2013 Chittenden County ECOS Plan

Adopted 6/19/2013
AMENDED 5/18/2016

For a healthy, inclusive, and prosperous community

Chittenden County RPC
Communities Planning Together

GBIC
Good Jobs In A Clean Environment

This plan is the Regional Plan, Metropolitan Transportation Plan, and Comprehensive Economic Development Strategy in one.

This plan can be found online at: www.ecosproject.com/plan

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ACKNOWLEDGEMENTS

This document is an important milestone in an unprecedented effort to acknowledge and act upon the interconnectedness of our County's institutions and towns. The challenges before us cannot be successfully addressed unless we operate from a big-picture perspective, one in which we share a common vision for the future. This five-year ECOS plan fully builds on the interrelationships between land use, housing, health and human services, transportation, economic development, education and equity, and recommends eight broad strategies to help us attain our goals.

This tremendous work would not have been possible without the time and effort of many people, and the imprimatur from their organizations, who contributed many hours to research, meetings, reviewing and shaping this document. This has truly been a collective, and collaborative effort.

This would not have occurred without the foresight of the GBIC and CCRPC Boards, who encouraged application for the three-year grant from the Environmental Protection Agency, the Department of Transportation, and Housing and Urban Development, which administers the grant through its Sustainable Communities Regional Planning Grant Program.

We celebrate the effort and this Plan, and look forward to creating the future of our County with you.

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Chittenden County Regional Planning Commission (CCRPC)
Resolution

Amendments to the Chittenden County ECOS Plan – the Regional Plan, Metropolitan Transportation Plan & the Comprehensive Economic Development Strategy

WHEREAS, CCRPC engaged in a two year planning process from 2011 to 2013, known as ECOS, to update Chittenden County's Regional Plan, Metropolitan Transportation Plan and the Comprehensive Economic Development Strategy through the ECOS process; and

WHEREAS, the ECOS process was driven by a 65 member Steering Committee made up of the 19 municipalities and various government, non-profit and business organizations; and

WHEREAS, the ECOS process resulted in the ECOS Plan which contains the required Regional Plan elements as described in VSA, Title 24, Chapter 117, Section 4348a, the required Metropolitan Transportation Plan elements as described in 23 CFR Part 450, and the required Comprehensive Economic Development Strategy elements as described in 13 C.F.R. part 303.6; and

WHEREAS, on June 19, 2013, in compliance with 24 V.S.A. § 4348, CCRPC adopted the ECOS Plan as the Chittenden County Regional Plan, in compliance with 23 CFR Part 450, CCRPC adopted the ECOS Plan as the Chittenden County Metropolitan Transportation Plan, and in compliance with 13 CFR 303.6, CCRPC supported the adoption by GBIC of the ECOS Plan as the Chittenden County Comprehensive Economic Development Strategy; and

WHEREAS, the CCRPC has undergone a process to amend Regional Plan components of the 2013 ECOS Plan; and

WHEREAS, the CCRPC held two warned public hearings to review and seek comments on the amendments, preceded by 30 day public comment periods, on March 16, 2016 and on May 18, 2016 at the CCRPC offices at 110 W. Canal Street, Suite 202 in Winooski VT.

NOW, THEREFORE, BE IT RESOLVED BY THE CHITTENDEN COUNTY REGIONAL PLANNING COMMISSION, that, in compliance with 24 V.S.A. § 4348, 23 CFR Part 450, and CCRPC adopts the amendments to the ECOS Plan; and

BE IT FURTHER RESOLVED BY THE CHITTENDEN COUNTY REGIONAL PLANNING COMMISSION, that, in compliance with 13 CFR 303.6, CCRPC supports the adoption by GBIC of the amendments to the ECOS Plan.

Dated at Winooski, this 18th day of May, 2016.

CHITTENDEN COUNTY REGIONAL PLANNING COMMISSION

Andrew H. Montroll, Chair

2013 Chittenden County ECOS Plan

CHAPTER 1 - INTRODUCTION

1.0 Introduction

Environment. Community. Opportunity. Sustainability.

- The ECOS Project is both a process and a plan for managing sustainable growth in Chittenden County.
- The ECOS Project is a unique opportunity for municipalities, organizations, businesses and residents to work together to preserve and improve our quality of life.
- The ECOS Project is for anyone and everyone interested in how we live, work and play together in Chittenden County.

Three Plans Combined Into One

The Chittenden County Regional Planning Commission (CCRPC) is charged by the State of Vermont with preparing a regional plan at least every eight years to protect the County's resources and to guide its development. The CCRPC is also charged with establishing a Metropolitan Transportation Plan every five years to address the long term transportation needs of Chittenden County. The Greater Burlington Industrial Corporation (GBIC) is charged with establishing a Comprehensive Economic Development Strategy (CEDS) every five years to establish economic development priorities for Chittenden County. More detail on the purpose of these plans can be found in Chapter 4. An opportunity to update all three regional planning documents with one process became available when the region received a Partnership for Sustainable Communities grant (a partnership of Federal Housing and Urban Development, Environmental Protection Agency, and US Department of Transportation). The ECOS Plan ***is*** the combined Chittenden County Regional Plan, Metropolitan Transportation Plan and Comprehensive Economic Development Strategy.

Community and regional planning enable people with different outlooks and awareness to learn about important and sometimes controversial matters, to agree on common objectives, and to collaborate on undertaking coordinated agendas of actions. Public planning should strive to engage people not only because our laws and democratic traditions require it, but also because public engagement makes planning better. Effective public planning promotes:

- Greater understanding of key facts;
- Deeper and more widespread appreciation of divergent views;

- Increased consensus on important goals and objectives; and
- Improved collaboration among stakeholders.

Planning for an entire region is especially challenging. While we all agree that Chittenden County should be a "great place to live, work and play," there are myriad visions of exactly how such a place should look and which actions we should undertake to achieve this goal. The *ECOS Plan* is intended to articulate the current consensus for our County's future.

Document Overview

This planning document roughly parallels the process of creating the plan, and is in 4 main sections:

1. Overview and Vision, including demographic information of the area
2. Analysis and Current Conditions, culminating in a list of 31 high-priority concerns
3. Strategies and Actions, integrated approaches addressing concerns
4. Using the Plan, as the Regional Plan, Comprehensive Economic Development Strategy (CEDS), and Metropolitan Transportation Plan (MTP)

1.1 ECOS Process Summary

The ECOS grant allowed CCRPC and GBIC to significantly expand both the depth of analysis and public engagement in developing a unified Regional, Transportation, and Economic Plan for Chittenden County. Beginning in March 2011, 65 partner organizations and many others have gone through a five phase process to develop this Plan (see below). All participants signed a memorandum of understanding agreeing to participate in the process, and to review the work with their individual organizations that they were representing. In addition, GBIC formed a CEDS committee composed of the GBIC board and Cynosure board members. The composition of this committee was intended to comply with EDA requirements for overseeing the preparation of a CEDS.

The ECOS Planning process started with the agreement of several key principles: transparency of process, setting priorities at each step, and accountability. Additionally, there has been a focus on building on previous planning work rather than starting from scratch, as much great work has already been done; and there has been a strong emphasis on community engagement.

The results of this collaborative process can be divided into two parts: analysis and actions. The first part (Chapter 2) looks at community goals, with an analysis of our existing situation, and establishes key indicators to measure our progress on an annual basis. Out of that process came a list of 33 concerns. The second part (Chapter 3 and 4) looks at the choices we have to address these needs and recommends priority strategies and actions with a focus on implementation.

There is a commitment to annually measuring the community indicators to see if we are achieving our goals and also measuring our collective performance in implementing the actions. This is similar to the Results-based Accountability Model™ that is used by United Way and many other organizations.

The specific process the ECOS Steering Committee and partners went through to develop this plan is summarized below.

1. Goals (found in Chapter 2) – based on the 60 existing planning documents.
    a. ECOS Steering Committee Retreat – Held on May 25, 2011 to vet the Draft Goal Statements; there were 67 participants.

   b. Public review from July 14 to September 30, 2011 including sub-committee reviews resulting in 123 comments from 65 groups/individuals.
   c. Vision, Principles, and Goals were approved by the ECOS Steering Committee on October 26, 2011.
2. Analysis (referenced in Chapter 2, specific reports are here: www.ecosproject.com/analysis)
   a. Technical experts were brought in to analyze topic areas including economy, housing, land use and transportation, energy, natural resources, public health, education, and climate change. It is important to note that the land use and transportation analysis report is based on a significant scenario planning exercise conducted by the CCRPC (CCMPO at that time) from 2008 to 2010. Over 900 people participated in the workshops and follow-up survey. More detail about the scenario planning exercise is provided in Chapter 3.
   b. Public review from November 15 to December 31, 2011 resulting in 686 comments from 18 individuals/groups. At the same time the technical experts and sub-committees continued to review and improve the analysis reports.
   c. Analysis Reports were accepted by the ECOS Steering Committee on January 25, 2012.
3. Indicators (found in Chapter 2)
   a. The University of Vermont Center for Rural Studies assisted with creating a possible list of indicators that will help monitor our progress toward goal attainment on an annual basis.
   b. The draft Indicators were released for public review from February 1 to March 16, 2012. Over 400 comments were received.
   c. The Interim Indicator Report was accepted by the ECOS Steering Committee on April 25, 2012.
   d. The ECOS Steering Committee, CEDS Committee, CCRPC's Long Range Planning Committee and sub-committees (Natural Systems, Transportation, Social Community, Health, Education, Climate, Economic Development, Energy, and Housing) reviewed and recommended revised Indicators between July and September, 2012. These revisions are reflected in Chapter 2 of this ECOS Plan.
4. Plan Priorities (found in Chapter 3)
   a. Public engagement activities managed by Burlington City Arts were conducted from June through August to gather more community input on concerns and strategies for addressing those concerns. 130 hours of public engagement took place in these efforts with over 600 people participating. See more detail about these activities below.
   b. In order to connect with as many diverse constituents as possible, CCRPC's Equity Coordinator, met with representatives from community and issue-oriented groups and organizations whose priorities are to serve marginalized communities. Input from over 600 people has been collected over the eighteen month process. See more detail about this public engagement below.
   c. The ECOS Steering Committee, CEDS Committee, CCRPC's Long Range Planning Committee, sub-committees and partners developed concerns and recommended strategies and actions between July and October, 2012. The concerns are listed at the end of Chapter 2. Over-arching strategies and actions are in Chapter 3.
   d. These concerns, strategies and actions were incorporated into the Discussion Draft of the ECOS Plan, which was reviewed by the public between November 15 and December 31, 2012. A specific public engagement website tool was created to get

direct feedback on the strategies and actions. Approximately 400 people participated - 130 comments were made, 2800 votes were cast. The most favorable responses were related to the water quality, planned development, and economic development strategies. Direct discussions were also held with each municipality's elected body from November, 2012 through January, 2013.

5. Plan Implementation
    a. The ECOS Steering Committee, CCRPC's Long Range Planning Committee and sub-committees and partners developed draft ECOS Criteria for prioritizing ECOS Grant projects between April 25 and July 25, 2012.
    b. A request for proposed ECOS Grant projects was released on August 1, 2012 with proposals submitted by September 15, 2012. 55 grant applications were received for a total request of $2,205,537 and a total proposed investment of $4,274,715.
    c. The ECOS Steering Committee awarded grant funds to eight (8) projects, for a total of $280,000 on October 24, 2012. These can be found in the ECOS Project list located in Appendix A of this Plan.
6. ECOS Plan Adoption
    a. The revised Draft ECOS Plan was approved by the ECOS Steering Committee on January 30, 2013 and recommended to CCRPC and CEDS Committee for adoption.
    b. The CCRPC Executive Committee, on behalf of the full Board, approved the first Public Hearing Draft on February 6, 2013. The second Public Hearing Draft was approved by CCRPC and the CEDS Committee on April 17, 2013.
    c. Public hearings were held by CCRPC on March 20, 2013 and May 22, 2013. Both of these hearings were preceded by 30 day public comment periods.
    d. The Chittenden County ECOS Plan was adopted by CCRPC on June 19, 2013 and by GBIC/CEDS Committee on June 25, 2013.

Community Engagement Specifics

Community engagement is the foundation of the ECOS Plan. Meaningful community engagement breaks down silos and shrinks the distance between people from diverse and divergent perspectives, expertise, and experience. In order to build a vision and create a plan that leads to equitable access and opportunities for everyone, engagement must include people of all income, racial, and ethnic groups, with particular attention to groups that have been historically left out of the public policy decision-making processes. Intentional and innovative methods need to be developed that foster inclusion of and engagement by low-income communities and communities from underrepresented racial and ethnic groups.

Meaningful community engagement is not a one-time interview or survey; it is the development of an ongoing relationship with a continuous loop for input and feedback on decisions and outcomes. Successful community engagement leads to transformative engagement where democratic mechanisms are created to ensure that shared power and decision-making control are vested in marginalized communities.

As in the rest of the country, demographics in Chittenden County are dramatically changing. While the White, non-Hispanic population has slowly grown about four percent from 2000 to 2010, the population of underrepresented racial and ethnic groups has grown at a much more rapid pace, most over fifty percent.(See Figure 11) Chittenden County also has a growing population of those who make under 200% of the federal poverty level. (See http://aspe.hhs.gov/poverty/index.cfm.) Due to these changing

demographics, it is critical to establish inclusive methods for outreach and meaningful engagement so we may achieve greater equitable outcomes for our region. In order to connect with as many historically underrepresented constituents as possible, CCRPC's Equity Coordinator met with individuals from community and issue-oriented groups and organizations whose priorities are to serve marginalized communities. The Equity Coordinator also met with key informants and informal leaders of various underrepresented ethnic and cultural groups. Input from over 600 people from marginalized communities has been collected over an eighteen month process. An initial large gathering of representatives from diverse cultural groups took place on September 24, 2011 to introduce the ECOS project and invite their input and participation. Follow up meetings for input and feedback have included individual meetings, personal interviews, focus groups, and various gatherings. Input has been collected from people in the following groups: persons of various socioeconomic statuses, diverse racial and ethnic communities, the aged and the young. New Americans that participated include immigrants from: Bosnia, Bhutan, Burundi, the Congo, Iraq, Kenya, Russia, Somali, including both Somali Bantu and ethnic, Sudan, Turkey, and Vietnam. The Equity Coordinator ensured that feedback was continuous through the development of this Plan.

In addition, the ECOS Project teamed-up with organizational partner Burlington City Arts to do outreach and community engagement. The goal was to learn about residents' priorities for initiatives – "***What*** should we do and ***who*** should do it? – by engaging community members in different creative endeavors as a means to reflect on what's important to them: what they like about living here, and what they would like to see change. Rather than conducting a survey, this creative, qualitative approach was meant to explore peoples' ideas and feelings about the institutions they interact with and their surroundings.

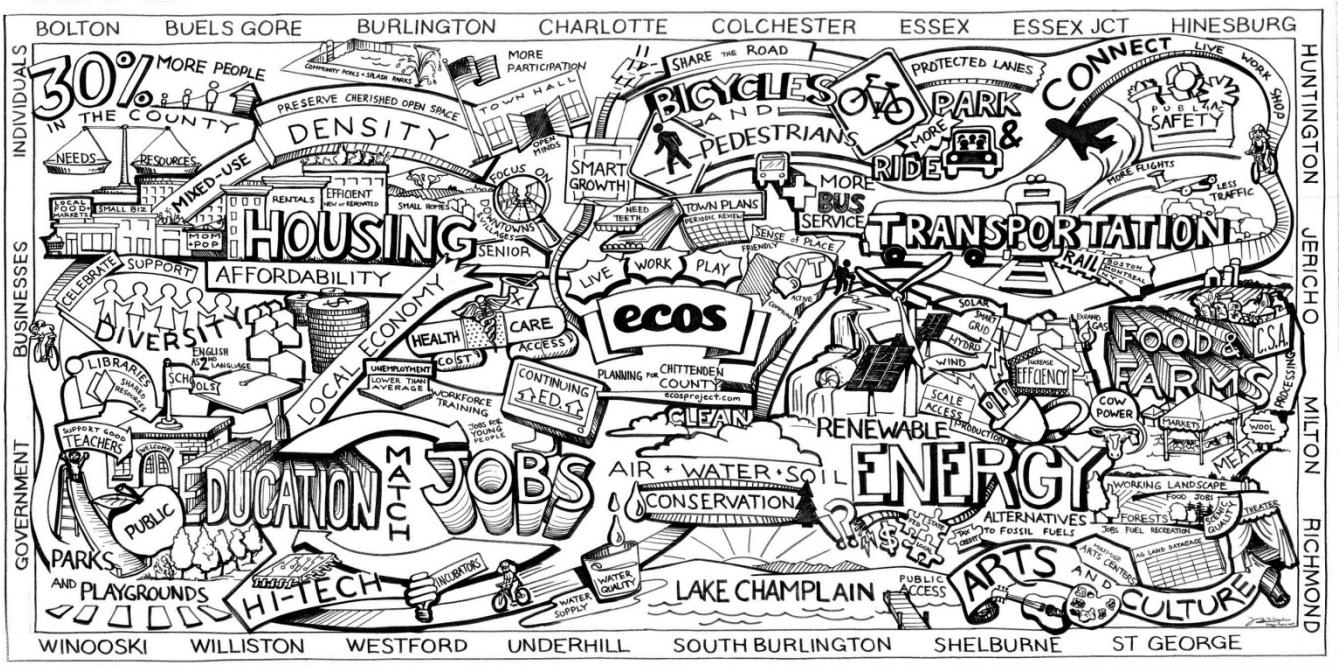
WHAT WE LEARNED

It's not surprising that most people who live here – whether young, old, new comer or 7th generation – all care about similar things: protecting the environment and our open lands; affordable housing; a variety of transportation concerns, including a desire for more busses and bike paths; access to health care, good schools and job training; and access to healthy foods. From the works on display, you'll see these themes expressed in different ways. The ECOS Project will now take all this input, and integrate it into the project's priorities moving forward.

The Burlington City Arts engagement activities included:

- **Community-created murals**
  - **WHAT:** We went to four different towns (we couldn't go to all 19!) and conducted workshops with residents.
  - **PROCESS Part I:** We led them through a series of exercises and discussions, where their thoughts and ideas were visualized live by illustrator Matt Heywood. Then we asked them to indicate their priorities by adding colored stickers to the mural indicating who (Individuals, Businesses or Government) they thought should do what.
  - **PROCESS Part II:** Then we took those murals out into the public – to Church Street during the Discover Jazz Festival, and to the Champlain Valley Fair – and asked passers-by to draw on the murals, indicating what their priorities are for the County.

- **PROCESS Part III:** Illustrator Matt Heywood then took all of the original drawings and synthesized them into a single work, which further reflects the threads of the conversations and reinforces the themes discussed.



Mural by Matt Heywood, The Image Farm

- **Community Portraits**
  - **WHAT:** While Chittenden County's growth includes many people from many places, a good number of them are "new Americans," who have often come to this area because of difficult situations in their homelands. The immigrants have tended to concentrate in Burlington and Winooski, though previous influxes of new comers have also settled in Essex and South Burlington, among other towns.
  - **PROCESS:** We recruited photographer Dan Higgins to learn about the interests and concerns of different groups of New Americans, who are in different stages of assimilation into our communities. The series of portraits are the result of his sensitive and generous time with people, who invited him into their world to capture their current experience. The words that accompany the exhibit are their responses to the question of what works, what doesn't work, and, from their perspectives, what could be improved in the Chittenden County of the future.

- **Youth Creative Writing**
  - **WHAT:** The decisions we make now are going to be inherited by our children, and so we wanted to find out what young people are thinking about the future, and what is important to them.
  - **PROCESS:** We partnered with the Young Writer's Project to create a prompt for their engaged community of young writers, asking them "What does 2035 look like to you?" The three winning entries and two honorable mentions can be found on the ECOS website. The winning three pieces are also recorded by the authors.

1.2 Vision

Our vision is that Chittenden County be a healthy, inclusive and prosperous community.

1.3 Mission

We will have a collaborative planning process with citizens, public and private organizations to develop a consensus regarding priority actions to achieve the goals below. The intent of this effort is to strengthen and enhance coordination, accountability and implementation of the plans of participating organizations such as state and local governments, planning organizations and other partner organizations - including business, environmental, education, and human services.

1.4 Principles

Principles describe our underlying values and guide the selection of strategies and actions to achieve our goals. These 10 principles will guide the selection of strategies and actions to achieve our goals (adapted from Sustainability Goals & Guiding Principles, ICLEI, October 2010).

1. **Think—and act—systemically**. Sustainable communities take a systems perspective and recognize that people, nature and the economy are all affected by their actions. Local governments in these communities consider the broader implications before embarking on specific projects, and they look for ways to accomplish multiple goals rather than default to short-term, piecemeal efforts.
2. **Instill resiliency**. Sustainable communities possess a strong capacity to respond to and bounce back from adversity. Local governments in these communities prepare for and help residents and institutions prepare for disruptions and respond to them swiftly, creatively and effectively.
3. **Foster innovation**. Sustainable communities capture opportunities and respond to challenges. Local governments in these communities cultivate a spirit of proactive problem solving to provide access to futures otherwise unobtainable and to enable the risk-taking inherent in innovation.
4. **Redefine progress**. Sustainable communities measure progress by improvements in the health and wellbeing of their people, environment and economy. Instead of focusing on GDP (throughput of dollars), local governments in these communities use a broad set of indicators.
5. **Live within means**. Sustainable communities steward natural resources so that future generations have as many opportunities available to them as we do today. They also recognize that resources exist for the benefit of life forms other than humans. Local governments in these communities assess resources, track impacts, and take corrective action when needed so that they meet the needs of today while maintaining and improving what they leave for future generations.
6. **Cultivate collaboration**. Sustainable communities engage all facets of society in working together for the benefit of the whole. Local governments in these communities bring government representatives, community members and organizations together and create a culture of collaboration that encourages innovation, sharing of resources, and jointly shared accountability for results.
7. **Ensure equity**. Sustainable communities allocate resources and opportunities fairly so that all people who do the full range of jobs that a community needs can thrive in it. Local governments

in these communities actively eliminate barriers to full participation in community life and work to correct past injustices.

8. **Embrace diversity**. Sustainable communities feature a tapestry of peoples, cultures and economies underpinned by a richly functioning natural environment. Local governments in these communities celebrate and foster ethnic, cultural, economic and biological diversity and encourage multiple approaches to accomplish a goal.
9. **Inspire leadership**. Sustainable communities provide leadership through action and results. Local governments in these communities recognize their opportunity to effect change by backing visionary policies with practices that serve as an example for citizens and businesses to emulate.
10. **Continuously improve**. Sustainable communities engage in continuous discovery, rediscovery and invention as they learn more about the impacts of their actions. Local governments in these communities track both performance and outcomes, are alert for unintended consequences, and modify strategies based on observed results.

1.5 Broad Goals

1. **Natural Systems** – Design and maintain a strategically planned and managed green infrastructure network composed of natural lands, working landscapes, and open spaces that conserve ecosystem values and functions, and provide associated benefits to our community.
2. **Social Community** – Promote the skills, resources, and assurances needed for all community members to participate in the workforce and in their family, civic and cultural lives, within and among their neighborhoods, and in the larger community.
3. **Economic Infrastructure** – Build the region's capacity for shared and sustainable improvements in the economic wellbeing of the community through support of both local and globally competitive initiatives.
4. **Built Environment** - Make public and private investments in the built environment to minimize environmental impact, maximize financial efficiency, optimize social equity and benefits, and improve public health.

CHAPTER 2 - REGIONAL ANALYSIS

2.0 INTRODUCTION

This Chapter describes the goals that have been developed through ECOS and the indicator data that shows us how we are doing relative to achieving our goals. Key issues/trends/insights are summarized for each of 17 topics. At the end of this Chapter is a summary of the conclusions drawn from the data, the form of 31 high-priority concerns.

This Chapter and these topics are grouped according to the four Broad Goals (see Section 1.5) as follows and as shown in more detail on the following pages:

2.1 Demographics
2.2 Natural Systems
- 2.2.1 Ecological Systems (Habitats, Water Quality, Air Quality)
- 2.2.2 Scenic and Recreational Resources
- 2.2.3 Climate Change

2.3 Social Community
- 2.3.1 Education, Knowledge and Skills
- 2.3.2 Health
- 2.3.3 Public Safety and Criminal Justice
- 2.3.4 Social Connectedness
- 2.3.5 Arts, Culture and Recreation
- 2.3.6 Civic Engagement and Governance

2.4 Economic Infrastructure
- 2.4.1 Economy
- 2.4.2 Household Financial Security
- 2.4.3 Working Lands

2.5 Built Environment
- 2.5.1 Land Use
- 2.5.2 Housing
- 2.5.3 Transportation
- 2.5.4 Infrastructure
- 2.5.5 Energy

2.1 REGIONAL CONTEXT

Chittenden County is located in northwestern Vermont between Lake Champlain and the highest peaks of the Green Mountains (see Figure 1-1). The County's nearly 350,000 total acres have a rich diversity of landscapes: forests, farms, water bodies, small cities, suburban areas, and villages.

Founded in 1787, Chittenden County has about 156,000 residents living in 19 municipalities that range in size from 20 to almost 40,000 residents. The County is the heart of the Burlington – South Burlington Metropolitan Statistical Area (the economic engine of Vermont); home to the State's largest higher education institution, health care facility, and private sector employer; and nationally recognized as having an outstanding quality of life.

FIGURE 1 - REGIONAL OVERVIEW MAP

Unlike many rural regions which have experienced population decline in the past 30 years, Chittenden County is growing, and at a rate higher than the rest of Vermont, higher than the New England region, and higher than the U.S. as a whole. Indeed, residents who were born in Vermont now constitute only half the population of the state. And the influx is increasingly diverse: Chittenden County's diversity is growing at a higher rate than the rest of the state.

The challenges of a growing population and growing diversity are many, and will touch on every aspect of our quality of life. This ECOS Plan aims to address those challenges in a holistic, integrated way.

Information about the people in Chittenden County helps us to understand the nature of our community and how we are changing. It can help decision makers anticipate potential pressures on the wider social, economic and physical environments. Factors such as population growth (it is important to note that college students are counted by the Census and are therefore included in our population numbers), age, ethnicity, migration and household makeup are often key determinants of conditions across a whole range of issues affecting quality of life.

FIGURE 2 - PROJECTED POPULATION CHANGE IN CHITTENDEN COUNTY

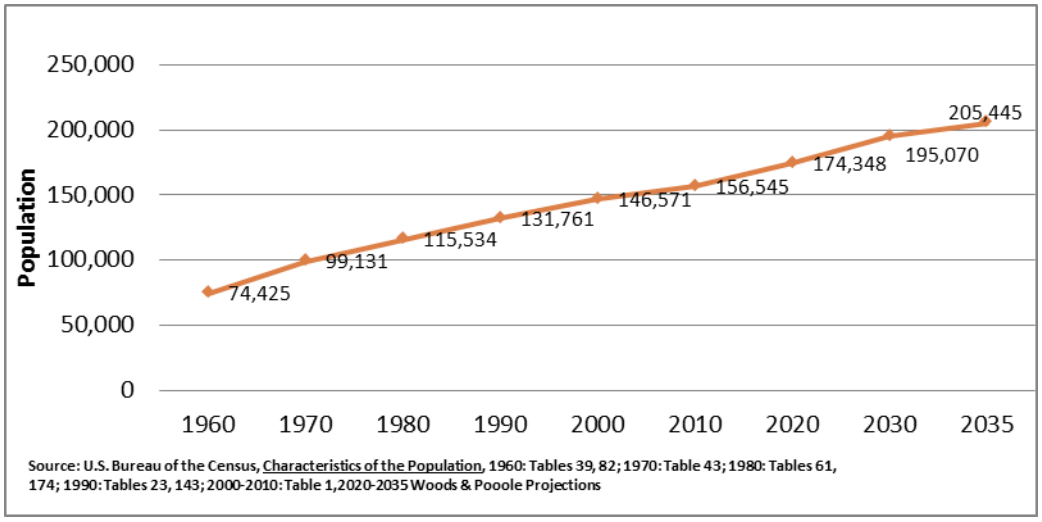


FIGURE 3 - HOUSEHOLD AND EMPLOYMENT FORCAST FOR CHITTENDEN COUNTY

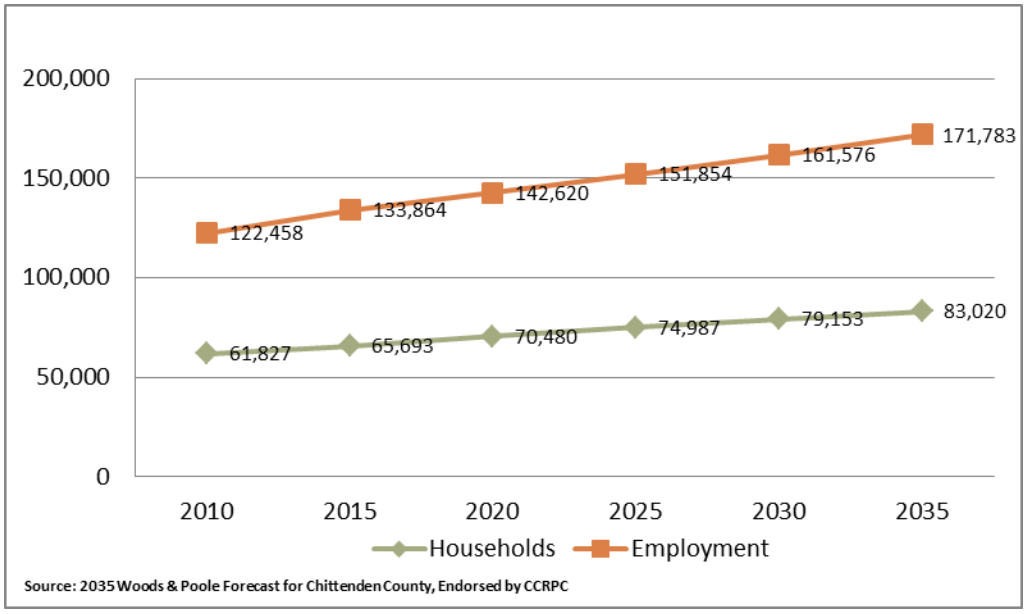


FIGURE 4 - POPULATION GROWTH RATE COMPARED TO VT AND NEW ENGLAND

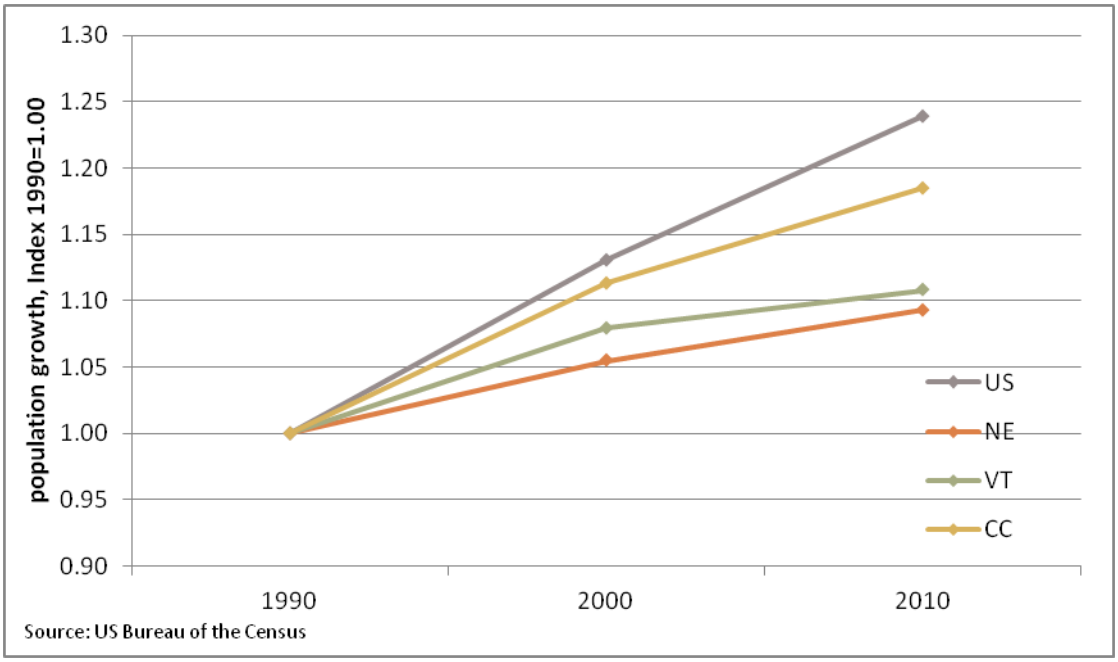
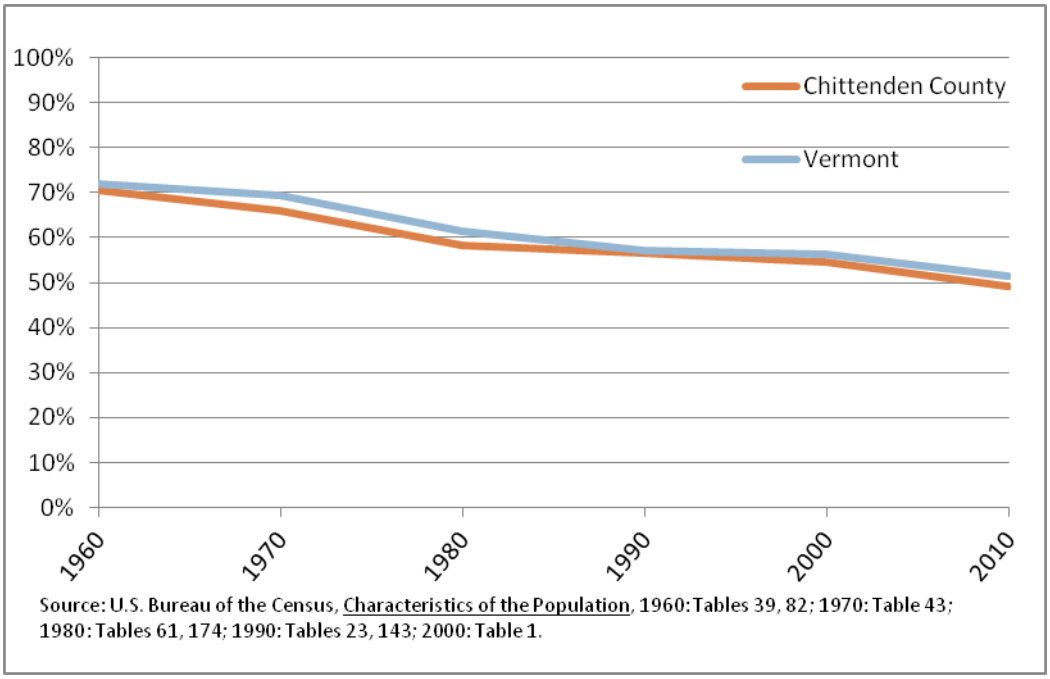
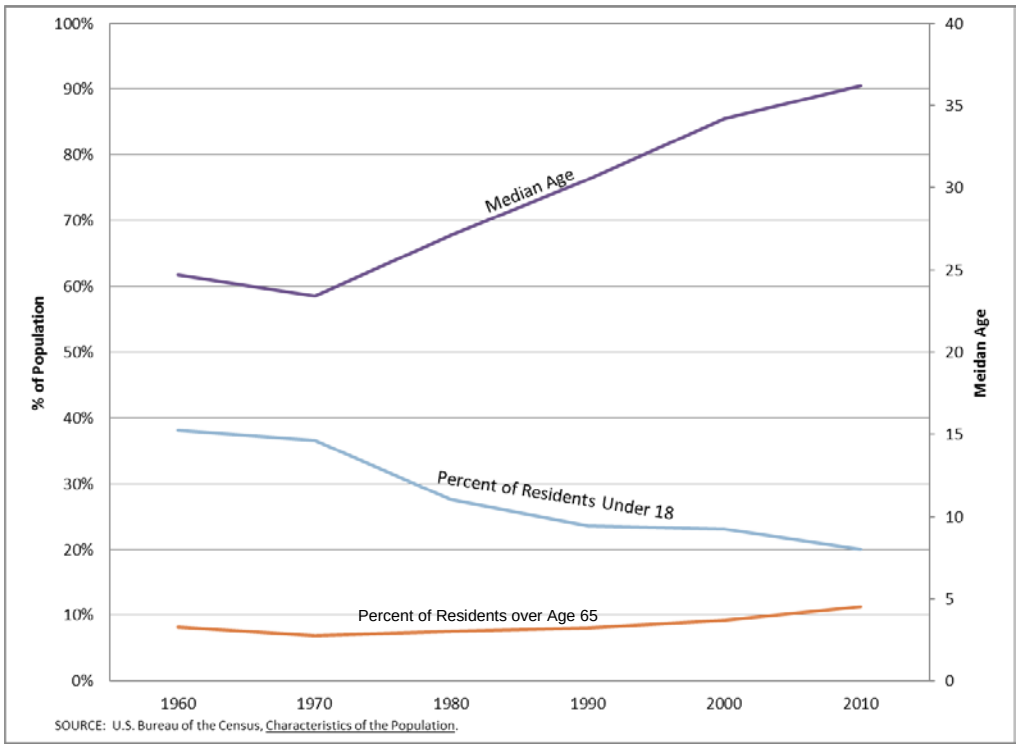


FIGURE 5 - PERCENT OF RESIDENTS BORN IN VERMONT IN CHITTENDEN COUNTY AND VERMONT, 1960 - 2010



- Age

FIGURE 6 - PERCENT OF RESIDENTS UNDER 18, PERCENT OF RESIDENTS OVER AGE 65, 1960 - 2010, AND MEDIAN AGE IN CHITTENDEN COUNTY, 1960-2010



- Families and households

FIGURE 7 - PERCENTAGE OF TOTAL HOUSEHOLDS THAT ARE SINGLE PERSON HOUSEHOLDS IN CHITTENDEN COUNTY AND VERMONT, 1960 - 2010, AND AVERAGE HOUSEHOLD SIZE IN CHITTENDEN COUNTY 1960 - 2010

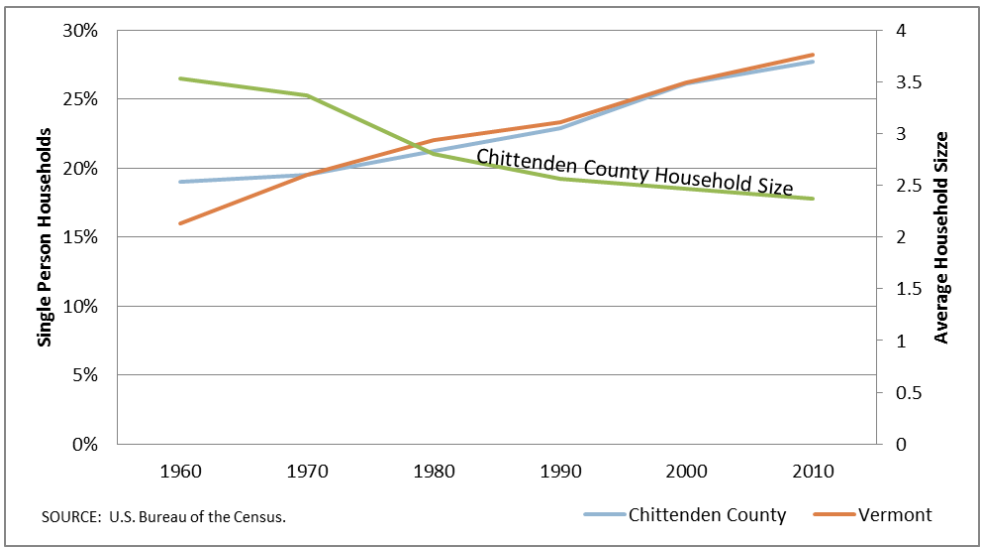
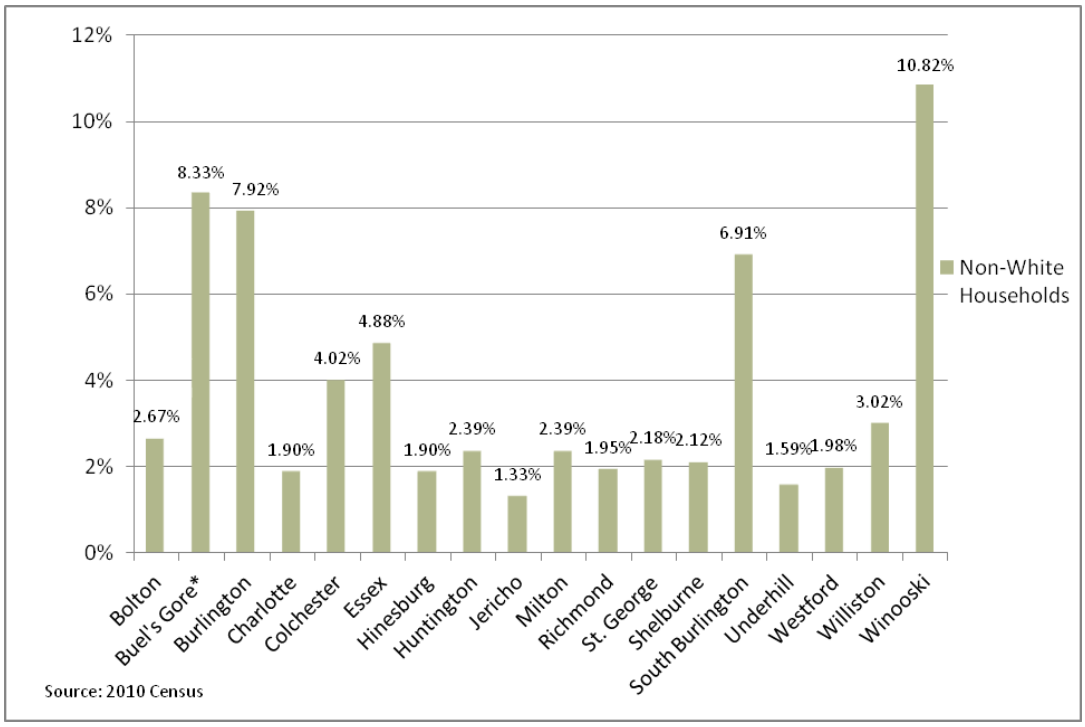
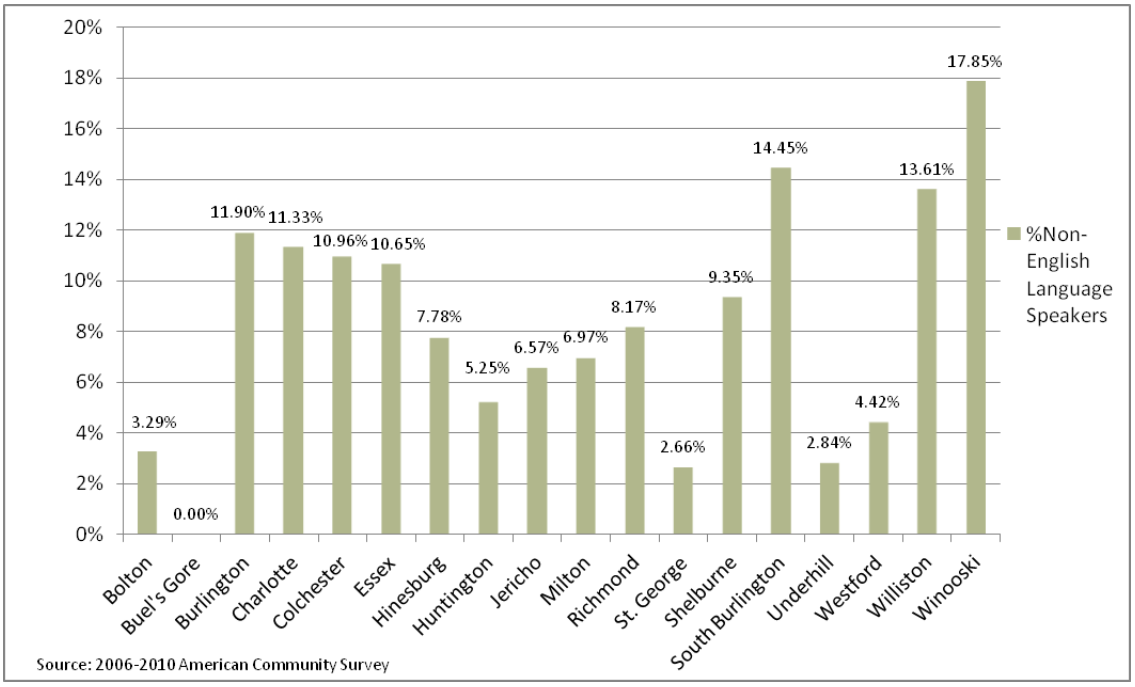


FIGURE 8 - PERCENTAGE OF NON-WHITE HOUSEHOLDS IN EACH MUNICIPALITY



*This percentage is high because there are very few households in Buel's Gore.

FIGURE 9 - PERCENTAGE OF HOUSEHOLDS IN EACH MUNICIPALITY WHERE LANGUAGE OTHER THAN ENGLISH SPOKEN



- Race/Ethnicity

FIGURE 10 - PERCENT OF RESIDENTS WHO ARE NON-WHITE OR HISPANIC IN CHITTENDEN COUNTY, VERMONT AND THE U.S., 1960 - 2010

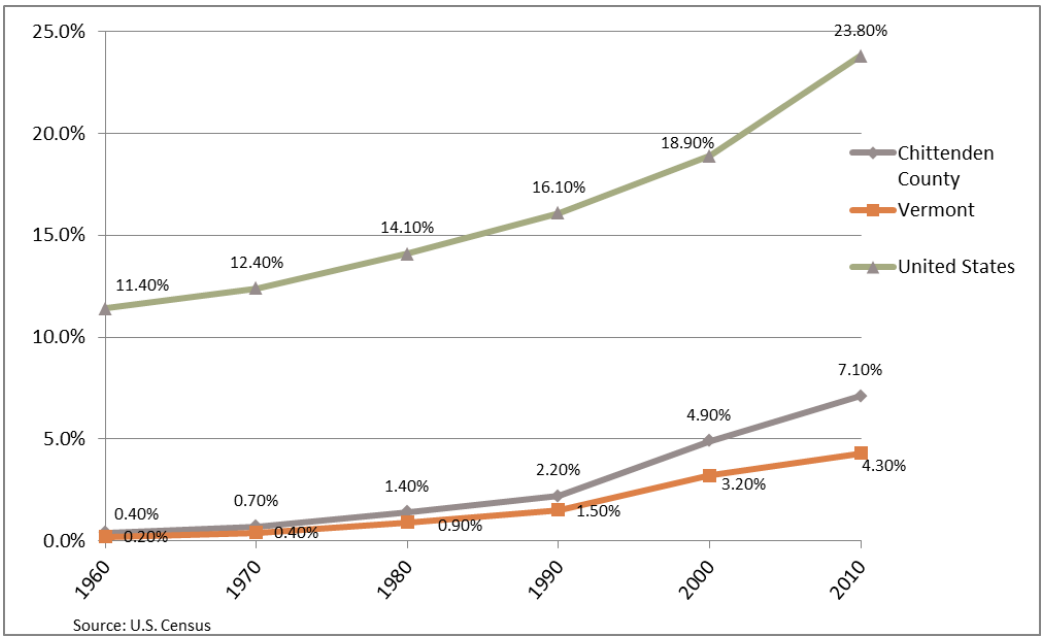
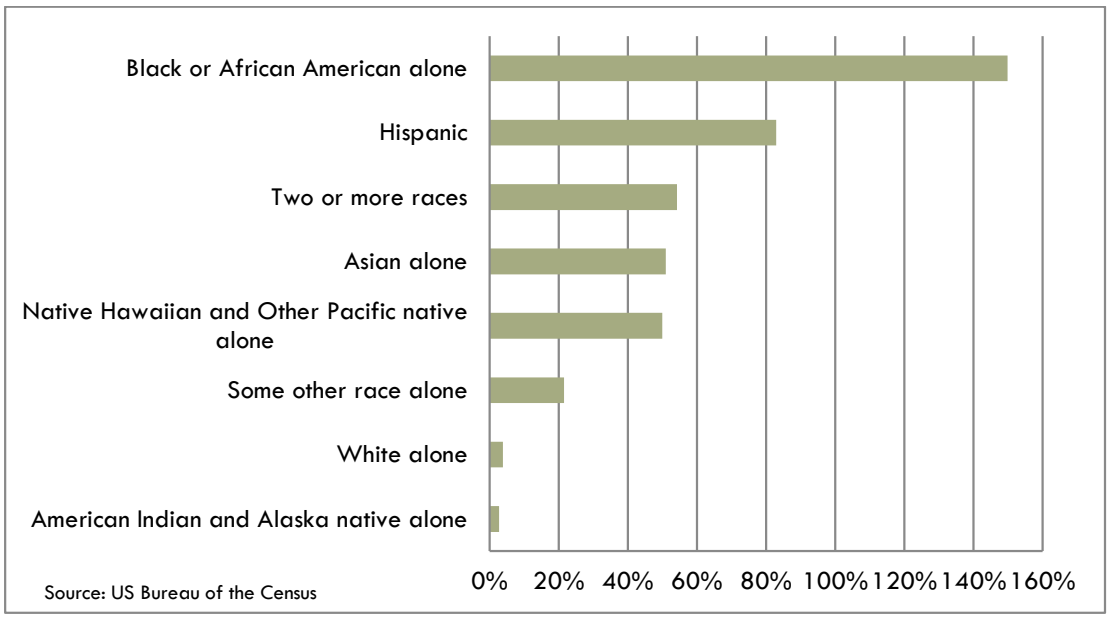


FIGURE 11 - PERCENT CHANGE IN POPULATION BY RACE, CHITTENDEN COUNTY, 2000 - 2010



- Disabilities
  - **Disability status of Chittenden County residents (relative to VT and US)**
    About 14,000 people in Chittenden County were identified as having a disability in 2010. Income of people with disabilities is far below that of people without disabilities, reducing their ability to afford housing and further limiting their housing choices.

2.2 NATURAL SYSTEMS

Broad Goal: Design and maintain a strategically planned and managed green infrastructure network composed of natural areas, working lands, wildlife habitat, scenic views and air quality that help to conserve ecosystem values and functions (including climate change adaptation and mitigation), and provide associated benefits to our community.

INTRODUCTION: A sustainable community preserves natural systems in order to maintain quality of soil, air and water and because they offer a richness that nurtures the human spirit. Healthy landscapes are necessary to sustain the complex myriad of plant and animal species that share our habitat. We are dependent on the surrounding landscapes for many resources such as food, water and fuel; for recreational opportunities and aesthetic values; and for vital natural processes such as water retention and recycling, air cleansing, carbon sequestration, and nutrient cycling. Preservation of our natural systems can help guide new growth into existing developed areas. In addition, a network of healthy natural systems and green infrastructure can make very important contributions to the overall prosperity of the region.

As a result of our topography and historic development patterns the eastern side of Chittenden County contains large intact habitat blocks, while the western side does not; however many important habitats exist throughout the entire County. Therefore, this plan calls for efforts to maintain the existing natural systems throughout the County, and minimize fragmentation of habitats and maintain wildlife corridors. The *Conserving Vermont's Natural Heritage Guide* (Vermont Fish and Wildlife Department and the Agency of Natural Resources, 2004) identifies the following seven mechanisms by which current development patterns degrade Vermont's natural heritage: 1. direct loss of diversity; 2. destruction of habitat; 3. habitat fragmentation; 4. disruption of movement, migration, and behavior; 5. introduction of invasive exotic species; 6. degradation of water quality and aquatic habitat; and 7. loss of public appreciation for the environment. Methods to combat or mitigate these mechanisms are crucial to the sustainability of the County as we continue to grow.

This section also touches on the local impacts of a changing climate. Our region's climate is already changing; warmer, wetter conditions are expected to increase this century (*Chittenden County Climate Change Trends and Impacts*). These changes will adversely impact forest and aquatic communities, water quantity and quality, public health, agriculture, winter sports businesses, and buildings and infrastructure in flood and fluvial erosion hazard areas. Curbing climate change will require planet-wide actions to reduce greenhouse gas emissions; and preparing locally so that we can be resilient in light of these changes is imperative.

This Plan uses a multidisciplinary, holistic 'ecological systems' approach to understanding our natural and built environment, in which we look at the complex relationships between living elements (such as vegetation and soil organisms) and nonliving elements (such as water and air) of a particular area to understand the whole ecosystem. In that same way, we must look beyond our municipal, county and state political boundaries to understand the impacts, both positive and negative, we have on each other. We need to collaborate with each other and adjust our actions in a measured fashion in support of ecosystem health.

2.2.1 ECOLOGICAL SYSTEMS

Ecological Systems Goal: Conserve, protect and improve the health of native species habitats, water quality and quantity, and air quality.

Key Issues/Trends/Insights

[Data for this section drawn from Natural Systems Analysis Report and Lake Champlain Basin Program's State of the Lake Reports]

- **Wildlife and Native Species** Chittenden County continues to see fragmentation and loss of *habitat* and connectivity largely due to mounting development pressures. Increasing land parceling and subsequent habitat conversion, lack of local regulations responsive to wildlife habitat concerns, and construction of transportation infrastructure (including roads and trails) continue to adversely impact habitat integrity. In addition, acid deposition from air pollution, migration of invasive species including destructive insect species, and climate change continues to threaten native forest plant and animal habitat.
- **Water Quality** Vermont water bodies continue to face mounting pressures from unsustainable development, farm and forest activities. Cumulative impacts from these land use activities have degraded water quality, aquatic habitat and altered the stability of river corridors and lakeshores. Issues that predominate in the County include disappearing wetlands, increasing impervious surfaces, steady high pollutant loads (mainly from nonpoint sources such as unmanaged stormwater), that result in nutrient enrichment and sedimentation, as well as other impairments. In addition, aquatic nuisance species continue to enter our waterways, contributing to the degradation of both habitat and recreational opportunities. Climate change is expected to bring us more intense storms at a higher frequency, which will only exacerbate the problem.
- **River Corridors** *River corridor resilience* is also critical to the health of our ecological systems as well as protection of nearby infrastructure. Channelization of streams and rivers, reduction and alteration of natural floodplains, river corridor encroachment, stormwater runoff and reduction and elimination of vegetative buffers are practices that lead to river corridor instability causing excessive erosion of river channels, pollution and additional fluvial erosion hazards. Of the river miles assessed in Vermont, 74% have become confined to deeper, straighter channels and no longer have access to historic floodplains essential to stable streams and sustainable water quality management. River Corridor means the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition, as that term is defined in 10 V.S.A. §1422, and for minimization of fluvial erosion hazards. River Corridor maps are officially posted on the ANR Natural Resources Atlas. In the coming year the maps will be updated to represent field-based Phase 2 data which have been delineated for many Chittenden County communities. An FEH is essentially equivalent to a River Corridor Protection Area (RCPA). Both delineate the extent of the rivers meander belt, however the FEH areas are field-based data and more accurate than the current State mapped RCPAs. A River Corridor includes the meander belt *and* the area to maintain a riparian buffer (defined as 50 feet from the meander belt). These areas are mapped in the 2016 update of the *Chittenden County All Hazards Mitigation Plan* and associated municipal Annexes, and are officially posted on the ANR Natural Resources Atlas. River Corridor protection is a goal in statute for municipalities, regions and state agencies. Important incentives such as the Emergency Relief Assistance Fund (see Section 2.3.3 for more information) are available to communities protecting river corridors.
- **Groundwater** As of 2005, 22,120 residents of Chittenden County (almost 15% of the population) relied on *groundwater* sources for their drinking water (Source: USGS Water Use

Compilation). Protection of groundwater resources from failing septic systems and petroleum spills/leaks is critical.

- **Regulations** *Local zoning lags behind town plans.* There is a disconnect between the vision for natural systems as expressed in Municipal Plans, and the Zoning Regulations that implement those plans. In addition, many zoning regulations have vague review standards and definitions, a situation that complicates enforcement and opens the town to due process legal challenges. Conversely, local bylaws protect the majority of Fluvial Erosion Hazard areas in the County with stream setbacks and floodplain regulations from new development. However, agriculture and forestry practices are exempt from local review and without State enforcement of accepted agricultural practices fluvial erosion hazard areas are subject to degradation.
- **Air Quality** *Outdoor air pollution* in significant concentrations can raise aesthetic and nuisance issues such as impairment of scenic visibility; unpleasant smoke or odors; and can also pose human health problems, especially for more sensitive populations like children, asthma sufferers, and the elderly. While Chittenden County's air quality meets current National Ambient Air Quality Standards (NAAQS), we are close to the limits for ground-level ozone and fine particulates. We are also subject to pollution from the mid-west that we cannot control. If the NAAQS are revised to be more stringent - or air pollutant levels increase - so that we exceed the NAAQS, additional and costly environmental regulations will apply to our region (Source: http://www.anr.state.vt.us/air/).
- **Climate Change Mitigation –**Plants are able to remove carbon from the atmosphere and store it in biomass and soils – a process called carbon sequestration. Maintaining forests, wetlands, agricultural lands and vegetated spaces in developed areas is important for ensuring current and future carbon sequestration. Vegetated landscapes are also important for the natural absorption of stormwater, reducing runoff and the potential for flooding. By concentrating development we can protect vegetative cover throughout the County.

Key Indicators

- **Chittenden County Land Cover Losses (Source: USGS 2001 and 2006 National Land Cover Data):**
  - .19 net acres of agricultural land and natural resource land lost annually to development per new resident between 2001 and 2006.
  - 210,619 acres or 61% of the land are covered by forest.
  - Between 2001-2006, 241 acres or .11% of barren land, deciduous forest, evergreen forest, mixed forest, shrub, grassland, woody wetlands, and emergent herbaceous wetlands were converted to development. These land cover categories are being used as a surrogate for wildlife habitat as there is currently a lack of a better, more accurate data source.
  - In particular, 55 acres or .5% of wetlands were developed in Chittenden County.

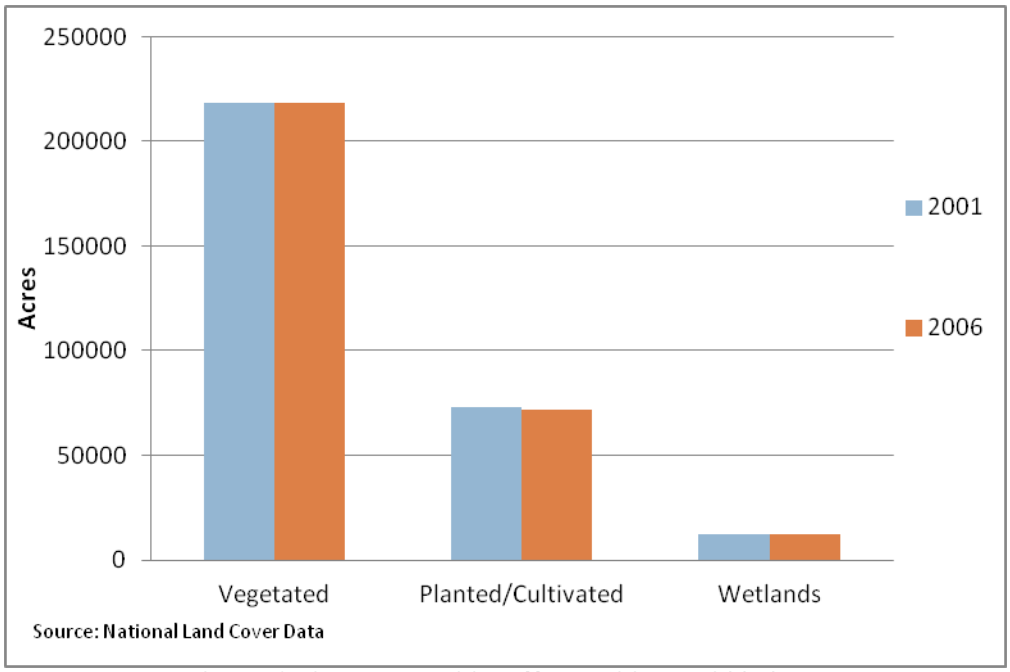


FIGURE 12 - CHITTENDEN COUNTY LAND COVER LOSSES

- **Number and Length of Degraded Rivers/Streams** (See the Water Quality and Safety Map with Strategy 3.2.3 in Chapter 3)**:**
  - 8 miles or 1% of all stream miles, Shelburne Pond, and Lake Champlain (Malletts Bay, Northeast Arm, Shelburne Bay, and Burlington Bay) are considered impaired for a variety of reasons (Source: Vermont Dept. of Environmental Conservation, 303d List Part A, August 2012 USGS, Vermont Hydrography Dataset, 2001-2004) and require a total maximum daily load management strategy.
  - The 2012 Vermont List of Priority Surface Waters also includes:
    - 8 miles or 0.53% of all stream miles and Burlington Bay, Muddy Brook and Unnamed Tributary of Winooski River are impaired and do not require development of a total maximum daily load (TMDL) because attainment is expected in a reasonable time (Part B).
    - 26 miles or 2% of all stream miles are in need of further study to confirm the presence of a violation of one or more criteria of the Vermont Water Quality Standards (Part C).
    - 93 miles or 6% of all stream miles and Lake Champlain (Burlington Bay, Mallets Bay, and Shelburne Bay) and Arrowhead Mountain Lake have completed and approved TMDLs in place, though they are not meeting water quality standards yet (Part D).
    - 41 miles or 3% of all stream miles and Lake Champlain (Burlington Bay, Mallets Bay, and Shelburne Bay), Arrowhead Mountain Lake, and Lake Iroquois are altered by invasive aquatic species (Part E).
    - 15 miles or 1.03% of all stream miles are altered by flow regulation (e.g., Dams) (Part F).

- **Phosphorus level concentrations** in several areas of Lake Champlain have remained relatively steady since 2007; however the non-point loads are consistently above the target

in the Main Lake and Mallets Bay. Non point phosphorus loading from streams to the main section of Lake Champlain are recorded at 3.3 times the target of 51.3 metric tons, and to Mallets Bay almost twice the target of 25.4 metric tons. Though it is important to note that the Lamoille River drains to Mallets Bay and is located largely outside of Chittenden County. (Source: *State of the Lake and Ecosystem Indicators Report 2012*, Lake Champlain Basin Program).

- **Percent of Impervious Surface by Watershed** (Source: 2008 Impervious Surface Data, ANR):
  - 8,267 acres or 7% of the Lake Champlain Direct Watershed is impervious.
  - 3,145 acres or 3% of the Lamoille River Watershed is impervious; and within Chittenden County 3.6 % impervious.
  - 7,779 acres or 6% of the Winooski River Watershed is impervious; and within Chittenden County 5.6% impervious.
  - Chittenden County is 5.63% impervious.

- **Chittenden County's Air Quality is close to National Ambient Air Quality Standards (NAAQS) for ground-level ozone and fine particulate**:
  - Ozone air quality samples taken since 1995 consistently show the County being below (though often close to) National Standards.

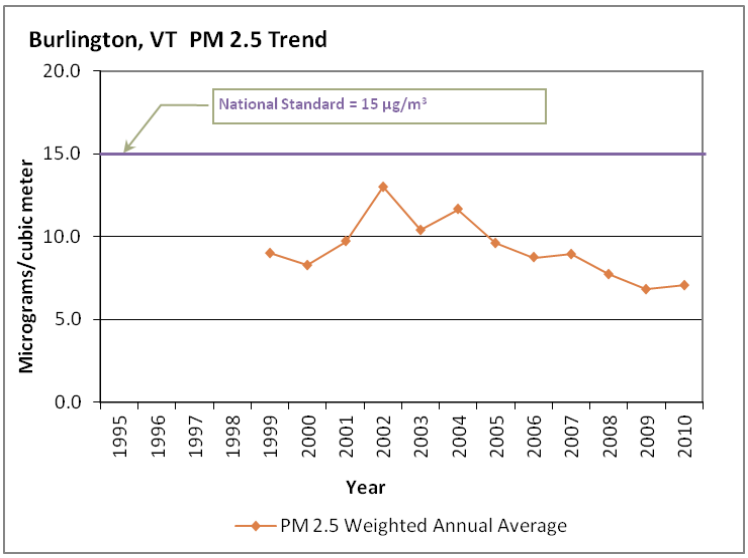


FIGURE 13 - OZONE TREND, BURLINGTON, VT

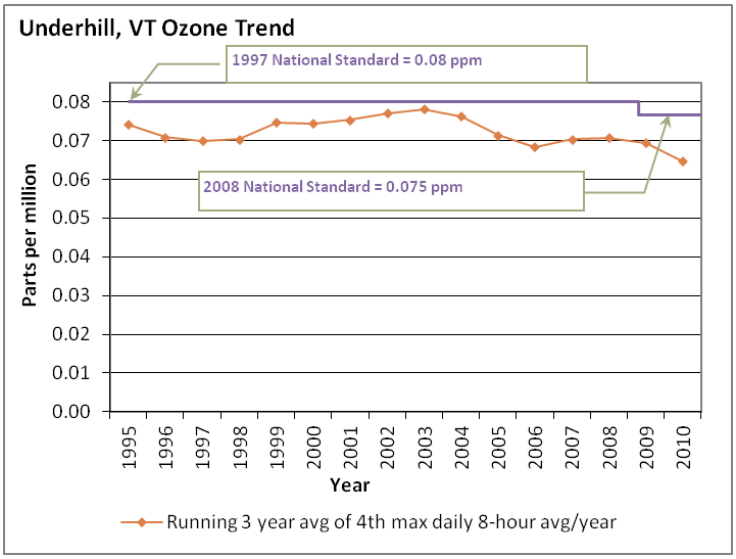


FIGURE 14 - OZONE TREND, UNDERHILL VT

2.2.2 SCENIC, RECREATIONAL, AND HISTORIC RESOURCES

Scenic and Recreational Resources Goal: Conserve, protect and improve valued scenic, recreational, and historic resources and opportunities.

Key Issues/Trends/Insights

[Data for this section drawn from Natural Systems Analysis Report]

- Chittenden County is rooted in its scenic, recreational, and historic resources. These provide residents a place to relax, play, gather, and learn about nature, conservation, and our heritage. They also provide important ecological functions including wildlife habitat, and water and air quality protection. These are supplemented by indoor and outdoor recreation facilities. In addition to the many recreational opportunities associated with Lake Champlain (swimming, boating, fishing, etc.), an extensive system of shared-use paths, on-road bike lanes, and off-road trails connect the County's recreational facilities and areas (this data can be found under the Natural Systems section of the online map located here: http://maps.ccrpcvt.org/ChittendenCountyVT/). In addition, municipalities are planning for new facilities and improvements to existing facilities to expand access and opportunities for recreation. See the CEDS Project list in Section 4.2.6 for cost estimates, funding sources and proposed timelines for fourteen recreation related projects throughout the County.
- Scenic resources represent an important element of the region's landscape and contribute directly to sense of place, quality of life and economic vitality through tourism and by attracting new residents and businesses.
- Historic resources include buildings, structures, landscapes, and archeological sites, both on land and under water. There are over 4,400 designated historic sites in Chittenden County and over 80 designated historic districts (this data can be found under the Natural Systems section of the online map located here: http://maps.ccrpcvt.org/ChittendenCountyVT/).
- The recreational value of our water bodies (swimming, fishing, boating, etc.) is critically dependent on water quality. E-coli and algal blooms lead to beach closures, while invasive species threaten our native fish populations. Events and encroachments such as these are exacerbated by the effects of climate change.
- As we work toward encouraging future development in areas planned for growth to maintain VT's historic settlement pattern of villages and urban centers, surrounded by rural countryside, ***access*** to valued scenic, recreation and historic resources should also be maintained and improved for all residents and visitors. In addition, accessible design standards should be incorporated into recreation facility projects.
- Eight of the County's municipalities (Milton, Colchester, Essex Junction, Winooski, Burlington, South Burlington, Shelburne and Charlotte) are member communities of the Lake Champlain Byway, a State-designated Scenic Byway that extends from Alburg in the Champlain Islands through Chittenden County on U.S. 7 and south into several towns in Addison County. Since 2002 these communities have secured competitive grants from the National Scenic Byway Program to improve the visitor experience by implementing projects such as wayfinding signage, interpretive panels, brochures, kiosks, and other amenities. In particular, the Byway focuses on improving interpretation and information about municipal and non-profit intrinsic resource sites such as parks, town forests, natural areas, trails and smaller museums.

