in 2002, the process involved extensive community input. Phase I began with the update of the economic development element. Consultant Karl Seidman was hired through a Vermont Municipal Planning Grant and a town-wide community meeting was held as well as two focus group discussions. In the summer of 2002, the Master Plan Steering Committee was formed to work with Town staff and the Planning Commission to guide the Master Plan process. The Master Plan Steering Committee included members of the Planning Commission as well as representatives from Town boards and commissions and a few other organizations and individuals. A second Vermont Municipal Planning Grant was used to hire consulting firm Landworks to undertake a citizen participation process. A series of six community meetings were held in the fall of 2002 followed by two focus group discussions. The project resulted in the preparation of the Summary Report of Citizen Participation for the Hartford Master Plan Update. Phase I of the Master Plan update was adopted by the Hartford Selectboard on July 22, 2003.

Work on Phase II of the Master Plan began immediately following the adoption of Phase I and included the following chapters:

- Land Use
- Housing
- Transportation
- Relationship of Plan to Development Trends and Plans for Adjacent Towns and Region
- Utilities

A major initiative of Phase II was an updated build-out analysis of residential development that examined how the Town could develop under existing zoning and whether the results were consistent with the community vision. The build-out analysis was prepared by the Two Rivers Ottauquechee Regional Commission and funded by a Vermont Municipal Planning Grant. Since there was a significant difference between the community vision and the Town's current zoning, the Master Plan Steering Committee set out to develop land use recommendations to align with the community vision.

Phase II of the Master Plan update also included funding through the Vermont Municipal Planning Grant to hire the Two Rivers Ottauquechee Regional Commission to assist the Planning Commission and Town staff in the preparation of the Master Plan.

Over the course of the five year effort to update the Master Plan, there were 56 Master Plan Steering Committee meetings, eight focus group discussions, two Chamber of Commerce discussions, seventeen community meetings, seven Planning Commission workshops and six public hearings.

2012 Readoption/Amendment

Since the 2003 and 2007 Master Plan updates were comprehensive overhauls of earlier Plans, the 2012 update was a readoption/minor amendment. The readoption included updates to the Housing and Population Chapters based on 2010 Census data. The minor amendment included the addition of a Child Care section as required by State Statute.

2014 Readoption/Amendment

The 2014 update is a readoption/amendment. The amendments included revisions to the Land Use Chapter necessary to meet the requirements in State Statutes and to be consistent with the Regional Plan. The amendments included updates to text, tables and maps, and a new section titled "Land Use Plan", with accompanying map.

Other Planning Studies

In addition to the Town Master Plan, the Town has undertaken a number of other planning studies and reports that have guided activities, and are incorporated into this Master Plan by reference. These include:

- River City Revival, 1991
- Hartford Village: A Plan for a Village's Future, 1994
- Railroad Row Historic District Plan, 1994
- Quechee Gorge Master Plan, 1996
- Sykes Mountain Avenue Study, 2000
- Route 5 South Study, 2001
- White River Junction Design Plan, 2001

- White River Junction Design Guidelines, 2001
- Maple Street Sidewalk Conceptual Alignment Analysis, 2001
- Hartford-Norwich Link of the Upper Valley Loop Trail Conceptual Alignment Analysis, 2002
- Sykes Mountain Avenue & US Route 5 Corridor Bicycle & Pedestrian Alignment Analysis, 2004
- Hartford Pedestrian and Bicycle Plan, 2009
- White River Junction Village Revitalization Plan, 2009
- Town of Hartford State Approved Growth Center Application, 2010
- White River Junction Tax Increment Financing District Plan, 2011
- Hartford Hazard Mitigation Plan, 2014

The above planning studies are available for review at the Department of Planning and Development Services office, located on the 2nd floor of the Hartford Municipal Building at 171 Bridge Street in White River Junction.

CHAPTER I

HISTORIC AND CULTURAL RESOURCES

INTRODUCTION

A plan for the future without a look into the past is incomplete. Historic structures and sites from earlier periods are the visual record of a town's history. Surviving fragments of history contribute to the individuality of each town and village and lend a sense of continuity. Historic resources should be preserved because they are irreplaceable, contribute to the Town's cultural heritage and tourism base, and enhance the Town's quality of life.

Hartford's historic resources illustrate a range of architecture from the village centers' concentrations of impressive 19th century commercial buildings and residences to the modest one and two story 18th century frame dwellings of early settlers that sporadically dot the rural rolling landscape. Hartford's access to three major rivers and the industrial potential afforded by them, along with the extensive impact of the railroad industry, are factors that distinguish the Town and its historic resources from other communities in the region. The individual village centers of White River Junction, Quechee, West Hartford, Wilder, and Hartford all retain distinct identities, while former active hamlets include Dothan, Jericho, Dewey's Mills, Centerville, and Center of Town.

The purpose of this chapter is to discuss existing local historic sites, 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.

GOAL

The following goal has been adopted for the preservation of Hartford's historic resources:

1. To refurbish, maintain and promote the Town's historical assets where economically feasible or desirable as a drawing card to our area.

POTENTIAL ARCHAEOLOGICAL AREAS

Long before European settlers arrived in the eighteenth century, Native Americans inhabited the Upper Valley. Although archaeological research in the Connecticut River valley is somewhat limited, our proximity to rivers and streams indicates a high potential for Native American artifacts. According to archaeologists, Native American cultures in Vermont date back to 9000-7000 BC. Early Native American settlements tended to locate along rivers and streams. Rivers developed into major communication and transportation corridors. With the Connecticut River, Ottauquechee River, White River and the numerous small brooks and streams flowing through the Town, Hartford holds great potential for prehistoric and historic archaeological areas. To

date, several Native American archaeological sites have been documented in Hartford. This may indicate that more are likely to be discovered in the future.

After European settlement, Hartford's rivers became lined with mills and factories harnessing the water for power. Throughout the Town, cellar holes bear silent witness to early settlers, their houses abandoned as the families moved or in other cases were destroyed by fire. Investigation of these areas as well as mill and dock sites that once lined the bank of the Connecticut River and prehistoric sites could yield useful information relating to the lifestyles of Hartford's early settlers.

In Quechee, old stone fence posts and quarries still exist, remnants of a past industry of this area. Centerville was also an area of industrial activity. The railway station in downtown White River Junction was the connection stop for vacationers taking the old Woodstock Railroad (now Route 4 area) to the station in Woodstock.

The old stone retaining wall and iron rings on stone posts near Wilder Dam, an old gold prospecting site in Wilder, old copper prospecting site in West Hartford, and the Lyman Park Railroad abutment are examples of historic Town features that have archaeological possibilities. Another potential archaeological area of interest includes the original Center of Town.

The record of these ancient times is fragile, and no doubt much has already been lost through vandalism, building, farming, road construction, and from the acidic nature of waterfront soils. Investigation by qualified archaeologists is necessary to determine the actual potential of these areas. Several phase 1 archaeological investigations (which identify potential archaeological sensitive areas and determine if the proposed project design may impact cultural resources) have been conducted in Hartford. However, to date, no comprehensive survey of archaeological resources has been prepared. For more information on archaeology, contact the Vermont Division of Historic Preservation.

OVERVIEW OF TOWN HISTORY

After the French and Indian War, settlers flocked to the open territory west of the Connecticut River. Responding to this influx, Benning Wentworth, the Royal Governor of New Hampshire, chartered Hartford and neighboring towns in 1761. According to the charter, grantees were obligated to till five acres of land for every fifty they owned. In this way, the governor hoped to stimulate settlement rather than land speculation and owner absenteeism. Boundary disputes between New Hampshire and New York jeopardized settlers claims until 1777, when Vermont became an independent colony. In 1791, Vermont entered the Union as the fourteenth state.

Traditionally, the Town of Hartford has been divided into distinct villages or hamlets, each of which contributed to the unique character and economic well being of the Town. Today, the Town recognizes five villages. White River Junction, the largest village in Hartford, has been an attractive commercial and industrial site since the mid-nineteenth century. Its location at the confluence of the Connecticut and White Rivers made White River Junction a natural center for river, rail and highway transportation, and commerce. With the construction of the Connecticut

River Railroad, and the Connecticut and Passumpsic Rivers Railroad in 1848, the Northern New Hampshire Railroad in 1849 and the Woodstock Railroad in 1863, White River Junction became the most important railroad junction in northern New England. Colonel Samuel Nutt, a renowned river boat captain, responded to this industrial expansion brought by the railroad by opening the Junction House in White River Junction, a hotel and public house on the site of the present Hotel Coolidge. Lured by efficient rail transportation and abundant water power, mills and factories flourished along the White River in Hartford Village, the Ottauquechee River in Quechee, and the Connecticut River in Wilder.

North of White River Junction, on the Connecticut River, is Wilder Village. Originally named Olcott, the village changed its name to Wilder in 1899 when a wealthy citizen bequeathed money for a bridge across the river on the condition that the village take his name. In the late nineteenth century, the Olcott Falls Paper Company used the river to power its pulp mill, which manufactured newsprint for city papers. In 1950, the Wilder Hydroelectric Dam was built, replacing earlier dams constructed by the paper company.

The Village of Hartford, just west of White River Junction, was the township's earliest business center. During the 1880s and 1890s, a farm implement factory, a box shop, a chair factory and a hotel made Hartford Village a thriving community. Several fires and floods around the turn of the century crippled Hartford's commercial sector to the extent that it never fully recovered.

During the nineteenth century, West Hartford, located up river from Hartford Village, was primarily an agricultural center and stage stop, in sharp contrast to the villages to its east and south.

Quechee Village, west of White River Junction, developed as another busy manufacturing center during the nineteenth century. The Ottauquechee River, which gives the village its name, also provided abundant water power and a remarkable scenic landscape. In 1836, at the head of the Quechee Gulf, Albert Dewey founded the first woolen mill in the United States to produce shoddy, a textile woven from recycled wool.

Historic districts are depicted later in this chapter.

RESULTS OF THE MASTER PLAN COMMUNITY MEETINGS

During the fall of 2002, the Town undertook a series of community meetings to solicit input from the public regarding the update of the Town Master Plan. The meetings were well-attended. All of the meetings concluded that:

The Town of Hartford is blessed with an abundance of historic and cultural resources that reflect its railroad and industrial past. Participants find that the preservation of these resources is very important to the character and charm of Hartford. Important to this preservation effort are the identification, mapping, and prioritization of key historic and cultural resources. Once completed, the Town should actively distribute this information to landowners, developers, students, and residents by way of fairs, festivals, brochures, and other marketing techniques. Incentives also

need to be identified and distributed to developers, homeowners, and commercial businesses to encourage growth in appropriate areas and to advocate maintenance and preservation of private resources. Finally, zoning and other development guidelines need to be developed/revised to reflect what and how specific resources are to be preserved.

The following is a list of the top three issues identified by community meeting participants:

1. Direct future growth to identify, preserve, and promote what we have;
2. Preserve the village atmosphere through zoning regulations;
3. Implement additional design review processes and tax incentives to encourage preservation and protection of historic and cultural resources.

PRESERVATION ACTION TO DATE

In recent years, responsibility for local preservation and historical activities has been shared by a variety of individuals and groups, as well as local and state officials.

Much valuable information concerning local and area history is contained in two books by John St. Croix: *Pictorial History of the Town of Hartford, Vermont* (1963) and *Historical Highlights of the Town of Hartford, Vermont* (1974). Other sources of local history include the *History of Hartford* by William Howard Tucker (1889), *The Gateway of Vermont: Hartford and Its Villages* by the University of Vermont (1904) and the *History of Windsor County* by Frank R. Holmes and Lewis Cass Aldrich (1891). For other sources, please refer to the bibliography on page 20.

In 1973, the Vermont Division of Historic Preservation surveyed approximately 30 structures and two districts in Hartford significant for their historic and architectural associations.

Between 1975 and 1977 the Hartford Bicentennial Committee was an active force in Town, planning events to celebrate community history as well as the nation's 200th birthday. From the American Revolutionary Bicentennial Administration, the Town received status as an official Bicentennial Community. Numerous events were scheduled in the villages as well as at the Center of Town. During the summer of 1977, as part of a neighborhood corps program, students documented the Town's cemeteries.

The Town also has pursued National Register designation for several historic districts and individual properties. Detailed information is discussed in the “National Register of Historic Places” section of this Chapter.

State, federal and local funds have been instrumental in recent years in making preservation a reality in Hartford. In 1991 the former Gates Memorial Library (now the Good Neighbor Health Clinic) was able to build a new roof, due to the generous support of Hartford's taxpayers and a grant from the Vermont Division for Historic Preservation. The Colodny Building received low interest loans from the Vermont Housing and Conservation Board, the Department of Housing

and Urban Development and the Town of Hartford to renovate the top two floors for senior housing. In 2005, the Center for Cartoon Studies renovated the first floor.

The rehabilitation and adaptive use of various local historic structures has been critical to the visibility and acceptance of preservation concerns. Structures that have found new use include the old Colton Farm (now Hemlock Ridge Barn Condominiums), the old Post Office/Court House (now an office building), the Stonecrest Farm (formerly the Sanderson residence, now a child care facility), the old Freegrace Leavitt Tavern (now a medical arts professional building), and the old Louis Homestead (now Waterman Place).

Structures that have undergone restoration include the Theron Boyd House, Methodist Church (replacement of the steeple), Wilder's Assembly of God Church clock tower, the interiors of the Elks Lodge and Miller Auto, the First Twin State Bank building facade, Magee-Greydon Freeman building (now office and retail), the Train Depot (train station, transportation museum and home of Vital Communities), the Green Building (now retail and residential), the Tip Top Bakery (now office, art studios, and retail), and the Hartford Church. The following table provides the physical locations of the buildings discussed.

Table I-1

IMPROVEMENTS TO HISTORIC BUILDINGS

BUILDING	LOCATION
Good Neighbor Health Clinic	70 N. Main Street, White River Junction
Colodny Building	92 S. Main Street, White River Junction
Hemlock Ridge Barn	16 Hemlock Ridge Drive, Wilder
Old Post Office	46 S. Main Street, White River Junction
Stonecrest Farm	1187 Christian Street, Wilder
Waterman Place	6931 Waterman Place, Quechee
Theron Boyd House	75 Hillside Road, Quechee
Methodist Church	106 Gates Street, White River Junction
Wilder Church	2087 Hartford Avenue, Wilder
Elks Lodge	14 Elk Street, Hartford
Miller Auto	76 Gates Street, White River Junction
First Twin State Bank	28 Gates Street, White River Junction
Magee-Greydon Freeman	42 N. Main Street, White River Junction
Train Depot	100 Railroad Row, White River Junction
Green Building	40 Currier St. White River Junction
Tip Top Building	85 N. Main Street, White River Junction
Hartford Church	1721 Maple Street, Hartford
Wilder Club and Library	78 Norwich Avenue, Wilder
Freegrace Leavitt Tavern	527 Center of Town Road, Rural South

Source: Hartford Lister's Office

The present architectural and environmental character of Quechee Village has benefited from the Quechee Lakes Corporation's efforts to preserve and recreate an "authentic" nineteenth century rural Vermont village as part of the Quechee Lakes four-season resort community. Much of the village's historic fabric has been reconstructed, and the result has been to give this village new vitality. In 1997, Quechee Mill Historic District was designated as a Historic District on the National Register of Historic Places.

PRESERVATION TOOLS

In order to make sure that Vermont towns can preserve their historic heritage, the State of Vermont has enacted a variety of laws that, if applied to the Town of Hartford should assist in successfully preserving many of the Town's historic resources. The various vehicles for preservation available at the private, local, state, and federal levels are summarized below and should be considered.

Private Citizens and Organizations

Much of the responsibility for historic preservation is undertaken by private individuals or groups. Considering the Town's high proportion of older housing units, pride in ownership and regular maintenance alone can produce 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 sometimes compromised, and work done may actually damage the historic features of the building it was intended to preserve. A wealth of specialized information relating to topics sensitive to the needs of older buildings, including the pros and cons of vinyl and aluminum siding, stripping paints, window replacement, and repointing brick, is available from the Hartford Department of Planning and Development Services Office.

In addition to the activities of private citizens, the Hartford Historic Preservation Commission, the Hartford Historical Society and other organizations can enhance the public's awareness of the importance of preserving the Town's historic quality through slide and video shows, research, lectures, interpretive signs, walking tours, pamphlets, and publications.

Certified Local Governments

The Certified Local Governments (CLG) program is designed to provide an opportunity for local governments to become more directly involved in identifying, evaluating, and protecting local properties of historical, architectural, and archaeological significance.

A town government wishing to become a CLG must fulfill certain requirements indicating its commitment to local preservation. One requirement is the establishment of an historic preservation review commission. As the advisory body to the Selectboard and Planning Commission, the Historic Preservation Commission becomes the coordinating body for community preservation activities. It prepares reports on National Register-eligible properties for

the Division of Historic Preservation and prepares applications for matching grants from the CLG share of the state's annual Historic Preservation Fund, if the community chooses to solicit grant funds. The matching grants available to towns that have become a CLG can be used to fund community preservation activities such as survey, National Register, preservation planning, and educational projects.

In 1993, the Town of Hartford became a CLG, one of ten designated by the Vermont Division for Historic Preservation. At that time, the Hartford Historic Preservation Commission was formed. As a CLG, Hartford is eligible to receive assistance and funding through the Division. The purpose of the Commission is to create and maintain a system for the survey and inventory of historic properties within Hartford; review nominations of properties that are under consideration for nomination to the National Register of Historic Places; seek and prepare applications for funding for preservation activities; advise and assist individuals, Boards, and Commissions on matters relating to the preservation of historic resources; and perform additional responsibilities as required.

Recent CLG projects have included a historic walking tour brochure (1996), interpretive signs (1998), design guidelines for Downtown White River Junction (2001), and the following historic district nominations: Quechee Historic Mill District (1995), Hartford Village Historic District (1996), Wilder Village Historic District (1997 & 1998), the Jericho Rural Historic District (1999), Downtown White River Junction (2001), and Christian Street Rural Historic District (2002).

Hartford Historic Preservation Commission

The Commission consists of five members, each of whom serves a three-year term and is chosen for interest, knowledge, or professional skills in the areas of history, anthropology, planning, or related subjects. As part of its goals, the Commission assists individuals and organizations in the preservation and appropriate reuse of historic structures within the Town of Hartford.

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 the Town's architecture, a good inventory is the foundation for other preservation tools and can be used to establish zoning for historic districts or to prepare nominations for the listing of historic structures and districts in the National Register of Historic Places. Data gathered in a survey may encourage greater local citizen appreciation of the built environment. 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 1960s the Vermont Division for Historic Preservation has conducted the State Historic Sites and Structures Survey on a systematic town-by-town basis. The survey is mandated by state and federal law. 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 1973, the Division prepared a survey of about thirty individual structures and two districts in Hartford that were felt to have historical and architectural significance. Copies of the survey can be viewed at the Hartford Historical Society, the Hartford Department of Planning and Development Services, and the Vermont Division for Historic Preservation. In coming years, the Division intends to revise and expand such surveys.

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 as multiple resource areas and generally must be older than 50 years.

Properties in Vermont are nominated to the National Register by the Vermont Division for Historic Preservation. Property owners or Town officials may request that a potential property or district be reviewed for National Register eligibility. Matching grants for the preparation of district nominations are available from the Division of Historic Preservation.

Individual Nominations to the National Register of Historic Places

The following is a list of individual nominations within the Town of Hartford. Additional properties were originally listed individually and later incorporated into one of the Town's historic districts.

Table I-2

INDIVIDUAL NOMINATIONS TO THE NATIONAL REGISTER OF HISTORIC PLACES

BUILDING/SITE/STRUCTURE	LOCATION
Jedediah Strong House	694 Quechee Main Street, Quechee
Marshland Farm	1161 Quechee Main Street, Quechee
Theron Boyd Homestead	11 Hillside Road, Quechee
The Dewey House	505 Deweys Mills Road, Quechee
Quechee Gorge Bridge	Route 4, Quechee

Many other buildings, sites, and structures within the Town are eligible for listing in the National Register.

Historic District Nominations to the National Register of Historic Places

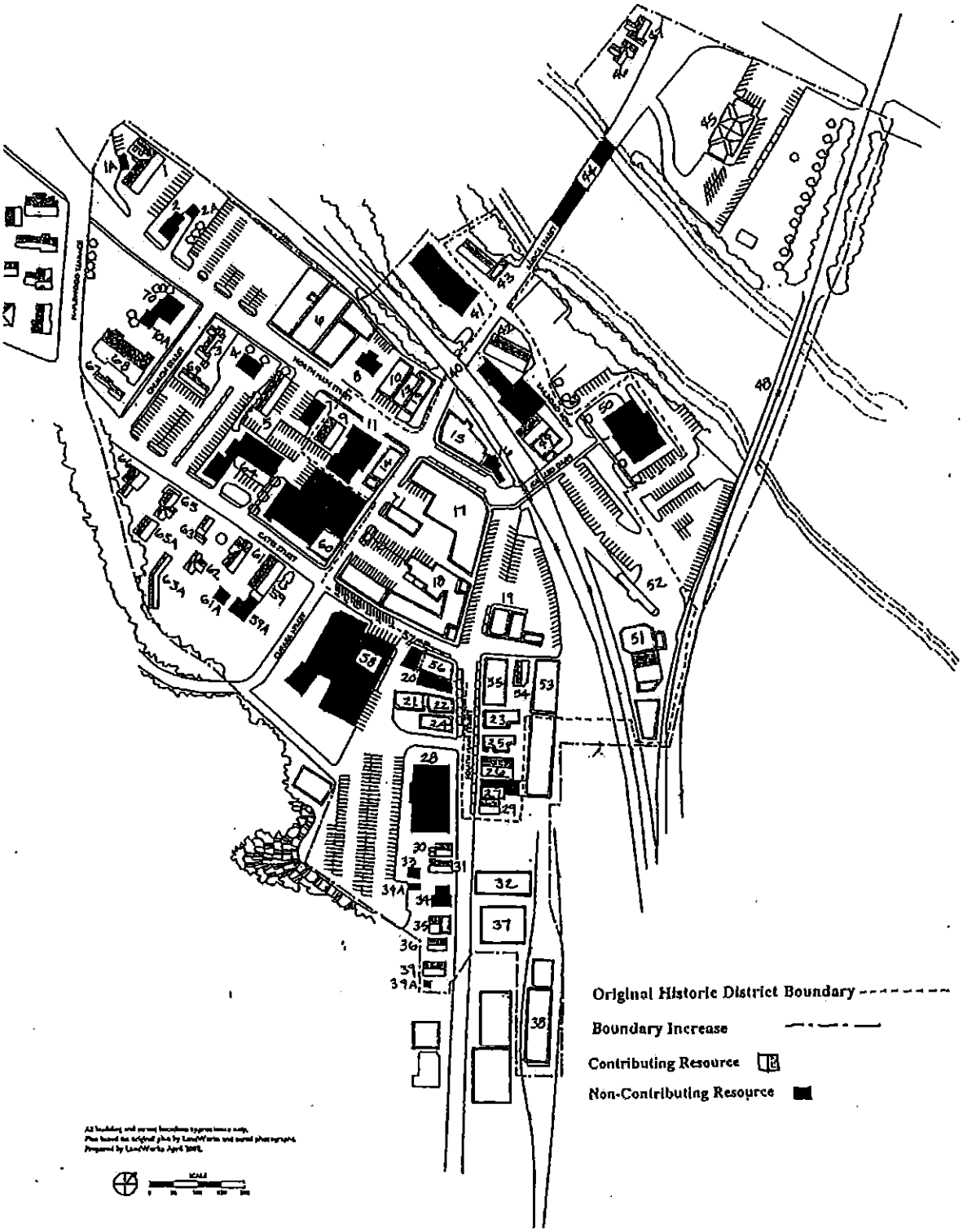
Over the last decade, the Hartford Historic Preservation Commission has directed a great deal of time and effort to the development of historic district nominations to the National Register of Historic Places. Currently, Hartford has seven official historic districts listed on the National Register. In addition, the Taftsville Historic District is a multi-town district (Woodstock, Hartland, and Hartford) that includes three contributing structures in Quechee. The following is a description of Hartford's historic districts.

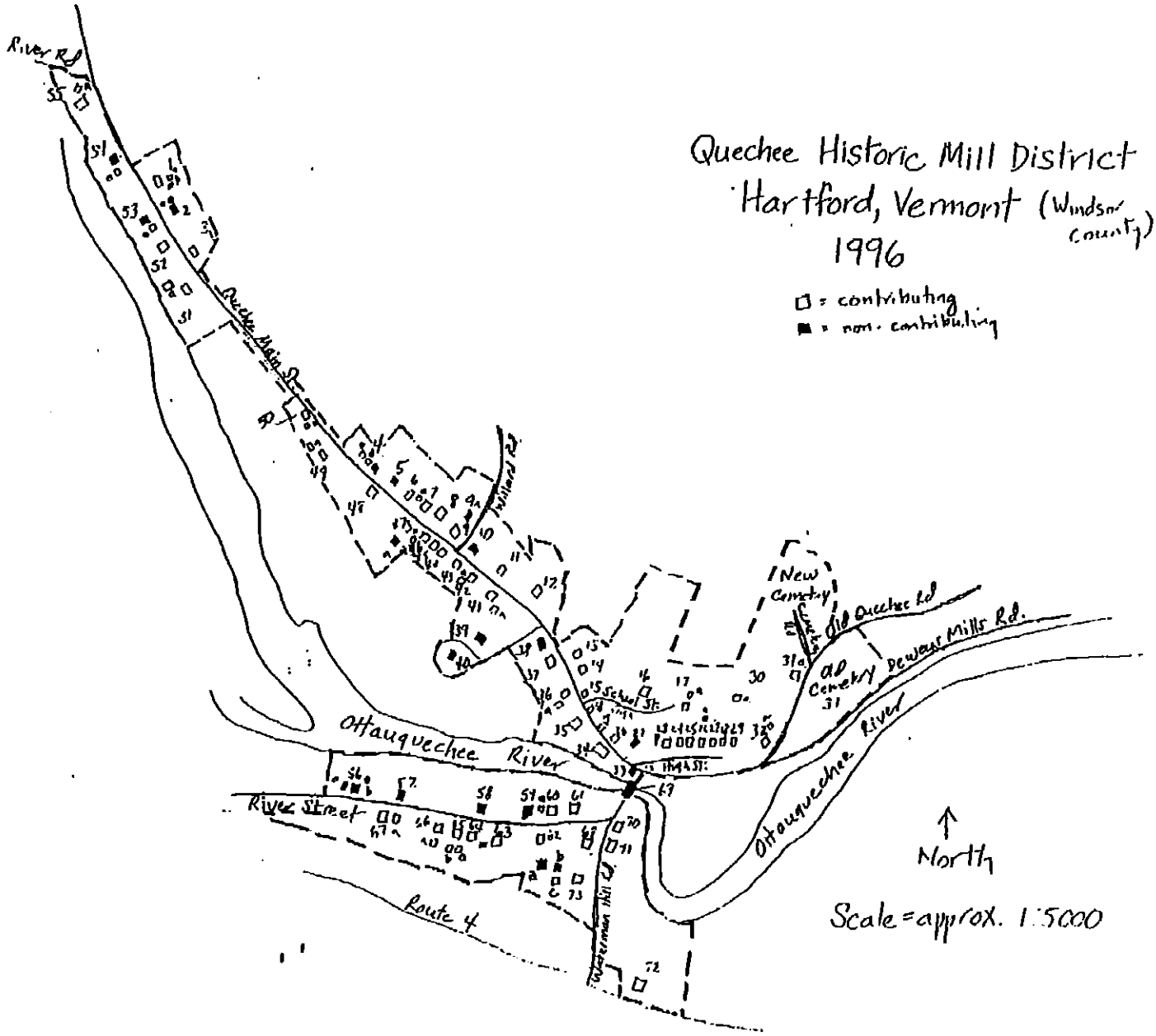
White River Junction Historic District

Originally listed on the National Register of Historic Places in 1974, the district covered the heart of the downtown commercial district and included twenty-nine contributing resources dating back to the mid-nineteenth century. In 2002, the district was expanded to include adjacent residential, educational, transportation, and industrial resources. Presently, there are 53 contributing resources. According to the historic district nomination, "the White River Junction Historic District is significant for its distinctive characteristics as a well-preserved late nineteenth-century urban village. Its significance is based primarily on its location at the junction of several early railroads and at the confluence of the Connecticut and White Rivers. From 1848 to the 1960s, White River Junction was the most important railroad town in Vermont. The nomination also adds that "the historic district's significance also lies in its palette of architectural styles: Italianate, Gothic Revival, Second Empire, Stick Style, High Victorian Gothic, Queen Anne, Colonial Revival, Neo-Classical Revival, Neo-Gothic Revival, International Style, and Art Deco."

Quechee Historic Mill District

Listed on the National Register of Historic Places in 1997, the district includes the heart of Quechee Village and includes 75 contributing buildings, two structures, and two sites dating back to the early nineteenth century. According to the historic district nomination, "the Quechee Historic Mill District is significant as a largely intact and unified Vermont mill village.… Structures in the district comprise a cross section of architectural styles from the early 19th to early 20th century, and in general possess a high level of integrity of location, design, setting, materials, workmanship, feeling and association… Despite the range of building dates and stylistic detailing present, taken together, the structures of Quechee Village form a cohesive unit, united by their history and their compact setting in the scenic valley formed by the Ottauquechee River." Architectural styles include Georgian, Classic Cottage, Greek Revival, Victorian, Italianate, Second Empire, Gothic Revival, Colonial Revival, Renaissance Revival, and late 19th Century Vernacular. The nomination also adds that "despite the loss of portions of the woolen mill, the district is still able to convey its historic context as a mill village."


Original Historic District Boundary
Boundary Increase
Contributing Resource
Non-Contributing Resource

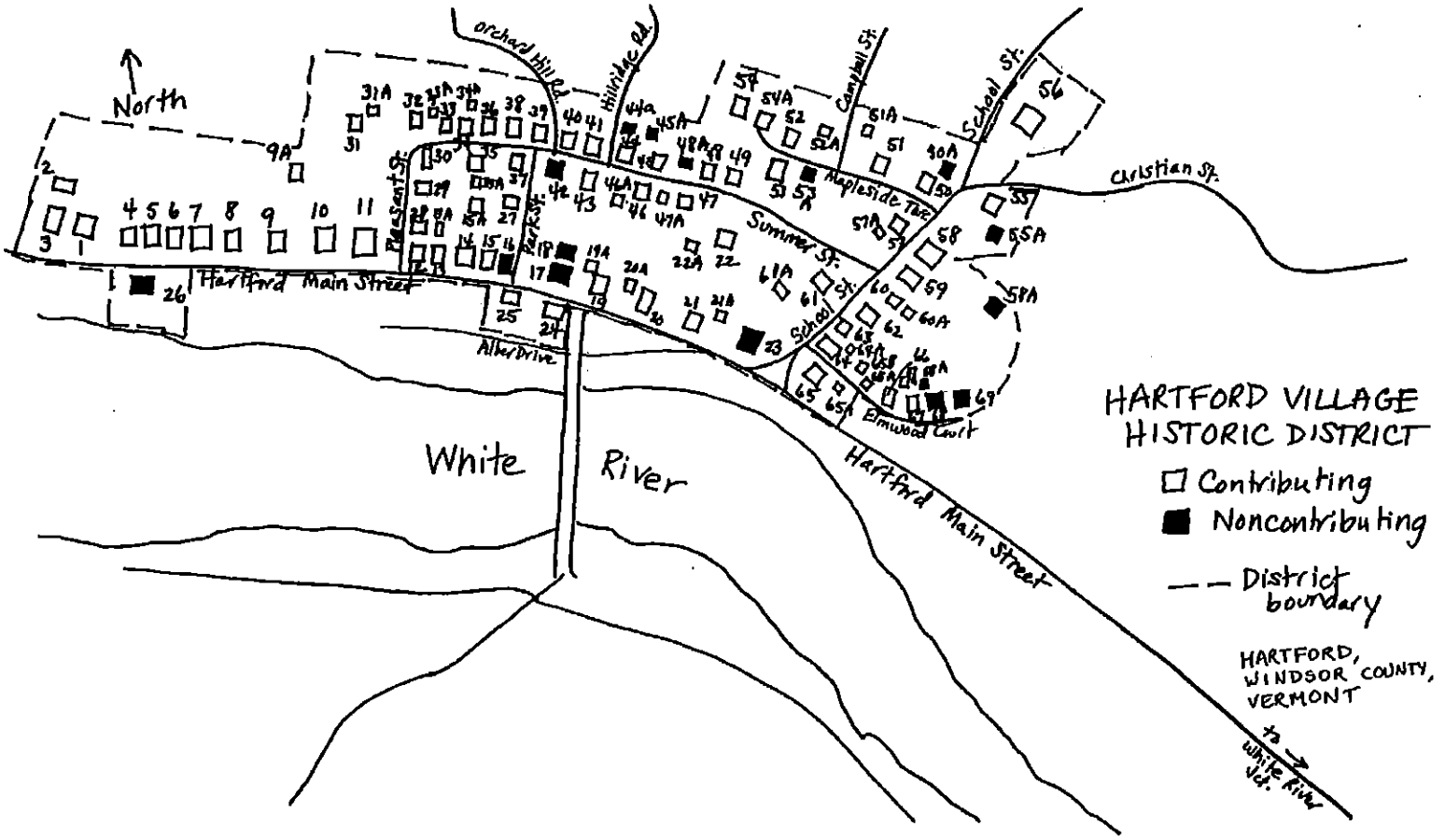

Quechee Historic Mill District
Hartford, Vermont (Windsor County)
1996
□ = contributing
■ = non-contributing
River Rd.
Quechee Main St.
Hartford Rd.
New Cemetery
Old Quechee Rd.
Dewars Mills Rd.
School St.
Old Cemetery
Ottauquechee River
River Street
Route 4
Waterman Hill Rd.
North
Scale = approx. 1:5000

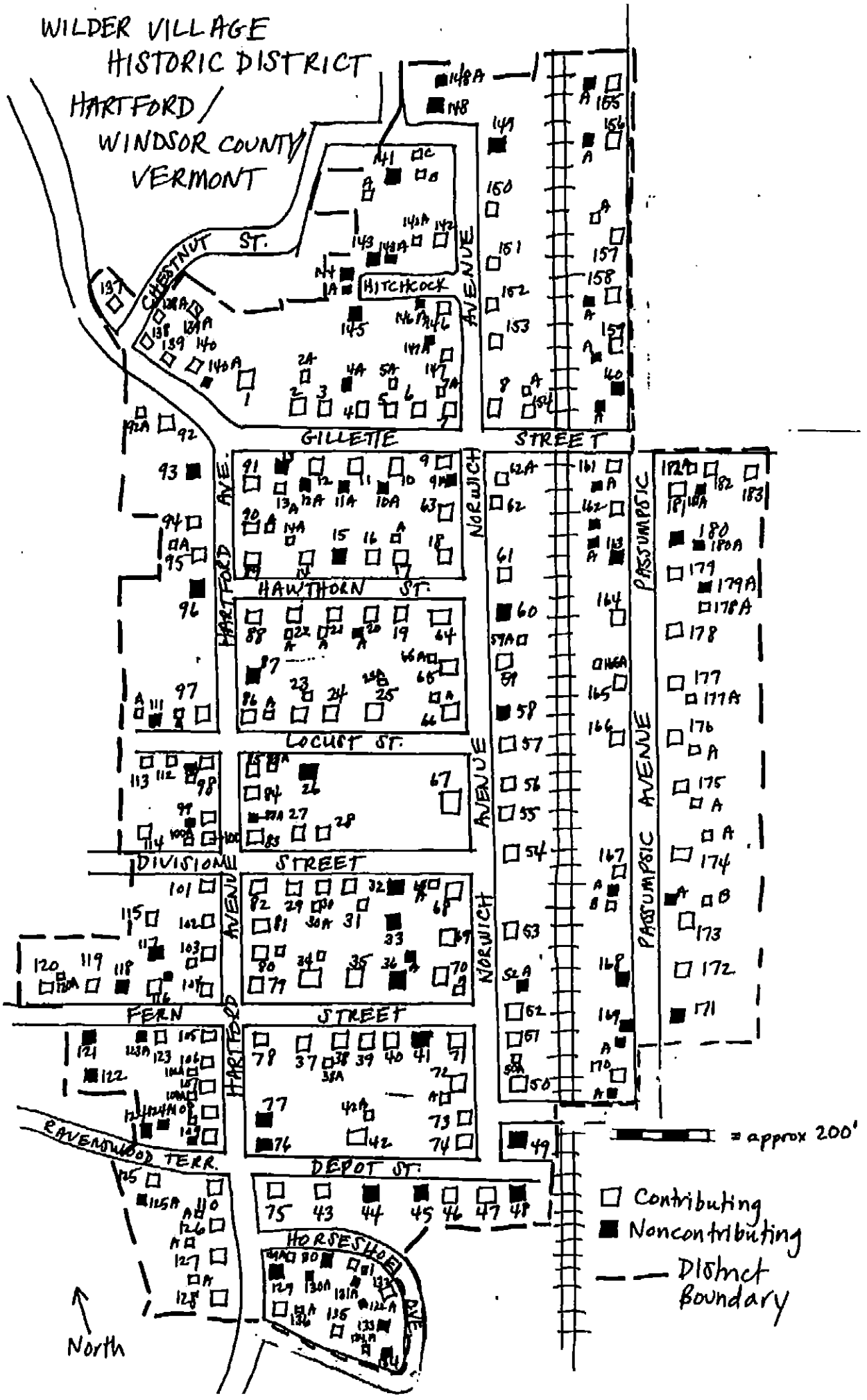
Hartford Village Historic District

Listed on the National Register of Historic Places in 1998, the district includes the heart of Hartford Village and includes 81 contributing buildings dating back to the early nineteenth century. According to the historic district nomination, "in the 19th century Hartford Village was the original center of business and industry in the area, with development fueled by a textile mill, grain mill, chair factory and other industries… Hartford Village Historic District is significant as a largely intact and unified mill village… Despite the range of building dates and stylistic detailing present, taken together, the structures of Hartford Village form a cohesive unit, united by their history and their compact setting in the scenic valley formed by the White River." Architectural styles include Federal, Cape Cod, Gothic, Queen Anne, Italianate, Greek Revival, Colonial Revival, Foursquare, and Bungalow.

Wilder Village Historic District

Listed on the National Register of Historic Places in 1999, the district includes the heart of Wilder Village and includes 202 contributing buildings and one object dating back to the late 19th century. According to the nomination, "the Wilder Village Historic District is significant … as a largely intact and unified late 19th and early 20th century Vermont mill village… The district is significant for being a planned village developed by and for the local pulp and paper mill. It is one of the few planned worker villages in Vermont. The district is a cohesive collection of vernacular architectural expressions from the 19th to the early 20th century and in general possess a high level of integrity of location, design, setting, materials, workmanship, feeling and association. Given the relatively compact area and range of building dates and the limited stylistic variations represented, the structures of Wilder Village form a defined dense and cohesive district, united by their history and the grid plan laid out in the late 19th century." Architectural styles include Queen Anne, Cape Cod, Colonial Revival, Vernacular, and Bungalow.


North
Orchard Hill Rd.
Hillridge Rd.
Campbell St.
School St.
Christian St.
Maplestde Terr.
Summer St.
Pleasant St.
Church St.
Hartford Main Street
Allen Drive
White River
Elmwood Court
HARTFORD VILLAGE HISTORIC DISTRICT
Contributing
Noncontributing
District boundary
HARTFORD, WINDSOR COUNTY, VERMONT
to White River Jct.

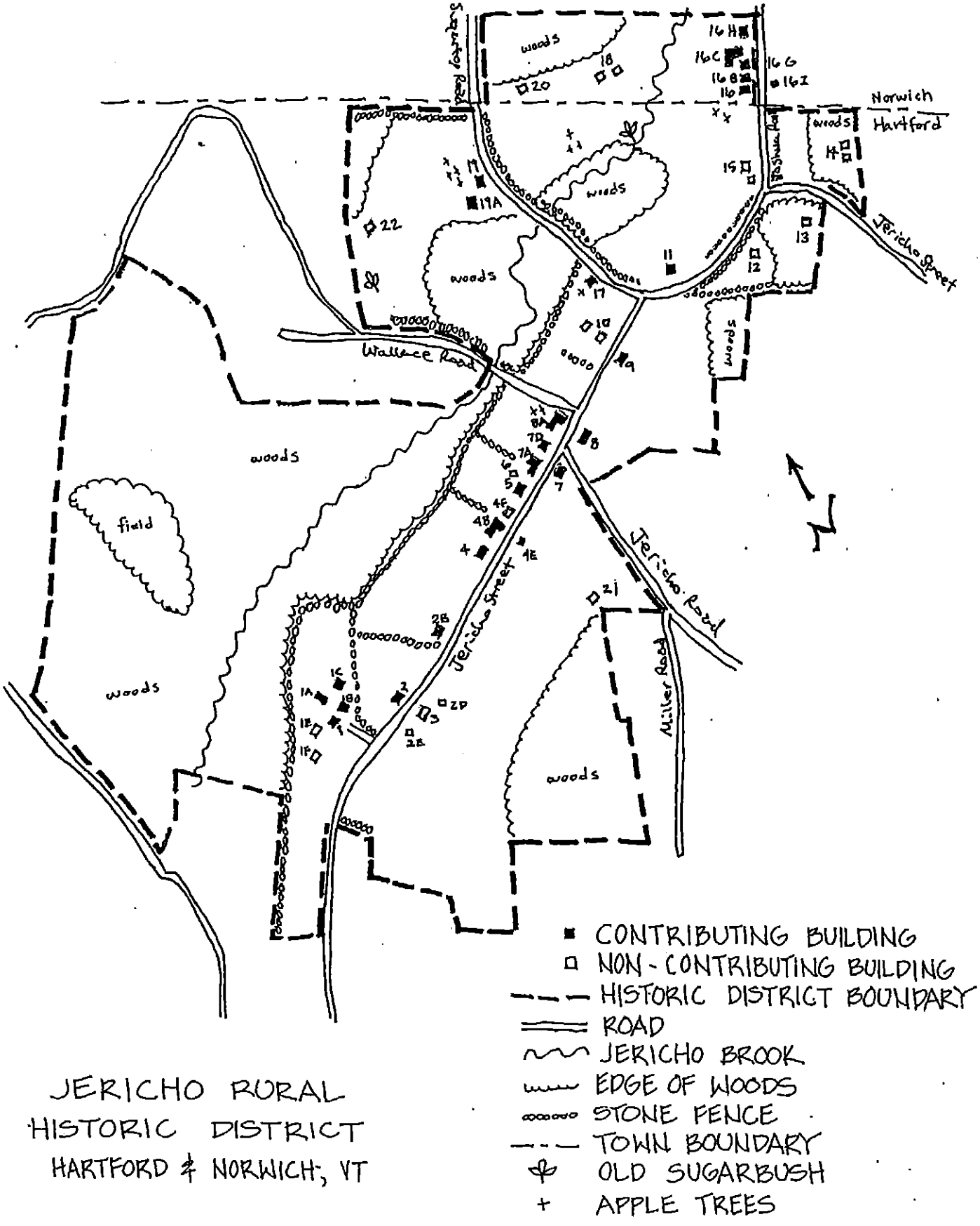

WILDER VILLAGE
HISTORIC DISTRICT
HARTFORD / WINDSOR COUNTY
VERMONT
CHESTNUT ST.
HITCHCOCK
AVENUE
GILLETTE
STREET
HARTFORD AVE.
NORWICH
HAWTHORN ST.
LOCUST ST.
DIVISION
STREET
FERN
STREET
RAVENSWOOD TERR.
DEPOT ST.
HORSESHOE
AVE
PASSUMPSIC
AVENUE
= approx 200'
Contributing
Noncontributing
District Boundary
North

Jericho Rural Historic District

Listed on the National Register of Historic Places in 2000, the Jericho Rural Historic District is an agricultural community located in the north-central area of Hartford and consists of four properties in Norwich. The district includes 43 contributing buildings, 7 sites, and 1 structure dating back to the late eighteenth century to the mid-twentieth century. According to the nomination, "The Jericho Rural Historic District is significant for its distinctive characteristics as a historic Vermont farming community. The nine historic farmsteads in the district depict the architecture and diverse agricultural activities of typical, small-scale Vermont hill farms that evolved from the late eighteenth century to the mid twentieth century. The district retains features such as cleared land, historic agricultural buildings and a one room schoolhouse, which in many areas of Vermont have been lost due to the encroaching forest and disuse… The Jericho Rural Historic District is the most intact rural agricultural area in Hartford and surrounding towns. It is unique for its string of contiguous historic farmsteads with intact historic farmhouses, agricultural buildings, pasture lands, cow paths and stone fences." Architectural styles include Federal, Classic Cottage, Georgian, Greek Revival, and Colonial Revival.

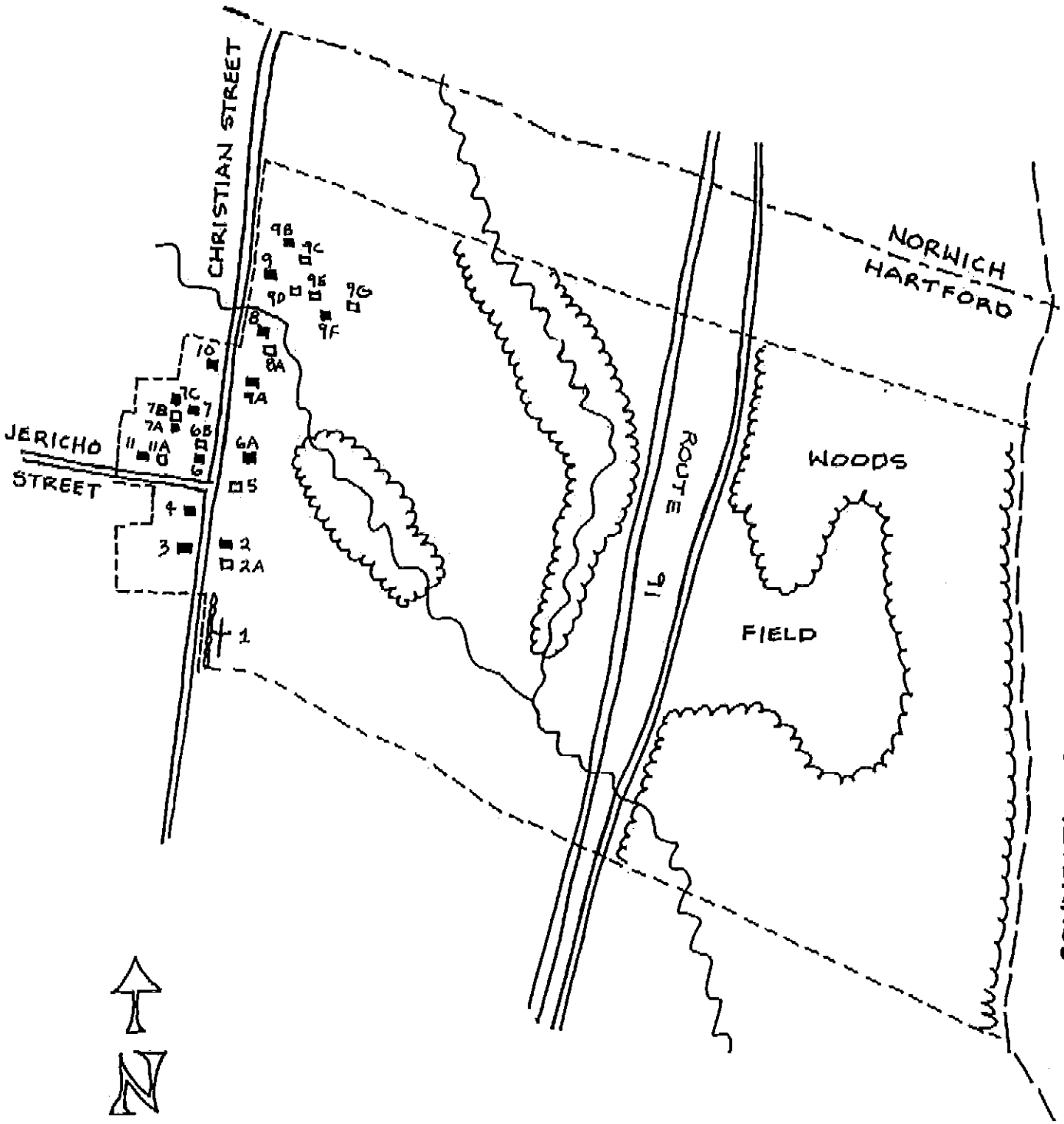
Christian Street Rural Historic District

Listed on the National Register of Historic Places in 2003, the district includes the area near the intersection of Christian Street and Jericho Street in Wilder close to the Norwich Town line and also includes the Brookside Farm extending east across Interstate 91 to the Connecticut River. The district includes 15 contributing buildings and one cemetery dating back to the late 18th century. According to the nomination, the district "is significant for its distinctive characteristics as a historic Vermont agricultural community and as one of the first settled hamlets in Hartford. It retains a cluster of intact farmhouses and several intact outbuildings, a historic cemetery, and a great deal of open agricultural land. The six historic farmsteads in the historic district depict the architecture and diverse agricultural activities of the typical, small-scale Vermont river valley farms that evolved from the late eighteenth century to the mid-twentieth century." Architectural styles include Federal, Greek Revival, Italianate, and Craftsman.



JERICHO RURAL HISTORIC DISTRICT

HARTFORD & NORWICH, VT



CHRISTIAN STREET
RURAL HISTORIC DISTRICT

HARTFORD
WINDSOR COUNTY
VERMONT

- CONTRIBUTING
- NON-CONTRIBUTING
- HISTORIC DISTRICT BOUNDARY
- ROAD
- RIVER BANK
- DOTHAN BROOK
- EDGE OF WOODS
- HISTORIC STONE WALL
- TOWN BOUNDARY

0 0.5

SCALE IN MILES

West Hartford Village Historic District

Listed on the National Register of Historic Places in 2004, the West Hartford Village Historic District was an agricultural and commercial community located on the important transportation corridors of the Central Vermont Railroad and the White River Road. The district includes 39 contributing buildings and two sites dating back to the late eighteenth century to the mid-twentieth century. According to the nomination, "the West Hartford Village Historic District holds significance in Vermont's historic context of industry and commerce, historic architecture and patterns of development, agriculture, and transportation. West Hartford Village was historically the location of a railroad station, a commercial and rest stop along the White River Road, a bridge crossing across the White River, a handful of stores, several industrial establishments, a creamery, and two cemeteries. The village was also supported by an agricultural community that existed during Vermont's agricultural periods of subsistence/ diversified farming, agricultural processing, sheep breeding, orchard farming, and dairying." Architectural styles include a stylistically diverse collection of nineteen historic vernacular houses constructed between 1795 and the 1920s, Greek Revival, Colonial Revival, Federal, Classic Cottage, and Cape Cod.

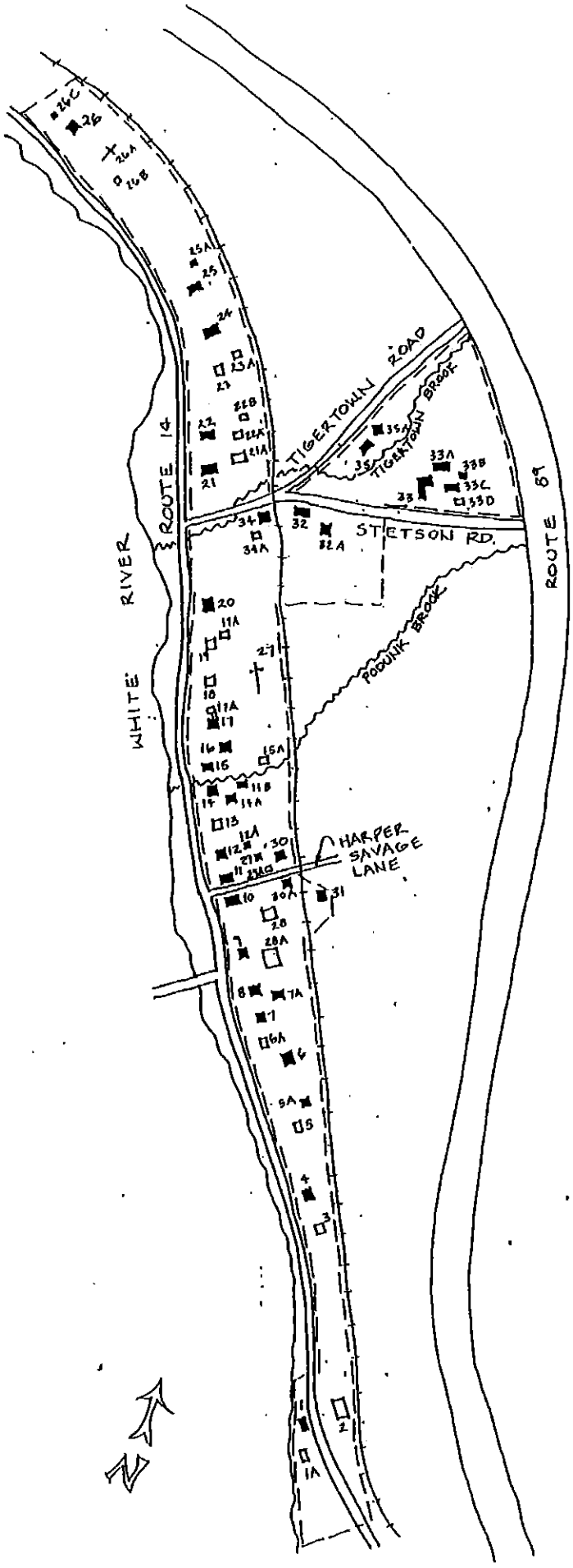
Scenic Roads

The designation of scenic roads can also aid a town in the preservation of rural environs around its historic structures. Currently, there are no locally designated scenic roads in the Town of Hartford, although the Jericho community has, in the past, considered scenic road designation for several Jericho area roads (see Chapter VIII). Route 5 South is listed as part of the Connecticut River Scenic Byway and Downtown White River Junction is designated as an official Waypoint Community.

Design Review Districts

Currently, the most comprehensive preservation tool available to local governments under state law is the creation and administration of a design review district, established through the Planning Commission. According to 24 VSA 4414(E) of Vermont Law, prior to the establishment of a design review district the Planning Commission shall prepare a report describing the particular planning and design problems of the area and setting forth the recommended planning and design criteria to guide development. The White River Junction Design Plan and the White River Junction Design Guidelines were completed in 2001. In 2006, a bylaw amendment was enacted establishing a design review district for Downtown White River Junction. This was followed by the establishment of the Downtown White River Junction as a designated downtown under the Vermont Downtown Program.

A design review district can be created for any area containing structures of historical, architectural, or cultural merit. Many Vermont communities have specifically applied the design review district concept to protect areas of historical significance. Within such a district no structure may be erected, altered, restored, moved, demolished or changed in use or type of occupancy without review by the Design Review Committee and the Planning Commission.



WEST HARTFORD VILLAGE HISTORIC DISTRICT

TOWN OF HARTFORD
WINDSOR COUNTY
VERMONT

- Contributing Resource
- Non-Contributing Resource
- Historic District Boundary
- Road
- Cemetery
- Railroad
- Brook

SCALE: 1" = 400'

Townscape Preservation

State legislation also enables Vermont municipalities to set up local historic districts for the purpose of ensuring the preservation of historically and architecturally significant buildings and areas. By adopting local historic district ordinance, a town's Planning Commission can apply standards to judge the appropriateness of proposed changes to buildings and sites within a historic district.

A local historic district ordinance in Hartford would enable local historic districts to be established in White River Junction, Quechee, Hartford, Wilder, and Jericho if sufficient interest is shown by residents. Such an ordinance would recognize individual landmark buildings or sites worth preserving for their architectural, historical or cultural significance.

If a local historic district ordinance is adopted, business owners could be encouraged to make improvements to the exteriors of their buildings through a series of incentives such as low cost loans, free technical assistance, and tax abatement for such improvements. These incentives have been successfully applied in other Vermont towns.

Federal Investment Tax Credits

The Tax Reform Act of 1986 offers tax incentives of a 20% Investment Tax Credit for substantial rehabilitation of income-producing, certified historic structures. This means that investors can receive a 20% federal tax credit on qualified rehabilitation expenses (i.e. $100,000 in rehabilitation costs can earn a $20,000 federal tax credit). Projects have to meet preservation guidelines found in the "Secretary of the Interior's Standards for Rehabilitation."

All buildings listed individually on the National Register are certified as historic for the purposes of the Tax Act. Those that contribute architecturally or historically to a National Register Historic District are eligible to obtain certification from the National Park Service through the Vermont Division for Historic Preservation. The Rehabilitation Investment Tax Credit can be combined with standard means or methods of depreciation.

State Grants

In 1985 the State of Vermont, through the Division of Historic Preservation, established a program for matching grants to assist non-profit organizations and communities in improvement projects that promote the public enjoyment of Vermont's historic resources. Another source of funding established by the Division is the Barn Preservation Grant Program.

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

Other Preservation Tools

There exist a number of other effective preservation tools, including:

- Historic Building Rehabilitation Tax Incentives
- Revolving Funds
- Scenic Road Designations (see Chapter IX)
- Easements
- Covenants

For more information, please refer to the Resource List on page 25.

DOWNTOWN/VILLAGE REVITALIZATION

Properly treated and maintained, the historic structures of Downtown White River Junction, Quechee Village, Hartford Village, Wilder Village, and several hamlets throughout Hartford contain tremendous potential for economic benefit. In some cases, preservation could prove to be the seed for the rebirth of these areas. Many of the buildings retain significant features, including elaborate brickwork, decorative glass and metal work, intact parapets, and other decorative details absent from buildings constructed today. The rehabilitation of older buildings is sometimes less expensive than new construction. Often taken for granted by those who have grown accustomed to their appearance, Main Street areas present a strong, attractive historical image to tourists and others passing through Town. The quaint Main Street image within Hartford's villages has become a proven formula for attracting tourists, seasonal residents and shoppers from nearby communities. Careful building renovation will erase the signs of deterioration that can eventually undermine the health of a downtown. Building rehabilitation or renovation does not necessarily mean major changes or expenses, nor should it be confused with restoration, in which the appearance of a building is returned to the condition in which it existed at a particular point in time.

Not every building needs major work. Minor repairs, repainting and the removal of coverings that detract from a building can make a big difference. The best renovations are contemporary solutions that respect the architectural features that enhance a building. The scale, proportions, materials, textures, and details of a building should be examined carefully before any renovation. Old photos can be very helpful in assessing a building's potential, uncovering changes that it has seen through time and making decisions about changes to undertake. A well-executed renovation project frequently will act as a catalyst for similar work along the street, enhancing the overall image of the downtown. However, it should be remembered that structures remodeled in a manner not compatible with their surroundings and departing from the character of the downtown can cause serious visual harm to the entire streetscape.

One such program intended to encourage downtown revitalization is the Vermont Downtown Program, which was created in 1998 by the State Legislature. The program enables Towns to pursue designation of their downtowns as Development Districts, thereby affording them access

to a series of tax credits, priority for funding under certain state programs, special grant programs, technical assistance, and other benefits. The Downtown Program has generated considerable interest around Vermont. In 2006, Downtown White River Junction was added to the list of designated downtowns. In 2002, the State Legislature amended the Downtown Program to include villages. The Town is considering applying for designated village status for some of the villages in Hartford.

RESOURCE LIST

The following is contact information regarding sources identified in this chapter.

Hartford Historic Preservation Comm.
c/o Dept. of Planning & Dev. Services
171 Bridge Street
White River Junction, VT 05001
(802) 295-3075

Hartford Historical Society
P.O. Box 547
Hartford, VT 05047
(802) 296-3132

Vermont Division for Historic Preservation
National Life Building, Drawer 20
Montpelier, VT 05620-0501
(802) 828-3226

Preservation Trust of Vermont
104 Church Street
Burlington, VT 05401
(802) 658-6647
http://www.ptvermont.org

US Department of the Interior
National Park Service
P.O. Box 37127
Washington, D.C. 20013-7127

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Landworks, *White River Junction Design Plan*, 2001

Landworks, *White River Junction Design Guidelines*, 2001

Mausolf, Lisa. *1996 Quechee Historic Mill District Nomination*

Mausolf, Lisa. *1998 Hartford Historic District Nomination*

Mausolf, Lisa. *1999 Wilder Village Historic District Nomination*

Sagerman, Paula. *2002 White River Junction Historic District Nomination*

Sagerman, Paula. *2000 Jericho Rural Historic District Nomination*

St. Croix, John W., *Pictorial History of the Town of Hartford, Vermont*, Equity Publishing Corporation, Orford, New Hampshire, 1963.

St. Croix, John W., *An Album of the Town of Hartford, Vermont, 1761-1969*, Right Printing Co., Inc., White River Junction, Vermont, 1969.

St. Croix, John W., *Historical Highlights of the Town of Hartford, Vermont*, Imperial Company, Hartford, Vermont, 1974.

The Gateway of Vermont: Hartford and Its Villages by the University of Vermont, 1904.

The Old and The New: Hartford Congregational Church, Cummings the Printer, White River Junction, Vermont, 1899.

The Old and The New: Hartford Library, The Ladies Reading Club, Hartford, Vermont, 1901.

The Old and The New: Hartford Vermont, Second Congregational Society, Hartford, Vermont, 1910.

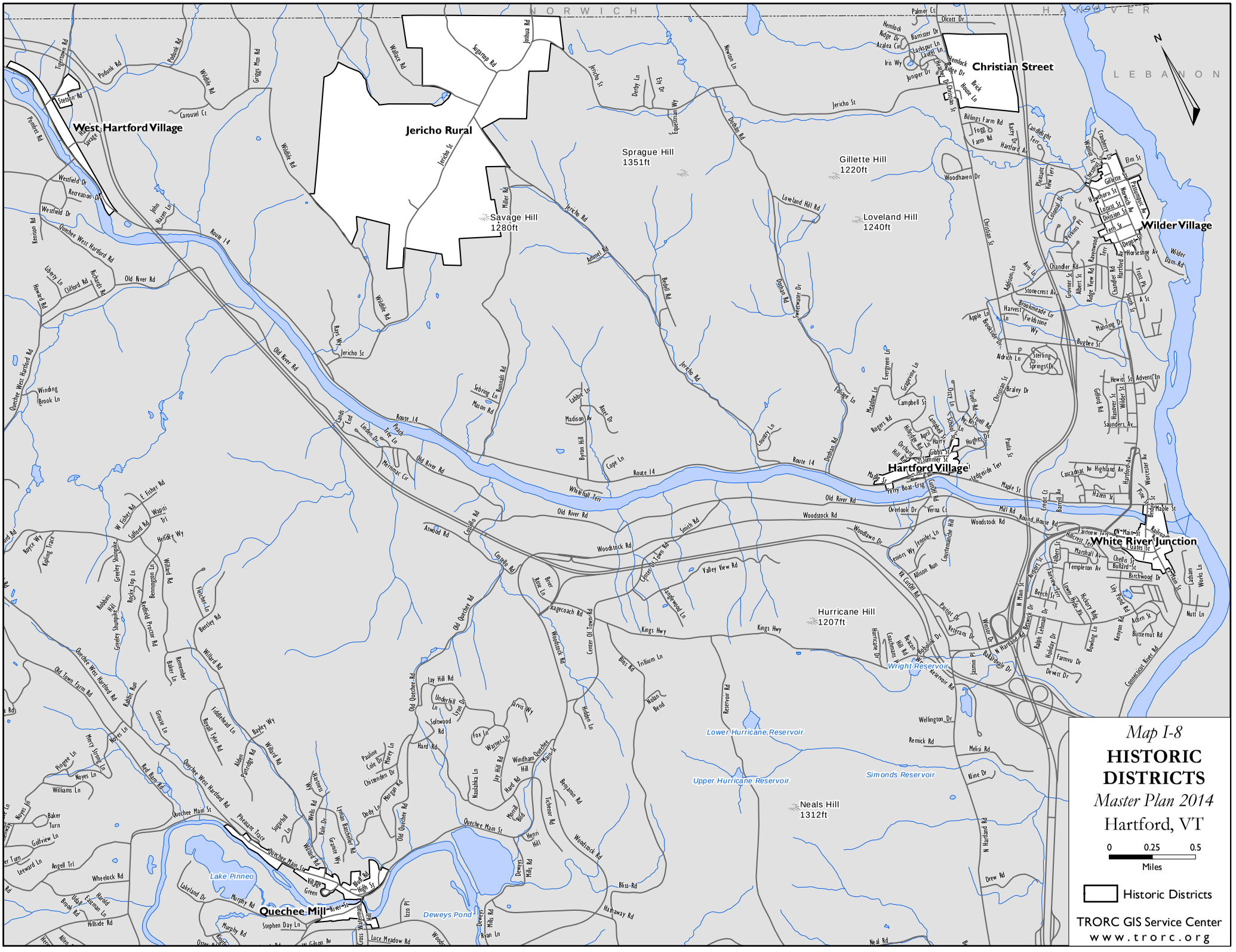
Tucker, William Howard, *History of Hartford*, The Free Press Association, Burlington, Vermont, 1889.

RECOMMENDATIONS

1. Work with the Hartford Historic Preservation Commission and the Hartford Historical Society to promote the preservation, recognition, enhancement, and appropriate use of the Town's historic and cultural resources.
2. Encourage the public's interest in the Town's historic and cultural resources in a variety of ways, including:
    a. displaying photographs, artifacts, and murals in the Town's public and commercial buildings;
    b. displaying markers/interpretive signs at key historic structures and sites;
    c. establishing self-guided walking tours of the Town's historic districts;

d. developing a brochure describing the Town historic resources and districts in order to attract tourists to Hartford;
e. arranging guided tours of the Town's historic structures and sites;
f. encouraging the study of local history in the school curriculum; and
g. encouraging the development of oral history projects.

3. Provide village and School libraries with materials on the Town's historic and cultural resources and encourage them to make those materials as accessible to the public as possible.
4. Encourage the protection, enhancement, and renovation of the Town's significant architectural and historic resources.
5. Continue listing eligible historic structures, sites and areas on the National Register of Historic Places.
6. Consider establishing a Hartford Register of Historic Places modeled on the Vermont Historic Sites and Structures Survey.
7. Consider designating certain rural roads within Town (such as the Jericho and Dothan areas) as "Scenic Roads."
8. Keep historic documents in secure, floodproof, and fireproof locations.
9. Encourage expansion of the 1973 Historic Sites and Structures Survey for Hartford prepared by the Vermont Division for Historic Preservation.
10. Use Community Development Block Grant Funds and other grants to rehabilitate the Town's older housing stock.
11. Continue to support the revitalization of Hartford's village centers.
12. Consider establishing historic zoning districts [pursuant to 24 VSA 117, 4407(15)].
13. Market and promote the historic and architecturally significant features of the Town's village centers to encourage tourism and the rehabilitation and reuse of existing historic structures and sites.
14. Develop a long-term plan to inventory, interpret, and preserve the Town's archaeological sites and to foster public awareness and appreciation of those sites.
15. Consider the development of a sign guide to assist business owners in historic districts in creating appropriate signs.
16. Assist landowners who wish to evaluate the potential of historic buildings to be used for new uses by applying for "pre-development grants" for architectural plans and specifications, historic structures reports, engineering studies, archaeological testing, and feasibility studies, etc.
17. Encourage public off-site, off-street parking in the Village centers to ensure that the landscaped areas around historic structures are conserved to the greatest extent possible.
18. Continue working toward qualifying Hartford’s village as designated villages under the Vermont Downtown Program.


NORWICH
HANOVER
LEBANON
N
West Hartford Village
Jericho Rural
Christian Street
Sprague Hill
1351ft
Savage Hill
1280ft
Gillette Hill
1220ft
Loveland Hill
1240ft
Wilder Village
Hartford Village
White River Junction
Hurricane Hill
1207ft
Neals Hill
1312ft
Lower Hurricane Reservoir
Upper Hurricane Reservoir
Simonds Reservoir
Wright Reservoir
Lake Pinneo
Deweys Pond
Quechee Mill
Route 14
Old River Rd
Woodstock Rd
Kings Hwy
Quechee West Hartford Rd
Quechee Main St
Jericho St
Old Quechee Rd
Stagecoach Rd
Center Of Town Rd
Reservoir Rd
Dothan Rd
Christian St
Maple St
Main St
Bridge St
Railroad St
Connecticut River Rd
Map I-8
HISTORIC DISTRICTS
Master Plan 2014
Hartford, VT
0 0.25 0.5
Miles
Historic Districts
TRORC GIS Service Center
www.trorc.org

CHAPTER II

LAND USE

INTRODUCTION

Existing land use patterns are the physical expression of numerous public and private decisions that have been made in the past. In turn, these patterns have a substantial impact on the rate, location, and type of growth that will occur in the future.

Land use considerations are closely related to all other facets of community planning. All the chapters of the Master Plan relate in some way to land use. For example, the economic development or housing recommendations are, in part, land use recommendations since those sections recommend the allocation of land for commercial, industrial, or housing use.

Much of Hartford's land use planning and decision-making revolves around the appropriate use of our manmade and natural resources. Manmade resources include public water and wastewater systems, the road network, parking lots, public and private buildings, farms, and recreational facilities. Hartford's natural resources include forests, agricultural lands, surface and ground water, scenic views, clean air, wildlife, minerals, and soils. They present both opportunities for and constraints on development and must be conserved so as not to preclude their continued use. Over time, development in Hartford has shown that some areas are naturally better suited for a particular use than others. If Hartford is to use its resources wisely and provide a high quality of life for its citizens, the capacity of Hartford's natural and manmade resources to accommodate development must be respected.

Five major considerations have informed the analysis of land use and projections for the future. As described in this chapter, they are: (1) community vision, (2) build-out analysis (3) existing and historic land use patterns, (4) natural constraints on development, and (5) strategies and recommendations for guiding future development.

COMMUNITY VISION

Public Participation Process

In the summer of 2002, the Town initiated a public participation process for the update of the Town Master Plan. A Master Plan Steering Committee, made up of representatives from Town Commissions and organizations, was formed. That fall, six community meetings were held throughout Town to seek input from residents regarding a vision for the future of Hartford. The meetings resulted in a strong public consensus with several clear messages from the participants:

- the importance of maintaining a high quality of life;
- concerns over cost of living and the ability of government to provide adequate services in an efficient manner, and

- the inter-relationships of many of the topic areas and the potential for integrative solutions and regional approaches to land use planning, growth, development, and related infrastructure.

Participants agreed that development should occur in already developed areas in order to preserve the Town's natural assets. Appropriate zoning changes should be made to help promote growth in suitable areas, such as increased density, implementation of transfer of development rights program, and development of overlay districts. Community workshops indicated that participants view rivers and access to them as one of the Town's most important assets, and steps should be taken to help preserve them. Connectivity between natural areas is essential and the Town should coordinate with neighboring towns, the Regional Planning Commission, and the business community to help maintain these significant resources.

In addition to the six community meetings, two focus group discussions looked closely at several planning issues. In the spring of 2003, Phase I of the Master Plan was completed. The Planning Commission held a public hearing, approved the Draft Plan, and forwarded it to the Hartford Selectboard. The Selectboard held two public hearings and adopted the Master Plan later that summer. Phase I involved the update of the following sections: historic and cultural resources, population, economic development, community facilities and services, utilities, and natural resources.

Phase II of the Master Plan included land use, housing, transportation, and some changes to community facilities and services and utilities and began in the fall of 2003. The first task was the update of the 1996 build-out analysis (described later in this chapter). A community meeting was in April 2004. The public requested more detailed land use recommendations. Over the next two years, the Master Plan Steering Committee developed recommendations for the village and rural areas and presented them at several community meetings. The following summarizes the community's vision based on input gathered from the public at the community meetings.

1. Increase density in already developed areas with infrastructure (water & wastewater, close to community facilities & services and served by public transit).
2. Manage density of future development.
3. Protect scenic areas, open space, and wildlife corridors.
4. Preserve Hartford's historic settlement pattern, defined by compact villages surrounded by rural countryside.
5. Maintain the character of Hartford's rural countryside and support agriculture, forestry, and recreational uses in these areas as well as carefully planned low-density residential uses.
6. Maintain and enhance Hartford's heritage of working farm and forest lands as part of a sustainable, environmentally sound, local resource-based economy.
7. Maintain and enhance the open space and recreational "infrastructure" important for long-term health and quality of life of Hartford residents.

BUILD-OUT ANALYSIS

A Build-Out Analysis of the Town based on existing zoning at that time, addressed the question: How would the Town develop under the current zoning? The Two Rivers Ottauquechee Regional Commission and Town Department of Planning and Development completed an update of the 1996 build-out analysis for the Town of Hartford in 2004 and 2005. It was intended to provide an overall picture of where development will occur across the Town rather than a focus on specific parcels.

Method: To complete the analysis, a tax parcel map was combined with the zoning map using a mapping process known as Geographic Information System or "GIS." This combination map shows total development area for each tax parcel using zoning district data on minimum lot size or dwelling units per acre. Then, using existing housing unit data, the density for existing units was subtracted from the total developable area for each tax parcel. The resulting map provides a visual and numeric estimate of the remaining developable area for each tax parcel with markers representing the maximum number of potential dwelling units for each parcel. Markers were randomly placed on the parcel and have no relation to where units could be placed.

Assumptions: The build-out analysis entailed several assumptions.

- Multiple Unit Dwellings were averaged to four units per existing E-911 property address.
- Residential development in the Central Business, Highway Commercial, and Industrial Commercial districts was excluded.
- Commercial growth was not assumed because it is difficult to predict.
- Expansion of the areas served by Town water and wastewater could not be assumed nor could unlimited capacity within current service areas.
- Quechee Lakes and other existing planned unit developments were excluded since the maximum number of allowed units is already set.
- Slopes, soil types, and on-site septic capacity were not considered.
- Agricultural and/or Wildlife Overlay Districts were not considered.
- Adjustments for planned unit development density bonuses were not considered.

In zones with calculations for dwelling units per acre, adequate minimum lot sizes were presumed. This could result in either over or under-estimates of density, depending on the zone.

Interpretations: Rural zone projections may overestimate development potential in some areas because the analysis could not consider natural limitations to development. However, these estimates do not consider the effect of density bonuses from rural planned unit developments, which have been relatively uncommon in recent years. Village zone estimates were calculated using dwelling-unit values, and do not reference lot size, setback, or parking requirements so these values may overstate development potential as well. The estimates cannot capture all of the variables that determine new development on an individual parcel, but they do help make useful comparisons and projections across different neighborhoods in Hartford.

Results and Comparisons

Map BO-1 shows the projected number of existing and new dwelling units that were possible under the Pre-2008 zoning. The map provides a quick examination of development trends, i.e., are the new housing units being built where the community hoped they would be built. In addition to the maps, the analysis generated Table II-1, indicating development potential by zoning district.

Table II-1
Distribution of Potential Residential Development Under Pre 2008 Zoning

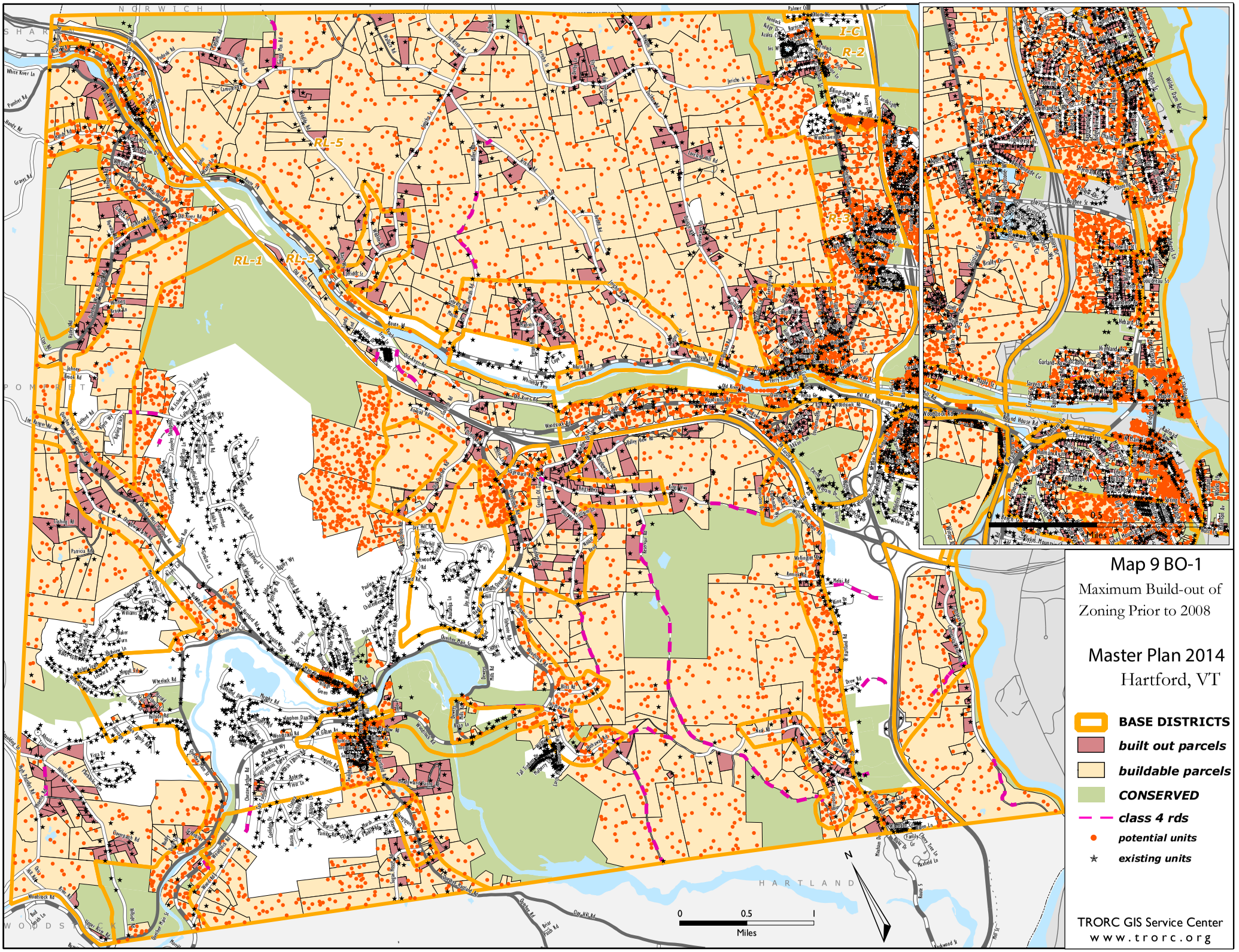
Zone	2004 Distribution	Potential Build-out with Pre 2008 Zoning
	% UNITS	% UNITS
QG	0.0	0.1
QII	0.0	0.8
R-1	18.3	13.9
R-2	27.7	17.9
R-3	15.8	15.7
RC-2	4.6	7.9
VB	0.3	0.4
VR-1	1.7	0.8
VR-2	0.6	0.5
VR-C	2.2	1.0
RL-1	6.7	13.4
RL-3	10.1	8.6
RL-5	11.9	19.2

A summary of Table II-1 results in the following distributions for residential development (excludes Quechee Lakes and other Planned Developments and the CB/HC/IC zoning districts).

	Rural	Village/In-Town
Existing 2004	29%	71%
Pre 2008 Zoning Build-out	41%	59%

Relationship to the Community Vision

These results indicated clearly that Pre 2008 zoning parameters would not help the Town achieve the vision our community articulated in many forums. The results of the build-out analysis were presented at a community meeting in April 2004. The participants overwhelmingly reaffirmed the 2002 vision and requested that the Master Plan Steering Committee develop specific land use recommendations to guide the Town toward the community vision. To do this, the Master Plan Steering Committee first needed to thoroughly examine the existing land use patterns, natural constraints to development, historic land use patterns, and recent land use trends. The following sections summarize the information reviewed.


RL-1
RL-3
RL-5
R-2
R-3
I-C
Map 9 BO-1
Maximum Build-out of Zoning Prior to 2008
Master Plan 2014
Hartford, VT
BASE DISTRICTS
built out parcels
buildable parcels
CONSERVED
class 4 rds
potential units
existing units
0
0.5
1
Miles
TRORC GIS Service Center
www.trorc.org

EXISTING AND HISTORIC LAND USE

The development of the Town's land has gone through several changes as the economic emphasis has shifted from one period to another. Until the 1830s, the population was sparse and mainly limited to certain areas adjacent to the Town's three rivers. Over 90% of the land area was undeveloped woodland. During the next fifty years, roads were made into undeveloped acreage for lumber and for the clearing of land for pastures, which greatly increased the percentage of developed land. With the growth of industry, the population shifted to the five compact villages, many outlying farms were abandoned, and much of the cleared land was taken over by second growth forest. The mills were active until the 1950s.

During the 1960s, the interstate highways were built. This stimulated commercial growth around the interchanges of I-89 and I-91 and Route 4. It also resulted in increased residential development throughout the Town and region. During this period, there also was a corresponding decrease in economic activity in Downtown White River Junction, and Quechee Lakes Development began in the late 1960s.

Hartford currently has zoned 82.2% of its lands as Rural Lands, 10.1% as Residential, 4.2% as Industrial-Commercial/Highway Commercial and 3.5% as mixed-use districts. In rural districts, much of the land is farmland and woodlands. Map II-6 presents the Town's current land use patterns.

Developed Land

About 20% of Hartford's land area is developed. The term "developed" is defined as lands containing built structures or infrastructure such as roads, parking lots, railroads and recreation facilities. All remaining land is categorized as "undeveloped." Although agricultural uses modify the state of natural lands, they are included in the undeveloped land classification. Once abandoned, agricultural lands generally revert to natural forests within a decade.

Undeveloped Land

About 80% of Hartford's land area remains undeveloped. The large amount of undeveloped land is a reflection of a number of factors, including natural constraints of the land that inhibit development, large landholdings in public and private ownership, and limited demand for development. More than one-third of the land in Hartford is on slopes greater than 15% and is therefore not easily developable. However, if the real estate market pushes the cost of land upward, it is likely to result in more development on steep slopes and other sensitive or marginally developable lands. In addition to higher site preparation costs, such development can result in higher levels of erosion, sedimentation, and flooding if not properly designed.

Undeveloped lands can be separated into a number of categories. While sufficient data is not available to estimate the acreage for each category, a discussion of the importance of these uses of land is provided below.

Forests

The major portion of Hartford's land area lies under forest cover. Like most communities throughout the Upper Valley Region, Hartford's forests represent an important natural resource and serve a wide range of functions and benefits, including:

- A renewable supply of fuel, lumber, and other wood supplies;
- An effective natural system that stabilizes soil, particularly on steep hillsides;
- Natural habitats for wildlife;
- Areas for outdoor recreational opportunities and educational and ecological research;
- Natural buffers between incompatible land uses;
- Systems for purification of the air and water; and
- Scenic views.

Over the last three decades, the demand for lumber and finished wood products, as well as high heating costs and the availability of wood as an abundant, alternative fuel, has increased the attractiveness of timber harvesting to woodlot owners. Much of the commercially marketable forest land in Hartford is located on steep topography, posing a significant problem not only to the logistics of timber harvesting but also to the environmental stability of these lands. Policies concerning forestry management are discussed in Chapter IX (Natural Resources).

Agricultural Lands

As many Vermont communities have experienced, farming in the Town of Hartford has undergone dramatic changes over the last century. Farmers have moved from sheep to cattle to dairy industries, and agriculture acreage has diminished greatly as farms and fields have been sold for residential development and commercial use. These changes have caused the loss of considerable prime agricultural soil. Still, Hartford contains substantial deposits of agricultural soils throughout the Town. These deposits have been classified by the U.S. Natural Resources Conservation Service (NRCS) as prime agricultural soils based on a combination of texture, nutrient, and moisture content capable of producing high crop yields. The Town has a prime agricultural soils layer on the natural resources map. The NRCS completed soils identification maps for the Town in 1992. Information may be obtained at the NRCS White River Junction office or viewed at the Hartford Department of Planning and Development Services. Hartford's agricultural reserves are limited. Any additional loss of existing or potential farmland, especially the breakup of large contiguous parcels of agricultural lands, could undermine the future logistic and economic viability of farming in Hartford.

DEVELOPMENT AND OUR NATURAL RESOURCES

Steep slopes, flood-prone areas, wetland soils, and the presence of bedrock at or near the surface can serve as major constraints on development. While it is, at times, possible to overcome such natural constraints through intensive engineering, this is often a costly and elaborate process. Efficient and environmentally sound planning seeks to guide growth into those areas already having

adequate natural capacity to support development. More detail regarding each of the topics below is included in Chapter IX.

Surface Drainage

Understanding the direction of water flow and knowing the size of natural drainage areas is another important factor in the analysis of Hartford's land capability. Manmade development that alters the natural drainage and filtering of rainwater can lead to increased soil erosion and can adversely affect water quality and wildlife. Such effects may be the result of catastrophic single events or long-term cumulative effects of seemingly minor changes in surface drainage associated with land use.

Wetlands

Wetlands are Vermont's most productive ecosystem and serve a wide variety of functions beneficial to the health, safety and welfare of the community. Important considerations for land use and zoning decisions include: (1) retaining stormwater runoff, reducing flood peaks, delaying flood crests, and thereby reducing flooding; (2) protecting the quality and quantity of ground water; (3) improving surface water quality by storing organic materials, chemically breaking down or removing pollutants, and by filtering eroded sediments and organic matter from the surface runoff; (4) providing a wide diversity of habitat for wildlife, including waterfowl, birds, mammals, fur-bearers, amphibians and reptiles; (5) providing habitats that are critical for the survival of rare, threatened, or endangered species of plants and animals; and (6) providing spawning, breeding, and general habitat for fish.

Floodplains

Floodplains, as distinct from surface drainage, are the periodically inundated flatlands adjacent to rivers and streams. Development in floodplains presents some specific problems, including: (1) a high probability of property damage during flooding, (2) the restriction of periodic water storage resulting in potentially greater flooding, and (3) the increased likelihood of erosion and sedimentation. The latter factor can cause increased turbidity of water in rivers and streams.

