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VISION STATEMENT

Chittenden County will continue to set the example as the place where a high quality of life is built on the right combination of economic growth and environmental stewardship for at least the next 25 years.

The Chittenden County Regional Planning Commission envisions this county to continue in its historic role as Vermont's economic engine and as home to one of Vermont's most popular tourist destinations. The county will continue to host the highest quality and widest variety of economic opportunities in Vermont as it has done for many decades. The people holding those jobs will be proud to call the county home because of its environmental beauty, its open and developed recreational spaces, its cultural amenities, its state-of-the-art healthcare facilities, its social services, its high-quality primary and secondary schools, its world-class higher education system, and its pattern of development that fosters conveniently located and vibrant nodes of commerce surrounded by productive farms and forests.

Economic Growth is the ultimate source of funding for many conservation, social and cultural programs that contribute to our high quality of life. However, only high-quality growth can be sustained over the long run. The Chittenden County Regional Planning Commission envisions high quality growth as growth that achieves a responsible balance between the protection of natural resources – land, air, and water – and the requisite development of residential, commercial, and industrial land to accommodate our expanding economy and populations.

Employees and their families will prefer to live in Chittenden County because a diversity of housing types for all income levels, ages and special needs is built to meet the demand through a consistent, swift, and equitable review process.

High-quality jobs will support efficient land uses, which will support a cleaner environment, which in turn attracts more quality employers in an upward spiral that demonstrates the symbiotic relationship between a clean environment and a healthy economy.

Traditional downtowns will be redeveloped to create an enjoyable high density, mixed use, and pedestrian- and bicycle-friendly atmosphere. In addition, new downtowns and smaller commercial activity centers will be located throughout the county in a variety of sizes, densities and mixes. These centers, planned by local municipalities and coordinated regionally, will create efficient land use by mixing commercial, cultural, recreational, employment, and residential uses clustered, where possible, around multi-modal transit options. The combination of redeveloped traditional downtowns and newer mixed-use centers will reduce vehicle usage, reduce air pollutants, and increase personal time thereby improving our quality of life.

This regional plan seeks to achieve this vision by accommodating growth in locations that sustain Chittenden County's quality of life. It is envisioned that people will use this plan for broad policy direction and not detailed requirements. Local governments will continue to maintain maximum flexibility in creating site-specific alternatives and innovative approaches to meeting this regional vision.

INTRODUCTION

Chittenden County is Vermont's most populous county. The combination of cultural, social, economic and political forces at work here is perhaps the most complex in Vermont. Over the past 40 years, residents have seen the area around Burlington transform from farmlands to an urban and suburban landscape supported by a service and manufacturing economic base. Meanwhile, over 70 percent of the county remains as undeveloped forests and farmland.

For the most part, this transformation has occurred to the satisfaction of the region's residents. There are signs, however, that this rate and type of growth will not continue as it has in the past. More and more of the region's residents have begun to question the effect of development on the landscape and on their quality of life.

The Chittenden County Regional Planning Commission is responsible for the preparation of a regional plan to help guide growth and development in Chittenden County. The Commission develops and adopts a regional plan every five years, most recently in 1996. This document represents the most recent vision for the future of Chittenden County. It represents the results of thousands of hours of public hearings, public work sessions, and deliberation by the Commission's volunteer members and staff.

Why Plan?

Planning is a necessary aspect of human life. From family dinner tables to board tables of multi-national corporations, everyone plans. It allows diverse constituencies the opportunity to collaborate and to reach agreement. Planning for an entire region is challenging. While we can all agree that Chittenden County should be a "nice place to live, work and play," there are a myriad of visions of what such a place should look like. An important role of regional planning is to provide a forum for arriving at consensus for the future vision of life in Chittenden County. People from a broad range of interests must come together, articulate their county's future, seek common themes, negotiate differences, and agree on a vision. Consensus building is at the heart of planning.

What Are the Uses for the Regional Plan?

The Chittenden County Regional Plan serves a variety of purposes. According to Chapter 117 of Vermont statutes, the purpose of the regional plan is to: "…recommend a distribution of population and the uses of the land for urbanization, trade, industry, habitation, recreation, agriculture,

forestry, and other uses." The Plan is generally a road map to the future. The Plan can provide a guide to local planning efforts. Where do we want to be within five to 25 years? The answer to this question is our vision for the future. This vision should represent the consensus of opinion of all those with a stake in the region's future. We devise **goals** to identify the end toward which the implementation of this Plan is directed. Our **policies** are precepts to be followed by entities over which the Plan has purview. **Implementation Strategies** are the actions the Commission plans to undertake in an effort to best achieve the goals of the Plan.

The plan should **provide a context for decision-making**. It is almost impossible to judge the merits of any activity without understanding its broader impact. Without a clear enunciation of our vision, decisions concerning any activity would be, at best, *ad hoc* and, most likely, random. The context provided by the Plan is useful in quasi-judicial proceedings and other land use forums where compliance with the Plan is often mandatory. This Plan is not a zoning document, but it helps our decision makers to determine whether anticipated activities may be considered good or bad for the region.

Finally, **the Plan can serve to avoid disputes and achieve resolutions.** . By examining current conditions and following trends, we can agree in advance how we would like future events to turn out. By coming together to write a set of visions and goals, we can conduct our activities with an eye toward achieving these goals.

Who Uses the Plan?

This Regional Plan is written for many users, including:

- Municipalities, which will use it as a guide in preparing local plans, which are compatible with state statutes and the Regional Plan;

- Chittenden County residents. By reading the Plan, all of us living in Chittenden County can preview where the region is headed in the next 25 years;

- Those doing business in the region. This Plan can help business decision makers by providing demographics and a forecast of land use, social and economic factors that will influence the region over time;

- Federal, state and local government decision makers. An understanding of existing infrastructure and estimates of future trends is essential to efficient public capital investments;

- Regulatory bodies. Act 250 and Section 248 require that proposed land development conform to local and regional plans. The Regional Plan will provide a context in which the District Environmental

Commission, the Environmental Court, local design review boards, planning commissions, and zoning boards will review land use applications and decisions.

How Was the Regional Plan Created?

This Plan represents a revision and update of the 1996 Chittenden County Regional Plan. Its first draft was presented to the public in the spring of 1999. Comments on subsequent drafts were taken from a number of sources, including: general written comments from the public; input from numerous, well-attended public forums; meetings with local planners and legislative bodies; reviewing local plans to attain compatibility; reports generated by task forces convened by the Commission, which focused on the topics of infrastructure, housing, economic development, growth centers, significant regional impact and natural resources; direction from the Commission's standing committees; review, discussion and debate by Commission members; and finally, public comment from two public hearings.

What Are Planning Areas?

Although this 2001 Regional Plan is an update of the 1996 Regional Plan, it differs from its predecessor in one major way. Rather than identifying regional, sub-regional and local growth centers, the 2001 Regional Plan addresses growth center planning by identifying five discrete "planning areas." The boundaries of these areas – named the Metropolitan, Village, Transition, Special Use and Rural Planning Areas – have been drawn to correspond to the region's existing patterns of planning and development.

The idea of designating planning areas – rather than creating specific growth centers – is to allow for an overall, region-wide coordination of development without unduly stifling local planning creativity. Each planning area's proposed uses and activities are more broadly defined to be more flexible in their implementation than the growth centers outlined in the 1996 Regional Plan.

This Plan focuses far more on the planning process than previous plans and far less on dictating specific uses. This Regional Plan intends to promote "smart growth" by guiding development into areas where adequate planning has been undertaken to receive it. It is a goal of the 2001 Regional Plan to create planned units of development featuring an appropriate mix of uses to foster the right balance of economic development and environmental protection.

What Is the Background of the Regional Plan?

Vermont Planning and Development Act (24 V.S.A. Chapter 117) became effective on March 23, 1968. The Act allows for the creation of a regional planning commission with the intent that the commission work with local municipalities and state agencies to further the following goals (Section 4302(b)):

1) To establish a coordinated, comprehensive planning process and policy framework to guide decisions by municipalities, regional planning commissions, and state agencies.

2) To encourage citizen participation at all levels of the planning process, and to assure that decisions shall be made at the most local level possible commensurate with their impact.

3) To consider the use of resources and the consequences of growth and development for the region and the state, as well as the community in which it takes place.

4) To encourage and assist municipalities to work creatively together to develop and implement plans.

A regional planning commission is required to "prepare a regional plan and amendments that are consistent with the goals established in section 4302 of Chapter 117, and compatible with approved municipal and adjoining regional plans." In 1988, the Legislature passed a number of sweeping amendments to Chapter 117 by what was known as Act 200. Together with Act 250 (10 V.S.A. Chapter 151), Chapter 117 forms the basis for most of Vermont's planning, land use and development regulations.

The specific goals of Section 4302(c) of Chapter 117 with which a plan must be consistent are the following:

1) To plan development so as to maintain the historic settlement pattern of compact village and urban centers separated by rural countryside.

2) To provide a strong and diverse economy that provides satisfying and rewarding job opportunities and that maintains high environmental standards, and to expand economic opportunities in areas with high unemployment or low per capita incomes.

3) To broaden access to educational and vocational training opportunities sufficient to ensure the full realization of the abilities of all Vermonters.

4) To provide for safe, convenient, economic and energy efficient transportation systems that respect the integrity of the natural environment, including public transit options and paths for pedestrians and bicyclers.

5) To identify, protect and preserve important natural and historic features of the Vermont landscape.

6) To maintain and improve the quality of air, water, wildlife and land resources.

7) To encourage the efficient use of energy and the development of renewable energy resources.

8) To maintain and enhance recreational opportunities for Vermont residents and visitors.

9) To encourage and strengthen agricultural and forest industries.

10) To provide for the wise and efficient use of Vermont's natural resources and to facilitate the appropriate extraction of earth resources and the proper restoration and preservation of the aesthetic qualities of the area.

11) To ensure the availability of safe and affordable housing for all Vermonters.

12) To plan for, finance and provide an efficient system of public facilities and services to meet future needs.

The Commission has adopted its 2001 Regional Plan in a manner consistent with the requirements of Chapter 117, and the goals of section 4302 are specifically incorporated into this Regional Plan.

The 2001 Regional Plan is different from the 1996 Regional Plan. This Plan is far more "process" oriented, focusing on the process of planning more than on dictating specific outcomes. Thus, while there are certainly specific policies stated in the 2001 Regional Plan, we are concentrating on local efforts to plan for and accommodate additional growth. We believe firmly that one of the keys to the continued success of Chittenden County as a "nice place to live, work and play" lies in sound, thoughtful and thorough regional and local land use planning.

Statement of Compatibility

Pursuant to 4348a (a)(8) of V.S.A. Title 24, Chapter 117 the Commission reviewed adjacent regional plans and has concluded that this plan as implemented will not significantly reduce the desired effect of the implementation of the other plan(s).

Where Chittenden County abuts another regional commission's jurisdiction, land uses are primarily rural in scale. The only exception is the northern most Special Use Planning Area in Milton. Because this area has different land use policies than in the adjacent region, the Commission believes the goal of "maintaining the historic settlement patterns of the village and urban centers separated by rural countryside" is preserved and implemented.

In addition, most human activity is focused toward the center of Chittenden County. Because of this settlement pattern, opportunities for land use or other conflicts with neighboring regions are limited.

LAND USE

HISTORY

CURRENT LAND USES

DEMOGRAPHIC PROFILE OF CHITTENDEN COUNTY
- **Population and Population Distribution**
- **Population Outlook**
- **Observations**

BACKGROUND
- **Development Patterns and Location Theory**

THE PLANNING AREA CONCEPT
- **Establishing Planning Areas**
- **Special Use Planning Area**
- **Metropolitan Planning Area**
- **Village Planning Area**
- **Transition Planning Area**
- **Rural Planning Area**

CREATING NEW PLANNING AREAS

HISTORY

In planning for Chittenden County's future, we must reflect on our past and understand where we are today. Framed by the Green Mountains and Lake Champlain, Chittenden County has a unique landscape. A mixture of bustling urban settings and rural pastoral landscapes tells a story of a region that values growth and tradition.

The people of Chittenden County are connected to the land. They always have been. Native Americans lived and traded along the region's waterways. Early European pioneers cut the forests, tilled the soil, and built democratic communities in the wilderness.

Those early communities relied on the region's natural resources to grow economically. The valley's rich soils made farming a productive industry that continues today. The region's abundant forests were cut down and used to build the nation. The bustling city of Burlington was a major lumber port. Shelburne thrived as a shipbuilding community, constructing vessels to tow timber to markets in the north and south. Lake Champlain was the region's "highway," connecting communities along the shore with each other, and with the rest of the world.

The railroad's arrival in 1849 opened new markets for Chittenden County's goods. Agricultural goods, such as wool, grain, and milk were shipped overland to New England's coastal cities. New towns grew up along the tracks and at rail junctions. Between 1850 and 1940, Chittenden County's population grew at a steady rate of around 10 percent every decade. After World War II, the population boomed. Between 1940 and 1980, the population doubled in size from 52,098 to 115,534.[1]

The freedom and versatility of the automobile – family cars, delivery trucks, and bus transit – replaced the need for building near railroads or port facilities where real estate prices were high. The economic boom after World War II led to more development away from the traditional population centers. New residential neighborhoods, retail stores, motels, restaurants, and manufacturing facilities were built along paved highways that were once dirt roads.

In 1957, IBM moved into Chittenden County and has since created meaningful career opportunities while enriching the lives of thousands of Vermonters through its outstanding community outreach programs. IBM is the most significant economic contributor to Vermont. It is the State's largest private employer and the major employer for six counties: Addison, Chittenden, Franklin, Grand Isle, Lamoille and Washington.

By the 1960's, Chittenden County's landscape began to look different. The towns and villages nearest to Burlington that were once separated by open countryside began to expand and grow. This expansion continues today.

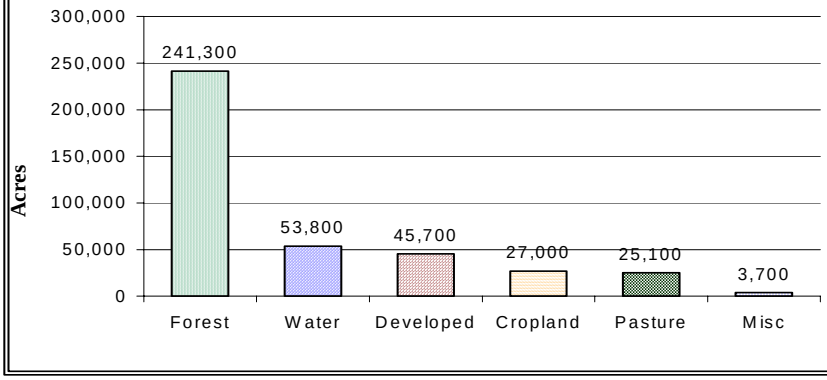
CURRENT LAND USES

Chittenden County's landscape has an array of land uses. A visitor to Burlington's urbanized enterprise zone might be surprised that Bolton's rugged, forested landscape is part of the same county. Almost every type of land use — urban, suburban, rural residential, heavy and light industrial, commercial, retail, recreational, cropland, pastureland, forestland, protected natural areas, etc.— is found here. The Chittenden County 1995 Land Use Map introduced at the end of this Plan generally illustrates the county's diverse landscape.

Chittenden County is heavily forested. In 1997, more than half of its 396,600 acres is covered by 241,300 acres of private, state and federal forestland. There are an additional 55,800 acres of non-forested, rural lands in the county.

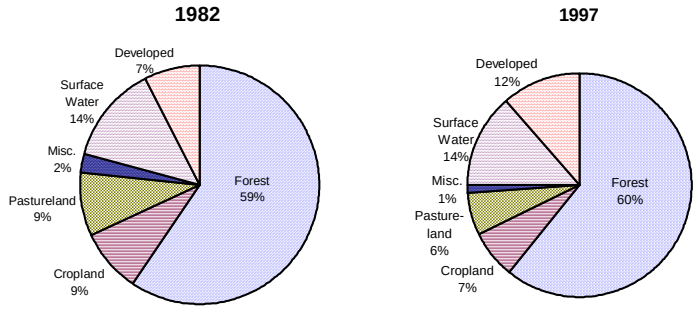
These lands are made up of 27,000 acres of cropland; 25,100 acres of pastureland; and 3,700 acres of miscellaneous lands such as marshlands, quarries and pits, and isolated houses or farmsteads. Water surface takes up an additional 53,800 acres, but 49,000 acres of this is the county's portion of Lake Champlain. In 1997, 12 percent, or 45,700 acres of Chittenden County was developed.[2] (See Figure LU-1)

Figure LU-1: Land Cover in Chittenden County 1997



In 1982, 7 percent, or 29,200 acres of the county's lands were developed. In 15 years, the total acreage of crop, pasture and miscellaneous non-forested lands dropped by 21,700 acres. Since the total number of forestland acres actually grew by 5,200 acres, it is reasoned that new development occurred on non-forested, rural lands.[3] (See Figure LU-2)

Figure LU-2: Land Uses in Chittenden County 1982 to 1997



DEMOGRAPHIC PROFILE OF CHITTENDEN COUNTY

Population and Population Distribution

Chittenden County is now home to 146,571 residents.[4] This level of population represents 24.1 percent of the entire estimated 2000 population of the State of Vermont. In 1980, the County's resident population totaled 115,534 indicating a 20-year increase of 26.9 percent and an average annual increase of 1.2 percent over the 1980 to 2000 period. In 1980, the population of Chittenden County accounted for 22.6 percent of the entire State's population indicating an increase in the County's relative share of total state population of nearly 1.5 percentage points. Chittenden County, as the nodal center of the northwest Vermont region, is directly linked by economic and social factors to the surrounding counties of Franklin, Grand Isle, Addison, Lamoille, and Washington. Altogether, Chittenden County and the five surrounding counties account for 316,135 or 51.9 percent of Vermont's entire 2000 population – a share that has increased steadily over the past 20 years.

Of the 146,571 total county population in 2000, 43,551 or 29.7 percent were 24 years of age or younger. This includes the Census Bureau estimated 2000 student population enrolled at colleges and universities throughout the County. The age distribution of the County, to a high degree, reflects the age distribution of the United States as a whole. The 2000 Census estimate shows an aging population with the median resident age being 35.3 years compared to 30.0 in 1980 for the United States as a whole, and 37.7 years in Vermont as compared to 29.4 median resident age in 1980. Whereas the median age of county residents was slightly under that of the nation in 1980, resident median age now exceeds that of the entire U.S. population. Of the entire county population in 2000, persons between the ages 35 and 54 account for 32.1 percent. This age group encompasses the post World War II "baby boom" cohort that has and will continue to dominate total population as it ages. The 2000 county count indicates that the 65 years and older population accounts for 13,780 persons or 9.4 percent of the total estimate. In 10 years the baby boom population will overtake the age 65 and over cohort and increase this percentage significantly.

In order to illustrate Chittenden County's population distribution patterns, the county was divided into three Planning Regions.[4] (see Figure LU-3)

Figure LU-3:
Chittenden County
Planning Regions

Planning Region 1: Burlington, South Burlington, and Winooski – a 29-square mile area.

Planning Region 2: Colchester, Essex, Essex Junction, and Williston – a 107-square-mile area.

Planning Region 3: Bolton, Buels Gore, Charlotte, Hinesburg, Huntington, Jericho, Milton, Richmond, Shelburne, St. George, Underhill, Westford – a 404-square-mile area.

A comparison of population densities by town and for the county planning regions for 1980 and 2000 illustrates a pattern of growth which has been identified as typical in post World War II American life. The central core, the relatively metropolitan communities of Burlington, South Burlington and Winooski indicate the highest population density when measured by number of people per square mile or acre. In 1980 the population density of this region was 2,011 people per square mile. In part, large areas of undeveloped land in South Burlington held the density of this region low. In 2000, we see a population density of 2,142 people per square mile for this planning region indicating an increase of 131 people per square mile. By examining the town-by-town data, we can see

that the majority of this change in total density is due to population changes in South Burlington. (See Table LU-1)

Table LU-1: Historic Population Density

	Population Per Square Mile			Percentage Change		
	1980	**1990**	**2000**	**1980-1990**	**1990-2000**	**1980-2000**
Chittenden County	215	244	272	13.5%	11.5%	26.5%
Region 1	**2011**	**2048**	**2142**	**1.8%**	**4.6%**	**6.5%**
Burlington	3524	3726	3704	5.7%	-0.6%	5.1%
South Burlington	703	772	953	9.8%	23.4%	35.6%
Winooski	4860	4433	4374	-8.8%	-1.3%	-10.0%
Region 2	**289**	**338**	**405**	**17.0%**	**19.8%**	**40.1%**
Colchester	345	398	459	15.4%	15.3%	33.0%
Essex	363	420	474	15.7%	12.9%	30.6%
Williston	126	161	252	27.8%	56.5%	100.0%
Region 3	**74**	**92**	**104**	**24.3%**	**13.0%**	**40.5%**

Population densities in Planning Region 2 reflect the continued urbanization of the County's geographic core. This planning region includes the towns of Colchester, Essex Town including the Village of Essex Junction, and Williston. All of the towns in this region have experienced population growth over the 1980 to 2000 period. In 1980 the towns comprising this region had a total population of 30,864 and an average population density of 289 people per square mile. In 2000, the population density of this region increased to 405 people per square mile– an increase of 40.4 percent on a people per square mile basis. This region realized a population increase of 40.2 percent over the 20-year period from 1980 to 2000. Population growth averaged 1.6 percent per year from 1980 to 1990 and then, 1.8 percent from 1990 to 2000. The Town of Williston realized the highest population increase on a percentage basis adding more than 3,807 residents across the 20-year period.

The remaining 11 towns and 1 gore of Chittenden County account for 74.9 percent of the entire county's land mass and 28.7 percent of the total population in 2000. This planning region has also realized significant population growth in 2000 compared to 20 years earlier. In 1980 the region's population stood at 29,961, in 1990 it had increased to 37,060 and in 2000 the total population is estimated at 42,045. In absolute numbers, the population change of this region is behind that of Regions 2, and 1 however; on a percentage basis this region has experienced the highest level of growth. The region encompasses some of the most remote corners of the entire northwest Vermont region with topography acting as a natural barrier to access and commercial and residential development.

In general, the pattern is one of continued dispersion of the residential population into the outer reaches of Chittenden County and a relatively stable population in the core but one that is declining on a relative share basis.

Population Outlook

The County's population is anticipated to increase by 102,686 between 2000 and 2035. Over the 10 year period between 2000 and 2010, total county population is expected to increase at an annual average rate of 1.4 percent. After 2010 and forward to 2035, the increase in the population of the county is expected to accelerate slightly to an average annual rate of 1.6 percent. These rates, when compared to rates of population increase experienced in the 1970s and 1980s are quite modest. The county population between 1970 and 1980 increased by and average of 1.5 percent per year while from 1980 to 1990, the experienced rate of average annual change in total population was 1.3 percent. When examined in absolute terms, however, it is important to realize that even at lower average annual rates the absolute increase in population is quite significant due to the higher population base to which these rates apply.

In 1990, the population in Region 1 accounted for 44.5 percent of the total county population. This region is comprised of the metropolitan core communities of Burlington and Winooski and the adjacent community of South Burlington, which has experienced significant population growth during the past decades. The Region's share fell to 41.8 percent of the total county population in 2000. On the historic track incorporated in the population forecast, the expectation is that Region 1 will account for only 38.2 percent of the entire county population in 2010. The average annual rate of growth in Region 1 is expected to be 0.5 percent through 2010 and then increase slightly to 0.6 percent through 2035.

Regions 2 and 3 have gained in share of total county population and are forecast to continue on this track through 2010. After which, the forecast shows a decrease in share for Region 2 and a continued increase for Region 3 through 2035. The population in Region 2 increased 40.2 percent between 1990 and 2000. In 1990 the region accounted for 27.4 percent of the entire county population. By 2000 the region's population accounted for 29.5 percent of the county total. By 2010, Region 2 can be expected to increase in share of total county population to 31.1 percent. By 2025, if these trends continue, Region 3 will surpass Regions 1 and 2 in share of total county population. Annual population rates of increase are expected to be 0.5 percent and 2.0 percent respectively for Regions 1 and 2 through 2010. After 2010, the annual rate of increase in Region 2 is expected to decrease slightly while the annual rate of increase in Region 3 will continue to increase slightly.

A comparison of forecast changes in population density across the planning regions, as measured by the number of persons per square mile, demonstrates the anticipated changes in land use patterns contemplated by these forecast. Table LU-2 displays the anticipated relative change in

people per square mile for each planning region and selected towns relative to the anticipated countywide change. In general, the forecast indicates population density countywide is expected to increase from 272 to 462 persons per square mile from 2000 to 2035 – an increase of 70 percent. However, population densities in Regions 2 and 3 are expected to about double over the present level during that same period. In Region 1 population density is anticipated increase by only about 29 percent over the 35-year period. These forecasts assume that public policies such as land use zoning and infrastructure expansion patterns of the past prevail into the future.

Table LU-2: Forecast Population Densities

	2000	2010	2025	2035	Percentage Change 2000-2035
Chittenden County	272	313	395	462	69.9%
Region 1	**2142**	**2252**	**2457**	**2586**	**20.7%**
Burlington	3704	3818	4056	4197	13.3%
S. Burlington	953	1053	1226	1339	40.5%
Winooski	4374	4558	4892	5106	16.7%
Region 2	**405**	**492**	**656**	**792**	**95.6%**
Colchester	459	538	706	844	83.9%
Essex	474	593	780	934	97.0%
Williston	252	307	435	545	116.3%
Region 3	**104**	**128**	**180**	**225**	**116.3%**

Observations

Chittenden County's population at 146,571 in 2000 is increasing at lower growth rates but adding more people relative to historic periods. Lower birth rates in recent years and relatively fewer people under age 25 and the aging of the baby boomers combine to increase the average age of the resident population. These demographic changes along with people delaying marriage and family to a later age and smaller families are expected to increase the demand for the number of housing units required. Together, the population's demand for housing will combine with needs for public infrastructure and economic development to put increased pressure on land resources. The current population forecast when applied to the planning regions and towns, represents a "status-quo" forecast with regard to implications for land use policy. In a sense, the forecast says: "If historic trends are continued into the future, the county's resident population will continue to expand in Regions 2 and 3 at a rate in excess of that of the countywide rate.

BACKGROUND

Development Patterns and Location Theory

Chittenden County's urban development patterns of the past 20 years reflect the urban development patterns of the rest of the United States.[5] Over the last few decades, American metropolitan populations have become decentralized. Population densities between metropolitan cores and suburban areas are beginning to equalize. Increases in household income and improvements in transportation infrastructure – particularly supporting the automobile – have greatly contributed to urban decentralization.[6]

Polycentric development patterns – a regional area with a traditional urban core having multiple sub-centers of mixed residential and commercial activity that satellite the core – occur here. Williston's Taft Corners, Milton's Town Center, Essex Town Center, and the Saxon Hill Industrial Area are becoming satellites of Chittenden County's traditional urban core, which includes Burlington, Winooski, and portions of Colchester, South Burlington and Essex Junction's Five Corners.

Location theory predicts that the difference in densities between urban cores and sub-centers is directly related to land costs. In other words, land prices decrease as one travels away from the core.[7] Development in the periphery is driven by lower land prices and development costs.[8] Generally, it is less costly to build on vacant land than to redevelop urban sites, which may be why only 1 percent of existing dwelling units in the United States are demolished each year. Chittenden County is not immune to these theoretical expectations.

The communities in Chittenden County that gained the most jobs between 1980 and 1996 were South Burlington, (8,495), Colchester (5,423), Williston (5,243), Burlington (4,080) and Essex and Essex Junction (3,347 combined).[9] During that period, 19,161 new jobs – 61percent of all new jobs – were added to the regional economy in South Burlington, Colchester and Williston. Yet those towns accounted for only 26 percent of the county's population in 1990. On the other had, only 18 percent (5,703) of all new jobs were created in the county's least affluent towns (Burlington, Winooski, and Milton) between 1980 and 1996 even though these towns accounted for 39 percent of the county's population in 1990. In addition, between 1980 and 1993, the largest numbers of residential building permits were issued in South Burlington, Colchester, and Burlington in that order.[10]

The decentralization of employment and residents in Chittenden County are, in absolute terms, neither positive nor negative. These economic forces have the potential for positive impact on the region's infrastructure, social services, environment, and quality of life if this

growth is guided into efficient development patterns and locations. Transportation systems and sewer infrastructure are critical components of land use that effect development patterns.

A study of infrastructure costs for "scattered," "linear," and "satellite" development patterns were compared to "contiguous" and "compact" patterns.[11] It was found that sewer and water capital costs for compact development averaged 40 percent lower than in other land use patterns. Density and lot size are not the only factors that influence the costs of infrastructure. Service standards, proximity to distribution and treatment plants, location attributes, and dwelling unit types also play a role. "Feeder hookups" and "trunk line" infrastructure costs were found to be highly sensitive to land development patterns. After studying the issue in five different states from 1992 through 1997, it was found that more compact development patterns created greater savings on infrastructure cost than less compact development.[12]

PLANNING AREA CONCEPT

Chittenden County's landscape will continue to change. The first specific goal listed in Vermont's planning and land use law is "to plan development so as to maintain the historic settlement pattern of compact village and urban centers separated by rural countryside."[13] This Plan is consistent with that goal, but in Chittenden County - home to one-quarter of Vermont's residents and the state's primary economic engine - "historic settlement pattern" must take on a regional scale.

Municipal planning efforts should place an emphasis on the region's unique and existing characteristics. Downtown districts and village centers, industrial areas and commercial centers, farmlands, and forests should be enhanced by progress, not hurt by it. Economic growth should occur in areas where infrastructure is planned for, or already exists. Regional planning efforts must encourage this type of local planning and coordinate them between jurisdictions.

Vermont law states that planning decisions shall be made at the most local level commensurate with their impact.[14] Thus, the region's municipal plans shall serve, where appropriate, as the site specific and detail base upon which the regional plan's foundation is premised. At the base of the regional plan lie five planning areas. These five components make up the Future Land Use Map for Chittenden County.

Within four of the five Planning Areas some degree of industry, commerce, housing, civic, open space, and transportation occur and is encouraged. The fifth area is reserved for single use areas. The magnitude, or spatial quality, at which these uses occur, is guided by this Regional Plan. The frequency at which they occur is a local decision.

The Planning Areas concept is attempting to guide local planning efforts into creating systemic planned units. Planned units of development guide future activities of residential, commercial, civic, and open space, into a system of integrated parts so that new development can allow a seamless interaction between uses. This is critical in developing Chittenden County into a network of downtowns, town centers and villages.

Each Planning Area should have its own unique characteristics. The Metropolitan Planning Area is metropolitan in scope and scale. A Village Planning Area should allow for compact development in a traditional village layout. The Transition Planning Area has the potential of developing new mixed-use activity centers typical of Metropolitan or Village Planning Areas. The Rural Planning Area should be conserved for its current uses. Special Use Planning Areas are reserved for industrial activities that are incompatible in a mixed-use area. The Plan's Future Land Use Map illustrates the locations of the current Planning Areas.

The Commission believes Planning Areas served by existing or planned infrastructure for new mixed-use, high-density development can help maintain our traditional landscape and serve the needs of the future.

High-density, mixed-use development in areas supported by infrastructure is also more cost effective, than low-density, scattered development.

Establishing Planning Areas

The Planning Areas were established by analyzing the current zoning of the municipalities to determine their desired degree of development. In areas where a mix of residential, commercial and industrial uses were either permitted or allowed by condition, within the sewer service area (existing or proposed), those areas became either Metropolitan or Village Planning Areas.

In distinguishing between Metropolitan or Village Planning Areas each municipality was consulted to determine their desired magnitude of development. If they anticipated or allowed commercial or industrial development that would significantly impact the region, as measured by the thresholds in the Plan's Substantial Regional Impact Section, those areas became the Metropolitan Planning Area. Those areas designated for compact residential and commercial areas became the Village Planning Area.

The Transition Planning Area is the area with existing or proposed sewer and water infrastructure that does not allow a mix of land use types. The Rural Planning Area is the area generally outside of existing or proposed sewer and water infrastructure.

Special Use Planning Area

The Commission recognizes that certain activities cannot be suitably located with most other activities and require single-use designation. Some activities require separation. However, these activities are often vital to the health of our economy and must be accommodated. For such uses, "Special Use Planning Areas" were created.

Special Use Planning Areas were created by analyzing current zoning. Where municipalities established industrial zones, for the purposes of isolating incompatible uses, these areas became Special Use Planning Areas. Currently, this plan identifies only those existing incompatible use areas. However, this plan anticipates new Special Use Planning Areas to be created to accommodate our expanding economy. The Chittenden County Regional Planning Commission is committed to working with municipalities to help identify appropriate areas and plan for new Special Use Planning Areas. (see Creating New Special Use Areas)

Some municipalities have industrial zones that allow for, and therefore anticipate, a mix of uses such as office space, ancillary commercial, and retail. In those cases, the area was not designated Special Use but is a Metropolitan or Village Planning Area.

Metropolitan Planning Area

A Metropolitan Planning Area should feature an intermingling of industry, commercial centers, regional services, educational institutions, recreational and natural areas, cultural facilities, and mixed-income neighborhoods. Its residents, workforce, and visitors should be served by a wide-array of transportation options, including high-quality roads, bus services, freight and passenger trains, ferryboats, and non-motorized bicycle and pedestrian routes.

The Metropolitan Planning Area is comprised of six units. The Plan's Future Land Use Map illustrates their locations. The largest unit is within Burlington, Winooski, and portions of South Burlington and Colchester. The second-largest contiguous unit is located in Essex Junction and Williston. Milton, Taft Corners area and Essex Town hold the remaining areas. In total, there are 17,869 acres of the Metropolitan Planning Area in Chittenden County.

The Commission encourages development of new businesses and housing options in the Metropolitan Planning Area. The area should contain the county's largest buildings and highest residential densities. Since most of the enterprises and services having a substantial regional impact are anticipated to be located in a Metropolitan Planning Area, it should receive the highest priority for public sewer and water infrastructure. An emphasis on non-automotive modes of transportation – to allow for easier pedestrian access – should be supported by regional and local transportation plans. Municipal plans and bylaws determine the best exact locations for new housing, industry, infrastructure, services and other uses within the Metropolitan Planning Areas.