- There is low compatibility between municipal plan recommendations for natural and scenic resources and the implementation of those recommendations through zoning bylaws and subdivision regulation. Further, there are often contradictory goals within municipal plans regarding natural and scenic preservation and new infrastructure for energy generation and transmission. Reconciliation of these is necessary to meet community visions and bring predictability to the development process.

Key Indicators

- **50,789 acres or 15% of Chittenden County's land area is protected from development.** Source: UVM SAL Conserved Land Database and municipalities.
- **56,450 acres or 17% of Chittenden County's land area is available for recreation in the form of town & state parks, athletic fields, and natural areas.** Source: CCRPC
- **Local Zoning Lags behind Plans** (Source: ECOS Natural Resources Analysis Report, Landworks). Municipal Zoning Regulations vary.
  - 16% of towns provide specific standards and guidelines for protecting identified scenic resources.
  - 68% of towns provide general recommendations for protecting scenic resources (e.g., views and landscapes along scenic roads should be protected).
  - 16% of towns reference scenic resources but provide no goals, standards, guidelines, or recommendations.
  - 57% of scenic resources identified are of roads or views from roads.
  - The majority (74%) of towns reference scenic resources in relation to their value as open space.
  - 42% of towns recognize that woodlands provide scenic as well as ecological values.
  - About 40% of towns consider historic structures and settlement patterns a scenic resource.
  - 21% of towns have a scenic overlay/preservation district.

2.2.3 CLIMATE CHANGE

Climate Change Goal: Reduce greenhouse gas emissions contributing to climate change and adapt to become more resilient to a changing climate.

Key Issues/Trends/Insights

[Data for this section drawn from *Chittenden County Climate Change Trends and Impacts.* Another reference that is currently under development is the *Chittenden County Regional Climate Action Plan.*]

- Temperature and precipitation records for the latter half of the 20th century show that Chittenden County's climate has changed: winters became warmer and summers became hotter. Lake Champlain freezes over later and less frequently and the growing season lasts longer. Annual precipitation has increased, but more falls as rain instead of snow.
- Scientists overwhelmingly agree that changes in climate worldwide are a result of human activities, mainly the burning of fossil fuels. Climate model forecasts for the Northeast US predict that during this century temperatures will continue to increase, as will extreme heat days and heat waves. More precipitation and extreme precipitation events are expected to increase, although short-term summer droughts may also become more frequent.
- These current and predicted changes in climate have broad implications for our region.
    - Environmental Quality - Summer air quality will deteriorate, as warmer temperatures promote the formation of smog. More intense rainfall will increase storm water runoff and the potential for flooding. Increased rain and runoff will wash pollutants into our waterways, and warmer waters and nutrients will encourage growth of bacteria and blue-green algae.
    - Natural Communities - Cold-water aquatic species, such as brook trout, will struggle to survive in warmer waters and in competition with better-adapted species. Our forests will change: maple, beech and birch trees will gradually be replaced by oak and hickory trees that are better adapted to warmer, wetter conditions. Invasive species, like the hemlock wooly adelgid, will further affect change in forest composition.
    - Public Health - Warmer temperatures allow the spread of insect-borne diseases, such as West Nile virus and Lyme disease. Air pollution and higher pollen production will increase problems for people with allergies, chronic respiratory diseases and asthma. High temperatures and heat waves will increase the risk of heat stress for the elderly, very young children and other vulnerable populations.
    - Built Environment – Flooding will put homes, businesses and public infrastructure in flood-prone areas at risk. Flooding may impact the safety of the water supply; droughts will also threaten water supplies. Although warmer winters will require less fuel for heating, hotter summers will increase electricity demands for cooling.
    - Local Economy - Warmer temperatures will hurt maple sugar production. Farmers can expect declining yields for cool-weather crops and depressed milk production from heat-stressed dairy cows. Less-colorful foliage seasons will hurt fall tourism. Less predictable snow will jeopardize winter sports and recreation and compromise Vermont's image as a winter sports destination.
- We can respond to climate change in two different ways.
    - **Climate mitigation** strategies will reduce the region's contribution of greenhouse gases. Although Chittenden County may be a small part of global greenhouse gas emissions, it is important that Chittenden County do its part to help solve the problem. More specifically Chittenden County should do what we can to help the State reach the goal of reducing 50% of greenhouse gas emissions from the 1990 baseline by 2028.

- **Climate adaptation** strategies help individuals, businesses and communities be able to withstand and bounce back from – or even take advantage of – the impacts of climate change.

Key Indicators

- **Greenhouse Gas Emissions** - In 2010, Chittenden County emitted approximately 1,193,000 metric tons of carbon dioxide equivalents (MTCO2e).

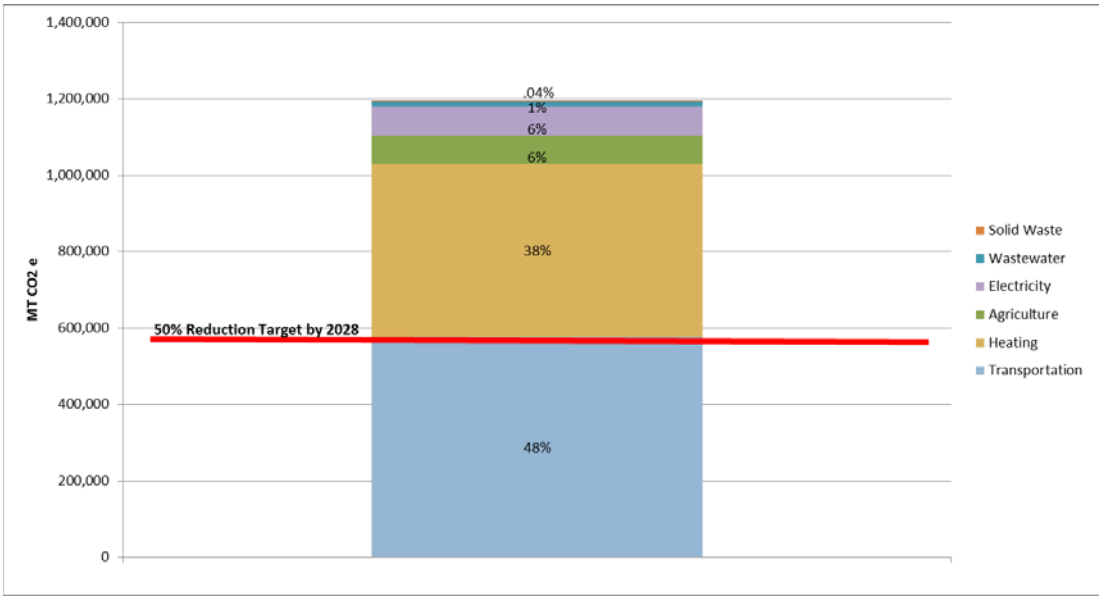


FIGURE 15 - CHITTENDEN COUNTY GREENHOUSE GAS EMISSIONS BY CATEGORY

Source: Draft 2010 Chittenden County Greenhouse Gas Emissions Inventory Data rounded to three significant figures.

- **Major Disaster Declarations** - Major disaster declarations are made for natural events causing damage so severe that it is beyond the combined capabilities of state and local governments to respond.

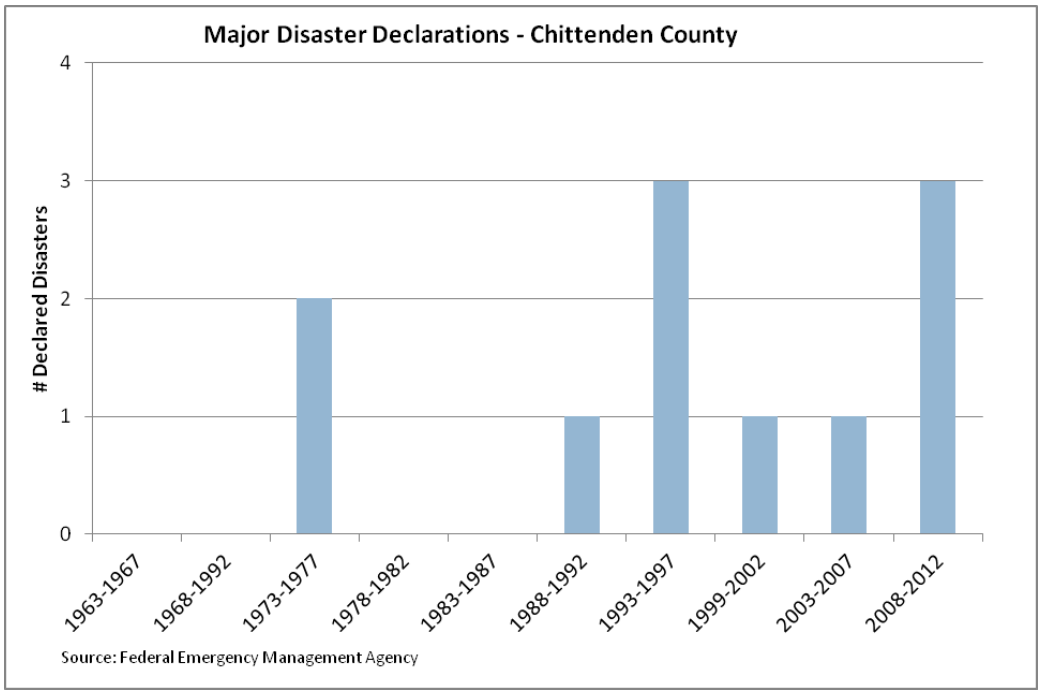


FIGURE 16 - MAJOR DISASTER DECLARATIONS, CHITTENDEN COUNTY

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- **Vegetated Landscapes.** Vegetated landscapes are an important supporting indicator for both climate mitigation and climate adaptation. Plants are able to remove carbon from the atmosphere and store it in biomass and soils – a process called carbon sequestration. Maintaining forests, wetlands, agricultural lands and vegetated spaces in developed areas is important for ensuring current and future carbon sequestration. Vegetated landscapes are also important for the natural absorption of stormwater, reducing runoff and the potential for flooding. In 2006, Chittenden County was 95% vegetated, approximately equal to the vegetated area in 2001. This indicator is related to the impervious surface indicator in Ecological Systems. Based on 2001 landcover data, the carbon sequestration rate was about 761,000 $MTCO_2e$.
- **Climate-Related Infectious Diseases.** Increased transmission of vector-borne diseases is a key supporting indicator associated with climate change. The Health Department tracks the number of new Lyme disease, West Nile virus (WNV) and Eastern Equine Encephalitis (EEE) cases each year. From 2003 to 2009, Chittenden County had one case of WNV and no cases of EEE. Data for Lyme disease are presented below.

- **Vermont Residents Discharged from Vermont, NH, NY, and MA Hospitals**
  Hospital Visits for Primary Diagnosis of Lyme Disease: Years of Admission 2003-2009

Number of Hospital Visits*			
Year of Admission	Statewide	Chittenden County	
2003	17	6	35%
2004	17	**	
2005	49	6	12%
2006	113	11	10%
2007	52	**	
2008	100	9	9%
2009	82	**	

* all inpatient and outpatient visits,* Visits less than 6. Source: The Annual Vermont Uniform Hospital Discharge Data Sets (VUHDDS), inpatient and outpatient. VUHDDS does not include Emergency Department data prior to 2003. Data for 2010 is not available at this time.

FIGURE 17 - NUMBER OF HOSPITAL VISITS FOR LYME DISEASE

- **Heat Stress Hospitalizations**

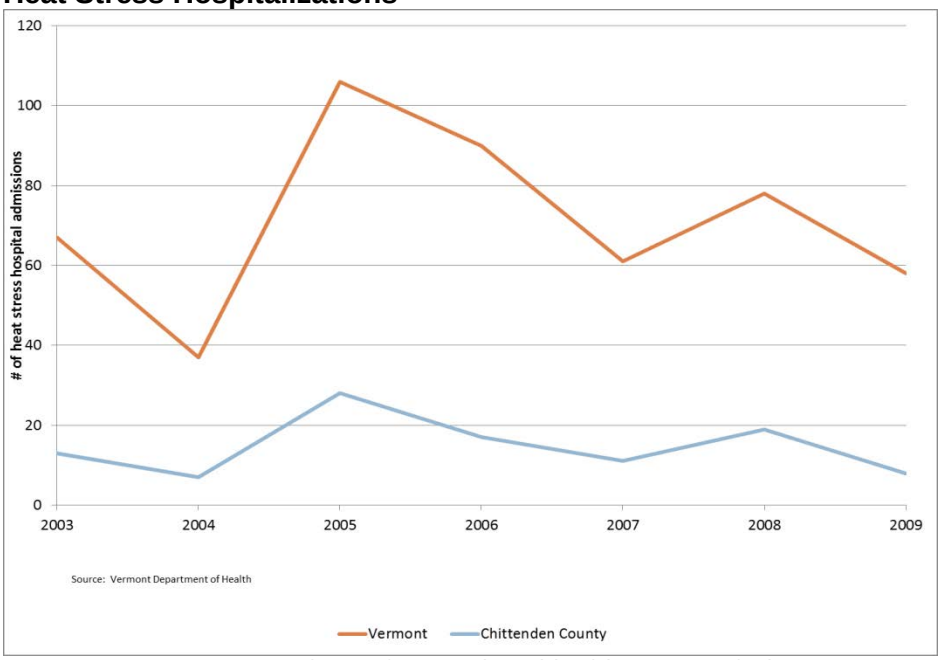


FIGURE 18 - HEAT STRESS HOSPITALIZATIONS

2.3 SOCIAL COMMUNITY

Broad Goal: All community members have the skills, resources, and assurances needed to participate in the workforce and in family, civic, and cultural life within and among neighborhoods and in the larger community.

INTRODUCTION:

Our region's economic, social and intellectual well-being depends on the strength of its people. What is more integral to any municipal or regional plan than the people who live, work and play in the region? Just as we identify desired goals and benchmarks to measure progress for natural and physical capital, we need to do the same for social (civic engagement, social connectedness, arts and culture) and human capital (education, health, safe people). Similar to the rest of the country, Census data demonstrates that Chittenden County is aging, becoming more racially and ethnically diverse, and experiencing growing income inequality. To counter disparities that will inevitably grow, equity must be at the core of our plans for the future. Ensuring that all – especially low-income and people of color - can fully participate in all aspects of a community is essential to our long-term success. Equity is both a means to a healthy, resilient community and an end from which we all benefit.

Educational achievement is essential for effective participation in society and to maintain a region's economic prosperity. Increasingly, urban societies are becoming knowledge-based and urban economies require innovative solutions to meet market demands. People's ability to learn new skills and reskill during their working lives is important if they are to keep pace with rapidly changing work environments. Access to life-long learning opportunities is also related to people's need for self-fulfillment and self-determination.

The health of a population is inextricably linked to the design of the community in which it lives, works and recreates. All people of Chittenden County deserve the opportunity to make choices conducive to living a long, healthy life, regardless of their income, education, race, or ethnic background. Approaching community design from a public health perspective marks the reunification of two disciplines long separated by narrowly focused Euclidean planning. The design of a community can buttress certain behaviors while it undermines others, and impact social circumstances, access to healthcare, and environmental exposures. The determinants of health must be addressed from a holistic approach; no discipline cuts across these domains as broadly as community design. Investments in the region's human and social capital are investments in the future of the region's economic and social prosperity.

Another key to a vibrant, engaged community is access to arts, culture, and recreational opportunities. Both structured and unstructured recreational activities, especially outdoors, provide opportunity for physical activity, social development, and appreciation of the natural environment. In addition to enriching lives personally, arts and cultural experiences -- in the form of public events, performances, exhibitions and classes -- enhance the attractiveness of a community to employers looking to attract and retain a skilled and creative workforce.

The health and overall well-being of people significantly determines a region's resiliency and ability to create equitable, prosperous and sustainable communities. The concept of community is fundamental to people's overall quality of life and sense of belonging. Confident and connected communities support social and economic development in our cities. Strong communities have fewer social problems, are more adaptable in the face of change and when they do experience difficulty they have internal

resources to draw upon. Equity is a cross-cutting issue that impacts the quality of an entire region. There is no greater resource to invest in than a community's people, all of its people.

2.3.1 EDUCATION, KNOWLEDGE AND SKILLS

Education, Knowledge, and Skills Goal: All Chittenden County children and adults have the education, skills and opportunities necessary to meet their full economic and social potential and well-being.

Key Issues/Trends/Insights

[Data for this section drawn from Education Analysis Report and references as incorporated below.]

- Chittenden County requires a well-educated workforce and well-educated individuals to attract good employers and livable wage jobs, to engage in civic affairs and the arts, and to take responsibility for the welfare of ourselves, each other and the natural environment we cherish. Our region's economic, social and intellectual well-being depends on educational attainment through a continuum of accessible and affordable educational opportunities from the early years through adulthood.
- The first five years of life are critical to a child's lifelong development. Young children's earliest experiences and environments set the stage for future development and success in school and life. Children from families that are economically secure and have healthy relationships are more likely to get a good start in kindergarten and maintain that advantage as they progress through school. The larger the gap at school entry, the harder it is to close. (National School Readiness Indicators Initiative)
- Research shows that children who are not performing proficiently in reading by the end of third grade are at very high risk for poor long-term outcomes, such as dropping out of school, teen pregnancy and juvenile crime. (National School Readiness Indicators Initiative)
- While Vermont can boast of a solid K-12 system which benefits from strong community support, small class sizes and high graduation rates (2nd in nation), it ranks 48th in its college-going rate. (Nation's Report Card, 2009)
- Though the educational level of Chittenden County residents 25 and older with four year bachelor's degree or higher exceeds state (32.6%) and national (27.5%) levels at 42%, of every 100 high school 9th graders, only 26 will complete a college program within 150% of normal time. (6 years for a 4-year degree and 3 years for a 2-year degree) (New England Board of Higher Education, 2006 data)
- Student achievement measures show clear performance gaps for low-income and students of color. If we are to remain an economically and socially viable community, all of our youth need the skills and education to participate as they are the future drivers of our region. A high quality public education can be the "great equalizer," ensuring the democratic ideal of equal opportunity. The Vermont PreK-16 Council and the Lake Champlain Regional Chamber of Commerce have identified goals to close the achievement gaps and create a seamless PreK-16 student-centered, performance-based learning system framed by rigorous standards and high expectations for all students, regardless of racial/ethnic background or socioeconomic status. The system will provide not just content learning but —21st century skills. These include (1) information and technology skills, (2) life and career skills, and (3) learning and innovation skills such as critical thinking, collaboration, and creativity. Ensuring for equity so that all members of our community can reach their fullest potential is assuring for a more inclusive, prosperous and sustainable region.
- We need to close the lingering achievement gaps and work to create a seamless PreK-16 education system framed by rigorous standards and high expectations for all students.

- About 45% of matriculated first-year students at the Community College of Vermont (CCV) are taking non-credit remedial classes in writing or mathematics. At other Vermont State Colleges, the number ranges from 5%-45%, with an overall average of 22% taking remedial courses. (VT PreK-16 Council, 2012)
- 38 of Vermont's 50 fastest-growing occupations — including six of the 10 fastest-growing jobs — require significant postsecondary education. (Vermont Business Roundtable)
- 30% of employers (largely within the skilled machine trades) report that they have training needs that are not met by local resources. (WDGT Chittenden Employer Survey, 2011)
- Childcare costs and availability are significant issues for the majority of Vermont parents who rely on out-of-home-care for their youngest children. According to the 2015 Building Bright Futures report, *How Are Vermont's Young Children and Families?,* child care costs for two-parent two-child families is over $19,000 a year—more than the cost of full-time, in-state tuition at a Vermont State College. This equates to 28-40% of household income for two-parent two-child families with incomes between $47,700 (200% federal poverty level) and the state median family income of $82,047. Even if families can afford care, finding availability is challenging. The need is greater than current capacity to care for our region's children. In 2014, there were 8,668 children under age 5 in Chittenden County and 76% of families with all parents in the workforce. However, as of July 2014, Child Care Resource (CCR) reports there were 5,970 slots to serve children ages 5 and under. Childcare availability is especially lacking for parents that work the third shift or have non-traditional erratic hours, like farmers. Challenges for the child care providers include very low salaries. According to Let's Grow Kids the average annual income is only $24,070. Vermont has established a Blue Ribbon Commission on Financing High Quality, Affordable Child Care to help understand and address these challenges. Addressing these challenges is imperative so that we can properly prepare our young children for school, and enable parents to work in a time when our workforce population is declining.
- Although some schools are seeing an increase in enrollment (So. Burlington being an example), the majority of schools in Chittenden County are facing declining enrollment. From the 2002-2003 school year to the 2011-2012 school year Chittenden County public schools experienced a decline in the ten year compounded annual growth rates (CAGR), 27% of Chittenden County schools experienced an increase in the ten year CAGR, and this figure was not available for 13% of the schools. NOTE: CAGR is used to measure enrollment growth or decline in Vermont. The formula looks at the first and last years' enrollment values and compares them over the number of years in the specified time frame to determine a rate of change. The CAGR is different from a percent change which does not consider the number of years over which a change occurs. There were 22,229 students enrolled in Chittenden County in the 2011-2012 school year, a decrease of 4.9% from the 23,387 students enrolled in the 2003-2004 school year. See the Vermont Department of Education's Public School Enrollment Report for the 2011-2012 School Year for more information. Regarding independent school enrollment, there were 1,778 students enrolled in independent K-12 schools in Chittenden County in the 2015-2016 school year.
- There has been a significant effort to further efficiency and consistency in the education system through voluntary unification of school governance structures. The VT Legislature passed Act 46 of 2015 which provided a number of voluntary options with associated incentives to unify (http://education.vermont.gov/laws/2015/act-46). Mount Mansfield Modified Union School District is now the main board which oversees 8 schools as of July 2015 (Bolton, Richmond, Jericho and Underhill voters approved this consolidation in November 2014). Huntington residents also took a

vote on this matter but it did not pass. Also residents from the towns of Essex, Essex Junction, and Westford voted to streamline their governance structure, forming one unified district to serve 10 schools in the three communities – will begin operation in July 2017 (https://www.cctv.org/watch-tv/programs/education-bill-act-46). These unifications reduce the number of school boards and aim to bring greater consistency across the curriculums – a direct implementation of ECOS Strategy 3.2.6.4. See the municipal and school capital plans for school facility improvement needs.

- There are currently 19 school governing bodies operating either as or under the 3 Supervisory Unions and 6 School Districts, 51 public schools, 18 independent schools (reported for SY16), and 6 colleges/universities in the County (see the ECOS Map Viewer for locations).

School Districts or Unions	# of Governing Boards	# of Schools	Towns Served
Burlington School District	1 Board	10 Schools	Burlington
Chittenden Central Supervisory Union	4 Boards	7 Schools	Westford, Essex and Essex Junction
Essex Town Supervisory District	1 Board	3 Schools	Essex
Chittenden East Supervisory Union	2 Boards	9 Schools	Bolton, Buel's Gore, Huntington, Jericho, Richmond, Underhill
Chittenden South Supervisory Union	7 Boards	6 Schools	Charlotte, Hinesburg, Shelburne, St. George, Williston
Colchester School District	1 Board	5 Schools	Colchester
Milton School District	1 Board	3 Schools	Milton
South Burlington School District	1 Board	5 Schools	South Burlington
Winooski School District	1 Board	3 Schools	Winooski

- Library facilities are well distributed across the region, and residents benefit from reciprocal agreements among all of the libraries in the County with the exception of Burlington (an additional fee is charged for non-Burlington residents). Only three municipalities in the region do not have a library: Bolton, Buel's Gore and St. George. These communities do not have any current plans to build a library, and the residents use the libraries in surrounding communities. All libraries in the region offer high speed internet access. See Vermont Department of Libraries, Vermont Public Library Statistics for more information. Current library expansion and improvements are needed in South Burlington, Essex Town, Colchester, and Jericho as identified in the CEDS Project list (see the list in Section 4.2.6 for cost estimates, funding sources and proposed timelines for these projects).

Key Indicators

- % of children entering kindergarten school ready according to developmental domains (Source: Statewide Assessment of Kindergarten Readiness across 5 domains - AHS, United Way)

	Year	Approaches to learning	Cognitive. Dev./General Knowledge	Communication	Socio-emotional Development	Health
State of Vermont	**2009**	**66%**	**61%**	**81%**	**67%**	**n/a**
Colchester (2007 data; 2009 not available)	2008	81%	64%	91%	67%	86%
Milton	2009	67%	73%	81%	77%	n/a
Chittenden East	2009	75%	67%	88%	77%	n/a
Chittenden Central	2009	62%	70%	84%	55%	n/a
Chittenden South	2009	75%	74%	90%	83%	n/a
Burlington	2009	70%	66%	82%	75%	n/a
South Burlington	2009	71%	61%	82%	70%	n/a
Winooski	2009	32%	50%	51%	49%	n/a
Essex Town	2009	70%	61%	86%	72%	n/a

FIGURE 19 - SCHOOL READINESS ACCORDING TO DEVELOPMENTAL DOMAINS

- Percent of Chittenden County's students scoring proficient or above on 2011-2012 state assessments

SUBJECT	READING		MATH		SCIENCE
GRADE	4	11	8	11	11
All Students	78%	76%	69%	43%	44%
Female	83%	83%	68%	42%	46%
Male	72%	69%	70%	44%	43%
Hispanic or Latino	85%	75%	68%	32%	42%
American Indian or Alaskan Native	*	*	*	*	*
Asian	65%	61%	59%	45%	40%
Black or African American	59%	33%	29%	7%	11%
Native Hawaiian or other Pacific Islander	*	*	*	*	*
White	80%	79%	72%	45%	46%
Not FRL	87%	84%	79%	51%	53%
FRL	57%	44%	39%	16%	14%
ELL	20%	9%	8%	7%	5%
Not ELL	80%	79%	72%	45%	46%

Based on 2011-2012 testing year. Reading and Math tests evaluate prior year's learning.
* = data suppressed because of an N<11

FIGURE 20 - STUDENT PROFICIENCY BY RACE

Source: VT Dept. of Education

- Cohort Drop Out Rates - % of students who do not complete high school

Cohort Drop Out Rates

School	Four-year Drop Out Rate	Five-year Drop Out Rate	Six-year Drop Out Rate
Burlington Senior High School	13.0%	13.5%	9.0%
Champlain Valley UHS #15	7.2%	2.9%	1.8%
Colchester High School	6.9%	3.9%	6.5%
Essex High School	10.4%	6.8%	4.3%
Milton High School	9.9%	4.5%	5.0%
Mt. Mansfield US #17	2.9%	6.0%	5.8%
South Burlington High School	7.4%	4.6%	4.4%
Winooski High School	37.8%	29.0%	29.2%
Total	***9.5%***	***7.1%***	***6.0%***

FIGURE 21 - COHORT DROP-OUT RATE

Note: Cohort dropout rates track individual students who enrolled for the first time in ninth grade in 2008 for the four-year rate, 2007 for the five-year rate, and 2006 for the six-year rate. Students are considered dropouts if they left high school permanently at any time during the four-year, five-year, or six-year period prior to receiving a regular diploma, GED or other completion certificate. Source: VT Dept. of Education

- Highest level of education attained for those 25 and over.

	Vermont	Chittenden County
Percent high school graduate or higher	91.3%	93.6%
Percent bachelor's degree or higher	34.0%	46.1%

FIGURE 22 - HIGHEST LEVEL OF EDUCATION ATTAINED (25+)

Source: 2011 ACS 3-year

- # of internship grants from the State of Vermont Department of Labor offered in Chittenden County (7/1/09-6/30/10)

# of internship grants from the State of Vermont Department of Labor offered in Chittenden County FY period of 2010 (7/1/09-6/30/10)
185 internship grants
93 secondary
92 post-secondary
Total of 7 programs

FIGURE 23 - INTERNSHIP GRANTS FROM STATE DEPT. OF LABOR

- Child Care Indicators: Building Bright Futures and Let's Grow Kids is working on developing county-specific data in coordination with several partners, including the Child Development Division and Vermont Insights. This data will be added to the ECOS Scorecard as they become available.

2.3.2 HEALTH

Health Goal: All Chittenden County residents are healthy.

Key Issues/Trends/Insights

[Data for this section drawn from See Public Health Analysis Report and Healthy Vermonters 2020]

- Similar to national statistics, the leading causes of death in Chittenden County are cardiovascular disease (32%), followed by cancer (26%). Tobacco use, diet, physical inactivity, and excessive alcohol consumption are modifiable, behavioral risk factors associated with these diseases.
- Behaviors are the most important contributors to health outcomes. The healthcare system, with its successes and failings, receives a disproportionate amount of attention. While it is undeniable that all Chittenden County residents should have access to affordable healthcare, the healthcare system's impact on population health is nominal compared to behavior, genetics and social circumstances. On the other hand, the healthcare system exerts significant effect after chronic disease is manifest.
- Health begins in our families, in our schools and workplaces, in our playgrounds and parks, and in the air we breathe and the water we drink. The conditions in which we live and work have an enormous impact on our health. Behaviors can be influenced, supported, or undermined by community design. Community design can also impact social circumstances, healthcare, and environmental exposures. Chittenden County residents should have the opportunity to make the choices that allow them to live a long, healthy life, regardless of their income, education or ethnic background
- Community design can influence the overall well-being of a community by making healthy lifestyle choices easily available and accessible to all community members. Healthy Community Design links public health themes (such as physical activity, public safety, healthy food access, mental health, air and water quality, and social equity) with traditional planning concepts (such as land use, transportation, community facilities, parks, and open space). The overall health of a community is underpinned by the planning strategies employed in its design. Community design can positively impact population health by increasing physical activity, reducing injury, increasing access to healthy food, improving air and water quality, minimizing the impact of extreme weather events due to climate change, decreasing mental health stresses, strengthening the social fabric of a community, reducing exposure to tobacco and alcohol advertising, increasing smoke-free indoor and outdoor policies, and providing fair access to livelihood, education, and resources.
- Interventions at the community, policy, and systems levels are critical to achieving individual level behavior changes that will improve health.
- Tobacco use, poor nutrition, physical inactivity, and excessive alcohol consumption are the leading causes of death in that they are the factors underlying the disease labels traditionally used to present this metric. Community design elements that support eliminating tobacco use, increasing physical activity levels, improving nutrition, and decreasing excessive alcohol consumption are the priorities on which focus must be brought to bear. Research shows that healthy community design is associated with improvements in these health behaviors.
- There are significant differences in prevalence of cancer by age. A higher proportion of adults 65 years and older (15%) have ever had cancer compared to all other age groups. There are no other statistically significant differences by demographic characteristics.

- There are no statistically significant differences in prevalence of overweight or obesity by grade in school or race/ethnicity. However, compared to males, a significantly lower proportion of females are obese (5% vs. 11%) and a lower proportion are overweight (10% vs. 14%).
- Within Chittenden County, there are several identified populations who experience health disparities (i.e., people of color, low-income, homeless) These populations suffer disproportionately from poor health outcomes. For example, low income people who suffer with food insecurity are more likely to be obese. The distribution of the data supports the link between poor health outcomes and low socioeconomic status. It is material to note that while county-wide data for a specific indicator may not indicate a problem, that same indicator sorted by economic status or education level, may reveal a significant public health issue, in a particular community.

Key Indicators

Chittenden County		
	Cardiovascular Disease	**All Cancers**
Adults*	5%	6%
Gender		
Male	7%	5%
Female	4%	7%
Age		
18-24	1%	--
25-34	0%	--
35-44	1%	2%
45-64	5%	6%
65+	19%	15%
Race/Ethnicity		
White, non-Hispanic	5%	5%
Racial-Ethnic Minority	7%	4%
Federal Poverty Level		
<250%	8%	6%
≥250%	4%	5%

* BRFSS 2008-2010; Age-adjusted to the U.S. 2000 population with the exception of All Cancers

FIGURE 24 - PERCENT OF CARDIOVASCULAR DISEASE AND CANCER BY POPULATION

Supporting Indicators

	Adults
Overweight Prevalence	37%
Obesity Prevalence	20%
Poor Mental health	8%
Binge Drinking	18%
Smoking Prevalence	12%

Source:BRFSS 2008-2010; Age-adjusted to the U.S. 2000 population with the exception of All Cancers, ** YRBS 2011

FIGURE 25 - RISK BEHAVIORS IN ADULTS

- There are significant differences in smoking prevalence by age. A lower proportion of Vermonters 65 and older (5%) are current smokers compared to all other age groups. A higher proportion of adults 25-34 years old (18%) are current smokers compared to adults 45-64 years old (11%). Though a higher proportion of people of color (18%) are current smokers compared to white, non-Hispanic Vermonters (11%), this does not reach the level of statistical significance. There is a statistically significant difference in the proportion of Vermonters under 250% of the Federal Poverty Line (22%) who smoke compared to those above 250% (8%).
- There are significant difference in the prevalence of cardiovascular disease (CVD) by gender, age, and Federal Poverty Level. A higher proportion of males (7%) have CVD compared to females (4%). A higher proportion of adults 65 years and older (19%) have CVD compared to all other age groups. A higher proportion of adults living below 250% of the Federal Poverty Line (8%) have CVD compared to those above 250% (4%). There was no statistically significant difference by race/ethnicity.

2.3.3 PUBLIC SAFETY, CRIMINAL JUSTICE & HAZARD MITIGATION

Public Safety, Criminal Justice Goal: Improve the safety of the public including the loss of life and property from natural and manmade hazards.

Key Issues/Trends/Insights

[Data for this section drawn from 2011 *Chittenden County Multi-Jurisdictional All Hazards Mitigation Plan.* This Plan will be updated in 2016. More information can be found on the Flood Ready Vermont website.]

- Feeling safe and secure in our homes, communities and urban areas is key to overall health in the community. Safety and perceptions of safety feature highly in people's view of their living environment, their sense of well-being and quality of life. As urban areas grow, the need for safe social and physical environments, where people are able to participate fully in their communities, becomes an increasing challenge.
- The cost of emergency response and multiple law enforcement agencies is a challenge to municipalities.
- The lack of volunteers for volunteer fire departments is causing concerns about the ability and timeliness of response and is resulting in the need to hire firefighters.
- As identified by the 2011 *Chittenden County Multi-Jurisdictional All Hazards Mitigation Plan (AHMP),* the highest ranked county-wide hazards are severe winter storm, flooding, telecommunications failure, power loss, major transportation incident, fluvial erosion and epidemic. Three of the top hazards are natural hazards, three are technological hazards, and one is a societal hazard.
- Flooding and fluvial erosion can damage or destroy homes, businesses and transportation infrastructure. In Chittenden County there are 866 structures (1.5% of total County structures) in flood-prone locations as identified in detail in the AHMP and municipal Annexes. Chittenden County experienced damage from five FEMA-Declared Natural Disasters between 2010 and 2014 (severe storm, flood, tropical storm), more declarations than occurred in the four previous 5-year periods. Additional data, including non-declared events, will be updated in the 2016 AHMP.
- Winter storms, flooding, transportation incidents and epidemics can cause human injury, illnesses and even death.
- Winter storms, telecommunications failure, power loss and transportation incidents can cause serious disruption of public safety services.
- Flooding, fluvial erosion and possibly epidemics may be made worse by projected climate changes. While Incident Command System training has continuously been offered throughout the state, post-Irene analysis has shown that previous ICS training was positively correlated with increased ability to respond to the challenges posed by Irene. This increase was due to the ability to organize a unified command structure within the town and work more efficiently.
- Emergency Management Planning of all types needs to be kept up to date to best be able to respond, recover, and mitigate disasters. These plans include Local Emergency Operations Plans (LEOP) for each municipality, implementing improvement plans from exercises, and hazard mitigation plans.
- The State has incentivized flood resilience planning through the Emergency Relief and Assistance Funds (ERAF) program. There are a number of steps a municipality can take to improve the local match requirement for FEMA post-disaster relief funds. Generally, in the event of a Federal-disaster declaration FEMA covers 75% of the cost of "Public Assistance" projects,

typically repairs to roads and culverts and debris cleanup. The remaining 25% must be matched by the State and municipal government. Four requirements are needed for the State to provide half of that requirement, 12.5% match assistance. As of early 2016, nearly all of Chittenden County's municipalities have met these four benchmarks as follows:

- adopt Local Emergency Operation Plans annually – 18 or 95% of Chittenden County municipalities have adopted these.
- adopt the Town Road and Bridge Standards that meet or exceed the VTrans 2013 standards – 18 or 95% of Chittenden County municipalities have adopted these; Bolton is considering adoption of these standards.
- participate in the National Flood Insurance Program – 17 or 89% of Chittenden County municipalities participate. St. George is considering adoption in FY17 while Buel's Gore has no mapped floodplain; and
- adopt a FEMA-approved Local Hazard Mitigation Plan – 19 or 100% of Chittenden County municipalities have an adopted Plan.

- There is an opportunity for the State to provide 17.5% of the FEMA post-disaster relief funds match, if the municipality protects river corridors. Currently 14 of our municipalities have received early adopter recognition for river corridor protection due to having strong municipal water quality buffers and floodplain regulations. This early adopter status will end two years after the river corridor maps are updated. Municipalities will need to adopt more stringent standards in order to be eligible for the 17.5% match. Municipalities will have two years to adopt these new protections, once the State incorporates the more accurate Fluvial Erosion Hazard areas into the published River Corridor map. There are two options: receive FEMA's Community Rating System (CRS) designation and prohibit structures in Flood Hazard Areas; or Adopt River Corridor (with the 50' buffer) or River Corridor Protection Area (without the 50' buffer) regulations for streams draining over 2 square miles, and a setback of 50' from top of bank for streams draining under 2 square miles that cannot be waived, and Fluvial Erosion Hazard protections. As of April 2016 Colchester is the only municipality with CRS designation. Hinesburg and Jericho have FEH overlay regulations although these may need refinements prior to the two year limit, and Westford is considering River Corridor regulations.

Key Indicators

- **Violent Crime Rate**

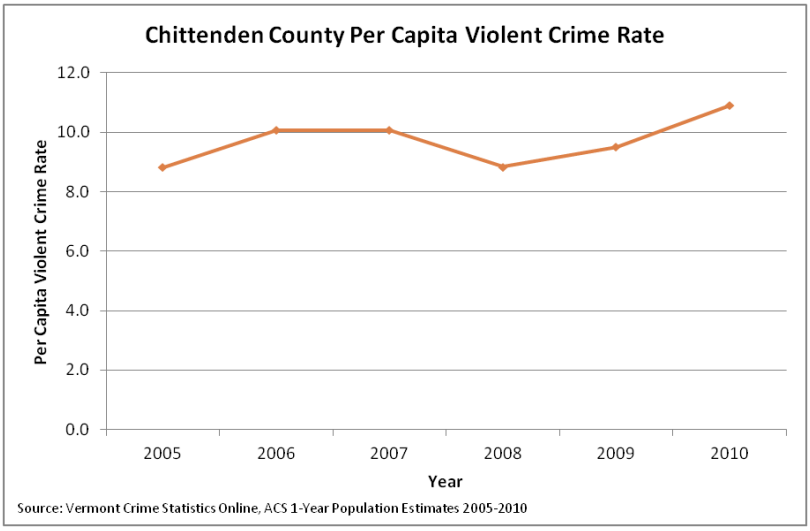


FIGURE 26 - VIOLENT CRIME RATE PER CAPITA

- **Rate of adult abuse and neglect victims** (AHS list) **-** The data needed for this indicator is not yet available, the intent is to include this information in the Annual Indicator Reports.
- **Incarceration rates by race compared to general population** (Source: Dept of Corrections). "The largest proportion of both male and female inmates were prosecuted in the largest District Court (Chittenden county) with the fewest inmates from the smallest counties. But on a per capita basis, Chittenden was close to average in its use of incarceration bedspace; only Bennington (176%) significantly exceeded expectations for use of prison/jail based on its population" (Source: DOC Fact and Figures FY2011, Page 38). "Although the residents of Vermont are predominantly characterized by race as "white", on a per capita basis, the utilization of DOC services by "black" residents is about 7 times higher for incarceration and 2.5 times higher utilization of DOC services by "black" residents for field supervision. Native Americans and Asians use DOC resources at about half the rate of "whites"" (Source: DOC Fact and Figures FY2011, Page 38).
- **Emergency Incidents - 2011**

Chittenden County Emergency Incident Data - 2011

Service Good Intent	False Alarm	Hazard Cond	Structure Fire	Canceled	Wildland	Other	Outside	Vehicle	Other Fire	Explosion	Grand Total Fire	EMS call	Medical Assist	Motor Vehicle Accident	Extrications	Water Rescues	Other	Search	Electrical	Grand Total EMS	Grand Total Fire and EMS
1779	1938	855	321	252	63	145	54	37	17	30	5491	5586	509	595	153	26	14	6	0	6889	12380

FIGURE 27 - 2011 EMERGENCY INCIDENTS

Source: Division of Fire Safety Annual Report

- **% and number of structures in special flood hazard areas in Chittenden County** (based on GIS analysis, Source: CCRPC and/or State NFIP.) 1.5% of structures or 866 structures out of 58,598 structures are within the Special Flood Hazard Area and Fluvial Erosion Hazard Area in 2012.
- **Vaccination rates** (Source: Vermont Immunization Registry) – There is a clear increase in the % of children receiving influenza immunizations from 2010 to 2012. Younger children have better influenza immunization coverage than teens – which do not see their providers as regularly as the young ones. Coverage in all groups needs to be improved. Note that actual rates may be higher than indicated since the use of the registry is not universal among practitioners.

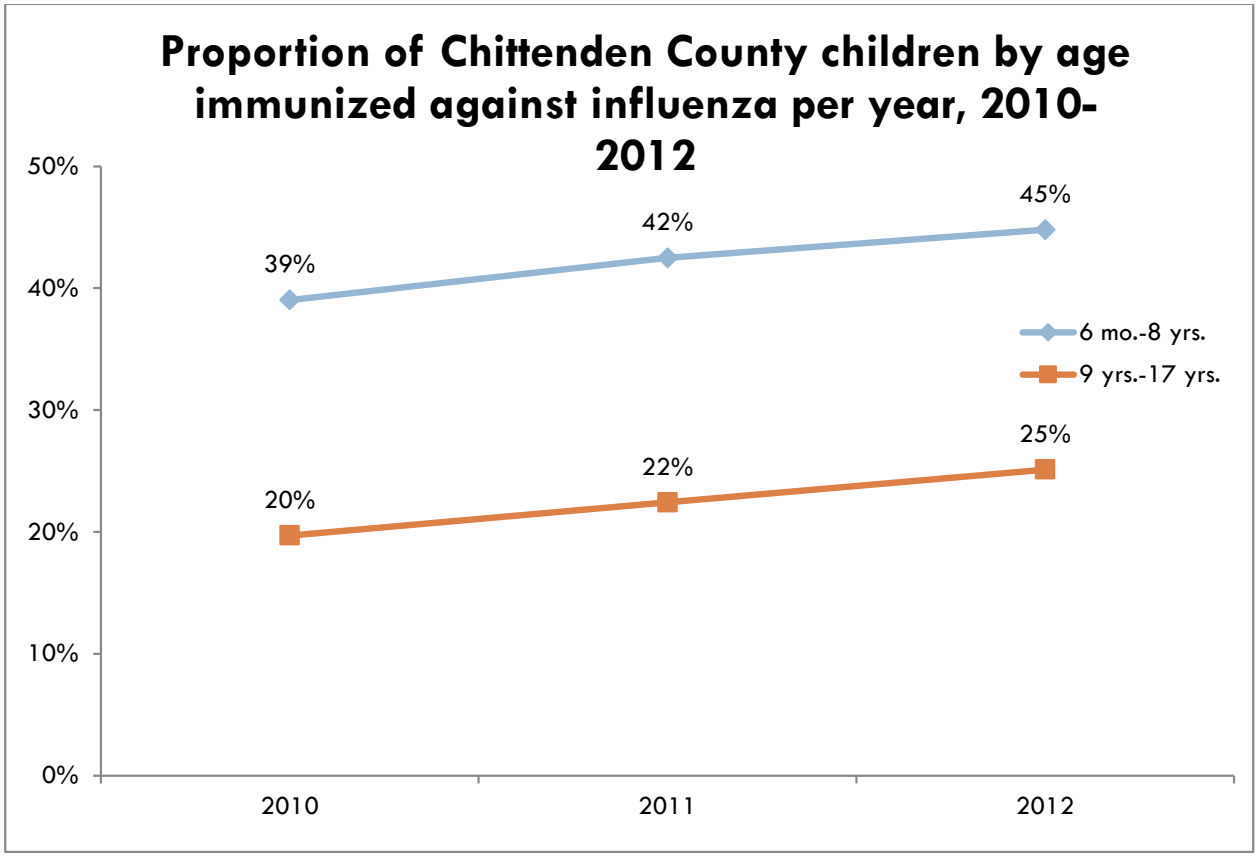


FIGURE 28 - PEDIATRIC FLU VACCINATION RATES

- **American Red Cross # of incidents and persons where shelter was needed** - The data needed for this indicator is not yet available, the intent is to include this information in the Annual Indicator Reports.
- **EMS aging calls** (Health Dept) - The data needed for this indicator is not yet available, the intent is to include this information in the Annual Indicator Reports.

2.3.4 SOCIAL CONNECTEDNESS

Social Connectedness Goal: Increase opportunities for people of all backgrounds to engage in the multicultural social fabric and activities of the community.

Key Issues/Trends/Insights

[Data in this section is drawn from references as indicated below. The data for the Key Indicators need to be developed through primary data collection, and is therefore not yet available for this Plan.]

- Social connectedness provides an indication of community strength and resiliency. The concept of community is fundamental to people's overall quality of life and sense of belonging. Informal networks and how people connect with others are important for strong communities and social cohesion. Confident and connected communities suffer less social problems, are adaptable to challenges, and support social and economic development. There are major health, economic and environmental benefits in developing opportunities for and participation in social interactions, recreation and leisure, arts and cultural activities.
- Resident attachment describes the emotional connection residents feel towards a geographic community. Research conducted by the Knight Foundation and Gallup discovered that the main drivers that influence attachment to a place are how accepting a community is of diversity, its wealth of social offerings, and its aesthetics. A correlation was also discovered that tied stronger resident attachment to better local economic growth (GDP). (Knight Foundation, http://www.soulofthecommunity.org/
- Social connectedness has been identified as a social determinant for individuals' health and well-being. Individuals who experience disenfranchisement and social exclusion suffer greater risk of depression, illness and addiction. (Minnesota Dept of Health)
- While Chittenden County continually ranks high for its quality of life, there are segments of our community who persistently suffer exclusion, or are at risk of suffering disenfranchisement. Underrepresented communities (low-income, people of color, foreign born, seniors, youth) have identified barriers such as lack of reliable transportation, the inability to meet one's basic needs due to low incomes, discrimination, and exclusion from governance as significant threats to their quality of life and sense of well-being. In addition, people of color, New Americans and English language learners have identified cultural and structural racism, xenophobia, and exclusion from social networks, education, and governance as the greatest threats to their quality of life. (ECOS' outreach efforts, 2011-12; Legacy Project outreach, 2010-12; Plan BTV outreach, 2012)

Key Indicators

Because the data needed for these indicators is not yet available, the intent is to collect primary data by surveying residents about quality of life and disaggregate the data by race and income.

- **% of residents who say that they mostly have positive interactions in their communities (neighborhood, school/work, larger community).**
- **% of residents who feel positive about the increasing ethnic diversity of our region.**
- **% of residents who feel that there are enough:**
  -opportunities to connect with others;
  -gathering places to connect with others

- **Index of Dissimilarity** - Neighborhoods differ in their racial composition. The Index of Dissimilarity is a measure of the evenness with which two groups are distributed across neighborhoods (or census tracts). It helps to answer the following questions: are racial groups evenly distributed throughout neighborhoods, or are some racial groups concentrated more in certain neighborhoods? The Census divides areas into census tracts that contain on average, about 4,000 residents. A score of 0 corresponds to even distribution across census tracts, while a score of 100 represents total segregation. Values between 30 and 60 indicate moderate segregation. According to the DRAFT Chittenden County Fair Housing and Equity Assessment (FHEA), the Hispanic, Black, and Asian populations are low to moderately integrated (the Draft FHEA can be found here: www.ecosproject.com/analysis).

2.3.5 ARTS, CULTURE AND RECREATION

Arts, Culture and Recreation Goal: Increase access to, and participation in, arts, culture and recreational opportunities.

Key Issues/Trends/Insights

[Data in this section drawn from the Vermont Arts Council]

- This section looks at both attendance at artistic and recreational programs and events in the community, as well as active participation in creative endeavors.
- There is a diminishing amount of time in school dedicated to arts and recreation; after school programs and are picking up the slack, but are not accessible to all (for a variety of reasons).
- Arts, culture and recreation are a major contributor to the overall quality of life of residents and visitors, and are a key factor in attracting businesses who see arts, culture and recreational opportunities as key elements to attracting and retaining a talented workforce.
- Participation in arts, culture and recreation activities by both residents and visitors contributes to a strong sense of shared community, as well as the economic vitality of the community.
- Attention needs to be paid to developing programs and events that attract and engage residents from diverse backgrounds, ages and income levels.
- Use of arts in education is a critical pedagogical tool for developing critical thinking skills, do better at math and science, develop insights on cultural diversity and the human experience, and build self-esteem through self-expression.
- In order to increase participation in arts, culture and recreational activities by underserved populations, organizations need to remove barriers to participation (including transportation, costs, and cultural differences).
- As the needs and interests of residents change, the nature and uses of our parks are evolving as well. This is particularly evident as new comers to the community bring cultural traditions of recreation with them, and seek appropriate venues.

Key Indicators

- **Participation at arts and cultural events**. Potential Source: Vermont Cultural Data Project. Because the data needed for these indicators is not yet available, the intent is to collect it in the future.
- **Arts in Education**. Because the data needed for these indicators is not yet available, the intent is to collect it in the future.
  - Number of FTE Art Teachers in County schools
  - Ratio of school arts specialists to students
- 66% of the Chittenden County population resides within 1/2 mile of parks or publicly accessible natural areas in urban areas and 1 mile in rural areas. (Source: Park, Open Space: CCRPC, Population, U.S. Census (2010))

2.3.6 CIVIC ENGAGEMENT

Civic Engagement Goal: People from diverse backgrounds feel that they have a say in political and non-political decisions that affect their lives, neighborhoods and communities.

Key Issues/Trends/Insights

- Civic engagement consists of political and nonpolitical activities that help identify and address community concerns. Being able to participate in, express views and influence decisions that affect one's life, neighborhood and community are essential for a true democracy. Effective civil and political systems allow our communities to be governed in a way that promotes justice and fairness and supports people's quality of life.
- Enabling democratic local decision making is one of the key purposes of local government and is also important in promoting the social, economic, environmental and cultural wellbeing of communities. Vermont and Chittenden County have a long held tradition of "local rule." Sometimes this supports to maintain local traditions and pride; and sometimes it is an impediment to collaboration and integrating new ideas.
- The population in our area is becoming increasingly ethnically diverse. For example, at least 56 languages (other than English) are spoken by students in Burlington (Burlington School District 2010-11 Annual Report, pg. 3). It is important that we understand how our institutions and processes need to evolve in order to remove barriers that limit people's ability to exercise their civic rights and decision making.
- New Americans, U.S born people of color, and low-income participants shared that their unfamiliarity with how local democratic systems work deters them from participating, though they'd like to. And when they are occasionally outreached to participate in a program, it feels as if it is just part of a regulatory requirement or grant opportunity, and not for the intention of truly incorporating their input. (ECOS' outreach efforts, 2011-12; Legacy Project outreach, 2010-12; Plan BTV outreach, 2012)
- Youth and adults of diverse cultural backgrounds do not feel that they are involved in decisions that affect their lives, neighborhoods and communities and therefore feel that they cannot participate and fully give back and improve the community's well-being.

Key Indicators

- **% of eligible voters that vote**

% General Election Voter Turnout				
	2004	2006	2008	2010
Chittenden County	69%	60%	70%	52%
Vermont	71%	61%	72%	54%

FIGURE 29 - PERCENT OF ELIGIBLE VOTERS WHO VOTE

Source: Vermont Secretary of State. http://vermont-elections.org/elections1/election_info.html

- **% of students who spend 3+ hours/week volunteering**

Year	2001	2003	2005	2007	2009	2011
Percent	13.0%	12.0%	12.0%	12.0%	12.0%	13.0%

FIGURE 30 - PERCENT OF STUDENTS WHO SPEND 3+ HOURS/WEEK VOLUNTEERING

Source: 2011 Youth Risk Behavior Survey, Dept. of Health

- **Local elected officials** by race, gender. Because the data needed for these indicators is not yet available (with the exception of the City of Burlington), the intent is to collect the data. Efforts to do primary data collection need to happen in order to be inclusive and understand where the gaps are.
- **Municipally-appointed commissions and boards** by race, gender. Because the data needed for these indicators is not yet available (with the exception of the City of Burlington), the intent is to collect the data. Efforts to do primary data collection need to happen in order to be inclusive and understand where the gaps are.
- **% of residents that feel they have a meaningful voice in the decision-making processes that affect their life, neighborhood and community.** Because the data needed for these indicators is not yet available, the intent is to collect primary data by surveying residents. Efforts to do primary data collection need to happen in order to be inclusive and understand where the gaps are.

2.4 ECONOMIC INFRASTRUCTURE

Broad Goal: Build the region's capacity for shared and sustainable improvements in the economic wellbeing of the community through support of both local and globally competitive initiatives.

INTRODUCTION: There is a direct relationship between a region's economic prosperity and the ability of residents to thrive: by gaining a higher income, residents have the ability to purchase needed items and lead a healthy lifestyle. In general, this leads to greater social connectedness, educational advancement, increased life expectancy, and happiness. Furthermore, if businesses are prospering, they are better able to continue to provide philanthropic and volunteer support for the community.

Over the past several decades, it is apparent that Chittenden County enjoys a competitive advantage relative to the balance of the state, based on the findings presented in the Economic Base and Competitive Assessment reports: the County's share of population, Gross Domestic Product, jobs and income, among other economic indicators, has increased.

Despite the advantages the region has enjoyed in many areas, however, there are some disquieting trends that need to be acknowledged. If recent trends continue, there will be additional loss of jobs in high-wage industries and slow growth in lower-wage industries. Job growth has been slow over the past decade and this is likely to continue into the future. However, the Chittenden County region has a highly desirable quality of life by many measures and there will continue to be growth pressures. Our challenge is how to manage and shape these larger external growth pressures to improve our job opportunities and incomes while also improving our quality of life.

This section of the ECOS Plan looks at three goals related to our economy: Economy, Household Financial Security, and Working Lands. Under each of these goals, a quick review of key issues and trends including a short list of selected indicators is presented. There are many specific and smaller measures that, while important, are not included so that we can focus on the biggest and most important trends that will affect the long term ability of our residents and our children and grandchildren to have a range of opportunities for jobs, income growth, and be able to afford not only their basic needs (housing, food, clothing), but also be able to fully enjoy their life in Chittenden County.

Our economy is typically looked at in terms of farm and non-farm employment. Therefore, this section includes an Economy section that looks at our non-farm employment and jobs and the opportunities for employment outside of agriculture. The Working Lands section focuses on agriculture as an industry and land use. The Household Financial Security section looks at the result of having a job (or not): income and pressures on income that impact our families' ability to enjoy their lives.

2.4.1 ECONOMY

Economy Goal: Retain and support existing employers and job growth, grow target sector employers and entrepreneurs, and work to attract a greater diversity of employers and employees.

Key Issues/Trends/Insights

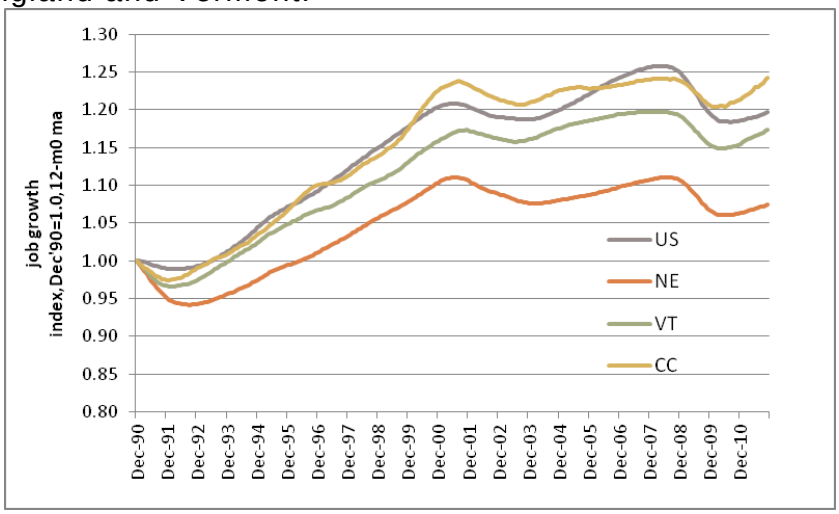
[Data in this section drawn from Economic Base Analysis, and the Economic Competitive Assessment Analysis Reports]

- Chittenden County's employment base is largely within five private industry sectors: Healthcare and social assistance; retail trade; manufacturing; accommodation and food service; and professional, scientific and technical services.
- Chittenden County is a mix of urban, suburban and rural areas, with a rural character that is important to many residents. Similarly, the economy includes the largest for-profit employer in the state (the major IBM complex); the largest retail area in Vermont with four communities ranking in the top five in the state based on preliminary 2011 retail sales tax reports (Williston – #1; South Burlington – #2; Burlington– #4; and Colchester - #5 (source: Vermont Department of Taxes); and significant agricultural, recreational and open space areas. This mix of uses results in a character cherished by its residents and appealing to prospective residents. The challenge is to plan and manage future growth, including economic development, so that it sustains and enhances this community character.
- Employment in the private sector declined between 2000 and 2010. Total non-farm employment in Chittenden County decreased from 95,354 to 93,231 between 2000 and 2010 – a loss of 2,123 jobs, or -2.2 percent. This was offset in part by an increase in public sector employment, but it was not sufficient to offset private sector losses (private sector: -4,386 + public sector: 2,263 = net -2,123).
- Chittenden County is currently modestly-supplied with buildings and land for business expansion. In the future, additional "shovel-ready" sites with good access, full utilities and proper zoning will be necessary if the County is to be competitive in attracting larger projects or retaining local businesses seeking to expand.
- Educational levels among residents 25 years old and older exceed state and national norms. (See Section 2.5 Education for more detail.) However, due to our aging demographics and available workforce, we need more individuals with postsecondary training and experiences.
- The County is blessed with a highly desirable quality of life. The notable exception is the affordability of housing, which was both rated the lowest quality of life factor in the Employers Survey (can be found in the Analysis Reports referenced above) as well as being the most commonly observed weakness of the area in interviews of employers.
- Based upon the results of the Employers Survey, recreational opportunities, safety from crime, and cultural opportunities all scored Very Good or higher, while the quality of the K – 12 educational system scored just below Very Good.
- The County's labor force has a relatively low unemployment rate and high labor participation rate, with many skills categories, particularly technical skills, reported as difficult to find or unavailable by area employers. While some of these needs are for skills that are unique to specific companies, several employers surveyed reported similar training needs for skilled

manufacturing occupations particularly in the machine trades. Interviewed manufacturers emphasized the strong need for local training programs in machining and other skilled occupations to support their growth and sustainability. They also expressed concern and frustration over a lack of proficiency in math and writing skills.

Key Indicators

- **Recent Chittenden County job growth** has been stronger than the U.S., New England and Vermont.



Source: US Bureau of Labor Statistics

FIGURE 31 - RECENT CHITTENDEN COUNTY JOB GROWTH, SINCE 1990

Total number of businesses in Chittenden County: Since peaking in 2008 the County's business count has dropped by 101.

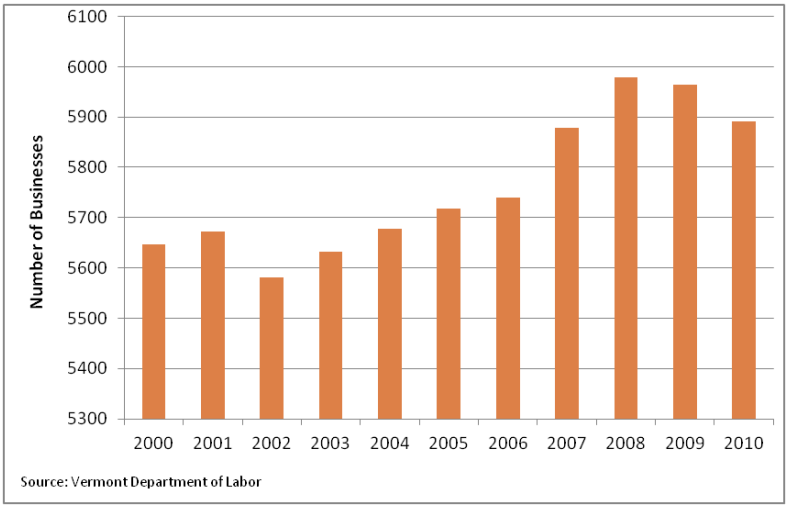


FIGURE 32 - TOTAL NUMBER OF BUSINESSES IN CHITTENDEN COUNTY

- **The unemployment rate in the greater Burlington area (**Burlington New England City and Town Area **(**NECTA)) has declined faster than the New England and US rates over the past two years.

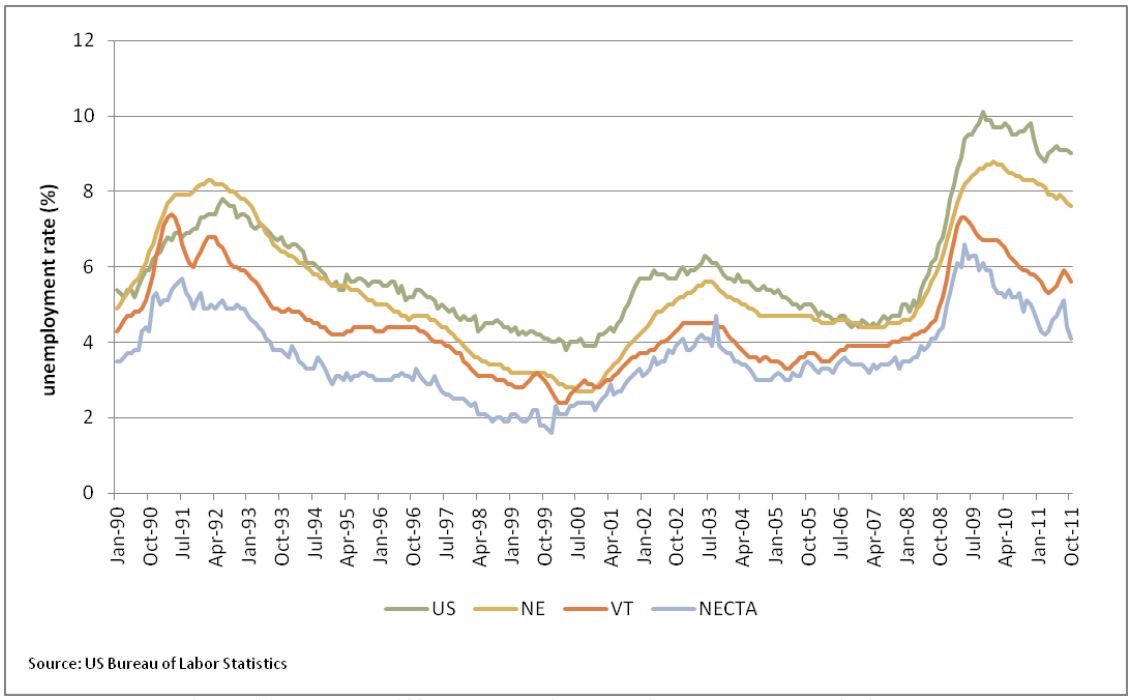


FIGURE 33 – UNEMPLOYMENT RATES IN THE GREATER BURLINGTON AREA

- Professional and technical services and Manufacturing jobs pay significantly higher salaries than our other major employment sectors.

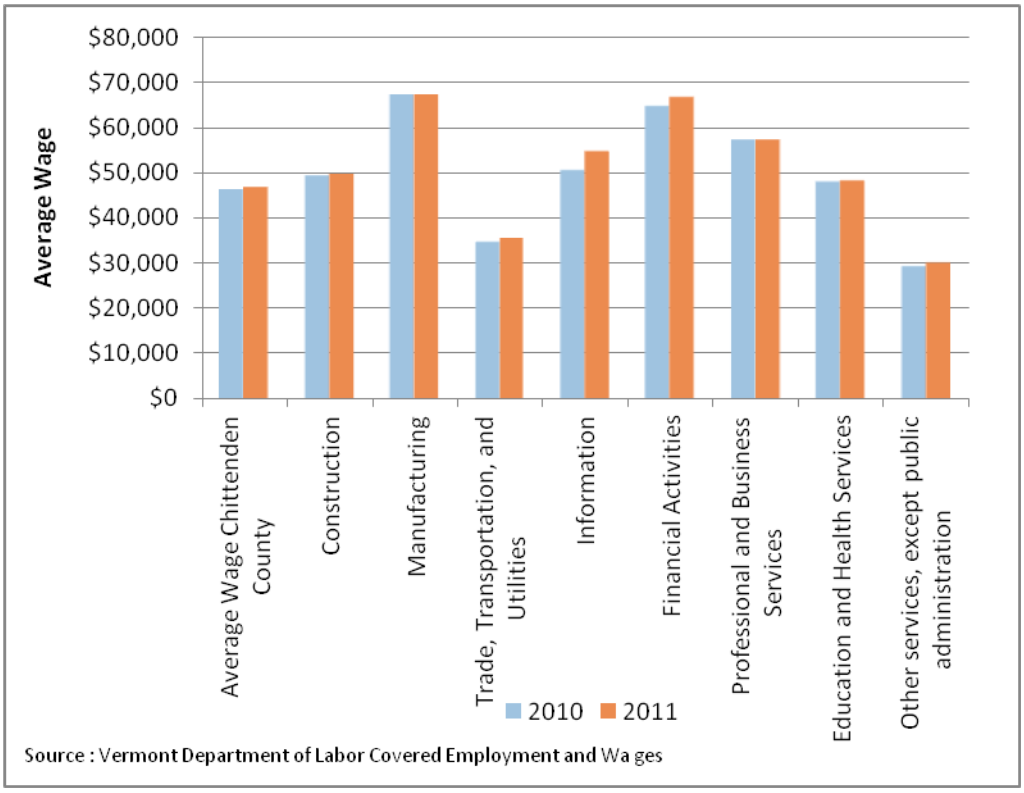


FIGURE 34 - AVERAGE WAGES BY INDUSTRY SECTOR

2.4.2 HOUSEHOLD FINANCIAL SECURITY

Household Financial Security Goal: Improve the financial security of households.

INTRODUCTION: Levels of income and wealth are key determinants of individual or family wellbeing. Economic standard of living involves a complex combination of factors such as income, living costs, and household size and composition.

Key Issues/Trends/Insights

[Data in this section drawn from Housing Analysis Report]

- In 2008, 21% of Chittenden County residents were living at less than 200% of the federal poverty level and many receive state and federal assistance to meet basic needs.
- Lower income Vermonters report higher rates of depression and chronic conditions, such as obesity, asthma, heart disease, stroke and diabetes.
- The County's ability to grow its economy in the future will be closely tied to its ability to provide available labor, particularly once the currently unemployed are absorbed back into the ranks of the employed as much as their skills will allow. A broad-based strategy of skills upgrading, new methods of recruiting and alternative working arrangements will be necessary.
- More focus is needed on education and workforce development to train employees for the opportunities in the technologies needed for manufacturing, professional services and health care. See more under the "Education" topic.
- Household financial security influences a family's ability to access enough food to fully meet basic needs at all times. Lack of financial resources can cause food insecurity.
  - 15,401 Chittenden County residents participate in 3SquaresVT (formerly known as Food Stamps).
  - 6.6% increase in 3SquaresVT participation since 2010.
  - 1 in 7 children in Chittenden County are food insecure.
  - 26% of grade school and high school students are eligible for free or reduced-price meals (Hunger Free VT – www.hungerfreevt.org).