Effective July 1, 2014, municipalities in Vermont are required to have a Flood Resilience Plan as a component of the Municipal Plan. The State allows the use of a local hazard mitigation plan to meet the requirement. The Town of Hartford first adopted a Hazard Mitigation Plan in 2008, which met the minimum FEMA requirements. Since then, FEMA has expanded the requirements of hazard mitigation plans. Also, in 2011, Tropical Storm Irene resulted in extensive flooding in Hartford. In response to the new FEMA requirements along with lessons learned from the Irene Flood, the Town began the update of the Hartford Hazard Mitigation Plan in 2013. Through a FEMA grant, Hartford was selected to be part of a demonstration project. A planning consultant was hired to work with the Town. The result was a much more involved planning process and a more extensive and detailed hazard mitigation plan. The Town intends to use the updated Hazard Mitigation Plan as the required “flood resilience plan” as allowed by the State of Vermont. The Town hereby incorporates the Hazard Mitigation Plan into this Master Plan by reference.

According to State Statute, flood resilient communities are encouraged. This involves avoiding development in flood-prone areas, protection of and restoration of floodplains and upland forested areas and flood emergency preparedness and response planning. In addition, Statute requires a flood resilience plan to include recommended policies which protect public safety, critical infrastructure, historic structures and municipal investments. The policies of the Hartford Master Plan and the Hartford Hazard Mitigation Plan meet these State requirements.

The Statutes also note that a flood resilience plan identify flood hazard and fluvial erosion hazard areas and designate those areas requiring protection to reduce the risk of flood damage. Currently, the Town has FEMA prepared flood maps, but is awaiting fluvial erosion hazard mapping by the Vermont Agency of Natural Resources. Once fluvial erosion hazard mapping is completed, the Town will utilize the mapping to address flood damage to improved property and infrastructure.

Steep Slopes

Much of Hartford's natural beauty derives from the Town's hilly terrain. Poorly designed development on highly visible steep-sloped areas could adversely affect a scenic vista and detract from the surrounding beauty.

The slope or steepness of land is defined as a change in elevation over a given distance and is expressed as a percentage. The degree of slope has a clear impact on the suitability of a particular site for development. Generally, as the slope of the land increases, the range of the appropriate land uses diminishes.

Areas having low to moderate slopes (0 - 8%) are considered to have minor limitations for most types of development. Higher density uses such as commercial and industrial development, apartment complexes, and roads and highways are usually best suited for lands that are moderate or low in slope.

Slopes between 8 and 15% may have moderate limitations to certain types of development that require more land clearing and coverage by impervious surface. For example, residential use may be well suited on these slopes, where most commercial and industrial uses would not. Certain site improvements may be required on these lands in order to minimize environmental problems related to erosion, runoff, and drainage.

Slopes above 15% have more serious limitations for development. Many of these areas in Hartford also serve as important natural and scenic resources, particularly on those slopes above 20%. Areas of land with grades over 15% equal 10,840 acres in Hartford. This is a little over one-third of the entire Town. Steep slopes are typically characterized by a thinner layer of soil, limited soil absorption capacity, and higher volumes and velocity of surface water runoff. Steeply sloped areas also may be inaccessible to most construction or emergency equipment and often require substantial site improvement costs such as residential sprinkler systems to retard fires, limited removal of vegetation and trees, and underground utility service.

Slopes above 20% should be reserved for open space uses such as wildlife habitat, watershed protection, passive recreation, and other conservation purposes. Where the above uses involve construction on these slopes, adequate site improvements should be made to avoid excessive runoff and erosion, contaminated surface water supplies, and silted streams.

Scenic Areas

The protection of the Town's scenic beauty is not just important to Hartford resident's quality of life but also to visitors who contribute to the sizeable tourism economy. The Town has been successful in maintaining much of its scenic beauty over several decades of residential and commercial growth, due partly to the historic development of Hartford into five villages largely separated by countryside and to the preservation of over 2,600 acres, which include the Quechee Lakes Landowner's Association (QLLA) open space, the Army Corps of Engineers property (Quechee Gorge), National Park Service (Appalachian Trail) lands, land with conservation easements**,** protected deeryards and Town properties. A complete section on Scenic Areas is found in Chapter IX (Natural Resources).

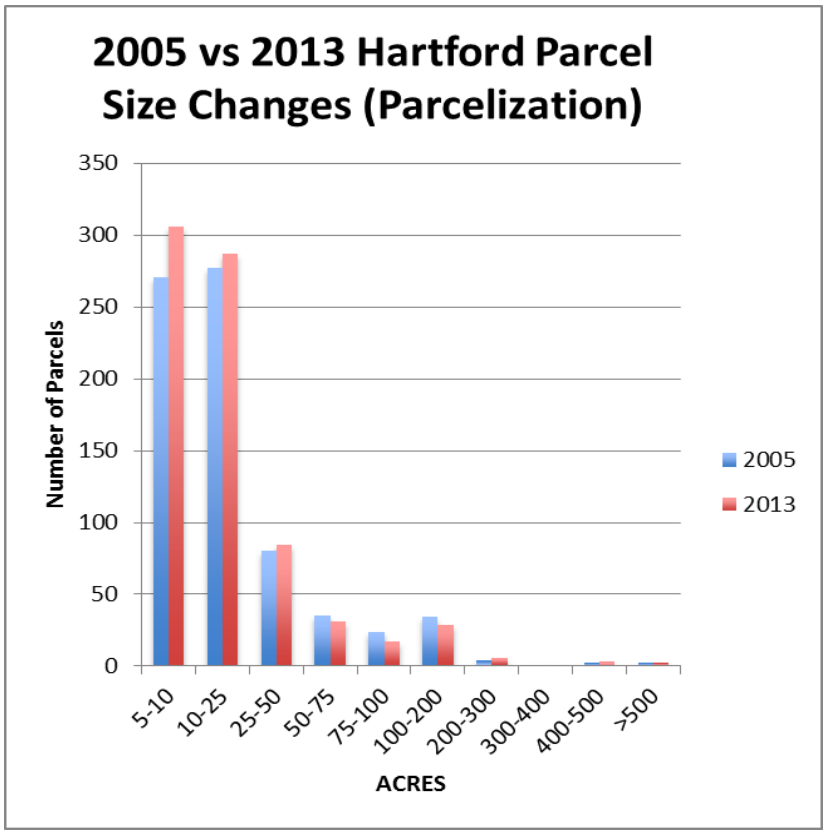
Parcelization

Parcelization refers to land use development patterns where the landscape is made up of many parcels of land. Subdividing larger parcels into smaller parcels usually leads to the broader landscape being fragmented. Areas with many parcels often have more roads, driveways, buildings and lawns which break up the continuity of our naturally forested landscape. While this development pattern may be attractive to individual owners, it is hard on wildlife and ecological processes that take place over many acres or square miles. Roofs, driveways and roads cause precipitation to run off rapidly instead of being absorbed, speeding erosion and contributing to floods. Landscaping introduces exotic plants that may invade and harm native ecosystems. Roads are barriers to some species, such as migrating salamanders, cutting off their ability to spread out, thrive and pass on their genes. Scenery, where the land has been parcelized and then developed (often for housing, lawns and roads), is less attractive than the wooded or open hillsides that traditionally make up the backdrop for our lives.

The following table and graph show that over time, Hartford is becoming more parcelized. In the eight years between 2005 and 2013, the number of 75 to 100-acre parcels decreased by 26%, from 23 to 17., while the number of parcels between 5 and 10 acres in size increased from 270 to 306, an increase of 13%. On a positive note, the number of parcels larger than 200 acres in size increased from 8 to 10 as some owners acquired adjacent lands.

Table II-2 Hartford Parcel Size Changes (Parcelization) 2005-2013

ACRES	2005	2013	# CHANGE	% CHANGE
5-10	270	306	36	13%
10-25	277	287	10	4%
25-50	80	84	4	5%
50-75	35	31	-4	-11%
75-100	23	17	-6	-26%
100-200	34	28	-6	-18%
200-300	4	5	1	25%
300-400	0	0	0	0%
400-500	2	3	1	50%
>500	2	2	0	0%



OVERLAY DISTRICTS

An overlay district is a special zoning district that encompasses one or more underlying zoning districts and provides supplemental development standards above that required by the underlying zoning district. Overlay districts are typically used to protect important features of a particular area

that extend beyond a single underlying zoning district. In 2008, the Town established three overlay districts which implemented the 2007 Master Plan recommendations. These overlay districts consider the protection of important natural resources (discussed in the previous section)**,** including unfragmented forested areas, and the working landscape, and the preservation of the rural character of Hartford. The overlay districts are the Rural Lands, Agriculture and Wildlife Connector Overlay Districts as described below.

Rural Lands Overlay District:

The purpose of this district is to promote the preservation of the rural character, sensitive features and natural resources, including prime agricultural soils, wetlands, steep slopes, important wildlife habitat, scenic views, ridgelines and hillsides in the Rural Lands (RL) and Forest Conservation Zoning Districts. Development should be laid out to integrate carefully into the natural resources while protecting and minimizing the fragmentation of land, and adverse visual and environmental impacts on natural resources.

Agriculture Overlay District:

The purpose of this Overlay District is to promote the continuation of agriculture; retain the maximum possible amount of agricultural lands which often provide important scenic views; protect historically viable farmland and prime and statewide agricultural soils; and preserve Hartford's rural character, scenic characteristics, including open lands, views, and working landscape qualities. Development should be clustered and avoid impacts on existing farmland and productive agricultural soils. There are three Agriculture Overlay Districts in Hartford. They include:

- Jericho Area
- Route 5 South/Neal Road/Connecticut River Road area
- Christian Street Area.

Wildlife Connector Overlay District:

The purpose of this Overlay District is to provide sufficient area for animals to move freely between conserved lands, undeveloped private lands, contiguous forest habitat, and other important habitat, land features, and natural communities within and beyond the boundaries of the Town in order to meet their necessary survival requirements. Development should be directed close to existing roads and/or developed areas and provide a suitable buffer for wildlife to travel through the corridor. There are four Wildlife Connector Overlay Districts in Hartford. These include:

- Pomfret town line to Quechee Lakes Section 5D
- Quechee Lakes Section 5D to the Norwich town line
- Quechee Lakes Section 5D to the Hartford Town Forest
- Hartford Town Forest to the Hartland town line

HARTFORD'S VILLAGES AND RURAL AREAS

Located on the eastern boundary of Vermont nearly halfway up the State, Hartford has three major rivers (Connecticut, White and Ottauquechee) with their associated valleys and rising hillsides. The elevation ranges from a low of 340' along the Connecticut River at the Hartland town line to approximately 1,575' along the Pomfret town line in Quechee. Hartford covers an area of 46 square miles. Like many other Vermont towns, Hartford has a mixture of densely settled villages surrounded by open countryside. Hartford has always served as a major gateway to the State, first via the Connecticut and White Rivers, then the railroads, and most recently the interstate highways. There are five core villages in Hartford and several smaller rural hamlets, each with its unique character and functions. The following is a description of each village and rural area along with some historical information.

White River Junction

White River Junction became the economic center for the Town with the arrival of the railroad in the late 1840s. Today, White River Junction is made up of two different but important commercial areas (the Downtown Central Business District and the Sykes Mountain Avenue/Route 5 Commercial area), as well as several nearby residential neighborhoods. The Downtown has traditionally served as the major commercial center of the Town. This role evolved from the freight and passenger train junction at the confluence of the White and Connecticut Rivers. At one time, at least fifty passenger trains a day stopped in White River Junction, attracting retail and personal services, wholesale trade, and manufacturing industries.

When the interstate highway system and convenient long-distance air travel came to the Upper Valley in the 1960s, the railroads declined, cutting the economic heart out of White River Junction. White River Junction continued to lose its identity as the mainstream retail and commercial center of the Upper Valley as shopping malls began springing up in nearby Lebanon, New Hampshire (no sales tax there). Most new commercial activity in Hartford during the last three decades has occurred in close proximity to the I-89/91 interchange~~s~~ on Sykes Mountain Avenue and Route 5 South. This area is expected to experience continued growth over the coming decades. In 2000, the *Sykes Mountain Avenue Study* was completed. The land use and traffic study recommended a new vision for future development in this important growth center, one that would change the predominant pattern of strip commercial development to a better planned and coordinated rectilinear grid pattern that has suitable infrastructure and will be more aesthetically pleasing.

In the late 1990s, after several decades of economic decline, Downtown White River Junction began to experience a wave of revitalization as it emerged as a center for community services, commercial offices, the visual and performing arts, educational attractions, and specialty shopping. In 2006, a design review district was established and the downtown was accepted into the Vermont Downtown Program. It is expected that redevelopment of the Downtown will continue. In 2011, Hartford's WRJ Tax Increment Financing District and Finance Plans were approved by the state. The District includes the historic area and the Pine Street, Maple Street and Prospect Street area.

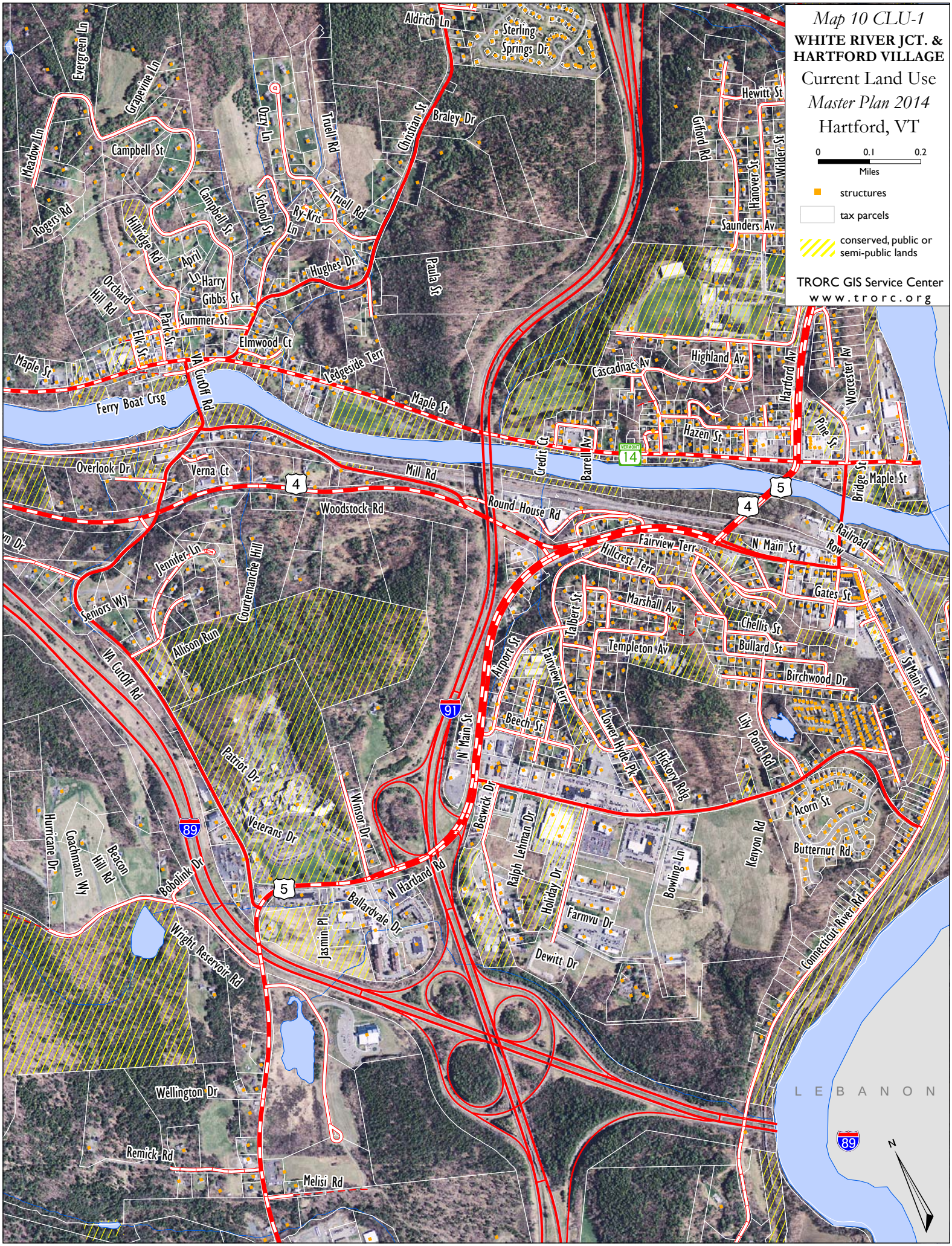
Since 1991, there have been several studies that have focused on the Downtown, which are incorporated into this Master Plan by reference:

- *City Revival* (1991)
- *Railroad Row Historic District Plan* (1994).
- *White River Junction Design Plan* and *White River Junction Design Guidelines* (2001).
- Expansion of the *White River Junction Historic District Nomination* (2002)
- *Downtown Municipal Parking Lot Conceptual Re-Design Study* (2005)
- *White River Junction Village Revitalization Plan* (2009)
- *Hartford White River Junction Tax Increment Financing District and Plan (2011)*

Hartford Village

Hartford Village, formerly known as White River Village until the 1850s once served as the economic center of the Town. It has evolved from a manufacturing center to a predominantly residential area. Housing development over the last few decades expanded from the compact village along Maple Street to the former hillside farms of Roger's Hill along Campbell Street and Christian Street.

In 1991, the Hartford Village Community Association (HVCA) was created by a grass-roots neighborhood group composed of Village residents and persons with a special interest in Hartford Village. Largely initiated to address issues of safety for the children and the elderly in the neighborhood, the Association grew to include social events, fundraisers, and an intensive volunteer effort to develop a comprehensive Village Plan and to implement the Plan following adoption. Projects included rezoning the village to reflect the goals of Village residents, planting new trees along Maple Street, and new curbing, sidewalks, lighting, and intersection improvements on Maple Street and improvements to Watson Park. The planning process strongly indicated that the social fabric of the Village requires primary attention. Future physical enhancements should continue to focus on improving social conditions, pedestrian safety, and increasing river access and access to public transportation. Twenty years later in 2011, the community and Town staff took another look at the village's assets and needs through the Town's Village Center planning process. One of the objectives of the process was to explore designation as a Vermont designated Village Center. The process was at the final stages of the process when Tropical Storm Irene caused flooding in the Village in August 2011. The goal is to revive the planning process in the next year.


Map 10 CLU-1
WHITE RIVER JCT. & HARTFORD VILLAGE
Current Land Use
Master Plan 2014
Hartford, VT
0 0.1 0.2
Miles
structures
tax parcels
conserved, public or semi-public lands
TRORC GIS Service Center
www.trorc.org
Aldrich Ln
Sterling Springs Dr
Evergreen Ln
Grapevine Ln
Meadow Ln
Campbell St
Rogers Rd
Hillridge Rd
Campbell St
Ozzy Ln
School St
Truell Rd
Ry-Kris Ln
Truell Rd
Christian St
Braley Dr
Hewitt St
Gifford Rd
Hanover St
Wilder St
Saunders Av
Hughes Dr
Paula St
April Ln
Harry Gibbs St
Orchard Hill Rd
Parker St
Summer St
Elk St
Elmwood Ct
Maple St
VA CurOff Rd
Ledgeside Terr
Ferry Boat Crsg
Maple St
Cascadnac Av
Highland Av
Hartford Av
Worcester Av
Credit Ct
Barrell Av
VERMONT 14
Hazen St
Pine St
Bridge St
Maple St
Overlook Dr
Verna Ct
4
Mill Rd
Woodstock Rd
Round House Rd
4
5
Railroad Row
N Main St
Fairview Terr
Hillcrest Terr
Jennifer Ln
Seniors Wy
Courtemanche Hill
Marshall Av
Gates St
Talbert St
Chellis St
Templeton Av
Bullard St
Airport St
Fairview Terr
Birchwood Dr
S Main St
Allison Run
VA CurOff Rd
91
Beech St
Lower Hyde Pk
Hickory Rdg
Lily Pond Rd
N Main St
Patriot Dr
Winsor Dr
Beswick Dr
Acorn St
Butternut Rd
Kenyon Rd
Hurricane Dr
Coachmans Wy
Beacon Hill Rd
89
Veterans Dr
Bobolink Dr
5
N Hartland Rd
Ralph Lehman Dr
Holiday Dr
Bowling Ln
Farmvu Dr
Ballardvale Dr
Jasmin Pl
Wright Reservoir Rd
Dewitt Dr
Connecticut River Rd
LEBANON
Wellington Dr
Remick Rd
Melisi Rd
89
N

Wilder

Wilder is the youngest of Hartford's five villages. The village originally was named Olcott, and then changed in 1898 to Wilder in honor of Charles Wilder, who built a dam and paper mill that employed many local residents. Mr. Wilder also contributed generous support to the Wilder Club and Library, and other community groups. An iron bridge that crossed the Connecticut River to New Hampshire was built by Wilder's estate, but that bridge, and Wilder's dam and paper mill were demolished in 1950 to make way for the Wilder Dam hydroelectric project.

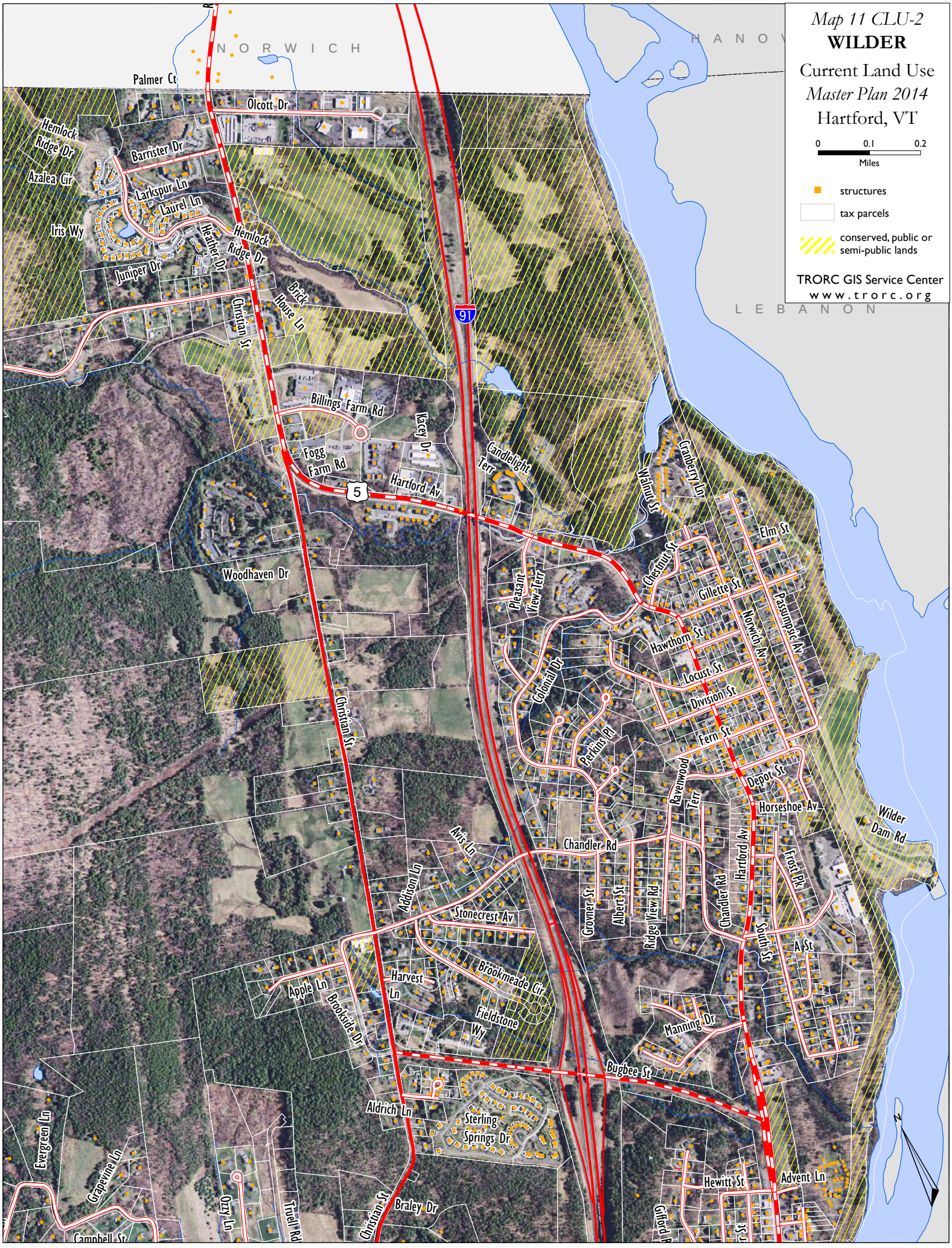
Wilder includes the historic Wilder Village to the east and the more recent residential areas to the west, and extends north to the Norwich Town line including newer residential and commercial development. Wilder has experienced a significant amount of development over the past few decades. For the most part, this has been due to a large amount of developable land, its accessibility to major employment centers, and the existence of Town water and wastewater service. While a large amount of undeveloped land still remains along Christian Street, much of it contains prime agricultural soils and outstanding views, and is protected by an Agriculture Overlay District created in 2008. Elsewhere in Wilder, there are opportunities for infill development. Wilder also has experienced a large amount of condominium development, including Briars, Ledgestone Commons, Woodhaven, Hemlock Ridge, and, most recently, Stony Creek and Silver Brook.

Wilder has three commercial parks: "A" Street Commerce Park, Olcott Office Park, and Billings Commerce Park. Over the last three decades, there has been a great deal of commercial development in the three commercial parks. Today, these commercial parks are approaching complete build-out.

The Dothan Brook School (elementary) was built in 1993 on the north side of Wilder on Christian Street. Hartford's first and only multi-use path was constructed in the late 1990s and connects the historic Wilder Village to the Dothan Brook School.

The Hazen Trail, built in the summer of 1991, runs from a Town-owned parcel just north of Wilder Village, 1.5 miles to the Montshire Museum in Norwich. In 1998, the Town received two grants and used Town Conservation Funds as a local match to purchase a 21 acre parcel to ensure permanent protection of the Hazen Trail corridor. The property was later named the Maanawaka Conservation Area. The trailhead to the Hazen Trail is located in closed proximity to the Wilder Multi-Use Path via Pleasant View Terrace.

In 1997, the Friends of Wilder Village was created as a grass roots neighborhood group. "The Friends" successfully worked on re-use of the Wilder Elementary School and relocation of the Wilder Post Office within the Village. In 2011, the Wilder community also worked with Town staff on the Town's Village Center planning process. Again, the community was in the final stages of the process when Tropical Storm Irene caused town-wide flooding. The goal is to revive the planning process in the next year and pursue state Village Center designation.


Map 11 CLU-2
WILDER
Current Land Use
Master Plan 2014
Hartford, VT
0
0.1
0.2
Miles
structures
tax parcels
conserved, public or semi-public lands
TRORC GIS Service Center
www.trorc.org
NORWICH
HANOVER
LEBANON
Palmer Ct
Olcott Dr
Hemlock Ridge Dr
Barrister Dr
Azalea Cir
Larkspur Ln
Laurel Ln
Iris Wy
Heather Dr
Juniper Dr
Brick House Ln
Christian St
91
Billings Farm Rd
Kacey Dr
Fogg Farm Rd
5
Hartford Av
Candlelight Terr
Cranberry Ln
Walnut St
Elm St
Chestnut St
Pleasant View Terr
Gillette St
Passumpsic Av
Norwich Av
Hawthorn St
Locust St
Division St
Colonial Dr
Fern St
Perkins Pl
Ravenwood Terr
Depot St
Horseshoe Av
Wilder Dam Rd
Woodhaven Dr
Avis Ln
Chandler Rd
Addison Ln
Stonecrest Av
Grovner St
Albert St
Ridge View Rd
Chandler Rd
Hartford Av
Frost Pk
South St
A St
Apple Ln
Brookside Dr
Harvest Ln
Brookmeade Cir
Fieldstone Wy
Manning Dr
Bugbee St
Aldrich Ln
Sterling Springs Dr
Evergreen Ln
Grapevine Ln
Campbell St
Ozzy Ln
Truell Rd
Braley Dr
Hewitt St
Advent Ln
N

Quechee

Quechee has undergone the most significant change of all the villages over the past half century. In its earlier days, Quechee was a rural farming community. In the nineteenth century, the village developed around manufacturing activities as mills were established on the Ottauquechee River that utilized the available water and associated power. Eventually, the mills declined, and during the 1950s and 1960s and Quechee lost its economic vitality. However, in the late 1960s, a broad master development plan for most of the historic village and areas surrounding the village was created by the Quechee Lakes Corporation. Today, the Quechee Lakes Planned Development is one of the largest planned residential communities in Vermont. It encompasses 5,170 acres, nearly 1/5 of the Town's 29,434 acres. The initial Master Plan for this development was approved by the Town and received an Act 250 permit in 1971, detailed in the Quechee Lakes Master Plan. When built out, it will include up to 2,154 residential units at a density of 2.4 acres per unit. In addition, 50% of the total land must be dedicated to common use. Extensive recreational facilities are included, as well as some commercial parcels. The last major update of the Quechee Lakes Master Plan occurred in 1988, and the current owners of Quechee Lakes Corporation initiated another major update in 2013.

The developer, Quechee Lakes Corporation (QLC), has had several owners over the years. In collaboration with independent developers, QLC is following a traditional process to create this large residential/recreational community. The QLC, which commenced during the 1970s, has had by far the largest impact on revitalizing the village. A community organization, Quechee Lakes Landowner's Association (QLLA), was created to govern the development and own and manage the common land and amenities, including the two golf courses, downhill and cross-country skiing facilities, a beach, tennis and paddle courts, plus a large number of buildings, including a clubhouse. Property owners within the Quechee Lakes Master Plan are obligated by deed to be dues-paying members of QLLA, and are bound by deed and QLLA bylaws. For example, the QLLA Review Board (RB) has authority to approve all building plans, tree removal, exterior painting, landscaping and the like. The obligations of QLLA membership, as well as the benefits, are not in place of, but are in addition to those that apply to a Hartford property owner.

During the 1970s and 1980s, over 1,000 new housing units were built as part of Quechee Lakes, with the objective of having about 40% of the residences owned by full-time residents. However, during most of the 1990s, very little development occurred at Quechee Lakes. That changed in the late 1990s, and between 2000 and 2005, Quechee once again experienced a fairly high rate of residential development. Since 2006, however, residential development in Quechee has slowed down significantly with the national recession. As of April 2013, of the 2,154 residential units conceptually approved in the Quechee Lakes Master Plan, 1,275 units or 59.2% were completed, and 519 vacant single family residential lots were approved but awaited zoning permits. (These 1,794 properties represent the current maximum number of QLLA memberships, of which about 1,400 are actually in use; membership only begins when the developer sells the property). Of the vacant lots, 304 lots or 58.6% were owned by Quechee Lakes Corporation. The remaining 360 units (a mixture of single family and multi-family units) have conceptual approval but still require Site Development Plan approval by the Hartford Planning Commission.

With respect to Quechee Lakes commercial parcels, there is little room for further development on Quechee Main Street, although the area is experiencing some redevelopment. Other Quechee Lakes commercially zoned properties exist along Woodstock Road (Route 4) and West Gilson Street. In 2008, this area was rezoned from Industrial/Commercial (I-C) to Highway Commercial (HC) to eliminate industrial type uses that were considered incompatible with the existing residential and commercial uses already in the area and in the Quechee Lakes Master Plan. The objective of the HC District is "to provide for well-planned and coordinated development of commercial facilities and services that can be effectively integrated with the existing village and/or scenic character along major transportation corridors."

Common lands governed by the Quechee Lakes Master Plan include greenbelts and recreational lands as well as several large parcels that are restricted to wildlife and conservation areas covered by the District 3 Environmental Commission and by a "Deer Yard Agreement" between QLC and the Vermont Department of Fish and Wildlife.

In addition to the Quechee Lakes Planned Development, Quechee Gorge and Quechee State Park are major factors in determining land use in Quechee. Commercial development near the I-89 interchange and along Route 4 near the Gorge and the Waterman Hill intersection serve the large number of visitors to the area. Several enhancements to the Gorge area were proposed in the 1996 *Quechee Gorge Master Plan*. Through the joint leadership of the Quechee Gorge Management Committee, strong public process and cooperative intergovernmental effort, several grants were obtained to successfully implement the Plan's recommendations, culminating in the construction of the Quechee Gorge Visitors Center, sidewalk, streetscape, and river access improvements in the summer of 2005.

Exit 1 on Interstate 89, located as it is on the Route 4 Scenic Byway is a major gateway to Quechee and Central Vermont. In 2005, part of the area was rezoned from Residential/ Commercial 2 (RC-2) to the Quechee Interstate Interchange (QII) Zoning District to promote land uses that were more compatible with the surrounding area, and encourage more compact development rather than the strip commercial development pattern that was emerging. Hence, the objective of the QII District is "to provide for well-planned and coordinated development (commercial facilities/ services and residential) that can be effectively integrated with the scenic character of the I-89/Route 4 gateway while maintaining safe and efficient traffic flow. This district will balance the needs of the community and those of the traveling public." In 2008, the remaining RC-2 zoning was changed to QII.

In 2011, the Quechee community also worked with Town staff on the Town's Village Center planning process. During recovery from extensive flood damage from Tropical Storm Irene, the community worked with Town staff to successfully obtain state Village Center designation in 2012.

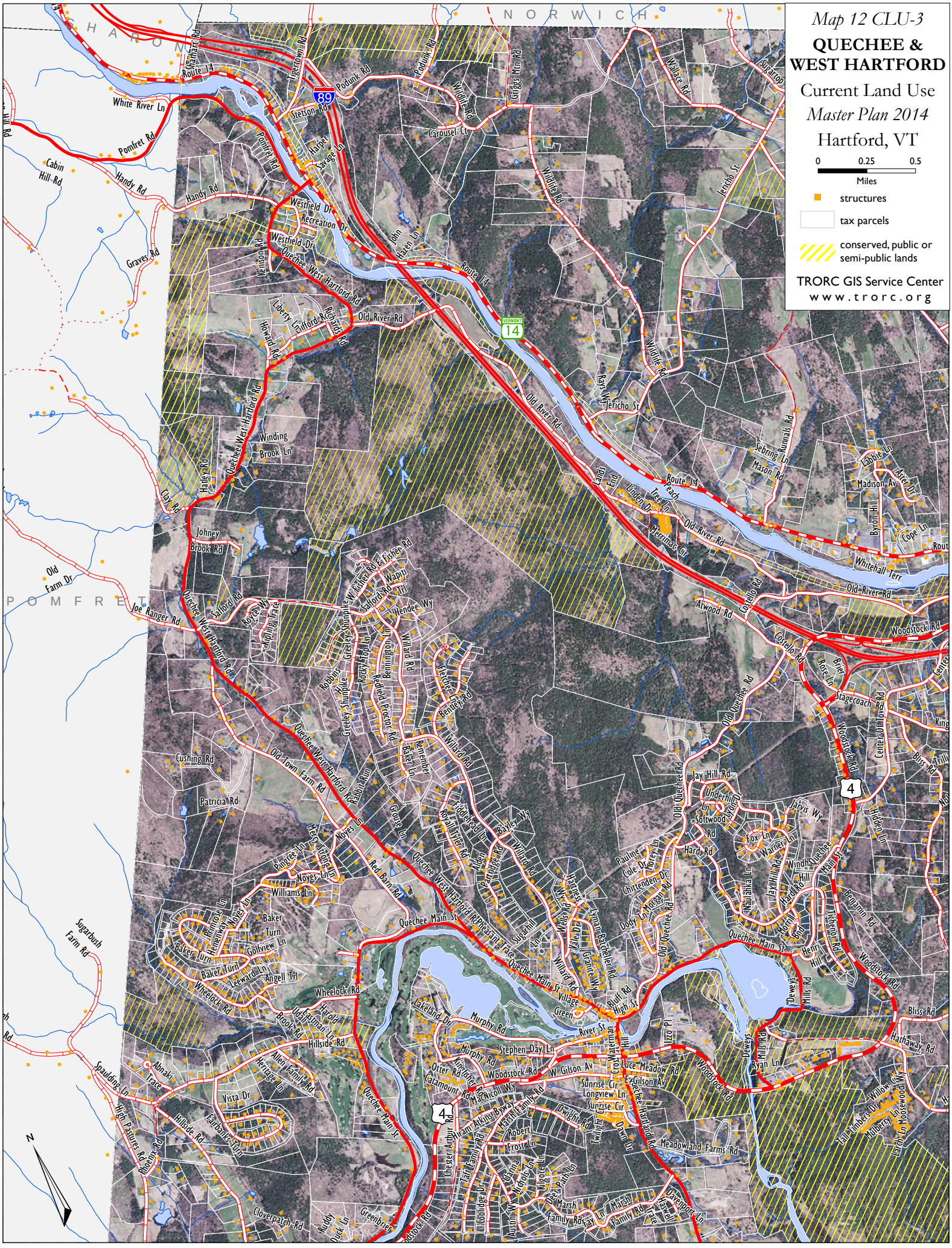
West Hartford

West Hartford is the most remote and rural village in Town, characterized by rolling hills and a low population density. It is the only village that is not served by Town water and wastewater. Located along Central Vermont Railway, Route 14, and the White River, West Hartford was primarily a stage stop connecting the Central Vermont Railway and other rural townships. Interstate 89 was built in the late 1960s, and contains the core of the village between the railroad and the White River. Today, West Hartford Village has a mixture of residential, commercial and civic uses. Of the four public libraries in Hartford, the West Hartford Library is the only one actually owned by the Town. Clifford Park lies on the southern side of the White River in West Hartford. Although some residential development has occurred on land previously used for farming, much of the surrounding area remains in forest and open lands. Natural constraints to development, such as steep slopes, soil suitability and lack of Town water and wastewater service, have prevented significant growth in West Hartford.

The Appalachian Trail passes through West Hartford, and a total of 251 acres of land has been acquired by the National Park Service to protect the trail corridor. In 2011, West Hartford received extensive damage from flooding by Tropical Storm Irene. Several buildings were destroyed and many others were badly damaged. Two years after the Irene Flood, the Village continues to recover. In 2011, the West Hartford community also worked with Town staff on the Town's Village Centers planning process. Again, the community was in the final stages of the process when Tropical Storm Irene caused town-wide flooding. The goal is to revive the planning process in 2015 and pursue state Village Center designation.

Rural North

The Rural North section of Hartford is comprised of the rural hillside hamlets of Jericho, Dothan and the former Centerville. Historically, much of the area was farmed. Although there still are large amounts of open meadows, there are only a few remaining full-time farming operations. In 2001, the Jericho Rural Historic District was established, documenting two centuries of hillside farming. In recent decades, there has been a trend of increasing land subdivision and housing development in these areas. A sizeable Industrial/Commercial zoning district exists along Route 14 between Hartford Village and West Hartford that was once farmland. This district has experienced a great deal of development over the last twenty years. The district lacks town water and sewer, and development has been in the form of contractor shops and yards, auto-related businesses, trucking and warehousing. In 2008, several zoning changes were made in the Rural North area; much of the land was rezoned from Rural Lands 5 (RL-5) to Rural Lands 10 (RL-10), an Agriculture Overlay District was established around the Jericho Rural Historic District and a Wildlife Connector Overlay District was established between Jericho and West Hartford.


Map 12 CLU-3
QUECHEE &
WEST HARTFORD
Current Land Use
Master Plan 2014
Hartford, VT
0 0.25 0.5
Miles
structures
tax parcels
conserved, public or
semi-public lands
TRORC GIS Service Center
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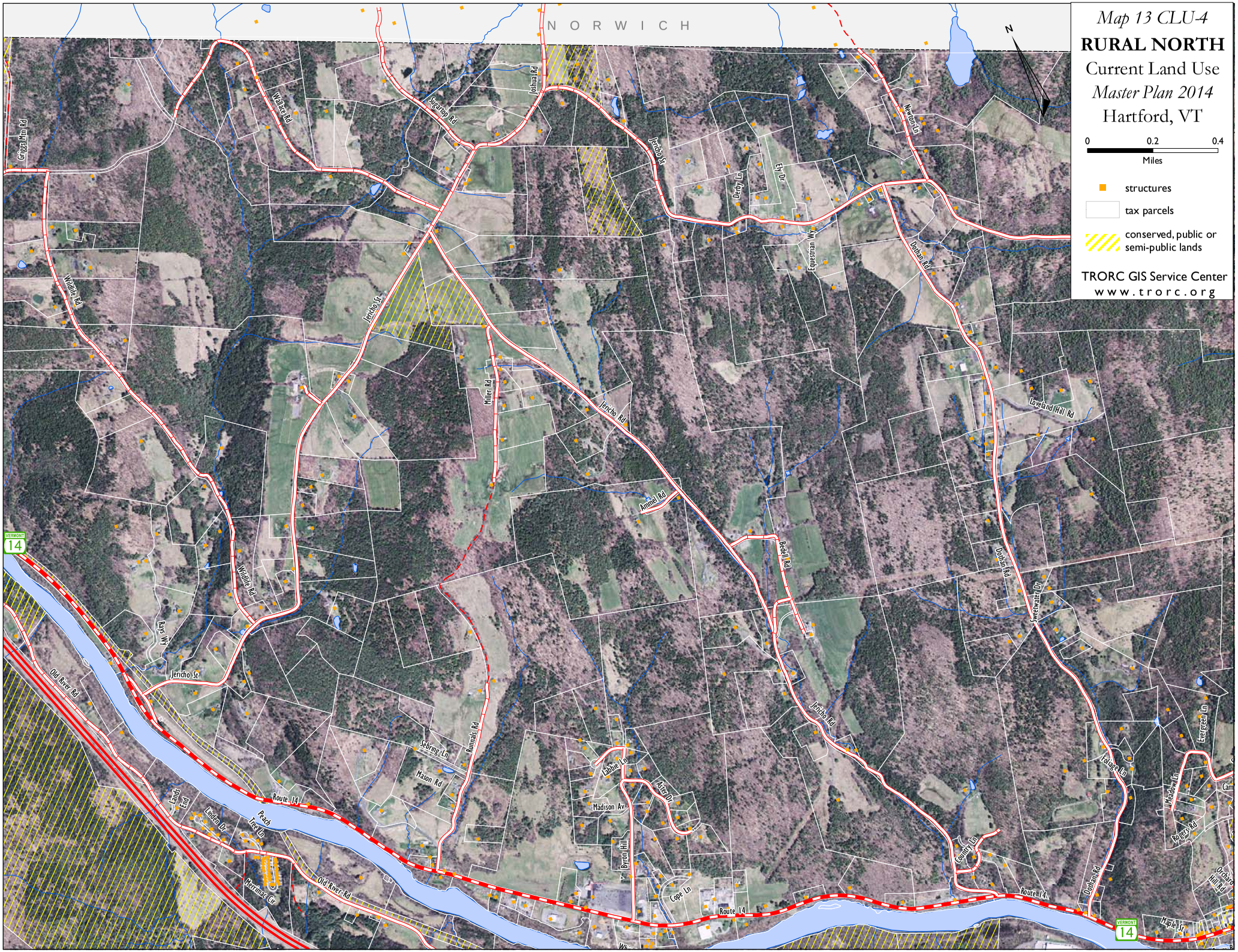
N O R W I C H
H A R O N
P O M F R E T
Route 14
VERMONT
14
89
4
Quechee West Hartford Rd
Old River Rd
Quechee Main St
Woodstock Rd
Old Quechee Rd
Wheelock Rd
Red Barn Rd
Old Town Farm Rd
Hillside Rd
Meadowland Farms Rd
Pomfret Rd
Handy Rd
Graves Rd
Cabin Hill Rd
White River Ln
Podunk Rd
Tigertown Rd
Stetson Rd
Harper Garage Ln
Westfield Dr
Recreation Dr
Menson Rd
John Hazen Ln
Carousel Ct
Wildlife Rd
Griggs Mtn Rd
Wallace Rd
Sugartop
Jericho St
Liberty Ln
Howard Rd
Richards Rd
Winding Brook Ln
Hadley Rd
Clay Rd
Johney Brook Rd
Old Farm Dr
Joe Ranger Rd
Safford Rd
Royce Way
Spring Trace
Fisher Rd
Wapiti Tri
Hendee Wy
Greeley Stumpike
Robbins Stumpike
Willard Rd
Rodfield Proctor Rd
Baker Ln
Remember Baker Ln
Fletcher Bentley Rd
Rabbit Run
Grouse Ln
Noyes Ln
Mary Morgan Ln
Pingree Ln
Williams Ln
Primrose Ln
Henriwaye Ln
Baker Turn
Goldview Ln
Leeward Ln
Angell Tri
Sugarbush Farm Rd
Spaulding Ln
Abnaki Trace
Heritage Ln
Allen Family Rd
Vista Dr
Fairbanks Turn
High Pastures Rd
Phoenix Rd
Cloverpatch Rd
Greenbriar Rd
Duck Ln
Brook Rd
Hillside Rd
Harold Underhill Ln
Lakeland Dr
Murphy Rd
Stephen Day Ln
Otter Rd
Catamount Rd
Fritz Fisher Rd
McNicoll Wy
Chester Arthur Rd
Hiram Atkins Byway
Marsh Family Rd
Robert Frost Ln
Dwight Rd
Twilight Dr
Sunrise Cir
Longview Ln
Sunrise Cir
Dawn Dr
Luce Meadow Rd
E Gilson Av
W Gilson Av
Quechee Hartford Rd
Cross Waterman Hill
Village Green
River St
High St
Bluff Rd
Granite Wy
Jade Dr
Lyman Batchelder Rd
Willard Rd
Sugarhill Ln
Pheasant Face
Harness Wy
Bayley Wy
Alden Partridge Rd
Nobail Taylor Rd
Fiddlers Elbow Ln
Jay Hill Rd
Underhill Ln
Softwood Rd
Hard Rd
Pauline Cole Dr
Morey Ln
Chittenden Dr
Longley Rd
Old Quechee Rd
Jarvis Wy
Fox Ln
Warner Ln
Windhaven Ln
Quechee Main St
Hard Rd
Main St
Hill Rd
Henry Hill
Benjamin Rd
Nicholson Rd
Dewey's Mills Rd
Ryan Ln
Bliss Rd
Hathaway Rd
Willow Creek Rd
Mayflower Hill
Tall Timbers Dr
Mulberry Ln
Laurel Ln
Davenport Ln
Marsh Family Rd
Marsh Family Trace
Nichols Ln
Moore Ln
Park Ln
Austin Wy
Coolidge Dr
Quechee Main St
Atwood Rd
Costello Rd
Whitehall Terr
Perrimac Cir
Linda Dr
Trees Up
Route 14
Sandi Ln
Kays Wy
Old River Rd
Sebring Ln
Mason Rd
Madison Av
Abbie Ln
Alger Dr
Byron Hill
Cope Ln
Stagecoach Rd
Nose Ln
Briar
Center Of Town
Bliss Rd
Hidden Ln
King
Route 14
Old River Rd
Old River Rd
Old River Rd


NORWICH
Map 13 CLU-4
RURAL NORTH
Current Land Use
Master Plan 2014
Hartford, VT
0
0.2
0.4
Miles
structures
tax parcels
conserved, public or semi-public lands
TRORC GIS Service Center
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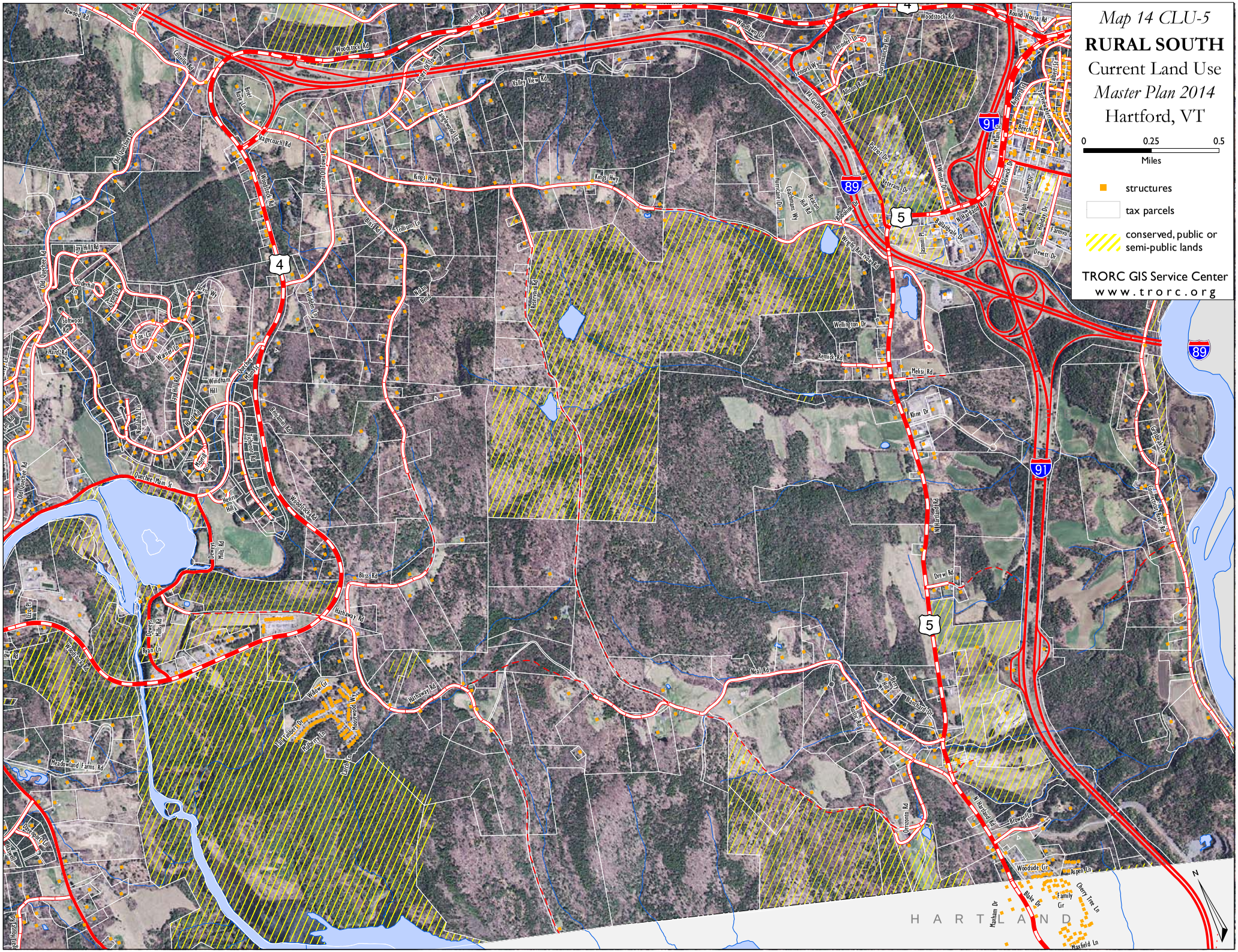
N
Griggs Mtn Rd
Walker Rd
Sugartop Rd
Joshua Rd
Jericho St
Derby Ln
Ely Dr
Equestrian Way
Newton Ln
Dothan Rd
Windtie Rd
Miller Rd
Jericho Rd
Loveland Hill Rd
Ammel Rd
Bedell Rd
Sweetwater Dr
Clary Way
Old River Rd
Sebring Ln
Kunrads Rd
Mason Rd
Labbie Ln
Aztec Dr
Madison Av
Byron Hill
Cope Ln
Route 14
Lands End
Linden Dr
Peach Tree Ln
Herriman Cir
Country Ln
Folegate Ln
Evergreen Ln
Shadow Ln
Rogers Rd
Orchard Hill Rd
Maple St
VERMONT
14

Rural South

The Rural South section of Hartford encompasses the rural hillside hamlets of Center of Town and the Neal Road areas. It also includes the Connecticut River Road and Route 5 South areas, and the Woodside Manor Mobile Home Park. Other large tracts of land in this section of town include the 423-acre Hartford Town Forest, 142 acre Hurricane Forest Wildlife Refuge, Hartford Transfer/ Recycling Center, Army National Guard Facility and recently constructed Maxfield ball field complex. Like the Rural North, the area has historically been farmed, and very few full-time farming operations remain today. The area also has experienced a trend of increasing land subdivision and housing development similar to other rural areas of the Town. In 2001, the Route 5 South Study was completed, which recommended limiting intensive commercial development to the north end of the study area as a means of protecting the rural character of this section of the Route 5 Scenic Byway, and to reduce public infrastructure costs. In 2008, zoning changes were made to implement the recommendations of the Route 5 South Study and reduce impacts on this corridor. These involved reducing the size of the Industrial/Commercial (I-C) Zoning District and changing the zoning to Highway Commercial (HC) to eliminate certain industrial uses. Other zoning changes made in 2008 included establishing a Forest/Conservation zoning district, an Agriculture Overlay District and a Wildlife Connector Overlay District.


Map 14 CLU-5
RURAL SOUTH
Current Land Use
Master Plan 2014
Hartford, VT
0
0.25
0.5
Miles
structures
tax parcels
conserved, public or semi-public lands
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HARTLAND
N

RECENT LAND USE TRENDS

Residential Development

During the 1970s and 1980s, Hartford experienced its largest net increase in population than at any other time in the Town's long history. With the new interstate highway system completed, an expanded water system, and a new municipal wastewater system, Hartford had the infrastructure in place to accommodate a large amount of new development. As a result, the Town grew by nearly 3,000 people in twenty years (from a population of 6,477 in 1970 to 9,404 in 1990). During this period, residential development in Hartford averaged nearly 150 new housing units per year. The 1970s and 1980s also resulted in a mix of single-family and multi-family housing.

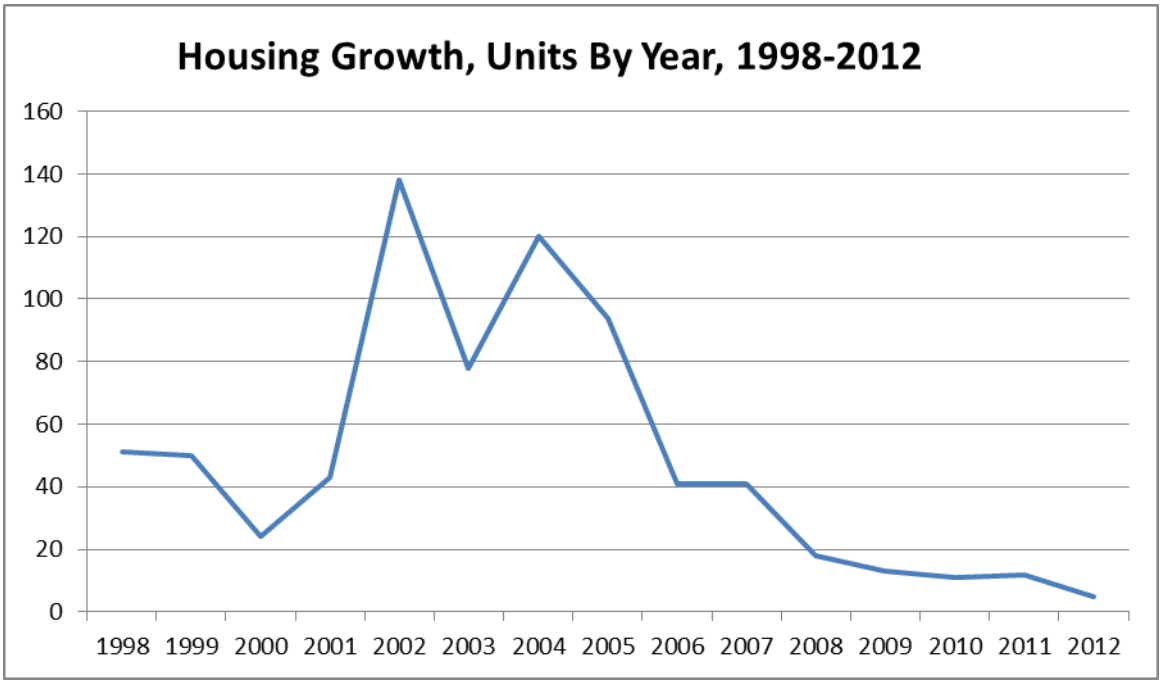
The rapid growth of the 1970s and 1980s was followed by the recession of the early 1990s, which resulted in a sharp decrease in new housing (47 new units per year) for the decade, the vast majority of which was single-family. The last decade started with a modest rate of housing growth (24 units in 2000 and 43 units in 2001). However, between 2002 and 2005, housing growth increased to more than 100 units per year, with nearly an even split between single family and multi-family housing. Following the rapid rise in new housing between 2002 and 2005, 2006 and 2007 resulted in a decrease in housing starts more in line with housing growth of the 1990s (41 units per year). The period of 2008 to 2012 followed with rapid drop in housing starts as the regional and national recession took hold. This resulted in the lowest rate of new housing in the last fifty years (an average of 12 new units per year). Table II-2 and Chart II-1 summarize the number and type of new housing by year from 1998-2012.

Table II-2 New Residential Development by Year, 1998 – 2012.

Year	Single Family Units	Multi-Family Units	Total Housing Units
1998	40	11	51
1999	29	21	50
2000	22	2	24
2001	39	4	43
2002	63	75	138
2003	50	28	78
2004	49	71	120
2005	50	44	94
2006	31	10	41
2007	25	16	41
2008	11	7	18
2009	9	4	13
2010	4	7	11
2011	6	6	12
2012	3	2	5
Total	**431**	**308**	**739**
Average	**28.7**	**20.5**	**49.3**
Percentage	**58.3%**	**41.7%**	**100.0%**

Source: Town of Hartford Zoning Permits, 1998-2012

Chart II-1 Total Housing Growth, 1998-2012



Source, Town of Hartford Zoning Permits, 1998-2012

From 1998-2012, 71% of housing was built in Quechee and Wilder. Both areas have a supply of developable land and access to town water and/or wastewater. Since much of Quechee Lakes was platted in the 1980s, there is a sizeable supply of approved building lots that do not require further subdivision approval. However, once the existing supply of lots approaches build-out, Quechee Lakes Corporation will have to obtain Planning Commission approval to pursue further development. From 1998-2012, an additional 11% of housing was built in White River Junction, that also is served by town water and sewer service. Table II-3 and Chart II-2 summarize the number and type of new housing by year from 1998-2012 in different areas of Hartford.

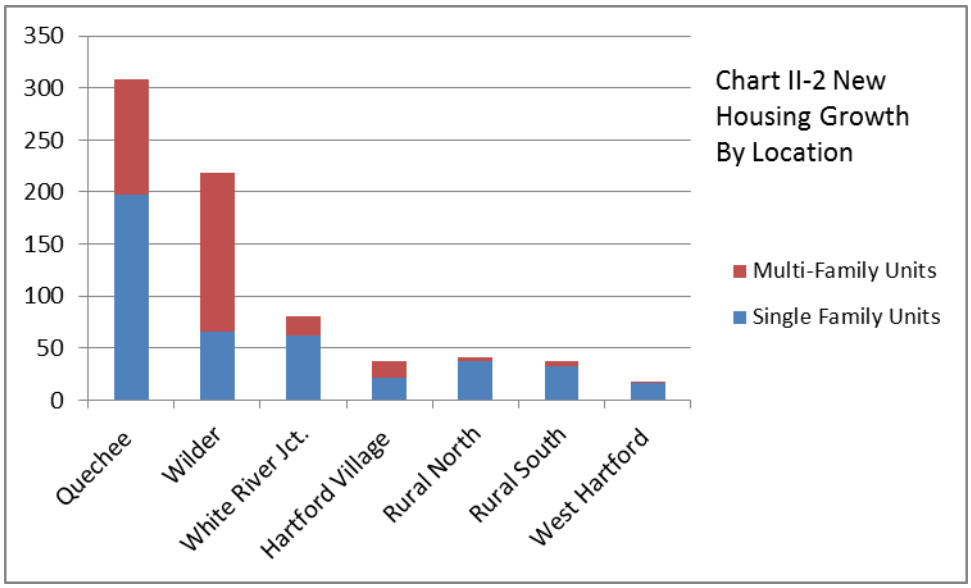
In recent decades, residential growth also has occurred in the rural outlying areas of Town although the rate has been much lower than the village/in-town areas served by town water and sewer. Many farms have been subdivided and the agricultural land has been converted to rural residential use served by on-site wells and septic systems. This can be seen by the spread of population moving into areas such as Jericho, Dothan, Center of Town, Christian Street, Route 5 South, and West Hartford. From 1998-2005, 80% of new housing occurred in areas served by town water and/or wastewater. From 2006-2012, that figure dropped to 71% indicating that there was a slight increase in development in the rural areas of Hartford.

Table II-3 Total Housing Growth, 1998-2012

	Single Family Units	Multi-Family Units	Total Housing Units
Quechee	197	111	308
Wilder	66	152	218
White River Jct.	62	18	80
Hartford Village	21	16	37
Rural North	37	4	41
Rural South	32	5	37
West Hartford	16	2	18
Total	**431**	**308**	**739**
Percentage	**58.3%**	**41.7%**	**100.0%**

Source: Town of Hartford Zoning Permits, 1998-2012

Chart II-2 New Housing Growth By Location



Source: Town of Hartford Zoning Permits, 1998-2012

Non-Residential Development

The trend for non-residential development in Hartford has varied from residential development over the past three decades. In the 1990s where there was a significant decrease in the rate of residential development in town, new non-residential growth continued, including commercial, industrial, and public/quasi public development.. Most of this new development occurred on Sykes Mountain Avenue in White River Junction and the Billings Commerce Park and Olcott Office Park in Wilder. By 1999, new non-residential development in Hartford climbed to more than 100,000 square feet.

Although 2000 and 2001 saw a sizeable decrease in the rate of development, 2002 to 2004 witnessed new non-residential development averaging 100,000 square feet per year. By 2005, the annual average decreased to 43,011 square feet. Overall, nearly 75,000 square feet of new non-residential development came on line each year between 1998 and 2005.

Reflective of national trends related to the Great Recession, , there was a 30% drop in non-residential development between 2006 and 2012 as compared to the 1998 to 2005 period. The average square footage of new development decreased from nearly 75,000 to 52,392 square feet per year.

Table II-4 New Non-Residential Development By Year, 1998-2012

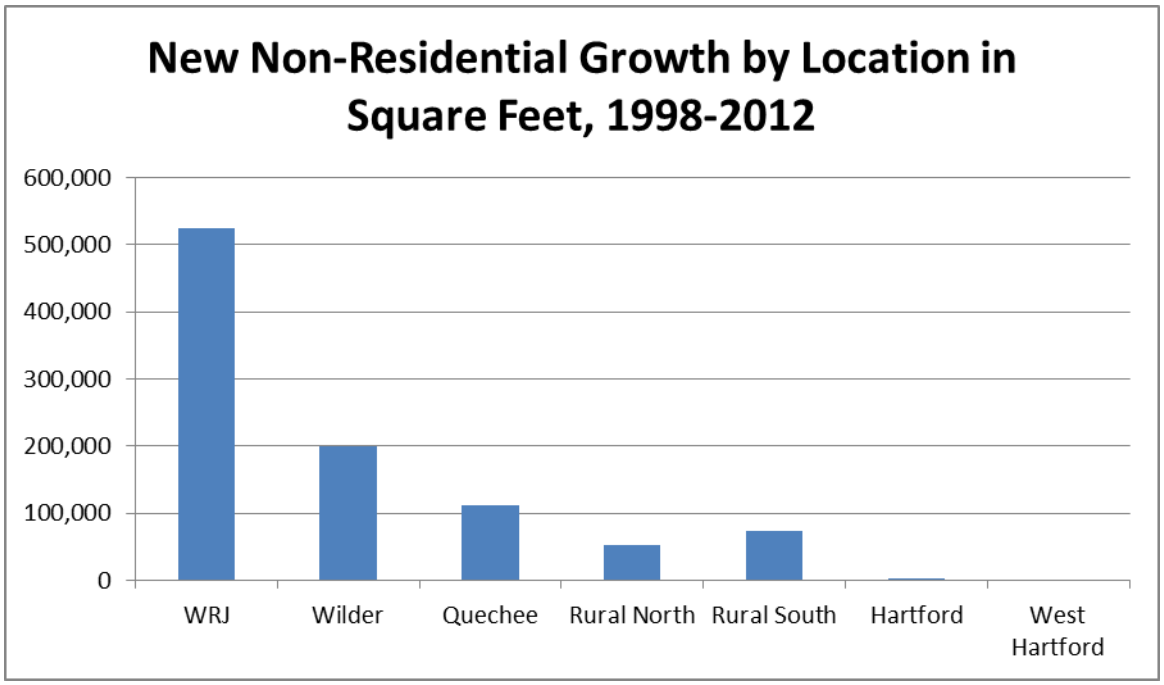
YEAR	TOTAL SQUARE FEET
1998	9,315
1999	109,067
2000	19,644
2001	26,614
2002	140,303
2003	104,418
2004	143,455
2005	43,011
2006	32,032
2007	58,480
2008	42,112
2009	37,293
2010	146,109
2011	12,655
2012	38,064
TOTAL	962,572
AVERAGE	64,171

Source: Town of Hartford Zoning Permits, 1998-2012

Between 1998 and 2005, the majority of new non-residential development occurred in White River Junction (55%) followed by Wilder (29%) and Quechee (12%). The remaining 3.7% occurred

throughout the rest of Hartford. Table II-4 and Chart II-3 summarize the location and growth of non-residential development from 1998-2005.

Chart II-3 New Non-Residential Growth By Location, 1998-2012



Since 2006, the majority of new non-residential development continued to occur in White River Junction (54%). However, non-residential development in Wilder decreased from 29% of the Town's share to 7%. Quechee remained about the same (11%), while there was an increase in non-residential development in the Rural South (18%), Rural North (10%) areas of town.

VISION FOR THE FUTURE OF HARTFORD

Throughout the series of community meetings, there were several recurring themes of the community vision. They included:

1. Increase density in already developed areas with infrastructure (water & wastewater, close to community facilities & services and served by public transit).
2. Manage density of future development.
3. Protect scenic areas, open space, and wildlife corridors.
4. Preserve Hartford's historic settlement pattern, defined by compact villages surrounded by rural countryside.
5. Maintain the character of Hartford's rural countryside and support agriculture, forestry, and recreational uses in these areas, as well as carefully planned low-density residential uses.
6. Maintain and enhance Hartford's heritage of working farm and forest lands as part of a sustainable, environmentally sound, local resource-based economy.
7. Maintain and enhance the open space and recreational "infrastructure" important for long-term health and quality of life of Hartford residents.

In putting together the land use recommendations, the Master Plan Steering Committee reviewed the following:

- Existing zoning regulations
- Current development patterns and neighborhoods
- Traditional size of lots
- Natural resource maps
- Large areas of forest and agricultural land
- Infrastructure (roads, wastewater/water systems)
- Balance development needs with rural character, wildlife habitat, views, farm & forest land

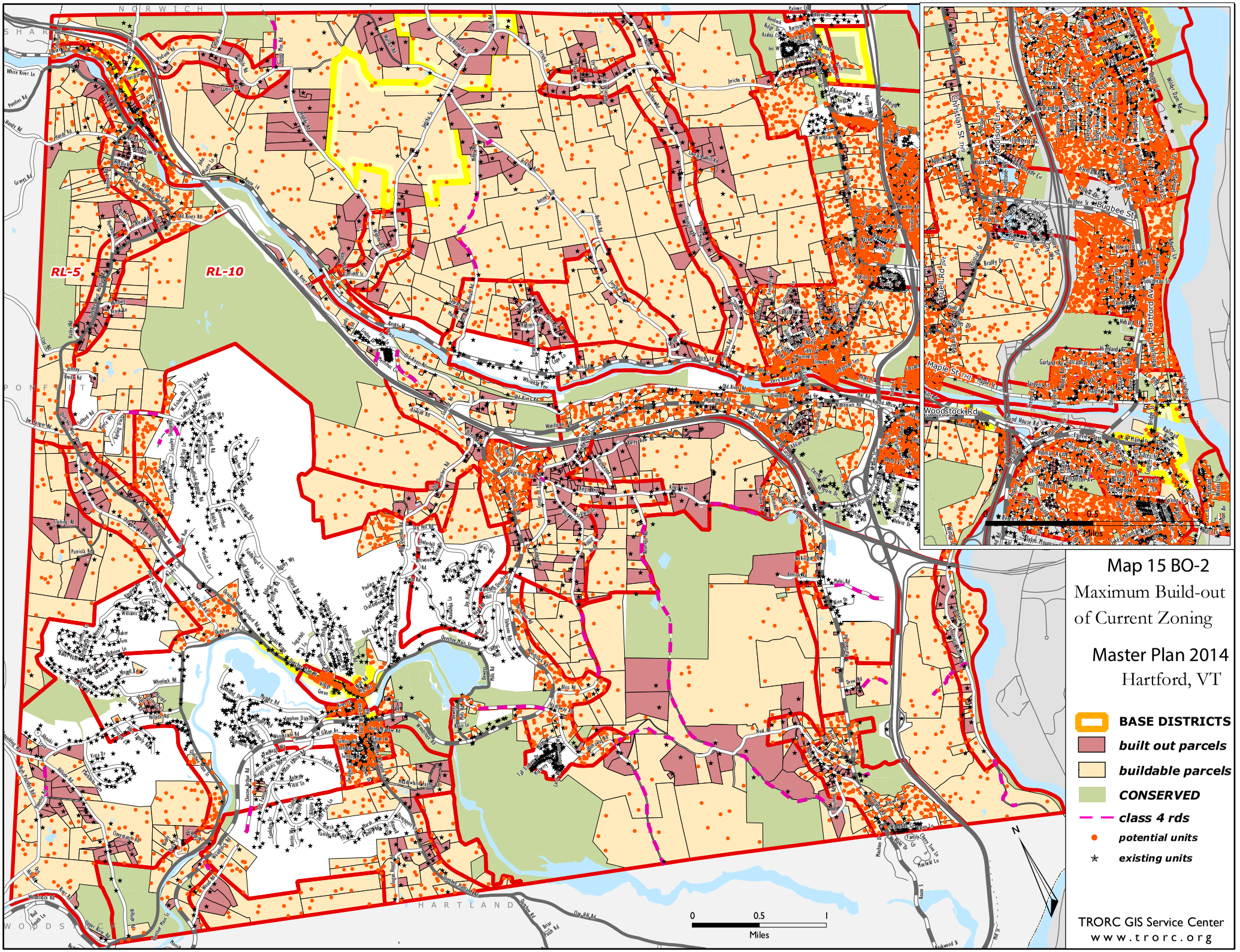
Build-Out Analysis with Proposed Zoning

The proposed zoning changes were entered into the build-out analysis, resulting in the following information.

Table II-5
Distribution of Potential Residential Development under Pre-2008 Zoning and Current Zoning Regulations

ZONE	Current Distribution	Potential Build-out with Pre-2008 Zoning	Potential Build-out with Current Zoning
	% Units	% Units	% Units
QG	0.0%	0.1%	0.1%
QII	0.0%	0.8%	1.5%
New R-1M			4.2%
R-1	18.3%	13.9%	24.2%
R-2	27.7%	17.9%	15.1%
R-3	15.8%	15.7%	14.9%
RC-2	4.6%	7.9%	6.3%
VB	0.3%	0.4%	0.6%
VR-1	1.7%	0.8%	1.8%
VR-2	0.6%	0.5%	0.4%
VR-C	2.2%	1.0%	6.7%
RL-1	6.7%	13.4%	6.9%
RL-3	10.1%	8.6%	5.7%
RL-5	11.9%	19.2%	3.9%
New RL-10			7.1%
New FC			0.7%

Note: Excludes Quechee Lakes Planned Development and the CB/HC/IC commercial zoning districts.



Map 15 BO-2

Maximum Build-out of Current Zoning

Master Plan 2014

Hartford, VT

- **BASE DISTRICTS**
- ***built out parcels***
- ***buildable parcels***
- ***CONSERVED***
- ***class 4 rds***
- ***potential units***
- ***existing units***

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One theme running throughout the community meetings was maintaining the balance of development as it exists today. A summary of Table II-5 shows that the following land use strategies and recommendations will achieve this, as indicated in Chart II-5.

LAND USE PLAN

Village Areas and Growth Centers

Hartford's traditional settlement pattern has consistently concentrated development in five unique and historic compact villages surrounded by rural countryside. To serve this growth pattern, Hartford has directed investment in Town water, wastewater, roads, public transit, etc., to the four larger villages of White River Junction, Wilder, Hartford and Quechee. Townwide, this amounts to 2,659 acres or 9% of the land area of Hartford being served by Town water, 4,013 acres or 13.6% of the land area being served by Town wastewater and 2,357 acres, or 8.0% of the land area being served by Town water and wastewater.

The Town encourages this pattern of development to continue and to put in place mechanisms to direct growth to these areas. By doing this, the Town will ensure fulfillment of the community vision and promote more efficient use of the Town's existing infrastructure, public facilities and services, resulting in a beneficial effect on the municipal tax base.

The primary purpose of the Land Use Plan is to ensure that future growth and development matches the vision of the community. This vision as described throughout this chapter, is to reinforce Hartford's traditional settlement pattern of concentrated development surrounded by rural countryside, while recognizing opportunities for growth that serve local and regional needs which are sustainable over time. The Town has identified the following eight Land Use Categories. Each category provides a historic context as well as the recommended amount, intensity and character of future development for that area.

1. Downtown
2. General Industrial and Commercial
3. Gateway Commercial
4. Mixed-Use Lands
5. Residential Lands
6. Rural Residential Lands
7. Rural Lands
8. Forest/Conservation Lands

The eight categories are identified on the Future Land Use Map (Map #16).

Downtown Lands

Since the 1850s, Downtown White River Junction has served as the town center of Hartford and the retail and service center of the Upper Valley. In the 1960's with the construction of the interstate, a

period of decline began that continued for the next two decades. In the late 1980s, early 1990's, a renewal effort began with the relocation of a state courthouse on Railroad Row, and parking, sidewalk and streetscape improvements. Private reinvestment continued to be limited until the late 1990s, early 2000s when White River Junction emerged as the home of the "creative economy" leading to a period of revitalization that continues today.

Downtown Lands are characterized as historic, compact development that is well integrated with the streetscape at a pedestrian scale. It functions as the town's urban center, served by public parking, town water and sewer service, pedestrian accessibility and public transportation. The Downtown occupies a fairly small geographic area, approximately 141 acres. Since land in this area is limited, development should make use of high lot coverage ratios (up to 90%) and maximize building heights (between 40 and 60 feet) provided it is compatible with the scale and design of existing structures. (Lot coverage refers to the portion of the lot that is covered by buildings or other impervious surfaces.) To fit in with the historic character of the downtown, development in the Design Review District section of the Downtown must comply with the *White River Junction Design Plan* and the *White River Junction Design Guidelines*. Development should emphasize mixed-uses and be consistent with a center for retail, services, civic, cultural arts, tourism and high-density housing. There is a focus on facilities for pedestrians, bicyclists, and bus and rail patrons. Residential density in the Downtown will be the highest in Hartford and is intended to be flexible. It will be calculated by square feet per lot as opposed to the number of units per acre ("Floor Area Ratio"). Allowable density should be two times the size of the lot. (Relevant zoning districts: CB, CB2)

General Commercial and Industrial Lands

General Commercial and Industrial Lands historically were developed during the industrial revolution as heavy industry related to mills along the Town's three rivers and the railroad. Over time, these commercial and industrial areas expanded along town, state and interstate highways and the railroad lines. These areas have evolved into strong commercial and industrial centers. Today, Hartford does not have an exclusive industrial zoning district; rather, it is coupled with commercial as the IC (Industrial-Commercial zoning district). Several general commercial and industrial areas exist throughout Hartford. Each area has developed a different mix of uses and its own unique character. Some areas, such as Kline Drive, A Street, Harrison Avenue, Route 14 and Old River Road are more industrial in nature, while Billings Farm and Olcott Drive have evolved into office/business parks. Sykes Mountain Avenue and Route 5 have developed a mix of general commercial uses, VA Hospital, US Postal Service Processing Facility, lodging, visitor services and automobile dealerships. Together, Hartford's general commercial and industrial areas have developed a broad range of uses that have contributed to the creation of a strong economic base in Hartford and the region. Some of the commercial and industrial parks in Hartford have or are approaching build-out.

New development should continue to include a broad range of uses such as general manufacturing, light manufacturing, large offices, business parks, hotels, transportation-related businesses, hospitals and institution, and take advantage of the public transit and town water and sewer that services the majority of the lands. Since there is a limited supply of commercial and industrial land

in Hartford, development should make use of high lot coverage ratios (up to 90%) and maximize the multi-story building heights (between 40 and to 60 feet). For commercial and industrial projects served by town water and sewer, development should incorporate a design which directs development toward the streetscape, with parking and related infrastructure located in rear and/or side yards. Facilities for pedestrians, bicyclists and bus patrons are important transportation features. For commercial and industrial projects not served by town water and sewer which are more rural in nature, development should be of a lower intensity with lower lot coverage, building heights, mass and scale. On-site open space should connect to the surrounding rural landscape. Driveway and road access to state and town highways should be minimized. (Relevant zoning districts: I-C, I-C2)

Gateway Commercial Lands

Gateway Commercial Lands are high profile transition areas along state highways from more rural areas to more developed areas. Three state highways (Route 4, 5 and 14) pass through Hartford, of which two are located on scenic byways: the Connecticut River Scenic Byway through White River Junction and Wilder on Route 5, and the Crossroad of Vermont Scenic Byway passes through White River Junction and Quechee on Route 4. Several commercial areas are located along the two scenic byways and represent gateways to Hartford: three commercial areas along Route 4 in Quechee (Waterman Hill, Quechee Gorge and the Quechee Interchange Area) and one commercial area along Route 5 in White River Junction (Route 5 south of the I-89 overpass). In general, these corridors are characterized by a rural scenic area, and a mixture of residential and nonresidential uses serving the traveling public, immediate neighborhoods and surroundings areas, with pockets of commercial development which have developed over time. Given the unique nature of each Gateway Commercial Area, not all types, scale or intensities of development may be appropriate in all locations. Therefore, in order to keep the character of these areas distinct, it may be necessary to vary the regulatory controls of each area.

The Gateway Commercial Lands should encourage a diverse mix of uses made up of (but not limited to) commercial (including retail), professional offices, light manufacturing and residential (including multi-family). In some instances, the scale of development is capped, and when possible development should reflect the scale of existing development, and be designed and configured to protect the rural character of these areas. Clustering is encouraged to preserve adjacent open space and rural character. New development also should incorporate a design which minimizes visual impact and is oriented towards the streetscape, with parking and related infrastructure located in rear and/or side yards. Driveway and road access to state and town highways should be minimized. Facilities for pedestrians, bicyclists and bus patrons should be considered. Moderate to high lot coverage (up to 75%) is encouraged as well as building heights up to 40’. Density of residential development, where allowed, is dependent upon municipal infrastructure, ranging from 1 dwelling unit per acre without town water and sewer service to 5.4 dwelling units per acre with town water and sewer service. (Relevant zoning districts QG, QII, HC)

Regarding the Quechee Interstate Area, the Town desires well-planned and coordinated development that is effectively integrated into the scenic character of this transition area around the Route 4 and I-89 interchange, referred to as the Quechee Interstate Interchange. As an important

gateway to the Town and Vermont, it warrants a balance between the needs of the traveling public and the community. In consideration of regional goals surrounding interstate interchanges and specifically the area around Exit 1 of I-89, development in this area should focus on general commercial and residential uses with retail as an accessory use only. Accessory use is defined as a use that is of a nature customarily incidental and subordinate to, the principal uses allowed within the area. The Town also is sensitive to development fitting in with the character of the surrounding area as well as the impact that some travel-oriented businesses may have. Therefore, development should be done in a manner that protects natural resources, including scenic views and the Quechee to Hartford Town Forest Wildlife Corridor (designated by the Vermont Fish and Wildlife Department as an "ecologically important crossing area"); preserves existing vegetation whenever possible; applies access management principles; addresses traffic safety; and includes building design that integrates with the character of the site with attention to mass and scale. Also, discussions over the past few years have brought to light that some of the Town's, Two Rivers-Ottauquechee Regional Commission's and State's long term visions for this interchange area are divergent and warrant further discussion. To ensure consideration of these different views, the Town advocates the creation of a joint study group to focus on creating a clear vision for this area balancing the needs of the varying constituencies.

Mixed-Use Lands

With five historic villages, Hartford has a rich history of mixed-use areas (a combination of residential and commercial uses). Mixed-Use Lands in Hartford include four compact village centers (Quechee, Wilder West Hartford and Hartford Village) and other Mixed-Use Lands, most of which are located in close proximity to village centers. These lands are characterized by a mixture of residential and nonresidential uses with varying levels of densities and intensity of uses. These areas include a mix of housing types and a variety of commercial uses which typically serve the immediate neighborhood and surrounding area.

Most of these areas are served by town water and sewer which provide opportunities for medium to high density residential development. Many of these areas are also served by transit and have sidewalks. With town water and sewer service, residential densities will be 12.5 to 21.5 dwelling units per acres. Without town water and sewer service, residential densities will be a maximum of 1.5 dwelling units per acre. Compact development including infill development is encouraged. Maximum lot coverage for the Mixed-Use Lands should vary from 65% to 90%, and maximum building height should be 40 feet.

For mixed-use areas served by town water and sewer, development should incorporate a design which directs development toward the streetscape, with parking and related infrastructure located in rear and/or side yards. Facilities for pedestrians, bicyclists and bus patrons should be considered. For mixed-use areas that are not served by town water and sewer, development should be designed and configured with appropriate transitions to the surrounding rural landscape and minimize driveway and road access to state and town highways. (Relevant zoning districts: VB, VR-C, RC-2)

Residential Lands

In Hartford, four of the five villages (excluding West Hartford) have town water and town sewer. This allows higher density development and has resulted in compact village centers surrounded by rural countryside. Residential Lands in Hartford are characterized by a mixture of single family and multi-family housing with varying densities. Historically, residential development occurred in the heart of the villages with a mixture of single family and multi-family housing on small lots) and during the last several decades, newer housing (primarily single family housing on larger lots) expanded out from village centers. The town water and sewer service area expanded to accommodate this growth. In turn, expanded water and sewer service has allowed higher density multi-family housing outside of village centers, particularly in Quechee and Wilder. Today, most of these residential areas remain fairly close to Hartford's village centers. Several residential areas are served by public transit.

Residential Lands provide opportunities for newer housing and limited non-residential uses that primarily serve the local neighborhood. Development should be compact with a well-defined streetscape and interconnected network of streets with access to public transit, adequate sidewalks and facilities for bicyclists and transit. Infill development is encouraged. Residential development should have moderate to high densities which allow for some neighborhoods as primarily single-family housing, while others are a mixture of single-family and multi-family housing. Residential densities should range from 3.5 to 11 units per acre. Maximum lot coverage should be 65%, and maximum building height should be 40 feet. Non-residential development should take into consideration compatibility with the existing neighborhood, the residential character and existing development patterns including mass and scale. (Relevant zoning districts: R-1, R-1M, R-2, R-3, VR-1)

Rural Residential Lands

Rural Residential Lands are characterized by low density residential development in rural areas located on open and forested land along the valley floor and along forested hillsides and typically without town water and sewer, with a few areas in Quechee that are served by town water and/or town sewer. In recent decades, these areas have experienced a higher concentration of residential development than other rural areas of Hartford. Residential density ranges from 1-2 dwelling units per acre. Lands in this designation tend to be located in close proximity to traditional village centers such as Quechee and West Hartford. Other Rural Residential Lands are located along Route 14 in the Rural North area and a section along Route 5 in the Rural South area.

Development in Rural Residential Lands should protect sensitive lands, be designed and configured to reinforce the rural character and historic working landscape of these districts, characterized by forested hillsides and hilltops, open fields/agricultural lands, and low-density residential development taking into consideration opportunities for agricultural use and forestry, and connectivity of undeveloped land. Non-residential uses are limited to those that complement the rural nature of the area, such as small scale farms, recreational agriculture, agri-tourism, farmstands, home businesses, and recreational and public facilities. (Relevant zoning districts: VR-2, RL-1)

Rural Lands

During the last century, hillside farming in Hartford and throughout Vermont declined and much of farmland transitioned to forest land. Rural Lands represent the traditional working landscape that makes up much of rural Hartford, characterized by open**,** agricultural and forested land along the valley floor, forested hillsides and hilltops, hillside farming, and low-density residential development. Some areas are more isolated with further distances from traditional village centers, while other areas border Rural Residential Lands.

Development may be difficult and/or limited due to natural resource constraints, and lack of public water and sewer services. Residential densities range from one lot per three acres to one lot per ten acres and nonresidential uses are very limited. Development should be designed and configured to protect sensitive lands, reinforce the rural character and historic working landscape of these lands, with residential and nonresidential development taking into consideration opportunities for agricultural use, including farms, recreational agriculture, agri-tourism, and farmstands, and forestry. Development should be clustered and designed to minimize encroachment into unfragmented areas and maintain the connectivity of undeveloped land to continue to support wildlife habitat and the working landscape. (Relevant zoning districts: RL-3, RL-5 and RL-10.)

Forest Conservation Lands

During the last century, hillside farming in Hartford and throughout Vermont declined and much of farmland transitioned to forest land. Forest Conservation Lands represent the traditional working landscape of the south central part of Hartford. These are the Town's most rural areas, historically characterized by many large minimally developed parcels on upland forests and ridges, with wildlife habitat, agriculture, steep slopes, limited residential development and several unimproved roads.

Development may be difficult and/or limited due to natural resource constraints. It should be designed and configured to reinforce the rural character and historic working landscape, protect sensitive lands, and minimize encroachment into unfragmented areas so connectivity of undeveloped land is maintained. Residential development density is very low with a maximum of 1 dwelling unit per 28 acres. Nonresidential uses are predominantly agriculture, forestry, conservation and recreation. (Relevant zoning districts: FC)

Strategies and Recommendations for Village Areas and Growth Centers

1. Designate the Villages of White River Junction, Quechee, Wilder, and Hartford as growth centers (see Growth Centers Map).