The land units currently designated as the Metropolitan Planning Area should be zoned to allow for high-density, mixed-use development; incorporate multiple transportation modes including mass transit; and possess the existing or proposed infrastructure capacity to support the planned growth.

The Goals of the Metropolitan Planning Area are as follows:

Goal 1. The Metropolitan Planning Area should receive the highest densities of residents and employees for the region;

Goal 2. A Metropolitan Planning Area should have a mix of residential and commercial land uses within one-quarter mile of each other;

Goal 3. Industrial property should be mixed with commercial and residential uses separated by buffers as appropriate;

Goal 4. The Metropolitan Planning Area should provide a full array of land uses including heavy industry and protected natural areas, cultural facilities, educational institutions, and commercial uses, open recreation areas, and residential properties in a range of densities and sizes;

Goal 5. The best locations for new housing, industry, infrastructure, services and other uses within the Metropolitan Planning Area should be determined by municipal plans and bylaws;

Goal 6. An appropriate mix of automotive, rail, ferry, bicycle, pedestrian and other transportation options should provide access to the different land uses;

Goal 7. The Metropolitan Planning Area should receive a high priority for investments in public sewer, and water infrastructure.

Village Planning Area

The Village Planning Areas are compact nodes of mixed-use activities outside the county's urban centers. New development here should feature compatible mixed-uses – commercial, industrial, residential and local services within a quarter-mile radius to encourage pedestrian travel. A Village Planning Area is intended to serve its surroundings as a municipal center where people can live, work, shop and recreate. The Future Land Use Map illustrates the locations of the Village Planning Areas.

A Village Planning Area requires adequate infrastructure to support its locally planned densities. The land units currently designated as the Village Planning Area should be zoned to allow for high-density, mixed-use development; have design standards that incorporate alternatives to automotive transportation; and have plans for the appropriate infrastructure. Finally, a Village Planning Area should resemble traditional Vermont villages, featuring municipal services, layout designs and architecture that reflect traditional patterns of compact villages and downtowns separated by open countryside. Vermont's traditional village pattern tends to have a commercial core – with approximately 18 employees per acre – interspersed with civic facilities and housing units in the center; a town green or other public space in the center; residential units – with a density of 4 to 7 dwelling units per acre – on tree-lined, semi-grid streets with sidewalks; and industrial areas within walking distance.[15]

The Goals of the Village Planning Area are as follows:

Goal 1. The Village Planning Area should provide a mixture of residential, commercial, and civic uses within a one-quarter mile radius of each other;

Goal 2. Industrial uses should be compatible with other neighboring land uses;

Goal 3. The density of residential and commercial uses should create a visible distinction from surrounding Planning Areas;

Goal 4. An appropriate mix of transportation options including automobile, bus, rail, bicycle, and pedestrian mobility should be provided;

Goal 5. The best locations for new housing, industry, infrastructure, services and other uses within the Village Planning Area should be determined by municipal plans and bylaws;

Goal 6. The Village Planning Area should receive the second highest priority for investments in public sewer and water infrastructure.

Transition Planning Area

The towns of Colchester, Williston, Essex and Essex Junction contain the largest portion of this area collectively possessing 19,518 acres. South Burlington has 3,198 acres; Shelburne has 3,427 acres; and Milton has 4,060 acres of the Transition Planning Area. The Plan's Future Land Use Map illustrates Transition Planning Area locations.

Although there are some exceptions, the current development pattern within this area can be generally characterized as nodes of single-use activities that are separated from one another by buffers, roads, or isolated patches of open space. Commerce, housing, industry, office parks, retail and service establishments are often isolated from each other. Some of these uses, such as industry, are incompatible with others and are appropriately isolated. Other uses can and should be integrated where possible. A majority of residents in this area are dependent upon an automobile to access most of the existing commercial services and retail establishments. Most of the existing commercial activities are located along principal arterials, which are usually not conducive to pedestrian mobility.

Much of the open land in the transition area is planned for some type of development. This is apparent through the current zoning and/or the existence of infrastructure to support development, including: transportation, water, sewer and natural gas systems; electrical generation and transmission facilities; solid waste and storm water management systems; telecommunication facilities; and public buildings.

New Development

Because the Transition Planning Area is the largest area in the county with the greatest amount of open land with infrastructure, this plan encourages the use of this infrastructure in the most efficient means possible. It is widely recognized in professional literature that higher density leads to lower infrastructure costs. This plan does not recommend a particular density, in terms of dwelling units per acre, to be applied to new development in the Transition Planning Area because costs vary between municipalities and this information is not currently available. This plan does, however, encourage municipalities allowing new development in the Transition Planning Area to ensure that it occurs in a manner that uses infrastructure efficiently. Efficiency in infrastructure means the greatest number of people are served at the least cost.

New development in the Transition Planning Area should be designed in such a way that it supports the future creation of Metropolitan or Village Planning Areas. These designs are at the discretion of local government but this plan discourages the practice of isolating land uses that would otherwise be compatible in multiple use areas. This plan does recognize that certain land uses should be isolated. In such cases, the municipality should create “Special Use Planning Areas”.

Incompatible Uses

Not all uses vital to a healthy Chittenden County economy are compatible in mixed use settings. Some uses may be inherently incompatible with residential and office uses due to the generation of noise, odor, dust, smoke, heavy vehicles, or visual impacts. These uses are generally located outside of mixed-use areas to accommodate such situations. Examples of incompatible uses are military bases, landfills, heavy industry, distribution centers, warehouses, and airports. For these types of uses Special Use Planning Areas were established.

Redevelopment and Existing Uses

Some of the Transition Planning Area is currently developed with single use commercial and residential development. Some single use commercial areas may have great potential for redevelopment into multiple use compact settlement patterns that decrease the distance

between housing, employment and commercial services. This development pattern would likely increase efficiency of current infrastructure. This plan recognizes that it may not be possible to convert existing single use residential areas into multiple use areas. However, this plan encourages it whenever feasible.

The Goals of the Transition Planning Area are as follows:

Goal 1. Promote new planned unit developments that mix uses in the most practical and desirable way to meet regional goals, while respecting municipal planning efforts;

Goal 2. Make the most efficient use of public infrastructure;

Goal 3. Promote development patterns that maximize accessibility between residential, commercial, industrial, and other land uses;

Goal 4. Ensure that existing Special Use Planning Areas are used to their maximum potential;

Goal 5. Promote new residential areas that follow Planned Residential Development (PRD) patterns of clustered development on small lots with conserved open space land;

Goal 6. The best locations for new housing, industry, infrastructure, services and other uses within the Transition Planning Area should be determined by municipal plans and bylaws;

Goal 7. Promote residential infill in existing single-use residential areas.

Rural Planning Area

Most of Chittenden County is agricultural land – pastures, cropland and timberland – or protected forests. The rural landscape so prevalent in the county's southern, eastern, and northern areas helps define Chittenden County's unique character. Efforts to find methods for preserving our county's existing farms, forested lands, and areas of natural, educational, or recreational value without economically disadvantaging those whose ownership has protected those lands through our history must continue. The Rural Planning Area should remain primarily working landscapes. Value-added processing or manufacturing operations nearby working farms and forestlands are essential to ensuring the economic viability of these working landscapes.

Generally, local services for the residents of the Rural Planning Areas should be provided by nearby Metropolitan, Village, or Special Use Planning Areas. Working, open land should remain the defining characteristic of the Rural Planning Areas. Distinct boundaries, (preferably natural) should separate this landscape from the other Planning Areas.

The Commission recognizes that maintaining the existing character of the Rural Planning Area will require cooperative efforts between government agencies and landowners in this area. This Plan must be flexible in attempting to maintain the Rural Planning Area's existing character while allowing landowners to extract economic value from their property.

The Goals of the Rural Planning Area are as follows:

Goal 1. Promote use of land for recreation, conservation, agriculture, silviculture, and other resource-extraction industries through private activities, publicly managed land, and unmanaged natural areas;

Goal 2. Promote opportunities for small-scale residential developments, which promote Planned Residential Development (PRD) patterns of clustered development on small lots with conserved open space. Encourage larger residential subdivisions to occur in Metropolitan or Village Planning Area;

Goal 3. Promote opportunities for commercial services that are designed in concert with the overall characteristics of the Rural Planning Area;

Goal 4. Promote and support efforts to develop more dynamic methods for providing financial support to landowners who desire to protect their land from development pressures. Ensure that this area remains a priority for conservation funding.

Planning Area Policies

Policy 1. The Commission should encourage the concentration of residents and employees within multiple activity centers throughout the county. These activity centers are recognized as Metropolitan and Village Planning Areas. The Commission believes this approach helps reduce vehicle miles traveled, increases the efficiency of infrastructure and mass transit, reduces air pollutant emissions, and protects natural resources.

Policy 2. Municipalities are encouraged to enlarge or create new Metropolitan, Village and Special Use Planning Areas. All new Planning Areas should meet the criteria listed in the Plan's "Creating New Planning Areas."

Policy 3. The Commission believes that the characteristics of the Transition Planning Area – large expanses of single-use, auto dependent development – are often an inefficient use of land. The land within the Transition Planning Area that currently exists as single-use residential development may continue in single residential use. The Commission encourages local governments, however, to consider writing new plans and ordinances where desirable for the Transition Planning Area to support mixed uses characteristic of the Village or Metropolitan Planning Areas, or to support continuation of the uses in the Rural Planning Area. The Commission is committed to using its resources to help local governments with this conversion where it is desired.

Policy 4. The Commission will work with municipalities that have a designated Metropolitan or Village Planning Areas, but have local plans and implementation bylaws that do not act to implement the characteristics of a Metropolitan or Village Planning Area listed in this plan, to adopt new bylaws that would be compatible with the new Regional Plan. These bylaws should allow for minimum residential densities, infill development, mixed land uses, transportation alternatives, flexible lot sizes and shapes, and mixed-use buildings. The Commission will work with local planning and zoning boards to achieve these goals.

Policy 5. The Commission believes infrastructure investments in locations that are planned to receive large amounts of growth make economic and common sense. Directing infrastructure investments also helps direct future development. The Commission believes that new infrastructure investments should be directed toward Planning Areas designed to: receive mixed-use, compact settlement patterns; aid in the infill of existing single-use areas; or in Special Use Planning Areas. The exception to this policy is in the cases where local approved plans adopted prior to the adoption of this Regional Plan conflict with this policy or in cases where a public health and safety risk is present.

Policy 6. The Commission recognizes that infrastructure lines traverse different Planning Areas. The Commission believes that allowing existing residential, commercial or industrial development in Metropolitan, Village Transition Planning Areas or Special Use Planning Areas to connect into these lines is not detrimental to the Plan's goals. Connections of new development to infrastructure within the Transition Planning Area should be carefully planned to insure that they contain densities of commercial, industrial and/or residential uses sufficient to support the new infrastructure investment. The Commission strongly encourages municipalities to plan for new infrastructure connections in areas where future plans provide for densities sufficient to provide efficient use of public investment, and to discourage connections that do not provide such efficiencies.

Policy 7. This plan supports the full build-out and utilization of existing industrial parks. Business in these districts should be served by all necessary and ancillary infrastructure to help ensure that these parks will become permanent and sustainable fixtures in our economy. New industrial/commercial parks may be located in the Metropolitan, Village or Special Use Planning Areas, and should have multi-modal access. Special Use Planning Areas should be reserved for uses incompatible with a mixed-use environment and should be buffered from other areas to the extent necessary to abate any negative impacts. Incompatible industrial activities may also occur in Metropolitan Planning Areas subject to municipal policies and bylaws.

Planning Area Implementation Strategies

In order to help achieve the above goals and policies, the Commission should:

- Update the 1995 Existing Land Use Map of Chittenden County;
- Inventory the county's commercial and industrial sites in a GIS format;
- Convert municipal "grand list" data to a GIS format;
- Identify vacant land parcels in all Planning Areas;
- Complete a regional open space plan, which builds on local efforts to identify open spaces in need of protection, and which identifies those local open space priorities that provide regional benefits.
- Perform zoning analysis to identify infill potential in the Metropolitan, Village, Transition and Special Use Planning Areas;
- Inventory water and sewer capacity for the county;
- Perform a "build-out analysis" using different scenarios of growth patterns to educate policy makers and local officials on the relationship between different land use policies and settlement patterns and;
- The Commission will aid local planning and zoning boards, when requested, to create municipal bylaws allowing for minimum residential densities, infill development, mixed land uses, transportation alternatives, flexible lot sizes and shapes, and mixed-use buildings.

CREATING NEW PLANNING AREAS

This plan recognizes that a number of land areas in the County are slated for additional growth while other areas are not. It is important for this County to identify future development areas and distinguish them from those areas that are not planned for development. This plan started the process by reviewing local zoning. However, communities may desire to change the status of their Planning Areas upon review of this Plan.

These future growth areas should be planned as systemic units where integrated mixes of compatible land uses are accommodated or where Special Use Planning Areas are designed for non-compatible land uses. The Regional Planning Commission strongly supports local efforts to plan for and accommodate additional growth while conserving natural resources. It is in the best interest of the county to identify areas where additional residents, businesses, and services will locate. Our housing, infrastructure, economic development, and overall quality-of-life objectives should be met in preparing for the future. Establishing new Metropolitan, Village Planning, and Special Use Planning Areas can help municipalities determine where they want to locate new growth while coordinating this growth at a regional level.

Municipalities and the Regional Planning Commission should work together to create or expand Planning Areas by designing local planning objectives. The Commission greatly encourages communities to plan and develop new Planning Areas to meet our projected regional needs.

Creating Metropolitan Planning Areas

Metropolitan Planning Areas are designed to accommodate all land uses. Municipalities are encouraged to plan and develop new Metropolitan Planning Areas to accommodate projected resident and employee population growth. The Commission was established to help municipalities plan for these areas with GIS mapping services, fiscal impact analyses, coordinated regional land planning, grant writing, and other technical assistance. The Commission is committed to using its resources to help communities establish new Metropolitan Planning Areas.

Metropolitan Planning Areas Should Have:

1) a clear and definitive geographic delineation;

2) a minimum commercial and residential density that encourages an efficient use of sewer, water and transportation;

3) a higher commercial and residential density within one-quarter mile of transit stops than the rest of the Metropolitan Planning Area;

4) allowances for infill development;

5) allowances for a mix of land uses, including, residential, commercial, civic, and industrial with at least two uses mixed within one-quarter mile of each other;

6) allowances for industrial activities that are not complimentary to commercial and residential uses to be located at the edge of, but within, the Planning Area, with buffer zones where appropriate;

7) flexible lot sizes and shapes;

8) allowances for accessory structures and dwelling units;

9) allowances for buildings to have a mix of commercial and residential uses;

10) multiple modes of travel, including pedestrians, cyclists and mass transit that connect to the same land uses available to the automobile.

Creating Village Planning Areas

The Village Planning Area is designed to accommodate high-density residential, civic, and commercial uses, as well as those industrial uses that do not have regional impacts. Municipalities are encouraged to plan and develop new Village Planning Areas to accommodate projected resident and employee populations. The Commission is committed to using its resources to help communities establish new Village Planning Areas.

Village Planning Areas Should Have:

1) a clear and definitive geographic delineation;
2) a minimum commercial and residential density that encourages an efficient use of sewer, water and transportation infrastructure;
3) a higher commercial and residential density within one-quarter mile of transit stops than the rest of the Village Planning Area;
4) allowances for infill development;
5) allowances for a mix of land uses, including: residential, commercial, civic, and industrial; with at least two uses mixed within one-quarter mile of each other;
6) flexible lot sizes and shapes;
7) allowances for accessory structures and dwelling units;
8) allowances for buildings to have a mix of commercial and residential uses;
9) multiple modes of travel including pedestrian, cyclists and mass transit that connect to the same land uses available to the automobile;

Creating Special Use Planning Areas

Special Use Planning Areas are designed to accommodate activities that are incompatible with most other activities and require single-use designation. Some activities require separation. Examples of these areas are, but not limited to: military bases, landfills, heavy industry, distribution centers, warehouses, and airports.

Special Use Planning Areas Should Have:

1) a clear and definitive geographic delineation;

2) plans for appropriate infrastructure for the intended use.

3) a buffer from other uses commensurate with its impact.

Land Use End Notes

[1] U.S. Census
[2] United States Department of Agriculture – Natural Resources Conservation Service, 1997 National Resources Inventory. Note: Developed Land includes "urban & built up and rural transportation."
[3] United States Department of Agriculture – Natural Resources Conservation Service, 1997 National Resources Inventory
[4] Source: 2000 Census estimate published by U.S. Census Bureau, May 2001
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[13] Vermont Statute, Title 24 V.S.A Ch 117 §4302(c)(1).
[14] Vermont Statute, Title 24 V.S.A Ch 117 §4302 (b)(2)
[15] Vermont Agency of Development and Community Affairs (1995) Estimating Land Area Needs for growth Centers: A Technical Report and Handbook, Research and Evaluation Specialists of Vermont, Inc., T.J Boyle and Associates, Burlington, VT; Northern Economic Planners, Concord, NH, May 1995, p.29, 36-37

INFRASTRUCTURE

WATER AND WASTEWATER INFRASTRUCTURE
- **Public Water Supply**
- **Wastewater Treatment**

FLOOD AND STORMWATER CONTROL

COMMUNITY FACILITIES

RIGHTS-OF-WAY

SOLID WASTE INFRASTRUCTURE

TRANSPORTATION

TELECOMMUNICATIONS
- **Overview**
- **Visual Impacts, Siting and Co-location**

Introduction

Chittenden County's infrastructure – its transportation network; water, sewer and natural gas systems; electrical generation and transmission facilities; solid waste and storm water management systems; telecommunication facilities; and public buildings – has a significant effect on how we live and grow as a community. Adequate, well-maintained and efficient infrastructure allows homes, businesses and public places to be accessible, usable, and safe.

Infrastructure is regional in nature. Its services and facilities require interconnection and cooperation between and across municipalities. It is essential that the Commission work closely with the county's communities to ensure that infrastructure is efficiently built and operated and to balance the necessary facilities with protection of the natural environment. The present condition of infrastructure in Chittenden County varies widely. Some of the downtown areas have all the necessary facilities, but many of these are old and in need of considerable maintenance or replacement. In particular, some combined sanitary/storm sewers must be separated. Infrastructure in our smaller towns and rural areas consists mainly of transportation, water and electricity systems, with a few sewer systems in place.

Improvement to the region's infrastructure must be planned and coordinated to ensure that its construction is essential to an area while avoiding placements that will have negative impacts. It is important to invest in areas where growth is planned and desirable.

WATER AND WASTEWATER INFRASTRUCTURE

Public Water Supply

Chittenden County's current water service area supplies water to over 105,000 people, or approximately 68 percent of its residents. The Champlain Water District (CWD) is the county's largest water supplier, serving 65,000 people with 18,400 residential connections and 2,600 non-residential connections among 12 municipal water systems. The CWD is a municipally chartered, consolidated water district, serving South Burlington, Shelburne, Williston, Essex Town, Village of Essex Junction, Winooski, Colchester Town, Colchester Fire District #1, Colchester Fire District #3, Milton, Village of Jericho, and the Mallets Bay Water Company.

The Burlington Department of Public Works (BPW) serves more than 40,000 people with about 10,000 connections within the City of Burlington and Colchester Fire District #2. Lake Champlain is the source for both the CWD and the BPW water systems.

Additional municipal water systems provide water service in Jericho, Underhill, Richmond, and Hinesburg, each serving about 300 connections. The county's water system coverage is illustrated on the Plan's Water Service Area map.

The Vermont Department of Environmental Conservation (DEC) is currently revising the Water Supply Rule to incorporate several federal and state initiatives. These include requirements to strengthen protection against microbes, while instituting standards to minimize health risks from disinfectants; increased standards for operator certification; and the implementation of a source water assessment program by which source water protection areas are delineated. In addition, the revised Water Supply Rule requires every community system to provide its customers with an annual water quality report.

The Vermont Agency of Natural Resources (ANR) is restructuring its infrastructure-funding programs to prioritize funding water and wastewater improvements in "growth centers" such as the Metropolitan, Village, and Special Use Planning Areas.

The Commission intends to prepare and maintain a Capital Facilities Plan in order to inform planning processes so that growth is planned to meet the region's vision. Data on existing infrastructure and improvement plans will be collected and depicted in Geographical Information Systems (GIS) maps and charted for scheduling and costs. The Commission will analyze this data for compliance with the Regional Plan and local plans and identify areas for cooperation between

communities. The Commission will also provide assistance to identify sources and obtain funding for projects.

Wastewater Treatment

Approximately 12 percent of Chittenden County is within a sewer service area. There are 12 wastewater treatment facilities serving South Burlington, Colchester Town, Colchester Fire District #1, Burlington, Williston, Essex Town, Village of Essex Junction, Winooski, Hinesburg, Milton, Richmond, and Shelburne. These facilities have the collective capacity to treat 17.51 million gallons per day of discharge. The Plan's Municipal Sewer Service Area map illustrates existing sewer systems in Chittenden County.

Locations outside of sewer service areas rely on septic systems to treat wastewater. However, current on-site septic rules may contribute to the region's housing shortage. Building lots less than 10 acres face stricter on-site septic rules and regulations in Vermont than in other states. This has been an impediment to compact development. However, proposed changes to the state's on-site septic regulations would probably make compact development more feasible in areas not served by municipal sewer systems.

The Vermont Department of Housing and Community Affairs has concluded that "towns in Vermont which effectively regulate on-site wastewater systems on the local level, the change will result in more land being available for development."[1] Most towns in Chittenden County do effectively regulate on-site wastewater, so on-site septic regulation changes will likely increase the amount of developable land in the county.

Water and Wastewater Infrastructure Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Protect the quality of our water so that it is safe and adequate to sustain current and future residential, industrial and commercial use;

Goal 2. Maintain and improve wastewater systems to protect and preserve overall water quality;

Goal 3. Promote the importance of continuing water conservation through educational programs and outreach;

Goal 4. Facilitate watershed planning and regional cooperation to meet our water and wastewater infrastructure goals;

Goal 5. Identify and eliminate combined sanitary and stormwater systems;

Goal 6. Promote environmentally sound, alternative septic technologies, particularly for replacement of failed systems;

Goal 7. Develop a capital facilities plan and capacity study.

Water and Wastewater Infrastructure Policy

Policy 1. The Commission sees clean, safe and healthy water as critical components in maintaining a high quality of life. Safe drinking water should be supplied to all county residents and the Commission will perform its duties to meet this objective. The Commission will plan to protect water quality and will plan for an adequate supply of drinking water for projected populations.

Policy 2. The Commission believes that effective and well-maintained wastewater treatment systems are essential to protecting water quality in Chittenden County. The Commission supports the improvements and expansion of wastewater treatment facilities.

Water and Wastewater Infrastructure Implementation Strategies

To help achieve the above goals and policies, the Commission will:

- Gain a thorough understanding of land uses at the parcel level;

- Complete a thorough build-out analysis of the Planning Areas where all developable lands are identified and "built-out" according to the existing zoning envelope;

- In collaboration with municipalities and regional entities responsible for water and wastewater infrastructure, use the build-out analysis as a foundation for assessing future capacity needs for the region's public water supply and wastewater treatment facilities;

- Convene a regional advisory group of water supply, water quality, and wastewater professionals to review the build-out analysis and confirm our future water supply and wastewater treatment needs;

- Maintain a regional database that records average daily water and wastewater demand within each municipality's water service areas;

- Support expansion of efficient water and wastewater treatment systems to serve Metropolitan, Village and Special Use Planning Areas.

FLOOD AND STORMWATER CONTROL

Management of storm drainage is important for keeping streets and roads clear of excess water; for the prevention of flooding and erosion; and for preventing pollution of surface waters. Certain low lands can be flooded during extremely wet conditions and shall be protected from development. These flood plains are suitable for agriculture, as long as a buffer zone is in place to prevent runoff from polluting surface waters.

In built-up areas, with curbs and storm drains, most stormwater travels through culverts and pipes, eventually discharging into surface waters. It is important to provide retention ponds that allow solids to settle out. These ponds should also include a filtration or aeration device to remove contaminants from the runoff.

In rural areas, the drainage is mostly in open ditches that help to provide some natural filtration. Development and public works projects should include stormwater management standards.

Per the 1987 amendments to the Clean Water Act, the U.S. Environmental Protection Agency (EPA) has developed new rules for stormwater management. Phase II of these rules are to be implemented in the next few years. The DEC is working to develop state requirements that will meet or exceed the federal stormwater requirements. These rules will require planning along watershed boundaries as opposed to jurisdictional boundaries.

The EPA has developed a toolbox of Best Management Practices that are available for each watershed for the purpose of stormwater management. In a similar fashion, the DEC is in the process of developing a *Stormwater Management Handbook* that will outline Acceptable Management Practices. Proposed practices for stormwater management are being chosen for their ability to remove 80 percent of total suspended solids from stormwater runoff; their expected capacity for managing anticipated stormwater runoff volumes; and their durability in the field.[2]

Flood and Stormwater Control Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Support the EPA and DEC stormwater rules through the use of Acceptable Management Practices, per the *Vermont Stormwater Management Handbook*;

Goal 2. Control storm drainage to prevent flooding, erosion, and pollution and direct public investment to those areas of greatest need of water improvement;

Goal 3. Maintain vegetated buffer strips adjacent to all waterways;

Goal 4. Provide for safe collection of hazardous waste;

Goal 5. Prevent residential, commercial and industrial development within floodplains;

Goal 6. Promote flood control practices that make use of the natural ability of wetlands and soils to absorb and slowly release water to reduce peak flow;

Goal 7. Separate all existing storm drainage systems from sanitary sewer systems.

Flood and Stormwater Control Policies

Policy 1. The Commission believes that Chittenden County's residents and structures should be protected from flooding. The Commission believes the best way to protect from flooding is to avoid development in floodplains and to protect and maintain riparian areas and wetlands.

Policy 2. The Commission believes that stormwater runoff should be delivered to our wetlands and water bodies as free from pollutants and sediment as reasonably possible. The Commission believes the best way to encourage clean stormwater runoff is through the proper construction and maintenance of stormwater infrastructure and municipal compliance of the EPA's Phase II stormwater management requirements and the Vermont Agency of Natural Resources' stormwater rules.

Flood and Stormwater Control Implementation Strategies

In order to achieve the policies above, the Commission will:

- Work with the state and member municipalities to implement Acceptable Management Practices in order to ensure compliance with EPA's Phase II stormwater management requirements and the Vermont Agency of Natural Resources stormwater rules;

- Work with municipalities, watershed organizations and others to educate landowners regarding stormwater structure maintenance, including the importance of routine cleaning; and good housekeeping practices for garages, fueling areas and equipment yards;

- Encourage municipalities, outside of urban centers, to adopt policies that provide open channels for surface water rather than traditional curbs, catch basins, and stormwater pipes.

COMMUNITY FACILITIES

New community facilities should be located in Planning Areas where sewer and water already exists, or where sewer and water are planned to serve development that would be compatible with new community facilities. The Commission will assist municipalities in analyzing locations that will be most beneficial to the region's communities. Chittenden County's community facilities are illustrated on the Plan's Facilities Maps.

The Commission's Capital Facilities Plan will identify and analyze the county's existing and planned facilities. This analysis will include consideration of traffic, parking, public transit, water, sewers, and the proximity of the population expected to use a facility. The Capital Facilities Plan will also identify potential duplication of regionally significant facilities and make recommendations for which projects should be pursued.

Community Facilities Include:

- Municipal offices
- Fire departments
- Police departments
- Public libraries
- Hospitals
- Colleges
- Universities
- Public schools
- Auditoriums
- Theaters
- Museums
- Post Offices
- Public Parks

Goals For Community Facilities

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Plan infrastructure improvements and expansions to accommodate proposed new or expanded community facilities to help ensure the goals of this Plan;

Goal 2. Complete the construction, expansion or provision of public facilities and services in a manner that does not reduce the resource value of abutting parcels, such as economically viable agricultural or forestry lands;

Goal 3. Help ensure that local governments receive payments in lieu of taxes.

Community Facility Policy

Policy 1. The Commission regards civic land uses as an essential complement to a mixed-use pattern of development. Most community facilities are civic uses that complement residential and commercial uses. Schools, post offices, public parks, and other municipal and state

government buildings often help frame a focal point in a community. They may attract a critical mass of employees that support other businesses. They may provide a public gathering place or double as a meeting hall to accommodate voting booths. The Commission strongly supports locating community facilities in central locations as part of a mixed-use environment. The Commission understands some facilities such as utility installations and landfills are not suitable in mixed-use environments. However, post offices, hospitals, and other federal and municipal buildings can be suitable for mixed-use environments and should be located there.

Community Facility Implementation Strategy

In order to help achieve the policy above, the Commission should:

- The Commission is a statutory party to all Act 250 hearings and will review development proposals and plans for consistency with the above policy.

RIGHTS-OF-WAY

A right-of-way is a corridor for infrastructure either owned by the public or a utility or obtained through easement. Rights-of-way are typically corridors of land occupied by various forms of infrastructure such as roads; pipelines; telephone and electricity transmission lines; and water, sewer and stormwater facilities. Municipalities can designate future easements for utilities and facilities on their official maps.[3]

Opportunities exist for consolidation of right-of-way development along Chittenden County's many developed highway and utility corridors. Consolidation of these corridors can eliminate the need for some transmission lines, allows less land to be developed, lessens the impact to viewsheds, and is less expensive to build and maintain.

Right-of-Way Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Work with utility companies, the Chittenden County Metropolitan Planning Organization, Vermont Agency of Transportation, U.S. Department of Transportation, municipalities, and other relevant parties to coordinate right-of-way planning and consolidate utility corridors;

Goal 2. Encourage neighboring regional planning commissions to join the Commission in adopting a policy to locate all new or replacement electrical and telephone transmission lines underground wherever economically feasible.

Right-of-Way Policies

Policy 1. The Commission believes that co-locating utilities in existing rights-of-way can reduce impacts to the scenery and lower utility costs. New infrastructure should be co-located in existing right-of-ways unless the greater public good is better served by placing utilities elsewhere.

Policy 2. The Commission believes that placing electrical and telephone transmission lines underground reduces negative impacts to the landscape while reducing long-term maintenance costs. New or replacement electrical or telephone transmission lines should be encouraged to be located underground. Utilities are encouraged to either relocate existing transmission lines in otherwise undeveloped corridors such that they are co-located, or to place them underground.

Right-of-Way Implementation Strategies

In order to help achieve the policies above, the Commission should:

- Support efforts to co-locate transmission lines in existing rights-of-way;
- Work with all levels of government and private interests to bury existing transmission lines when they are replaced, if economically feasible;
- Support local ordinances requiring new lines to be buried.

1

SOLID WASTE INFRASTRUCTURE

The Chittenden Solid Waste District (CSWD) is a regional organization that is actively solving solid waste problems, including implementation of source reduction and recycling programs. All of Chittenden County's municipalities are CSWD members except the Town of Underhill, which has developed its own solid waste management plan. The state has accepted the CSWD and the Underhill solid waste plans as meeting the requirements of Vermont's solid waste statutes (Act 78). In addition to CSWD and the Town of Underhill, there are many individuals, public entities, private businesses and institutions that are striving to address the issue of solid waste management. Existing solid waste facilities are shown on the Plan's Facilities Map.

Solid Waste Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Assure that the environmentally sound management of solid waste generated within the county is accomplished in an efficient, effective, and economical manner;

Goal 2. Maintain a solid waste management system based on the following hierarchical priorities consistent with Act 78. These are:

1. Reduction of toxicity of the waste stream;
2. Reduction of volume of the waste stream;
3. Reuse;
4 Recycling and composting, and;
5. Disposal;

Goal 3. Ensure the solid waste management system consists of an appropriate combination of public, private, and public/private programs in order to best serve the county and promote the public good.

Solid Waste Policies

Policy 1. The Commission believes that users of the solid waste system should pay for the cost of the solid waste system.

Policy 2. The Commission believes that the public should be educated about the solid waste management goals and the means for achieving them throughout all sectors of the public.

Policy 3. The Commission promotes a flexible and dynamic solid waste management process capable of responding to technological advancement and changes in local conditions.

Solid Waste Implementation Strategies

In order to help achieve the policies above, the Commission should:

- ❖ Support local drop-off centers strategically located throughout the region;

- ❖ Ensure that municipal plans are consistent with the requirements of Act 78;

- ❖ Encourage the town of Underhill to join CSWD;

- ❖ Ensure that the future waste disposal needs of the region are adequate by supporting the efforts of the CSWD and local communities in the siting of a long-term regional landfill within Chittenden County.

TRANSPORTATION

Under federal guidelines, Chittenden County is a metropolitan district. Therefore, transportation planning and prioritization is managed by a metropolitan planning organization, or the Chittenden County Metropolitan Planning Organization (CCMPO). At the same time, the Commission oversees the county's land-use planning. Recognizing and planning for the interaction between transportation and land use is vital, thereby creating the need for the CCMPO and the Commission to work together closely. To accomplish this, the two organizations have representatives on each other's boards and standing committees and cooperate in the preparation of plans. A Memorandum of Understanding has been executed to govern this cooperation. Each community that is represented on the Commission also has a representative on the CCMPO.

An affordable, efficient transportation system is essential for the movement of people and goods. The interaction between transportation and land use must be continuously evaluated. Plans must be developed so as to ensure that the improvements that are undertaken will support the planning areas concept and minimize adverse environmental impacts. This will be accomplished by close cooperation between the Commission and the CCMPO in preparing and implementing regional plans, and working with the member communities in the preparation of their local plans.

The *1997 Chittenden County Long Range Transportation Plan* includes four goals for transportation planning in Chittenden County. Recognizing the inherent link between land-use patterns and transportation, the CCMPO included as one of its four goals the aspiration to make the land use/transportation connection. The CCMPO adopted a policy to support existing and planned growth centers through investments in transportation infrastructure in those areas. Currently, the recently released *Draft Goals for the 2001 Metropolitan Transportation Plan* includes a desire to reinforce sustainable land-use patterns.