Key Indicators

- **Chittenden County household income is higher than both VT and the US. However, median household income in the County has declined for two consecutive years, approximately back to 2006 levels.**

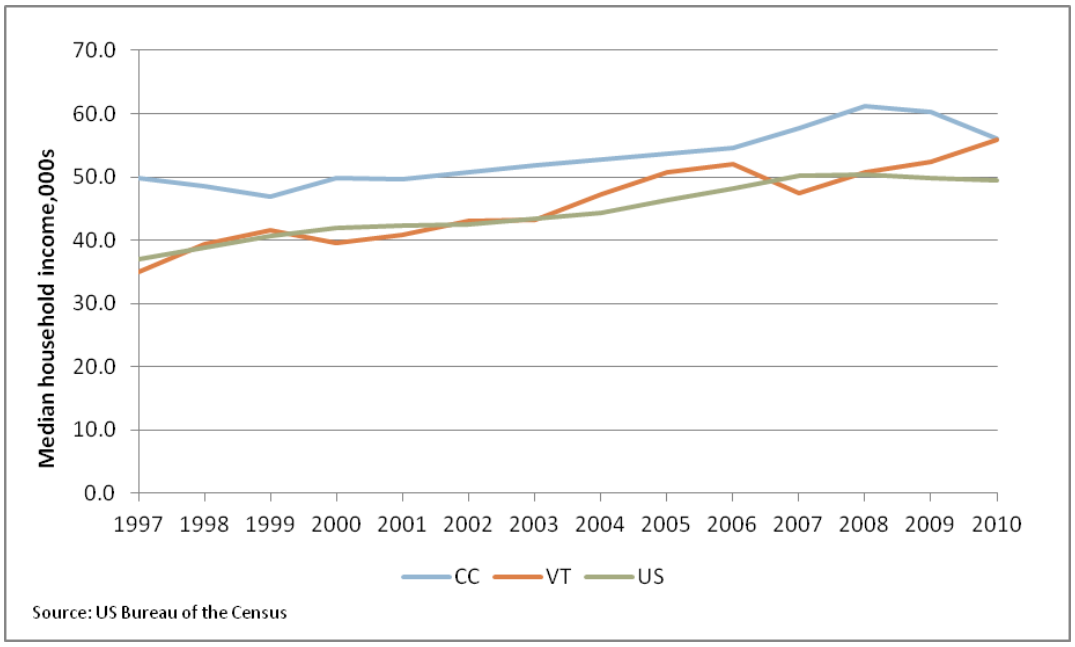


FIGURE 35 - MEDIAN HOUSEHOLD INCOME

- **Household income varies significantly by race**

Race of Head of Household	Median Income	Margin of Error
White	$60,297	+/- $1,376
African-American	$40,865	+/- $5,687
Asian	$54,417	+/- $10,580
Two or more races	$52,358	+/- $12,820

FIGURE 36 - MEDIAN HOUSEHOLD INCOME BY RACE

Source: U.S. Census Bureau, American Community Survey 2005-9

- **Percentage of Families whose Income in the Last 12 Months is Below Poverty Level**

	ACS 2007 3-year Estimates	ACS 2010 3-year Estimates
Chittenden County	6.10%	6.70%
Vermont	6.90%	7.60%
US (2010)		15.10%

FIGURE 37 - PERCENT OF FAMILIES BELOW POVERTY LINE

Source: U.S. Census Bureau, American Community Survey 2005-9

- **Average Combined Housing + Transportation Costs in 2010 is 53% of County median income** (derived from the H+T Affordability Index, Center for Neighborhood Technology). 45% is considered the threshold of affordability.

2.4.3 WORKING LANDS & LAND BASED INDUSTRIES

Working Lands Goal: Support the growth and vitality of working farms and managed forests; and sustainably manage sand and gravel extraction operations.

Key Issues/Trends/Insights

[Data for this section drawn from Natural Systems Analysis Report; Farm to Plate Annual Reporting; *Informing Land Use Planning and Forestland Conservation Through Subdivision and Parcelization Trend Information* – Vermont Natural Resources Council, September 2010; The Action Plan of the VT Working Landscape Partnership.]

- Working lands and resource extraction industries are critical components of a self-reliant and diverse economy, making a region less vulnerable to market crises. Local food and fuel production is preferred since the transportation to import these products consumes tremendous amounts of energy and generates pollution. In addition, when food is imported from far-away places, nutrient value is reduced during the transport time.
- Working lands and resource extraction industries are economically viable within the constraints of our natural landscape. Sustainably managed farmland and forest land means less developed land, fewer impervious surfaces, and thus a greater presence of the natural ecosystem's features and functions. Conversely, high quality food and productive forests are dependent upon clean water and clean, nutrient-rich soils. It is imperative that we maintain high quality water and soils for healthy and viable food and forest product industries.
- A major challenge to forest and farm businesses is the value of the land in these industries versus the value of the land for development. Often when these industries are no longer economically viable, the land is sold and developed, resulting in forest fragmentation and increased parceling of land. The number of parcels has gone up, while their size has gone down, diminishing their economic viability and the ecological services they provide. This situation has far-reaching potential consequences for the future of Vermont's local economies, including tourism.
- Markets for forest products are necessary to ensure that landowners can afford to hold and manage their forest land (Vermont Forest Resource Plan, page 57). Unfortunately, the Vermont forest products industry is in slow and unheralded decline which has resulted in dramatic reductions in wood processing and manufacturing (Action Plan of the Vermont Working Landscape Partnership, page 14)). In the face of increasing gas prices and international trade, the importance of local products and processing cannot be overstated. Markets for forest products are often influenced on regional scales beyond the county level, though support of opportunities to develop and take advantage of markets must occur at the local scale.
- In recent decades, farm enterprises in the County have been employing new forms of business ownership, engaging in non-farm employment, limiting the size of farm operations to control the growth of farm production expenses, producing different types of farm products, producing more farm-related products, and engaging in more direct sales to consumers. These trends present a new set of challenges for farmers and communities, including access to markets and access to affordable land. Difficulties acquiring the proper equipment, or accessing to a certified processing facility are also a common problem for some new farmers. We will need to adjust our regulations and programs to ensure that we are not unnecessarily prohibiting agricultural enterprises from diversifying as well as continue efforts to ensure that agricultural enterprises remain economically viable. It is not just about growing more or different things – it is also about

creating higher value products from what is grown. An example is helping dairy farms by increasing production of yogurt, ice cream, artisanal cheeses, and other dairy based products.

- Chittenden County contains two major zones of bedrock geology: Sedimentary Zone – Rocks formed by the deposit of sediment, located predominantly in the lowlands between Lake Champlain and the uplands on the eastern side of the County; and Metamorphosed Zone – Rocks formed by metamorphic processes located predominantly in the uplands on the eastern side of the County. No major geologic threats (such as major active fault lines, seismic disturbances, areas prone to sinkholes or subsidence) or opportunities (such as major deposits of valuable minerals) exist in the County. In Chittenden County, the extraction of sand, stone and gravel are currently commercially viable. These resources play an important role in our land development practices and economy. While it is important to manage the environmental impacts of these operations, it is also important to manage these finite resources because a reduction of these locally available products will likely have an impact on construction costs. These nonrenewable resources are used to produce building materials (such as concrete and railroad ballast), to use as landscaping materials, and to build and maintain public and private roads and buildings. Chittenden County contained 3 primary producing construction sand and gravel areas, and a total of 10 producing mines within those areas (Vermont Geological Survey/U.S. Geological Survey, 2010-2011 and USGS Mineral Resource Data System, 2015).

Key Indicators

- **Use Value Appraisal (UVA) Enrollment:** UVA is a State program allowing land to be taxed based on its income producing potential from agriculture or forestry, rather than its – typically higher - fair market (development) value. (Source: UVA program and the USGS National Land Cover Data)
  - In 2010, 66,411 acres and 789 parcels of UVA Forest Land enrollment.
  - In 2010, 16,895 acres and 311 parcels of UVA Agricultural Land enrollment.
  - From 2001 to 2006, 514 acres or 1% of agricultural land was converted to development; and 140 acres or .07% of forest land was converted to development.

- **The number of farms has increased, while the acreage of farmland has decreased.**

Farm Size (Acres)	1987	1997	2007	1987 to 2007 Change Number	1987 to 2007 Change Percent
1,000 or More	7	10	11	4	57.14%
500 to 999	44	23	25	-19	-43.18%
180 to 499	140	123	203	63	45.00%
50 to 179	134	137	178	44	32.84%
10 to 49	99	123	143	44	44.44%
Under 10	28	40	81	53	189.29%
Total	452	456	641	189	41.81%

FIGURE 38 - NUMBER OF FARMS OF DIFFERENT SIZES IN CHITTENDEN COUNTY, 1987 - 2007

SOURCE: U.S. Census of Agriculture, 1987, 1997 and 2007.

Use*	1987	1997	2007	1987 to 2007 Change	
				Acres	Percent
Cropland	53,177	42,188	31,161	-22,016	-41.40%
Woodland	31,925	28,853	34,744	2,819	8.83%
Other (including pasture)	12,967	12,314	17,477	4,510	34.78%
Total	98,069	83,355	83,382	-14,687	-14.98%

FIGURE 39 – ACRES DEVOTED TO DIFFERENT USES ON CHITTENDEN COUNTY FARMS 1987-2007

SOURCE: U.S. Census of Agriculture, 1987, 1997 and 2007

* Cropland-includes land planted for Christmas tree production and short rotation woody crops. Woodland includes natural or planted woodlots or timber tracts and cutover and deforested land with young growth that has or will have value for wood products and land in tapped maple trees.

- The average **property taxes per acre** for farms in Chittenden County increased 82 percent (adjusted for inflation) from 1987 to 2007, from $18.60 to $33.86. (Source: U.S. Census of Agriculture)
- The **net farm income per acre for farms** in Chittenden County increased from $102.49 in 2002 (adjusted for inflation) to $110.17 in 2007 (compared with Vermont's increase from $93.93 to $129.20). However the income trends vary depending on the product: there were decreases in the value of "dairy, cattle and calves" and "all other farm products" and increases (in some cases dramatic) in the value of other types of farm products (farm income from products made on the farm such as cheese or for services provided on the farm such as farm equipment repair). (Source: U.S. Census of Agriculture)
- **.19 net acres of agricultural and natural resource land lost annually to development per new Resident** (Source: National Land Cover Data, 2006, U.S. Census Population 2001-2006)

2.5 BUILT ENVIRONMENT

Broad Goal: Make public and private investments in the built environment to minimize environmental impact, maximize financial efficiency, optimize social equity and benefits, and improve public health.

INTRODUCTION: The built environment comprises the physical buildings of the County combined with supporting infrastructure necessary for travel, waste, water, and energy for living, working, and playing. Strategic investments to Chittenden County's built environment and development centers are necessary for promoting a high quality of life that is hinged on economic development, affordability, and environmental stewardship. Significant regional planning for sidewalks, housing, transit choice, and cultural and recreational resources can make more homes and businesses in our centers the key to allowing growth to happen more sustainably.

Other vital infrastructure updates are also needed to support livability in these centers. Sewer capacity and water supply investments are necessary to accommodate new residents and employers. Renewable energy sources for buildings and alternatives to driving need to be planned to reduce the consumption of fossil fuels and decrease carbon emissions.

This section focuses on the promotion of higher density, mixed use development in Center, Metro, Suburban, Enterprise, and Village Planning Areas – while de-emphasizing development outside of these areas. These actions would result in reduced energy for transportation and land use by promoting increased car pooling, pedestrian/bicycle travel, availability of transit, reduction in vehicle miles traveled, and the need for smaller homes that maximize efficiency. Consolidating households and employers in these Planning Areas also makes for providing other infrastructure more efficient. A description of the Planning Areas can be found in Chapter 4, Section 4.4.1.

2.5.1 LAND USE

Land Use Pattern Goal: Encourage future growth in the Center, Metro, Enterprise, Suburban, and Village Planning Areas to maintain Vermont's historic settlement pattern and respect working and natural landscapes.

Key Issues/Trends/Insights

[Data from this section drawn from Historic Development and Future Land Use/ Transportation Analysis Report]

- Over the past 60 years development trends, zoning regulations, and consumer preference have shifted growth away from the metropolitan areas around Burlington, to more suburban and rural locales. This shift has resulted in scattered development at low densities that consume large amounts of land, high infrastructure costs, with little opportunity for social interactions, and less ability to walk to services.
- Overall, Chittenden County is moving in the right direction of developing and implementing policies that encourage more growth in these areas. As of 2012, Chittenden County includes 10 Villages, 2 Downtowns, 2 Growth Centers, 2 New Town Centers, and 1 New Neighborhood that are part of the State Designation Program that promotes smart growth principles. Recent studies and surveys indicate that households are choosing to live in areas with shorter commute times, nearby shops and services, and more transit options. This growing demand indicates that the small lot and attached accessible housing stock may be in short supply.
- Forest and agricultural land fragmentation and increased parceling have meant that the number of parcels in rural areas has increased while their size has decreased, diminishing their economic viability, scenic, and the ecological services they provide.
- Future land-based opportunities for farming and forest-based products, recreation and tourism may become more limited as suitable open land becomes less available. This possibility has far reaching consequences for the future of Vermont's local and tourism economies.
- There are over 4,400 designated historic sites in Chittenden County (over 2,500 in Burlington alone) and over 80 designated historic districts (see historic resources map here: http://maps.ccrpcvt.org/ChittendenCountyVT/).
- A sustainable society operates without contributing new contaminants to the environment, but also cleans up old contaminants and returns those lands into productive use. Contamination impairs the environment, poses risks to human health, and discourages productive use or reuse of the property. Of 702 Chittenden County sites with reported contamination, 476 (68%) have completed corrective action (VT DEC Waste Management Identification Database).

Key Indicators

- **% of Acres in Major Land Use Categories, Chittenden County 2008**

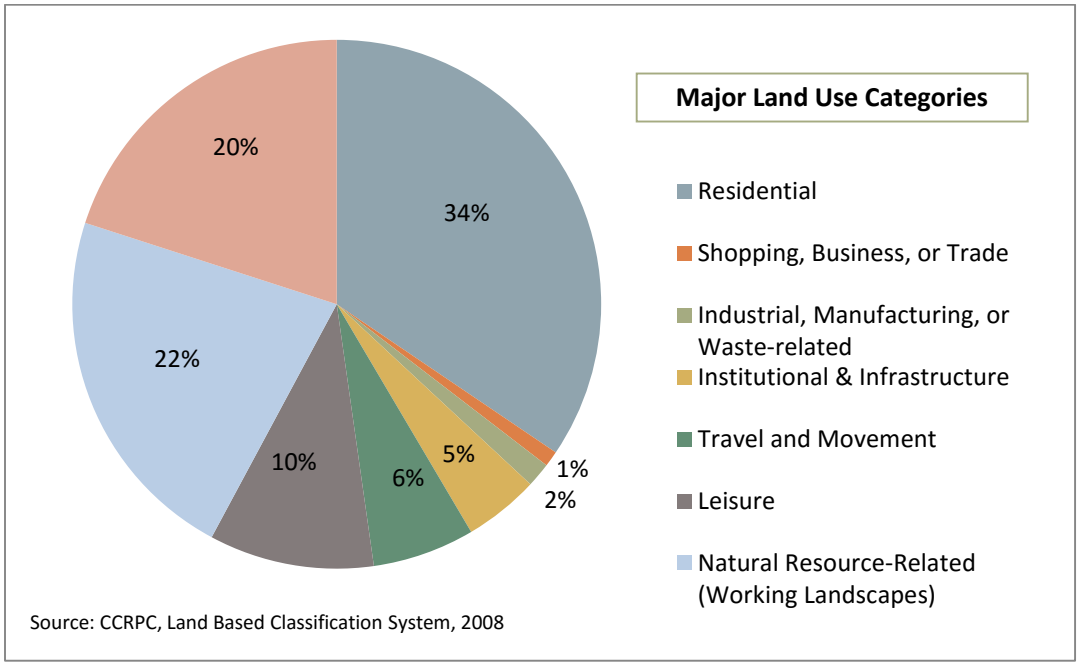


FIGURE 40 – LAND USE CATEGORIES BY PERCENTAGE

- **Percent of New Structures in Areas Planned for Growth: 1950 – 2010**

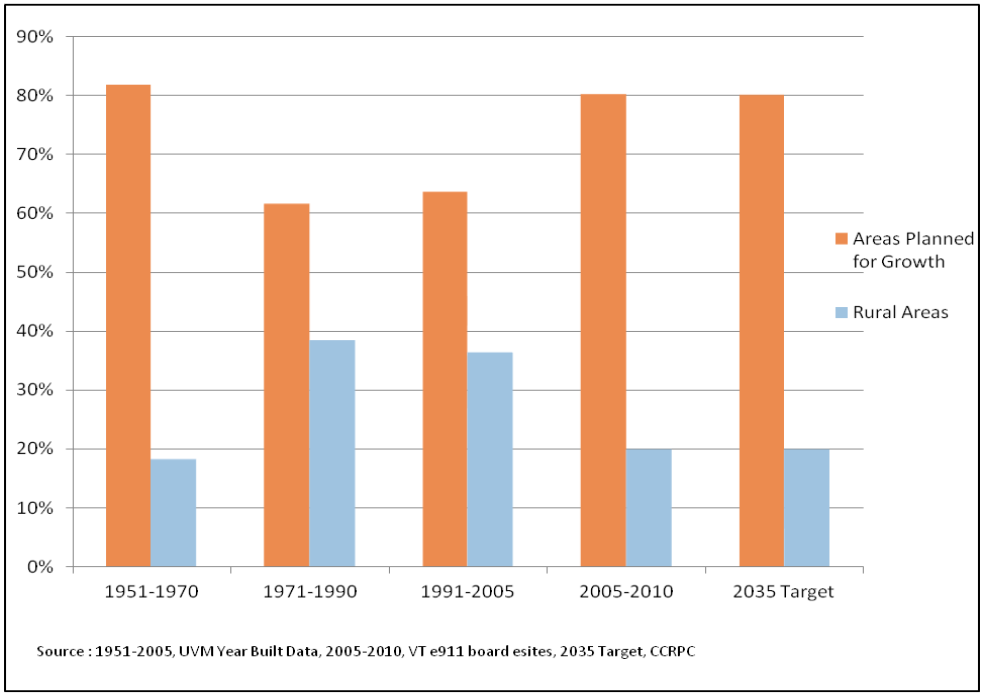


FIGURE 41 - PERCENT OF NEW STRUCTURES IN AREAS PLANNED FOR GROWTH, 1950 - 2010

Note regarding Figure 41: The best available data at the time of this report related to e911 structures. Going forward, CCRPC seeks to regularly track dwelling units and the non-residential square footage in the Areas Planned for Growth to better represent the development that is occurring in the County.

- **75% of private property investment is going into the Areas Planned for Growth and 25% in the Rural Planning Area** (Source: CCRPC from parcel and grand list data).

- **Development Density by Planning Area, 2010**

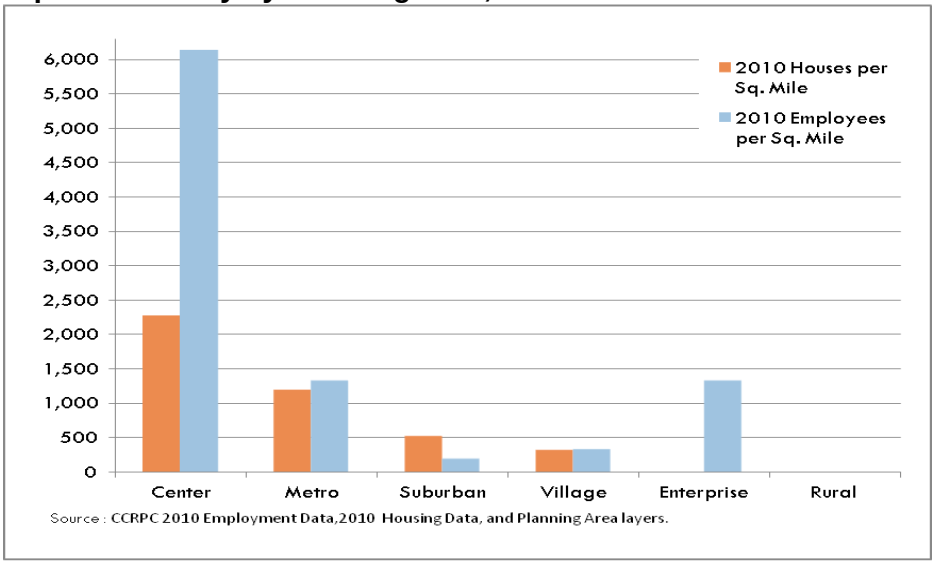


FIGURE 42 – DEVELOPMENT DENSITY BY PLANNING AREA, 2010

2.5.2 HOUSING

Housing Goal: Increase the opportunities for safe, decent, energy efficient, affordable, accessible and fair housing for all types of households in all neighborhoods.

Key Issues/Trends/Insights

[Data for this section drawn from Housing Analysis Report Analysis Report. Another reference that is currently under development is the Fair Housing Equity Assessment.]

- Adequate and affordable housing is central to a sustainable community. A healthy community is made up of households with a variety of incomes and affordable housing is needed to satisfy residents' wide range of needs. Lack of affordable housing contributes to many social stresses, including homelessness. Housing diversity supports the workforce and helps ensure that residents of all ages are continuously present in the community.
- The financial burden of paying a mortgage, homeowner's insurance, property taxes, utility expenses and other housing fees is unaffordable when these costs consume more than 30% of the household's income. Further, paying more than half of income on housing expenses creates a severe strain on a household's budget. These households are at much higher risk of foreclosure, eviction, homelessness, and frequent moving—all of which harm residents and the community. Approximately 4,000 owner households and 6,000 renter households living in Chittenden County pay more than half of their incomes for housing expenses. Cost burdens are highest for the lowest income residents, especially those living on fixed incomes or public assistance and those working at low-wage jobs.
- Approximately 500 people in Chittenden County were homeless during the January 2011 one-night count, clearly demonstrating gaps in the access to the types of housing options and services that could have kept these people housed.
- Some Chittenden County residents do not have equal access to housing opportunities. Members of the County's growing population of non-White residents, residents with disabilities, and single-parent families are more likely to experience poverty and less likely to become homeowners than other types of households. Insufficient housing options for all residents, regardless of their race, disability status, or membership in other protected classes, help prevent those residents from reaching their potential as contributing community members.
- Nearly 60% of the County's housing stock was built before 1980—when lead-based paint was widely used, when most home insulating/heating/energy technology was inefficient, and when building and accessibility codes did not yet accommodate all types of residents. (Note: Lead was banned from paint in 1978.)
- More than 11% of Chittenden County residents commute 25 or more miles to work—with potential adverse effects on both the health of the driver and the environment. In addition, with the exception of some neighborhoods in Burlington and Winooski and a few other Census blocks in the County, the vast majority of the County's working residents pay more than 45% of their income for the combined cost of housing and transportation.
- The County's population is expected to continue growing, albeit at a slower pace than in the past decade. Between 2010 and 2015, demand for additional owner homes is likely to be lower than prior levels of home building in the County. However, demand for renter homes is predicted to increase. Tools to ensure adequate housing supply for renters include renovation and

conversion of existing buildings as well as new construction. Looking further out roughly 4,000 additional housing units (rental and ownership combined) will be needed from 2010 to 2020.

- There are many needs for permanent supportive housing in the County, including housing for those transitioning out of a correctional facility. There are 69 beds in Chittenden County Transitional Housing Programs (FY2016 Department of Corrections). While this is certainly meeting a need, these are not permanent housing solutions, and not all inmates are able to transition to these houses. The statewide inmate population held in a correctional facility beyond their mandated sentence due to a lack of housing decreased by half between 2015 to 2016. However, as of February 2016, approximately 120 people statewide (28 in Chittenden County) remain in a correctional facility for this reason. Finding housing that will work for those that remain has proven challenging, due to the circumstances and needs of those inmates. For example, some of them previously violated rules in transitional housing locations.

Key Indicators

- **% households spending over 30% of income on housing expenses (owners and renters).**

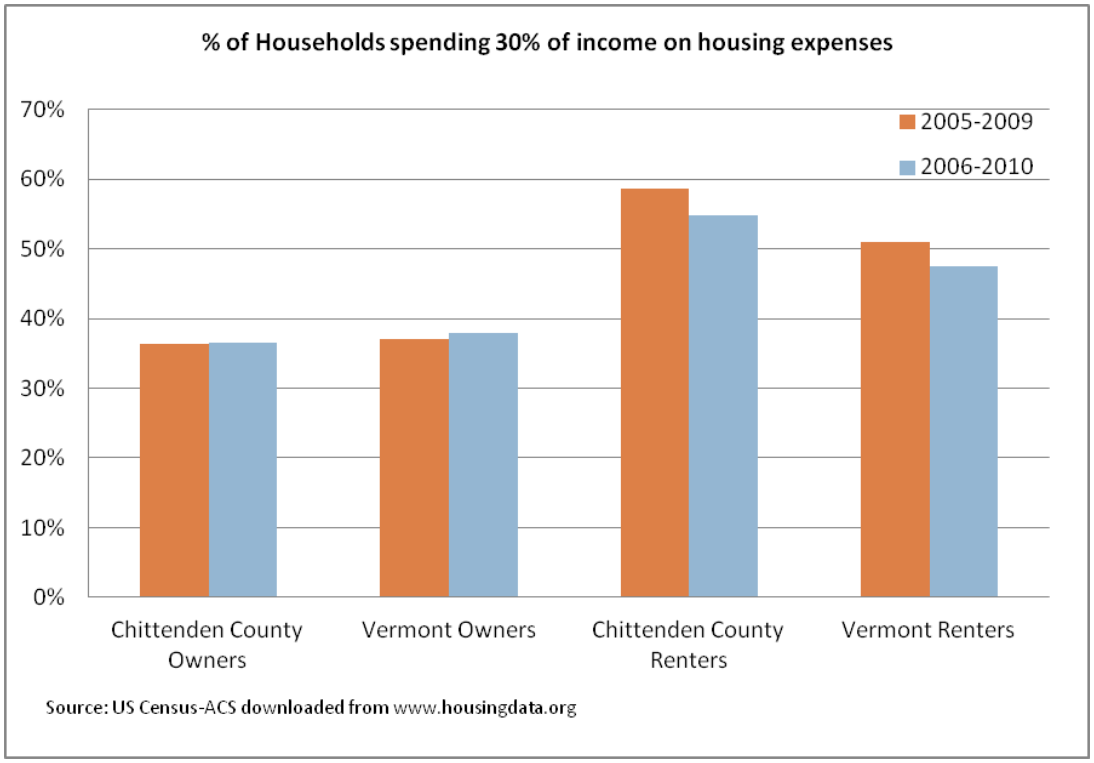


FIGURE 43 - PERCENT OF HOUSEHOLDS SPENDING 30% OF INCOME ON HOUSING EXPENSES

- **# of new housing units in 2010 by Municipality.** This data will be collected going forward.
- **Metro and non-metro vacancy rate for renters**. A healthy vacancy rate needs to be based on local circumstances, and long-term local averages (setting a national standard is not effective). The target for Chittenden County may be somewhere between 3% and 5%, though more analysis would need to be done to find a more accurate target. In Burlington

and Winooski the average rental housing vacancy rate has been well below this, at 1.5% from 2004 to 2011 (Source: VHFA Allen and Brook report). For the suburban areas the average rental housing vacancy rate from 2004 to 2011 is 2.6% - still lower than a healthy rate but not as low as Burlington and Winooski (Source: VHFA Allen and Brook report).

- **Months of inventory for Condos and Single Family Homes**. A healthy housing market is one in which housing units for ownership are on the market for no more than 6 months. The average for condos from 2004 to 2010 has been 4.4 months; and the average for single-family homes from 1998 to 2010 has been 5.1 months. However, in 2008 (at the beginning of the recession) the single-family housing units were on the market for 9.6 months. More recently, this trend has corrected itself. (Source: VHFA Allen and Brook report)
- **Homeless at point in time, 3 year average.** Average from 2008 to 2011 is 497. Source: Chittenden County Continuum of Care (Burlington CEDO 2011)
- **Increased inventory of affordable rental housing.** As of 10/22/2012 there were 120 properties and 4,520 subsidized units. Source: Vermont Directory of Affordable Rental Housing (www.housingdata.org/doarh).

2.5.3 TRANSPORTATION

Transportation Goal: Provide accessible, safe, efficient, interconnected, secure, equitable and sustainable mobility choices for our region's businesses, residents and visitors.

Key Issues/Trends/Insights

[Data for this section drawn from Historic Development and Future Land Use/Transportation Analysis Report and MTP Supplemental Documents in Chapter 4]

- Congestion is worsening with potential negative consequences on economic development, the environment and human health.
- The 2008-2009 Scenario Planning Process undertaken by the Chittenden County Metropolitan Planning Organization resulted in a clear surveyed preference for future growth to be concentrated into higher density, mixed use centers – this preference is also demonstrated in the policy direction outlined in municipal plans and ordinances throughout the County. Directing transportation investments to serve mobility and accessibility in compact settlements will result in a more cost effective and efficient transportation system.
- Continued low-density development in rural areas will increase Vehicle Miles Traveled (VMT) and likely increase potentially harmful air pollutants and greenhouse gases.
- Higher fuel prices will lead to an increase in the percentage of household income needed to meet transportation expenses; rural residents are disproportionately impacted by household transportation costs.
- Some population segments – youth, the elderly, low-income and communities of color – lack access to viable public and private transportation options. The lack of safe, reliable, and complete connections within the transportation system and between transport modes reduces access to employment, social, economic, and recreation opportunities; and limits access to basic needs by means other than a personal vehicle.
- More robust investment in transportation options – transit, walking/biking, carsharing and ridesharing – could reduce congestion, vehicle miles traveled, use of single occupancy vehicles, social exclusion, and could improve public health, and enhance the economic well-being of our residents, businesses and visitors.
- While access to public transit is widely available in the region's more urbanized areas, there are days and times when service is not available; some suburban and most rural populations lack access to transit.
- Roadway condition of over half of the arterial highway mileage in Chittenden County is rated poor or worse. Compounding our poor roadway conditions and inadequate investment, transportation funding in general is overly reliant on the state and federal gas taxes which are decreasing in value as inflation lowers purchasing power and revenues decline due to improving vehicle fuel efficiency and fewer VMT.
- Transportation costs exceed our capacity to maintain, operate, and improve our current system. Nor do we have adequate funds needed to grow transit, walking/biking, and Transportation Demand Management (TDM) programs. The prospect of less funding in a time of increasing transportation investment need is a worrisome trend and needs to be addressed.
- The MTP must be fiscally constrained to the funding anticipated for investment in the planning horizon through 2035. The following chart outlines the funds anticipated to be available for the next 25 years. The chart highlights the fact that we will not be able to afford everything that may be needed and that investments will need to be selected which promote future sustainability.

Estimated Transportation Funding for Chittenden County: 2010 - 2035

	COSTS in Millions (2010$)
Estimate of future funds	$1,177
Cost to maintain/preserve the transportation system	$754
Committed projects (TIP and Circ Alternatives)	$113
Total available to address new transportation needs	$310
Estimated cost of anticipated new projects (the sum of all items on the MTP Project List - Transportation Need)	$849
Funding deficit (Transportation Need minus Total Available)	($540)

FIGURE 44 - ESTIMATED TRANSPORTATION FUNDING FOR CHITTENDEN COUNTY 2010 - 2035

- While our rate of driving alone to work increased by 36% between 1980 and 2000 (to 76% of all work trips), in more recent years this trend has shown improvement to 71% in 2010. We've also seen a nearly 60% increase in transit ridership the past decade. Vehicle Miles of Travel (VMT) per person is also on the decline, down 8% between 2000 and 2010. It is imperative that we maintain these positive recent trends in order to reduce congestion, decrease greenhouse gas emissions, and more efficiently utilize all of our transportation resources.
- Note: Aviation transportation is planned for by the Burlington International Airport (BIA) according to Federal Aviation Administration procedures. Air to ground transportation planning is coordinated between CCRPC, BIA, and the City of South Burlington and is considered in this Plan.

Key Indicators

- **Percent of workers commuting by non-Single Occupant Vehicle (SOV) mode (walk, bike, transit, carpool, telecommute).** Recent data suggests the reversal of a negative trend going back at least 30 years and probably longer.

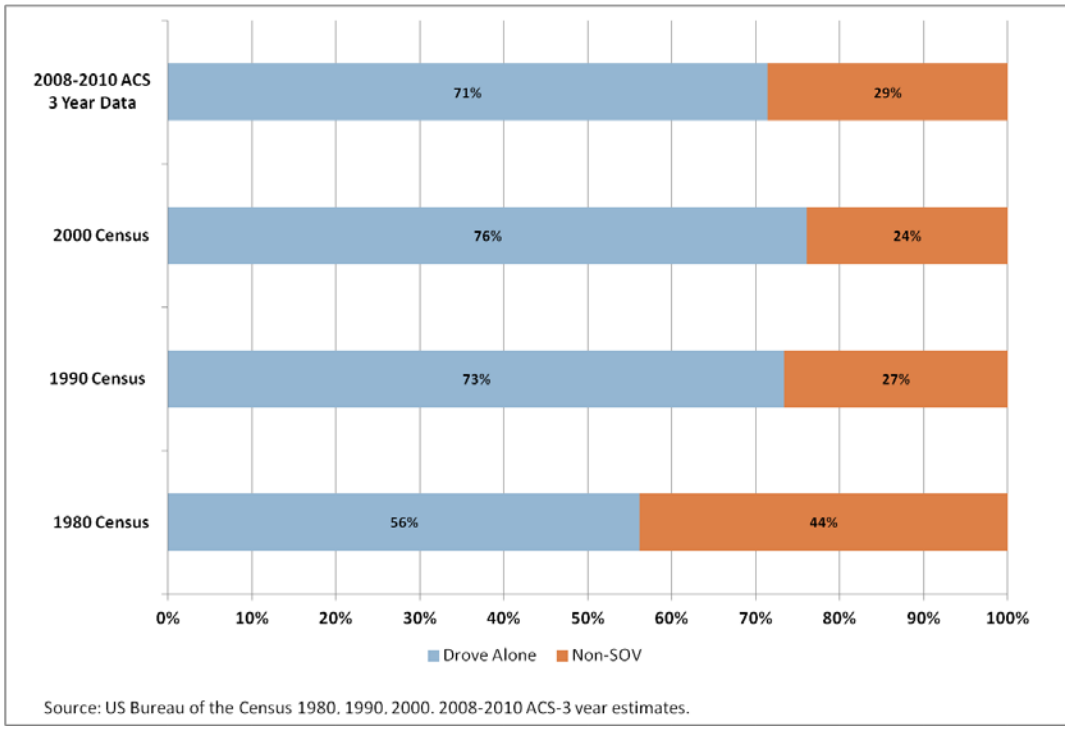


FIGURE 45 – PERCENT OF WORKERS COMMUNTING BY NON-SINGLE OCCUPANT VEHICLE (SOV)

- **VMT Per Capita.** Less driving per person can have positive environmental, transportation, economic, health and social impacts. Our most recent data may portend a positive trend.

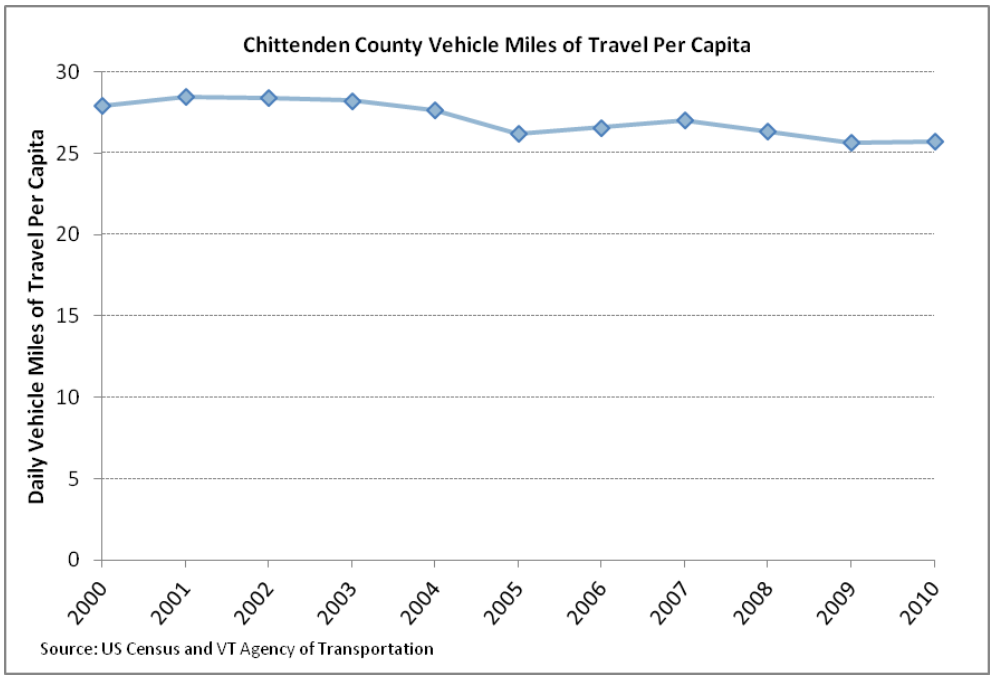


FIGURE 46 - VEHICLE MILES OF TRAVEL PER CAPITA

2.5.4 INFRASTRUCTURE & FACILITIES

Infrastructure & Facilities Goal: Ensure adequate infrastructure and facilities (i.e. water supply, wastewater treatment, stormwater treatment, broadband coverage and solid waste recovery and recycling) to support areas planned for growth while conserving resources.

Key Issues/Trends/Insights

[Data for this section and more information can be found in the: Section 2.2.1 Ecological Systems Topic for water quality; Broadband Action Plan; Stormwater websites: http://www.ccrpcvt.org/stormwater/ and www.smartwaterways.org; and other sources listed below.]

- The majority of the residents in the County get their drinking water from Lake Champlain, via two utilities: the Champlain Water District and the City of Burlington's DPW Water Division. Both Champlain Water District and the City of Burlington's DPW Water Division utilities have received Phase III Director's Awards from the USEPA's Partnership for Safe Water Program; and Champlain Water District was the first in the United States to receive the Phase IV Excellence in Water Treatment Award in 1999, and is one of 11 in the US to presently maintain this award status following required annual reviews. In addition, Richmond, Hinesburg, Underhill and Jericho have smaller public water supply utilities – some of which are facing capacity and water quality challenges (Hinesburg for example).
- Currently, there are 12 municipal wastewater treatment plants in the County; together they have a treatment capacity of 21 million gallons per day (MGD) (Source: State of Vermont Wastewater Management Division). As of 2010, CCRPC estimated an aggregate reserve capacity of 9 MGD (this does not account for unconnected committed capacity and capacity limitations of individual facilities.). The estimated future demand for wastewater capacity in 2035 is 7 MGD. While these figures indicate that there is sufficient sewage treatment capacity to absorb anticipated growth in housing and employment county-wide, this does not account for location specific limitations. Colchester, Essex Junction, Huntington, Hinesburg, Westford, and Williston were among the municipalities in need of more wastewater capacity.
- Management of our storm water is critically important to maintaining and improving water quality throughout the County. Stormwater treatment is challenging in both urban and rural areas of the County for a variety of reasons: existing urban areas need to retrofit old infrastructure, financing new infrastructure in areas planned for growth when development is incremental, and impacts from agriculture and forestry practices that don't follow best management practices. Stormwater is managed at a variety of levels including EPA's National Pollutant Discharge Elimination System (NPDES) permits; VT's discharge permits; and some municipalities have additional stormwater regulations and programs. VT's discharge permits are structured to address site level development for projects over 1 acre of disturbance; therefore, incremental and cumulative impact of development is not addressed through this program. The municipalities are facing the challenges of dealing with the cumulative impact – and most are regulating stormwater through local regulations. In addition, nine municipalities and three public entities are subject to MS4 permitting (a NPDES program) in Chittenden County: Burlington, Colchester, Essex, Essex Junction, Milton, Shelburne, South Burlington, Williston, Winooski, Burlington International Airport, UVM and VTrans. A new MS4 permit was issued by the State in December 2012. There are two additional requirements: each permittee/municipality must develop and implement a Flow Restoration Plan (FRP) for the stormwater impaired waters within their jurisdiction (current estimates for restoration of individual impaired streams ranges in the millions); and each permittee/municipality must now pay for the annual operation of stream flow gauges (formally funded by the State/UVM/USGS).

- Information technology is integral to fulfilling the economic needs of residents and businesses in the region. Telecommunications is the communication of information through various media. The ECOS Competitive Assessment Analysis Report identifies quality and costs of telecommunications services as the weakest utility infrastructure based on the Employer Survey. As of December 2011, broadband technology was widely available in Chittenden County. Approximately 99% of Chittenden County residents and 99.5% of non-residential structures (analysis included commercial, industrial, municipal structures) had access to Broadband defined as 768 kbps download/200 kbps upload speeds. However, in 2015 the Federal Communications Commission has increased the benchmark definition of broadband internet service to 25 Mbps (megabits a second) download and 3 Mbps upload. While a coverage analysis has not been completed under this new definition it is very likely that Chittenden County no longer has such extensive coverage. It is imperative to ensure that we are on par with other urban areas in the realm of number of service providers, service tiers, and affordability as the technology is constantly improving and we must keep up.
- A sustainable society minimizes the amount and toxicity of the waste it generates, reuses materials, recycles, and composts. The Chittenden Solid Waste District (CSWD) is responsible for the management of solid waste in Chittenden County. The system in the County is a combination of public, private, and public/private programs. CSWD has established a range of programs and facilities to manage waste through reduction, diversion, and proper disposal. CSWD also has identified the need for and is in the process of developing a regional landfill site (See the CEDS Project list in Section 4.2.6 for cost estimates, funding sources and proposed timeline for CSWD landfill design and construction projects). The tons of refuse disposed in Chittenden County have been declining over the last 5 years, while the amount of recycled materials has increased. While those trends are positive, there is room for improvement. It is estimated that 27% of the municipal solid waste sent to the landfill is comprised of recyclable materials and 32% is comprised of organic materials that could be composted (Source: CSWD Estimate of the Components of Solid Waste Disposed for FY 2012). A State law passed in 2012 (Act 148) bans disposal of certain recyclables (effective July 1, 2015), yard debris and clean wood (effective July 1, 2016), and food scraps (phased in over time) from disposal. Residents and businesses in CSWD have been required to separate yard debris and recyclables from waste destined for disposal since 1993. The additional bans on food scraps and clean wood will have a significant impact on waste diversion in Chittenden County.
- As can be seen on the ECOS Map Viewer, there are the following government/administrative facilities in the County: 13 police stations, 21 post offices, 2 courthouses, 18 municipal offices, 27 fire/rescue stations, and 1 state correctional facility.
- Larger municipalities such as Burlington, Winooski, Colchester, Essex, Essex Junction, Milton, Shelburne, South Burlington and Williston have a variety of government and school facilities, and provide a wide range of municipal services such as planning and zoning, recreation, highways, libraries, water, sewer, fire, rescue and police. In contrast, small rural municipalities such as Bolton, Buel's Gore, and St. George support only a few part-time employees such as a municipal clerk and road foreman, and often contract for other services. Municipal government in the remaining communities commonly consist of a few full-time employees such as a municipal clerk, an administrative aide for the selectboard and a highway foreman and small crew, supplemented by part-time or seasonal employees for activities such as recreation programs or the municipal library.
- This variation is particularly apparent in regards to Emergency Services. Almost every municipality has a locally-based fire department (with the exception of Buel's Gore and St. George), half have police departments, and fewer have their own emergency medical services. Many of the smaller municipalities receive primary police services from the Vermont State Police (VSP) on an "as-needed" basis, but must "rent" traffic enforcement services from the Chittenden County Sheriff's office, the VSP or neighboring communities. Many of the

municipalities have reciprocal agreements for assistance in fire and rescue services. The majority of these fire and rescue departments rely on volunteers; and recruitment and retention of these volunteers is a challenge. For more information see Section 2.3.3 of this Plan, the All Hazard Mitigation Plan and Annexes and the Local Emergency Operations Plans for each municipality (particularly Section 5.2 provides the specific services, volunteers and personnel for each operation). Discussions around consolidation of some municipal services, such as dispatch, continue in an effort to achieve greater efficiency. As an example of creative solutions, Essex and Essex Junction have consolidated a number of services since July 2013. Specifically, in accordance with the 2015 Town of Essex Annual Report: a shared manager has successfully administered both Town and Village municipalities, a joint stormwater policy committee has been appointed and begun planning Town and Village stormwater permit activity, one tax bill now exists for the Village taxpayers, one Town-wide collection system has been successfully implemented, the Senior Center has been consolidated, and a plan is underway to create a consolidated finance and administrative service delivery system.

- Chittenden County's community hospital is the University of Vermont Medical Center, also Vermont's only academic medical center, serving in this role for patients from across the state and the upper northeast corner of New York. The UVM Medical Center provides a full range of tertiary-level inpatient and outpatient services, provides primary care services at 10 Vermont locations, operates the region's only Level I Trauma Center, and is home to the University of Vermont Children's Hospital. As some of the inpatient facilities are 50 to 70 years old, the Medical Center has a Master Facilities Plan to address the long-term health needs of our region, focusing on single rooms for inpatients and more space for providers and the equipment they need to provide high quality health care, while striving for LEED certification for healthy and efficient building design. The UVM Medical Center continues to focus on becoming fully permitted to construct a new inpatient building with 128 replacement beds on the main campus. They are looking at all older primary care sites to ensure they are adequately sized and equipped to meet all of their patients' needs. The UVM Medical Center is not currently planning changes to other outpatient facilities. Other health care facilities in Chittenden County include 53 primary care sites; the Community Health Centers of Burlington (the local Federally Qualified Health Center, or FQHC); Howard Center (the local designated agency that provides mental health, developmental, and substance abuse services); two home health agencies (Visiting Nurse Association of Chittenden and Grand Isle Counties and Bayada Home Health Care); 6 Nursing Homes; 13 residential care homes; and 4 assisted living facilities.
- The shift in our demographics is important when analyzing what facilities and services are needed. According to the 2015-2020 Chittenden County Housing Needs Assessment (Bowen National Research) between 2015 and 2020, the number of households between the ages of 65 and 74 will increase the most, adding 1,085 households during this time. Overall, Chittenden County will add a projected 3,345 households age 55 and older between 2015 and 2020." Also, according to the State of Vermont Population Projects – 2010 to 2030 (VT Agency of Commerce and Community Development August, 2013) we are expecting a significant population increase in all age cohorts 60 years old and older. In 2010, 17% of the Chittenden County population was 60 years old and older. According to these projections, this age cohort will grow to 23% of the population in 2020; and 28% of the population in 2030. Changes in specific age cohorts is shown here:

Chittenden County Population Projections for 60 Years Old and Older										
	2010 Census	2020 Low Projection	% Change of '10-'20 Growth	2030 Low Projection	% Change of '10-'30 Growth		2020 High Projection	% Change of '10-'20 Growth	2030 High Projection	% Change of '10-'30 Growth
Age										
60-64	8,220	10,872	32.26%	8,901	8.28%		10,909	32.71%	8,922	8.54%
65-69	5,609	8,910	58.85%	9,578	70.76%		9,115	62.51%	9,732	73.51%
70-74	3,823	6,812	78.18%	9,143	139.16%		7,379	93.02%	9,925	159.61%
75-79	3,099	4,505	45.37%	7,247	133.85%		4,805	55.05%	7,904	155.05%
80-84	2,563	2,851	11.24%	5,133	100.27%		3,006	17.28%	5,870	129.03%
85+	2,591	3,484	34.47%	4,881	88.38%		3,452	33.23%	5,090	96.45%
Source: VT Agency of Commerce and Community Development, August 2013										
Note: During the 1990s (High Projection), the national economy was generally healthier than during the 2000s (Low Projection) and Vermont saw greater rates of net in-migration. As a result, the High Projection using 1990s migration rates generally, show higher populations than the Low Projection using the migration rates of the 2000s.										

- Not only is this a major demographic change, the needs of people within these age cohorts have changed with greater desire on aging in place and emphasis on providing home based care. While the State has had some success in addressing these needs, there is a long way to go and the demand is expected to increase. Expansion of the Vermont Respite House and use of technology in medical services (i.e. the Visiting Nursing Association of Vermont has tele-monitors to conduct daily in-home check-ins with patients remotely) are two examples of how Vermont is responding to these growing and changing needs. Also, the State has shown progress in the Choices for Care program and are currently serving those that qualify in the highest needs category (long-term care program that assists with care and support for older Vermonters and people with physical disabilities whether they are at home, an enhanced residential care setting, or a nursing facility. Participants in Choices for Care must qualify for Level II nursing home placement and meet financial eligibility criteria). However, the Visiting Nurses Association (VNA) has a significant number of clients who are clinically eligible for the highest needs Choices for Care program but don't qualify because their Medicaid eligibility has not yet been established. The VNA considers this delay a major factor in preventing them from serving a vulnerable population. In addition, VNA is currently experiencing a waiting list of over 250 people for the Moderate Needs (homemaking services) and their ability to serve the people on this list is limited by a lack of funding.

Key Indicators

- **Current Water Capacity and Reserve for Large Water Utilities** The reserve capacity below equates to 39,000 new homes (as a comparison there are 65,722 housing units in Chittenden County in 2010).

Utility	Capacity	Reserve
Champlain Water District	20 mgd	6.5 mgd
City of Burlington	7.5 mgd	1.3 mgd
Total:	27.5 mgd	7.8 mgd

FIGURE 47 - CURRENT WATER CAPACITY AND RESERVE FOR LARGE WATER UTILITIES

- **Current Wastewater Capacity v. Capacity Needed for Growth Projections in Areas Planned for Growth** Source: ANR and CCRPC Municipal Growth Projections. Chittenden County has the capacity to treat an additional 7 million gallons per day of wastewater. In 2035, it is estimated that the anticipated demand will be 7 MGD which is adequate capacity to accommodate 80% of the future development within the various sewer service areas. However, capacity varies for each treatment plant and some facilities may have a narrow margin of additional capacity.
- **16.9% of impervious area is under storm water management through operational stormwater permits countywide**. Source: ANR VTDEC Stormwater Permit database, ANR's 2008 NDVI Impervious Surface Layer.
- **52% of the impervious area in Chittenden County is covered by the Municipal Separate Storm Sewer System Permit (MS4).** Source: MS4 Boundary, ANR's 2008 Impervious Surface Layer.
- **Pounds of Waste Disposed/Capita/Day for MSW (Municipal Solid Waste) and C&D (Construction Debris).**

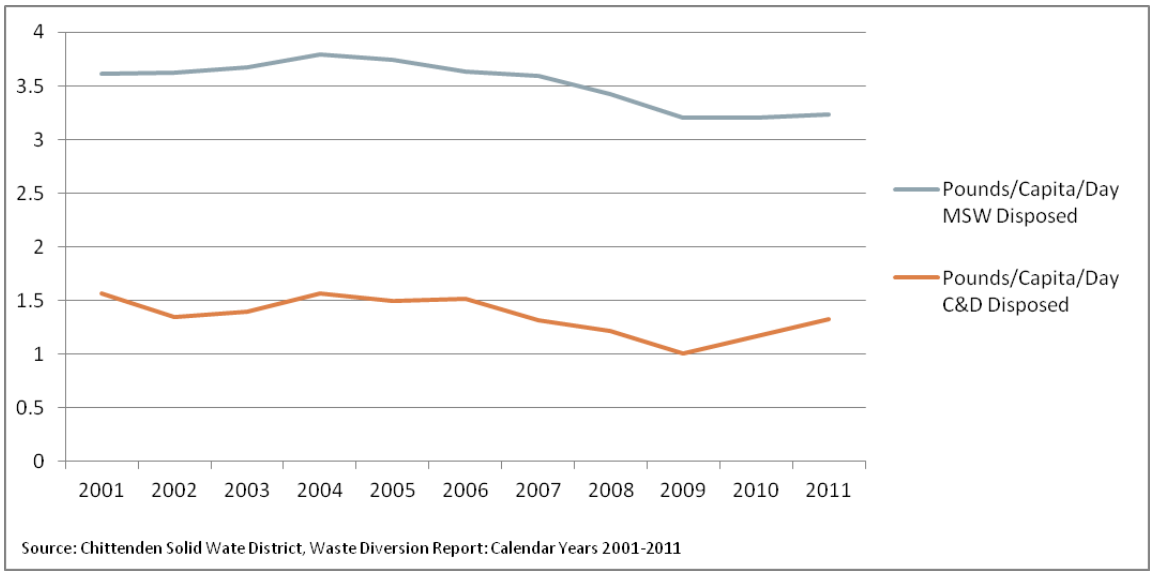


FIGURE 48 - POUNDS OF WASTE DISPOSED/CAPITA/DAY FOR MUNICIPAL SOLID WASTE (MSW)

2.5.5 ENERGY

Energy Goal: Reduce Chittenden County's consumption of energy and reliance on non-renewable, energy. Improve the cost-effectiveness, efficiency and reliability of the energy production, transmission, and distribution system.

Key Issues/Trends/Insights

[Data for this section drawn from: Energy Analysis Report and Climate Change Trends and Impacts Report].

- Chittenden County citizens, businesses, and industries spent about $617 million on energy in 2009 (25% of Vermont's total). Much of this money leaves the County and state immediately. This outflow of energy dollars acts as a drain on the local economy.
- The price of energy is forecasted to continue increasing in the future, which will result in an additional burden on the County's residents and businesses, unless energy consumption can be reduced.
- Chittenden County has a long history of electrical and natural gas energy efficiency programs, dating back to 1990, which have provided significant energy savings and economic benefits to the state and County. These programs along with improvements in federal standards have led to a reduction in per household and per employee energy consumption of electricity and natural gas. Reduction in energy consumption directly results in a reduction in energy bills.
- While efficiency programs targeting electricity and natural gas have been largely successful, there is an urgent need to fund and develop similar programs for non-regulated thermal fuels and for the transporation sector.
- Fossil fuel combustion increases the atmospheric concentration of carbon dioxide and other greenhouse gases, which are the causes of global climate change. Climate change will have profound impacts on the environment, public health, infrastructure, and economy of Chittenden County.
- Vermont, and the County, relies heavily on fuel oil for building heat and on gasoline and diesel for transportation. Gasoline consumption has increased as more residents drive to and from work, run errands, and consume for goods.
- Vermont's rural nature offers challenges for the transmission and distribution of energy. It is important to maintain and develop an energy production, transmission, and distribution infrastructure in Chittenden County that is efficient, reliable, cost-effective, and environmentally responsible. Current energy distribution projects include: Extension of 3-phase power in south Hinesburg along VT116 by Green Mountain Power; Extension of natural gas service in Hinesburg up Richmond Road by VT Gas; and Extension of natural gas service to St. George village center. In addition, Burlington's plan to recapture "waste heat" from the McNeil power plant and distribute it to the Old North End of Burlington and heat greenhouses at the Intervale is a thermal energy project with a more efficient distribution of a previously wasted energy source. See the CEDS Project list in Section 4.2.6 for cost estimates, funding sources and proposed timelines for these projects.
- The cost of electricity is related to the distance it travels. When electricity is transmitted over long distances, a significant amount of electricity is lost. Improving line efficiency or encouraging distributed generation (such as locally sited small scale renewable projects) reduces losses and could result in more cost effective rates.
- Every three years, Vermont Systems Planning Committee (VSPC) launches a process to update and identify constrained areas and reliability needs for the electric transmission grid. Chittenden County has areas identified as needing improvement.

- Electric efficiency programs have always worked to reduce electrical demand especially during peak periods but the development of the Smart Grid will provide a powerful tool to address this issue. Smart Grid coupled with education, behavior change, and load control technologies can help reduce peak demand and defer substation upgrades which can result in substantial cost saving.
- Chittenden County has many non-fossil fuel based, renewable energy production sites owned by utilities, private parties, and municipalities. Reliable, cost effective, and environmentally sustainable energy availability is critical to support the economy and natural resources of Chittenden County.
- The more widespread adoption of electric vehicles should reduce the total energy consumption in the County, due to better efficiency (an EV gets the equivalent of 100 miles/gallon). To prepare for widespread adoption of electric vehicles, charging infrastructure should be developed. In addition, policies and pricing structures to encourage off peak charging need to be considered to mitigate grid constraints.
- Chittenden County is home to an international airport and a National Guard base, therefore the transportation fuel consumption in the County not only includes gasoline, diesel, and compressed natural gas, but also aviation gasoline and jet fuel.

Key Indicators

➢ Energy Consumption Estimates and Population Trend in Chittenden County

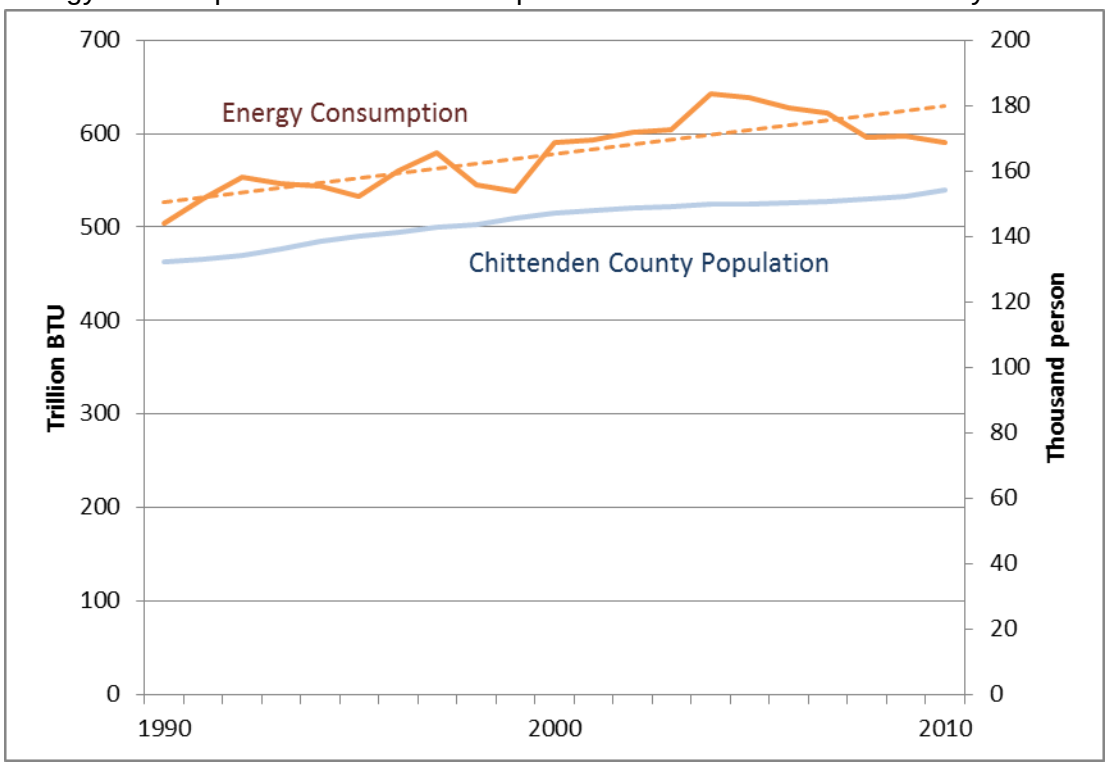


FIGURE 49 - ENERGY CONSUMPTION ESTIMATES AND POPULATION TREND IN CHITTENDEN COUNTY

- **2009/2010 Total energy consumption per person (per household for the residential sector) and by sector (transportation, residential, commercial, and industrial).** Reduction in consumption will lead to a reduction in energy bills, relative to what they would be without that reduction in consumption.

	Total Energy (MMBTU)	Gallons of Gas
Residential Energy per Household	89	
Commercial and Industrial Energy per Employee	120	
Transportation Energy per Person		420

Source: Efficiency VT, Energy Information Administration, CCRPC, UVM VT Transportation Energy Report (2009, 2010)

FIGURE 50 – 2009/2010 TOTAL ENERGY CONSUMPTION PER CAPITA

- **Percent of natural gas saved in 2010 from building weatherization and heating equipment upgrades.**

Natural Gas (McF)	2010
Consumed	6,363,760
Savings	82,151
% Efficiency Savings	1%

Source: VT GAS, 2010

FIGURE 51 - 2010 NATURAL GAS EFFICIENCY SAVINGS AS A PERCENTAGE OF THE NATURAL GAS CONSUMED

- **Electricity Efficiency Savings as a percent of total electricity consumed.**

FIGURE 52 - ELECTRICITY EFFICIENCY SAVINGS AS A PERCENT OF TOTAL ELECTRICITY CONSUMED

- **According to the Vermont Energy Atlas, in 2009, .06% of electricity consumed in Chittenden County is from privately owned renewable energy sources. Utility renewable energy generation is excluded because utility energy generated may not be used in Chittenden County.**

- **Number and capacity of renewable energy production sites in the County (Source: VT Energy Atlas, Oct. 12, 2011)**

	# of sites	Capacity (kW)	MWh	Capacity (Thousand Btu)	
Solar Photovoltaic	297	6,101			
Solar Thermal	42			2,975	
Combined systems	12	86		588	
Wind	28	491			
Hydro[1]	6		152,000		
Wood Thermal [2]	9				3,900
Wood Electric [3]	1	50,000			665,760

1- Six utility owned hydro stations generate electricity for Chittenden County and surrounding area. 2-Thermal capacity not recorded, only tons of wood consumed as a proxy for system size is available. 3-McNeil Power

FIGURE 53 - NUMBER AND CAPACITY OF RENEWABLE ENERGY PRODUCTION SITES IN THE COUNTY

2.6 Recent Accolades and Concerns for the Future

Accolades

As we look to the future, Vermont, Chittenden County, and Burlington have gained a national reputation for our high quality of life. These can be summarized by looking at some of the accolades that we have received over the past few years. For more detail, please see the Lake Champlain Regional Chamber of Commerce webpage at http://www.vermont.org/About_Burlington/accolades.aspx.

- **2012 - Vermont is second most peaceful place to live**
- **2012 - Forbes: Burlington is One of America's Best Downtowns**
- **2012 & 2011 – Healthiest County in the US, Univ. of Wisconsin Population Health Institute County Health Rankings**
- **2011- Burlington ranked #1 place for guys by Men's Health**
- **2012- Vermont ranked #1 healthiest state by the United Health Foundation for 4th year in a row**
- **2011- Top 10 Cities for Outdoor Recreation - Outside Magazine**
- **2011- Top 10 for "Volunteering in America"**
- **2011- HUD's HOME Program "Door Knocker Award" for exceptional contribution to affordable housing**
- **2011- #1 "Top Ten Small Cities" State of Well-Being**
- **2011 – Second in the US for number of patents/1,000 jobs 2007 to 2011 – Brookings Institute.**
- **2011- Top 10 Real Estates Markets to Watch in 2011 - Inman News**
- **2010 - Kiplinger's (Magazine) Best Cities 2010: Burlington, Vt.**
- **2010 - New England's Most Enjoyed Secret - Vitality Cape Cod Magazine**
- **2010 - Burlington, Vermont rated #2 in the best college towns survey by MSN Local Edition.**
- **2010 - Burlington, Vermont receives Home Depot Foundation Award of "Excellence for Sustainable Community Development"**
- **2010 - #1 Bass Fishing Capital - Outdoor Life**
- **2010 - Prettiest Town in America - Forbes.com**
- **2010 - Arbor Day Foundation: Tree City USA**
- **2010 - One of Best Cities for New Jobs This Spring - Forbes.com**
- **2010 - Top 100 Places to Live in America - RelocateAmerica.com**
- **2010 - First Wave City - Carbon War Room**
- **2009 - Burlington, Vermont named the number 1 healthiest place by women**
- **2009 - Children's Health Magazine has named Burlington the #1 place to raise a family.**
- **2008 - #2 in "Greenest Small City in America" contest by Organic Gardening magazine.**
- **2008 - Church Street Marketplace named one of 10 Greatest Places in America by the American Planning Association.**
- **2008 - BusinessWeek magazine named Burlington Vermont one of the best places to raise your kids & Family Circle named South Burlington one of the 10 best towns for Families.**

These accolades reflect many of the positive things we see in our community and our neighbors. They highlight many of the reasons why so many of us love this community and want to keep seeing it improve for ourselves and future generations.

Concerns

While we celebrate the positive aspects of our community, we also owe it to our children and their children to look to the future and work on addressing problems and aspire to do better. There are many questions that we heard from our community reflecting real concerns for the future. These questions include:

- Will my children and their children:
  - Be able to find good paying jobs here?
  - Be able to afford a home here?
  - Enjoy a cleaner Lake Champlain, streams, and rivers?
  - Breathe cleaner air?
  - See and use our rural landscape, farms, and mountains?
  - Have more transportation options?
  - Have to drive twice as far and long to get to their jobs?
  - Want to live in this community?
  - Be part of an equitable community?
  - Retain our small town neighborliness?
  - Be healthier?
  - Be better educated and successful?

These questions reflect many of the concerns that were identified in developing Chapter 2. These concerns require improvement to realize our goals. These are not prioritized, but rather follow the outline of the topics as discussed in Chapter 2 above. We should all understand that these concerns are based on today's assessment of trends rooted in our current values and will change over time; either as we improve in certain areas or as our values shift over the generations. The current concerns are grouped by broad goal area below.

Natural Systems

1. Habitat Loss - We are experiencing a loss of habitat quality and quantity due to roads, invasive species and development patterns.
2. Unstable Rivers - River corridors are unstable due to alterations and encroachments leaving us susceptible to costly damage from flood events
3. Non-point Source Water Pollution - While we have addressed point sources of pollution, non-point sources are still contributing pollutants to our water bodies.
4. Climate Change - Climate change is a global phenomenon with local impacts. Our region's climate is already changing; warmer, wetter conditions are expected to increase this century. These changes will adversely impact forest and aquatic communities, water quantity and quality, public health, agriculture, winter sports businesses, and buildings and infrastructure in flood and fluvial erosion hazard areas.
5. Greenhouse Gas (GHG) Emissions - Chittenden County emits 1,177,000 metric tons of greenhouse gases (measured as carbon dioxide equivalents). Fossil fuel consumption for transportation and heating accounts for almost 88% of our emitted greenhouse gases.
6. Climate Health Impacts - We can expect hotter summers that increase the frequency and severity of heat-stress illness and vector-borne diseases (such as Lyme disease, West Nile virus and Eastern Equine Encephalitis).

Social Community

7. Tobacco Use and Substance abuse - Rates of tobacco use have decreased from 20% in 1999 to 13% in 2008. Despite this significant decrease, exposure to second-hand smoke is high among youth and adults. Rates of substance abuse are increasing; meanwhile access to mental health services is inadequate.
8. Obesity - The prevalence of obesity is uniformly high across economic groups and has increased dramatically over the last 20 years.
9. Emergency Preparedness – Improvements need to be made in the areas of emergency planning, training, and operations centers.
10. K-12 proficiency - Improvements need to be made pre-K-12 to increase proficiency in reading, writing, math and science.
11. Workforce Development – We must support and expand existing programs to address labor pool and training gaps. We must also design a specific approach to assist current workforce education and training partners to assure that the required skill sets and workplace readiness skills are widely available to business.
12. Inclusion – There is a concern that members of underrepresented communities are not well connected and involved with governmental decisions. This includes the concern about their knowledge of the different government processes.
13. Disparities - Disparities in educational results, health, incarceration, and income exist for people of color and low income populations.
14. Aging – There is a general concern that we focus on and address the aging of our community and what that means for us in the future.