2. Revise zoning densities and dimensional requirements to encourage infill housing in the village areas, taking into consideration existing settlement patterns. **Implemented with the 2008 Zoning Amendments.**

3. Enhance pedestrian accessibility in village areas.

4. Reduce minimum lot size requirements. **Implemented with the 2008 Zoning Amendments.**

5. Continue to regularly evaluate the water and wastewater systems to ensure that improvements are planned and funded to accommodate anticipated growth for the foreseeable future.

6. Reduce minimum lot width and depth requirements to allow replication of historic development patterns. **Implemented with the 2008 Zoning Amendments.**

7. Encourage mixed-use development in the village centers.

8. Create a residential zoning district that allows multi-family housing as a permitted use. **Implemented with the 2008 Zoning Amendments.**

9. Allow a density bonus of up to 25% for affordable housing projects in areas served by Town water and wastewater.

10. Encourage the development of multi-family housing on a scale and design compatible with existing neighborhoods.

11. Ensure that higher density development does not detract from the historic character of Hartford's villages and the downtown.

12. Create a new commercial zoning district for the area around the Quechee Interstate Interchange that will protect the character of the area. **Implemented with the 2008 Zoning Amendments.**

13. Create a new zoning district for existing I-C (Industrial/Commercial) properties along Route 4 in Quechee and Route 5 South that will protect the character of the area. **Implemented with the 2008 Zoning Amendments.**

14. Change zoning district designations to more accurately reflect the existing character of the neighborhood. **Implemented with the 2008 Zoning Amendments.**

15. Carefully review the permitted and conditional uses for all village zoning districts. **Implemented with the 2008 Zoning Amendments.**

16. Assure that zoning districts in the village centers retain adequate pedestrian orientation. Such areas should have clear sets of standards regulating traffic flow, preservation of greenspace and the development of sidewalks or walkways where appropriate.

17. Consider reviewing the regulations, policies, and procedures for amending the Quechee Lakes Master Plan in recognition of changing roles, technologies, and community attitudes.

18. Provide tax incentives for higher density development in designated growth areas.

Strategies and Recommendations for Rural Areas

A common theme has been maintaining Hartford's rural character.

19. Create a Rural Planned Unit Development (PUD) Overlay District for all Rural Land Zoning Districts: For all major subdivisions, require detailed mapping of natural resources with an emphasis on preserving rural character and sensitive features including prime agricultural soils, wetlands, steep slopes, important wildlife habitat, scenic views, and ridgelines and hillsides that are easily visible from existing roadways and all overlay districts. **Implemented with the 2008 Zoning Amendments.**

20. Change the Definition of Minor Subdivisions: For all rural areas, change the definition of a minor subdivision to include boundary line adjustments and the creation of only one new lot, with criteria to be developed relative to the placement of structures and driveways based on natural resource constraints. Allow one minor subdivision per parcel every five years to give landowners the opportunity to slice off a small lot without having to go through an expensive application process.

21. Create a Wildlife Habitat Overlay District: To maintain critical wildlife corridors and habitat that connect to unfragmented forested areas within Hartford and to adjacent Towns, development will be encouraged close to roads and/or developed areas to allow sufficient wildlife corridors through the area.

    - Pomfret to QLLA Section 5 (Quechee/West Hartford Road)
    - QLLA Section 5 (across Route 4) to the Hartford Town Forest and south to Hartland.
    - QLLA Section 5 (across I-89 & the White River to Wildlife Road and north to Norwich.

    All major subdivisions require detailed mapping of natural resources. **Implemented with the 2008 Zoning Amendments.**

22. Create an Agricultural/Scenic Overlay District: Discourage development that impacts agricultural/scenic resources in:

    - Jericho Area
    - Route 5 South/Connecticut River Road
    - Christian Street

    All major subdivisions requires detailed mapping of natural resources. **Implemented with the 2008 Zoning Amendments.**

23. Create a New Zoning District (RL-10): In less developed areas where unfragmented forests, large agricultural lands, undeveloped lands, and other natural resources exist, propose a change from RL-5 to RL-10. RL-5 will continue in areas closer to villages, roads, and areas where development has occurred closer to five-acre densities. **Implemented with the 2008 Zoning Amendments.**

24. Create an Forest Conservation Zoning District in the Rural South Area: For the largest unfragmented forested area of Town that abuts the Town Forest and the Army Corps of Engineers lands where the density will be one lot per 28 acres, reduce the number of potential units in the most remote area of Town and allow for inclusion in the current use program. **Implemented with the 2008 Zoning Amendments.**

25. Allow Smaller Lots without Reducing Density: In the RL-3, RL-5 and RL-10 zoning districts, reduce the minimum lot size to one acre while maintaining the overall density of each zoning district (one lot per three acres in RL-3, one lot per five acres in RL-5, and one lot per ten acres in RL-10). This will allow the opportunity for greater clustering of houses to protect larger amounts of open lands, agricultural land and forest land. For instance, in the RL-10 district, a 30-acre lot could be subdivided into a maximum of three buildable lots. Two one acre building lots and a building lot for the remaining 28 acres could be created. Further subdivision of the 28-acre lot in the future would not be allowed since the maximum density of three lots would have already been achieved. **Implemented with the 2008 Zoning Amendments.**

26. Reduce Lot Width and Lot Depth Requirements: For lots two acres or smaller in the RL-3, RL-5 and RL-10 zoning districts, reduce the lot width requirement to 150' and the lot depth requirement to 150'. This will allow more efficient placement of lots, thereby protecting agricultural land, forest land and other natural resources. **Implemented with the 2008 Zoning Amendments.**

27. Reduce Minimum Setbacks: For lots two acres or smaller in the RL-3, RL-5 and RL-10 zoning districts, reduce the minimum setback requirements to 35' for the front and 25' for the side and rear. This will allow more efficient placement of houses, thereby protecting agricultural land, forest land, and other natural resources. **Implemented with the 2008 Zoning Amendments.**

28. Cluster residential development on the most suitable sites that minimize impact on natural resources and fragile features: These include prime agricultural soils, wetlands, streams, steep slopes, scenic views, ridgelines, and important wildlife habitat.

29. Maintain and enhance open space and recreational "infrastructure" important for long-term health and quality of life for Hartford residents.

30. Adopt standards to protect natural resources and fragile features: These areas include prime agricultural soils, wetlands, streams, steep slopes, scenic views, ridgelines and important wildlife habitat.

31. Carefully plan and design new residential development in rural lands districts to protect important agricultural land and other scenic and natural resources.

32. Encourage appropriate uses such as agriculture, forestry, wildlife habitat conservation, hunting and other recreational activities through incentive programs, land conservation as part of planned unit developments, purchase of development rights, and conservation easements and education.

33. Consider utilizing zoning and subdivision regulations to limit development on slopes exceeding 20%, on ridgelines and hilltops and on open meadows/agricultural land.

Recommendations and Strategies that Affect Both Rural and Village Areas

34. Try to achieve a population balance between rural Hartford (25%) and the areas served by Town water and wastewater service (75%).

35. Encourage private and public efforts to implement the following planning studies:
    a. River City Revival, 1991
    b. Railroad Row Historic District Plan, 1994
    c. Sykes Mountain Avenue Study, 2000
    d. Route 5 South Study, 2001
    e. White River Junction Village Revitalization Plan, 2009

36. Maintain wooded buffer areas between the I-89/I-91 Interstate Highways and surrounding properties.

37. Revise zoning, subdivision, highway, floodplain, etc. regulations to more closely reflect the Master Plan. **Partially implemented with the 2008 Zoning Amendments and the update of the Hartford Transportation Ordinance in 2013.**

38. Consider proposing/adopting basic building codes aimed at fire prevention and safety.

39. Promote the use of accessory apartments as a means of increasing the availability and affordability of housing.

40. Coordinate with the Two Rivers Ottauquechee Regional Commission and other regional organizations and surrounding Towns to create a well-balanced region.

41. Provide incentives for clustering housing.

42. Continue the Town's historic settlement pattern, defined by compact villages surrounded by rural countryside.

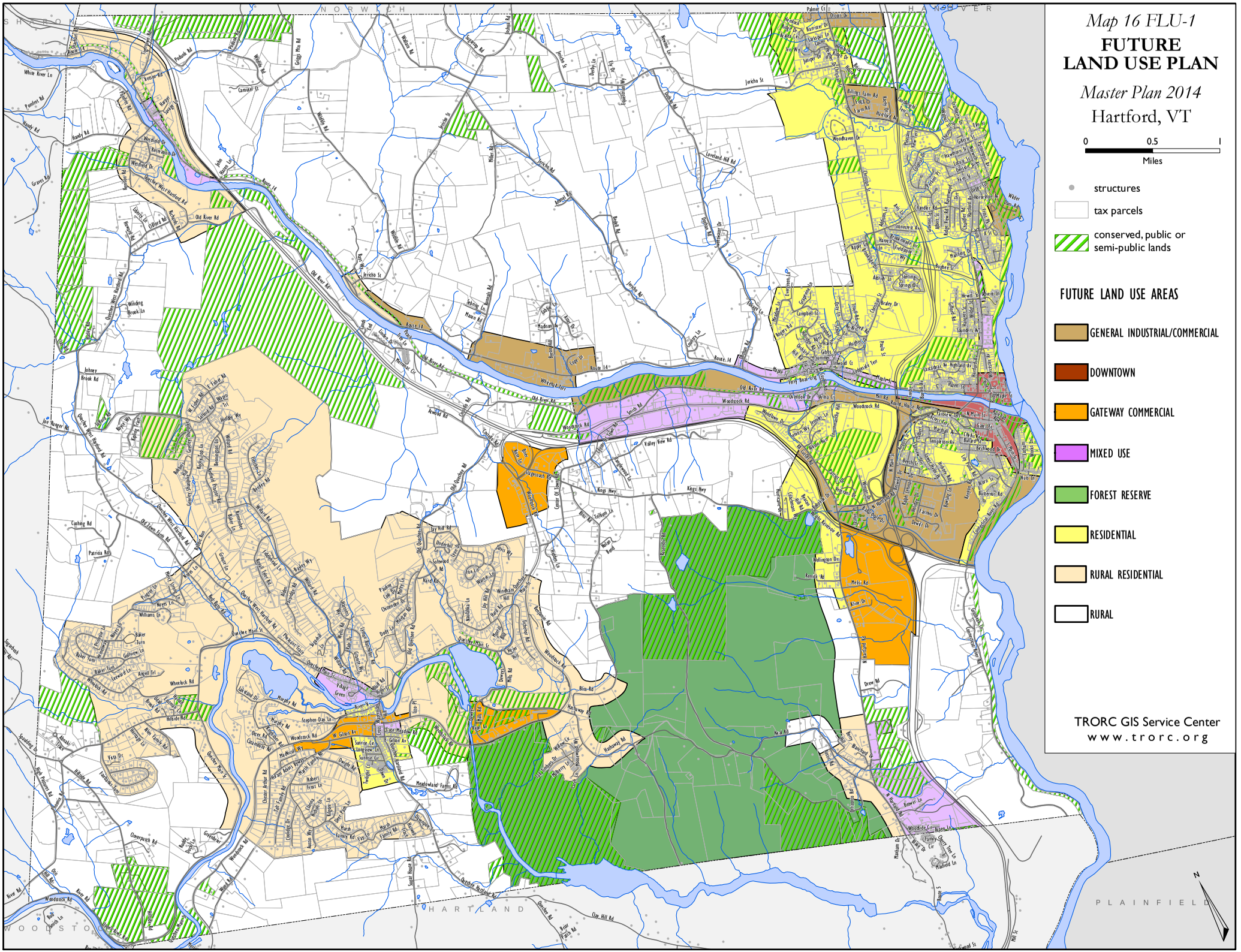
The following illustrations prepared by the Two Rivers-Ottauquechee Regional Commission are intended to show the difference between development utilizing the Pre 2008 zoning standards and development utilizing the current zoning standards, using the Jericho area as an example.

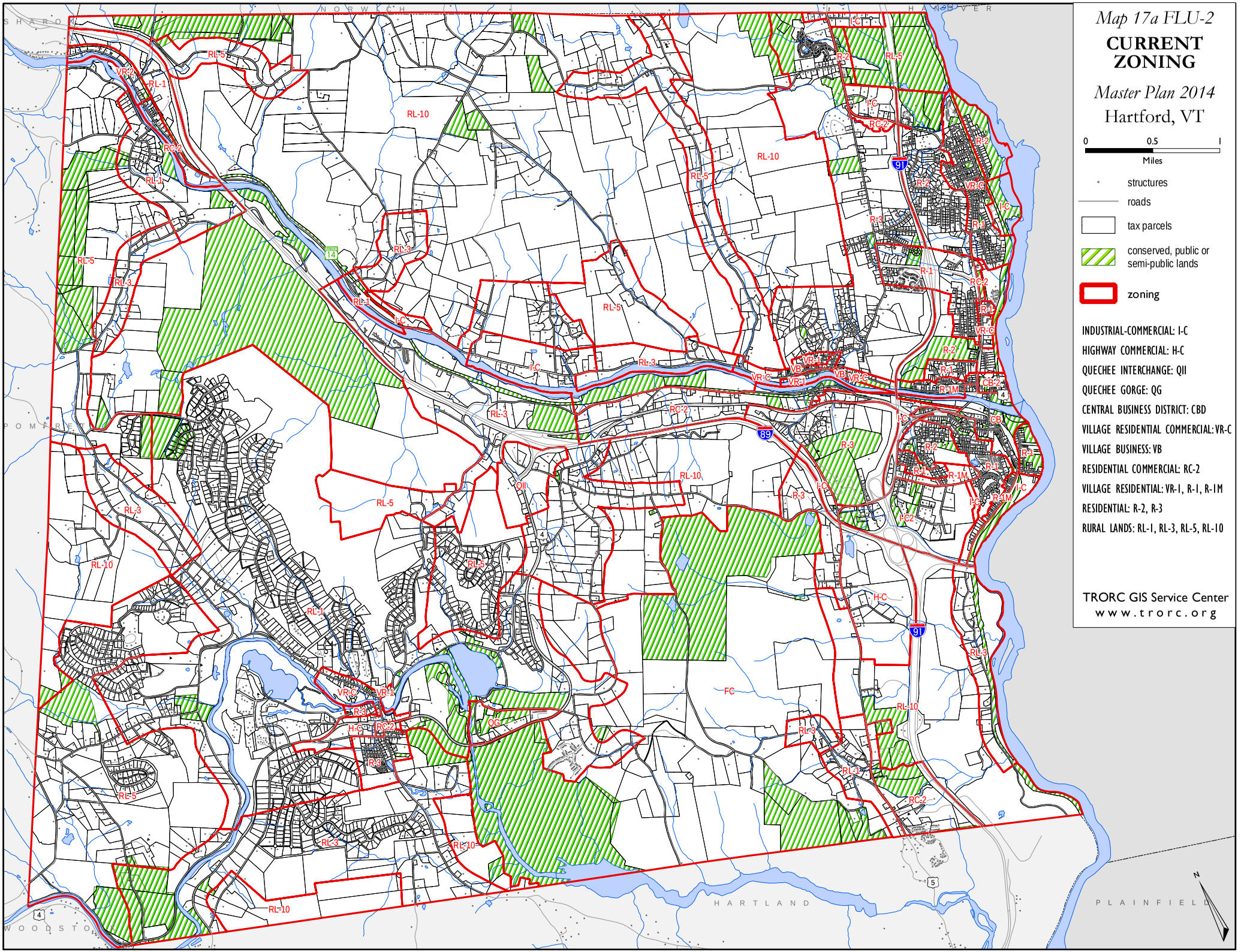
ILLUSTRATION II-1
EXISTING CONDITION

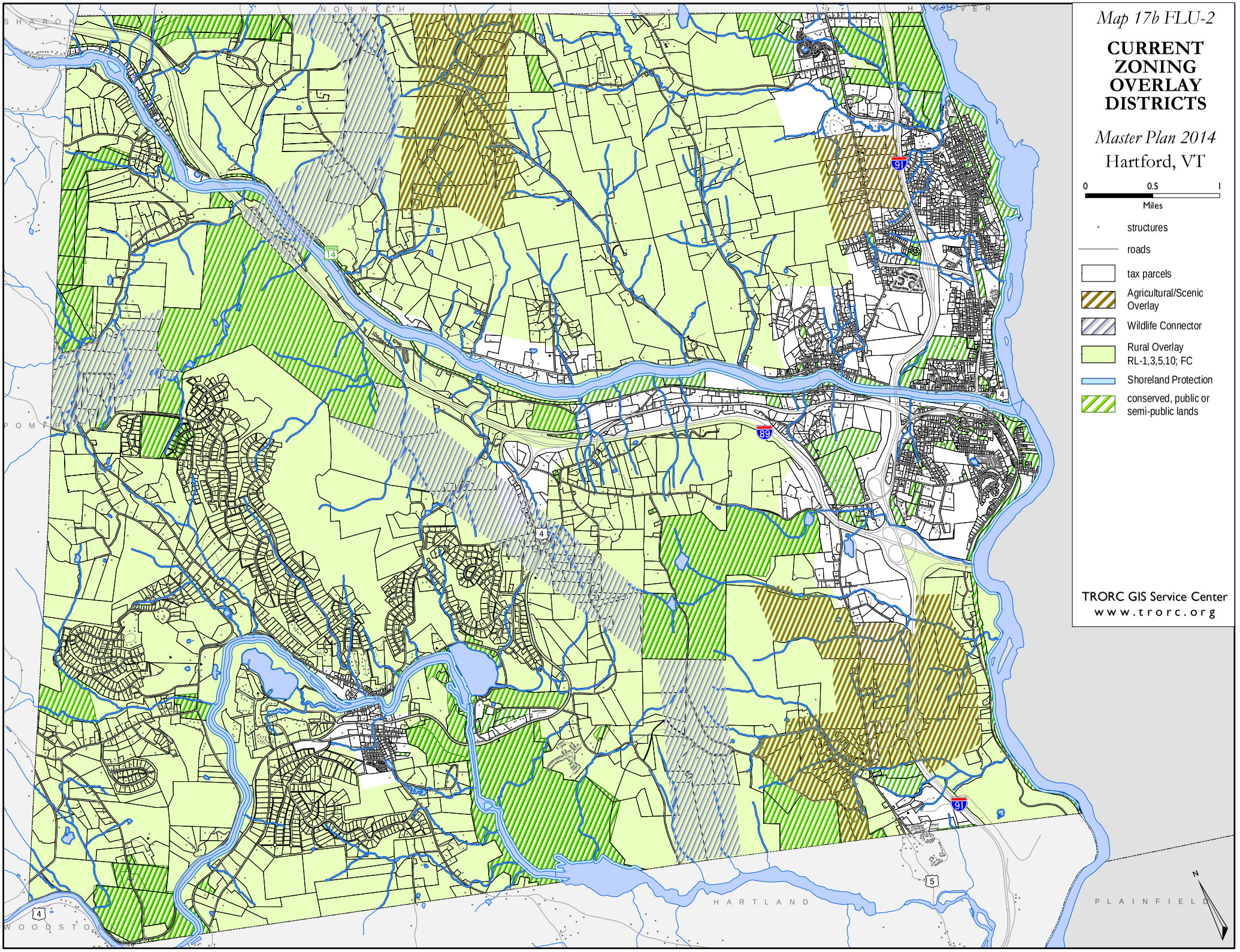
ILLUSTRATION II-2
DEVELOPMENT UTILIZING PRE 2008 ZONING STANDARDS

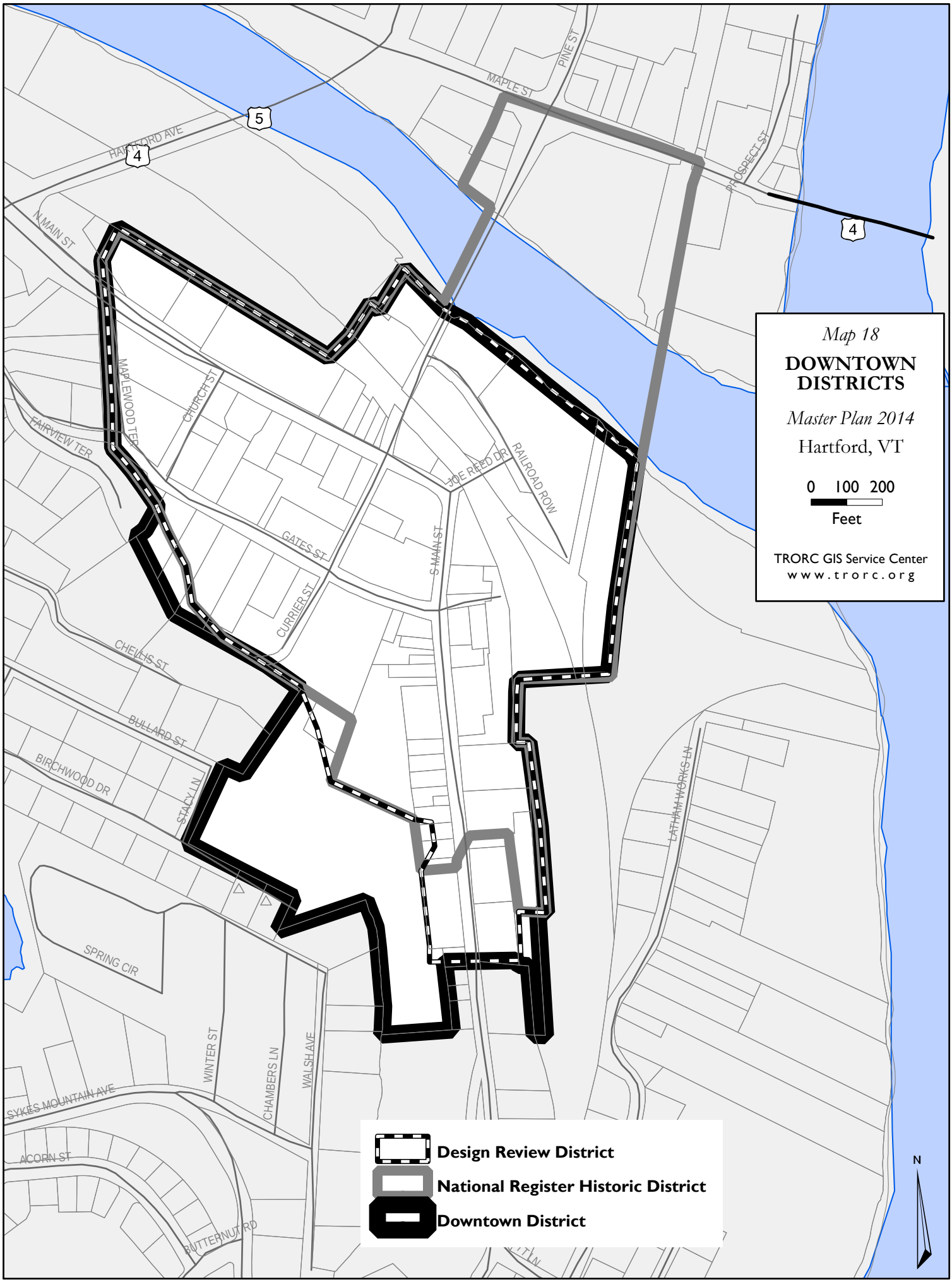
ILLUSTRATION II-3
DEVELOPMENT UTILIZING CURRENT ZONING STANDARDS

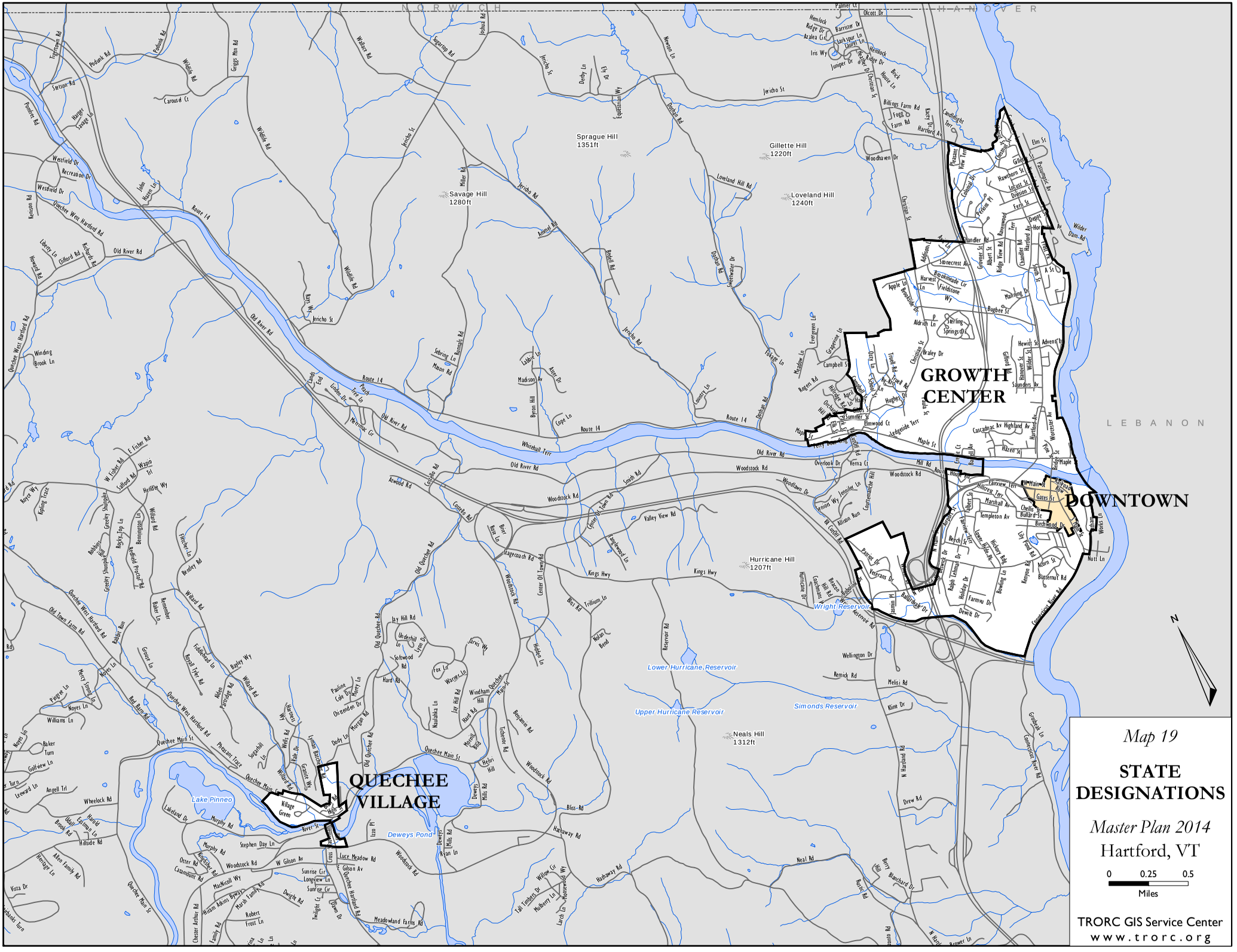
Illustration II-2 (Pre 2008 zoning) and Illustration II-3 (current zoning) result in the same number of dwelling units, but the current zoning allows for smaller lot sizes, reduced lot width and depth requirements, and reduced setbacks. The result is much less impact on the traditional rural agrarian landscape of Jericho.


Map 16 FLU-1
FUTURE
LAND USE PLAN
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
structures
tax parcels
conserved, public or
semi-public lands
FUTURE LAND USE AREAS
GENERAL INDUSTRIAL/COMMERCIAL
DOWNTOWN
GATEWAY COMMERCIAL
MIXED USE
FOREST RESERVE
RESIDENTIAL
RURAL RESIDENTIAL
RURAL
TRORC GIS Service Center
www.trorc.org
N
NORWICH
HANOVER
SHARON
HARTLAND
WOODSTOCK
PLAINFIELD


Map 17a FLU-2
CURRENT ZONING
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
structures
roads
tax parcels
conserved, public or semi-public lands
zoning
INDUSTRIAL-COMMERCIAL: I-C
HIGHWAY COMMERCIAL: H-C
QUECHEE INTERCHANGE: QII
QUECHEE GORGE: QG
CENTRAL BUSINESS DISTRICT: CBD
VILLAGE RESIDENTIAL COMMERCIAL: VR-C
VILLAGE BUSINESS: VB
RESIDENTIAL COMMERCIAL: RC-2
VILLAGE RESIDENTIAL: VR-1, R-1, R-1M
RESIDENTIAL: R-2, R-3
RURAL LANDS: RL-1, RL-3, RL-5, RL-10
TRORC GIS Service Center
www.trorc.org
SHARON
NORWICH
HANOVER
POMFRET
WOODSTOCK
HARTLAND
PLAINFIELD
N


Map 17b FLU-2
CURRENT ZONING OVERLAY DISTRICTS
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
structures
roads
tax parcels
Agricultural/Scenic Overlay
Wildlife Connector
Rural Overlay RL-1,3,5,10; FC
Shoreland Protection
conserved, public or semi-public lands
TRORC GIS Service Center
www.trorc.org
SHARON
NORWICH
HANOVER
POMFRET
WOODSTOCK
HARTLAND
PLAINFIELD
14
4
89
91
5
N


Map 18
DOWNTOWN DISTRICTS
Master Plan 2014
Hartford, VT
0 100 200
Feet
TRORC GIS Service Center
www.trorc.org
Design Review District
National Register Historic District
Downtown District
N
MAPLE ST
PINE ST
PROSPECT ST
HARTFORD AVE
N MAIN ST
MAPLEWOOD TER
CHURCH ST
FAIRVIEW TER
JOE REED DR
RAILROAD ROW
GATES ST
S MAIN ST
CURRIER ST
CHELSIS ST
BULLARD ST
BIRCHWOOD DR
STACY LN
LATHAM WORKS LN
SPRING CIR
WINTER ST
CHAMBERS LN
WALSH AVE
SYKES MOUNTAIN AVE
ACORN ST
BUTTERNUT RD


NORWICH
HANOVER
LEBANON
GROWTH CENTER
DOWNTOWN
QUECHEE VILLAGE
Sprague Hill 1351ft
Gillette Hill 1220ft
Savage Hill 1280ft
Loveland Hill 1240ft
Hurricane Hill 1207ft
Neals Hill 1312ft
Wright Reservoir
Lower Hurricane Reservoir
Upper Hurricane Reservoir
Simonds Reservoir
Lake Pinneo
Deweys Pond
Route 14
Old River Rd
Quechee Main St
Woodstock Rd
Kings Hwy
Jericho St
Jericho Rd
Old Quechee Rd
Quechee West Hartford Rd
Map 19
STATE DESIGNATIONS
Master Plan 2014
Hartford, VT
0 0.25 0.5
Miles
TRORC GIS Service Center
www.trorc.org

CHAPTER III

POPULATION

INTRODUCTION

An analysis of changing trends in a town's population is one of the most fundamental aspects of a master planning effort. Any significant changes in the population of a community will affect land use patterns, the town's economic base, and local demand for housing, education, transportation, human services, and community facilities. Demographic shifts are important, since knowledge of changes in the school age, senior citizen, and seasonal population is a prerequisite to providing for appropriate education, senior citizen housing, and future municipal services.

This chapter reviews the population changes in Hartford over time. First, the Town's population trends are presented and contrasted to those of Windsor County and the state as a whole. Next, the natural increase and migration patterns affecting Hartford's population growth are analyzed, along with characteristics of the population including household size, age distribution, and seasonal vs. year-round residency. The Town's seasonal population also is described. Finally, the future is explored in light of population projections, indicating the degree of change that may be expected over the next twenty years.

GOALS

l. To plan for Hartford's role in the region's anticipated growth, recognizing that there will be some disagreement among citizens regarding what constitutes an acceptable growth rate.

2. To try to direct this growth in a way that does not overburden Town services nor negatively impact the quality of life, rural atmosphere and economic resources of the Town and to balance common interests with individual interests.

POPULATION TRENDS

Since the first census in 1790, the Town of Hartford has grown steadily. The decades with the highest percentage increase in population occurred in rank order are the 1790s, 1880s, 1970s and 1800s. The largest net increase in population in rank order occurred in the 1970s, 1980s, 1990s and 1940s. Table III-1 summarizes Hartford's population change by decade. Between 1960 and 2010, Hartford has experienced a 56.6% increase in population, which is substantially higher than that of Windsor County (33.4%) but closer to the State of Vermont (60.5%). During the 1970s, there was a 22.9% increase in population from 6,477 persons to 7,963 in 1980, representing the largest ten-year population increase in Hartford's history and the largest percentage gain of the last century. During the 1980s, Hartford's population continued to increase at a brisk pace (18.1%), from 7,963 in 1980 to 9,404 in 1990.

During the 1990s, the population growth slowed down but remained steady at 10.2%, adding 963 people to the Town and bringing the population above 10,000 for the first time. Hartford's growth rate was higher than Windsor County (6.2%) and the State of Vermont (8.2%) but fell below the 13.2% growth rate for the U.S.

TABLE III-1
HARTFORD'S HISTORIC POPULATION CHANGE
1790 - 2010

YEAR	POPULATION	NET CHANGE	% CHANGE
1790	988	-	-
1800	1,494	506	51.2%
1810	1,831	337	22.6%
1820	2,010	179	9.8%
1830	2,044	34	1.7%
1840	2,341	297	14.5%
1850	2,159	-182	-7.8%
1860	2,396	237	11.0%
1870	2,480	84	3.5%
1880	2,954	474	19.1%
1890	3,740	786	26.6%
1900	3,817	77	2.1%
1910	4,179	362	9.5%
1920	4,739	560	13.4%
1930	4,888	149	3.1%
1940	4,979	91	1.9%
1950	5,827	848	17.0%
1960	6,355	528	9.1%
1970	6,477	122	1.9%
1980	7,963	1486	22.9%
1990	9,404	1441	18.1%
2000	10,367	963	10.2%
2010	9,952	-415	-4.0%

Source: U.S. Census

During the 2000s, Hartford experienced a 4.0% decrease in population while there was a 5.9% increase in total housing units. The population decrease was primarily due to an increase in the seasonal housing rate and vacancy rate. In 2000, 15% of housing units were classified as seasonal, while the figure increased to 18% in 2010. Also, in 2000, the homeowner vacancy rate was 1% and the rental vacancy rate was 2.5%. In 2010, the homeowner vacancy rate increased to 3% and the rental vacancy rate increased to 9%. Windsor County also experienced a population decrease (-1.3%) during the 2000s as well as many other Windsor County communities. A discussion of regional population trends follows on page 52.

Table III-2 summarizes population changes for Hartford, Windsor County, Vermont and the U.S. since the first federal census in 1790. From a low of 5% in 1830 to a high of 18.1% in 2000, Hartford comprises a significant portion of the Windsor County population. Table III-2 also shows that Windsor County's percentage of the State's population continues to decline slightly as other

Vermont counties have had higher growth rates. In 2000, Windsor County's population was 9.4% of the State's population. In 2010, the figure dropped to 9.1%. The percentage of Vermont's population to that of the U.S. has leveled off over the last several decades to approximately .2%.

Since 1790, there have only been two decades when Hartford's population declined (1840s and 2000s). Windsor County experienced six straight decreases in population between 1840 and 1890, and also experienced a decrease in population during the 2000s (-1.3%). The State of Vermont has experienced a decrease in population twice (1910s and 1930s). During the 2000s, Vermont recorded a population increase of 2.8%, considerably lower than the population increase of the 1990s (8.2%).

TABLE III-2
RELATIVE SHARES OF POPULATION
Hartford, Windsor County, Vermont, USA: 1790 - 2000

Year	Hartford	Windsor County	%Hartford Wind. Cty	VT	% Windsor County/VT	USA	% VT/ USA
1790	988	15,740	6.2	85,425	18.4	3,929,214	2.1
1800	1,494	26,940	5.5	154,465	17.4	5,308,483	2.9
1810	1,831	34,877	5.2	217,895	16.0	7,239,881	3.0
1820	2,010	38,242	5.2	235,981	16.2	9,638,453	2.4
1830	2,044	40,623	5.0	280,652	14.4	12,866,029	2.1
1840	2,341	40,356	5.8	291,948	13.8	17,069,453	1.7
1850	2,159	38,320	5.6	314,120	12.1	23,191,876	1.3
1860	2,396	37,193	6.4	315,098	11.8	31,443,321	1.0
1870	2,480	36,063	6.8	330,551	10.9	39,818,449	0.8
1880	2,954	35,196	8.3	332,286	10.5	50,155,783	0.6
1890	3,740	31,706	11.7	332,422	9.5	62,947,714	0.5
1900	3,817	32,225	11.8	343,641	9.3	75,994,575	0.4
1910	4,179	33,681	12.4	355,956	9.4	92,228,496	0.3
1920	4,739	36,984	12.8	352,428	10.4	106,021,537	0.3
1930	4,888	37,416	13.0	359,611	10.4	123,202,624	0.2
1940	4,979	37,862	13.1	359,231	10.5	132,164,569	0.2
1950	5,827	40,885	14.2	377,747	10.8	151,325,798	0.2
1960	6,355	42,483	14.9	389,881	10.8	179,323,175	0.2
1970	6,477	44,082	14.6	444,732	9.9	203,211,926	0.2
1980	7,963	51,030	15.6	511,456	9.9	226,504,825	0.2
1990	9,404	54,055	17.4	562,758	9.6	248,709,873	0.2
2000	10,367	57,418	18.1	608,827	9.4	281,421,906	0.2
2010	9,952	56,670	17.6	625,741	9.1	308,745,538	0.2

Source: U.S. Census

REGIONAL POPULATION TREND

In spite of a lower population gain (2.5%) during the 2000s, the Upper Valley region has experienced sizeable growth over the last fifty years. The opening of the interstate highways in the 1960s accelerated development in the region and, at the same time, made commuting to the core towns feasible from outlying areas, thereby contributing to more rapid growth in the regional periphery. Table III-3 illustrates the population change over the last fifty years. Since 1960, Hartford has experienced a 57% increase in population. This is slightly lower than the 61% growth rate for the State and considerably higher than the 33% growth rate for Windsor County for the same period. Several of the smaller outlying towns have more than doubled their population during this period. They include Grantham (799%), Sharon (210%), Canaan (159%), Thetford (147%), Enfield (145%), Plainfield (121%), and Hartland (113%). In actual numbers, Hanover experienced the largest net increase in population since 1960 (3,931), followed by Lebanon (3,852), Hartford (3,597), Enfield (2,715), Grantham (2,653) and Canaan (2,402). Although most of the region's communities have experienced steady population growth, the towns of Springfield and Windsor have actually lost population over the last fifty years due to the decline in manufacturing. Woodstock is the only other Town in the area that has experienced very small population growth (9.4%) over the last half century.

TABLE III-3
POPULATION TRENDS
Sample of Upper Valley and Windsor County Communities

							Net Change	**% Change**
	1960	**1970**	**1980**	**1990**	**2000**	**2010**	**1960-2010**	**1960-2010**
Lebanon, NH	9,299	9,725	11,134	12,183	12,568	13,151	3,852	41.4%
Hanover, NH	7,329	8,494	9,119	9,212	10,850	11,260	3,931	53.6%
Hartford	**6,355**	**6,377**	**7,963**	**9,404**	**10,367**	**9,952**	**3,597**	**56.6%**
Springfield	9,934	10,063	10,190	9,579	9,078	9,373	-561	-5.6%
Enfield, NH	1,867	2,345	3,175	3,979	4,618	4,582	2,715	145.4%
Canaan, NH	1,507	1,923	2,456	3,045	3,319	3,909	2,402	159.4%
Windsor	4,468	4,158	4,084	3,714	3,756	3,553	-915	-20.5%
Norwich	1,790	1,966	2,398	3,093	3,544	3,414	1,624	90.7%
Woodstock	2,786	2,608	3,214	3,212	3,232	3,048	262	9.4%
Hartland	1,592	1,806	2,396	2,988	3,223	3,393	1,801	113.1%
Thetford	1,049	1,422	2,188	2,438	2,617	2,588	1,539	146.7%
Royalton	1,388	1,399	2,100	2,389	2,603	2,773	1,385	99.8%
Plainfield, NH	1,071	1,323	1,749	2,056	2,241	2,364	1,293	120.7%
Grantham, NH	332	366	704	1,247	2,167	2,985	2,653	799.1%
Lyme, NH	1,026	1,112	1,289	1,496	1,679	1,716	690	67.3%
Sharon	485	541	828	1,211	1,411	1,502	1017	209.7%
Pomfret	600	620	856	874	997	904	304	50.7%
Windsor County*	42,483	44,082	51,030	54,055	57,418	56,670	14,187	33.4%
Vermont	**389,881**	**444,732**	**511,456**	**562,758**	**608,827**	**625,741**	**235,860**	**60.5%**

Source: U.S. Census

* Windsor County consists of the following communities: Rochester, Bethel, Royalton, Sharon, Norwich, Hartford, Pomfret, Barnard, Stockbridge, Bridgewater, Woodstock, Hartland, Windsor, West Windsor, Reading, Plymouth, Ludlow, Cavendish, Baltimore, Weathersfield, Springfield, Chester, Andover, and Weston.

Growth in the Upper Valley during the 1990s slowed down considerably from the rapid growth rate experienced in the 1970s and 1980s. Growth rates slowed further during the 2000s with many communities, including Hartford losing population. However, many communities gained population during the decade and some had double digit increases. They include Grantham (38%), Canaan (18%), and Orford (13%). Other communities with more modest gains in population included Sharon and Plainfield (6%), Lebanon, Hartland and Strafford (5%) and Hanover (4%). In terms of actual numbers, Grantham had the largest population increase during the 2000s (818), followed by Canaan (590), Lebanon (583) and Hanover (410). In terms of population decrease, Hartford had a net loss of 415, followed by Windsor (203), Woodstock (184) Norwich (130), and Pomfret (93). On the New Hampshire side, Enfield had a population decrease of 36 and Cornish had a decrease of 21.

TABLE III-4
POPULATION CHANGE
SAMPLE OF UPPER VALLEY COMMUNITIES
2000 TO 2010

	2000	**2010**	**Net Change**	**% Change**
Royalton	2,603	2,773	170	6.5%
Sharon	1,411	1,502	91	6.4%
Plainfield	2,241	2,364	123	5.5%
Hartland	3,223	3,393	170	5.3%
Lebanon	12,568	13,151	583	4.6%
Hanover	10,850	11,260	410	3.8%
Springfield	9,078	9,373	295	3.2%
Vermont	**608,827**	**625,741**	**16,914**	**2.8%**
Upper Valley	92,057	94,336	2,279	2.5%
Lyme	1,679	1,716	37	2.2%
Enfield	4,618	4,582	-36	-0.8%
Thetford	2,617	2,588	-29	-1.1%
Windsor County	57,418	56,670	-748	-1.3%
Cornish	1,661	1,640	-21	-1.3%
Norwich	3,544	3,414	-130	-3.7%
Hartford	**10,367**	**9,952**	**-415**	**-4.0%**
Windsor	3,756	3,553	-203	-5.4%
Woodstock	3,232	3,048	-184	-5.7%
Pomfret	997	904	-93	-9.3%

Source: U.S. Census

* For the purpose of this table, the Upper Valley Region consists of the following fourteen Vermont communities: Bradford, Fairlee, West Fairlee, Thetford, Strafford, Sharon, Norwich, Hartford, Pomfret, Woodstock, Hartland, Windsor, West Windsor, and Weathersfield; and the following eleven New Hampshire communities: Orford, Lyme, Dorchester, Canaan, Hanover, Lebanon, Enfield, Grantham, Plainfield, Cornish, and Claremont.

POPULATION CHANGE WITHIN HARTFORD

Table III-5 breaks down the population distribution by the three Census Designated Places (CDP) of White River Junction, Wilder and the remainder of Hartford. As shown, most of the growth in Hartford during the 1980s and 1990s was outside the villages of White River Junction and Wilder. However, during the 2000s, the Wilder CDP experienced an increase in population, while White River Junction and the remainder of the Town experienced a loss in population.

TABLE III-5
HARTFORD POPULATION DISTRIBUTION BY COMMUNITY

	WRJ CDP Population	Wilder CDP Population	Rest of Hartford Population	Total Population
1980	2,582	1,461	3,920	7,963
1990	2,521	1,576	5,307	9,404
2000	2,569	1,636	6,162	10,367
2010	2,286	1,690	5,976	9,952
% Change 2000-2010	-11.0%	3.3%	-3.0%	-4.0%

Source: U.S. Census

POPULATION TREND OF STATE'S LARGEST COMMUNITIES

Chittenden County continues to experience a higher rate of growth than the rest of Vermont. During the 2000s, Chittenden County's population increased 6.8% compared to 2.8% for the State. Chittenden County also has the four largest communities in the state and eight of the top twenty. Burlington ranks first with a population of 42,417, followed by Essex (19,587), South Burlington (17,904) and Colchester at 17,067. In rank order, South Burlington climbed from 5th to 3rd, Williston climbed from 15th to 12th, and Winooski climbed from 19th to 17th. Chittenden County also had three communities with a double digit increase in population for the decade, Williston grew by 14%, followed by South Burlington (13%) and Winooski (11%). Among the large communities that experienced the highest net increase in population were Burlington (3,528), South Burlington (2,090) and Williston (1,048). Five communities in the top twenty lost population and dropped in rank order. St. Albans City lost 10% of its population, dropping from 14th to 19th, followed by Rutland (5%) dropping from 3rd to 5th, and Hartford (4%) dropping from 8th to 9th. Among the larger communities that experienced the largest net decrease in population were Rutland City (-797), St. Albans City (-732), Hartford (-415), Barre City (-239) and Montpelier (-180).

TABLE III-6
VERMONT'S 20 LARGEST COMMUNITIES
AND POPULATION CHANGE
2000-2010

Rank 2010	Rank 2000	Municipality	2000	2010	2000-2010 Net Change	1990-2000 % Change
1	1	Burlington	38,889	42,417	3,528	9.1%
2	2	Essex (town)	18,626	19,587	961	5.2%
3	5	S. Burlington	15,814	17,904	2,090	13.2%
4	4	Colchester	16,986	17,067	81	0.5%
5	3	Rutland (city)	17,292	16,495	-797	-4.6%
6	6	Bennington	15,737	15,764	27	0.2%
7	7	Brattleboro	12,005	12,046	41	0.3%
8	9	Milton	9,479	10,352	873	9.2%
9	8	Hartford	10,367	9,952	-415	-4.0%
10	11	Springfield	9,078	9,373	295	3.2%
11	10	Barre (city)	9,291	9,052	-239	-2.6%
12	15	Williston	7,650	8,698	1,048	13.7%
13	12	Middlebury	8,183	8,496	313	3.8%
14	16	Barre (town)	7,602	7,924	322	4.2%
15	13	Montpelier	8,035	7,855	-180	-2.2%
16	17	St. Johnsbury	7,571	7,603	32	0.4%
17	19	Winooski	6,561	7,267	706	10.8%
18	18	Shelburne	6,944	7,144	200	2.9%
19	14	St. Albans (city)	7,650	6,918	-732	-9.6%
20	20	Swanton	6,203	6,427	224	3.6%

Source: U.S. Census

POPULATION DENSITY

The growth experienced by Hartford since 1960 has resulted in further development of its land base. With its 2010 population of 9,952, Hartford had a population density of 257 persons per square mile, which ranks below the population density of the City of Lebanon (355) but above that of Hanover, Windsor, Springfield and other neighboring towns (Table III-7). Windsor County has a population density of 59 persons per square mile, slightly below that of the State of Vermont, which has a population density of 68 persons per square mile.

TABLE III-7
POPULATION DENSITY IN SELECTED SURROUNDING COMMUNITIES
1960-2010

Town	Square Miles	1960	1970	1980	1990	2000	2010
Lebanon, NH	37	251.3	262.8	300.9	329.3	339.7	355.4
HARTFORD, VT	**38.8**	**163.8**	**166.9**	**205.3**	**242.3**	**267**	**256.5**
Hanover, NH	49.6	147.8	171.2	183.8	185.7	218.8	227.0
Windsor, VT	19.8	225.7	210	206.3	187.6	189.7	179.4
Springfield, VT	49.3	201.5	204.1	206.7	194.3	184.1	190.1
Norwich, VT	44.8	40	43.9	53.5	69	79.1	76.2
Hartland, VT	45.2	35.2	40	53	66.1	71.3	75.1
Woodstock, VT	44.6	62.5	58.5	72.1	72	72.5	68.3
Royalton, VT	40.6	34.2	34.5	51.7	58.8	64.1	68.3
Vermont	9,217	42.3	48.3	55.5	61.6	66.1	67.9
Windsor County	967	43.9	45.6	52.8	55.9	59.4	58.6
Thetford, VT	45.5	23.1	31.3	48.1	53.6	57.5	56.9
Plainfield, NH	52.4	20.4	25.2	33.4	39.2	42.8	45.1
Sharon, VT	39.9	12.2	13.6	20.8	30.4	35.4	37.6
Pomfret, VT	39.5	15.2	15.7	21.7	22.1	25.2	22.9

Source: U.S. Census

NATURAL INCREASE AND MIGRATION

The two components of population change are natural increase and migration. Natural increase is defined as the excess of resident births over deaths; migration refers to the number of people moving into and out of a town. If a community has little in- and out-migration, almost all changes in population are attributable to natural factors alone.

From 1990 to 1999, Hartford averaged 119 births per year and an average of 89 deaths per year. Hartford's excess of births over deaths added 304 persons for the decade. Since the Town's total population grew by 963 persons during that same period, there was a net in-migration of 659 persons (68.4% of the total increase). Thus, two-thirds of Hartford's population growth in the 1990s resulted from more people moving into the town than moving out, and one-third of the increase in population growth is due to births.

From 2000 to 2009, Hartford averaged 112 births per year and an average of 99 deaths per year. Hartford's excess of births over deaths added 135 persons for the decade. Since the Town's total

population decreased by 415 people during that same period, there was a net out-migration of 550 persons.

Table III-8 illustrates the changes in population that can be attributed to natural increase and in-migration or out-migration directly reflects the changes to some residential neighborhoods in Hartford. Population gains through in-migration are generally accommodated by: (1) constructing new homes, (2) adding to the number of housing units in existing structures, and/or (3) converting seasonal homes to year-round use.

TABLE III-8
BIRTHS, DEATHS AND POPULATION CHANGE
Hartford, 1990-2009

Year	Births	Deaths	Natural Increase	% Growth Due to Natural Increase	Total Population
1990	138	77	61	0.6%	
1991	141	82	59	0.6%	
1992	120	94	26	0.3%	
1993	128	101	27	0.3%	
1994	124	85	39	0.4%	
1995	110	93	17	0.2%	
1996	106	72	34	0.4%	
1997	102	89	13	0.1%	
1998	106	82	24	0.3%	
1999	114	110	-4	-0.1%	
1990s Totals	**1,189**	**885**	**304**		**10,367**
2000	105	88	17	0.2%	
2001	95	89	6	0.1%	
2002	91	87	4	0.1%	
2003	120	97	23	0.2%	
2004	121	105	16	0.2%	
2005	115	93	22	0.2%	
2006	119	108	11	0.1%	
2007	106	121	-15	-0.2%	
2008	128	97	31	0.3%	
2009	121	101	20	0.2%	
2000s Totals	**1,121**	**986**	**135**		**9,952**

Source: State of Vermont Vital Statistics

HOUSEHOLD SIZE

The trend for household size throughout the U.S. in recent decades has been a consistent decrease. Household size in Hartford, Windsor County and Vermont has followed that trend. Hartford continued to experience a slight decrease in household size between 2000 and 2010, following county and state trends. Census figures show that the mean number of persons per year-round housing unit in Hartford was 3.18 in 1970, 2.69 in 1980, 2.41 in 1990, 2.28 in 2000, and 2.22 in 2010. The 2010 figures for Hartford continue to be slightly lower than Windsor County (2.25) and the State of Vermont (2.34).

TABLE III-9
MEAN NUMBER OF PERSONS PER OCCUPIED YEAR-ROUND HOUSING UNIT
Hartford, Windsor County, Vermont

	1970	1980	1990	2000	2010
Hartford	3.18	2.69	2.41	2.28	2.22
Windsor County	3.08	2.63	2.47	2.35	2.25
Vermont	3.21	2.75	2.57	2.44	2.34

Source: U.S. Census

AGE DISTRIBUTION

Understanding the age composition of a community is vital in planning for future needs. A change in the school-age population, for example, may indicate a need for modification in educational policies. Likewise, a shift to a larger senior citizen population would require that different types and ranges of services and facilities be developed, such as assisted living and extended care.

As Table III-10 indicates, Hartford's median age continues to rise, along with that of Windsor County and the State. The earlier impact of the post-World War II "baby boom" that lowered the median age has reversed as the "baby boomers" have reached maturity, and they are now contributing to the aging trend. The increase in median age for Hartford in recent decades has been significant. That trend continued in the 2000s. In 1990, the median age was 34.7. It rose to 40.0 in 2000 and 43.3 in 2010. However, Hartford continues to have a lower median age than Windsor County (45.8), but higher than Vermont (41.5) and the U.S. (37.2).

TABLE III-10
MEDIAN AGE: HARTFORD, WINDSOR COUNTY, VERMONT

	1970	1980	1990	2000	2010
Hartford	28.4	31.1	34.7	40.0	43.3
Windsor County	30.4	32.2	36.0	41.3	45.8
Vermont	26.8	29.4	33.0	37.7	41.5

Source: U.S. Census

Table III-11 and Table III-12 summarize the characteristics of the age distribution for Hartford.

TABLE III-11
AGE DISTRIBUTION

Age Group	1990 No.	1990 %	2000 No.	2000 %	2010 No.	2010 %
0-4	706	7.5%	553	5.3%	546	5.5%
5-9	712	7.6%	689	6.6%	556	5.6%
10-14	566	6.0%	730	7.0%	590	5.9%
15-19	512	5.4%	658	6.3%	561	5.6%
20-24	526	5.6%	410	4.0%	488	4.9%
25-34	1,724	18.3%	1,302	12.6%	1,207	12.1%
35-44	1,650	17.5%	1,737	16.8%	1,299	13.1%
45-54	946	10.1%	1,698	16.4%	1,573	15.8%
55-64	829	8.8%	1,071	10.3%	1,483	14.9%
65+	1,233	13.1%	1,519	14.7%	1,649	16.6%
TOTAL	9,404		10,367		9,952	

Source: U.S. Census

As shown in Table III-11, the general trend over the last two decades has been a sizeable decrease in the 0-9 year-olds and 25-44 year olds, a moderate decrease for 20-24 year olds, consistent numbers for 10-19 year olds, steady increases in 65+ year olds and substantial increases in 45-64 year-olds. As with median age, the trend toward an older population is a reflection of the "baby boomers" passing from school age to the labor force and beyond. How this trend will affect the demand for services as the population ages will need to be closely monitored.

The working-age group (20-64) is often referred to as the labor force, although not all persons in the group are actually employed or looking for work, and some persons not in this age group are part of the labor force. As with most other communities in the region, this group accounted for the main portion of Hartford's population increase in the 1970s, jumping from 3,270 persons to 4,582 in 1980. The age group continued to grow in the 1980s to 5,675 in 1990 and to 6,218 in 2000. However, in 2010, this group decreased slightly to 6,050.

Regarding significant changes to specific age groups between 2000 and 2010, the 5-19 year olds experienced an 18% reduction, 20-24 year-old age group increased by 19%, the 35-44 year-old age group decreased by 25%, and the 55-64 year olds increased by 39%.

TABLE III-12
AGE DISTRIBUTION, 2000 TO 2010 CHANGE

Age Group	2000 No.	2010 No.	Net Change	% Change
0-4	553	546	-7	-1.3%
5-9	689	556	-133	-19.3%
10-14	730	590	-140	-19.2%
15-19	658	561	-97	-14.7%
20-24	410	488	78	19.0%
25-34	1,302	1,207	-95	-7.3%
35-44	1,737	1,299	-438	-25.2%
45-54	1,698	1,573	-125	-7.4%
55-64	1,071	1,483	412	38.5%
65+	1,519	1,649	130	8.6%
Total Number	10,367	9,952	-415	-4.0%

Source: U.S. Census

The senior citizen population, as defined by the U.S. Census, is made up of persons aged 65 and over. Although most people in this age group are retired, some are employed full or part-time. As is the case in Hartford, there are almost always more women than men in this age bracket. The size of this population group in Hartford continues to rise. As a percentage of total population, this group increased from 10% in 1970 to 12% in 1980 to 13% in 1990, 15% in 2000 and accounted for nearly 17% of the population in 2010. In actual numbers, between 1980 and 1990, the senior category increased by 268. From 1990 to 2000, seniors grew by 286, and from 2000 to 2010, seniors gained 130. Although Hartford has a lower percentage of senior citizens than Windsor County (17.8%), Hartford has a higher percentage of senior citizens than the State (14.6%). By 2020, it is possible that Hartford seniors will represent 20% of the population and ±55% of the property-owning/taxpaying population.

Table III-13 compares Hartford's senior citizen population (as a percentage of total population) to those of Windsor County and the State. The population of the U.S. will likely continue to show a relative increase in the over-65 age group, as the "baby-boom" generation ages and the effect of lower birth rates is felt. Hartford, Windsor County, and Vermont will, no doubt, be influenced by this population shift.

SEASONAL POPULATION

Much of Vermont features recreational opportunities in relation to its lakes, rivers and mountains. The Village of Quechee is typical of this recreational orientation, and it provides a strong market for seasonal homes. Besides the seasonal residents, there are many more visitors who stay for short periods or stop on the way to and from other recreational centers in northern New England.

According to the U.S. Census, the period between 1970 and 1990 resulted in rapid growth of seasonal housing in Hartford, primarily related to the Quechee Lakes Planned Development. In 1970, there were a total of 78 seasonal housing units in Hartford. In 1980, the figure increased to 461. In 1990, the number of seasonal housing units increased to 862. Consequently, there was an increase of 784 seasonal housing units in a twenty-year period. However, in the 1990s, there was a slight (3%) reduction in the number of seasonal housing to 839. This was followed by a 24% increase in seasonal units during the 2000s as the number rose by 200 to 1,039 as a result of renewed construction in the Quechee during the early 2000s. Hartford's percentage of total housing units that were seasonal increased from 15.3% in 2000 to 17.9% in 2010. This figure is above the State rate of 15.6%, but below the rate for Windsor County (21.7%).

Results of a 1984 survey of seasonal homes in Sunapee, New Hampshire, show that the average seasonal household size can be as high as 4.2. Applying this average to Hartford's seasonal housing units produces a 2010 seasonal population estimate of 4,364. Although Hartford's seasonal household size may be lower, this demonstrates that seasonal fluctuations can have substantial impacts on Hartford's infrastructure.

POPULATION PROJECTIONS

In the past, Hartford's population growth has been irregular, as shown previously in Table III-1. Changes in the economy, such as the addition of a large industry or the closing of a major employer, have had major impacts. In addition to regional job growth, household size and birth rates are among the many factors that affect population change. Therefore, estimates of future population are general guides and must be updated continually, accommodating new information and changing economic conditions.

In 1993, the Vermont Health Care Authority developed a range of population projections for each Vermont community based on various combinations of factors such as historical growth patterns and the age structure of the community. These projections are shown for Hartford in Table III-13. The projections were based on the 1990 census population of 9,404 for Hartford. Each scenario assumed growth to level off to some extent from the unusually high rates of the 1970s and 1980s. As shown in Table III-13, the moderate range projection for Hartford (9.7%) was extremely accurate to the actual growth rate of 10.2% during the 1990s. However, the recession of the late 2000s resulted in a population decrease closer to the low range projection.

TABLE III-13
HARTFORD POPULATION PROJECTIONS

	U.S. Census 1990	Projection 2000	% Change	Projection 2005	% Change	Projection 2010	% Change	Projection 2015	% Change
Low	9,404	9,795	4.2%	9,772	3.9%	9,839	4.6%	9,751	3.7%
Moderate	9,404	10,310	9.6%	10,622	12.9%	10,935	16.3%	11,210	19.2%
High	9,404	10,826	15.1%	11,473	22.0%	12,029	27.9%	12,667	34.7%

Note: % = % change from 1990 Census.
Source: Vermont Population Projections, Vermont Health Care Authority, June 1993

RECOMMENDATIONS

1. Identify and track population indicators in order to ensure adequate facilities and services for different age groups.

2. Continue to plan for accommodating a changing population, including school age and senior citizens, while evaluating actions such as zoning changes and water and sewer service area expansions to ensure their population impacts are compatible with other goals and objectives of the community.

3. Explore opportunities and policies to encourage and promote growth in the Town's population.

CHAPTER IV

HOUSING

INTRODUCTION

As a community that was settled over two hundred years ago, Hartford has a long history of having a mixture of compact village centers surrounded by open countryside. Over the years, Hartford's housing stock has evolved into a diverse range of types and styles in both the more urban areas of Town as well as the rural areas. There are large single-family residences in rural areas, mobile homes on large lots, and mobile homes in mobile home parks. There are small historic homes in village centers and large and small apartment buildings, condominiums that serve year-round residents and others that serve as vacation homes. There are large-lot single-family neighborhoods and compact neighborhoods made up of a mixture of single-family, two-family, and multi-family dwellings. There are small and large senior housing complexes. The diversity of housing has been an important community resource. However, in the last decade, housing prices rose significantly and although prices have stabilized in the last few years, obtaining housing is an ever-increasing challenge for many of Hartford's residents and employees of businesses in Town, as well as employers wishing to expand or locate in Hartford. The Town is at a critical juncture, as decisions about housing that are made in the short term will impact the Town, its residents, and businesses for many years to come.

This chapter summarizes the characteristics of the present housing stock in Hartford, the increasing gap between housing costs and wages, and projections about additional housing that will be needed in the near future to serve the growing population and businesses, and outlines recommendations to encourage continued housing diversity and choice.

RESULTS FROM THE MASTER PLAN COMMUNITY MEETINGS

During the fall of 2002, the Town undertook a series of community meetings to solicit input from the public regarding the update of the Town Master Plan. The meetings were well-attended. Several themes developed from these meetings. They included:

- Promote mixed-use in the villages and downtown.
- Prevent sprawl-like development by encouraging growth in village areas where the infrastructure is available to accommodate development.
- Identify and inventory site limitations, infrastructure constraints, density and existing zoning to determine where higher density, mixed-use development is most feasible.

The sessions also resulted in several recommendations:

- Look at adaptive reuse of older buildings instead of constructing new buildings.
- Determine where the best areas are in Town for different types of housing, taking into consideration available infrastructure and zoning.
- Plan housing in coordination with all other uses.

HOUSING PATTERNS

Historically, the greatest concentration of housing in Hartford is in the contiguous villages of Wilder, White River Junction and Hartford Village where municipal water and sewer exist. During the last forty years, a second concentration of housing developed in Quechee, where the Quechee Lakes Planned Development was designed to blend in with the wooded hillsides, saving much of the low-lands for recreational uses. Most of Quechee Lakes is served by on-site wells and municipal sewer. With a maximum planned build-out of 2,154 units, to date, approximately 2/3 of the units have been built. Although municipal water exists in Quechee, it is limited primarily to the valley floor, the heart of the village and along Route 4.

Hartford has a long history of rural hamlets and outlying areas composed of farmland dotted with barns and farmhouses. Over the last half century, many farming operations ceased and the homes began to serve residents employed in Hartford or nearby communities. In recent decades, that trend has continued as rural areas have become attractive places for people to build. This has spurred more housing growth on the hillsides of Hartford and surrounding communities.

HOUSING CHARACTERISTICS

Following two decades of rapid growth, the 1970s (64.2% increase) and the 1980s (30.7% increase), housing growth fell considerably during the 1990s and 2000s in large part because of two separate recessions, one in the early 1990s and the other in the late 2000s. According to the 2000 U.S. Census, Hartford had a total of 5,493 housing units. This represented a 9.3% increase since 1990. Census figures for Hartford in 2010 indicated that housing growth slowed further resulting in a 5.9% increase for the decade.

TABLE IV-1
HARTFORD HOUSING GROWTH
CHANGE BETWEEN 1970-2010

	1970	1980	1990	2000	2010	1970-2010
Housing Units	2,121	3,483	5,026	5,493	5,816	
Net Change	-----	1,362	1,543	467	323	3,695
% Change	-----	64.2%	30.7%	9.3%	5.9%	174.1%

Source: U.S. Census

The 1990s resulted in other changes as well. After two decades of sizeable growth in the seasonal and second-home market (primarily due to development of the Quechee Lakes Planned Development), the 1990s resulted in a slight decrease (2.7%) in seasonal and second homes as many

of these units were absorbed as year-round housing. There also was a sizeable decrease in the number of vacant units (57.2%) as the housing market tightened during the latter part of the decade.

During the first half of the 2000s, Hartford experienced steady numbers of new housing units. Between 2002 and 2006, Hartford averaged 108 units per year. However, as a result of the national recession, housing numbers dropped considerably beginning in 2006 and have continued to fall since then. For the decade, Hartford had a 5.9% increase in the number of housing units. The decade also saw a resurgence in seasonal housing as the number of seasonal units increased 23.8% from 839 to 1,039. Another change brought on by the recession was a 128.3% increase in vacant units. As a result, there was a 1.4% drop in housing occupancy and a 4.0% loss in population.

TABLE IV-2
HARTFORD HOUSING GROWTH
NUMBER AND TYPES OF HOUSING UNITS
1970-2010

Year	# Occupied Year-round Units	% Change	# Seasonal & 2nd Homes	% Change	# of Vacant Units	% Change	# of Total Units	% Change
1970	2,003	--	78	--	40	--	2,121	--
1980	2,958	47.7	461	491.0	64	60.0	3,483	64.2
1990	3,825	29.3	862	87.0	339	430.0	5,026	44.3
2000	4,509	17.9	839	-2.7	145	-57.2	5,493	9.3
2010	4,446	-1.4	1,039	23.8	331	128.3	5,816	5.9

Source: U.S. Census

Another change during the 2000s was a shift back to construction of multi-family housing. From 1984 to 1989, a total of 501 multi-family units were constructed in Hartford, which was more than half of the total housing units built during that period. During the 1990s, only 75 multi-family units were constructed, reflecting a mere 16.6% of the total number of new housing units. During the early 2000s, a number of large multi-family housing developments took place in Quechee and Wilder and multi-family housing accounted for 42.9% of new housing for the decade.

TABLE IV-3
NEW HOUSING UNITS IN HARTFORD DURING THE 2000s

	Year	Single-family	Multi-family	Total
	2000	22	2	24
	2001	39	4	43
	2002	63	75	138
	2003	50	28	78
	2004	49	71	120
	2005	50	44	94
	2006	31	10	41
	2007	25	16	41
	2008	11	7	18
	2009	8	4	12
2000-2009	Total	348	261	609

Source: Department of Planning and Development Services

During the 1990s, most of the new single-family housing was owner-occupied. The growth rate of owner-occupied housing during the 1990s was 24.3%, compared to a growth rate of 6.9% for renter-occupied housing. This demonstrated a decrease in the amount of new rental housing. The percentage of owner-occupied housing increased from 63.1% in 1990 to 66.6% in 2000 while the percentage of renter-occupied housing decreased from 36.9% in 1990 to 33.4% in 2000. Still, Hartford's share of owner-occupied housing lagged behind the State (70.6%) and Windsor County (71.5%).

During the 2000s, there was a -1.6% decrease in owner-occupied units and a .09% decrease in renter-occupied units. Overall, the percentage of owner-occupied units decreased slightly from 66.6% in 2000 to 66.4% in 2010.

TABLE IV-4
HARTFORD HOUSING STOCK
NUMBER OF OWNER AND RENTER OCCUPIED UNITS AND PERCENTAGE OF YEAR-ROUND OCCUPIED UNITS
CHANGE BETWEEN 1990-2010

	Owner Occupied	Percent Units	Renter Occupied	Percent Units
1990	2,415	63.1%	1,410	36.9%
2000	3,002	66.6%	1,507	33.4%
2010	2,953	66.4%	1,493	33.6%
Total Change 2000-2010	-49		-14	
Percent Change 2000-2010	-1.6%		-.09%	

Source: U.S. Census

Table IV-5 indicates the decrease in owner-occupied housing units from 54.7% in 2000 to 50.8% in 2010, while the percentage of renter-occupied housing decreased from 27.4% in 2000 to 25.7% in 2010. Off-setting the decrease in occupied units was a significant increase in the percentage of seasonal units (23.8%) and vacant units (128.3%) over the course of the decade.

TABLE IV-5
HARTFORD HOUSING STOCK
CHANGE IN PERCENT OF TOTAL 1990-2010

	Owner Occupied Units	Renter Occupied Units	Seasonal & 2nd Home Units	Vacant Units	Total Units
1990 #	2,415	1,410	862	339	5,026
1990 %	48.1%	28.1%	17.2%	6.7%	100%
2000 #	3,002	1,507	839	145	5,493
2000 %	54.7%	27.4%	15.3%	2.6%	100%
2010 #	2,953	1,493	1,039	331	5,816
2010 %	50.8%	25.7%	17.9%	5.7%	100%

Source: U.S. Census

Although Hartford experienced a slight decrease in the percentage of owner-occupied units, Windsor County and Vermont experienced slight increases. In 2000, owner-occupied units accounted for 70.6% in Vermont. In 2010, the rate increased to 70.7%. In 2000, owner-occupied units accounted for 71.5% in Windsor County. In 2010, the rate increased to 72.3%.

TABLE IV-6
NUMBER OF OWNER AND RENTER OCCUPIED UNITS AND PERCENT OF YEAR-ROUND OCCUPIED UNITS
HARTFORD, WINDSOR COUNTY, VERMONT, 2000 AND 2010

	Hartford			Windsor County			Vermont		
	No. 2010	% 2010	% 2000	No. 2010	% 2010	% 2000	No. 2010	% 2010	% 2000
Owner Occupied	2,953	66.4	66.6	17,897	72.3	71.5	169,784	70.7	70.6
Renter Occupied	1,493	33.6	33.4	6,877	27.7	28.5	70,850	29.3	29.4

Source: U.S. Census

Although there are a large number of older homes in Hartford, sizeable growth in new housing over the last four decades has reduced the percentage of housing built in 1930 or earlier to 20.3% according to the American Community Survey. The percentage of housing built prior to 1960 was 30.4%. Table IV-7 shows the age of Hartford's housing stock. Compared to Windsor County and the State, Hartford's housing stock is newer. Although figures are not available for 2010, in 2000 the median year that Hartford's housing stock was built was 1975, compared to 1966 for Windsor County and 1968 for the State, indicating that Hartford has a newer housing stock.

TABLE IV-7
HARTFORD AGE OF HOUSING STOCK

	Number Of Units	Percent
2005 or later	85	1.4%
2000-2004	264	4.3%
1990 to 1999	646	10.6%
1980 to 1989	1,459	24.0%
1970 to 1979	1,426	23.5%
1960 to 1969	354	5.8%
1940 to 1959	609	10.1%
1930 or earlier	1,236	20.3%

Source: U.S. Census Bureau 2006 -2010 American Community Survey

Historically, Hartford has had a fairly high percentage of rental housing including multi-family units. During the 1970s and 1980s, there was a substantial increase in the number of units in a structure. Despite those growth rates over the last few decades, single-family homes remain the predominant housing type in Hartford (Table IV-7).

TABLE IV-8
HARTFORD, UNITS IN STRUCTURE

	Number Of Units	Percent
1 Unit detached	3,142	51.7%
Mobile homes	319	5.2%
1 unit attached	390	6.4%
2 units	359	5.9%
3 or 4 units	465	7.6%

5 to 9 units	1,070	17.6%
10 to 19 units	287	4.7%
20 or more units	47	.8%

Source: U.S. Census Bureau 2006 -2010 American Community Survey

The national recession of the late 2000s has had its effect on the housing market. This was evident in an increase in the number of vacant housing units in Hartford and elsewhere compared to 2000 Census figures. The vacancy rate increased from 2.6 in 2000 to 5.7% in 2010. Hartford's homeowner vacancy rate in 2010 was 3.0% and the rental vacancy rate was 9.0%. These compare to homeowner vacancy rates of 2.7% for Windsor County and 1.9% for the State, and rental vacancy rates of 10.2% for Windsor County and 6.9% for the State, as reported by the 2010 Census.

TABLE IV-9
HOUSING VACANCY RATES IN HARTFORD: 1990-2010

	1990	2000	2010	% Change 2000-2010
For Rent	137	38	149	292.1%
For Sale only	105	31	93	200.0%
Rented or sold, but not occupied	38	27	19	-29.6%
Other vacant	59	49	70	42.9%
Total	339	145	331	128.3%

Source: U.S. Census

Housing affordability also relates to housing condition and overcrowding, as lower incomes generally do not allow for routine maintenance and often do not allow for an appropriately sized home. Often, low-income renters are paying rents that are not sufficient for adequate property maintenance. The U.S. Census found that in 2000, 59 housing units in Hartford had more than one person per room (considered overcrowded). According to the American Community Survey (2006-2010) there were 39 units with 1.01 to 1.5 occupants per room and 41 units with 1.51 or more occupants per room. In 2000, there were 21 housing units that lacked complete plumbing (one indicator of substandard condition). According to the American Community Survey (2006-2010) there were 90 units lacking complete plumbing. Problems such as leaking roofs, structural defects, and faulty wiring are often faced by those without incomes adequate to pay housing costs and properly maintain the housing unit but are not included in the Census figure. Housing age is another indicator of potentially poor condition. Although a large number of units have been added during the past three decades, 20.3% of Hartford's housing stock (1,236 units) were built in 1930 or earlier.

HARTFORD POPULATION IN HOUSING

The total population of Hartford reported in the 2010 Census was 9,952. Of these, 57 live in institutions (hospitals, nursing homes, community care homes) and 20 live in non-institutionalized

group quarters. The remaining 9,875 live in the 4,446 year-round occupied housing units. Of these, 6,922 live in owner-occupied units (70.0%) and 2,953 live in Rental Units (30.0%).

The trend for household size throughout the U.S. in recent decades has been a steady decrease. Household size in Hartford, Windsor County and Vermont has followed that trend, and once again the 2000s resulted in smaller households. Census figures show that the mean number of persons per year-round housing unit in Hartford dropped from 2.41 in 1990 to 2.28 in 2000 and to 2.22 in 2010. Average family size in Hartford decreased at a lower rate from 2.88 in 1990 to 2.86 in 2000 to 2.82 in 2010. Owner-occupied households average 2.34 persons per year-round housing unit, while renter-occupied households average 1.98 persons per year-round housing unit.

TABLE IV-11
MEAN NUMBER OF PERSONS PER OCCUPIED YEAR-ROUND HOUSING UNIT
HARTFORD, WINDSOR COUNTY, VERMONT

	1970	1980	1990	2000	2010
Hartford	3.18	2.69	2.41	2.28	2.22
Windsor County	3.08	2.63	2.47	2.35	2.25
Vermont	3.21	2.75	2.57	2.44	2.34

Source: U.S. Census

Another national trend is an aging population. Hartford and Windsor County have a population that is older than the State of Vermont and the U.S. average. In 1990, 1,233 or 13.1% of Hartford residents were age 65 and over. In 2000, the figure increased to 1,519 or 14.7% of the population. In 2010, the figure increased again to 1,649 or 16.6%. In 2010, Windsor County's population 65 and over was 17.8 compared to 14.6% for the State. Hartford's median age increased from 34.7 in 1990 to 40 in 2000. In 2010, Hartford's median age increased to 43.3. In Windsor County, the median age was 45.8. In Vermont, the median age was 41.5 and 37.2 for the U.S. In 2010, 27.0% of Hartford households (1,205) had an individual 65 years or older. In 2010, there were 1,459 single-person households in Hartford. This represented 32.8% of Hartford households. Of the single-person households, 553 or (37.9%) were senior citizens. As the "baby boom" population approaches retirement, they are likely to have a sizeable impact on housing.

In 2010, a majority (75%) of Hartford households had no minor children and 41.1% of Hartford households were non-family households. Compared to Windsor County, Vermont, and the U.S., Hartford has a higher percentage of non-family households (see Table IV-12). Hartford also has a higher percentage of single-person households. Hartford and Windsor County have a slightly lower percentage of family households with married couples and their own children, than Vermont and the U.S.

TABLE IV-12
HOUSEHOLDS BY TYPE, 2010

	Town of Hartford	Windsor County	State of Vermont	United States
% Family Households	58.9%	62.3%	62.5%	66.4%
% Family Households with Married Couple with own minor children	24.5%	24.0%	26.2%	29.8%
% Non-family Households	41.1%	37.7%	37.5%	33.6%
% Householder Living Alone	32.8%	30.0%	28.2%	26.7%

Source: U.S. Census

Of the 24.5% of Hartford households with minor children, 709 or 65% were in married couple households with two potential wage earners. Single parent households with one potential wage earner totaled 381 or 35%. Married couple households with minor children average 1.8 minor children, while single parent households with children average 1.55 minor children.

COST OF HOUSING

Home Ownership

During the 1980s, there was a construction boom, which was followed by a period of escalating housing prices in Hartford and throughout the State and region. This was followed by a period of relatively slow growth in housing prices during the 1990s in part due to a regional recession. According to the 1990 census, the median home price for selected owner-occupied units was $110,500 in Hartford, which was 15.7% higher than the statewide median price of $95,500. In the 2000 Census, the Hartford median price increased to $120,600, 7.5% higher than the statewide median of $111,500. Table IV-13 indicates that there were significantly fewer homes in Hartford valued under $100,000 as compared to the County and the State.

During the first half of the 2000s, a resurgence in construction took place in Hartford and much of Vermont. This was followed by escalating housing prices. However, a national recession set in 2007 and led to a significant drop in construction and stabilized housing prices.

TABLE IV-13
NUMBER AND PERCENT OF OWNER-OCCUPIED HOUSING UNITS
BY VALUE CATEGORIES
HARTFORD, WINDSOR COUNTY, VERMONT

Value	Hartford Percentage	County Percentage	State Percentage
Less than $100,000	8.8%	13.4%	11.5%
$100,000-$199,999	31.4%	34.2%	33.2%

$200,000-$299,999	33.0%	23.2%	29.2%
$300,000-$499,999	20.0%	18.9%	18.9%
$500,000+	6.7%	10.3%	7.2%
Median	$225,900	$209,900	$216,800

Source: U.S. Census Bureau 2006 -2010 American Community Survey

The following housing sales data was collected by the Vermont Department of Taxes through the State property transfer tax. Census results from 1980, 1990, and 2000 indicate higher housing costs in Hartford than in Windsor County and the State. The following table shows that the State median housing sales price surpassed Hartford's briefly in 2000 and 2001 and again in 2008. In 2010, Hartford's median sales price was 0.5% higher than the State and 7.7% higher than Windsor County.

TABLE IV-14
MEDIAN PRICE OF PRIMARY RESIDENCES SOLD BY YEAR
HARTFORD, WINDSOR COUNTY, VERMONT
1999-2010

Year	Hartford	Windsor County	Vermont
1999	$107,500	$102,500	$110,000
2000	$112,250	$110,000	$119,000
2001	$120,500	$120,000	$126,900
2002	$145,000	$129,000	$134,925
2003	$156,000	$142,500	$149,900
2004	$173,000	$155,000	$164,500
2005	$218,250	$176,500	$184,900
2006	$207,000	$185,000	$195,000
2007	$207,000	$184,250	$200,000
2008	$185,000	$194,500	$200,000
2009	$200,000	$185,000	$190,000
2010	$195,000	$180,000	$194,000

Includes single-family homes, condominiums, and mobile homes with land
Source: Vermont Department of Taxes

Table IV-15 provides housing sales data for Hartford going back to 1999. Housing prices grew significantly (94.4%) from 2000-2005. However, as a result of the recession, between 2005 and 2010, housing prices have fallen 10.7%. Overall, for the decade, housing prices still grew by 73.7%.

TABLE IV-15
MEDIAN PRICE OF PRIMARY RESIDENCES SOLD BY YEAR
HARTFORD, 1999-2010

Year	Hartford	Net Change	% Change
1999	$ 107,500	$ -2,500	-2.3%
2000	$ 112,250	$ 4,750	4.4%
2001	$ 120,500	$ 8,250	7.3%
2002	$ 145,000	$ 24,500	20.3%
2003	$ 156,000	$ 11,000	7.6%
2004	$ 173,000	$ 17,500	11.2%
2005	$ 218,250	$ 44,750	25.8%
2006	$ 207,000	$ -11,250	-5.2%
2007	$ 207,000	$ 0	0%
2008	$ 185,000	$ -22,000	-10.6%
2009	$ 200,000	$ 15,000	8.1%
2010	$ 195,000	$ -5,000	-2.5%

Includes single-family homes, condominiums and mobile homes with land
Source: Vermont Department of Taxes

Rental Housing

The monthly cost for rental housing has typically been higher in Hartford than in Windsor County and Vermont. In 1990 and 2000, Hartford had slightly higher rents. In 1990, Hartford's median contract rent was 13.7% above Windsor County and 16.1% above the State. The 2000 Census indicated that the median contract rent for Hartford was 6.9% above Windsor County and 4.2% above the State. However, figures from the American Community Survey indicate much higher median rents for Hartford than Windsor County (19.7%) and Vermont (24.3%).

TABLE IV-16
MEDIAN CONTRACT MONTHLY RENT
HARTFORD, WINDSOR COUNTY, VERMONT

		Windsor	State of
Year	Hartford	County	Vermont
1990*	$439	$386	$378
2000*	$576	$539	$553
2006-2010**	$971	$811	$781

Source: * U.S. Census Bureau
** American Community Survey

HOUSING AFFORDABILITY

The definition of housing affordability is paying not more than 30% of household income for housing including utilities.

Home Ownership

According to the 2000 U.S. Census, households making the median family income ($42,990) could afford the median priced home ($120,600). However, with the escalation in home prices since 2000, this is no longer the case. According to the Vermont Housing Finance Agency (VHFA), in 2009, a household would have to earn $58,000 a year to afford a median price of a home in Vermont of $195,000. VHFA also noted that with a statewide median household income of $52,000, a household could afford a home in the $175,000 range. It would also require $14,000 as a down payment and to cover closing costs. Even with a drop in housing prices the last few years, there are not many homes in Vermont available at that price. The median purchase price of a new home in Vermont (excluding affordable housing projects) was $290,000 in 2010. The annual income needed to afford a home at that price is about $86,000 and down payment and closing costs of $24,000 to afford the home. Thus a gap between income and housing costs has developed.

In Hartford, the median sale price of a home was $195,000 in 2010. Using the VHFA formula, a household would have to earn $58,500 to afford it. That figure is 14.2% above the estimated Hartford median household income of $51,226. Based on the median household income, a household would be able to afford a home in the $171,000 range. Since there are a limited number of homes in Hartford available at this price, home ownership is out of reach for many Hartford households.

TABLE IV-17
MEDIAN HOUSEHOLD INCOME COMPARED TO THE MEDIAN HOME VALUE
HARTFORD, VERMONT
2000 AND 2006-2010

Year	Median Household Income	Median Home Value	% Household Income to Home Value
2000*	$42,990	$120,600	35.6%
2006-2010**	$51,226	$195,000	26.3%

Source: * 2000 U.S. Census
** U.S. Census Bureau American Community Survey

Rental Housing

The proportion of rental households paying in excess of affordable levels (30% of income) is a measure of rental distress or housing cost burden. According to the American Community Survey, the number of Hartford renter households with rents at or above 30% of household income was 63.2%. Although the figure for Hartford is above the rate for Windsor County (53.4%) and the State (52%) the figures indicate high housing costs throughout Vermont.

The U.S. Department of Housing and Urban Development (HUD) provides fair market rent assessments for Vermont at the County level, which is updated annually.

TABLE IV-18
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FAIR MARKET RENTS FOR WINDSOR COUNTY, 2012

Type of Unit	Hartford
0 Bedroom Unit	$782
1 Bedroom Unit	$876
2 Bedroom Unit	$1,030
3 Bedroom Unit	$1,402
4 Bedroom Unit	$1,668

Source: U.S. Housing and Urban Development

Based on the HUD Fair Market Rent, an hourly wage was calculated for each county and the State to determine the hourly wage needed to afford an apartment and only pay 30% of income toward housing. Since a separate rate was not conducted for municipalities, the Town and the County rate is the same.

TABLE IV-19
HOURLY WAGE NEEDED TO AFFORD A TWO BEDROOM APARTMENT AND ONLY PAY 30% OF INCOME TOWARD HOUSING
HARTFORD, WINDSOR COUNTY, VERMONT, 2011

		Windsor	State of
Type of Unit	**Hartford**	**County**	**Vermont**
0 Bedroom Unit	$13.19	$13.19	$13.55
1 Bedroom Unit	$14.77	$14.77	$15.53
2 Bedroom Unit	$17.38	$17.38	$19.04
3 Bedroom Unit	$23.65	$23.65	$24.75
4 Bedroom Unit	$28.15	$28.15	$28.47

Source: Vermont Housing Data

The following is a list of occupations in Southern Vermont with the median hourly wage. The list indicates that there are many occupations that fall below the required hourly to fall within the 30% guideline.