The Long Range Transportation Plan, to be renamed the Metropolitan Transportation Plan, shall be considered to be an integral part of the Regional Plan. As well, the Transportation Improvement Plan (TIP), which is prepared and continuously updated by the CCMPO, shall prioritize the transportation projects in Chittenden County to be accomplished with federal and state funding.

Transportation Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Preserve, maintain, and improve existing transportation facilities, particularly main access corridors and bridges;

Goal 2. Complete the major access corridor improvements, as well as other similar projects included in the TIP, in ways that support the goals of this Plan. Many of these projects have been in the planning stages for many years and are projects upon which the communities have based their local plans. These include the Southern Connector, Circumferential Highway, Shelburne Road reconstruction, Limekiln Bridge, Exit 13, and others in the TIP;

Goal 3. Improve the mass transit system by the expansion of the Chittenden County Transportation Authority service area and frequency of operation, introduction of passenger and commuter rail and construction of multi-modal centers, transit-oriented developments, and park-and-ride lots with express bussing. Affected stakeholders should devise and implement a method of funding mass transit that is fair to all member communities and to all passengers and strives to reduce the financial burden on local property tax rates;

Goal 4. Improve facilities for rail freight service to reduce congestion resulting from large truck traffic;

Goal 5. Expand the network of sidewalks and bike paths where appropriate to improve the mobility and safety of pedestrians and bikers;

Goal 6. Support necessary transportation improvements to the Burlington Airport, such as parking, public transportation, access and egress;

Goal 7. Work closely with the CCMPO to minimize any adverse effects of transportation improvements, recognizing that the benefits of the contemplated transportation improvements may outweigh the adverse effects. This includes continuing the development, and supporting the use of, an empirically based prediction model, such as the Decision Support System (DSS) currently being developed, to determine the potential effects that proposed transportation improvements may have on land use and implement plans to minimize adverse effects;

Goal 8. Consider relocating the rail yard currently on the Burlington Waterfront to a more central location that would be compatible with freight transfer from rail to truck for local distribution;

Goal 9. All transportation options will be considered. The RPC supports local transportation projects that insure economic vitality and quality of life to the communities' residents;

Goal 10. Develop an access management plan for roads and highways to help alleviate some traffic congestion problems as well as to guide municipalities in controlling development.

TELECOMMUNICATIONS INFRASTRUCTURE

Overview

Telecommunication services are essential to the effectiveness of emergency services, the competitiveness of local businesses, and the region's overall quality of life. The benefits of wireless telecommunications services must be balanced with its negative impacts on the region's scenic quality and potential health hazards.

Unprecedented demand for expansion of telecommunications services is anticipated in the next decade. Demand for wireless telephone service is rising, requiring increased coverage and capacity. Large towers to accommodate high-definition television have also been constructed. Wireless technology may be the best prospect for delivering high-speed Internet service to rural communities. Therefore, it is important for the region's municipalities to plan accordingly for the expansion of wireless telecommunications facilities.

While wireless telecommunications will grow and become an increasingly important part of the telecommunications picture, residential and industrial high-speed Internet access will continue to come through existing and improved (fiber optic) telephone and cable lines. We must ensure adequate access to wired telecommunications is available – not only in the density-rich portions of Chittenden County, but in the more rural areas as well.

Over the past five- to ten-year period, unprecedented demand for expansion of telephone lines and telecommunications services has occurred. Demand for additional telephone lines – primarily for dedicated fax and Internet access – is continuing to rise, requiring increased capacity.

The maintenance and improved quality of our current wired service should be accompanied by access to high-speed, broad-ban technology. Access to high-speed lines is essential to the competitiveness of local businesses, telecommuters, and the overall vitality of the economy within the region. Access to high-speed lines may redefine settlement patterns and commerce in the same way the railroads and interstates have in the past.

Wired telecommunications transmission lines require rights-of-way. Since access to broadband will define the economic potential of areas for decades to come, the granting of cable access to high density population areas should only be granted to companies in return for their investment to expand these lines to rural communities as well.

Visual Impacts, Siting, and Co-location

The location of telecommunications facilities has effects upon natural and aesthetic resources. Before a telecommunication facility can be sited on state property within the county, the Vermont Agency of Administration must notify the Commission and the planning commissions of any municipalities whose view-sheds might be affected.[4]

There are several methods to lessen the impacts of telecommunications facilities. Co-locating additional wireless telecommunications facilities with existing towers or suitable structures would have less impact than constructing new towers. Using towers designed to resemble trees or other natural landscape features can also diminish the impact of wireless telecommunications facilities.

Telecommunications Infrastructure Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Encourage the use, construction and siting of new wireless telecommunications facilities to reduce visual impacts and public health hazards as much as possible;

Goal 2. Encourage the dismantling of unused telecommunications towers within a reasonable amount of time after disuse;

Goal 3. Encourage and support municipalities to examine or amend zoning regulations to meet regional goals regarding telecommunications facilities;

Goal 4. Support, maintain and expand existing capacity;

Goal 5. Expand the availability of broadband access to the Internet;

Goal 6. Encourage the reduction of the cost for high-speed telecommunications in the state;

Goal 7. Harmonize regulatory legislation to encourage co-location of cell towers.

Telecommunications Infrastructure Policies

Policy 1. The Commission regards the growth of the telecommunication industry and infrastructure as essential in a number of applications including public safety, health care, government services, business, and education. The expansion of "e-commerce" and the high-technology industry holds great opportunities for Chittenden County in our efforts to balance a strong economy with environment and aesthetic protection. Infrastructure should not conflict with Chittenden County's scenic and environmental qualities. New tower sites and designs should minimize scenic and environmental impacts. New towers should be constructed in areas serviced by existing roads or trails.

Policy 2. The Commission suggests that municipalities prepare for the decommissioning and dismantling of telecommunication infrastructure by requiring developers to provide assurance for sufficient funds for such activities when they are permitted.[5]

Telecommunications Infrastructure Implementation Strategy

In order to help achieve the policies above, the Commission should:

- ❖ Work with telecommunication companies and our regional partners to help assure that the expansion of telecommunication infrastructure occurs in an aesthetically and environmentally appropriate way.

Infrastructure End Notes

[1] Vermont Department of Housing & Community Affairs, 1998. Onsite Sewage Reform, Land Use Implications

[2] Vermont Department of Environmental Conservation, 2000. Vermont Stormwater Management Handbook, Technical Support Document, Public Review Draft, November, 2000.

[3] Vermont Statute: Title 24 § 4401(b)(3)

[4] Vermont Statute: Title 30 § 227(b).

[5] Vermont Statute: Title 24 § 4407

ENERGY

ENERGY CONSUMPTION AND PRODUCTION

- **Overview**
- **End-Use: Transportation**
- **End-Use: Residential Sector (non-transportation)**
- **End-Use: Commercial/Office Sector (non-transportation)**
- **End-Use: Industrial Sector (non-transportation)**
- **Electrical Energy Sources**
- **Non-Electrical Energy Sources**

Introduction

Unless we reverse historic trends, our energy needs will rise as our population grows. Diverse, reliable, affordable, and environmentally acceptable energy supplies are essential to sustaining our quality of life. Although it has demonstrated leadership in exploring and implementing renewable energy solutions, Chittenden County is nonetheless highly dependent upon non-renewable fossil fuel energy sources for now. In addition to currently rising costs and the finite quantity of these resources, some energy production methods have adverse impacts on human health, wildlife habitats, and the stability of the global climate. These effects may be limited through increasing the efficiency with which energy is used, by increasing the utilization of renewable energy strategies when appropriate, and by implementing high-density development strategies.

The high-density, mixed-use communities of Metropolitan and Village Planning Areas can reduce vehicle mileage and allow energy needs to be met with less investment in energy infrastructure. Metropolitan and Village Planning Areas can help reduce personal vehicle mileage, encourage the use of mass transit, and encourage the use of distributed generation with district heating and cooling (community energy systems), using unutilized thermal energy from electric generating plants.

It is recommended that the siting of energy production and delivery facilities not only comply with Title 30 VSA Sec. 248, but also minimize environmental impacts while optimizing the economic utilization of existing and planned investments in energy infrastructure. These objectives can be met by recognizing and evaluating: energy efficiency opportunities; distributed generation; co-generation; district heating and cooling; other programs that capture and employ waste heat; life-cycle costs of energy projects; and the environmental and ecological impacts of energy alternatives. Programs that balance these objectives can promote fuel diversity, reliability, energy independence and environmental responsibility, and promote the expanded use of renewable forms of energy.

ENERGY CONSUMPTION AND PRODUCTION

Overview

Discussions of energy are typically divided into areas of end-use (demand), subdivided by sector; and production (supply), subdivided by source. Understanding end-use is helpful in revealing efficiency opportunities, while an understanding of production helps to determine which fuels and technologies offer the greatest benefits to a region.[1] The Plan's Gas and Electric Utilities Map illustrates the locations of energy infrastructure in Chittenden County.

End-Use: Transportation

Transportation is the largest energy end-use in Vermont, accounting for 44 percent of the state's total energy use. Recent increases in transportation energy consumption are due primarily to car and truck travel. Reducing the energy consumed and pollution emitted by road transportation is a high priority for the region. Concentrating people, jobs and services within smaller geographic areas allows for easier non-motorized travel, increases mass transit feasibility, and reduces overall automobile use. Fewer and more efficient cars on the road translate into a conservation of transportation fuel and cleaner air and water. Policies that support the use of alternative fuel vehicles should be encouraged.

End-Use: Residential Sector (non-transportation)

Energy consumption in the residential sector has grown in recent years. Space heating and cooling accounts for the majority of this consumption. Water heating is the residential sector's second highest end-use. Peak electric power usage in Burlington now occurs during the cooling season. There is a trend of growing summer load in areas surrounding Burlington as well. The use of electricity for space heating is decreasing, being replaced by natural gas, oil, propane and wood. Proper building site orientation and design, a lifecycle cost approach to building component choice, and other alternative energy and energy efficiency-related techniques in home construction and buying decisions should be encouraged. The use of natural gas, wood, and solar heaters should be encouraged over fuel oil and electric baseboard heating. Programs organized by public utilities to reduce electricity demand should be encouraged and promoted by the Commission. Existing regulations for

energy efficiency should be incorporated into the design review process. Programs organized by Vermont's Energy Efficiency Utility, Vermont Gas Systems, and Burlington Electric Department to provide incentives to reduce energy consumption in buildings should be encouraged.

End-Use: Commercial/Office Sector (non-transportation)

Non-transportation energy delivered to the commercial sector declined then rose again in recent decades. Space heating and cooling accounted for most of this growth. Efforts should be made to improve commercial space heating and cooling energy efficiency. Renewable energy technologies, and distributed generation with associated space conditioning systems should be promoted for commercial space conditioning where appropriate.

Lighting was the second highest commercial energy use. More than $1 million per year is spent on wasted exterior lighting in Vermont.[2] In 1996, the Commission produced the *Outdoor Lighting Manual for Vermont Municipalities*. The manual offers strategies for effective, cost-efficient outdoor lighting. Municipal governments are encouraged to use it in their planning and zoning efforts. Municipal governments and the State of Vermont are also encouraged to adopt Light Emitting Diodes (LED) technology for traffic lights as rapidly as possible.

All levels of government should set a strong example in promoting energy efficiency. The region's governmental entities should perform comprehensive energy audits and reduction programs within their buildings. They should also adopt improvement policies regarding energy consumption in municipal operations.

End-Use: Industrial Sector (non-transportation)

Industrial energy consumption also fell and then rose again in recent decades. Process heat and motors create the largest energy demand within Vermont's industrial sector. Continuous improvement in industrial energy efficiency should be promoted. Chittenden County's industries should be encouraged to participate in technology transfer programs with other Vermont firms to increase industrial energy efficiency.

Production: Electrical Energy Sources

Electrical power used in Vermont comes from a number of sources, including coal, nuclear, oil, natural gas, hydro, wood and solar. Hydropower accounts for a high proportion of electricity used in Chittenden County. Thirty percent of Vermont's total electricity consumption is generated by hydropower facilities in Quebec. While virtually all economically feasible hydro sites in Vermont have already been developed, there are strategies through which existing dams can be re-powered to expand production.[3] Strategies should be devised to minimize environmental impacts of existing hydro facilities, such as the Peterson Dam, to preserve these renewable energy resources.

A substantial portion of Vermont's electricity is generated by the Vermont Yankee nuclear power facility. It is unclear at present to what extent this source will continue to remain a substantial part of the county's electric supply during the plan period.

Coal and oil account for a small amount of electricity consumed in Vermont. Coal- and oil-burning facilities using conventional technology for commercial energy production are discouraged because of environmental costs – including air pollution and acid rain – that are generated by these facilities using today's technologies.

A small amount of Vermont's electricity is produced by natural gas. This is an available, relatively clean-burning resource, and should be considered for future electricity production within the region when renewable sources are not practical or economical.

Wood is used to produce a small proportion of Vermont's electricity. One-third of the state's wood-derived electricity is produced at the McNeil Generating Station in Burlington, which uses wood to produce approximately 80 percent of its electricity. Net CO_2 emissions are zero or negative when the CO_2 recycled by growing and sustainably harvesting trees is considered. Levels of NOX are of concern in any combustion process, and particulates are of concern in biomass combustion. These factors are addressed by U.S. Environmental Protection Agency (EPA) standards.[4]

Wind power could enhance Vermont's energy self-reliance. Wind power is relatively quiet and clean. Wind power sites should avoid obstructing scenic views.

Methane recovery from manure on farms and also from landfills and other similar sources has potential as the technology develops and particularly as distributed generation technologies proliferate. These should be encouraged when appropriately sited.

Solar energy technology is available and has minimal environmental impacts. Vermont's low amount of sunshine coupled with the high costs of producing solar cells and storage batteries generally

makes large-scale solar power economically unfeasible at this time, however, this is changing and should be evaluated during the plan period.

Production: Non-Electrical Energy Sources

Non-electrical energy sources are mostly used for space heating and transportation needs. Petroleum used for non-electrical purposes currently accounts for about 70 percent of Vermont's delivered energy. Sixty percent of this is consumed as vehicle fuel. The combustion of petroleum causes environmental damage and contributes to global climate change. No petroleum is produced in Chittenden County and therefore must be imported.

Natural Gas accounts for about 6 percent of Vermont's delivered energy. Pipelines – delivering gas from sources in western Canada – currently serve much of the region's developed areas. The use of natural gas emits fewer pollutants per unit of energy than any other fossil fuel and should be promoted. It is nonetheless a non-renewable resource .

Wood is an abundant native energy resource in Vermont. Employing appropriate forestry management techniques could substantially increase the amount of wood available for both electric and non-electric energy production. Installing wood heating systems in large buildings should be evaluated against alternatives.

A negligible amount of coal is used for non-electrical purposes in Vermont. This energy source should be discouraged due to its high environmental costs and a lack of local availability.

Energy Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Reduce energy end-use in the transportation, residential, commercial, and industrial sectors by concentrating new development in Metropolitan and Village Planning Areas;

Goal 2. Promote the development of business opportunities that maximize energy efficiency and minimize environmental impacts and that promote the development of renewable-energy business opportunities in Chittenden County.

Energy Policies

Policy 1. Public and private entities should be encouraged to reduce energy consumption, to increase energy efficiency and to promote the use of renewable energy resources.

Policy 2. The Commission and utility companies should cooperate to determine the location of proposed energy-generation plants before applying for a permit under state law.[5] Generally, the siting of electricity-generation plants, whose primary purpose is to sell power, should consider conservation opportunities, environmental impacts, and the efficient utilization of existing and planned energy infrastructure.

Policy 3. Partnerships to promote energy conservation will be supported by the Commission.

Energy Implementation Strategies

In order to help achieve the above policies above, the Commission should:

- Help develop a regional policy on local energy generation and that policy should become a part of our regional plan;

- Work with municipalities, energy professionals, and interested organizations to develop workshops and resource materials aimed at incorporating energy efficiency standards and greenhouse gas reduction strategies in household and commercial building designs;

- Encourage municipalities to participate in programs that promote the use of alternate fuel vehicles;

- Research, identify, disseminate and promote information about new and efficient energy technologies and encourage energy efficiency programs among residents, businesses and municipalities.

Energy End Notes

[1] All information below, unless otherwise noted, was derived from Fueling Vermont's Future: Vermont Comprehensive Energy Plan and Vermont Greenhouse Gas Action Plan, Public Review Draft, Vermont Department of Public Service, September 1997

[2] Outdoor lighting Manual for Vermont Municipalities, Chittenden County Regional Planning Commission, 1996, p. 18

[3] Commission Task Force Comments, Summer 2000.

[4] L. Doe, Burlington Electricity Department, Fall 2000

[5] Vermont Statute: Title 30 V.S.A. § 248

HOUSING

HOUSING ISSUES
- **Housing Availability**
- **Cost of Housing Permits and Infrastructure**
- **Housing Densities**

AFFORDABLE HOUSING
- **Overview**
- **Distribution of Affordable Housing**
- **Mobile Home Parks**

HOUSING ISSUES

Housing Availability

There is a critical housing shortage in northwestern Vermont. Recent media reports tell of families living in motel rooms, students crowding into "mini-dorm" apartments, tenants paying inflated rents, people living in unsafe or substandard conditions, and long commutes to work. The supply of housing has not kept up with demand. An estimated 7,400 additional housing units – 5,300 units of owner occupied housing and 2,100 units of rental housing – are currently needed in the region, which includes Chittenden, Addison, Franklin Grand Isle, Lamoille and Washington counties.[1]

In 1998, there were 122,748 households in the six-county area. Between 1992 and 1998, the region's housing stock grew by 1 percent annually, with more than three-fifths of that growth occurring in the single-family market. Chittenden County had an estimated 56,092 housing units in 1998 – up 4.5 percent from January 1994.[2] (see Table H-1).

Table H-1: Housing units in Chittenden County, 1994-1998.

Type	January, 1994		Change 1994-1997		January, 1998	
	Number	% of total	Number	% of total	Number	% of total
1 unit	33,270	62.0%	1,968	81.7%	35,238	62.8%
2-4 units	10,085	18.8%	190	7.9%	10,275	18.3%
5 or more units	7,565	14.1%	250	10.4%	7,815	13.9%
Mobile Homes *	2,764	5.1%	-no data-	0%	2,764	4.9%
TOTAL	53,684	100%	2,408	100%	56,092	100%

* The 1990 census figure is used for mobile homes, as no updated data are available. Totals shown thus assume no change in the number of mobile homes in the Region.

Source: 1998 Housing Demand Analysis for Chittenden County, Vermont; The Vermont Housing Council

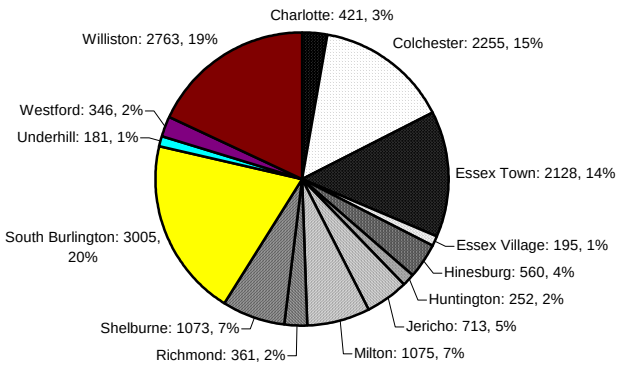
The 2000 Census shows that Chittenden County added another 2,772 housing units since 1998, for a total of 58,864 (housing units by type are not yet available). The county currently has 56,452 households of which there are 35,168 family households. The average household size is 2.47 while the average family size is 3.02.[3]

If the region's economic prosperity continues over the next 25 years, more than 66,380 new jobs will be created and the population will grow by 67,600.[4] New housing unit construction needs to grow by 1.7 percent, or 1404 units annually to meet the region's projected need for 35,674 new households in 2025.[5] In addition to the projected need, Chittenden County currently has a housing shortage of 1,970 housing units. This housing shortage is projected to increase to 4,976 by the year 2010. This unmet housing need will create upward pressure on housing cost over the period.

Chittenden County's housing prices are much higher than the national average.[6] The supply of housing units listed for sale in Chittenden County has fallen by over 50 percent since 1998 when the median price of a single-family home in Chittenden County was $132,000.[7] Prices have risen 17 percent as a result.[8] The median selling price of a single-family home in Chittenden County increased to $139,500 in 1999 and to $155,000 in 2000.[9] Almost one-third of housing sales in 1999 were condominiums at a median price of $90,000.[10] These high prices place an economic strain on many of the region's working families, impact the quality of life for residents unable to find suitable housing, and may discourage business expansion or location to Chittenden County.

The growth of housing has been unevenly distributed among the region's communities in the past decade. The communities of Williston, Colchester, Essex Junction and Essex have collectively grown by 49 percent between 1990 and 2000. (see Figure H-2) These municipalities have faced challenges to ensure local services and facilities can keep pace with growth. In response to these challenges, some communities have implemented "phasing," a residential growth management process that limits the number of new residential Zoning/Building Permits that may be issued each year.[11]

Figure H-2:
U.S. Census Estimated Population Growth by Municipality, 1990-2000
Values Shown are the total number, and percentage of Chittenden County



Phasing regulations can be an effective means of ensuring that a community's rate of growth does not exceed its ability to provide services. However, the housing market is regional and restrictions in one community may increase the number of housing starts in a neighboring community.

The student population also affects the region's housing availability. Approximately 12,000 full-time, students of higher education live in Chittenden County during the academic year. Roughly 53 percent

of these full-time students live off-campus, in private apartments or condominiums, located predominantly in and around downtown Burlington. It is unsure how Trinity College's closure in September 2000 affects the overall percentage of the region's undergraduates residing off campus.

Students occupy approximately 1,150 (16 percent) of the 7,175 market-rate rental units in Burlington, and 12 percent of rental housing in Chittenden County. The largest concentration of students exists in Burlington's "Hill Section," an area that is convenient to UVM and employment centers in Burlington, South Burlington, and Winooski.[12] Accommodating more students in on-campus housing would help alleviate the strain on the housing market.

No concise data on the quality and habitability of existing housing are available.[13] However, a report by the Vermont Department of Housing & Community Affairs states that the 1990 Census estimates about 26,000 renter households statewide – nearly 35 percent of the of the total renter households – have a housing problem that could include substandard conditions, overcrowding or overpayment.[14] Members of the Commission's Housing Task Force have echoed this concern, and point out that housing inspection standards vary from community to community.

Costs of Housing Permits and Infrastructure

Housing prices are also affected by permitting and infrastructure costs. In most Chittenden County communities, project approval requires review by planning commissions and zoning boards of adjustment before a building permit is granted. Some larger communities also have public works or design review boards, which review projects.

Over the past few years, some municipalities have established development review boards (DRB). These boards perform the project and permit review functions of planning commissions and zoning boards. These communities report that the transition has been successful and that the resulting design works well.[15] The DRB system can improve the timeliness of permitting decisions while relieving local planning commissions of their regulatory review function, allowing them to focus exclusively on the task of planning.

The Commission recognizes that Act 250 has played a positive role in maintaining Vermont's character and quality of life. Developments with 10 or more housing units must undergo review under Act 250, and developers must receive a land use permit from the State of Vermont before construction can begin. Many believe that the timeliness and efficiency of the Act 250 permitting process needs to improve particularly in designated Planning Areas.[16]

The Act 250 process includes an archaeological planning and review process. The Vermont Division of Historic Preservation (DHP) developed this process, which is also required for federal permits or

licenses and to receive state or federal funding. The goal of the process is to avoid development in archaeologically sensitive areas, and to recover the archaeological information where avoidance is not possible.[17]

Avoiding archaeologically sensitive sites, rather than recovering information, is preferable from an archaeological standpoint, and reasonable given the high costs of an archaeological study.[18] However, in some cases, avoidance may not be possible and developers are required to perform additional and more expensive archeological studies.[19] The DHP is aware of this issue and is continually working on ways to improve the review process. This includes efforts to make the review process more predictable through the development of new rules, working with developers to reduce costs, and providing additional resources.[20]

State and federal laws set handicap accessibility standards for residential buildings of four or more units. These standards guarantee that all of the region's residents can perform routine activities, regardless of physical handicap. However, meeting accessibility standards can pose challenges to historic redevelopment by raising project costs beyond perceived benefits.

There is general agreement among public, private and non-profit housing industry representatives that access standards pose real challenges to redeveloping or renovating historic buildings. Housing industry members disagree as to whether access requirements raise the overall cost of housing. Some developers believe accessibility standards increase construction costs while reducing a unit's resale potential, making them less desirable even to those who would use the special amenities. Other members of the housing community counter that the accessibility requirements add little to construction costs.[21] Some confusion on accessibility standards exists, and education regarding the actual requirements may be needed.

The cost of new infrastructure also plays a role in the price of housing. New development needs infrastructure. The development community is responsible for constructing the on-site capital infrastructure – roads, water, sewer, and stormwater drainage systems; street lighting; and other amenities – required to serve new units. Generally, infrastructure is easier and cheaper to maintain by municipalities if built to a high standard of quality. However, higher standards require greater up-front expenses for the developer. These costs are passed on to the homebuyer, increasing housing prices.

Housing Densities

Regional goals such as the conservation of land and wildlife habitat, reduction of automobile travel, lower housing costs, and greater community spirit and cohesion can be supported by denser patterns of development.[22] Diverse, mixed-income neighborhoods featuring mixed-use development can be rewarding places to live. These neighborhoods can provide numerous services for residents, including access to a greater variety of employment opportunities, social support, and commercial and entertainment opportunities.

Mixed-use developments can provide conveniences, reduce the costs of infrastructure, and support affordable housing. Traditionally compact development within downtowns and village centers has involved housing located on upper stories, above retail shops or offices. Recent efforts to promote this type of housing have led to successful redevelopment projects in historic Vermont downtowns. While redevelopment of upper-story housing in existing downtowns has proven feasible, there seems to be little demand for the construction of new upper-story housing.[23] According to discussion with some developers, second story development is usually not economically feasible.

The development community sees mixed-use districts as a more feasible means to achieve mixed development than focusing on mixed-use buildings. However, challenges to developing mixed-use districts exist.[24] For example, much of the county is zoned for single use categories (e.g. industrial, commercial, residential, etc.) Many developers specialize in housing for certain income brackets or certain types of development. Building neighborhoods of intermingled homes with a variety of price ranges might create marketing obstacles.

Recent statewide surveys found that a majority of Vermonters support efforts to promote compact development and avoid "sprawl," yet only 21 percent of them would prefer to live in traditional centers themselves.[25]

Current on-site septic rules may also contribute to the housing shortage. Building lots less than 10 acres face stricter on-site septic rules and regulations in Vermont than in other states. This has been an impediment to compact development. However, proposed changes to the state's on-site septic regulations would probably make compact development more feasible in areas not served by municipal sewer systems.

The Vermont Department of Housing and Community Affairs (DHCA) has concluded that in "towns in Vermont which effectively regulate on-site wastewater systems on the local level, the change will result in more land being available for development."[26] Most towns in Chittenden County do effectively regulate on-site wastewater, so on-site septic regulation changes will likely increase the amount of developable land in the county.

Housing Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Promote safe, cost-effective, and quality housing to accommodate the region's housing demand. This housing should be equitably distributed throughout the region to adequately meet current and future needs and be consistent with this Plan;

Goal 2. Encourage the region's higher-education institutions to provide housing for a reasonable percentage of their respective full-time student populations;

Goal 3. Encourage municipal and state permitting that strikes a balance between providing housing for the region's population while protecting the environment and overall quality of life;

Goal 4. Meet the demand for high-density and/or mixed-use housing while protecting historic buildings sites and settlement patterns;

Goal 5. Encourage public investments in the construction or maintenance of the infrastructure necessary to support housing development;

Goal 6. Explore the financial feasibility of redeveloping historic structures and work to ensure adequate availability of resources in the existing housing stock in general;

Goal 7. Encourage both the preservation and production of housing for the elderly and special needs population, including assisted living facilities, licensed Level III care facilities and their accessory commercial uses.

Goal 8. Support environmentally sound septic technologies that enable higher densities of development;

Goal 9. Encourage Chittenden County municipalities to prepare to manage the effects of new on-site septic regulations on land use and development patterns.

Housing Policies

Policy 1. The Commission believes that the region's residents have a fundamental right to housing. Our communities shall address their role to provide for the projected housing demand – and for the infrastructure to meet those needs. The Commission will evaluate the projected housing capacity for each of its member municipalities, and will work with them to insure that their municipal plans allow adequate housing stock to meet projected growth.[61]

Policy 2. The Commission believes that growth management provisions should be implemented where necessary to prevent a municipality's growth rate from exceeding its ability to provide public services. Growth management provisions should recognize that housing is regional in nature, and restrictions on housing in one community will affect development rates in neighboring communities. The Commission also supports implementing local impact fees as a means of providing housing with adequate infrastructure without phasing development.

Policy 3. The Commission believes that student populations have a substantial effect on the housing market and the region's higher-education institutions have a responsibility to provide reasonable housing for their students.

Policy 4. The Commission believes that the region is facing an extreme shortage of housing at all price levels, so strategies to reduce housing costs should be pursued. Increasing current residential densities (dwelling units per acre) would help alleviate the problems of housing costs by reducing the infrastructure costs per dwelling unit. Increased residential densities in designated Planning Areas are consistent with the need to preserve undeveloped land.

Policy 5. The Commission believes that the permitting process can be, at times, an impediment to the construction of housing. The Commission supports legislative efforts to improve the permitting process for housing developments; and particularly, to make the process more efficient in designated Planning Areas. Such efforts might include a unified permit process where state, regional, and local government review developments simultaneously.

Policy 6. The Commission believes that infrastructure and handicap accessibility requirements influence the cost of housing. The Commission will support efforts to ensure that these costs are necessary and applied efficiently.

Policy 7. The Commission believes that compact settlement patterns are beneficial to the environment, homebuyers, and the quality life of Chittenden County's residents. The Commission encourages municipalities to promote density in their municipal plans and through density bonuses and clustering provisions in local ordinances. Sewer, water, transportation improvements, and other types of infrastructure must be provided in order to support density in areas where development is desired.

Policy 8. The Commission believes that Vermont land use and development law should be changed to explicitly enable municipalities to regulate both minimums and maximums for density, lot size, lot coverage, parking requirements, and other physical elements of development.

Policy 9. The Commission believes that alternative technologies for septic systems should be allowed for statewide use. The development and adoption of these new technologies could be an essential ingredient to the development of dense housing in many parts of the region. The Commission supports the development of alternative technologies for septic systems that are compatible with the goals of the Plan.

Housing Implementation Strategies

In order to help achieve the policies above, the Commission should:

- Identify developable land for residential construction within Metropolitan, Village, and Transition Planning Areas;
- Conduct a "build-out analysis" to reconcile land available for residential construction with projected housing demand;
- Inventory each community's developed housing stock and assess its status relative to local and regional housing goals;
- Work with member communities and other appropriate organizations to develop and implement a regional "fair-share" approach for housing of all types and at all price levels;
- Work with adjacent regional planning commissions and communities to address regional housing issues and set common goals;
- Assess local plans for their progress on local and regional goals related to density and provision of housing;
- Educate the legislature regarding the need for adequate housing and appropriate strategies for meeting those needs;

- Aid municipalities in developing zoning ordinances and capital budgets, which implement their municipal plans;

- Work with the region's higher-education institutions to formulate policies and effective strategies that result in a majority of students living on-campus;

- Promote and support, as appropriate, a transition to the DRB system in member municipalities;

- Work with member communities to investigate the costs and benefits of public works standards and assist communities in promoting efficient infrastructure investment;

- Work with the Vermont Historic Preservation Division and municipalities to make the archaeological review process more predictable through the development of new rules, working with developers to reduce costs, and making resources more accessible;

- Work with the Vermont Department of Historic Preservation and municipalities to map, protect and enhance historic districts and archaeological sites in the county;

- Promote flexible and efficient accessibility requirements;

- Work with member communities through the planning and zoning process to provide and plan for higher densities, where appropriate;

- Serve as a clearinghouse of information on non-traditional septic technologies;

- Consult with member municipalities and the legislature to determine the effects of new septic regulations and provide technical assistance for any changes to comprehensive plans or ordinances communities may wish to make in response to those effects;

- Support communities who wish to adopt building codes.

AFFORDABLE HOUSING

Overview

Housing affordability in Chittenden County is at its lowest point since 1993.[27] The need for affordable housing for low to moderate-income families surpasses the supply in Chittenden County and continues to grow. People qualifying for the Vermont State Housing Authority rental assistance in Chittenden County have to wait an average of 54 months – almost double the state average – for affordable housing.[28] Rental housing is very expensive and scarce in Chittenden County. According to the National Low Income Housing Coalition, the Burlington MSA is ranked the fourth most expensive place to rent in the country. Vacancy rates are at an all time low with less than 1 percent of the county's rental units available at any time.[29]

Definition: Affordable Housing

For the purposes of this Plan, affordable housing is defined as: 1) Housing that is owned by its inhabitants, whose gross annual household income does not exceed 80 percent of Chittenden County's median income, as defined by the United States Department of Housing and Urban Development, and the total annual cost of the housing, including principal, interest, taxes and insurance, is not more than 30 percent of the household's gross annual income; 2) Housing that is rented by its inhabitants whose gross annual household income does not exceed 65 percent of Chittenden County's median income, as defined by the United States Department of Housing and Urban Development, and the total annual cost of the housing, including rent, utilities, and condominium association fees, is not more than 30 percent of the household's gross annual income.

In order to be consistent with language used by the Vermont Department of Housing & Community Affairs, this Plan uses the term "moderate income" to refer to those households earning between 80% and 100% of the Chittenden County median, "low income" to refer to those earning between 50% and 80%, and "very low income" to refer to those earning below 50% of median. The annual median household income in Chittenden County for a family of four was $52,200 in 2000.

The demand for affordable housing will continue to grow over the next 10 years. Nearly half of the 44,000 new jobs created in the northwestern Vermont will be low paying, service-sector positions.[30] More than one half of the growth in owner households, and three-quarters of the growth in renter households will occur in income categories that generally require housing assistance.[31]

In order to construct housing in affordable price ranges, some form of subsidy is usually required.[32] Federal low-income housing tax credits are an important form of affordable housing subsidization, but the demand for these credits continually exceeds supply. Some relief has come from the federal government's recent doubling of tax credits available in Vermont to $2 million per year.