Economic Infrastructure

15. Job Opportunities – We need to keep encouraging our existing and new employers to grow so that our children have employment opportunities here and do not have to leave to find work.
16. Manufacturing Diversity - Our manufacturing sector lacks diversity leaving us susceptible to changes.
17. Industrial Sites - There is a lack of industrial sites to accommodate future economic growth.
18. STEM - We have a strong innovation economy, but increasing the labor force skills in science, technology, engineering and technology (STEM) remains a high need.
19. Housing Cost - Decreasing the cost of housing would help in attracting workers to our region.
20. Working Lands Loss- Sustaining our working lands is a challenge because there is greater monetary value in developing land than maintaining it as a farm or productive forest; in addition some local products are undervalued (i.e. milk, saw timber).

Built Environment

21. Sprawl - Over the last 60 years development trends, zoning regulations, and consumer preference have shifted growth away from metropolitan areas around Burlington to more suburban and rural locales resulting in large amounts of land consumed and high infrastructure costs. This trend seems to have reversed since 2005 and we need to stay on this new course.
22. Lack of Rental Housing – An increase of 1,000 rental housing units is needed in the County by 2015 to maintain a conservative vacancy rate of 1.4%. We will not reach that number based on

currently approved developments. In addition, a healthier vacancy rate may be much higher to increase housing choices and lower rents, while maintaining a vibrant economy. This would result in a need much greater than 1,000 rental units by 2015. However, this must be balanced by a viable market – developers will build more units when most of the existing units are occupied.

23. Affordable Homes - An increase of 1,000 homeownership units in the County priced under $300,000 is needed by 2015 to increase housing choices and lower costs. This need could be met through existing permitted developments, however many are not being built due to challenges with condominium financing. For the same reason as mentioned above, the 1,000 units is based on a conservative vacancy rate figure.
24. Maintenance of Existing Housing – There is a need to adequately maintain existing housing stock to preserve it as a viable option for the future.
25. Supportive Housing - There is a need to increase the number of units of permanent supportive housing throughout the County in addition to Burlington. Supportive housing is a combination of housing and services intended as a cost-effective way to help people live more stable, productive lives. Supportive housing is widely believed to work well for those who face the most complex challenges—individuals and families who have very low incomes and/or disabilities, and/or may suffer from substance abuse, addiction or alcoholism, mental illness, HIV/AIDS, or other serious challenges to a successful life.
26. Mode Share - While our rate of driving alone to work increased by 36% between 1980 and 2000 (to 76% of all work trips), in more recent years this trend has shown improvement to 71% in 2010. We've also seen a nearly 60% increase in transit ridership the past decade. Vehicle Miles of Travel (VMT) per person is also on the decline, down 8% between 2000 and 2010. It is imperative that we maintain these positive recent trends in order to reduce congestion, decrease greenhouse gas emissions, and more efficiently utilize all of our transportation resources.
27. Road System & Funding - Roadway condition is rated poor or worse for over half of the arterial highway mileage in Chittenden County. The costs associated with maintaining and improving this infrastructure exceeds our fiscal capacity to fully address it. Nor do we have adequate funds needed to grow transit, walking/biking, and Transportation Demand Management (TDM) programs. Compounding our poor roadway conditions and inadequate investment, transportation funding in general is overly reliant on the state and federal gas taxes which are decreasing in value as inflation lowers purchasing power and revenues decline due to improving vehicle fuel efficiency and fewer VMT. The prospect of less funding in a time of increasing transportation investment need is a worrisome trend and needs to be addressed.
28. Energy Conservation - Vermont and Chittenden County lead the nation with respect to initiatives that support efficiency and renewable energy, however, more efficiency programs are needed for non-regulated thermal fuels and energy for transportation to keep costs down and to reduce GHG emissions.
29. Renewables Siting - With the rise of renewable energy sources, municipalities are struggling with being left out of the conversation and are making specific recommendations within their Town Plans regarding how they want the Public Service Board to review petitions in their Towns.

30. Water and Wastewater– In order for municipalities to implement their plans for future growth in their urban or village improved water and wastewater services (both on-site, community systems, and sewer) are often necessary, including financial assistance. Colchester, Essex Junction, Huntington, Hinesburg, Westford, and Williston were among the municipalities raising this concern.
31. Stormwater Investments – Municipalities are committed to making improvements in storm water quality, but are concerned about the costs and how to pay for them.

We are at a time of choice. Do we allow things to keep going the way they are? Do we take steps to achieve the best future possible?

See Chapter 3 for strategies and actions to address these concerns.

CHAPTER 3 – ECOS Plan Priorities & Implementation

3.0 Introduction

The State of Vermont is projected to add 60,000 people by 2030 (US Census Bureau - http://www.census.gov/population/www/projections/projectionsagesex.html). This is a very small part of the population growth in the entire US, but will be significant for Vermont. If the past is any indicator, Chittenden County will feel the pressure from a majority of that growth. Woods and Poole estimates that Chittenden County may see **50,000 new residents by 2035** (see Figure 2 in Section 2.1). These numbers are only projections at two different levels of geography and will very likely be inaccurate, but still they give us a sense of the direction of the market demand for jobs and housing in our region.

This Plan is not a plan to achieve growth, rather it is a plan that recognizes that there are many external factors over which we have little control locally. Our region continues to be an attractive place from environmental, economic, and social perspectives. Therefore, this Plan recognizes that we have growth pressures and existing concerns that we address in the strategies below. In large part, the strategies are focused on how we manage growth to accomplish positive outcomes.

The ECOS Project has attempted to be very broad and inclusive in both the process of developing this plan and in comprehensively addressing the major issues within the Chittenden County community. We have developed a vision, principles and goals in Chapter 1. We have analyzed our community in relation to these goals and identified areas of concern in Chapter 2. Having identified areas of concern we now need to focus on the strategies and actions that will have positive impact. This is the focus of Chapter 3. See the table on the next page that describes which strategies address the concerns identified in Chapter 2.

The process leading up to this plan identified public preferences for future growth. The vision, principles, and goals highlight these preferences, tying the public process to a guide for future decisions. Because of broad public participation, the planning process provides local leaders with a basis for action. Each goal could be implemented in a variety of ways to address local needs and challenges and to enhance the region as a whole. The Plan becomes reality as the public, private and non-profit organizations apply the principles in the incremental choices they make over time leading us to collective solutions.

This Chapter summarizes the scenario planning effort that establishes the basis for implementation and the recommended high priority strategies and actions for achieving the future that we all want.

	Strategies (in brief) to Address the County's Concerns							
Concerns for the Future (from the end of Chapter 2)	3.2.1 Improve Economy	3.2.2 Concentrate Development & Infrastructure	3.2.3 Improve Water Quality and Safety	3.2.4 Protect Working Landscapes and Habitats	3.2.5 Increase Health and Personal Safety	3.2.6 Educate our Residents	3.2.7 Improve Efficiency of Financing and Governance	3.2.8 Ensure Equity
1. Habitat Loss		✓		✓			✓	
2. Unstable Rivers			✓					
3. Non-point Source Water Pollution			✓	✓			✓	
4. Climate Change		✓	✓	✓	✓			
5. GHG Emissions		✓		✓				
6. Climate Health Impacts		✓		✓	✓			
7. Tobacco & Substance Abuse		✓			✓			
8. Obesity		✓			✓			
9. Emergency Preparedness			✓	✓	✓			
10. K-12 Proficiency						✓	✓	
11. Workforce Development	✓					✓		
12. Inclusion	✓	✓			✓	✓		✓
13. Disparities	✓	✓			✓	✓		✓
14. Aging		✓			✓			✓
15. Job Opportunities	✓							
16. Manufacturing Diversity	✓							
17. Industrial Sites	✓							
18. STEM	✓					✓		
19. Housing Cost	✓	✓					✓	
20. Working Lands Loss	✓	✓		✓				
21. Sprawl	✓	✓		✓	✓		✓	
22. Lack of Rental Housing		✓					✓	
23. Affordable Homes		✓					✓	
24. Maintenance of Existing Housing		✓						
25. Supportive Housing		✓						
26. Mode Share		✓			✓			
27. Road System & Funding		✓					✓	
28. Energy Conservation		✓					✓	
29. Renewables Siting		✓						
30. Water & Wastewater		✓	✓				✓	
31. Stormwater Investments		✓	✓				✓	

FIGURE 54 - CHART OF HOW STRATEGIES ADDRESS CONCERNS

3.1 Scenario Planning Review – Choices for the Future

Since 2008 CCRPC (and former CCMPO) has conducted three levels of scenario planning analysis which are reflected in the section which follows. From 2008 to 2010, CCRPC (CCMPO at the time) conducted a Land Use scenario planning process to analyze land use patterns that either follow trend development, or deviate from it by concentrating development in our centers and villages, or deviate from it to increase density in the Burlington area. These land use scenarios coupled with various transportation alternatives helped stakeholders focus their discussions on various options to improve long term sustainability. This effort incorporated substantial public input (over 900 people participated in our workshops and follow up survey) to increase our understanding of the community's broad range of concerns and aspirations for the future with particular focus on our development patterns and transportation system. Please see the Chittenden County Historic Development and Future Land Use/Transportation Analysis report (ecosproject.com/analysis) for more information.

The second scenario planning process analyzed three distinctive Transportation scenarios utilizing the land use scenario selected from the Land Use scenario planning process described above. The three Transportation scenarios analyzed included Basic Transportation/Constrained Funding, Energy Conservation/Social Equity, and Enhanced Road Capacity transportation investment scenarios. The outcomes of these comparisons are outlined in the following section.

The final scenario planning process compared the Transportation scenarios above with the anticipated results of the transportation future selected for implementation in the Metropolitan Transportation Plan 2015-2035 as detailed in Chapter 4 of this document. As is outlined in this section, the use of scenario planning provides a tool to gauge the costs and benefits of implementing a diversity of potential land use and transportation programs.

Land Use Scenarios

The scenario planning effort resulted in a recommended Land Use Plan and strategy that mirrors the plans adopted by the municipalities in the region and is consistent with the State's legislated goal to "plan the development so as to maintain the historic settlement pattern of compact village and urban centers separated by rural countryside" (24 VSA 4302(c)(1)). The local Land Use Plans are reflected in the regional Future Land Use Planning map.

The recommended future regional Land Use Plan seeks to have 80% of our future growth happen in the 15% of the County that has existing infrastructure and services. This percentage reflects our historic distribution of development prior to 1970. From 1970 to 2005, the percentage of development in our urban center and villages decreased to about 65%. From 2005 to 2010, that trend reversed and we again achieved 80% of new development in our urban center and villages.

What are the implications of achieving this development pattern?

According to our scenario planning analysis, if we concentrate future homes and jobs in our currently existing and planned communities which make up 15% of Chittenden County's land area, we will:

- Only use 25 square miles of land (4.7% of the total County) within and adjacent to currently developed urban center and villages;
- Have more jobs and housing located in our urban and village centers;

- Reduce greenhouse gas emissions by at least 50 tons per day; and
- Potentially triple transit ridership.

If we continue on the path that we were on from 1970 to 2005, we will:

- Use 99 square miles – in contrast to the 25 in the concentrated scenario above - (18.5% of the total County) of our rural landscape for housing and jobs;
- Increase the pressure on neighboring counties to absorb demand for homes thereby increasing driving; Increase greenhouse gas emissions; and
- Not have as many transit riders.

Transportation Scenarios

The regional Land Use Plan scenario was used to evaluate contrasting alternative transportation scenarios. The details of these scenarios and their results can be found in the Chittenden County Historic Development and Future Land Use/Transportation Analysis report (ecosproject.com/analysis). The components of the three transportation scenarios are repeated here for reference, including rough cost estimates.

Scenario Name	Scenario Elements
1. Basic Transportation/ Constrained Funding Approx. $114 million	This is the existing transportation system plus permitted projects – those identified in the MPO'S Transportation Improvement Program (TIP) that have also completed permitting. Not included are major road projects such as the Champlain Parkway (Southern Connector), which has not completed the permitting process and the Circumferential Highway which is not slated to be constructed as originally planned.
2. Energy conservation/Social equity Approx. $550-767 million	• All of #1 above, plus… • Transit intensive – full implementation of CCTA's 2010 Transit Development Plan (TDP) - More services to more places more frequently • CCMPO Bike/pedestrian Plan build out – More sidewalks, shared use paths and on-road bike lanes • Transportation Demand Management – Employer incentive programs to encourage transportation alternatives (similar to CATMA but more widespread around the County), implementation of extensive park and ride facilities per 2011 CCMPO Park & Ride Plan • Intelligent Transportation Systems (ITS) improvements to reduce delays on key highways and provide better experiences for transit users. • Passenger and commuter rail - Connecting North, East and South • Expanded Carshare – to less urban locations • A ten-fold increase in the per-mile operating costs for automobiles reflecting an assumption of a significant increase in fuel and energy costs.
3. Enhanced Road Capacity	• All of #1 above plus… • Full Circumferential Highway (as originally planned)

Approx. $500-693 million	• Champlain Parkway • Three lanes on I-89 from the proposed Circ Interchange in Williston East of Exit 12 to the proposed Circ Interchange in Colchester north of Exit 16 (Colchester US RT 7). • New I-89 exits at VT 116 (Hinesburg Rd) and W. Milton Rd • Colchester Exit 16 upgrades (double-crossover diamond) • Intelligent Transportation Systems (ITS) improvements to reduce delays on key highways and provide better experiences for transit users. • Williston Grid Streets • Local connectors from official town maps • Other potential capacity increases on arterial highways in identified congested areas

FIGURE 55 - SCENARIOS FOR TRANSPORTATION

What are the results from the analysis of scenarios compared to the Basic Transportation alternative?

If we invest in the Enhanced Road Capacity, as depicted is scenario 3, we will:

- have an increased amount of travel on our roads
- gain a small reduction in greenhouse gas emissions
- not increase our transit usage
- decrease afternoon commuter traffic congestion by 25-30%
- spend about $400 million more than the Basic Transportation/Constrained Funding scenario

If we invest in the Energy Conservation/Social Equity scenario investments we will:

- reduce travel on our roads by 15-20%
- decrease greenhouse gas emissions by 20%
- increase daily transit usage by 1,000%
- decrease afternoon commuter traffic congestion by 30-35%
- spend about $450 million more than the Basic Transportation/Constrained Funding scenario

These future scenarios are starkly different from one another, vastly different than past historical transportation investment strategies, and unlikely to proceed in the manner outlined in the Scenario exercise. The results from this exercise, however, lay the groundwork for our transportation implementation strategies and actions that are identified in the Metropolitan Transportation Plan (MTP) components of this document (see Chapter 4) which combine those elements of the scenarios outlined above into a more balanced and sustainable future transportation program.

See synopsis of the MTP below.

Metropolitan Transportation Plan 2015-2035 Approx. $310 million	• Scenario 1 above (Basic Transportation/Constrained Funding) plus… • Remaining Transportation Improvement Program projects not accounted for in scenario 1 above • Expanded CCTA service as identified in their Transit Development Plan – Higher service levels and expanded service area • Numerous (many minor) roadway investments to improve system efficiency and safety

- Increase investments in walking and biking infrastructure.
- Expanded Transportation Demand Management (TDM) efforts to reduce single occupancy vehicle (SOV) work trips

FIGURE 56 - MTP SYNOPSIS

While the improvements from the MTP scenario do not match those from the Energy Conservation alternative (see Future Transportations discussion on page 157 of ECOS Chapter 4), they make their positive contributions for less than half the cost and within the allotted transportation budget. The program of projects and strategies is rooted in both the ECOS goals and the reality of existing transportation funding streams. Additionally the MTP 2015-2035, if implemented as planned, will advance the two primary transportation indicators: increasing non-single occupancy vehicle work trips and reducing vehicle miles traveled/capita. The transportation projects are prioritized based on funding category taking into consideration the ECOS Criteria see Appendix B).

In the next section, we look at the recommended strategies and actions to achieve our goals.

3.2 High Priority Strategies, Actions & Partners

Given the projected growth in our region and the challenges we already know we face, there are no easy answers. The challenges are multi-faceted and often inter-related. For this reason, we are breaking from discussing issues by topic and focusing on comprehensive, cross-cutting solutions in order to achieve a healthy, inclusive and prosperous community.

Collective impact is the commitment of a group of important actors from different sectors to a common agenda for solving a specific problem. These sectors include the public (state, municipal and regional), business, and non-profit. If we do this well, we can achieve improved outcomes without the need for additional public expenditures. The ECOS Project will be implemented through this collective impact approach and is structured in the following way:

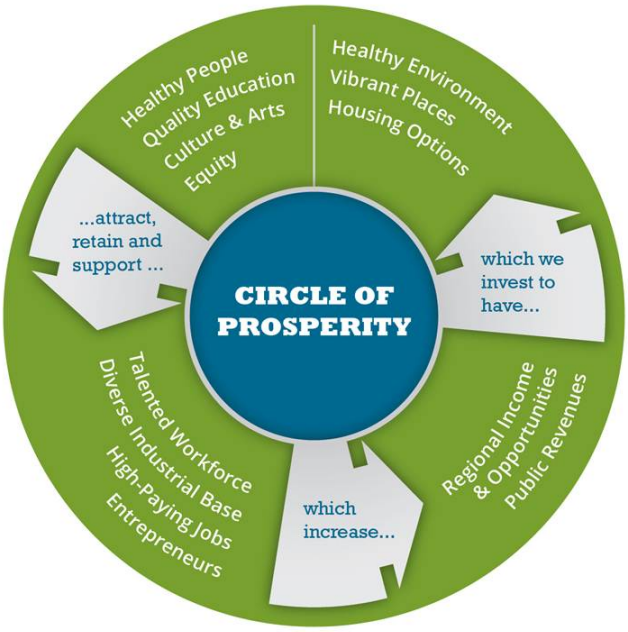
a. **Strategies** - Eight (8) broad, high priority, cross-cutting, strategic implementation measures. This list is not meant to be exhaustive or to undermine any steps currently underway to effect positive change, but to focus our 5 year implementation efforts.
b. **Actions** - Under each strategy is a list of general actions identifying the method in which the strategy will be achieved. The actions address the concerns of the community (see end of Chapter 2). Many of these are not new ideas; however, they may need additional commitment or additional partners to achieve the desired outcomes.
c. **Projects -** Under many of the Actions are identified Funded Projects that were prioritized through ECOS criteria (see Appendix B at http://ecosproject.com/plan) and funded with ECOS implementation grants and/or by ECOS Partners. The high priority, vital projects for economic development identified in Section 3.2.1 were prioritized using the ECOS criteria and also reviewed by the GBIC/CEDS Committee. The full ECOS/CEDS and ECOS/MTP Project Lists on

*We need to work together to achieve **collective impact***

pages 136 & 199 (respectively) in Chapter 4 include specific projects proposed for implementation. These implementation projects are each directly related to the strategies described below. The ECOS/CEDS Project List includes details regarding the Lead Partner, other partners, expected start date, jobs beyond construction, estimated costs, and funding sources.

Together, this three tiered implementation approach serves as a strategic plan for CCRPC, GBIC, and ECOS partners for the next 5 years. CCRPC will adopt the actions and projects to which they are a party into their annual Unified Planning Work Program and report progress each year. It is important to note that when implementing actions at the municipal level we must acknowledge the uniqueness of each community and resist blanket approaches.

While this implementation approach is collective in that many partners are needed to participate, it is also collective in that no one piece will bring success without the others. For example, it will be difficult to achieve greater mobility, accessibility, affordability and health without concentrating development in our areas planned for growth. Further, we can't concentrate our growth without providing adequate infrastructure in those areas. Visually, these collective, inter-relationships are described in this circle of prosperity.



An underlying theme in all 8 strategies is resiliency. Resiliency is the ability to adapt to difficult situations and successfully overcome adversity. Building on the example above, concentrating growth makes us more economically and socially resilient in our communities when we diversify our economy and provide job opportunities for all residents thereby increasing equity and income for our residents. Investing in properties in our existing communities also allows us to focus on projects that reduce energy consumption and reduce costs to residents. On the flip side, concentrating growth also helps to protect our rural land and natural resources – bringing greater stability to the rural economy, and greater resiliency to a changing climate.

It should be noted that while there is not a specific climate change strategy, strategies and actions to address our changing climate are included below. The CCRPC is developing a more detailed Climate Action Plan for consideration in FY 2014. Some of the strategies and actions below that are supportive of the Climate Action Plan recommendations include: investing in areas planned for growth, updating municipal plans and zoning, reducing fossil fuel usage, transportation demand management, flooding and erosion hazard protection, habitat preservation, and emergency preparedness.

STRATEGIES

3.2.1 IMPROVE AND STRENGTHEN THE ECONOMIC SYSTEMS OF OUR REGION TO INCREASE OPPORTUNITIES FOR VERMONT EMPLOYERS AND EMPLOYEES.

Economic development is about building a community's capacity for shared and sustainable improvements in the economic well-being of residents. Providing access to good jobs that can support an adequate standard of living for all residents of a region or community; continuous and sustainable improvements in the internal functioning of the economy, where its structural underpinnings are made stronger without sacrificing long-term quality of life; and providing the means and the continuous processes to strengthen the foundation of our communities.

Actions

1. **High wage employers** – The primary goal of any economic development strategy is retaining and growing the already existing high wage jobs within the economy. Providing support and connecting available resources is critical to ensuring that this economic base remains vital and is able to grow. The high wage sectors in which Chittenden County expects to drive our economy are: Information Technology, Communications, and Media (including Information Technology, E-Commerce, and Digital Media); High Value-Added Manufacturing; Higher Education; Clean Tech/Green Tech; and, Health Care and Wellness (see the Target Sector Analysis – will be located here www.ecosproject.com/analysis shortly.).
    a. Build relationships with these employers. For example, the recent Tech Jam highlighted some of the region's many successful tech companies. Success here connects to the action on innovation and entrepreneurial development and includes: developing and attracting a tech workforce, access to financing, marketing VT and the region as a home for tech jobs and tech companies, supportive infrastructure such as broadband access, incubator space, and networking.
    b. Facilitate access to employment and infrastructure development resources made available by the State. Currently these include programs such as the Vermont Employment Growth Incentive, Vermont Training Program, etc.
    c. Market the quality of life – Chamber action

2. **Industrial Site Locations** – With only a few years supply of existing buildings or permitted sites left for high wage industrial or manufacturing businesses in the region, additional sites need to be identified and carefully planned to ensure a smooth permitting process to be ready for employers' needs for expansion or relocation in Chittenden County. The most likely employment sectors with this need are high wage, technology-based and other types of manufacturing. The best opportunities for these sites are on vacant portions of land owned by current major employers, within close proximity to - or already connected to - existing infrastructure services for long term efficiency.
    a. FUNDED VITAL PROJECT - GBIC with IBM will examine these undeveloped properties owned by IBM for environmentally responsible infill development opportunities

considering water, wastewater and transportation infrastructure, and take sites through permitting. (Phase 1 of this work is funded by HUD, IBM, and GBIC. Additional federal and/or state funding to help with site development infrastructure may be sought as appropriate. Future funding sources may include EDA or CDBG funds. Total future estimated job growth at this site could be 1,000 or more.)

b. CCRPC and GBIC will work with ACCD to have business/industrial parks recognized as benefit locations in state designation programs. (Funded by GBIC and CCRPC. No direct additional employment is expected, but this would help to create future opportunities.)
c. Efforts should be made by CCRPC to educate businesses and developers on development practices that achieve a higher level of density, greater compatibility within traditional development patterns, use less land, and provide for all modes of transportation.

3. **Workforce Education and Skills Development** – Promote public/private partnerships for education that connect the skills development infrastructure of our institutions of higher education, vocational programs, and technical schools with the direct needs of the Vermont workforce. If education takes place with connections to our economic needs, students and retrained workers will have their skill sets match with the employment market.
   a. FUNDED PROJECT - Chittenden County After School Aspirations Program (ASAP). Lake Champlain Regional Chamber of Commerce and project partners will design and implement a replicable and sustainable after-school curriculum for at-risk youth in grades 8-12 that will assess their interests and skill levels, raise post secondary education aspirations, expose them to the fields of science, technology, engineering and math (STEM), and prepare them for viable careers in Chittenden County. (Funded by HUD, LCRCC. No direct additional employment is expected, but this would help to create future opportunities.)
   b. See Strategy 3.2.6 for more actions

4. **Innovation and Entrepreneurial Development** – Coordinate and promote the providers, programs, and services already available in the State to create an economic system of resources that is easily navigable at all stages of the innovation and entrepreneurial continuum. This must aggregate and address services such as finding capital, mentorship, prototyping, commercialization, etc.
   a. FUNDED VITAL PROJECT - GBIC is working with the State of Vermont, the University of Vermont, and the Vermont Technology Council to produce a virtual front door for entrepreneurs called "Innovate Vermont." The intent is to create an online portal for entrepreneurs and innovators to find programs, resources, and services across many different needs and throughout Vermont. Funded by GBIC, State of Vermont, UVM and other partners. No direct additional employment is expected, but this would help to create future opportunities.
   b. Encourage home-based small businesses in villages as allowed by municipal zoning.
   c. Research Dayton, OH's work which capitalizes on the entrepreneurial spirit of recent immigrants as a cornerstone of their economic development policy and actions.

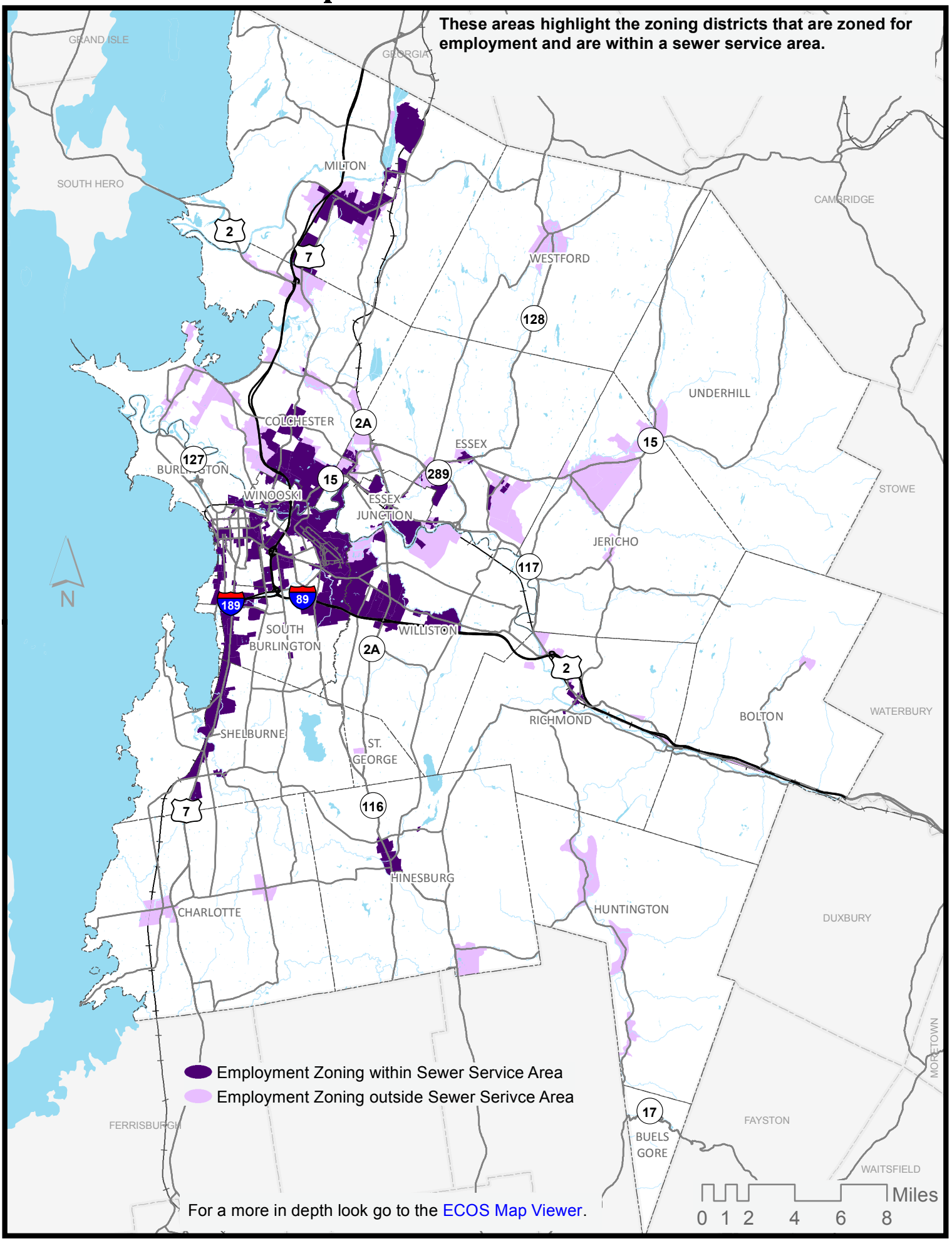
5. **Creative Economy and the Arts** – Arts and the creative economy are what drives a large and diverse amount of economic activity in our region (e.g. local foods, design, technology, media, craftsmanship/fabrication, arts, emergent media, music, dance, festivals, education, and recreation). This portion of the economy is fundamentally unique in that it is a significant contributor to the culture in our region. Support creative economy and arts programs and efforts.
    a. Create collaborations between arts, culture and recreation groups and the Chamber of Commerce and local businesses to promote the use of local artists in regular business needs (i.e. advertising, branding, communications, etc.) and to share vacant or underutilized commercial spaces with artists for gallery and/or studio space.

6. **Working Lands** - Support value-added foods, farms and forest products through the work of Farm to Plate by Vermont Sustainable Jobs Fund and Working Lands Enterprise Board. See Strategy 4 for more details.

7. **Tourism** – Continue good efforts in tourism including VT Convention Bureau, Lake Champlain Regional Chamber of Commerce, and Lake Champlain Byway.

8. **Economic Development Coordination –** Both the State of Vermont and Northwest Regional Planning Commission have begun economic development planning efforts to develop CEDS for the State and Northwest region. There has not previously been a Statewide CEDS. A Statewide CEDS process is beginning in 2013 and this Plan will help inform that effort. Any recommendations that come out of that process will be considered in future ECOS Plan amendments or revisions as appropriate. CCRPC staff is actively participating on behalf of CCRPC and GBIC in both efforts as part of their advisory committees. GBIC and CCRPC will coordinate and assist those efforts to improve the effectiveness of efforts in Chittenden County and for the State.

Map 1 - Economic Infrastructure



3.2.2 STRIVE FOR 80% OF NEW DEVELOPMENT IN AREAS PLANNED FOR GROWTH, WHICH AMOUNTS TO 15% OF OUR LAND AREA.

The areas planned for growth are defined as the Center, Metro, Suburban, Village, and Enterprise Planning Areas (all but Rural) as displayed on the Future Land Use Map. CCRPC is committed to annually monitoring the quantity and location of development to measure our progress on concentrating 80% of new growth in these Planning Areas at a regional scale (not each municipality). This goal mimics the development patterns we've seen in the recent past (see Section 2.5.1 Indicators for more detail). CCRPC will monitor this through annual updates of its housing, employment, and commercial/industrial square footage databases and also by the State of Vermont's e911 locational database. The databases identify when a structure was built, number of dwelling units, employees, and square footage at a specific location. The major source of information for updating these databases will be gathered from CCRPC's member municipalities.

Increasing investment in denser, mixed use growth areas will improve economic opportunities, housing options, transportation options and improve community health. Focusing growth in the appropriate planning areas is also a cost effective approach to increasing the supply of affordable housing, reducing energy consumption and using existing infrastructure efficiently.

Actions

1. **Invest in Areas Planned for Growth** -

    a. Establish wastewater, water infrastructure and public transit in areas currently developed and/or planned for growth.
    b. Target reuse, rehabilitation, redevelopment, infill, and brownfield investments to the non-rural Planning Areas.
    c. Retrofit existing buildings to reduce energy use and greenhouse gas emissions.
    d. Improve design quality of high density areas, and allow flexibility for creative solutions.

2. **Municipal Planning and Zoning** - Strengthen and direct development toward areas planned for growth through infill development and adaptive reuse of existing buildings through municipal plan and bylaw revisions and state designation programs.

    a. Municipal Development Review Regulations should be revised to improve the mix of uses, shared parking, support for transit, access to a variety of services (for example restaurants, grocery stores, parks, entertainment) via active transportation, energy efficiency, renewable energy and the affordability of housing. A particular emphasis is needed on providing for affordable rental housing.
        - FUNDED VITAL PROJECT - South Burlington's Pathway to Sustainability –The overall project includes a series of initiatives to support, develop, and create a community that will be a leader in sustainable food production, housing, transportation, energy efficiency, natural resource protection, transit oriented development, residential quality of life and economic growth. Specifically, ECOS funding is supporting an overhaul of the City's Land Development Regulations, with a special focus on Form Based Codes, to implement the goals of ECOS and the City's Path to Sustainability.

- FUNDED VITAL PROJECT – PlanBTV Form Based Code. Burlington will develop and adopt form based code zoning for their Downtown and Waterfront districts consistent with PlanBTV.
- FUNDED VITAL PROJECT – Shelburne Road, Shelburne Form Based Code. Shelburne will develop and adopt form based code zoning for the Shelburne Road corridor north of the Village.
- FUNDED VITAL PROJECT – Winooski Gateway Development Regulations. Winooski will develop and adopt updated zoning for their gateway districts.

b. Integrate capital planning and budgeting in planning efforts to provide the right mix of infrastructure over time. Official maps can also be a useful tool to drive infrastructure improvements in the areas planned for growth.
c. Health Impact Assessments (HIA) provide a tool to use at the regional, municipal, agency, and organizational level to assure that planning decisions maintain or improve the public health. Access can be improved by co-locating public facilities, in particular, medical and mental health facilities in areas with easy access via active transportation and public transit. Town health officers should be encouraged to participate in community planning efforts.
d. Empower local officials through trainings and education on strategies to achieve the above plan and bylaw amendments, and implementation of them during development review. This could include how to effectively analyze development costs and benefits, and select appropriate multi-modal congestion mitigation measures.

3. **Affordable Housing** – Producing more affordable housing helps meet basic needs, creates jobs and 50-year hard assets. This is a critical part of the infrastructure of the community and the economy.

a. Implement incentives that encourage more housing construction that is lower cost including, but not limited to, affordable and supportive housing. This housing should be integrated within our communities throughout the County to provide a mix of housing for different incomes and access to jobs and services. These actions include:
    i. Chittenden County Regional Planning Commission and its partners should study the current and projected shortage of affordable housing units by type (rental, owner, multi-family, single family).
    ii. Increase density in areas planned for growth considering community character and design.
    iii. Revise infrastructure requirements with a goal of reducing costs for developers.
    iv. Consider fee waivers or other development review process incentives.
    v. Continue to work with the University of Vermont, Champlain College and Burlington College to develop specific plans to increase the percentage of students who reside in dedicated student housing.
    - FUNDED PROJECT – VHFA is working with South Burlington, Williston, and Essex Junction to analyze their local needs and suggest improved bylaws and programs to create more affordable housing and increase housing choice.

b. Maintain or increase local and state resources that fund additional affordable housing, make housing more affordable, and/or maintain existing affordable housing. These actions include:
    i. The state should fully fund the Vermont Housing and Conservation Board with 50% of property transfer tax revenues. This funding should be used to increase the stock of permanently affordable housing in Chittenden County.

ii. Review and amend (if necessary) local ordinances impacting the maintenance and use of existing buildings to ensure they're encouraging maintenance and retrofits of existing housing stock without adding undue cost.
iii. Advocate for more Tax Increment Financing (TIF) districts to help fund infrastructure improvements. Encourage the use of municipal housing trust funds to assist in the financing of affordable housing.
iv. Take steps to preserve existing affordable housing (including protecting subsidized housing and ensuring perpetual affordability through shared equity programs) from being converted to market rate housing; and continue to encourage shared equity for new owner homes.

c. Engagement and education efforts should continue and be improved. These actions include:
   i. Increase fair housing education and outreach for landlords, property managers, real estate professionals, and anyone involved in the sale, rental or finance of housing. Work with the Vermont Refugee Resettlement Program, The Association of Africans Living in Vermont, Opportunities Credit Union, and other organizations to develop strategies for new Americans to quickly develop credit history. Create educational materials that encourage landlords to use alternative criteria for new Americans that don't penalize them for a lack of credit or rental history.
   ii. Provide fair housing and land use planning training for land use professionals and municipal officials throughout the County.
   iii. Train municipal officials and staff, the public, and developers to promote better development practices that achieve a higher level of density with quality design.

d. Increase efforts to comply with fair housing requirements. These actions include:
   i. Identify gaps in municipal implementation of State Fair Housing laws and ADA compliance (including but not limited to municipal bylaws should include language that explicitly permits officials to make reasonable accommodations to accommodate the needs of people with disabilities without delay or public input).
   ii. The Vermont legislature should enact legislation that limits security deposits to no more than one month's rent with no more than one-half month's rent and no more than $200 for pet deposits (excluding assistance animals for persons with disabilities). For tenants with rent subsidized through public programs, security deposit amounts should be based on the tenant's share of the rent before the application of any utility allowance. These limits do not apply to service deposits for residential care/assisted living settings.
   iii. Implement the recommendations (as best as possible within current resource capacities) of the 2010 Burlington Analysis of Impediments and the 2012 State Analysis of Impediments. This includes tracking zoning variances, local permit applications, adjusted residential permit application and denials to identify disparities and trends.

e. Increase enforcement and testing capacity of fair housing organizations such as Vermont Legal Aid. Currently, Vermont Legal Aid is only funded to test the protected classes included in federal fair housing law. Seek funding sources that would allow Vermont Legal Aid to test and enforce state protected classes (Age, marital status, sexual orientation, gender identity, receipt of public assistance).

4. Energy

a. Reduce Energy Consumption - Education and outreach to key sectors regarding weatherization, life cycle fuel costs, and behavioral adjustments will be essential elements for reducing energy use and costs over time.
b. Decrease greenhouse gas emissions, to support the State's goal of reducing greenhouse gas emissions 50% from 1990 levels by 2028.
    i. Encourage individual homes and businesses to include electric and thermal energy efficiency in building and/or retrofitting. Weatherization should be promoted and executed as a first step to reduce overall energy consumption before investing in renewable energy systems. There is a need for focused study to determine solutions for vermiculite removal as it relates to weatherization, in particular low income weatherization. Vermiculite was used as an insulator for decades (1960-1990) – and was mined with asbestos thus any home with vermiculite is assumed to be contaminated.
    ii. Provide alternatives to fossil fuels for heating.
    iii. Reduce fossil fuel consumption in the transportation sector.
    iv. Increase resilience to potential interruptions of grid power, especially for maintaining essential services (including water supply and sewage disposal) without electrical power. Such services need, in the short term, backup power with at least a week's supply of stored fuel. In the long term, redesign these services in a more resilient way.
c. Increase Renewable Energy Generation, to support the State's goal of 90% renewable energy by 2050.
    i. Determine appropriate sites for community-level renewable energy generation. Recent work on this topic has included the Legislature's Solar Siting Task Force Committee in 2015; and three Regional Planning Commissions have received Department of Energy grants. CCRPC has not yet received these funds, but will benefit from the work of the other three RPC's – and will hopefully be able to build on that work if CCRPC receives its own grant to work on this task further.
    ii. Encourage individual homes and businesses to include renewable energy options in building and/or retrofitting.

5. State/Local Permitting Coordination & Improvement

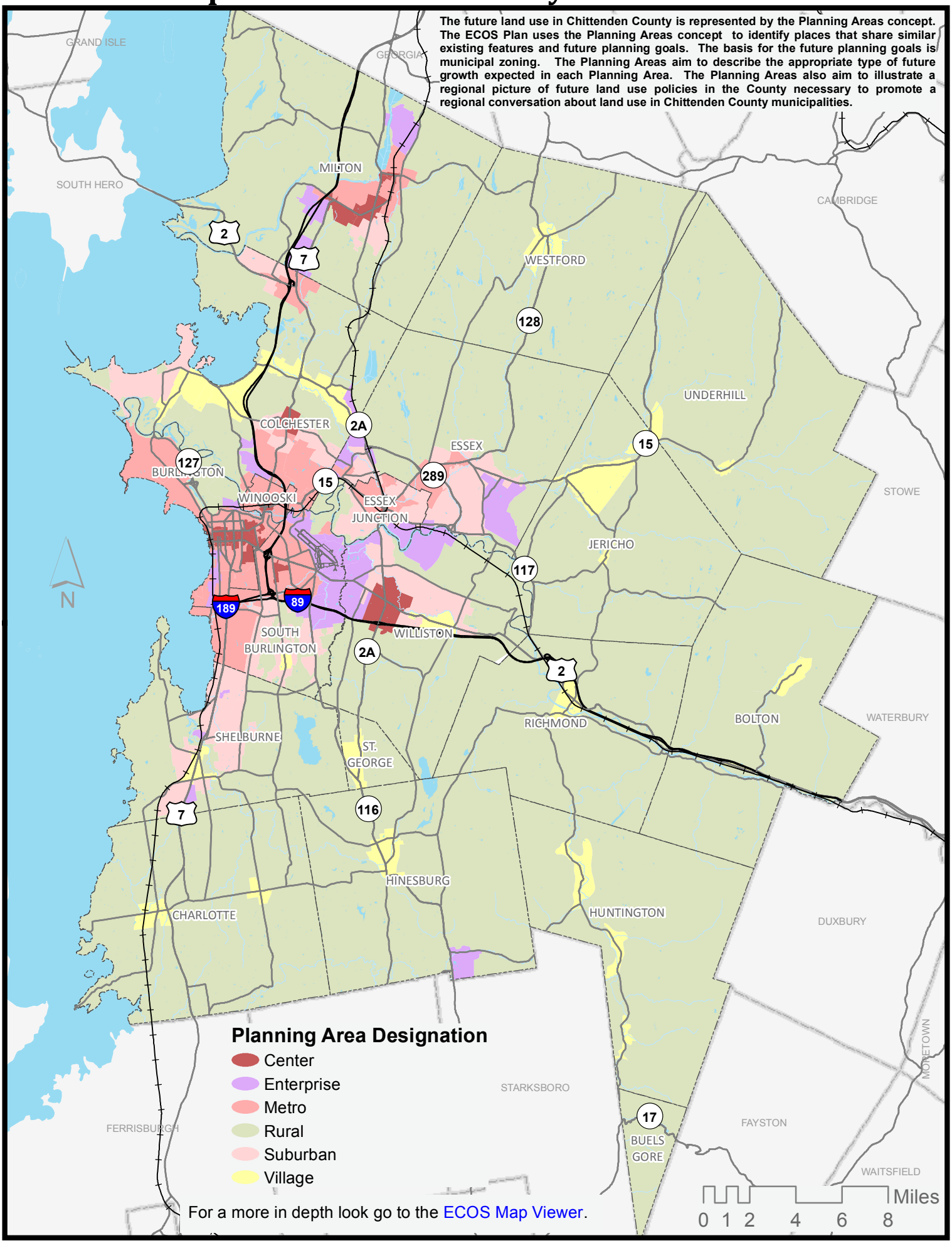
a. Support changes to the local and state permitting process to make the two more coordinated and effective. Participate in the Agency of Commerce and Community Development's (ACCD) process to improve the State's designation programs designed to encourage development in appropriately planned places and discourage development outside of those areas. This program could be improved with regulatory and/or fiscal incentives. These could include expedited permitting processes for projects in areas that are: a) designated for growth; and, b) where a community has a robust plan, regulations and staff capacity; and reduction of redundancies such as delegation of permitting for certain local and state reviews (such as exemption from Act 250). In conjunction with delegation it may be appropriate to develop more stringent standards and thresholds for development review in rural areas.
b. Collaborate with stakeholders to ensure local and state regulations, bylaws and plans encourage transparency, predictability and timely review of sustainable and environmentally sound development applications.

c. Develop a transportation assessment process that supports existing and planned land use densities and patterns in Center, Metro, Suburban, Village, and Enterprise Planning Areas to allow for more congestion and greater mode choice than allowed by current standards. The CCRPC will collaborate with the Vermont Agency of Transportation (VTrans), the Natural Resources Board, and other state and local stakeholders to develop a process that evaluates the transportation impact from a multi-modal perspective rather than just a traffic flow standpoint.
    - Policies and planning studies that are adopted as part of this ECOS Plan and subsequent amendments will guide CCRPC's position in permit proceedings.

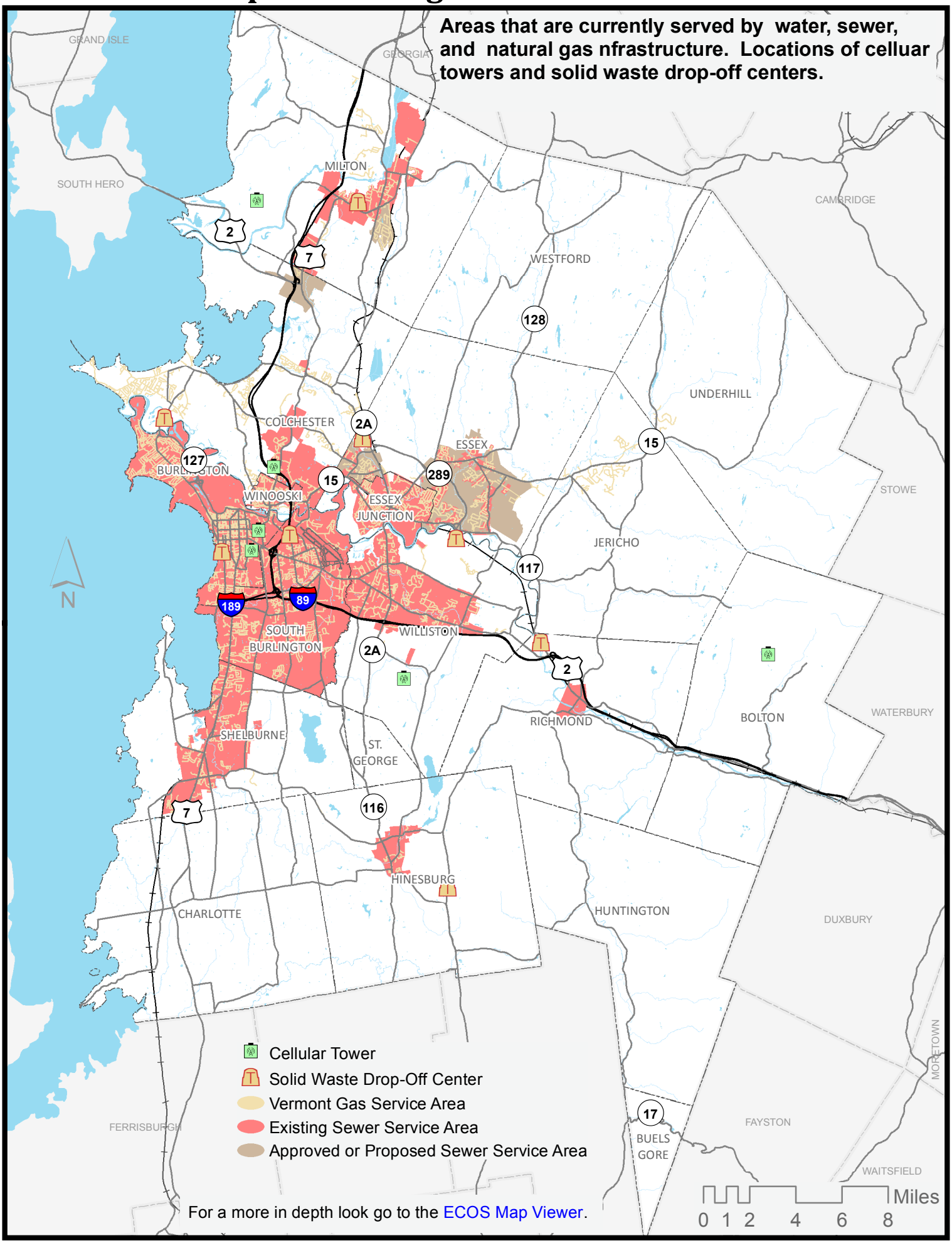
6. Metropolitan Transportation Plan Investments

a. Adequately fund the maintenance and preservation of our existing transportation assets including roads, bridges, rail, transit, walking/biking facilities, and transportation demand management (TDM) programs and facilities.
b. New transportation system investment should focus on the highest priority transportation projects as detailed in the ECOS/Metropolitan Transportation Plan (MTP) Project List. In the next five years, these projects will primarily be those that are included in the Transportation Improvement Program (TIP), as may be amended. The TIP projects are considered FUNDED VITAL PROJECTS for the purposes of the Comprehensive Economic Development Strategy (CEDS).
c. Future project investments and specific focal areas for targeted implementation impact include:
    i. For transportation planning studies that have been adopted as part of this ECOS Plan, the specific recommendations for project, policy, and program investments will guide CCRPC investment priorities.
    ii. Expand Intelligent Transportation Systems (ITS) for the roadway network, and traffic and transit operations, to improve safety and reduce congestion;
    iii. Expand the Go! Chittenden County Transportation Demand Management (TDM) program (including park and ride facility development) to reduce single occupancy vehicle (SOV) trips
    iv. Increase investment in CCTA transit services to increase user accessibility
    v. Expand walking and biking infrastructure to support active transportation and to provide interconnection with the region's transit system
    vi. Develop a regional network of electric vehicle charging stations to accommodate the growth in low emissions, low energy costs electric vehicles and support the expanded adoption of natural gas vehicles for heavy duty fleets.

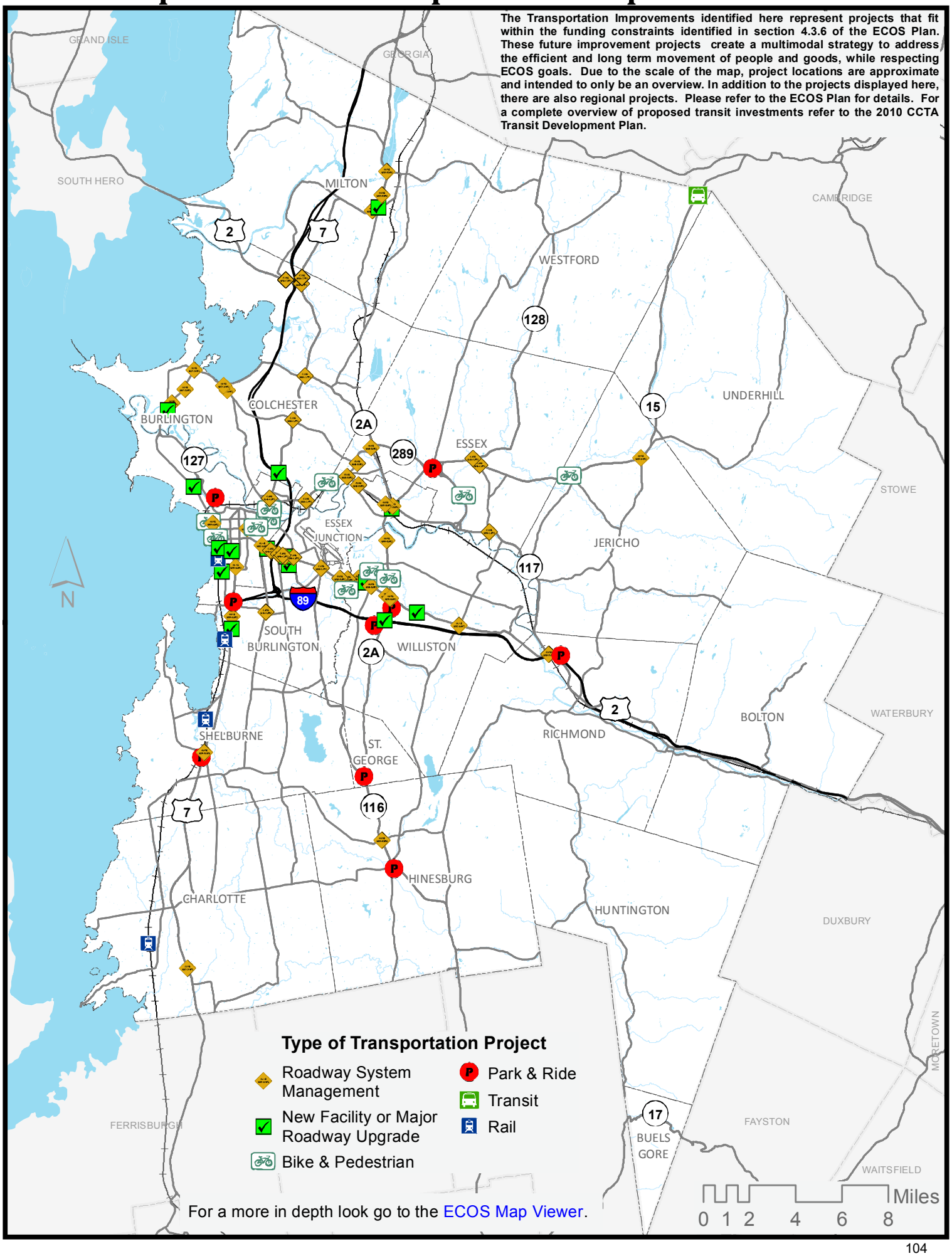
Map 2 - Chittenden County Future Land Use



Map 3 - Existing Utilities and Facilities



Map 4 - Future Transportation Improvements



3.2.3 IMPROVE THE SAFETY, WATER QUALITY, AND HABITAT OF OUR RIVERS, STREAMS, WETLANDS AND LAKES IN EACH WATERSHED.

While striving toward all of these ECOS strategies, and particularly Strategy #2 – 80% of growth in 15% of our land area, it is essential to do so in such a way that we do not impair our essential water resources (including potable water) and that we prepare ourselves for the impacts of a changing climate.

1. **River Hazard Protection** – Develop and implement adaptation strategies to reduce flooding and fluvial erosion hazards. While supporting planned growth, ensure that growth is evaluated in terms of preparedness for a changing climate. Chittenden County will continue its efforts, along with the municipalities, to avoid development in particularly vulnerable areas such as floodplains, river corridors, wetlands, lakeshore and steep slopes; protect people, buildings and facilities where development already exists in vulnerable areas to reduce future flooding risk; plan for and encourage new development in areas that are less vulnerable to future flood events (see Section 3.2.2); and implement stormwater management techniques to slow, spread and sink floodwater (see the Non-Point Source Pollution section below).
    a. Identify problem locations - Conduct on the ground inventories and map flow and sediment attenuation locations and problematic infrastructure (undersized culverts, eroding roadways, "vulnerable infrastructure" - infrastructure subject to repeat damage and replacement, etc.).
    b. Revise bridge/culvert designs - Revise public works and zoning ordinances with culvert and bridge design specifications that allow for wildlife passage and movement of floodwater and debris during high intensity events. Implement culvert and bridge designs that produce stable structure in river channels (i.e. fluvial geomorphology).
    c. Protect river corridors– Existing bylaws protect the majority of Fluvial Erosion Hazard (FEH) areas with stream setbacks and floodplain regulations. Work with ANR to get the FEH data incorporated into the River Corridor Protection Area maps. Work with municipalities and ANR to improve bylaws to protect the River Corridor Protection Areas or River Corridors not currently protected and enforce these bylaws. Continue protection of river corridors including non-regulatory protection measures such as stream re-buffering, river corridor easements on agricultural lands, river corridor restoration and culvert and bridge adaptation.
    d. Support non-regulatory conservation and/or preservation of vulnerable areas through public and land trust investments, including identification of repetitively damaged structures and provide assistance to elevate, relocate or buy out structures, and identify where flood storage capacity may be restored and conserved.
    e. Participate in the development and implementation of the Lamoille, Winooski and Direct to Lake Tactical Basin Plans. CCRPC will work with the State, municipalities and other partners to address river hazard protection, flood resiliency and water quality through these Plans – including prioritizing projects for funding.

2. **Non-point Source Pollution** - While we have addressed point sources of pollution, non-point sources are still contributing pollutants to our water bodies.
    a. Assemble data – Work from existing data collected and further identify the locations that are contributing to water quality pollution such as flow, sediment, pathogen and nutrient. Where

needed, conduct on-the-ground inventories of water quality and biological assessments (in-stream), wetlands, sub-watersheds, river corridors (buffered or not) and geomorphology. Map the existing and new data on one regional map.

b. Revise Plans and Bylaws and Ensure Enforcement -- Incorporate the above data into municipal plans; establish specific statements that protect these resources; develop clear standards for how to protect these resources within zoning regulations; and initiate on-going enforcement of the regulations. Encourage low impact development techniques, and shared storm water control programs to maximize land development in areas planned for growth. Incentivize best management practices for agricultural uses; and encourage the Agency of Agriculture to better enforce their required agricultural practices. In addition, EPA's DRAFT Lake Champlain Total Maximum Daily Load (TMDL) for phosphorus, Vermont's Phase 1 TMDL Implementation Plan, and the Vermont Clean Water Act (2015 Act 64) have established a variety of regulatory programs to address phosphorus reduction. CCRPC will work with the municipalities and other partners to implement these programs: Municipal Roads General Permit, Phosphorus reduction integration into the existing MS4 permit, and Developed Lands (3 or more acres of impervious). See Chittenden County's Work Plan and the 2016 All Hazard Mitigation Plan (in development) for more detail on these actions.

c. Implement Non-regulatory approaches - Identify and implement non-regulatory approaches to nutrient, pathogen and sediment pollution management. Under new MS4 permit requirements, municipalities will be developing flow restoration plans to achieve the total maximum daily load requirements for impaired streams, rivers, and Lake Champlain. These plans may require additional public investment in storm water facilities or investments or actions by individual property owners. Support watershed organizations.
   - FUNDED PROJECT - Connecting the Drops: A Water Story –Winooski Natural Resources Conservation District (WNRCD) aims to continue public awareness of water quality issues with a call to action in the 2013 summer season. The project includes a public art and education display in downtown Burlington where art, public participation, science education, and environmental stewardship will highlight stormwater's impact on Lake health and steps each of us can take to improve it.

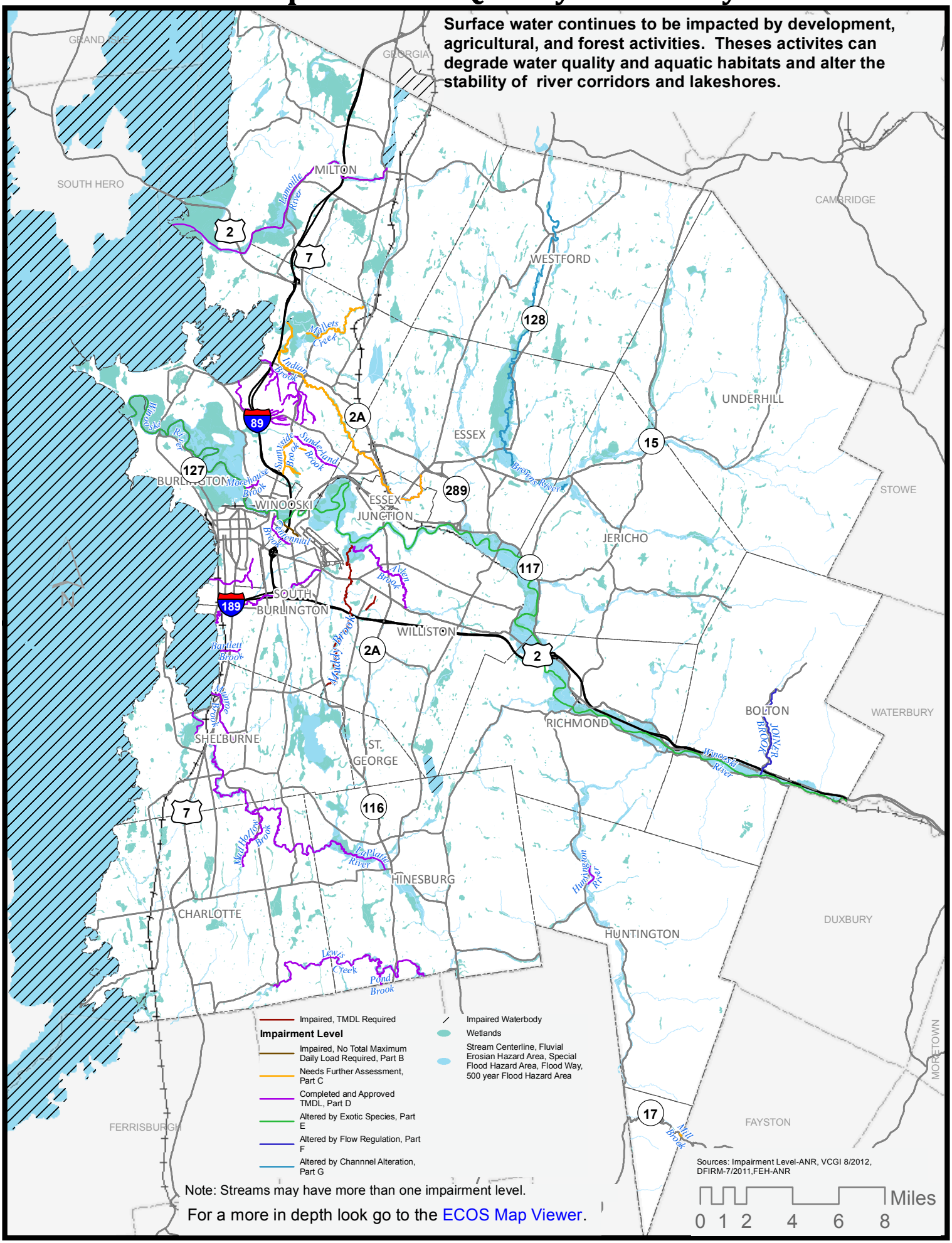
3. **Wastewater Treatment Plant Upgrades** – The non-point sources have been identified as the largest contributors of phosphorus to Lake Champlain, and therefore Vermont's August 2015 *Draft* Lake Champlain Phosphorus TMDL Phase I Implementation Plan, does not allocate any additional phosphorus reductions to wastewater treatment plants in the Lake Champlain basin. However, EPA's *Draft* Phosphorus TMDLs for Vermont Segments of Lake Champlain, dated August 14, 2015, does include reductions at some of the County's wastewater treatment plants as identified in Table 9 of that document. These treatment plants are listed in the ECOS Project List (see Section 4.2.6). To provide further context to the treatment plants on this list, here is further information from EPA's Phosphorus TMDL:

   "*The currently permitted WWTF [wastewater treatment facility] contributions in [the Main Lake, Shelburne Bay and Burlington Bay] segments ranges from 16 to 97% of the total segment base load and should be reduced. EPA has made WWTF waste load allocations [WLA] equivalent to setting the phosphorus limit at 0.2 mg/l at design flow for the 17 facilities with flows greater than 0.20 MGD. Those facilities [in Chittenden County] are: Burlington*

East, Burlington Main, Burlington North, Essex Junction, Hinesburg, Global Foundries, Shelburne #1 and #2, Richmond, South Burlington Airport Parkway, South Burlington Bartletts Bay, and Winooski. [Some] of these facilities have recently made upgrades or have the ability to make process improvements that would enable them to meet permit limits consistent with the new allocations without major construction upgrades. [Within Chittenden County] these include, Essex Junction, South Burlington Airport Parkway, Shelburne #1 and #2, and South Burlington Bartlett Bay….There are two exceptions to this general approach. The 2002 WLAs for Weed Fish Culture Station and Burlington Electric were lower than a limit equivalent to 0.2 mg/l at design flow. The more stringent 2002 allocations have been retained and are already reflected in the permit limits for these facilities." EPA's Phosphorus TMDLs for Vermont Segments of Lake Champlain August 14, 2015, page 31.

4. Support and promote the use of more holistic, less chemical dependent and less energy intensive effluent management efforts whenever possible (for example, composting toilets, localized grey water systems, passive grey water and black water septic systems, rain water harvesting and storage, etc.)

Map 5 - Water Quality and Safety



Note: Streams may have more than one impairment level.

For a more in depth look go to the ECOS Map Viewer.

3.2.4 INCREASE INVESTMENT IN AND DECREASE SUBDIVISION OF WORKING LANDS AND SIGNIFICANT HABITATS, AND SUPPORT LOCAL FOOD SYSTEMS.

1. **Habitat Preservation** - Protect forests, wetlands and agricultural lands from development, and promote vegetative landscaping in urban areas in order to maintain natural habitats, natural storm water management and carbon sequestration. This will keep people and infrastructure out of harm's way and allow for natural flood attenuation areas.
   a. Inventory - Conduct on the ground surveys and inventories of significant habitats (include wetlands), connectivity corridors, scenic resources and locations of invasive species and map this information. Incorporate this data into municipal and regional plan text and maps and establish specific policies that address and protect these resources.

      - FUNDED PROJECT - Forests, Wildlife & Communities: Science to Action – Town of Richmond with Towns of Bolton, Jericho, Huntington, Vermont Natural Resources Council, Arrowwood Environmental, Vermont Fish & Wildlife Department, VT Forests, Parks & Recreation Department, and CCRPC. This project is a comprehensive four-town natural resource inventory of wildlife habitat, wetlands, uplands, natural communities and working lands; technical assistance in the development of bylaws and non-regulatory conservation tools tailored to our communities' needs to provide permitting predictability, protect, restore and enhance critical habitat, and advance the goals specified in each town's plan; and engagement of property owners and other citizens in all aspects of the project.

   b. Municipal Development Review Regulations - Develop clear definitions of the resources to be protected and establish standards to describe how to protect these resources within zoning and subdivision regulations.
   c. Education - Educate engineers, developers, real estate professionals, planners and the public regarding resources and methods for restoration and protection.
   d. Non-regulatory Protection - Support non-regulatory conservation and/or preservation through public and land trust investments. Establish invasive plant removal management plans, implement the plans and include long-term monitoring.