TABLE IV-20
SAMPLE OCCUPATIONS IN SOUTHERN VERMONT THAT FALL BELOW THE HARTFORD HOUSING WAGE, 2004

OCCUPATION	MEDIAN HOURLY WAGE
Cashier	$8.12
Ambulance driver & attendant	$8.13
Home health aides	$9.59
Hotel/motel desk clerk	$10.08
Retail salesperson	$10.19

Nursing aide	$10.54
Teller	$10.60
Landscaper	$10.82
Emergency medical technician	$11.45
Child care worker	$11.66
Roofer	$11.72
Transit bus driver	$12.03
Payroll clerk	$12.28
Welder, cutter, solderer	$12.59
Medical assistant	$12.88
Hairdresser	$13.03
Automotive technician/mechanic	$13.41
Police/Sheriff's patrol officer	$14.97
Firefighter	$15.66
Plumber, pipefitter, steamfitter	$16.06
Carpenter	$16.57
Librarian	$16.71
Child, family & school social worker	$16.73
Electrician	$16.95
Health educator	$17.10
Surveyor	$17.15
Interior designer	$18.10
Paralegal & legal assistant	$18.15
Editor	$18.25
Postal service mail carrier	$19.18

Source: Vermont Department of Labor for the Southern Vermont Region, November, 2004

Types of Special Housing Needs

Single Persons

The 2010 Census found 1,459 single-person households in Hartford. This represents 32.8% of all Hartford households. The growth rate of single-person households from 1990 to 2000 was 30.9% and between 2000 and 2010 it was 5.6%. Of the single-person households, 553 or (37.%) were senior citizens and the remaining 906 consisted of non-seniors. Numerically, the largest group of very low-income renters is single persons. In 1980, there were affordable single accommodations in eight rooming houses in Hartford. Today, there is only one rooming house, providing 11 rooms. The need for rooming houses has been met by motels that offer long-term rentals, but several older motels have been demolished in recent years. In 1992, seven hotels/motels and one rooming house had a total of total of 115 rooms. Today, four hotels/motels and one rooming house have a total of 91 rooms offering long-term rentals. An affordable alternative is shared housing, but this may not be the first choice of many single persons.

Single-Parent Families

In 2010, there were 381 single wage-earner headed households in Hartford. Of those, 293 were female-headed and 88 were male-headed. Of the female households with children under 18, 119 or 41% made less than 46.5% of the median household income. Consequently, many of these households will be paying considerably more than 30% of their income on housing and thus experience housing cost burden.

Senior Citizens

Senior citizens represent those 65 years and older. The Census indicates that in 2000, there were 1,519 senior citizens in Hartford, which represents 14.7% of the population. That was an increase from 12.1% in 1980 and 13.1% in 1990. In 2000, households with a senior citizen accounted for 1,095 or 24.3% of all Hartford households. Of senior citizens households, 493 or nearly 1/3 of all senior citizen households lived alone. Since many seniors live on limited incomes, escalating housing costs can lead to housing cost burden. With this in mind, there have been several senior housing facilities built in Hartford over the last twenty years using federal housing program funds. They include Graystone Apartments, Village Apartments, Colodny Apartments, and Windsor Hollow Apartments.

As the "baby boomer" generation approaches retirement, there will be an even larger percentage of senior citizens, the result of which is likely to be a demand for different types of senior housing facilities. In 2000, the Valley Terrace assisted living facility was completed. Additional housing for seniors is possible through accessory apartments added to single-family houses. The following is a list of senior housing in Hartford.

Table IV-21
Hartford Housing for Senior Citizens and the Disabled

Name of Facility	Units
Graystone Apartments	34
Village Apartments	14
Windsor Hollow Apartments	26
Colodny Apartments	8
Valley Terrace Assisted Living	61
Total	143

Note: In 1991, a change in federal policy combined senior and disabled housing.

Disabled

According to the 2000 Census, there were 1,653 people age 5 and above in Hartford with some level of disability. This translates to a rate of 16.1% and is similar to the 17.1% rate for Vermont but is lower than the nationwide rate of 19%. For seniors, the rate was 33.6% in Hartford, 38.6% for Vermont and 41.9% for the U.S. Updated census figures were not available for 2010. Besides the possibility of reduced earning potential, leading to housing affordability problems, there may also be accessibility needs associated with disabilities. Repeated requests for accessible apartments,

some of which are from persons needing to locate near the VA Hospital, make it appear that there is a need for additional accessible units in Hartford. Presently, there are 21 units accessible to the disabled under public/non-profit management. In addition, there are an uncounted number in the private sector.

Institutional Care

As the population grows older, there will continue to be an increasing need for more diverse elderly housing such as nursing homes and extended care. Many facilities serve a regional need. In Hartford, there is one nursing home with 67 beds, and the VA Hospital has a total of 60 beds.

Homeless

Founded in 1981, the Upper Valley Haven (Haven) is one of eleven emergency shelters in Vermont. The Haven has two facilities on Hartford Avenue; the Byrne Shelter (2004) provides emergency shelter for homeless families with at least one minor child and the Hixon House (2010) which provides shelter for adults. In addition to the two shelters, the Haven also has a food shelf and distributes food and clothing to those in need. The clothing room had 6,255 visits in 2010 and 6,715 visits in 2011. The food shelf had 8,430 visits in 2010 and 10,607 visits in 2011.

TABLE IV-22
UPPER VALLEY HAVEN USE

Byrne Shelter (Families)	2010	2011
Total Persons Served	125	133
Total Families Served	41	40
Total Children	68	67
Total Adults	57	66
Average Length of Stay (Days)	86	87
Median Length of Stay (Days)	65	74
Hixon Shelter (Adults)	**2010**	**2011**
Total Persons Served	80	146
Total Men Served	51	102
Total Women Served	29	44
Average Length of Stay (Days)	37	60
Median Length of Stay (Days)	26	33

Source: Upper Valley Haven

The majority of those served by the Haven come from within a 60-mile radius of White River Junction from both sides of the Connecticut River. The Haven does not provide shelter to individuals with active alcohol or drug abuse issues. They work closely with other local agencies such as the WISE Domestic and Sexual Abuse Violence Program, the VA Hospital, and the Vermont Office of Economic Services, among others. In addition to shelter, the Haven works

closely with their guest families to help them take the steps needed to secure their own housing and maintain it. They also have a very active program for assisting the younger guests with their schoolwork.

Hartford Housing with Public and Non-Profit Subsidies

In 1990, there were 307 housing units in Hartford that had some form of public or non-profit subsidy. Presently, the number has increased to approximately 513 units. Between 2000 and 2005, there were 498 new housing units added to Hartford's housing stock. Based on an estimate by the Department of Planning and Development Services, approximately 95 units or 19.1% were rental units. Of those new rental units, 68 or 71.6% have some form of subsidy.

One of the most common housing assistance programs is the Department of Housing and Urban Development (HUD) Section 8 housing voucher program, which provides a rental subsidy to eligible households. To qualify for HUD Section 8 rental subsidy, a household must be low-income, which HUD defines as having a household income of less than 50% of the county median (adjusted by household size). Based on the median household income of $66,800 for a family of four in Windsor County, the HUD levels for December 2011 are:

1 PERSON	2	3	4	5	6	7	8
$23,800	$27,200	$30,600	$33,950	$36,700	$39,400	$42,100	$44,850

After applying for and obtaining this subsidy, a household pays 30% of its monthly income toward rent and utilities, while the Section 8 Program pays the rest. The housing costs of that household then meet the definition of "affordable." Without rental assistance, it is unlikely that a household at these income levels would find affordable rents. Recent changes in the HUD Section 8 Program have required that 75% of the vouchers go to households earning less than 30% of the median household income (very low-income) and 25% to households earning less than 50% of the median household income (low-income). This has resulted in an increasing percentage of Section 8 vouchers to the elderly and the disabled living on Social Security or disability income with a corresponding decrease in Section 8 vouchers for families. Housing experts note that there is an increasing demand for affordable housing for working families struggling with higher housing costs.

In 2011, the Hartford Housing Authority ceased to exist. As a result, the forty-three Section 8 housing vouchers that were issued for Hartford were transferred to the Vermont State Housing Authority. Due to cutbacks in the Section 8 program, there have not been any additional vouchers provided in many years. As such, many housing authorities have long waiting lists. The Vermont State Housing Authority administers 173 state housing subsidies in Hartford, most of which are Section 8 vouchers. However, the state vouchers are not restricted to housing in Hartford and therefore can move with the household to another community.

The following is a list of housing in Hartford that has some form of public or non-profit subsidy. Please note that there is small degree of overlap since some of the units house people who have been provided a Section 8 voucher.

TABLE IV-23
HARTFORD HOUSING WITH PUBLIC OR NON-/PROFIT SUBSIDIES SERVING LOW-INCOME HOUSEHOLDS*-
2011

White River Junction	
Colodny House (senior and disabled)	8
Morale House (family)	3
Northwoods (family)	28
Village Apartments (senior and disabled)	14
Graystone Village (senior and disabled)	34
Stony Creek (family)	18
Twin Pines Houses	10
White River Junction Subtotal	**117**
Wilder	
Hollow Drive (family)	18
Windsor Hollow (senior and disabled)	26
Stony Creek (family)	18
Briars (family)	24
Brookview (family)	24
Twin Pines House	1
Twin Pines Condo	1
Upper Valley Habitat for Humanity Houses	3
Wilder Subtotal	**115**
Hartford Village	
Anna Pluhar (family)	3
Hillcrest Manor (family)	9
School Street (family)	8
Overlook Housing (family)	10
Twin Pines House	1
Hartford Village Subtotal	**31**
Quechee	
Sunrise Settlement (family)	22
Quechee Pines (family)	9
Quechee Subtotal	**31**
Vermont State Housing Authority Section 8 Vouchers in Hartford	**172**
Vermont State Housing Authority Managed Units	**36**
TOTAL UNITS WITH PUBLIC OR NON-PROFIT SUBSIDIES	**502**

Source: Hartford Lister's Office, Hartford Department of Planning and Development Services, Hartford Housing Authority, Vermont State Housing Authority and the Twin Pines Housing.

* Eligible households typically make less than 50% of the median household income

The American Community Survey identified 63.2% of all Hartford rental households, paying more than 30% of their income for housing costs. Even with stabilizing housing prices in the last few years, there is an affordability problem for many Hartford households. The increasing gap between wages and housing costs will increase the number of households who are exceeding the 30% affordability rule. Working low-income households are the most vulnerable and have the greatest difficulty finding affordable housing. The result is that the only permanent new housing that is being constructed for these households is by the non-profit organizations. Consequently, the Town should support the efforts of these non-profit organizations to create housing for working households.

Between A Rock and A Hard Place; Housing and Wages in Vermont: Over the last ten years, the Vermont Housing Council and the Vermont Housing Awareness Campaign have published an annual report that tracks the gap between housing costs and wages. According to the annual update, there has been an increasing gap between housing costs and wages in Vermont.

For rental housing, a modest two bedroom apartment in Vermont costs $990 per month. The housing wage to afford the average two-bedroom apartment would be $19.03. According to *Between a Rock and a Hard Place*, at least 53% of Vermont's non-farm employees work in occupations that pay less than $19.03 per hour.

Other issues of concern that came from the Report include the following:

- The median price of home in Vermont in 2010 increased 3% from 2009 to $194,000.
- The median price of a new house built in Vermont in 2010 (that was not part of an affordable housing project) was $299,000.
- Although interest rates remain low, closing costs in Vermont increased 37% between 2009 and 2010.
- In Vermont, 47% of renters and 38% of owners pay more than 30% of their income for housing costs. Vermont ranks 33rd in the nation in housing affordability.
- Between 2005 and 2010, home heating fuel prices have increased; including propane 41%, oil 32%, and electricity 23%.
- Homelessness in Vermont continues to grow. In January, 2011, a survey of homeless shelters and service providers counted 2,500 who were homeless.
- Vermont's homeownership vacancy rate is 1.9%, which is the 13th lowest in the U.S., while the rental vacancy rate of 6.1% ranks fourth lowest in the U.S.
- Median wages for many of Vermont occupations are far below the housing wage.

To counter many of these problems, the Report states that, "To address Vermont's housing needs, and the Vermont economy, as a whole, the state should focus on enhancing sustainability. By continuing its wise policy of making key public investments in housing infrastructure that is

permanently affordable, Vermont will improve the sustainability of its economy and the lives of all Vermonters who depend on it for their wellbeing."

HOUSING AS A REGIONAL ISSUE

In the last few years, a great deal has been written about the lack of affordable housing in the Upper Valley region and throughout the State of Vermont. In particular, there have been two studies written on the subject. The findings are listed below:

Upper Valley Housing Needs Analysis: Due to concerns that a housing crisis was emerging, the *Upper Valley Housing Needs Analysis* (UVHNA) was commissioned for communities on both sides of the Connecticut River that make up the Upper Valley Region. Completed in August, 2002, the Study included 57 communities in three Labor Market Areas (LMA):

- Hartford/Lebanon LMA (35 communities with a total population of 90,329 in 2000)
- Claremont, NH LMA (13 communities with a total population of 20,458 in 2000)
- Springfield, VT LMA (9 communities with a total population of 40,578 in 2000)

The Study revealed that the Upper Valley Region experienced strong economic growth during the 1990s which generated a large number of new jobs, a housing shortage and significant housing affordability crunch. The study reported that if the rate of new housing is not doubled this decade, the housing shortage will worsen and anticipated job growth could suffer. The following are some of the key findings:

Upper Valley Region (All three LMAs):

- To make up for the current housing shortage, the region needs make up for a shortfall of 3,100 new units. To accommodate anticipated job growth and household growth this decade, an additional 9,700 new units are needed region wide.
- Without a doubling of the rate of housing production this decade, economic growth in the region will be hampered.
- During the 1990s, region wide, 1,000 seasonal units were converted to year-round occupancy. The current rate of seasonal housing is 15%.

Hartford/Lebanon LMA:

- Nearly 11,000 new jobs were added in the Hartford/Lebanon LMA, primarily due to growth of Dartmouth College, Dartmouth-Hitchcock Medical Center (DHMC), new technology firms at Centerra Business Park, the Airport Business Park, and at retail establishments in West Lebanon. Unemployment rates remain lower than 2%. The 1990s showed that growth at Dartmouth College and DHMC helped reduce the effects of a regional recession.
- Housing growth has not kept pace with housing demand. Job growth and the growth in households surpassed growth in housing. While 5,000 new households were added to the LMA, only 2,800 new housing units were created. 5,600 new units are needed this decade.

- 2/3 of the job growth occurred in New Hampshire, while housing growth was evenly split between Vermont and New Hampshire.
- Home ownership and rental vacancy rates are less than half normal levels.
- Housing costs increased approximately three times faster than income growth. This has led to limited housing choice and strained affordability.
- Housing is least affordable in the Lebanon/Hartford LMA. Middle-income families earning up to $40,000 per year have limited housing choices and difficulty finding affordable housing. A household earning the median income could afford a $125,000 home, while the median home price was $170,000. The result was that 25% of households experience ownership affordability issues.
- Low-income households have to make major compromises in their housing selection.
- Meeting the need for more rental housing will be even more difficult. Forecasts identify the need for 1,800 new rental units.
- Job growth is expected to continue at the 1990s rate.
- Without a much higher housing production rate this decade, the current housing crunch will continue.

Windsor County Housing Needs Assessment: The Vermont Department of Housing and Community Affairs commissioned housing studies for all fourteen of Vermont's counties. In 2005, the *Windsor County Housing Needs Assessment* was completed. The county wide study included twenty-four municipalities. The *Study* documented the lack of affordable housing opportunities for low-to-moderate income Windsor County residents and confirmed that a serious housing shortage has emerged. The *Study* also noted that the impact is particularly burdensome in the northern part of the County due to proximity to Hanover and Lebanon, New Hampshire. The *Study* included two focus group discussions: one in Springfield and the other in Hartford. The following are some of the key findings:

- In the past few years, the cost of housing has increased as much as 30% a year.
- There are few rental housing options. In 2005, the shortage was estimated at 2,231 rental units.
- In 2004, the number of subsidized housing units totaled 1,079. Of that number, 54% were units restricted to elderly or disabled tenants. Subsidized housing provides for 24% of low-income renter households resulting in a current gap of 746 affordable elderly rental units and 2,807 units for the non-elderly. Statewide, there are 3,000 people on the Section 8 housing voucher waiting list. The report acknowledged that there are not enough housing funds to go around.
- By 2010, there is a need for construction of 813 owner-occupied homes to bridge the gap between supply and demand.
- A gap exists between income needed to purchase a home and the purchase price. The gap is expected to widen.
- The elderly population is growing at a faster rate than the general population. In 2000, more than 1,938 residents had a mobility or self care limitation. This represents a 16% of all Windsor County households. According to the Vermont Department of Aging and Independent Living's *Shaping the Future of Long Term Care & Independent Living* report,

the projected number of persons with long–term care need will grow to more than 2,100 by 2010.

- High growth is expected in the 45 and 69 age group and the 80 and older age group, while the 25-44 age group will experience a significant decline and the 15-24 age group will expand slightly.
- The trend of smaller household size is expected to continue. Between 2000 and 2010, the number of households in Windsor County is expected to grow at 6%, while the population is expected to grow at 3%. This creates greater demand for more housing units.
- According to the 2000 U.S. Census, the lowest-income households were much more likely to have mobility and/or self-care limitations and housing problems (as measured by cost burden, and/or overcrowding, and/or without adequate plumbing or kitchen facilities.
- Windsor County has a much lower unemployment rate than the State average. Four of the top five types of occupations in Windsor County are lower-paying service positions. This will create a need for more affordable housing.
- It is expected that people will be traveling more due to the inability to find affordable housing where jobs are located.
- The rental vacancy rate was 4.7 in Windsor County compared to 3.9% for Vermont. The vacancy rate for owner-occupied housing in Windsor County was 1.5%, slightly lower than the State average of 1.7%.
- The number of low-income households is expected to increase by 896 households between 2000 and 2010.

CHALLENGES TO THE DEVELOPMENT OF NEW HOUSING

There are a number of challenges to the development of new housing, many of which are not unique to Hartford.

High Land Costs

Over the past several years, there has been a surge in the cost of large parcels and building lots in both the rural and village areas. It has been reported that the price of land more than doubled in just the last few years.

Supply of Developable Land

As the Town has grown, a great deal of new housing development has occurred on large areas of open, easily developable, relatively flat lands. As the number of these sites decreases, there is more pressure to develop what are considered the more marginal properties, with steep slopes, shallow or wet soils, etc. There also is increasing pressure on agricultural and forested lands. Due consideration has not been given to infill lots (vacant lots in built-up areas) and underdeveloped lots (land that could be developed more intensively) as part of the supply of developable land.

Site Preparation Costs

As the amount of easily developable land decreases, there is an increase in the amount of development on marginal lands. These parcels have higher site preparation costs, which directly affect the cost of housing.

High Infrastructure Costs and Fees

In recent years, there have been rising infrastructure costs. Providing water, sewer, roads, electricity, etc. has often increased at a faster rate than inflation. Town hook-up and impact fees have been developed to ensure that development pays its way without local government subsidies.

State and Federal Environmental Regulations

As our society learns more about the impacts of development, state and federal rules have been developed to mitigate impacts. These requirements add to the cost of development. The most recent requirement has been the new federal stormwater management regulations.

Neighborhood Opposition to New Development

In recent years, there has been an increase in neighborhood opposition to new development proposals. This results in longer time periods to get local and state development approval and can result in further legal delays.

Compatible Design

The term "compatible design" refers to the consistency in scale, quality, or character between new and existing development so as to avoid abrupt and/or severe differences. As new residential development occurs in established neighborhoods and village centers, it is critical that the design of new development be sensitive to the established neighborhood character to ensure compatibility. Since zoning regulations do not typically go far enough to ensure compatible design, design review districts are far more effective. In Hartford, there is currently only one design review district (Downtown White River Junction). The use of a planned unit development is another method that the Planning Commission can use to ensure compatible design. With design review or a planned unit development, the developer should work closely with the Planning Commission to achieve a compatible design. As more infill development occurs, compatible design becomes even more important. The Town should work with private-sector developers and housing organizations to encourage compatible design for new housing in Hartford.

Accessible Design

Accessible design relates to providing accessibility to the disabled and the elderly. With an ever-increasing older population, accessible design should be encouraged.

Reduced Funding for Affordable Housing

In recent years, there has been a decrease in the amount of state and federal funding for affordable housing. The Town should work with the Upper Valley Housing Coalition, Twin Pines Housing Trust, the White River Area Housing Development Corporation, and the private-sector development community to identify possible solutions to these challenges.

HOUSING OPPORTUNITIES

Infrastructure

Hartford is fortunate to have four out of five of its villages served by Town water and sewer. This creates opportunities for more intensive development than areas served by on-site wells and septic systems. The Town should ensure that there is adequate expansion capacity of municipal water and sewer facilities to accommodate future residential and commercial development.

TABLE IV-24
HARTFORD LAND AREA SERVED BY TOWN WATER/SEWER
2006

	ACRES	PERCENTAGE
Total Land Area of Hartford	29,434	100.0%
Area Served by Town Sewer	4,013	13.6%
Area Served by Town Water	2,659	9.0%
Area Served by Town Water & Sewer	2,357	8.0%

Source: Two Rivers Ottauquechee Regional Commission, July 2006

Zoning Recommendations

The process to update the 2007 Hartford Master Plan resulted in a series of zoning recommendations that encourage higher residential densities in the village areas that are served by Town water and sewer, are located near transit service, and are close to community facilities and commercial services. The recommended densities and dimensional requirements were consistent with the development patterns of Hartford's historic villages. These recommendations were implemented as part of the 2008 zoning amendments. In addition, as an alternative to requiring that a certain percentage of new housing be affordable, the 2007 Master Plan recommended that a density bonus be provided for affordable housing projects in areas served by Town water and sewer (for household incomes less than 80% of the median household income). This recommendation should be implemented with the next round of zoning amendments.

Infill Development

There is a significant amount of land in the villages that are served by Town water and sewer. Many of these properties are relatively level and would be good candidates for infill development. Increased densities will provide greater incentive to develop these parcels.

Redevelopment of Underdeveloped Land

There are properties throughout Town that are underdeveloped. Redevelopment at more intensive levels would be appropriate especially in light of the existence of infrastructure and increasing property values.

Accessory Apartments

In 2004, legislation in Vermont was signed into law that provides an opportunity for homeowners to add an accessory apartment to their house. According to the law, municipalities must allow homeowners the opportunity to add one accessory dwelling (an efficiency or one-bedroom apartment unit that is clearly secondary to the owner-occupied house and that the apartment would include all the amenities needed for independent living) as long as they meet the following conditions:

- The homeowner must reside in the residence.
- The property has the capacity to handle the additional demand for wastewater disposal.
- The size of the accessory dwelling unit equals no more than 30% of the total square footage of the house.
- The property meets any applicable setback, coverage, and parking requirements contained in the Town zoning bylaws.

Municipalities can require a Conditional Use Permit for accessory apartments that involve building of a new structure on the property or that increases the height or floor area of the house or expands the size of the parking area. The new law is an opportunity for communities to create additional rental housing while providing homeowners with supplementary income. The Town should promote this housing alternative and establish a streamlined review process.

Mobile Homes

Mobile homes provide an affordable housing option to the traditional stick-built single-family home for many Vermonters. In Vermont, State Statute requires that mobile homes, modular housing, or prefabricated housing to be treated the same as stick built housing. State Statute also prevents municipalities from prohibiting mobile home parks. In Hartford, mobile home parks are allowed as a conditional use in the RC-2 zoning district.

According to the 2000 U.S. Census, mobile homes made up 7.7% of the total housing stock in Vermont. In Hartford, there were 407 mobile homes or 7.4% of the Town's housing stock. In 2005, the number of mobile homes remained at 407 with 314 located in mobile home parks and 93 mobile homes with land. According to the 2004 Mobile Home Parks Report, there were a total of 254 mobile home parks in Vermont with a total of 7,308 lots. The average size of Hartford's mobile home parks (62.8 units) is more than double the State average of 28.8 units. Of the five mobile home parks in Hartford, two are served by Town water and sewer and three are located on private water and sewer systems. Four of the mobile home parks are privately owned, while the

Olcott Falls Mobile Home Park was purchased by the non-profit corporation Housing Foundation, Inc. in 1993. Statewide, the trend has seen a slight decrease in the number of mobile home park lots. In 1998, there were 7,505 mobile home park lots. In 2004, the number decreased 2.7% to 7,308.

According to the Vermont Department of Housing and Community Affairs, Hartford is classified as having a medium number of mobile home park lots relative to the total number of housing units in Town. In 2004, Windsor County had a median mobile home park rent of $243 per lot, which is very close to the State median rent of $246 per lot. Statewide, the median lot rent for a non-profit or cooperatively owned mobile home park was $229.

There have been many improvements in the quality of mobile homes in recent years. In 2003, there were 300 new mobile homes sold in Vermont. Approximately 2/3 of them were double-wide units. The average price of a new double-wide mobile home in Vermont during 2003 was $57,100 excluding land, while the average price of a used mobile home was $24,963 excluding land.

Local and Regional Non-Profit Housing Organizations

- Twin Pines Housing Trust (TPHT): With an office located in White River Junction, TPHT was established in 1990 and serves communities throughout the Upper Valley. As a non-profit housing developer, the organization is committed to perpetual affordable housing. The organization's portfolio (either owned by TPHT or partnered with other organizations) includes 112 apartments, 9 mobile home lots, and 25 single-family homes. In addition, they have an additional 80 units in the planning or development stages throughout the Upper Valley. Presently, there are 76 TPHT units located in Hartford.

- Upper Valley Habitat for Humanity (UVHFH): With an office located in White River Junction, the UVHFH is one of eight Vermont chapters of the international organization. Established in the Upper Valley in 1986, the mission of the organization is to eliminate substandard housing and homelessness in the community. The emphasis is on home ownership, with sweat equity required in place of a down payment. To date, UVHFH has been responsible for the creation of three new houses in Hartford and seventeen houses in other Upper Valley communities.

- COVER Home Repair: With an office located in White River Junction, COVER (Corps of Volunteers Effecting Repair) was created in 1998 under the umbrella of the Tri-County Community Action Programs. It formed from a collaboration between Dartmouth College students, other community volunteers, and a Bates College graduate who wanted to complete home repair projects that would benefit families and individuals with low-incomes. COVER is a small repair group addressing the urgent home repair needs of low-income, elderly and disabled members of the Upper Valley community. Projects focus primarily on repair or restoration of pre-existing structures: wheelchair ramp construction, pitched roof construction/repair/restoration, interior weatherization/insulation, and window or cabinet installation. COVER minimizes the

cost of repair by using salvaged, at-cost materials to benefit homeowners who are physically or financially unable to complete the repair themselves.

- Upper Valley Housing Coalition: Established in 2002 as an outgrowth of the Vital Communities of the Upper Valley, the UVHC was created as a means to bring together different constituencies (business, community, municipal groups and leaders and non-profit organizations) affected by the growing housing shortage to serve as a vehicle to work together to increase the supply of diverse workforce housing. The concept of workforce housing includes affordable housing, market-rate housing, mixed-income housing and ownership, and rental housing. The UVHC considers the availability of diverse housing choices to be critical to the continued economic vitality of the Upper Valley and to maintain the high quality of life. It also is seen as a tool to promote the development of a range of housing opportunities through several financial vehicles.

RECOMMENDATIONS

This review of the housing and demographic trends provides a picture of what the Hartford community has been, is, and could be in the future. The type, availability, and affordability of housing directly influence the people who constitute the community. Current trends have shown that more and more the cost of housing is outpacing the incomes of the people who reside in Hartford. The Town must ask if it wants to be a community where its school teachers, firefighters, single parents, and elderly can find housing. It is through the Master Planning process and implementation of the following strategies and recommendations that the future trends can be influenced.

Strategy: Advocate for a diverse housing stock that promotes a range of housing types and costs.

1. Encourage the production of adequate amounts of new housing to meet the housing needs of residents at all socioeconomic levels.

2. Encourage the retention of existing housing stock, including the upgrading of substandard housing.

3. Encourage public and private mixed-income single-family and multi-family residential development within neighborhoods and village areas where there is Town water and sewer and that are located in close proximity to public transit and community facilities.

4. Continue to support the development of housing for special-needs populations, including first-time home buyers, senior citizens, single-parent families, single persons, disabled persons, and the homeless.

5. Continue to support the efforts of the Hartford Housing Authority and the White River Area Housing Development Corporation to administer rental assistance programs for low-income residents of Hartford and assistance to other special-needs populations.

6. Support the Upper Valley Housing Coalition's regional efforts to overcome the current regional housing shortage, including participation in housing workshops and efforts to reduce the cost of developing new housing.

7. Work with non-profit housing organizations to develop affordable housing projects and secure perpetuity whenever possible.

8. Support local and regional economic development initiatives aimed at raising the income levels of current residents, thereby increasing income available for housing costs.

9. Promote the use of accessory apartments as a means of increasing the availability and affordability of housing.

10. Encourage the renovation and re-use of existing buildings to meet various housing needs.

11. Investigate the use of Town and State properties for the development of affordable housing.

Strategy: Facilitate the development of housing through the zoning and subdivision processes.

12. Revise zoning densities and dimensional requirements to encourage infill housing in village areas, taking into consideration existing settlement patterns.

13. Encourage mixed-use development in the village centers.

14. Allow a density bonus of up to 25% for affordable housing projects in areas served by Town water and sewer.

15. Create a residential zoning district that allows multi-family as a permitted use.

16. Ensure that higher density development does not detract from the historic character of Hartford's villages and the downtown.

17. Encourage the development of multi-family housing on a scale and design compatible with existing neighborhoods.

18. Encourage new rural housing development to be clustered in order to preserve the greatest amount of open space and blend harmoniously with the natural environment.

19. In the Downtown, encourage the rehabilitation of vacant or under-utilized buildings to provide housing on the upper floors, while encouraging first-floor commercial use.

20. Encourage innovative residential site designs that promote connections with existing neighborhoods and village areas.

21. Streamline the permitting of accessory apartments.

Strategy: Provide the necessary resources to enable housing production.

22. Create a municipal fund for the rehabilitation of substandard housing.

23. Develop a historic housing rehabilitation program for properties listed or eligible for listing on the National Register of Historic Places.

24. Consider reduced application and impact fees for new permanent affordable housing.

25. Conduct a study to help identify areas most suitable for new residential development.

CHAPTER V

ECONOMIC DEVELOPMENT

INTRODUCTION

This report summarizes the results from the economic analysis and community participation phases of Hartford's Economic Development Strategy process and presents the recommended economic development goals and strategies for Hartford. It is organized in four parts. First, an analysis of Hartford's economic performance and structure is presented. Second, Hartford's major assets and advantages along with its major challenges are summarized. Third, the key elements of the town's economic development vision and specific economic development goals are articulated. These two sections draw upon a community visioning session held on January 9, 2002, six focus groups held January 9 and 10, 2002, and individual interviews.

In the fourth section, a six-part economic development strategy is recommended to advance these economic development goals and build on key Hartford assets. The rationale for each component strategy and specific action steps to implement it are discussed. In the concluding part of the strategy section, an implementation plan is provided that addresses overall management of the strategy and the delegation of responsibility for major action steps.

The planning process to formulate Hartford's economic development strategy incorporated information and input from six sources:

- A review of existing reports, studies, and analyses by the Town of Hartford and other sources;
- An analysis of economic data and trends for Hartford, Windsor County, and Vermont;
- Input from the January 9, 2002, community vision session;
- Input from two meetings of the Economic Development Strategy Steering Committee;
- Focus groups held on January 9 and 10, 2002, with local businesses, town, and civic organizations, the tourism industry, property owners, the real estate community, and banks and economic development professionals; and
- Individual interviews with additional businesses, non-profit organizations, and government leaders

DEMOGRAPHIC AND ECONOMIC ANALYSIS

This section summarizes key information and presents findings from an analysis of demographic and economic data on Hartford, Windsor County and Vermont. It is organized in three parts:

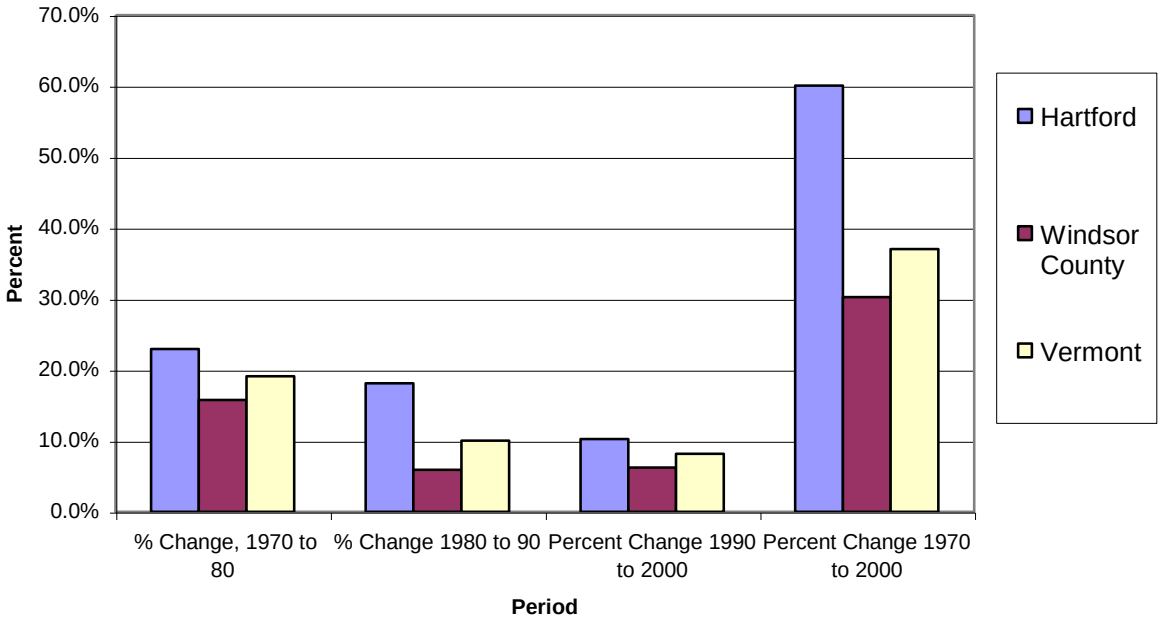
1. A brief overview of population trends and composition;
2. An assessment of the Town's economic performance over the past decade; and
3. An analysis of the Town's current economic structure and major sources of job growth during the 1990s.

This analysis highlights where Hartford is performing well and identifies faster growing sectors and important industry concentrations that may be appropriate targets for future growth. It also identifies potential problems and challenges that help to define the town's economic development goals.

Demographic Profile

Hartford's population has grown rapidly over the past thirty years, far above the County and State growth rates. The town's 2000 population was 10,367, a 10.2% increase from 1990, compared with 6.2% growth for the county and 8.2% for all of Vermont. Figure V-1 presents population growth for Hartford, Windsor County and Vermont for each of the last three decades and cumulatively from 1970 to 2000. Over this thirty-year period, Hartford's population grew at twice the county rate and 62% faster than Vermont.

Figure V-1. Population Growth By Decade, Hartford, Windsor County and Vermont



Hartford's population is slightly older than the State's and has a higher concentration of renters than both the Windsor County and Vermont. Hartford's median age was 40 years in 2000, above Vermont's median age of 38 but below Windsor County's, at 41. Similarly, 14.7% of Hartford's population is 65 or older, compared to 12.7% for Vermont. One-third of Hartford's population consists of renters, compared to 28.5% for Windsor County and 29.4% for Vermont. This probably reflects the diversity of Hartford's housing stock and greater availability of rental units.

Despite this diverse housing stock, Hartford and the surrounding region have very low housing vacany rates and housing demand that is outstripping the available supply. According to the 2000 Census, Hartford had a 1% vacancy rate in owner-occupied housing and 2.5% in rental housing. These levels are below that for the State and region. Vermont's vacancy rates in 2000 were 1.4% for owner-occupied housing and 4.2% for rental housing, while the respective rates for Windsor County

were 1.6% and 5.1%. A recent housing study commissioned by the Upper Valley Lake Sunapee Regional Planning Commission reports an overall regional vacancy rate of 1.5% for owner-occupied units and 4.8% for rental units[1]. Moreover, this study shows that housing demand has far outstripped supply, with a resulting decline in the available inventory and an increase in prices. While households grew by over 2,500 from 1990 to 2000, the number of total units grew by only 1,500 in the Hartford Labor Market Area (LMA). For the four-LMA area covered in the study, the average home price increased from below $100,000 in 1988 to almost $180,000 in 2001. During this period, the median rent for a two-bedroom unit grew from $500 to $700. The increase in housing costs has outstripped income growth, with the average home price growing 33% from 1997 to 2001 as the average income increased by only 13%.

Economic Performance

This analysis assesses how well Hartford's overall economic base is growing and how well its residents are benefiting from this job growth, compared to the County and State. Four indicators of economic performance are used:

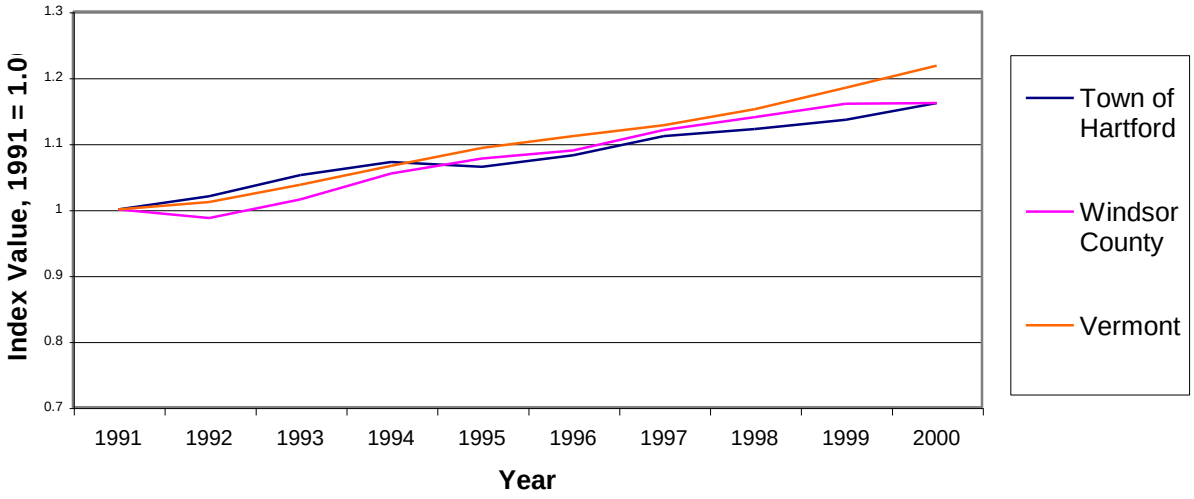
- Overall job growth;
- Unemployment rate;
- Income growth; and
- Poverty rates.

Since there is no recent data on town-level income and poverty levels, the analysis of these two indicators relies on the County-level data supplemented with some local figures on poverty among schoolchildren. It is important to note that employment figures are establishment-based data that refer to jobs at employers located in the designated area. Unemployment rates, median income, and poverty rates are household-based data that describe the residents of a designated area.

During the 1990s, Hartford's job growth was equal to the County growth rate but below that for Vermont. Figure V-2 compares trends in overall job growth for Hartford, Windsor County, and Vermont, using an index where 1991 employment equals 1.0. Vermont's total employment grew by 21.7% from 1991 to 2000, while both Hartford and Windsor County jobs grew at 16%. However, Hartford's private sector jobs grew by 22.1% over the decade, close to Vermont's 23.2% rate and above 18% growth at the county level. This indicates that slower growth in Hartford's government jobs accounts for its weaker job growth performance in the 1990s.

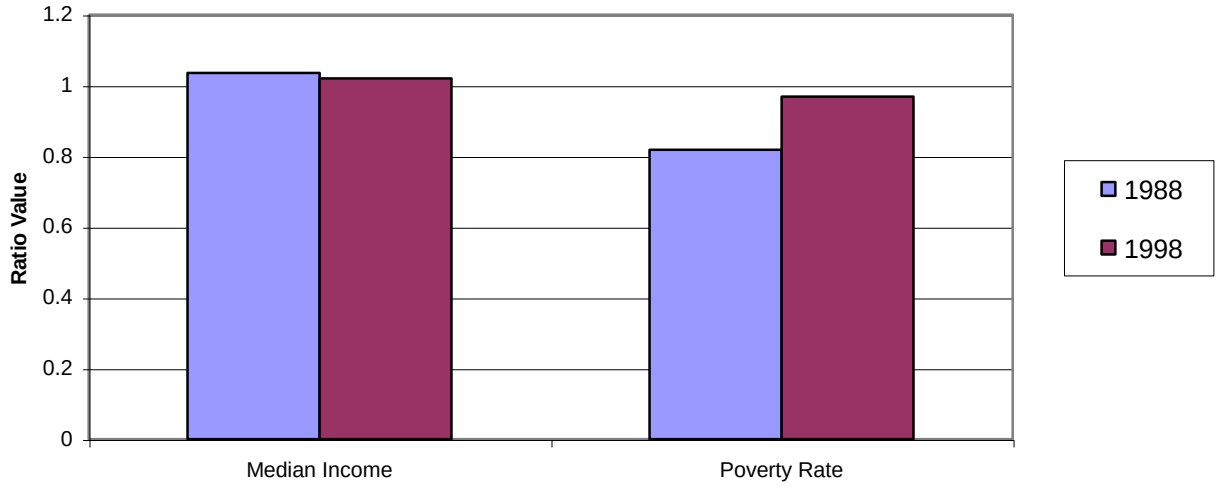
[1] This rate is for a four labor-market area region that includes the Claremont, Springfield, Lebanon, and Hartford Labor Market Areas (LMA). Rental vacancy rates were lowest in the Lebanon LMA at 2.1%.

Figure V-2. Employment Growth, Hartford, Windsor County and Vermont, 1991 to 2000



Hartford's unemployment rate is very low and well below County and State levels, indicating that the Town residents have little difficulty securing jobs within the region. In November 2001, Hartford had a 1.5% unemployment rate. While this rate was an increase from the 1.1% rate in November 2000, it was 60% below the county rate (2.6%) and less than half of Vermont's 3.4% rate. The unemployment rate for the Vermont portion of the Hartford-Lebanon Labor Market Area is the lowest rate in Vermont. While this very low unemployment rate is good for the region's residents, it indicates a very tight labor market, where new and growing employers are likely to face difficulty finding sufficient employees. This problem is worsened by the limited housing availability and high housing costs, which make it more difficult for firms to attract new workers to the area.

Figure V-3. Ratio of Windsor County to Vermont, Median Income and Poverty Rate



While job growth and unemployment both indicate strong economic performance, income and poverty data suggest that the region's are not performing as well as the state in terms of income growth and poverty. Figure V-3 compares the ratio of Windsor County's median income and poverty rate to that of Vermont for 1989 Census data and 1998 estimated figures. In both cases, Windsor's relative position declined over the decade. Its median income dropped from 3.5% above the state level in 1989 to 1.9% above the state in 1998. More significantly, the county poverty rate increased from 8.1% in 1989 to an estimated 9.3% in 1998, while the state's poverty rate dropped slightly from 9.9% to 9.6%. Consequently, Windsor County's poverty rate changed from 81.8% of the State level in 1989 to 96.9% in 1998. Another indicator of local poverty rates is provided by Census Bureau estimates of the percentage of children living in poverty for all school districts in the United States. According to these estimates, Hartford's child poverty rate is above that of surrounding towns. Hartford had an estimated child poverty rate of 8% in 1997, which was at least twice that of its Vermont neighbors and above the rates for Lebanon (7%) and Hanover (6%).

Several key findings emerge from the economic performance analysis:

- Hartford is performing well in population and job growth;
- Unemployment is not a problem for town residents;
- Poverty is increasing as income growth is below the state level, which suggests a need for better paying jobs;
- Tight labor markets may limit the ability to attract new employers without an expansion of the labor force; and
- Limited housing availability and rising housing costs are an obstacle to expanding the labor force, while also reducing living standards for existing residents.

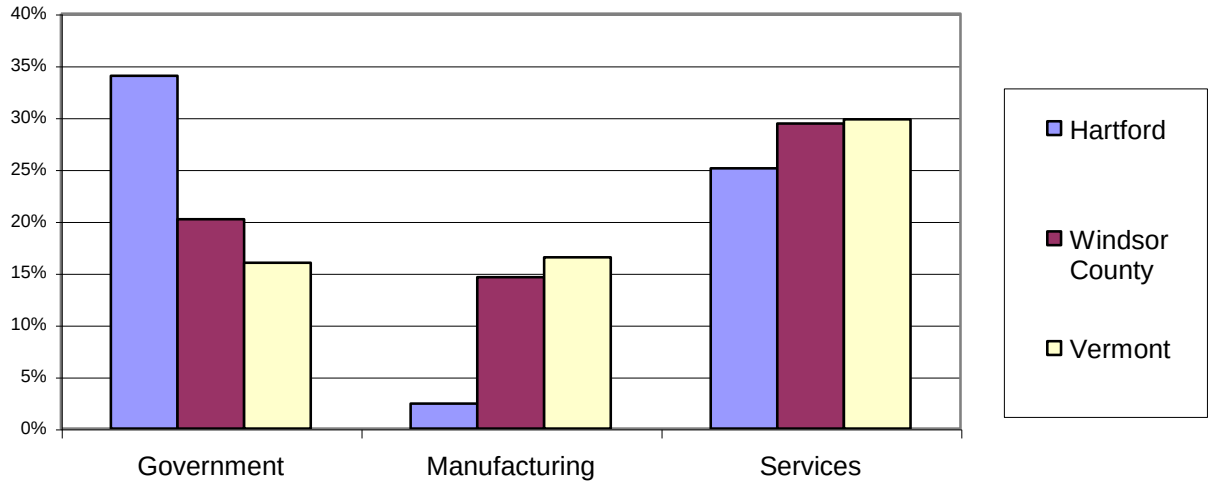
Economic Structure Analysis

This section focuses on the composition of Hartford's economic base and the major sources of job growth for the town and county to help identify strengths and weaknesses within Hartford's economic base and to identify potential target industries for future growth.

Hartford's economic base is heavily concentrated in government jobs and has a smaller manufacturing and service sector than the County and State. Figure V-4 shows that 34% of Hartford's jobs are in the government sector, far above the 20% and 16% shares for Windsor County and Vermont, respectively. The federal government accounts for 60% of Hartford's government jobs and explains its disproportionately large government sector. Two large federal facilities, the Veteran's Administration medical center and the United States Post Office regional distribution facility, account for the vast majority of this federal employment[2]. These larger federal facilities also represent part of Hartford's base in health care and distribution, two important economic clusters for the town. Local government is the town's second largest employer, providing 538 jobs, primarily in the school system (396 jobs). Hartford is most under-represented in manufacturing jobs, which accounted for 14.6% of county jobs and 16.5% of state employment in

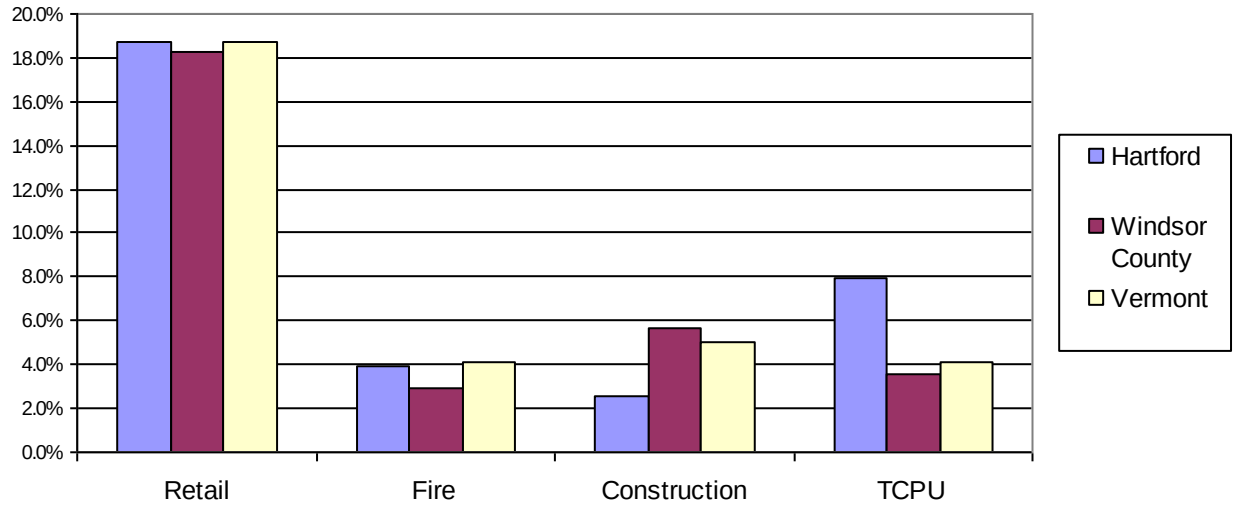
[2] State employment data from the ES-202 data services reports Hartford having 1178 federal jobs in 2000, with 466 in the postal services and 677 in health services.

Figure V-4. 2000 Employment Share for Major Sectors



2000 but only 2.4% of Hartford's job base. Since manufacturing is one of the highest wage sectors, Hartford is not capturing an important source of good-paying private-sector jobs. The town's service sector, at 25.1% of total employment, is somewhat smaller than the county and state shares of almost 30%. Hartford's share of jobs is close to the state and county levels for retail and FIRE (Finance, Insurance and Real Estate) but there is a high concentration of transportation, communications, and utility jobs (TCPU) in Hartford, due in part to the town's excellent transportation access (see Figure V-5).

Figure V-5. Retail, FIRE, Construction and TCPU Shares for 2000



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In 2000, Hartford's employment totaled 5,771 jobs, with 3,810 in the private sector and 1,961 in government. Within the private sector, the six largest industries, each with at least 200 employees in 2000, are:

- Eating and drinking places (452 jobs)
- Health services (320 jobs)
- Miscellaneous retail (230 jobs)
- Auto dealers and service stations (218 jobs)
- Social services (211 jobs)
- Trucking and distribution (207 jobs)

Hotels and lodging was just below this level, at 196 jobs.

When both government and private-sector employers are considered, Hartford has three key industry clusters that account for a large share of its job base and where it has a high concentration of jobs relative to the state.[3] These three key clusters are:

- Health care, with 997 jobs (including the VA medical center) and 17% of total employment;
- Distribution, with 673 jobs (including the Post Office facility) and 11% of total employment; and
- Tourism, with 507 jobs[4] and 9% of total employment.

Table V-1. 2000 Average Annual Wages in Key Industries for Hartford and Vermont

Sector	Hartford	Windsor County	Vermont
All Employment	$30,628	$27,421	$28,920
All Government	$38,095	$31,755	$30,110
All Private	$26,785	$26,326	$28,694
Eating & Drinking Places	$12,902	$11,045	$11,238
Health Services	$26,389	$26,576	$30,397
Miscellaneous Retail	$20,900	$21,628	$20,210
Auto Dealers & Service Stations	$27,773	$23,539	$25,490
Social Services	$21,051	$17,625	$18,322
Trucking & Warehousing	$32,951	$31,317	$30,567

Wage levels within Hartford's largest industries are mixed. The Town's large government sector pays wages well above the town's average wage and above County and State wages within the government sector. However, only one of the Town's six largest private industries, trucking and warehousing, pays wages above the Town's average annual wage. When compared to the private sector wage, two of the six largest industries pay above the average annual private wage of $26,785:

[3] A location quotient is a measure of an area concentration of economic activity relative to a larger region. Hartford's location quotients for health care, distribution, and tourism relative to all of Vermont are 1.79, 8.96, and 2.1. This means that Hartford has almost twice the state share of jobs in health care, almost nine times the state share in distribution, and over twice the state share in tourism.

[4] Tourism employment was estimated as the total of hotels and lodging, recreation and amusement, and one-third of eating and drinking establishments and miscellaneous retail.

trucking and distribution, with an average annual wage of $32,951, and auto dealers and service stations, with $27,773 in annual average pay. Moreover, Hartford's private-sector average wage in 2000 was 7% below Vermont's average of $28,694.

Hartford is growing faster than the State and County in most sectors, but its growth in government jobs is slowing. Hartford's job growth in manufacturing, services, FIRE, and TCPU exceeded County and State growth rates during the 1990s, while its retail job growth lagged the State's. Services were an especially important source of new jobs for Hartford, adding 465 jobs and accounting for 57% of net job growth over the decade and 67% of the net growth in private employment. Government employment in Hartford grew by 6% from 1991 to 2000, below the 9.1% growth in Windsor County and 14.4% growth for Vermont. Moreover, federal government jobs declined by 5% during the decade, due to a loss of almost 100 jobs at the Veterans Administration health center.

Figure V-6. Government Employment Growth, 1991 to 2000

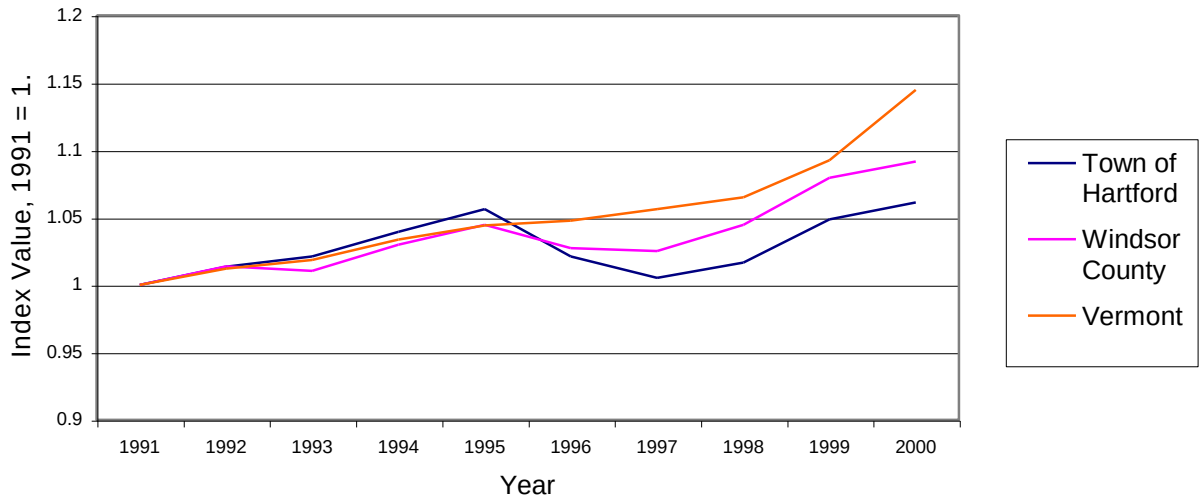


Table V-3. High-Growth Industries for Hartford and Windsor County 1991 to 2000

Industry	Hartford Absolute Job Growth	Hartford Percentage Job Growth	Windsor County Percentage Job Growth
Total Employment	802	16.1%	16.1%
All Private Employment	689	22.1%	18.0%
Health Services	194	154.0%	55.8%
Social Services	131	163.8%	33.4%
Trucking & Warehousing	108	109.1%	84.8%
Miscellaneous Retail	85	58.6%	20.8%
Eating & Drinking Places	57	14.4%	10.2%
Engineering & Management	36	38.7%	52.2%
Business Services	-4	-2.9%	52.2%

At the industry level, Hartford's fastest growth is occurring in lower-wage businesses, while it is capturing a smaller share of regional growth in high-wage service industries. Table V-3 compares local and County growth rates for the major high-growth industries. Hartford is adding the most jobs and experiencing the faster growth in health services, social services, trucking and warehousing, and miscellaneous retail. In these four industries, Hartford's growth rates during 1990s far outpaced growth in Windsor County. However, wage levels in three of these industries are below the Town's average private-sector wage. In two key high-wage industries, business services and engineering and management services, jobs in Hartford grew at rates well below the County and State levels. Hartford's employment in business services declined by 2.9% from 1991 to 2000, while jobs in Windsor County increased by 52.2%. Although this decline reflects the loss of an important employer in 2000, Hartford's growth in business services was below the County rate throughout the decade[5]. In management and engineering services, County employment increased by 52.2%, compared to 38.7% growth in Hartford. State growth rates during the 1990s in these two industries were even higher.

[5] From 1991 to 1999, Windsor County business services employment grew by 87%, compared to 33% for Hartford.

Summary and Implications

Several important findings emerge from the economic structure analysis:

- Hartford's job base is very dependent on two large federal facilities, and employment at one of these facilities has been declining over the past decade;
- Health care, distribution, and tourism are three key industry clusters in Hartford that together account for over one-third of all jobs;
- Hartford's largest and fastest growing private-sector industries have relatively low wages, below both the town's overall average wage and its average private-sector wage; and
- Hartford's growth in key high-wage service industries is below County and State rates.

These findings, along with the demographic and economic performance analysis, have the following implications for Hartford's economic development goals and strategy:

- Diversifying Hartford's economic base is an important goal to both reduce its dependence on its two large federal employers and to expand its base of high-paying jobs
- Attracting higher paying jobs is an important issue for Hartford to help raise local and regional incomes and reduce poverty rates. With a declining supply of land, it is particularly important to use this scarce resource to capture high-quality jobs.
- Expanding the earnings capacity of Hartford residents is a greater priority than simply expanding job opportunities. Low unemployment rates and modest income growth suggest that labor-forces skills and the supply of quality jobs are more important than overall job growth and access to jobs. Since most residents are employed outside the town, higher resident incomes depend on increasing their skill levels and access to better paying jobs throughout the region.
- Expanding the region's workforce housing supply and labor force is a key economic development challenge for Hartford and the entire region. While Hartford cannot address this problem alone, it can help formulate regional initiatives while advancing sound projects and programs within the town.
- Health care and tourism are two important industries to retain and grow, given their important role in the Hartford's economy, although private-sector wages in these industries are not high.
- Distribution is another potential target industry, especially given its higher paying jobs, but the land-and traffic-intensive nature of this industry makes it less attractive.

DEVELOPMENT ISSUES AND OPPORTUNITIES

Economic development opportunities are also shaped by the availability of land and buildings to house business growth. Hartford's available real estate falls into four categories:

- Undeveloped land zoned for commercial or industrial use that is served by water and wastewater infrastructure
- Undeveloped land zoned for commercial or industrial use that **is not** served by water and wastewater infrastructure

- Vacant building space
- Under-utilized land and buildings

Hartford's inventory of undeveloped land served by infrastructure is fairly limited, primarily consisting of 110 acres in the Sykes Mountain Avenue district and a handful of vacant parcels in business parks in Wilder. This land represents Hartford's prime development land since it is adjacent to interstate highway exchanges and supplied with public water and wastewater. Furthermore, with the declining supply of such prime development land within the region, Hartford's inventory will be increasingly valuable and should be targeted to uses that provided the greatest benefit to the town.

Additional commercial and industrially zoned land that is not served by infrastructure is concentrated along the Route 5 South corridor and the Route 14 corridor. A recent study of Route 5 south indicated that 58.6 acres of this land is suitable for development, with the balance not suitable for development due to wetlands, public use, and other factors. Since no study of the Route 14 corridor has been undertaken, the amount of land suitable for development is not known. Without infrastructure, this land is less desirable since it requires investment to create private water and septic capacity and its use would be limited to retail and service uses that do not require wastewater service or extensive water use. The real estate community and some groups at the community visioning meeting argued strongly that expanding Hartford's supply of new land for commercial and industrial development should be an economic development priority. This would require extending water and wastewater infrastructure along the Route 5 and Route 14 corridors to open up new land that is zoned for commercial and industrial use for development.

Vacant building space exists throughout Hartford, primarily in small commercial and retail buildings within village centers. One of the largest amounts of vacant space is in the American Legion building in White River Junction. A final source of real estate to support economic development is under-utilized land and buildings. This includes land and buildings in minimal economic uses, such as storage, and in locations for which the market would support higher economic uses. A number of under-utilized buildings devoted to storage, distribution, utility, and industrial uses exist along the railroad corridor in White River Junction. Since this area is served by water and wastewater, and is close to major interstate highways and adjacent to residential neighborhoods, it has the potential for economic uses that will generate greater economic benefits and be more compatible with the surrounding uses. As regional demand for land grows and recent trends in White River Junction continue, the economic importance and potential of this area will increase. At the community visioning session and focus groups, there was a strong desire to target new development in White River Junction and other areas that are already served by good transportation, water, wastewater, and telecommunications infrastructure.

The potential uses for the town's real estate assets are affected by a number of factors, including the community's goals, fiscal impacts, economic growth and market demand, infrastructure service, and the character of surrounding uses. Community economic development goals, as discussed in the following section, emphasize creating balanced development that minimizes environmental impacts and provides higher paying job opportunities. However, there is also a strong interest in balanced development that includes both residential and economic uses and a diversity of jobs for people with

different education and skill levels. Fiscal impacts concern the marginal tax revenues and service costs generated by new development. Family-oriented residential development frequently imposes costs on a community, due to high education costs for school-aged children, that exceeds the tax revenues generated by a new housing unit. However, these added costs are partially offset by state education aid. Commercial and industrial development typically generates tax revenue in excess of increased service costs, although this may not be the case when new investments in roads and other infrastructure are needed to accommodate the development. Office and hotel uses generate the highest tax revenues per acre of development since they are higher density developments with higher value building improvements. Retail development typically yields less property tax revenue per acre than office and hotel development but can be a major local revenue generator when a local sales or inventory tax exists. Moreover, retail development also generates more traffic than office or hotel uses[6] that may require road and interchange improvements, although many communities have been able to get developers to cover some or all of these costs. The economic and market trends discussed in the previous section also support increased office development in Hartford since many of the fastest growing industries are in the service sector. In terms of the surrounding environment, office and retail uses are most compatible with the existing character of Hartford's Village Centers. A variety of uses could fit into land use patterns in the Sykes Mountain Avenue area, given the current mix of hotels, distribution and transportation facilities, auto-related related uses, and retail. A recent study of this area recommended mixed-use development that could include tourist and motorist facilities, vehicle sales and repair, office and research, light industry and retail. However, the study advocated denser and better planned development that avoids further strip-style land use and is more pedestrian-oriented and attractive with sidewalks and landscaping.

In conclusion, several factors suggest Hartford will face a unique opportunity to shape its future over the next five to ten years as development pressures make its existing inventory of land more valuable. Multiple factors, including economic demand, fiscal impact, and job quality, favor office and service-sector development, especially in White River Junction and the Sykes Mountain Avenue area. Small-scale retail and service businesses are appropriate for existing vacant space in the other village centers.

[6] A Maryland report states that a 110,000 square shopping center can generate 9,710 trips per day, with big box stores also generating up to 35 truck trips per day.

ECONOMIC DEVELOPMENT ASSETS

Hartford's key economic development assets were identified through a community visioning session, focus groups, interviews and the economic analysis. These assets provide a foundation for Hartford's economic development strategy since the town will be most successful with development plans that build on existing advantages and strengths. Critical economic development assets and advantages include:

- The town's central location and strong highway access at the intersection of Interstates 91 and 89. Hartford's location provides easy access throughout the region and is within 1 to 2 hours of the major government and economic centers in Vermont and New Hampshire.
- Scenic beauty and recreational resources that include the rural landscape and mountains, three rivers, Quechee Gorge, and the associated state park. These resources are a key part of the Town's quality of life, help attract residents, and are central to its role as a tourist destination
- Historic and cultural assets include historic farm homesteads, the heritage and architecture of village centers, the Railroad Museum, and the Northern Stage Theater. An emerging cultural resource is the growing number of artists locating in White River Junction. These resources contribute to the region's attraction as a tourist destination and draw people from throughout the region to Hartford. A number of these assets also provide momentum to support the revitalization of White River Junction.
- Quechee Lakes planned development and resort is an important source of tax revenue for the town, attracts high-income residents and second-home owners that expands spending to support local businesses, and adds to the town's recreational amenities.
- Water, wastewater, and telecommunications infrastructure in the town's primary economic centers that is vital for many business uses and supports higher density residential and commercial development. This infrastructure also protects environmental quality and open space by ensuring the proper treatment of wastewater and facilitating development in concentrated areas. White River Junction's telecommunications capacity is an asset of growing importance as the use of Internet and high-speed telecommunications grows in importance to businesses.
- A supply of land available for development that is already zoned for industrial and commercial use. This includes over 100 acres in the Sykes Mountain Avenue area and two remaining parcels in both the Olcott and Billings Farm business parks. Additional industrial and commercially zoned land exists on the Route 5 and Route 14 corridors, but it is not served by water and wastewater service. A recent study of the Route 5 South corridor by the Upper Valley Lake Sunapee Regional Planning assessed the suitability of this area for various uses. While the area includes 449 acres of land zoned for industrial and commercial use, only 58.6 acres were found suitable for such development. A variety of factors, including wetlands, existing development, steep slopes, prime agricultural land, and land in public ownership, excluded most of this area from future development. Close to 80% of the land suitable for commercial and industrial use is located north of Kline Drive and would require extending wastewater service and upgrading of existing town water service to support new development.

- Rail access and transportation services for both passenger service to White River Junction and freight service to several developed areas. Freight service is an important asset to some manufacturing and distribution firms, while passenger service supports some tourism activity.
- Low rental real estate costs that help to incubate new businesses, attract firms seeking a lower cost location, and support users, such as artists and artisans, that need low-cost space to be viable.
- A strong local and regional education system that includes high-quality K-12 public schools, technical colleges in Vermont and New Hampshire, Lebanon College, and Dartmouth College. Hartford's public school system helps attract families and is a key resource for workforce education. The two technical colleges offer degrees in mainly technical fields and are a skills-training resource for existing employees and workers.
- Proximity to Dartmouth College and the Dartmouth-Hitchcock Medical Center, which serve as key regional employers and an engine for new business formation through their role in attracting and educating talented entrepreneurs, engineers, and managers. This asset supports two key growing industries for Hartford and the region: health care and information technology. Dartmouth's $400 million expansion plan will provide a further engine of regional growth over the next several years.
- Town government, civic organizations, and regional agencies that provide leadership and capacity to address issues and improve the region. Town departments, the banking community, and Green Mountain Economic Development Corporation have created a supportive environment for businesses and new development. The Two Rivers-Ottauquechee Regional Commission provides planning and research support to help address local issues while providing a focal point for addressing regional needs and concerns. Multiple business and civic groups are working to improve White River Junction and promote the town and region as a visitor destination.
- The preparation of a regional Comprehensive Economic Development Strategy (CEDS) under the U.S. Economic Development Administration (EDA) guidance is an important asset, providing both a regional framework for Hartford's economic development activities and access to federal EDA funding.
- The town's heterogeneous population creates a special character and community life that attracts residents and businesses, generates markets for a wide-ranging mix of businesses and provides a diverse workforce for businesses.

ECONOMIC DEVELOPMENT CHALLENGES

Hartford faces a number of challenges and obstacles in leveraging these assets and realizing the benefits of its many economic development opportunities. The most critical economic development obstacles raised in the community meeting, focus groups, and interviews include:

- Limited growth in new housing, especially workforce housing, and high housing costs that make it difficult to attract new workers to the region and prevent employees at local firms from living in town.
- The extremely low unemployment rate and small available workforce is a constraint to the growth of existing employers and affects the ability to attract new employers. Workforce

development issues exist both among entry-level workers who lack basic education and job-readiness skills and in the supply of higher skilled workers.

- Residential and commercial buildings in poor condition that require significant new investment to attract users and that contribute to poor perceptions of Hartford.
- The perceived image, physical appearance, and building conditions in parts of White River Junction reduce its attractiveness as a shopping and visitor destination and its appeal as a business location. Significant improvements have occurred in recent years with the installation of new sidewalks and streetlights, the opening of the new visitor center and railroad museum, renovation of the Tip Top Bakery Building, the location of the Northern Stage Theater, several new businesses, and planned improvements to Railroad Row underway. These improvements provide significant momentum for continued revitalization, yet focus group discussions indicated that perceptions of White River Junction are lagging behind these changes and still remain an obstacle to shopping and investment.
- The absence of a strong sense of identity and commitment to Hartford as a whole and the limited cohesion and coordination among the town's five villages.
- Heavy reliance on two federal facilities for 20% of its job base, which creates the potential for significant job losses with the closure or downsizing of either facility.
- Limited success in establishing itself as a center for higher-paying professional and technology-based firms while much of its private-sector employment and job growth is concentrated in lower-wage industries. This situation limits higher paying job opportunities for town residents and creates a challenge to attract new employers that can provide higher paying jobs while generating minimal environmental impacts.
- As development pressure grows in Hartford due to its location, good infrastructure, and strong school system, there is a need to balance new development with the preservation of the town's natural beauty, rural character, and attractiveness as a place to live, work, and visit.
- Hartford faces a challenge in maintaining its fiscal capacity to meet the demand for local services that accompanies a growing population, new development, and increasing state and federal mandates. A related challenge is to keep its tax rate affordable to avoid overburdening exiting businesses and residents and to help attract new investment. There was a shared sense that Hartford needs to attract new commercial development along with housing to balance the greater cost to the town generated by family housing.
- Overcoming the regulatory burdens of Act 250 and the perception that Vermont is both a high-cost state and difficult place to do business is an obstacle to attracting new businesses and development to Hartford.
- A limited supply of commercial and industrially zoned land that is served with water and wastewater infrastructure. While Hartford does have some existing prime development land well served by infrastructure, this supply is limited and is likely to be absorbed in the next 5 to 10 years. Expanding the available real estate for longer-term economic growth will require more reuse of existing buildings and exploring the expansion of water and wastewater service to some areas.

ECONOMIC DEVELOPMENT VISION AND GOALS

This section presents a broad economic development vision for Hartford and specific economic development goals that emerged from the public participation process. The vision and goals provide the foundation for the specific economic development strategies presented in the following section.

Economic Development Vision

The community meetings and focus groups generated several common themes that form the basis for a shared vision of the town's economic future. This vision includes:

- A revitalized, more attractive and vibrant downtown White River Junction, well articulated by one group at the community visioning meeting as "White River Junction is a (jumping place) with cafes, restaurants, and things going on";
- A more attractive and visually appealing Town, with fewer abandoned buildings, less blight, and appealing gateways to the Town;
- A stronger sense of community across the entire Town and within the five village centers and where the village centers are stronger focal points for community activities, services and small businesses;
- New development and investment focused in already developed areas that are served by existing infrastructure, especially the five village centers, and in denser and more pedestrian-oriented forms that minimize strip and sprawl-style development;
- Balanced economic growth that includes both new commercial and residential development and that provides a mix of jobs for people at different skill levels. Strong support exists for attracting new businesses that are environmentally friendly and add higher paying and technology-intensive jobs and for expanding the supply affordably priced housing.
- Improved economic outcomes and less economic disparity within Hartford, including higher income levels for town residents, reduced poverty within the Town, and reduced disparity in investment activity and economic well-being across Hartford.
- Well-preserved scenic beauty and rural landscapes and improved scenic and recreation resources within the Town, especially greater access to and utilization of the Connecticut and White rivers.

Economic Development Goals

Hartford's economic development strategy is based on the following goals that reflect the shared vision for town articulated above:

- Improve the image and physical appearance of White River Junction and attract new businesses and economic uses that establish White River Junction as a regional center for entertainment and cultural activities and professional services;
- Create more attractive and vibrant village centers with new small businesses, upgraded buildings, and expanded community activities;
- Attract new businesses and employers to Hartford that are environmentally friendly and provide high-paying jobs, emphasizing information and technology-based firms, consulting and management services, and health care-related activities;
- Improve the employment skills, earnings capacity, and incomes of Hartford residents with low-paying jobs;
- Expand the supply of affordable rental housing and workforce home ownership opportunities within Hartford and the Upper Valley Region; and
- Target new development to already developed and underdeveloped areas served with existing infrastructure and minimize development on existing agricultural land and open space, especially in key scenic areas.

ECONOMIC DEVELOPMENT IMPLEMENTATION AND RECOMMENDATIONS

The following six strategies are proposed to achieve Hartford's economic development goals and realize the shared vision for the Town's future. In formulating the strategies and implementation actions, consideration was made to leverage important Town assets, address critical obstacles and extend existing local capacity to realize the Town's development vision. (The full text of the "Economic Development Strategy" Report completed in April 2002 should be reviewed for detailed background on the strategies and recommendations.)

Strategy One: Expand Capacity to Revitalize White River Junction with New Downtown Partnership Organization and Redevelopment Entity

The revitalization of White River Junction is an important economic development goal for Hartford in its own right, but it also advances two other goals: targeting new development to already developed areas and attracting new environmentally friendly and higher paying businesses. White River's existing building stock, transportation access, and strong water, wastewater and telecommunications infrastructure provide a strong foundation for attracting more professional and technology-based firms. Moreover, a vibrant White River Junction with more stores, restaurants, and arts, cultural and entertainment activities provides amenities to help attract these firms and serves as a destination for local residents.

Recommendations

1. Create a downtown partnership organization involving property owners, businesses, residents, the arts community, civic organizations and town officials and raise funds to hire a full-time staff person for the organization.
2. Submit an application for State downtown designation.
3. Develop a plan to guide the work of the downtown partnership organization that has broad-based support.
4. Undertake several short-term activities to increase awareness and support for the downtown partnership organization and build on the current momentum.
5. Create a façade and building improvement fund in White River Junction.
6. Establish an entity with the mission and authority needed to prepare and implement redevelopment projects.
7. Maintain and strengthen White River Junction's attractions and improve linkages to other key destinations by:
    a) Create an arts organization to strengthen recognition and community support for arts and cultural activities downtown.
    b) Work with Northern Stage Theater to establish a permanent home in White River Junction for this critical destination.
    c) Establish a transportation service that links White River Junction, Quechee Village, and other key destinations.
    d) Secure special state legislation to transfer state-owned land at the junction of the White and Connecticut River to town ownership, providing a key site to strengthen the downtown's pedestrian and scenic connection to the rivers.

Strategy Two: Strengthen Village Centers as Community Centers

This strategy addresses the community's goal to enhance village centers as focal points for community life. It also builds on the unique character of each village and their importance in the Town's economic and social history, adapting these strengths to contemporary community conditions. Furthermore, since most Town centers are well served by infrastructure, this strategy can also reinforce the goal of attracting new businesses to already developed areas. However, strengthening village centers does not necessarily mean making them economic centers. It may mean increasing community activities or services, adding recreational resources, diversifying the housing mix, or other goals. What constitutes a more vital community center and the specific steps to get there must be defined by each village. This strategy expands the resources, capacity, and attention to support community-based initiatives. Thus the impetus for implementation of this strategy will come from grass-roots efforts in each village. Town government will organize and commit itself to supporting these efforts and create two programs to support physical improvements and investment that compliments local initiatives. Finally, investing in stronger village centers should be implemented in a manner that fosters a stronger sense of identity and community pride for the entire town.

Recommendations

8. Identify an existing organization or create a new one in each village to define and implement improvement efforts in the village center to identify shared goals and priorities for strengthening the village center.
9. Establish a "Village Service Team" across town departments to work with each local volunteer organization on village improvement efforts.
10. Utilize the façade and building improvement fund discussed under strategy one to provide an incentive for improving buildings in village centers.
11. Create a housing improvement program that provides financial assistance for low and moderate-income homeowners to stabilize their properties and to undertake improvements. The program also should include a means to mitigate the property tax impact of such improvements.
12. Identify existing community events and plan additional ones to be held in each village center, with the goal of having at least one event each season.
13. Establish a transportation service that links White River Junction, Quechee Village, and other village centers to strengthen village centers.
14. For those village centers where expanding local economic activity is a goal:
    a) Identify existing home-based and small businesses within Hartford that are potential tenants for vacant village center building through a review of existing records and directories, outreach, and surveys;
    b) Work with building owners to make improvements needed to accommodate potential tenants with real demand for space in the village center.

Strategy Three: Build a More Accessible and Effective Workforce Development System

More accessible and effective education and training services is central to helping lower income workers improve their skills and advance into higher paying positions. Moreover, addressing regional labor shortages and creating a higher skilled workforce over time will also help attract and retain higher-paying professional and technology-based firms. This is a complex issue to address since education and workforce development is a regional issue that involves the K-12 education system, post-secondary education at the region's colleges, skills training at private trade schools, job readiness and skills training provided through non-profit organizations, and services provided by the State Department of Employment and Training. Despite the fragmented nature of education and training services, some communities and regions have formed consortia that improve linkages between education and training providers and the needs of employers and major industries and strengthen job preparation, placement, and career advancement opportunities for the labor force.

Recommendations

15. Identify potential sites and buildings to house a satellite facility for Community College of Vermont and/or Vermont Technical College.

16. Cultivate a delegation of local government, business, and civic leaders to lobby for it with college and state officials.
17. Work with business organizations such as Chambers of Commerce to prepare a guide to regional education and training services that provides useful evaluative data on program quality, such as graduation rates, job placement rates, starting salaries for graduates, and the like.
18. Advocate for the creation of a regional workforce development consortium that can improve coordination among education and training providers, fill service gaps, and more effectively address employer needs and improve the skills and earnings of workers.

Strategy Four: Attract Professional Service and Technology-Based Businesses to Hartford

While the primary goal of this strategy is to utilize Hartford's limited supply of prime commercial and industrial zoned land to maximize economic impacts and expand higher paying job opportunities, it will advance several additional goals. First, it helps diversify Hartford's economic base and achieve the balance and environmentally friendly development envisioned by the community. Second, by increasing the local supply of higher paying jobs, it creates more opportunity to link lower-income residents to better paying employment. Third, it will expand and diversify Hartford's tax base. Fourth, attracting these firms to already developed areas is consistent with the goal of targeting new development within areas served by infrastructure and helping to preserve Hartford's scenic beauty and natural resources. Finally, it leverages the regional strength in these industries and seeks to better position Hartford to benefit from the region's leading engines for future economic growth.

Recommendations

19. Implement a marketing campaign targeted to attract high-technology and professional-service firms to Hartford, highlighting existing services, incentives, and tax benefits available.
20. Prepare information materials that explain the zoning requirements and process for targeted types of development, including new construction of an office building, new construction of a light manufacturing plant, and rehabilitation of an existing building for office or mixed use.
21. Implement the Sykes Mountain Avenue Study recommendations to create a more attractive and pedestrian-oriented mixed-use area, including zoning changes to allow higher density office development that can appeal to professional and high-tech firms.
22. Attract a developer to build a multi-tenant Technology Center office building in White River Junction and/or the Sykes Mountain Avenue area.
23. Determine the financial feasibility of extending water and wastewater service to the Kline Drive area, which is suitable for new development.
24. Evaluate both the development potential and financial feasibility of extending water and wastewater service for the Route 14 corridor.

25. Update zoning to reflect actual development potential along the Route 5 and Route 14 corridors.
26. Monitor the likelihood of the Veteran's Administration facility cutbacks and closure and advocate to avoid such actions while developing a contingency plan for cutbacks or closure.

Strategy Five: Develop Local and Regional Initiatives to Expand Workforce Housing

Housing availability is a critical regional issue as well as a local goal. Expanding the supply of housing for the workforce is central to addressing labor shortages that constrain existing business growth and make it difficult to attract new employers to the area. It is also central to the community's desire for balanced growth and economic diversity within the Town. Hartford has some advantages in increasing housing supply, with a strong school system, good water and wastewater capacity, and zoning that allows greater housing density than surrounding bedroom communities. Since workforce housing has fiscal consequences for a community by increasing the costs for public schools beyond the new tax revenue generated, new housing and the associated fiscal impacts should be shared regionally. Given the regional nature of the housing supply problems and the need for shared fiscal responsibility, Hartford can best advance regional solutions through its participation in the newly established Workforce Housing Coalition.

Recommendations

27. Work within the regional Workforce Housing Coalition to develop regional initiatives to expand the supply of workforce housing.
28. Work with lenders, developers, brokers, and state agencies to create a homeownership program in Hartford that utilizes specialized first mortgage products and a soft-second mortgage, to make home ownership affordable to low- and moderate-income residents.
29. Explore the market potential and required zoning to use duplex and townhouse style housing as a lower cost affordable home ownership option, especially as infill housing within village centers.

Strategy Six: Strengthen Community Pride and Identity Throughout Hartford

This strategy addresses the desire for a stronger sense of community and greater connections among residents throughout the town expressed at the community visioning session. The increased understanding, sense of community purpose and trust that emerges through these efforts will enhance the Town's overall economic development and civic initiatives. It represents the building of social capital that is often cited as a critical success factor in economic and community development.

Recommendations

30. Establish or build on an existing annual community-wide event to bring people together, celebrate the town's heritage and successes, and have fun.
31. Hold an annual "re-visioning" meeting to report progress on the economic development plan and other initiatives, foster dialogue among residents, and update the economic development strategy.
32. Create information tools, e.g., a web site, electronic newsletter, print newsletter, and a regular feature in the *Valley News*, to report on successes and implementation progress and to notify residents about events, meetings and activities throughout Hartford.
33. Establish an Economic Development Advisory Committee (EDAC) to oversee and coordinate implementation of the Economic Development Program comprising of residents of all five villages, key businesses and employers, and a staff or board member from the organizations responsible for major implementation tasks.

CHAPTER VI

COMMUNITY FACILITIES AND SERVICES

INTRODUCTION

The provision of public services is an important element in promoting and protecting the health, safety, and general welfare of the community. Hartford's community facilities provide local residents, businesses, institutions, and visitors with police and fire protection, water, sewer, libraries, road maintenance, waste disposal, cemeteries, schools, and other services. Many of the community facilities represent a substantial investment by the Town of Hartford, and private owners have, in turn, substantial investments that rely upon these facilities and services. Most of these facilities and services are funded through local property taxes. Impact fees also are utilized to fund expansions of facilities necessitated by growth. When residential, commercial, industrial, and institutional areas expand, old facilities become outmoded. The need for additional public facilities and services increases as the population grows.

This chapter first looks at goals and community attitudes. Next, specific community facilities and services are discussed, including Municipal Building, Police Department, Emergency Services, Parks and Recreation, Education, Libraries, Solid Waste, Human Services, and Cemeteries. Finally, recommendations regarding each are summarized. Water, Wastewater, and Roads are covered in other chapters. Map VI-1 shows all community facilities in the Town of Hartford by type of facility, name, and location.

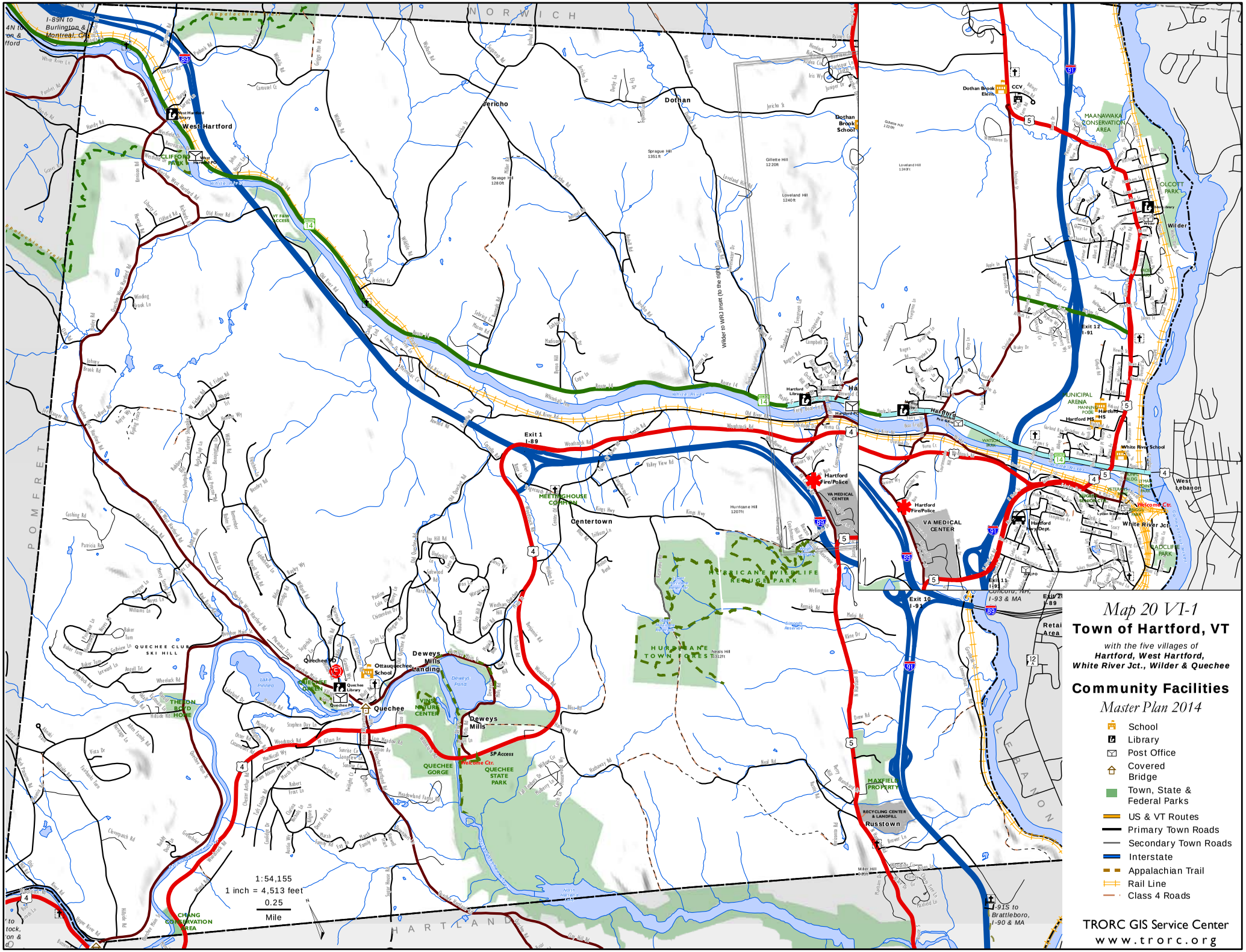
GOALS

1. To maintain an efficient and cost-effective level of facilities and services adequate to meet the needs of Hartford residents and visitors, including quality schools and attractive recreational facilities.
2. To anticipate future land use needs for municipal purposes, including schools; to investigate early acquisition of such lands; and to encourage participation of developers in this program.

RESULTS FROM THE MASTER PLAN COMMUNITY MEETINGS

During the fall of 2002, the Town undertook a series of community meetings to solicit input from the public regarding the update of the Town Master Plan. The meetings were well-attended. The following are comments that came out of the community meetings.

Community facilities and services are very important to the residents of Hartford. Participants expressed many concerns and ideas for improving existing facilities. Of particular importance was providing adequate facilities for children that are safe and easily accessible. It also was stated that community facilities should be integrated with and located near other public functions and that they balance the needs and desires of all users. Lastly, the Town needs to identify whether or not current facilities are adequate, determine what needs improvement, and perform



Map 20 VI-1

Town of Hartford, VT

with the five villages of
Hartford, West Hartford, White River Jct., Wilder & Quechee

Community Facilities

Master Plan 2014

- School
- Library
- Post Office
- Covered Bridge
- Town, State & Federal Parks
- US & VT Routes
- Primary Town Roads
- Secondary Town Roads
- Interstate
- Appalachian Trail
- Rail Line
- Class 4 Roads

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annual maintenance of such facilities. The following is a list of the three top issues identified by community meeting participants.