The system that provides affordable housing is comprised of non-profit and for-profit development corporations, which use subsidies to build housing; state, federal and local agencies, which administer affordable housing programs; and private lenders, which provide gap financing. Although this system is healthy and performs its function well, there are ongoing challenges with affordable housing provisions, some of which must be addressed at the regional level.

Affordable Housing Funding Sources in Chittenden County

- Vermont Housing & Conservation Board Trust Fund
- Vermont Community Development Program Block Grants
- Special Federal appropriations
- Section 811, for special needs housing
- Section 202, for elderly housing
- McKinney funds for transitional housing for the homeless
- Section 8, rental subsidy funds
- Rural Development Housing Programs
- Federal and State tax credits, allocated (9%) and unallocated (4%)
- Ownership programs and rental unit funding administered by the Vermont Housing Finance Agency
- Federal Home Loan bank programs
- Burlington Housing Trust Fund
- Burlington Community Land Trust
- Historic Tax Credits

Distribution of Affordable Housing

Affordable housing is not evenly distributed in Chittenden County. Public investment in affordable housing is concentrated in the county's traditional centers. Between 1980 and 1996, public subsidies helped create 1,180 units of permanently affordable housing in Burlington, Winooski, and Milton, and an additional 1,445 units were made affordable to first-time homebuyers with Vermont Finance Housing Agency (VHFA) mortgages. Compared to the 5,703 new jobs created in these municipalities between 1980 and 1996, this is a ratio of about one affordable housing unit for every two new jobs.

During this same period, in South Burlington, Colchester, and Williston, only 566 units of permanently affordable housing were created, and an additional 1,264 units were made affordable for first-time homebuyers with VHFA mortgages. Compared to the 19,161 new jobs created in these municipalities between 1980 and 1996, this is a ratio of about one affordable housing unit for every 10 new jobs.[33]

High proportions of affordable housing create a fiscal strain on communities, which need to use larger shares of their capital budget to

provide social services for lower-income residents. The imbalance of affordable housing in Chittenden County might be corrected through a regional "fair-share" housing approach, which would stipulate that communities must plan for affordable housing within their municipalities.

Mobile Home Parks

Mobile homes are an important type of affordable housing in Chittenden County. The 1990 U.S. Census recorded about 2,800 mobile homes in the region, making up about 5 percent of the housing stock. Two-thirds of those units rent lots in private mobile home parks.[34] The number of lots available in mobile home parks has held steady over the past decade. As a result, the vacancy rate is very low. In 1998, only two mobile home lots – 0.1 percent of the total – were vacant.[35]

Some mobile home parks in Chittenden County face environmental challenges such as undrinkable water and failing septic systems. An inter-agency group – made up of the Vermont Attorney General's Office, Department of Housing and Community Affairs (DHCA), Dept. of Health, Dept. of Labor and Industry, and Agency of Natural Resources – was formed in 1998 to address high-risk mobile home parks throughout the state. The group's goal is securing safe, sanitary infrastructure in problematic parks to prevent closure. The already tight housing market will face an additional strain if any of the region's larger mobile home parks close.

Affordable Housing Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Meet regional affordable housing needs;

Goal 2. Support funding for affordable housing construction, and rent-subsidy and ownership-assistance programs;

Goal 3. Keep affordable housing units affordable, while allowing owners of affordable units to benefit from natural or self-generated equity appreciation. Some affordable housing units should be kept perpetually affordable;

Goal 4. Mobile home parks that provide safe, environmentally sound, affordable housing should be kept open;

Goal 5. Establish separate advisory group, with the majority of members represented by municipalities, to the Commission to address the fair share of housing throughout the county;

Goal 6. To help municipalities ensure they are consistent with Federal Fair Share housing requirements when using federal funds to build affordable housing.

Affordable Housing Policies

Policy 1. The Commission believes that the needs of residents with low to moderate-incomes and/or special needs must be considered in the planning process so that suitable housing will be available for all the region's residents. The Commission will work with its municipal members and the commissioner of DHCA to insure that their planning processes incorporate the needs for diverse, mixed-income housing.

Policy 2. The Commission believes that affordable housing programs are needed to alleviate the financial strains associated with living in Chittenden County. The Commission supports the expansion of existing programs to provide funding for affordable housing.[36]

Policy 3. The Commission believes that the permitting process can be, at times, an impediment to the construction of affordable housing. The Commission supports legislative efforts to improve the permitting process for affordable housing developments.

Policy 4. The Commission believes that mobile homes represent an important source of affordable housing in the region. The Commission will support efforts by its member municipalities and others to address existing environmental, health, and safety issues in order to maintain and improve the county's mobile home stock.

Affordable Housing Implementation Strategies

In order to help achieve the policies above, the Commission should:

- ❖ Work with member communities and other appropriate organizations to develop and implement a regional "fair-share" affordable housing approach;
- ❖ Support local efforts to waive impact fees for affordable housing units;
- ❖ Encourage amendments to the permitting process that will create incentives to direct development into Metropolitan and Village Planning Areas;
- ❖ Work with affordable housing providers to analyze the gaps between the cost of available dwelling units and household income;
- ❖ Support collaboration among for-profit and non-profit housing developers to foster mixed income development;
- ❖ Work with member communities and the State of Vermont to devise strategies to ensure that mobile home parks remain open unless voluntarily and legally closed by their owners;
- ❖ Encourage the cooperation and involvement of the private sector, public and non-profit housing organizations in the development and management of affordable housing;
- ❖ Undertake an inventory of different income level housing to get a baseline understanding of where we are and what we need.

Housing End Notes

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[29] K. Beyer, VT Dept. of Housing & Community Affairs, Summer 2000.
[30] Housing in Northwest Vermont: A Review of Demand and Supply of Housing in the Six County Region, Prepared for the Vermont Housing Council by Economic & Policy Resources, Inc., and Thomas E. Kavet Consulting, p. 4.
[31] Ibid., p. 6.
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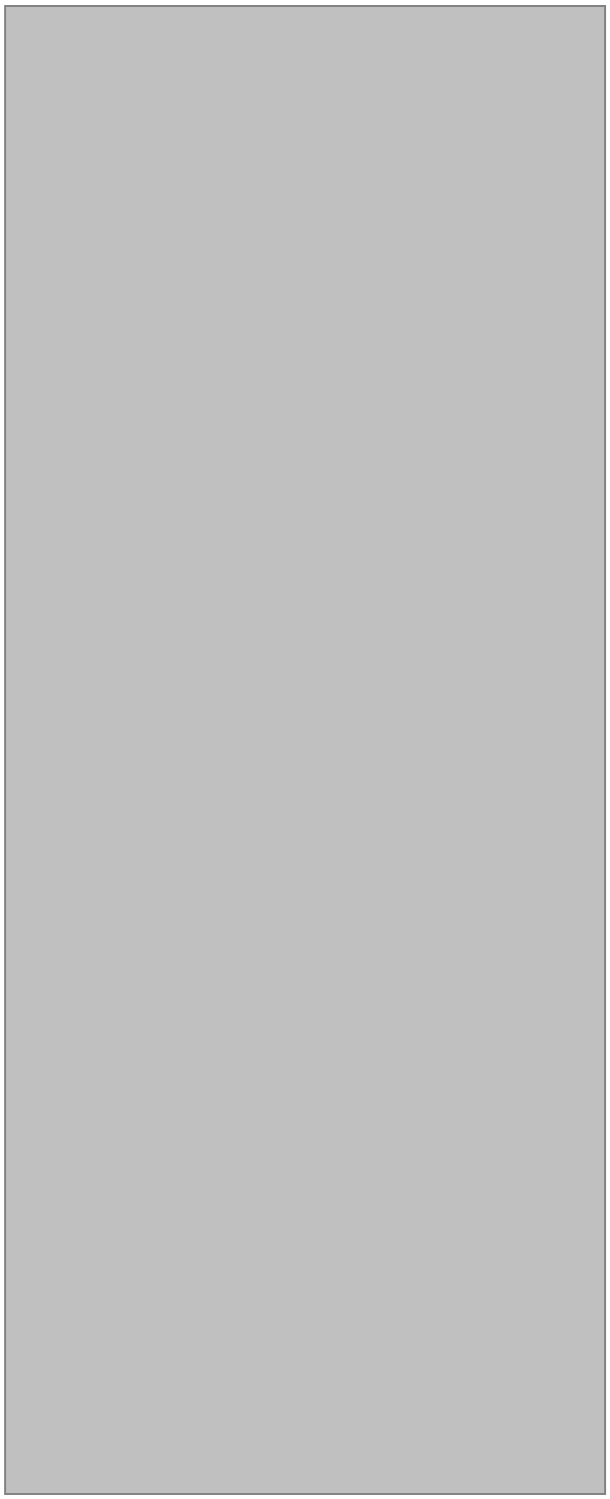
ECONOMIC DEVELOPMENT



Overview

Environmental protection, responsible land stewardship and natural resource conservation lie at the center of Vermont's core values. The challenge is to create and maintain an economic foundation that yields sustainable economic opportunities for Vermonters while respecting their core values.

Approximately 50 years ago, elected officials and community leaders throughout our state came together to create Vermont's first statewide economic development program. Their primary objective was to diversify Vermont's economic base in order to create sustainable economic opportunities for Vermonters while strengthening the viability of our forestry and agricultural economic base.

This economic development initiative began with the creation of the Rutland County Economic Development Corporation in 1948 and the Greater Burlington Industrial Corporation (GBIC) in 1954. Business and civic leaders created these non-profit regional economic development corporations (RDCs) to work with municipalities to build infrastructure, create industrial parks, and recruit industry. The manufacturing industry sector was targeted for recruitment because of its tradition of providing high-wage employment and initiating significant investments in the local and state tax base.

The early RDCs worked with the state in developing strategic plans to build industrial infrastructure that would accommodate world-class manufacturing business operations in Vermont. The state became a better place to do business as the interstate highway system was completed, electric transmission lines were upgraded, public water and wastewater treatment facilities were installed and upgraded, and the natural gas infrastructure was developed.

It is important to analyze a region's economy in order to understand how its people generate their economic livelihood. Chittenden County and northwestern Vermont have become the nucleus of the state's economy. Chittenden County's economic success was built upon a foundation of strategic planning, good infrastructure planning and development, and a targeted business recruitment and retention program. In northwestern Vermont, GBIC worked with municipal and state officials to identify areas suitable for industrial park development. The essential land selection criteria involved:

- Site location in an area outside of the municipal and residential core;
- Proximity to the interstate highway system;
- Reasonable proximity to water and wastewater infra-structure;
- Suitable access to electric transmission.

Once these areas were identified, GBIC purchased the land and acted as the developer. The industrial park's host municipality provided infrastructure using state and federal funding assistance. The most unique quality of Vermont's early industrial parks was their covenants. Once the parks were developed, the land was banked by an RDC and was sold or allocated to only value-added producers of goods and services. This approach led to the creation of the following GBIC industrial parks:

- 1955 - Essex Junction Industrial Park, 210 acres
- 1957 - Burlington Industrial Park, 40 acres
- 1958 - Shelburne Industrial Park, 55 acres
- 1963 - Ethan Allen Industrial Park, Colchester, 100 acres
- 1967 - Williston Industrial Park, 46 acres
- 1975 - South Burlington Industrial Park, 180 acres
- 1983 - Catamount Industrial Park, Milton, 174 acres

In the 1960's, 1970's and early 1980's Vermont began recruiting industries from Germany, Switzerland, and the greater Montreal and Toronto areas. By the early 1970's, Vermont's 12 RDCs had successfully attracted companies like IBM, General Electric, Eveready, and BF Goodrich, which set up manufacturing centers throughout the state. Along with providing individual economic opportunities, these businesses have enriched the lives of Vermonters by strengthening their communities. With a strong economic base supporting it, Vermont was able to make significant investments in environmental projects and government programs such as open space, recreation areas, parks, bike paths, good public schools, and other community public services.

Today there are over 101,000 Vermonters employed in the Burlington labor market area and over 300 manufacturers located in business and industrial parks throughout Chittenden County.

Chittenden County Employment Profile

Sector employed	# of firms	Percentage
Agriculture, Forestry, Fishing	114	.5%
Construction	612	4.5%
Manufacturing	302	18.2%
Transportation, Utilities	243	4.7%
Trade	1776	22.6%
Finance, Insurance, Real Estate	501	5.0%
Services	2403	29.7%
Government	278	14.4%
TOTAL	6,229	99.6%

As Vermont enters the new millennium, the goal of economic development is to foster opportunities for businesses and communities to thrive in a global economy, as well as to strengthen the local economy by promoting Vermont products locally and regionally, thereby enabling Vermonters to continue to enjoy a superior quality of life. In order to achieve this goal, the state needs to be attractive to existing companies, provide a competitive business and tax climate and maintain all essential infrastructure in order to be more competitive with other states and countries in attracting jobs, and more focused in its efforts to link economic and community development to produce vibrant communities in a world-class economy. Vermont and Chittenden County should view our Canadian neighbors as business partners and foster productive economic relations with them. Without a strong manufacturing, technology, and value-added business base we run the risk of inducing economic decline in Chittenden County.

One of the most significant challenges facing Chittenden County in the next 20 years is selecting land areas and developing infrastructure to accommodate the region's business and enterprise growth. A recent report of 325 inventoried lots, 19 subdivisions of commercial and industrial land in Chittenden County, revealed 108 lots available as of June 2001. The greatest numbers of lots available were in Williston, Colchester, and South Burlington. The report concludes that these are the communities likely to experience the most growth in the coming years.[1] The Burlington International Airport (located in South Burlington) is currently expanding its industrial area to add another 1 million square feet. This space will be available within the next few years. The Regional Plan acknowledges the goals and the designated individual industrial, business, and commercial area zones of each of Chittenden County's municipal plans. The CCRPC supports the creation of economic development in those municipal zoning areas.

Chittenden County's future economic success will be built upon a foundation of good planning and sound infrastructure to support its economic base. This plan seeks to accommodate new industries in the locations where inventory is currently greatest and in locations designated by local municipalities. The essential infrastructure of the world's thriving economies today are education, electricity, fuel (natural gas and fossil fuels), telecommunications, technology, transportation (air, rail, roads), water, wastewater treatment, and a well-trained and skilled workforce. In the global economy, any town, city, state, or nation that disregards the maintenance and investment of its essential infrastructure risks failures that will lead to economic decline and community deterioration. There has never been a more compelling time for Chittenden County to invest and maintain its essential economic development infrastructure, prepare areas for future economic enterprise development, advance a culture of technology education, and create a climate that welcomes investment and economic opportunity.

The Commission recognizes that portions of Chittenden County make up a large portion of Vermont's economic engine, and that the county's economic viability has regional and statewide implications. The fundamental strategy that underlies this Plan's economic development goals and policies is to encourage and promote a diverse and world-competitive economic base.

Economic Development Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Help maintain stable, fair and affordable tax rates;

Goal 2. Support the construction, expansion and efficient utilization of necessary and ancillary infrastructure to accommodate future economic development;

Goal 3. Provide technical assistance in the form of data and information to the general public and existing small businesses;

Goal 4. Maximize the potential of the region's agricultural and forest products;

Goal 5. Diversify the region's economic base;

Goal 6. Promote vital, livable town and city centers;

Goal 7. Promote the fullest creation and utilization of industrial and value-added business parks and facilities.

Policies and Implementation Strategies

Policy

Policy 1. The Commission desires to keep Chittenden County as the leading economic engine for the State of Vermont. The Commission's position is that Chittenden County shall maintain its competitive edge by protecting its current assets (i.e. existing businesses and infrastructure); capitalize on its greatest strengths; and moving toward diversifying its economic base. The Commission recognizes a rapidly changing national and global economy and seeks to keep Chittenden County prepared to take full advantage of this changing dynamic.

Implementation Strategies

In order to help achieve the above policy, the Commission should:

- ❖ Work cooperatively with their regional partners, the Greater Burlington Industrial Corporation and the Lake Champlain Regional Chamber of Commerce to write a long-range economic development plan and a strategic plan to guide and implement sustainable economic development;

- ❖ Analyze the region's strengths and weaknesses by business sector;

- ❖ Work with regional partners in completing a commercial and industrial database, which will inventory and map commercial and industrial buildings, provide details about each building's attributes, as well as the availability and permitting status of each site;

- ❖ Provide mapping services, land data resources, and analyses to aid in locating appropriate commercial and industrial sites and buildings;

- ❖ Support efforts by member municipalities to provide businesses and business parks with the infrastructure that will allow continued competitiveness and growth and promote economic opportunity.

Policy

Policy 2. The Commission will encourage a more timely, objective, and predictable permitting process. The Commission believes that development in the Metropolitan and Village Planning Areas as well as in Special Use Planning Areas deserve a speedy permit process.

Implementation Strategies

In order to help achieve the above policy, the Commission should:

- ❖ Participate in discussions on using Act 250 to further the goals of this Plan and to enable the process to be more predictable, both in timetable and cost;

- ❖ The Commission should offer clear interpretation of development standards that further implement the intent of this Plan.

- ❖ Advocate for a more unified local and state permitting process.

Policy

Policy 3. The Commission believes that the county's existing businesses are the reason why Chittenden County is the leading economic engine in Vermont. Therefore the Commission seeks to help existing businesses improve their growth potential and enhance their ability to continue to compete in national and world markets.

Implementation Strategies

In order to help achieve the above policy, the Commission should:

- ❖ Work with local and regional entities to maintain and promote expansion of work-at-home opportunities.

- ❖ Encourage the development of on-and off-campus laboratories and research centers near the region's institutions of higher education to promote partnerships between the medical industry and businesses.

- ❖ Work with local, regional, and state entities to enhance access to capital sources, other funding and information to support small business creation and expansion.

- ❖ Provide technical assistance and resources to appropriate entities to promote the enhancement of land-based production (agriculture, forestry, recreation) and value-added potential of the region's agricultural and forest resources.

- ❖ Work with local and regional entities to assure the timely deployment of telecommunications infrastructure that support the needs of present and future employers.

- ❖ Work with Vermont Technology Council, the legislators, the Workforce Investment Board, and other appropriate organizations to encourage and foster the development of education, training and retraining programs for area employees to ensure that the local economy will be in a position to benefit from new and emerging technologies.

- ❖ In cooperation with GBIC and the Lake Champlain Regional Chamber of Commerce, help existing business by including a strategy that promotes regional cooperation by the CCRPC organizing regular meetings among local economic development officials;

- Develop and maintain databases, searchable on the web, which provide information on programs that are available in the County;

- Support economic development programs, services, priorities, and goals of the Greater Burlington Industrial Corporation and the Lake Champlain Regional Chamber of Commerce;

- Support efforts to increase the quality of technical education including the construction of a new technical academy.

End Notes

[1] Allen & Cable, June 2001

NATURAL RESOURCES

AIR QUALITY

WATER QUALITY
- Overview
- Watersheds
- Water Pollution

AGRICULTURE, FOREST AND CONSERVATION LANDS
- Agriculture
- Forest Resources
- Conservation Lands

EARTH RESOURCES

RECREATION

AIR QUALITY

Overview

Chittenden County has relatively clean air. The region's "fresh air" is a primary attraction to residents and visitors. It is a major component to the overall quality of life here. The U.S. Environmental Protection Agency (EPA) sets nationwide air quality standards for ozone, sulfur dioxide, carbon monoxide, nitrogen dioxide, particulate matter, and lead. Chittenden County's air complies with these federal quality standards. In fact, according to these standards, the county's air quality has improved in the last decade. (see Figure NR-1)

Most of the measured pollutants, including ozone, are generated predominantly by motor vehicles and out-of-state sources. Some of these include pollution from coal-burning power plants located in the Midwest. Scientists believe that acid rain and other environmental problems are caused by the emissions from these plants.

There are ways for the region to keep air pollution levels below ambient standards. For example, new local electricity generating plants can be properly sited and designed to meet performance standards. Encouraging growth in high-density, mixed-use Planning Areas can reduce motor vehicle emissions by reducing the need for automotive travel. Planning transportation networks that include improving mass transit, increasing ride-share programs, creating non-motorized facilities such as bike lanes and walking paths, and other non-motorized transportation alternatives can reduce automobile emissions. The Commission will coordinate with the Chittenden County Metropolitan Planning Organization (CCMPO) to implement land-use and transportation plans that serve to maintain acceptable federal air quality standards in the region.

Air Quality Goals

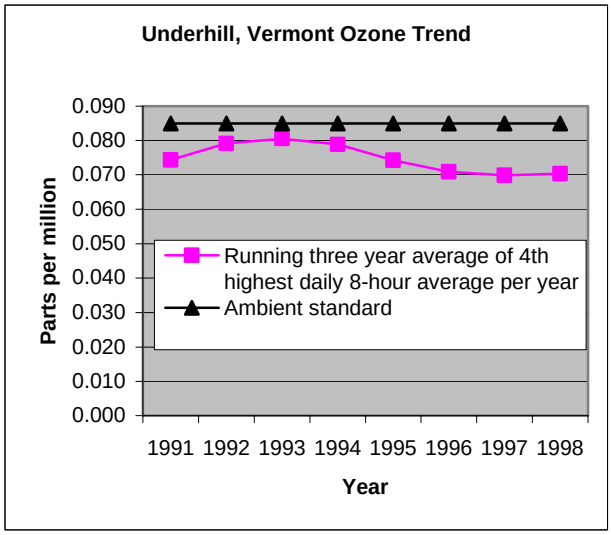
The goals of the Chittenden County Regional Planning Commission are to:

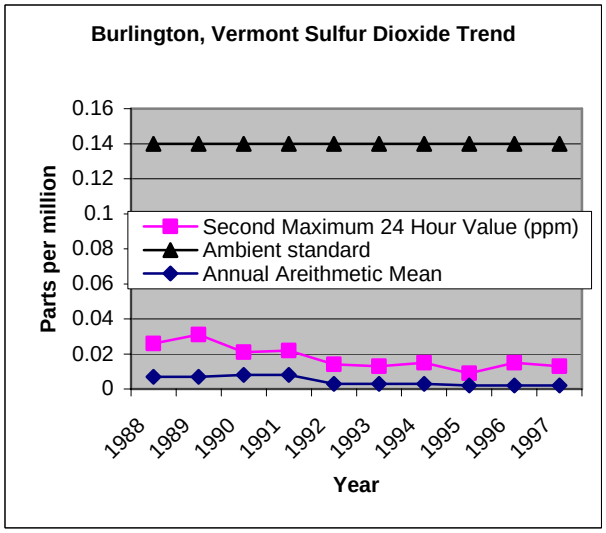
Goal 1. Promote healthy, clean air in Chittenden County especially in developed areas;

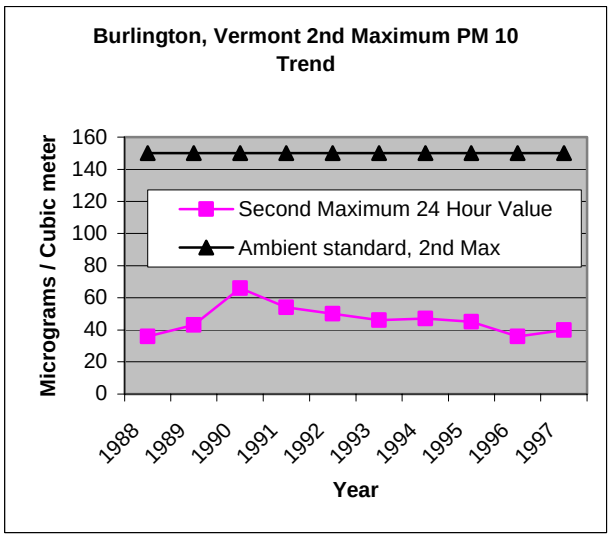
Goal 2. Promote visually clear air wherever possible, recognizing it as an important element of the region's scenic beauty, including both the daytime and nighttime skies.

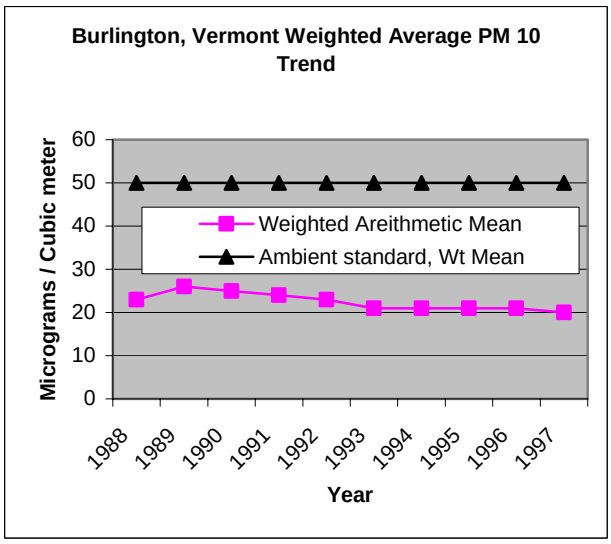
1

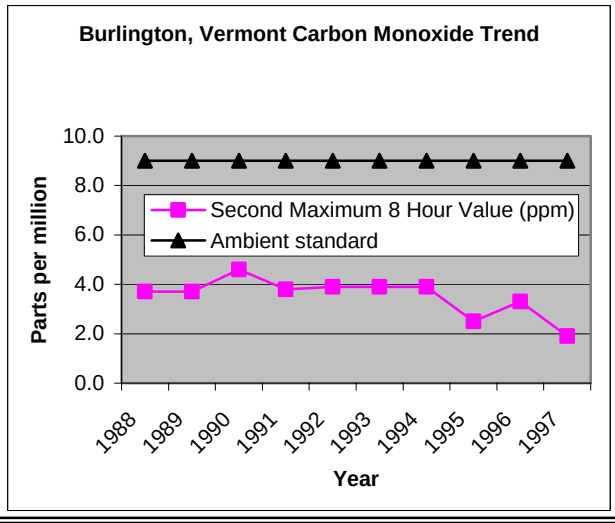
Figure NR-1: Air Quality Trends vs. EPA Standards in Chittenden County[1]

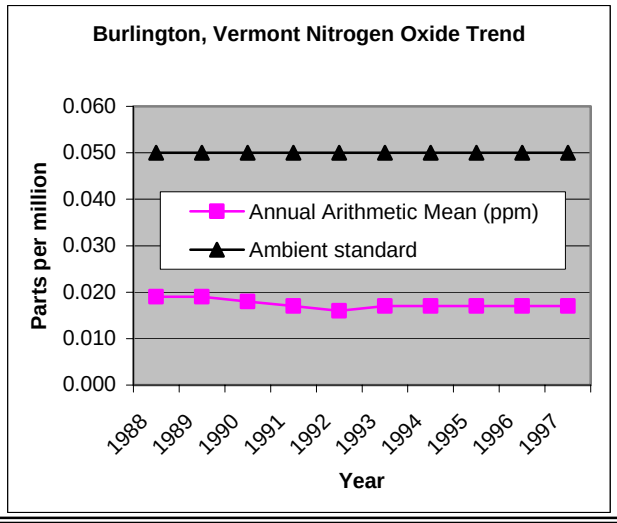












Air Quality Policies

Policy 1. The Commission believes that clean air is essential to a healthy population and high quality of life. Land planning efforts made at the local and regional levels should lead toward meeting or exceeding EPA air quality standards.

Policy 2. The Commission believes that high-density, mixed-use development patterns will lead to less overall air pollution than low-density auto oriented development. These patterns of development will be promoted in the Metropolitan and Village Planning Areas.

Air Quality Implementation Strategies

In order to help achieve the above policies, the Commission should:

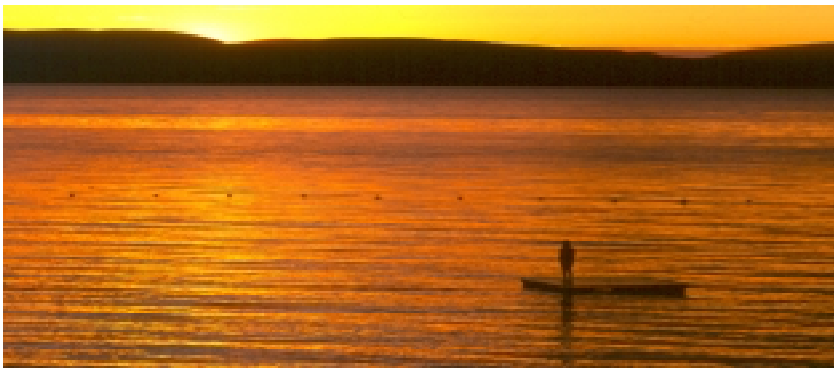
- Work with the CCMPO to encourage transportation priorities and plans that will improve air quality in the region, while at the same time meeting mobility and access needs;

- Work with the appropriate state and federal agencies to determine the extent of localized air quality impacts within densely developed areas, and to implement strategies for their alleviation;

- Assist in the development and implementation of the Alliance for Climate Action's "10 Percent Challenge Campaign," a voluntary program to reduce Burlington's greenhouse gas emissions;

- Promote community energy systems using renewable energy.

WATER QUALITY



Overview

Clean water is vital to our quality of life. Lake Champlain is the drinking water source for more than 105,000 Chittenden County residents. Underground aquifers supply water to the outlying rural residents. Lake Champlain is also a cornerstone of our economy by drawing commerce and visitors to the region. Recreational activities such as swimming, boating and fishing in the lake's clean waters are components of our overall quality of life. Water pollution can pose a threat to our health, economic well being, and our overall quality of life.

The Commission worked with the Vermont Department of Environmental Conservation (DEC) to review each member municipality's currently adopted comprehensive plan, zoning bylaws, and subdivision regulations. These documents were compared with the recommendations of the DEC's *Local Planning and Zoning Options for Water Quality Protection.* It was found that most of Chittenden County's municipalities could increase water quality protection in their watersheds by addressing issues such as: development setbacks from ponds, lakes, rivers and streams; requiring vegetation in watercourse buffer zones; keeping thorough inventories of water bodies; hosting discussions of watershed planning; and protecting and maintaining water quality through wetland protection regulations. The Plan's Hydrography and Class 2 Wetlands Map illustrates some of Chittenden County's water resources.

Watersheds

Water resources often cross town, county, state, and national borders. A watershed's water quality can only be protected or enhanced through the cooperation of the municipalities and landowners that live, work, and play in the watershed.

Water Pollution

Water pollution is generally separated into point and non-point sources. Non-point pollution enters waterways from a wide geographic area rather than from a specific location. Some water pollution sources include urban and suburban storm-water runoff, septic system discharge, and agricultural activities. Water pollution – particularly levels of phosphorus in surface waters – is the area of greatest environmental concern in Chittenden County.[2]

Phosphorus pollution increases the dissolved nutrients in a water body. This, in turn, stimulates the growth of aquatic plant life. This additional growth depletes a water body's dissolved oxygen levels, thus reducing the water's ability to sustain aquatic animal life. Phosphorus is the limiting nutrient for most plant growth in Lake Champlain, and is the focus of nutrient management efforts.[3]

Sources of phosphorus from agricultural land include: manure and commercial fertilizer runoff from fields; soil erosion from fields; runoff from livestock concentration areas; milkhouse effluent; whey; runoff from stacked manure; livestock access to streams; and induced stream bank erosion. However, it is estimated that an acre of developed land contributes 3.5 times more phosphorus than an acre of agricultural land, and almost 40 times more than forested land in the Lake Champlain Basin.[4] As Chittenden County becomes more developed and less agricultural, mitigation of phosphorous in urban and suburban runoff will become increasingly important to the health of our region's surface waters.

The continued implementation of agricultural best management practices (BMPs) would further reduce phosphorous loading to Lake Champlain and improve water quality in Chittenden County. However, increases in phosphorus loading due to development may be occurring at rates that completely offset the reductions achieved by implementing agricultural BMPs.[5] This is true for Lake Champlain and other water bodies in the region, such as Shelburne Pond.[6]

Water Quality Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Protect the quality of our lakes, ponds, wetlands, streams, rivers and groundwater resources and surrounding habitats;

Goal 2. Promote practices that reduce non-point source pollution;

Goal 3. Promote practices and public education that encourage toxics reduction; erosion control; septic system maintenance; proper

marine waste disposal; and general water quality protection in all drinking water sources;

Goal 4. Support funding for municipal storm-water management programs and the adoption of municipal storm-water ordinances;

Goal 5. Promote watershed planning consistent with the goals of "*Opportunities for Action: An Evolving Plan for the Lake Champlain Basin*," watershed- protection guidelines developed by the Lake Champlain Basin Program and the communities of the Lake Champlain watershed;

Goal 6. Promote and assist watershed organizations working to improve water quality, and encourage land use practices that reduce non-point source pollution.

Water Quality Policy

Policy 1. The Commission regards clean and safe water as a critical component in a healthy economy and high quality of life. The Commission seeks to develop land use plans that allow for the protections and maintenance of the county's surface water quality. The Commission encourages its municipalities to meet the requirements of state water supply rules and will review local plans for achieving this goal.

Water Quality Implementation Strategies

In order to achieve the policies above, the Commission will:

- Work with municipalities and the Vermont Agency of Natural Resources to integrate watershed planning with land use planning through inter-municipal dialogs;

- Support efforts to adopt watershed plans, particularly for watersheds supplying drinking water;

- Work to create inter-jurisdictional cooperation where watersheds cross municipal boundaries.