2. **Working Lands Implementation** – To preserve the soul of Vermont, as well as move forward into the future with resiliency, Vermont needs to protect the farmland and forestland we have and support existing and new operations (including, but not limited to, un-intensive urban and suburban home gardens and mini-homesteads). Support implementation of the Farm to Plate Strategic Plan and the VT Working Landscape Partnership Action Plan.
   a. Municipal Development Review Regulations - Develop clear definitions of working lands to be protected and establish zoning and subdivision standards to describe how to protect these areas from development so that they may be retained and accessible as "working" lands. Maintain access and scale of working lands to ensure viability after subdivision in the rural landscape (including but not limited to protection of log landings of previously logged forested parcels, zoning techniques such as fixed area ratio zoning to separate lot size from density, conservation zoning and homeowners association bylaws that allow for farming on the open space lots, etc.);

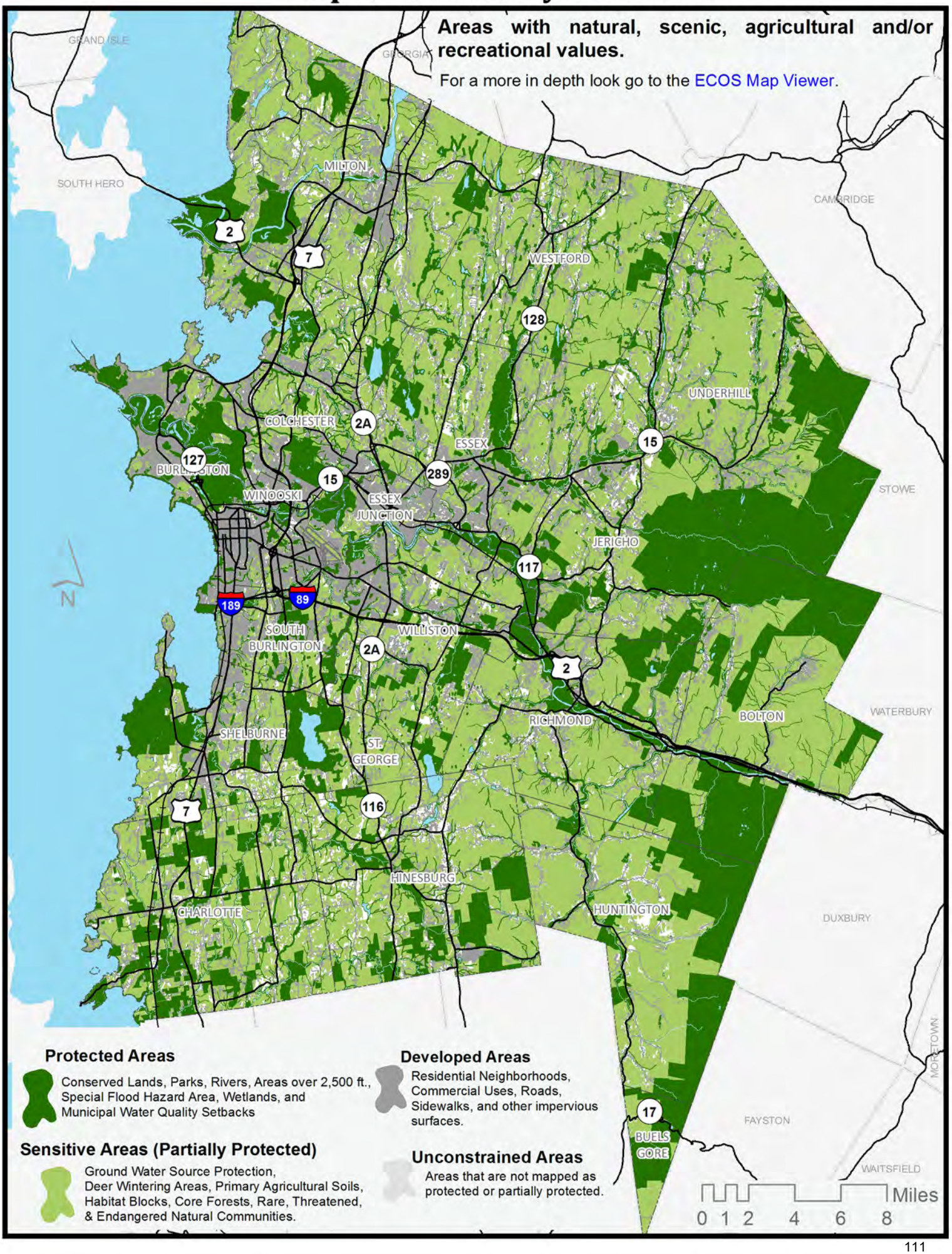
while promoting urban agriculture in areas planned for growth. While farming is generally exempt from municipal zoning, some structures such as farm houses, processing facilities, the generation of energy for on-farm use, and on-farm retail and related enterprises may be regulated. The economic viability of farm enterprises can often depend on these facilities so municipal regulation should not impede reasonable farm related improvements.

b. Infrastructure & Systems – support establishment of food processing industries, value-added product markets, workforce training, etc to help support the viability of these industries.
    - FUNDED PROJECT - New American Food –Association of Africans Living in Vermont, Inc. is leading this revenue-generating, culinary job skills training project. It will prepare unemployed refugee Reach Up (Temporary Assistance for Needy Families) recipients, with limited English proficiency, for jobs in the food preparation and food processing industries through the 120-hour, 10-week FRESH food course. The AALV Employment Counselor places graduates into employment opportunities that result in movement off welfare. In addition, there will be an increase in sales by refugee farmers of organic, locally grown crops.
c. Support non-regulatory conservation and/or preservation through public and land trust investments (including but not limited to municipal land conservation funds).

3. **Earth Resources Extraction -** Mineral extraction and processing facilities, including smaller private extraction operations existing to support agricultural operations, should be planned, constructed, and managed, in conjunction with State and local regulations, to:

a. Not place an excessive or uneconomic burden on local and state highways and bridges – including but not limited to a burden to the function and safety of existing roads and bridges serving the project site, strain from heavy loads on roadbeds and bridges, conflicts with pedestrians or bicyclists and increased heavy traffic in dense residential areas; and
b. Minimize any adverse effects on water quality, fish and wildlife habitats, and adjacent land uses; and
c. Plan for their eventual rehabilitation so that slopes are stable and the surface is revegetated with a variety of native species to support a wide range of biodiversity. To that end, topsoil should not be removed from sites and excavations should stop early enough so that stable slopes can be established on the property; and
d. Extraction sites should be screened to the extent practical if topography and vegetation allow.

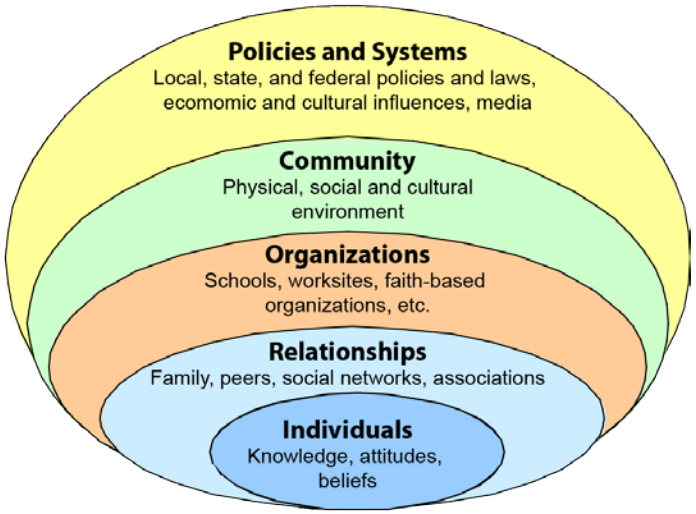
Map 6 - Natural System Areas



3.2.5 INCREASE OPPORTUNITY FOR EVERY PERSON IN OUR COMMUNITY TO ACHIEVE OPTIMAL HEALTH AND PERSONAL SAFETY.

Efforts to reduce obesity, tobacco use & alcohol abuse must be multi-focal; impacting social norms, public engagement and ultimately laws and policy. The VT Prevention Model is an instrument that guides the interventions set forth by the Vermont Department of Health and its many community partners. It helps ensure a comprehensive impact on every level of society from the individual resident to government policy makers. In the case of establishing tobacco free outdoor spaces substantive progress is made when interventions are brought to bear at all level of the prevention model. For instance, a healthcare provider counseling patients about health risks associated with tobacco represents an individual level strategy. Youth tobacco prevention coalitions capitalize on the power of social relationships to shift social norms (relationship level).

Vermont Prevention Model



Source: Vermont Department of Health

Organizational level actions might involve adapting a worksite wellness program to include a tobacco cessation component. A media campaign represents a community level strategy. Lastly, creation of a town ordinance or amending zoning regulations to designate a smoke-free public area represents prevention intervention at the policy/systems level. The Prevention Model can be used to guide the transition of public awareness and opinion leading to the establishment of systems that incorporate prevention strategies into the community planning process.

1. **Basic needs** – Investment in the health, safety and education of citizens is the tide that lifts all boats. Provide the basic needs of all people through access to healthy food, access to safe shelter, greater and more equitable opportunities for education, job training, jobs, affordable housing and public transportation.

- FUNDED PROJECT - Eat Well, Age Well - Hunger Free Vermont with the following partners: American Association of Retired Persons, United Way, Champlain Valley Agency on Aging, State of Vermont Department for Children and Families. This project will connect committed and trained United Way volunteers aged 55+ with Vermonters aged 60+ who may be eligible to participate in 3SquaresVT. This project will collaborate with the Community Driven Transportation for Seniors & Adults with Disabilities project on opportunities for outreach for their shared audience.

2. **Tobacco Use** – Reduce access and exposure to tobacco by restricting retail promotion of tobacco products and designating tobacco-free outdoor public spaces and events.

3. **Obesity** -- Create policies and environmental supports that increase access to active transportation, active recreation, and healthy foods.

4. **Substance Abuse** - Support residents in choosing to be free from alcohol abuse and addiction by restricting retail promotion of alcohol products and designating alcohol-free outdoor public spaces and events.
5. **Emergency Preparedness**
   a. Assure that all municipalities and social service organizations have well-developed emergency preparedness plans that take an all-hazards approach and thereby can be used in weather emergencies (such as widespread and prolonged loss of electrical power in winter) as well as biological, chemical, radiological and terrorist emergencies; address the needs of their residents/clients with access or functional needs; and address the needs or residents/clients who speak a language other than English. Include action steps that municipalities would take in the case of a major emergency event at nearby locations that create a refugee situation in the Chittenden area.
      i. Assure an understanding of these plans by entities named in the plan as well as those supported in the plan.
      ii. Practice implementing the plan through regular emergency exercises.
   b. Train Chittenden County employers on the development, practice, and regular review of Businesses Continuity Plans and Business Recovery Plans.
   c. Develop systems that monitor for impacts of climate-change that would affect human health or safety. Assure communication systems are in place to share this information with entities that are best suited to engage in prevention planning and provide any necessary emergency support.

6. **Caregiving** - Assure that older adults and people with disabilities are well cared for as needed.
   a. Support family members who provide care for them.
   b. Ensure that older adults and people with disabilities who need formal care in their daily living have access (including transportation) to the appropriate services as needed.
      - FUNDED PROJECT - Community Driven Transportation for Seniors & Adults with Disabilities –United Way with the following partners: SSTA, CCTA, Champlain Area Agency on Aging, UVM Center for Aging, and Fanny Allen Corporation. The program will create a community-driven transportation service model that provides low-cost transportation services to medical appointments and non-medical rides for seniors and adults with disabilities, especially those with no other means of transportation. The program will recruit, train and retain 30 volunteer drivers; increase the number and types of rides provided to seniors and adults with disabilities by volunteer drivers; decrease the cost per ride across the system; and develop a long-term sustainability plan for the volunteer driver program.

7. **Social Connectedness** - Increase opportunities for residents to come together, interact, and network.

a. Support organizations and businesses that bring diverse people together around a myriad of themes: arts and cultural events, recreational and leisure activities, civic engagement initiatives, educational workshops, family events, or any other activity that brings people together with a common interest. Encourage organizations of all kinds to offer and/or support free arts and leisure opportunities so that everyone, regardless of location or social/economic status, can experience the benefits of cultural events and participate in civic engagement.

3.2.6 EQUIP OUR RESIDENTS WITH THE EDUCATION AND SKILLS THAT THEY NEED TO THRIVE.

During 2012, several efforts were concurrently conducted with a focus of improving education outcomes. The actions below summarize the result of that work. These efforts include the Lake Champlain Regional Chamber of Commerce/GBIC Education Task Force, the Vermont Superintendents Education Quality Framework, and the ECOS Education Subcommittee.

Vermont is home to a public education system that has provided a significant economic benefit to students, businesses and the broader community. There is vital connection between a strong education system, the attractiveness of our region, and a healthy economy. Nonetheless, like much of the nation, Vermont faces challenges. We have an aging workforce, an increasing number of jobs that require a post-secondary degree, entrants to the workforce and college who lack the basic skills necessary to be successful and a lingering achievement gap that is tied to income and race across the state. In an environment with fewer students in the system to enter the workforce, it is an economic and community imperative that our schools help a higher percentage of all students achieve college and career readiness than ever before. Investment in public education is vital for our success as a community and a society – though the costs of education can be exceptionally high. Education financing along with other public costs need to be balanced and evaluated as suggested in 3.2.7.6.

1. **Coordinate Efforts** - Establish a Chittenden County regional initiative of all interested stakeholders to undertake the action steps below drawing upon successful nationally recognized programs in other states. (e.g. STRIVE in Cincinnati, OH)

2. **Elementary Readiness and Comprehensive Student Needs** – Students need to begin kindergarten and every school day after that ready to learn.
    a. Improve access and funding for pre-kindergarten programs so that children are ready to learn by the time they begin kindergarten.
    b. Ensure that our young children are nurtured by knowledgeable and capable caregivers by: increasing the capacity, knowledge and skills of parents to nurture their young children; providing families access to high quality early care and education settings; and, supporting the ability of early care and education providers to develop the skills and knowledge needed to care for children.
    c. Provide adequate meals to students who need them.
    d. Quantify the financial realities of the human service cost shift and integrate the social, health and nutritional services that schools currently provide.

3. **Student-centered, Proficiency-based, Flexible Pathways to Graduation**

a. Adopt the Smarter Balanced assessments, which are administered on-line and based on the Common Core Standards. These assessments provide teachers with rapid results, allowing for timely adjustments.
b. Develop a comprehensive advisory system within schools that includes a sustained relationship with an advisor throughout a student's career, and a personal learning plan tied to proficiency expectations for graduation rather than Carnegie units of credit. These plans may rely on traditional course-work, school choice, college courses through dual enrollment, internships for credit, on-line courses, community-based work, and service learning.
c. Expand the use of on-line resources and technology such as the Vermont Virtual Learning Cooperative (which only one third of Vermont high schools have signed on to) and the Learning Network of Vermont (real time interactive video technology in 130 Vermont school sites).

4. **Consistency Across the System** - Make the changes to governance necessary to improve consistency and equity across the state.
    a. Explore the impacts and outcomes of adopting a common statewide school calendar or targeted and personalized summer program opportunities with the overall goal of deterring summer learning loss.
    b. Adopt a common, statewide daily schedule to allow for distance learning, flexible pathways and the ability to access courses outside of a home school district.
    c. Adopt a statewide teacher's contract, with allowance for regional cost-of-living disparities, and acknowledgment for innovation.
    d. Set a state deadline for voluntary consolidation to achieve a target number of supervisory unions and districts. If the necessary consolidation is not achieved voluntarily, the Legislature should appoint an independent panel to draft a statewide slate of consolidations. Ask districts and supervisory unions (SUs) to describe what unique circumstances prevent their reorganization to serve an average of 1,500 students. Grass roots, community-driven consolidation is the healthiest and most viable course. However, reducing the number of SUs and school districts presents an opportunity to use cost savings to support innovation, improve programs and reduce unnecessary and duplicate spending as well as property taxes.

5. Career Awareness/Skill Alignment
    a. Develop a community needs advisory system that embeds current and anticipated career information from employers into each district and SU. Expand early career exposure and awareness that is based on local employer feedback and that begins in middle school or earlier. It should assist families and students with career awareness, goal-setting and the link to relevant learning, training and career opportunities.
    b. Strengthen programming and delivery of math curriculum.
    c. Allow Career and Technical Education Centers to be accessible either full or part-time starting in the 9th grade.
    d. Offer credit-bearing, structured, 40-hour internships subsequent to a 20-hour pre-employment skills segment, and tied to a high school learning outcome (e.g., the Linking Learning to Life TIPS (Training Interns & Partnering for Success) model for structured internships).
    e. Provide training and support for people who are leaving incarceration.

f. To develop creative and collaboration skills, make sure there are opportunities for students to come together, interact, and network. Bring diverse people together around arts, music, cultural events, recreation, and sports activities.

6. Teacher Preparation and Ongoing Professional Development

a. Support innovation in teacher preparation, training and ongoing professional development. Twenty-first century teachers are facilitators, coaches and guides who will measure student learning through proficiency, instead of serving as the exclusive distributors of classroom and course content.
b. Allow for greater flexibility in licensing to accommodate transitions from career to classroom.
c. Improve the numeracy skills and confidence of educators through content-specific professional development and adoption of strong math benchmarks based on the Common Core.

7. **Postsecondary aspiration, continuation, retention and completion** - Public higher education in Vermont is chronically underfunded relative to the rest of the nation. In the near term, additional state investment should be targeted to desired performance: enrollment of Vermonters and successful degree completion.
   a. Adopt a loan forgiveness program tied to the timely completion of a degree, in which a student or his/her parents are provided with an economic incentive to be staggered over five years which forgives the equivalent of one year's tuition at a four-year public college.
   b. For students who demonstrate college or career readiness before they would otherwise finish high school, use the state's commitment to their education through age eighteen to support an additional year of learning. This funding might be applied to an apprenticeship, an experience in entrepreneurship, a certificate program, a year in college, an internship, or community service.

8. **Child Care** - Ensure that children ages (0-5) have adequate access to high quality and affordable early learning and education programs by integrating child care issues into the planning process, including child care financing, infrastructure, business assistance for child care providers, and child care workforce development.
   a. Work with municipalities to review land-use and development regulations to identify needed amendments to authorize quality child-care services in appropriate locations convenient to households, employment centers accessible via transit, and near recreation facilities. Amendments could include incentives to provide space for childcare in all types of projects.
   b. Work with municipalities to consider waiving impact fees for new child care businesses.
   c. Review the recommendations of the Vermont Blue Ribbon Commission on Financing High Quality, Affordable Child Care when complete, to determine how our partners may help advance these efforts.

3.2.7 DEVELOP FINANCING AND GOVERNANCE SYSTEMS TO MAKE THE MOST EFFICIENT USE OF TAXPAYER DOLLARS AND REDUCE COSTS.

Considering development and growth comes with both costs and benefits, this Plan attempts to reach a balance by directing growth in such a way that new infrastructure and long-term maintenance costs are minimized. For example: Promotion of and incentives for compact development in areas planned for growth will help keep rural areas open; this can also minimize stormwater problems and prevent new watersheds from becoming impaired. Incentives and promotion for public transit can reduce the need for parking lots which will reduce stormwater impacts and costs. Compact development will make public transit more cost effective.

1. **Community Development Finance Tools** – Expand and improve implementation of financing tools available to municipalities with particular emphasis on options that level the playing field between greenfield development and infill development and to help direct new investment dollars to strengthen existing neighborhoods. This would include tax increment financing (TIF), Local Option Sales Taxes, Impact Fees, Special Assessment Districts, and capital planning and budgeting. Also support downtown tax credits, and additional incentives as part of State Designated Growth Centers, Downtowns, Villages, New Town Centers, and Neighborhoods. Keep the Vermont Municipal Bond Bank highly functional, accessible and AAA rated as it is key to the financial health of this region. Explore and develop other financing mechanisms for maintaining and improving infrastructure. Develop revolving loan funds for business to improve access to capital. Monitor the State of Maryland's health enterprise zone program to determine if it is successful and if a similar program would be appropriate for VT.
2. **Affordable housing financing and Implementation** – Increase resources for housing, which includes but is not limited to: local housing trust funds, state housing trust fund, state housing tax credits, and strongly advocating for increased federal resources.
3. **Energy Investment** – Encourage property assessed clean energy (referred to as PACE) efforts, weatherization, tax incentives and other financing opportunities for investments in energy efficiency and renewable energy.
4. **Transportation Financing** - Encourage municipalities to implement local transportation funding programs such as Tax Increment Financing Districts, Local Option Sales Taxes, Impact Fees, or Special Assessment Districts as appropriate. Monitor and participate in state and federal transportation financing reform efforts such as the 2012 Vermont Legislature's Act 153, Section 40 Transportation Funding study and the Natural Resources Board/VTrans Fair Share Cost Study to help address declining revenue from the gas tax.
5. **Clean water Financing** – Monitor and participate in state financing reform such as the 2012 Vermont Legislatures Act 138 study which the Agency of Natural Resources is leading to make recommendations on how to implement and fund the remediation or improvement of water quality. Ensure that stormwater regulation and requirements do not financially burden or penalize dense and compact development in the areas planned for growth.
6. **Monitor State and municipal tax burdens** (education, utilities, municipal services and state) - Examine the structure of government to identify opportunities for restructuring, streamlining or eliminating programs to increase efficiency, reduce costs and enhance accountability. Substantive changes to our tax policy such as expanding the sales tax, internet and cloud

taxation, and migrating to Adjusted Gross Income should not be made until we have a comprehensive picture of Vermont's tax structure, including the property tax and health care financing.

7. **County coordination and alignment** – Coordinate and align investments and actions to advance the ECOS Plan. Monitor and report accomplishments.
8. **Multi-jurisdictional services** – There are a number of services that are provided on a regional or sub-regional basis. These include: Supervisory Unions, Chittenden Solid Waste District, Champlain Water District, Winooski Park District, Chittenden County Regional Planning Commission, Chittenden County Transportation Authority, Chittenden County Sherriff, Chittenden Unit for Special Investigations, and 911 dispatch. Examine and advance appropriate, efficient and effective governance structures to deliver improved services (i.e. Regional Walk/Bike/Park-n-Ride)

3.2.8 ENSURE THAT THE PROJECTS AND ACTIONS IN ALL ECOS STRATEGIES ASSESS EQUITY IMPACTS, AND THAT THE DESIGN AND DEVELOPMENT OF PROGRAMS ARE INCLUSIVE OF ALL AND ENGAGE UNDERREPRESENTED POPULATIONS.

Equity, by definition, means fair and just inclusion. The theory underlying the Sustainable Communities Initiative is that economic competitiveness, social equity, and environmental and public health are interconnected and that all of these outcomes can be improved if regions better coordinate their public investments, including transportation systems, toward the goal of sustainability. Past development patterns have prevented regions from maximizing their potential.

Low-income communities and communities of color are often isolated from economic opportunities because the only homes affordable to their members are in neighborhoods far from growing job centers, good public schools, and basic amenities like grocery stores and banks. Meanwhile, transportation and other infrastructure—critical to attracting and keeping jobs—is crumbling and the risk of climate change is growing. (*America's Tomorrow: Equity is the Superior Growth Model*, PolicyLink, 2011.)

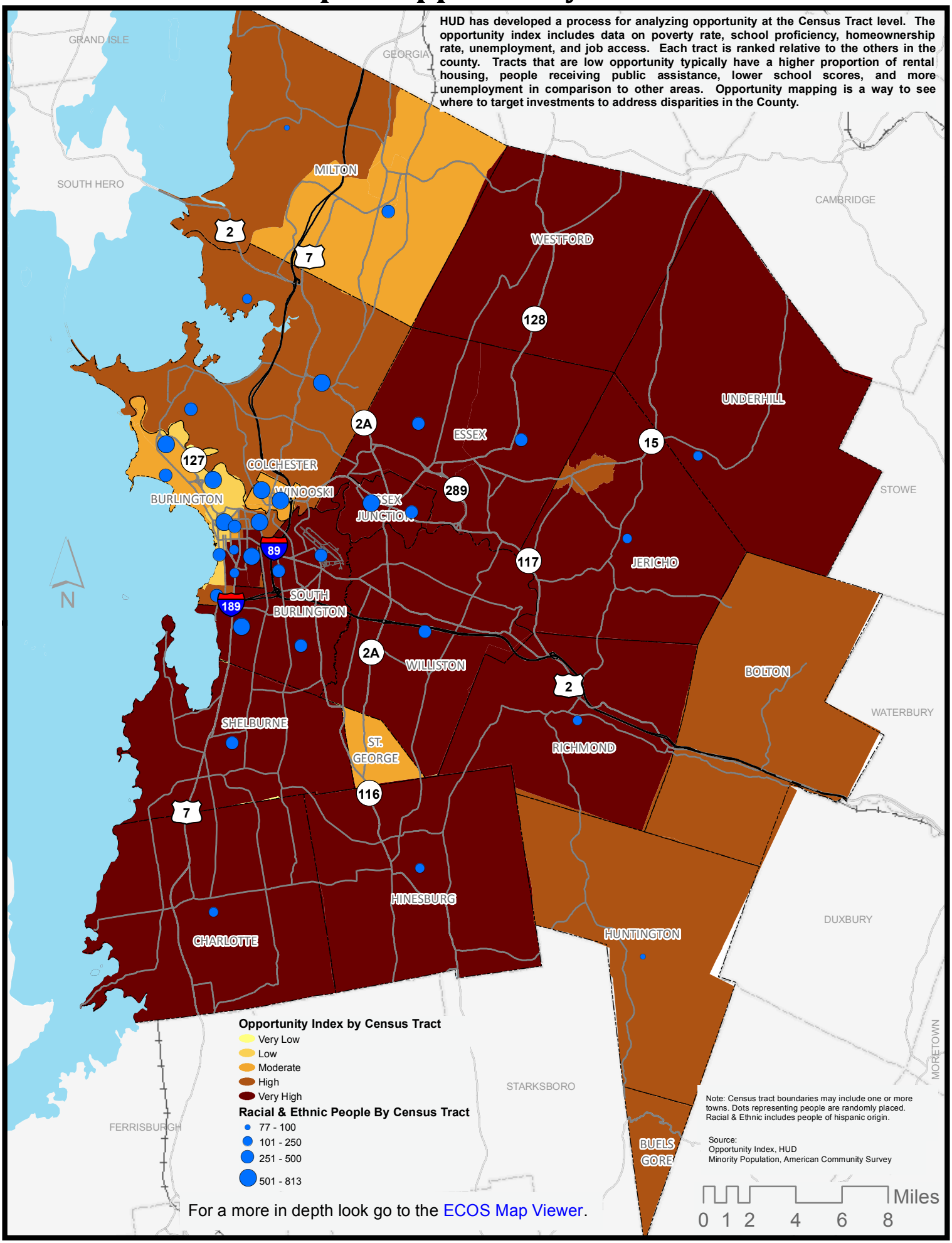
Ensuring equity so that all residents can access and take advantage of the region's economic, social, and environmental assets requires new networks of relationships, new problem-solving methods, and new, inclusive decision-making tables. Substantial efforts are already underway in other communities tackling inequities such as health disparities, transportation and environmental justice, educational equity, and income inequality that can be examined for best practices. New tools need to be created by a diverse group of equity stakeholders in order to ensure for meaningful community engagement, identification and tracking of disparities, and decision-making that weighs the burden placed on different groups. By bringing together diverse and disparate interests while developing new leaders, ECOS projects can be the seeds for an equitable, prosperous and healthy future for Chittenden County.

1. **Track and analyze inequities in all sectors**.
2. **Target and prioritize positive programs** and investments to low opportunity places (see Opportunity Map).
3. **Civic Engagement** - Increase opportunities and remove barriers for civic engagement for all, including underrepresented populations.

a. Provide leadership development training for all civic leaders, including underrepresented communities, to increase knowledge about and encourage service on boards and commissions.
b. Increase boards' and commissions' knowledge and understanding about diverse population and importance of inclusion and representation.
c. Support voter registration drives targeting all citizens, including underrepresented groups.
d. Invest in the naturalization process: civics classes, connected with civic opportunities.
e. Appoint members of underrepresented communities to committees, boards, and commissions.
f. Key documents should be made accessible online and translated (or translation services available when necessary).
g. Improve municipal and regional government organization websites to increase accessibility of English and non-English speaking community members while complying with ADA standards.

4. **Develop an equity toolkit** that guides the decision-making at the policy, program and budget level.
5. **Dissemination of Findings and New Tools** – Encourage the propagation and dissemination of improved procedures by joining the national dialogue on equity, through online availability, workshops, and peer exchange.

Map 7 - Opportunity and Race



3.3 Plan Accountability and Monitoring

ANNUAL INDICATORS AND PROGRESS REPORT

In order to increase accountability for ECOS Plan implementation and results, we are proposing the following plan monitoring system. The system is intended to be tools through which the ECOS partners demonstrate results and continue to focus on collective impact. It is a part of demonstrating our efforts to do things differently, more effectively and efficiently through stronger partnerships.

It is likely that a memorandum of understanding will have to be developed and agreed to by the ECOS partners that commit to leading the collective impact strategies and to following through in monitoring our indicators and implementation of program level actions. There will be opportunities not apparent now to assist each other and achieve better results.

The indicators will be monitored on an annual basis in an Annual Indicator and Progress Report. This report will be guided by an ECOS Accountability Partnership made up of representatives of the ECOS Partners. This committee will be charged with improving partnership efforts and reviewing the draft Indicator and Progress Report and communications each year. Quarterly meetings are expected.

An Indicator Technical Committee made up of staff from the above organizations will provide technical support and make recommendations to the ECOS Accountability Partnership. It is expected that this group will meet quarterly or as much as needed to produce the Annual Indicator and Progress Report each year. The first year will take more time to finalize the indicators.

Performance measures will be determined by progress in implementing the projects identified in this Plan. ECOS Partners must commit to reporting their progress to the ECOS Accountability Partnership so that individual program results can be monitored and reported as part of the Annual Indicator and Progress Report. Changes in ECOS Plan strategies and actions may be made as deemed necessary.

It is intended that the Annual Indicator and Progress Report be reviewed with each of the partners' boards to achieve maximum exposure and results from our collective actions.

CHAPTER 4 – USING THE ECOS PLAN

4.1 Regional Plan

While the previous section highlighted our top needs in Chittenden County and strategies to address those needs, we recognize the need to remain steadfast on the full range of goals identified through the ECOS project.

The regional plan is a comprehensive document that needs to include the following content:

- The policies to guide future growth and development. These policies include the 17 Goal statements in Chapter 2, the 8 Strategies in Chapter 3 and are further supported by Section 4.1.1 and 4.1.2.
- A land use section that indicates the locations for an extensive list of land use types such as housing, recreation, open space, commerce, agriculture, projects with regional impact etc.,.and describe the intensity and character of these land uses. This can be found throughout Chapter 2 (and particularly within topics under Sections 2.2 and 2.5), the *Historic Development and Future Land Use/ Transportation Analysis Report*, Section 3.2.2, and Section 4.1.1.
- An energy element. This can be found in Section 2.5.5, the Energy Analysis Reports and throughout Section 3.2. In addition Climate Change is found in Section 2.2.3, *Chittenden County Climate Change Trends and Impacts* and *Chittenden County Regional Climate Action Plan* (in development), and throughout Section 3.2.
- Transportation element (see MTP description below as this fulfills the regional plan transportation element requirement.). In addition this can be found in Section 2.5.3, the *Historic Development and Future Land Use/ Transportation Analysis Report*, and throughout Section 3.2.
- Utilities and facilities. This can be found in Section 2.5.4 and throughout Section 3.2.
- Policies on preservation of natural and historic resources. This can be found in the *Natural Resources Analysis Report*, Section 2.2.1, 2.2.2, 3.2.2, 3.2.3, and 3.2.4.
- Implementation strategies. These can be found in Section 3.2, and Section 4.1.2, the ECOS Project List, and the MTP Project List.
- How the plan relates to adjoining regions. This can be found in Section 4.1.3.
- Housing element. This can be found in Section 2.5.2, the *Housing Analysis Report*, and throughout Section 3.2 (and particularly within Sections 3.2.2 and 3.2.7).
- Economic development element (See CEDS description below as that plan fulfills the requirements of this element.) In addition this can be found in Section 2.4, the Economic Analysis Reports, and Section 3.2.1.

More information on regional plans can be found here:
http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=24&Chapter=117&Section=04348a

All of the Analysis Reports referenced above can be found at:

www.ecosproject.com/analysis

4.1.1 ECOS PLAN POLICIES & MAPS

For the purposes of complying with VT Statute (24 VSA 4348a), the ECOS Plan's goals in Chapter 2 serve as the policy statements, and the maps are located throughout this document and online (more detail about the maps can be found below). These goals were influenced by analysis reports, data, sub-committee expertise and public participation efforts. The strategies and actions described in Chapter 3 will help CCRPC, member municipalities and partners reach the desired goals. CCRPC deliberately chose to make the 2013 ECOS Plan a strategic plan that is intended to provide **general advisory guidance** and intentionally chose to use "should", rather than shall, in the Plan's goal statements.

ECOS Plan Maps

The following ECOS Plan maps can be found within the Plan itself:

- Map 1 - Economic Infrastructure (located in Section 3.2.1)
- Map 2 - Future Land Use (located in Section 3.2.2)
- Map 3 - Utility and Facilities (located in Section 3.2.2)
- Map 4 – Future Transportation Improvements (located in Section 3.2.2)Map 5 - Water Quality and Safety (located in Section 3.2.3)
- Map 6 - Natural Systems (located in Section 3.2.4)
- Map 7 - Opportunity and Race (located in Section 3.2.8)
- Map 8 – 2013 Metropolitan Transportation Systems Map (located in Section 4.3.1)
- Map 9 – 2006-2010 High Crash Locations-Intersections (located in Section 4.3.2
- Map 10- 2006-2010 High Crash Location –Segments (located in Section 4.3.2)
- Map 11 – Transportation Corridors (located in Section 4.3.5)

The maps included in the ECOS Plan are limited illustrations of the underlying datasets that reside in CCRPC's Geographic Information System (GIS) and are intended to provide a general overview of future and existing conditions. The accuracy of information presented in the maps is determined by its sources. Errors and omissions may exist. The Chittenden County Regional Planning Commission is not responsible for these. Questions of on-the-ground location can be resolved by site inspections and/or surveys by registered surveyor. 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. More detail of the mapped data can be accessed through the ECOS Online Map (http://maps.ccrpcvt.org/ChittendenCountyVT/). Map updates will be incorporated into the online map as data is available and time allows. Once a year, a thorough examination of available data will be conducted. The ECOS Online Map contains data which helped to inform the regional analysis and is presented in four categories: Built Environment, Social Community, Economic Infrastructure, and Natural Systems. The ECOS Online map is a data viewer that allows a user to locate their area of interest and control the display of various layers. A user can see data at the County level as well as at the address level. The ECOS Online Map essentially enables unique creation and printing of individual maps through the Internet.

Map 1- Economic Infrastructure Map

The Economic Infrastructure Map identifies areas within the County that are appropriate for commercial and industrial uses, per municipal zoning regulations. These uses exist throughout the County and include warehouses, manufacturing, office buildings, hotels, retail stores, medical buildings, and auto sales. This map also shows whether the areas zoned for commercial and industrial uses are within the sewer service area.

Map 2 - Future Land Use Map

The future land use map identifies the location and boundaries of the Chittenden County Regional Planning Areas as described below.

Planning Areas

The ECOS Plan uses the Planning Areas concept to identify places that share similar existing features and future planning goals. The Planning Areas reflect current municipal zoning. In addition, the scenario exercise described in Section 3.1 showed public support for growth in line with these Planning Areas. The Planning Areas aim to describe the appropriate type of future growth expected in each Planning Area; however the exact uses and densities allowable are determined by local ordinances. The Planning Areas also aim to illustrate a regional picture of future land use policies in the County necessary to promote a regional conversation about land use in Chittenden County municipalities. The six Planning Areas are depicted on the Future Land Use Plan Map. They are Center, Metro, Suburban, Village, Rural, and Enterprise.

Center Planning Areas are intended to be regional centers or traditional downtowns that serve the County and beyond and contain a mix of jobs, housing, and community facilities. Center Planning Areas also contain the County's highest density and largest-scale developments with residential densities generally ranging from 7 to more than 60 dwelling units per acre. Center Planning Areas may contain a state designated New Town Center, Growth Center, Tax Increment Financing District, or high density Village Center. Development in downtown centers primarily happens through infill development of underutilized vacant land and adaptive reuse of older structures whereas, development in municipal growth centers occurs in targeted areas that will accommodate future anticipated growth. These land uses are locally planned and managed to coexist successfully with neighborhoods and natural areas. Places within Center Planning Areas are served by wastewater facilities, other infrastructure, and offer a variety of transportation options, including non-motorized modes

Metro Planning Areas are areas where local zoning authorizes places to accommodate jobs and housing in a compact development pattern that supports transit service and encourages pedestrian activity and are within the sewer service area. Commercial land uses found in the Metro Planning Area are intended to serve the nearby residential area. Existing densities within Metro Planning Areas are typically higher than those found in the Suburban, Rural, Village, and Enterprise Planning Areas and generally range between 4 and 20 dwelling units per acre. Future development in the metro area should be encouraged to occur at the higher end of this range to ensure that there are adequate housing and jobs in these areas.

Suburban Planning Areas are areas near a Center Planning Area, Metro Planning Area, Village Planning Area, or Enterprise Planning Area where local zoning authorizes future development to occur at scales, densities, and uses compatible with existing development and with general residential densities greater than 1 and less than 4.5 dwelling units per acre. Many parts of the Suburban Planning Area already have been developed, often in suburban styles of development and are predominantly

within the sewer service area. Future development and redevelopment in this Planning Area should be publicly sewered, minimize adverse impacts on natural resources, and protect strategic open space.

Enterprise Planning Areas are areas where local zoning authorizes a future concentration of employment uses that attract workers from the County and multi-county region. Development in these Planning Areas should have adequate wastewater capacity and access to transit or be near these services. Typically, this area encompasses major employers or a cluster of single employers and has current or planned transit service.

Village Planning Areas are areas where local zoning authorizes a variety of future residential and nonresidential development at densities and scales in keeping with the character of a Vermont village, generally between 2 and 12 dwelling units per acre if sewered and between 0.2 and 4 units per acre if not sewered. Village Planning Areas are compact areas of mixed-use activities that maintain the character of a Vermont village. This type of Planning Area is intended to serve its local surroundings as a place where people can live, work, shop and recreate.

Rural Planning Areas are areas where regional and town plans promote the preservation of Vermont's traditional working landscape and natural area features. The Rural Planning Area also provides for low density commercial, industrial, and residential development (generally 1 dwelling unit per acre or less) that is compatible with working lands and natural areas so that these places may continue to highlight the rural character and self-sustaining natural area systems. Development in the rural planning areas is typically outside the sewer service area.

Map 3 – Existing Utilities and Facilities

The Utilities and Facilities Map shows the existing sewer service area, the water supply district, solid waste facilities, natural gas service area, and cellular towers.

Map 4 - Future Transportation Improvements

The Future Transportation Improvements Map gives an overview of the projects that fit within the funding constraints identified in the ECOS project list in Section 4.3.6 of the ECOS Plan. These future improvement projects create a multimodal strategy to address the efficient and long term movement of people and goods, while respecting ECOS goals. For a complete overview of proposed transit investments refer to the 2010 CCTA Transit Development Plan.

Map 5 - Water Quality and Safety Map

The Water Quality and Safety Map illustrates the level of impairment for streams and lakes based on the Vermont Department of Environmental Conservation 303d List and the 2012 List of Priority Surface Waters. Additionally, it shows the location of wetlands, fluvial erosion hazard areas, special flood ways, and the 500 year flood hazard area.

Map 6 - Natural Systems Map

The Natural Systems Map depicts sensitive and protected areas in the County. Sensitive areas include ground water source protection zones, deer wintering areas, primary agricultural soils, habitat blocks, core forests, and rare, threatened or endangered natural communities. Sensitive areas are partially protected through the municipal permitting process and Act 250. The map also includes areas that are protected or where development is discouraged. For the purpose of this map, conserved lands, parks, rivers and their buffers, areas over 2,500 ft., special flood hazard Areas, and wetlands make up the protected category. Protection levels and development potential may vary depending upon jurisdiction.

Map 7 - Opportunity and Race Map

The Opportunity and Race Map combines an opportunity index, developed by the U.S. Department of Housing and Urban Development, with U.S. Census data on race. The purpose of this map is to show levels of opportunity in areas where there are the highest concentrations of racial minorities. HUD has developed a process for analyzing opportunity at the Census Tract level. The opportunity index includes data on poverty rate, school proficiency, homeownership rate, unemployment, and job access. Each tract is ranked relative to the others in the county. Tracts that are low opportunity typically have a higher proportion of rental housing, people receiving public assistance, lower school scores, and more unemployment in comparison to other areas. Opportunity mapping is a way to see where to target investments to address disparities in the County.

Map 8 - 2013 Metropolitan Transportation Systems Map

The Metropolitan Transportation Systems Map represents the present transportation network. The Metropolitan Transportation System is the multimodal network of highways, arterial and major collector roadways, transit services, rail lines, bicycle paths, sidewalks, Burlington International Airport, and other inter-modal facilities critical to the movement of people and goods in the region.

Map 9 - 2006-2010 High Crash Locations-Intersections

The High Crash Locations at Intersections Map depicts where the rate of crashes exceeds a threshold known as the critical rate. Locations are ranked by calculating a ratio between the critical rate and actual rate.

Map 10 - 2006-2010 Crash Locations-Segments

The High Crash Locations of Segments Map depicts where the rate of crashes exceeds a threshold known as the critical rate. Locations are ranked by calculating a ratio between the critical rate and actual rate.

Map 11 - Transportation Corridors

The Transportation Corridors Map represents the locations of the corridors where projects, programs, and strategies are implemented within Chittenden County's transportation system.

4.1.2 ACT 250, SECTION 248 & SUBSTANTIAL REGIONAL IMPACT

In accordance with 24 VSA § 4345a(17) a regional planning commission shall, as part of its regional plan, define a substantial regional impact, as the term may be used with respect to its region. This definition shall be given due consideration, where relevant, in state regulatory proceedings. Those proceedings are:

- Act 250 – Certain proposed developments are required to obtain a permit from one of Vermont's nine District Environmental Commissions in order to establish that the proposed development will satisfy 10 criteria defined by Act 250 (10 VSA §6086). One of these 10 criteria is that the proposed development be "in conformance with any duly adopted local or regional plan or capital program."

- Section 248 – Certain proposed utility facilities are required to obtain a permit from Vermont's Public Service Board to establish that the proposed facility will satisfy criteria defined by Section

248 (30 VSA §248). One of the Section 248 criteria is that the proposed facility will "not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions."

- In addition, the Secretary of the Agency of Natural Resources may not issue a new Solid Waste Management Facility Certification (10 VSA §6605(c)) unless the facility is "in conformance with any municipal or regional plan adopted in accordance with 24 VSA Chapter 117."

In accordance with 24 VSA §4348 (h), in the above three proceedings, in which the provisions of a regional plan or a municipal plan are relevant to the determination of any issue in those proceedings, the provisions of the regional plan shall be given effect to the extent that they are not in conflict with the provisions of a duly adopted municipal plan. To the extent that such a conflict exists, the regional plan shall be given effect it if is demonstrated that the project under consideration in the proceedings would have a "substantial regional impact." **That is, the issue of whether a proposed development has a "substantial regional impact" is important only when there is a conflict between the regional plan and municipal plan.** CCRPC will attempt to reduce the potential for such conflicts through its municipal plan review and approval process.

The following is the required definition of "substantial regional impact," as this term is to be used with respect to Chittenden County:

> ***A proposed development has a substantial regional impact if it is not consistent with the Future Land Use Plan of this Regional Plan.***

This definition puts the emphasis on the Planning Areas – and stipulates that if a development proposal is not consistent with the Planning Areas, then the Regional Plan will take effect in the State proceedings (as described above) if there is a conflict between the regional plan and the municipal plan. The Planning Areas form the basis for the appropriate areas for growth in the next 20 years as shown in the Future Land Use Plan.

The Planning Areas are consistent with current municipal plans and zoning, so only developments that are NOT consistent with municipal zoning and the planning area definitions would likely prompt the SRI definition. Further, developments that push beyond these defined areas are more likely to have a significant impact on our region, than developments within the defined areas for growth. Upon request by a municipality to make a change to the Planning Areas as a result of a municipal plan, zoning and/or infrastructure service area change, CCRPC will review the request for consistency with the Planning Area definitions prior to any action.

The CCRPC has a role in development review outside of the very limited circumstances in which the substantial regional impact definition will come into play. RPCs "shall appear before district environmental commissions to aid them in making a determination as to the conformance of developments and subdivisions with the criteria of 10 VSA § 6086" (24 VSA § 4345a(13)). Both Act 250 and Section 248 require the permit applicant for a project that is proposed to be located in Chittenden County to submit a copy of the application to CCRPC. CCRPC is a party in any such application for an Act 250 permit and may apply to be a party in any such application for a Section 248 permit.

CCRPC has established an interim policy (Guidelines and Standards for Reviewing Act 250 and Section 248 Applications) for its participation in the permit review procedures of Act 250 and Section 248. Currently under this interim policy:

- CCRPC's Executive Committee considers whether an applicant's proposal is in conformance with the Regional Plan, with specific attention given to the Planning Areas of this Plan (for the

same reasons described above for the SRI definition), and the criteria dealing with traffic and other criteria within CCRPC's expertise.

- Staff initially reviews each Act 250 application (with specific attention given to those applications going to a hearing as the FY13 CCRPC contract with the Agency of Commerce and Community Development requires that the CCRPC review and comment on Act 250 and Section 248 applications if a hearing is held).
- CCRPC staff will discuss potential Act 250 and Section 248 projects with Planning and Zoning staff and members of the Planning Advisory Committee to identify emerging development proposals to assess their conformance with the Regional Plan. The intent is that this proactive, collaborative approach attempts to work out any concerns about Act 250 and Section 248 applications prior to their submission.

The Planning Advisory Committee may recommend to the CCRPC revised procedures for participation in Act 250 and Section 248 proceedings in order to better achieve the goals of this Chittenden County 2013 ECOS Plan. These revisions will be established through formal amendments to the Guidelines and Standards for Reviewing Act 250 and Section 248 Applications, and if appropriate, as amendments to this Plan as well. Changes in the review of transportation impacts and CCRPC policies will be coordinated with VTrans and the District Environmental Commission as appropriate to seek consistency in Act 250 reviews.

Subsequent to Plan adoption, the CCRPC anticipates a change to the measures and thresholds used to evaluate allowable congestion in Planning Areas Designated for Growth:

- Currently, Level of Service (LOS) is the predominant measure used to quantify traffic congestion of the transportation system and often determines whether or not mitigation is required for specific development proposals LOS measures quality of service of a transportation facility from a driver's perspective. Alternatively, LOS will not be used as the predominant measure of congestion when reviewing overall intersection performance in traffic impact studies as part of Act 250 applications. For Planning Areas Designated for Growth (excludes Rural Planning Areas), the CCRPC will use both LOS and volume-to-capacity (*v/c*) measures to evaluate congestion. Rather than focusing on incremental and often inconsequential changes between different levels of service, the *v/c* measure provides information on whether capacity of an intersection is being fully utilized. Applying both LOS and *v/c* measures will more effectively assist in reaching the land use and transportation goals of the region. The CCRPC will work with VTrans and other stakeholders to develop LOS and *v/c* thresholds that will allow for higher levels of congestion within non-Rural CCRPC defined Planning Areas than currently defined in the VTrans LOS Policy.

4.1.3 STATEMENT OF COMPATIBILITY AND CONSISTENCY

Pursuant to 24 *VSA* 4302 (f), 4345a (5), 4348a (a), and 4348a (a)(8), CCRPC has reviewed the approved plans of its member municipalities and of its adjoining regional planning commissions and concluded that this *ECOS Plan* is compatible with those plans (that is, this *ECOS Plan*, as implemented, will not significantly reduce the desired effect of the implementation of the other plans).

Chittenden County is bordered to the north by Grand Isle and Franklin Counties, which are served by the Northwest Regional Planning Commission. The ECOS Plan is compatible with the NRPC 2015 Regional Plan. Most bordering areas are designated as Rural in the ECOS Plan and as Agricultural Resource, Rural or Conservation and Forest Resource in the NRPC 2015 Regional Plan. There are two areas near the border with Franklin County that should be monitored in the future. Any development

near around Exit 17 on Route 2 in Colchester may have an impact on Grand Isle County. Additionally, there is an area in Milton planned for Enterprise in the ECOS Plan near, but not bordering, an area planed for Conservation in Georgia in Franklin County. Development in the future should be monitored to ensure no adverse effects.

Chittenden County is bordered to the east by Lamoille County (served by the Lamoille County Regional Planning Commission) and Washington County (served by the Central Vermont Regional Planning Commission). The ECOS Plan is compatible with the Lamoille County Regional Plan: 2014-2022. The Lamoille County Regional Planning Commission's Future Land Use Map designates the areas bordering Chittenden County as Rural Residential, Forest Conservation or Agricultural Conservation. This is compatible with the ECOS Plan's designation of adjoining municipalities as Rural Planning Areas. The ECOS Plan is also compatible with the 2015 Amendment to the Central Vermont Regional Plan. The Plan's future land use map designates areas bordering Chittenden County as Resource and Rural areas. This is compatible with the ECOS Plan's designation of adjoining municipalities as Rural Planning Areas.

Chittenden County is bordered to the south by Addison County (served by the Addison County Regional Planning Commission). The ECOS Plan is compatible with the Addison County 2011 Regional Plan. The Addison County 2011 Regional Plan designates areas bordering Chittenden County to the south as Rural and Agricultural or Forestland and Conservation/Floodplain areas, which is generally compatible with the designation of bordering areas in the ECOS Plan as Rural Planning Areas. There are two possible points of conflicts between future land uses. In Hinesburg, a designated Enterprise Zone is Hinesburg borders a Rural and Agricultural area in Starksboro. In Ferrisburgh, a designated Village and Commercial/Industrial area borders a Rural Planning Area in Charlotte. Development in the future should be monitored to ensure no adverse effects.

Beyond the abutting land designations as described above, it is likely that there is housing pressure on the surrounding regions based on a lack of housing within Chittenden County. This is evidenced by a low vacancy rate in Chittenden County, and the number of commuters from outside of the region.

County	Percent of Primary Jobs held by County Residents located in Chittenden County (2013)	Number of Primary Jobs held by County Residents located in Chittenden County (2013)
Grand Isle County	57.50%	2,009
Franklin County	42.30%	9,538
Lamoille County	19.80%	2,279
Washington County	16.20%	4,105
Addison County	26.90%	4,160

Source: http://onthemap.ces.census.gov/

While some of these commuters may prefer to live outside of Chittenden County for reasons other than the housing expense within the County, continued efforts to increase the housing stock within the areas planned for growth in the County will hopefully minimize this pressure on the surrounding regions.

Due to the amount of commuting traffic from the surrounding regions into Chittenden County, there is a demand for transportation services and infrastructure to get residents to their places of work and home again. All four regional plans include a similar sentiment as this one from the Northwest Regional Plan:

"As this demand increases, efforts to combine infrastructure capacity improvements with increased public transportation services should be examined at every possible opportunity." A recent example of this type of improvement, selected by the Circ Alternatives Task Force, is the CCTA Jeffersonville Commuter bus route on Route 15. The Plans are consistent in calling for access management, and concentrated development to maintain these arterial corridors for mobility and preservation of character. Concentrated development of jobs and housing that is affordable in the areas planned for growth is a major tenant of the ECOS Plan and a critical component in addressing some of the cross regional pressures on transportation networks. Particular roadway improvements and corridor plan recommendations identified in the surrounding regional plans are consistent with the ECOS Plan.

Also, hazard mitigation and emergency services are regional issues as responders cross municipal and county boundaries. All four regional plans include a similar sentiment as this one from the Addison County Regional Plan: "To maintain a strong and effective response system that is built on the concept of cooperation and mutual aid."

CCRPC has also reviewed the goals of 24 *VSA* 4302 and concluded that this *ECOS Plan* is consistent with those goals (that is, implementation of this *ECOS Plan* will result in substantial progress toward attainment of the goals established in 24 *VSA* 4302).

Municipal Plan Review & Compatibility

In determining whether the Municipal Plans are compatible with this Regional Plan (upon request by the Municipality and in accordance with VT Statute 24 VSA 4350b), the CCRPC will refer to the Planning Areas depicted on the Future Land Use Map, the goals in Chapter 2 and the strategies in Chapter 3. In conducting these reviews and determining compatibility CCRPC's Planning Advisory Committee will use the *Guidelines and Standards for Confirmation of Municipal Planning Processes and Approval of Municipal Plans* and when needed seek guidance from community partners with expertise in subject areas outside of CCRPC's realm.

Municipalities may also find it useful to consult the ECOS Criteria included in Appendix B. The ECOS Criteria were established to prioritize transportation projects (for the MTP), and the ECOS implementation grants in order to ensure that limited financial resources will go to the projects that will have a high rate of return and move many ECOS goals in the right direction. In addition, the MTP sections of this plan, particularly the corridor improvement sections, may be helpful to the municipalities in planning for future land use and transportation improvements.

Decisions for how we create denser mixed use communities are made at the local municipal level of government. Therefore, municipalities are encouraged to apply ECOS strategies in their development decision making process. Specific implementation of the ECOS strategies will vary throughout the County as municipalities consider their own unique needs and relationship to the region as a whole.

4.2 Comprehensive Economic Development Strategy (CEDS)

This section starts with a basic primer on economic development and what it means in Vermont. Highlights from the Base Analysis, Competitive Assessment, and Target Sector Analysis are then provided. This section concludes with a discussion of how the US Economic Development Administration's requirements for a Comprehensive Economic Development Strategy are met including the detailed project list.

4.2.1 UNDERSTANDING ECONOMIC DEVELOPMENT[1]

It is absolutely vital that we have an economic development strategy that enables our region and our state to be a competitive place to attract and retain high value-added, dollar importing businesses in order to create high paying jobs and sustainable economic opportunities for Vermonters.

A healthy and sustainable economy functions much like a biological organism; at all times portions of the organism are growing to replace those that become weak, mature, and die. Goods and services produced within the region and sold to consumers outside the region result in dollars flowing into the region's economy. Those are the dollars that provide the fuel necessary for the growth and renewal of a region's economy. They circulate through the economy as wage earnings, rents, and purchases of homes, goods and services. The total dollar impact is greater than the sum of the parts and the flow generates new investment that sustains and renews the capacity of the economy. Without these dollars to support the renewal of the economy, the prospect of future prosperity is lost as relative job and income growth performance is reduced through loss of economic productivity.

Economic Development should not be confused with land development. Economic development means many things to many people. To some, it means creating new job opportunities. To others, it means increasing the grand list of individual communities. To others, economic development is viewed as the process of consuming more of the world's finite resources, which inevitably leads to the degradation of the global environment. Still others view economic development as a way to make the economy stronger, and working hard to achieve sustainable improvements in the lives of workers and families. With so many different views, it is not surprising that economic development is often mislabeled and misunderstood.

Careful consideration of the term economic development finds that it is a term that encompasses much more than just creating additional businesses and jobs, or adding to a municipality's or region's tax base. Real and more enlightened economic development is about "building a community's capacity for shared and sustainable improvements in the economic well-being of residents."[2] Under this definition, it is not just access to any job. It is about access to good jobs, ones that can support an adequate standard of living for all residents of a region or community. It is also about continuous and sustainable improvements in the internal functioning of the economy, where its structural underpinnings are made

[1] The following information, definitions, and conceptual framework would not be possible without the resources, prior work, and reports from Economic and Policy Resources, the GBIC Comprehensive Economic Development Strategy, and GBIC Economic Plans

[2] From Local Partnerships for Economic Development, Executive Office of Communities & Development, State of Massachusetts (1994).

stronger without sacrificing long-term quality of life.

A healthy, vital and sustainable economy is what is required to provide the public resources for a strong social safety net, the protection of the environment, and high-quality public services such as quality roads, and good schools. All of those are attributes of the superior quality of life in strong communities.

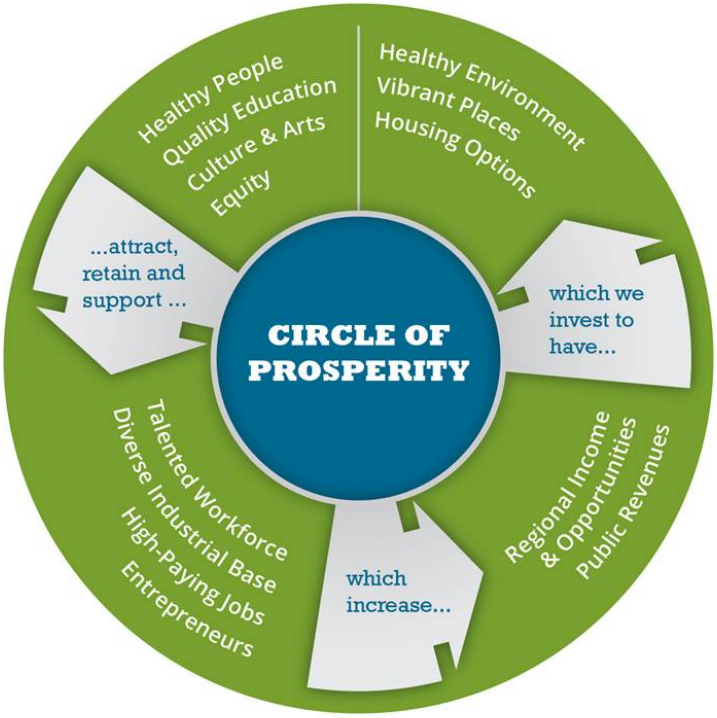
Understanding Economic Development

- Economic development is about building a community's capacity for shared and sustainable improvements in the economic well-being of residents.
- Economic development is about access to good jobs that can support an adequate standard of living for all residents of a region or community. Economic development is also about continuous and sustainable improvements in the internal functioning of the economy, where its structural underpinnings are made stronger without sacrificing long-term quality of life.
- Economic development provides the means and the continuous process to strengthen the foundation of our communities.

Why we need economic development:

- `To constantly renew and strengthen the "living economy".
- To address on-going infrastructure needs of key dollar-importing regional businesses.
- To supply the financial resources in order to create and sustain healthy communities.

The Circle of Prosperity



When a state has and maintains a talented workforce it attracts a diverse industrial base of dollar importing businesses that create high wage jobs. From the economic drivers dollars flow into the private sector to provide taxes, public revenues, capital, resources, and employment opportunities. These private sector actions fund the public sector's operations through taxes and governmental fees of which both the public and private sectors invest in creating and maintaining a clean environment, good schools, access to higher education and housing, and enhances the state's quality of life, thereby creating healthy communities. The "Circle of Prosperity" illustrates this interrelationship. First articulated in Vermont back in 1997 by the Vermont Business Roundtable, the "Circle of Prosperity"

emphasizes the fact that economic development and healthy communities are a system, involving the collective and sometimes coordinated actions of many individuals, businesses, and institutions.[3]

Economic Development Market Focus

The primary economic market focus of the economic development practitioners is to work with the Vermont Department of Economic, Housing, and Community Development and the region's municipalities to retain, sustain, and attract high value-added economic opportunities for Vermonters. The primary focus is the value-added, dollar importing, goods and services exporting employment sectors.

The primary goal of regional economic development corporations is the creation and retention of value-added jobs that will employ Vermonters, draw dollars into the state, strengthen the region's economy, and improve the quality of life for area residents. The economic focus of GBIC is the region's value-added industry sectors and the region's economy-driving businesses. Value-adding, goods and services exporting, dollar importing employers are the economic contributors that form the base of a region's economy.

The value-added industry sector is defined by enterprises that add value to a good, a product and/or a service and then export these goods, products, and/or services, thereby importing money into the state. This creates the highest wage jobs, economic opportunities for Vermonters, and forms the base of the foundation of our state's economy.

These businesses tend to be the primary generators of capital in a region's economy and create the highest wage employment opportunities for working Vermonters. Vermont's Regional Development Corporations (RDC) conduct ongoing value-added business visitation programs to know and understand the issues and opportunities facing Vermont's regional value-added industries.

Economic Drivers Defined

Economic drivers are businesses that add value to a good, product, and/or service and then export that good, product, and/or service resulting in the importing of cash into the state. Dollars from these companies flow into the private sector to provide capital, resources, and employment opportunities.

Economic drivers form the foundation of our regional and state economies and we must know who they are and do whatever we can as a state to keep them here in Vermont.

Key attributes of Vermont's Economic Drivers

- Produce "dollar importing" high-value goods and/or services.
- Achieve superior levels of labor productivity through specialized applications and/or knowledge.
- Maintain a continuous program of improvement to productive capacity and efficiency through capital investment.
- Maximize the region's intellectual capital resources through collaborative initiatives that utilize the strengths of industry, higher education, government, and civic organizations.

[3] Economic and Policy Resources 2004 Chittenden County Economic Plan. The Role of the Vermont Business Roundtable in the Evaluation, Coordination and Support of Economic Development Policy in Vermont, Report of the Economic Development Task Force, 1997. pp.1-2.

- Are attracted to state's natural resource endowments to gain competitive advantage.

There are four types of basic economic development:

1. Business/Job Creation
2. Retention of Existing Key Employers is Job # 1 in Economic Development
3. Expansion of Existing Economic Driver Employers
4. Growth through Innovation and Entrepreneurial Development

Business /Job Creation

Most successful and sustainable business and job creation comes from existing employers, entrepreneurs and innovators. Those employers, investors, entrepreneurs and innovators who are already living in Vermont are the most likely prospects to continue to invest in Vermont and create economic and job opportunities in our state.

Retention of Existing Key Employers is Job # 1 in Economic Development

The oldest rule in economic development is to keep your "home businesses competitive and retain them". The value of retaining our state's existing value adding, dollar importing, goods and service exporting employers is JOB #1 for economic development practitioners. Vermont rarely attracts employers into our state with job offerings of more than 50 employees initially, so the retention of our state's most significant far outweighs allocating significant resources into chasing rising star sectors. Retaining and valuing these employers is essential to saving and creating good jobs for working Vermonters. So the retention of our state's most significant economic driver employers is always priority # 1. A quality job preserved is as valuable as a new quality job created. In these competitive economic times working Vermonters and their families cannot afford to lose their high paying jobs in our state's current economic driver businesses.

Expansion of Existing Economic Driver Employers

Most new job creation will always come from employers that are already domiciled in our state. Knowing, understanding and addressing their needs and requirements to remain competitive will almost certainly make Vermont the site of choice for expansion of jobs and economic investments.

Grow through Innovation and Entrepreneurial Development

The Organization for Economic Cooperation and Development (OECD) put forth the definition of innovation, knowledge-based economies as "economies which are directly based on the production, distribution, and use of knowledge and information." In the OECD's efforts to further refine their definition of a knowledge-based economy, they invented two related concepts. The first concerned "investment in knowledge" relying on a statistical definition: "expenditures directed towards activities with the aim of enhancing existing knowledge and/or acquiring new knowledge." For the OECD, this amounted to the sum of the expenditures on research and development (R&D), higher education, and software. The OECD, in the second concept, provided for the classification of "knowledge-based industries," stating that such business had the following three characteristics: 1) a high level of investment in innovation, 2) intensive use of acquired technology, and 3) a highly-educated workforce.

The most vital component to Vermont's economic landscape is innovation. Innovation is knowledge creation by either improving on existing knowledge or through the development of new ideas. For

businesses, innovation provides a means by which companies can adapt to changes in the marketplace as well as to improve on techniques and technologies. This creative quality is not relegated to the business community alone or a class of innovative individuals. Indeed, all people within the community have the potential to generate new ideas which, when properly facilitated, can lead to new commercial ventures. The bio-researcher who develops a new cancer drug and the Vermont dairy farmer who designs more efficient ways to manufacture and market cheese products (knowledge-based farming) expand the knowledge held prior to their innovation and each provides a new marketable commodity. In this sense, a region with a thriving creative economy is one that emplaces a system to assist the smooth transmission of ideas to the marketplace.

In an economy where knowledge and innovation are key, education in general and higher education in particular are the fulcrum points upon which success and failure hinge. Vermont has a unique advantage in this area, as higher education is represented well throughout the state. It stands to reason, therefore, that the University of Vermont, Middlebury College, Champlain College, Norwich University, St. Michael's College, the Vermont State Colleges and Vermont's institutions of higher education should serve not only as focal points for the creation of new information, but also as conduits for those innovative people outside these schools to bring to market their new ideas. This requires the development of partnerships between higher education and businesses as well as an established network of contacts with equal and open communication among partners. While the accomplishments of the Vermont Technology Council and the Experiment Programs to Stimulate Completive Research program (EPSCoR) are notable to be sure, a knowledge-based economy warrants an expansion of these programs that furthers the integration of the business and higher education communities.[4]

In developing and sustaining an innovation knowledge-base society, higher education, state, and business leaders should recognize the importance of three central themes: improving education, investing in research and development, and developing a system that enables the transmission of ideas to the marketplace.[5]

Characteristics of an Innovation, Knowledge-based Society

- Driven by Technology and Information
- Evolutionary by Nature
- Education is a Key Component
- Dependent on Creativity and Innovation
- Highly Competitive in the Global Marketplace
- Encompasses all Members of Society
- Relies on Networks and Partnerships

The Five Policy Pillars of an Innovation, Knowledge-based Society

1. Foundational investments in education, training, and scientific and technological research
2. Creation of an open and flexible regulatory and trade system that supports growth and innovation, including policies that support the IT revolution

[4] Excerpted from Shane Barney, GBIC-Vermont Business Roundtable Knowledge base Society Study
[5] Shane Barney, GBIC-Vermont Business Roundtable Knowledge base Society Study

3. Development of polices to enable employers and employees the tools to navigate, adapt, and prosper in a continually changing economic environment
4. Reinvention of the state government and organizations involved in economic development to make them fast, responsive, and flexible.
5. A proper balance between too narrow and too wide of a policy.[6]

There are entrepreneurs that through creativity and innovation start businesses and want to keep themselves and their businesses here.

Examples of successful companies in our region and state created by Vermont innovators and entrepreneurs are: Dealer.com, Rhino Foods, Burton Snowboards, Gardeners Supply, Ben and Jerry's, Green Mountain Coffee, My Web Grocer, Seventh Generation, Union Street Media, Harringtons, Dakin Farms, King Arthur Flour, NRG Systems, Microstrain, and The Vermont Teddy Bear Company. To our good fortune, a primary characteristic of these innovators and entrepreneurs is that they are already members of our communities and they want to stay and grow here. These are businesses and business people who love Vermont and want to stay here and innovate, invest, create things and live in Vermont.

We must focus upon creating an environment and support network that encourages, nurtures and develops entrepreneurial enterprise and innovation must be one of our primary economic development goals and programmatic priorities.

We must coordinate and promote the providers, programs, and services already available in the State to create an economic ecosystem of resources that is easily navigable at all stages of the innovation and entrepreneurial continuum. This must aggregate and address services such as finding capital, mentorship, prototyping, commercialization, business management skills, etc.

Strategic Business Attraction/Recruitment

While our primary focus is on those businesses already here, or that are started here, business attraction and recruitment remains a target of opportunity. States like Vermont with limited resources allocated towards business recruitment must be very targeted and strategic in their efforts to attract new employers and jobs, including the following elements:

- Developing a highly targeted business recruitment strategy that includes identifying those existing businesses in the state with good expansion/growth potential is an important component of any successful economic development strategy.
- Vermont should broaden its recruitment efforts into new, currently under-represented industries that have a competitiveness profile that is consistent with the key regional and statewide business attributes for success and/or utilize substantially same or functionally-similar approaches that successful Vermont based companies employ to achieve their success.
- One of the most essential elements in creating a successful recruitment program is to seek to find employers that are a fit for the culture of our state.
- Creating an environment and support network that encourages, nurtures and develops entrepreneurial enterprise and innovation must be one of Vermont's primary economic development goals and programmatic priorities.

Vermont's Natural Prospect Markets

[6] Shane Barney, GBIC-Vermont Business Roundtable Knowledge base Society Study

A proven and successful development strategy for Vermont must recognize the historical facts that the businesses and enterprises we have successfully recruited to Vermont and those that have stayed here fall into three prospect categories:

1. They are here already and want to stay and grow here.

These are businesses and business people who are here already. In small and large businesses these are the entrepreneurs that through creativity and innovation start businesses and want to keep themselves and their businesses here. **They love Vermont and want to live and work here.**

2. They have a love and affinity for Vermont and want to be here.

These are people that love Vermont and want to be here. These prospects are people with an emotional attachment to and an affinity for Vermont. The natural markets for this target seem to fall into the following areas: Former Vermont residents: People born here or educated here who have moved away and want to come back to Vermont. They are often the Alumni of Vermont's institutions of higher education who left to explore other places, but Vermont has helped define their lives. They love Vermont and our state has played a meaningful part of their personal development and enrichment and they have the desire to come back to Vermont to live, raise a family, work, and/or to retire. Another group that falls into this prospect category is people that own second homes in Vermont or are loyal and dedicated Vermont vacationers. Vermont is a very special place to them and their families.

3. There is a strategic advantage for their business to be located in Vermont.

An example of these prospects is the Vermont Captive Insurance companies who have come to Vermont because of the Vermont Captive Insurance incentive program. Another would be the financial services companies that are here in Vermont through the Vermont Financial Services Tax Credit program. Vermont has developed a globally renowned captive insurance program. The state should continue to enhance the resources to strengthen this industry sector and also develop comprehensive educational curriculums that lead Vermonters into careers that support the retention and growth of this industry.

Where to Prospect for long-term recruitment success

Vermont's institutions of higher education are vitally important for succeeding in the development of new high value-added industry sectors.