1. Areas that need improvement include schools, central library, community center, computer access, Town garage, public works, and recreation facilities.
2. Designated playing fields and recreational areas for youths and adults are important to Hartford's quality of life and safety of its children.
3. Improvements to community facilities and services need to consider other issues such as schools and housing.

MUNICIPAL BUILDING

The Hartford Municipal Building is located on a 3.4 acre site on Bridge Street in White River Junction. Built in 1884 to serve as a school, the two-story building is of post and beam construction, with exterior brick-bearing walls. The main floor provides space for the Town Manager, Treasurer, Finance Department, Town Clerk, Selectboard Meeting Room, Parks and Recreation Department, and the Historical Society. The second floor provides space for a Parks and Recreation Department office, the Department of Planning and Development Services (includes Zoning, Health, Economic and Community Development, Conservation, Historic Preservation, and Planning), the Housing Authority, the Public Works Department (includes Water, Wastewater, and Highway), and the Listers' Office. In addition, a conference room and break room also are located on the second floor. Historically a jail, the basement, is now used for storage. The attic is presently unoccupied. However, the Town is in the process of seeking funds to rehabilitate the space. Approximately 25 people are employed at the Municipal Building and there are 54 parking spaces provided at the site. Although the first floor of the Municipal Building is handicapped accessible, the second floor is not. The Municipal Building has a floor area of approximately 15,400 square feet.

POLICE DEPARTMENT

The Hartford Police Department is housed in the Public Safety Facility on VA Cutoff Road on a 2.2 acre site owned by the Town. The Police Department utilizes 8,700 square feet of space in a public safety building sharing a centralized dispatch service area, training classroom, lobby, and fitness area with the Emergency Services Department. The police portion of the building houses office space for the chief, administrative assistant, deputy chief, support and patrol captains, detectives, supervisors, and a squad room. In addition, there is a fingerprinting/records/photo area, evidence storage, interview/fingerprinting station, conference room, secure custody area, sallyport, locker and shower areas, and an outside storage area.

Hartford continues to grow in a variety of areas. These include second or seasonal homes, primary residences, commercial and industrial development, Town grand list, and governmental development. The Police Department has remained stable in size for a number of years. A comparison of department positions shows an overall increase of only 1.5 positions in twenty years, far below other comparative growth rates found in the Master Plan, such as the grand list, housing, and commercial development. Strategies to ensure the continuation of effective enforcement in the future must include additional staff development and specialization, more effective and efficient ways of conducting the business of the Department, and a commitment to preserving the safety of

the community. These can be accomplished by keeping the Department equipped, trained, and prepared to deal with the many aspects of a busy, vital, and economically diverse community.

The Hartford Police Department currently provides an increased role of public service. Annual reports of departmental activity show increasing numbers of responses to a wide variety of calls for service beyond the traditional and well-known crimes. As the quality of life has improved in the Upper Valley over the past few years, residents are becoming increasingly sensitive to an increasing number of minor problems that they want their Police Department to deal with. The addition of several local ordinances dealing with noise, trash, and nudity are a few examples of increased local concerns that have demanded an increased enforcement role for the Department.

Prominent factors in gauging the long-term needs of the police department are Hartford's unique "service population" geographical location near similar population centers, proximity to transportation venues (interstate highways, train terminal, airport, bus terminal), and the county governmental offices. Serving the needs of these factors means increased responsibilities for the police with no effective manner to recover the incurred financial burdens.

The Police Department maintains a variety of patrol vehicles, specialized vehicles, and safety equipment. On the average, marked police vehicles are replaced every two years, and unmarked vehicles are replaced as needed or as the budget allows. The Department purchases, maintains, and replaces a variety of uniforms and equipment to support department personnel, including sidearms; shotguns; radar equipment; leather gear; uniforms; ammunition; emergency lighting equipment; portable, mobile and base station radios; and other assorted emergency equipment. The Department also maintains a variety of office equipment, computers, and furniture. The Department currently maintains a trained canine and handler.

Within its communications center, the Police Department provides radio and telephone communications for police, fire, and EMS through Enhanced 911 service. The center is a local Public Safety Answering Point (PSAP). These services are also provided by contract for the towns of Norwich, Royalton, Sharon, Randolph, and Brookfield. Service upgrades and replacement of communications equipment has taken place and will need to be maintained as technology changes to ensure continued excellence in communications and allow an integrated and cost-efficient consolidation with town departments.

The Police Department also continues to move aggressively in the area of technology and computerization. In 1995 and 1996, the Department created the first department-wide network of computers serving all aspects of the facility and working cooperatively to include the Emergency Services Department within the network, as well as full time access to state records, intelligence services and the internet. Digital imaging, intelligence, and computer-aided dispatching are areas of future need as once-expensive technologies come within reach of smaller departments.

Additional plans are in development through the state to further improve integrated communications with local, state and federal departments; faster transmission of data and sharing of data; and higher security for stored data. Routine upgrading of the network of computers, printers, and other equipment is necessary to maintain the technical edge we currently hold.

Each aspect of the operation is evaluated on a yearly basis. Parking for vehicles for employees, visitors, and training attendance is needed, and additional storage for files and equipment is also necessary.

EMERGENCY SERVICES

The Hartford Emergency Services Department is a combination (career and paid on-call) department that provides fire protection, emergency medical services, technical rescue services, and hazardous materials protection to the community.

The Department's Headquarters is located on the VA Cut-off Road in White River Junction on a 2.2 acre site. The one-story building (with two stories on the south end) is of cement block construction with brick veneer and was built in 1978. The building has a forced hot water heating system and is insulated. The station provides 13,456 square feet of space. There are five bays provided for fire engines. The remainder of the station contains office space for the Chief, Assistant Chief, secretary, apparatus room, repair room, operations room, storage rooms, and meeting and training rooms that are shared with the Police Department. A second non-staffed station, known as Hartford Station 2, is located on Willard Road in Quechee.

The career staff consists of two Chief Officers, sixteen career Firefighter Emergency Medical Technician-Intermediates (EMT-I), one full-time mechanic, a full-time secretary and approximately nine paid-on-call firefighters. The Fire Chief also serves as the Town's designated Emergency Management Director.

From 1986 to 2002, the Fire/Ambulance emergency responses increased by 64 percent. As shown in Chart VI-1, ambulance responses increased 92 percent during this time period, and fire responses increased 13 percent.

The Hartford Emergency Services Department's mission is to use proactive and reactive methods to save lives and protect property in order to provide a quality of life consistent with the requirements of the residents of the Town of Hartford.

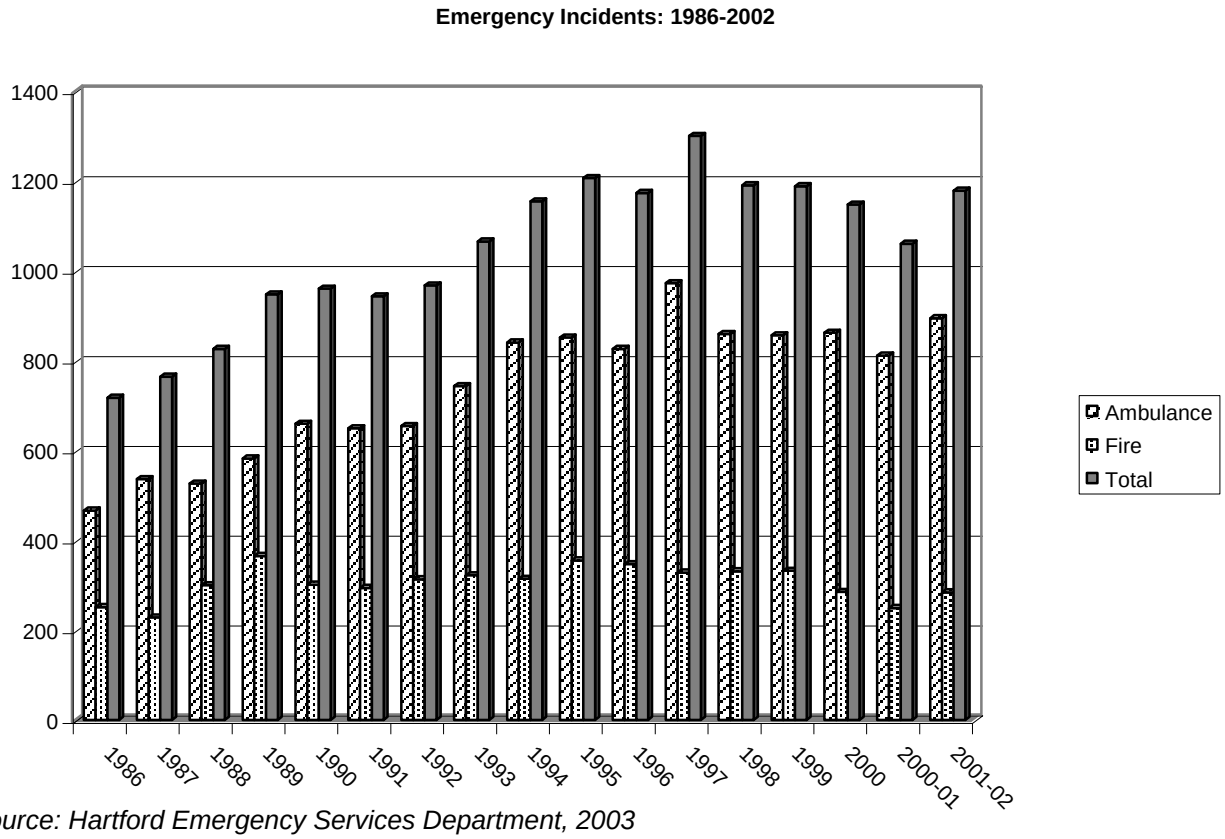
The goals of the department are to:

1. Have an initial crew, with a minimum of four personnel, ready to respond and perform initial fire attack to protect lives and property. The department's ability to meet this goal has decreased since the last Master Plan update in 1998. State regulations (VOSHA), enacted in November 1998, require a minimum of four employees on scene before interior firefighting can be performed to save property. The Department has four employees on duty 50 percent of the time.
2. Enhance prevention activities consisting of education, code enforcement, and engineering.
3. Enhance training and equipment for technical rescue services at:
    - Water-related emergencies
    - High-angle topographical rescue (Quechee Gorge, e.g.)

- Remote/inaccessible areas. (Forests, hiking trails, etc.)
- Natural and manmade disasters
- Transportation accidents

4. Enhance training and equipment for response to hazardous materials emergencies.
5. Expand response capability for emergency medical services as follows:
   - Provide advanced life support within five to seven minutes at 80 percent of the incidents in the community.
   - Provide automatic external defibrillation (AED) within four to six minutes at 90 percent of the incidents in the community.
   - Increase the number of paramedics to increase capabilities for responses to medical emergencies.
6. Improve Emergency/Disaster Management in the areas of mitigation, preparedness, response, and recovery.
7. Improve dispatching and communications capabilities through the installation and use of a computer assisted dispatch (CAD) program.
8. Maintaining a Capital Improvement Plan (CIP) that analyzes the needs of the Department over the next five to ten years.

CHART VI-1 SUMMARY OF EMERGENCY SERVICES CALLS 1986-2002 Hartford, VT



Source: Hartford Emergency Services Department, 2003

PARKS & RECREATION

Hartford Parks & Parks and Recreation Department

The following is the mission statement of the Department: "Our mission is to serve the needs of the community through quality parks and facilities and by offering lifelong learning through recreational and cultural programs." The Department received its National Agency Accreditation in 2004. The Department is made up of two divisions: the Parks Division and the Recreation Division.

The Parks Division maintains/improves twelve parks and two facilities which include Frost Park, Lyman Point Park, Erwin Clifford Park, George Ratcliffe Park, Watson Park, Quechee Green Park, Kilowatt Athletic Field/parking, Hurricane Forest Wildlife Refuge Park, Fred Briggs Park, Veterans Memorial Park, Meeting House Common, and Wilder Picnic Grounds; the two facilities consist of the Sherman Manning Pool and the Outdoor Recreation Facility, known as the Hartford Municipal Arena.

The Recreation Division provides year-round diversified recreation and leisure programs for the whole community and all ages, including a comprehensive athletic program for 4 to18-year-olds. Adult sport leagues and drop-in athletic programs also are offered.

Department Personnel

The Department is staffed with six full-time employees: Director, Administrative Assistant, Program Director, Parks & Facilities Foreman, and two park laborers. Volunteers continue to be the backbone of the athletic programs for the youth population. Many additional volunteers provide a wide variety of services to the Department. The Department continues to recognize and reward volunteers through the annual volunteerism award presentation.

The volunteer Parks and Recreation Commission works actively in assisting and advising the Director. The Commission is made up of seven members appointed by the Selectboard and governed by the Parks and Recreation Commission Bylaws. Commission members have a liaison with the Selectboard, School Board, Tree Board, Conservation Commission, the Bugbee Senior Center, and the youth athletic coaches.

Equipment

The Department maintains a variety of equipment and vehicles, which are reviewed annually for upgrading and replacement.

Services and Delivery

The departmental office is open Monday through Friday (8:00 a.m.-5:00 p.m.). In 2006 state-of-the-art program registration software went on-line. Park and facility care is being completed on a timely (regular) basis with full-time maintenance staff. Youth are now able to visit the gymnasium on a weekly basis during the winter months because of the adult gym supervision provided by the Department. Program offerings have increased and diversified with the Department's ability to contract a wide variety of quality instructors. A needs assessment survey was conducted in 2006, which updated the 1997 survey.

Special attention is given to the safety and attractive appearances of parks. The parks are on a maintenance schedule. This maintenance includes the day-to-day grooming, along with year-to-year maintenance. As new lands (parks) are acquired, additional seasonal labor must be hired. This is evident with the newly acquired TransCanada properties and the construction of two new municipal parks (Meeting House Common and Veterans Memorial).

Revenue and Expenditures

The working budget of over $450,000 is insufficient to maintain the current services. Capital projects and additional staffing are needed, which will increase the overall operating budget. The Hartford Municipal Arena working budget is $150,000 and operates as an enterprise account.

The Department operates on a user-fee program. Fees are set at a reasonable amount in hopes that all community members can afford to participate. A scholarship program is available for any person or family who needs financial assistance. This practice will continue. Adult program fees are set to break even. Excess revenues help offset programs that do not break even. This practice also will continue.

FACILITIES AND PARK OVERVIEW

Hartford residents are fortunate to have an extensive system of parks and facilities with a wide variety of recreation opportunities located within the Town (Table VI-1). (See also Map IX-1 in Natural Resources Chapter.) The Town's neighborhood parks, athletic facilities, and the Hurricane Forest Wildlife Refuge Park are supplemented by federal and state Quechee Gorge/North Hartland Lake lands, as well as Connecticut River facilities at the privately-owned Wilder Dam and an extensive system of facilities developed as part of the Quechee Lakes Planned Unit Development. The Appalachian Trail passes through West Hartford in the northwest corner of Town, offering easy access for day hikes or longer journeys. Future private initiatives in progress include the construction of an indoor aquatics center and indoor athletic center. Each of these initiatives has a direct relationship with the Town.

Town Facilities

The Hartford Municipal Arena and Sherman Manning Pool are located on school property under the jurisdiction of the Town of Hartford Parks and Recreation Department.

The Hartford Municipal Arena is an enclosed, steel-framed, metal roof structure, approximately 210 feet by 100 feet. It is used primarily as an ice skating/hockey arena from October to March and a skateboard and in-line skating park May to September. The building is equipped with a refrigeration system, which was installed in 1997. In addition to skate boarding and in-line skating, from May to September, the facility also hosts special events, school and town athletics and ceremonies, summer day camp, and community functions.

The Sherman Manning Pool is presently open ten weeks from late June to late August. Traditionally, the pool opens the week after school is over and closes one week prior to Labor Day weekend. The facility offers a wading pool, main pool with diving and swimming lanes, waterslide, and a large sunning deck area. Swimming and diving instructions are offered, along with recreational swimming. The locker room facilities are operated by the School Department and shared during the summer months with the Parks and Recreation Department. The pump house is utilized for storage and filter system.

School Facilities and Athletic Space also are utilized by the Parks and Recreation Department. These include gymnasiums at the Dothan Brook, Ottauquechee, and White River Schools, Hartford Memorial (Middle) School and Hartford High School, as well as classrooms, cafeterias, and specialty rooms (library, home economics, theater). The four tennis courts and four diamonds are used for youth and adult athletics.

TABLE VI-1
PUBLIC AND PRIVATE RECREATIONAL LANDS AND FACILITIES

AREA	ACREAGE	FACILITIES
MUNICIPAL		
Fred Briggs Park	0.2	Lawn, gardens, and Engine 494
Frost Park	2.0	Play area, flooded rink

Lyman Point Park	0.9	Picnic area, launching area, and open play area and play structure, and community bandstand
Clifford Park	12.0	Softball field, baseball field, horseshoe pits, tennis court, basketball hoops, picnic area and playground equipment
Ratcliffe Park	8.4	Fields for soccer, softball, baseball, picnic area, basketball court, playground equipment
Watson Memorial Park	8.6	Soccer field and playground
Meeting House Common	1.0	Pocket park & toddler playground
Veterans Memorial Park	1.2	Passive park & memorial geese sculpture
Hurricane Forest and Wildlife Refuge Park	142.0	Trails, picnic area, fishing access
Hartford High Area, Gilman Environmental Area	14.0	Pool, indoor ice arena, tennis courts, two gymnasiums, fields for football, baseball, field hockey and softball, and a grass track. Environmental education area.
Maxfield Property	65.0	Presently in agricultural use
Hurricane Town Forest	423.0	Forest Trails, hunting, two reservoirs with fishing access
Maanawaka Conservation Area	21.0	Forest, trails, shoreline with fishing access
Dothan Brook School	5.0	Playground equipment, playfields, and gymnasium
White River School	1.7	Playground equipment, gymnasium
Ottauquechee School	6.0	Playground equipment, playfields, and gymnasium
Subtotal:	**712.0**	
STATE		
Quechee State Park	76.0	Picnic, camping, hiking, xc skiing
Subtotal:	**76.0**	
FEDERAL		
Appalachian Trail	250.7	Hiking
Veterans' Hospital	64.0	Hospital and grounds
Army Corp of Engineers Floodlands and North Hartland Reservoir	759.76	Walking, birding, cross country skiing, fishing, and Quechee Gorge and Deweys Pond
Subtotal:	**1,074.46**	
PRIVATE		
TransCanada Property	79.0	Boat launch, athletic fields, open recreational space & picnic area
Quechee Lakes Landowners Assoc.		
Polo Field	54.0	Open space used for polo games, Scottish Festival
Lake Pinneo	55.0	Swimming, sailing, windsurfing
Ski Area	73.0	Downhill ski area

Highland Golf Course	127.4	Golf course, cross country skiing
Lakeland Golf Course	136.4	Golf course, cross country skiing
Greenbelt and wildlife area	1,939.0	Greenbelt and wildlife area
Quechee Green Park	10.0	Walking/jogging path, playground, exercise course, gazebo and athletic fields
Dewey's Mill Landing & Field	1.8	Open recreation space, boat access to Dewey's Pond
QLLA (other)	321.0	Deweys Mills Pond and surrounding marshland, Murphy Farm, greenbelts and Clubhouse acreages
Subtotal	**2,796.6**	
TOTAL	**4,659.06**	

Town Parks

The park system provides both passive and active leisure time activities. Each park's character is described below.

Frost Park is a neighborhood park located in a residential area of Wilder Village. The park has a large play structure (constructed in 2003), swing sets, park benches, hopscotch, four-square, ½ court basketball, picnic tables and shelter, and roadside parking. This park is not large enough to hold any regulation athletic fields. During the winter, the open field is flooded and frozen for use as a lighted ice-skating rink. Playground structures are suitable for young children.

Lyman Point Park includes the municipal lawns and is used primarily for picnicking, fishing, and boat portages. It also has a large playground constructed in 1995, community bandstand constructed in 1997, picnic tables, and park benches. Substantial parking is available at the municipal parking lot and the Point Plaza parking lot. This park is situated on the northern point of the White and Connecticut Rivers' confluence and gives easy access to fishing and canoeing activities.

Clifford Park is a day-use neighborhood park along the White River off Westfield Drive on Recreation Drive located in West Hartford Village. A large percentage of users visit the park for more than three hours. Large groups use the property for special outings and group sports. The Park contains a regulation softball field, eleven regulation horseshoe pits, a small basketball court, numerous playground equipment, a tennis court, picnic tables and grills, a large barn used for winter storage of park equipment, fishing and boating access, a nature trail, and parking areas.

Ratcliffe Park is a neighborhood park located in White River Junction Village. It is primarily used for athletic sporting events (soccer, baseball, softball and basketball) and family picnicking. The Park contains two baseball diamonds, playground equipment, a regulation basketball court, a regulation soccer field, picnic tables and grills, park benches, a water fountain, parking, an overlook along the Connecticut River, and the White River Teen Garden.

Watson Memorial Park, located in Hartford Village, is primarily used for athletic events. This property is owned by the School District and maintained and scheduled by the Town. The Park contains a large playground, a regulation soccer field (also used for lacrosse and field hockey), and

picnic benches. The Park was completely renovated in 1993. Small car-top boat portage and fishing access were constructed in 2002. A planned 2007 expansion includes the construction of a dog park located in the east end of the park grounds. In 2005, an irrigation line was installed to provide irrigation to the athletic field.

Kilowatt Athletic Field is located at the TransCanada Dam and was renovated in 1990/91. Renovations included widening the access road, a new parking area, and the construction of a regulation size soccer field. In 2006, the properties (Wilder Picnic Area, Kilowatt Field and boat launch) were leased to the Town of Hartford. Future plans include improving the security, park amenities, trails and recreational activities of the park grounds. Recreation activities may include access to the river for rowing.

Fred Briggs Park is located in downtown White River Junction along Main Street. The Park consists of a memorial garden, small lawn, four maple trees and the Engine 494. In 2003, a new shelter was constructed, covering the entire engine, tender, and caboose.

Quechee Green Park is located in the "heart" of Quechee Village along the Ottauquechee River. Park amenities include a common green, gazebo, park benches, playground, swings, fitness stations, and walking/jogging trail. The open space is used for athletics and special events. Quechee Lakes Landowners Association (QLLA) owns the Park property, with the exception of the common green. The Town owns the common green. The park space is scheduled by the Town and cooperatively maintained by the Town and QLLA.

Dewey's Landing is located on Quechee Main Street at Dewey's Pond and provides small car-top boat portage and fishing access. The property is owned by the Army Corps of Engineers and maintained cooperatively by the Hartford Parks and Parks and Recreation Department and the Vermont Department of Forest, Parks and Recreation.

Dewey's Pond Field located on Dewey's Mill Road allows access to winter activities on Dewey's Mill Pond (ice-fishing, skating, snow shoeing and cross-country skiing). The Department plows a portion of the field to allow people to park vehicles.

Hurricane Forest Wildlife Refuge Park consists of 142 acres. In 1973, Winsor C. and Bertha C. Brown donated the property to the Town on Wright Reservoir Road. The land was voted at Town Meeting to be accepted by the Town with certain conditions and restrictions. The gifted parcel provides a year-round sanctuary for wild birds and animals and contains the Wright Reservoir, hiking trails, and picnic sites. The site is contiguous to the Hurricane Town Forest. In 2006/2007, the Wright Reservoir Dam was included with the Upper and Lower Hurricane Reservoirs in an engineering assessment report, which recommended improvements to all three dams. The report was paid for in-part with funds derived from timber harvesting in the Hurricane Town Forest.

Meeting House Common is located on Center of Town Road in White River Junction. A toddler playground structure was installed in 2006 and the site has a small open play area and picnic benches.

Veterans Memorial Park is located on Railroad Row in Downtown White River Junction. It is home of the Veteran Memorial geese sculptures. A passive park along the White River, it consists of lawn, a paved walkway, and benches.

Wilder Picnic Park is located in Wilder Village on TransCanada land. A large picnic area with tables and grills exists along the Connecticut River. A small car-top boat portage also exists.

Conservation Commission Managed Properties

Hurricane Town Forest consists of 423 acres and is located on a Reservoir Road. The property contains two reservoirs that were once used as part of the Municipal water supply. The property has an extensive trail system and is open to hunting and fishing. A forest management plan was updated in 1998 and a recreation management plan was adopted in 2002. The property is used for several educational programs by the Hartford Schools, and it is hoped that this relationship will continue. In 2006/2007 the Upper and Lower Hurricane Dams were included along with the Wright Reservoir Dam in an engineering assessment report, which recommended improvements to all three dams. The report was paid for in-part with funds derived from timber harvesting in the Hurricane Town Forest.

Maanawaka Conservation Area consists of 21 acres and is located on a Connecticut River backwater in Wilder. Serving as the southern end of the 1½ mile long Hazen Trail that links Hartford to Norwich and the Montshire Museum, the property was acquired by the Town in 1998 using the Town Conservation Fund and two grants. The property also has a trail that provides fishing access to the nearly ¼ mile frontage to the backwater. A management plan for the property was developed in 1999.

David Chang Conservation Area consists of six acres along the Ottaquechee River. Located on Route 4 in the southwestern part of the Town, on the Hartford/Hartland town line. In 2003, the property was acquired by the Town using the Town Conservation Fund and a grant. A plant inventory and a forest management plan were completed in 2004.

Other Public Recreation Facilities

An extensive public recreation land corridor, made up of Quechee State Park and Army Corps of Engineers flood control lands, extends from Deweys Pond south along the Ottauquechee River to North Hartland. Boating and fishing are available at Deweys Pond, with a small parking area at the north end of the Pond and a trail south to the Quechee Gorge bridge on Route 4. Picnic areas and a campground at the State Park along Route 4 are heavily used by visitors to the area. The trail to the bottom of the Gorge is used by visitors and residents to view the Gorge and for access to fishing. Facilities at the southern end of the public land in North Hartland include a beach, boat ramp, and picnic shelters.

The Quechee Gorge Master Plan, developed in 1996 with a Federal Public Lands Highways Grant, proposes numerous enhancements to the area associated with the Gorge and public lands. These include development of a visitor center and sidewalks along Route 4; improvements to traffic safety, pedestrian circulation, and parking; improvements to and expansion of the existing trail system around the Gorge; and a trail extension to the recreation facilities at the North Hartland Dam for

those interested in a longer hikes. Implementation is underway through a coordinated effort between the Town, area residents and businesses, the Army Corps of Engineers, the Hartford Area Chamber and the State.

The Appalachian Trail corridor passes through the northwest corner of town, crossing the White River in West Hartford. Through a cooperative effort involving the Hartford and Norwich communities, landowners, the Upper Valley Land Trust, and Appalachian Trail Conference, many additions have been made to the amount of federal and private land along the trail protected to provide a buffer between hikers and surrounding land uses. Linkages continue to be planned and developed, building on existing Class IV road corridors in Hartford and Norwich.

Future Needs

The Parks and Recreation Department strives to provide excellent services to the Hartford community in program offerings and maintaining grounds and equipment. The Department must respond to the needs of the growing community and may need to expand in areas of staffing, equipment purchases, and land acquisition in order to continue its high standard of service to the community.

The Department has successfully completed development/acquisition of public parks in all five villages. Areas of immediate interest include the development of recreation facilities and athletic fields on the former Maxfield property and the newly leased TransCanada property and the consideration of a park facility on the northwest side of Wilder. There is presently a need to expand parking at many of the Town parks. Irrigation for the playing field at Clifford Park is needed to help cope with irregular rainfall.

Currently, all equipment and the daily maintenance operation is housed out of the Hartford Municipal Arena building. As a year-round facility for public and private functions, it will no longer be feasible to have the parks division operate from this location. In 2007 a new maintenance building is planned to be constructed on the newly TransCanada leased property.

The Parks and Recreation Department will continue to work with the Department of Planning and Development Services in planning for potential park and open-space development. Population growth increases the demands on our parks and puts a burden on our ability to maintain the existing park system. As the make-up of population changes, there will be more demand for diversified social, cultural, health, and athletic programs. The Department must respond to the community's demand for quality recreation programs and park/facility services. Each year the demand for more activities for all community members increases. As the parks/facilities are improved, the level of maintenance must meet the high expectations of the community.

Capital Improvement Plan

The following list of the top ten improvements that was adopted by the Parks and Recreation Commission in the fall of 2002. One represents the highest priority.

CAPITAL IMPROVEMENT PLAN PRIORITY LIST

1. Develop the Maxfield and TransCanada lease properties (community recreation and athletic needs).
2. Pursue land acquisition along the Connecticut River between Ratcliffe Park and the State of Vermont property on Railroad Row.
3. Build a park maintenance shelter (office space, cold & hot storage, and equipment bay).
4. Expand the parking area at Ratcliffe Park.
5. ~~5.~~ Install lights for the outdoor tennis courts at the Hartford Memorial School.
6. Create a parking area for the Hurricane Forest Wildlife Refuge Park.
7. Provide access to rivers for swimming, fishing and boating.
8. Increase staffing for a full-time recreation supervisor.
9. Renovate the existing bathhouse.
10. Construct a new track and field complex on High School grounds.

EDUCATION

The Hartford School District continues to strive for educational excellence in an increasingly challenging world. The philosophy of the District states, in part, that the District

> *"...sees itself as a part of a learning community that consists of students, parents, faculty and the Upper Valley. This community shares in the development of thinking individuals who will have the self-confidence and information to make intelligent decisions based on sound values and who will assume responsibility for those decisions."*

The District adopted the following mission statement in February of 1999:

> *The mission of the Hartford School District is to provide and ensure a caring and dynamic learning community where the intellectual development of students is our highest priority.*

Our schools are faced with both state and federal mandates, often unfunded, that continue to widen the scope of the District's responsibility and place pressure on our budgets. Mandates in areas of special education, student assessment, data reporting and physical plant, among others, present a significant challenge, both to budget and to the staff time allocated to teaching and administering our schools.

The District has involved the community in many aspects of its planning. A Long-Range Plan was developed in 1999 that outlines the District's goals for a five-year period. The process involved the participation of school personnel, School Board members, and the public. This plan includes goals in the areas of curriculum, technology, and 21st century initiatives, assessment, safe and respectful school environments, parental and community involvement, time and scheduling, and staff development.

In order to achieve the goals outlined in the District's Long-Range Plan, we have linked our improvement efforts in curriculum, instruction, and assessment. The district has adopted a process for renewing its curriculum on a five-year cycle to reflect current research and best practices in education. This process also ensures clearly articulated outcomes for children in pre-K through 12 that are coordinated among our three elementary schools, middle, and high school. In addition, teachers, building administrators, and school directors have been engaged in a process to develop a comprehensive plan for assessing our educational programs. This plan outlines how we will assess students in core content areas, as well as areas such as communication, thinking, and reasoning skills. Information will also be gathered about how well we engage families, our facilities, and school climate. This information will be used to modify our curriculum and instruction to better meet the needs of our students.

Much of the information generated as part of our comprehensive assessment plan will continue to be reported in the "Hartford School-Community Profile." This annual publication is distributed widely throughout the community and provides information related to student academic performance, student health and well-being, district resources, and programmatic goals.

Another mechanism for analyzing our assessment information is the Action Planning process that takes place in each school on an annual basis. Each school develops an Action Plan in which student performance data is reviewed and goals are set for the coming year. Modifications to instructional practices and goal-centered professional development are often outcomes of the Action Planning process. Action Plans are developed with the participation of teachers, parents, school directors and the building administrator and approved by the school's faculty and the School Board.

A major initiative undertaken by the District has been to improve student learning in mathematics. Over the last several years, the District has supported this effort through the implementation of a standards-based mathematics curriculum, program, and significant professional development. Six of our teachers are currently enrolled in the Vermont Mathematics Initiative, which is a three-year program leading to a master's degree in mathematics. The National Science Foundation recently awarded a five-year $7.4 million dollar grant to the Vermont Math Program, to improve student learning in mathematics. The Hartford School District is one of four partnership districts in this project.

Over the next several years the District will put an increasing emphasis on the exploration and development of a comprehensive system for staff development, evaluation, recruitment, retention, and mentorship.

Hartford High School has implemented an Honors Program that is tailored to meet the needs of academically talented and highly motivated students who seek to challenge themselves. The program stresses rigorous academics, self-direction and independent learning, involvement with the community, the development of public speaking and communication skills, and positive self-esteem.

The District has formulated school-based Technology Plans that are consistent with State and Federal requirements. The primary focus of the District's technology planning is to ensure that technology is used as an educational tool that results in improved student learning, more effective and efficient administrative systems, and improved communication within the district and with the public and outside agencies. The District is committed to funding educational technology and maintaining an up-to-date infrastructure. The District saves a significant amount of money each year by building its own computers and designing and building its own computer labs. All Internet access is presently "filtered" to prevent inappropriate usage. In addition, the district has "Acceptable Use" policies for both students and staff that ensure the appropriate use of technology. All of the District's schools use a computerized database for storing and accessing student information such as attendance, directory information, grades, and disciplinary information. In addition, the Hartford High School and the Memorial Middle School do their scheduling using this software. All of the District's libraries have electronic circulation and card catalogs as well as extensive Internet access. We are presently exploring a system that would allow parents to access their children's grades and homework assignments via the Internet.
In addition to serving the Town's educational needs, the District's school buildings are used for many Hartford Parks and Recreation Department programs. The District and the Recreation Department have a working agreement that gives priority to the activities of the School District and the Town when planning for facility usage. There continues to be a shortage of athletic field space

for District and Recreation Department activities and a need to develop additional field space that will allow for program expansion and adequate maintenance of existing athletic fields. The School Board and Selectmen have committed funds to study possible uses of the property recently donated to the Town by the Maxfield family. It is hoped that this property will be available, in the near future, to meet Hartford's increasing need for athletic field space.

The Hartford Village School was sold in 1999 and continues to be used for educational purposes. The Quechee Elementary School was sold in 1996 and is the home of the Upper Valley Waldorf School. The old Wilder Elementary School is presently the home of a regional special education program that is hosted by the Hartford School District. Funds from this program have allowed the District to make improvements to the building, including a sprinkler system, re-wiring, a new fire alarm system, replacement of some windows, and interior painting. The District is presently planning to replace the lighting throughout the building with financial assistance from Efficiency Vermont.

The School Directors have entered into tuition agreements with Sharon, Hartland, and Cornish. The revenue generated by tuition students contributes revenue to the District, thereby lowering the tax burden of the Hartford taxpayer. The tuition students from these and many other towns make a valuable contribution to the academic, athletic, and social fabric of both the middle and high schools.

Table VI-2
HARTFORD SCHOOL DISTRICT ENROLLMENT DATA

SCHOOL	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Capacity
Hartford High	740	746	787	811	813	820	793	800	809	789	751	800
Memorial Middle	452	438	464	468	474	420	408	386	382	392	367	500-550
White River	230	226	213	218	206	181	174	176	207	198	215	300-350
Dothan Brook	371	362	369	363	355	329	333	291	296	281	285	400-600
Ottauquechee	253	265	238	245	256	264	258	272	257	214	197	350-400
TOTAL	2046	2037	2071	2105	2104	2014	1966	1925	1951	1874	1815	

Source: Hartford School District

The School District will undertake a Master Plan in 2007.

Facilities

The School District places a high priority on ensuring that its students, staff and the public have safe, clean and well-maintained facilities. All of our schools meet current fire and life safety codes as well as ventilation and indoor air quality requirements. All old underground fuel storage tanks have been replaced, and new tanks meet present codes. The Hartford High School has been chosen to participate in a state-sponsored pilot program to investigate better and more efficient ways to clean the building. These practices will be adapted to other buildings, as deemed appropriate. All schools and administrative buildings are hard-wired for computer use, providing students and staff with email communication and Internet access.

The District has developed a facilities plan that outlines major capital projects that need to be addressed in the future. State construction funds are used, whenever possible, to share the cost of capital improvements. The difficult budgetary times the District has faced make fully funding capital projects, as well as other priorities, a continuing challenge.

Due to deficiencies in roof systems, the District has filed a legal action against the contractor and architect who were involved in the building of the Dothan Brook School and the renovation of the White River School. The District feels strongly that the problems associated with these roof systems fall outside of the District's responsibility and, hence, steps have been taken to seek relief. Informal resolution of this matter has been attempted and failed.

The Dothan Brook School was completed in 1993 and can accommodate over 450 students in grades K-5. The school was built with the "core facilities" to allow for future expansion to a capacity of 600. The school is located at the north end of the village of Wilder. The school is connected to the village of Wilder via a recently completed bike path. The school is in full compliance with present building codes and offers its students and staff a safe and beautiful learning environment. The building includes 21 classrooms, a computerized library, computer lab, dedicated art and music facilities, a full nursing station, full cafeteria and kitchen, and a 5,155 square foot gym.

The Ottauquechee School was built in 1994 and can accommodate 350 students in grades K-5. The school was built with the "core facilities" to allow for future expansion to a capacity of 400. The school is located on 17 acres in the village of Quechee. The school is in full compliance with present building codes and offers its students and staff a safe and beautiful learning environment. The building includes 14 classrooms, a computerized library, computer lab, dedicated art and music facilities, a full nursing station, full cafeteria and kitchen, and a 4,125 square foot gym.

The White River School is a wood and brick building on Pine Street in White River Junction. The school can accommodate 300-350 students in grades K-5. The school was built in 1907 on a two-acre site. Two additional rooms were built in 1924. There was an addition built in 1934 that added the gymnasium, and another significant addition was added in 1938. Finally, there was a major renovation and addition in 1993, as part of the elementary-school bond project. This most recent renovation has made use of previously unused areas of the building's basement, as well as a complete upgrading of the building's fit and finish. Major work was done to create an up-to-date

library, cafeteria, art and music areas, and handicapped accessibility. New administration, guidance and nursing areas were built, and the building was brought into compliance with present day building codes. The building was reoccupied in 1994. In 1995, a computer lab was installed adjacent to the library with networked computers and has full Internet accessibility.

The Memorial Middle School, located on Highland Avenue in White River Junction, is a brick building constructed in 1952. A four-classroom addition has been built since that time. The school serves over 440 students in grades 6-8, including 27 tuition students from the Town of Sharon. Major improvement to the building's infrastructure were made in 1996-97. These improvements included:

- The complete re-wiring and new lighting for the building;
- Replacement of all exterior windows and doors;
- Renovation of science labs, guidance area and administrative offices;
- Replacement of heating and ventilation units;
- Installation of new digital HVAC controls;
- A 4,000 square foot addition (to include storage, a new art room and a new classroom);
- Safety improvements to traffic flow;
- New data wiring and phone system;
- Major cosmetic upgrades such as floor tile, painting, etc.

Student restrooms were completely renovated during the summer of 2001. The school's first computer lab was built in 1996, and a second computer lab was built in 2002.

The Hartford High School, located adjacent to the middle school, is a brick and panelized building built in 1962, with a substantial addition built in 1986. The school serves Hartford's students in grades 9-12, as well as tuition students from 16 surrounding towns. The school has a large gymnasium with recently replaced bleachers, 300-seat auditorium, and full kitchen and cafeteria facilities. The school's "block schedule" has allowed for students to take a greater number of credits and for teaching to be more focused in longer class periods. Outdoor recreational facilities include fields for football, softball, baseball, and field hockey. The school rents time for ice hockey from the Town of Hartford. Soccer takes place at off-site facilities. Major improvements to the building's infrastructure were made in 1996-97. These improvements included:

- A 4,000 square foot addition (to include a new guidance suite and two new classrooms);
- The reconfiguration of the school's interior space, yielding 4 new classrooms;
- New energy-efficient lighting;
- Improved ventilation throughout the building;
- New data wiring and phone system;
- A nurse's and athletic director's office;
- New administrative offices;
- Digital HVAC controls.

The school replaced an inadequate oil boiler and made significant improvements to the woodchip-burning boiler. A new handicapped accessible bathroom was added in 2001.

The Hartford Area Career and Technology Center was built in 1971 by the State Department of Education. The program serves high school students from Hartford and five surrounding towns. Course study is offered in accounting, allied medical services, auto body, auto technology, building trades, computer office technology, computer technology, cooperative education, cosmetology, culinary arts, engineering and architectural design, graphic arts, human services, industrial/agricultural technology, natural resources, videography, travel and tourism, pre-vocational education, and public safety. The great majority of these programs rely heavily on the use of modern-day technology. Over 50% of the Center's students go on to either two- or four-year higher education. Energy efficient lighting was installed in 1997. The building was converted from electric to hot water heat in 1996-97, resulting in a significant savings in heating costs. Finally, the building was wired for data and a new phone system in 1997.

The District began a discussion regarding the configuration of our elementary schools during the 2002-03 school year. There are many factors related to the town's growth and population distribution that suggest a need to look at creative possibilities regarding how we serve the elementary population. The District is confronted with the following demographic realities:

1. Population growth in the town is uneven. Our villages are growing at drastically different rates. For example, there is significant population growth in the village of Quechee and very little growth in White River Junction.
2. The District projects a trend of declining enrollment of school-age students.
3. There is an unequal distribution of disadvantaged and special education students among the town's villages.

The District will involve staff and the community in the exploration of this matter.

Other Facilities

The School District also operates and maintains a superintendent's office, special education office, maintenance facility, and bus garage. The District owns, operates, and maintains a fleet of nineteen school buses**,** as well as five maintenance vehicles and several automobiles used for student transportation and driver's education instruction. The District also owns the Watson Memorial Playground in Hartford Village, which is maintained by the Hartford Parks and Recreation Department. Several District classes recently renovated the field house at Watson Field, which is presently used for storage by the District. The old Wilder Elementary School presently houses a regional special needs program.

CHILD CARE

There are many child care providers located in Hartford and many more in surrounding communities. In Vermont, there are three categories of child care: Licensed Programs, Registered Family Child Care Homes and Legally-Exempt Child Care. A Licensed Program is a child care program providing care to children in any approved location. The number and ages of children served are based on available approved space and staffing qualifications, as well as play and learning equipment. A child care facility that is a Licensed Program is considered a public building under Vermont Law, and therefore subject to inspections. Types of licensed programs include: early childhood programs, school-age care, family homes and non-recurring care programs. A Registered Family Child Care Home is a child care program approved in the provider's residence, which is limited to a small number of children based on specific criteria. Legally-Exempt Child Care is classified as a person who cares for child/children from only 1-2 families in addition to their own children. Care must take place in the private home of the provider or the children being cared for. Such facilities are exempt from registration with the State.

In Hartford there are 14 Licensed Programs and 15 Registered Family Child Care Homes. The Child Care Project at Dartmouth College assists area parents, including Hartford parents in finding child care.

LIBRARIES

Historically, Hartford has relied on village libraries to serve its residents. Each of the recognized five villages (White River Junction, Wilder, Hartford Village, Quechee and West Hartford) had their own library. That changed in 2001 when the Gates Memorial Library in White River Junction closed. Of the remaining four libraries, the West Hartford Library is the only Town-owned facility with an elected board of trustees. The Quechee Library, Hartford Library, and the Wilder Club and Library are operated by private non-profit organizations with their own separate board of directors, but each library receives some Town funding. In Vermont, non-profit libraries are relatively common.

Historically, Hartford's village libraries have taken on a role as informal community centers. In fact, more than 100 years ago, the Wilder Club and Library was built to serve as much as a community center as a library. Today, Hartford libraries continue to play an expanded role hosting many different community programs and events. The expanded role of libraries is not unique to Hartford as it follows a nationwide trend.

With the advent of the world-wide web and technological innovations in recent years, libraries have been undergoing major changes. Libraries continue to evolve and adapt. The future direction that libraries will take is uncertain.

Over the past decade, the Town has had an ad-hoc committee study the libraries and develop specific recommendations. Some ideas that have been explored include a central library; two main libraries (east and west side of Town) with other libraries serving as reading rooms; the Hartford Cooperating Libraries; specialization of libraries; and funding based on circulation statistics, visits, and computer use.

During the Master Plan Community Meetings held in the fall of 2002, many residents commented that the Town should establish a central library. However**,** in November 2000, Town voters rejected a $3.2 million dollar bond election to establish a new municipal library. Some viewed the vote as an indication that residents preferred the village library system. Today, it is an open question whether voters will endorse a larger facility or multiple facilities and, if the latter, of what number and scope**.**

West Hartford Library (Hartford Town Library)

The West Hartford Library, which was formerly the village schoolhouse, was established as a Town-owned public library by vote of Town Meeting in March, 1922. In 1927, the original building met an early demise when a devastating flood swept through the village of West Hartford, destroying the library and houses along the river.

Within two weeks, citizens of Hartford, Connecticut, who had heard of the plight of the library in West Hartford, Vermont, organized "The Hartford to Hartford Committee" to raise funds to replace the village library. Within a month, *The Hartford Times* and Chamber of Commerce jointly collected $14,000 for the Town of Hartford. The land for the new library was donated by Mr. and Mrs. Gary Place~~,~~ and Mrs. Place's brother. The present wood frame one story building was constructed and opened in 1928.

The library provides 1,200 square feet of space on the main floor and also has a full basement that houses the juvenile collection and provides space for meetings and programs. Both floors are now handicap accessible by the use of external ramps. The basement ramp also has a roof covering it to make it safe in inclement weather.

The library collection as of early 2006 consists of 10,841 items, including books, books on tape, CD's, videos, etc. The library has 100 registered borrowers. During 2006, patrons made 2,184 visits to the library to borrow 3,317 items. The library also provides computer services to the public, which is especially popular with Appalachian Trail thru-hikers. The library staff makes deliveries to some day care homes.

During 1968 when Interstate 89 was being constructed, the stream that supplied running water to the library was destroyed. Due to regulations imposed by the State, the lot on which the library sits was deemed unsuitable for either a septic system or a new well. These problems were overcome during the past five years when the State of Vermont approved the placement of a septic system on one side of the building and a well on the front corner of the library property. This allowed the construction of a handicap accessible restroom in the library, complete with running water and a flush toilet.

Plans for the future include trying to continue being the focal point for the village, as well as a “Community Center” and a meeting place for residents in the Town and surrounding area. The West Hartford Library will strive to provide the many traditional services as well as be prepared to bring to the citizens of the Town of Hartford any new and better library services. The library continues to operate as the only Town-owned public library, and is governed by five Trustees elected by the townspeople.

Quechee Library

Seven years after moving into its new 4,000 square foot building on Quechee Main Street in accordance with its long–range plans, Quechee Library built a 2,000 square foot addition. The addition provided a lift, a new children's area, a second floor multi-purpose room, and a separate meeting room entrance. Partially funded by a Vermont Public Library Foundation Incentive Grant, the addition followed the two-year project of automating the Library's circulating and cataloging functions. The automation was done in house by staff and volunteers, and has proved to be essential for efficiency as the Library's collection has in this time period grown to over 23,000 items. Circulation now exceeds 31,000 items a year, accounting for more than half of the town wide activity. In-house activity includes use of resources such as daily newspapers, many periodicals, Value Line, and the bank of public computers which provide Internet access, including the Vermont On-Line Library and a home page providing well researched links to dozens of sites. Wireless access also is available. The web page at www.quecheelibrary.org will include public access to the library catalog once financing is secured for the software.
Library programs are numerous and popular, ranging from concerts to book discussions to story hours to author visits to chess tournaments to Vermont Council on Humanities speakers. The Library plans to continue to offer this variety.

The staff includes a library director, a technical services librarian, and dozens of volunteers. Now open thirty-eight hours a week, this community resource has grown so robustly due to a combination of grants (including a federal Library Services and Construction Act grant), tax dollars, and the donation by businesses and many individuals of time, talent and funds. Plans for the future include continued expansion of the services, providing more outreach to various parts of town primarily by offering mentoring opportunities and delivery of books to other sites, and expansion of the collection. A very active Friends group and seven-member Board of Trustees began, begun as an association 120 years ago in a small mill village, and now serves a very diverse, growing town. The gardens in front of the library keep it a focal point on Main Street and help to attract visitors as well as residents.

Hartford Library

The Hartford Library, Inc. is located on Main Street in Hartford Village (Route 14 west). It was constructed in 1893, and the original deed set up a perpetual Trustee Board which has governed the operation of the library since that time. The library is a two-story building with a full basement. It has 2,300 square feet of space, 10,452 items and ample parking.

The library offers computer service with the state, college and other libraries. This service greatly expands the amount of reading material available, as well as reference material and special course books. The Library also sponsors a summer reading program for children and adults, a book discussion group for fourth and fifth graders, a year-round preschool story program, and a monthly book service to two area nursing homes. The library recently completed "Envisioning Excellence", a five-year Vermont State Library Plan to meet State standards. The library is currently working on developing a five-year and a ten-year plan that will include increasing technology services to the community via more computers with internet access and an automated card catalog system. The

library employs a certified librarian and an assistant librarian, and operates with the help of volunteers.

Wilder Club and Library

More than a century ago, the Wilder Clubhouse and Library was built to serve the community of Wilder in many ways. The historic building has since been carefully tended by a Board of Trustees and continues to undergo restorations. A fund drive for making the building fully accessible has also begun. Meanwhile, the Board of Trustees in 1997, in an effort to improve library services and efficiency town-wide, contracted with the Quechee Library and Gates Library to administer library services in the library portion of the Clubhouse. Quechee Library, following the closing of Gates, continues to provide these services, rotating new books into the Wilder Library on a regular basis and offering various programs for children.

In 2001, Wilder Library was the recipient of two Gates Foundation computers. These resources, updated with the newest software, are public computers with full, high speed access to the Internet. Wireless access is also available.

In 2002, aided by Freeman Foundation funds provided through the Vermont Public Library Incentive Grants, enabled Quechee Library staff and volunteers to do the necessary to include the Wilder collection in the larger library's database so patrons of both libraries can search all titles and determine locations. Interlibrary loans as well as books from Quechee are delivered to Wilder for those requesting that service.

In 2006/07, the Wilder Club and Library has been successful in receiving a Cultural Facilities Grant from the Vermont Arts Council, a Vermont Historical Preservation Grant, grants from the Ashgate Publishing Company, the Mascoma Savings Bank, and the White River Rotary Club. These funds, with other contributions, will allow work to proceed to build an ell for a lift to make the building accessible, and for restoration of the porch and windows.

The library clerk for Wilder also visits the Bugbee Senior Citizen Center monthly. The Clubhouse building's performance stage continues to serve as a community building for various groups and can be rented by the day by individuals or groups, providing income for maintenance for this historic community center. "

Projected Library Needs

The American Library Association recommends the following standards:

- floor space of 0.7 square feet per capita;
- three to five volumes per capita;
- one linear foot of shelf space per eight volumes;
- one staff member (full time equivalent) per 2,000 population.

Applying these standards to Hartford's 2000 population of 10,367, and projections for the years 2005, 2010, and 2015 produces the projected town-wide library needs as seen in Table VI-3. It should be noted, however, that these standards do not recognize seasonal needs.

In 2006, the four Hartford libraries combined had a floor area of about 10,050 square feet and 52,649 volumes and the equivalent of 3.7 full-time employees. Although the four Hartford libraries combined meet the area and collection size standards of the American Library Association, Hartford falls below the staff level standard.

TABLE VI-3
PROJECTED LIBRARY NEEDS, HARTFORD

Year	Projected Population	Area Needed Square Feet	Staff Needed	Collection Size	Linear Shelf Space
2000	10,367	7,257	5	41,468	5,184
2005	11,152	7,806	5.5	44,608	5,576
2010	11,996	8,397	6.0	47,984	5,998
2015	12,904	9,033	6.5	51,616	6,452

Source: Department of Planning and Development Services using the American Library Association standards, 1992; Revised 2003 and 2007, using population projections.

SOLID WASTE

In 1987, Vermont's Solid Waste Law, Act 78, established a comprehensive policy for managing the state's solid waste. It includes the following provisions: that reduction and re-use would receive the highest priority in managing the state's solid waste, with a goal of 50% reduction by the year 2005; that all municipal solid waste and ash landfills would have to meet stricter environmental standards by July 1992, including a liner and leachate collection system. Act 78 also requires communities to prepare a solid waste, waste diversions implementation plan. These plans are prerequisite for certification and recertification of facilities and for eligibility for state solid waste grants. Initially covered by the Greater Upper Valley Solid Waste Management District (GUVSWMD) solid waste plan, Hartford withdrew from the District in 1995. With the assistance of an engineering consultant, Hartford developed a new plan in 2003, which is awaiting approval by the State and Hartford Board of Selectmen. As of summer 2006, final approval is pending. The following is a summary of certain sections of the Town of Hartford Solid Waste Implementation Plan. The complete Plan should be sought for more detailed information, particularly related to solid-waste generation and negotiating special wastes.

The Hartford Community Center for Recycling and Waste Management is located on 19 acres of land on U.S. Route 5 South. In order to meet the new requirements, the Center experienced major changes during 1991. The construction of the new Community Center for Recycling and Waste Management began in June and had its grand opening on January 18, 1992. In July 1991, the Town

began its curbside recycling program for residents of Hartford. The facility's development, construction and implementation were funded 75% through State grant funding and 25% through the capital reserve fund, which is Town funding derived from landfill user fees. The recycling and solid waste facility consists of a recycling building and intermediate processing center; the SEVCA Good Buy Store, where reusable items are dropped off and sold for a minimal charge; the education building; the household hazardous waste building; transfer station; and a certified construction and demolition debris landfill. The buildings have a total of 9,412 square feet.

The curbside recycling program, started in 1991, greatly increased the amount of recyclables taken from the waste stream. The volumes for 2005 are shown in Table VI-4. Also shown in Table VI-4 is recycling removal from the waste stream at the Community Center for Waste Management. This tonnage includes town and district recycling.

TABLE VI-4
COLLECTIONS OF RECYCLABLE MATERIALS -- 2005

Categories	Hartford/ GUVSWMD District Tons	Hartford Curbside Recycling
Mixed/Paper/Boxboard	243.73	307.26
Corrugated	187.80	N/A
Bricks/Concrete	5.60	N/A
Metal cans/foil	50.86	20.63
Plastic	96.98	60.31
Glass	331.35	86.12
Newspaper	180.55	**See mixed/paper/boxboard
Auto batteries	2.4	N/A
Miscellaneous/Scrap Metals	262.99	N/A
Yard Waste	14.00	N/A
Waste Oil	2.1	N/A
Tires	8.72	N/A
Totals	1,389.35	474.32

Note: Totals do not include volumes of household hazardous waste collected at regional HHW collections.

Residential solid waste can be brought to the transfer station by Hartford residents and is accepted from residents of GUVSWMD towns. Commercial solid waste from Hartford and District communities is also accepted.

By January l, 1993, all municipal solid waste had to be disposed of in lined landfills. The Hartford landfill did not meet the requirements to be lined, so the Hartford landfill was covered and closed in 1991. Municipal solid waste taken to the town transfer station from Hartford and district Towns is transported to Lebanon, New Hampshire, by a private hauler. Many residents contract with a private hauler directly instead of bringing their trash directly to the transfer station.

Hartford's certified construction and demolition debris (C&D) landfill accepts material from GUVSWMD towns and several New Hampshire communities, in addition to Hartford residents and businesses. The volumes of trash and C&D handled by the Hartford facility in 2005 are shown in Table VI-5.

TABLE VI-5
VOLUMES OF TRASH AND C&D PROCESSED -- 2005

	Trash (Tons)	C&D (Tons)
Hartford (via transfer station)	1,161.40	1,937.3
GUVSWMD Towns (via transfer station)	912.54	1,614.44
NH Communities (via transfer station)	none	4,520.44
Subtotal	2,073.94*	8,072.18
Hartford (via private haulers to Lebanon, NH)	9,430.90	
TOTALS	11,504.84	8,072.18

*Note: This figure represents only the value handled by the Hartford facility, not the total volume of waste generated. During 2005, 9,430.9 tons of trash from Hartford were delivered directly to the Lebanon landfill by private haulers and businesses.
Source: Town of Hartford Solid Waste Implementation Plan

Household hazardous waste (HHW) includes motor oil, oil paints, antifreeze, lead acid batteries, solvents, pesticides, household cleaners, and other commonly used materials that, if improperly disposed of, can contaminate surface and groundwater and pose serious health risks. Used motor oil, antifreeze, and batteries are accepted at the Hartford transfer station on a daily basis. The town also promotes and sponsors two household hazardous waste collection days every year in conjunction with the GUVSWD. Typically at least one of the collection days is held at Hartford's Recycling and Waste Management Facility. The second day of household hazardous waste and disposal is held in rotation at one of the selected district towns.

Financing the Solid Waste Program

The solid waste disposal and recycling program at the Community Center for Recycling and Solid Waste operates under enterprise-fund accounting rules. It is not a property tax-funded entity but receives all operating expenses from tipping charges, membership fees, and from commercial haulers and resident landfill user fees. The curbside recycling program that stops at all residences is supported by Town tax funds.

HUMAN SERVICES

The provision of human services is important, either directly or indirectly, to all residents of Hartford. Human-services programs serving Hartford and the region have been developed to help

ensure the physical and mental health of the area residents and provide transportation, education, counseling, and other services. Hartford's citizens have at their disposal a wide array of services.

Senior Services

White River Council on Aging/Bugbee Senior Center Meals on Wheels
Wilder Community Care Home
Community Care Home for the Aged
Brookside Nursing Home
Retired Senior Volunteer Program of Windsor County
VNA/VNH (formerly Home & Community Health Care)

Low Income

Good Neighbor Health Clinic
The Upper Valley Haven, Inc.
Food Shelf
South Eastern Vermont Community Action (SEVCA)
Headrest
Step-Up For Women
Vermont Legal Aid
Hartford Food Station
Head Start (Vermont)
Lebanon In Service to Each Neighbor (LISTEN)

Disabled

Transition III
Upper Valley Support Group For Parents of Children with Special Needs
Vermont Division of Vocational Rehabilitation
Vermont Handicapped Ski Foundation
Division For The Blind And Visually Impaired

Crises Intervention

Headrest
Upper Valley Youth Services
American Red Cross
Women’s Information Service (WISE)

Medical and Mental Health

VT Alliance of Visiting Nurses
VT Department of Social & Rehabilitative Services
Child Support Services

Counseling Center of Lebanon
Mental Health Services of Southeastern Vermont
Home and Community Health Care of the Upper Valley
Hospice of the Upper Valley, Inc.
Planned Parenthood of New England
Crisis Pregnancy Center
Upper Valley Hostel
Valley Health Care Coalition
Dartmouth-Hitchcock Psychiatric Associates & Medical Center
Vermont Department of Health/Local Health Office
Windsor Regional Home Health Agency
Alice Peck Day Memorial Hospital
Good Neighbor Health Clinic

Drugs

Alcoholics Anonymous
Adult Children of Alcoholic Parents
Alanon
Alateen
Alcohol and Drug Abuse
Headrest
Office of Alcohol and Drug Abuse Programs

Women

Women's Information Service (WISE)
Hannah House, Inc.
Day Spring Pregnancy Care Center

Education

Community College of Vermont
Head Start (Vermont)
Essential Early Education Program, Special Education
Hartford Area Vocational Center
Upper Valley Support Group for Parents of Children with Special Needs
Adult Basic Education Southeastern Vermont
American Red Cross
Cooperative Extension Service, University of Vermont
Family Place

Employment

Vermont Department of Employment and Training

Dartmouth Community Services - Tucker Foundation

Corrections

Probation and Parole

Windsor County Court Diversion

Children

Windsor County Partners

Child Care Project

Children's Center of the Upper Valley

The Day Care Center Inc.

Essential Early Education Program, Special Education

Carter/Witherell Center

Casey Family Services

David's House

Good Beginnings

Green Mountain Children’s Center, Inc.

Upper Valley Support Group for Parents of Children with Special Needs

The Vermont Children's Aid Society, Inc.

Vermont Department of Health/Local Health Office

Vermont Division of Social Services

Family Place

Veterans

Veterans Administration Regional Office

Veterans Administration Hospital

Vietnam Veteran Outreach Center, VT

CEMETERIES

Native Americans inhabited Vermont as early as 9,000 – 7,000 BC. Summer settlements typically occurred along rivers and streams. No Native American burial grounds have been found in Hartford to date.

Settlement of Hartford by European descendents occurred almost 250 years ago. Since then, many cemeteries have been established, and they are scattered throughout the Town. Some were intended for the larger community, while others were opened for a specific religious group or as a private family plot. Many of the cemeteries are very old. Many are maintained by private cemetery associations, while others are maintained by the Town. However, there are a few cemeteries that have no managing entity and are not being maintained. The following is a description of Hartford cemeteries. Private family lots are excluded from this section.

Hartford Cemetery

The Hartford Cemetery, located on Maple Street near the Interstate 91 overpass, is the main Protestant cemetery in the Town. Started in 1819, it is managed by the Hartford Cemetery Association. Each person who owns a lot is like a stockholder and is invited to attend the annual meeting and vote on management of the cemetery. The Hartford Cemetery does not have room to expand. Current growth rates allow for approximately fifteen more years of use. New sites are currently being investigated.

West Hartford Cemetery

The West Hartford Cemetery is located off Route 14 behind the West Hartford Church. It was started in the 1830s to serve West Hartford and the surrounding area. The West Hartford Cemetery is owned and managed by the West Hartford Cemetery Association and remains open. Additions of land were made in the early 1960s and since then, additional land has been purchased or donated from the Central Vermont Railroad and Quechee Lakes Corporation. At the present rate, the Cemetery has lots available for at least thirty years. The West Hartford Cemetery Association plans to purchase additional land to expand if it becomes available.

Quechee Cemetery

The Quechee Cemetery has two sections. One section is by the Ottauquechee River between the Old Quechee Road and Quechee Main Street, while the other section is on the hill above. The Quechee Cemetery started in 1777 and remains open. It is managed by the Quechee Cemetery Association. There are no lots left in the lower cemetery, but the upper cemetery still has a small number of lots available. The land next to the Cemetery belongs to the Hartford School District. Attempts to obtain land for future expansion have been unsuccessful. Without additional land, the Quechee Cemetery is expected to be full within a few years.

South End Cemetery

The South End Cemetery is located on South Main Street in White River Junction. The Protestant Cemetery started in 1780 and is currently open to cremations only. A number of years ago, it was combined with the Old St. Anthony's Cemetery, and is maintained by St. Anthony's Parish.

South End Cemetery (Old St. Anthony's Cemetery)

The South End Cemetery also known as the Old St. Anthony's Cemetery is located on South Main Street in White River Junction next to the original St. Anthony's Church. A new church was built in 1898 at its present site on Church Street. The old church building and rectory were sold in 1989 and St. Anthony's Parish retained the Cemetery. The Cemetery started in the 1859, and is currently open to cremations only. A number of years ago, the Cemetery combined with the Protestant Cemetery. It is managed by St. Anthony's Parish.

Mt. Olivet Cemetery

Mt. Olivet Cemetery is located at the intersection of Hartford Avenue and Bugbee Street, near the boundary of White River Junction and Wilder Village. It was started around 1900 to serve the needs of the Catholic community in Hartford. It has approximately 10 acres and, at present, it is at about 70% capacity. The Cemetery is managed by St. Anthony's Parish. At the current rate of use, it has enough land for another fifty years.

Christian Street Cemetery

Christian Street Cemetery is located on Route 5 near the former Billings Dairy. It was started in 1775 to serve the needs of the Town. The Cemetery is managed by the Christian Street Cemetery Association. The site is about two and one-half acres and is at approximately 75% capacity. At the current rate of use, it has enough lots remaining to meet needs for the next thirty years.

Center of Town Cemetery

The Center of Town Cemetery is located at the intersection of Kings Highway and Center of Town Road. It was started in 1798 and is currently closed. The Cemetery is owned and maintained by the Town of Hartford.

Russtown Cemetery

The Russtown Cemetery is located on the east side of Route 5 near the Hartland town line. It was started in 1802. Although burials are still taking place at the Cemetery, all of the lots have been sold. The Cemetery is owned and maintained by the Town of Hartford.

Tucker Cemetery

The Tucker Cemetery is located on the north side of Route 14 between West Hartford Village and the Sharon town line. It started in 1817 and is currently closed. The Cemetery is owned by the Hooper Family and maintained by the Town of Hartford.

Delano Savage Cemetery

The Delano Savage Cemetery is located on the north side of Route 14 at the southern entrance to Jericho Street. It started in 1790 and is currently closed. The owner is unknown. Currently, the Cemetery is not being maintained.

Simond Cemetery

The Simond Cemetery is located off of Town Farm Road in Quechee. It was started in 1832 and is currently closed. The Cemetery is owned by the Town of Hartford, and is not currently being maintained.

RECOMMENDATIONS

General

1. Increase local awareness of the range of services available to Hartford residents.
2. Promote the removal of architectural barriers that prevent people with disabilities from using or gaining access to public places.
3. Continue to maintain an up-to-date five-year Capital Improvements Program (CIP) to plan major capital expenditures and help spread the costs evenly over time.
4. Consider the impact of specific development proposals on Hartford's community facilities and services that are not assessed impact fees. This should include a number of factors, including fiscal impact, the current and projected capacity of the facilities, location and relationship to the CIP.
5. Review the impact-fee structure to ensure it accurately reflects the true cost of development.
6. Plan for all community facility buildings to be energy-efficient and have adequate space and parking.

Police

7. Provide Police foot or bike patrols (vs. car and parking) in the village centers as needed.
8. Expand the present Police patrol force to meet the needs of the community as warranted.
9. Maintain an effective system of public safety by appropriate repair and replacement of necessary emergency equipment.

Emergency Services

10. Increase staffing to maintain a minimum of four Firefighter EMT-I's on duty to perform initial fire attack to save lives and property. This requires the addition of four career firefighters.
11. Enhance fire prevention code enforcement by hiring one person and expanding the contract with the State of Vermont to include plan review for new construction, to streamline the permitting process, and ensure continuity.
12. Initiate, coordinate, and institutionalize the public education component in the community.

13. Enhance technical rescue capabilities at water-related emergencies, topographical rescue, natural and manmade disasters, and transportation accidents through external and internal training programs and equipment.
14. Enhance hazardous materials response capabilities through external and internal training programs and equipment to protect life, property, and environment from hazardous materials releases.
15. Expand emergency medical services delivery by:
    a) Encouraging existing personnel to become certified paramedics and by hiring personnel who are certified paramedics.
    b) Increasing the likelihood of early defibrillation by:
        i. Supporting the acquisition of AEDs by public and private sector organizations.
        ii. Continuing to assist the Police Department with CPR and AED training.
16. Reduce intervention time and increase capabilities by strategically placing advanced life support equipment with personnel or FAST squads.
17. Improve Emergency/Disaster Management by revising the Town's Emergency Operations Plan and conducting training in weapons of mass destruction and terrorism.
18. Improve dispatching and communications through the use of computer-assisted dispatching and other technological advances.
19. Encourage funding of the capital improvement plan for firefighting equipment to avoid major budget jumps or bonding for new equipment by anticipating these costs and spreading them out evenly over time.

Recreation

20. Consider funding for land acquisition, additional staffing and new equipment as the demand for park expansion and recreational programs increases. These may be funded through user fees and operating-budget increases.
21. Acquire a community-center site.
22. Construct a maintenance facility.
23. Upgrade the Hartford Municipal Arena with a paint job, new central heating system, additional locker rooms, administrative office, heated work space, entrance improvements, upgraded PA system, new electrical service entry, viewing and storage improvements, full insulatation, upgraded and increased number of public bathrooms/ sewage system, and a new, closer parking area.
24. Install picnic site amenities and park benches, and landscape in and around the playground area in Clifford Park,. Long-range projects include an additional tennis court and renovation of the barn with water and electricity.
25. Secure additional property for Ratcliffe Park.
26. Upgrade existing building for bathrooms, storage and meetings, and expand facility use to include lighted basketball courts and picnic areas in Watson Memorial Park.

27. Continue with a strong turf maintenance program, including water irrigation and field lighting in Kilowatt Athletic Field.
28. Complete adequate posting, develop Wright Reservoir picnic site, make the entrance area to the pond handicapped accessible, construct an off-road trailhead parking area and explore the possibility of connecting Wright Reservoir Road with King's Highway by developing the Class 4 road into a bike/hike trail in the Hurricane Forest Wildlife Refuge Park
29. Encourage future development to interconnect parks and private lands with hike/bike trails. Support for these projects should be given to the Conservation Commission.
30. Continue with the development of comprehensive after-school programs for the primary-grade students utilizing the Town's elementary schools. The programs should be funded through school taxes and offset, in part, by a minimal fee.

Education

31. Develop a plan to address future redevelopment/expansion for the middle school/high school.
32. Acquire land for future middle school/high school redevelopment/expansion as needed.
33. Create additional recreational facilities (playing fields, gymnasium, and track space) to support extra curricular, recreational, and community activities.
34. Continue to maintain the middle, high, and vocational schools to ensure a lengthy life expectancy.
35. Assure compliance with the Federal mandates concerning handicapped accessibility.

Libraries

36. Evaluate current and future library staffing needs relative to the American Library Association standards.
37. Cooperate with the library trustees to ensure the needs of the townspeople are met.
38. Continue to recognize the role that each individual library plays in satisfying the social and cultural needs of the villages throughout the Town.
39. The Town should continue to evaluate the means and methods it uses to provide library services to ensure effective and efficient modern library services to its citizens.

Solid Waste

40. Evaluate solid-waste needs for future growth and what the Town needs to do now to plan for the disposal and cost of disposal in the future and who pays for it.
41. Expand re-use, recycling, and reduction efforts to lower the volume of solid waste that requires disposal.
42. Monitor trends in the waste-management industry to better position the Town to respond to market changes.

43. Review alternate means of operating and funding the Hartford Community Center for Recycling and Waste Management periodically to determine whether operational modifications are warranted to meet the future needs of the Town.
44. Reopen the household hazardous waste facility to accommodate the disposal of HHW by residents and businesses on a year-round basis.
45. Establish a citizen committee to study ways to improve short-term and long-term solid-waste disposal and recycling efforts.
46. Develop a capital improvements plan for maintenance of the Hartford Community Center for Recycling and Waste Management.

Human Services

47. Continue to support and cooperate with the region's human-services providers to ensure that those services utilized by Hartford's residents continue to be available.

Cemeteries

48. Encourage better communication between the Town, Historical Society and the private cemetery associations in Hartford.
49. Investigate funding sources for the maintenance of historic cemeteries that have no designated maintenance entity.
50. Encourage the Quechee Cemetery Association to plan for additional space needed.

CHAPTER VII

UTILITIES

INTRODUCTION

Hartford's utility system has a major influence on land use patterns in the Town. Utilities provide services that can be metered or measured. Some, like electricity and telephone, are available virtually throughout the Town, wherever poles have been set and lines have been strung. Others, such as water, wastewater, cell phones, DSL, and cable TV, are available in more limited areas where it is economical to provide the service to a concentration of people.

The extent and adequacy of utility service plays an important role in contributing to the general welfare of residents and the quality of life 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 lifestyle.

Hartford is fortunate to have municipal water and wastewater service in four of the five village areas (White River Junction, Wilder, Quechee and Hartford Village). This allows the Town the opportunity to concentrate development in these established built-up areas (refer to Map VII-1). West Hartford Village is the only village that does not have Town water and wastewater service.

In order to defray some of the future expenses of plant expansions related to increased development in Town, Hartford instituted an impact-fee ordinance for wastewater in 1986 and water in 1992. Impact fees are a one-time charge levied on new construction and expanded water and wastewater consumption.

The decision to improve or extend utilities is based on the following factors: (a) existing or potential problems, (b) the cost of the utilities, and (c) public needs and desires. To plan for public utility provision, it is first necessary to determine the extent of existing facilities.

This chapter reviews existing utilities and considers the suitability of local utilities to meet future demands.

RESULTS FROM THE MASTER PLAN COMMUNITY MEETINGS

During the fall of 2002, the Town undertook a series of community meetings to solicit input from the public regarding the update of the Town Master Plan. The meetings were well-attended. The following are comments relating to utilities that resulted from these community meetings.

- Use Town water and wastewater systems as strategic levers for guiding development.
- Eliminate impact fees to encourage development in high-density areas.
- Build where infrastructure already exists (ie. water, wastewater, roads, etc).

GOALS

1. To encourage development in already developed and underdeveloped areas served by existing utilities.
2. To encourage the extension of utilities to areas zoned for commercial/industrial development and dense residential development that also have been identified by the Town as growth centers.

WATER SUPPLY

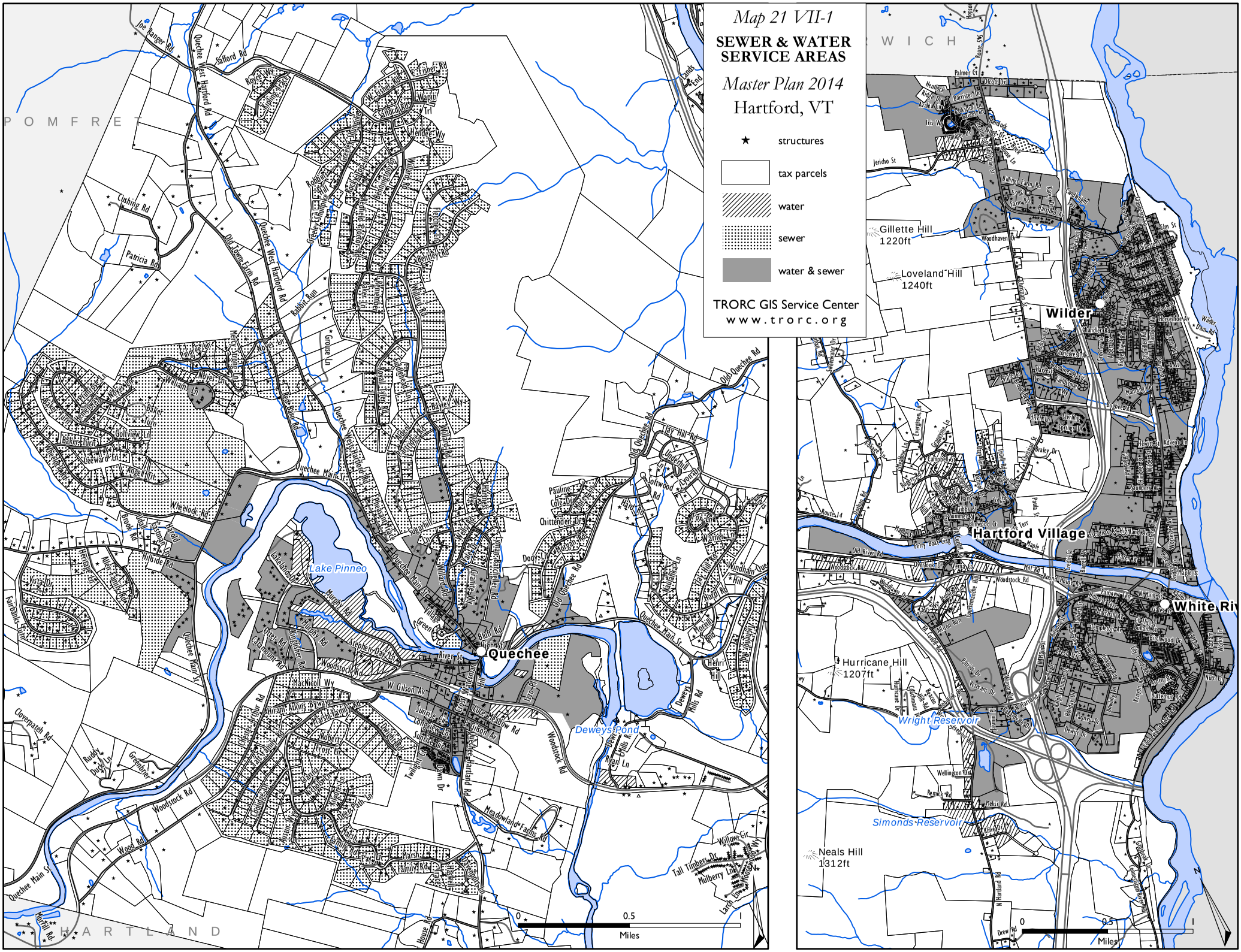
Hartford's municipal water service extends to four of the five village areas (White River Junction, Wilder, Quechee, and Hartford Village) that are served by one of two water treatment plants, one in Wilder and the other in Quechee (refer to Map VII-1). The extent of the water service area must be considered one of the Town's greatest assets. Townwide, there are currently 2,659 acres or 9% of the land area of Hartford that is served by Town water. A water system accommodates denser development and more intensive land uses than does on-site wells. The systems enable the Town to support a larger residential population, sizable recreation and institutional development, and a vigorous business community. The availability of a water system is a major consideration in the future growth and development of the Town.

Hartford Water System

The Hartford Water System serves approximately 2,042 customer accounts, 86% of whom are residential users in Wilder, White River Junction, and Hartford Villages. This water system consistently ranks as one of the best in the State of Vermont. With the construction of the storage tank and treatment facility in the mid 1970s, Hartford was one of the first Vermont towns to meet federal drinking water standards. To ensure continued compliance with both State and Federal drinking water standards, the Water Department does various sampling throughout the year for water quality.

The history of the Hartford system is interesting. The Hartford Village area and West Lebanon were once served by the same private system, with storage at the Boston Lot Reservoir in West Lebanon. In 1947, the Town bought the entire system and then sold the West Lebanon portion to the West Lebanon Fire District. To this day, the Hartford and West Lebanon systems are interconnected by a 12" main that runs across the Connecticut River on the Route 4 Bridge. In emergency situations, the valve is opened to pipe water to the community in need.

The Hartford water system currently utilizes two wells. Well #1 has a current pump capacity of 800 gallons per minute (gpm). Well #2 was added in 2004 and is capable of pumping 900 gpm. In 2005, the Town of Hartford pumped over 114 million gallons from Well #1 and over 165 million gallons from Well #2. Water from these wells exceeds the aesthetic standards for manganese in drinking water. Manganese is removed at the Wilder Water Treatment Plant, which was built in 1976 and upgraded in 2004. To prevent the discoloration and precipitation caused by high


Map 21 VII-1
SEWER & WATER SERVICE AREAS
Master Plan 2014
Hartford, VT
structures
tax parcels
water
sewer
water & sewer
TRORC GIS Service Center
www.trorc.org
POMFRET
HARTLAND
WICH
Quechee
Hartford Village
Wilder
White Riv
Lake Pinneo
Dewey's Pond
Wright Reservoir
Simonds Reservoir
Gillette Hill
1220ft
Loveland Hill
1240ft
Hurricane Hill
1207ft
Neals Hill
1312ft
0
0.5
1
Miles

manganese content, water runs through six pressurized filters at the plant. The treatment capacity of the plant is approximately 2.16 million gallons per day (gpd), with an average daily use of 765,800 gallons in 2006. Peak day use for the period between May 2005 and May 2006 was approximately 1,120,000 gpd. The volume of water generated from the two Wilder wells and the treatment capacity of the Wilder Water Treatment Plant are expected to meet anticipated needs for many years to come. However, in some areas of the water distribution system, water pressure may need to be improved. Some improvement may occur with normal water main replacement.

Water is pumped from Wilder and stored in both a 1.5 million gallon tank located near the Veteran's Administration Hospital and in the 1 million gallon water storage tank located in Wilder. Water is gravity-fed in all but the Campbell Street area, where the water must be pumped to a higher elevation. Presently, 92% of the accounts in the Hartford system are metered. The remaining 8% pay a flat rate.

There are two existing water line crossings over the White River. The Bridge Street and Hartford Village bridges each have water lines installed on them, a 12" and 10" linerespectively, which carry water over the White River and enhance flows and pressures in the system.

Users are billed quarterly on the current fee schedule seen in Table VII-1*. The largest water user in Town is the Veteran's Administration Hospital, which has its own water distribution system. The next largest users are the Regency Inn and the Econo Lodge. The current fee schedule does not cover budget expenses. Map VII-1 shows the area served by the public water system.

TABLE VII-1
HARTFORD WATER AND WASTEWATER SYSTEM
FEE SCHEDULE

	Water Fee	Wastewater Fee
Per 100 Cubic Feet	$2.62	$3.75
Administrative Fees	$10.50	$10.50

Source: Department of Public Works, Master Fee/Rate Chart, 2006

* This fee schedule is reviewed annually by the Hartford Selectboard and may change.

A regular maintenance program is followed, which includes flushing twice a year and pipe replacement projects. Extensions to new developments are installed according to Town standards, at the expense of the developer, and are taken over by the Water Department. The current source protection plan was updated and approved by the Vermont Water Supply Division in September, 2004.

The following is a priority list on the most needed improvements to the Hartford water system.

1. Complete Distribution System Improvements on high maintenance lines (frequent repairs or flushing is required)

   Barrel Avenue, Credit Court, and Sargent Street

   Highland Avenue

   Colonial Drive

   Summer Street, Maple Street, and Elk Street in Hartford Village

   Division Street

   Frost Park

   Lexington Avenue

   Locust Street

   Ridgeview Road

   South Street

   Wilder Avenue

   Chellis Street

   Worcester Avenue

   Remick Road

   Half Penney Road

2. Distribution System Improvement (Phase II)

   2,200' of 12" Main on South Main Street

   Bridge Street to Nutt Lane: 700' of 12" Main

   Taft Avenue to the High School: 1,900' of 12" Main on Maple Street

   Bridge Street to Cascadnac Avenue: Re-route water main in front of Mobil Station on corner of Sykes Mountain Avenue and Route 5

   14,500' of main in area of Fairview Terrace, Forest Hill and Lily Pond Road area

   Clean and line or replace all cast iron mains in the system

3. Insurance Services Office (ISO) Commercial Risk Improvements

   5500' 12' or 16" main from VA tank to Melisi Road

   1250' 12' main from Nutt Lane to Harrison Avenue

   1000' new 12" from Route 5 to end of road

4. Transmission and Storage

   Re-route water main under Fountain of Youth fitness club and under I-89

   Replace/extend water main to Route 5 south of the VA

   Construct water storage tank in Route 5 South area

5. Fire Protection

   Replace 5-10 hydrants per year

Quechee Water System

Originally constructed and operated by the Quechee Lakes Corporation, the Quechee Water System has been maintained and operated by the Town of Hartford since 1979. In 1998, the Town assumed ownership of the well facility and distribution system. The Quechee Water System serves both Quechee Lakes and non-Quechee Lakes properties, primarily in the heart of Quechee Village along the Ottauquechee River valley floor. Hillside development above the river valley is served by individual wells. As of October 2006, the system serves approximately 750 customer accounts. During a one year period from January 2005 to January 2006, the peak day flow was 260,200 gallons per day (gpd).

A gravel-packed well located near Lake Pinneo has a State-approved yield of 923 gallons per minute (gpm), with a pumped capacity of 650 gpm. In 2005, the Town of Hartford pumped more than 56 million gallons from the Quechee well to the distribution system, for an average of 155,800 gpd. There are four storage tanks in the Quechee Water Distribution system.

TABLE VII-2
QUECHEE WATER SYSTEM STORAGE TANKS

TANK	CAPACITY IN GALLONS
Sugar Hill Tank	132,000
Wheelock Road Tank	100,000
Kingswood Tank	54,000
North Hartland Tank	34,000
TOTAL	320,000

Source: Department of Public Works

Expansions and improvements to the system will follow the Quechee Lakes Master Plan. Expansion of the water line across Quechee Gorge along Route 4 occurred in 2002 and further east to Quechee Gorge Village in 2004. Replacement of the water line on River Street was completed in 2006 to include the tying in of the water line at River Street and Route 4 to provide a "looped feed" for the distribution system.

An engineering evaluation of the capacity of the Quechee water system is underway and is expected to be completed in early 2007. Specific system improvements are yet to be determined**,** but there appears to be ample water capacity to accommodate anticipated growth. It is known that water system storage is inadequate and will need to be increased. The following is a list of general improvements needed for the Quechee water system.

1. Develop another water source for the system. This could include obtaining State approval to use the Quechee Lakes Golf Course well as a backup source.
2. Develop another water storage tank capable of sustaining future domestic and fire flows for the system.
3. Install telemetry level instrumentation and controls for the water storage tanks.
4. Improve water transmission capabilities as determined necessary after developing a computer water model of the system.
5. Clean and line or replace all cast iron mains in the system.

WASTEWATER DISPOSAL

As previously stated, Hartford municipal wastewater service includes four of the five village areas (White River Junction, Wilder, Quechee, and Hartford Village) that are served by one of two wastewater treatment plants, one in White River Junction and the other in Quechee (refer to Map VII-1). The extent of the wastewater area must be considered one of the Town's greatest assets. Town-wide, there are currently 4,013 acres, or 13.6% of the land area of Hartford that is served by Town wastewater. This figure is considerably higher than the area served by Town water due primarily to the extensive area of Quechee Lakes that is served by Town wastewater and individual wells.

A wastewater system accommodates denser development and more intensive land uses than does on-site disposal. The systems enable the Town to support a larger residential population, sizable recreation and institutional development, and a vigorous business community. The availability of a wastewater system is a major consideration in the future growth and development of the Town.

White River Junction Treatment Facility

The White River Junction (WRJ) Treatment Facility (formerly known as the North Elm Street Treatment Plant) serves the wastewater areas of White River Junction, Wilder and Hartford Villages. The WRJ Treatment Facility serves approximately 1,903 customer accounts. Town sewer fees are based on water usage. This facility has been in operation since March 1978 and was improved in 1981 with a new aeration system. In June, 1990, another upgrade was completed at an approximate cost of $3,000,000. This upgraded the treatment capacity from 970,000 gallons per day (gpd) to 1,215,000 gpd, with a peak design flow of 4,000,000 gpd, and additional aeration, chlorine contact tank, and sludge thickening facilities.