AGRICULTURE, FOREST AND CONSERVATION LANDS

Agriculture

Overview

Agriculture has been an important part of the landscape and the lifestyle in Chittenden County for two centuries. Chittenden County, as well as being Vermont's economic, cultural, and industrial engine, makes a significant contribution to Vermont's agricultural production. Almost 15 percent of the county's land base – more than 52,000 acres – is devoted to agriculture.[7] Chittenden County ranks 8th among Vermont's counties in percentage of crop and pasture lands (see figure NR-2), and 2nd in farm productivity.[8] (see Figure NR-3) This ranking is consistent with the national statistic of one-third of agricultural production occurring in metropolitan counties.[9]

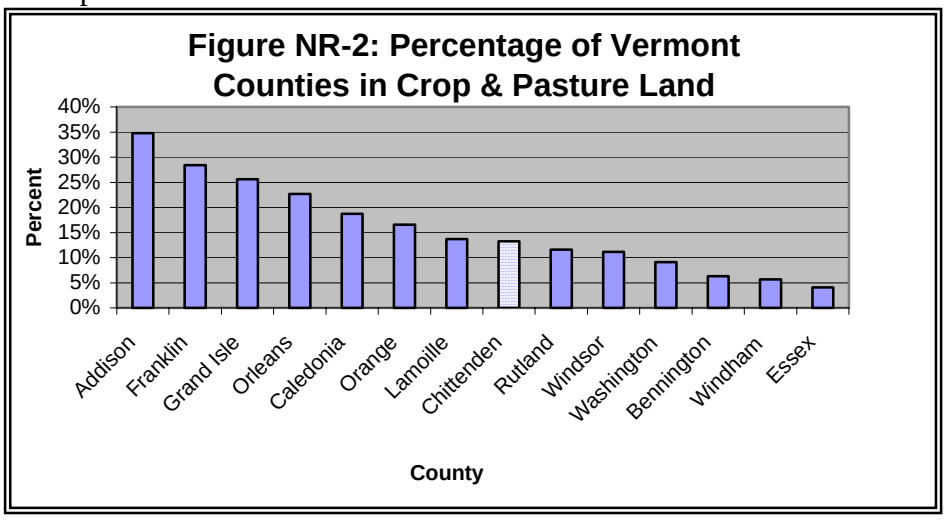
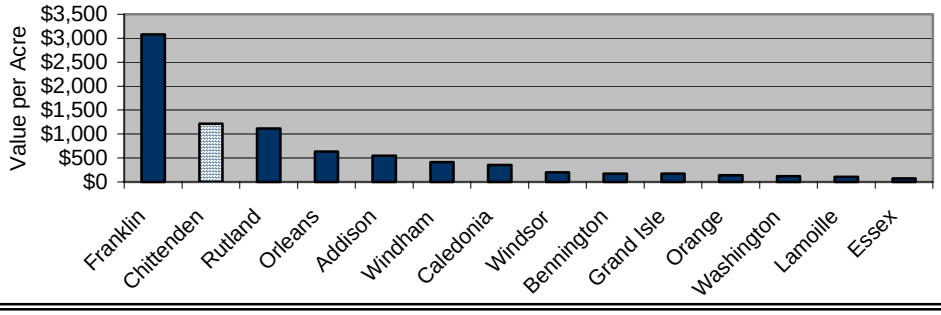


Figure NR-3: Farm Productivity in VT Counties, 1997



Agriculture's indirect contribution to Vermont's tourism industry is also important. The state's pastoral landscapes attract millions of visitors every year. One-quarter of Vermont's 22 million annual visitors come to Chittenden County. In 1990, tourism generated $2.2 billion in the Lake Champlain Basin.[10] The county's open pastures and fields are an invaluable contribution to the charm experienced by visitors here. The working landscape's scenic values also make an essential contribution to the quality of life in Vermont.

Chittenden County's contribution to Vermont agriculture was once much higher than it is today. Land use changes in Chittenden County began in the 1940s, with much of the area's agricultural land base becoming developed. This process has leveled out over the past five years. However, this leveling might be attributed to a change in agencies performing the national agricultural census.[11]

The loss of farmland can usually be traced to a single factor: the economic value of the land. A farmer's land is not only his primary asset, but also his life insurance and retirement fund.[12] There has been a great deal of conversion of agriculture land to other uses in Chittenden County. Much of the less-productive agricultural land has been developed and what is left is generally highly productive. In fact, Chittenden County's productivity was $1,214 per acre in 1997 – the second highest among all Vermont counties.[13] The Plan's Primary Agricultural Soils Map illustrates Chittenden County's primary agricultural soils.

While Chittenden County farms are highly productive, this does not ensure their continued operation. Vermont's taxation policies assess land according to "highest and best use." This can translate to agricultural land being taxed as if it were developed. However, the State of Vermont maintains a "current use" taxation program, which allows farms and forestland to be taxed according to their productivity levels. Many of landowners in Chittenden County participate in these tax stabilization programs.

Farmers also face a myriad of issues in urbanizing areas like Chittenden County. These include: higher traffic on roads and highways, which can disrupt operations; higher costs and reduced availability of supplies and services; and conflicts between non-agricultural land uses.

Farming Conflicts

Farming and suburban living often do not mix well. While new residents are often attracted to the pastoral landscape created by farming, some find the noise, odors, dust, chemicals, smoke, hours of operation, and other aspects of farming to be a nuisance. In many urbanizing parts of the United States, farmers are faced with tensions with neighbors who take issue with these effects of farming, or who may trample crops, damage fences, litter, or allow pets to chase livestock. Complaints and lawsuits can result, leading to lost productivity or increased costs for the operation.

The state has responded to these issues, by enacting the "right to farm" law, which protects agricultural operations from nuisance suits as long as the farm is following legal agricultural practices.[14] Conflicts between agricultural and residential uses in Chittenden County are notable. Some town plans make note of this as a growing issue, and the Commission recognizes these conflicts as serious.[15] Municipalities with an interest in promoting agriculture should explore strategies to support farming. Municipalities can also offer other protections to agriculture through their local zoning bylaws and ordinances.

Options for Protecting Agriculture through Local Ordinances:

- Include a general description of activities and conditions expected in a zoning district. Changes in activities would be protected as long as they did not substantially change the conditions expected in the area;
- Cover agricultural operations as a whole rather than individual activities and practices;
- Attach a notice to all real estate sales and building permits in designated agricultural areas stating that anyone locating in the area must be willing to tolerate the sights, sounds, odors of agricultural operations;
- Protect the farmer against any action "alleging that an agricultural operation has interfered with private property or personal well being, whether as a nuisance or on other grounds."

Source: Vermont Dept. of Agriculture, Food, and Markets, 1994: Sustaining Agriculture: A Handbook for Local Action. Chapter 9, "Right-to-Farm"

Forest Resources

Overview

Chittenden County's forests – located in the Champlain Valley and the Northern Green Mountains biophysical regions – are uniquely isolated by Lake Champlain to the west, agricultural lands to the north and south, and the crest of the Green Mountains to the east. The county's forests are rich and diverse, hosting some genetically superior species and others at the limits of their range.

Chittenden County's urban and rural forests contribute significantly to the environmental, social, and economic health of the region. Trees enhance the richness of our communities and neighborhoods by making our living environment more pleasant. Trees provide privacy, emphasize views, and screen undesirable uses.

Trees are a locally renewable resource that improve air quality, conserve water, and support wildlife habitats. They protect people and property by moderating the effects of sun, wind and rain. The direct economic benefits of trees are lower energy bills, locally renewable raw materials, and increased property values. The indirect economic benefits are also great. Trees help to manage stormwater and reduce the need for built facilities. They remove CO_2 from the air and help reduce the effects of burning fossil fuels on the environment. Using locally grown wood and other biomass for space heating, generating electricity, and producing local products translates to energy dollars remaining in the community.[16]

Statewide, the amount of acreage in forestland cover has increased over the past 100 years. In 1900, 25 percent of Vermont was forested. Today, forests cover 78 percent of the state.

Economic Values of Forests

The forests and forest products industry of Chittenden County represents a significant contribution to the regional economy. Economically the forests in our region support several industries including: timber, tourism, and renewable sources for energy generation. While just under two percent of the total sawtimber and veneer log harvest

in Vermont is derived from Chittenden County's forests, the sawmill industry is demanding high quality timber resources from outside the County's borders.[17] Thus, the industry within the county helps to boost rural economies.

Chittenden County ranks sixth in total mill demand, a fact that underscores the economic importance the mill industry plays inside and outside the county.[18] The annual timber demand of the county's six commercial and five part-time sawmills grew steadily from 6.5 million board feet in 1968 to16.1 million board feet in 1988. By 1994, the demand rose to 22.1 million board feet, however, by 1999, it fell to 17.1 million board feet.

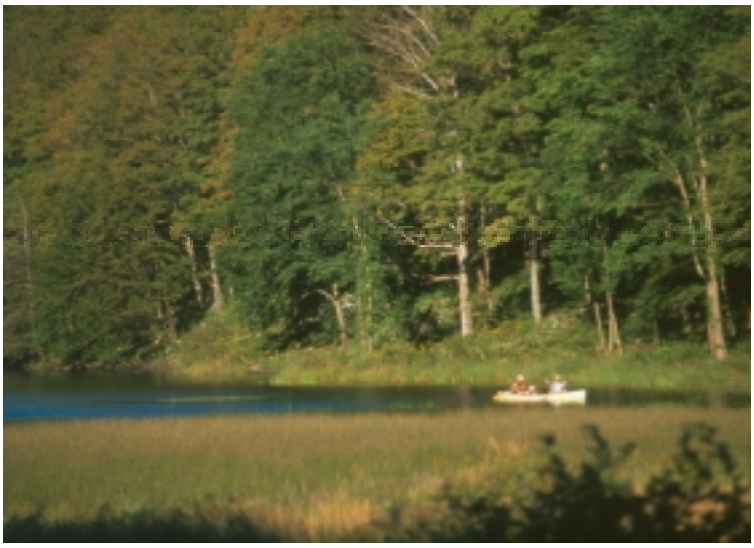
The woodchip production including sawmill residue and whole tree chip harvest in 1999 was 38,626 green tons or approximately 12 percent of the total production for the state. Woodchips are a valuable resource for energy. The demand for low-grade timber for energy represents an important component of the regional economy. The McNeil Electric Generating Station, for example, procures an estimated 25,000 to 30,000 tons of low-grade wood (whole tree chips and mill residue) from the county each year. The value of this renewable resource (including transportation costs) represents $550,000 to 750,000 dollars annually.[19]

Commercially viable forestland parcels are important to maintain and enhance for jobs and value-added benefits. The region's sawmills employ from 79 to 125 people. At least another 93 people are employed in the wood products industry.[20] Altogether, the forest products industry represents a positive contribution to the local economy. Chittenden County's forests offer other non-timber economic benefits including: maple syrup production; habitat for game and migrating wildlife; clean air and water; defined viewsheds for "leaf-peeping" tourism; and other outdoor recreation opportunities

Conserved Forest Lands

The conservation of forestlands plays a role in protecting the county's natural heritage. In Chittenden County, there are 33,624 acres – 10 percent of the county's land area (state and town owned forested lands) in public ownership. The federal government owns 11,683 acres of forested lands in Chittenden County, with a vast majority of this land located within the U.S. Army National Guard's Ethan Allen Firing Range.[21]

Conservation Lands



Overview

There is a strong ethic for conservation in Chittenden County. Many of the region's residents believe that open space is integral to the county's character, and the protection of our natural resources is a matter of public good.[22] Many private landowners enter into voluntary conservation agreements, or agree to sell their land into conservation at amounts less than they would receive in the marketplace. The Plan's Recreation Resources Map includes the locations of the 48,783 acres of publicly conserved land in Chittenden County.

Voters in eight municipalities – Bolton, Charlotte, Hinesburg, Huntington, Jericho, Shelburne, South Burlington, Williston – have established open space funds to be used in acquiring and conserving land. Some of these funds have been in place for over a decade with collectively more than $826,500 of local tax revenue dedicated annually. Several other communities are considering creating similar open space funds. Most of the conservation funds in the county, however, are not big enough to have a significant impact.

Nearly all the county's municipalities have established conservation commissions – local boards with the charge of recommending conservation initiatives to their legislative bodies. The Winooski Valley Park District is a regional agency working to acquire and manage lands for recreation and conservation within its seven member towns. Its mission is to establish parks and preserve natural areas, farmland, and wildlife habitat in the Winooski River watershed.

The Vermont Land Trust has conserved over 9,000 acres of land in the county since the early 1980's. Over half of this land has been under

conservation since 1995, which is indicative of the generally increasing trend toward conservation in Chittenden County.

Burlington, Essex, South Burlington, Colchester, and Williston have open space plans, which serve to guide land protection efforts at the local level. The Commission has begun work on a regional open space plan that, when completed, is intended to reinforce local public and private open space conservation initiatives, and offer guidelines to help communities work together to create a regional open space network.

Agricultural, Forest and Conservation Lands Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Support landowners who desire to keep their parcels of viable agricultural and forested lands in active production;

Goal 2. Minimize point and non-point source pollution from agricultural and forest uses by advocating for increased funding;

Goal 3. Support efforts to promote and enhance the economic viability of small-scale farming and forestry;

Goal 4. Plant trees as part of the urban landscape, rural roadsides, and in buffer strips;

Goal 5. Minimize forest fragmentation within new residential, commercial and industrial developments, and encourage replanting of native species of high wildlife value;

Goal 6. Establish new sources of conservation funds;

Goal 7. Help conserve the region's working lands, regionally significant natural resources, recreational opportunities, and scenic qualities;

Goal 8. Promote, through education, a land stewardship and conservation ethic in the county with programs such as agriculture in the classroom;

Goal 9. Protect natural ridgelines from development;

Goal 10. Identify and maintain the ecological integrity of the corridors and networks of corridors that connect critical wildlife habitats.

Agricultural, Forest and Conservation Lands Policies

Policy 1. The Commission believes that the preservation and expansion of the practice of agriculture, and the long-term preservation of the region's

agricultural lands is good public policy. This can be facilitated by updating the Land Evaluation Site Assessment evaluation criteria to better consider intensive use (e.g., hydroponic tomato farm) of land rather than exclusively extensive uses (e.g., corn fields and pasture). At the same time, the Commission recognizes that a farmer's land is private land. The Commission respects private property rights and offers support in helping farmers who desire to continue farming.

Policy 2. The construction, expansion or provision of public infrastructure should consider its effect on the resource value of important and economically viable agricultural or forestlands.

Policy 3. The impacts of point and non-point source pollution from working landscapes on water quality and aquatic health are significant, and should be addressed in a way that is sensitive to the financial strains that exist on farmers.

Policy 4. The Commission believes that the long term viability and health of the county's farms and forestlands positively promotes the economic, recreation, aesthetic, and ecological values of the county. As such, the Commission seeks to promote sustainable forestry and agricultural practices in Chittenden County and supports the health of urban, suburban and rural trees and forests.

Policy 5. The conservation of regionally significant open lands improves our quality of life, aids in the recruitment of high-quality employers and employees, and protects significant wildlife habitat. The Commission believes it is essential to establish and maintain an interconnected network of open and conserved lands throughout the county to balance and complement planned development. To this end the Commission should, at a minimum, protect and conserve the natural features of statewide value as identified in this plan vis-à-vis development to help maintain that balance.

Agricultural, Forest and Conservation Lands Implementation Strategies

In order to help achieve the above policies, the Commission should:

- Encourage the District Environmental Commission to consider, as a priority, land within Chittenden County as viable off-site mitigation in Act 250, where off-site mitigation is offered or required for developments in Chittenden County occurring on prime or statewide agricultural or forested lands.

- Update the LESA evaluation criteria to better consider intensive use of land rather than exclusively extensive uses. Employ the LESA program in determining important agriculture lands.

- Promote the county's diversity of agricultural and forestry production; support the expansion of agricultural operations and ventures, value-added agricultural and forest products; and encourage municipalities to also support the expansion of such operations.

- Work with other entities such as the State of Vermont to establish a dedicated funding mechanism by the State of Vermont to conserve and protect lands supporting agriculture, forestry, water quality, recreational, wildlife, and visual resources.

- Complete a regional open space plan, which builds on local efforts to identify open spaces in need of protection, and which identifies those local open space priorities that provide regional benefits as well.

- Maintain a database of working and conserved lands for the open space plan.

- Act as an information clearinghouse for conservation and protection activities.

- Aid member municipalities in developing workable Transfer of Development Rights programs.

- Aid member municipalities in developing zoning bylaws that implement strategies to enhance and protect conserved and working lands. Such strategies would include growth management and clustered development.

- Educate landowners on their options for sale, transfer, or subdivision of their land before a land transaction occurs.

- Perform studies of the tax and municipal revenue implications of conservation vs. development.

- Advocate for full funding of the state current use program, and encourage municipalities to adopt their own tax stabilization programs.

EARTH RESOURCES

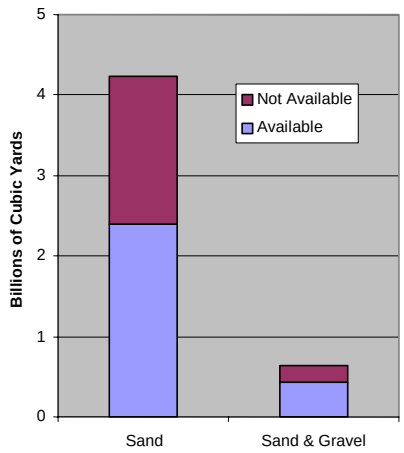
Overview

Chittenden County's earth resource needs are met primarily from pits and quarries owned and operated by the private industrial sector. In addition, several municipalities maintain pits to supplement their own highway construction and maintenance needs. The Vermont Department of Environmental Conservation lists 12 earth resource operations of various sizes within Chittenden County. The Plan's Earth Resources map illustrates their locations. These operations produced approximately 583,500 metric tons of sand & gravel and 1,293,000 tons of crushed rock in 1998.[23] Sand & gravel and crushed rock are collectively known as "aggregates," which account for all earth resource production in Chittenden County. Practically all aggregates produced in Chittenden County are used here. Some producers import earth resources.[24]

While sand and gravel are nonrenewable resources, the availability is essential to road construction, paving and maintenance. Aggregates are also used to produce concrete and other construction materials such as railroad ballast. The availability of aggregates that meet state and federal transportation specifications is a matter of concern: they are a non-renewable resource. The production of aggregates is affected by development over resource deposits and environmental quality standards. The demand for earth resources and the level of production regulation are high in Chittenden County compared to other areas and conservation strategies for the use of these materials is critical.[25]

Chittenden County is rich in sand deposits, but gravel is less abundant and could become scarce within the coming decades. About 44 percent of sand deposits and 32 percent of sand and gravel deposits in Chittenden County are unavailable due to inaccessibility, conflicting land use, environmental sensitivity, or poor quality.[26](see Fig. NR-4) It has been estimated that statewide, currently operating sand and gravel pits can be expected to operate only 20 more years.[27]

Figure NR-4: Sand & Gravel Resources in Chittenden County



Earth Resource Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Ensure the long-term availability of aggregate resources to support economic development and construction.

Goal 2. Educate the public about the need for long-term aggregate resource availability and the need for resource conservation.

Goal 3. Ensure that earth resource extraction is planned and conducted in a manner to lessen environmental impacts and that conservation of resources is considered.

Goal 4. Encourage municipalities to examine or amend zoning regulations regarding the location and operation of earth resource extraction sites.

Earth Resource Policies

Policy 1. The Commission believes that availability of natural earth resources is essential to construction and economic development in Chittenden County, and must therefore be ensured.

Policy 2. The Commission believes that earth resource extraction activities should not degrade the environment. All efforts should be made to prevent unnecessary environmental damage arising from the extraction of earth resources.

Policy 3. The commission acknowledges that earth resources are a nonrenewable resource and that resource planning and conservation are essential.

Earth Resource Implementation Strategies

In order to help achieve the policies above, the Commission should:

- ❖ Develop and maintain a current inventory of available earth resources.
- ❖ Consider employing land evaluation methods to determine important natural earth resource areas.
- ❖ Encourage municipalities to establish development standards to maintain access to earth resource resources.
- ❖ Work with communities and industry to identify the location of deposits of gravel and other earth resources important to the future development of the Region.

- Use its party status under Act 250 to ensure that the economic necessity of extracting earth resources from a given site outweighs its environmental impact.

RECREATION RESOURCES

Overview

Chittenden County is blessed by an abundance of recreational opportunities in a clean and beautiful environment. People from all over the world come here to play, learn and relax, particularly during the fall foliage season. Recreation is a large component of Chittenden County's economy and renowned quality of life. Hiking, biking, rock climbing, roller blading, hunting, camping, canoeing, kayaking, sailing, golf, fishing, skiing, and snowboarding are some of the more active outdoor recreational activities available here. The Plan's Recreational Resources Map illustrates the county's recreation resources.

Few places in New England have surface waters as clean, peaks as high, or forests as healthy as Chittenden County. Maintaining and enhancing these natural resources is important to preserving our high quality of life and economic prosperity.

Recreational resources also include developed community facilities and lands. Park and recreation programs, services, and facilities should keep up with public demand as Chittenden County continues to grow.

Upgrading existing and developing new recreation lands and facilities is needed to meet the future recreational needs of residents.[28] Some of the identified needs include:

- Athletic fields, multi-purpose playing fields;
- Swimming pools, swimming beaches;
- Neighborhood and community parks, playgrounds;
- Indoor facilities, recreation centers, ice rinks;
- Creation, protection and maintenance of trails, bike paths and greenways;
- Maintenance and improvements to existing facilities and parks;
- Public access to water resources, including Lake Champlain;
- Open lands suitable for recreation.

Recreation Resource Goals

The goals of the Chittenden County Regional Planning Commission are to:

Goal 1. Promote municipal planning for year-round recreation needs;

Goal 2. Establish a region-wide system of interconnected walking trails, bicycle paths and natural areas;

Goal 3. Encourage traditional recreational activities, including hunting and fishing, to promote an appreciation of the outdoors and the natural landscape;

Goal 4. Plan for the accessibility to natural and developed recreation areas;

Goal 5. Expand and promote cultural activities and the availability of the arts.

Recreation Resource Policy

Policy 1. The Chittenden County Regional Planning Commission believes that opportunity for nature-based and developed recreation are essential to a high quality of life and should be available to all Chittenden County residents. The Commission will use its resources to plan recreational resources that meet current and future needs of the county.

Recreation Resources Implementation Strategies

In order to help achieve the policy above, the Commission should:

- ❖ Inventory current recreational opportunities and assess the demand for those resources in an open space plan in collaboration with local communities;
- ❖ Aid municipalities in developing plans and strategies for meeting future demand for new community recreation facilities;
- ❖ Work with municipalities and others to develop a set of guidelines to encourage retention and creation of natural recreational areas;
- ❖ Cooperate with CCMPO, member municipalities and others to develop a region-wide network of trails and bicycle paths;

- ❖ Support efforts to establish and expand cultural programs throughout the county;

- ❖ Encourage municipalities to work collaboratively with landowners to expand bicycle and transportation paths;

- ❖ Collaborate with the State of Vermont in its efforts to provide recreation opportunities, specifically assisting in updating the *State Comprehensive Outdoor Recreation Plan*.

Natural Resources End Notes

[1] U.S. Environmental Protection Agency:

Ozone: Measures of ozone have hovered around 0.070 ppm in the Burlington area for past few years. Proposed "8-hour" standard holds attainment standard at 0.085 ppm, and is a little more stringent than the current 1-hour standard. The 8hr standard may go into effect in a few years but has been "stayed" by the courts. Trend has declined from 1992 values, when it was right around 0.085 ppm. (Measurement site is Underhill b/c must be measured downwind from cities)

Sulfur Dioxide: Measurements well below National Standards: between 0.030 and 0.001 ppm in Burlington. Standard is 0.140 ppm. Also, trend is declining for past 10 years.

Carbon Monoxide: Measurements in Burlington at half the level of the standard (4.6 ppm vs. 9.0 ppm standard) in 1990. Since, has fallen to below 2 ppm.

Nitrogen Dioxide: Levels in Burlington have fluctuated between 0.017 and 0.019 ppm since 1988. Standard is 0.050 ppm.

Particulate Matter 10: Liquid or solid droplets of 10 micrometers or less, which may reach & affect the lungs. Burlington levels have fallen since 1990, starting from a level of about half of the allowable standard (66 micrograms per cubic meter vs. 150 mg/m3 "Second Max 24 hour value", and 26 vs. 50 mg/m3 "Weighted Arithmetic Mean"). A new standard for Particulate Matter has been proposed and is held up in the courts. This standard would be more rigorous, and would be known as "PM2.5." Data collected so far in Burlington indicates that Vermont would be in compliance with the new standard.

Lead: Vermont is not required to measure lead in the air. No data are available.

[2] Commission Natural Resources Task Force, Summer 2000

[3] Lake Champlain Basin Program, Oct. 1994: Opportunities for Action: State of the Lake, p. 24

[4] Hegman et al, 1999, cited in: Lake Champlain Basin Program: Preliminary Evaluation of Progress Toward Lake Champlain Basin Program Phosphorus Reduction Goals, June 1, 2000, pp. 4-5

[5] Lake Champlain Basin Program, 2000: Preliminary Evaluation of Progress Toward Lake Champlain, June 2000, pp 12, 17

[6] Shelburne Pond Consultants, 1998, Shelburne Pond Assessment: Watershed Analysis, Ecological Summary & Recommendations for Management. Prepared for The University of Vermont Natural Areas and The Nature Conservancy May, 1998

[7] 1997 National Resources Inventory, USDA-Natural Resources Conservation Service

[8] Market value of 1997 agricultural production in Chittenden County was $25.5 million (1997 U.S. Census of Agriculture).

[9] Saving America's Countryside, Samuel N. Stokes, A. Elizabeth Watson, & Shelley S. Mastran, for the National Trust for Historic Preservation. Second Edition, 1997. Johns

Hopkins University Press, Baltimore. Note: Chittenden, Franklin, and Grand Isle are the only Vermont counties considered metropolitan counties by the U.S. Census Bureau.

[10] Lake Champlain Basin Program

[11] In 1997, the U.S. Department of Agriculture took over the Agricultural Census from the U.S. Department of Commerce, and was much more successful at finding farms. The declining trend in number of farms and land in farms would have probably continued though 1997 if not for the changes in methodology. Unfortunately, there are no information sources other than the U.S. Census available to substantiate this information.

[12] Saving America's Countryside, Samuel N. Stokes, A. Elizabeth Watson, & Shelley S. Mastran, for the National Trust for Historic Preservation. Second Edition, 1997, Johns Hopkins University Press, Baltimore.

[13] 1997 U.S. Census of Agriculture

[14] Vermont Dept. of Agriculture, Food, and Markets, 1994: Sustaining Agriculture: A Handbook for Local Action. Chapter 9, "Right-to-Farm"

[15] See p. 26 of the Charlotte Town Plan, Readopted March 7, 2000, and pp. 20, 47 of the Hinesburg Town Plan, re-adopted August 18, 1997

[16] Commission Natural Resources Task Force, Summer 2000.

[17] Vermont Department of Forests, Parks & Recreation "Vermont Sawlog & Veneer Log Harvest", 1999.

[18] Vermont Wood Manufacturers Association. "Directory of Sawmill & Veneer Mill in Vermont", 1997.

[19] 5-23-01 email from Bill Kropelin to Kevin Anderson, Chief Forester, Burlington Electric Department

[20] Vermont Wood Manufacturers Association. "Vermont Wood Product Manufacturers & Crafters, 2000.

[21] Commission GIS Data

[22] Commission Natural Resources Task Force, Summer 2000.

[23] T. Casey, Hinesburg Sand & Gravel, and J. Perkins, Pike Industries

[24] Construction Aggregates Demand in the New England States, New England Governors' Conference, Inc & Minerals Management Service, U.S. Department of Interior, Jan. 1992.

[25] Vermont Geological Survey, 1993

[26] Ibid.

[27] Commission Natural Resources Task Force, Summer 2000

SUBSTANTIAL REGIONAL IMPACT

Defining Substantial Regional Impact

In addition to identifying locations for proposed developments with substantial regional impact, this plan also provides threshold levels to define what constitutes "substantial regional impact." The purpose in defining these substantial regional impact criteria is to determine the applicability of the regional plan in state regulatory proceedings, primarily Act 250 and Section 248.

If a development proposal meets any of the listed criteria, the District Environmental Commission (DEC) or the Public Service Board, will consider the regional plan in their deliberations. In Act 250, for instance, if a proposed development met any of the substantial regional impact criteria, the Regional Plan would be considered under Act 250's Criteria 10: "…conformance with any duly adopted local or regional plan…" Similarly, were any of the criteria met by a proposed utility development, the Regional Plan would be consulted in the Section 248 review.

The substantial regional impact criteria will be relevant in these two State of Vermont regulatory arenas. They will be used solely to determine whether or not the regional plan is applicable in these proceedings. **NOTE: A PROPOSED DEVELOPMENT MUST ALREADY BE IN ACT 250 OR SECTION 248 REGULATORY REVIEW BEFORE THESE CRITERIA ARE APPLIED AND SUBSTANTIAL REGIONAL IMPACT DETERMINED. THESE CRITERIA HAVE NO BEARING OUTSIDE STATE REGULATORY PROCEEDINGS**. Applications deemed minor by the District Environmental Commission shall not be considered by the CCRPC as applications having substantial regional impact.

Note that substantial regional impacts can have positive, as well as negative, results. The Regional Plan guides appropriate development, to appropriate areas, at desired densities, in order to implement the planning area concepts contained in this Plan. For development proposals compatible with the plan, this document will add credibility and valuable support in the regulatory arena.

This plan proposes the following quantitative thresholds as a means to determine substantial regional impact. A proposed development meeting one or more of the criteria in the table below will be deemed to have substantial regional impact.

Quantitative Thresholds	
Land Use	**Threshold Criteria**
Airports	1. Construction of a new: • commercial airport, • airport with paved runways, • paved runway, or • passenger terminal facility 2. Expansion of an existing paved runway or terminal facility by more than 25%
Hospitals/Extended Care Facilities	Construction or expansion of a hospital or extended care facility that would create 50 or more beds. When development or a health care facility contains fewer than 50 beds, such development shall be considered office development.
Electrical Generation/Transmission	Any proposed generating facility/transmission or expansion requiring Public Service Board approval under 30 VSA Chapter 5, Sec 248.
Natural Gas Transmission	The construction or extension of transmission lines requiring Public Service Board approval under 30 VSA Chapter 5, Sec 248.
Industrial Parks	Any proposed new industrial park outside of Metropolitan, Village, Transition, and Special Use Planning Areas.
Industry *Office* *Retail, Wholesale and Service*	Any proposed building footprint exceeding: 1. 100,000 SF in the Metropolitan Planning Area 2. 75,000 SF in a Village Planning Area 3. 75,000 SF in a Transition Planning Areas 4. 75,000 SF in a Special Use Planning Area 5. 25,000 SF in Rural Planning Areas
Earth Resource Extraction	Any proposed extraction operation that annually generates an average of 60 or more truckloads, or 120 or more truck trip ends per weekday.
Hotel/Motel Development	Any proposed lodging facility exceeding: 1. 150 or more rooms in the Metropolitan Planning Area 2. 50 or more rooms in the Village Planning Area 3. 100 or more rooms in the Transition Planning Area 4. 35 or more rooms in the Rural Planning Area.

Water Transmission	The construction or extension of transmission lines over 2,500 FT in length and 12 inches or greater in diameter, outside Metropolitan, or Village, Special Use or Transition Planning Areas except on sites with private water transmission systems not involving sales to the public, or for hydraulic looping for reliability and/or redundancy reasons within an existing municipal service area or to allow the interconnection of Metropolitan and Village Planning Areas.
Sanitary Sewer Transmission	The construction or extension of transmission lines over 2,500 FT in length and 25 inches in diameter, outside Metropolitan, Village, Special Use or Transition Planning Areas except on sites with private sewer transmission systems not involving sales to the public.
Educational Facilities	The construction or expansion by 10% of total square footage of a regional (multi-municipal) educational facility.
Residential Development	• Any residential development in a Metropolitan Planning Area that proposes to construct over 200 dwelling units. • Any residential development in a Transition Planning Area that proposes to construct over 100 dwelling units. • Any residential development in a Village Planning Area that proposes to construct over 60 dwelling units. • Any residential development in a Rural Planning Area that proposes to construct over 10 dwelling units.

Solid Waste Management	1. Construction of a regional landfill, expansion of an existing landfill, or any building, land, facility, or land development associated and otherwise described as an integral component of a planned or existing regional landfill. A regional landfill is a landfill that serves more than one municipality. 2. Any development proposal that would result in increasing the volume of solid waste entering a regional landfill by three percent (3%) or more. 3. Any solid waste or recycling facility that handles or processes 5 percent or more of the county's solid waste or recycling tonnage.
Cultural Facilities	**Civic or Convention Centers:** A facility or portion thereof designed to accommodate the following numbers of people in assembly: 1. 1000 or more people in assemblyin Metropolitan, Village, and Transition Planning Areas. 2. 250 in the Rural Planning Area **Cinemas:** A cinema with 1000 or more the following numbers of seats: 1. 1000 or more in Metropolitan, Village, and Transition Planning Areas. 2. 250 or more in the Rural Planning Area **Theaters:** A live performance space providing the following number of 1000 seats: or more. 1. 1000 or more in Metropolitan, Village, and Transition Planning Areas. 2. 250 or more in the Rural Planning Area **Museums:** A museum with a projected peak draw of 1000 visitors or more per day, regardless of Planning Area location.

Recreation Facilities	**Outdoor:** 50 acres for parks or inherently spacious outdoor recreational facilities, including ski areas, golf courses, and natural areas. 20 acres for other outdoor uses including but not limited to sports fields, tennis courts, and swimming pools. **Indoor:** Any indoor recreational facility, including but not limited to sports arenas, stadiums, race tracks, amusement parks, and ice skating rinks, with total building floor space as follows: 1. 100,000 SF in a Metropolitan Planning Area 2. 75,000 SF in a Village Planning Area 3. 75,000 SF in a Transition or Rural Planning Area 4. 25,000 SF in a Rural Planning Area 5. 75,000 SF in a Special Use Planning Area
Transportation System Impacts	1. Any development proposal that reduces the level of service (LOS) one letter grade at intersections within the project's impact area. 2. Any development proposal that requires the significant extension or expansion of a major regional route, state highway or component of the Metropolitan Transportation System defined by the Chittenden County Metropolitan Planning Organization's Metropolitan Transportation Plan.

Act 78: The 1987 Solid Waste Bill

Act 200: the 1988 amendments to Vermont Statute 24 V.S.A. Chapter 117; the Vermont Municipal and Regional Planning and Development Act.

Act 250: Vermont Land Use and Development Law 10 V.S.A. Ch 151; the state environmental review process conducted by a District Environmental Commission)to consider a proposed development's impact using 10 established criteria.

Adjacent: nearby, proximal..