Vermont should work with the offices of development and alumni at all of our state's institutions of higher education to prospect for Alumni, Parents, and Friends that would be interested in exploring future investments and economic development opportunities in Vermont.

Focus on second home owners and visitors who love Vermont.

The state should also work closely with the Vermont Ski Areas Association and our state's resorts to create opportunities to get to know and prospect for second home owners and vacationers that would be interested in exploring future investments and economic development opportunities in Vermont.

4.2.2 ECONOMIC BASE ANALYSIS

This sub-section provides an analysis of the current economic base of Chittenden County and the trends that have been shaping the County's economy up to this point in time. It considers those aspects of a regional economy most typically included in the preparation of a Comprehensive Economic Development Strategy (CEDS) or similar economic development strategic plans.

In reviewing the findings presented in the Economic Base Analysis report (http://ecosproject.com/analysis), it is apparent that Chittenden County enjoys a competitive advantage relative to the balance of the state. Further, the County is an essential part of the Vermont economy as evidenced by:

- Chittenden County contains 25 percent of the State's population
- Median household income is $60,182 versus $51,219 for the State
- The County poverty rate is 10.6 percent compared to 11.5 percent statewide
- Accounted for about 60 percent of State population growth between 2000 and 2010
- Home to 25 percent of the State's private businesses
- Accounted for 45 percent of total manufacturers' shipments in 2007
- Twenty nine percent of the State's retail sales occurred in the County (2007)
- GDP per capita is $50,000 vs. $40,000 for the State
- Provides 32 percent of sales tax revenue in Vermont
- Provides 35 percent of state income tax revenues

Over the past several decades the County's share of population, GDP, jobs and income, among other factors, has increased. While this is certainly good news for the economic development community in the Burlington region, the analysis also points out some areas of concern, described below:

- Employment in the private sector declined between 2000 and 2010. This was offset in part by an increase in public sector employment, but it was not sufficient to offset private sector losses (private sector: -4,386 + public sector 2,263 = net -2,123).
- The annual rate of population growth in both Chittenden County as well as the State has slowed over the past several years. This may suggest that the advantage the region has enjoyed from its population gains is shrinking. Slow population growth is endemic in the region sometimes described as the "frost belt" or "snow belt."
- The growth in the MSA's gross domestic product over the past decade has come entirely from the services sectors. Output from the goods-producing industries, primarily manufacturing, has remained flat in nominal terms and, as a result, goods-producing industries represent a declining share of economic activity. Services include high wage professional services as well as lower wage personal services.
- The number of Chittenden County jobs in high-wage industries has declined by more than 5,000 since the year 2000; much of this has been from cutbacks at IBM. Employment in mid-wage and low-wage industries has increased slightly. The loss of jobs in high wage industries is not unique to this region—it is part of a larger trend that has been seen nationwide.
- The number of unemployed individuals remains at historically high levels. If the region is not growing jobs it seems unlikely that this unemployment problem, particularly for those with lower skills, will improve anytime soon. What becomes of these workers?

- The construction industry is still being constrained by the collapse of the housing market and greatly reduced new residential construction activity. Residential permits issued remain at an all-time low.
- The volume of home sales has declined over the past few years and there is little evidence of any improvement on this front.
- Although growth in total nominal wages has risen off its sharp decline in 2009, they remain below the County's long-term growth rates.
- Growth in traded-sector industries (those industries that sell their products and services outside the region and bring new money back in, thus supporting the local, or non-traded, industries) has been limited primarily to the retail sector. The computer and electronic industry (NAICS 334) remains the most important element of traded sector employment but, following the loss of more than 4,000 jobs over the past decade, the long-term security of these jobs may be in question.
- There has been a decrease in the number of businesses over the past few years. Between 2008 and 2010 more than 100 businesses, on net, closed their doors.

Despite the advantages the region has enjoyed in many areas, there are some disquieting trends that need to be acknowledged. If recent trends continue (for instance, additional cutbacks at IBM), there will be additional loss of jobs in high-wage industries and slow growth in lower-wage industries. Job growth has been elusive over the past decade and this too is likely to continue into the future. The rate of population growth has declined and that is likely to continue into the future. These and other problems are exceedingly difficult to address on a local level, but this does not mean that one should throw up one's arms in despair. Local efforts, coupled with strong pressure on state and federal elected officials, could work to mitigate some of these disadvantages.

While reversing these trends is unlikely, awareness of them can facilitate local planning. It is unlikely that these issues can be successfully addressed locally since many of the policies affecting these changes emanate at the federal level. The larger issue here is the long-term structural change impacting most snow-belt states. Slow growth is a regional problem and will most likely require a regional solution. Local planning is necessary, but not nearly sufficient, given the magnitude of ongoing changes.

4.2.3 COMPETITIVE ASSESSMENT

This sub-section provides an assessment of the competiveness of Chittenden County, Vermont as an economic development product. In the economic development marketplace, the product being sold is usually a place, and the characteristics of that place determine its competitiveness. In this instance, the place being assessed is Chittenden County, Vermont and its constituent communities, in particular, the central City of Burlington. Chittenden County is comprised of many communities that have varying degrees of interest in differing forms of economic development. Taken as a whole, this provides the basis for a diverse and sustainable economy and quality of place in the future.

In reviewing the findings presented in the Competitive Assessment report (http://ecosproject.com/analysis), the following highlights were noted:

- Chittenden County is a mix of urban, suburban and rural areas, with an essential rural character that polling has consistently shown is important to many residents. Protection of this character must be reflected in economic development efforts if public sector economic development efforts are to be broadly supported.
- The County represents a quarter of the state's population, and is relatively young, with household incomes and educational attainment exceeding state and national norms.
- Chittenden County's employment base is largely (83%) within five private industry sectors: healthcare and social assistance; retail trade; manufacturing; accommodation and food service; and professional, scientific and technical services.
- The number of subsectors with high location quotients shows a diversified employment base that offers opportunities for continued economic diversification and a broad base on which the County's economy can flourish.
- The County's ability to grow its economy in the future will be closely tied to its ability to provide available skilled labor, particularly once the currently unemployed are absorbed back into the ranks of the employed as much as their skills will allow. A broad-based strategy of skills upgrading, training, new methods of recruiting and alternative working arrangements will be necessary. An integrated workforce delivery system plan will need to be considered and implemented.
- The County's labor force has a relatively low unemployment rate and high labor participation rate, with many skills categories, particularly technical skills, reported as difficult to find or unavailable by area employers. To remedy this situation, recruitment of needed skills from other locations, and development of those skills within the area's workforce, retaining graduating students from area educational institutions, limiting the out-migration of skilled residents, and maximizing the return of local students graduating from colleges in other locations are needed.
- The best recruiting experiences reported by county employers are typically from workers in the Northeast, the upper Midwest and areas with similar climate and outdoor recreational opportunities, such as the Northwest and Colorado. Recruiting people from large technology centers such as Boston, Austin and California is difficult.
- Employers report very good to excellent workforce quality, with good work ethic and productivity, and low turnover and absenteeism.
- The County's higher education infrastructure is excellent, although almost 30% of employers participating in the Employer Survey indicated that they have training needs that are not being meet by local resources. While some of these needs are for skills that are unique to specific companies, several employers surveyed for this assessment reported similar training needs for skilled manufacturing occupations particularly in the machine trades. Interviewed manufacturers emphasized the strong need for local training programs in machining and other skilled occupations to support their growth and sustainability.
- With the notable exception of affordability of housing, most every kind of quality of life factor sought by most people is readily available in the County.
- The County's perceived regulatory environment rates as less than Good (where Good = 3 on the five point scale used in the Employer Survey conducted as part of this assessment), with local property taxes and the local construction permitting process (regulations and procedures) both topics of complaint.
- Chittenden County has a good inventory of available buildings or partial space in buildings, with 388 buildings totaling nearly 2.9 million square feet.

- Chittenden County is currently modestly-supplied with land for business construction. In the future, additional "shovel-ready" sites with good access, full utilities and proper zoning will be necessary if the County is to be competitive in attracting larger projects or retaining local businesses seeking to expand.
- Chittenden County is well-served with a highway network that facilitates multi-directional travel and is well-planned for roadway and related improvements. Those plans must be implemented, often at substantial cost and sometimes (particularly for larger projects) with delays from state-mandated permitting. A potential impending decline in the adequacy of the County's roadway system caused by increasing traffic congestion, necessary roadway maintenance, and need for new road construction, coupled with the opportunity and need for future economic development, has resulted in the identification of a number of issues and situations that require immediate and careful consideration.
- The County is generally well-served with utilities and telecommunications services necessary to support economic development. The weakest part of the County's utilities and telecommunications system is the quality and costs of telecommunications, in particular cell phone service. A major state-wide initiative to improve telecommunications services is underway.
- Interviews and surveys show there are lingering misconceptions about the mission of GBIC.
- Continued and increased attention must be paid to providing services to existing businesses and entrepreneurs in Chittenden County.

4.2.4 STRATEGIC INDUSTRY SECTOR ANALYSIS

This sub-section provides a summary of the identification of target clusters and industry sectors that will likely be significant economic drivers for Chittenden County. The full Strategic Industry Sector Analysis report can be found at http://ecosproject.com/analysis. Based on the Economic Base Analysis and Competitive Assessment, the following 12 initial target clusters and industries for attraction and development efforts were identified and submitted to GBIC for consideration:

- Information Technology
- Value Added/Sustainable Agriculture
- Digital Media
- E-Commerce
- Clean Tech/Green Technology
- Tourism
- Retail
- Non-profit Organizations
- Health Care
- Business and Administrative Services
- Value-Added Manufacturing
- Higher Education

From this initial selection, five primary targets, one of which is a combination of three of the initial recommendations, were selected as value-adding industries with high location quotients and are profiled in the Strategic Industry Sector Analysis report referenced above:

1. Information Technology, Communications, and Media
   - Information Technology
   - E-Commerce
   - Digital Media
2. High Value-Added Manufacturing
3. Higher Education
4. Clean Tech/Green Tech
5. Health Care and Wellness

4.2.5 CEDS REQUIREMENTS

The following is a listing of requirements for Comprehensive Economic Development Strategies from the Economic Development Administration's regulations at 13 C.F.R. part 303 with a reference to where in this ECOS Plan the information may be found in parentheses.

1. The ECOS Plan Vision is that Chittenden County be a healthy, inclusive and prosperous community. (See Section 1.2);
2. A background of the economic development situation of the Region with a discussion of the economy, population, geography, workforce development and use, transportation access, resources, environment and other pertinent information. (See highlights shared above in Section 4.2.2 and 4.2.3 and the full Economic Base and Competitive Assessment Analysis Reports at www.ecosproject.com/analysis);
3. An in-depth analysis of economic and community development problems and opportunities, including: (i) Incorporation of relevant material from other government-sponsored or supported plans and consistency with applicable State and local workforce investment strategies; and (ii) An identification of past, present and projected future economic development investments in the Region covered. (Existing relevant studies and plans were consulted in the development of the Economic Base and Competitive Assessment Analysis Reports. See highlights shared above in Section 4.2.2 and 4.2.3 and the full Economic Base and Competitive Assessment Analysis Reports at www.ecosproject.com/analysis);
4. A section setting forth goals and objectives necessary to solve the economic development problems of the Region. (See Sections 2.4.1 and 3.2.1);
5. A discussion of community and private sector participation in the CEDS effort. (See Section 1.1);
6. A section listing all suggested Projects and the projected numbers of jobs to be created as a result thereof. (See ECOS/CEDS Project List in Section 4.2.6 for projects);
7. A section identifying and prioritizing vital projects, programs and activities that address the Region's greatest needs or that will best enhance the Region's competitiveness, including sources of funding for past and potential future Investments. (See Section 3.2.c.Project for the general discussion of ECOS priorities. See Section 3.2.1 for vital projects, including funding. See Section 4.2.6 for a more detailed discussion of how ECOS/CEDS projects were prioritized.);

8. A section identifying economic clusters within the Region, focusing on those that are growing or in decline. (See Strategic Industry Sector Analysis at http://ecosproject.com/analysis);
9. A plan of action to implement the goals and objectives of the CEDS, including:
   (i) Promoting economic development and opportunity;
   (ii) Fostering effective transportation access;
   (iii) Enhancing and protecting the environment;
   (iv) Maximizing effective development and use of the workforce consistent with any applicable State or local workforce investment strategy;
   (v) Promoting the use of technology in economic development, including access to high-speed telecommunications;
   (vi) Balancing resources through sound management of physical development; and
   (vii) Obtaining and utilizing adequate funds and other resources Investments.
   (See Section 3.2 in general);

(9) A list of performance measures used to evaluate the Planning Organization's successful development and implementation of the CEDS, including but not limited to the following:
   (i) Number of jobs created after implementation of the CEDS;
   (ii) Number and types of investments undertaken in the Region;
   (iii) Number of jobs retained in the Region;
   (iv) Amount of private sector investment in the Region after implementation of the CEDS; and
   (v) Changes in the economic environment of the Region.
   (See indicators in Chapter 2, specifically 2.4.1 for jobs and 2.5.2 for private property investment. See Section 3.3 for Annual Indicator and Progress Report);

10. A section outlining the methodology for cooperating and integrating the CEDS with State's economic development priorities. (See Section 3.2.1.8.)

4.2.6 CEDS PROJECTS

ECOS Partners have identified projects that they hope to implement in the next few years. Many of these projects will require state or federal assistance to accomplish. The list is incorporated into this Plan and can be found on the following pages. Three processes were collectively used to prioritize projects in the ECOS/CEDS Project List. The first process focused more on economic development, the second more on transportation, and the third more on land use changes.

Economic prioritization - To determine vital projects for the purposes of job creation and economic development, the ECOS criteria (see Appendix B at http://ecosproject.com/plan) were used to prioritize projects and reviewed with the ECOS Steering Committee and GBIC/CEDS Committee during the summer of 2012. These projects were then reviewed and approved for funding by the ECOS Steering Committee in October 2012 and funded with ECOS implementation grants and/or by ECOS Partners. These projects are included in ECOS Strategies 3.2.1 and identified as "FUNDED VITAL PROJECTS." Additional ECOS funded projects were also prioritized with the ECOS criteria, but those additional projects were not prioritized by the GBIC/CEDS Committee.

Transportation prioritization – The transportation investments that are considered VITAL PROJECTS were determined by going through a prioritization process within VTrans and then through the CCRPC Transportation Advisory Committee and finally the CCRPC Board. These VITAL PROJECTS are on the current Transportation Improvement Program (TIP) list and can be found here:

http://www.ccrpcvt.org/tip/. The TIP is updated on an annual basis. The projects that are in the TIP are considered VITAL PROJECTS for the purposes of economic development because these investments are necessary for job retention and growth in our region. The designation as VITAL PROJECTS is also noted above in ECOS Strategy 3.2.2.6.b.

Land use prioritization - The land use changes that are considered VITAL PROJECTS are noted in ECOS Strategy 3.2.2.2.a. These projects were developed through CCRPC's Unified Planning Work Program process. They were determined to be VITAL PROJECTS because these zoning changes are necessary for creating economic development opportunities including job retention and growth in our region.

All of the projects that are considered priorities for Chittenden County municipalities are included in the full ECOS/CEDS and ECOS/MTP Project Lists on pages 134 & 200 (respectively). Only the VITAL PROJECTS are noted in Chapter 3. These lists include specific projects proposed for implementation. The ECOS/CEDS Project List includes details regarding the Lead Partner, other partners, expected start date, estimated costs, estimated jobs beyond construction, and funding sources. These implementation projects are sorted according to the ECOS Strategy number and priority. The EDA Goals listed below are also referenced by number in the list.

ECOS Strategies:

3.2.1 – Improve and strengthen the economic systems of our region to increase opportunities for Vermont employers and employees.

3.2.2 – Strive for 80% of new development in areas planned for growth, which amounts to 15% of our land area.

3.2.3 – Improve the safety, water quality, and habitat of our rivers, streams, wetlands and lakes in each watershed.

3.2.4 – Increase investment in, and decrease subdivision of, working lands and significant habitats, and support local food systems.

3.2.5 – Increase opportunity for every person in our community to achieve optimal health and personal safety.

3.2.6 – Equip our residents with the education and skills that they need to thrive.

3.2.7 – Develop financing and governance systems to make the most efficient use of taxpayer dollars and reduce costs.

3.2.8 – Ensure that the projects and actions in all ECOS strategies assess equity impacts, and that the design and development of programs are inclusive of all and engage under-represented populations.

EDA Goals:

1. Promoting economic development and opportunity;
2. Fostering effective transportation access;
3. Enhancing and protecting the environment;

4. Maximizing effective development and use of the workforce consistent with any applicable State or local workforce investment strategy;
5. Promoting the use of technology in economic development, including access to high-speed telecommunications;
6. Balancing resources through sound management of physical development; and
7. Obtaining and utilizing adequate funds and other resources Investments.

The CEDS Project list follows on the pages below:

2015 ECOS/CEDS Project List

#	ECOS Strategy	EDA goal	Municipality/ Sponsor	Project Name (Champion or Partners)	Description/Comments	Estimated Cost	Expected Job Creation (post construction)	Fully Funded Y/N	Priority VITAL/ H/M/L	50% Local Match Source(s)	Possible Start Date
1	3.2.1	4.2.5.8.i	GBIC	Industrial Infill Sites (IBM)	Master planning and preliminary approval of new industrial sites, part of an existing industrial campus, to accommodate future job growth of value added employers. Also keep an inventory of available sites.	$100,000	1,000	N	VITAL	$25,000 ECOS grant and GBIC funds	completed
2	3.2.1	4.2.5.8.iv	Lake Champlain Regional Chamber of Commerce	Chittenden County After School Aspirations Program/ASAP (GBIC, Lake Champlain Workforce Investment Board, Boys and Girls Club of Burlington, Linking Learning to Life, Sara Holbrook Community Center, King Street Center, Community College of Vermont, and many businesses)	The project partners will design and implement a replicable and sustainable after-school curriculum for at-risk youth in grades 8-12 that will assess their interests and skill levels, raise post secondary education aspirations, expose them to the fields of science, technology, engineering and math (STEM), and prepare them for viable careers in Chittenden County.	$45,279	0	Y	VITAL	$40,000 ECOS Grant, LCRCC funding	completed
3	3.2.1	4.2.5.8.iv	GBIC	Innovate Vermont	GBIC is working with the State of Vermont, the University of Vermont, and the Vermont Technology Council to produce a virtual front door for entrepreneurs called "Innovate Vermont." The intent is to create an online portal for entrepreneurs and innovators to find programs, resources, and services across many different needs and throughout Vermont.	$25,000	TBD	Y	VITAL	GBIC funds	ongoing
4	3.2.1	4.2.5.8.i	Burlington	Redevelopment of King Street Dock Site / Ferry Yard Relocation (CEDO)	Relocation of maintenance yard, and redevelopment of King Street dock site and ferry terminal - mixed use development	$60-65,000,000	75-200	N	VITAL	TIF, public/private partnership	2014
5	3.2.1	4.2.5.8.i	Burlington	Pine Street Corridor Redevelopment (CEDO)	Ongoing work with businesses along Pine St.(Sondik, Noyes, Champ. Choc., Dealer and others). Individual Projects may be funded by private businesses. Complete street improvements would be publicly funded.	TBD for private projects, $10,000,000 for complete streets	250	Y	H	Municipal	Ongoing
6	3.2.1	4.2.5.8.i	Burlington	Town Center Mall redevelopment	Mixed use redevelopment	$60-80,000,000	20-200	N	H	TIF, public/private partnership	In progress
7	3.2.1	4.2.5.8.i	Colchester	"Branding" Colchester	#1 Priority for Town	$50,000	0	Y	H	100%	In Progress
8	3.2.1	4.2.5.8.i	Colchester	Colchester Strategic Economic Development Plan Implementation	Implement recommendations of the 2012 Colchester Economic Development Plan	$16,000	0	Y	H	100%	In Progress
9	3.2.1	4.2.5.8.i	GBIC	Chittenden County Economic Resource Center (GBIC)	A non-profit economic and planning support resources center anchored by GBIC with co-location by CCRPC, CCMPO, LCRCC, VT SBDC, VMEC, VEDA, and other related non-profits	$4,000,000	TBD	N	H	Cynosure	ongoing
10	3.2.1	4.2.5.8.iv	GBIC	Chittenden County Career Fair (7Days, UVM, VSC)	Explore developing an annual, county-wide Career Fair that expands on Tech Jam work. Expose High School Freshmen and Sophomores to the jobs available in the County at all major employers, salaries of those jobs, skills needed to obtain those jobs, and classes needed to obtain those skills. An intention of this Career Fair should be to demonstrate to the region's future workforce that there are good jobs available paying good wages.	$6000	60	Y	H	GBIC Funds; local businesses; business organizations	2013
11	3.2.1	4.2.5.8.i	Colchester	Biotechnology Research Park/Incubator	Exit 16 center of UVM life sciecne research center, Vt Health Dept Laboratory, and Albany College of Pharmacy also a research facility	$10,000,000	Depends of company - from 10 to 100	N	M	No funding yet. Will seek grants for emerging technologies being developed.	TBD
12	3.2.2	4.2.5.8.vi	Hinesburg	New water service	Two new wells on the Wainer property located off of Shelburne Falls Road, along with the first municipal nanofiltration treatment system in Vermont. To address current needs and water quality concerns. Another source still needed for projected demand.	1,175,000	TBD	Y	VITAL	Municipal Water Enterprise Fund	In Progress - construction start December 2015
13	3.2.2	4.2.5.8.ii	Burlington	Railyard Enterprise District (CEDO)	Develop and build out new street grid including bike/ped/, mixed use, greenspace and connections to the lake and bike path.	$10-30,000,000	TBD	Y for planning phase	VITAL	Various options	2012
14	3.2.2	4.2.5.8.vi	Burlington	Marina Expansion and Long-term Improvements (Parks)	In conjunction with Plan BTV, the Parks Master Plan, and an assesment of the existing Boathouse, opportunities to improve/renovate/replace the Boathouse, increase transient boater slips, and improve land side amenities should be considered.	$2-3,000,000	10	N	VITAL	TIF	2014

2015 ECOS/CEDS Project List

#	ECOS Strategy	EDA goal	Municipality/ Sponsor	Project Name (Champion or Partners)	Description/Comments	Estimated Cost	Expected Job Creation (post construction)	Fully Funded Y/N	Priority VITAL/ H/M/L	50% Local Match Source(s)	Possible Start Date
15	3.2.2	4.2.5.8.vi	Burlington	Redevelopment of 453 Pine (CEDO)	Redevelop Brownfield at 453 Pine St to allow growth in the South End. Possible inclusion of solar array	$6-12,000,000	100-300	N	VITAL	Private equity	2013
16	3.2.2	4.2.5.8.vi	Shelburne	Form-based code on Shelburne Road	North of the Village	$70,000	0	Y	VITAL	State, CCRPC, Local	In Progress
17	3.2.2	4.2.5.8.vi	South Burlington	Pathway to Sustainability (Chamberlin School, Pomerleau Real Estate, Green Mountain Power, Encore Redevelopment, Efficiency Vermont, South Burlington Realty, Dorset Street Associates, LLC., Llewellyn-Howley Incorporated, Hayes Avenue Homeowner Associations, and the Farm at South Village)	The overall project includes a series of initiatives to support, develop, and create a community that will be a leader in sustainable food production, housing, transportation, energy efficiency, natural resource protection, transit oriented development, residential quality of life and economic growth. Specifically, ECOS funding is supporting an overhaul of the City's Land Development Regulations, with a special focus on Form Based Codes, to implement the goals of ECOS and the City's Path to Sustainability.	$202,000	0	Y	VITAL	$50,000 ECOS grant, City funding	In Progress
18	3.2.2	4.2.5.8.ii	VTrans, CCRPC	transportation projects	federally eligible transportation investments are included by reference in this list and can be found in the MTP Section 4.3.6, TIP Projects are VITAL.	~$30,000,000 annually	125	Y	VITAL	FHWA, FTA, VTrans, Muni	2013
19	3.2.2	4.2.5.8.vi	Essex Junction	Sewer Treatment Plant Refurbishment	Plant is $15M and pump station $1.3	$16,300,000	1	Y	H	State Revolving Loan fund eligible.	completed
20	3.2.2	4.2.5.8.vi	Hinesburg	Extension of 3-phase power	to South Hinesburg along VT116 by Green Mountain Power. Job creation possibly substantial, service extension to existing industrial district with ample build out potential.	TBD	TBD	N	H	From Utility Provider (GMP) and destination Industrial District Businesses	TBD
21	3.2.2	4.2.5.8.ii	Burlington	Burlington Bikepath (Parks and CEDO)	Reconstruct and enhance 7.5 mile bike path	$17,000,000	25 to 50	N	H	$2.7M TIF, EDA, Municipal, Other TBD	In Progress
22	3.2.2	4.2.5.8.ii	Burlington	Cherry Street Streetscape - Phase 1	Creating walkable environment and links between the waterfront and Church Street Marketplace	$1,500,000	0	N	H	TIF, CCTA	2015
23	3.2.2	4.2.5.8.ii	Burlington	Side Streets Project (CEDO)	Expand amenitiesof CSMP to more of the downtown district. Add connectivity to waterfront from CSMP. Stimulate downtown business growth.	$28,000,000	TBD	N	H	TIF and other grants, BID	2013-25
24	3.2.2	4.2.5.8.iii	Burlington	Urban Reserve Planning and Redevelopment (CEDO)	Develop new conservation map that includes a land use/land cover analysis.	TBD	TBD	N	H	TIF, Conservation Legacy Fund	2013
25	3.2.2	4.2.5.8.iv	Burlington	General utility upgrades in waterfront district	Water, sewer, lighting, electrical, conduit, telecommunications upgrades to prepare sites for development and enhanced public space.	$6,500,000	0	N	H	TIF	2014
26	3.2.2	4.2.5.8.vi	Burlington	North Beach Emergency Access Road Improvement (Parks)	Renovation of roadway to better accommodate emergency vehicle access to North Beach Campground.	$300,000	0	N	H	TBD	TBD
27	3.2.2	4.2.5.8.vi	Burlington	Gateway Block Redevelopment (CEDO)	Redevelopment of the Gateway Block at Main and North Winooski. Properties include Memorial Auditorium, Municipal surface lot, motel and firehouse.	$10,000,000	100	N	H	private/public partnership, TIF Investment	2014
28	3.2.2	4.2.5.8.vi	Burlington	Housing renovation and construction (CEDO)	Ongoing through HOME funds, Lead Program and other initiatives.	$20,000,000	20-100	N	H	TIF, private/public partnership	Ongoing
29	3.2.2	4.2.5.8.vi	Burlington	District Heating Plan (CEDO)	Plan to recapture "waste heat" from the McNeil power plant and distribute it to the Old North End of Burlington, a densely populated area within the City.	Feasibility study underway; TBD	15-50	N	H	$140,000 grant and in-kind to pay for study	2012
30	3.2.2	4.2.5.8.vi	Burlington	Moran Plant/Waterfront Redevelopment (CEDO)	To redevelop one of the last parcels/vacant buildings on the shores of Lake Champlain in downtown Burlington. The Moran plant has been vacant for decades and the city is now working to develop a private/public partnership to renovate the facility.	$21,000,000	60-80	N	H	$2M Section 108 Loan; $1.3 Million in Historic Tax Credits; $1.5 Million in Grants, TIF	2013-14
31	3.2.2	4.2.5.8.vi	Burlington	Grocery Store site in South End. (CEDO)	Working with brokers and local grocery store to find a suitable location in the south end of the city. Discussions are currently underway.	$3-10,000,000	100	N	H	Private equity	In progress
32	3.2.2	4.2.5.8.vi	Burlington School District	Burlington High School Renovations	to meet 21st century learning needs, such as electrical outlets and capacity, wireless infrastructure, smart boards and projectors.	$5 million to start basic upgrades; $80 million for complete renovations	0	N	H	Local	2014
33	3.2.2	4.2.5.8.ii	Burlington, South Burlington	Airport Improvements - South End Development PHASE 6	Taxiway G Extention, Taxiway B rehabilitation.	$9,780,000	0 Beyond Contruction	N - Dependent on FAA reauth.	H	Anticipated 10% Local/State Match Dependent on FAA reauthorization	2013-2016 Multi-year project

2015 ECOS/CEDS Project List

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34	3.2.2	4.2.5.8.ii	Burlington, South Burlington	Airport Improvements - South End Development Engineering Design	General Aviation/Corporate Taxiway & Apron.	$330,000	0	N - Dependent on FAA reauth.	H	Anticipated 10% Local/State Match Dependent on FAA reauthorization	2013
35	3.2.2	4.2.5.8.ii	Burlington, South Burlington	Airport Improvements - Noise Compatibility Program	Noise study and authorization of possible mitigation measures.	$330,000	0	N - Dependent on FAA reauth.	H	Anticipated 10% Local/State Match Dependent on FAA reauthorization	Planning In Progress
36	3.2.2	4.2.5.8.vi	CCRPC	State/local permitting process and bylaw improvements	Work with municipalities, state agencies and the legislature to encourage development in areas planned for growth.	$5,000	0	Y	H	municipal match funds	Ongoing
37	3.2.2	4.2.5.8.vi	Charlotte	Alberts Way affordable housing units	Habitat for Humanity. 3 single family homes and 1 duplex = 5 units total.	$825,000	$0	N	H	$528,000	completed
38	3.2.2	4.2.5.8.v	Colchester	Community Broadband Wireless Technology Access	Totally dependent on private sector initiative.	$500,000	TBD	N	H	N/A	In progress
39	3.2.2	4.2.5.8.v	Colchester	Fiber optic Redundancy in Colchester's 3 economic zones	Private sector initiative - redundancy in place for Rt 15 and Exit 16.	TBD	TBD	N	H	N/A	Underway
40	3.2.2	4.2.5.8.vi	Colchester	Water Storage Capacity Addition & Expanded Distribution System	Provide necessary fire storage capacity for growth center.	$1,500,000	20 to 300	80%	H	100%	completed
41	3.2.2	4.2.5.8.vi	Essex Town	New Police Station, permits design and construction	Construct new Police Station off Maple Street.	$7,100,000	0	Y	H	Capital Funds and Long term debt	completed
42	3.2.2	4.2.5.8.vi	Essex Town	Renovate Municipal Office Building at 81 Main Street - planning, design and construction	Expand municipal offices into area vacated by Police and refurbish.	$1,700,000	0	N	H	Capital Budget and existing Capital Funds	completed
43	3.2.2	4.2.5.8.vi	Jericho	Village water/wastewater	preliminary engineering study to develop options for creating water/sewer infrastructure in Jericho's 3 Designated Village Centers.	TBD	2	N	H	TBD	2015
44	3.2.2	4.2.5.8.vi	Jericho	Library improvements	Improve to be ADA compliant and add community center.	TBD	1	N	H	TBD	In progress
45	3.2.2	4.2.5.8.vi	Milton	Milton 4D Streetscape Improvements: Defining Downtown from the Diner to the Dam	this project invests in lighting, street trees, sidewalk improvements, and wayfinding/placemaking signage along US Route 7 in the Town Core.	$2,300,000	50	N	H	Seek grants, loans, and local funding, TIF	ongoing
46	3.2.2	4.2.5.8.vi	Richmond	New Water Tower	The steel water storage tank built in 1969 is deteriorating and requires replacement. This is the sole water storage tank for the Richmond water system. Additionally the needs of the water system have changed requiring a larger tank with more elevation.	$1,500,000	0	N	H	State and Local	completed
47	3.2.2	4.2.5.8.vi	South Burlington	City Center Development	Assure there is an adequate inventory of "develop-able" sites with the necessary infrastructure to promote retention and expansion of existing firms and the recruitment of new-startup operations in strategic business clusters in the region and workforce housing.	$88,000,000	2,000	N	H	Property Taxes, TIF, Private	In progress
48	3.2.2	4.2.5.8.vi	South Burlington	Market Street	Assure there is an adequate inventory of "develop-able" sites with the necessary infrastructure to promote retention and expansion of existing firms and the recruitment of new-startup operations in strategic business clusters in the region and workforce housing.	$7,200,000	111	Y	H	Fed, Property Taxes, TIF, Private	In progress
49	3.2.2	4.2.5.8.vi	South Burlington	Community Center	Expanded facility to meet community programming needs	$7,500,000	4	N	L	Federal/State/Local	2018
50	3.2.2	4.2.5.8.vi	St. George	New Town Center Designation/Master Planning	Village Center master planning is in nascent stage in conjunction w/ ongoing development applications; no funding or professional assistance yet acquired.	$20,000	TBD	N	H	municipal funds and grants	2013
51	3.2.2	4.2.5.8.vi	St. George	Expansion of Village Center Municipal Septic System	to enable concentrated growth center. Town has funded feasibility study- construction costs are undetermined (To be based on final design).	TBD	TBD	N	H	municipal funds and grants	2013
52	3.2.2	4.2.5.8.vi	VHFA	Affordable housing program	Assist municipalities with to develop improved bylaws and programs to create more affordable housing.	$30,000	0	Y	H	ECOS funding	completed
53	3.2.2	4.2.5.8.vi	Westford	Upgrade/Expand Municipal parking area	provide an adequate number of parking spaces to serve the town office.	$15,000	0	N	H	Local	in progress - 1/2 completed
54	3.2.2	4.2.5.8.vi	Westford	Form-based code	for the Village center.	TBD	0	Y	H	Local	In progress

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55	3.2.2	4.2.5.8.vi	CSWD, Burlington, Hinesburg	Relocate Burlington, Colchester and Hinesburg Drop-Off Centers	Build New Drop-Off Centers.	$1,300,000	1	N	H	Partially funded by CSWD. CSWD will match any grant funding.	2016 and ongoing
	3.2.2	4.2.5.8.vi	CSWD, Burlington, Hinesburg	Construct new relocated Burlington and Hinesburg Drop-Off Centers	Construct new Drop-Off Centers.	$1,000,000	1	N	H	Partially funded by CSWD. CSWD will match any grant funding.	2016 and ongoing
56	3.2.2	4.2.5.8.vi	Essex Junction	Essex Junction WWTF Combined Heat and Power	design and construct improvements to the Essex Junction Wastewater Treatment Facility combined heat and power generation system.	$750,000	0	Y	H	Fully by Village of Essex junction	completed
57	3.2.2	4.2.5.8.vi	CSWD	Develop Business and Location Plan for Drop-Off Center Program	Future Drop-Off Planning. Will likely be performed in-house with limited survey and Cadd assistance from consultants	$50,000	0	N	M	Not funded. CSWD will match any grant funding.	2016
58	3.2.2	4.2.5.8.vi	CSWD	Study Consolidated Collections - Design System, Develop RFP and Contracts	Consolidated Collections Study.	$150,000	2	N	H	Not funded. CSWD will match any grant funding.	TBD
59	3.2.2	4.2.5.8.vi	Hinesburg	Extension of Natural Gas Service	in Hinesburg up Richmond Road by Vermont Gas.	TBD	0	N	M	From Utility Provider (VT Gas)	TBD
60	3.2.2	4.2.5.8.vi	CSWD	Analysis of Alternative Waste Management Systems	Waste Conversion Study.	$100,000	0	N	M	Not funded. CSWD will match any grant funding	completed
61	3.2.2	4.2.5.8.vi	CSWD	Design & Permitting of Regional Landfill	New Regional Landfill in Williston, design presently on hold indefinitely.	$400,000	0	N	M	$300,000 budgeted; $100,000 in grants possibly needed	TBD
62	3.2.2	4.2.5.8.vi	CSWD	Design for HHW Facility - Future processes and needs	HHW Facility.	$25,000	0	N	H	Not funded. CSWD will match any grant funding.	2016
	3.2.2	4.2.5.8.vi	CSWD	Construction for HHW Facility Upgrades	HHW Facility upgrades construction.	$160,000	0	N	H	Not funded. CSWD will match any grant funding.	2016
63	3.2.2	4.2.5.8.vi	CSWD	Construction of Regional Landfill	New Regional Landfill in Williston, design presently on hold indefinitely.	$50,000,000	4	N	M	To be borrowed	TBD
64	3.2.2	4.2.5.8.vi	CSWD	Construction of Special Waste Management System	Special Waste & C&D Facility.	$1,000,000	1	N	M	Not funded. CSWD will match any grant funding.	TBD
65	3.2.2	4.2.5.8.vi	CSWD	Study Residential Organics for Future Planning	Residential Curbside Organics Study. Results used in planning curbside collection.	$60,000	0	N	H		completed
	3.2.2	4.2.5.8.vi	CSWD	Study Biosolids for Future Planning	Biosolids Study 10% Complete. Preliminary results being used for evaluating next step.	$300,000	2	N	M		In progress
66	3.2.2	4.2.5.8.vi	BSD with partners	Downtown parking garage on the campus of Edmunds School for the use of School, Champlain College and the community (BSD)	Underground facility with turf surface above to extend green area for School. Consider parking revenue as one source of funding.	$6,500,000	0-5	N	M	Not funded - consider revenue bond, public/private funding.	2016
67	3.2.2	4.2.5.8.ii	Burlington	Cherry Street Streetscape - Phase 2	Creating links from Battery Street at foot of Cherry Street down to Lake Street.	$23,000,000	0-100	N	M	TIF, public/private partnership	TBD
68	3.2.2	4.2.5.8.ii	Burlington	Realignment of Birchcliff Pkway and Sears Lane	Realigning the roads tofacilitate better, safer traffic connections.	$5-10,000,000	0-30	N	M	?	2015
69	3.2.2	4.2.5.8.vi	Burlington	City Hall Park (BCA/Parks)	Imagine City Hall Park master planning process completed; park slated for major reconstruction. Stimulate downtown business growth.	$2,500,000	TBD	N	M	Penny for Parks (PFP), TIF	2016
70	3.2.2	4.2.5.8.vi	Burlington	Transient Mooring Upgrades (Parks)	Existing mooring field requires upgrades. Expands waterfront economic activity.	$85,000	TBD	Y	M	N/A	Completed
71	3.2.2	4.2.5.8.vi	Burlington	Perkins Sea Wall Repair (Parks)	Existing wall failed in late summer 2012. Need for reconstruction.	$75,000	0	N	M	Penny for Parks (PFP)	Completed
72	3.2.2	4.2.5.8.vi	Burlington	Parks Signage Improvements (Parks)	Installation of improved entry signs & kiosks.	$20,000	0	Y	M	Penny for Parks (PFP)	Completed
73	3.2.2	4.2.5.8.vi	Burlington	Calahan Athletic Field Renovations (Parks)	Soil ammendment and field improvement to middle athletic fields.	$60,000	0	N	M	Penny for Parks (PFP)	Completed
74	3.2.2	4.2.5.8.vi	Burlington	Parks System Master Plan (Parks)	Development of a comprehensive parks master plan: inventory, assessment, community outreach, strategic plan.	$200,000	0	Y	M	Penny for Parks (PFP)	Completed
75	3.2.2	4.2.5.8.vi	Burlington	Leddy Arena Renovations (Parks)	Includes renovation of public restrooms, kitchen & snack shop improvements, ventilation & electrical upgrades.	$165,000	0	TBD	M	Capital Improvement Progam (CIP)	Completed
76	3.2.2	4.2.5.8.vi	Burlington	Leddy Arena Parking Lot Renovation (Parks)	Existing parking lot deteriorating and in need of major reconstruction.	$575,000	0	TBD	M	TBD	In progress
77	3.2.2	4.2.5.8.vi	Burlington	Waterfront North (CEDO)	Providing modern infrastructure to support the northern end of Burlington's waterfront including new road surfaces, sidewalks, streetlighting (increasing multi-modal access and public safety), stormwater, parking, skatepark and undergrounding of overhead utilities.	$7,500,000	0	Y	M	$2,000,000 TIF, other small grants and local resources.	In progress

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78	3.2.2	4.2.5.8.vi	Burlington	Public/Private lighting standards and implementation. (CEDO)	Develop lighting standards for energy efficiency, cost effectiveness and decrease light pollution. Costs for implementation are TBD.	$20,000 to develop standards	0	N	M	BED and other grants.	2013-25
79	3.2.2	4.2.5.8.vi	Burlington	Champlain Parkway Related Development (CEDO)	Identify appropriate development/redevelopment opportunities along Parkway route.	TBD	0-200	N	M	Private/public partnerships	2013-16
80	3.2.2	4.2.5.8.vi	Burlington	Intervale Heated Greenhouse (CEDO)	Build greenhouses on intervale land heated by excess heat from the McNeil Plant.	$1,500,000	40	N	M	Farm Investment	2015
81	3.2.2	4.2.5.8.vi	Burlington	Gilbane Smart Growth Center, Phase III (CEDO)	South End Tranit Center - This is an ongoing discussion on how best to utilize the site.	$65,000,000	100-500	N	M	Private/public partnerships	2015
82	3.2.2	4.2.5.8.vi	Burlington	YMCA	Redevelopment of current site.	$13,000,000	10	N	M	Capital campaign and donations	Ongoing
83	3.2.2	4.2.5.8.vi	Charlotte	Community wastewater for Charlotte village	examine feasibility.	TBD	TBD	N	M	TBD	TBD
84	3.2.2	4.2.5.8.vi	Essex Town	New Waterline to feed Susie Wilson Road, planning, design and construction	New connection with increased pipe size needed to provide adequate fire flows and pressures.	$190,000 to $250,000	0	N	M	Water user fees and bond vote	Study completed, will pursue in future yr.
85	3.2.2	4.2.5.8.vi	Essex Town	Sandhill Road Waterline Improvements Planning , design and construction	Increase waterline with 8 inch pipe to replace section of 3 inch piping and add pressure reducing valves.	$200,000	0	N	M	Water user fees and bond vote	Initial work in progress
86	3.2.2	4.2.5.8.vi	Huntington	Village wastewater service	study has been completed.	TBD	TBD	N	M	TBD	TBD
87	3.2.2	4.2.5.8.vi	Richmond	Village Subsurface Project	improve water and sewer lines on E Main and Bridge St.	$2,100,000	0	N	M	Local, State, Federal Transportation Funding	2017
88	3.2.2	4.2.5.8.vi	South Burlington	City Center Parking Decks	Construct 500 spaces to provide necessary infrastructure to facilitate business and residential development.	$12,000,000	190	N	M	TIF/Private	2017
89	3.2.2	4.2.5.8.vi	Westford	Town Salt & Salted Sand Shed	protect water resources from salt contamination.	$250,000	0	N	M	Local	TBD
90	3.2.2	4.2.5.8.vi	Westford	Westford Community Wastewater (large scale)	to serve the Village center. Follow-up to 2008 wastewater feasibility study.	$2,200,000	0	N	M	Fed/State/Local	TBD
91	3.2.2	4.2.5.8.ii	Burlington	Miller Community Recreation Center Sidewalk Improvements (Parks)	Pervious concrete was improperly installed at time of 2009 facility renovation. The pervious concrete has failed, does not drain, and is crumbling. Need for removal and installation of standard concrete.	TBD	25 to 50	N	L	TBD	completed
92	3.2.2	4.2.5.8.vi	Burlington	Boathouse Public Restroom Renovation (Parks)	Significant leaking has deteriorated existing facilities. Need for renovation.	$95,000	TBD	Y	L	TBD	2013
93	3.2.2	4.2.5.8.vi	Burlington	Waterfront Electrical Distribution Design (Parks)	Improvements needed to better support waterfront events.	$15,000	0	Y	L	Penny for Parks (PFP)	In progress
94	3.2.2	4.2.5.8.ii	Burlington, South Burlington	Airport Improvements - South End Development PHASE 5	Construction of New Cargo Area.	$5,250,000	TBD	N - Dependent on FAA reauth.	L	Anticipated 10% Local/State Match Dependent on FAA reauthorization	2019
95	3.2.2	4.2.5.8.ii	Burlington, South Burlington	Airport Improvements - South End Development PHASE 7	General Aviation/Corporate Taxiway & Apron.	$5,000,000	0 Beyond Contruction	N - Dependent on FAA reauth.	L	Anticipated 10% Local/State Match Dependent on FAA reauthorization	2018-2019 Multi-year project
96	3.2.2	4.2.5.8.vi	Colchester	Burnham Memorial Library Expansion	The current public community library has outgrown its space and is limited to what it can and should potentially offer to the public. Serving 60,000+ patrons.	$5,000,000	3	N	L	Friends of the Library & Library Trustees primary fundraising source	2020
97	3.2.2	4.2.5.8.vi	Colchester	Multi-Generational Community Recreation Center	Land secured; funding needed to build.	$5,000,000	20	N	L	TBD	TBD
98	3.2.2	4.2.5.8.vi	Essex Town	Highway Garage planning , design and construction Expansion	Expand existing space to accommodate all vehicles and repair activities.	$360,000	0	N	L	Capital Budget and existing Capital Funds	Post 6/18
99	3.2.2	4.2.5.8.vi	Essex Town	Library Expansion and Renovation, Planning , design and construction	Expand existing space to meet current needs.	$103,000	0	N	L	Capital Budget and existing Capital Funds	Post 6/18
100	3.2.2	4.2.5.8.vi	Essex Town	Painesville area sewers, construction	Install municipal sewers on Pinecrest Drive, Blair, portions of Pioneer and Ira Allen.	$700,000	0	N	L	Bond vote and local users	Post 2018
101	3.2.2	4.2.5.8.vi	Essex Town	Indoor Recreation Space study only	Prepare study on feasibility, cost, layout and location.	$30,000	0	N	L	Capital Budget and existing Capital Funds	TBD
102	3.2.2	4.2.5.8.vi	Essex Town	Historic Structure repairs, construction	Fort Ethan Allen Water Tower requires funds for preservation of structure.	$100,000	0	N	L	Existing Capital Funds and grants	2016
103	3.2.2	4.2.5.8.vi	Huntington	Village form-based code	draft has been completed. Dependent upon wastewater service being made available.	TBD	TBD	N	L	TBD	TBD
104	3.2.2	4.2.5.8.vi	South Burlington	New City Hall	Expanded facility to meet community needs for municipal services and municipal meeting space.	$6,300,000	7	N	L	Property Taxes	2018
105	3.2.2	4.2.5.8.vi	South Burlington	Library	Recreation facility serving community.	$8,900,000	12	N	L	Local	2018

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106	3.2.2	4.2.5.8.vi	Colchester	Waste Water Treatment & Service	For Mallets Bay and Exit 17 area - add one sentence description.	$30,000,000	TBD	N	TBD	TBD	TBD
107	3.2.2	4.2.5.8.ii	Williston	Taft Corner Grid Streets	construct local streets in Taft Corner area to improve circulation	$3,900,000	TBD	N	TBD	local impact fees, private funds, grants	TBD
108	3.2.2	4.2.5.8.vi	Williston	Water Storage Tank Expansion	Tank on Tower Lane needs to be replaced to a new location and brought up to standards	$870,000	TBD	N	TBD	$400,000 & Borrowing $470,000	2020
109	3.2.2	4.2.5.8.vi	Williston	Williston Entry-Level Housing.	Potentially develop a housing trust fund and/or projects with Champlain Housing Trust and Affordable Housing Task Force	$3,500,000	TBD	N	TBD	Buyer mortgages, VT Community Development Program; VT housing & Conservation Trust Fund; Habitat for Humanity	TBD
110	3.2.2	4.2.5.8.vi	Winooski	Winooski West-end Revitalization	Assist with homeownership and literacy	TBD	TBD	N	M	TBD	TBD
111	3.2.2	4.2.5.8.vi	Winooski	City Plan Update	update Plan to reflect revised principles	$20,000	0	N	H	MPG and municipal funds	In progress
112	3.2.2	4.2.5.8.vi	Winooski	Bylaw updates	make updates as appropriate for each district	$50,000	0	N	H	CCRPC, MPG and municipal funds	In progress
113	3.2.2	4.2.5.8.vi	Winooski School District	Winooski School District Renovations and Upgrades	TBD	$591,000	TBD	TBD	TBD	Municipal Funds	TBD
114	3.2.2	4.2.5.8.vi	Burlington	Miller Community Recreation Center Roof Renovation (Parks)	Facilty currently experiences serious, extensive leaking throughout building. Repair/replace existing roof; remove chimney.	TBD	0	TBD	TBD	TBD	TBD
115	3.2.2	4.2.5.8.vi	Burlington	Leddy Park Softball Renovation (Parks)	Existing facility has poor and limited drainage. Project includes installation of new drainage systems and field renovations.	$100,000	0	TBD	TBD	Penny for Parks (PFP)	completed
116	3.2.2	4.2.5.8.vi	CVE, Essex Junction	Champlain Valley Exposition (CVE) music pavilion/grandstand	Renovation & expansion	$8,000,000	TBD	TBD	TBD	TBD	TBD
117	3.2.2	4.2.5.8.vi	St. George/VTGas	Vermont Gas service	to enable concentrated growth center	TBD	TBD	TBD	TBD	Vermont Gas	TBD
118	3.2.2	4.2.5.8.vi	Underhill	Village designation for Underhill Center	Obtain Village Center Designation for the Center area.	TBD	N/A	N/A	TBD	TBD	completed
119	3.2.2	4.2.5.8.vi	Underhill	Rezoning of Underhill Flats, including the Jacobs parcel	In process via MPG. Rezoning voted down at Town Meeting. PC to determine pursuit.	$8,200	N/A	Y	TBD	N/A	TBD
120	3.2.2	4.2.5.8.vi	Underhill	Rezoning of Underhill Center	In process via MPG. Will also need water system Rezoning voted down at Town Meeting. PC to determine pursuit.	$8,200	N/A	Y	TBD	N/A	TBD
121	3.2.3	4.2.5.8.iii	CCRPC	Comprehensive Transportation Hazard Mitigation and Water Quality Program	Infrastructure protection and hazard mitigation, water quality planning through FEH Bylaw equivalent tracking to ANR, culvert mitigation and AOP planning	$90,000	0	Y	H	municipal match funds	ongoing
122	3.2.3	4.2.5.8.iii	CCRPC	Green Infrastructure Grant	Lead statewide effort to communicate guidance on green infrastructure techniques to municipalities through RPCs	$100,000	0	Y	H	regional planning and municipal match funds	completed
123	3.2.3	4.2.5.8.iii	Essex Town	Stormwater projects –planning, design and construction	Construct stormwater projects to meet MS4 permit and Flow Restoration Plans	$1,000,000	0	N	H	Existing Capital Funds and bond vote	2016 and beyond
124	3.2.3	4.2.5.8.iii	Westford	Huntley Road culvert	replace culvert	$110,000	0	N	H	Fed/State/Local	completed
125	3.2.3	4.2.5.8.vii	Winooski Natural Resources Conservation District	Connecting the Drops: A Water Story (ECHO Lake Aquarium and Science Center, Church St. Marketplace, and ArtsRiot)	The project includes a public art and education display in downtown Burlington where art, public participation, science education, and environmental stewardship will highlight stormwater's impact on Lake health and steps each of us can take to improve it.	$46,000	0	Y	H	$40,000 ECOS Grant, Local funding	completed and ongoing by Stream Team
126	3.2.3	4.2.5.8.iii	Essex Junction	Storm water Improvements	MS4 permit investments	TBD	0	N	L	TBD	TBD
127	3.2.3	4.2.5.8.iii	South Burlington	Storm water Improvements	Continue to comply with State Standards. Prepare for the implementation of the MS-4 Permits.	$50,000,000	0	N	H	Federal/State/Local	Ongoing
128	3.2.3	4.2.5.8.iii	Burlington	Oakledge Drainage & Paving Improvements (Parks)	Renovation of entrance roadway to improve deteriorating infrastructure and support recent stormwater drainage improvements	$30,000	0	TBD	TBD	Penny for Parks (PFP)	completed
129	3.2.4	4.2.5.8.i	Association of Africans Living in Vermont, Inc.	New American Food (Burlington School District – Food Services, Vermont Works for Women, Union Street Media, The Skinny Pancake, and The Intervale Center)	It will prepare unemployed refugee Reach Up (TANF) recipients, with limited English proficiency, for jobs in the food preparation and food processing industries through the 120-hour, 10-week FRESH food course. The AALV Employment Counselor job places graduates into employment opportunities that result in movement off welfare. In addition, there will be an increase in sales by refugee farmers of organic, locally grown crops.	$98,425	6	Y	VITAL	$50,000 ECOS grant, local funding	completed
130	3.2.4	4.2.5.8.iii	Burlington	Breakwater planning and construction	Breakwater to protect harbor from north and south winds	$7-10,000,000	0	N	H	TIF	2013

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131	3.2.4	4.2.5.8.vi	Richmond	Forests, Wildlife & Communities: Science to Action (Towns of Bolton, Jericho, Huntington, Vermont Natural Resources Council, Arrowwood Environmental, Vermont Fish & Wildlife Department, VT Forests, Parks & Recreation Department, and CCRPC)	This project is a comprehensive four-town natural resource inventory of wildlife habitat, wetlands, uplands, natural communities and working lands; technical assistance in the development of bylaws and non-regulatory conservation tools tailored to our communities' needs to provide permitting predictability, protect, restore and enhance critical habitat, and advance the goals specified in each town's plan; and engagement of property owners and other citizens in all aspects of the project.	$98,800	0	Y	H	$40,000 ECOS Grant, State, Local	completed
132	3.2.4	4.2.5.8.iii	Burlington	Stormwater outfall at foot of College Street improvements	Extending the outfall further into the lake to diminish the creation of silt build up and scouring that clouds the harbor	$200,000	0	N	M	TIF	2015
133	3.2.4	4.2.5.8.vi	Burlington	Burlington Food Enterprise Center (CEDO)	Finalize Environmental remediation of the site (CAP) and possibly sell property to Intervale Center for future redevelopment.	$4,300,000	15-20	N	M	Public/private partnerships, City	2015
134	3.2.4	4.2.5.8.vi	Essex Town	Study for use of Buildings and grounds at the Tree Farm	Investigate alternative uses for the property and associated costs	$15,000	0	N	M	Capital funds and planning grant	TBD
135	3.2.4	4.2.5.8.vi	CVE, Essex Junction	Champlain Valley Exposition Agricultural Center	create an agricultural center	$8,000,000	TBD	TBD	TBD	TBD	TBD
136	3.2.5	n/a	United Way	Community Driven Transportation for Seniors & Adults with Disabilities (SSTA, CCTA, Champlain Area Agency on Aging, UVM Center for Aging, and Fanny Allen Corporation)	The program will create a community-driven transportation service model that provides low-cost transportation services to medical appointments and non-medical rides for seniors and adults with disabilities, especially those with no other means of transportation.	$80,000	1	N	VITAL	$20,000 ECOS Grant, Local	completed and ongoing
137	3.2.5	n/a	all coalitions (see list below)	SUBSTANCE ABUSE,TOBACCO	Varying mix of policy, systems, and environmental strategies in school and community settings.	other funding	n/a	Y	H	VDH	ongoing
138	3.2.5	n/a	BPHC	OBESITY-Enhance mixed use development	Complete assessment in contract with Local Motion to identify factors that limit mixed use development, present assessment results to the community	BPHC $40,000, CY $10,000, MCYC $20,000, WCSPC $12,165	n/a	Y	H	VDH	completed
139	3.2.5	n/a	BPHC	OBESITY-Improve access to parks, recreation facilities, and open spaces	Complete assessment in contract with Local Motion to determine town support for and resident access to local parks, recreation facilities, and open spaces, present assessment results to the community.	same as above	n/a	Y	H	VDH	completed
140	3.2.5	n/a	BPHC, WCSPC, CHIPS	TOBACCO-Provide education to community leaders about effects of tobacco retail outlet number, location, type, and/or density.	Work with community leaders to promote evidence based practices in their community concerning tobacco retail outlets.	same as above	n/a	Y	H	VDH	ongoing
141	3.2.5	n/a	BPHC, CY	SUBSTANCE ABUSE-Strategies to reduce underage drinking and drug abuse	Includes conducting assessments to providing education to the community about effects of alcohol retail outlet number, location, type, and/or density, and other strategies.	Total Alcohol Prevention Award FY13: BPHC $40,000, CY $40,000	n/a	Y	H	VDH	ongoing
142	3.2.5	n/a	BPHC, CY (Hinesburg and St. George only for this strategy), MCYC, WCSPC	OBESITY-Improve access to healthy foods	Conduct assessments identifying barriers to access to healthy foods, present assessment results to the community. WCSPC: Farm stand at community center in collaboration with Association of Africans Living in Vermont.	same as above	n/a	Y	H	VDH	completed
143	3.2.5	n/a	BPHC, CY, MCYC	OBESITY,SUBSTANCE ABUSE-Healthy Retailers	Support local convenience stores to make small changes to promote healthy foods and limit tobacco and alcohol advertising.	Total Healthy Retailer Awards FY13: BPHC $10,000, CY $10,000, MCYC $10,000	n/a	Y	H	VDH	completed
144	3.2.5	n/a	BPHC, CY, MCYC, CHIPS, WCSPC	TOBACCO-Reduce second hand smoke exposure	Provide education about various smoke-free policies for post-secondary campuses, public events, and public parks, beaches, and other open air spaces. Example: Breathe Easy Campaign in Burlington.	same as above	n/a	Y	H	VDH	Ongoing
145	3.2.5	n/a	BPHC, MCYC	OBESITY-Increase pedestrian and bicycle friendly communities	Complete walkability and bikability assessments, present assessment results to the community.	same as above	n/a	Y	H	VDH	ongoing - partially complete

2015 ECOS/CEDS Project List

#	ECOS Strategy	EDA goal	Municipality/ Sponsor	Project Name (Champion or Partners)	Description/Comments	Estimated Cost	Expected Job Creation (post construction)	Fully Funded Y/N	Priority VITAL/ H/M/L	50% Local Match Source(s)	Possible Start Date
146	3.2.5	n/a	Burlington Partnership for a Health Community (BPHC), Connecting Youth (CY), Milton Community Youth Coalition (MCYC), Winooski Coalition for a Safe and Peaceful Community (WCSPC)	TOBACCO-Provide education to community leaders about tobacco advertising	Provide education about tobacco product placement.	BPHC $45k, MCYC $45k, WCSPC $32k, CHIPS $45k	n/a	Y	H	VDH	ongoing
147	3.2.5	n/a	Burlington School District	SUBSTANCE ABUSE-School-Based Substance Abuse Services Grant	Student Assistance Professional funding to provide substance abuse prevention, treatment, and referal.	Total Grant Award FY13: $40,000	n/a	Y	H	VDH	ongoing
148	3.2.5	n/a	Hunger Free Vermont	Eat Well, Age Well (American Association of Retired Persons, United Way, Champlain Valley Agency on Aging, State of Vermont Department for Children and Families)	This project will connect committed and trained United Way volunteers aged 55+ with Vermonters aged 60+ who may be eligible to participate in 3SquaresVT.	$20,000	0	Y	H	$15,000 ECOS Grant, Local	completed
149	3.2.5	n/a	most all munitipalities	SUBSTANCE ABUSE	law enforcement START activity (Stop Teen Alcohol Risk Team).	other funding	n/a	Y	H	VDH	ongoing
150	3.2.5	n/a	most all schools	SUBSTANCE ABUSE,TOBACCO	varying mix of in-school prevention groups (eg LEAD = Chittenden South, START = Burlington), Student Assistance Professionals (SAP's), Prevention Coordinators,teach d/a in heath ed.	other funding	n/a	Y	H	VDH	ongoing
151	3.2.5	n/a	most coalitions (see list below)	FAMILY-support parents,youth	Safe Home Initiative,Parent Up VT, field trips, mentors.	other funding	n/a	Y	H	VDH	In progress
152	3.2.5	n/a	Public School Districts and Supervisory Unions	MEDICAL,DENTAL,MENTAL HEALTH-Early Periodic Screening Diagnostic and Treatment- Medicaid Administrative Claiming Reimbursements	Reimbursements for Medicaid promotion, outreach, and connection to medical, dental, and mental health services by school health professionals. Funds must be reinvested into school for population-based prevention and wellness programs and positions serving students.	$375,000	n/a	Y	H	VDH	2013
153	3.2.5	n/a	Various Public Schools	TOBACCO-VKAT/OVX	School-based youth tobacco prevention programs.	$25,000	n/a	Y	H	VDH	ongoing
154	3.2.5	n/a	Westford	emergency shelter at Westford School	emergency shelter at Westford School.	TBD	0	Y	H	Local	completed
155	3.2.6	4.2.5.8.iv	Burlington	Vermont Aviation Center (CEDO)	Working with VTC, Heritage Aviation and the Airport to establish a facility housing the Burlington Aviation Tech Program, Vermont Flight Academy and allowing room for VTC to expand their future aviation program offerings.	$8,300,000	25-30	N	H	TBD	In progress
156	3.2.6	4.2.5.8.iv	Champlain College	Health Information Technology Program	Development funds are being sought by Champlain College to offset tuition and/or for additional curriculum development to support the growing needs of the healthcare industry.	$300,000	0	N	H	Champlain College	TBD
157	3.2.7	4.2.5.8.vii	CCRPC	Annual Indicator Report	Lead partnership in producing an Annual Report on ECOS Plan implementation.	$90,000	0	N	H	reg'l plng, MPO, muni match funds	ongoing
158	3.2.7	4.2.5.8.vii	Colchester	24/7 Municipal Government	with capacity to issue permits and collect taxes and fees on line.	$200,000	$0	Y	H	Municipal	In progress
159	3.2.7	4.2.5.8.vii	Colchester, Essex, Milton, Winooski	Partnership Revolving Loan Fund Capitalization	Business loans for small start-up businesses that are unable to secure capital from other sources.	$490,000	1 to10	Y	H	VT Community Development Program.	In progress
160	3.2.7	4.2.5.8.vii	Burlington	Fire station consolidation (CEDO)	This is an ongoing conversation related to Gateway Block Redevelopment.	TBD	0-50	N	M	TIF	TBD
161	3.2.1	4.2.5.8.i	Essex Town, Essex Village, Williston, GBIC, CCRPC	Infrastructure utilization, access or acquisition plan	The creation of a plan to examine the future utilization, access, or acquisition of the already existing infrastructure on the IBM Vermont Campus. Infrastructure to include, but not be limited to: water, wastewater, road, bridge, electric transmission, etc.	$100,000		N	VITAL	CDBG, State	TBD
162	3.2.1	4.2.5.8.iv	GBIC	Chittenden County workforce development needs	Work with area employers, higher education institutions, and workforce development professionals to create programs and curriculum to meet the needs of manufacturing, technology, and value-adding employer workforce needs.	$10,000	TBD	N	H	GBIC Funds; local businesses; business organizations	In Progress

2015 ECOS/CEDS Project List

#	ECOS Strategy	EDA goal	Municipality/ Sponsor	Project Name (Champion or Partners)	Description/Comments	Estimated Cost	Expected Job Creation (post construction)	Fully Funded Y/N	Priority VITAL/ H/M/L	50% Local Match Source(s)	Possible Start Date
163	3.2.2	4.2.5.8.i	Burlington CEDO	Downtown mall redevelopment	To redevelop the downtown mall to include significant residential infrastructure and parking to complement new commercial opportunities. Design planning has begun.	$200,000,000	TBD	N	H		2016
164	3.2.1 3.2.2	4.2.5.8.i 4.2.5.8.v	University of Vermont	UVM STEM Building	Development of a University building designed to meet the specific needs of classes to teach Science, Technology, Engineering, and Mathematics related courses. Under construction.	$106,000,000	TBD	N	H		In Progress
165	3.2.5		University of Vermont (University of Vermont Medical Center)	UVM Medical Center Inpatient Facility	Development of a new inpatient facility to serve the population of Northwest Vermont. Design completed, in permit process.	$187,000,000	TBD	N	H		2016
166	3.2.2		Milton	Milton Hourglass Intersection	this project invests in an area planned for growth and would address a high accident intersection at US7, Middle and Railroad Street by creating an hourglass-shape intersection scoped by the RPC.	costing in progess, at least 1.2 million.	TBD				In Progress
167	3.2.4		Westford	Conserve Working Lands	draft land use and development regulations to conserve working lands	$5,000					In Progress
168	3.2.2 3.2.3		Westford	Westford Community Wastewater (small scale)	to serve municipal & community facilties. Follow up to 2014 site-specific wastewater feasiblity study	$60,000			V		In Progress
169	3.2.2		Westford	formalize on-street parking in front of brick meeting house	upgrade, pave and strip parking are in front of bmh	$15,000					2020
170	3.2.2		Westford	Pedestrian infrastructure	construct sidewalks connecting public facilities (common, library, town office, post office, school, meeting house, etc.)	$250,000					2017
171	3.2.4		Westford	preserve significant natural resources	after conducting a natural resource inventory, draft regulations to preserve significant natural resources through forestry districts and/or conditional use review	$30,000			V		2017
172	3.2.4 3.2.5		Westford	westford-milton rd recreation	identify the recreation potential/possiblities of the westford milton road property and utlize property accordingly	TBD					2016
173	3.2.5		Westford	common to school river path	create a path from the common to the school along the Browns River.	$10,000	0	Y	H	local / state	In Progress
174	3.2.2		Hinesburg	Highway Garage	planning, design and construction	TBD					2016
175	3.2.2		Hinesburg	zoning bylaw update	zoning rewrite to make them shorter, simpler and easier to understand	$35,500				local/state	2016
176	3.2.5		VDH - Burlington Di	Health Impact Assessment	Assessment potential positive and negative affects of transportation and other projects or policies on the health of residents.		n/a	Y	H		Completed anc
177	3.2.2		Jericho	Jericho Corners pedestrian connection - scoping study	Approved scoping study will evaluate alternatives for creating a safe pedestrian connection between several residential developments along Lee River Rd and Jericho Corners VCTR on Route 15. Will need future implementation funds. Will likely request TA from CCRPC working with our trails committee	Scoping $27K Construction TBD	0	Y		Bike/Ped Grant Program	In Progress
178	3.2.2		Jericho	Commercial District access management	Hire consultant to conduct outreach and provide access management recommendations that could be employed in the Commercial District to reduce the appearance of sprawl, improve public safety, and integrate this district with the adjacent Riverside designated Village Center District	$20K	0	N			Fall 2015
179	3.2.2		Jericho	Master Plan and Form-based Code	Created a Master Plan and Form-based Code for the Riverside/Underhill Flats Village Center, creating a template for future commercial and residential growth in this designated VCTR	$70,000	0	Y		ECOS funding, MPG Grant	Completed
180	3.2.4		Jericho	Natural Resources Regulatory and Town Plan Updates	Conservation Commission and Planning Commission are working collaboratively to incorporate new inventory data from the ECOS S2A project into new overlay definitions, new map resources, protections for wildlife corridors, and regs for reducing forest fragmentation	TBD	0	Y			In progress

	2015 ECOS/CEDS Project List										
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181	3.2.4		Jericho Conservatio	Jericho Wetlands Map	Conservation Commission would like to create and maintain going forward, a Jericho Wetlands Map of previously unmapped wetlands and vernal pools, for reference in the Town Plan and Regulations. This data was collected during the ECOS S2A project, and needs to be put into map form.	TBD	0	N			2015
182	3.2.2		Richmond	Jolina Court Interim Zoning	Interim Zoning adopted for the area around the abandoned Creamery building to increase redevelopment flexibity.	n/a	n/a	n/a	n/a		In Progress
183	3.2.2		Richmond	New Town Plan	The process of developing a new town plan will start soon, with the recent annoucement of MPG funding. One componet of the process will include a specific density+village growth workshop, flood resiliency workshop, .	$15,000 +	n/a	Y	VITAL	State, Local	In Progress
184	3.2.2		Richmond	Streamline municipal permit process	Increase coordination of process of issuing local approvals and increase awareness of State permit requirements for applicants.	unknown	unknown	N	H		TBD
185	3.2.3		Richmond	Richmond Draft Flood Hazard Overlay Dsitrict Regulaitons and Post Flood Procedures	Draft guidance document to asssit in the adminsitration of the flood regulations and includes a post-flood procedure to guide the Adminstrative Officer in communicating permit requirements to flood-damaged property owners. Document includes copies of "how to" guides to help property owners make buildings less suseptible to flood damages and increase prepardness.	n/a	n/a	Y	M		
186	3.2.2		Richmond	Property Assessed Clean Energy	Created PACE District, implemented in August 2013					N/A	In progress
187	3.2.2		CCRPC and Richmond	VT RT 2 Bicycle and Pedestrian Scoping Report	Develop a plan to link the village center to transit stop at the State-owned Park and Ride at I-89 Exit 11 by way of multi-use path.	$40,000/$5,000 ,000		Y			Completed
188	3.2.2		South Burlington	Public-pirvate partnerships including UVM Medical Center Facilities	Coordinate with major employeers such as UVM Medical Center and provide multi-modal transportation			N	M	Federal, State, Local, Priv	In Progress
189	3.2.2		South Burlington	Williston Road Network Assessment Ph I & II	Transportation network analysis for the City Center / Exit 14 area		0	N	H	Local, CCRPC	In Progress
190	3.2.2		South Burlington	Kimball / Kennedy / Tilley area network study	Transportation network analysis for the Kimall / Kennedy / Tilley Dr area for projected future development		0	N	M	Federal, State	In Progress
191	3.2.2		South Burlington	Chamerlin Neighborhood / Airport area Plan	Develop short-and long term land use and transpotation plan for neighborhood adjancent to BIA	$150,000	0	Y	H	Local, State, CCRPC	In Progress
192	3.2.2		South Burlington	City Center Affordable Housing	Advance public-private partnerships to develop affordable housing in City Center			N	H	Federal, State, Private Sector, Local	In Progress
193	3.2.2		South Burlington	SB Landfill Solar Array	Public-Private partnership to install solar array on City-owned capped landfill			N	M	Local, Private Sector, housing non-profits	In Progress
194	3.2.4		South Burlington	Strategic land conservation	Acquire and/or conserve land in identified priority conservation areas			N	M	Local, State	In Progress
195	3.2.5		South Burlington	City Parks and Recreation Path upgrades	Improve ADA accessibility of existing parks; develop park amenities in undeveloped parks, fill gaps in city's recreation path network			N	M	Local, State, Federal	In Progress
196	3.2.7		South Burlington	City Center Affordable Housing	Advance public-private partnerships to develop affordable housing in City Center					Local, private sector, non-profits	In Progress
197	3.2.7		South Burlington	South Burlington TIF implementation	Complete TIF Financing plan, initiate project development					Local, State, Federal, Private sector	In Progress
198	3.2.7		South Burlington	Review statewide education financing	Review and implement improvements to state system for financing education					State	In Progress
	3.2.2	4.2.5.8.ii	Municipalities, CCRPC, State	Brownfield eligible projects	state and federally eligible brownfield projects	TBD		N	H	local, state, federal	Ongoing
199	3.2.3		Burlington	Burlington Riverside/East WWTP upgrade*	Possible upgrade needed to meet TMDL targets. This plant is currently at 90% of the proposed TMDL phosphorus load.	$3,540,220		N			TBD
200	3.2.3		Burlington	Burlington North WWTP Upgrage*	Possible upgrade needed to meet TMDL targets. This plant is currently at 59% of the proposed TMDL phosphorus load. North Plant began optimizing in August 2015, thus 2015 load for those plants is reduced from previous years.	$3,540,220		N			TBD

2015 ECOS/CEDS Project List

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201	3.2.3		Burlington	Burlington Main WWTP Upgrage*	Possible upgrade needed to meet TMDL targets. This plant is currently at 110% of the proposed TMDL phosphorus load. Main Plant began implementing additional chemically based phosphorus removal in June 2015.	$24,030,227		N			TBD
202	3.2.3		Essex Junction	Essex Junction WWTP Upgrade*	Additional capacity may be needed over the long term to meet TMDL phosphorus reduction requirements. The WWTP is currently at 25% of its phosphorus load after a $15 million refurbishment. Over the long term, $1,200,000 may need to be invested to maintain the TMDL.	$1,200,000					TBD
203	3.2.3		Global Foundaries	Global Foundaries WWTP upgrade*	Possible upgrade needed to meet TMDL targets, though currently at 30% of phosphorus load on TMDL list. TMDL still lists a potentiallong-term cost.	$4,110,000					TBD
204	3.2.3		Richmond	Richmond WWTP upgrade*	Possible upgrade needed to meet TMDL targets, though currently at 17% of phosphorus load on TMDL list. TMDL still lists a potential long-term cost.	$1,620,150					TBD
205	3.2.3		South Burlington/A	South Burlington Airport Park*	Possible upgrade needed to meet TMDL targets. TMDL lists currently at 93% of phosphorus load, though no cost estimate included.	?		N			TBD
206	3.2.3		Winooski	Winooski WWTP upgrade*	Possible upgrade needed to meet TMDL targets. TMDL lists currently at 130% of phosphorus load.	$7,052,897		N			TBD
207	3.2.3		Hinesburg	Hinesburg WWTP upgrade*	Possible upgrade needed to meet TMDL targets, though currently at 78% of phosphorus load on TMDL list. TMDL lists a potential long-term cost.	$7,800,000		N			TBD
208	3.2.3		Shelburne	Shelburne #1 WWTP upgrade*	Possible upgrade needed to meet TMDL targets. TMDL lists currently at 78% of phosphorus load, though no cost estimate included.	?		N			TBD
209	3.2.3		Shelburne	Shelburne #2 WWTP upgrade*	Possible upgrade needed to meet TMDL targets. TMDL lists currently at 79% of phosphorus load, though no cost estimate included.	?		N			TBD
210	3.2.3		South Burlington Ba	South Burlington Bartlett Bay WWTP upgrade*	Possible upgrade needed to meet TMDL targets. TMDL lists currently at 80% of phosphorus load, though no cost estimate included.	?		N			TBD

* = As identified in Table 9 of EPA's *Draft* Phosphorus TMDLs for Vermont Segments of Lake Champlain, dated August 14, 2015. Current loads updated from Essex Junction and Burlington.