The average day flow for the twelve-month period from January 2005 through December 2005 was 1,028,000 gpd. Commitments against reserve ~~(~~projects for which approval for connection has been given but connection to municipal wastewater has not been completed~~)~~ total 137,000 gpd. This leaves the Town with an uncommitted reserve capacity of 50,000 gpd. (Information is from the WRJ Uncommitted Reserve Capacity report dated 2/24/2006). Since the system is reaching capacity, the Town has initiated a study to determine the future capacity needed to accommodate anticipated growth over the next twenty years. The study will be completed in 2007.

Quechee Wastewater Treatment Facility

Owned by the Town of Hartford since 1998, the Quechee Wastewater (QW) Treatment Facility provides tertiary treatment, with a designed flow of 300,000 gallons per day (gpd). The average daily flow from January 2005 through December 2005 was 202,000 gallons. This leaves a total reserve capacity of 98,000 gpd, of which 85,267 gpd is committed reserve and 12,733 gpd is uncommitted reserve. The collection system also includes 24 leach fields that were accepted by the Town in 1998. There are approximately 1,231 customer accounts served by the QW Treatment Facility. Town sewer fees are based on water usage.

As with the White River Junction Facility, the Quechee Wastewater Treatment Facility is nearing its current capacity. The Town has undertaken a study to accommodate anticipated growth in the Quechee Lakes Master Plan as well as other areas served or within the service area of the facility. The study is expected to be completed in early 2007.

Shared Systems

As previously stated, 13.6% of the land area of Hartford is served by Town wastewater service. The remaining 86.4% of the Town is not served by Town wastewater and thus must rely on septic systems (discussed in more detail in Chapter IX, Natural Resources). In Vermont, there are State standards for separation distances between wells and septic systems. In addition, there is a back-up system requirement in the event of a failure to a primary septic system. In some cases, existing well and septic system locations on adjacent lots could make it difficult, if not impossible to comply with these requirements. Since expansion of Town wastewater service to many rural areas is not practical, the use of shared systems may be the only option. In addition, natural resource conditions may make more sense to utilize a shared system as well. Therefore, the Town should support the use of shared septic systems.

Septage Disposal

The septage from private on-site septic systems is pumped by private contractors. The White River Junction Wastewater Treatment Facility can be used on a space-available basis for treatment and processing of this septage. The 2006 septage tipping fee rate was $80/1,000 gallons for Town residents and $110/1,000 gallons for non-residents. In 2005, approximately 144,770 gallons of septage were treated at the White River Junction Plant.

Sludge Management Plan

Technological changes associated with wastewater treatment processes have been the basis for revision of state and federal philosophies, regulations, and standards, as well as the basis for development of new guidelines and standards.

Municipal sludge, after digestion, contains a variety of nutrients useful to plant growth. Properly digested sludges are low in organic matter and are generally considered not harmful.

For years municipal wastewater sludge has been used as a fertilizer and soil amendment and is still used for this purpose.

The "State of Vermont Solid Waste Management Plan - 1988" states the following: "In response to Vermont's escalating solid waste disposal problems, the 1987 General Assembly adopted comprehensive new solid waste legislation that defines sludge from a municipal wastewater treatment facility and septage as a solid waste. This legislation, the 1987 Solid Waste Act (Act 78), is designed to change the way Vermonters think about and manage solid waste, placing the highest priorities on waste reduction and on the reuse and recycling of more waste materials." The land application of municipal sludge is a method for reuse of this solid waste.

To minimize the threat to the environment and human health, it is necessary to evaluate both the sludge and proposed disposal sites. The sludge must go through a process to significantly reduce pathogens (PSRP) and must be tested to ensure the nutrients and heavy metals are within recommended limits. Application rates are calculated to limit nutrients to the amount required by the crops to be grown. This protects surface and groundwater from contamination. Disposal sites are evaluated to ensure proper isolation distances are available to surface water and property boundaries. Isolation distances are necessary to protect the environment and human health.

The Town received a full certification of its bio-solids management plan for the period 2003-2008. Bio-solids from the White River Junction wastewater treatment facility are lime stabilized and delivered to several state-approved farm fields for use as fertilizer. Bio-solids for the Quechee facility are disposed of in slurry form at approved facilities throughout the state or at the Lebanon, New Hampshire, landfill.

ELECTRIC SERVICE

Electric service is provided by two companies, Green Mountain Power (GMP) and Central Vermont Public Service Corporation (CVPS). GMP serves the eastern part of Town including White River Junction and Wilder. Quechee and West Hartford are served by CVPS. The range of three-phase power service is extensive and is an asset for commercial, industrial and institutional development. Two independent producers sell power to Vermont utilities, including the Dewey's Mill Facility (1212 Kw) and the Simon Pearce Facility (460 Kw). The Town encourages energy conservation. Additional information can be found in Chapter X.

TELECOMMUNICATIONS

For more than a decade, government deregulation and changes in technology have led to a revolution in the telecommunications industry. In the age of high-speed Internet, wireless and digital technologies, fiber optic cables and broadband, there is a rush to establish the infrastructure necessary to accommodate growth in a highly competitive marketplace. Services have greatly expanded and consumers have many more options. Given this trend, it is important that the Town support efforts to upgrade and improve broadband access, especially in the Town's growth centers.

Wireless Communication Facilities and Aesthetics

With the growth in wireless communications, there has been a proliferation of communication towers, first in the urban areas and more recently throughout the nation's rural areas, including Vermont. In 1996, the U.S. Congress passed the Federal Telecommunication Act. Although the

Act prevents local government from an outright ban on the construction of wireless communication facilities, local government does have the right to place reasonable requirements and restrictions on such facilities.

In many parts of the country, communication towers have not been closely regulated, and their aesthetic impact has been substantial. In Vermont, there has been greater scrutiny regarding the location of wireless communication facilities and recognition that the growth of the industry can occur without detracting from the State's scenic character. Vermont's topography provides challenges to the accommodation of cellular and PCS telephone service. Typically, the industry prefers highly visible locations such as hilltops and ridgelines in order to achieve maximum service. Unfortunately, these highly visible towers can have significant visual impact. In addition, development of the infrastructure to support the towers also can have considerable environmental impacts.

In January 2002, the Hartford Zoning Regulations were amended to provide specific standards for placement and construction of wireless communication facilities while mitigating adverse impacts. Through the adoption process, it became clear that the Town should avoid creating new facilities such as the existing facility at Hurricane Hill, the radio tower on Route 5 South, and the tower farm on Craft's Hill in West Lebanon. The consensus was to have a greater number of facilities with less visual impact than fewer facilities with greater visual impact.

In the last five years, wireless communication providers have expanded communication facilities in Hartford. The I-89, I-91, and Route 4 corridors are particularly attractive to the industry, and it is likely that the future will result in more expansion of wireless communication facilities into the outlying areas of Town.

The following is a list of the larger wireless communication facilities in the Town of Hartford as of late 2006:

- Verizon Facility – Gates Street
- Verizon Facility – Allison Run, off VA Cutoff Road
- Verizon Facility – Gifford Street
- Nextel Facility – Bliss Road
- Nextel Facility – Hillside Road
- Hurricane Hill Telecommunications Tower, Kings Highway
- Hartford Emergency Services Tower – Reservoir Road
- FAA Beacon – Hurricane Town Forest, off Kings Highway
- Radio Tower – Route 5 South
- TV Tower – Dewitt Drive
- Telecommunications Tower – Bliss Road
- Radio Tower – Hillside Road

Telephone

Hartford's local phone (traditional land-line service) is provided by Verizon. However, consumers have the option of selecting from a variety of long-distance and Internet service providers. In addition, growth in cell-phone usage has resulted in several companies vying for residential and business customers.

Public Safety and the Advent of Cell Phones

With changing technologies, there has been an increase in number of cell phones, and in some cases cell phones have replaced land-line phones. Since the 1990s, land-line phones have been equipped with a locatable address devise when calling E-911. This allows emergency dispatch operators to immediately identify the location of the call. Although newer-model cell phones are equipped with a GPS (geographical positioning system) identifying the location of the call, it is currently limited to calls received via a cell tower in Vermont. Since Hartford is on the border with New Hampshire and there are several cell towers in Lebanon, calls made from Hartford may be received by a tower in New Hampshire and therefore may not identify the location of the call. However, according to Hartford Emergency Services Dispatch, this has not hindered emergency response from E-911 cell-phone calls made from Hartford residences. Often, cell phones have aided in providing quicker responses by emergency personnel. However, there are instances when a cell-phone user unfamiliar with the area reports an accident on Interstate Highways (89 & 91) and cannot provide the specific location of the accident.

Television

Due to the hilly terrain in Hartford and the surrounding area, residents without cable or satellite television service have limited reception. As a result, cable television has continued to grow since it was made available to Hartford residents in 1964. Service is provided in the more densely settled areas of Quechee, White River Junction, Wilder, and Hartford Village. Comcast, one of the largest cable companies in the U.S., serves the Hartford area. In recent years, there has been an increase in satellite television service as well.

Included in the local cable network is the community access television, which broadcasts local government meetings, sporting events, and educational programming on two local stations (Channel 8 and Channel 10). Initially begun in Hanover to serve Hanover, Norwich, and the Dresden School District in 1993, the local cable access expanded to include Hartford and Hartland in 2003. Funding is provided through cable fees and grants. Currently, the local cable access television station has a studio at the Tip Top Building in Downtown White River Junction.

Hartford residents also have easy to access to a Vermont Interactive Television (VIT) site at the Vermont Community College campus on Billings Drive, one of twelve sites in Vermont. Funded by the State of Vermont, the VIT site provides residents an opportunity to participate in statewide public meetings, video conferencing, and distance-learning programs.

Recommendations

1. Continue an aggressive maintenance program for the two Town water distribution systems.

2. Continue efforts regarding wellhead protection in the areas of the Quechee and Wilder Wells.
3. Establish a reserve fund for equipment replacement for the water and wastewater treatment facilities.
4. Improve and expand water and wastewater system infrastructure within present service area before consideration of an expansion of the service area.
5. Complete recommended improvements to the water systems.
6. Continue an aggressive maintenance program for the two Town wastewater systems.
7. Structure utility rates to cover the costs of proper operation and maintenance of the wastewater and water systems.
8. Expand water and wastewater systems in the Route 5 South area to service existing and potential commercial and industrial development between Route 5 and Interstate 91 as recommended in the Route 5 South Study.
9. Establish a reserve fund for equipment replacement in the event of unanticipated failure at the White River Junction Treatment Facility and the Quechee Wastewater Treatment Facility.
10. Support the use of shared septic systems.
11. Support efforts to upgrade and improve broadband access, especially in the Town's growth centers.
12. Consider establishing a citizen's committee to study communication needs and capacities in Hartford.
13. Focus on the upgrade and expansion of the water and wastewater systems.

CHAPTER VIII

PUBLIC ROADS AND TRANSPORTATION

INTRODUCTION

The Town of Hartford is an important and historic transportation crossroads and gateway to Vermont. From earlier times, its rivers were avenues of transportation; barges were dragged upriver to White River Junction from the south, logs were floated down to Wilder from the north, and the stagecoaches traveling between eastern coastal cities and the Champlain Valley stopped regularly in the town center until the railroad era began.

White River Junction flourished for nearly a century as an important rail center and continues to handle significant freight and passenger service. Two of the most important interstate highways serving northern New England intersect in the Town, making it an important stopover point for travelers and a distribution point for commerce. Hartford is midway between Boston and Montreal on Interstate 89 and also midway between southern New England and the St. Lawrence Valley on Interstate 91. Hartford residents had an airport in the past but now use Lebanon Airport on a limited capacity and more typically use the Manchester, NH, and Burlington, Vermont, airports. Finally, from a recreational point of view, the Town is frequently traversed by cyclists, canoeists, hunters, skiers, snowmobilers, fisherman, and foliage watchers.

A safe and efficient transportation system is vital to our basic quality of life. It is the foundation for how we will achieve all our stated goals in the Town Master Plan. Over the last fifty years, the regional population has grown by 55%. This growth rate is expected to continue and will necessitate a planned transportation system that meets those increasing demands.

While most of the transportation system falls within existing public rights-of-way, the Town continues to make transportation decisions and investments cooperatively with our residential and commercial land use interests. While the majority of trips are made by the single-occupant vehicle driver, the Town continues its commitment to providing accessibility options to all populations and for all transportation modes. And while transportation has innately negative environmental impacts, the Town will continue to seek possible mitigation alternatives that can preserve and enhance the surrounding environment.

This chapter provides a planning and project development model for Hartford's future transportation system.

RESULTS FROM THE MASTER PLAN COMMUNITY MEETINGS

During the fall of 2002, the Town undertook a series of community meetings to solicit input from the public regarding the update of the Town Master Plan. The meetings were well-attended. Several transportation themes developed from these meetings. They included:

- Hartford has a role in the larger regional transportation system. As such, Hartford needs to work with State and regional organizations.
- Alternative modes of transportation, including public transit, park and ride facilities, and pedestrian and bicycle facilities, should be encouraged.
- To address increasing traffic and an inadequate road system, the Town should actively manage traffic using the following techniques: analysis of traffic flow, access management, traffic calming, enforcement of speed limits, improving road conditions and capacity, and encouraging alternative modes of transportation.

The public participation process also included a focus group discussion on transportation issues that reiterated the above recommendations and added the following:

- Improve specific intersections.
- Improve intersection signal controls and lower speed limits.
- Develop a Bicycle/Pedestrian Master Plan and ensure adequate maintenance of existing pedestrian and bicycle facilities while encouraging/requiring developers to implement pedestrian/bicycle facilities.
- Ensure adequate design standards for new development.
- Re-examine parking requirements.

A community meeting on transportation issues held in the summer of 2006 resulted in additional comments supporting the need for improved facilities for pedestrians and bicyclists.

TRANSPORTATION PLANNING

The purpose of transportation planning is to ensure a consistent, coordinated, and proactive effort to preserve the existing transportation system while addressing infrastructure and service needs.

Transportation planning is also a communications tool for Hartford residents and businesses. It directs the Town's education and outreach activities. It establishes a process by which the Town solicits input and guidance for future transportation investments. It sets the stage for how multiple Town departments working with multiple transportation agencies can effectively and efficiently communicate to one another.

Hartford has a long history of being involved in transportation planning. Town staff and officials have been working on many different transportation modes and services, which are all supported by various transportation planning processes. It has been this collective response to incorporate land use planning, development regulations, and capital facility planning that has allowed Hartford to achieve its planning goals.

Transportation planning is a shared responsibility. The Office of the Town Manager, under the guidance of the Town Selectboard, helps establish and communicate transportation planning-related priorities and directives. Hartford's Department of Planning and Development Services works with citizen volunteers serving on the Planning Commission, Zoning Board of Adjustment, Historic Preservation Commission, and Conservation Commission to help implement transportation

planning directives. These multiple boards have different responsibilities that incorporate transportation planning elements. As part of its role in project implementation, the Department of Public Works helps guide and inform the transportation planning process. All efforts are leveraged using regional and state transportation planning agencies referred to in this chapter.

The role of the private developers in transportation planning is critical. When presenting development proposals, it is critical that they provide, as early as possible, sufficient information, as warranted, to facilitate a thorough planning process. This may include transportation plans and traffic impact studies; how the development accommodates present or future public and private transportation facilities; and how the development follows context-sensitive design of transportation infrastructure generally consistent with the Town Master Plan goals, and specifically with this Chapter.

Transportation planning cannot occur within a vacuum. Regular and proactive consultation between citizens, Town officials and Regional Commission staff and periodic surveying of Town residents about their satisfaction with the transportation system are critical pieces in planning for the Town's future transportation needs.

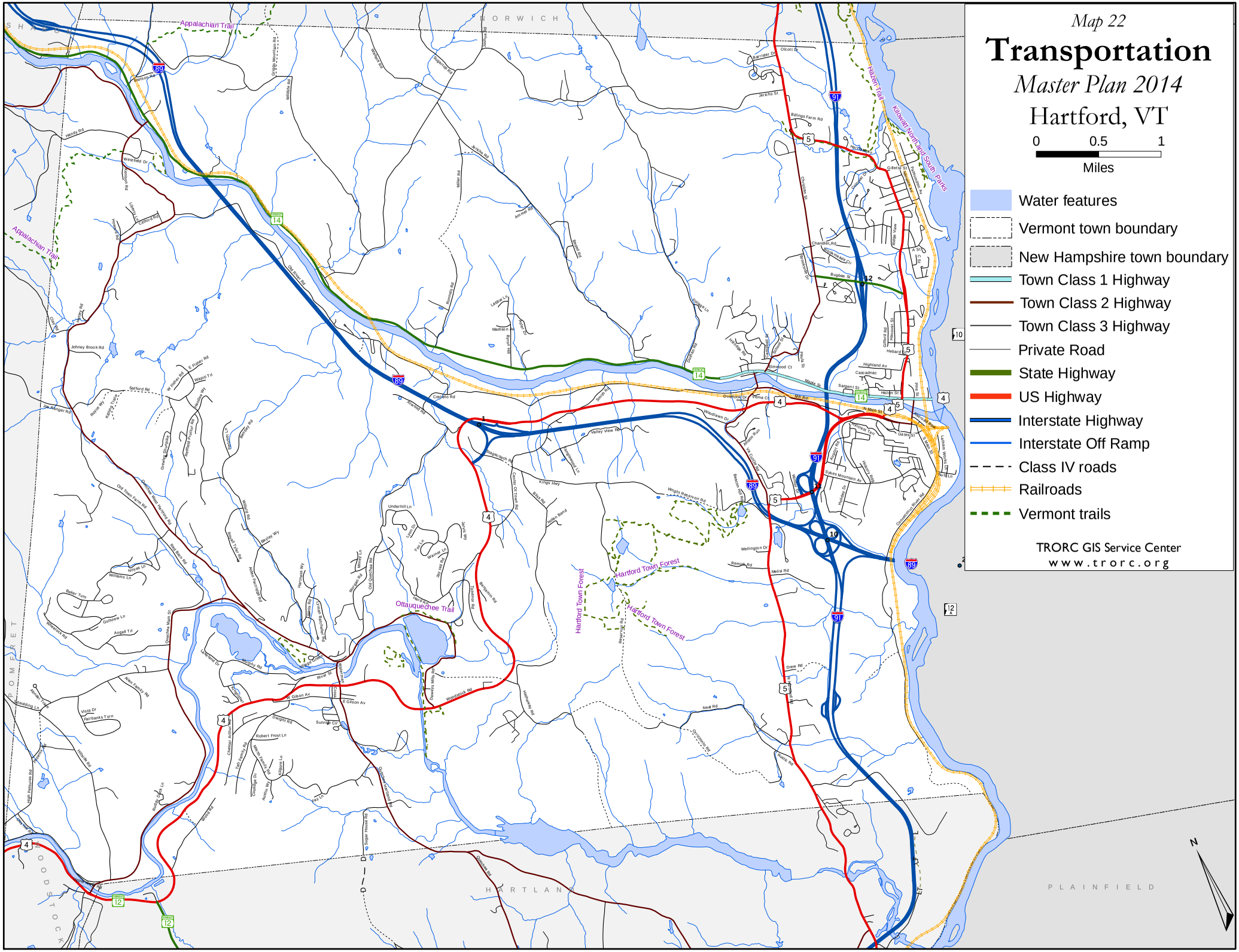
REGIONAL TRANSPORTATION PLANNING

The Two Rivers-Ottauquechee Regional Commission manages a regional transportation planning program supported by its communities, the State of Vermont, and the Federal Highway Administration. The regional transportation process includes planning and policy development as well as project programming and management.

The Regional Commission's transportation process can be divided into two distinct elements. First, the Regional Commission serves as the transportation liaison for all state and federal transportation policy, projects, and programs. Using this process, Hartford communicates its citizen's local and regional priorities to the elected and appointed officials in state and federal government. Second, Hartford receives project assistance and technical guidance on many different types of transportation projects. An example is this Chapter, which was updated by the regional transportation planner in collaboration with Town staff and officials. This gives Hartford an added resource for effectively leveraging its planning and transportation system management responsibilities.

All regional transportation decisions are made in the greater context of planning goals, which seek to enhance community livability, economic development, and the preservation of our environment. These goals and processes are articulated in the Regional Commission's Plan.

Hartford joined the Two Rivers-Ottauquechee Regional Commission in 2004. Since that time, the Town and the Regional Commission have worked as partners in several transportation planning issues and projects. This working relationship has already resulted in a number of successful collaborations on both local and regional projects.


Map 22
Transportation
Master Plan 2014
Hartford, VT
0 0.5 1
Miles
Water features
Vermont town boundary
New Hampshire town boundary
Town Class 1 Highway
Town Class 2 Highway
Town Class 3 Highway
Private Road
State Highway
US Highway
Interstate Highway
Interstate Off Ramp
Class IV roads
Railroads
Vermont trails
TRORC GIS Service Center
www.trorc.org
Appalachian Trail
Ottauquechee Trail
Hartford Town Forest
Hazen Trail
Kilowatt North and South Parks
NORWICH
HARTLAND
PLAINFIELD
WOODSTOCK
SHARON
POMFRET
N

PROJECT DEVELOPMENT

The Town has a responsibility to work proactively on developing projects that meet the growing demands placed on our transportation system. Private development, government regulations, legislative mandates and policy, and accounting standards have formalized the project development process, and while the process has historically been geared toward meeting funding options and system capacity triggers brought on by private development and system deterioration, Hartford will increasingly look to planning as the first resource in identifying, developing, and prioritizing construction projects.

Transportation funding sources come from numerous combinations of the local tax base, state and federal gas tax receipts, state and federal allocations and registration fees, U.S. Congressional apportionments, and private financing sources. The most significant funding resource comes from the federal transportation bill, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The federal and state government pays a percentage of project costs (50-100%) and, if necessary, the local community pays the remainder (often called local match).

The Town has been extremely successful in identifying, planning, and funding improvements for its transportation system. The following programs are the most significant funding sources.

State Capital Program: Vermont has an ongoing program to maintain or replace roads and bridges on the state and local transportation system. Depending on the project, the state pays a fixed percentage of the total costs, with the Town covering the local match.

State Town Highway and Bridge Program: The Vermont Districts allocate state aid funds on a rotating basis between communities in their regions. These funds cover major rehabilitation or reconstruction work. The District allocates a set grant amount and Hartford may use those funds for smaller projects or as a match for larger projects.

Federal and State Transportation Enhancements: Approximately 10% of Vermont's surface transportation funds are allocated to transportation projects that "enhance" the existing system. These enhancements are primarily for bicyclists and pedestrians but can involve aesthetic and environmental improvements. All projects are picked in an annual competitive selection process. These projects are municipally managed, with Towns receiving a set grant award to reimburse 80% and 90% of the project costs.

Private Financing: Commercial and residential development can exceed the capacity of the existing transportation system. Where projected capacity is exceeded for any one transportation mode then private developers then pay for or cost-share the necessary transportation system upgrades. These projects are unique to the scale and type of development.

These funding options, as well as other short-term or one-time grant programs, almost always require some form of local cash match. Transportation projects can be costly even with small local matches of 10-20% that are required within a singular construction season. When appropriate,

Hartford does build capital reserves to meet project-match requirements and this process should continue.

In the past few years, the Town has actively pursued "municipally managing" projects that would have been implemented by the State. This local management has reduced project delays and ensured a more effective project for Hartford's transportation needs.

Hartford has been fortunate that the development community often works closely with Town officials to build projects that mitigate transportation impacts and ultimately enhance the quality of our transportation system. It is through this cooperative process that the Town can best achieve a functional transportation system while preserving the safety, efficiency, and aesthetic values of our transportation resources.

UPPER VALLEY TRANSPORTATION MANAGEMENT ASSOCIATION

The Upper Valley Transportation Management Association (UVTMA) is a partnership of municipalities, schools, transportation providers, planning agencies, and private-industry groups that focuses on traffic impacts to preserve and enhance Upper Valley economic growth and community livability. The UVTMA goals are mitigating traffic congestion, improving mobility choices for all Upper Valley residents, and reducing our dependency on single-occupancy vehicle commuting. The UVTMA works under the wing of Vital Communities of the Upper Valley, a regional nonprofit organization based in Downtown White River Junction that fosters community dialogue and action regarding the long-term balance of cultural, economic, environmental and social well being in the region. Vital Communities provides staff and technical support to the UVTMA, although the UVTMA is just one facet of the Vital Communities work program. Vital Communities complements Hartford's planning activities and affords the Town an opportunity to work with neighboring New Hampshire communities and transportation partners. Since its focus lies within the greater Upper Valley, Vital Communities is not restricted by Regional Planning Commission or State boundaries. Furthermore, its broad mission of improving Upper Valley community livability has allowed this organization to remain responsive to local and regional needs.

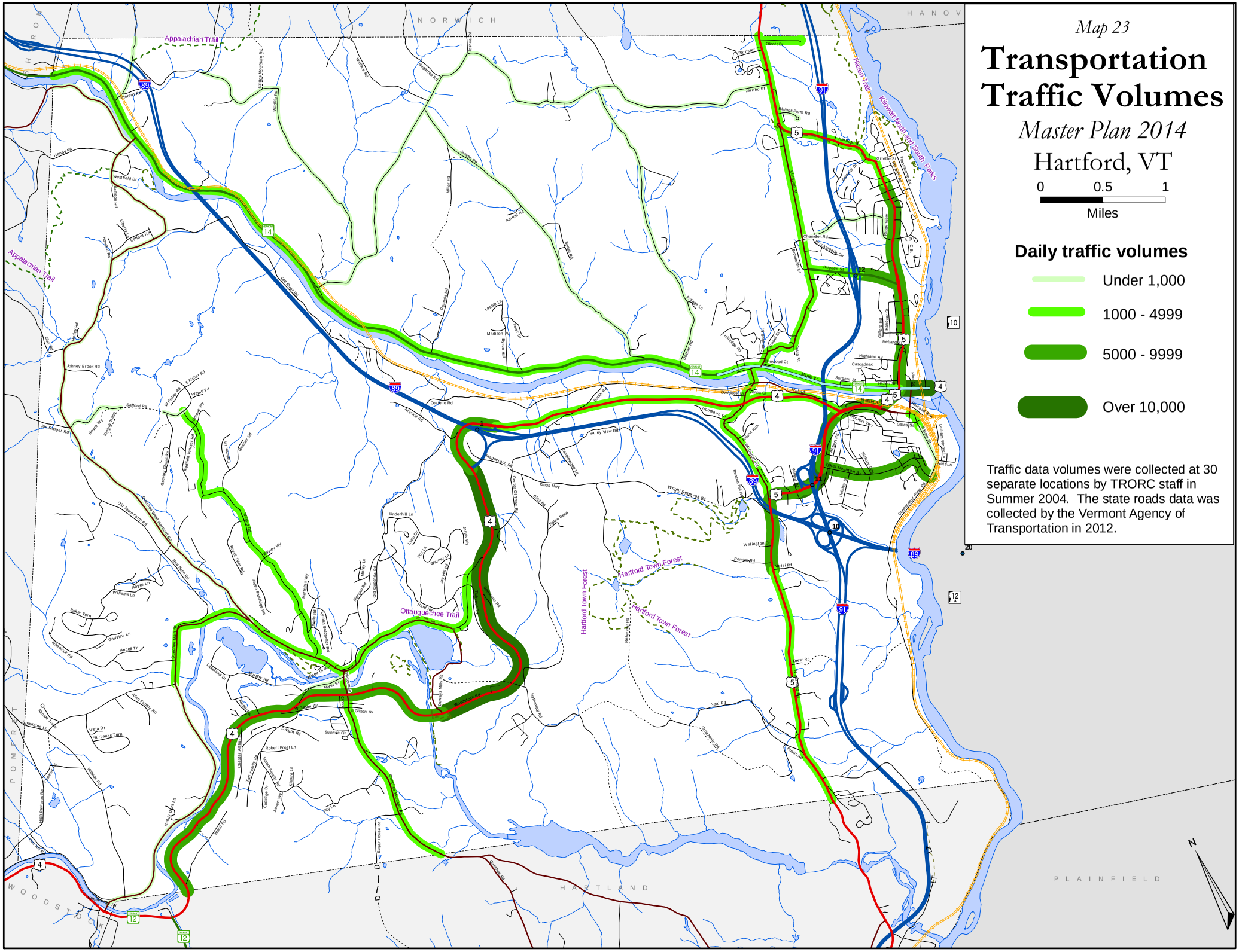
TRAFFIC DATA

Traffic data plays a significant role in how Town and State officials manage our road system. The first responsibility for all transportation professionals is to ensure safe passage for the traveling public. Transportation professionals rely on recording traffic volumes, speeds, and types of vehicles, to understand how our transportation system operates. They record crash data to better understand where road failures occur. They also examine influences from major employers and residential developments to better understand trip origins and destinations.

The Regional Commission and VTrans collect traffic counts within the Town by placing an automatic traffic recorder along roads for a span of one to two weeks. The data collected from these traffic volume counts is used to prioritize transportation projects and assist planners in evaluating development-related impacts. Traffic volumes and growth rates vary according to the road and its classification. Regionally, traffic growth on local and state roads increases 1-2% annually.

In 2002, Hartford Police began mapping vehicle crash locations that previously had only been recorded on paper forms. In 2003/04, there were approximately 350 vehicle crashes involving property damage only (80%), property damage and injuries (20%), and property damage and fatalities (< 1%). 70% percent of these crashes occurred on VT/U.S. roadways, 20% on local roads and 10% on interstate highways. Based on state criteria, the Town has no official "high accident locations." In general, the crash data is correlated to traffic volumes, with more traffic along roads or intersections equaling more crashes.

Currently, there is not much data on road and intersection level of service. Having this information would be very helpful in evaluating future improvements to intersections, especially when reviewing the impact from a proposed development.


Map 23
Transportation Traffic Volumes
Master Plan 2014
Hartford, VT
0 0.5 1
Miles
Daily traffic volumes
Under 1,000
1000 - 4999
5000 - 9999
Over 10,000
Traffic data volumes were collected at 30 separate locations by TRORC staff in Summer 2004. The state roads data was collected by the Vermont Agency of Transportation in 2012.
NORWICH
HANOVER
HARTLAND
PLAINFIELD
WOODSTOCK
POMFRET
Appalachian Trail
Hazen Trail
Kilowatt Mountain South Parks
Ottauquechee Trail
Hartford Town Forest
N

PUBLIC ROAD SYSTEM

In the State of Vermont, all municipal roads are designated as Class I, II, III, IV, or legal trails. These are legal designations used by the State in defining the amount of State funding for towns. Class I roads include all state highways under the jurisdiction of the town. Class II roads usually provide access to neighboring towns. Class III roads are the lower traffic volume roads that access adjacent neighborhoods and properties. All these roads must be passable year-round, under normal conditions, by a regular passenger vehicle. They all have to meet certain design and maintenance standards, but they can be paved or gravel and receive remarkably different types and volumes of traffic. These classifications also are used by the Town to distinguish development standards, maintenance practices, and access requirements.

The final two classifications have no state aid attached to them and receive little or no maintenance. Class IV roads are nominally maintained by the Town but receive no winter maintenance. These roads may or may not be passable by regular or off-road-type vehicles. Legal trails receive no official town maintenance, although civic groups and volunteers actively maintain selected segments. Trails are unique from the other municipal travel ways in that motorized vehicular access is prohibited.

The public road system in Hartford totals approximately 187 miles. The state actively maintains 25% of the roads that are the most significantly traveled in town (45 miles). Hartford actively maintains 70% of all the roads classified as being Class I, II, or III (129 miles). There are another 5% of roads designated by the state as being Class IV, but only 10 miles of Class IV roads have actually been recorded on the state highway system map, with the total mileage still unknown.

In addition to the legal road designations, local roads can be described according to a particular "functional class." Major and minor arterial roads serve to carry traffic across Town and to neighboring towns. This category includes interstates and connecting roads that tie the arterials together. Examples of the major arterials are Interstate Highways 89 and 91, U.S. Routes 4 and 5, and VT Route 14. Collector roads serve, as the name suggests, to carry traffic between residential areas and the main traffic arteries. Collector streets include such roads as Chandler Road, Center of Town Road, Dothan Road, Jericho Road, Quechee Main Street, and South Main Street.

LOCAL ROAD SURFACE CONDITION

Public roads have been and will be Hartford's single largest Town asset requiring significant financial investments paid by every taxpaying resident. Good roads are the connective element to the entire community and should be managed wisely and effectively. Town citizens want roads with a smooth riding surface, adequate lighting, proper markings, and minimal interruptions due to maintenance and construction-related activities.

Hartford has an ongoing management system that includes an inventory and 10-year capital program. The inventory identifies road conditions. The capital program identifies roads for routine maintenance and reconstruction.

In the late 1990s, the Town had a deficient road system, as evaluated by transportation professionals and as compared to other towns within the region. Over the last 6+ years, Hartford's Capital Improvement Program has focused significant resources on road improvements. As a result, the Town now has a very good road system and comparably better infrastructure than other communities within the region. Now the average road is in good condition, with only 10% listed as fair or below.

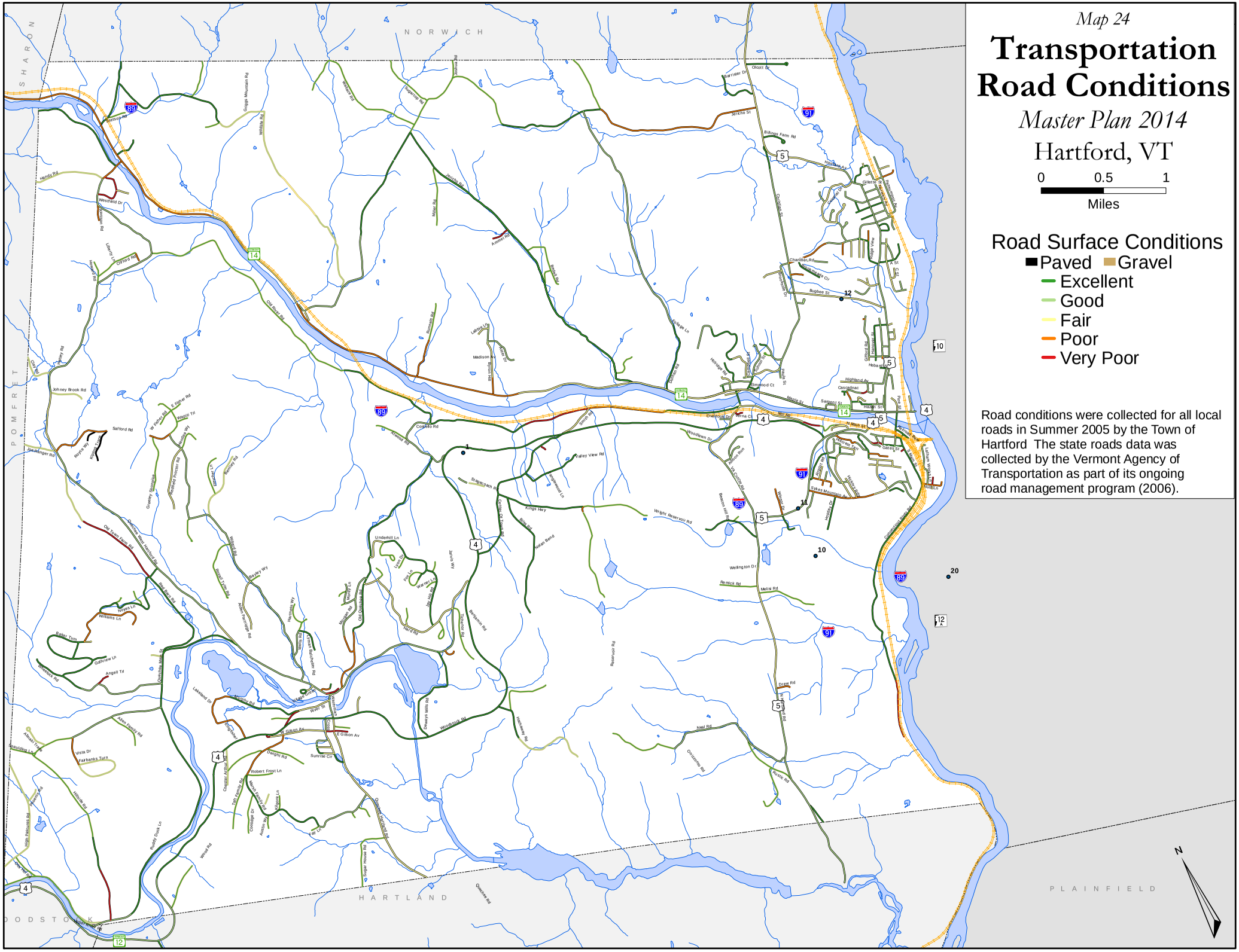
Preventative maintenance on an ongoing basis has proven to be a more cost-effective approach than reconstruction and replacement. Deferred investment results in greater road deterioration and requires significantly more dollars in the future. In one hypothetical example reviewed by the Public Works Department in 2005, two preventative maintenance applications would have saved the Town 75% the cost of doing a single deferred-maintenance reconstruction project to extend the road's serviceable life over the same timeframe. These relative savings are significantly magnified, considering Hartford has been investing between $600,000 and $1,000,000 annually in its paving program. This continued commitment to preserving and enhancing the road system by emphasizing preventative maintenance over deferred reconstruction is a critical part of the Town's fiscal responsibility.

LOCAL PUBLIC ROAD DEFICIENCIES

There are a few road segments and intersections that have a history of crashes but more often intersections are just inefficient and create traffic nuisances, near-miss collisions, and other unreported problems. Some of the transportation deficiencies include: poor road geometries, narrow winding roads, and obstructed sight distances. The areas of concern (not mentioned elsewhere) are:

- U.S. Route 4 intersections with Quechee Main Street and Waterman Hill Road
- VA Cut-Off Road intersections with U.S. Route 4, Old River Road, and VT Route 14
- U.S. Route 5 intersections with Chandler Road and A Street
- Quechee-West Hartford Road and Quechee Main Street intersection
- Christian Street intersections with U.S. Route 5 and VT Route 14
- Sykes Mountain Avenue and South Main Street intersection

Further investigation of the conditions and possible solutions is needed for these intersections**.**


NORWICH
SHARON
POMFRET
HARTLAND
PLAINFIELD
WOODSTOCK
Map 24
Transportation Road Conditions
Master Plan 2014
Hartford, VT
0 0.5 1
Miles
Road Surface Conditions
Paved
Gravel
Excellent
Good
Fair
Poor
Very Poor
Road conditions were collected for all local roads in Summer 2005 by the Town of Hartford The state roads data was collected by the Vermont Agency of Transportation as part of its ongoing road management program (2006).
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STATE-CONTROLLED ROAD SYSTEM

The Town continues to have concerns about the State's ability to maintain its road system. While the Town's average pavement condition is good to excellent, the State's average pavement condition is fair to poor. This decline in pavement quality is particularly problematic because the majority of Town residents use these State roads.

VT Route 14 was resurfaced in 2006, which raised its poor pavement conditionbvg to acceptable standards. U.S. Route 4 has average pavement quality, but the roadway itself does meet State of Vermont design standards. U.S. Route 5 has alternating design and pavement condition problems with the greatest deficiencies found within the Tafts Flats and Wilder Village area. Interstates 89 and 91 require investments to address the areas of rutting, pavement deterioration, inadequate signage, and deficient guardrail. Along many of these State controlled roads, there are intersections that fail to meet safety and/or capacity standards. In almost all cases Hartford's State roads have projects already planned, designed, and engineered to address these deficiencies. The challenge is securing the necessary funds for construction and/or resurfacing.

The Town's single greatest transportation priority is to see these existing State road projects completed:

- U.S. Route 5 - Reconstruction of Tafts Flats area.
- U.S. Route 5 / Sykes Mountain Avenue - Roundabout
- Interstate 91 – Resurfacing, bridge maintenance, and general safety and signage projects from Hartford to Newbury.
- Interstate 89 – Resurfacing, bridge maintenance, and general safety projects from Hartford to Royalton.
- U.S. Route 5 – Resurfacing from Bugbee Street to Norwich's VT 10a intersection

LOCAL PUBLIC GRAVEL ROADS

The Town has approximately 32 miles of publicly maintained gravel roads. These gravel roads impose a distinct scenic character to the surrounding land, reduce cut-through traffic, require greater driver caution and slower travel speeds, and encourage low-density development land use patterns. In many cases, town residents use these roads for bicycling and walking to enjoy the rural countryside.

Gravel roads make sense for traffic volumes up to 1,500 trips per day. At these lower volumes, gravel roads are much more cost effective to construct and maintain. However, traffic alone is not the sole determining factor; choosing to pave also can depend on soils, drainage, steepness of slopes, and winter maintenance policies. There also is significant diversity in the design and condition of the Town's gravel roads; some operate at or near typical road standards, with smooth travel surfaces and regulation road widths, while preserved narrow back-country roads meet few of these contemporary road standards, and seasonally can offer less smooth traveling.

Appropriately constructed and maintained gravel roads do have a traffic volume limit. When too many vehicles use a gravel road, it becomes potholed and bumpy, requiring frequent road grading

that is costly and time consuming. The conventional wisdom is that after traffic volumes exceed a maximum number of vehicles per day, gravel roads should be paved. While there is no set traffic number, this is evaluated against other factors such as environmental conditions (e.g., poorly drained soils), maintenance history (e.g., frequent grading), and whether the gravel road meets standards.

Gravel roads are an important resource to a Town's transportation system. Paving should not be considered "improving" a gravel roadway. In most instances, existing gravel roads lack the base and sub-grade materials needed for pavement, resulting in gravel roads needing full-depth road reconstruction. In other instances, gravel roads help discourage motorists who would otherwise leave state roads and other principal arterials to cut through neighborhoods. And finally, gravel roads are outside development nodes, and preserving these roads indirectly helps preserve the land use patterns supported in this Master Plan.

Balancing these diverse functional needs of gravel roads with the demands on the road system and the desire to preserve the rural character of the areas they serve is a challenge for the Town. This is especially important when considering development proposals that would create traffic volumes in excess of what the existing gravel road can support. Conversion to asphalt roads should only occur when the change is determined to be necessary. Although the financial cost to maintain a gravel road may over time be more than the cost to pave, this should not be the sole determining factor, particularly for a gravel road that has demonstrated public value in its present aesthetic and/or functional condition.

CLASS IV ROADS

Class IV roads primarily offer access to Town and conservation resources and provide unique insights into an agrarian landscape long abandoned. Many Class IV roads have been incorporated into the natural landscape whereby very little development has occurred along these roads. Even though the Town owns the Class IV roads and right-of-way, there is no legal obligation to maintain the road surface, culverts, or bridges. Public utility services or other municipal infrastructure that typically accompany roads are nearly nonexistent. Often these roads are our scenic travel corridors for hikers and bicyclists and provide limited access to hunting and conservation lands.

The question of how Class IV roads were created is important to the policies set forth in this Master Plan. Class IV roads were created by the state's local road classification system which required that Towns identify Class I, II, and III roads for state aid. Local roads, not identified by the Town Selectmen to receive state aid, would be by default Class IV roads. As funding was involved, municipalities were diligent in identifying and mapping local roads for the State of Vermont. But since Class IV roads were not needed for state aid, they were not as consistently identified or mapped. A common misconception is that since many of these roads do not exist on any official state funding map, they are therefore ancient highways unknown to Town officials or citizens. This is not true, and many of our Class IV roads remain a well-known transportation and recreation resource. Another common misperception is that since automobiles cannot use these roads, then the Town no longer requires a public right-of-way. This auto-centric attitude fails to recognize that the public travel ways often are used by other traveling constituencies, such as walking, bicycling, equestrian users.

It is important that the Town explore the role of Class IV roads in our land use development policies, traffic circulation, emergency management access, and natural and historic resource impacts. Recent state legislation requires the Town identify and map all Class IV Roads by July, 2009 or lose all public claim to Class IV roads not presently identified on the State's Highway map in July, 2015. This process will assist the Town to assess which roads and/or rights-of-way should be preserved or allowed to be upgraded.

DEVELOPMENT REVIEW ROAD STANDARDS

The Town currently uses highway rules and regulations that were adopted by the Selectboard in 1990 and amended in 2000. This ordinance details road construction standards and policies for road classifications, right-of-way, access, road acceptance, and numerous other construction and maintenance related activities. The responsibility of ordinance implementation rests with the Selectboard and the Department of Public Works. Insofar as guidelines for development review can contribute to this process, the following planning considerations should continue or be expanded upon in future ordinance updates:

- Emergency management services will have guaranteed access to all development.
- Within bicycle and pedestrian priority corridors, the minimum right-of-way width should include both the roadway and an allowance for existing or planned bicycle and pedestrian facilities.
- Since local and state road construction follows State of Vermont design standards, private roads should be constructed to those standards, thereby minimizing changes if the road is accepted by the Town at a later date.
- Road design and construction should adhere to the relevant Master Plan goals and objectives – land use, natural resources and transportation elements.
- All roads will reflect a context-sensitive design that preserves and enhances the adjacent land uses and transportation system.
- Private road and driveway standards should be adopted to ensure stormwater is not discharged onto public highways or drainage systems.

Over the last few decades, transportation projects have placed greater emphasis on contemporary engineering design standards. However, in some instances, the design and engineering of our roadways and bridges failed to consider the Town's unique historical and natural landscapes. These improvements did not account for a road being historic, scenic, pleasant to drive, or respectful to the people and businesses living alongside it. While engineering sufficiency criteria are important factors for road and bridge improvements, compatibility with existing and future development patterns also are important considerations.

ACCESS MANAGEMENT

According to the Vermont Agency of Transportation (VTrans) definition, access management is a process that provides or manages access to land development while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity needs, and speed. Access management is an important process to provide reasonable accessibility to adjacent land uses while maintaining a safe and efficient flow of traffic. Transportation professionals have established that a single, well-designed access to a public highway presents few concerns for the traveling public. However, if access has been poorly designed and/or its frequency increases, the road's health declines proportionally. The result is increased traffic congestion, crash rates, and road maintenance obligations to handle surface water improperly channeled to the road surface or shoulders. Ironically, these factors eventually compromise access to all land uses along the affected roadway. In many instances, towns are forced into costly highway expansion projects.

Hartford's emphasis on access management for national and state highways is particularly critical in order to effectively maximize our development capacity. These roads support the majority of our commercial and industrial activities, and their continued operations greatly depend on the proper functioning of our road system. Given that the State of Vermont has the legal authority and control for permitting access along our state and national highways, it is critical that this is accomplished in cooperation with the Town and in concert with our local and Act 250 land use planning processes. A top priority for access management is US Route 4, a winding narrow road that serves as a major local and regional travel corridor. Unlike all other State-controlled highways, there are no parallel roads or alternative travel options. Route 4 will likely continue to be the only major east-west highway in the region.

The Town recognizes the value of access management and can implement access management strategies through its planning and public works related ordinances and policies. The following are some of these strategies for all public and private transportation and development projects impacting local and state public roads as well as private roads:

- Utilize State of Vermont design standards for all temporary and permanent access, to include emphasis on drainage, sight distance, and access for emergency services;
- Encourage use of shared driveways and/or permitting access that may result in a future shared driveway;
- Require the review of access for existing development whenever a change of use, ownership, or other application process is brought before the Town;
- Encourage commercial properties to use existing development nodes in order to preserve or create road segments with few accesses;
- When practical, approve subdivisions with private and public road designs that allow shared access with other adjacent subdivisions and/or have the private rights-of-way reserved so an access may be built to connect to existing and future development;
- Encourage permanent landscaping and roadside enhancements to visually define access points and contribute to the roadway's aesthetic character;

- Use sight-distance standards based on the actual travel speeds and not the posted speed limits. If no such data exists or is not current, then Hartford and the State will work with the Regional Planning Commission and/or Hartford Police to obtain the appropriate data;
- Utilize access or an access easement from a local road rather than a State highway

BRIDGES AND CULVERTS

The Town has a wide array of bridges and culverts, ranging from huge-span Interstate 91 bridges to 12-inch culverts along gravel roads. All these structures serve a common purpose of enabling transportation infrastructure to exist harmoniously with various scales of water features. To the average Hartford citizen, only the larger bridges are seen on the landscape, while much of the other infrastructure operates invisibly. Often bridges and culverts represent a "pinch point" along a roadway. This is because the road has been expanded over the years to accommodate more vehicles, pedestrians, and bicyclists. This is relatively easy to accomplish with additional pavement and shoulder work. But the bridge and culvert infrastructure are not so easily expanded, and these facilities are not as frequently replaced or upgraded.

Within the local transportation system alone, there are 1,038 culverts, 29 short-span bridges, and 4 long-span bridges (excluding privately owned culverts and bridges). In current dollars, this system could be valued at approximately $6 million dollars worth of infrastructure. In good conditions, a culvert or bridge can last 50 to 75 years. The Town conducts regular safety inspections of bridges and establishes priorities for improvements. Maintaining this system absorbs significant resources, and even small maintenance steps like bridge painting have significant costs. In general, our system of culverts and bridges is in good condition. For the 2006 construction season, approximately $35,000 was budgeted for rehabilitation and replacement of culverts and short-span bridges. More funding is needed in the future to maintain our existing assets.

Whenever a bridge is repaired or reconstructed, every effort should be made to maximize safety while providing an attractive design and accommodating the space needed for a multimodal transportation environment. It also is important that the design and construction of new culverts and bridges not just reflect transportation standards but also include consideration of natural resources and emergency-management standards. This includes building small drainage structures to withstand 25-year storm events, considering hydraulic and sediment transport capacities, and preserving the environment surrounding the improved area.

BICYCLE TRANSPORTATION

Bicycles are used both for transportation and recreation. Many bicyclists can be seen riding throughout Hartford and the Upper Valley region. Bicycle transportation is used for work, school, or conducting errands. Recreational users include local residents who see the health benefits of the sport and visitors who come to Vermont to experience the outstanding scenery.

Hartford receives a number of benefits promoting bicycle use, ranging from tourism opportunities to mitigating vehicle congestion. Bicyclists do not create air pollution, produce little noise, add diversity to an automobile-dominated road system, and rarely cause traffic congestion. Bicyclists

contribute to a better-functioning transportation system and render a community more attractive to all residential and commercial uses.

Bicycle facilities fall under three general categories: road improvements, such as the addition of bicycle shoulders, bicycle path networks, and designated bike lanes; transportation service improvements, such as bus bike racks; and land use development accommodations, such as commercial-center bike-storage facilities. All these improvements support a positive cycle of encouraging more citizens to bicycle.

Hartford depends on the planning and design guidance provided by the Vermont Agency of Transportation (VTrans) through the 2007 Vermont Bicycle and Pedestrian Plan and the 2002 Vermont Pedestrian and Bicycle Facility Planning and Design Manual. VTrans requires that all road and intersection design/redesign consider accommodating bicycling. However, flexibility in design standards is needed if it proves unreasonable to install bicycle facilities as part of a public or private development. These standards include providing bicycle facilities on principal arterials, on roads with high speed and traffic volumes, in town/village centers, around schools, and sections that have significant obstacles or deterrents to local and/or regional bicycle routes (e.g., U.S. Routes 4 and 5). The priority is accommodating bicyclists along the existing roadway network, rather than providing separate facilities that are more costly. The State also stresses accommodation of bicyclists with on-street or off-street facilities, connecting bicycle paths to adjacent developments, and providing areas for bicycle parking and/or storage.

Valley roads with gentle grades and lower traffic volumes include Old River Road, Quechee Main Street and Connecticut River Road. Other more challenging rides on roads with scenic views and relatively low traffic volumes include Jericho Street, Jericho Road, Dothan Road, Old Quechee Road, Quechee/West Hartford Road and Quechee/Hartland Road. The Town also has many Class IV roads that are well suited for mountain biking.

In Hartford, there are many challenges to bicycling. The steep grades in many of the Town's roads deter all but the hardiest of bicyclists, while many of the roads with gentle grades tend to be narrow, with high traffic volumes. These conditions deter all but the most experienced bicyclists, and parents often are reluctant to allow their children to ride their bicycles beyond their own immediate neighborhood. As a result, a significant amount of bicycling occurs along roadways with no bicycle-specific infrastructure or accommodations. This is an acceptable condition along low-volume rural roadways in low-density development districts. This also is acceptable on roads with significant grade challenges. However, there are several roads with sufficiently high traffic volumes and narrow shoulders. These include Route 4, Route 5, Christian Street, Sykes Mountain Avenue, and Maple Street (Route 14). Improvements to shoulders will create safer conditions for bicyclists and will likely increase bicycle use. Providing sensors at signalized intersections that can be triggered by bicycles also contributes to bicycle safety.

In the late 1990s, the Upper Valley Trails Alliance initiated the Upper Valley Bike Loop, a four-town loop through Hartford, Norwich, Hanover, and Lebanon, to encourage increased bicycling. To date, several pieces of the loop have been completed. Among them are the Wilder Multi-Use Path, a mile-long paved path that connects the north end of Wilder Village to the Dothan Brook School.

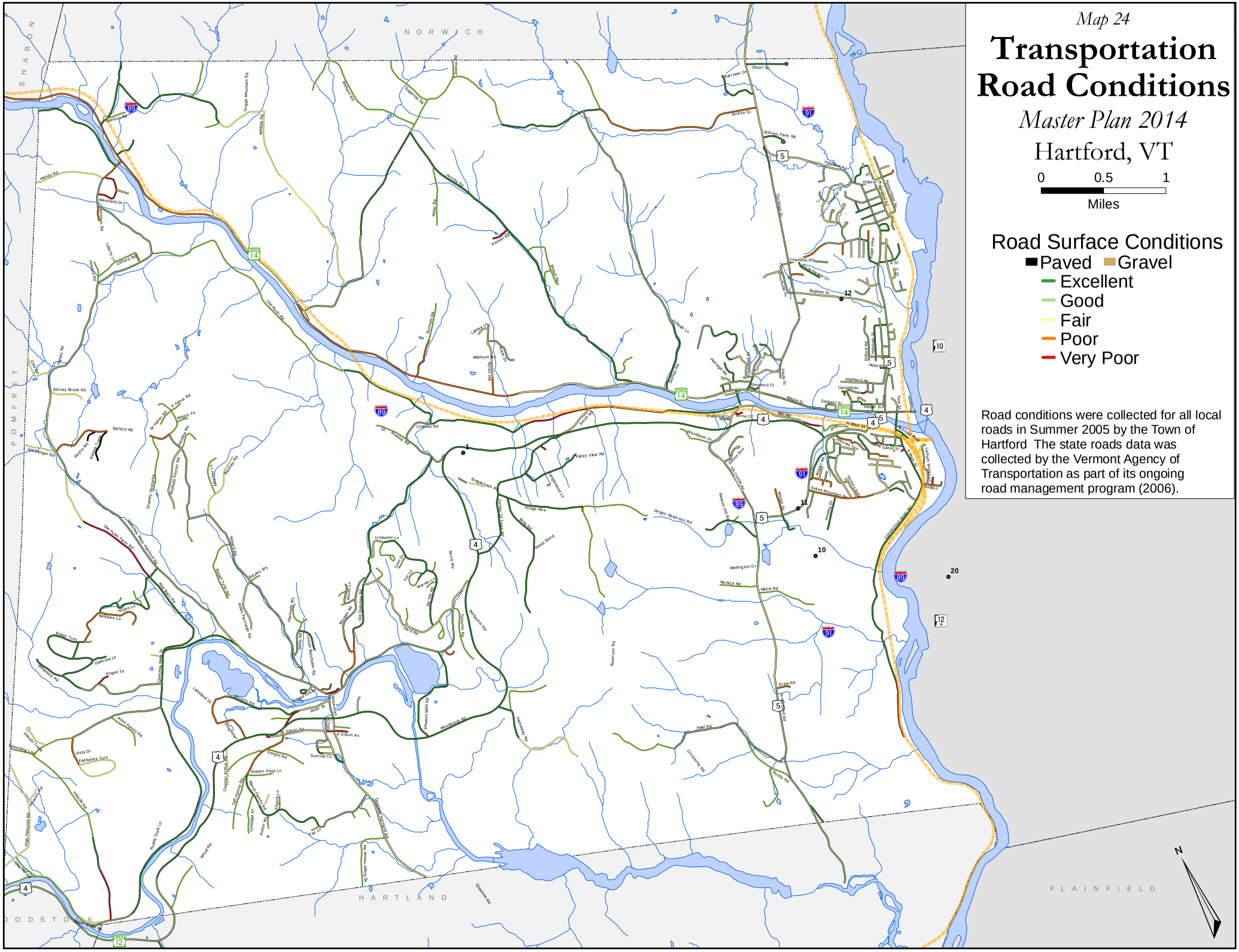
In addition to use by Dothan Brook students during the spring and fall, the path is used extensively throughout the year by walkers, joggers, and bicyclists. In 2002, a Transportation Enhancements grant resulted in a feasibility study to extend the Wilder Multi-Use Path from the Dothan Brook School in Hartford to Main Street in Norwich. However, due to an unsuccessful attempt to work out an agreement with property owners along the corridor, a path separate from Route 5 was not possible. As a result, the study's preferred alternative was the widening of shoulders along Route 5. The Hartford Selectboard voted against this alternative because they were concerned that wider shoulders potentially could be dangerous to children who may be tempted to ride along this busy section of road, especially since the Dresden School District athletic field complex is on Route 5 just north of the Hartford/Norwich town line. The Town should continue to work toward finding an acceptable solution to completing this section of the Upper Valley Bike Loop. Another project that the Upper Valley Trails Alliance initiated as part of the Upper Valley Bike Loop is a rail with trail feasibility study over the Connecticut River rail bridge between Downtown White River Junction to West Lebanon and Lebanon. This study is currently underway.

In addition to travel ways, having adequate bicycle racks in commercial developments, village centers, and community facilities is an important part of Hartford's multi-model transportation system. Bicycles are allowed on Amtrak trains and all Advance Transit buses are outfitted with bicycle racks. Additionally, the Connecticut River Scenic Byway runs through Hartford along Route 5 and is likely to foster increased bicycle use along the corridor. Having adequate bicycle facilities also will benefit local businesses that cater to tourism.

PEDESTRIAN TRANSPORTATION

Walking is an important part of community life and, much like bicycling, actively contributes to our road's vitality, reduces our dependence on the automobile, and provides a healthy recreational opportunity. The Town and private developers build roads based on anticipated vehicle traffic volumes; likewise, the Town should promote the construction of sidewalks and other pedestrian amenities based on anticipated and desired pedestrian traffic volumes and needs. The type and location of pedestrian facilities are based on objective criteria involving roadway geometry; vehicle volumes, speeds, and classification; connectivity to existing facilities; development densities; and economic development opportunities.

In Hartford, there are approximately ten miles of sidewalks, most of which tend to be in the villages and along segments of busy roads such as Route 5, Route 4, and Route 14. In the last ten years, the Town has completed a total of 1.4 miles of new sidewalks on South Main Street, Railroad Row, Maple Street, and Route 4 at Quechee Gorge with the assistance of several state/federal grants. However, more sidewalks are needed. Map XIII-3 identifies a preliminary list of thirty locations where new sidewalks should be constructed. A more thorough review of these locations is needed to develop a comprehensive pedestrian/bicycle plan, including a system for prioritizing these locations.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Transportation Road Conditions
Master Plan 2014
Hartford, VT
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Good
Fair
Poor
Very Poor
Road conditions were collected for all local roads in Summer 2005 by the Town of Hartford The state roads data was collected by the Vermont Agency of Transportation as part of its ongoing road management program (2006).
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In village centers, along dense development nodes, and within appropriately scaled subdivisions, sidewalks are an important transportation facility. Hartford's goal is to strive for a continuous system of high-quality, connective sidewalks within these areas. While year-round facilities are optimal, pedestrian facilities that accommodate three seasons of travel remain preferable over no facility. Additionally, it is reasonable to expect that developers provide for pedestrians either by constructing the actual facility, developing the site to accommodate the facility, participating in Federal grant programs by providing the local match requirement, and/or deeding the public the rights-of-way to provide the land needed for facility construction. It is important that these goals and objectives are considered during the review process for municipal and private development projects.

A new initiative for the Town is the Federal Safe Routes to School Program. In the summer of 2006, the Dothan Brook School was accepted into the Program, which is intended to eliminate obstacles that discourage schoolchildren from walking or bicycling to school. The Town government and the School District are working together to make this a successful endeavor.

Once new sidewalks are constructed, the Town takes on the responsibility for maintaining the majority of these pedestrian facilities. Maintenance of sidewalks has become an increasing concern, and several are in poor condition. Since reconstruction of sidewalks is not an eligible activity for state/federal grants, these improvements must be financed with local funds. A comprehensive inventory of conditions and criteria for prioritizing projects is needed to guide the Town in budgeting for these expenditures along with the budgetary needs for new sidewalk construction. In many ways, this would be similar to the process that is used for the Town's Highway maintenance budget.

TRAFFIC CALMING

Traffic calming is the physical design or redesign of a road to reduce the inappropriate impacts of vehicular traffic. When successfully employed, traffic calming can decrease cut-through traffic volumes, lower traffic speeds, and improve safety for all transportation modes. Less measurable benefits include an improved aesthetic quality of streets such as trees and other landscaping. A better-looking roadway evokes a psychological reaction whereby motorists identify a road's character as a neighborhood asset supporting a community as opposed to a highway that supports ever improving mobility.

There are many different types of traffic-calming facilities. Roundabouts, such as the one proposed for US Route 5 and Sykes Mountain Avenue, can significantly lower traffic congestion while also lowering traffic speeds. These facilities should be properly examined whenever intersection redevelopment projects are proposed. Road narrowing and curbline bump-outs, found in Hartford Village, decrease travel lane widths, better articulate parking, and allow pedestrians safer passage. These facilities should be considered within village centers, development nodes, and within all condominium and subdivision projects. Speed humps, bumps, speed tables, and raised crosswalks force the driver to slow in order to navigate a raised roadway feature. There are few examples of these measures in Town, but they are used by adjacent communities and throughout the region. These facilities should be promoted within village centers, development nodes, and all condominium and larger subdivision projects.

Traffic-calming measures should not necessarily be restricted to public roads but can be employed on local roads and developments as well, particularly those adjacent to schools and commercial activities and serving large volumes of bicyclists and pedestrians. However and whenever they are considered, it is important to consider the benefit of slowing traffic while considering access for emergency vehicles and roadway maintenance

PARKING

Historically, the Master Plan has not put much attention on parking – parking was needed, so it was built. However, over time we are recognizing that parking comes with significant planning, financial, environmental, and community livability responsibilities as well as costs. While having full parking in downtown White River Junction and other village centers is an indicator of successful revitalization efforts, it also possess challenges where the concentrated land use patterns make land a valued commodity. It also impacts strip or sprawl-type development because sizable parking lots tend to discourage public transit, bicyclists, and pedestrians.

There also are varying and sometimes competing needs and interests in the community. Businesses want high-turnover spaces for customers and long-term use spaces for employees. In medium/high-density residential developments, parking needs to accommodate the long-and short-term usage patterns of residents and visitors. All parking facilities need to be convenient, safe, appropriately sited and well-maintained for year-round usage.

National standards for defining parking space and location requirements are typically linked to land use categories, peak usage rates, and near structures. In some instances this can work, but more consideration needs to be given to lowering parking requirements if it is likely citizens would access the development by using public transportation, bicycling, and walking. The proximity of parking spaces should be balanced with the needs of the particular land use to include other needed amenities such as community space, sidewalks, and traffic calming. It also is important, especially in village centers, to focus parking in the rear of lots behind buildings.

Parking benefits should be extended to the greatest possible number of constituencies. Shared parking facilities with compatible development; on-street parking with time limitations to encourage customer and short-term delivery usage; and use of Town, County, and State parking lots by area businesses or for special events are some of these options. As the market for curbside parking increases, Town officials should consider establishing market prices (meters) to help defray the costs and encourage short-term usage.

Given that Downtown White River Junction currently is experiencing a steady stream of redevelopment, it is anticipated that eventually there will be an increasing demand for these finite parking resources, particularly public parking. To address this issue and plan for future needs, since the winter of 2005, the Town has been conducting parking counts by block and lot of public parking to identify parking patterns and availability. Overall, 43% of the available parking is being used; however, there are some locations in downtown where public parking is limited.

As buildings are being redeveloped for higher uses, the future availability for adequate and safe parking is becoming a concern for potential developers and businesses. In response to this, the

Town has been pursuing three projects: reconfiguration of roadway and parking areas on Railroad Row, development of a shared parking lot on state rail property off Railroad Row, and reconstruction of the municipal parking lot behind the American Legion off South Main Street.

Since parking is an expensive commodity, it is important that the Town explore creative funding options. The 2005 study and conceptual redesign of the municipal parking lot behind the American Legion Hall proposal for a safer, more attractive and better-functioning parking facility is estimated at $1.3 million. The Town will have to decide how to pay for these and other Downtown parking improvements. One option is to consider establishing a parking fund that allows businesses and property owners to utilize public parking while contributing funds to the maintenance and upkeep of those spaces.

As residential and nonresidential development and redevelopment opportunities arise, it is important that parking space requirements and parking lot placement do not result in a change to the character of a neighborhood by creating excessive, highly visible paving. Furthermore, it is in the best interest to the integrity of the Downtown and other village centers not to encourage the demolition of buildings to make way for additional parking. The site development review process should seek all opportunities to promote shared parking, rear-lot parking access, covered parking, and other techniques.

PARK AND RIDE FACILITIES

Park and ride facilities enable motorists to drive from their homes, park, and then carpool or use public transit to arrive at their destination while reducing traffic congestion and pollution. Regional public-transit providers often depend on park and rides for commuter-based ridership. Rather than having multiple stops to gather a dispersed residential population, public transit can utilize a single park and ride to shuttle commuters to their employment destinations. The use of park and rides is an important public-transit resource, and facilities should be planned and constructed to better support fixed-route services.

Ideally park and rides are located within short distances of our major transportation corridors– I-89, I-91, US Route 4, US Route 5, and VT Route 14. To meet demand, park and ride facilities must offer at least 20 parking spaces. These facilities also can be unique stand-alone parking lots or situated with existing businesses or public parking facilities. Public/private shared park and ride lots are preferred in areas of active commercial development and constrained land use. Dedicated facilities should only be planned in areas where limited commercial development is present and/or anticipated.

Over the past few years the State has initiated studies to identify possible locations for Park and Rides in Hartford, with particular emphasis at the interchange of I-91 and Route 5, where historically commuters have established their own ad-hoc park and rides on private property. Unfortunately, the State has not selected a site. As an interim measure, the Town has designated a portion of the municipal parking lot behind the American Legion Building in Downtown White River Junction as a Park and Ride facility.

PUBLIC TRANSPORTATION

Over the past few years, public transportation has become a more active part of Hartford's transportation system. Fixed-route services allow access to employment, commercial centers, and schools. Elderly and disabled transportation services give alternatives to people partially or wholly unable to drive on their own. For some of our citizens, public transportation remains their only available transportation option. The State of Vermont has extensively studied public transportation use, and all projections indicate those demand trends for the State and this region will continue to increase.

Everyone benefits from public transportation. Everyone at some time of their lives will be dependent on public transportation. Public transportation allows us to increase the capacity of our roads by reducing traffic congestion, giving additional options for bicyclists and pedestrians, and connecting residents to a greater network of bus, rail, and air transport.

Hartford has consistently supported public transportation through planning, participation on transit boards, and appropriating funds for fixed route services. To meet increasing demands, the Town should continue or raise this level of support.

The private sector, in partnership with the Town and public transportation agencies, also has an opportunity to support public transportation. On existing bus routes, commercial and large-scale residential development should be expected to provide the necessary public rights-of-way for bus pull-offs. These accommodations should be developed in coordination with the public transportation service providers. Conversely, the Town could encourage more intensive development patterns along public transportation routes through site planning and design criteria. Particularly important is that developments include pedestrian facilities that provide safe and efficient access to those bus stop locations/shelters.

The school system has an opportunity to expand public transportation use as well. An increase in public transportation would mitigate parking demands, reduce traffic congestion, and facilitate a safer walking and bicycling environment. Where possible, the Town should work with the school system to provide public transportation services for school and after-school related trips.

Hartford has a significant number of public transportation options: Advance Transit, Stagecoach Transportation Services, Bugbee Senior Center, Upper Valley Rideshare Program, Connecticut River Transit, Dartmouth Coach, Vermont Transportation Lines, and Taxi Service.

Advance Transit

Based at its headquarters at the Billings Commercial Park in Wilder, Advance Transit, Inc. (AT) is the principal provider of public transportation for the core of the Upper Valley. Serving White River Junction, Hartford Village, and Wilder, the system links Hartford residents with Hanover, Norwich, Lebanon, West Lebanon, Enfield, and Canaan. AT also provides linkages to the other transportation services coming from Randolph, Springfield, and St. Johnsbury. It has five fixed-routes of which the orange and green routes pass through Hartford. Contracted shuttle service is provided to Dartmouth College, Dartmouth Hitchcock Medical Center, and special events.

With financial assistance from Dartmouth College and Dartmouth Hitchcock Medical Center, AT created free fares system-wide in 2002. Between 2001 and 2006, system-wide, AT's fixed-route ridership increased by 103.6% from 173,656 boardings to 353,536 boardings. Growth experienced during the same period for the green and orange routes was 109 percent. In 2005, Advance Transit began a promotional campaign seeking donations to keep the system free. Table 1 shows this readership in Hartford.

Table VIII-1
Advance Transit Boardings in Hartford

	Green Route	Orange Route	Total	% Change from Previous Year
2001/2002	6,836	12,318	19,154	---
2002/2003	9,829	16,085	25,914	35.3%
2003/2004	12,819	17,882	30,701	18.5%
2004/2005	14,313	18,247	32,560	6.1%
2005/2006	18,372	21,634	40,006	22.9%

All AT buses are equipped with lifts for the handicapped. New requirements of the Americans with Disabilities Act (ADA) will result in complimentary paratransit service provided to ADA eligible riders with origins and destinations within 3/4 of a mile of a fixed route. Planning is currently underway for a scheduled 2007 implementation.

All buses in the AT system are equipped with bicycle racks year-round. This has created greater opportunities for multi-modal commuting.

AT has developed an extensive planning process that regularly conducts system improvement studies and passenger surveys. Such studies and surveys have led to schedule changes. The last system-wide study/survey was conducted by Tom Crikelair Associates in 2004. The survey found that 57% of AT riders had no car available. About 62% of those surveyed use the bus to commute to work. This means that, for many, AT provides the sole method for residents to access employment. Based on the survey, AT received high marks on quality of service questions. The survey also found that in addition to the green and orange routes that pass through Hartford, many Hartford residents use other AT routes: 19% of riders on the red route (Lebanon/West Lebanon), 6% of riders on the brown route (Norwich/Hanover), and 5% of riders on the blue route (Lebanon/Hanover).

AT is currently investigating the following system improvements:

- Adding an extra bus on the orange route (service from White River Junction to Hanover) to go from 1 hour to ½ hour service.
- Adding an extra bus on the red route (service to Downtown Lebanon and the West Lebanon Plazas) to go from 1 hour to ½ hour service.

- Adding service to Woodstock.

AT has obtained grant funds to purchase and install bus shelters at busy bus stop locations throughout the system. A bus shelter was installed on Hartford Avenue in Wilder in 2005. Other possible bus shelter locations are being considered. Where new development occurs on a bus route, bus pull-offs should be considered and coordinated with Advance Transit, the Department of Public Works and VTrans (if on a State Highway). In 2004, a bus pull-off was constructed on Route 5 as part of the Stony Creek Development.

Stagecoach Transportation Services

Stagecoach Transportation Services is a provider of public transportation in Windsor County and Orange County with its offices in Randolph. Stagecoach is a secondary transit provider to Hartford. It has a fleet of vans, small buses and taxis to provide transportation services to commuters, the elderly, disabled as well as Medicaid and social service recipients. Stagecoach offers fixed-route service for commuters on the 89er Route from Randolph to Lebanon, Hanover, and White River Junction, with stops at the VA Hospital; and the River Route from Wells River to Hanover and to White River Junction with stops at the VA Hospital and the Gilman Office Complex. Stagecoach also offers the West Lebanon Shopper Route every Saturday and second Friday from the Randolph area. In addition, Stagecoach provides rides to Randolph area senior centers and makes meal deliveries to seniors.

Bugbee Senior Center

The Bugbee Senior Center provides transportation services for residents age 60 and over for medical appointments, shopping trips, and transportation to the Senior Center. The fleet consists of one van. In 2005, the Center provided 12,000 rides supported by donations, state funding, their own funding, and volunteer resources.

Upper Valley Rideshare Program

The Upper Valley Rideshare Program is a free carpool matching service for anyone commuting in or from the Upper Valley region of Vermont and New Hampshire. The UV Rideshare Program operates from the Advance Transit office in Wilder, includes 115 communities, and is fully sponsored by the New Hampshire and Vermont Transportation Departments. The UV Rideshare Program averages over 1,000 active commuters. In September 2006, there were 64 Hartford residents registered for carpools and 88 commuters traveling to jobs in Hartford who are registered for carpools.

Connecticut River Transit

Connecticut River Transit is a provider of public transportation primarily serving Windham County and Southern Windsor County, with daily trips to White River Junction (VA Hospital), Hanover, and Lebanon. Its focus is on commuters and elderly and disabled transportation services.

Vermont Transit Lines

Vermont Transit Lines operates a regional bus terminal on Sykes Mountain Avenue in White River Junction. It provides direct bus service from White River Junction to major urban areas in Vermont, New Hampshire, New York, and Massachusetts. Vermont Transit's schedule is fully coordinated with its national Greyhound transit services and includes service to the Manchester and Logan Airports.

Dartmouth Coach

Dartmouth Coach is owned by Dartmouth Travel, a subsidiary of Concord Trailways. It provides daily service from Hanover to Logan Airport and South Station in Boston.

Taxi Service

There are three local taxi service operators serving Hartford: Big Yellow Taxi, P & P's Twin State Taxi, and Lebanon Livery Car Service. They provide fee-based transportation services on request.

AIR TRANSPORTATION

Although an airport once existed off Sykes Mountain Avenue, today there are no Hartford air transportation options. However, the Lebanon Regional Airport (LRA), located across the Connecticut River is the closest air facility to serve Hartford residents and economic interests. The LRA offers a limited array of passenger and freight services. It has been steadily expanding operations over the last twenty years, and projections indicate that the growth rate will continue. It is important that Hartford be a participant in regional planning efforts that seek to enhance the LRA facilities and/or expand passenger and freight services. While the airport itself falls within New Hampshire boundaries, air transportation users reside on both sides of the Connecticut River, so bi-state planning activities among the two states departments of transportation are important.

National and international air flights are available at Manchester, NH and Burlington, VT airports. In favorable driving conditions, these airports can be accessed within one and a half-hours. Both airports have been increasing their operations and have become the major northern New England air facilities for this region. Prior to much of this growth, residents were forced to access airports further away in Boston, MA, and Hartford, CT. Insofar as Town policies can influence these regional airports, Hartford should take a supportive position on proposals that increase their passenger and freight capacities.

RAIL TRANSPORTATION

The Town is uniquely located as a railroad hub offering connections north-south in the state and east-west through Vermont and New Hampshire, with two railroad lines running through the community. The rail lines are the Washington County Railroad Company Connecticut River Subdivision (WACR Connecticut River) line, which travels north to south, and the Northern New England Central Railroad (NNECR) line, which goes primarily northwest to southeast. WACR Connecticut River is owned by the State of Vermont and operated by a leaser that uses the rail line for freight services. NNECR is privately owned and supports freight and AMTRAK passenger

services. In freight service, the NNECR is one of the most active in the state in both frequency of trains traveling along the rail line and the tonnage of freight it moves. With AMTRAK service, the "Vermonter" runs two trains a day, seven days a week, with stops in White River Junction.

Over the last 10-15 years, rail has become a more active transportation mode for freight and passenger services throughout the Northern New England region. A local consequence is that the Town has seen greater activity along its rail lines. Over the last three years, the State of Vermont has significantly invested in rehabilitation of the ballast, rail ties, and other supporting rail infrastructure. The state has been sufficiently successful that, in certain areas, the traveling speeds for trains have been allowed to increase.

Hartford's downtown and surrounding areas could make increased rail service more feasible. Vermont's Rail Plan encourages the use of this valuable rail corridor, and the State Rail Program enables companies to access the rail line. While it is important to promote active use of the railroad for freight travel, this needs to be compatible with development in the surrounding neighborhood and commercial centers. The type of use, hours of operation, noise, and truck traffic are some of the issues that need to be addressed.

The State's rail and road bridges that cross the rail lines are in poor condition. Hartford's top three bridge project priorities are the reconstruction or replacement of the Gillette, Passumpsic, and Bridge Street bridges. Failure of these bridges will cutoff significant areas of the community from itself, hinder economic development, and restrict or discourage bicycle and pedestrian traffic. Although these projects have been identified by the State of Vermont, they remain in the design/permitting stage or are awaiting construction funding.

Beyond the bridges listed, there are other organizations working with New Hampshire and Vermont agencies to better utilize the Connecticut River NNECR rail bridge to encourage greater walking and bicycling between White River Junction to West Lebanon. Having bicycle and pedestrian access so close to White River Junction would be a significant benefit to the downtown area. This initiative has been expanded to include tourism-based passenger rail service between Downtown White River Junction and the Montshire Museum in Norwich.
A safety concern among Town residents is the number of illegal rail crossing paths and trails. This becomes an increasingly problematic issue as frequency of train crossings and train speeds increase. These crossings typically occur along sections of rail lines where train operators do not anticipate pedestrian and bicycle traffic. Whenever illegal rail-crossings are found, there should be an effort to curtail traffic at that location and provide an adequate crossing opportunity in the immediate area.

Another safety issue is at-grade road/driveway vehicle crossings of railroad tracks. Hartford has several public roads that cross railroad tracks, some of which have signals but not gates. "Four quadrant crossing gates" is the rail term for gates that are activated by sensors from an approaching train and are lowered to prevent vehicles from crossing the tracks until the train passes. Gates can effectively reduce the risk of accidents but are very expensive to install. Several legal private driveway crossings also exist in Hartford. These have no signals or gates and are a potential safety issue for unaware travelers.

Ensuring emergency access to areas of Town where there is a single access crossed by the railroad tracks has been a long term concern of the Town. One such area, the Latham Works/Nutt Lane residential neighborhood, is off South Main Street. Periodically, trains on the line and derailments could hinder emergency responders access to the neighborhood. The Town is in the process of completing a secondary emergency access through the rail yard that connects to Railroad Row near the train station.

ROADWAYS AND ECOLOGY

Transportation systems can create negative impacts on soil, water, and air quality and often contribute to the fragmentation of land tracts and wildlife habitats. For wildlife, bridges and culverts can discourage fish passage, roads can physically prevent the seasonal movement of amphibians, and traveling vehicles can dissuade or collide with our indigenous mega-fauna. For air quality, choices in fuel and fuel economy can result in significant changes in the production of greenhouse gases and federally regulated pollutants. And for water quality, failing culverts, deteriorating gravel roads, improper roadside ditching, and other insufficient stormwater mitigation techniques can allow the discharge of polluted sediment into our streams and rivers.

Hartford has started to define these transportation system impacts and develop mitigation strategies that minimize disturbances. Not all impacts can be controlled, but there are mitigation strategies the Town can implement. While adequate resources and sometimes differing philosophies present challenges for addressing these impacts, the Town should continue to pursue opportunities to advance the planning and construction of projects that preserve or enhance soil, water, and air quality. Culverts and bridge replacements appropriately designed to handle stormwater runoff, promote fish passage, and minimize the discharge of road sediment are a high priority. The Town will seek to implement on-site stormwater mitigation measures in road and bridge construction projects. The Town also will encourage the construction of transportation facilities that mitigate impacts to the surrounding environment.

The Vermont Agency of Transportation undertakes numerous transportation projects that require on-site and off-site environmental preservation. Often these projects occur in urban or suburban areas where the land is already developed. While these large-scale projects are unlikely to occur within Hartford, the Town should work to obtain these environmental mitigation funds, especially for culverts and bridges adjacent to our large preserved tracts of land.

The Town and the School District annually consume approximately 60,000 gallons of diesel fuel for equipment, town and emergency-management vehicles, and school buses. The use of diesel fuel releases significant amounts of pollutants into our air. In most instances, these particulates are quickly absorbed by the environment. The use of biodiesel blends that are partially derived from vegetable oils result in better air quality and often provide improved vehicle performance and efficiency. The Town is currently trying biodiesel blend options and is considering adopting the use of biodiesel for all municipal vehicles and related equipment.

RECOMMENDATIONS

Transportation Planning

1. Private developers are encouraged to collaborate with the appropriate planning committees in providing sufficient transportation information to facilitate development approvals.
2. The Town should continue to develop specific data and planning standards through the development review process.
3. The Town should continue providing educational opportunities to the volunteers serving on Planning and Community Development boards. Basic classes on traffic operations and management, as well as transportation topics in development review, should be held on an annual basis. Funds should also be set aside to support volunteers in attending statewide and national training courses.
4. The Town will conduct a transportation survey prior to the next update of the Town's transportation element and/or as part of developing a transportation plan.

Regional Transportation Planning

5. The Town Manager should formalize an annual staff meeting with Planning, Public Works, and Emergency Management Services to discuss citizen transportation issues and review all pending transportation projects in progress. The coordination meeting would also prioritize and coordinate all new project suggestions and set goals for grant development.

Project Development

6. Hartford, using its staff and elected officials, should remain actively engaged in the Two Rivers-Ottauquechee Regional Commission transportation planning initiative and should clearly and actively advocate for the interests of its citizens and the TRORC region.
7. Continue to be a strong advocate for the timely construction of all our State transportation projects. The Town Manager should continue to maintain a project priority listing and use all available government channels to communicate those priorities.
8. Continue to be persistent in pursuing transportation grant funds. Hartford should prioritize its grant projects with the Town Manager and plan for the ongoing development of solid, well-supported grant applications.
9. On state and federally funded projects, Hartford will exercise every opportunity to take over project management and development tasks to ensure that Town projects are completed in a timely and efficient manner.
10. On large-scale residential and commercial development projects, the Town will consider development impact costs when feasible and appropriate. Compensation can be exacted to mitigate transportation system impacts that are caused by development.

Upper Valley Transportation Management Association

11. Hartford should support the Upper Valley Transportation Management Association and should utilize this forum for advancing Hartford's local and regional interests.

Traffic Data

12. The Public Works Department, working with the Two Rivers-Ottauquechee Regional Commission, will implement a townwide traffic count program.
13. The Town should work with the Regional Commission and developers to compile a database of level of service data for all major arterials and intersections.
14. Large-scale residential and commercial development should include a level of service analysis for all roads and intersections that are proposed to be impacted. At a minimum, all development proposals should include traffic statistics referenced to national transportation standards (ITE Trip Generation), which then may be augmented with their own data-collection efforts.

Local Road Surface Condition

15. Continue to inventory transportation conditions and maintain a ten-year capital program. Utilize regional and state resources for technical and funding assistance.
16. Maintain 75% of local roads to a standard of good or better.
17. Maintain the policies and practices of proactive road maintenance and construction in transportation budgets and policies.

Local Road Deficiencies

18. Address local road and intersection deficiencies.

State-Controlled Access

19. Advocate to the State Agency of Transportation to construct or resurface the Town's state-controlled roadways.

Local Gravel Roads

20. Maintain gravel roads in their present condition unless daily traffic volumes warrant reconstruction and paving or if paving is justified for other reasons, such as public safety.
21. Consider traffic capacities when reviewing and approving development that plans to use gravel roads for access.

Class IV Roads

22. Secure Town and state funding to better research and map all Class IV roads. Use that process to devise a more formal Class IV road policy.
23. Amend existing Town policy and ordinance language to be in compliance with the Town Plan's Class IV road guidance.
24. Work with Town staff and abutting property owners to consider reclassifying some Class IV roads as trails.

25. All Class IV roadways abutting low density development districts do not have to be upgraded by private landowners beyond what is essential to maintain access to their property. Consider modifying zoning, subdivision, and highway standards to fit these Town Plan standards.
26. Hartford should not "throw-up" any Class IV roads where the public use will be forever abandoned.

Development Review Road Standards

27. Update the Highway Rules and Regulations to reflect transportation element goals and to meet new state and federal mandates.
28. Provide active design review and construction oversight by staff and outside consultants to protect the public's interest.
29. Create a driveway and private drive standard.

Access Management

30. Ensure the Vermont Agency of Transportation works with the Town in their access permit process. Revise all planning and Public Works permit procedures to ensure that the State has been consulted or has permitted access prior to initiating any Town decision. Increase minimum lot frontage standards for properties adjacent to US Route 4.
31. Continue to implement access-management standards along our local highways, using the Town's driveway access ordinance. Update the ordinance to better reflect contemporary standards in access management.
32. Amend zoning and subdivision regulations to better promote access management.
33. Develop multimodal connections to the street system within and between new developments. Use built roads, sidewalks, deeded rights-of-way, and other planning tools to develop transportation connections.

Bridges and Culverts

34. Continue to inventory culverts and maintain a culvert replacement schedule within the capital program. Utilize regional and state resources for technical and funding assistance.
35. Continue the Town's policy of replacing all culverts in poor condition and in advance of paving work.
36. Develop new bridge and culvert regulations to meet the standards set forth in this Town Plan and accommodate the more recent transportation and flood requirements.

Bicycle Transportation

37. Require that commercial and residential development accommodate bicyclists.
38. Require public and private development to accommodate bicyclists in the identified bicycle zones.

39. Develop a Bicycle and Pedestrian Plan.
40. Participate in the Safe Routes to School Program and actively educate parents and children on the benefits of bicycling and walking.

Pedestrian Transportation

41. Make development decisions to facilitate and encourage pedestrian travel. Require that all commercial development and major subdivisions accommodate pedestrians. Incorporate pedestrian-friendly designs and amenities in all new development. Provide those facilities solely for the use of pedestrians and wheelchairs.
42. Require public and private development to accommodate bicyclists in the identified pedestrian zones. When economically feasible, accommodate pedestrians in all new construction or major reconstruction of roads and highways.
43. Actively propose pedestrian facility projects under the State's Transportation Enhancement Program and the Bicycle/Pedestrian Program.
44. Work with State highway officials to address the deficiency of bicycling infrastructure along the Town's two most critical regional links, US Route 4 and US Route 5.
45. Conduct an inventory of existing sidewalks and create a prioritized capital program.
46. Continue to inventory and assess pedestrian facilities like the road system and incorporate projects into the existing capital program.
47. Proactively design and engineer pedestrian facilities so plans are "on the shelf" should construction funds become available.
48. Annually set aside transportation funds so that there is a source of available funding to leverage against state grants or private investments.
49. Continue the process of referencing State of Vermont design standards as needed and also adapt pedestrian facility design with traffic calming and landscaping improvements.