Adjoining: touching, lying near or close to

Adverse impact: a condition that creates, imposes, aggravates, or leads to inadequate, impractical, unsafe, or unhealthy conditions on a site proposed for development or on off-tract property or facilities.*

Aesthetic: the perception of artistic elements or elements in the natural or created environment that are pleasing to the eye.

Affordable housing:

1) Housing that is owned by its inhabitants, whose gross annual household income does not exceed 80 percent of Chittenden County's median income, as defined by the United States Department of Housing and Urban Development, and the total annual cost of the housing, including principal, interest, taxes and insurance, is not more than 30 percent of the household's gross annual income.
2) Housing that is rented by its inhabitants whose gross annual household income does not exceed 65 percent of Chittenden County's median income, as defined by the United States Department of Housing and Urban Development, and the total annual cost of the housing, including rent, utilities, and condominium association fees, is not more than 30 percent of the household's gross annual income

Agriculture/Farming: 1) The cultivation or other use of land for growing food, fiber, Christmas trees, maple sap, or horticultural and orchard crops; or 2) the raising, feeding or management of livestock, poultry, equines, fish or bees; or 3) the operation of greenhouses; or 4) the production of maple syrup; or 5) the on-site storage, preparation and sale of agricultural products principally produced on the farm; or 6) the on-site production of fuel or power from agricultural products or wastes produced on the farm.

Agricultural land: land capable of supporting commercial farming as defined by state law.

Agricultural runoff: the portion of melted snow, rainfall, and other liquids that flows across agricultural ground surface and returns to surface or groundwater – sometimes contaminating a water body or resource with fertilizer, manure, pesticides, sediment, and other foreign materials.

Allowances: To be permitted by the local governments through duly adopted bylaws.

Archaeological resources: land, water, or construction that shows evidence of artifacts or significant design elements of human activity, usually from a time period of which only vestiges remain.*

Best management practices (BMP): the methods, measures, designs, performance standards, maintenance procedures, and other management practices that prevent or reduce adverse impacts upon water quality.

Building permit: Written permission by the proper governing body for the construction, repair, alteration or addition to a structure. *

Build-out analysis: a study that examines an area's capacity for development.

Bylaw: zoning regulations, subdivision regulations, shore land and flood hazard bylaws, an official map or a capital budget and program adopted under the authority of 24 V.S.A. Chapter 117 § 4401.

Capacity Study: an inventory of available natural and human-made resources, based on detailed data collection, which

identifies the capacities and limits of those resources to absorb land development.

Chittenden County: the County of Chittenden is formed of the Towns of Bolton, Charlotte, Colchester, Essex, Essex Junction, Hinesburg, Huntington, Jericho, Milton, Richmond, St. George, Shelburne, Underhill, Westford, Williston, the Cities of Burlington, South Burlington, and Winooski, Avery's (Buel's) Gore and so much of Lake Champlain as lies in this state west of the towns and cities in the county adjoining the lake and not included within the limits of the county of Grand Isle. The City of Burlington is the shire town.

Circumferential Highway: Proposed limited access highway between State Route 127 in the Town of Colchester and Interstate Route 89 in the Town of Williston.

Cluster Development: a development design technique that concentrates buildings in specific areas on the site to allow the remaining land to be used for recreation, common open space, and preservation of environmentally sensitive features; sometimes referred to as planned residential development (PRD) or planned unit development (PUD).

Cogeneration: the production of electricity and heat, generally in the form of steam or hot water, from a facility.

Construction: The process of determining the sense, real meaning, or proper explanation of terms or sections in this regional plan.

Corridor: A narrow strip of land associated with the movement of people, wildlife, goods, services, and/or utilities.

Cultural Facilities: establishments that document the social and religious structures and intellectual and artistic manifestations that characterize a society and include museums, art galleries, and botanical and zoological gardens of a natural, historic, educational, or cultural interest.

DSS (Decision Support System): a process by which local and regional planners and policy - makers can approximate the potential effects of transportation upon land use and development patterns, as well as the effects of land use patterns upon transportation infrastructure. This process will be aided by the development of an analytical computer tool that will analyze how land use policy and patterns affect the existing transportation infrastructure, and how changes to the transportation infrastructure can influence land use and development patterns. The DSS project will include a process for using the results of the computer analysis to inform planning efforts.

Development, Land: the division of a parcel into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or other structure, or of any mining, excavation or landfill, and any change in the use of any building or other structure, or land, or extension of use of land. (Vermont Statute, Title 24 V.S.A. Ch. 117 Section 4303(3))

Development right: the legal right to develop a property.

Dwelling unit: one or more rooms, designed, occupied, or intended for occupancy as a separate living quarter, with cooking, sleeping and sanitary facilities provided within the dwelling unit.

Feeder hookups: infrastructure such as water and sewer lines, that serve secondary needs such as housing units and business locations.

Floodplain: land subject to a 1 percent or greater chance of flooding in any given year.

Geographical Information Systems (GIS): a computerized mapping system.

Groundwater: the water below land surface in a zone of saturation, but does not include surface waters.

Growth: when used in this plan with regard to population or residential development, the increase in non-seasonal housing capacity in Chittenden County, as measured by the product of

the number of units and the expected capacity of each unit. Otherwise, the increase in built space as measured by square footage of building space.

Growth Center: an area within a community providing for a concentration of housing, commercial services, employment opportunities and government uses, and served by basic infrastructure. Growth centers are identified in this Plan as Metropolitan and Village Planning Areas and Special Use Districts.

Growth patterns: established historic development configurations.

Habitat: the physical and biological environment that a community of a particular species of plant or animal requires in order to remain viable.

Hazardous Waste: as defined in 10 V.S.A. § 6602(4), as may be amended from time to time.

Heavy Industry: Industrial uses that meet the performance standards, bulk controls, and other requirements established in an ordinance.*

Household: an occupied dwelling unit.

Industrial Park: a tract of land planned, developed and operated as an integrated facility for a number of individual industrial uses, with special attention to circulation, parking, utility needs, aesthetics, and compatibility.

Industrial Use: the industrial (see industry) purpose or activity for which land, buildings, facilities or other form of land development are designed, arranged, or intended for which land, buildings, facilities or other form of land development are occupied or maintained.

Industry: Those fields of economic activity including agriculture, forestry, fishing, hunting, and trapping; mining; construction; manufacturing; transportation; communication, electric, gas, and sanitary services (including the disposal, reuse, recycling and management of solid waste and hazardous waste and any of its associated facilities); and wholesale trade. Industrial uses (see industrial use) need to meet the performance standards, bulk controls, and other requirements established in local bylaws and as determined by the District Environmental Commission in Act 250 proceedings.

Infill development: the development of new housing or other buildings on scattered vacant sites in a built-up area.

Infrastructure: services and facilities – such as highways and roads; water and sewer lines and other utilities; communications systems; and public facilities – needed to sustain industry, residential, commercial and all other land use activities.

Landfill: a disposal site in which refuse and earth, or other suitable cover material, are deposited and compacted in alternative layers of specified depth in accordance with an approved plan.*

Land Use: a description of how land is occupied or utilized. *

Landscape: an expanse of natural scenery.

Legislative Body: the select-board in the case of a town, the trustees in the case of an incorporated village, the mayor and councilors in the case of a city, and the supervisor in the case of an unorganized town or gore.

Metropolitan Planning Area: a location designated for development of mixed use commercial, industrial, residential, community facilities.

Mixed-use development: the compact development of a tract of land, building, or structure with a variety of complementary and integrated uses, such as, but not limited to, residential, office, manufacturing, retail, public, or entertainment.*

Multi-modal: consisting of more than one mode of transportation.

Municipality: town, a city, or an incorporated village or an unorganized town or gore.

Natural Area: an area of land or water, which is not dominated by man-made features, that has unusual or significant flora, fauna, geological, or similar features of scientific, ecological, or educational interest.

Office- A room, group of rooms, building or buildings, used for conducting the affairs of a business, profession, service, industry, or government.

Open Space: publicly and privately-owned areas of land, including parks, natural areas and areas of very low-density development. Open spaces are places in the outdoors which 1) provide people with a visual and/or other sensory connection to nature and the natural landscape; 2) support the function of healthy ecosystems; or 3) support recreation without conflicting with other designed uses.

Pedestrian Scale: an urban development pattern where walking is a safe, convenient and interesting mode of travel. It is an area where walking is at least as attractive as any other mode to all destinations within the area. The following elements are not cited as requirements, but illustrate features of areas of pedestrian scale:

- •continuous, smooth and wide walking surfaces;
- •ease of visibility from streets and buildings;
- •safety for pedestrians;
- •few points where high-speed automobile traffic and pedestrians mix;
- •frequent crossings;
- •storefronts, trees, bollards, on-street parking, awnings, outdoor seating, signs, doorways and lighting designed to serve those on foot;
- •areas well-integrated into the public transit system and having uses that cater to people on foot.

Planned residential development (PRD): a municipal zoning bylaws options that allows up to a 25 percent increase in the permitted number of dwelling units to provide flexibility of design and land development to facilitate an economical provision of streets and utilities, and preserve the landscape. (Vermont Statute: 24 VSA §4407)

Planned Units: see **Systemic Planned Units.**

Planning Area: a land use category.

Primary Agricultural Soils: soils that have a potential for growing food and forage crops, are sufficiently well-drained, are well supplied with plant nutrients or highly responsive to the use of fertilizer, and have few limitations for cultivation.

Public Offices: office spaces used by governments of all levels, i.e., general purpose local government, schools, special purpose government spaces.

Rural Planning Area: a location designated for primarily agricultural uses and the services needed for those uses.

Renewable Energy Resources: energy available for collection or conversion from direct sunlight, wind, running water, organically derived fuels including wood, agricultural sources, waste materials, waste heat, and geothermal sources.

Retail: A business that buys goods for resale to the general public andmay render services incidental to the sale of such goods.

Right-of-Way: a strip of land acquired by reservation, dedication, forced dedication, prescription, or condemnation and intended to be occupied by a road, pedestrian way, crosswalk, railroad, electrical transmission lines, oil or gas pipeline, water line, sanitary, storm sewer, and other similar uses.

Riparian: of, pertaining to, or situated on, the edge of the bank of a river or other body of water.

Satellite: a man-made object or vehicle in orbit over the Earth, which receives and transmits electromagnetic radiation for purposes including wireless telecommunications.

Scenic Resources: those visually pleasing landscapes including mountains, farms, ridge lines and shorelines, and the locations providing scenic vistas of those landscapes.

Section 248: Vermont Law regarding the Public Service Board, including its duties and role and the rules of electricity and natural gas supply and transmission.

Service: Establishments primarily engaged in providing assitance, as opposed t products, to individuals, businesses, industry, government, and other enterprises, including hotels and other lodging places, personal business, repair, and amusement services; health, legal, engineering, and other professional services; educational services; membership organizations, and other miscellaneous services.

Setback: the distance a structure has to be from a property line.

Single-use commercial areas: a building or location dedicated solely to commercial activities and use.

Single-use residential areas: a building or location dedicated solely to residential use and activities.

Single Family Dwelling: a building containing one dwelling unit.

Solid Waste: as defined in 10 V.S.A. § 6602(2), as may be amended from time to time.

Sprawl: growth of a low-density nature, in previously rural areas outside of defined metropolitan and village area boundaries and some distance from existing development and infrastructure.

Special Use Planning Area: planning areas reserved for uses incompatible in a mixed-use environment.. .
Stewardship: a planning and management approach to land and natural resources that considers long term sustainability, environmental impacts, and public benefits of actions as well as public and private dollar costs.

Systemic Planned Units: Units of development that guide future activities of residential, commercial, civic and open space, into a system of integrated parts so that new development can allow a seamless interaction between uses.

Transition Planning Area: a location designated for conversion to a Metropolitan or Village Planning Area.

Traditional: of, pertaining to or in accord with tradition. Tradition is a set of customs and uses viewed as a coherent body of precedents influencing the present.

Transfer of Development Rights (TDR): the removal of the right to develop or build, expressed in dwelling units per acre, from land in one district to land in another district where such transfer is permitted; a relatively new land development control tool used to preserve open space and farmland.

Transportation Infrastructure: see Transportation Network.

Transportation Network: the system of sidewalks, trails, airplanes, bicycle paths, public transportation facilities and routes, railroad tracks and rights-of-way, roads, streets, highways, and all other corridors whose major purpose is to provide mobility for people and goods within the Chittenden County Region. Synonymous with transportation infrastructure.

Trunk Line Infrastructure: main line infrastructure that serves feeder lines within a sewer or water system.

Urban Center: a compact form of development with a dense, mixed core of residential, commercial, and service facilities.

Urban decentralization: the reduction of population, commercial activities, and services in an urban center due to development outside the center.

Village Planning Area: a location designated for development of mixed use commercial, residential, and community services.

Water pollution: the addition of pollutants to water in concentrations or in sufficient quantities to result in measurable degradation of water quality.

Wellhead Protection Area: areas designated by the Vermont Department of Health to protect the quality of public water supplies.

Wetland: areas inundated by surface or groundwater with a frequency sufficient to support vegetation or aquatic life that depends on saturated or seasonally saturated soil conditions for growth and reproduction (e.g., marshes, swamps, sloughs, river and lake overflows, and bogs; but excluding such areas as grow food or crops in connection with farming activities).

Wildlife: any member of a nondomesticated species of the animal kingdom, whether reared in captivity or not, including without limitation, any mammal, fish, bird, amphibian, reptile, mollusk, crustacean, arthropod or other invertebrate

Wireless telecommunications facility: any site, structure, object, or improvement which includes one or more pieces of equipment or machinery intended or used to send and/or receive non-visible electromagnetic radiation for the purpose of communication. These include, but are not limited to, towers.

Wireless telecommunications services: communications services not relying on actual wire connections between sender and receiver. .

Watershed: an area of land that drains water, sediment, and dissolved material to a common outlet at some point along a stream channel.

Wildlife habitat: land and water where non-domesticated wildlife habitats.

Wholesale: Establishments which primarily engage in the selling of merchandise to retailers; to industrial, commercial, institutional, or professional businesses; to other wholesalers, or to other agents or brokers.

Zoning: the delineation of districts and the establishment of regulations governing the use placement, spacing, and size of land and buildings. *

***** From the New Illustrated Book of Development Definitions, Harvy S. Moskowitz & Carl G. LindBloom, 1990 Rutgers, NJ

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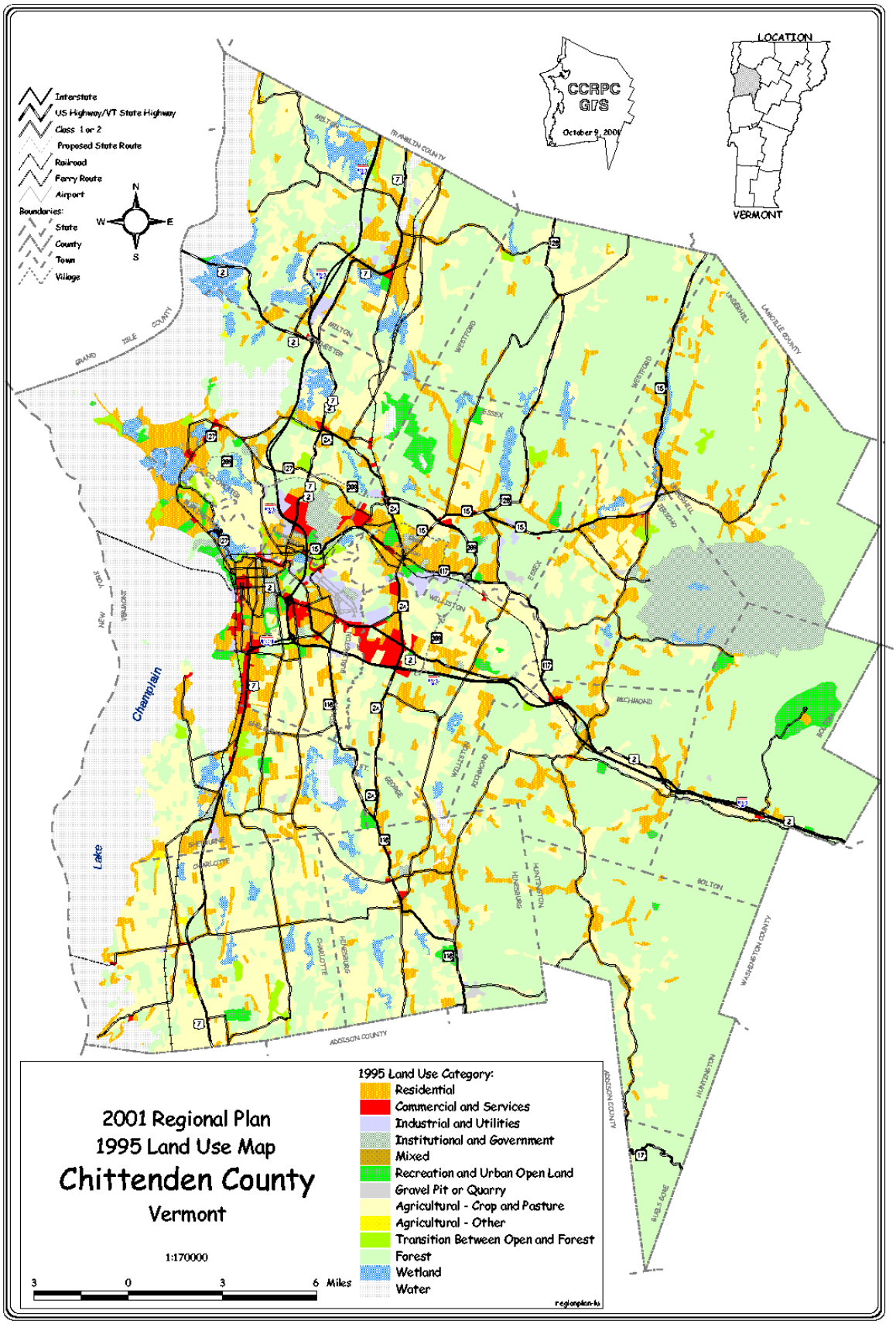
Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
State
County
Town
Village
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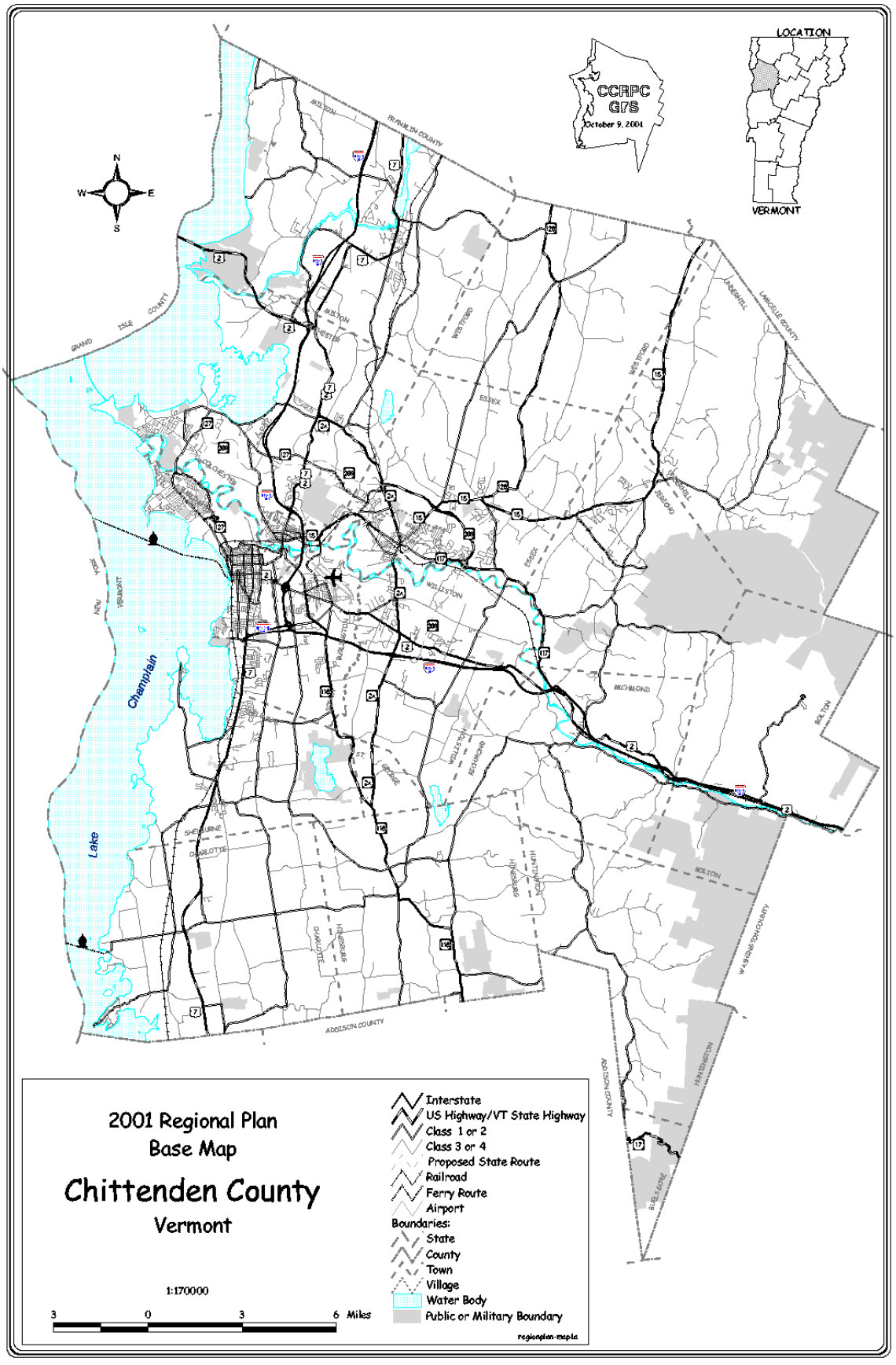
CCRPC
GIS
October 9, 2001
LOCATION
VERMONT
Champlain
Lake
FRANKLIN COUNTY
GRAND ISLE COUNTY
ADDISON COUNTY
WASHINGTON COUNTY
LAMOILLE COUNTY
2001 Regional Plan
1995 Land Use Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
1995 Land Use Category:
Residential
Commercial and Services
Industrial and Utilities
Institutional and Government
Mixed
Recreation and Urban Open Land
Gravel Pit or Quarry
Agricultural - Crop and Pasture
Agricultural - Other
Transition Between Open and Forest
Forest
Wetland
Water
regionplan-lu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October 9, 2001
LOCATION
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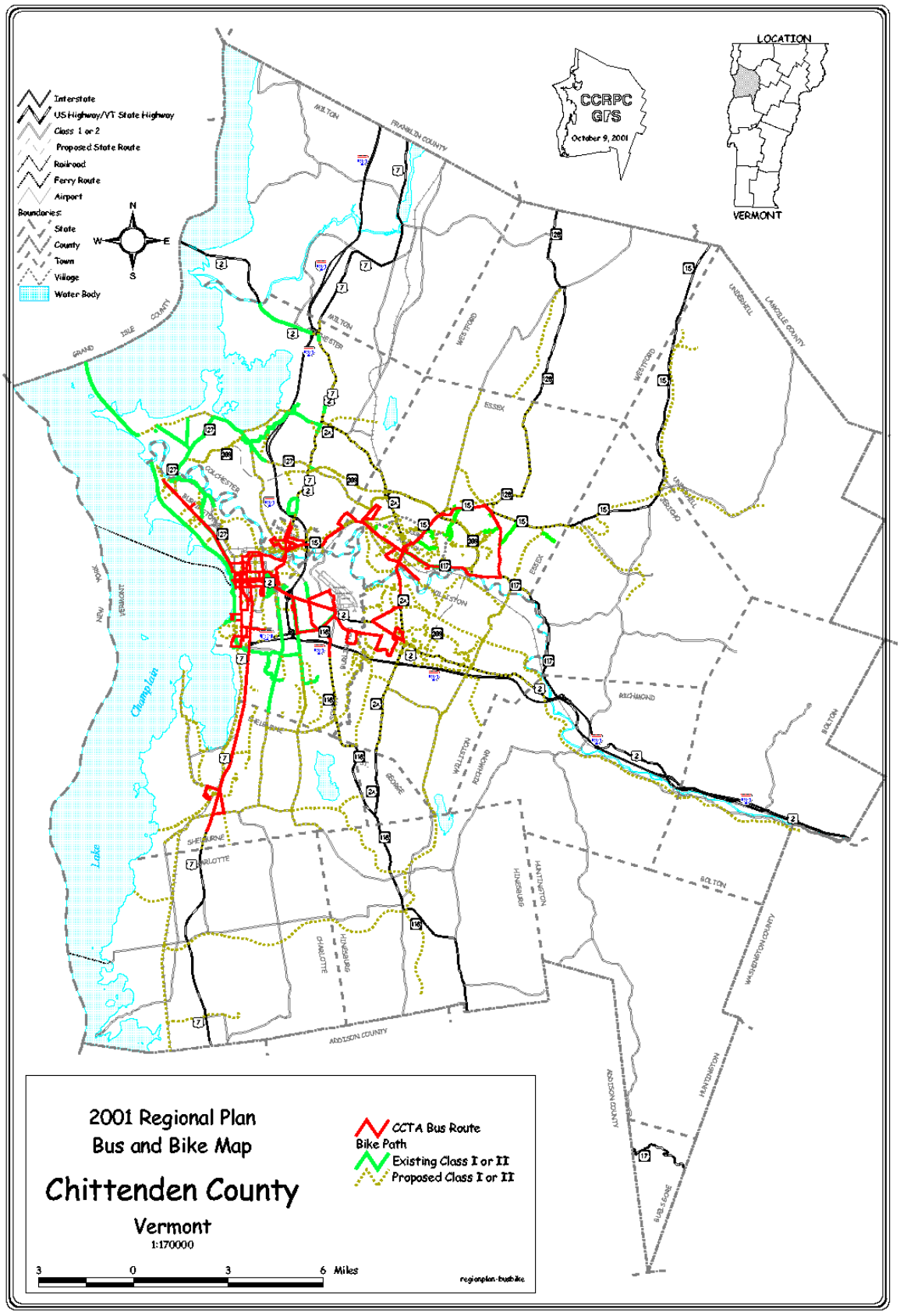
WASHINGTON COUNTY
ADDISON COUNTY
Lake Champlain
NEW YORK
VERMONT
MILTON
COLCHESTER
ESSEX
WESTFORD
JERICHO
UNDERHILL
WILLISTON
HINESBURG
RICHMOND
BOLTON
HUNTINGTON
SHELBURNE
CHARLOTTE
2001 Regional Plan
Base Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
Interstate
US Highway/VT State Highway
Class 1 or 2
Class 3 or 4
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
State
County
Town
Village
Water Body
Public or Military Boundary
regionplan-map1a


Interstate
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Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
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Town
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Water Body
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October 9, 2001
LOCATION
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GRAND ISLE COUNTY
LAMOILLE COUNTY
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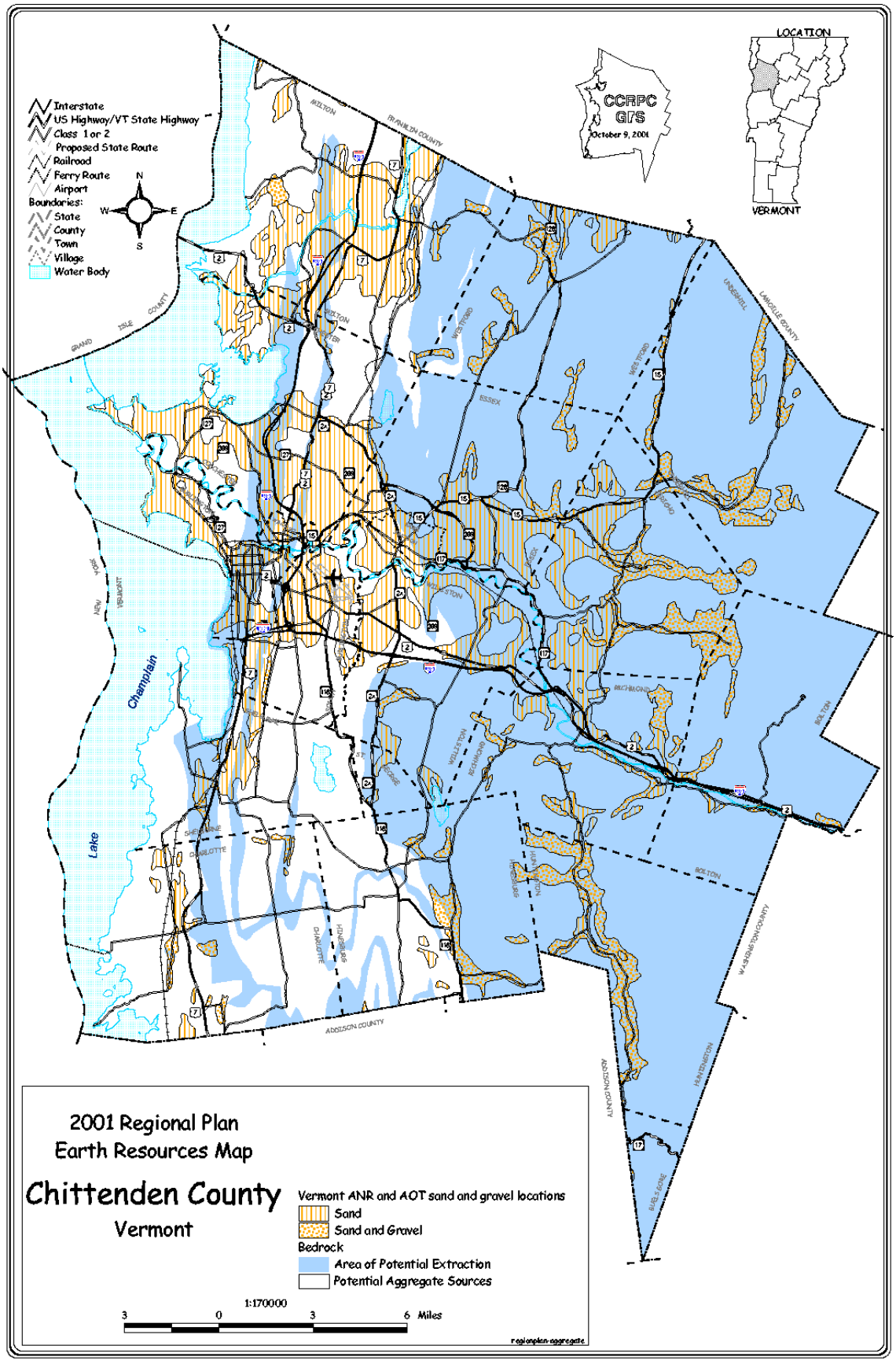
NEW YORK
VERMONT
MILTON
ESSEX
WESTFORD
UNDERHILL
COLCHESTER
WILLISTON
RICHMOND
BOLTON
HUNTINGTON
HINESBURG
CHARLOTTE
SHELBURNE
GEORGE
BURLINGTON
2001 Regional Plan
Bus and Bike Map
Chittenden County
Vermont
1:170000
CCTA Bus Route
Bike Path
Existing Class I or II
Proposed Class I or II
3 0 3 6 Miles
regionplan-busbike


Interstate
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Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
State
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Town
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Water Body
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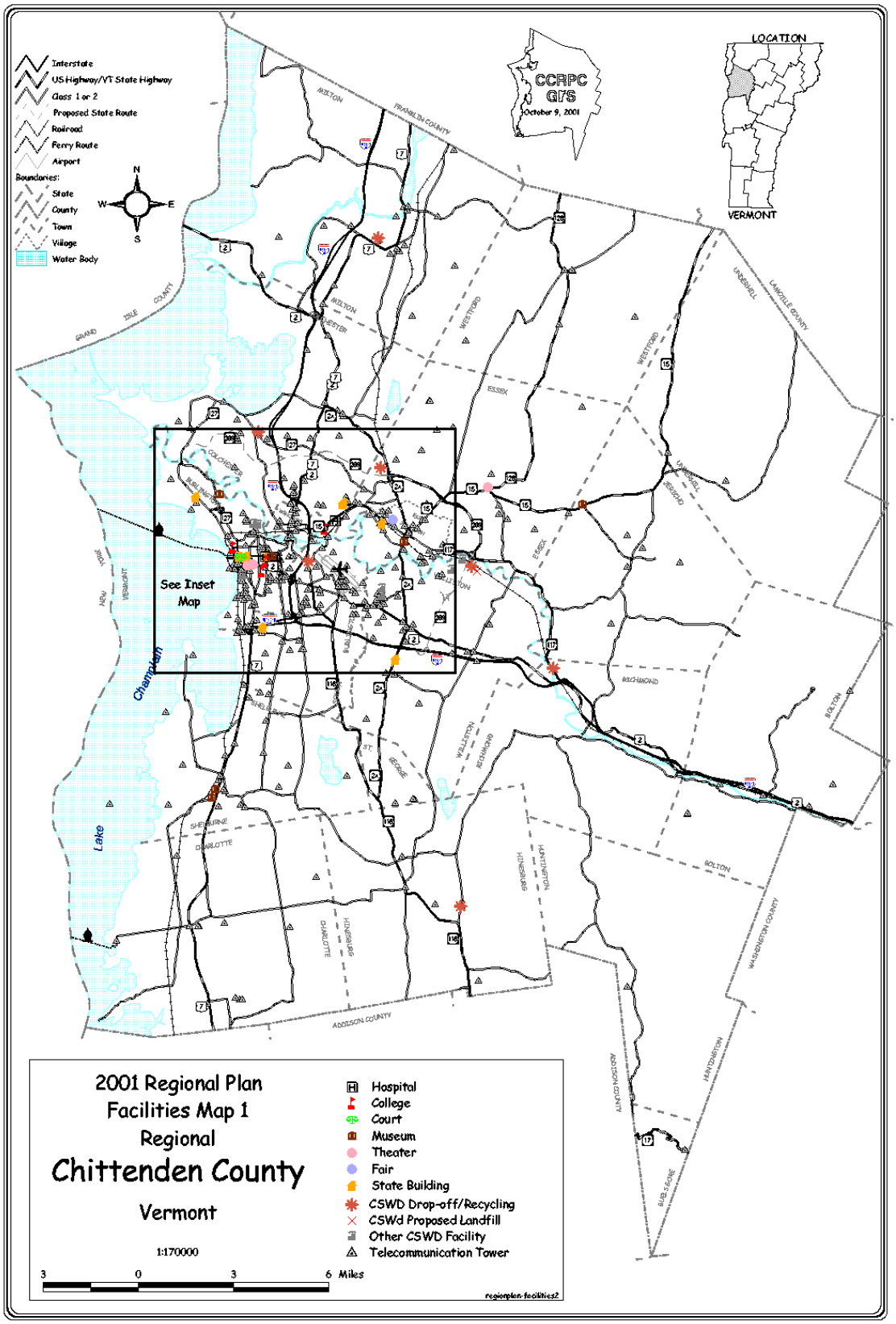
GIS
October 9, 2001
LOCATION
VERMONT
Champlain
Lake
MILTON
FRANKLIN COUNTY
GRAND ISLE COUNTY
ESSEX
WESTFORD
UNDERHILL
LAMOILLE COUNTY
JERICHO
RICHMOND
WILLISTON
HINESBURG
CHARLOTTE
SHELBURNE
BOLTON
WASHINGTON COUNTY
HUNTINGTON
ADDISON COUNTY
NEW YORK
VERMONT
2001 Regional Plan
Earth Resources Map
Chittenden County
Vermont
Vermont ANR and AOT sand and gravel locations
Sand
Sand and Gravel
Bedrock
Area of Potential Extraction
Potential Aggregate Sources
1:170000
3 0 3 6 Miles
regionplan-aggregate


Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
State
County
Town
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Water Body
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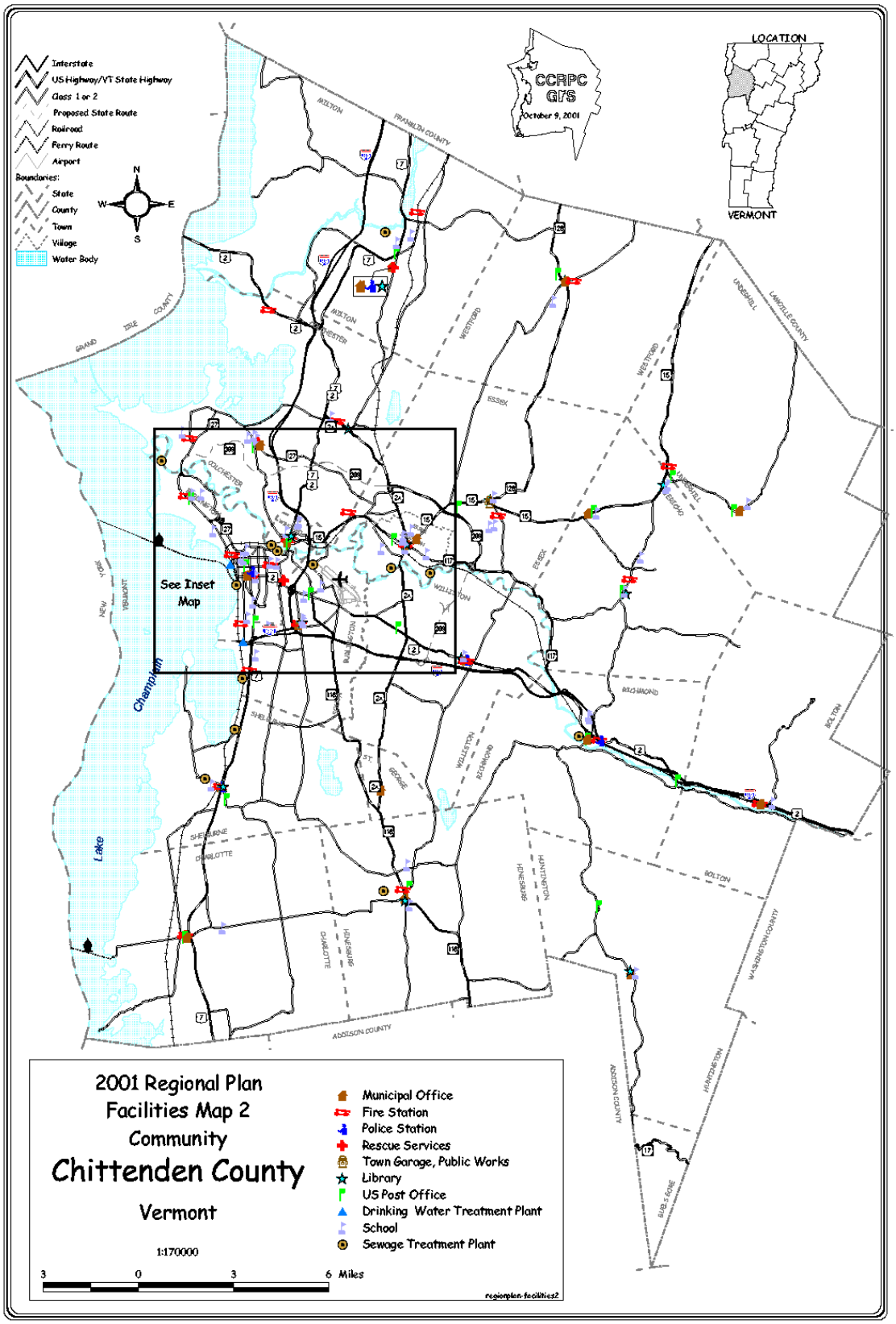
GIS
October 9, 2001
LOCATION
VERMONT
See Inset
Map
Champlain
Lake
ADDISON COUNTY
FRANKLIN COUNTY
GRAND ISLE COUNTY
LAMOILLE COUNTY
WASHINGTON COUNTY
2001 Regional Plan
Facilities Map 1
Regional
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
Hospital
College
Court
Museum
Theater
Fair
State Building
CSWD Drop-off/Recycling
CSWd Proposed Landfill
Other CSWD Facility
Telecommunication Tower
regionplan-facilities2


Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
State
County
Town
Village
Water Body
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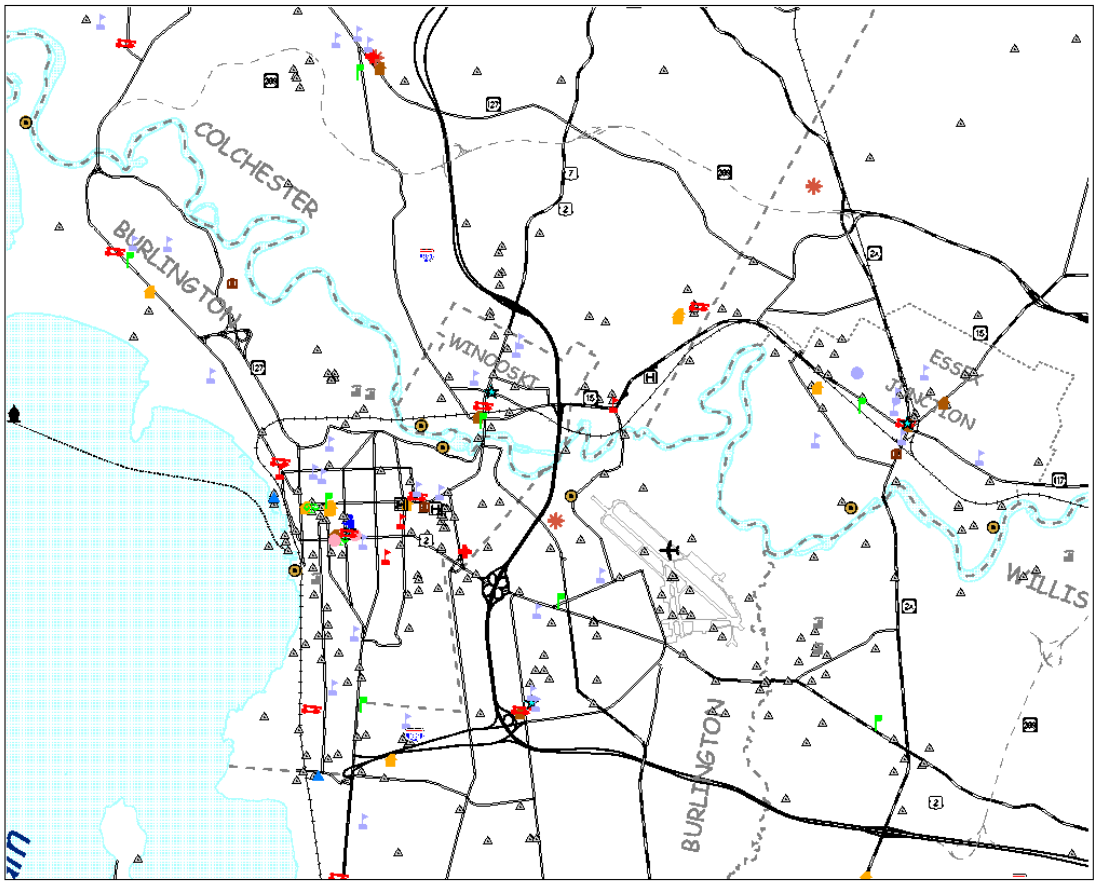
GIS
October 9, 2001
LOCATION
VERMONT
See Inset
Map
Champlain
Lake
2001 Regional Plan
Facilities Map 2
Community
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
Municipal Office
Fire Station
Police Station
Rescue Services
Town Garage, Public Works
Library
US Post Office
Drinking Water Treatment Plant
School
Sewage Treatment Plant
regionplan-facilities2



Regional Plan
Facilities Map 3
Inset - Regional and Community

Chittenden County
Vermont

Regional Facilities

- Hospital
- College
- Court
- Museum
- Theater
- Fair
- State Building
- CSWD Drop-off/Recycling
- CSWd Proposed Landfill
- Other CSWD Facility
- Telecommunication Tower

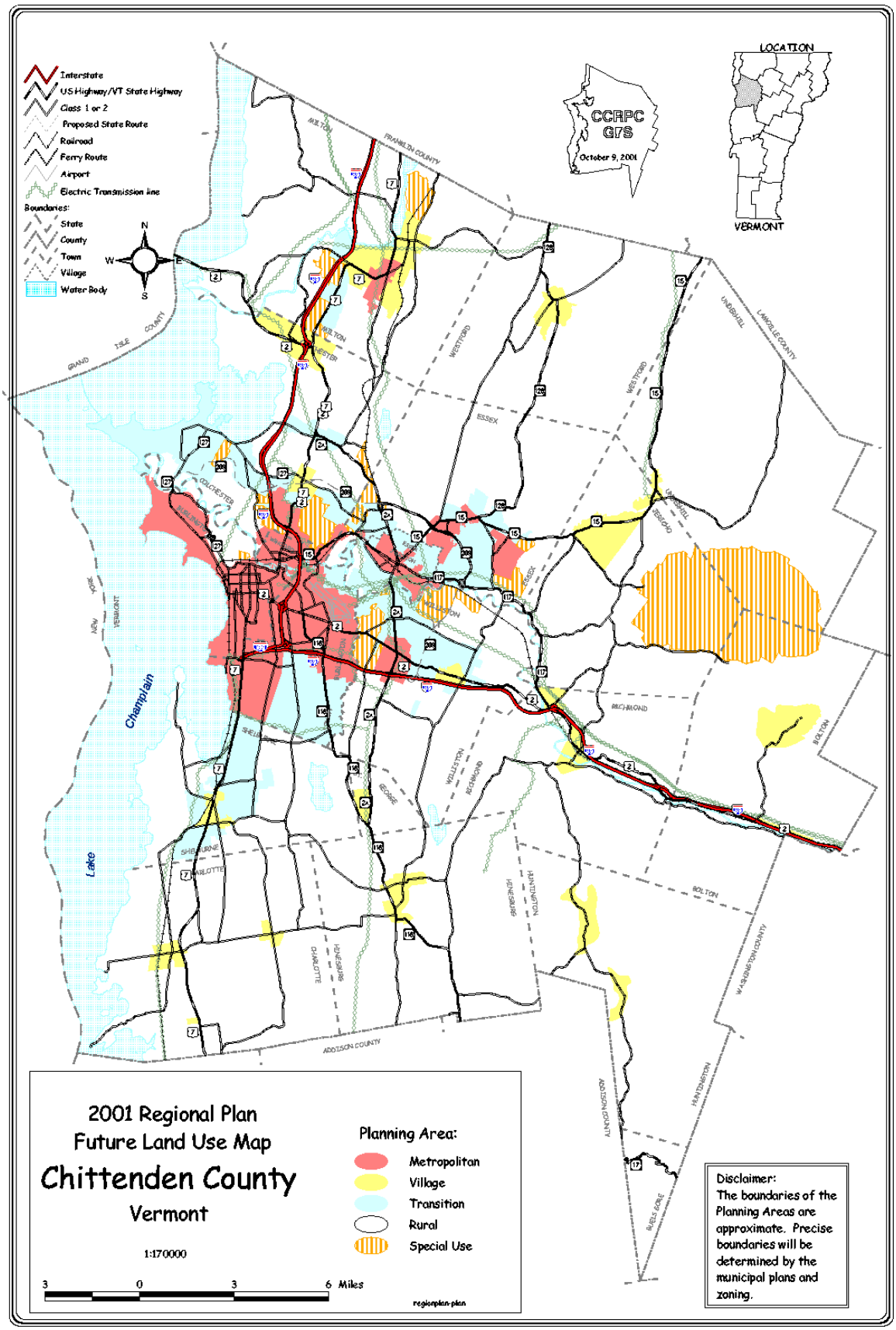
Community Facilities

- Municipal Office
- Fire Station
- Police Station
- Rescue Services
- Town Garage, Public Works
- Library
- US Post Office
- Drinking Water Treatment Plant
- School
- Sewage Treatment Plant

1:60000

1 0 1 2 Miles

regionplan-inset2


Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Electric Transmission line
Boundaries:
State
County
Town
Village
Water Body
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October 9, 2001
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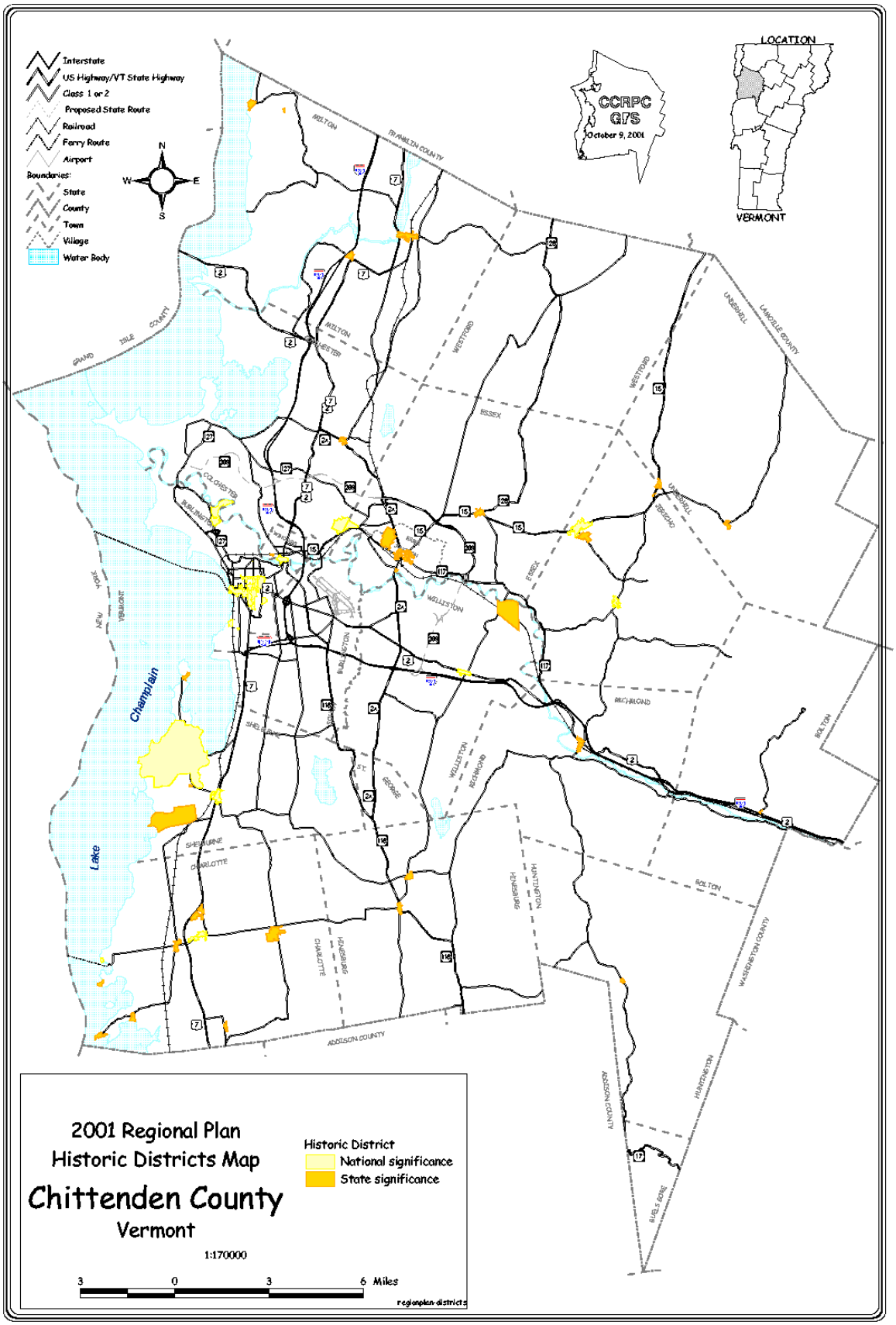
FRANKLIN COUNTY
GRAND ISLE COUNTY
ADDISON COUNTY
WASHINGTON COUNTY
LAMOILLE COUNTY
MILTON
ESSEX
WESTFORD
UNDERHILL
JERICHO
RICHMOND
HUNTINGTON
BOLTON
WILLISTON
SHELBURNE
CHARLOTTE
GEORGE
NEW YORK
VERMONT
2001 Regional Plan
Future Land Use Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
regionplan-plan
Planning Area:
Metropolitan
Village
Transition
Rural
Special Use
Disclaimer:
The boundaries of the Planning Areas are approximate. Precise boundaries will be determined by the municipal plans and zoning.


Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
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Town
Village
Water Body
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CCRPC
GIS
October 9, 2001
LOCATION
VERMONT
Lake Champlain
FRANKLIN COUNTY
GRAND ISLE COUNTY
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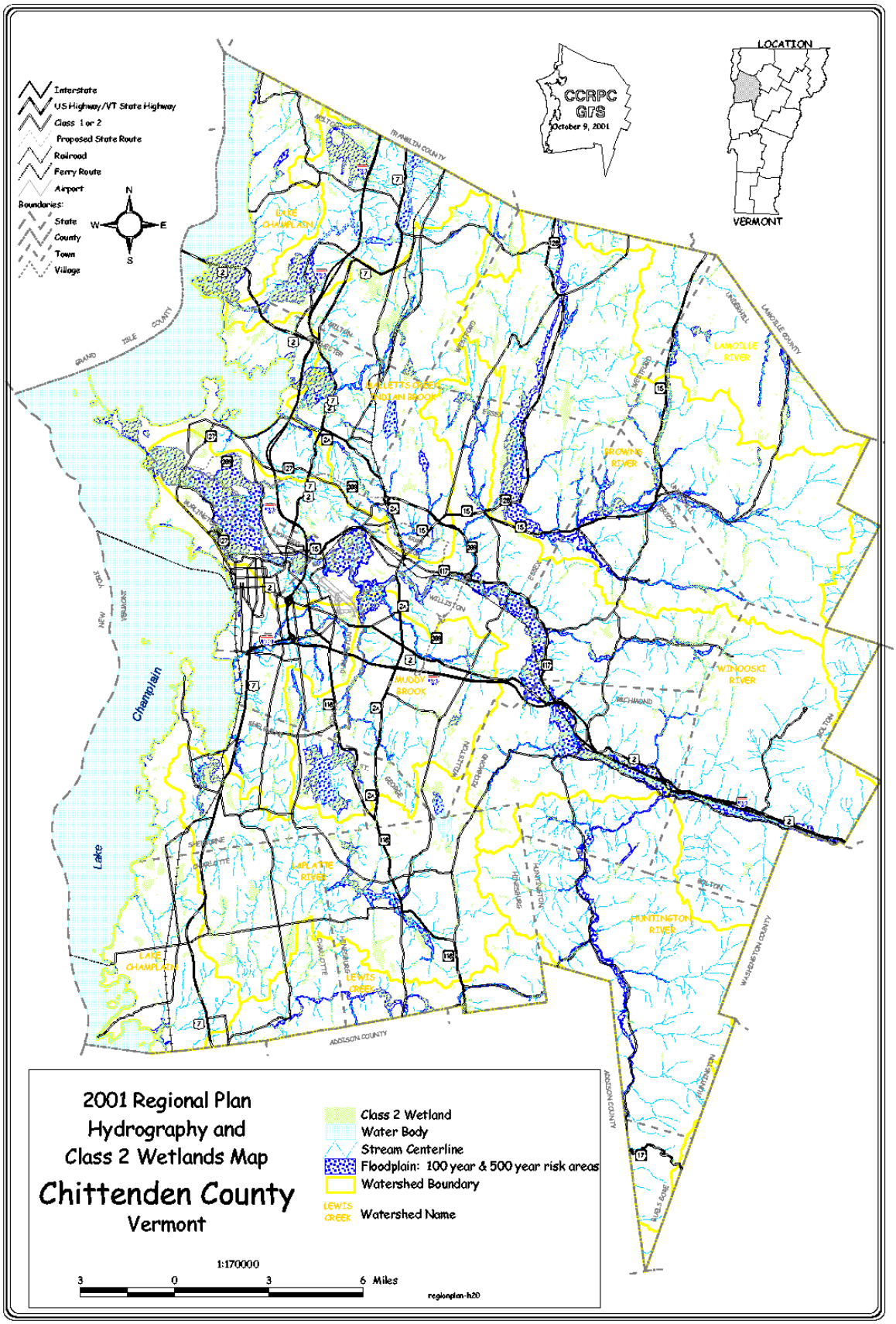
BOLTON
CHARLOTTE
SHELBURNE
COLCHESTER
HINESBURG
2001 Regional Plan
Historic Districts Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
regionplan-districts
Historic District
National significance
State significance



2001 Regional Plan
Hydrography and Class 2 Wetlands Map
Chittenden County
Vermont

Class 2 Wetland
Water Body
Stream Centerline
Floodplain: 100 year & 500 year risk areas
Watershed Boundary
LEWIS CREEK Watershed Name

1:170000

3 0 3 6 Miles

regionplan-h20

MAP METADATA

Disclaimer

The accuracy of information presented is determined by its sources: errors and omissions may exist. Chittenden County Regional Planning Commission is not responsible for these. Questions of on-the-ground location can only be resolved by site inspections, and/or surveys by a registered surveyor. Hence these maps are not sufficient for delineation of features on-the-ground. These maps identify the presence of features, and may indicate relationships between features, but are not a replacement for surveyed information or engineering studies.

Base Map

This map depicts Chittenden County boundaries and base layers. Town, county and state boundaries are shown. These data were developed from 1:5000 orthophoto-base parcel data and 1:24000 USGS topographic quadrangles. The data layer used is a compilation of the most accurate town boundaries available in 1996. This layer has not been updated since 1996.

Interstate, US and state highway, class 1 and 2 road centerlines were developed through the E911 project. The sources for these data were 1:5000 orthophotos or gathered using a global positioning system (GPS). The last update of this data was in 2001. The proposed state route centerline was derived from the 1997 road layer. Greenhorne and O'Mara, Inc. automated the railroad centerline data in 1995. The track centerlines were digitized from 1:5000 orthophotos. This information does not include siding tracks.

Lake Champlain Transportation Company (LCTC) ferryboat routes were automated in 1995. The source maps were 1:24000 and 1:25000 USGS topographic quadrangles.

The Burlington International Airport runways were automated using 1:5000 orthophotos. The last update of this data layer was done in 1994.

The lakes, ponds and rivers of Chittenden County were derived using 1:24000 USGS topographic quadrangles, 1:20000 NRCS soil survey data, and 1:5000 orthophotos. The feature location accuracy varies with the source; however, at this time this is the best available water data.

The public and military lands were extracted from the Vermont Conserved Lands Database. The UVM Spatial Analysis Lab has worked in cooperation with the Vermont Agency of Natural Resources, the Vermont Housing and Conservation Board, the Vermont Land Trust, the Vermont chapter of The Nature Conservancy, regional planning commissions, Vermont municipalities, and other conservation organizations to complete the database for the entire state of Vermont. This public lands extract from the Vermont Conserved Lands Database is a geospatial database, or GIS coverage, of parcels that are currently protected from development through public ownership. The Vermont

Conserved Lands Database was designed to facilitate land conservation planning in Vermont. The database is intended to include all land parcels greater than two acres in area that are expected to remain protected from development or land conversion.

1995 Land Use Map

These data provide a reasonable approximation of 1995 land use in Chittenden County, Vermont. They are suitable for county-level planning use, and can provide a starting point for municipal planning use. At the town level however, errors may be identified and a more detailed delineation of land use may be necessary. For the most part, land use is identified to level II of the Vermont GIS coding standard dated April 1991. This standard is an adaptation of the hierarchical Anderson system.

Since 1:5000 orthophotos for Chittenden County are from 1988, and were judged to be too time-consuming to use as a map base, it was decided to use older 1978 1:20000 orthophoto composites as the mapping base using the below methodology.

To start, the land use coverage was assembled from the outer county boundary, wetlands, surface water, parks, and military land 50 acres or larger. National Wetland Inventory (1:24000 source) data was used for wetlands. Orthophoto composite (1:20000) surface water data extracted from soils data was used for surface waters, with the exception of the Lake Champlain shoreline, which was automated from 1:5000 1988 orthophotos. Park boundaries were assembled from various 1:5000 orthophoto-base municipal parcel boundary data.

With wetland, water, and parcel linework compiled into the land use coverage, mylar plots of these data were generated to overlay the 1:20000 orthophoto composites for drafting. To compensate for the 1978 orthophoto base vintage, parcel boundary data was plotted in yellow on the overlays for each of the Towns where they exist. The Towns without parcel data were Milton, South Burlington, St. George, Huntington, and Buels Gore. The year of the parcel data varied from 1990 to 1995, with the exception of Colchester, which was 1988. For the Towns without parcel data, 1:5000 road centerline data were plotted. The parcel and road centerline linework indicate where additional development occurred since 1978.

Using these overlays and general knowledge of Chittenden County, existing (1995) land use was drafted using the 1:20000 1978 base. Note that while some site visits were done for questionable areas, no 1995 imagery was used in the drafting process, and the reference parcel data dated from the early 1990's.

The source data were at 1:20000, with a resulting data at a resolution of 10 acres. However, during drafting, this threshold was loosely applied. In particular, a smaller, but undefined, threshold was used in strip-developed areas and dense mixed-use areas in urban centers and villages. A 50-acre threshold was used for incorporating wetland, surface water, park, and military use boundary data, as outlined above. Updates were done in 1998 to reflect additional residential and industrial areas in Milton.

It is recognized that the resulting data are a fair representation of 1995 land uses. More dispersed residential and commercial uses are not captured (due to detection threshold). Because a photographic source such as 1995 aerial photography was not

used, errors are certain to exist. With use, these errors will be corrected. Updated orthophotos for Chittenden County were flown in 1999. CCRPC is in the process of developing a new Land Use coverage based off of those orthophotos.

Please see the Base Map documentation for all other information.

Future Land Use Map

The Future Land Use data layer was developed by CCRPC. This data layer began as very general and broad boundary lines. Through discussion with town representatives, the planning areas became more defined. As a result, the boundary lines of the planning areas follow tax parcel, zoning or sewer service areas boundaries.

Please see the Base Map and Gas and Electric Utilities Map documentation for all other information.

Facilities and Inset Maps

The state, regional, and community facilities are point locations identified using 1:5000 orthophotos. Corrections and additions were made to this data layer as municipalities notify the CCRPC. Any changes or additions made in 2000 were done using digital 1:5000 orthophotos.

Please see the Base Map documentation for all other information.

Gas and Electric Utilities Map

This map identifies the location of Hydroelectric and wood fired Generation Facilities (automated in 1994 using 1:5000 orthophotos). This map depicts the electric transmission line corridors and substations. Greenhorne and O'Mara, Inc. automated this data in 1992 using 1:5000 orthophotos. Vermont Electric (VELCO) provided CCRPC with updated electric transmission lines in June, 2001. This map also shows the Vermont Gas service area for Chittenden County. Buffering the Vermont Gas distribution lines by 250 feet generated this service area. The transmission and distribution line data was updated in 2000 using information provided to CCRPC from Vermont Gas.

Please see the Base Map documentation for all other information.

Water Service Area Map

This map identifies areas in Chittenden County that have water service. There are two major water suppliers, Champlain Water District and Burlington Public Works. Jericho, Underhill, Richmond and Hinesburg water districts serve the rest of the service areas.

The Water Supply Division of the Vermont Agency of Natural Resources has delineated areas in which contamination of public community water supplies is most likely to occur. A public community water supply has at least 10 service connections, or

regularly serves an average of at least 25 individuals daily at least 60 days per year. Source Protection Areas (SPA) include Wellhead Protection Areas and Watershed feeding surface water intakes, which supply drinking water to the public. SPAs only exist for Public Community and Bottled Water Systems. SPAs are defined as "the surface and subsurface area from or through which contaminants are reasonable likely to reach a public source."

Please see the Base Map documentation for all other information.

Municipal Sewer Service Area Map

The existing and proposed sewer service areas are depicted in this map. These service areas were updated in 2000 using information provided to CCRPC from the various municipalities. The sewage treatment facilities are points where effluent is discharged into surface waters. The points were located on 1:5000 orthophotos by treatment plant personnel in 1994.

Please see the Base Map documentation for all other information.

Bus and Bike Map

The CCTA bus route data is current as of June 2000. CCTA has kept CCRPC informed of any route changes, additions, or deletions. The bus routes were developed from the road data layer.

Class I bike paths are separated from the automobile lanes on roads using physical barriers, or are removed from roads altogether. Class II bike paths follow roads, and are not separated from automobile travel lanes by physical barriers. Most of the existing and proposed alignments were originally automated through the 1993 Alternative Transportation Path Plan. The planning project was sponsored by the CCMPO and carried out by the consulting firms of T.J. Boyle and Associations, FitzPatrick-Llewellyn, Inc., and Resources Systems Group. Some updates to this data layer were done in 2000 by CCRPC.

Please see the Base Map documentation for all other information.

Historic Districts Map

Historic districts of national and state significance are identified on this map. Using State Historic Sites and Structures surveys and Federal National Register of Historic Places Inventories, the historic district boundaries were compiled. Where possible, parcel boundaries were used for district boundaries. If parcel data did not exist, parcel boundaries were drafted onto 1:5000 orthophotos using paper tax parcel maps as a guide. In most cases, it was not clear if a district boundary was supposed to follow a parcel boundary or not. Therefore, CCRPC took liberty in interpreting the source district maps. The last update to this data layer was in 1995.

Please see the Base Map documentation for all other information.

Soil Septic Suitability Map

This map identifies soils that are suitable for onsite septic. The State Data Table "Top20" was combined with the soils data (uncorrected 1:15840 NRCS soil maps recompiled on 1:5000 orthophotos) to identify the onsite septic capability. Utilizing the Vermont NRCS report "Ancillary Soil Interpretation Ratings for On-Site Sewage Disposal in Vermont", this map groups the seven Ancillary Septic Systems Ratings into three categories. Class 1 and 2 are grouped as conventional systems or good. Class 3 and 4 are grouped as mound systems or fair. Class 5, 6, and 7 are grouped as unsuitable or poor. This map is intended for general planning purposes only. It is not, in any way, intended to replace or supersede an on-site soil investigation.

Please see the Base Map documentation for all other information.

Hydrography and Class 2 Wetlands Map

Class 2 Wetlands were delineated by the USFWS NWI section. They used 1:80000 scale color infrared aerial photos (flown between 1975 and 1978), USGS topo sheets and other mapped and text data to interpret locations of wetlands. The areas were drawn onto topographic maps with a very wide pen; the pen width equals about 80 feet of ground distance on a 1:24000 scale map. The minimum wetland mapping unit is generally wetlands over 3 acres in size. These maps were used by the State of Vermont Agency of Natural resources as a means of creating this data layer. Nearly two-thirds of the wetlands were hand digitized from 1:24000 scale NWI mylars. The remainder of the state was scanned from 1:24000 or 1:25000 scale mylars. These mylars were created by transferring wetland polygon boundaries from 1:62500 scale NWI mylars to 1:24000 scale base maps. The wetland boundaries are very approximate due to the methods used to generate the original maps. Errors of as much as 500 meters have been observed when clearly identifiable boundaries were plotted over 1:5000 scale orthophotos. Most boundaries are expected to be within several hundred meters of their true locations. However, not all wetlands appear on the NWI maps, and some non-wetland areas may appear as wetlands. Review of the NWI maps by the Wetlands Office of the VT Agency of Natural Resources has shown that only a very small percentage (estimated at 1-2%) of the wetlands on the NWI maps are not found on the ground; many of these have been filled in since the 1977 inventory. It is also estimated that there are about 25% more wetlands than appear on the NWI maps, most of these being below 3 acres in size (often closed-canopy wetlands or open water). Discrepancies have been noted between the original 1977 NWI maps and a more recent inventory along the Connecticut River. For more information on the accuracy and use of the NWI maps, contact the Wetlands Office of the Agency of Natural Resources.

The map shows floodplains identified on US Federal Emergency management Agency (FEMA) FIRM's. The FIRM's are not georeferenced, nor do they appear to use a known projection. Georeferencing for automation in a GIS was accomplished through manual overlay of reference features in GIS format such as roads, waterbody shorelines, and stream centerlines. Floodplains are identified along rivers, streams, lakes, ponds, and

wetlands. These data identify possible flood-prone areas, but they do not constitute a delineation of floodplain boundaries.

The watershed boundaries were interpreted from 20-foot contour lines 1:24000 USGS topographic quadrangles. In relatively steep areas, where the contour lines are close together, the positional accuracy of watershed boundaries is the highest. The three major watersheds in Chittenden County are the Lamoille River, Winooski River, and Direct to Lake Champlain.