4.3 Metropolitan Transportation Plan (MTP)

The MTP is the region's principal transportation planning document and sets regional transportation priorities. It consists of short- and long-range strategies to address transportation needs and that lead to the development of an integrated, inter-modal transportation system that facilitates the efficient movement of people and goods.

As mandated by federal regulations, the MTP must both articulate and work towards the region's comprehensive long-range land use plans, development objectives, and the region's overall social, economic, environmental, system performance and energy conservation goals and objectives. It should also be consistent with the statewide transportation plan and the CCRPC is required to make special efforts to engage all interested parties in MTP development.

Federal regulations also mandate that the MTP:

- Consider eight planning factors in their long range plan (these factors are identified in Appendix A, located at http://www.ecosproject.com/plan);
- Estimate demand for transportation services for a minimum 20-year period;
- Identify existing and proposed projects and strategies that together function as an integrated metropolitan transportation system;
- Maintain a multi-modal focus that includes transit and bicycle and pedestrian facilities;
- Estimate costs and identify reasonably available financial sources for operation, maintenance and capital investments;
- Determine ways to preserve existing facilities and services and make efficient use of the existing system; and
- Discuss potential environmental mitigation of MTP projects and strategies

For more information on MTPs see: http://cfr.vlex.com/vid/450-322-metropolitan-planning-process-19725008

4.3.1 METROPOLITAN TRANSPORTATION SYSTEM

The primary focus of the MTP is the Metropolitan Transportation System (MTS). It is the multimodal network of highways, arterial and major collector roadways, transit services, rail lines, bicycle paths, sidewalks, Burlington International Airport, and other inter-modal facilities critical to the movement of people and goods in the region. It is also the system, with the inclusion of all public bridges over twenty feet in length, eligible for federal funding investment. Map 8 depicts the existing Chittenden County MTS.

The MTS is also a planning tool used to identify metropolitan transportation problems, develop system-level solutions and serve as a focus for performance monitoring. The MTS distinguishes locally important transportation facilities from those that are strategically significant at the regional, state and even federal levels. These facilities and services form the regionally significant modal components critical to Chittenden County's mobility needs. As this system evolves and grows over time based on

the recommendations later in this Chapter, the MTS system will change to accommodate those new facilities and services. The MTS is not stagnant but a dynamic system requiring regular updates.

For example, the MTS concept recognizes that we must consider a bus transit system that runs on local streets and arterials, and therefore cannot analyze transit operations independently of arterial congestion. Similarly, an MTP that addresses arterial access management must also provide for appropriate pedestrian facilities and operations within that same arterial corridor. Resulting problems may be difficult to resolve, as a single mode strategy can lead to other modal conflicts. However, by addressing the transportation system as a single entity of interrelated elements, we become more aware of potential conflicts in the planning stage, rather than finding unexpected consequences when a given project goes to design or even construction at a subsequent date.

4.3.2 CURRENT TRANSPORTATION CONDITIONS

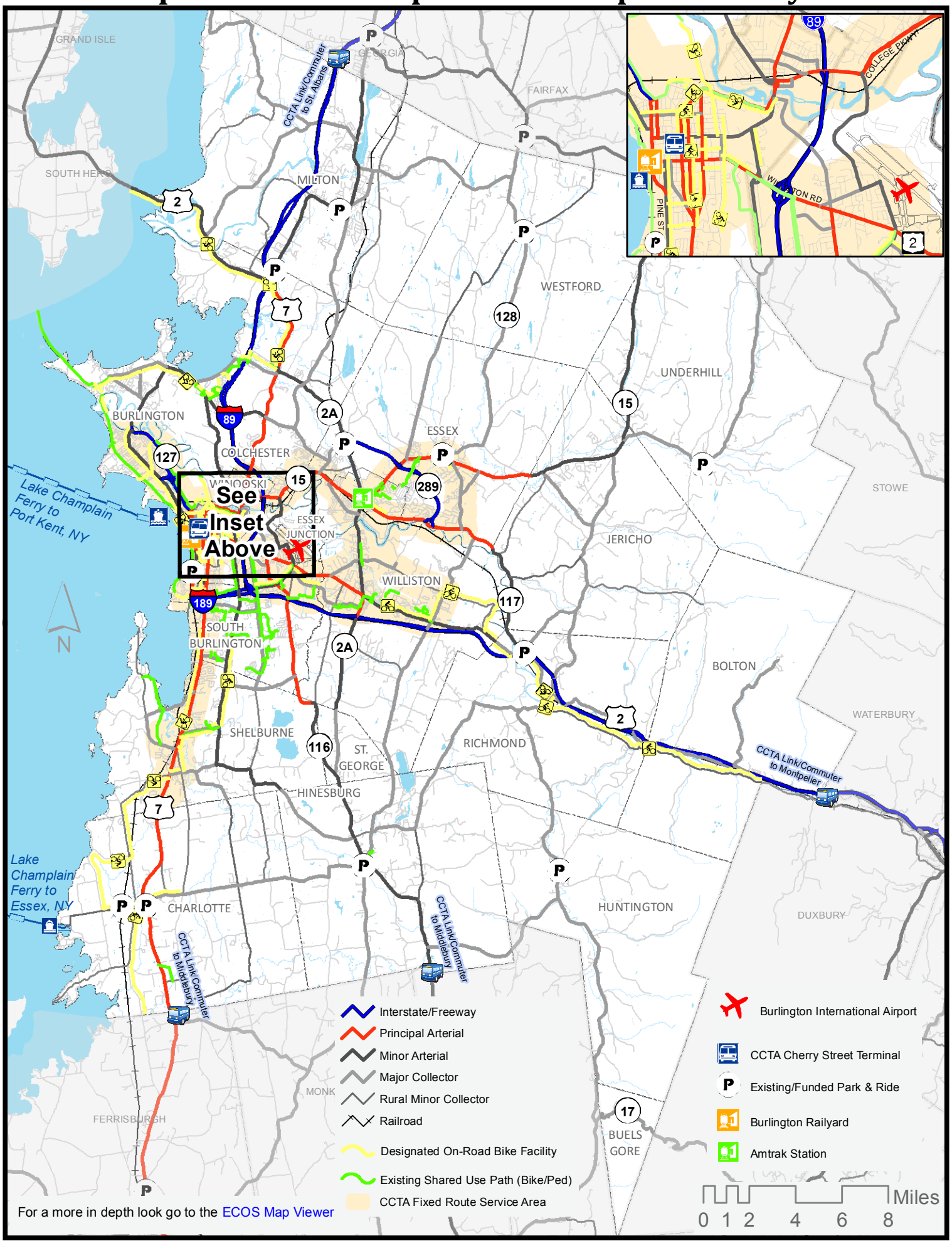
The current status of the region's Metropolitan Transportation System is assessed in the following sections. This assessment provides strong evidence of the need for maintenance and improvement of the MTS while highlighting the major issues of concern about system condition.

Arterial Roadways and Congestion

The road network in the region consists of highways classified as Interstate Highways, Principal Arterials, Minor Arterials, and Collectors. The classification system is organized as a hierarchy of facilities based on the degree to which the roadway facility serves mobility and access to adjacent land uses. Interstates and Arterials are only 16 percent of County road mileage, yet carry two thirds (66 percent) of all vehicle miles traveled.

Highway sufficiency ratings are measures the Vermont Agency of Transportation uses to describe the safety, service, and level of maintenance found at specific locations along the state's transportation network. Ratings are made on a 0-100 scale, but four general condition categories are commonly used to summarize the data with groupings at 40 or lower (bad), 41-60 (poor), 61-80 (fair), and 80-100 (good). According to data reported through 2008, all of our interstate highways have a "good" rating. However, just over half of the arterial highway mileage in Chittenden County is rated as poor or worse. A number of the arterial state highway segments with the lowest reported sufficiency ratings are found along long-established arterial routes in outlying portions of the region. Arterial congestion is growing faster than population or employment. As a result, travelers increasingly seek cut-through and bypass routes on neighborhood and residential streets.

Map 8 - 2013 Metropolitan Transportation System



For a more in depth look go to the ECOS Map Viewer

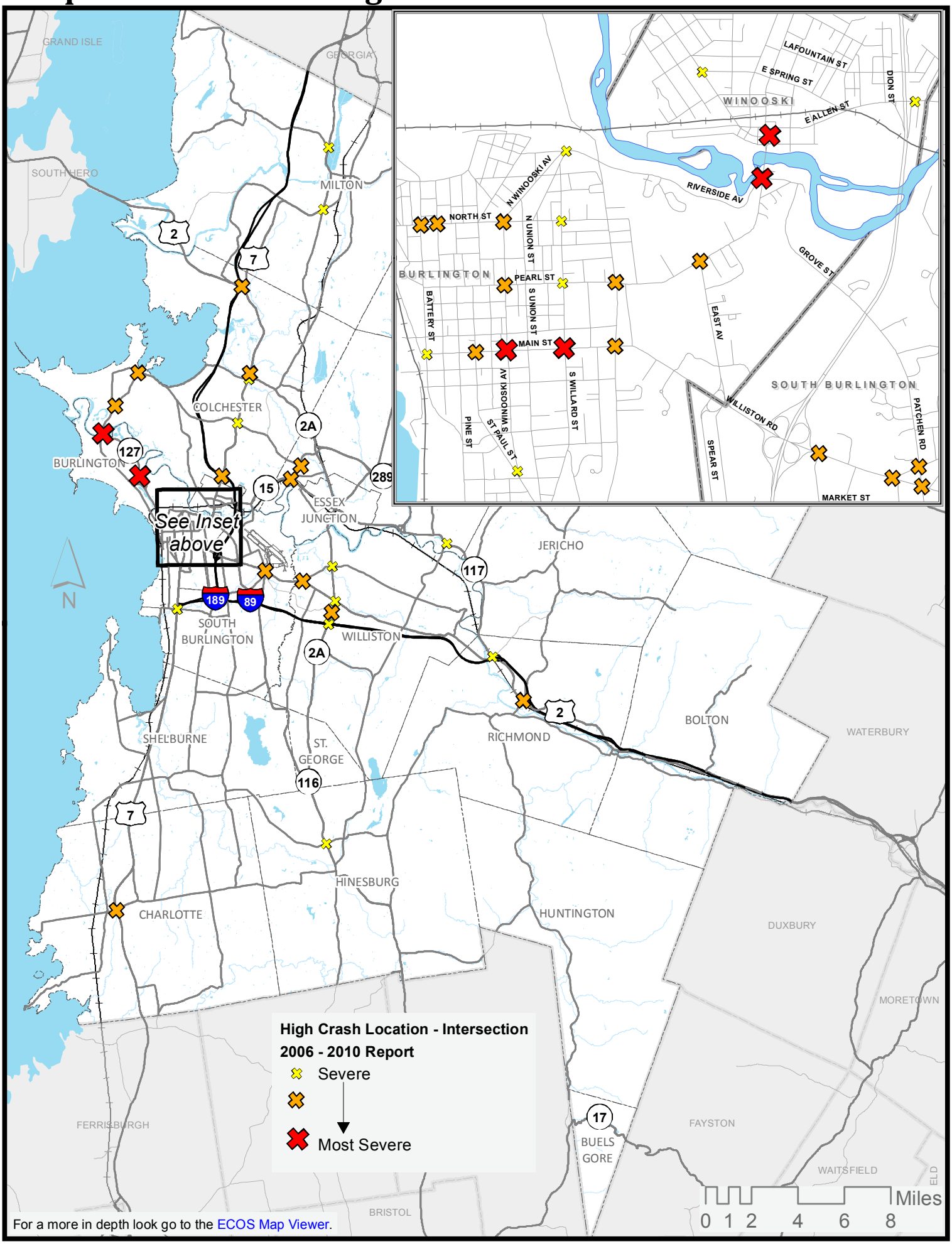
Using the congestion measure of volume to capacity ratio (V/C) the CCRPC's Transportation Demand Model identifies 2035 congestion problems in the afternoon peak hour on those road segments identified in the table on page 166. The combination of truck and automobile traffic on arterials can further exacerbate congestion, primarily due to slow truck acceleration at traffic signals and in stop-and-go traffic. Providing truck routes or specific truck lanes could help alleviate some of these congestion problems.

High Crash Locations

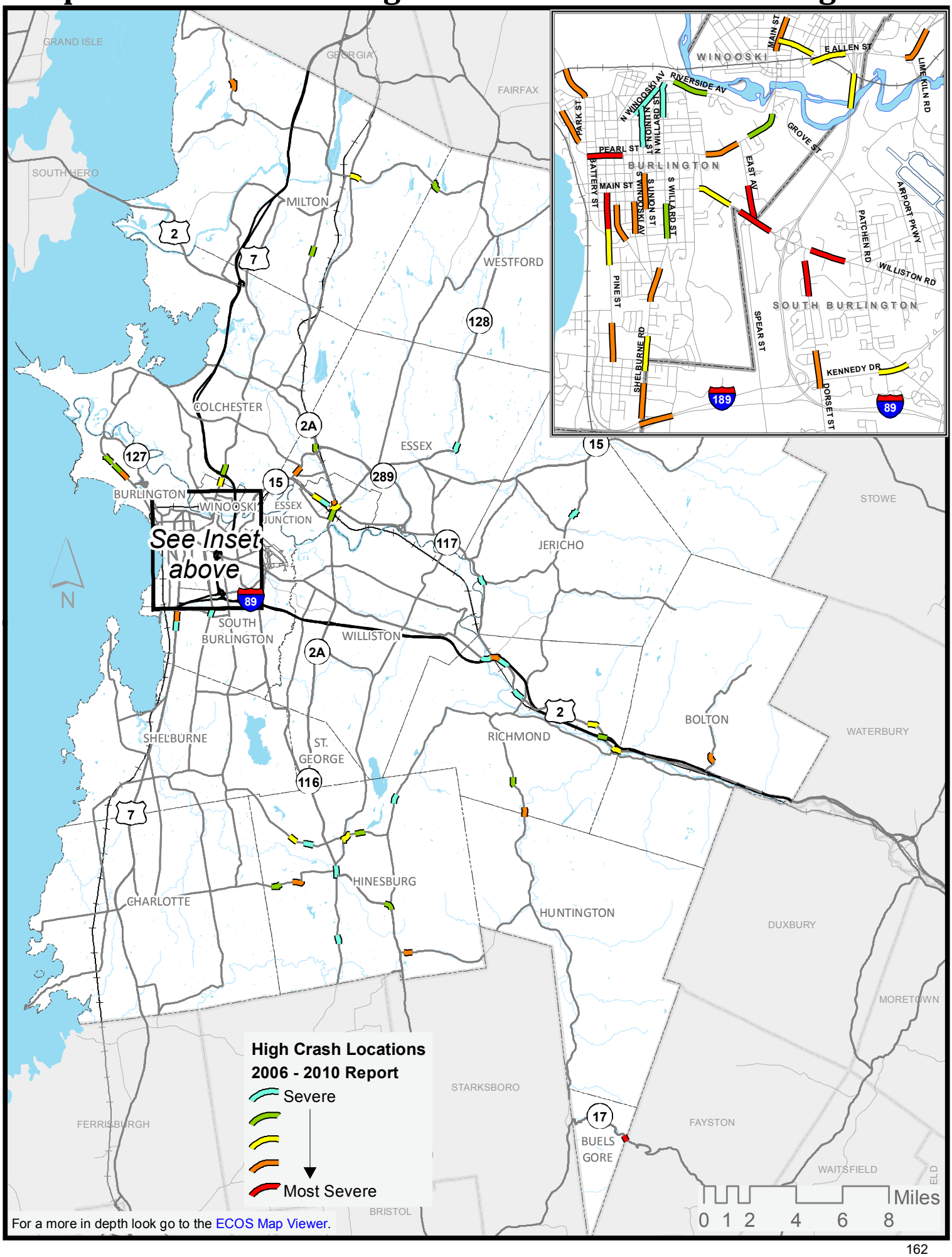
High Crash Locations (HCLs) are road segments and intersections where the rate of crashes exceeds a threshold known as the critical rate. Locations are ranked by calculating a ratio between the critical rate and actual rate. According to the VTrans High Crash Location Report for 2006 through 2010, there are several dozen HCL road segments in the Chittenden County region, and nearly as many HCL intersections.

The locations of these road segments and intersections are identified on Maps 9 and 10. The most severe intersection sites are located in Winooski and Burlington. The worst road segments for crashes are in Burlington and South Burlington. Nearly all high crash intersections fall within the urban or suburban towns, the road crash segments are spread around the region and can be found in even the most rural communities.

Map 9 - 2006 - 2010 High Crash Locations - Intersections



Map 10 - 2006 - 2010 High Crash Locations - Road Segments



For a more in depth look go to the ECOS Map Viewer.

Public Transit

The Chittenden County Transportation Authority (CCTA) has been providing transit services in parts of Chittenden County since 1974. CCTA operates over a dozen scheduled transit routes in the Greater Burlington area plus commuter services linking Burlington with Montpelier, Middlebury, St. Albans, Milton and Hinesburg. CCTA also provides Americans with Disabilities Act (ADA) paratransit services for persons unable to use the CCTA fixed route bus system because of a disability in Burlington, South Burlington, Winooski, Williston, Essex Junction, Shelburne and Colchester through a contract operator, the Special Services Transportation Agency (SSTA). School tripper service, limited Sunday service, and targeted shuttle services round out CCTA's transit offerings.

CCTA also runs a program with area colleges - UVM, Champlain and St. Mike's - called Unlimited Access, allowing faculty, staff and students to use their ID cards as transit passes and ride at no cost. Another recent CCTA initiative provides employers with support and information to facilitate transportation benefit offerings to their employees through the Go! Chittenden County program.

CCTA currently provides well over two and a half million trips per year, a 78% increase over the past twelve years (See Figure 57 - CCTA Ridership, FY2000 - 2012below). The public transit service area and frequencies had historically primarily served non-driving segments of the population (low income, seniors and children) with a limited ability to encourage most people to get out of their cars and get on the bus. However, the inter-regional Link Express commuter services are capturing an increasing portion of the choice rider market each year. Fifteen minute frequencies at peak times on select local routes (Essex Junction, Williston and Pine Street) are also making transit more appealing to the general public. CCTA's entire fleet is also equipped with bike racks to encourage this type on multimodal trip making.

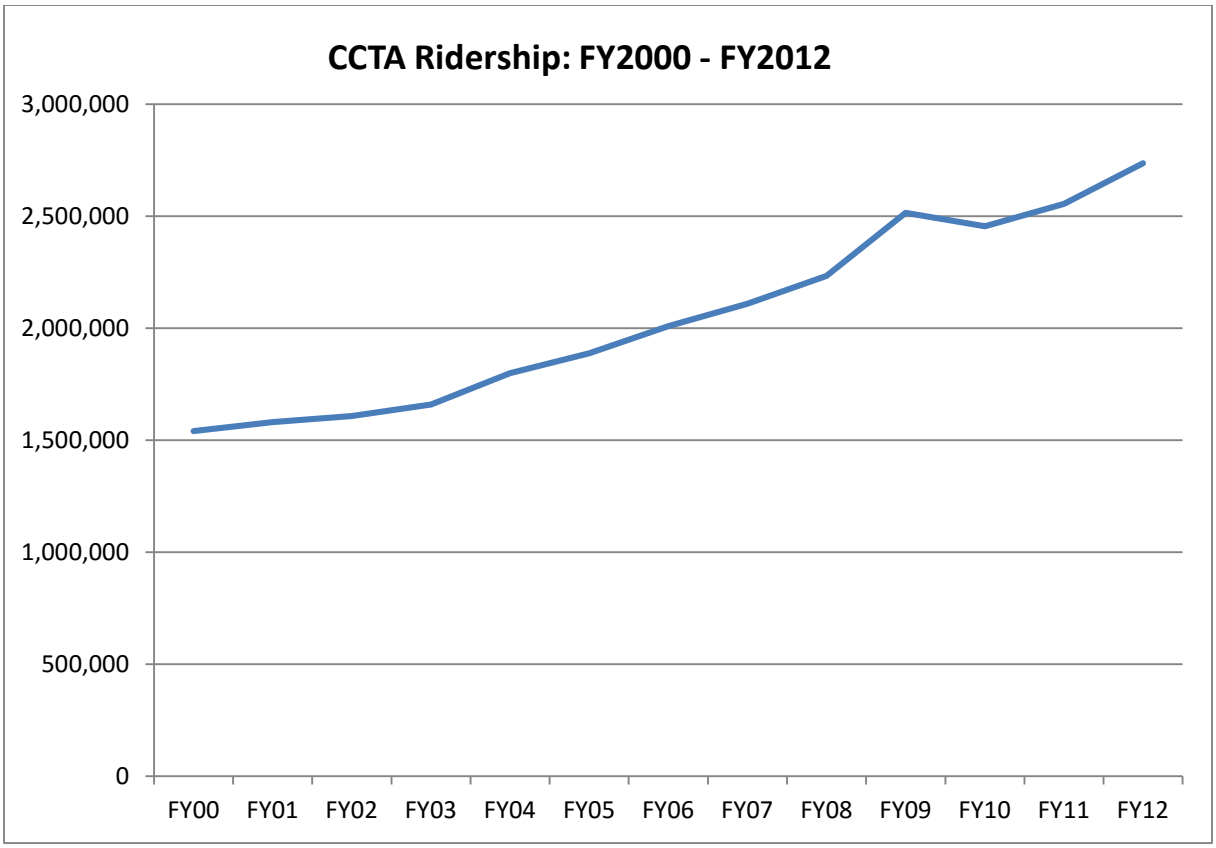


FIGURE 57 - CCTA RIDERSHIP, FY2000 - 2012

CCTA's reach is beyond Chittenden County as they have assumed operations in Central Vermont and Franklin County under the name Green Mountain Transit Agency (GMTA). In June 2011, CCTA and GMTA became a single unified organization making CCTA the first regional transit authority in Vermont.

CCTA has identified in its future service strategies in its Transit Development Plan (TDP) which is incorporated into the MTP by reference. These services include new or improved commuter routes, regional trunk routes, community connectors, and specialized services like senior shuttles. For more information see: http://www.cctaride.org/resources/documents.html

Complementing CCTA service is SSTA, the public paratransit operator primarily responsible for providing services to the elderly and disabled through a variety of contracts with social service agencies. SSTA's service area is slightly larger than CCTA's, reaching into the County's rural as well as urban areas.

Passenger Rail

Intercity rail service available in Chittenden County consists of Amtrak's Vermonter Train, with Vermont stops in Essex Junction, Brattleboro, White River Junction, Montpelier, Waterbury, and St Albans. This service was established in April 1995 as a reconfiguration of the discontinued Montrealer train from Montreal to Washington, D.C. The Vermonter provides one inbound and one outbound trip daily.

Southbound service to New York and Washington, D.C. originates at St. Albans in the morning, returning later in the evening. Figure 58 - AMTRAK 'VERMONTER' RIDERSHIP, FY2005 – 2012 provides the most recent history of ridership on this service which is experiencing rising popularity.

YEAR	2005	2006	2007	2008	2009	2010	2011	2012
RIDERS	45,207	47,307	63,299	72,655	74,016	86,245	77,783	82,086

FIGURE 58 - AMTRAK 'VERMONTER' RIDERSHIP, FY2005 – 2012

Source: Amtrak Monthlies

The State of Vermont has been pursuing a project known as the "Albany-Bennington-Rutland-Burlington-Essex," or "ABRBE" passenger rail project. Reinstituting passenger rail service connecting Rutland to Burlington was cited as the State's number two rail priority in the 2006 VTrans Rail Policy Plan (behind maintaining the existing two Amtrak services). However, no timetable for implementing actual Amtrak service to Burlington from the south has been set. More recently, restarting the passenger rail service to Montreal, suspended in 1995, has become a top VTrans priority.

Intercity Bus

Currently two carriers provide intercity bus services in Chittenden County: Greyhound Lines and Megabus. These services carry passengers, baggage and packages on fixed routes and schedules. Greyhound runs four daily trips between Montreal and Boston with a stop at Burlington International Airport and limited service to downtown Burlington and UVM. Megabus connects Burlington (at UVM) to both Boston (one trip daily) and New York City (two trips daily).

Freight: Rail and Truck Facilities

Chittenden County has a well-developed freight distribution system. About six million tons of freight flow into, out of, or within the region each year, far more than in any other region of Vermont. According to the 2001 CCMPO *Regional Freight Study and Plan* (the most recent detailed look at freight in the region), more than 91 percent of the freight tonnage moved in the County moves by truck, while rail moves 5.7 percent. Rail has historically been used to carry large volumes of bulk materials, such as fuel, stone, wood chips, and salt. Nearly 60 percent of the region's freight flows to or comes from nearby – other parts of Vermont, New Hampshire, or New York.

In recent years, the County's freight system has had to adapt to a changing and more competitive marketplace. With the advent of new information technologies, truck containers, rail cars and airplanes are increasingly viewed as mobile warehouses that feed goods into the production process or on to market shelves in "time definite" service.

The *Regional Freight Study* noted that the freight infrastructure in Vermont does not meet national industry standards for motor carriers and railroads and this affects the access to Chittenden County. For example, US 7 and VT 22A are insufficient as a north/south highway in western Vermont. Further, the rail system serving Chittenden County has weight and clearance limits that affect its ability to function effectively in the regional, national and North American rail systems. As a result of the

railroads' downsizing in the last few decades, Chittenden County reduced the number of direct rail sidings and limited transload facilities – facilities that connect rail to trucks in order to transfer goods. However, a new transload facility opened in late 2010 in the Vermont Railway yard in Burlington. These freight system deficiencies were also cited in the more recent 2010 Western Corridor Study.

There are two rail freight operators in Chittenden County: 1) The Genesee & Wyoming who recently purchased the New England Central Railroad (NECR)/RailAmerica and currently has a base in St. Albans. The former NECR was Vermont's largest privately owned and operated rail operating freight service from Alburgh, VT to New London, CT. NECR, now G&WR, also operates on the spur line that connects their mainline in Essex Junction to Burlington. 2) The Vermont Railway is based on the waterfront in Burlington and operates on state owned lines south to Bennington, branching off in Rutland to Whitehall, NY and Bellows Falls, VT.

In 2010 Vermont received a $50 million federal grant award which, combined with the NECR's $19.5 million match, provided a sizeable reinvestment opportunity for the entire NECR line through the state. Now completed the improvements allow 286,000 lbs. gross weight rail car capacity from St. Albans to the VT/MA state line, bringing this entire line up to national standard. We note that these improvements will not apply to the NECR spur from Essex Junction to Burlington, where track and bridge repairs will still be needed for improved service.

Pedestrian and Bicycle Facilities

Chittenden County has a range of dedicated bicycle and pedestrian facilities, as well as other facilities that may be used for cycling and walking. Facilities dedicated to non-motorized uses (such as sidewalks and off-road, shared use paths) are concentrated in and around the metropolitan core. Non-dedicated facilities that bicyclists and pedestrians share with motorized users are located throughout the region. According to data compiled by the CCRPC in 2008, the miles of shared use paths increased from 30 to 39 (from 2003) and designated on-road bike facilities rose from 20 miles to 81. Most shared use paths (with the exception of the Burlington Bike Path) were recently built and are currently in good condition.

Sidewalk construction and maintenance has been the exclusive domain of local governments until very recently. In 2005 the CCRPC began a municipal sidewalk grant program for the design and construction of more of these facilities. Since then, ten towns and cities have received a total of over $2 million for 26 new projects.

Community support for non-motorized facilities is substantial, as surveys in 2000, 2006, 2010 and 2012 revealed. These facilities have rated second highest (only following transportation system maintenance) on the list of transportation improvements the public desires. An important amenity in making these facilities more attractive to the growing number of elder users are frequently spaced seating/resting areas. This was borne out in a Burlington survey conducted by AARP as part of their Livable Communities project in 2006.

The CCRPC has regularly updated its regional Pedestrian/Bicycle Plan, most recently in 2008 – see: http://www.ccrpcvt.org/library/bikeped/. This document identifies the vision, goals and objectives for these active transportation modes, assesses current conditions, and makes recommendations to sustain and improve the environment for walking and biking in the region.

Intermodal Facilities

Chittenden County has pursued and continues to pursue development of various intermodal transportation facilities – places/facilities where people or goods transfer from one transportation mode to another. Current facilities fitting this category are the CCTA Cherry Street terminal in Burlington, the Essex Junction Amtrak station, University Mall in South Burlington, Burlington International Airport, the Vermont Railway Yard in Burlington, two privately operated ferry terminals (Charlotte and Burlington) and the most common – several park and rides scattered around the region.

Park and ride facilities span a spectrum from the large, federally funded, high capacity facilities like the one at I-89 Exit 11 in Richmond (soon to be enlarged), down to small, undesignated and informal lots where travelers meet, perhaps unknown to the private facility owner. At most of these lots, people arrive in autos and transfer to another auto to carpool for the remaining part of their trip. Some facilities also offer links to public transportation as well such as the Richmond and Colchester park and rides off of I-89.

Similar to the pedestrian and biking modes, the CCRPC regularly updates a regional park and ride plan, most recently completing an update in 2011, see: http://www.ccrpcvt.org/library/studies/Parknride_InterceptFacility_FinalPlan_20110615.pdf. A robust offering of these types of facilities around the region – strategically spaced and located – can significantly help us achieve a more efficient use of our transportation resources.

A Burlington project just getting underway may significantly impact intermodal links to the VT Railway's railyard on the City's south waterfront. Labeled the Railyard Enterprise project, this planning study will enhance some preliminary recommendations from a 2010 CCMPO report on Waterfront South. The focus of the study was the creation of a multimodal network of new roadways, bike/pedestrian facilities and truck access to the railyard. The potential impacts may include a reconfigured railyard with improved truck access lessening truck impacts to adjoining neighborhoods, a more efficient grid transportation network, and potential new redevelopment opportunities.

Air Service Facilities

The region's passenger air travel and shipping needs are served primarily by the Burlington International Airport (BTV). BTV is owned by the City of Burlington, governed by an Airport Commission and located in the City of South Burlington. The airport is accessed primarily from US 2 (Williston Road). The airport is a vital link to the national air transportation system for the residents and businesses of the County, Northwest Vermont, northern New York State and southern Quebec Canada. Currently, five commercial airlines (providing 38 daily departures and serving 10 destinations), two air cargo carriers, two general aviation/fixed base operators, and two airframe and power plant maintenance facilities operate from BTV. The airport also serves as home to a unit of the Air National Guard fleet of F-16s, a National Guard Blackhawk helicopter air ambulance service and a maintenance and repair facility for Blackhawks.

While most airports saw a drop off in enplanement growth following the 9/11/01 terrorist attacks, BTV bucked that trend and continued to grow through 2008. The airport has taken on several capital expansion projects over the past decade and expects to see further growth in the future. BTV recently (2011) completed a master plan update which could lead to further significant capital improvements on both the landside and airside facilities of the airport. The Plan anticipates a doubling of annual enplanements by 2030 to 1.6 million. According to the Vermont Green House Gas Emissions Inventory

Update 1990-2009, in 2009, jet fuel and aviation gasoline are responsible for 2.5% of GHG emissions statewide.

Landside connections to the airport are provided by private auto, taxi, CCTA fixed route and intercity bus via Greyhound Lines. The State's recent Statewide Intercity Bus Study (2013) noted that there is somewhat of a public transportation service gap between the airport and CCTA's Cherry Street station as this trip is not direct, requiring a transfer at University Mall.

Bridges

There are a total of 179 bridge structures greater than or equal to 20 feet in length in Chittenden County. Of these, 86 are owned by the State and the remaining 93 by local governments. Nearly all (78 of 86) of the State owned bridges over 20 feet long are located on major highways, i.e. principal arterials and major collectors. The majority of municipally owned bridges (61 of 93) over 20 feet long are located on less heavily traveled highways, i.e. minor collectors and local roads. Note that many bridges and other structures less than 20 feet long are also maintained by both the State and municipalities.

The condition of local and State bridges is evaluated every two years by VTrans. Using a sufficiency rating system developed by the U.S. Department of Transportation, bridges are assigned a value between 0 and 100. Ratings are based on evaluations in three areas – structural adequacy and safety, essentiality for public use, and serviceability and functional obsolescence – with special reductions given for extreme safety problems and lack of alternative routes.

Sufficiency ratings on bridges are used to determine the eligibility for funding for improvements. A sufficiency rating below 50 qualifies that bridge for replacement funding. Below 80, bridges are eligible for rehabilitation money. Bridges rated above 80 are not eligible for federal funding. Based on this system and VTrans' latest inspection reports, 10 percent (18 of 179) of all bridges are eligible for replacement. Nearly half of the total number are eligible for rehabilitation as well – 86 of 179. The remaining 77 bridges (43 percent) are deemed sufficient. There has been a marked improvement over the past decade in the number of bridges in the replacement category, down to 18 from 29, a 38 percent improvement. Bridge rating data can be found here: http://apps.vtrans.vermont.gov/VTransparency/Search.aspx

Other Transportation Demand Management Programs

Two organizations in the region have notable programs generally fitting the broad category of Transportation Demand Management (TDM). These are 1) CarShare Vermont and 2) the Campus Area Transportation Management Association (CATMA).

CarShare Vermont, a non-profit organization founded in 2008, currently provides affordable access to a network of 10 vehicles parked around Burlington. Vehicles are available 24 hours a day, 7 days a week and can be used to drive to any destination. CarShare members pay for vehicle use based on how much they drive. The organization takes care of other expenses - from routine maintenance, roadside assistance, and car washes to insurance, gas, and parking. The program is designed to save members money (less need to own a vehicle) and reduce unnecessary trips that impact the environment. CarShare Vermont is planning to expand soon into Winooski and further into other communities in the future.

CATMA, also a non-profit membership based organization, was formed in 1992 to jointly address, plan and manage a viable, cost-effective and sustainable transportation and parking network in and around the Greater Burlington area. CATMA's founding members -- UVM, Fletcher Allen, Champlain College and American Red Cross – efficiently coordinate land use planning, share resources, administer transportation and parking programs, infrastructure and associated facilities through CATMA, while minimizing environmental impacts.

CATMA has significantly influenced the reduction of single occupant vehicles for its members as well as their costs and need for parking due to its suite of sustainable TDM award winning strategies including: free and reduced transit, bike-walk rewards program, convenient emergency ride home program, CarShare Vermont campus membership promo, staggered work and class scheduling, coordinated shuttle services, employee and student transportation surveys, along with frequent drawings, contests, outreach and consistent messaging.

CATMA recently expanded membership to include the CCRPC, and pilot programs have been offered to the downtown City of Burlington and State of Vermont employees with developing partnerships at CCV in Winooski and St. Michael's College. CATMA is currently marketing the benefits of TDM and its managed comprehensive commuter programs to area employers, including the establishment of an Employee Transportation Coordinator Network in Chittenden County.

In 2011, the CCRPC received a grant from the Transportation, Community and System Preservation program (TCSP) to build a more robust, comprehensive and coordinated regional TDM program. A collaboration was established with CarShare Vermont, CATMA, Local Motion, CCTA, Vermont Energy Investment Corporation (VEIC), Vt. Dept. of Health and GoVermont (VTrans) under a single brand, Go!Chittenden County. This initiative is an opportunity to expand and offer transportation outreach and programs to encourage more individuals and businesses to experience the value and ease of non-SOV transport (see: http://www.gochittendencounty.org/business/)

The potential impact of widespread TDM program implementation could be significant. While only 5% of Chittenden County workers currently work from home (2006-2010 American Community Survey), the CCRPC's 2012 Transportation Survey revealed that over 23% of Chittenden County employees work for an employer that allows them to work from home. Employers need encouragement and support to implement an employee commute program that will assist in reducing congestion and parking demand, resulting in less strain on our existing roadways and influencing individual transportation behavior. There is an opportunity to focus on shifting transportation costs to a sustainable model and better integrating land use and transportation.

Transportation and Climate Change

The consensus view in climate science is that our planet is warming and human activities that release greenhouse gases (GHG) into the atmosphere are the primary cause of the warming. In Vermont, the largest contributor of GHG emissions is the transportation sector – mostly carbon dioxide (CO_2) exhausted from the burning of petroleum products in internal combustion and diesel engines. Transportation's 47% statewide contribution to GHG emissions is closely mirrored by our 49% Chittenden County estimate. These compare to a nationwide contribution share of 28% from transportation.

To address this continuing and growing environmental issue, transportation planning looks at the problem from two perspectives: 1) How to mitigate climate changes through policies, programs, and technologies, and 2) How to adapt transportation infrastructure and services to the coming climate changes.

Climate change is only one of many factors to consider as we plan the region's future transportation investments but we need to carefully monitor its potential impacts while implementing programs that will slow its progress. For more information go to the air quality and climate sections of the CCRPC website.

Travel Patterns

Residents of Chittenden County make thousands of trips every day (for example, people driving to work, children walking to school, shoppers taking the bus to the market and students cycling to a friend's house). Transportation planners have typically classified travel as peak and off-peak trips. Traditionally, peak-period trips focus on commuter traffic in the early morning (AM peak) and late afternoon (PM peak) periods, while off-peak trips refer to shopping and leisure trips taken throughout the day and in the evening. Peak and off-peak trips typically make different demands on the transportation network. Peak period travel tends to be the most congested and adds the greatest amount of stress to the transportation system. However, the pattern of AM and PM peaking is being eroded over time and those "peaks" are beginning to flatten, showing a more even spread of traffic volume over the course of the day. The CCRPC has therefore enhanced its computer Travel Demand Model to reflect all day travel (while retaining the ability to examine peak periods) thus improving our analytical capabilities.

In Chittenden County, most trips (as measured in person-trips) are internal, meaning they do not cross sub-regional boundaries (e.g. urban, suburban, rural and external boundaries. The largest share (32 percent) of daily person trips begins and ends in the region's urban communities (Burlington, South Burlington, and Winooski). A smaller share (18 percent) takes place within suburbs (Milton, Colchester, Essex, Essex Junction, Williston and Shelburne) or from suburb to suburb.

Fewer daily trips begin and end within rural communities (less than 2 percent). Roughly the same amount of travel occurs within rural areas as takes place between rural areas and other sub-regions. These travel patterns reflect lower levels of economic activity in rural areas resulting in rural residents traveling longer distances to the suburbs or urban core for employment, shopping, and other activities.

The amount of travel originating from outside Chittenden County into the region is relatively small compared to the total amount of travel within the County. This travel totals about 50,000 daily trips or eight and one half percent of the greater region's total. Approximately four percent of all trips in the region are between external areas and the urban core and nearly the same share are between external areas and the region's suburban communities. Less than half of one percent of all trips in the region are "through trips" (i.e., trips that begin and end outside the region).

The Larger Northwest Vermont Region

Chittenden County is the population and jobs center of a larger area encompassing all of northwestern Vermont – see Figure 59 - 30 and 45 Minute Commute Zones from Downtown Burlington below. Its economic and cultural impacts spread well beyond the county lines. Many residents from our neighboring counties come to Chittenden County for work and other activities and this has been borne

out in Census and other data. Proximity and easy access to Chittenden County have been determinants as to which towns in our neighboring counties have grown the fastest. Franklin County's fastest growing towns are those along the I-89 corridor and/or bordering our northern municipalities. The northern tier communities in Addison County have likewise grown at faster rates than other county towns, and in Lamoille County, Cambridge and Stowe have been two of the most rapidly growing communities.

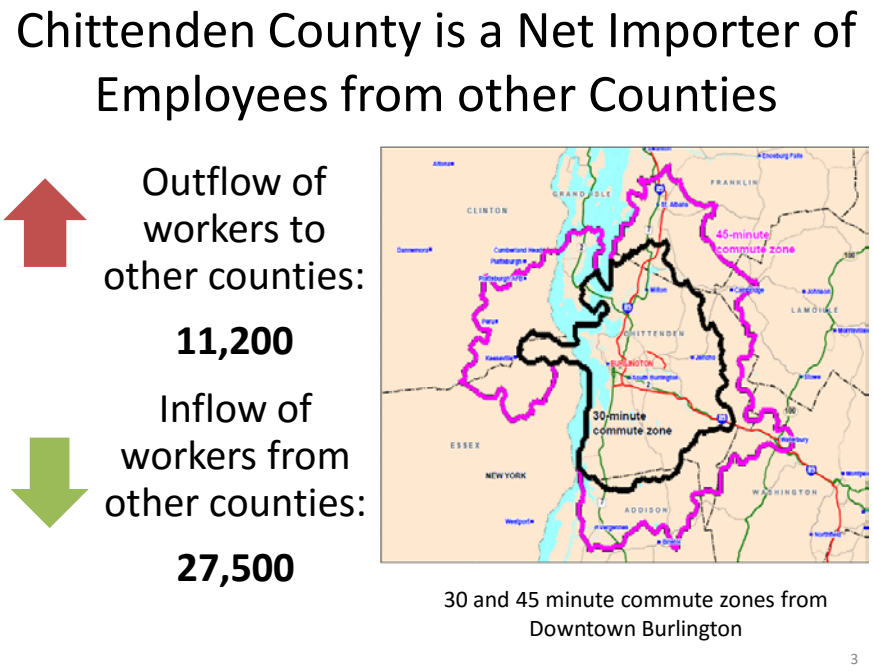


FIGURE 59 - 30 AND 45 MINUTE COMMUTE ZONES FROM DOWNTOWN BURLINGTON

The traffic volumes to the north (especially when combined with traffic to and from the islands to our northwest) reveal the significant ties to the areas in that direction. Over 40 percent of all Chittenden County interregional traffic flows to/from the north along the I-89 corridor or northwest, in and out of Grand Isle County.

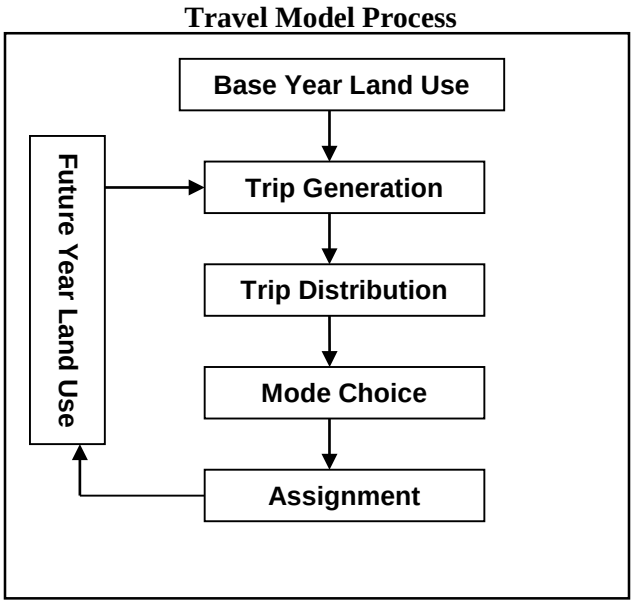
4.3.3 FORECAST OF FUTURE TRANSPORTATION CONDITIONS

Introduction

The previous section examined our transportation system conditions as they are today. This section will look into the future and identify likely transportation conditions based on growth assumptions made in ECOS chapter two. The CCRPC Travel Demand Model is the tool used to project the transportation impacts from anticipated future employment and housing growth. The model simulates the interaction between housing, employment and a multi-modal transportation system. System-wide transportation models have been used in Chittenden County since the mid-1980s. The current model was developed in 1994 and updated in 1998 and 2011. The current model uses custom designed computer software and incorporates several advanced features including the ability to estimate bus, commuter rail, walk/bike and shared and single occupancy vehicle trips, and sensitivity to the effect transportation projects have on where trips are made.

The model is able to analyze morning (AM) and afternoon (PM) peak hour as well as all day conditions. The afternoon peak hour was adopted for analysis of transportation alternatives because the PM peak represents the most congested conditions and therefore highlights any problem areas in the transportation system.

The model follows a five-step process as shown below**.** This process is built first to replicate existing travel conditions and then adapted to simulate future scenarios.



The five model steps break-down the relationship between the land use, economic activity and travel behavior. Trip generation, for example, estimates the total number of trips to be taken and trip distribution estimates where these trips will go. Both of these steps are based on economic activity and land use patterns. The mode choice model evaluates how people will travel (i.e. automobile, bicycle, walk, etc.) and trip assignment estimates which route or path travelers will use.

The Chittenden County Transportation Model is a powerful and important analytical tool, but it is just that – a tool for helping us to better understand transportation issues. The model does not make decisions, but is one of numerous resources the CCRPC calls upon to help make more informed choices about how to invest limited resources in the region's transportation system.

Careful input data, combined with powerful software analysis and real world calibration make the model a reliable tool to assess our potential likely future. The following results comparing current to future congestion, transportation enhancements vs. no improvements, Vehicle Miles Traveled (VMT), transit

trips potential, greenhouse gas emissions, and total vehicle delay allow us to assess the effectiveness of our project and strategy recommendations.

An important model assumption in our analysis for future conditions is the anticipated work trip reductions from implementation of TDM programs. The methodology assumes that a Regional TDM program is successful at reducing home to/from work single occupant vehicle (SOV) trips by 10 percent to the major employment centers in the region. The 10 percent reduction of home to/from work SOV trips is a reasonable goal based on the local experience of CATMA. This mode share is directly attributable to CATMA programs such as subsidizing transit passes, incentives for walking and biking, and rideshare programs. The 10 percent goal is further supported by TDM program success stories presented in the Online TDM Encyclopedia published by the Victoria Transport Policy Institute which cites examples of reductions in SOV home to/from work trips ranging from 10 to 25 percent.

Future Congestion

In order to get an idea of how traffic will look in 2035, we compared its impacts today (actually 2015 as the year selected for current conditions) to the growth impacts 20 years into the future that incorporates the transportation recommendations identified in section 4.3.6 MTP Project Listlater in this chapter. The congestion measure used to identify problematic areas is the volume to capacity ratio. This concept is illustrated below:

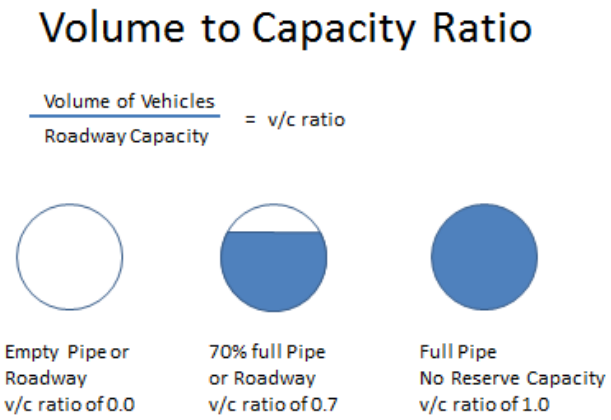


FIGURE 60 - VOLUME TO CAPACITY RATIO

The most significant areas of 2035 future congestion concern are identified in the table below. These are the places where we anticipate the traffic volumes in the peak hour to exceed the road's capacity to carry that traffic load. i.e. v/c > 1

Congested Area	*Comments*
Milton, I-89 Exit 17 northbound off ramp	Exit 17 area will be subject of scoping report in FY14
Richmond, I-89 Exit 11 southbound off ramp	No immediate plans to address the ramp but will examine operations of entire interchange in future UPWP task
South Burlington, Winooski, I-89 between Exits 14 and 15	Discuss future planning and/or scoping activity with VTrans and FHWA. Likely look at longer segment from Exit 12 (Williston) to Exit 16 (Colchester) and consider I-189 as well
Burlington, Colchester Avenue, from East Avenue to Riverside Avenue	Examine capacity issues in scoping the Barrett Street/Colchester Avenue intersection in FY14
Hinesburg/St. George, VT RT 116 between VT RT 2A and CVU Road intersections	Consider scoping this segment in future UPWP
Essex, VT RT 289 eastbound on ramp	One lane bridge over rail line constricts traffic flow. Will look to scope alternatives in future UPWP

FIGURE 61- CONGESTION PROJECTIONS, 2035

There are some other areas projected to be severely congested in the future but these are more a function of how the model classifies the road segment in that location. For instance, US RT 2 in Richmond is classified as a major collector which limits its capacity designation compared to the same road just over the line in Williston where it's designated a minor arterial and thus, theoretically, able to handle higher traffic loads. The characteristics of the roadway through this area however are the same so the lower class designation assumes congested conditions. This appears to occur as well on VT RT 15 in Jericho and Industrial Avenue in Williston. While these roads will experience future congestion, the severity of that congestion is likely less than our model implies. Working with VTrans the CCRPC will be offering suggested revisions to the regional road classification system to better align roadways to their actual function.

Other Transportation Performance Measures

In the charts below a comparison is provided of the current transportation system conditions (2015 Base which includes implementation of the current Transportation Improvement Program), the 2035 transportation conditions if we make no improvements (2035 No Build), and the transportation conditions if we implement the projects identified for the Metropolitan Transportation Plan 2015-2035 4.3.6 MTP Project List (2035 Build). Congestion is not the only measure to use in gauging the impacts and effectiveness of a transportation strategy. Our travel demand model also produces other indicators to allow us to compare scenarios. Here are four that we commonly use and form the basis for the following analysis:

1. Daily Vehicle Miles Traveled (VMT)
2. Daily Transit Trips
3. Green House Gas (GHG) emissions
4. Vehicle Hours of Delay (VHD)

The results of the congestion and other four measures reveal that the transportation package of improvements recommended in the MTP have positive, albeit slight, impacts. The analysis uses the travel demand model in combination with the 2035 regional land use described in the ECOS Transportation and Land Use Report. The model forecast results are directly related to the future growth expected to occur at the county level. According to the county forecasts, housing and employment in Chittenden County are expected to grow by about 40% between 2005 and 2035. The transportation model estimates the number of trips people make to, from, and within the county to grow at a comparable rate over the same time period.

The most general measure of the amount of travel in the county provided by the model is known as Vehicle Miles of Travel or Vehicle Miles Traveled (VMT). One vehicle traveling one mile on a road represents 1 unit of VMT, so a 1 mile long stretch of highway carrying 100 vehicles per day would contribute 100 units of VMT to the regional total. The figure below shows the change in VMT between 2015 and the two 2035 transportation scenarios. Note that the difference between the future scenarios is slight – only .8%.

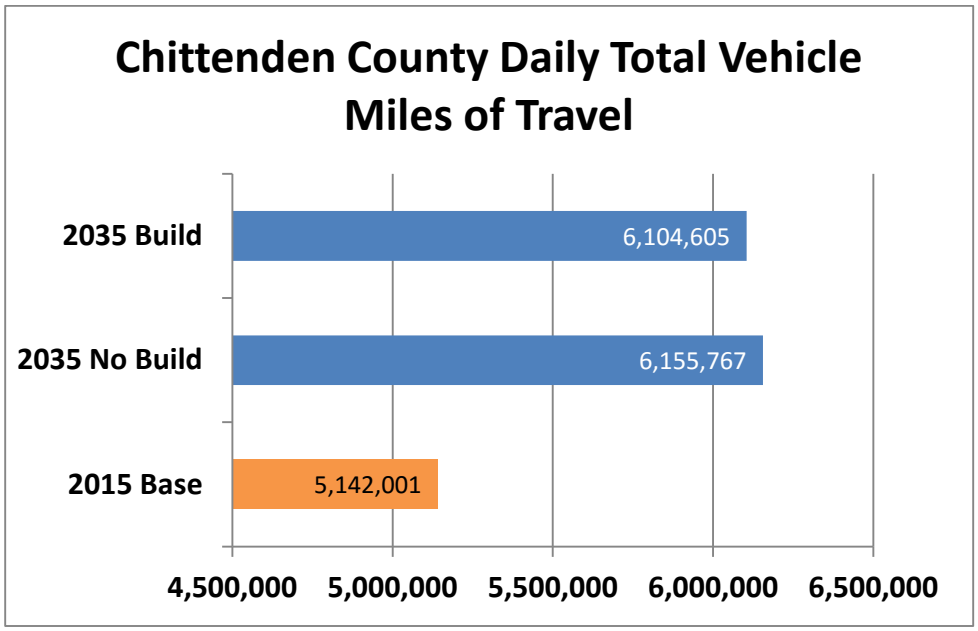


FIGURE 62 - DAILY TOTAL VEHICLE MILES OF TRAVEL, CHITTENDEN COUNTY

The VMT estimates in the chart above include all travel on highways within Chittenden County, including trips made wholly within or to/from the county from outside (e.g. St Albans to Burlington commuters). The impact of travel to/from Chittenden County is an important consideration in our regional future as these trips represent a significant proportion of the total and almost half of regional VMT since these “external” trips tend to be longer.

Another way of thinking about regional travel patterns, however, is to just look at trips that are made within Chittenden County, or “internal” trips. These are the types of trips municipal and regional decision-makers within the County will have the greatest ability to influence through policy making. The figure below includes the estimates of internal VMT for Chittenden County.

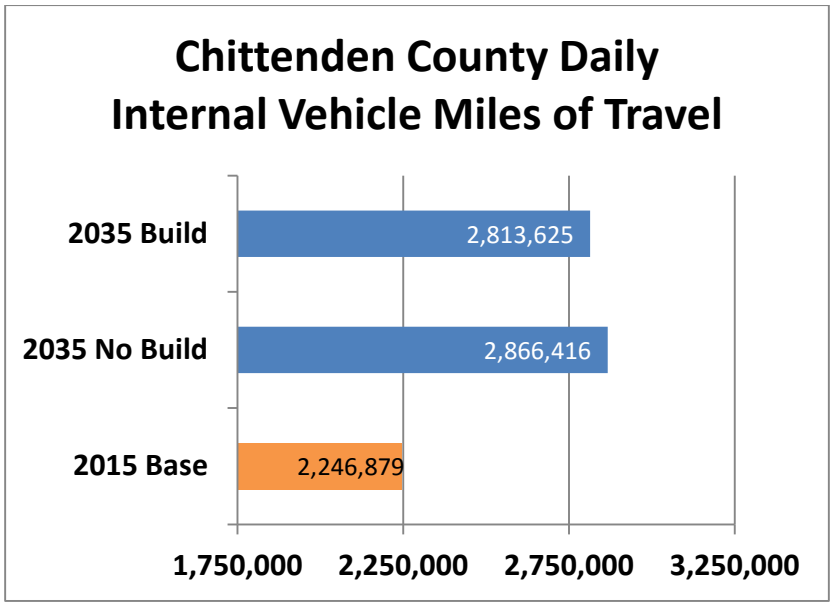


FIGURE 63 - DAILY INTERNAL VEHICLE MILES OF TRAVEL, CHITTENDEN COUNTY

A closer look at the Internal VMT estimates for the two scenarios indicates only a 1.8% decrease in internal VMT between the build and no-build scenarios. This slight decrease is primarily due to fewer vehicle trips in areas targeted for Travel Demand Management (TDM) programs as well as more trips being made via public transportation.

Public transportation via bus, and potentially rail service in the future, is expected to continue playing an important role in providing services to riders who depend on the service for basic transportation as well as the increasing number of people who may have other transportation options available, but choose to use transit. The figure below shows the increase in transit ridership in the build scenario as the services are available to a larger population thus increasing the attractiveness of transit.

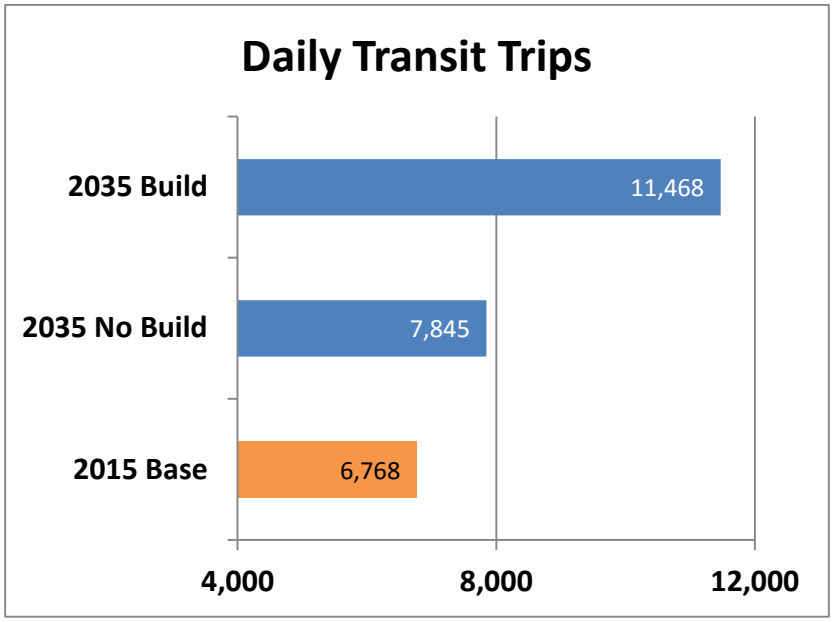


FIGURE 64 - DAILY TRANSIT TRIPS 1

It is important to note CCTA's actual average daily transit ridership for 2013 is between 9,000 and 10,000 trips. The CCRPC Travel Demand Model is not equipped to model long range transit trips that extend outside Chittenden County and accounts for a large part of the discrepancy between CCTA data and the 2015 Base number. Even so, the projected increases in transit trips (2015 Base to 2035 Build) from a percentage basis are consistent with the historical growth shown in Figure 57. While model outputs increase transit trips by 70% (2015 Base to 2035 Build), transit is still projected to provide for only 1% of all trips in 2035. As a comparison, the share of walking trips is anticipated to slightly rise from currently 6.5% to about 8.5% in 2035.

Congestion is expected to increase in the future as travel needs place additional demands on the transportation system. The transportation model can be used to compare the difference between uncongested travel on the highways (known as free flow) and congested travel. Since the highest travel demand occurs in the afternoon rush hour period (roughly 5-6 p.m.) this leads to the greatest concentration of congestion over the course of the day.

A complementary measure to the volume to capacity ratio in assessing congestion is Vehicle Hours of Delay (VHD). PM Peak VHD sums the lost time of all vehicles in the peak hour due to congestion. Nationally this lost time has significant negative impact on our economic productivity and the environment.

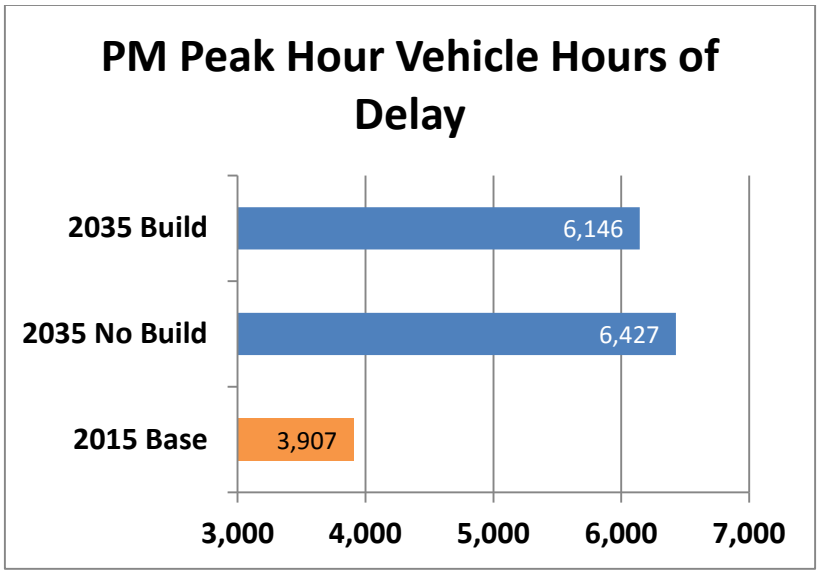


FIGURE 65 - PM PEAK HOUR VEHICLE HOURS OF DELAY

The figure above shows that total PM peak hour delay is expected to increase between 2015 and 2035 in both scenarios, although only slightly less (4.6% less) in the build scenario due to TDM programs and public transportation alternatives.

Comparing Performance to Previous Hypothetical Scenarios

Earlier in the ECOS development process we created three very distinct future transportation scenarios and compared them under the same measures (as well as estimating their costs), to see how each performed. Those scenarios are outlined and their relative performances identified ECOS Chapter 3.1 Scenario Planning Review – Choices for the Future. We've added the Metropolitan Transportation Plan 2015-2035 (2035 Build MTP) scenario to the others in the charts below to compare how well our recommended package of strategies and projects rates relative to these hypothetical extremes. While the basic economic inputs of future housing and employment determine the general order of magnitude of future travel demand, there are important distinctions in the way the transportation scenarios perform which will be reviewed below.

A brief overview of the scenarios we're comparing the Build MTP scenario to:

- Enhanced Road Capacity scenario is a robust road expansion scenario with new interstate interchanges and wider arterials
- Energy Constrained/Social Equity scenario has significant work trip reductions, new bus and rail transit opportunities, more walking and biking facilities, and higher drive alone costs
- Basic Transportation/Constrained Funding scenario maintains the existing system and adds only those improvements in the 4 year Transportation Improvement Program (TIP)

The number of trips made on public transportation is an area in which we hope to see increases. Higher levels of transit use can indicate positive trends in transportation efficiency and air quality emissions. The figure below compares the relative performance.