Traffic Calming

50. Develop a Hartford local roads traffic-calming policy. Work with the State to implement traffic-calming elements in all transportation projects using their own traffic-calming guidelines policy.
51. Require that all subdivision and condominium developments include traffic-calming planning in their traffic circulation plans.
52. Educate Town staff, boards and civic groups on traffic-calming techniques.

Parking

53. Support construction of a redesigned municipal parking lot behind the Legion Hall.
54. Support flexibility in the Town Zoning Regulations to address parking space requirements. Encourage development to utilize public parking resources, shared parking opportunities, and offset parking space requirements with accessibility improvements for public transit,

bicyclists, and pedestrians. To prevent an oversupply of parking, set space requirements to meet the needs for the majority of users.

55. Support flexibility in the Town Zoning Regulations for parking space design and sizing. A compact design can allow for more spaces within a smaller parking lot footprint. Developments that have paved parking lots for typical capacity rates should create "green" lots for peak seasonal usage.

56. Continue to monitor municipal parking usage in Downtown White River Junction and plan for future parking facilities.

57. Establish a municipal parking fund to be paid by developers who credit municipal parking toward meeting their parking requirements.

58. Create a parking district to maintain public parking through general fund types.

Park and Ride Facilities

59. Working with the State Agency of Transportation, pursue locating park and ride facilities along each interstate exit. Prioritize park and ride investments in locations that would best serve public transit needs.

Public Transportation

60. Continue to financially contribute to public transportation provider operations.

61. Work with commercial and large-scale residential developers to accommodate public transportation. Ensure that these accommodations occur with adequate consultation from our regional public transportation providers.

62. Encourage the coordination for Hartford transit connections among the many different transportation service providers.

63. Pursue the construction of bus pull-offs and bus shelters at busy bus stop locations. Work to include transit maps and information at each bus stop.

Air Transportation

64. Actively promote bi-state planning activities among the two state Department of Transportation offices because while the airport itself falls within New Hampshire boundaries, air transportation users reside on both sides of the Connecticut River.

Rail Transportation

65. Support AMTRAK passenger services and encourage a fuller integration of passenger rail with other transportation modes and related infrastructure.

66. Continue to encourage the State to replace road and rail bridges along the rail line for double-stacking clearance and to open travel ways for multimodal traffic.

67. Where applicable, support land use regulations and policies to better promote rail-related freight and passenger services, preserve rail public rights-of-way, and reduce at-grade railroad crossings.

68. Actively support rail-based tourism and guide adjacent land development to preserve and enhance scenic and natural resources.
69. Encourage the State and railroad companies to fence areas along the railroad that have illegal access.
70. Encourage the State and railroad companies to install four-quadrant crossing gates at railroad crossings of public roads and post signs at private driveway crossings.
71. Consider establishing rail with trail facilities along rail lines to accommodate pedestrians and bicyclists where they continue to cross and/or travel.
72. Continue to work with the State and railroad companies to develop a parking area on Railroad Row.

Roadways and Ecology

73. Continue the use of bio-diesel blends for Town and school vehicles.
74. Pursue Better Backroads and state mitigation grants and funding to address roadside erosion problems and improve bridges and culverts.

CHAPTER IX

NATURAL RESOURCES

INTRODUCTION

One of the Town of Hartford's greatest assets is the abundance and quality of its existing natural resources. Although Hartford has grown to a population exceeding 10,000, the Town has retained much of its rural character and scenic beauty. An understanding of the Town's natural resources is basic to the formulation of a plan to guide Hartford's future growth and development. Natural resources provide opportunities and constraints to development and must be carefully evaluated to ensure resource protection. This chapter defines the unique blend of natural resources that have helped shape Hartford's character, recognizing the threats to those resources, and identifies strategies for their protection. As growth pressures continue, careful planning and a vision for a well-balanced town will ensure that Hartford can grow while simultaneously preserving our precious natural resources and quality of life.

RESULTS FROM THE MASTER PLAN COMMUNITY MEETINGS

During the fall of 2002, the Town undertook a series of community meetings to solicit input from the public regarding the update of the Town Master Plan. The meetings were well-attended. All of the meetings similarly concluded that:

Hartford has many resources that need to be preserved. Participants identified rivers (i.e. White, Ottauquechee, Connecticut) and access to them as some of the Town's most important resources. Agriculture and open lands are also very important resources that distinguish the character of Hartford. In order to help preserve the Town's rivers and other significant resources, several strategies were identified, such as the revision of the zoning regulations to include ridgeline and hillside development regulations and agricultural overlay districts. Key to this endeavor involves the identification, mapping and prioritization of Hartford's significant resources. Once completed, these documents should be readily available to developers, landowners, homeowners, and residents to help guide them with their land-planning decision making.

The following is a list of the top three issues identified by community meeting participants.

- Hartford's most important resources include surface waters (i.e. rivers and streams), ridgelines/hillsides, farmlands, forest/woodlands, villages, Town parks, meadows, air quality, and Route 5 South farmland.
- Identify and designate areas for potential conservation purposes.
- Consistent implementation of strategies/policies is desirable.

SETTING

Like many Vermont communities, Hartford has a diverse landscape: three major rivers, fairly narrow river valleys with hillsides rising above with a mixture of farmland and forests. Scenic views abound. Hartford is home of one of Vermont's most scenic and highly visited natural attractions, Quechee Gorge, a 165-foot canyon of the Ottauquechee River. Elevations in Town range from approximately 340' along the Connecticut River at the Hartland town line to approximately 1,575' along the Pomfret town line west of Old Town Farm Road in Quechee. Historically, natural resources have had a significant influence in the initial settlement and later development of Hartford. Initially settled by farmers, all five villages were established along one of the three rivers. Besides serving as transportation corridors, the rivers served as a source of hydropower to support the development of mills and factories in Hartford Village, Wilder, and Quechee. Today, hydropower exists on the Connecticut and Ottauquechee Rivers, but the mills and factories no longer exist. The rivers now play a role in the recreation and tourism industry.

CLIMATE

Situated in the east central part of the state along the Connecticut River valley, Hartford has a gentler climate than many of the higher elevation or more northerly areas of Vermont that experience colder temperatures and greater snowfall. The closest weather station to Hartford is the Lebanon Municipal Airport (LMA), located less than a mile from the town line at an elevation of 562'. Based on data collected at the LMA from the 1960-1990, the average annual temperature was 44.3F degrees. January is the coldest month, with an average daily high of 28F degrees and an average daily low of 5.7F degrees. July is the warmest month of the year, with an average daily high of 81.2F degrees and an average daily low of 56.8F.

Average annual precipitation is 35.57 inches. May (3.44 inches) and November (3.4 inches) are the wettest months of the year, while February (2.13 inches) is the driest month. Average annual snowfall is 76.3 inches. January is the snowiest month, with an average of 18.3 inches of snowfall followed by February (17.8 inches) and December (17.7 inches). Regarding the plant hardiness zone, Hartford is located in zone 4, having an average annual minimum temperature of –20F degrees to –30F degrees.

TABLE IX-1
LEBANON NH AIRPORT WEATHER DATA BASED ON FAA OBSERVATIONS 1961-1990

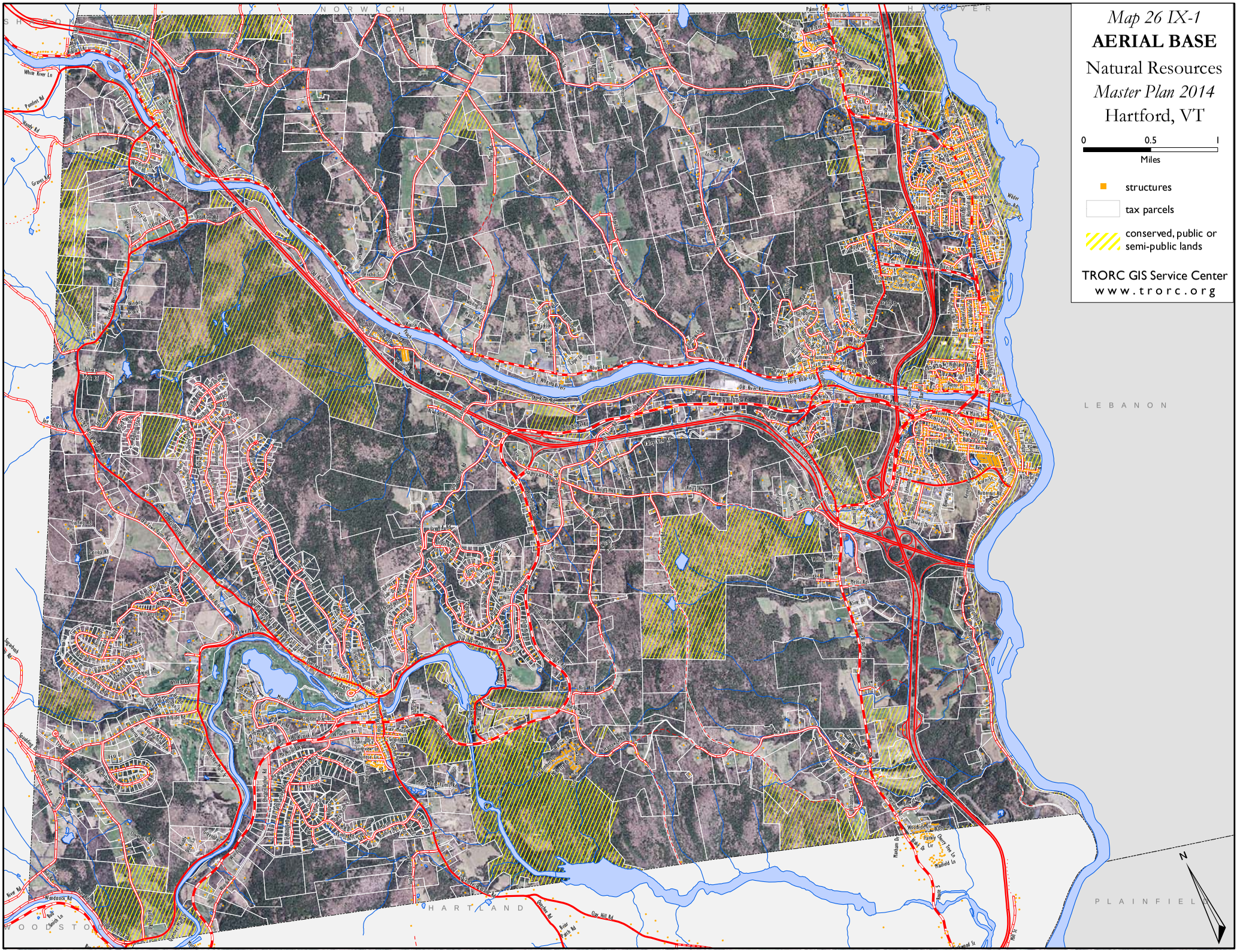
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Temperature													
Daily Maximum Temp	28.0	31.6	41.7	54.4	67.6	76.3	81.2	78.5	69.9	58.5	44.8	31.8	55.4
Daily Minimum Temp	5.7	8.4	20.8	31.6	42.3	51.7	56.8	55.3	47.2	36.4	28.1	13.8	33.2
Monthly	16.9	20.1	31.2	43.0	55.0	64.0	69.0	66.9	58.6	47.5	36.5	22.8	44.3
Degree Days													
Heating (base 65F)	1491	1257	1048	660	321	73	16	47	206	543	855	1308	7825
Cooling (base 65F)	0	0	0	0	11	43	140	105	14	0	0	0	313
Precipitation													
Snowfall	18.3	17.8	13.2	3.6	0.1	0	0	0	0	0.3	5.3	17.7	76.3
Water Equivalent	2.48	2.13	2.40	2.71	3.44	3.00	3.11	3.56	3.18	3.18	3.40	2.98	35.57

Source: NOAA/NCDC Publication Climatology of the U.S. #84, NOAA/NCDC Publication Climatology of the U.S. #20

AIR QUALITY

Air quality is an important feature in our overall quality of life. Clean air contributes to our health and to clear skies and extended views. In the Town's earlier days, Hartford was a bustling railroad town with mills and factories operating on the banks of the Town's three major rivers. There is no doubt that these industries had an affect on air quality. Today, Hartford does not have any heavy industry, and the state and the region have good air quality. The Federal Clean Air Act (1970) provides maximum allowable concentrations for air pollution. The State of Vermont is classified as an attainment area (in compliance) with the Clean Air Act standards. Due to the requirements of the Federal Clean Air Act Amendments of 1990, Vermont adopted a revised air pollution control strategy in 1993. The focus of the State Implementation Plan is to maintain air-quality at or above national air-quality standards.

Clean air is a quality that should not be taken for granted. While the Town, State, and the region currently experience good air quality, it is likely that as the region continues to grow, there is likely to be an impact on air-quality. Many air-quality problems must be dealt with at the national and international level. However, there are local sources of air pollution that should be monitored by the Town and the State. They include emissions from truck and automobile traffic, wood stoves, backyard burning, and dust from construction and excavation sites.


NORWICH
HANOVER
SHERBURNE
LEBANON
HARTLAND
WOODSTOCK
PLAINFIELD
Map 26 IX-1
AERIAL BASE
Natural Resources
Master Plan 2014
Hartford, VT
0
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Miles
structures
tax parcels
conserved, public or semi-public lands
TRORC GIS Service Center
www.trorc.org
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GEOGRAPHIC FEATURES

Geology

The rock that underlies much of Hartford is a schist of the Waits River formation, created roughly 330 million years ago during the most recent collision of North America with Africa. As the continents came together, fine-grained sand and mud from the ocean floor were trapped, pressurized, and cooked into stone by the collision. Geologists know that these particular sands and muds were sitting on the outer edge of the underwater continental shelf, where the shallow shelf ends and starts to plunge into the deepest ocean depths, because underwater landslides pulled calcium-rich material from the shallow shelf and deposited it amidst the calcium-poor sediments of the deeper ocean. This has led to the great range of soil types found among Waits River schists today: where the calcium-rich material was turned into stone, the soils today are prime farmlands; where the calcium-poor material was turned into stone, the soils today are relatively infertile and less suitable for agriculture.

Though Hartford does not have any deposits of economically significant ores or minerals, the Town does have significant sand and gravel deposits that were laid down at the end of the last ice age, roughly 12,000 years ago. These deposits correspond in general with the river-bottom lands where eskers, kame terraces, and alluvial deposits denote both the end of the glacial period and the extensive flooding of the immediate post-glacial period.

Soils

The physical and chemical components of soil influence the suitability of land for various land uses. The U.S. Department of Interior Natural Resources Conservation Service has produced the *Interim Soil Survey Report for Windsor County*, 1997. The report is an excellent source of information that includes soil-survey maps showing the different soil classifications for each Town as well as a soil interpretation sheet for each soil type. The sheet describes the soils suitability for certain uses, such as farming, forestry, construction of buildings and roads, and on-site sewage suitability based on characteristics such as slope, texture, permeability, depth to groundwater, depth to bedrock, etc. Soil maps for Hartford and Windsor County were updated in 1998 and have been digitized for GIS mapping. According to the Natural Resources Conservation Service, there are four general soil associations in Hartford. They are:

- Windsor-Hitchcock-Agawam: Accounting for nearly 28% of the soils in Hartford, these are soils that formed in water-deposited materials on flood plains, terraces and old lake plains along rivers and brooks. In Hartford, these soils are found along the Connecticut, White, and Ottauquechee Rivers, extending above the valley floor and incorporating portions of nearby hillsides. These soils are very deep, include areas nearly level to steep, are well drained to excessively drained and have sandy, gravelly, and silty textures. Some areas are subject to flooding.
- Buckland-Shelburne-Cabot: Accounting for 17% of the soils in Hartford, these soils were formed in glacial till. In Hartford, these soils are found in several concentrations in upland areas of Quechee along Route 4 and Hillside Road, the Center of Town area, and along Jericho Street, Dothan Road, and Jericho Road. These soils are very deep, nearly level to

steep, poorly drained to well-drained. They are loamy soils with dense glacial till within three feet. Most areas have a high water-table limitation.

- Vershire-Glover-Dummerston: Accounting for nearly 55% of the soils in Hartford, these soils were formed in glacial till in upland areas. Comprising more than half of the soils in Hartford, these soils are found in most of the higher elevation areas of Town and extend down many hillsides. These soils are shallow to very deep, gently sloping to steep, well drained to somewhat excessively drained soils with loamy textures. Most areas have a shallow depth to bedrock limitation, with bedrock at less than 40 inches.
- Wet Organic Soils: Accounting for only .5% of the soils in Hartford, these are wetland soils that are very deep, nearly level, very poorly drained soils formed in organic material scattered throughout Town. Please note that this soil does not include all of the wetland soils in Hartford.

Septic-System Suitability

Except for the four villages that are served by Town sewer, the vast majority of land in Hartford relies on-site septic systems. Soils play an important role in determining the capability of an area to accommodate septic systems. The Natural Resources Conservation Service has evaluated predominant soil types found in Vermont and placed them into five categories corresponding to their suitability for on-site disposal.

1. Well Suited: This rating indicates that soils properties and site features that are well suited for on-site waste disposal systems with expected good performance and low maintenance.
2. Moderately Suited: This rating indicates that soil properties and site features are moderately suited for on-site waste disposal systems. One or more soil properties or site features make the soil less desirable than the soils rated well suited.
3. Marginally Suited: This rating indicates that one or more soil properties or site features are marginally suited for on-site waste disposal systems and overcoming those limitations requires special design, extra maintenance, or costly alteration.
4. Not Suited: This rating indicates that these soil map units are not suited for on-site waste disposal systems since the soils are generally too wet, rocky or steep, or otherwise unsuitable.
5. Not Rated: This rating indicates that the map unit is not rated. This group is composed of miscellaneous map units that been filled, excavated, regraded, or otherwise disturbed by human activities. They have a wide range of soil properties and require on-site investigations to determine their suitability for most uses, including on-site waste disposal. Also included in this category are areas mapped as water.

A substantial portion of the Town is comprised of soils that are marginally suited for septic systems, while several areas have soils that are not suited for septic systems.

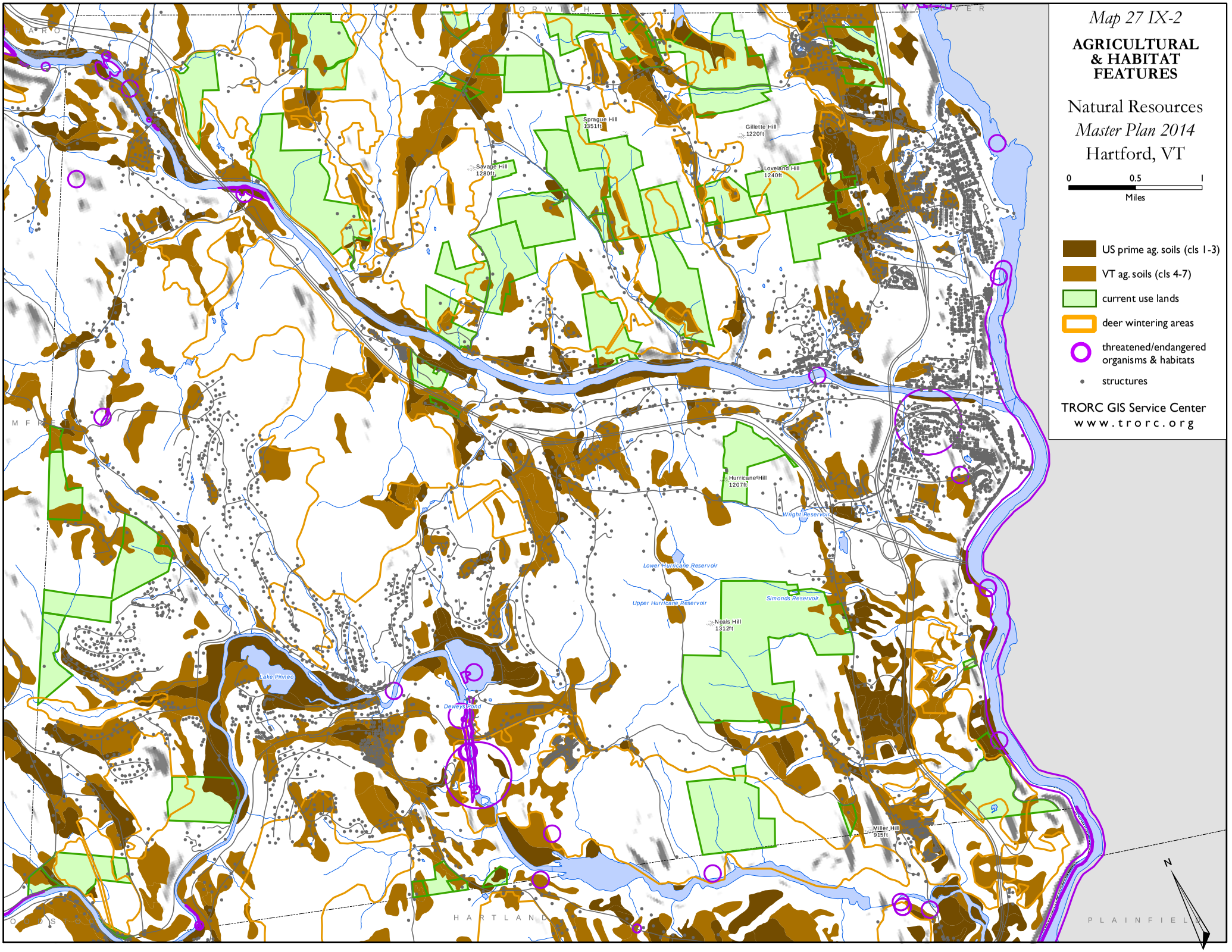
The Town of Hartford does not regulate septic systems. However, a state permit is required for all new, repaired, or expanded systems. Prior to 2002, 10-acre lots were exempted from the State

septic regulations. Possibly related to that exemption, a sizeable number of lots larger than 10 acres were created in Hartford over the previous twenty years.

Agricultural Soils

The Natural Resources Conservation Service has developed a system of evaluating the most productive agricultural soils in the nation and throughout each state. Soils best suited farming are classified as prime agricultural soils and statewide agricultural soils. Soils in the prime category are the highest level of agricultural soils and have the greatest productivity potential and the fewest limitations for farming. Prime agricultural soils in Vermont are a valuable resource and rate as high as prime agricultural soils in the farmbelt states. Soils of statewide significance are the next highest category. Soils of statewide significance are similar to prime agricultural (nationally significant) soils but because of slope or other mitigating factors may not be as productive as prime agricultural soils. Contiguous parcels of both soil categories are often essential to produce a tract of suitable size to be economically cultivated.

According to the Natural Resources Conservation Service, in Hartford, there are 175 acres of prime agricultural soils and 352 acres of statewide agricultural soils. Both prime and statewide agricultural soils have been designated as a state resource for Act 250 purposes. It should be noted that the same conditions that are well-suited for farming, such as level terrain, deep topsoil, no bedrock, and good drainage also are ideal for development. A discussion of agricultural lands follows later in this chapter.


Map 27 IX-2
AGRICULTURAL & HABITAT FEATURES
Natural Resources
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
US prime ag. soils (cls 1-3)
VT ag. soils (cls 4-7)
current use lands
deer wintering areas
threatened/endangered organisms & habitats
structures
TRORC GIS Service Center
www.trorc.org
Sprague Hill 1351ft
Gillette Hill 1220ft
Savage Hill 1280ft
Loveland Hill 1240ft
Hurricane Hill 1207ft
Wright Reservoir
Lower Hurricane Reservoir
Upper Hurricane Reservoir
Simonds Reservoir
Neals Hill 1312ft
Lake Pinneo
Deweys Pond
Miller Hill 915ft
HARTLAND
PLAINFIELD
N

EARTH RESOURCES

Typically, soils near rivers are good sources for sand and gravel extraction. With three major rivers in Town, Hartford has excellent sand and gravel deposits. According to the Natural Resources Conservation Service, almost 19% of the soils in Hartford are suitable for commercial sand and gravel extraction. Sand and gravel is not a renewable resource. Once they are built on, for the most part, they become unavailable for future extraction.

Land development activity in Windsor County and surrounding areas over the last three decades has increased the need for sand and gravel resources for road construction, building foundations, septic systems, and driveways, as well as road maintenance. The use of local sand and gravel significantly reduces the cost of construction materials as well as being economically important to the Town and the region. However, sand and gravel operations pose the risk of adverse social and environmental impacts on the community. Of particular concern are the following issues:

1. Degradation of surface and groundwater quality through site erosion and discharges of contaminants into exposed surface areas;
2. Destruction of important wildlife habitat;
3. Deterioration of scenic beauty;
4. Localized air and noise pollution;
5. Property devaluation;
6. Structural deterioration of the Town's local roads and bridges (and the associated cost of repairs) through repeated transporting of heavy loads of sand and gravel;
7. Traffic and pedestrian hazards caused by increased truck traffic on both minor and major local roads, residential and downtown areas; and
8. Lack of adequate enforcement by the State to ensure compliance with State permit requirements.

As development pressures continue within the region, the demand for sand and gravel will continue. Many of the impacts of sand and gravel extraction can be avoided or mitigated through careful site planning, operation, and reclamation. Clearly, the Town must work closely with sand and gravel operators to ensure that the resource can be developed while protecting a healthy natural and social environment.

Hillsides and Ridges

Hartford has several ridges throughout Town that rise above 1,000' in elevation. The largest is centered in Jericho and extends west toward West Hartford, north into Norwich, and east toward Wilder and includes the named hills of Savage Hill, Sprague Hill, Gillette Hill, and Loveland Hill. The highest point on the Jericho ridge is an unnamed hill with an elevation of 1,351' east of the junction of Jericho Road and Jericho Street. The second largest area above 1,000' in elevation is centered in the Hurricane Town Forest and extends south beyond Neal Road into Hartland, west

beyond Bliss Road, and north beyond Kings Highway. The highest point is Neal's Hill at 1,312.' The area also includes Hurricane Hill and the Beacon. There are three areas above 1,000' in elevation in the Quechee area. The largest one spans either side of the high point of the Quechee/West Hartford Road. The west side includes the highest point in Town (approximately 1,575') that extends west into Pomfret. The east side rises to an elevation of approximately 1,300' west of Willard Road. The other Quechee areas above 1,000' in elevation are the Hillside Road/Fairbanks Turn area (high point of Fairbanks Turn 1,180') and the Marsh Family Road area (Dupuis Hill 1,162') that extends south into Hartland. West Hartford also has a few small areas above 1,000' in elevation on both sides of the Quechee/West Hartford Road.

TABLE IX-2

Hartford's High Elevation Areas/Hills

Name	Elevation	Location
Unnamed Ridge	1,575'	West of Old Town Farm Road, Quechee
Unnamed Hill	1,441'	West of Old Town Farm Road, Quechee
Unnamed Hill	1,351'	East of the junction of Jericho Road/Jericho St., Rural North
Neals Hill	1,312'	East of Reservoir Road, Rural South
Unnamed Hill	*1,300'	West of Willard Road, Quechee
Savage Hill	*1,280'	Between Jericho Street & Miller Road, Rural North
Beacon	1,271'	East of Reservoir Road, Rural South
Loveland Hill	*1,240'	East of Dothan Road, Rural North
Gillette Hill	*1,220'	East of Dothan Road, Rural North
Sprague Hill	*1,220'	Between Jericho Road & Dothan Road, Rural North
Unnamed Hill	*1,220'	North of Wallace Road, Rural North
Hurricane Hill	1,207'	North of Kings Highway, Rural South
Unnamed Hill	1,203'	East of Wildlife Road, Rural North
Unnamed Hill	1,202'	West of Marsh Family Road, Quechee
Unnamed Hill	*1,180'	High point of Fairbanks Turn, Quechee
Dupuis Hill	1,162'	East of Marsh Family Road, Quechee
Newton Hill	1,162'	East of Willard Road, Quechee
Unnamed Hill	1,162'	East of Newton Lane, Rural North

*Indicates approximate elevation based on USGS Maps of Hartford

All in all, more than 50% of the town is characterized by hillside slopes of 15% or greater, with many areas exceeding 25% (see Map IX-3 Slopes). The U.S. Natural Resources Conservation Service has identified slope categories and developed limitations associated with each category. Their findings are listed in Table IX-3 below. Generally, extreme slopes, those in excess of 25%, should not be developed, and any land disturbances in these areas for agriculture, forestry, or ski area activities should be conducted with careful attention to erosion control and stormwater management practices. Development on severe slopes, those from 15-25%, should also be discouraged or be very limited. The development permit and/or subdivision approval for construction on severe slopes should require measures that minimize the disturbance of existing vegetation, control erosion, stabilize the slope, and protect down slope areas from stormwater runoff.

Today, Hartford's forested hillsides and ridgelines are largely undeveloped and are important assets. They define our Village Centers, bestow scenic vistas, provide open space, and play an important role in maintaining Hartford's rural character. Besides their aesthetic appeal, these forested areas also provide high-quality water, oxygen, wildlife habitat, and recreational opportunities. Typically, these areas have had limited development potential due to their rugged character, shallow soils, and limited accessibility. In recent years however, the Town has experienced considerable development on hillsides, which have had an impact on these features and have raised citizen concern for their protection.

Steep slopes pose several land use and development challenges. They are very susceptible to erosion and high rates of runoff, particularly when cleared for roads, construction, agriculture, or forestry. Consequences of erosion include soil loss resulting in sedimentation of surface waters that negatively impact water quality and wildlife habitat. In addition to the physical constraints, development on steep slopes permanently alters the nature of the Town. Such development, especially at higher elevations, tends to stand out from many vantage points, adversely impacting the Town's scenic landscape. Special measures may be required if limited development is approved in these areas, including the careful siting of structures, lighting restrictions, and screening and landscaping requirements.

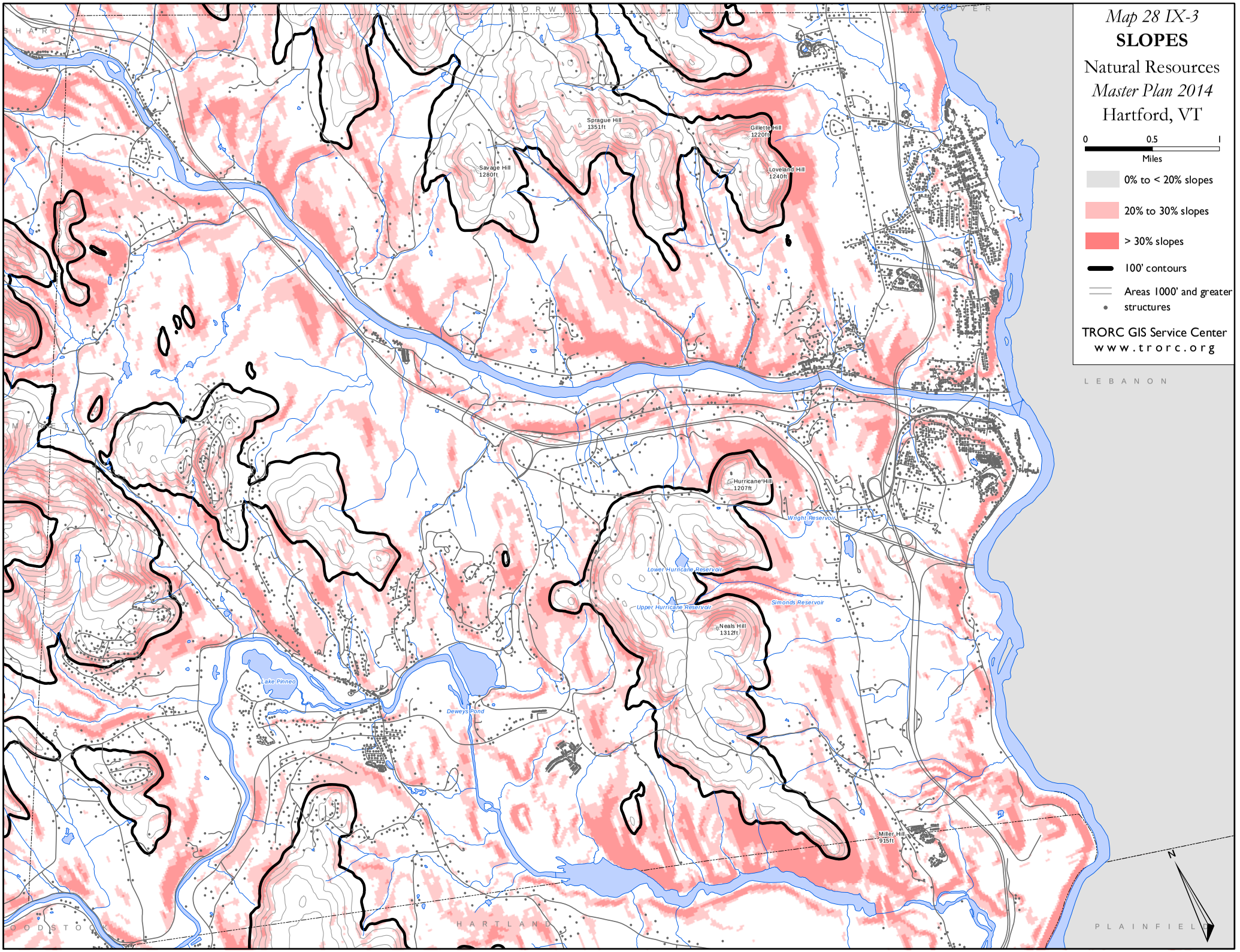

Map 28 IX-3
SLOPES
Natural Resources
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
0% to < 20% slopes
20% to 30% slopes
> 30% slopes
100' contours
Areas 1000' and greater
structures
TRORC GIS Service Center
www.trorc.org
SHARON
WINDSOR
HARTFORD
LEBANON
PLAINFIELD
HARTLAND
Sprague Hill
1351ft
Gillette Hill
1220ft
Savage Hill
1280ft
Loveland Hill
1240ft
Hurricane Hill
1207ft
Wright Reservoir
Lower Hurricane Reservoir
Upper Hurricane Reservoir
Simonds Reservoir
Neals Hill
1312ft
Lake Pinneo
Deweys Pond
Miller Hill
915ft
N

Table IX-3
Development Constraints Associated with Steep Slopes

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

Source: U.S. Natural Resources Conservation Service

WATER RESOURCES

Water Bodies

Water bodies are lakes and ponds and other natural or manmade impoundments containing permanent standing water with depths exceeding two meters. They provide flood-storage capacity, wildlife habitat, and recreational and scenic value. Water bodies in Hartford are completely or partially manmade and generally used for recreation. These include Lake Pinneo, Dewey's Pond, Upper and Lower Hurricane Reservoirs, Wright Reservoir, Simonds Reservoir, and a small portion of North Hartland Reservoir. Although they are known habitats for salamanders and other aquatic organisms, the Hurricane Reservoirs are currently drained to an extremely low level due to the age and poor condition of the dam structures. Their value as aquatic habitat, as well as their aesthetic value, will depend on future commitments to repair and maintain the dams.

Watercourses

Watercourses are surface conduits that feed or drain water resources and include rivers, streams, brooks, or drainage swales. Hartford is located in the Connecticut River watershed and specifically contains within its boundaries portions of the White River Watershed and the Ottauquechee River watershed. The streams that make up these waterways are important as wildlife habitat, drainage, groundwater recharge, and recreational activities. Riverine corridors provide important habitat for mammals including fox, otter, mink, beaver, deer, moose and for waterfowl, migratory songbirds,

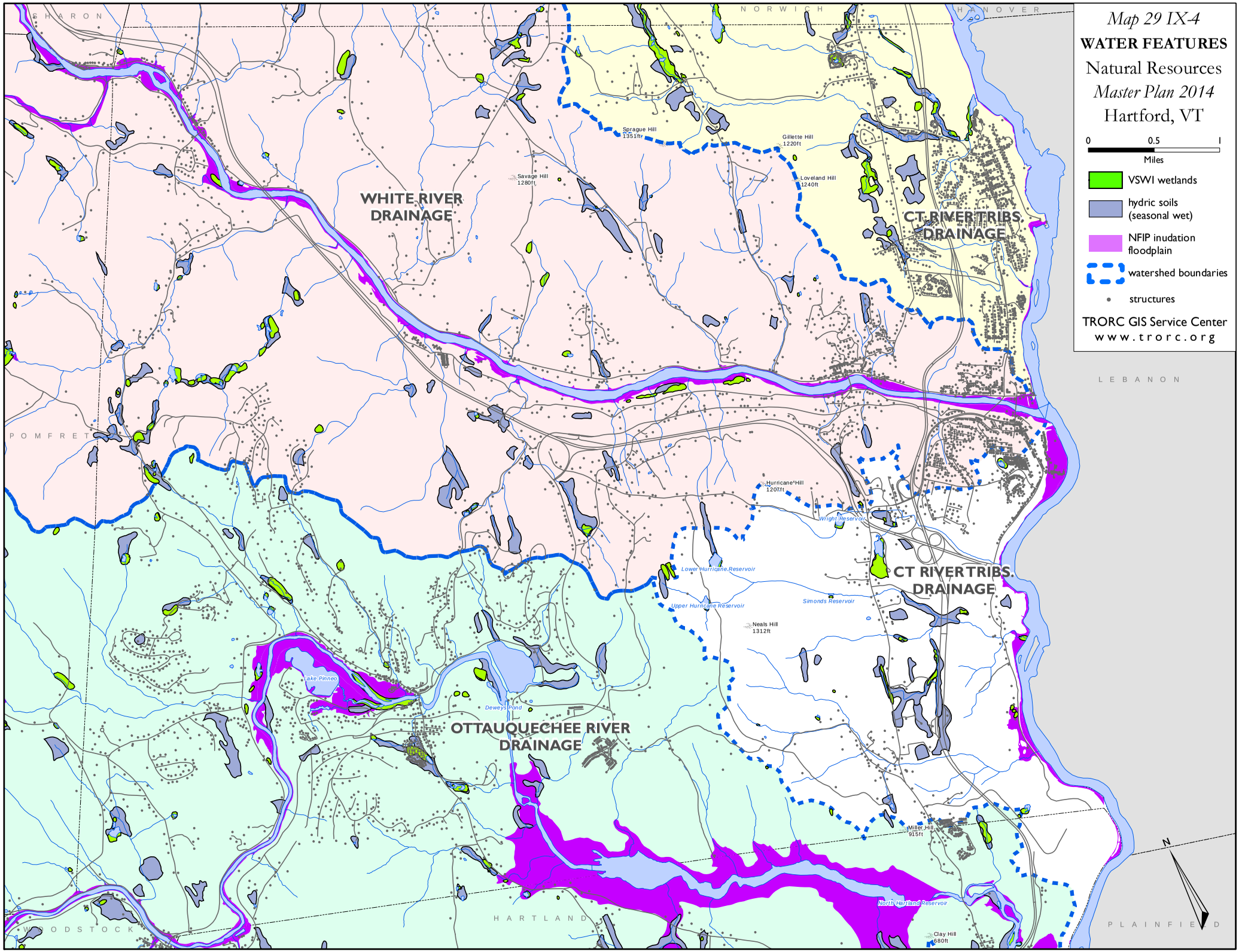
and predatory birds such as osprey and eagles. The natural condition of the river shorelines is forested, which helps to keep temperatures cool in the summer and also reduces stream-bank erosion.

In most cases, major roads have been built adjacent to extensive segments of these rivers, and therefore, they are extremely susceptible to contamination from sedimentation, petroleum in runoff, salt, and other chemicals. Other threats to Town streams and rivers include pollution from failing septic systems and domestic animal waste. In addition, loss of riparian vegetation along these watercourses due to development and agriculture also threaten the resident aquatic life as well as the shoreline itself. Development of Shoreline Protection Regulations to encourage maintenance of riparian buffers and minimize removal of streamside vegetation should be adopted.

Wetlands and Vernal Pools

Wetlands are those areas that are sufficiently saturated or flooded during the growing season to support water-loving plants, to allow for the development of hydric soils, and to support aquatic life that is dependent of flooded, saturated, or seasonally saturated soil conditions. They include marshes, forested shrub swamps, bogs, fens, vegetated river channel, lake shores, ponds and pond shores, and vernal pools. Wetlands are important natural communities not only to the resident wildlife and plants but also to the general public for the functions and values they provide, which include erosion control; water purification; fisheries habitat; wildlife habitat; rare natural community types; habitat for rare, threatened and endangered species; opportunities for education, research, and recreation; and maintenance of open space. Animal species dependent on wetlands for their habitat include many avian species (ducks, geese, rail, herons, shorebirds, songbirds, birds of prey); mammals, such as muskrat, beaver, otter, mink, raccoon; numerous fish species; reptiles; amphibians; and many invertebrate fauna. Development should not occur in or close to wetland areas. Groundwater contamination, disruption of natural drainage systems and wildlife, and flooding are possible consequences and buffers and setbacks should be used to protect wetlands.

Hartford contains a significant amount of wetland soils consisting of upland forested swamps, lowland shrub-scrub swamps, wet meadows, and both deep and shallow emergent marshes. Please refer to the Water Features Map on page 208. Wetlands identified by the National Wetlands Inventory (NWI) are protected by the 1990 Vermont Wetlands Rules. The NWI was completed in 1978 but never field checked. Therefore, a more accurate up-to-date inventory would be useful for identifying important wetlands that must be protected. Moreover, landowners should be made aware of significant wetlands on their property.


Map 29 IX-4
WATER FEATURES
Natural Resources
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
VSWI wetlands
hydric soils (seasonal wet)
NFIP inudation floodplain
watershed boundaries
structures
TRORC GIS Service Center
www.trorc.org
WHITE RIVER DRAINAGE
CT RIVER TRIBS. DRAINAGE
CT RIVER TRIBS. DRAINAGE
OTTAUQUECHEE RIVER DRAINAGE
SHARON
NORWICH
HANOVER
LEBANON
POMFRET
HARTLAND
WOODSTOCK
PLAINFIELD
Sprague Hill 1351ft
Gillette Hill 1220ft
Savage Hill 1280ft
Loveland Hill 1240ft
Hurricane Hill 1207ft
Wright Reservoir
Lower Hurricane Reservoir
Upper Hurricane Reservoir
Simonds Reservoir
Neals Hill 1312ft
Lake Pinneo
Deweys Pond
Miller Hill 915ft
North Hartland Reservoir
Clay Hill 680ft
N

Aquifers

Aquifers are subsurface deposits of coarse sand and gravel that, because of the depth of the material and the large pore sizes between sand grains and cobbles, hold vast quantities of potable water. They are extensive glacial deposits usually found along river corridors underlying floodplain areas. Hartford's two main aquifers with high potential to yield drinking water include the Connecticut River shoreline from the Wilder Dam area to the Interstate 89 Bridge, and the area in Quechee Village from Quechee-Hartland Road extending northwest.

While they contain vast quantities of drinking water, aquifers also are vulnerable to percolation of surface-water pollutants to the groundwater reserves. Aquifers cannot be easily flushed, and therefore, pollutants can remain in the subsurface water supply indefinitely. Threats to aquifer water quality include septic tank effluent, leaking underground fuel storage tanks, landfill leachate, improperly stored hazardous wastes, and development which involves extensive areas of impervious material cover and can reduce the restoration of water to the aquifer.

Floodplains

Floodplains are periodically inundated flatlands adjacent to rivers and streams. They serve as storage areas for water during periods of heavy rain and spring thaw, thereby reducing the velocity of rivers and streams. Floodplains also provide some of the best agricultural soils and travel corridors for wildlife. They also present severe limitations for development due to the potential hazards resulting from flooding, harmful effects on channel capacity and downstream properties resulting from filling, improper functioning of sewage disposal systems caused by typically high water tables, increased likelihood of erosion and sedimentation, and potential decrease in wildlife populations due to compromised travel corridors.

Floodplains in the town of Hartford are shown on Map IX-4 having been designated by the Federal Emergency Management Agency (FEMA). Floodplain land use is regulated through the Town of Hartford Flood Damage Prevention Regulations. The adoption and enforcement of the Flood Damage Prevention Regulations is a requirement to participate in the National Flood Insurance Program, which allows Hartford property owners to qualify for low cost flood insurance.

Threats and Concerns

Increased peak runoff resulting from development can have a devastating single or cumulative impact upon water resources. Such increased loads and velocities exceed the natural capacity and stability of watercourses and wetlands, resulting in scour and downstream sedimentation. Sedimentation increases turbidity, raises water temperature, adversely affects natural hydraulic characteristics, and can diminish water quality and ecological balance in these habitats.

FOREST RESOURCES

The majority of land in the Town of Hartford is forested. As such, it provides numerous benefits to the Town, including a reduced tax rate, a source of forestry-related jobs, recreational and sporting opportunities, scenic and aesthetic values, wildlife habitat, storm water mitigation, and air purification and temperature moderation. The goal of the Town's Master Plan is to encourage and strengthen each of these contributions to the quality of life in Hartford.

Numerous tax studies from Vermont, New England, and across the U.S. demonstrate that keeping land forested and undeveloped is the best way to keep a town's tax rate low. This seems counterintuitive at first, given that undeveloped land generates very little tax revenue. But while forested land contributes little to the tax coffers, it costs the Town even less in demand for services because there are no building, road, or school costs associated with its ownership. In short, keeping land forested is a net tax gain for towns.

Keeping land forested also provides the raw materials necessary for the forestry-related jobs that underpin a rural economy. Residents of the Town of Hartford who currently depend upon the forest for their livelihood included loggers, foresters, firewood processors, sawmill and kiln workers, home-sawmill operators, furniture and sign makers, maple sugar producers, and every landowner who realizes income from the sale and management of their forestlands.

Forested lands also provide the largest areas for recreation in the Town not only because of the 565-acre Town-owned Hurricane Town Forest and Hurricane Forest Wildlife Refuge Park but also because of the many landowners who keep their lands open to their fellow citizens for recreation. Though recreational uses of forest lands are nearly unlimited, the major activities in Hartford include hiking, jogging, bird watching, mountain biking, horseback riding, leaf peeping, hunting, snowmobiling, skiing, and snowshoeing.

In 1999, the Town adopted a new "Forest Resource Management Plan for the Hurricane Watershed," which outlines best silvicultural practices for the 565-acre Hurricane Town Forest and Hurricane Forest Wildlife Refuge Park. In addition, in 2002 the Town adopted the "Hurricane Town Forest Recreation Management Plan" to guide the increasing amount of recreation that occurs in this largest piece of Town-owned forestland.

Survey after survey of the citizens of the Town of Hartford confirm that one of the main attractions of living in a town like Hartford is its natural beauty. The forested lands in town are central to this aesthetic experience. The autumn foliage in Vermont is world renowned and provides both pleasure and tourist-related income for Town residents. But because so much of Hartford is forested, the forest itself provides the aesthetic backdrop to everyday life in Town, not just during foliage season.

Because the lands of Hartford are naturally forested, forestlands are essential for the survival and flourishing of our native wildlife. Bobcat, mink, fisher, weasels, fox, deer, turkey, and a host of birds and other wildlife depend upon the forested landscape for their livelihood. The coyote, a relatively recent interloper, is also thriving in the woods of Hartford. All of these animals bring countless pleasure to the citizens of the Town, both those who like to watch and hunt animals and those who are simply glad to know that the wildlife is out there.

Finally, the forested lands in Hartford provide significant protection from and mitigation of natural and human-made disasters. The intensity of the great November Flood of 1927 that devastated the villages of West Hartford, Hartford, and White River Junction was directly related to the deforestation of the White River watershed. Keeping the majority of Hartford forested helps prevent future floods from causing similar damage. In addition, forests help moderate the temperature extremes of summer and winter and remove pollutants and particulates from the air.

While nearly all of Hartford is forested to some degree, there are three areas in Town that merit particular attention because they are made up of contiguous, relatively undeveloped large land parcels that are heavily forested. These provide crucial "core areas" that are essential for maintaining the economic, recreational, aesthetic, and habitat benefits that all townspeople enjoy. These three areas correspond with the three areas of Town that are highest in elevation: the Hurricane Hill/Neal Hill/Ottauquechee area, extending from the Town Forest and adjacent to the U.S. Army Corps of Engineers land; the Jericho/West Hartford district adjacent to the National Park Service lands of the Appalachian Trail; and the high ridge to the west of the White River that is primarily owned by the Quechee Lakes Landowners Association.

AGRICULTURAL RESOURCES

Agricultural lands in Hartford provide numerous benefits to the Town, including a reduced tax rate, a source of agriculturally related jobs, recreational and sporting opportunities on open lands, scenic and aesthetic values, wildlife habitat, storm water mitigation, and a local, reliable source of food and fiber. The goal of the Town's Master Plan is to encourage and strengthen each of these contributions to the quality of life in Hartford.

Agricultural lands in Hartford are central to the Town's aesthetic appeal, with the tight interweaving of forest and field at the heart of Vermont's beautiful landscape. In addition, agricultural lands provide significant wildlife habitat throughout the Town, both for species that require open lands and those that thrive at the margin of fields and forests, like the white-tailed deer.

Important agricultural soils (which include prime agricultural soils and statewide agricultural soils) may be found in several significant clusters in the Town of Hartford. Two of these clusters underlie the villages of Wilder and White River Junction and have, therefore, already been lost for agricultural use. Another cluster in the Center of Town area near Exit 1 of I-89 also has been intensely developed.

In contrast, most of the important agricultural soils in the Ottauquechee River Valley have been preserved. These soils are primarily owned by the Quechee Lakes Landowners Association.

In Wilder, a significant group of primary agricultural soils exist between the Norwich line and where Route 5 crosses under I-91. In the center of this area, the Hazen family farm (Brookside Farm) has been preserved permanently through the purchase of conservation easements coordinated by the Upper Valley Land Trust. The first use of the Town's Conservation Fund established in 1991 was to assist the Upper Valley Land Trust in purchasing conservation easements to this farm.

A cluster of primary agricultural soils also exists on Route 5 South. Although some industrial development has occurred on these soils, much of it remains in active agricultural use, primarily in conjunction with the Wright Farm.

In addition to these large clusters of agricultural soils, smaller pockets of agricultural soils lie throughout the Town. The Jericho Community area, the Quechee-West Hartford Road area, the Hillside Road area, and the Connecticut River Road area all contain actively used agricultural soils.

BIOLOGICAL DIVERSITY

Defining Biological Diversity

The Town of Hartford's biological diversity resources encompasses the totality of flora and fauna that occur within the Town's ecosystems, as well as biological processes that support and sustain this flora and fauna. This includes species familiar to Hartford residents, such as fish and game species, our hardwood forests, and the birds that visit our feeders, as well as lesser-known species of reptiles, amphibians and small mammals. Additionally, biological diversity includes the variety of plant species, insects, and soil and aquatic microorganisms found throughout the natural habitats of Hartford.

Importance of Biological Diversity to Hartford

The biological diversity of Hartford has long been a major attraction of the town for residents and visitors alike. While biological diversity within this area provides direct benefits to plants and animals, such efforts also provide the Town with recreational opportunities, aesthetic benefits, and protection of land and water resources. Furthermore, the conservation and management of biological diversity directly benefits the Town via increased dollars spent by residents and volunteers who visit the area to participate in such opportunities.

Status of Biological Diversity in Hartford

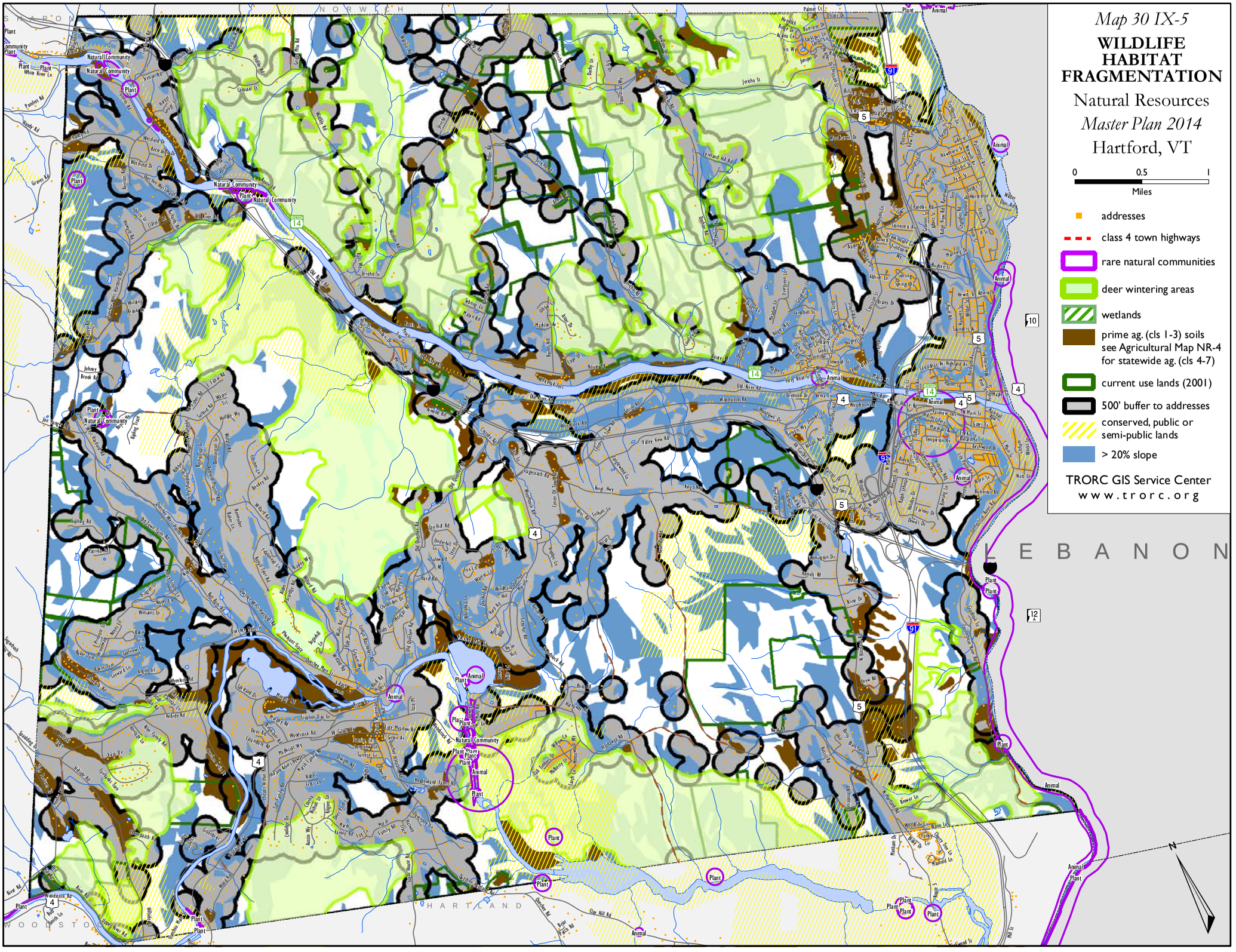
- Biodiversity – Hartford is characterized by a wide variety of high-quality aquatic and terrestrial habitats (as described in other sections) that support substantial biological diversity. These resources include myriad species of plants (wetland, grassland, forest) that support a variety of mammal (white-tail deer, moose, black bear, coyote, mink, otter, fisher, bobcat), bird (wild turkey, ruffed grouse, ducks, songbirds), reptiles, amphibians, and invertebrates. Not only do these habitats support resident populations of these species, but habitats within the Town provide important stop-over locations for migratory and wintering species.
- Fish and Game Resources – Some species, such as white-tail deer, black bear, and a variety of fish species, among others are important resources for hunters throughout the Town of Hartford. These species frequently have specific habitat needs. For example, winter survival of the area's white-tailed deer population depends upon the availability of winter deer yards. These habitats have been mapped by the State of Vermont's Department of Fish and Wildlife and include both areas of softwood tree species that provide winter cover and mixed softwood-hardwood stands for browse. Black bear frequently require large tracts of

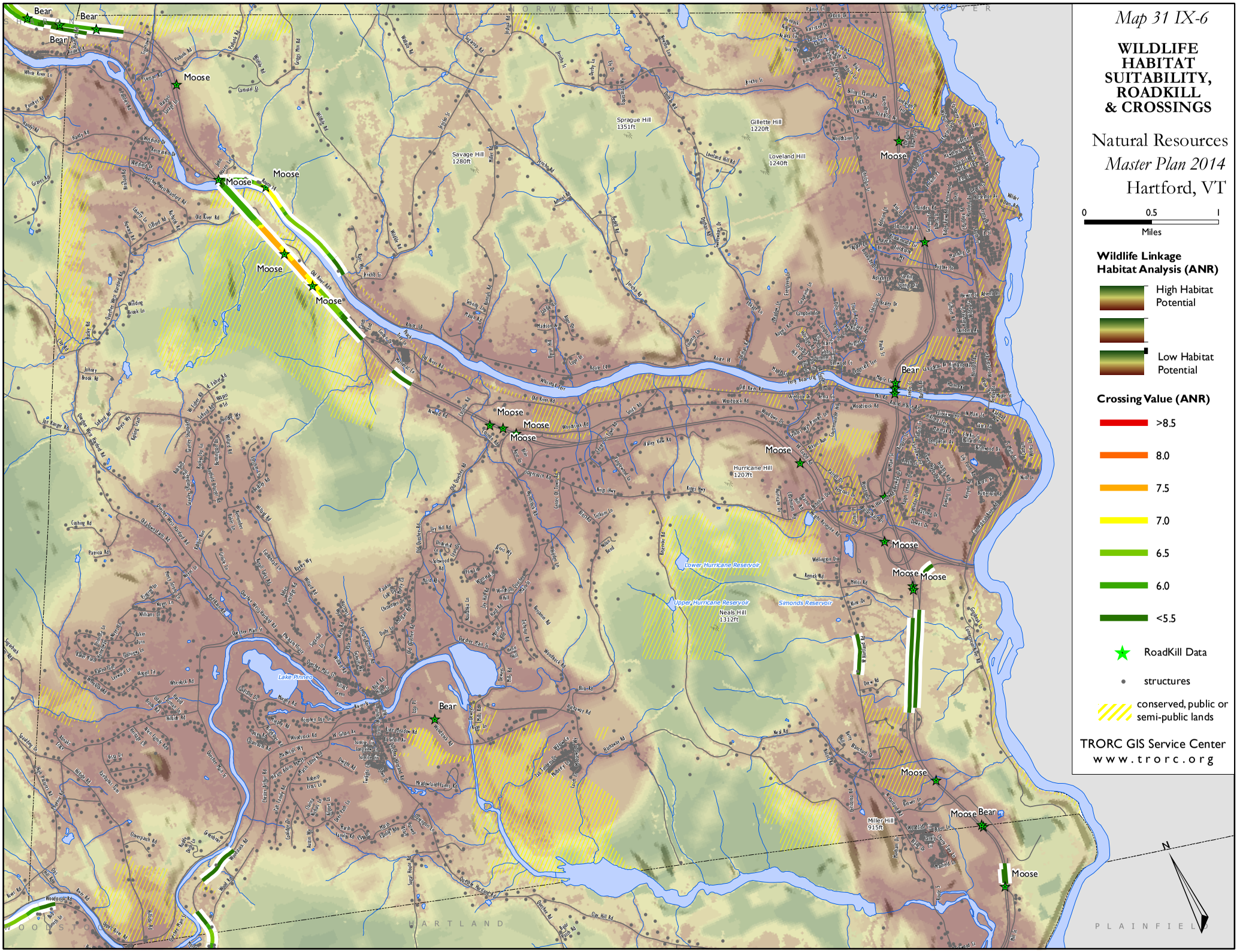
undeveloped forest with healthy stands of American beech that provide critical food resources. The Town of Hartford includes three of the State's major rivers (the Connecticut, White and Ottauquechee Rivers) as well as numerous smaller waterways that provide excellent habitat for a variety of fish species.

- Rare and Endangered Species – Rare and endangered plants, animals, and natural communities are an important aspect to the town's biodiversity resources. The Vermont Department of Fish and Wildlife's Non-game and Natural Heritage Program has mapped and identified 366 records of rare species and natural communities within Hartford that afford special protection (see map IX-5). Of these, 14 are assigned a state rank of S1, indicating that they are very rare and that "generally 1 to 5 occurrences are believed to be extant and/or some factor(s) are making it especially vulnerable to extirpation from the state." In addition, 11 of the records of rare species and natural communities are assigned the state rank of S2, indicating that they are considered rare with generally 6 to 20 occurrences believed to be extant. In addition to the species identified by the Non-game and Natural Heritage Program, both Peregrine Falcon and Bald Eagle regularly occur within the Town. Bald Eagles regularly winter at the Wilder Dam.

Threats to Biodiversity Resources

Threats to the biodiversity resources present within the Town of Hartford fall within three major categories: habitat degradation, habitat fragmentation, and habitat loss. Habitat degradation includes compromising the quality of wildlife habitats via pollution and the negative impacts associated with edge effects. Habitat fragmentation includes the isolation of habitat patches via highly dispersed and decentralized patterns of development. Finally, habitat loss is the destruction and conversion of wildlife habitats to non-habitat land uses, including different types of development.


Map 30 IX-5
WILDLIFE HABITAT FRAGMENTATION
Natural Resources
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
addresses
class 4 town highways
rare natural communities
deer wintering areas
wetlands
prime ag. (cls 1-3) soils see Agricultural Map NR-4 for statewide ag. (cls 4-7)
current use lands (2001)
500' buffer to addresses
conserved, public or semi-public lands
> 20% slope
TRORC GIS Service Center
www.trorc.org
NORWICH
HARTFORD
WOODSTOCK
LEBANON
N


Map 31 IX-6
WILDLIFE HABITAT SUITABILITY, ROADKILL & CROSSINGS
Natural Resources
Master Plan 2014
Hartford, VT
0
0.5
1
Miles
Wildlife Linkage Habitat Analysis (ANR)
High Habitat Potential
Low Habitat Potential
Crossing Value (ANR)
>8.5
8.0
7.5
7.0
6.5
6.0
<5.5
RoadKill Data
structures
conserved, public or semi-public lands
TRORC GIS Service Center
www.trorc.org
Lower Hurricane Reservoir
Upper Hurricane Reservoir
Simonds Reservoir
Lake Pinneo
Sprague Hill 1351ft
Savage Hill 1280ft
Gillette Hill 1220ft
Loveland Hill 1240ft
Hurricane Hill 1207ft
Neals Hill 1312ft
Miller Hill 915ft
HARTLAND
WOODSTOCK
PLAINFIELD
N

INVASIVE PLANTS

For centuries, people have been moving plants around the world. Global commerce has been a vehicle for the introduction of non-native seeds and plants. Horticulturists, in their search for new and attractive plant materials, have also contributed to the plant migration. Most exotics do not become a problem and can be enjoyed in our landscapes and other natural habitats. However, some of the exotics introduced outside of their normal growing areas cause problems when they become invasive. This means they are able to proliferate and aggressively alter or displace native plants. Some of the characteristics of invasive plants are that they have the ability to reproduce quickly, they are not controlled locally by natural predators or diseases, and once established run rampant, out-competing our native plants. They can monopolize light and water, and nutrients escape. Often, invasive plants have been distributed or sold by nurseries, homeowners, landscapers, highway departments, and soil conservation agencies.

The following is a list of invasive plants common to the Upper Valley:

- Purple Loosestrife
- Common Reed
- Goutweed or Bishop's Weed
- Common Buckthorn
- Glossy Buckthorn
- Burning Bush
- Multiflora Rose
- Porcelin Berry
- Japanese Knotweed
- Japanese Barberry
- Norway Maple
- Black Swallow-wort
- Autumn Olive
- Oriental Bittersweet
- Garlic Mustard
- Shrub Honeysuckles

Addressing the problem of invasive plants in Hartford is a challenging task. The following is a list of strategies:

- Prevention of New Introductions: The most cost-effective way of control is to prevent the arrival of any new exotics.
- Eradication of New Infestations: If invasive exotics have been recently introduced to Town and have not yet become established, they can be attacked while their density and range are limited. The prospect of total elimination saves not only money but also our ecological systems.
- Managing Established Populations: If we have to deal with invasive plants that cannot be eradicated, we must control their spread and minimize the damage to natural systems and bio-diversity. Control efforts are numerous, but must be tailored to fit the situation. When fighting invasives around endangered species, we must be careful to not cause further damage to these fragile ecosystems.

Finally, we must take an active role in returning our native vegetation to land where the invasive plants have been eliminated. If we do not replant with natives, the exotics will re-colonize.

SCENIC RESOURCES

The historic development of Hartford into five villages largely separated by countryside, and the preservation within the Quechee Lakes Development of over 2,600 acres of greenbelt, have enabled the Town to maintain much of its scenic beauty. The Town has been successful in guiding development so that the scenic beauty of its rural areas is preserved. The protection of the Town's scenic beauty is important, not just for Hartford residents but for visitors to Hartford as well. Indeed, a large part of the Town's economy depends on the tourism attracted by the beauty of the landscape.

Connecticut River Scenic Byway

In 1999, the States of Vermont and New Hampshire gave official approval to years of planning by designating a bi-state route for a Connecticut River Scenic Byway along New England's largest river. The Byway includes Route 5 through Hartford, and White River Junction is one of ten waypoint communities along the byway. The Connecticut River Byway is a river-focused and river-friendly economic development opportunity that strives to balance the promotion, preservation, enjoyment and stewardship of the Connecticut River Valley and to link people, organizations, communities, and agencies in promotion of the Connecticut River Scenic Byway as a tourism asset. A Scenic Byway Council exists to raise awareness of the Valley's unique historic, cultural, environmental, agricultural, and railroading traditions and resources. The Scenic Byway Council is hosted by the Connecticut River Joint Commissions.

The Connecticut River also has been designated an American Heritage River and is the heart of the Silvio O. Conte National Fish and Wildlife Refuge.

Scenic Areas

A scenic area can be one with views of farmsteads surrounded by pasture land, of compact villages nestled among mountains, and of forest tunnels cut by splashing brooks. It also can be views of mountain ridgelines, river valleys, and other traditional New England scenes. The Hartford Conservation Commission has identified the following as important Scenic Areas:

1. The Hillside Road area in Quechee, that is, the area bounded by:
    a. the Pomfret town line to the west;
    b. the Woodstock and Hartland town lines to the south;
    c. the Ottauquechee River to the east; and
    d. Wheelock Road and the northern end of Quechee Lakes Greenbelt #7-GB02-001 to the north.
2. Route 4 from Lakeland Drive southwest to the Hartland Town Line and bordered on the northwest by the Ottauquechee River and on the southeast by a line running 500 feet parallel to Route 4.

3. The open lands along the Ottauquechee River from Wheelock Road down river to the Quechee Covered Bridge, including, for example, the Quechee Village Green (Lot 12-QLLA-016), the two Quechee golf courses (Lots 7-QLLA-002 and 7-QLLA-003), and the Quechee Ski Area (Lot 7-QLLA-010).
4. The open lands and waters adjacent to Deweys Mills Road such as the Ottauquechee River, Dewey's Pond, the pasture surrounding Marshland Farm, and the Polo Field.
5. Quechee Gorge, including all land owned by the United States of America along the Ottauquechee River.
6. The open lands at the intersection of Old Quechee Road and Atwood Road in the Center of Town area.
7. The open lands along Kings Highway from Reservoir Road east to where Kings Highway becomes a Class 4 road.
8. Hurricane Hill and Neals Hill above 900 feet elevation.
9. The Wright Farm on Route 5 South.
10. The open lands south of I-89 between Route 5 South and I-91.
11. The Connecticut River Road area, as follows:
    a. the open lands along the Connecticut River Road; and
    b. the wooded lands along this road between the Connecticut River on the east and a line running 100 feet parallel to the Connecticut River Road on the west.
12. The Connecticut River and its banks from Wilder Dam downstream to the southern end of the big island visible from Wilder Dam and the view of Mt. Ascutney from this dam.
13. The Connecticut River basin north of the Wilder Dam, including the shoreline of the River owned by the New England Power Company, the "setback" area where Dothan Brook enters into the Connecticut River, and the area to the north of this "setback" area bounded as follows:
    a. on the east, by the Connecticut River;
    b. on the north, by the Norwich town line;
    c. on the west, by I-91;
    d. on the southeast, by the northern lot line of the Candlelight Terrace Condominium project; and
    e. on the southeast, by that branch of Dothan Brook that originates on Mosley Hill in Norwich.
14. Brookside Farm on Route 5 North in Wilder.
15. The ridge line west of Route 5 north in Wilder above 800 feet in elevation as seen from Route 5 or Christian Street and bordered:
    a. on the south, by the VELCO power line which crosses Christian Street near the height of land; and

b. on the north, by the Norwich town line.

16. The "Dothan Area," that is, the open lands at the intersection of Jericho Street and Newton Lane, including west for 3,000 feet on Jericho Street, and south for 2,000 feet on Jericho Street.

17. The "Jericho Area," that is, the open lands along Jericho Street and the open lands along the following roads off of Jericho Street or Jericho Road:

    a. Wildlife Road north to where it becomes a Class IV road;
    b. Jericho Road southeast to half way between Miller Road and Ammel Road;
    c. Miller Road south to where it becomes a Class IV road;
    d. Wallace Road west to where it becomes a Class IV Road;
    e. Sugartop Road; and
    f. Jericho Street east for 3,000 feet.

18. The White River and the lands along the White River as follows:

    a. the land between the White River and Route 14 upriver from Dothan Road to the Sharon town line; and
    b. the land north of the P&C warehouse between the White River and:
        i. Old River Road upriver to I-89;
        ii. I-89 upriver to where Old River Road crosses over I-89 in West Hartford;
        iii. Old River Road from where it crosses over I-89 in West Hartford upriver to the Quechee-West Hartford Road;
        iv. the Quechee-West Hartford Road upriver to Westfield Drive;
        v. Westfield Drive upriver to Recreation Drive;
        vi. Recreation Drive upriver to the West Hartford Bridge;
        vii. the West Hartford Bridge upriver to the Pomfret Road; and
        viii. the Pomfret Road upriver to the Pomfret Town line.

19. The open lands along Handy Road in West Hartford.

20. The open lands along the Quechee-West Hartford Road, Old Town Farm Road, and Red Barn Road from Clay Road south to the River Road.

21. The open lands at the intersection of Atwood Road and Old Quechee Road in the Center of Town area.

Wireless Communication Facilities

As discussed in Chapter VII (Utilities) wireless communication facilities have the potential of creating significant visual impacts. The industry prefers to locate towers in highly visible locations such as hilltops and ridgelines in order to achieve maximum service. In addition, development of the infrastructure to support the towers also can have significant visual impacts. The Department of Planning and Development Services staff, Planning Commission, and Zoning Board of Adjustment

should periodically review the wireless communication facility regulations and the approved facilities to ensure that the regulations are effective in mitigating the visual impacts of wireless communication facilities on the Town's scenic resources.

Wind-Energy Facilities

In recent years, there have been advances in wind-energy technology which together with higher energy costs has led to a renewed interest. Wind energy is renewable and does not generate greenhouse emissions. Smaller scale facilities are now more cost-effective. In addition, new wind energy facilities are quieter than earlier models.

However, there are some negative aspects of wind energy. First, it is an intermittent source of power. Second, the best location for wind-energy facilities is typically higher elevation areas that include ridgelines and hilltops. This can result in significant visual impacts that can affect our scenic and historic resources and ultimately tourism. Wind energy facilities create impacts by land clearing, road construction and power lines. In addition wind energy facilities can negatively affect ecosystems and wildlife. Consequently, the siting of wind energy facilities must be carefully evaluated to mitigate impacts.

Lighting

Dark skies and bright stars are resources that greatly contribute to our rural quality of life. However, our ability to enjoy the night sky can be hampered by excessive and unshielded lighting. Public safety and welfare require adequate illumination, but inappropriate lighting can produce unsafe or unpleasant conditions. Unshielded lights can glare into the eyes of motorists and into neighboring homes. Excessive lighting also wastes energy and leads to sky glow. Additionally, excessive and misdirected lighting can negatively impact wildlife, especially species undergoing local and long-distance migrations (e.g., birds, amphibians).

In most cases, the careful placement, shielding, and selection of the proper type of lighting can lead to improved lighting, lower utility cost and reduced impacts. The use of down light fixtures and motion-detector lights can also reduce the negative affects of lighting. The Town should consider amending the Zoning Regulations to establish specific lighting standards. In addition, the Town should provide educational material to property owners and businesses regarding appropriate lighting.

OPEN SPACE AND GREENWAYS

Although it is one of the ten most populous communities in Vermont, the Town of Hartford is blessed with an important natural resource: open space. Hartford's open space, and the land that connects it (tracks of land referred to as greenways), is of vital importance to the community and the subject of this chapter.

Open space is defined as any publicly or privately held, unimproved area of land, water course, or water body that may be used for agriculture, forestry, or outdoor recreation, or remain in a natural state. The character of an open space is often informed by its local context, such as whether it is located in an urban/village, suburban, or rural setting. For example, the open space in Hartford's villages generally consists of parks and recreational fields with limited natural areas. Incidentally, such open space, as found in parks and playing fields, is managed by the Town Recreation Department and is not addressed in this section. (Refer to the Community Facilities and Services section of the Master Plan for more information on these open spaces.) This chapter focuses primarily on open space in the suburban and rural context such as the Hurricane Town Forest, Maanawaka Conservation Area, or other various conserved or undeveloped areas under private ownership.

The function of open space is often enhanced by accessibility or connections to other open spaces. By definition, greenways are connecting tracts of land that provide continuity and interconnectedness between the region's open spaces. Greenways provide connections between isolated habitat areas to maintain bio-diversity, provide access to larger habitats, and allow for refuge from predators, fire or other disturbances. The interdependence of open space therefore underscores the importance of the Town's greenways as well. Hartford and its surrounding towns benefit greatly by having open and natural areas that enhance the recreational, natural, and scenic value of the area. Examples of greenways may include farm fields, undeveloped portions of river and stream corridors, and contiguous areas such as the Hurricane Town Forest and the Hurricane Forest Wildlife Refuge Park.

While Hartford's open space areas and their related greenways may vary in character and in use, they all share one thing in common–a vulnerability to development. Typically, once an open space or greenway is developed, there is little chance of recovering or replacing it. Thus, the value associated with the open space would be lost as well.

The Value of Open Space to the Public

Hartford's open space provides a number of benefits to the public including, but not limited to a sense of place and regional identity for residents and visitors, support of key economies for the region, recreational opportunities, and safeguards for protecting other natural resources such as core wildlife habitats.

Local and traditional industries are dependent upon open space to be viable in this community. Industries like agriculture, forestry, tourism, and recreation depend greatly on the rural character of

the Town and surrounding areas. Additionally, the existence of open space helps to define what many residents enjoy about living in this area. It provides scenic views, lends delineation between traditional village centers and countryside, and offers ample opportunity for outdoor educational and recreational pursuits. While the benefit of creating a sense of place has its own intrinsic value, it is additionally important because it, in turn, helps to support local economies. The relationship between open space and the protection of the Town's other natural resources, such as wildlife and water resources, is well known. Large tracts of open space tend to include areas of significant wildlife habitat and a capacity to maintain high-quality surface waters. While the majority of Hartford is forested, there is an important distinction between properties conserved from future development and properties that are simply undeveloped at this point in time. The following figures and tables summarize conserved and protected properties that will respectively remain as open space for future generations. As these will show, conserved properties comprise a small but significant proportion of the total lands in the Town of Hartford.

TABLE IX-4
TOWN OF HARTFORD OPEN SPACE

Name/Description	Location	No. Acres
Undeveloped Open Space		
Hurricane Town Forest	Reservoir Road	423
Hurricane Forest Wildlife Refuge Park	Wright Reservoir Road	142
Maanawaka Conservation Area	Route 5 North	21
Maxfield Property	Route 5 South	64
VA Cutoff Road Property	Off VA Cutoff Road	50
Computac Property	Old River Road	15
Dewey's Mills Property	Dewey's Mills Road	5.3
	Subtotal	**720.3**
Developed Open Space		
Lyman Point Park	Bridge Street	1
Frost Park	Wilder	2
Ratcliffe Park	North Elm Street	9
Watson Memorial Field	Main Street, Hartford	8
Quechee Green	Quechee	1.1
Clifford Park	Quechee/West Hartford Road	12
Fred Briggs Park	Main Street	.2
	Subtotal	**33.3**
	Total	**753.6**

Source: Town of Hartford, Department of Planning and Development Services, Recreation Department and Listers Office, 2006

In comparison to other communities in the Tri-Town area, the Town of Hartford controls significant but proportionately fewer open space acres. While the City of Lebanon and the Town of Hanover own, respectively, 1,460 and 1,682 acres of open space (not including recreational and scenic easements), Hartford maintains only 753.6 acres of open space.

Table IX-5 on the following page illustrates all lands held for natural and open space conservation. Total conserved land in Hartford, including parks and recreation areastotals 6,081.2 acres. This accounts for 24.5% of the Town. Consequently, a substantial portion of existing open space in Hartford is within private properties and is not being actively conserved.

Approximately one-third of the entire Town of Hanover is protected from future development through forestry and recreation holdings. In comparison, Hartford's 6,081.2 acres of protected land accounts for 24.5% of the Town's 24,851 acres. Hartford enjoys the benefit of significant State and Federal open space lands, as well as lands owned by semi-public concerns, such as the Quechee Lakes Landowners Association (QLLA).

The Current Use Program began in Vermont over twenty years ago. The Program allows forest and agricultural lands to be appraised at a lower rate set by the State. This property tax and land management program was developed in response to rising property taxes. Property enrolled in Current Use Program has a lien on the property for as long as the property participates in the Program. Land taken out of the Current Use Program must pay a land use change tax of 20%. Although the Current Use Program provides an economic incentive for land to remain in forestry and agricultural use, unlike a conservation easement, it is not a method of permanent protection. Land in Hartford that is enrolled in the Current Use Program in 2006 accounts for 4,574 acres, or 18.4% of the Town. Of that, 3,379 acres are forest lands, and 1,055 acres are agricultural lands.

TABLE IX-5
NON TOWN-OWNED SIGNIFICANT OPEN SPACE HOLDINGS

Owner/Name	Location	Acreage
North Hartland Reservoir (U.S. ACOE)	Quechee Gorge/Ottauquechee Floodpl	760
Veterans Hospital (U.S.)	Route 5	64
Quechee Gorge State Park (VT)	Quechee	76
Hartford Rod & Gun Club	Wildlife Road	35
US Gen New England	Wilder	89
Quechee Lakes Landowners Association (QLLA) Greenbelt and wildlife areas	Quechee	1,939
QLLA Lake Pinneo	Quechee	55
QLLA Deweys Mills Pond and surrounding Marshland, Murphy Farm	Quechee	321
QLLA, Golf Courses/Nordic Center	Quechee	263.8
QLLA, Polo Field	Quechee	54
QLLA, Downhill Ski Area	Quechee	73
QLLA Deeryard	Quechee	780
Sterling Springs Deeryard	Hartford/Hartland Town Line	30
Hemlock Ridge Deeryard	Hartford/Norwich Town Line	93.8
Brookside Farm Conservation Easement	Wilder	174
Taylor Conservation Easement	Quechee	251
Wilson Conservation Easement	Jericho	6
Appalachian Trail	West Hartford	251
	Total	**4,797.0**
COMBINED TOWN AND OTHER HOLDINGS TOTAL OPEN SPACE ACRES:		**5,562.6**

Source: Town of Hartford Listers Office, 1992
(Updated 2003)

PRESENT THREATS TO OPEN SPACE AND GREENWAYS

Regional growth trends place increasing development pressures on Hartford's open spaces. The majority of open space in the Town are private, undeveloped lands with secondary-growth forest

cover. The chief threat to maintaining open spaces in their present form is the pressure of new development. New development can negatively impact adjacent open spaces by altering the physical state and character of the area. Considering the prevalent low-density, dispersed, and non-centralized development pattern in the region, new property development leads to fragmentation of open and natural spaces in the landscape. This fragmentation reduces the core habitat areas that are critical to wildlife communities. If the landscape becomes a collection of small, isolated pockets of natural areas capable of sustaining wildlife, it loses its capacity to support diverse and thriving wildlife communities. Additionally, fragmentation can negatively impact the natural functions of the landscape to intercept, absorb, and treat rainwater and snowmelt runoff. This can have a direct negative environmental impact due to soil erosion and degraded water quality. While fragmentation is a serious concern for a growing rural community like Hartford, there are steps to accommodate new development while minimizing fragmentation of core habitat areas. Growth management practices can be incorporated in existing regulations to encourage development in existing town and village centers or as cluster or planned unit developments in newly developed areas. The Town can identify core habitats and incorporate these large-scale areas in the development-review process so that the scope of a subdivision or site-plan review can extend beyond the property boundaries to include local natural impacts.

RECOMMENDATIONS

Air Quality

1. Support state and federal programs directed at the reduction of air pollution and encourage enforcement of air-quality standards to prevent deterioration of the region's air quality.
2. Encourage land use patterns that promote transportation alternatives to the single occupant vehicles, such as mass transit, park and ride facilities, sidewalks, and bike lanes/multiple use paths.
3. Target clean industries to encourage economic development that does not contribute to air pollution, and do not approve new development that contributes unduly to air pollution.

Hillsides & Ridgelines

4 Amend Section 3-5 on the Zoning Regulations (Extraction of Earth Resources/Filling of Land) to add the following to the review criteria: impact on scenic quality, aquifer recharge areas, and wildlife habitat.

5. The Town should conduct a visual assessment of hillsides and ridges to identify those upland areas most visible from heavily traveled roads and highways.
6. The Town should consider an overlay district to control development on hillsides and ridgelines to avoid or mitigate adverse impacts to scenic resources.

Water Resources

7. Develop and enforce shoreline protection regulations in order to protect riparian areas.
8. Conduct field verification of National Wetlands Inventory designations in order to better protect town wetlands.
9. Consider adoption of a wetlands protection overlay district to protect town wetlands.
10. Review policies and recommendations of the Connecticut River Corridor Management Plan and consider adopting those applicable to Hartford.
11. Assess available geologic information on the two town aquifers identified by USGS and better define the value and threats to these resources such as uncontrolled development, adverse land use patterns, or use of adjacent earth and mineral resources.
12. Incorporate zero-peak runoff requirement into the subdivision regulations and site plan review requirements that mandate that new development design drainage systems that will not discharge any additional peak runoff into existing town surface waters.
13. Assess the condition of the existing dams creating the Hurricane Reservoirs and develop plans for their long-term maintenance.

Forest Resources

14. Consider establishing a new Agriculture & Forestry zoning district in the Town that would encompass the three core forest areas (the greater Hurricane Town Forest/Ottauquechee area, Jericho/West Hartford area, and the eastern portions of Quechee).
15. Work with landowners abutting Class IV roads in the three core forest areas to voluntarily pursue conversion of Class IV roads to (motorized or non-motorized) trails.
16. Consider redirecting the proceeds from the State's Land Use Change Tax into the Town's Conservation Fund instead of the Town's General Fund.
17. Ensure that the forestry and recreation management plans for the Hurricane Town Forest and Hurricane Forest Wildlife Refuge Park are fully implemented.

Agricultural Resources

18. Consider establishing a new Agriculture and Forestry Zoning District in the Town that would encompass the prime agricultural lands in Town, especially the Jericho area, the Quechee-West Hartford Road area, the Hillside Road area, the Connecticut River Road area, and the Route 5 South lands.
19. Consider creating economic incentives in addition to the state's agricultural current use appraisal program to assist farmers in preserving the Town's remaining agricultural lands.
20. Encourage developers to permanently preserve Hartford's agricultural lands through the purchase of conservation easements on or off-site.

Biological Diversity

21. Develop and conduct a community-wide inventory and mapping of wildlife and their essential habitat requirements. This effort should consist of the following phases:
    a. Regularly collect and review existing data on rare and endangered species and communities from the State of Vermont's Department of Fish and Wildlife's Nongame and Natural Heritage Program.
    b. Coordinate a townwide inventory of significant plant communities and fish and wildlife resources in collaboration with consultants from the State of Vermont.
    c. Establish permanent wildlife monitoring locations on town-owned property.
22. Encourage conservation of contiguous properties to maintain the connecting links and corridors for wildlife.

Invasive Plants

23. Identify the locations of invasive plants in Town by raising public awareness and enlisting volunteers to conduct surveys.
24. Encourage businesses, homeowners and landscape contractors to use native species and non-invasive ornamentals.

25. Prohibit invasive plants in landscaping plans for approved Site Development Plans and provide native substitute lists to zoning permit applicants.
26. Post pictorial signs of invasive aquatic species at all boat-launching areas in the Town of Hartford.
27. Provide native substitute lists at all horticultural retail outlets and encourage retailers not to sell any plants that are on the Vermont Agency of Natural Resources Invasive Plant List.

Scenic Resources

28. Develop a priority list of Scenic Areas needing protection, map them, and consider purchasing the development rights on critical parcels of land within designated Scenic Areas using the Town's Conservation Fund.
29. Follow the guidelines set forth in the Vermont Scenic Landscapes: A Handbook for Growth and Protection, by the Vermont Agency of Natural Resources for development projects that are not within Scenic Areas (such as projects within the Town's Industrial/Commercial zoning districts).
30. Study lighting alternatives and consider adopting lighting standards that minimize increased "sky-glow."
31. Continue to participate in the Connecticut River Scenic Byway Program.
32. The Department of Planning and Development Services staff, Planning Commission and Zoning Board of Adjustment should periodically review the telecommunication facility regulations and the approved facilities in order to ensure that the regulations are effective in mitigating the impacts of telecommunication facilities.
33. The siting of wind-energy facilities must be carefully evaluated to mitigate impacts.