Please see the Base Map documentation for all other information.

Natural Features of State-wide Value Map

Natural Heritage Areas are sites of threatened or endangered species' habitats, and significant natural communities. Plants and animals tracked by the Vermont Nongame and Natural Heritage Program are native to the State, and considered significant for one or more reasons: they have particular habitat requirements, are on the edge of their ranges and/or are vulnerable to disturbance or collection. Most of the species represented have twenty or less known sites. Significant natural communities are either rare habitat types in Vermont, or are among the best examples in the State of a common community type. The source points for the 300-meter buffers were located on 1:24000 USGS topographic quadrangles. These data are for general planning use only, and are not to be used as a guide for visitation. This data layer was last updated in 1995.

Significant biological natural areas, or Natural heritage areas – general location, were delineated from 1:24000 USGS topographical quadrangles in natural heritage area town inventory reports for Chittenden County. These significant biological natural areas are the result of a two-year inventory by naturalists in the Vermont Agency of Natural Resources Department of Fish and Wildlife Nongame and Natural Heritage Program.

The inventory occurred in 1990 and 1991. The limitations of the inventory and resulting data are important. The natural areas are identified but their boundaries were not delineated and are approximate. The feature accuracy of the linework is defined as 75 meters or 246 feet. These data are not a comprehensive inventory of all significant biological natural areas in Chittenden County. There are more natural areas that have not been identified in these data. The results of the Natural Heritage inventory are contained in a two-part report, "Biological Natural Areas of Chittenden County", by Brett Engstrom and Marc Lapin.

The deer wintering area data includes areas drawn by Vermont Fish & Wildlife Dept. (VFWD) biologists on USGS topographic maps. Sources for these areas were lines drawn on state highway maps, topographic maps, overlays to 1977 infrared photos, written material, and verbal information from VFWD biologists. Some of the sources maps date back to the early 1970's. Areas were mapped and field checked over a period of three decades. The most accurate information available has been compiled and mapped for entry into a GIS. These rough area outlines are to be used for local, department and agency project review and planning. Expected ground accuracy is +/- 500 feet. Better quality surface water data, more current reviews and regular updates of the deer wintering database will soon improve the quality of the data. This data was updated in 1999.

The Vermont Department of Fish and Wildlife published a map of the State of Vermont in 1989 entitled, "Black Bear Habitat in Vermont, 1989". The following statement accompanied this map. "The black bear is a sensitive environmental indicator of Vermont's remote forestland. This map represents the Vermont Fish and Wildlife Department's best estimate of bear range. It has been produced for communities, conservation groups, planners, and others as a land use planning tool to help secure the black bear resource for future generations. Lines are expected to be accurate within one half mile." This data has been updated in 1999. Two types of habitat are shown on the map. The first is Bear Production Habitat, which is described on the source map as, "Regions supporting relatively high densities of cub-producing females." The second type is Seasonal Bear Habitat, which is described on the source map as, "Regions frequently used by bears, including cub-producing females. These habitats often contain critical seasonal feeding areas and vital travel corridors."

Please see the Base Map documentation for all other information.

Primary Agricultural Soils Map

The State Data Table, Top20, was combined with the soils data (uncorrected 1:15840 NRCS soil maps recompiled on 1:5000 orthophotos) to identify the primary agricultural soils. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, and acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Users of prime farmland map units should recognize that soil properties are only one of several criteria that are necessary. See the National Soil Survey Handbook for a complete definition. This map is intended for general planning purposes only. It is not, in any way, intended to replace or supersede an on-site soil investigation.

Please see the Base Map documentation for all other information.

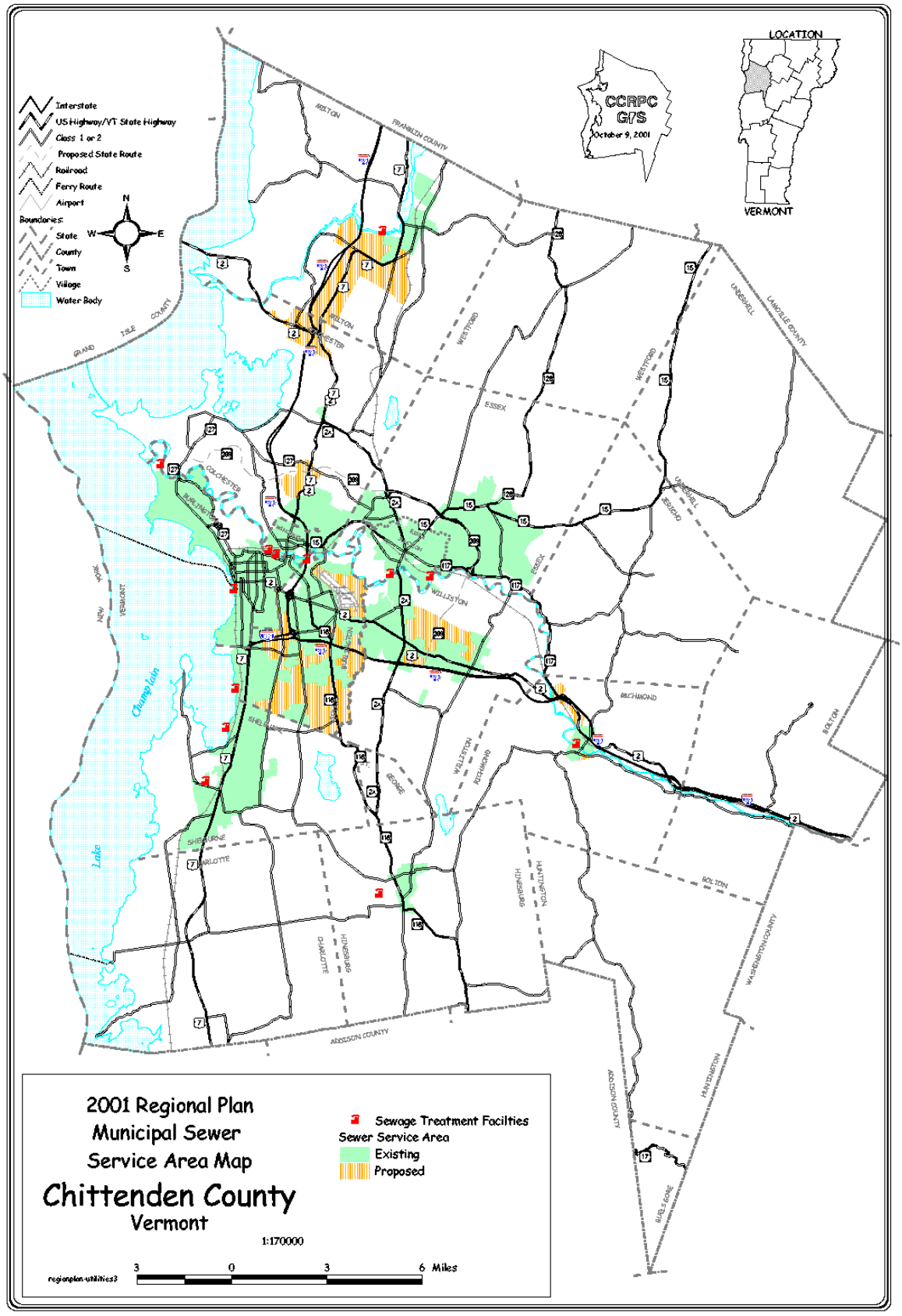
Recreation Resources Map

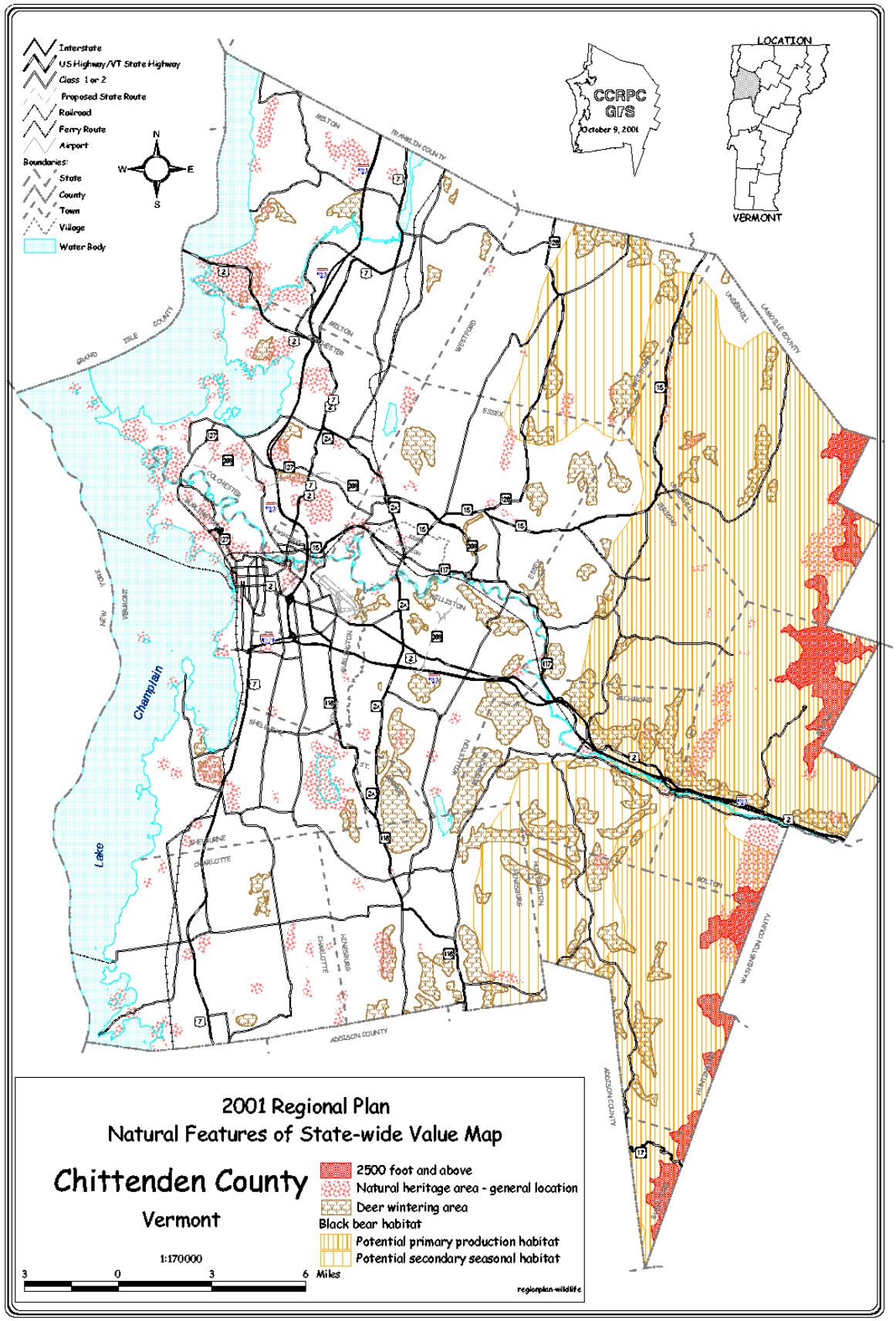
Outdoor recreation facility/sites are points for recreation types not done under a roof. This does not include dispersed recreation on private land. These points were identified using 1:5000 orthophotos. This data layer was last updated in 2000.

Class I bike paths are separated from the automobile lanes on roads using physical barriers, or are removed from roads altogether.

The Catamount Ski Trail, Long Trail, and VAST snowmobile trail were clipped from a statewide data layer. The data was hand drawn on USGS Topographic quads by foresters of the Vermont Department of Forests, Parks, & Recreation using orthophotos, survey data, and personal knowledge of the area as references.

Please see the Base Map documentation for all other information.


Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
State
County
Town
Village
Water Body
N
W
E
S
CCRPC
GIS
October 9, 2001
LOCATION
VERMONT
FRANKLIN COUNTY
GRAND ISLE COUNTY
ADDISON COUNTY
WASHINGTON COUNTY
LAMOILLE COUNTY
BOLTON
ESSEX
WESTFORD
UNDERHILL
JERICHO
COLCHESTER
WILLISTON
RICHMOND
HUNTINGTON
CHARLOTTE
SHELBURNE
GEORGE
BURLINGTON
NEW YORK
VERMONT
Lake Champlain
2001 Regional Plan
Municipal Sewer
Service Area Map
Chittenden County
Vermont
1:170000
Sewage Treatment Facilities
Sewer Service Area
Existing
Proposed
3 0 3 6 Miles
regionplan-utilities3



2001 Regional Plan

Natural Features of State-wide Value Map

Chittenden County

Vermont

1:170000

3 0 3 6 Miles

2500 foot and above

Natural heritage area - general location

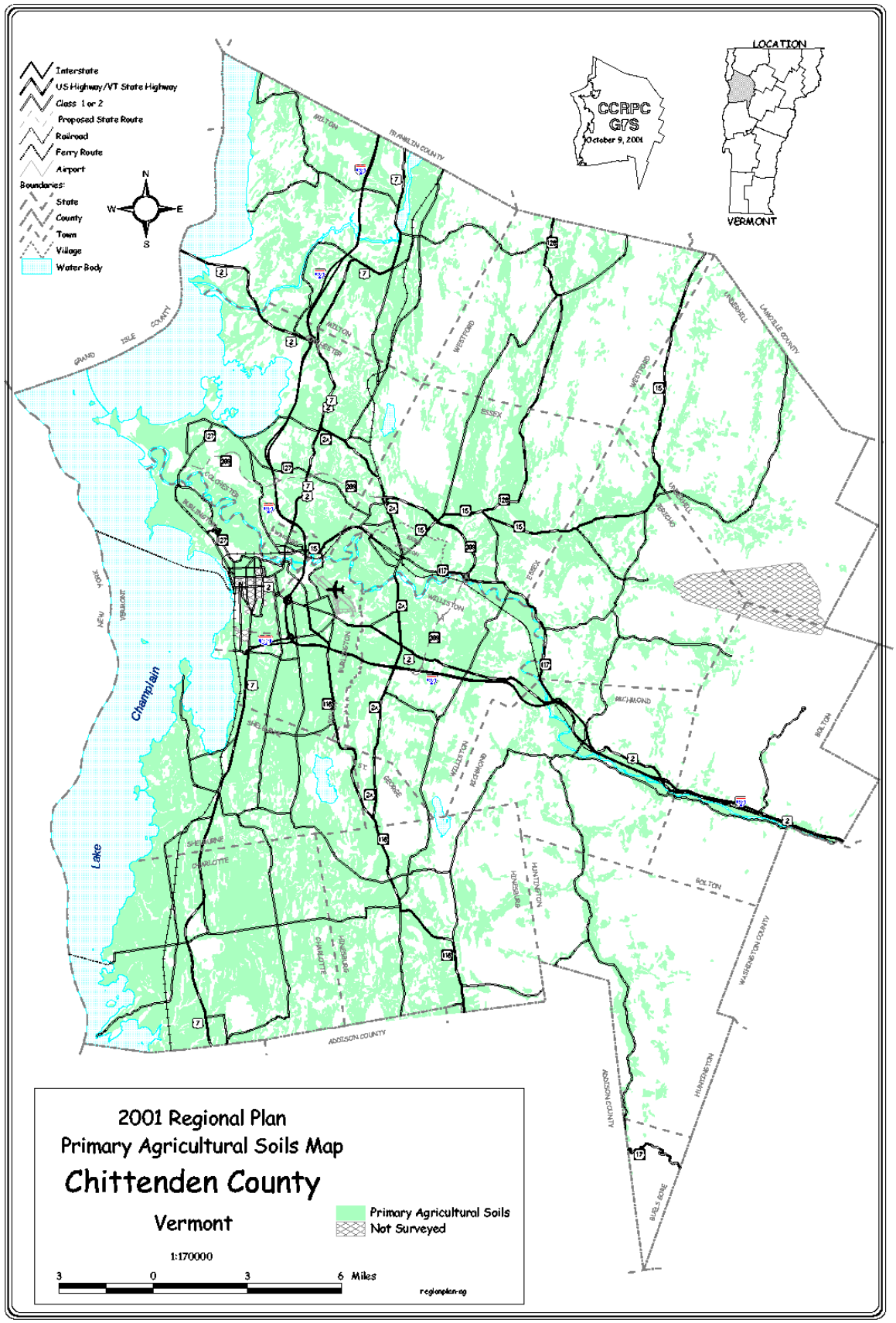
Deer wintering area

Black bear habitat

Potential primary production habitat

Potential secondary seasonal habitat

regionplan-wildlife


Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
Railroad
Ferry Route
Airport
Boundaries:
State
County
Town
Village
Water Body
N
W
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CCRPC
GIS
October 9, 2001
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Lake Champlain
FRANKLIN COUNTY
GRAND ISLE COUNTY
ADDISON COUNTY
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LAMOILLE COUNTY
BOLTON
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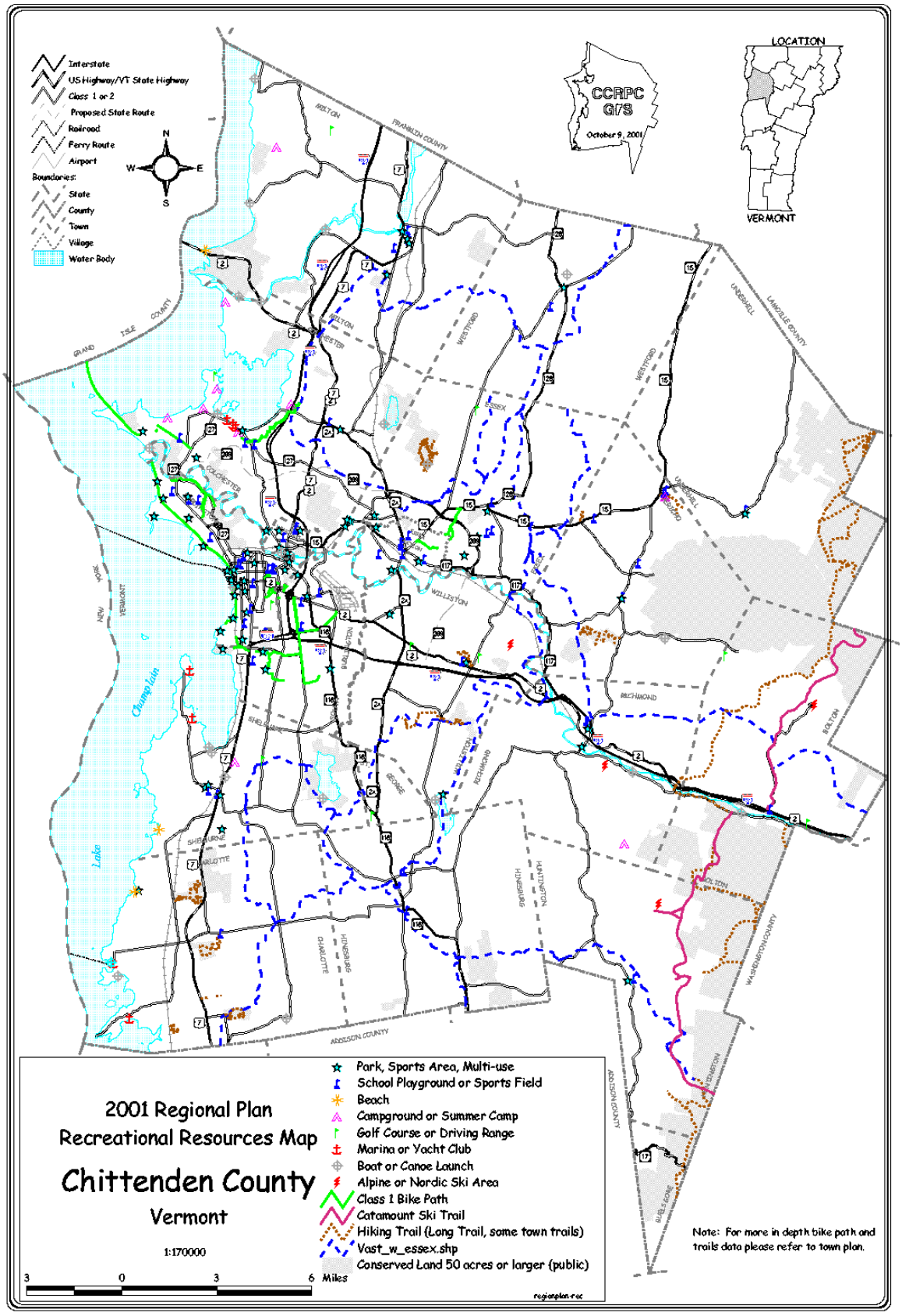
RICHMOND
WILLISTON
HINESBURG
HUNTINGTON
CHARLOTTE
SHELBURNE
COLCHESTER
MILTON
JERICHO
UNDERHILL
NEW HAVEN
VERGENNES
BUELS GORE
2001 Regional Plan
Primary Agricultural Soils Map
Chittenden County
Vermont
Primary Agricultural Soils
Not Surveyed
1:170000
3 0 3 6 Miles
regionplan-ag


Interstate
US Highway/VT State Highway
Class 1 or 2
Proposed State Route
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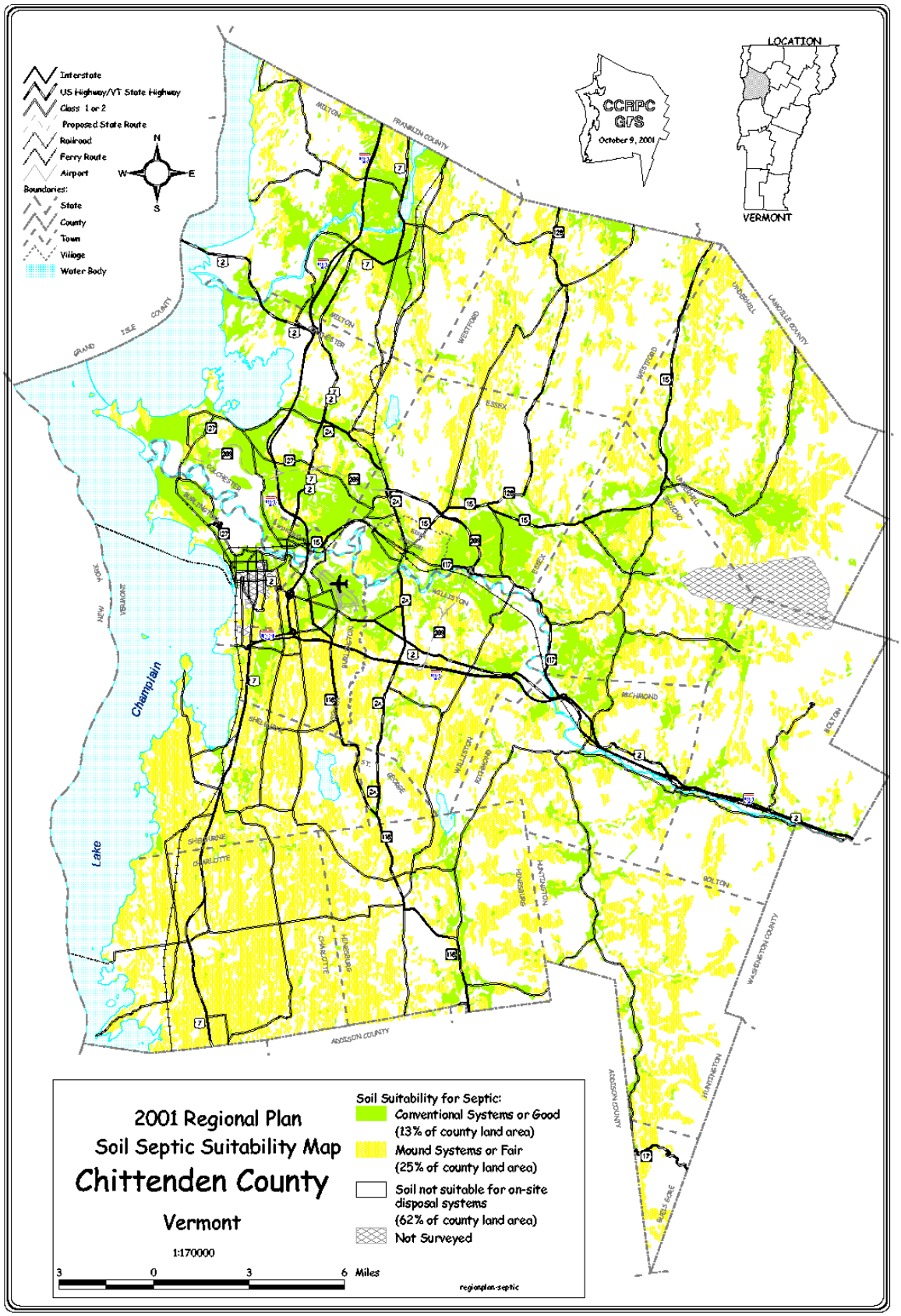
RICHMOND
HUNTINGTON
CHARLOTTE
SHELBURNE
GEORGE
2001 Regional Plan
Recreational Resources Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
Park, Sports Area, Multi-use
School Playground or Sports Field
Beach
Campground or Summer Camp
Golf Course or Driving Range
Marina or Yacht Club
Boat or Canoe Launch
Alpine or Nordic Ski Area
Class 1 Bike Path
Catamount Ski Trail
Hiking Trail (Long Trail, some town trails)
Vast_w_essex.shp
Conserved Land 50 acres or larger (public)
regionplan.rec
Note: For more in depth bike path and trails data please refer to town plan.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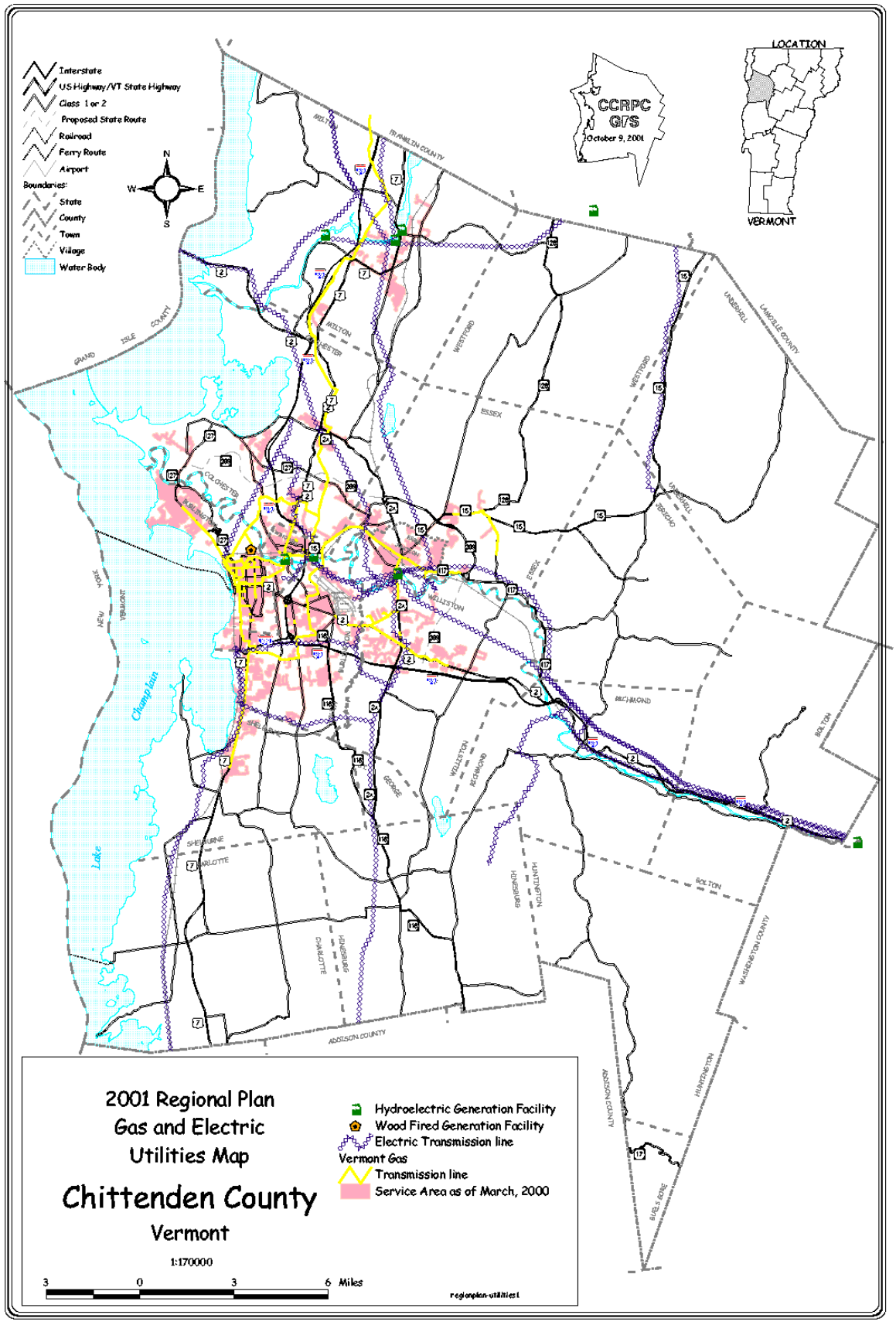
BOLTON
WILLISTON
SHELBURNE
CHARLOTTE
HINESBURG
ST. GEORGE
NEW YORK
VERMONT
2001 Regional Plan
Soil Septic Suitability Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
Soil Suitability for Septic:
Conventional Systems or Good
(13% of county land area)
Mound Systems or Fair
(25% of county land area)
Soil not suitable for on-site
disposal systems
(62% of county land area)
Not Surveyed
regionplan-septic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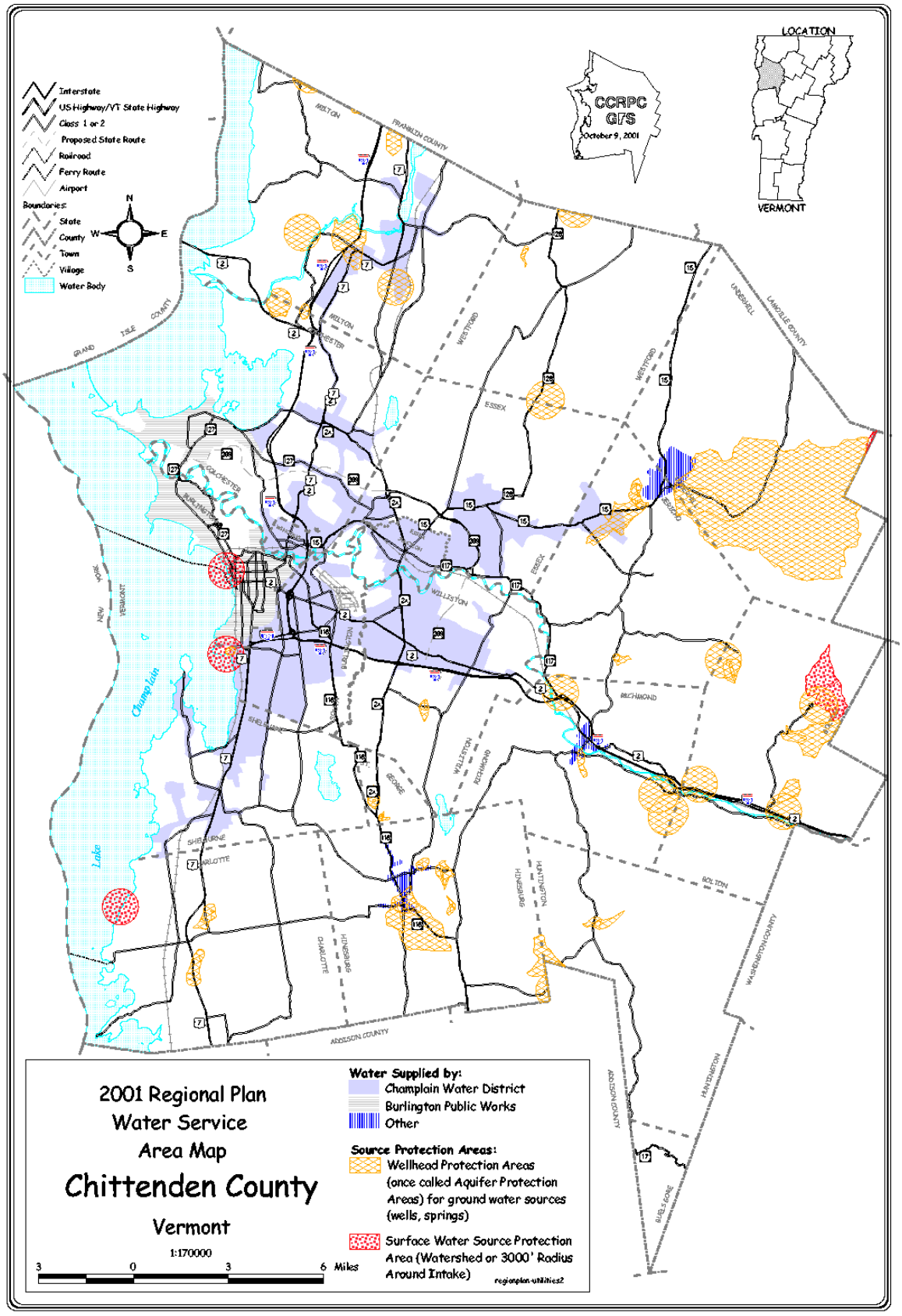
RICHMOND
BOLTON
HUNTINGTON
SHELBURNE
CHARLOTTE
HINESBURG
GEORGE
New York
Vermont
Lake Champlain
2001 Regional Plan
Gas and Electric
Utilities Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
Hydroelectric Generation Facility
Wood Fired Generation Facility
Electric Transmission line
Vermont Gas
Transmission line
Service Area as of March, 2000
regionplan-utilities1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S
CCRPC
GIS
October 9, 2001
LOCATION
VERMONT
Lake Champlain
2001 Regional Plan
Water Service
Area Map
Chittenden County
Vermont
1:170000
3 0 3 6 Miles
Water Supplied by:
Champlain Water District
Burlington Public Works
Other
Source Protection Areas:
Wellhead Protection Areas
(once called Aquifer Protection
Areas) for ground water sources
(wells, springs)
Surface Water Source Protection
Area (Watershed or 3000' Radius
Around Intake)
regionplan-utilities2