Open Space & Greenways

34. Identify existing core habitat areas within the town and identify desired greeenway alignments.
35. Collaborate with neighboring towns to develop regional greenways.
36. Continue to contribute annually to the Hartford Conservation Fund for acquisition of sensitive natural areas, most valuable open space lands and core habitats, and other conservation projects.
37. Develop, in cooperation with trail groups, a system of trails to connect up with the Appalachian Trail and the Hurricane Town Forest.

Future Development

38. When development does occur, encourage cluster or planned developments.
39. Continue to encourage urban infill in established settlement areas and discourage development in outlying areas.

40. Coordinate greenway planning with new development proposals so that quality open space is preserved within new development and that open space connects with neighboring open space.

CHAPTER X

ENERGY

INTRODUCTION

Energy is an important factor for the economic, environmental, and social well-being of our community. Practically every decision we make and action we take affects energy use and production. And, in turn, energy use and production affect our future decisions and actions.

Hartford relies heavily on fuels imported from outside our region. Therefore, most of the money spent on energy is exported from our local economy and does not return to create jobs or buy goods locally. In addition, foreign fuel sources are insecure and unstable and so are subject to huge price swings and supply shortages beyond our control.

Environmentally, air, soil, and water quality are affected by our energy use. On the global scale, energy production and use have caused large-scale environmental problems, such as large quantities of radioactive waste from nuclear power plants, contamination of ocean waters and land from oil spills, and global warming, which threatens to drown the world's coastal cities, reduce the productivity of agricultural zones, and subject many ecosystems to foundational change and possible extinction.

Hartford is impacted environmentally by energy used in other parts of the nation. Acid rain, a pollution brought to us from Midwestern coal plants, affects our lakes and forests. Though Hartford has no comparable heavy industry, our energy production and use affect not only our area, but surrounding areas as well. Responsible handling of energy decisions must, therefore, concern not only the needs of our immediate township but all regions affected by our energy production and use, not only for this year but for many generations to come.

Hartford's energy future is linked to energy policies and economic forces at the state, federal, and international levels. Though the Town has limited abilities to affect a national energy policy, the Town government can influence the local population. The Town is the unit of government closest to the citizens, and is, therefore, most accessible to the participation of every individual. By adopting and implementing this Town Energy Plan, the Town makes a public policy statement regarding energy issues and acknowledges the importance of energy planning in the overall development of the community and country.

This chapter and its recommendations will promote the creation of a sustainable energy future: one that minimizes environmental impact, supports our local economy, and emphasizes energy conservation, efficiency, and the increased use of local and regional renewable energy resources.

GOALS

Implementation of this Energy Plan is the initial step in the development of a sustainable energy future as reflected in Vermont's Comprehensive Energy Plan (December, 2011). Our long-term goals ~~is~~ are to become a model for sustainable energy practices and a regional leader in energy efficiency innovation and fiscal responsibility; to create a culture of energy conservation; to reduce energy use by utilizing energy efficient end-systems; to achieve the maximum development of indigenous renewable resources that is economically feasible; to thoroughly evaluate and modify, where feasible, our patterns of energy use, settlements, transportation, and industry to minimize environmental impacts; and to reap the long-term economic, environmental, and quality-of-life benefits that these changes will bring.

The goals of the Hartford Energy Plan are:

1. To save financial and natural resources by encouraging the conservation and efficient use of energy in the Town and region;
2. To reduce the overall energy consumption within the Town through conservation and efficiency;
3. To have meaningful reduction in greenhouse gas emissions and other adverse environmental impacts associated with energy consumption in accordance with the goals established by the 2007 Report and Recommendations of The Governor's Commission on Climate Change;
4. To promote the development of local renewable resources as a replacement for imported non-renewable resources;
5. To ensure that energy supplies will be reliable, affordable and environmentally sound;
6. To increase public awareness of energy issues and build public support for energy efficiency and sustainable energy policies;
7. To promote least-cost planning, or life-cycle costing, which considers all costs of energy production and use, including environmental and social costs;
8. To reduce energy demands for transportation, and
9. To create and follow a plan to reduce dependency on fossil fuels.

MUNICIPAL

The Town may itself reduce its use of energy and at the same time reduce budget costs, as well as provide leadership to the community. Features of Town energy consumption that should be audited are the age and efficiency rating of all Town boilers and furnaces; the amount of insulation, use of

energy-efficient lighting, and use of energy-efficient windows in Town buildings; and the use of energy-efficient lighting in Town street lighting. The Town Municipal Building has already made strides in these directions: a new furnace room boiler and oil burner were replaced in 1990. The Hartford Water Department Garage has had insulation in the walls and ceiling of the office areas and meter shop, and a new propane gas furnace was installed in the spring of 1992. The Town has also been replacing street lights within Historic White River Junction with more energy-efficient lights.

Goals

l. To investigate, consider and implement cost-effective energy conservation and efficiency measures for use in all Town buildings and operations.

2. To encourage the sustainable development and use of local renewable energy resources for all Town buildings and operations.

3. To increase efficiency in all Town vehicles.

RESIDENTIAL, COMMERCIAL AND INDUSTRIAL

Economically, energy costs for all residential, commercial, industrial, and municipal use in Hartford were estimated at approximately $7,925,668 per year in 1992, or $2,072 per household. It is estimated that these annual energy expenditures will rise to at least $24,250,141 for the Town and $2,735 per household by the year 2010 if no conservation and efficiency measures are introduced. These figures do not include expenditures for gasoline, diesel, coal and solar, which would put the costs considerably higher.

As long as we remain dependent on limited and dwindling, non-renewable fuel sources for energy, and as long as we continue to consume more and more energy, the economic and environmental costs of that use will grow increasingly larger in the future.

Goals

1. To encourage and support public-energy education and awareness programs.

2. To encourage and support cost-effective energy conservation and efficiency measures for use in the Town's residential, commercial and industrial sectors wherever economically feasible.

3. To encourage and support the sustainable development and use of local renewable energy resources for the Town's residential, commercial and industrial sectors wherever economically feasible.

4. To encourage an energy-impact analysis for all major development proposals.

TRANSPORTATION

The Town can play an important role in encouraging the conservation of energy for transportation. It may do so by adopting land development strategies that cluster residential, commercial, and

industrial development. In this way, the use of the automobile for long trips to stores, to places of employment, and to schools, parks, and libraries will be minimized. The Town may also encourage alternatives to automobile use by supporting public transportation and developing sidewalks and bike paths.

Goals

1. To promote cost-effective energy efficiency in future transportation planning.
2. To educate the public about energy-efficient transportation.
3. To coordinate land-use and transportation planning that promote energy efficient transportation.
4. To promote and implement strategies to encourage ride sharing, public transit, bicycling, walking, and other alternative transportation methods.
5. To increase ridership in areas with access to public transportation.

LAND USE AND DEVELOPMENT SITING

Land use planning directly affects energy use within the Town. By considering energy in land use planning, the Town can save, or even produce, energy that would otherwise be lost with less efficient developments and site designs.

Possibly the greatest energy planning value comes from directing development patterns. Concentrating development in central areas can serve a variety of uses: it preserves rural character and remaining agricultural lands; it provides facilities and services within close proximity, thereby reducing transportation distances; and it allows for greater use of alternative transportation such as walking and bicycling.

In addition to development patterns, site design can play a large role in reducing energy costs. Southern exposures, thermal mass collectors, and specific distances and heights from other buildings to allow their solar access are all construction designs that will enable large energy savings. Site design such as tree rows for winter wind buffers and summer shade suppliers, can also effectively reduce energy costs.

Many residences and businesses in Town are dependent on the Town water systems serving Wilder, Hartford Village, White River Junction, and Quechee. It is important that the Town protect the aquifers that are the source of water for the two systems from contamination by improper fuel storage.

Goals

1. To encourage and support settlement patterns and densities that reduce travel requirements for work, services, shopping, recreation, and entertainment.

2. To adopt land use and zoning regulations that encourage energy conservation and efficiency and the sustainable development of local renewable sources of energy.

CONSERVATION AND ENERGY EFFICIENCY

Conservation and energy efficiency are similar planning terms, yet each has a distinct role. Conservation attempts to minimize energy loss through existing systems, and energy efficiency focuses on meeting the end need and then works backward to determine the best way to meet this goal.

Conservation measures can include everything from a tune-up of the household automobile to improving home insulation, weather stripping and caulking. Some of these improvements, such as weather stripping and caulking, have been estimated at reducing energy consumption by at least 15% in the average home, and insulating at cost-effective levels can reduce consumption another 25%.

Conservation of electricity during peak load periods, when electricity use is highest, is called load management and can be practiced by individual consumers, as well as the electric utilities. By shifting those activities that require large amounts of electricity to periods of less demand, one can save money by paying the lower off-peak rate.

Reuse and recycling are two important methods of conservation. Reuse consists of the development of second, third or more uses of primary (first-time) products. Recycling requires the collection and reproduction of products from the initial resources. Hartford now has the finest recycling facility in the state of Vermont. Both reuse and recycling help reduce a substantial portion of Hartford's solid waste flow and eliminate the need for the consumption of more natural resources and energy at the primary production process. As future energy costs rise in response to increases in natural resources, so will primary production costs rise, making reuse and recycling an even more profitable conservation method.

Goals

1. Encourage retrofitting of existing housing to minimize energy use for space and water heating.
2. Encourage financing assistance for investment in energy conservation, particularly in the residential sector.
3. Maximize use of primary (first-time) products through recycling.

RENEWABLE ENERGY RESOURCES

Local renewable energy sources such as wood, solar, hydroelectric, and wind have enormous potential value for Vermont's towns. Several renewable technologies are already cost-effective when compared to conventional fossil and nuclear fuels; others are projected to be cost-effective in the near future. They are becoming economically competitive, as dwindling fossil fuel resources

become less accessible and, thus, more expensive to extract, and as least-cost planning begins to incorporate the hidden costs of environmental damage from fossil fuel use in the real price of using these fuels. A large percentage of money spent on local renewables stays within the community, whereas most of the money spent on fossil fuels leaves the community. It is, therefore, prudent for Hartford to become aware of its renewable resources and to have some idea of the potential energy and economic viability of these resources.

Furthermore, renewables enhance local and regional independence and stability. Hydropower, for example, cannot pick up and relocate. If managed in a sustainable manner, the region's vast wood resources should remain an inexhaustible source of energy for the future. Once developed, these local renewable resources will continue to provide power, employment, and real estate taxes to the Town, with little or no drain on Town services. The more broad-based and diverse our supplies of energy, the more secure Hartford will be from a sudden loss of power or jump in price by any single energy source.

Goals

1. To protect the Town's renewable energy resources.
2. To promote the cost-effective, sustainable development of the Town's renewable energy resources.
3. To encourage use of locally produced renewable energy sources instead of imported non-renewable energy supplies.

The following information has been taken from "EarthRight Institute's Guide to Town Energy Planning in Vermont," 1992.

Wood

Wood is Vermont's most abundant renewable resource. The approximate equivalent of 1.15 million cords of wood is harvested annually in the form of pulp, logs, chips, and chunk wood for home heating. Of this, 300,000 cords are burned to heat homes in the state each year. Vermont's forests produce enough fuel wood each year to provide for all of the state's heating needs on a sustainable basis, if the woodlands were properly managed and if all available energy conservation and efficiency measures were utilized. Because wood is grown and harvested locally, 88% of the money generated stays in the local economy.

Solar

Despite the fact that Vermont is one of the cloudiest states in the U.S., direct use of solar energy can play a significant role in meeting Vermont's energy needs. Each square foot of land area in Vermont receives 109 kilowatt-hours of energy from the sun each year. Well- proven technologies exist that enable this energy to be harnessed for space heating, water heating, lighting, and electricity.

People have been using the sun for space heating for thousands of years. By simply orienting buildings toward the south, using appropriate levels of glazing (windows) on the south wall, installing "thermal mass" (such as concrete, brick, quarry tile, or water) to store the sun's energy, and employing high levels of insulation, one can cost-effectively acquire as much as 60% of one's space heat from the sun.

Solar water heating is another well-established solar technology that works well in Vermont. An appropriately sized solar water heating system can provide two-thirds of a household's annual hot water needs-almost 100% in the summer and as low as 30% in the worst month of the winter. When a solar system is coupled with a wood-fired water heating system, it is possible to get almost 100% of one's hot water from renewable energy sources.
Solar energy can also be used to provide natural day lighting in well-designed buildings. Appropriate placement of windows and use of clerestory building designs can greatly reduce the energy needed for lighting.

Solar electricity, also known as photovoltaics, is cost-effective today in applications further than one-quarter mile off the utility power grid and may be cost-effective in locations connected to utility lines in as little as ten years, as advancements in photovoltaics technology continue, lowering the price for solar electricity. Twenty years ago, photovoltaics-generated electricity cost $30.00 per kilowatt hour (kwh); today it costs about $.30 per kwh, and the U.S. Department of Energy expects the cost to be $.04 to $.07 per kwh by 2010. A Japanese company is already incorporating photovoltaics into roofing tiles, and it is only a matter of time before most south facing roofs are covered with electricity-producing shingles.

The pollution-free nature and low operating costs of these solar technologies are compelling arguments for increased use of solar energy. The largest obstacle to widespread use of solar energy is that solar systems often have high initial investment costs that may deter homeowners and businesses. However, the savings that accrue over the lifetimes of the systems typically repay these initial investments several times over. In Hartford, several homeowners have incorporated solar into their energy supply systems.

Wind

Wind generators are a proven technology, and the cost is expected to decrease as further advances are made. A 1990 study by Battelle Labs for the U.S. Department of Energy indicated that Vermont could potentially generate an average of 540 megawatts of electricity year-round without affecting environmentally sensitive and urban areas.

Residential wind machines generally interface with the electric utility grid, feeding in electricity when the machine's supply exceeds demand and drawing from the grid when the demand is larger. The current price structure for excess power sold back to the utility companies does not encourage installation in most residential settings.

Small annual variations in a site can mean large differences in power. That being the case, careful measurement of the winds is required. It is advisable to hire a consulting firm to assess wind speeds at sites under consideration for wind energy development.

Potential environmental impacts which must be considered throughout the planning stages of a wind development project include aesthetics and historic preservation.

Hydroelectric

Hydropower was one of the earliest renewable energy resources, with extensive systems of dams and mills operational in the middle-ages and earlier. Today, almost all hydropower is used to produce electricity, with most systems tied to the electric utility grid.
In Hartford, hydropower generated from the Ottauquechee River in Quechee produces about 80% of the power used by Simon Pearce Glass, Pottery and Restaurant. The Ottauquechee River is dammed again at the old Deweys Mills site and has an installed generating capacity of 1.4 Mw. Dothan Creek has an old spillway in Wilder along Route 5, where a sawmill once operated. These are just several examples of the potential of hydropower in Hartford. The largest hydropower facility in our area is the Wilder Dam, owned by TransCanada. Hartford has good potential for smaller, more community-oriented hydropower projects.

A well-built hydro project will operate for upwards of 50 years with only routine maintenance. During this period, it will consistently and reliably produce electricity without producing any global warming, acid rain, or other pollution, with minimal risk of damage due to dam failure, and will utilize a minimal amount of nonrenewable resources, chiefly lubricating fluids.

Potential environmental impacts that must be considered throughout all planning stages of a hydro development project include historic preservation, fish habitat, temperature increases due to a large area of standing water, erosion, and aesthetics.

RESOURCE RECOVERY TECHNOLOGY PROGRAMS

Innovative technologies are advancing at a tremendous rate and are allowing us to recover and conserve much of the energy that previously went unused and resulted in a waste of resources and increased pollution. Several of these technologies - such as co-generation, demand side management programs, and mining of landfill gasses - are currently available for use throughout Vermont.

Co-generation

Conventional electrical generating facilities convert one third of the heating value from burned fuels to electrical energy, while venting roughly two-thirds off as waste heat. Co-generation facilities capture and use this thermal waste energy for space heating and/or industrial processes, thereby using up to twice the potential energy in the fuel as conventional generating facilities. Typically, a co-generation facility is sized either to match the electrical demand and use the heat as needed or to

match the thermal energy required, and the electricity is used as needed or fed back to the grid. Co-generation works best in situations where large thermal and electrical needs are located near one another. Since thermal transfer losses are greater than electrical transfer losses, siting considerations favor locating co-generation facilities close to the thermal demand.

Approximately 90% of the co-generation industry is large energy users. The use of an on-site generator, whether for peak shaving, co-generation, or a total energy system, should be investigated for any facility with electric bills exceeding $50,000 per year. Facilities already having generators and with electrical bills of $30,000 or more, or having a large quantity of combustible waste or large thermal loads, should also investigate the feasibility of co-generation. Neighboring facilities should consider the possibility of a joint co-generation facility to match the thermal load of one facility with the electrical demands of another.
The installation of co-generation facilities makes the most economic sense at either the time of new construction or when replacing heating or generating facilities. Currently, in Hartford, there are several large electrical energy consumers that might benefit from investigating the feasibility of co-generation.

Demand Side Management Programs

The primary responsibility of electric power companies is to provide an adequate, uninterrupted supply of electricity to the public. Traditionally, utilities have looked to expand their supply side (i.e. build a new power plant or purchase more power from another power generator) in response to increased demand from the public. However, Vermont utilities have recently begun working with environmental groups and the Vermont Public Service Board to develop programs that promote conservation, efficiency, and fuel switching among electric users to satisfy the demand for power. Because these programs focus on reducing demand, rather than increasing supply, they are called demand side management (DSM) programs. Electric utilities offer these comprehensive energy efficiency programs to their residential, farm, commercial, and industrial customers to encourage them to make cost-effective investments in energy efficiency.

Methane Gas Production and Collection

Recently developed systems capture the methane gas which is produced in landfills from the anaerobic breakdown of organic materials. The methane is then either used on-site or trucked as a liquid fuel for use elsewhere.

Methane gas is a serious ozone depleter and, if left in landfills, will eventually escape into the atmosphere and cause significant environmental damage.

Possibilities exist for methane gas production as a commercial enterprise. Home-grown fuels may become more profitable with recent technological advancements and should be encouraged.

IMPLEMENTATION STRATEGIES

The Town should consider the formation of an Energy Committee. In conjunction with other boards and commissions, the Energy Committee should develop an implementation program, assign responsibility for all actions called for in the Town Energy Plan, and specify a time period for their completion. The Energy Committee will want to refer to "EarthRight's Guide to Town Energy Planning in Vermont," an excellent resource for information regarding energy information collection.

The Town's boards, commissions, and the Energy Committee should place a priority on the modifications and actions that will enable the municipality itself to achieve a higher level of energy efficiency and conservation. Programs determined through sound engineering analysis to be able to return their investment in five years or less should be considered by the Town. The short-term goals should be completed within one year, while the long-term goals and/or recommendations should be started within one year.

The Energy Committee should conduct an annual review and analysis of program implementation and submit a report of its findings to the Town Selectboard and make it available to the Hartford residents.

The Energy Committee should organize an annual Renewable Technologies Fair to be held in Hartford, that displays, demonstrates, and sells renewable energy products to the local residential and commercial public. Such products might include refrigerators, lights, gas stoves, gas dryers, insulating drapes, storm windows, set-back thermostats, instantaneous water heaters, and water conservation items.

The Energy Committee should become aware of resource recovery technologies such as co-generation, demand side management programs, and mining landfill gasses, as well as emerging technologies, and inform and advise the community as to their existence and applications.

The Energy Committee should encourage the development of co-generation by encouraging businesses that are either building new or replacing existing facilities, and that meet the criteria listed above, to investigate the feasibility of co-generation as an option.

The Energy Committee should encourage local businesses to use the energy auditing services of the Vermont Industrial Energy Conservation Advisory Program (VIECAP) for determining efficiency of their current energy use systems.

RECOMMENDATIONS

1. Provide leadership to the community in energy conservation by creating an Energy Committee charged with implementation of the recommendations within this chapter.
2. Conduct complete energy audits of all Town buildings to:
    a. Identify areas of energy waste and areas of potential savings;

b. Recommend cost-effective energy conservation and efficiency measures and modifications that will make use of renewable energy; and

c. Prioritize these modifications and incorporate them into the Town's Capital Improvements Program.

3. Encourage programs to provide energy audits and cost-effective weatherization services.

4. Construct and retrofit municipal buildings for cost-effective energy conservation, and participate in the energy programs offered by local utility companies to their customers.

5. Keep energy consumption and expenditure records for Municipal use to better track the Town's energy demands by specific types of energy used and target conservation and efficiency efforts.

6. Develop and implement a program of upgrading to, and maintaining, energy-efficient exterior lighting.

7. Include fuel efficiency in its purchasing decisions.

8. Use life-cycle costing in evaluating all decisions concerning equipment, vehicle, or other energy-consuming purchases by the Town.

9. Investigate the use of alternative fuels in Town vehicles. (This can be very cost-effective, as the federal government may share the cost of programs that demonstrate clean alternative fuels for municipal vehicles.)

10. Within the School District:

    a. Teach and promote bicycling as a viable transportation alternative;

    b. Teach the true costs of various energy options, including car ownership; and

    c. Teach energy-efficient driving techniques in driver's education.

11. Investigate co-generation facilities for municipal buildings.

12. Provide information on conservation and efficiency; efficient transportation; local renewable resources; related town, state and federal energy programs; and available funding and financing for these programs.

13. Develop incentives for townspeople and developers for the sustainable use of local and/or renewable resources.

14. Continue to cooperate with adjacent communities and Advance Transit to develop commuter facilities to:

    a. Increase access to bus routes, including frequent cycles during peak transit hours;

    b. Encourage education programs on the benefits of using public transportation; and

    c. Encourage car-pooling and van-pooling initiatives and programs.

15. Encourage employers in the Town and the region to promote energy-efficient commuting.

16. Promote the development and use of a system of trails, greenways, sidewalks, bicycle paths, and commuter parking lots as viable transportation components, with particular attention

given to connecting schools, recreation facilities, shopping centers, places of employment, health centers, and transportation facilities.

17. Encourage the installation of bicycle parking racks at activity areas such as schools, recreation and community facilities; shopping centers; places of employment; health centers; and transportation facilities.
18. Provide shelters, where needed, for pedestrians and bicyclists at bus stops and rideshare pickup locations.
19. Include sidewalks and bicycle paths as a component of the capital budgeting process and continue to pursue Federal and State funding for their construction.
20. Consider bicycle paths, sidewalks, pedestrian walkways, and public transportation access in reviewing all proposals for commercial and Town recreation-facility development.
21. Consider transportation efficiency issues, bicycle use, and alternatives to the private automobile when reviewing proposed plans for a development.
22. Where possible, acquire easements for bicycle and walking paths between developed areas at the time of permitting subdivisions or new roads.
23. Develop park and ride areas.
24. Continue to encourage mixed-use growth centers (co-mingled residential development, employment areas, commercial districts, shopping areas, and rideshare lots), to discourage land use that would create or lead to energy inefficient sprawl and strip development.
25. Encourage the use of energy conservation measures through site-plan review as follows:
    a. Vegetation as winter wind buffers and summer shading,
    b. Building orientation to take advantage of natural light and heat, and
    c. Protection of solar access for existing buildings from shadows cast by new structures.
26. Actively promote the Use Value Tax Program for stimulating sustainable fuel wood production, and for improving the management of forests.
27. Continue to manage the Town Forest for recreational uses, and wildlife habitat, for the benefit of the Town and its residents in a sustainable manner.
28. Encourage all wood-burning installations to meet all applicable National Fire Protection Association (code #211) safety requirements and Federal EPA emissions standards.
29. Coordinate with local fuel-wood suppliers, foresters, and loggers to evaluate options of developing a fuel-wood cooperative.
30. Encourage the organization of an annual cooperative to purchase energy saving devices, such as insulation, solar water heating systems, woodstoves, photovoltaic modules, etc.
31. Encourage existing and proposed large electrical energy consumers and large thermal users to manage their energy load and investigate co-generation where feasible.

32. Encourage the continued use of hydropower at Hartford's three hydroelectric sites: the TransCanada generating facility at the Wilder Dam, the Simon Pearce facility at the Quechee Dam, and the Hydro Energies Corporation facility at the Deweys Mills Dam.
33. Encourage and promote public education efforts on energy issues.
34. Encourage energy-efficient and aesthetically appropriate exterior lighting for industrial and commercial projects and for street lighting within new subdivisions.

CHAPTER XI

RELATIONSHIP OF PLAN TO DEVELOPMENT TRENDS AND PLANS FOR ADJACENT TOWNS AND REGIONS

An important component of any planning effort is a view beyond the focus area. An attempt has been made throughout this Plan to consider Hartford's important role within the Upper Valley region. Several areas have been identified in other chapters of the Plan where it is clear that Hartford and its neighbors would benefit from continued regional cooperation relative to problem solving and the provision of services. This chapter looks more specifically at the land use plans of Hartford's neighbors.

Hartford shares its northern border with Norwich, Vermont; its eastern border with Lebanon, New Hampshire; its southern border with Hartland, Vermont; and joins Pomfret, Vermont; to the west. Hanover, New Hampshire is located to the northeast; Plainfield, New Hampshire to the southeast; Woodstock, Vermont to the southwest; and Sharon, Vermont to the northwest. Hartford, along with its neighbors to the north, south, and west is a member of the Two Rivers-Ottauquechee Regional Commission (TRORC), which consists of thirty Vermont towns.

The Hartford Master Plan is generally consistent and compatible with plans for each of its neighboring communities, as well as the TRORC Regional Plan. Each is listed below.

A Plan for the Town of Norwich, 2006

Town of Sharon Municipal Plan, 2005

Pomfret Town Plan, 2006

Town and Village of Woodstock Plan, 2001 (Update in progress)

Municipal Plan for the Town of Hartland, Vermont, 2002

Master Plan for the City of Lebanon, New Hampshire, 2002

Hanover Master Plan, 2003

Two Rivers-Ottauquechee Regional Commission Regional Plan, 2003

No conflicts were identified with any of the above plans.

Although each of the plans is unique, reflecting the individual character of communities, a general pattern was observed in reviewing the plans together. A generally common theme in the land use plans pertinent to the Upper Valley is the encouragement of future development in or near existing downtown and village areas, with surrounding areas to continue to be used for low-density development compatible with forestry, agriculture, and resource protection. This is an important foundation of the Regional Plans as well.

Hartford directly adjoins Norwich, Pomfret, Hartland, and a small stretch of Woodstock along the Ottauquechee River. The Norwich plan incorporates the Zoning Map as a guide for future land use. Both Hartford and Norwich have planned for a continued pattern of low-density development along most of the common border, with higher densities and commercial development toward the east in the Route 5/Interstate 91 area. Like Hartford, Pomfret has planned for low-density development along the shared border. Along the Woodstock line, the Ottauquechee River provides a buffer between the Taftsville hamlet area and Hartford's low-density development. Similar to the situation to the north along the Norwich line, most of the land to the south along the Hartland line has been planned by both communities to remain low density and rural in nature. Again, exceptions relate to major transportation corridors. Both communities plan slightly higher density use to continue adjacent to Route 5 in the vicinity of the existing mobile home park. As Hartford has done in several locations, Hartland has also planned an area of commercial use along Route 4, while making an attempt to mitigate the potential impacts of development on this heavily used transportation corridor.

Although separated by both the Connecticut River and a state line, the relationship between Hartford and bordering towns in New Hampshire is a strong one. As discussed in other chapters of this Plan, Hartford, Norwich, Lebanon and Hanover form the economic and service core of the Upper Valley to revitalize and enhance the physical infrastructure and economic social base in one community directly link to another and, therefore, successes resulting from these neighboring efforts benefit all communities. It is important to recognize these linkages as well as the benefits of planning for regional housing, transportation, and employment needs.

CHAPTER XII

IMPLEMENTATION PROGRAM

		TIMING							
RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
HISTORIC AND CULTURAL RESOURCES: CHAPTER I									
1. Work with the Hartford Historic Preservation Commission and the Hartford Historical Society to promote the preservation, recognition, enhancement, and appropriate use of the Town's historic and cultural resources.	5	X			HHPC, HHS & P&D		X	X	X
2. Encourage the public's interest in the Town's historic and cultural resources in a variety of ways, including: a. displaying photographs, artifacts, and murals in the Town's public and commercial buildings; b. displaying markers/interpretive signs at key historic structures and sites; c. establishing self-guided walking tours of the Town's historic districts; d. developing a brochure describing the Town historic resources and districts, in order to attract tourists to Hartford; e. arranging guided tours of the Town's historic structures and sites; f. encouraging the study of local history in the school curriculum; and g. encouraging the development of oral history project.	5	X			HHPC, HHS & P&D				X
3. Provide village and school libraries with materials on the Town's historic and cultural resources and to make those materials as accessible to the public as possible.	5, 12	X			HHPC, HHS & P&D				X
4. Encourage the protection, enhancement, and renovation of the Town's significant architectural and historic resources.	5	X			HHPC, HHS & P&D				X
5. Consider listing eligible historic structures, sites and areas on the National Register of Historic Places.	5	X			HHPC & P&D				X
6. Consider establishing a Hartford Register of Historic Places modeled on the Vermont Historic Sites and Structures survey.	5			X	HHPC & P&D				X
7. Consider designating roads within rural historic districts	1,6,9,		X		HHPC & P&D			X	

BOS = Board of Selectmen
HHPC = Hartford Historic Preservation Commission
HHS = Hartford Historical Society
CC = Conservation Commission
PC = Planning Commission
P&D = Planning & Development Staff
PW = Public Works Department
HHA = Hartford Housing Authority
P&RC = Parks & Recreation Commission
P&RD = Parks & Recreation Department
ZBA = Zoning Board of Adjustment
RPC = Regional Planning Commission

RECOMMENDATIONS	ACT 200 Goals	TIMING			RESPONSIBLE PARTY	REGULA-TORY	FINAN-CIAL	POLICY	OTHER
		Continuing/ Ongoing	0-2 Years	3-5 Years					
(such as the Jericho and Dothan areas) as "Scenic Roads".	10								
8. Historic documents should be kept in secure, floodproof and fireproof locations.	5	X			HHPC & HHS				X
9. Expansion of the 1973 Historic Sites and Structures Survey for Hartford, prepared by the Division for Historic Preservation, should be encouraged.	5		X		HHPC & P&D				X
10. Use Community Development Block Grant Funds and Other grants to rehabilitate the Town's older housing stock.	1, 11	X			P&D & HHA		X		X
11. Continue to support the revitalization of Hartford's village centers.	1, 10	X			ZBA&PC		X	X	X
12. Consider establishing historic zoning districts [pursuant to 24 V.S.A. 117,4407(15)].	5	X			HHPC, P&D & PC		X	X	X
13. Market and promote the historic and architecturally significant features of the Town's village centers to encourage tourism and the rehabilitation and reuse of existing historic structures and sites.	2,5	X			P&D		X		X
14. Develop a long-term plan to inventory, interpret, and preserve the Town's archeological sites and to foster public awareness and appreciation of those sites.	5			X	HHPC & P&D				X
15. Consider the development of a sign guide to assist business owners in historic districts to create appropriate signs.	5		X		HHPC, P&D & PC		X	X	X
16. Assist landowners who wish to evaluate the potential of historic buildings to be used for new uses by applying for "pre-development grants" for architectural plans and specifications, historic structure reports, engineering studies, archaeological testing, and feasibility studies.	5	X			HHPC & P&D		X		X
17. Encourage public off-site, off-street parking in the Village centers to ensure that the landscaped areas around historic structures are conserved to the greatest extent possible.	4	X			PC & P&D		X	X	X
18. Continue working toward qualifying Hartford's villages as designated villages under the Vermont Downtown Program.	5		X		HHPC, P&D, PC & BOS		X	X	X

BOS = Board of Selectmen
HHPC = Hartford Historic Preservation Commission
HHS = Hartford Historical Society
CC = Conservation Commission
PC = Planning Commission
P&D = Planning & Development Staff
PW = Public Works Department
HHA = Hartford Housing Authority
P&RC = Parks & Recreation Commission
P&RD = Parks & Recreation Department
ZBA = Zoning Board of Adjustment
RPC = Regional Planning Commission

		TIMING							
RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
LAND USE – CHAPTER II									
1. Designate the villages of White River Junction, Quechee, Wilder and Hartford the Quechee Interstate Interchange zoning district as growth centers (see proposed growth centers map).	1		X		P&D & PC	X			
2. Revise zoning densities and dimensional requirements to encourage infill housing in the village areas taking into consideration existing settlement patterns.	1		X		P&D & PC	X			
3. Enhance pedestrian accessibility in village areas.	4	X			P&D, PC & PW	X			
4. Reduce minimum lot sizes requirements.	1		X		P&D & PC	X			
5. Continue to regularly evaluate the water and wastewater systems to ensure that improvements are planned and funded to accommodate anticipated growth for the foreseeable future.	12	X			PW		X	X	
6. Reduce minimum lot width & depth requirements to allow replication of historic development patterns.	1		X		P&D & PC	X			
7. Encourage mixed-use development in the village centers.	1	X			P&D & PC	X			
8. Create a residential zoning district that allows multi-family as a permitted use.	1 & 11		X		P&D & PC	X			
9. Allow a density bonus up to 25% for affordable housing projects in areas served by Town water and wastewater.	1 & 11		X		P&D & PC	X			
10. Encourage the development of multi-family housing on a scale and design compatible with existing neighborhoods.	1	X			P&D, PC & ZBA		X		
11. Ensure that higher density development does not detract from the historic character of Hartford's villages and the downtown.	1&5	X			P&D, PC & ZBA		X		
12. Create a new commercial zoning district for the area around the Quechee Interstate Interchange that will protect the character of the area.	1&5		X		P&D & PC	X			
13. Create a new zoning district for existing l-C (Industrial/Commercial) properties along Route 4 in Quechee and Route 5 South that will protect the character of the area.	1&5		X		P&D & PC	X			

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		TIMING							
RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
14. Change zoning district designations to more accurately reflect the existing character of the neighborhood.	1		X		P&D & PC	X			
15. Carefully review the permitted and conditional uses for all village zoning districts.	1		X		P&D & PC	X			
16. Assure that zoning districts in the village centers retain adequate pedestrian orientation. Such areas should have clear sets of standards regulating traffic flow, preservation of green space and the development of sidewalks or walkways where appropriate.	1,2 & 6		X		P&D, PC & PW	X			
17. Consider reviewing the regulations, policies, and procedures for amending the Quechee Lakes Master Plan in recognition of changing roles, technologies and community attitudes.			X		P&D, PC, QL Resorts & Quechee Lakes Landowners Association	X			
18. Provide tax incentives for higher density development in designated growth areas.				X	BOS		X		
19. Create a Rural Planned Development (PUD) Overlay District for all Rural Land Zoning Districts. For all major subdivisions, require detailed mapping of natural resources with an emphasis on preserving rural character and sensitive features including prime agricultural soils, wetlands, steep slopes, important wildlife habitat, scenic views, and ridgelines and hillsides that are easily visible from existing roadways, and all overlay districts.	1&6		X		P&D & PC	X	.		
20. Change the Definition of Minor Subdivisions: For all rural areas, change the definition of a minor subdivision to include boundary line adjustments and the creation of only one new lot with criteria to be developed relative to the placement of structures and driveways based on natural resource constraints. Allow one minor subdivision per parcel every five years to give landowners the opportunity to slice off a small lot without having to go through an expensive application process.	1		X		P&D & PC	X			
21. Create a Wildlife Habitat Overlay District: To maintain critical wildlife corridors and habitat that connect to unfrag-mented forested areas within Hartford and to adjacent Towns, development will be encouraged close to roads and/or developed areas to allow sufficient wildlife corridors through the area.	1&6		X		P&D & PC	X			

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(Cont'd from 21.) . Pomfret to QLLA Section 5 (Quechee/W. Hartford Rd.) . QLLA Section 5 (across Route 4) to the Hurricane Forest and south to Hartland.									
. QLLA Section 5 (across 1-89 & the White River to Wildlife Road and north to Norwich. .									
22. Create an Agricultural Overlay District: Areas with significant prime and/or actually used agricultural soils, Development that impacts agricultural resources will be discouraged. . Jericho Area . Route 5 South/Connecticut River Road . Christian Street	1&9		X		P&D & PC	X			
23. Create New Zoning District (RL-10): Less developed areas where unfragmented forests exist, large agricultural lands, undeveloped lands and other natural resources. In these areas, the zoning is proposed to change from RL-5 to RL-10. RL-5 will continue in areas closer to villages, roads and areas where development has occurred closer to five- acre densities.	1,5&9		X		P&D & PC	X			
24. Create an Agricultural Forestry Zoning District in the Rural South Area: For the largest unfragmented forested area of Town that abuts the Town Forest and the Army Corps of Engineers lands where the density will be one lot per 28 acres.	1,5 & 9		X		P&D & PC	X			
25. Allow Smaller Lots without Reducing Density: In the RL-3, RL-5 and RL-10 zoning districts, reduce the minimum lot size to one acre, while maintaining the overall density of each zoning district (one lot per three acres in RL-3, one lot per five acres in RL-5, and one lot per ten acres in RL-10).	1,6&9		X		P&D & PC	X			
26. Reduce Lot Width and Lot Depth Requirements: For lots two acres or smaller in the RL-3, RL-5 and RL-10 zoning districts, reduce the lot width requirement to 150' and the lot depth requirement to 150'.	1&9		X		P&D & PC	X			
27. Reduce Minimum Setbacks: For lots two acres or smaller 'in the RL-3, RL-5 and RL-10 zoning districts, reduce the minimum setback requirements to 35' for the front and 25' for' the side and rear.	1,6 & 9		X		P&D & PC	X			

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RECOMMENDATIONS	ACT 200 Goals	TIMING			RESPONSIBLE PARTY	REGULA-TORY	FINAN-CIAL	POLICY	OTHER
		Continuing/ Ongoing	0-2 Years	3-5 Years					
28. Rural residential development should be clustered on the most suitable sites that minimize impact on natural resources and fragile features: These include prime agricultural soils, wetlands, streams, steep slopes, scenic views, ridgelines, and important wildlife habitat.	1,5,6 & 9	X			P&D & PC	X			
29. Maintain and enhance open space and recreational "infrastructure" important for long-term health and quality of life for Hartford residents.	1 & 8		X		P&D, PC & P&RD	X			
30. Adopt standards to protect natural resources and Fragile features: These areas include prime agricultural soils, wetlands, streams, steep slopes, scenic views, ridgelines and important wildlife habitat.	1&5		X		P&D & PC	X			
31. In the rural lands districts, new residential development shall be carefully planned and designed to protect important agricultural land and other scenic and natural resources.	1,5 & 6	X			P&D & PC	X			
32. Appropriate uses such as agriculture, forestry, wildlife habitat conservation, hunting and other recreational activities should be encouraged through incentive programs, land conservation as part of planned unit developments, purchase of Development rights and conservation easements and education.	1,5 & 6	X			P&D & PC	X			
33. Consider utilizing zoning and subdivision regulations to limit development on slopes exceeding 20%, on ridgelines and hilltops, and on open meadows/agricultural land.	1&5		X		P&D & PC	X			
34. Try to achieve a population balance between rural Hartford (25%) and the areas served by Town water and wastewater service (75%).	1&5	X			P&D & PC	X			
35. Encourage private and public efforts to implement the following planning studies: a. Railroad Row Historic District Plan b. River City Revival c. Sykes Mountain A venue Study d. Route 5 South Study	b4	X			P&D, PC & Hartford Development Corporation	X			

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
36. Maintain wooded buffer areas between the 1-89/1-91 and surrounding properties.	1,5 & 6	X			P&D & PC	X		X	
37. Revise zoning, subdivision, highway, floodplain, etc. regulations to more closely reflect the Master Plan.	b4		X		P&D & PC	X			
38. Consider proposing/adopting basic building code aimed at fire prevention and safe!!.	12				P&D & BOS	X			
39.Promote the use of accessory apartments as a means of increasing the availability and affordability of housing.	11	X			P&D & HHA			X	
40. Coordinate with the Two Rivers Ottauquechee Regional Commission and other regional organizations and surrounding Towns to create a well-balanced region.	bl	X			P&D			X	
41. Provide incentives for clustering.	1&5	X			P&D & PC	X			
42. Continue the Town's historic settlement pattern; defined by compact villages surrounded by rural countryside.	1	X			P&D & PC	X		X	

POPULATION CHAPTER III									
1. Identify and track population indicators in order to ensure adequate facilities and services for different age groups.		X			PC, PW & P&D		X	X	
2. Continue to plan for accommodating an increasing population, including school age and elderly, while evaluating actions such as zoning changes and water and sewer service area expansions to ensure their population impacts are compatible with other goals and objectives of the community.		X			PC, PW & P&D		X	X	

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
HOUSING – CHAPTER IV									
1. Encourage the production of adequate amounts of decent, affordable new housing to meet the housing needs of citizens at all socioeconomic levels.	11	X			P&D & HHA		X	X	
2. Encourage the retention of existing housing stock, including the upgrading of substandard housing.	5,11	X			P&D, HHPC & HHA		X		X
3. Encourage public and private mixed income single-family and multi-family residential development within neighborhoods and village areas where there is Town water and sewer and is located in close proximity to public transit and community facilities.	4,11& 12	X			P&D, PC	X		X	
4. Continue to support the development of housing for special needs populations, including first time home buyers, senior citizens, single parent families, single persons, disabled persons and the homeless.	11	X			HHA, P&D, & Twin Pines Housing Trust		X	X	
5. Continue to support the efforts of the Hartford Housing Authority and the White River Area Housing Development Corporation to administer rental assistance programs for low income residents of Hartford and assistance to other special needs populations.	11	X			BOS			X	
6. Support the Upper Valley Housing Coalition regional efforts to overcome the current regional housing shortage, including participation in housing workshops and efforts to reduce the cost of developing new housing.	11	X			P&D			X	
7. Work with non-profit housing organizations to develop affordable housing projects and secure perpetuity whenever possible.	11	X			P&D & HHA			X	
8. Support local and regional economic development initiatives aimed at raising the income levels of current residents, thereby increasing income available for housing costs.	3	X			GMEDC			X	
9. Promote the use of accessory apartments as a means of increasing the availability and affordability of housing.	11	X			P&D			X	
10. Encourage the renovation and re-use of existing buildings to meet various housing needs.	11	X			P&D			X	

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
11. Investigate the use of Town and State properties for the development of affordable housing.	11	X			P&D			X	
12. Revise zoning densities and dimensional requirements to encourage infill housing in village areas taking into consideration existing settlement patterns.	11		X		P&D & PC	X			
13. Encourage mixed-use development in the village centers.	1 & 11	X			P&D & PC	X			
14. Allow a density bonus up to 25 % for affordable housing Projects in areas served by Town water and sewer.	11		X		P&D & PC	X			
15. Create a residential zoning district that allows multi-family as a permitted use.	11		X		P&D & PC	X			
16. Ensure that higher density development does not detract from the historic character of Hartford's villages and the downtown.	5	X			P&D, PC & ZBA			X	
17. Encourage the development of multi-family housing on a scale and design compatible with existing neighborhoods.	1	X			P&D, PC & ZBA			X	
18. Encourage new rural housing development to be clustered in order to preserve the greatest amount of open space and blend harmoniously with the natural environment.	1,5& 10	X			P&D & PC	X			
19. In the Downtown, encourage the rehabilitation of vacant or under-utilized buildings to provide housing on the upper floors, while encouraging first floor commercial.	1 & 5	X			P&D & PC			X	
20. Encourage innovative residential site designs that promote connections with existing neighborhoods and village areas.	1	X			P&D & PC			X	
21 Streamline the permitting of accessory apartments.	11		X		P&D			X	
22. Create a municipal fund for the rehabilitation of substandard housing.	5&11		X		P&D & BOS		X		
23. Develop a historic housing rehabilitation program for properties listed or eligible for listing on the National Register of Historic Places.	5 & 11		X		P&D & HHPC		X		
24. Consider reduced application and impact fees for new permanent affordable housing.	11		X		P&D & BOS			X	
25. Conduct a study to help identify areas most suitable for new residential development.	5 & 11		X		P&D		X		

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
ECONOMIC DEVELOPMENT CHAPTER V									
1. Create a downtown partnership organization involving property owners, businesses, residents, the arts community, civic organizations and town officials and raise funds to hire a staff person for the organization.	1,2		X		P&D, Ad Hoc Committee and Civic Groups		X	X	X
2. Submit an application for state downtown designation.	1,2&5		X		P&D, Ad Hoc Committee and Civic Groups	X	X	X	X
3. Develop a plan to guide the work of this organization that has broad-based support.	1,2		X		P&D, Ad Hoc Committee and Civic Groups		X	X	
4. Undertake several short-term activities to increase awareness and support for the new organization and build on current momentum.	1,2	X			P&D, Ad Hoc Committee and Civic Groups		X		X
5. Create a I and building improvement fund in White River Junction.	1,2& 5		X		P&D, BOS, Ad Hoc Committee, HHPC		X	X	
6. Establish an entity with the mission and authority needed to prepare and implement redevelopment projects.	1,2		X		P&D			X	X
7. Maintain and strengthen White River Junction's attractions and improve linkages to other key destinations by: a. Create an arts organization to strengthen recognition and community support for arts and cultural activities downtown. b. Work with Northern Stage Theater to establish a permanent home in WRJ for this critical destination c. Establish a transportation service that links WRJ, Quechee Village and other key destinations. d. Secure special state legislation to transfer state owned land at the junction of the White and Connecticut River to town ownership, providing a key site to strengthen the downtown's pedestrian and scenic connection to the rivers.	1,2,4, 5,8& 10	X X		 X	P&D and Ad Hoc Committee and Civic Groups				X

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
8. Identify an existing organization or create a new one in each village to define and implement improvement efforts in the village center to identify shared goals and priorities for strengthening the village center.	1,2,5	X	X		P&D and Ad Hoc Committee and Civic Groups				X
9. Establish a "Village Service Team" across town departments to work with each local volunteer organization on village improvement efforts.	1,2,5		X		P&D, P&RD, PW, Ad Hoc Committee And Civic Groups				X
10. Utilize the I and building improvement fund discussed under strategy one to provide an incentive for improving buildings in village centers.	1,2,5		X		P&D		X	X	X
11. Create a housing improvement program that provides financial assistance for low and moderate-income homeowners to stabilize their properties and to undertake improvements. The program also should include a means to mitigate the property tax impact of such improvements.	1	X			P&D and Planning Commission		X	X	X
12. Identify existing community events and plan additional ones to be held in each village center with the goal of having at least one event each season.	1,2,8	X			P&D, P&RD, Ad Hoc Committee and Civic Groups				X
13. Establish a transportation service that links White River Junction, Quechee Village and other village centers to strengthen village centers.	1,24			X	PC, P&D, PW and Advance Transit		X		X
14. For those village centers where expanding local economic activity is a goal: a. Identify existing home-based and small businesses within Hartford that are potential tenants for vacant village center building through a review of existing records and directories, outreach and surveys; b. Work with building owners to make improvements needed to accommodate potential tenants with real demand for space in the village center.	1,2,	X			P&D, Ad Hoc Committees and Civic Groups				X
15. Identify potential sites and buildings to house a satellite facility for CCV and/or VTC.	1,2,3		X		P&D				X
16. Cultivate a delegation of local government, business and civic leaders to lobby for a satellite facility for CCV and/or VTC with college and state officials.	1,2,		X		P&D				X

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
17. Work with business organizations such as Chambers of Commerce to prepare a guide to regional education and training services that provides useful evaluative data on program quality, such as graduation rates, job placement rates, starting salaries for graduates and the like.	2,3		X		P&D, Chamber of Commerce				X
18. Advocate for the creation of a regional workforce development consortium that can improve coordination among education and training providers, fill service gaps and more effectively address employer needs and improve the skills and earnings of workers.	2,3	X			P&D, RPC, Green Mountain Economic Development Corporation			X	X
19. Implement a marketing campaign targeted to attract high technology and professional service firms to Hartford highlighting existing services, incentives and tax benefits available.	1,2		X		P&D, Ad Hoc Comm., Green Mountain Economic Development Corp.			X	X
20 Prepare information materials that explain the zoning requirements and process for targeted types of development, including new construction of an office building, new construction of a light manufacturing plant, and rehabilitation of an existing building for office or mixed use.	1,2,		X		P&D				X
21. Implement the Sykes Mountain Avenue Study recommendations to create a more attractive and pedestrian-Oriented mixed-use area, including zoning changes to allow higher density office development that can appeal to professional and high tech firms.	1,2,4	X			P&D, PC				X
22. Attract a developer to build a multi-tenant Technology Center office building in White River Junction and/or the Sykes Mountain Avenue area.	1,2	X			P&D				X
23. Determine the financial feasibility of extending water and sewer service to the Kline Drive area, which is suitable for new development.	1,2, 12		X		P&D, PW		X		X
24. Evaluate both the development potential and financial feasibility of extending water and sewer service for the Route 14 corridor.	1,2,4, 12		X		P&D, PC, PW		X	X	
25. Update zoning to reflect actual development potential along the Route 5 and Route 14 corridors.	1,2,4, 12	X			P&D, PC	X			

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
26. Monitor the likelihood of the Veteran's Administration facility cutbacks and closure and advocate to avoid such actions while developing a contingency plan for cutbacks or closure.	2	X			P&D				X
27. Work within the regional Workforce Housing Coalition to Develop regional initiative to expand the supply of workforce Housing.	2,11	X			P&D, HHA, RPC, Green Mountain Economic Dev. Corporation		X	X	X
28 Work with lenders, developers, brokers and state agencies to create a homeownership program in Hartford that utilizes specialized first mortgage products and a soft-second mortgage to make home ownership affordable to low- and moderate-income residents.	2,11	X			P&D, HHA, Town Manager and BOS		X	X	X
29. Explore the market potential and required zoning to use duplex and townhouse style housing as a lower cost affordable home ownership option, especially as infill housing within village centers.	1, 11	X			P&D,PC,BOS	X	X	X	X
30. Establish or build on an existing annual community wide event to bring people together, celebrate the town's heritage and successes, and have fun.	2,8	X			P&D, Ad Hoc Committee, Civic Groups				X
31. Hold an annual "re-visioning" meeting to report progress on the economic development plan and other initiatives, foster dialogue among residents, and update the economic development strategy.	1,2		X		P&D, PC, Ad Hoc Committee, Civic Groups, BOS		X		X
32. Create information tools, e.g., a web site, electronic newsletter, print newsletter, and a regular feature in the Valley News, to report on successes and implementation progress and to notify residents about events, meeting and activities throughout Hartford.	2	X			P&D, Ad Hoc Committee, Civic Groups				X
33. Establish an Economic Development Advisory Committee (EDAC) to oversee and coordinate implementation of the Economic Development Program comprised of residents of all five villages, key businesses and employers, and a staff or board member from the organizations responsible for major implementation tasks.	1,2		X		BOS			X	

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		Continuing/ Ongoing	0-2 Years	3-5 Years					
COMMUNITY FACILITIES & SERVICES CHAPTER VI									
1. Increase local awareness of the range of services available to Hartford residents.	3,4,8, 12	X			Town Depts. And Ad Hoc Committees and Civic Groups				X
2. Promote the removal of architectural barriers which prevent the handicapped from using or gaining access to Public places.	12	X			Town Manager		X		X
3. Continue to maintain an up-to-date five-year Capital Improvements Program (CIP) to plan major capital expenditures and help spread the costs evenly over time.	12	X			P&D, PC and Town Manager		X	X	X
4. Consider the impact of specific development proposals on Hartford's community facilities and services which are not assessed impact fees.	1,2, 12	X			PC and P&D			X	
5. Review the impact fee structure to ensure it accurately reflects the true cost of development.	1,2, 12		X		P&D, PC, Town Manager and BOS		X	X	
6. All community facility buildings should be energy-efficient and have adequate space and parking.	4,7, 12			X	Town Manager		X	X	
7. Provide Police foot or bike patrols (vs. car and parking) in the village centers as needed.	12		X		Police Dept.		X	X	
8. Expand the present police patrol force to meet the needs of the community as warranted.	2	X			Police Dept. and Town Manager		X	X	
9. Maintain an effective system of public safety by appropriate repair and replacement of necessary emergency equipment.	12	X			Police Dept., Emergency Services Dept., and Town Manager		X		
10. Increase staffing to maintain a minimum of four Firefighter EMT's on-duty to perform initial fire attack to save lives and property.	12	X			Emergency Services Dept. and Town Manager		X	X	
11. Enhance fire prevention code enforcement by hiring one person and expanding the contract with the State of Vermont to include plans review for new construction to streamline the permitting process and ensures continuity.	12	X			Emergency Services Dept. and Town Manager	X	X	X	
12. Initiate, coordinate and institutionalize the Emergency Services public education component in the community.	12	X			Emergency Services Dept.			X	X

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13. Enhance technical rescue capabilities at water related emergencies, topographical rescue, natural and manmade disasters, and transportation accidents through external and Internal training programs and equipment.	12	X			Emergency Services Dept.		X	X	
14. Enhance hazardous materials response capabilities through External and internal training programs and equipment to protect life, property and environment from hazardous materials Releases.	12	X			Emergency Services Dept.		X	X	
15. Expand emergency medical services delivery by: a. Encouraging existing personnel to become certified paramedics and by hiring personnel who are certified paramedics. b. Increasing the likelihood of early defibrillation by: b.1 Supporting the acquisition of AEDs by public and private sector organizations. b.2 Continuing to assist the Police Department with CPR and AED training.	12	X			Emergency Services Dept.		X	X	
16. Reduce intervention time and increase capabilities by strategically placing advanced life support equipment with personnel or fast squads.	12		X		Emergency Services Dept.		X	X	
17. Improve Emergency/Disaster Management by revising the Town's Emergency Operations Plan and conducting training in weapons of mass destruction and terrorism.	12	X			Emergency Services Dept.		X	X	
18. Improve dispatching & communications through the use of Computer assisted dispatching and other technological advances.	12	X			Emergency Services Dept.		X	X	
19. Encourage funding of the capital improvement plan for firefighting equipment to avoid major budget jumps or bonding for new equipment by anticipating these costs and spreading them evenly over time.	12	X			Emergency Services Dept.		X	X	
20. Consider funding for land acquisition, additional staffing and new equipment as the demand for park expansion and recreational program increases.	8, 12	X			Town Manager, P&RD, and P&RC		X	X	
21. Acquire a community center site.	12			X	Town Manager		X	X	
22. Construct a maintenance facility at the Hartford Municipal Arena.	12		X		P&RC and P&RD		X	X	

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
23. Upgrade the Hartford Municipal Arena with a paint job, new central heating system, additional locker rooms, administration. Office, heated work space, entrance improvements, upgrade PA system, new electrical service Entry, viewing and storage improvements, fully insulate, Upgrade and increase public bathrooms/sewage system, and. a new closer parking area.	12		X		P&RD and P&RC		X	X	X
24. In Clifford Park, install picnic site amenities and park Benches, and landscape in and around the playground area. Long-range projects include an additional tennis court and renovation of the barn with water and electricity.	8, 12			X	P&RC and P&RD		X	X	X
25. Secure additional property for Ratcliffe Park.	8, 12		X		P&RC and P&RD		X	X	
26. In Watson Memorial Park, upgrade existing building for bathrooms, storage, and meetings, and expand facility use to include basketball courts and picnic areas.	8, 12		X		P&RC, P&RD and School District		X	X	X
27. In Kilowatt Athletic Field, continue with a strong turf maintenance program, including water irrigation and field lighting.	8, 12	X			P&RC and P&RD		X	X	
28. In the Hurricane Forest Wildlife Refuge Park, complete adequate posting, develop Wright Reservoir picnic site, make the entrance area to the pond handicap accessible, construct off-road trailhead parking and explore the possibility of connecting Wright Reservoir Road with King's Highway by developing the Class 4 road into a bike/hike trail.	4,8,12			X	P&RC and P&RD		X	X	
29. Encourage future development to interconnect parks and private lands with bike/hike trails. Support for these projects Should be given to the Conservation Commission.	4,8,12	X			P&D, PC and CC		X		X
30. Continue with the development of comprehensive after-school programs for the primary grade students Utilizing the Town's elementary schools. The programs should be funded through school taxes and offset, in part, by a minimal fee.	8 & 12	X			Hartford School District, P&RC and P&RD		X	X	
31. Develop a plan to address future redevelopment/expansion for the middle school/high school.	3, 12			X	Hartford School District		X	X	

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32. Acquire land for future middle school/high school redevelopment/expansion as needed.	3,12			X	Hartford School District		X	X	
33. Create additional recreational facilities (playing fields, gymnasium and track space) to support extra-curricular, recreational, and community activities.	8,12			X	Hartford School District		X	X	
34. Continue to maintain the middle, high, and vocational Schools to ensure a lengthy life expectancy.	3, 12	X			Hartford School District		X	X	
35. Assure compliance with the Federal mandates concerning handicapped accessibility.	3, 12	X			Town Manager Ad Hoc Committees and Civic Groups		X	X	X
36. Evaluate current and future library staffing needs relative to the American Library Association standards.	12		X		Town Manager Ad Hoc Committees and Civic Groups		X	X	X
37. Cooperate with the library trustees to ensure the needs of the townspeople are met.	12			X	Ad Hoc Committees and Civic Groups				X
38. Continue to recognize the role that each individual library plays in satisfying the social and cultural needs of the villages throughout the Town.	1, 12	X			Ad Hoc Committees and Civic Groups				X
39. The Town should continue to evaluate the means and methods it uses to provide library services to ensure effective and efficient modern library services to its citizens.	12	X			Ad Hoc Committees, Civic Groups & BOS,		X	X	
40. Evaluate solid waste needs for future growth and what the Town needs to do now to plan for the disposal and cost of disposal in the future and who pays for it.	12		X		PW		X	X	
41. Expand re-use, recycling and reduction efforts to lower the volume of solid waste that requires disposal.	12	X			PW		X	X	
42. Monitor trends in the waste management industry to better Position the Town to respond to market changes.	12	X			PW			X	
43. Alternate means of operating and funding the Hartford Community Center for Recycling and Waste Management should be reviewed periodically to determine whether operational modi-fications are warranted to meet the future needs of the Town.	12				PW, Town Manager, BOS		X	X	
44. Reopen the household hazardous waste facility to accommodate the disposal of HHW by residents and businesses on a Year-round basis.	12		X		PW	X	X	X	

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45. Establish a citizen committee to study ways to improve short term and long term solid waste disposal and recycling efforts.	12		X		PW			X	
46. Develop a capital improvements plan for maintenance of the Hartford Community Center for Recycling and Waste Management.	12		X		PW		X	X	
47. Continue to support and cooperate with the region's human service providers to ensure that those services utilized By Hartford's residents continue to be available.	12	X			Town Manager, Town Meeting and P&D		X	X	X
48. Encourage better communication between the Town, Historical Society and the private cemetery associations in Hartford.	12		X		HHS, BOS, Town Manager & Cemetery Associations			X	
49. Investigate funding sources for maintenance of historic cemeteries that have no designated maintenance entity.	12		X		P&D, HHPC,BOS & Town Manager		X	X	
50. Encourage the Quechee Cemetery Association to plan for additional space.	12			X	Ad Hoc Committees & Civic Groups				X

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UTILITIES - CHAPTER VII									
1. Continue an aggressive maintenance program for the two Town water distribution systems.	12	X			PW, BOS & Town Manager		X	X	
2. Continue efforts regarding wellhead protection in the areas of the Quechee and Wilder Wells.	5, 12	X			PW		X	X	
3. Establish a reserve fund for equipment replacement for the water and wastewater treatment facilities.	12		X		PW		X	X	
4. Improve and expand water system infrastructure within present service area before consideration of an expansion of the service area.	12	X			PW, BOS & Town Manager		X	X	
5. Complete recommended improvements to the water systems.	12		X		PW, BOS & Town Manager		X	X	
6. Continue an aggressive maintenance program for the two wastewater systems.	12	X			PW		X	X	
7. Structure utility rates to cover the costs of proper operation and maintenance of the wastewater and water systems.	12	X			Town Manager and PW		X	X	
8. Expand water and wastewater systems in the Route 5 South area to service existing and potential commercial and industrial development between Route 5 and Interstate 91 as recommended in the Route 5 South Study.	12			X	Department Policy and Operations		X	X	
9. Establish a reserve fund for equipment replacement in the event of unanticipated failure at the White River Junction Treatment Facility and the Quechee Wastewater Treatment Facility.	12	X			Town Manager		X	X	
10. Support the use of shared septic systems.	12	X			P&D & PW			X	
11. Support efforts to upgrade and improve broadband access, especially in the Town's growth centers.	12	X			P&D			X	
12. Consider establishing a citizen's committee to study communication needs and capacities in Hartford.	12		X		Town Manager & Ad Hoc Committee			X	
13. Focus on the upgrade and expansion of the water and wastewater systems.	12			X	PW, P&D, BOS & Town Manager		X	X	

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PUBLIC ROADS AND TRANSPORTATION - CHAPTER VIII									
1. Private developers are encouraged to collaborate with the appropriate planning committees in providing sufficient transportation information to facilitate development approvals.	4	X			P&D, PW	X		X	
2. The Town should continue to develop specific data and planning standards through the development review process.	4,12	X			P&D, PW		X	X	
3. The Town should continue providing educational opportunities to the volunteers serving on Planning and Community Development boards. Basic classes on traffic operations and management, as well as transportation topics in development review should be held on an annual basis. Funds should also be set aside to support volunteers in attending statewide and national training courses.	12	X			P&D, PW			X	
4. The Town will conduct a transportation survey prior to the next update of the Town's transportation element and/or as part of developing a transportation plan.	4		X		PC, P&D and PW	X			
5. The Town Manager should formalize an annual staff meeting with Planning, Public Works, and Emergency Management Services to discuss citizen transportation issues and review all pending transportation projects in progress. The coordination meeting would also prioritize and coordinate all new project suggestions and set goals for grant development.	4 & 12		X		PC, P&D, PW, Town Manager & Regional Planning Commission			X	
6. Hartford, using its staff and elected officials, should remain actively engaged in the Two Rivers-Ottauquechee Regional Commission transportation planning initiative and should clearly and actively advocate for the interests of its citizens and the TRORC region.	4,12	X			PC, P&D and PW, Town Manager, Bas &RPC			X	

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7. Continue to be a strong advocate for the timely construction of all our State transportation projects. The Town Manager should continue to maintain a project priority listing and use all available government channels to communicate those priorities.	4, 12	X			PC, P&D and PW			X	
8. Continue to be persistent in pursuing transportation grant funds. Hartford should prioritize its grant projects with the Town Manager and plan for the ongoing development of solid, well-supported grant applications.	4	X			P&D, PW & Town Manager		X	X	
9. On state and federally funded projects, Hartford will exercise every opportunity to take over project management and development tasks to ensure that Town projects are completed in a timely and efficient manner.	4,12	X			P&D, PW & Town Manager		X	X	
10. On large-scale residential and commercial development projects, the Town will consider development impact costs when feasible and appropriate. Compensation can be exacted to mitigate transportation system impacts that are caused by development.	4,12	X			PW and P&D	X			
11. Hartford should support the Upper Valley Transportation Management Association and should utilize this forum for advancing Hartford's local and regional interests.	4,12	X			P&D, PW, BOS & Town Manager		X	X	
12. The Public Works Department will implement a town-wide traffic count program.	4, 12	X			P&D & PW		X	X	
13. The Town should work with the Regional Commission and developers to compile a database of level of service data for all major arterials and intersections.	4,12	X			P&D, PW & RPC			X	

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14. Large scale residential and commercial development should include a level of service analysis for all roads and intersections that are proposed to be impacted. At a minimum, all development proposals should include traffic statistics referenced to national transportation standards (lTE Trip Generation) which then may be augmented with their own data collection efforts.	4,12	X			P&D, PW & RPC	X			
15. Continue to inventory transportation conditions and maintain a ten-year capital program. Utilize regional and state resources for technical and funding assistance.	4,12	X			P&D & PW		X		
16. Maintain 75% of local roads to a standard of good or better.	1,4, 12		X		P&D & PW		X	X	
17. Transportation budgets and policies should maintain the policies and practices of proactive road maintenance and construction.	4,12	X			PW, BOS & Town Manager		X	X	
18. Address local road and intersection deficiencies.	4	X			P&D, PW & RPC		X	X	
19. Advocate the State Agency of Transportation to construct or resurface the Town's state controlled roadways.	12	X			P&D, PW & RPC		X	X	
20. Maintain gravel roads in their present condition unless daily traffic volumes warrant reconstruction and paving or if paving is justified for other reasons, such as public safety.	1,4, 12		X		Town Manager and PW		X	X	

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21. Consider traffic capacities when reviewing and approving development that plans to use gravel roads for access.	4 & 12	X			P&D & PW			X	
22. Secure Town and state funding to better research and map all Class IV roads. Use that process to devise a more formal Class IV road policy.	1,4 & 12		X		P&D & PW		X		
23. Amend existing Town policy and ordinance language to be in compliance with the Town Plan's Class IV road guidance.	1,4 & 12		X		P&D & PW	X		X	
24. Work with Town staff and abutting property owners to consider reclassifying some Class IV roads as trails.	8			X	P&D & PW			X	
25. All Class IV roadways abutting low density development districts may not have to be upgraded by private landowners beyond what is essential to maintain access to their property. Consider modifying zoning, subdivision, and highway standards to fit these Town Plan standards.	1,4,5 & 12	X			P&D & PW	X		X	
26. Hartford should not "throw-up" any Class IV roads where the public use will be forever abandoned.	4&8	X			P&D & PW			X	
27. Update the Highway Rules and Regulations to reflect transportation element goals and to meet new state and federal mandates.	4		X		P&D & PW		X	X	
28. Provide active design review and construction oversight by staff and outside consultants to protect the public's interest.	4 & 12	X			P&D & PW		X		
29. Create a driveway and private drive standard.	4 & 12		X		P&D, PW & Emergency Services	X			
30. Ensure the Vermont Agency of Transportation works with the Town in their access permit process. Revise all planning and Department of Public Works permit procedures to ensure that the State has been consulted or has permitted access prior to initiating any Town decision. Increase minimum lot frontage standards for properties adjacent to US Route 4.	4	X			PW & P&D	X			

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31. Continue to implement access management standards along our local highways using the Town's driveway access ordinance. Update the ordinance to better reflect contemporary standards in access management.	4	X	X		PW	X			
32. Amend zoning and subdivision regulations to better promote access management.	4		X		P&D, PC & PW	X			
33. Develop multimodal connections to the street system within and between new developments. Use built roads, sidewalks, deeded rights-of-way, and other planning tools to develop transportation connections.	4	X			P&D, PC & PW	X	X	X	
34. Continue to inventory culverts and maintain a culvert replacement schedule within the capital program. Utilize regional and state resources for technical and funding assistance.	4	X			PW & RPC		X		
35. Continue the Town's policy of replacing all culverts in poor condition and in advance of paving work.	4	X			PW		X		
36. Develop new bridge and culvert regulations to meet the standards set forth in this Town Plan and accommodate the more recent transportation and flood requirements.	4	X			PW	X			
37. Require that commercial and residential development accommodate bicyclists.	4	X			P&D & PC	X			
38. Require public and private development to accommodate bicyclists in the identified bicycle zones.	4	X			P&D & PC	X			
39. Develop a Bicycle and Pedestrian Plan.	4		X		P&D & PW			X	
40. Participate in the Safe Routes to School Program and actively educate parents and children on the benefits of bicycling and walking.	4 & 12	X			P&D			X	

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41. Make development decisions to facilitate and encourage pedestrian travel. Require that all commercial development and major subdivisions accommodate pedestrians. Incorporate pedestrian friendly designs and amenities in all new development. Provide those facilities solely for the use of pedestrians and wheel chairs.	4	X			P&D, PC & PW	X			
42. Require public and private development to accommodate bicyclists in the identified pedestrian zones. When economically feasible, accommodate pedestrians in all new construction or major reconstruction of roads and highways.	4	X			P&D, PC & PW	X			
43 Actively propose pedestrian facility projects under the State's Transportation Enhancement Program and the Bicycle/Pedestrian Program.	4	X			P&D & PW		X	X	
44. Work with State highway officials to address the deficiency of bicycling infrastructure along the Town's two most critical regional links, US Route 4 and US Route 5.	4	X			P&D, PW & RPC		X	X	
45. Conduct an inventory of existing sidewalks and create a prioritized capital program.	4		X		PW, BOS & Town Manager		X	X	
46. Hartford will continue to inventory and assess pedestrian facilities like the road system and incorporate projects into the existing capital program.	4	X			PW & P&D		X	X	
47. The Town should proactively design and engineer pedestrian facilities so plans are "on the shelf" should construction funds become available.	4	X			PW & P&D		X		
48. The Town also should annually set aside transportation funds so that there is a source of available funding to leverage against state grants or private investments.	4	X			PW & P&D		X		
49. Like the bicycling section, Hartford should continue the process of referencing State of Vermont design standards as needed and also adapt pedestrian facility design with traffic calming and landscaping.	4	X			PW			X	

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50. Develop a Hartford local roads traffic calming policy. Work with the State to implement traffic calming elements in all transportation projects using their own traffic calming guidelines policy.	4		X		P&D PW & RPC			X	
51. Require all subdivision and condominium developments to include traffic calming planning in their traffic circulation plans.	4		X		P&D PC & PW	X			
52. Educate Town staff, boards and civic groups on traffic calming techniques.	4		X		RPC		X	X	
53. Support construction of a redesigned municipal parking lot behind the Legion Hall.	4			X	P&D & PW		X	X	
54. Support flexibility in the Town Zoning Regulations to address parking space requirements. Encourage development to utilize public parking resources, shared parking opportunities, and offset parking space requirements with accessibility improvements for public transit, bicyclists, and pedestrians. To prevent an oversupply of parking, set space requirements to meet the needs for the majority of users.	4		X		P&D & PW	X			
55. Support flexibility in the Town Zoning Regulations for parking space design and sizing. A compact design can allow for more spaces within a smaller parking lot footprint. Developments that have paved parking lots for typical capacity rates should create "green" lots for peak seasonal usage.	4		X		P&D & PW	X			
56. Continue to monitor municipal parking usage in Downtown White River Junction and plan for future parking facilities.	4	X			P&D & PW			X	
57. Establish a municipal parking fund to be paid by developers who credit municipal parking toward meeting their parking requirements.	4		X		P&D & PW	X			

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58. Create a parking district to maintain public parking through general fund types.	4			X	P&D & PW		X		
59. Working with the State Agency of Transportation, pursue locating park and ride facilities along each interstate exit. Prioritize park and ride investments in locations that would best serve public transit needs.	4		X		P&D, PW, RPC & Transit Providers		X	X	
60. Continue to financially contribute to public transportation provider operations.	4	X			BOS & Town Manager		X		
61. Work with commercial and large scale residential developers to accommodate public transportation. Ensure that these accommodations occur with adequate consultation from our regional public transportation providers.	4	X			P&D & RPC			X	
62. Encourage the coordination for Hartford transit connections among the many different transportation service providers.	4	X			P&D, Transit Providers & TMA			X	
63. Pursue the construction of bus pull-offs and bus shelters at busy bus stop locations. Work to include transit maps and information at each bus stop.	4	X			P&D, PW, Transit Providers & TMA		X	X	
64. Actively promote bi-state planning activities among the two state Department of Transportation offices because while the airport itself falls within New Hampshire boundaries, air transportation users reside on both sides of the Connecticut River.	4	X			GMEDC, RPC & TMA			X	
65. Support AMTRAK passenger services and encourage a fuller integration of passenger rail with other transportation modes and related infrastructure.	4	X			P&D, RPC, TMA & Transit Providers			X	

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66. Continue to push the State in replacing road and rail bridges along the rail line so they can make double stacking clearance and sufficiently open travel ways for multimodal traffic.	4	X			P&D, PW, RPC, TMA			X	
67. Where applicable, support land use regulations and policies in order to better promote rail related freight and passenger services, preservation of rail public rights-of-way, and the reduction of at-grade railroad crossings.	4			X	P&D & PC	X		X	
68. The Town should actively support rail based tourism and can effectively guide adjacent land development to preserve and enhance scenic and natural resources.	4	X			P&D & PC	X		X	
69. Encourage the State and railroad companies to fence areas along the railroad that have illegal access.	4	X			PC & Town Manager			X	
70. Encourage the State and railroad companies to install four quadrant crossing gates at railroad crossings of public roads and post signs at private driveway crossings.	4	X			PC, PW & Town Manager			X	
71. Consider establishing rail with trail facilities along rail lines to accommodate pedestrians and bicyclists where they continue to cross and/or travel.	4			X	P&D, PW, P&RD, & Town Manager		X	X	
72. Continue to work with the State and railroad companies to develop a parking area on Railroad Row.	4		X		P&D & Town Manager		X		
73. Continue the use of bio-diesel blends for Town and school vehicles.	4&6	X			P&D & Town Manager			X	
74. Pursue Better Backroads and state mitigation grants and funding to address roadside erosion problems and improve bridges and culverts.	4&6	X			PW		X		

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RECOMMENDATIONS	**ACT 200 Goals**	**Continuing/ Ongoing**	**0-2 Years**	**3-5 Years**	**RESPONSIBLE PARTY**	**REGULA-TORY**	**FINAN-CIAL**	**POLICY**	**OTHER**
NATURAL RESOURCES CHAPTER IX									
1. Support state and federal programs directed at the reduction of air pollution and, encourage enforcement of air quality standards to prevent deterioration of the region's air quality.	6	X			CC and P&D	X		X	
2. Encourage land use patterns that promote transportation alternatives to the single occupant vehicles, such as mass transit, park and ride facilities, sidewalks and bike lanes/multiple use paths.	4	X			PC, CC and P&D	X	X	X	
3. Target clean industries to encourage economic development that does not contribute to air pollution, and do not approve new development that contributes unduly to air pollution.	6	X			PC and P&D	X		X	
4. Amend Section 3-5 on the Zoning Regulations (Extraction of Earth Resources/Filling of Land) to add the following to the review criteria: impact on scenic quality, aquifer recharge areas and wildlife habitat.	5,6,10		X		PC and P&D	X			
5. The Town should conduct a visual assessment of hillsides and ridges to identify those upland areas most visible from heavily traveled roads and highways.	5,6		X		CC and P&D				X
6. The Town should consider an overlay district to control development on hillsides and ridgelines to avoid or mitigate adverse impacts to scenic resources.	5			X	PC, CC and P&D	X			
7. Develop and enforce shoreline protection regulations in order To. protect riparian areas.	5,6	X	X		CC, PC and P&D	X			
8. Conduct field verification of National Wetlands Inventory designations in order to better protect town wetlands.	5			X	CC and P&D		X	X	
9. Consider adoption of a wetlands protection overlay district to protect town wetlands.	5,6			X	CC, PC and P&D	X			
10. Review policies and recommendations of the Connecticut River Corridor Management Plan and consider adopting those applicable to Hartford.	5,6		X		CC, PC and P&D	X		X	

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11. Assess available geologic information on the two town aquifers identified by USGS and better define the value and threats to these resources.	5,6		X		CC, PC and P&D	X		X	
12. Incorporate a zero-peak runoff requirement into the subdivision regulations and site plan review regulations that requires new development to design drainage systems that will not discharge any additional peak runoff into existing Town surface waters.	5,6		X		PC and P&D	X		X	
13. Assess the condition of the existing darns creating the Hurricane Reservoirs and develop plans for their long-term maintenance.	5,6,8		X		CC, P&D and BOS		X		
14. Consider establishing a new Agriculture & Forestry zoning district in the Town that would encompass the three core forest areas (the greater Hurricane Town Forest/Ottauquechee area, Jericho/West Hartford area and the eastern portions of Quechee).	5,6,9			X	CC, PC and P&D	X		X	
15. Work with landowners abutting Class IV roads in the three core forest areas to voluntarily pursue conversion of Class IV roads to (motorized or non-motorized) trails.	5,6,9			X	CC and P&D			X	
16. Consider redirecting the proceeds from the State's Land Use Change Tax into the Town's Conservation Fund instead of the Town's General Fund.	5		X		CC, P&D and BOS		X	X	
17. Ensure that the forestry and recreation management plans for the Hurricane Town Forest and Hurricane Forest Wildlife Refuge Park are fully implemented.	5,6,8 & 9	X			P&D and CC		X	X	
18. Consider establishing a new Agriculture and Forestry Zoning District in the Town that would encompass the prime agricultural lands in Town, especially the Jericho area, the Quechee-West Hartford Road area, the Hillside Road area, the Connecticut River Road area, and the Route 5 South lands.	5,6,9			X	CC, PC and P&D	X			
19. Consider creating economic incentives in addition to the state's agricultural current use appraisal program to assist farmers in preserving the Town's remaining agricultural lands.	9	X			CC, PC, P&D and BOS		X		

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20. Encourage developers to permanently preserve Hartford's agricultural lands through the purchase of conservation easements on or off-site.	9	X			CC, PC and P&D	X		X	
21. Develop and conduct a community-wide inventory and mapping of wildlife and their essential habitat requirements. This effort should consist of the following phases: a. Regularly collect and review existing data on rare and endangered species and communities from the State of Vermont's Department of Fish and Wildlife's Nongame and Natural Heritage Program. b. Coordinate a town-wide inventory of significant plant communities and fish and wildlife resources in collaboration with consultants from the State of Vermont. c. Establish permanent wildlife monitoring locations on town-owned property.	5,6	X			CC and P&D		X	X	
22. Encourage conservation of contiguous properties to maintain the connecting links and corridors for wildlife.	5,6	X			CC, PC and P&D			X	
23. Identify the locations of invasive plants in Town by raising public awareness and enlisting volunteers to conduct surveys.	5	X			CC and P&D		X	X	
24. Encourage businesses, homeowners and landscape contractors to use native species and non-invasive ornamentals.	5	X			CC, PC and P&D				X
25. Prohibit invasive plants in landscaping plans for approved Site Development Plans and provide native substitute lists to zoning permit applicants.	5		X		CC, PC and P&D	X		X	
26. Post pictorial signs of invasive aquatic species at all boat-launching areas in the Town of Hartford.	5	X			CC, P&RC, P&D and P&RD		X	X	
27. Provide native substitute lists at all horticultural retail outlets and encourage retailers not to sell any plants that are on the Vermont Agency of Natural Resources Invasive Plant List.	5		X		CC and P&D			X	
28. Develop a priority list of Scenic Areas needing protection, map them and consider purchasing the development rights on critical parcels of land within designated Scenic Areas using the Town's Conservation Fund.	5	X			CC and P&D		X	X	

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29. Follow the guidelines set forth in the Vermont Scenic Landscapes: A Handbook for Growth and Protection, by the Vermont Agency of Natural Resources for development projects that are not within Scenic Areas (such as projects within the Town's Industrial/Commercial zoning districts).	5	X			PC and P&D	X		X	
30. Study lighting alternatives and consider adopting lighting standards that minimize increased "sky-glow".	5, 7		X		PC and P&D	X			
31. Continue to participate in the Connecticut River Scenic Byway Program.	5, 6	X			CC, PC and P&D				X
32. The Department of Planning and Development Services staff, Planning Commission and Zoning Board of Adjustment should periodically review the telecommunication facility regulations and the approved facilities in order to ensure that the regulations are effective in mitigating the impacts of telecommunication facilities.	5	X			PC, ZBA and P&D	X			
33. The siting of wind energy facilities must be carefully evaluated to mitigate impacts.	5	X			PC and P&D	X		X	
34. Identify existing core habitat areas within the town and identify desired greenway alignments.	6		X		CC and P&D			X	
35. Collaborate with neighboring towns to develop regional greenways.	5, 6, 8	X			CC, PC and P&D			X	
36. Continue to contribute annually to the Hartford Conservation Fund for acquisition of sensitive natural areas, most valuable open space lands and core habitats and other conservation projects.	9	X			CC and BOS		X	X	
37. Develop, in cooperation with trail groups, as system of trails to connect up with the Appalachian Trail and the Hurricane Town Forest.	4, 5, 8 & 12	X			CC, PC and P&D	X		X	
38. When development does occur, encourage cluster or planned developments.	1, 5, 6 & 9	X			PC and P&D	X		X	
39. Continue to encourage urban infill in established settlement areas and discourage development in the outlying areas.	1, 12	X			PC and P&D	X			
40. Coordinate greenway planning with new development proposals so that quality open space is preserved within new development and that open space connects with neighboring open space.	1, 5, 6 & 10	X			CC, PC and P&D	X		X	

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ENERGY - CHAPTER X									
1. Provide leadership to the community in energy conservation by creating an Energy Committee charged with implementation of the recommendations within this chapter.	7		X		Town Manager		X	X	
2. Conduct complete energy audits of all Town buildings.	7, 12		X	X	PW (Future Energy Commission) and Town Manager		X	X	X
3. Encourage programs to provide energy audits and cost-effective weatherization services.	3,7,12			X	Housing Authority				X
4. Construct and retrofit municipal buildings for cost-effective energy conservation, and participate in the energy programs offered by local utility companies to their customers.	7,12			X	Town Manager and PW		X	X	
5. Keep energy consumption and expenditure records for Municipal use to better track the Town's energy demands by specific types of energy used and target conservation and efficiency efforts.	7,12	X			Town Manager and PW		X	X	X
6. Develop and implement a program of upgrading to, and maintaining, energy efficient exterior lighting.	7, 12		X		Town Manager		X	X	
7. Include fuel efficiency in its purchasing decisions.	7, 12	X			Town Manager and all Departments		X	X	
8. Use life-cycle costing in evaluating all decisions concerning equipment, vehicle, or other energy-consuming purchases by the Town.	4,7,12	X			Town Manager, all Departments and School District		X	X	
9. Investigate the use of alternative fuels in Town vehicles.	4,7,12		X		Town Manager, Town Departments and School District		X	X	
10. Within the School District: a. teach and promote bicycling as a viable transportation alternative; b. teach the true costs of various energy options, including car ownership; and c. teach energy-efficient driving techniques in driver's education.	4,7,12	X			Hartford School District		X	X	

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11. Investigate co-generation facilities for municipal buildings.	7, 12			X	Town Manager and PW		X	X	
12. Provide information on conservation and efficiency; efficient transportation; local renewable resources; related town, state and federal energy programs; and available funding and financing for these programs.	3,4,7, 12		X		Town Manager, Libraries and Ad Hoc Committees and Civic Groups		X	X	X
13. Develop incentives for townspeople and developers for the sustainable use of local and/or renewable resources.	7,12			X	Ad Hoc Committees and Civic Groups				X
14. Continue to cooperate with adjacent communities and Advance Transit to develop commuter facilities to: a. increase access to bus routes, including frequent cycles during peak transit hours; b. encourage education programs on the benefits of using public transportation; and c. encourage car-pooling and van-pooling initiatives and programs.	3,4,7, 12	X			Ad Hoc Committees and Civic Groups, P&D and PW		X		X
15. Encourage employers in the Town and the region to promote energy efficient commuting.	4,7	X			Ad Hoc Committees and Civic Groups, and P&D		X		X
16. Promote the development and use of a system of trails, greenways, sidewalks, bicycle paths, and commuter parking lots as viable transportation components, with particular attention given to connecting schools, recreation facilities, shopping centers, places of employment, health centers, and transportation facilities.	1,4, 12	X			CC, PC, P&D, and PW				X
17. Encourage the installation of bicycle parking racks at activity areas such as schools, recreation and community facilities, shopping centers, places of employment, health centers and transportation facilities.	4,8,12		X		PC and P&RD		X	X	
18. Provide shelters, where needed, for pedestrians and bicyclists at bus stops and rides hare pickup locations.	4,12			X	Ad Hoc Committees and Civic Groups, and PW		X		X

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19. Include sidewalks and bicycle paths as a component of the capital budgeting process and continue to pursue Federal and State funding for their construction.	4, 12	X			PW, P&D, and PC		X	X	
20. Consider bicycle paths, pedestrian walkways, and public transportation access in reviewing all proposals for commercial and Town recreation facility development.	4,8,12	X			PC, P&RC and P&RD			X	
21. Consider transportation efficiency issues, bicycle use, and alternatives to the private automobile when reviewing proposed plans for a development.	4,7	X			PC and PW	X		X	
22. Where possible, acquire easements for bicycle and walking paths between developed areas at the time of permitting subdivisions or new roads.	4,12	X			PC and P&D		X	X	
23. Consider developing park and ride areas.	4	X			VTrans, Ad Hoc Comm., PW and P&D		X		X
24. Continue to encourage growth centers to discourage land use that would create or lead to energy inefficient sprawl and strip development.	1,4,7	X			PC and P&D		X	X	X
25. Encourage the use of energy conservation measures through site plan review as follows: a. vegetation as winter wind buffers and summer shading, b. building orientation to take advantage of natural light and heat, and c. protection of solar access for existing buildings from shadows cast by new structures.	7	X			PC and P&D			X	
26. Actively promote the Use Value Tax Program for stimulating sustainable fuel wood production, and for improving the management of forests.	7,9	X			Town Manager		X	X	
27. Continue to manage the Town Forest for recreational uses, and wildlife habitat for the benefit of the Town and its residents in a sustainable manner.	5,6,8,9	X			P&D and CC		X		X
28. Encourage all wood burning installations to meet all applicable National Fire Protection Association (code #211) safety requirements and Federal EPA emissions standards.	6	X			Emergency Services Dept.		X	X	
and investigate co-generation where feasible.									

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29. Coordinate with local fuel wood suppliers, foresters and loggers to evaluate options of developing a fuel wood cooperative.	7,9			X	CC				X
30. Encourage the organization of an annual cooperative to purchase energy saving devices, such as insulation, solar water heating systems, wood-stoves, photovoltaic modules, etc.	7		X		Ad Hoc Committees and Civic Groups				X
31. Encourage existing and proposed large electrical energy consumers and large thermal users to manage their energy load	7	X			PC			X	
32. Encourage the continued use of hydropower at Hartford's three hydroelectric sites.	5,7	X			Town Manager		X	X	
33. Encourage and promote public education efforts on energy issues.	3,7	X			Ad Hoc Committees and Civic Groups				X
34. Encourage energy efficiency and aesthetically appropriate exterior lighting for industrial and commercial projects and for street lighting within new subdivisions.	7	X			PC			X	X

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