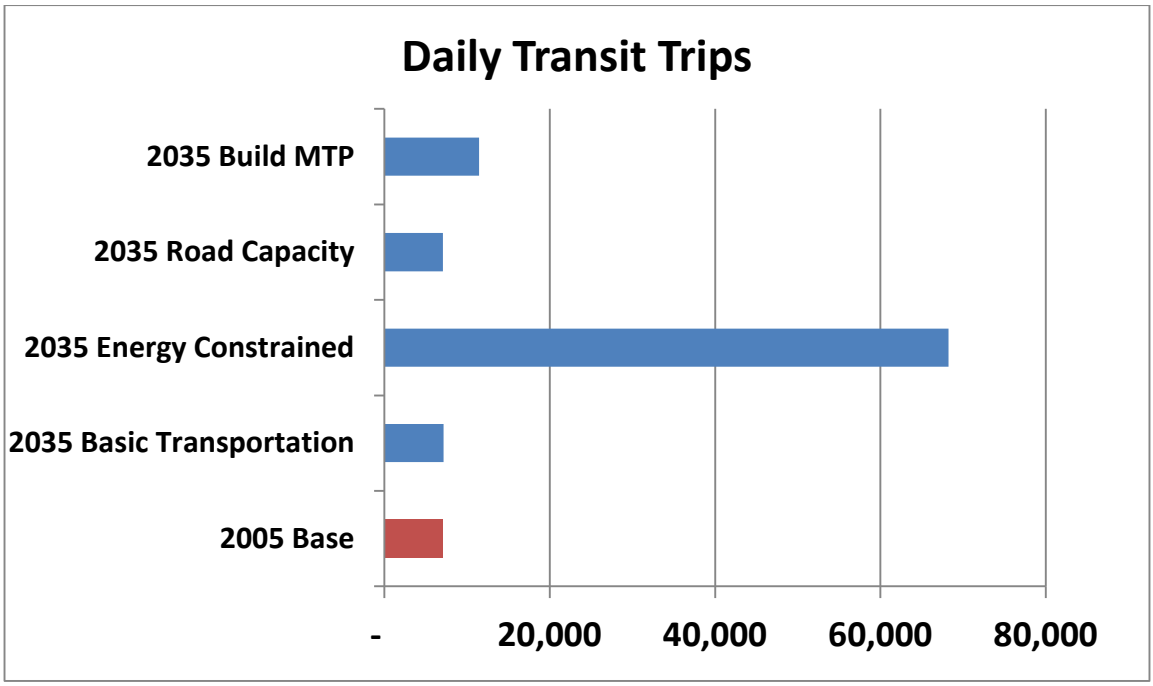


FIGURE 66 - DAILY TRANSIT TRIPS 2

The Energy Constrained scenario attains its transit gain primarily by building a passenger rail component to complement the bus service, making the services available to a wider population. Though its gains are modest by comparison, the Build MTP scenario improves public transportation ridership over the Basic and Road Capacity alternatives.

The next figure displays the relative PM Peak Vehicle Hours of Delay (VHD).

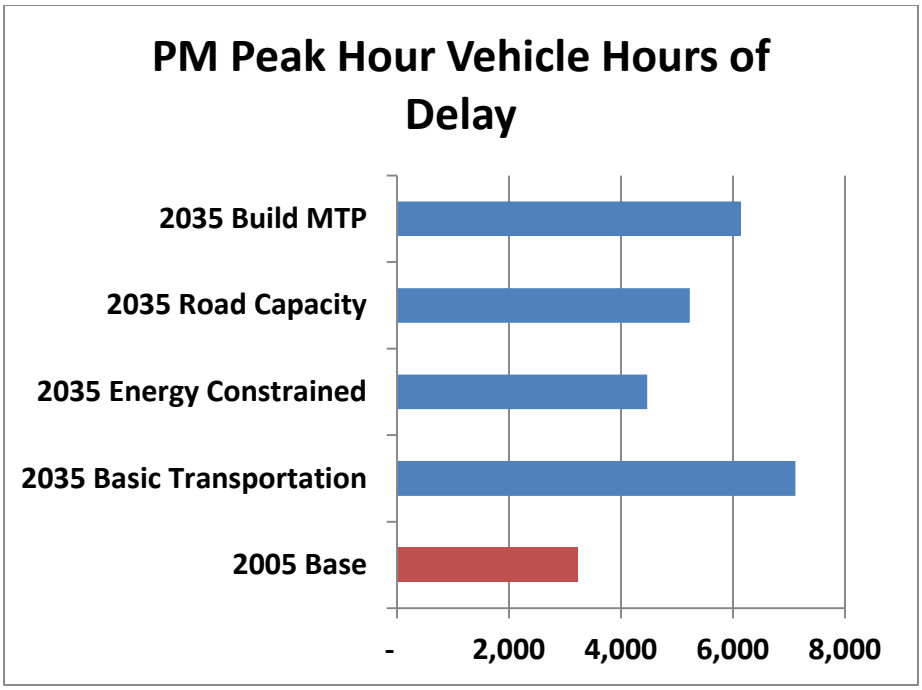


FIGURE 67 - PM PEAK HOUR VEHICLE HOURS OF DELAY

In this measure, the Build MTP results, while better than Basic Transportation, don't achieve the improvements that the Energy Constrained or Road Capacity scenarios see. However, as we'll see below, the VHD improvements in those scenarios come at very high financial costs - costs that are well outside our anticipated fiscal constraint level.

The following two figures display VMT data, total and internal only. While VMT totals are quite different between the two charts, the patterns are similar. The VMT totals produced by the Build MTP scenario best the results from the Basic and Road Capacity alternatives, but the Build MTP doesn't perform as well as the Energy Constrained scenario. The high costs of driving, superior transit services, as well as high implementation costs of that scenario would see a better VMT result.

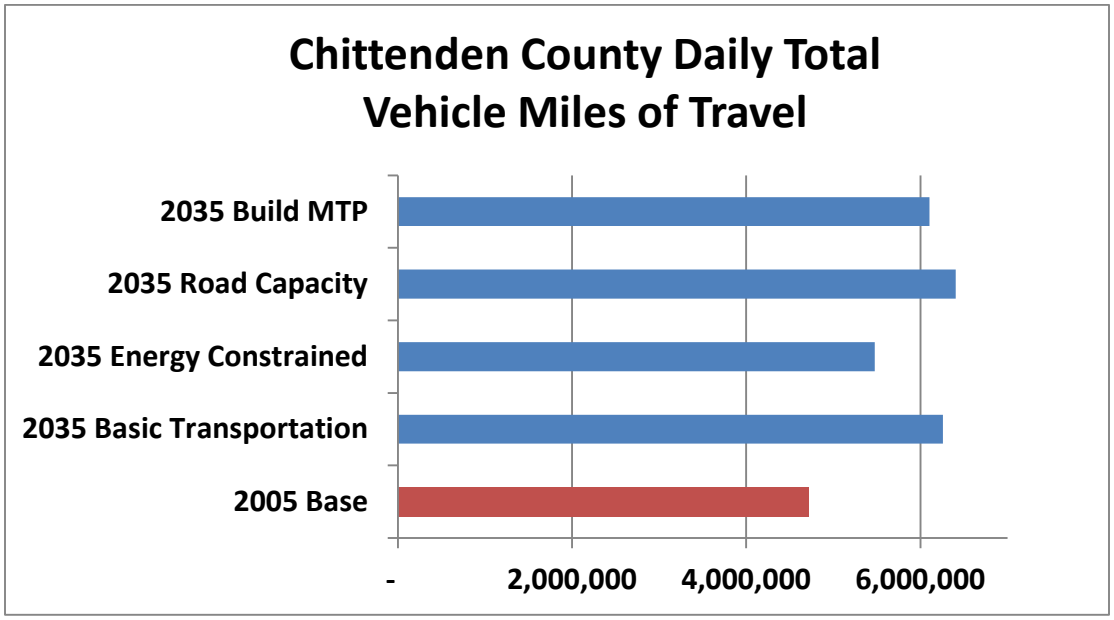


FIGURE 68 - CHITTENDEN COUNTY DAILY TOTAL VEHICLE MILES OF TRAVEL

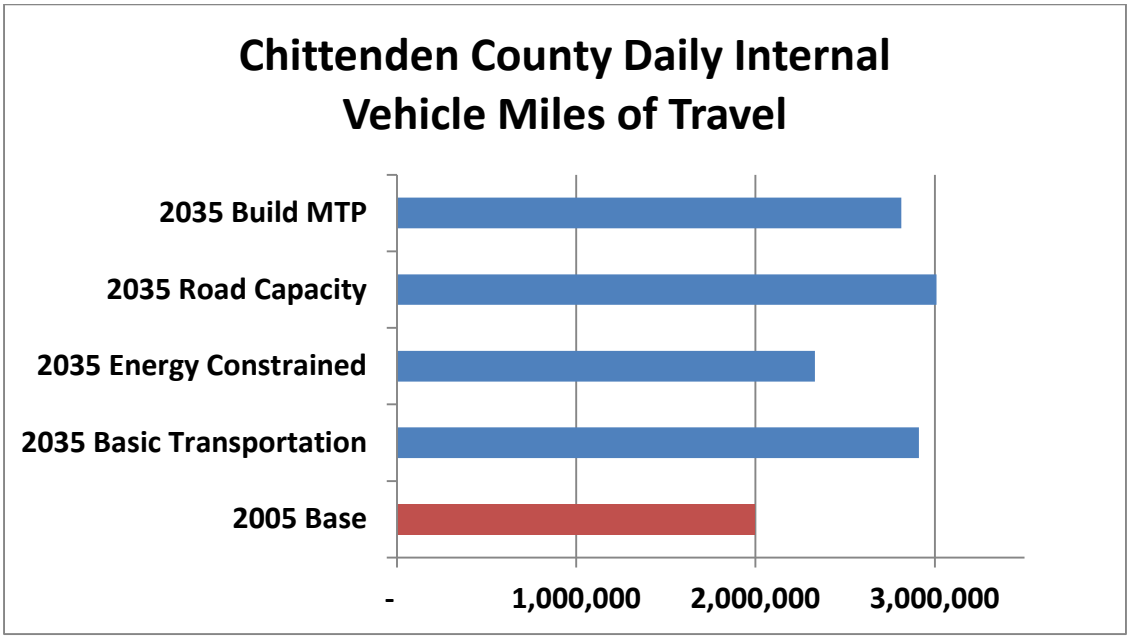


FIGURE 69 – CHITTENDEN COUNTY DAILY INTERNAL VEHICLES MILES OF TRAVEL

While the foregoing comparison/analysis shows relatively modest improvements across the performance measures used, the one that is most compelling is implementation costs. For each of these, we've estimated what it would take to build/implement. In this category, and due to our financial limitations, the Build MTP performs best. We expect to have less than approximately half the funds it would take to build the Enhanced Road Capacity or Energy Constrained alternatives. In the light of

fiscal realism, the improvements we do see appear to be fiscally prudent.

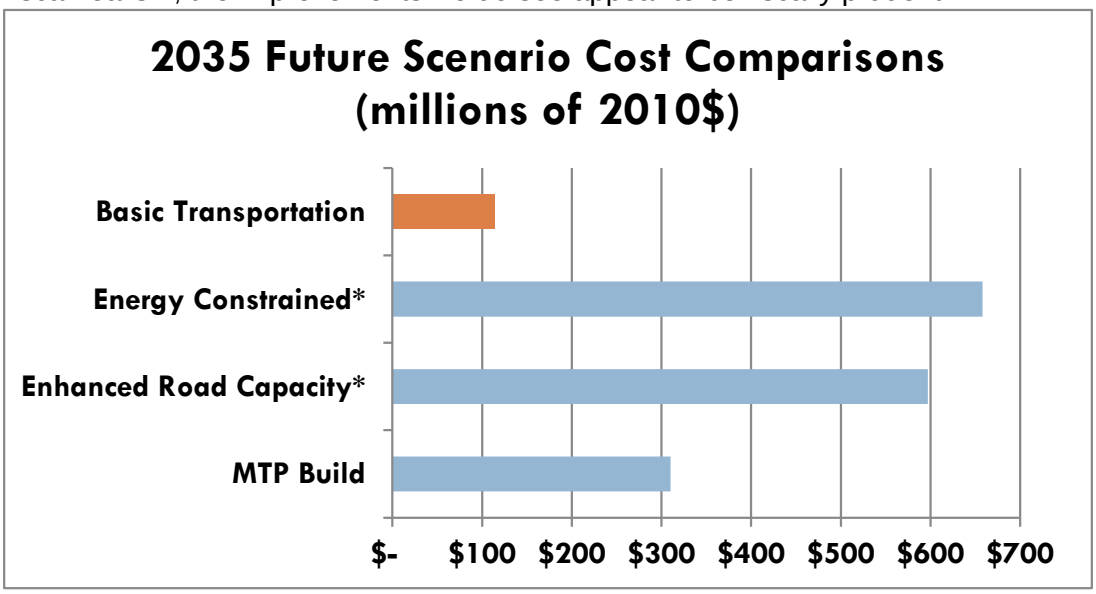


FIGURE 70 - 2035 FUTURE SCENARIO COST COMPARISONS (MILLIONS OF 2010 $)

*These are the mean of an estimated range

4.3.4 FINANCIAL PLAN

Introduction

The CCRPC's long range transportation plan must incorporate a financial section that estimates how much funding over the life of the plan will be needed, how much will be available for the recommended transportation investments, and the costs to maintain and operate the existing system. The financial section must outline how the CCRPC can reasonably expect to fund all included projects and programs within a fiscally constrained environment, drawing on all anticipated revenues from the federal and state governments, regional or local sources, the private sector and user charges.

Federal regulations establish the requirement for the financial plan in *23 CFR 450.322(f)(10)*[7]. The operative requirements of that regulation are summarized here. The adopted MTP shall include:

> *(10) A financial plan that demonstrates how the adopted transportation plan can be implemented. Key components of this plan to include:*
>
> > *(i) System-level estimates of costs and revenues to adequately operate and maintain Federal-aid highways and public transportation.*
> >
> > *(ii) Agreed upon estimates of funds that will be available to support plan implementation.*
> >
> > *(iii) Recommendations on any additional financing strategies with strategies for ensuring their continued availability.*

[7] For more details on federal regulations regarding MPO long range planning, see http://edocket.access.gpo.gov/cfr_2009/aprqtr/23cfr450.322.htm

(iv) Funding to include all federally funded projects, both highway and transit. Projected funds to reflect "Year of Expenditure dollars." (YoE)

The financial projections extend 25 years to the MTP planning horizon of 2035.

The completed financial plan will contain three parts:

1. The overall level of fiscal constraint including projection of future transportation funding in Chittenden County and factors that are anticipated to affect this.
2. The base level of investment required for system preservation as called for under 23 CFR 450.322(f)(10)(i).
3. An estimate and analysis of the costs associated with MTP recommended improvements themselves.

FINANCIAL PLAN PART 1: OVERALL CONSTRAINT

CCRPC funds intended to be guided by the contents of the 2035 MTP are limited to federal transportation funds allocated to the Chittenden County metropolitan area under federal transportation acts. Moving Ahead for Progress in the 21st Century (MAP-21) is the current act governing the use of federal transportation funds. MAP-21 is a two year bill which was signed into law on July 6, 2012.

The Chittenden County region does not access other sources of transportation funding such as tolls or private contributions, so the anticipated funding level for significant transportation projects on highways eligible for federal aid is expected to be federal funds plus state and local match.

The single most critical issue for establishing how much MTP funding will be available between 2010 and 2035 is therefore the future availability of federal funds. For the purposes of this plan, an estimate of available future funding has been developed based on the growth trend of statewide federal funding and CCRPC's historic share of statewide funding. This has been deemed to represent the most reasonable estimate of funding availability for two reasons:

- Actual funding available to the CCRPC over the past ten years is volatile and has depended on the timing of specific projects. Statewide spending patterns exhibit a more consistent trend, and
- MAP-21 will continue funding programs at levels similar to what SAFETEA-LU has provided. For this reason trends are based on the time period since SAFETEA-LU was enacted in FY2005.

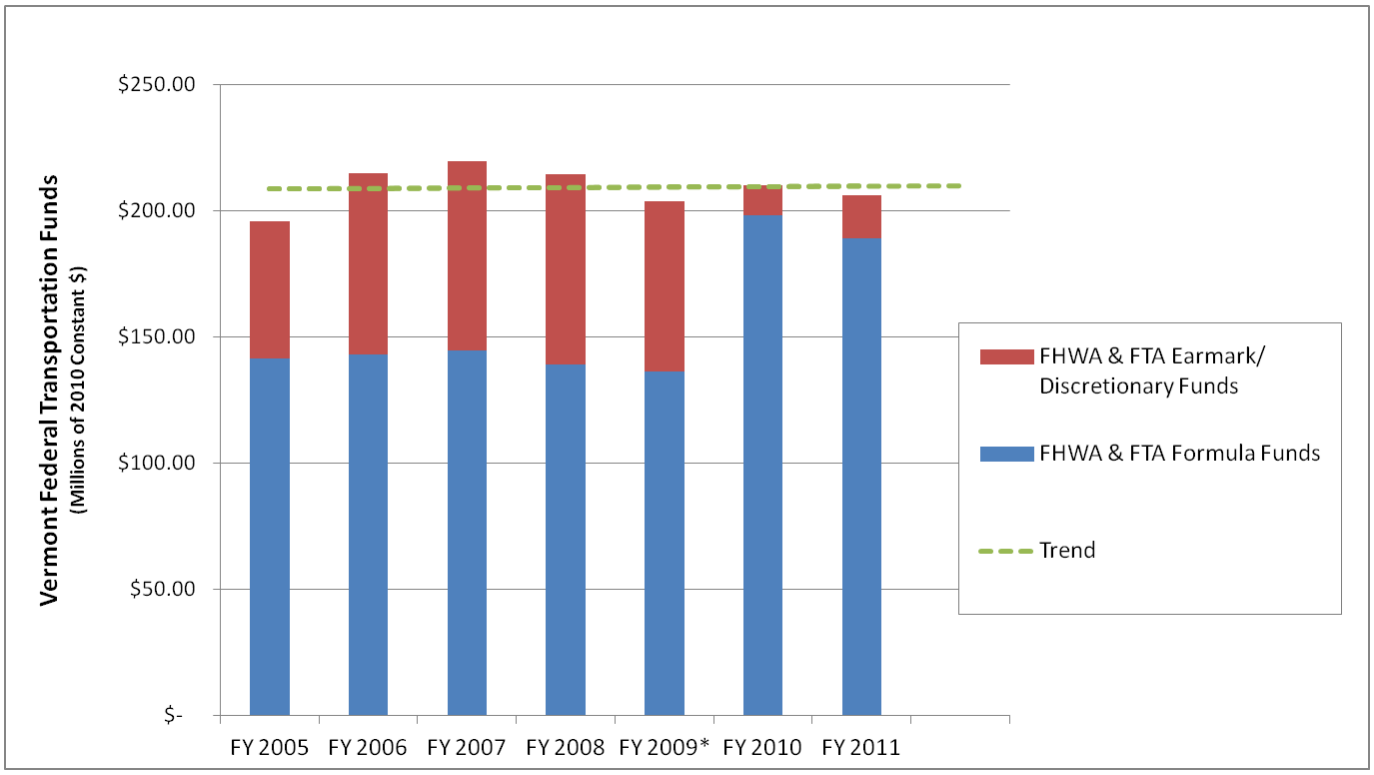


FIGURE 71 - VERMONT FEDERAL TRANSPORTATION FUNDING TREND FY2005 - 2011

Total statewide federal funding was projected for future years based on a linear regression[8] of the FY2005 – FY2011 statewide obligation history in Figure 71 - Vermont Federal transportation Funding Trend FY2005 - 2011above. Earmark and discretionary funds which are not part of the federal formula funds allocated to Vermont were included in the total funding history used to establish the trend. Figure 1 shows the decline in earmark and discretionary funding after the original expiration of SAFETEA-LU in 2009. This has not had a major impact in overall funding to Vermont as the formula programs have increased to keep funding relatively consistent in FY2010-2011.

The 2009 federal funding amounts do not include the American Recovery and Reinvestment (ARRA) funding as that was a one-time injection of additional funds and is not a reasonable basis for calculations of long-term funding availability. The trend based over the last seven years indicates a slight increase in annual statewide funding of $185,000 dollars per year in 2010 constant dollars. This is less than a 0.1% increase annually in constant 2010 dollars although the growth is slightly higher when expressed in year of expenditure dollars as the inflation factor to convert from constant to year of expenditure dollars is about 3% per year moving forward into the future.

The next step is to calculate CCRPC's estimated share of the statewide federal funds. As shown in Figure 72 - State of Vermont and CCRPC Federal Funds Obligation History (Millions of 2010 $)below, CCRPC's share of the total statewide funds has fluctuated between 13% and 30% between 2005 and 2011. Funding for large projects such as the US 7 Shelburne Rd and Kennedy Dr widening projects

[8] Based on the historic funding the linear equation for statewide funding was found to be y = 0.186*x + 208.3 where x = years since 2005, and y = funding in millions of 2010 constant dollars.

increased CCRPC's share of statewide funding considerably in FY2005; the more normal range of CCRPC's share was 12 to 19%.

FY	2005	2006	2007	2008	2009[9]	2010	2011
Statewide	195.5	214.9	219.6	214.4	203.5	210.0	205.9
CCRPC	58.0	34.7	29.1	30.9	38.3	32.2	24.8
CCRPC Percent of Statewide	29.7%	16.1%	13.3%	14.4%	18.8%	15.4%	12.1%

FIGURE 72 - STATE OF VERMONT AND CCRPC FEDERAL FUNDS OBLIGATION HISTORY (MILLIONS OF 2010 $)

Note: Constant 2010 dollars calculated using ENR Construction Cost Index

The mean proportion of statewide federal funding going to CCRPC projects over the 2005-2009 period was 17.1%[10]. This is a bit lower than Chittenden County's proportion of statewide population at 25% (US Census, 2010) and Vehicle Miles of Travel (VMT) at 20% (VTrans, 2009) and appears to represent a reasonable estimator of available funding in the County. As a result, CCRPC's annual funding increase is estimated to be 17.1% of the Vermont trend in total federally supported transportation funding.

Figure 74 below presents CCRPC's estimated annual funding at five year intervals. This is based on the statewide funding trend shown in Figure 73 and the County's 17.1% historic share of statewide funds. In constant year 2010 dollars the annual 5-year increments show slight increases. The year-of-expenditure row, where 3.2% inflation is compounding over 25 years, shows significantly higher annual amounts when adjusted – particularly closer to 2035 when the compounding effect is more pronounced.

[9] FY2009 ARRA funds are not included in this table as they were a one-time source of funds. FHWA has recommended removing these from the funding history used to examine long term trends.

[10] This percentage is intended to represent a best estimate of available funding, and is in no way intended to be construed as a CCMPO "entitlement" or "rightful share" of statewide funds. A calculation of the median share of funding was similar at 15.4%.

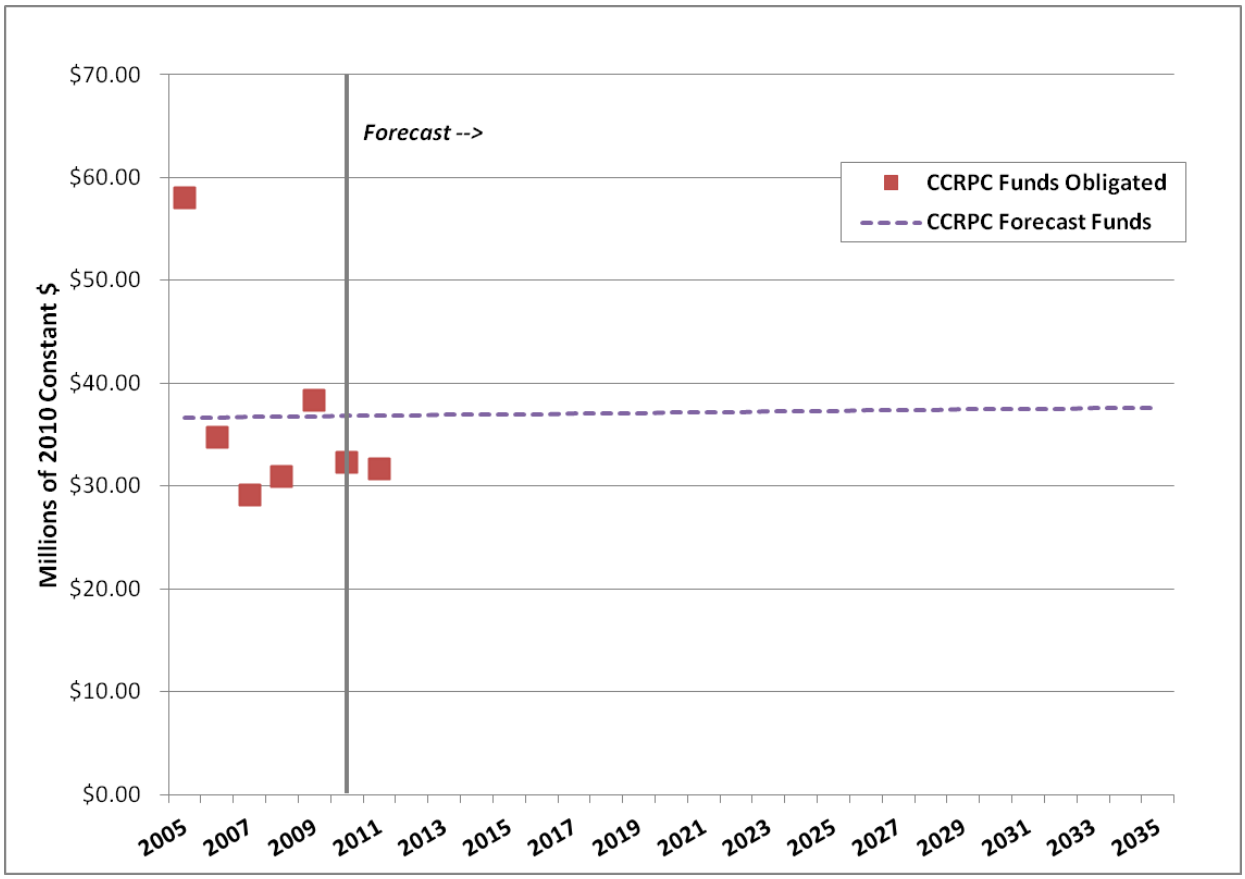


FIGURE 73 - CCRPC TRANSPORTATION FUNDING FORCAST (CONSTANT 2010 $)

	FY	2010	2015	2020	2025	2030	2035
Annual	Constant 2010 $	35.8	36.0	36.1	36.3	36.5	36.6
	Year of Expenditure $	35.8	42.1	49.5	58.2	68.5	80.5
Cumulative	Constant 2010 $	35.8	215.4	395.7	576.9	758.9	941.6
	Year of Expenditure $	35.8	233.4	465.7	738.8	1,060.0	1,437.6

FIGURE 74 - CCRPC PROJECTED ANNUAL AND CUMULATIVE FUNDING IN 5-YEAR INCREMENTS (MILLIONS OF $). NOTE THAT THE YEAR OF EXPENDITURE FIGURES ARE BASED ON 3.2% ANNUAL INFLATION RATE

Potential Adjustments to Projected Funding

There are a number of factors that could change the projected level of funding detailed in Figure 74 above. Sources of potential changes in funds available include:

Alternative/Innovative Funding Sources

CCRPC has explored a variety of alternative transportation funding sources over the past

several years. A special Blue Ribbon Commission on Innovative Finance (BRC) was established by the CCMPO Board in 2007 to provide recommendations regarding viable innovative finance strategies to advance the region's transportation needs. This effort was tied to the expectation that future transportation funding available from existing sources may be increasingly inadequate to serve the multitude of needs. The CCMPO Board endorsed several funding recommendations from the BRC in November 2009, including continuing to work collaboratively on creative financing of transportation projects, adding factors to the VTrans project prioritization process reflecting innovative finance participation in projects, and monitoring federal highway transportation reauthorization issues related to innovative finance.

Although CCRPC continues exploring the innovative finance recommendations, the potential revenue generation of new funding sources was deemed too uncertain to include in this estimation of future funds available.

Bonding

The Vermont Legislature passed Act 50 in 2009 covering the transportation capital program for the state[11]. Included in the act was a provision allowing a limited amount of transportation bonding for project costs. Act 50 also included a new 2% sales tax on the pre-tax retail price of gasoline and diesel for motor vehicles at the wholesale level. This was estimated to generate approximately $22 million in additional statewide revenue in FY2010.

Based on Chittenden County's historic share of statewide transportation funds it seems reasonable the region might receive an additional $5 million per year in constant 2010 dollars if the legislature maintains this source of revenue in the future. Figure 75 below summarizes Chittenden County funding with this additional $5 million annual contribution.

	FY	2010	2015	2020	2025	2030	2035
Annual	Constant 2010 $	40.8	41.0	41.1	41.3	41.5	41.6
	Year of Expenditure $	40.8	48.0	56.4	66.2	77.8	91.5
Cumulative	Constant 2010 $	40.8	245.4	450.7	656.9	863.9	1,071.6
	Year of Expenditure $	40.8	265.9	530.4	841.2	1,206.5	1,635.8

FIGURE 75 – CCRPC PROJETED ANNUAL AND CUMULATIVE FUNDING WITH BONDING (MILLIONS OF

The remainder of the calculations in this financial plan use funding amounts shown in Figure 74 above as a more conservative estimate of available resources. The values in Figure 75 are shown for discussion purposes only.

Potential Decreases in Funding

The depletion of the national transportation trust fund has generated a great deal of uncertainty over future availability of federal funds for projects nationwide. Congress is debating the reauthorization of federal transportation programs with action expected in the coming months. There is a potential for this reauthorization or future actions to alter federal support for

[11] The full text of 2009 Act 50 is available here: http://www.leg.state.vt.us/docs/2010/Acts/ACT050.pdf

transportation projects available to Vermont.

Reductions in federal earmark funds sponsored by Vermont's Congressional delegation may also reduce the availability of federal transportation funds in Vermont. As shown in Figure 1 above, the state received about 30% of the total funds available as earmarks from FY2005-2009 (excluding the ARRA funds in FY2009). Congress and the Executive Branch have implemented tighter control over the earmark process, but it is uncertain how this may impact long term funding as the federal reauthorization advances.

In general, the above factors related to funding adjustments are too uncertain or short lived to significantly impact the quantitative estimates of future transportation funding for Chittenden County. The qualitative discussion is intended to highlight some of the uncertainties which may affect CCRPC's ability to fund transportation projects in the future.

Overall Funding Constraint Conclusion

Funding for CCRPC transportation projects is presently dependent on federal funding, which is matched on an 80% federal / 20% non-federal basis at the state and local levels. Historically, CCRPC has accounted for 17.1% of the annual funds available statewide. The statewide funding trend is slightly increasing in 2010 constant dollars. In Chittenden County this results in a $32,000 constant dollar increase annually to $36.6 million in 2035. Total funding available is estimated to be $941.6 million (2010 constant $), however budget decisions in Washington DC could well lower future anticipated funding levels. Additional funding sources, especially for transit operating funds will be critical for the preservation and expansion of transit services in the region.

FINANCIAL PLAN PART 2: SYSTEM PRESERVATION ELEMENT

The system preservation element is a fundamental component of the MTP financial plan. As directed by federal regulations, the estimate of funds available to implement new plan initiatives is the total constraint amount as detailed in Part 1 minus the funds necessary to preserve the existing investment in transportation infrastructure to an acceptable standard of service. Defining the acceptable standard and the appropriate programs to restore underperforming facilities and services is the purpose of this element of the financial plan.

The total annual expenditures required for system preservation consists of the sum of those expenditures required for the pavement, bridge, and public transportation management. The transit system calculations include two possible approaches: maintaining only the existing system and level of service, or bringing this system up to the standard recognized in the Transit Development Plan (TDP). The total annualized costs for system preservation are shown in Figure 76 below.

System	Existing System	TDP Transit
Pavement Management	13.5	13.5
Bridge Management	6.8	6.8
Public Transportation Management	3.6	7.2
TOTAL	**23.9**	**27.6**

FIGURE 76 – ANNUALIZED BUDGET FOR ALL CCRPC SYSTEM PRESERVATION (MILLIONS OF $)

Note: these calculations are discussed in Appendix C of this document

Depending on whether the plan assumes the projects in CCTA's Transit Development Plan (TDP) are completed, base level maintenance expenditures, for roads, bridges and public transportation, should be between roughly $24 million and $28 million (2010 $) annually to maintain the existing system (refer to totals in Figure 76).

Preservation funding comes from a variety of sources depending on the type of facility. Interstate highways and bridges receive federal funds through special programs, state highways receive funding through both federal and state programs, and local highways and bridges on the federal aid system receive maintenance funding through local, state, and federal programs. Transit purchases of new and replacement rolling stock are often supported with federal funds through the Federal Transit Administration (FTA) and FHWA Congestion Mitigation & Air Quality (CMAQ) funds and earmark projects in past years. Municipal contributions and farebox revenues are also important sources of ongoing transit preservation costs. Since the financial forecasts for the MTP are examining long term funding through federal programs, it is reasonable to assume that not all of the preservation funding needs identified in Figure 76 will require federal assistance.

A review of federally funded system preservation projects included in CCRPC's TIP obligations over the past six years is shown in Figure 77. The chart includes preservation funding for highways and bridges as well as funding for all of the other types of projects in the TIP. Preservation funds ranged from $17-35 million (2010 $), with a mean of $23.2 million per year[12].

[12] The median preservation spending was slightly lower at $21.9 million.

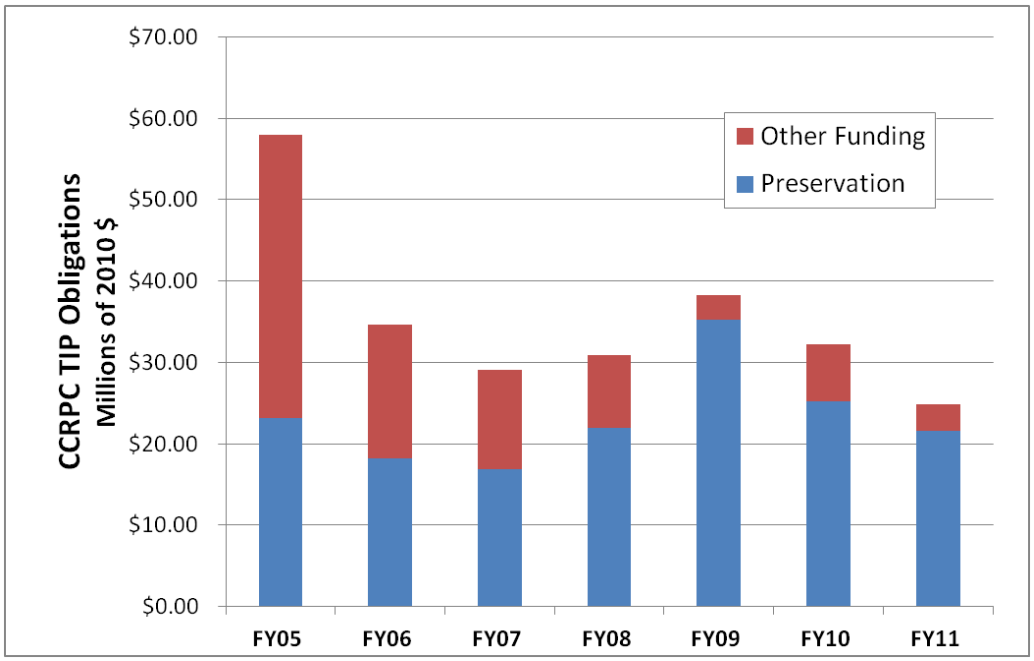


FIGURE 77 - CCRPC TIP FUNDING OBLIGATION FOR PRESERVATION AND OTHER TYPES OF PROJECTS (IN 2010 $)

The final calculation in Part 2 of the financial plan is determining funds available for new projects, after accounting for system preservation. This subtracts the estimated $23.2 million in annual preservation costs from the funds available to Chittenden County in Figure 74. The total funding available for new projects is shown in 5 year increments in Figure 78 below. The forecast funding resources for planned improvements in the MTP is estimated at $339.2 million in 2010 constant $.

	FY	2010	2015	2020	2025	2030	2035
Annual	Constant 2010 $	12.6	12.8	13.0	13.1	13.3	13.4
	Year of Expenditure $	12.6	15.0	17.8	21.1	24.9	29.6
Cumulative	Constant 2010 $	12.6	76.4	140.9	206.2	272.3	339.2
	Year of Expenditure $	12.6	82.8	165.8	264.3	381.0	519.2

FIGURE 78 - ANNUAL AND CUMULATIVE FUNDING AVAILABLE FOR PLANNED IMPROVEMENTS ($ MILLIONS)

Notes: Total funding available based on Figure 4-20. Inflation based on 3.2% annual and system preservation requirements are estimated at $23.2 million annually in 2010$.

CONCLUSION

This financial plan concludes Chittenden County had $12.6 million in FY2010 for new transportation investments above system preservation costs. This is calculated by the total of expected funds available, minus maintenance funding. This level of funding is expected to remain fairly stable in terms of buying power to 2035. By the plan horizon year in 2035 CCRPC expects to have approximately $339 million (2010 $) in cumulative funding available for new projects. When factoring inflation into the calculation of the cumulative funding available, the total amount of funds increases to $519 million in year of expenditure dollars.

There is one more factor to take into account before finalizing the level of funds available for new projects. Maintenance and preservation needs have been well documented in this chapter but the CCRPC has other funds committed to projects not accounted for here, namely those non-preservation projects identified in our Transportation Improvement Program (TIP) and a set-aside for CIRC alternative projects now that that project will not be implemented as originally planned. The table below summarizes all anticipated revenues and costs out to 2035.

Future Estimates	***Millions (2010$)***
Total Funding for Transportation System	$1,177
Maintenance & Preservation Costs of the Transportation System	$754
Cost of 2012 Committed Transportation Projects (TIP and CIRC Alternatives)	$113
Total Available New Funding (to address new transportation needs excluding TIP & CIRC Alternative projects)	$310

Cost of anticipated new transportation project needs (MTP Project List)	$849
New transportation project funding deficit (new transportation project need minus total funding available for new projects)	**-$540**

FIGURE 79 - ESTIMATED FUNDING FOR CHITTENDEN COUNTY: 2010 - 2035

Maintaining the existing transportation system is a critically important task and it has been estimated that $754 million will be required to accomplish this – nearly two thirds of the total (see the pie chart below – Figure 81. The plan also identifies $113 million for already committed projects listed in the current Transportation Improvement Program (TIP) and projects to be identified in the CIRC Alternatives planning process. The remaining funding available for new transportation needs is $310 million.

Program Category	*(2010$) in Millions*	*% of Program*
Estimate of total future funds	$1,177.0	100.0%
Cost to maintain/preserve the existing transportation system	$754.0	64.0%
Committed TIP projects and CIRC Alternatives	$113.3	9.6%
Roadway / Safety & Traffic Operations	$146.5	12.5%
Transit	$94.4	8.0%
Bike & Pedestrian/ Enhancement	$38.6	3.3%
Rail	$26.8	2.3%
Park & Ride/ Intermodal	$3.4	0.3%

FIGURE 80 - ESTIMATED TRANSPORTATION FUNDING FOR CHITTENDEN COUNTY BY CATEGORY, 2010 - 2035

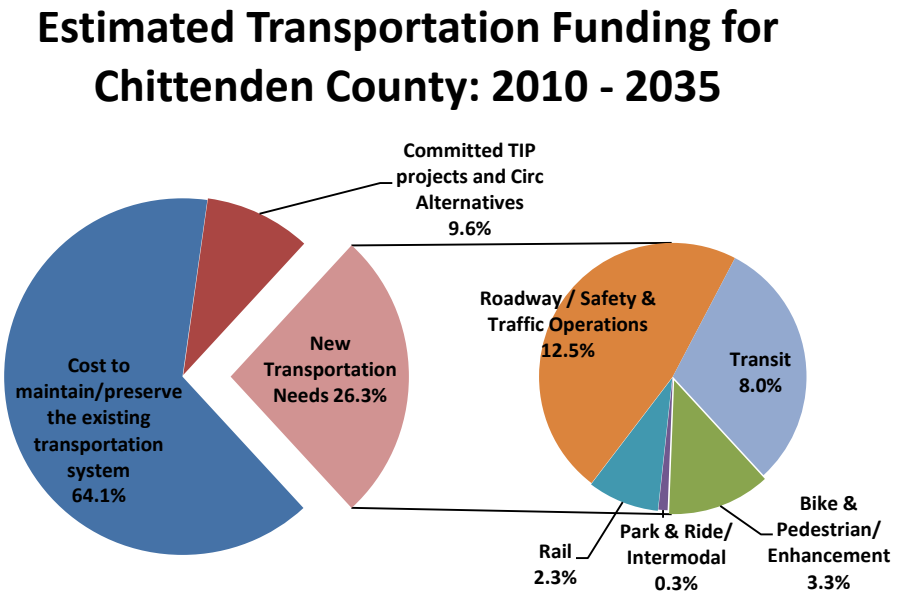


FIGURE 81 - ESTIMATED TRANSPORTATION FUNDING BY CATEGORY FOR CHITTENDEN COUNTY: 2010 - 2035

Figure 82 below details how funding has been allocated over the past 13 years in Chittenden County by percent share to various project types. The sustainability evaluation criteria developed under the draft ECOS plan strongly suggest the desire for increased multimodal transportation options in the future. To move in that direction, this Plan proposes that the MTP reflect a gradual increase in funding for other transportation modes of five percent per five year period of the plan. Table 8 identifies the final ECOS target shares at the end of the 25 year period. All funding categories except roadway have been increased by five percent per five year period, and roadway has been reduced by the corresponding amount. With this funding allocation strategy 64 percent of the overall funding remains committed to maintaining the existing transportation system which includes road, bridge and transit system maintenance. Committed TIP and CIRC Alternatives projects are allocated 9.6 percent of anticipated revenues, new Roadway & Traffic Operations combine for an investment of 12.5 percent. Transit system investment consumes 8 percent of the future total with 5.9 percent allocated to Bike/Pedestrian, rail, and park & ride facilities. The third column in Table 8 applies the ECOS target funding shares to the estimate of funding available for new transportation needs and develops target funding levels.

Program Category	FY99-11 TIP Obligation Percentages	ECOS Target Funding Levels *	ECOS Target Funding Shares Applied to Estimated Funding Available for New Projects	*For Comparison* FY99-11 VTrans Capital Program Funding Percentages**
Bike & Pedestrian/ Enhancement	9.8%	12.5%	$38,590,187	9.7%
Park & Ride/ Intermodal	0.9%	1.1%	$3,425,082	3.9%
Rail	6.8%	8.7%	$26,805,678	11.8%
Roadway	55.5%	43.2%	$146,537,117	54.2%
Safety & Traffic Operations	3.2%	4.1%		7.4%
Transit	23.9%	30.5%	$94,391,936	13.0%
Totals	100%	100%	$309,750,000	100.0%

Notes:

* Percent shares by funding category have been increased by 5% every 5 years for Bike & Ped/ Enhancement, Park & Ride/ Intermodal, Rail, Safety & Traffic Operation and Transit. Roadway has been reduced by the corresponding amount.

** Provided for comparison -- Capital Program percentages reflect the percentage of federal funds for the listed categories. This is only a portion of the overall Capital Program.

FIGURE 82 - CHITTENDEN TRANSPORTATION FUNDING HISTORIC OBLIGATIONS & FUTURE RECOMMENDATIONS

As previously mentioned in the discussion of potential changes in funding, CCRPC's funding may be affected by a number of different factors at the local, state, and federal levels. The 2035 MTP financial forecast is based on recent trends continuing, a method recommended in FHWA guidance. However, the unpredictability of future transportation funding suggests that being aware of other funding scenarios is good preparation should unanticipated events occur which may affect CCRPC funding resources. For instance, MAP-21 calls for the application of yet-to-be-determined transportation performance measures. Once these are established and tracked, we may see new investment focus areas that differ from the strategic path we call for here. However, since the long range transportation plan is required to be updated every 5 years so these forecasts will be revisited on a regular basis to ensure the assumptions and calculations include changes to funding streams as they occur.

4.3.5 IMPLEMENTING CORRIDOR IMPROVEMENTS

This section presents the projects, programs, and strategies to implement MTP recommendations by corridor—the most logical and easily understood method of describing and understanding the functional characteristics and impacts of Chittenden County's transportation system.

The broad priorities established here include:

- System maintenance, defined as keeping the existing transportation infrastructure of roads, bridges, transit, bicycle and pedestrian facilities, and inter-modal facilities in acceptable operational condition. Future acceptable conditions will be determined by using accepted standards such as VTrans' asset management system or municipal infrastructure management systems.
- Encouraging higher density and mixed use land development, as proposed by the CCRPC's Regional Plan, in order to improve the efficiency of transportation investments.
- Completing all projects identified in the CCRPC's FY2013-2016 Transportation Improvement Program (TIP).
- Expanding the region's transit system to outlying suburban and rural areas and adjoining regions in accordance with CCTA's Transit Development Plan.
- Expanding the bicycle and pedestrian networks with on- and off-road facilities and more sidewalks.
- Employing more Transportation Demand Management (TDM) strategies through employer based trip reduction programs and an expanded network of park and ride facilities.
- Implementing Transportation System Management (TSM) strategies, including Intelligent Transportation Systems (ITS) investments, intersection improvements and access management along major arterials, to improve the efficiency of the existing infrastructure.

- Addressing corridor congestion problems along key arterials with capacity enhancements as needed.

Corridor-oriented planning considers the transportation connections between major settlement areas of Chittenden County. These corridors represent easily recognizable and dominant directional movements of persons and goods, while also accounting for localized travel markets. The corridor delineations identified below are based on the analysis of existing and emerging travel and land use patterns. They are tied to the various trip origins and destinations both within and outside of the region. The defining feature of each corridor is one or more major or minor arterial roadway.

Building the MTP around these corridors facilitates an inter-municipal/regional understanding of transportation conditions and priorities and can help decision-makers as they grapple with the diverse needs of a complex region. Corridor-oriented planning also strengthens the CCRPC's ability to look across municipal boundaries and beyond isolated single-mode solutions to better address transportation problems. As we address transportation problems with new programs and projects identified with the following corridors, it is important to repeat and stress that ***maintenance of the existing infrastructure is critically important and should remain the County's top priority*.**

Key corridors (see **Map 11** on the next page):

1. **Regional Core:** The transportation network in the Greater Burlington area;
2. **Northern Corridor:** US 2/7 and I-89 from Winooski to the County line, VT 127 through Colchester, and the rail line north from Essex Junction;
3. **Northeast Corridor:** Essex Junction to the County line along VT 128 and VT 15;
4. **Route 15 West Corridor:** Winooski to Essex Junction including Winooski Branch rail line;
5. **Southeastern Corridor:** Richmond to Buels Gore, including Huntington Road and Main Road;
6. **Route 116 Corridor:** VT 116, South Burlington to the County line;
7. **Eastern Corridor:** US 2, I-89, VT 117, and the Burlington and Essex Junction rail line east to the County line;
8. **Southern Corridor:** US 7 and rail line from Burlington to County line;
9. **Cross County Corridor:** VT 2A and VT 289 from St. George/Williston to Colchester.

The specific project priorities identified in the following corridors were determined through an evaluation process utilizing prioritization criteria developed in the ECOS project.

MTP CORRIDORS

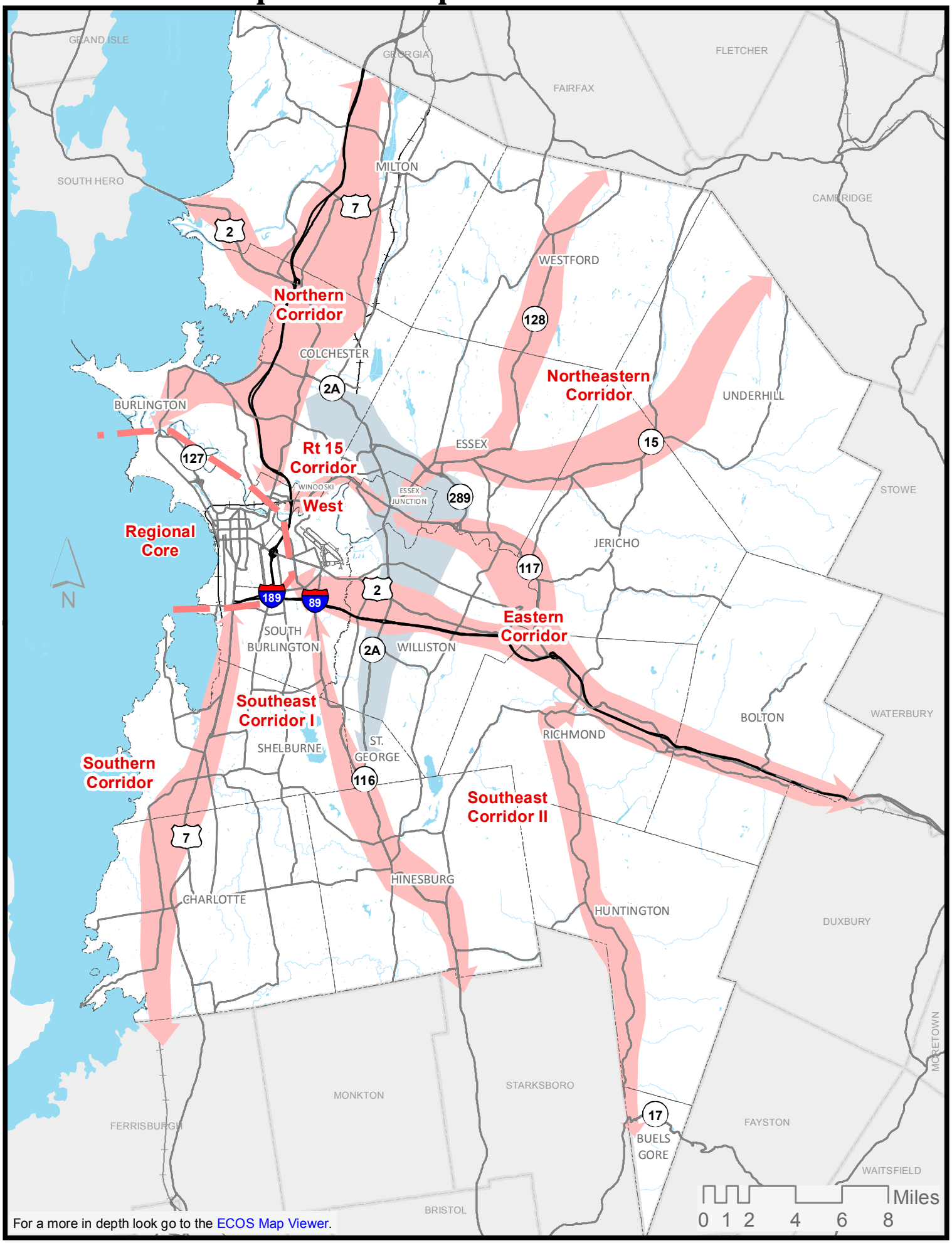
Regional Core

The Regional Core is defined here essentially as the City of Burlington and adjoining areas of Winooski and South Burlington. This area is both origin and destination for much of the region's travel, and the

evolution of the road network servicing it clearly demonstrates its relative importance in the state's economic and cultural history.

Multimodal options in the Regional Core are the best in the state. Part of the reason modes other than SOVs are attractive is due to the dense development and resulting volume of vehicles producing congested conditions. This is the region's primary activity center and congestion is a condition of its vibrancy and vitality. The walk/bike/transit modes will remain attractive as alternatives here as long as the vehicle speeds remain relatively low.

Map 11 - Transportation Corridors



For a more in depth look go to the ECOS Map Viewer.

Because the Regional Core has a significant residential component, yet provides a conduit for high traffic volumes and possesses a well-connected grid street system, knowledgeable drivers can use neighborhood streets to avoid congested arterials. To minimize this practice, traffic-calming techniques should be used in those cut-through neighborhoods to maintain safety, enhance street life, encourage walking and bicycling, and direct the cut-through traffic back onto the arterials.

Parking here is perceived as constrained despite inventories to the contrary. However, parking costs are higher than elsewhere in the region, where undeveloped land is considerably less expensive. Locating, designing, and funding parking facilities poses a dilemma and businesses can be attracted by less costly and more welcoming expansion opportunities outside the Regional Core. Striking a parking balance between many competing interests is a vexing challenge here.

A well-developed sidewalk network already exists in the Regional Core although its age shows and significant reinvestment will be required to maintain its integrity and meet federal accessibility requirements. Bicycling is well provided for in the shared use path network around this area; however, many of these trips start and end in places served only by city streets. A well signed and designed on-street network, especially focusing on north/south travel, is needed to provide citywide, safe, on-road bicycle travel.

Public transit coverage is superior to anywhere else in the state. However, new services and facilities as outlined in CCTA's TDP, with adequate funding, can further improve this. Higher frequency levels, more hours of service during the day, more weekend service, and a well-located, high quality transit hub downtown will help the system grow and appeal to a wider traveling public.

Go!ChittendenCounty and TDM programs at the Hill Institutions provided by CATMA, have helped promote transportation alternatives, reduce parking pressures, and have better managed traffic flow in and around these facilities. Expanding these programs to more City employers could help relieve congestion and parking demand there.

The state's western side railroad, VT Railway, operates a line here and has its headquarters and railyard on the Burlington waterfront. Another line, now owned by Genesee & Wyoming, links the waterfront to their mainline in Essex Junction. Bringing Amtrak service into Burlington, from Rutland, on the VT Railway line is a state goal.

Corridor Strategies/Projects

Because the character of the Regional Core significantly differs from the corridors that feed and sustain its vibrancy, the types of transportation strategies and projects recommended below differ from those recommended in the corridors. The table below identifies the regional project and program priorities for this area. NOTE: Transportation Improvement Program (TIP) projects are listed first. These are the region's near term (next four years) project priorities. The listed sequence beneath the TIP projects does not denote priority rank.

Municipality	Project	Type
Burlington	Champlain Parkway -- **TIP Project**	New Facility or Major Roadway Upgrades

Burlington	Shelburne Street Roundabout -- **TIP Project**	Roadway System Management
South Burlington	US2/Exit 14 Improvements (Staples Lane) -- **TIP Project**	New Facility or Major Roadway Upgrades
Burlington	Bike Share Program	Bike & Pedestrian
Burlington	Burlington Bike Path Rehabilitation	Bike & Pedestrian
Burlington	Colchester Avenue/East Avenue Intersection Improvements	Roadway System Management
Burlington	Colchester Avenue/Prospect Street Intersection Improvements	Roadway System Management
Burlington	Colchester Avenue/Riverside Avenue Intersection Improvements	Roadway System Management
Burlington	Colchester Avenue Bicycle & Pedestrian Improvements - Project Street to East Avenue	Bike & Pedestrian
Burlington	Colchester Ave Mid-block Pedestrian Crossing - Trinity Campus to Fletcher Allen Health Care	Bike & Pedestrian
Burlington	Depot Street Improvements for Waterfront Access	Roadway System Management
Burlington	North Avenue Improvements	New Facility or Major Roadway Upgrades
Burlington	Northern Connector/VT 127 Park & Ride	Park & Ride
Burlington	US2/East Avenue - No southbound East Avenue left turns at jughandle	Roadway System Management
Burlington	Waterfront South Roadway and Rail Improvements per Railyard Enterprise project	New Facility or Major Roadway Upgrades
Burlington	Winooski Avenue Complete Street and Bicycle Street	New Facility or Major Roadway Upgrades
Burlington	CCTA Transit Center in downtown Burlington	Transit
South Burlington	Exit 14-US2 Improvements - additional lane between southbound on-ramp and southbound off ramp	Roadway System Management
Winooski	Circulator Improvements	Roadway System Management

Winooski / Burlington	Winooski Main Street Bridge Bicycle and Pedestrian Improvements	Bike & Pedestrian

Northern Corridor

The Northern Corridor serves north/south travel needs connecting the Regional Core area (and points further east and south) to Colchester, Milton, and Franklin and Grand Isle counties.

North/south movement in this corridor is currently relatively efficient and non-congested. East/west travel through Colchester, however, is constrained and will likely remain so pending solutions to be determined though the CIRC Alternatives process. Future congestion problems will likely become more apparent along Heineberg Drive and on US 7 through the Exit 16 area in Colchester; further north on US 2 out to the Islands; and on stretches of US 7 north of Interstate Exit 17 through the southern approach to the Milton Town Core area.

Bicycle and pedestrian accommodations are improving, especially within the village areas, although connecting travel between the more heavily settled areas by bicycle and on foot is encumbered by narrow road shoulders in some areas. By contrast, the road shoulders on US 2 from Chimney Corners to the Sandbar Causeway are exemplary examples of adequate width to accommodate cyclists and walkers.

Public transportation services here are limited. While Milton has become a CCTA member and has commuter service to the Regional Core, Colchester remains a non-member – the largest suburban community to do so. Colchester does enjoy some transit however, through the CCTA Essex Junction Route along VT 15 in the town's southeast corner and Link and Commuter stops at the park and ride near Chimney Corners. Public transportation services in this corridor should be developed according to CCTA's Transit Development Plan.

The Genesee & Wyoming Railroad line travels through this corridor and is used for both through freight and passenger trains. While there are currently no passenger stations located here, there are, however, freight rail sidings in Colchester and Milton.

Recommended Corridor Strategies/Projects

The following projects and strategies are recommended for this corridor. NOTE: The listed sequence does not denote priority rank.

Municipality	Project	Type
Colchester	VT2A/US7/Creek Road/Bay Road Intersection -- **TIP Project**	Roadway System Management
Colchester	Blakely Road/Laker Lane Intersection Improvements	Roadway System Management
Colchester	Exit 16 Improvements	New Facility or Major Roadway Upgrades

Colchester	US2/US7 at Blakely/Severance Road	Roadway System Management
Colchester	West Lakeshore Drive/Prim Road Intersection Improvements	Roadway System Management
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (Chimney Corners & US2/northbound ramps)	Roadway System Management
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (US2/Jasper Mine Road)	Roadway System Management
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements - Signal Alternative (US7/Brentwood Dr and US7 to Chimney Corners)	New Facility or Major Roadway Upgrades
Colchester	VT127 Intersection Improvements -- 5 intersections on the VT127 Corridor	Roadway System Management
Colchester	VT127 Roadway Improvements - East (**TIP Illustrative Project**)	New Facility or Major Roadway Upgrades
Colchester	VT127 Roadway Improvements – West	New Facility or Major Roadway Upgrades
Colchester	West Lakeshore Drive/Malletts Bay Avenue Intersection Improvements	Roadway System Management
Milton	US7/Centre Drive Intersection Improvements	Roadway System Management
Milton	US7/Main Street Intersection Improvements	Roadway System Management
Milton	US7/Middle Road/Railroad Street Safety Improvements	New Facility or Major Roadway Upgrades
Milton	US7/Rebecca Lander Drive/Barnum Street Intersection Improvements	Roadway System Management
Winooski	Main Street (US7) - West Allen Street to City Line Improvements	Roadway System Management

Northeastern Corridor

The Northeastern Corridor serves the municipalities of Essex, Westford, Jericho, and Underhill, providing a link to the employment and commercial centers of the greater Burlington area via VT 15 and VT 128. These roads also connect parts of Franklin and Lamoille counties to Chittenden County. Old

Stage Road in Essex and Westford, and River Road/Pleasant Valley Road in Underhill form parallel collectors channeling traffic through this corridor as well.

Travel into this corridor from the outlying towns and counties flows relatively well today. However, it is expected that in the out years of this plan's horizon (20-25 years), stretches of VT 15 through the Lang Farm/Essex Center areas will be significantly congested along with VT 15 from Jericho Village through Underhill Flats. In addition, the lower reaches of VT 128 from Essex Center will also be experiencing congested conditions.

Bicycle and pedestrian improvements are advancing in this corridor, especially in the designated growth areas of Essex Junction, Lang Farm/Essex Center, and Underhill Flats. Roadway improvements to accommodate bicyclists are needed and are planned for when the arterials are rehabilitated or reconstructed. Currently, much of the corridor features inadequate shoulder width for safe bicycling but should see steady incremental improvements over the coming years.

There is limited public transportation available in the more densely populated southwestern part of the corridor. In the near term, however, CCTA commuter service along VT RT 15 out to Jeffersonville, with select stops at new and/or improved park and ride facilities, is in the planning stages and service may be running in 2013. Additional transit improvements should follow CCTA's Transit Development Plan. Minor intersection/signal improvements along the VT 15 corridor from Five Corners in Essex Junction to Jericho Village are planned to improve traffic flow.

Corridor Strategies/Projects

The Plan identifies specific projects and strategies to meet existing and future needs. In this corridor these are identified below. NOTE: The listed sequence does not denote priority rank.

Municipality	Project	MTP Category
Jericho	VT15/Browns Trace Intersection -- **TIP Project**	Roadway System Management
Jericho	VT15 Footbridge -- **TIP Project**	Bike & Pedestrian
Transit	CCTA Cambridge Route -- **TIP Project**	Transit
Essex	VT15/Sand Hill Road Traffic Signal	Roadway System Management
Essex Junction	Crescent Connector Road - Phase I, VT2A to VT117 (*project also listed under Cross County Corridor and Eastern Corridor*)	New Facility or Major Roadway Upgrades
Essex Junction	Crescent Connector Road - Phase II, VT117 to VT15 (*project also listed under Cross County Corridor and Eastern Corridor*)	Roadway System Management
Transit	VT15 Commuter Park and Ride Lots	Park & Ride
Essex	Essex Center, VT15/VT289 Park & Ride	Park & Ride

Essex	VT15/Towers Road/VT128 Intersection Improvements	Roadway System Management

Route 15 West Corridor

Parts of the roadway network from the Northeastern, Northern, and Eastern corridors intersect in the Route 15 West Corridor, and feed into the Regional Core area. This results in significant traffic volumes substantially put on one arterial roadway, VT 15 from Essex Junction to Winooski. One of the feeder roads, Susie Wilson Road in Essex Town, carries the majority of traffic to and from the Northern and Northeastern Corridors.

In contrast to the other major corridors discussed, significant traffic volumes travel on VT 15 west with no parallel alternative route available. Not surprisingly, the capacity of the little used Genesee & Wyoming freight rail line running by its side has been examined closely for its potential to alleviate some of VT 15's traffic demands. Congestion problems have also spurred interest in Intelligent Transportation Systems (ITS) investments, such as improved signal coordination and enhanced real time traveler information, to improve traffic flow.

CCTA's most heavily used service, the Essex Junction Route, follows VT 15. Efforts to improve that service include ITS investments to give buses priority at traffic signals. The Essex Junction route already has 15-minute peak hour headways, but additional service improvements are included in CCTA's Transit Development Plan.

The pedestrian environment is relatively good in this corridor with extensive sidewalk networks in Essex Junction and Winooski. Along VT 15, there is a sidewalk (along the north side primarily but both sides in Essex Junction) that provides safe pedestrian travel all along the corridor. However, the need for a parallel bicycle facility is clear, as on-road bicycle travel poses dangers. A recently completed scoping report should lead to a shared use path from Susie Wilson Road to the Winooski City line.

A corridor carrying such high traffic volumes—over 25,000 vehicles per day with no alternative routes—needs to be managed carefully to keep the traffic moving efficiently, including signal coordination, access management, and multimodal strategies. As development increases, access demands to VT 15 will increase as well. Effective access management, in combination with more and safer walking, biking and transit, will be crucial to keep people and goods moving safely and efficiently.

Corridor Strategies/Projects

The list that follows identifies each of the projects or strategies that are part of the 2035 MTP. These were analyzed and shown to be effective in addressing future transportation problem areas. NOTE: The listed sequence does not denote priority rank.

Municipality	Project	Type
Colchester / Essex / Essex Junction	VT 15 Multi-use Path	Bike & Pedestrian

Essex Junction	Pearl Street/Post Office Square/Five Corners Improvements	Roadway System Management
Colchester	VT15/Lime Kiln Road Intersection Improvements	Roadway System Management
Essex	VT15/Susie Wilson Road Intersection Improvements	Roadway System Management
Essex Junction	VT15/West Street Intersection Improvements	Roadway System Management

Southeastern Corridor

The Southeastern Corridor serves the rural southern part of Richmond and the Huntington River Valley. Though the least-traveled of the corridors examined, the Southwestern Corridor is one of the most scenic. Most morning peak-hour traffic is headed north, then west to the greater Burlington area for jobs, shopping and other activities. There is some tourist traffic using the corridor to get to the recreational areas to the east in the Mad River Valley, accessing Camels Hump hiking trails or enjoying the fall foliage. There is also a notable use of the corridor by heavy log trucks bringing timber from the north to processing facilities to the south.

Traffic volumes are very low in this corridor by regional standards and congestion is only an issue in the morning peak hour at the Bridge Street/US 2 intersection in Richmond. No congestion problems are foreseen in this corridor over the life of this Plan. However, US 2, which this corridor feeds, is expected to experience serious capacity constraints within the timeframe of this Plan. Heavy log truck use may lead to surface and subsurface road deterioration sooner requiring more frequent road maintenance.

Pedestrian opportunities will remain limited and increasing traffic volumes will likely lessen walkers' safety. Similarly, with bicyclists the potential for more vehicle conflicts exists with increasing traffic thereby reducing safety margins. The Huntington Road/Main Road is identified in this Plan as an on-road bicycle facility and therefore the Towns will be expected to find ways to accommodate bicyclists when major road rehabilitation or reconstruction work takes place.

No regular transit services currently exist, although limited peak hour commuter feeder services or demand response service that focuses on the elderly and disabled populations may expand to allow service to the general population in accordance with CCTA's Transit Development Plan.

Corridor Strategies/Projects

This corridor's rural character, light traffic levels, and peripheral location, not surprisingly leads to no regional level transportation recommendations.

Vermont Route 116 Corridor

This corridor links the Town of Hinesburg and rural northeastern Addison County towns to Chittenden County's employment and commercial centers. Northbound traffic during the weekday morning peak hour and the reverse in the evening are the dominant traffic movements in this corridor.

Existing congestion levels throughout the corridor remain relatively low except during commuter peak hours through Hinesburg Village and towards the northern terminus in South Burlington. In the future, however, nearly the entire length of VT 116 from Hinesburg Village to the Interstate, as well as Silver Street, may be operating over capacity in the afternoon peak hour.

Along VT 116 shoulder widths are inconsistent and in some areas too narrow for safe bicycle and pedestrian travel. Over the long term, improvements are expected to accommodate bicyclists on Hinesburg's stretches of VT 116 and Silver Street, and improvements are also expected to the sidewalk network within and adjacent to Hinesburg Village. While on-road bicycle facilities are currently not planned north of the intersection of VT 116 and VT 2A, bicycle and pedestrian travel within South Burlington should be improved as their long term commitment to provide these facilities through their development permitting process continues.

A peak hour public transportation service was recently established through Hinesburg Village connecting the regional core to the north and Bristol and Middlebury in Addison County to the south – CCTA's 116 Commuter. Additional development of transit options should be considered in accordance with CCTA's Transit Development Plan.

Corridor Strategies/Projects

In order to address future anticipated problems and needs in this corridor, the following are recommended (NOTE: The listed sequence does not denote priority rank.)

Municipality	Project	Type
Hinesburg	VT116/CVU Road Improvements -- **TIP Project**	Roadway System Management
Hinesburg	Hinesburg Village Park & Ride	Park & Ride
St. George	VT116/VT2A Intersection Park & Ride	Park & Ride

Eastern Corridor

The Eastern Corridor serves east/west travel needs connecting urban and suburban Chittenden County and points further east and south to the Regional Core area. The primary road facilities are Interstate 89, US 2, and VT 117, which branches off US 2 in Richmond and serves parts of Jericho and Essex before terminating in Essex Junction.

Traffic flow along US 2 is encumbered at several congested intersections including Taft Corners, Airport Drive/Kennedy Drive and especially Dorset Street. In addition, segments of this road in Richmond and Williston are projected to operate over capacity by 2035. VT 117 through parts of Jericho and Essex are also expected to see operational deficiencies by 2035.

Bicycle/Pedestrian travel is relatively low volume in the eastern part of the corridor although adequate shoulder widths on US 2 through Bolton make for relatively safe conditions. Moving closer to Burlington, the level of bicycle and pedestrian travel increases, as well as the presence of off-road shared-use paths and sidewalks. US 2 lane widths are adequate through Williston, and increasingly in South Burlington, despite the higher traffic volumes and more numerous curb cuts that can make for challenging on-road bicycling. Along VT 117 bicyclists and walkers face a less than ideal environment

although with relatively lower traffic volumes and fewer curb cuts than US 2, trips are less daunting. Once into Essex Junction the environment changes markedly for the better with on-road designated bicycle lanes, slower vehicular speeds, and sidewalks.

Transit services have expanded into Williston over the past several years and an inter-regional commuter bus from Burlington to Montpelier, the Link Express runs with a stop at the I-89 Exit 11 Richmond Park and Ride. The frequency of transit service diminishes the further east one travels in this corridor. Over time, growth and development in Williston will likely lead to demands for increases in transit service and should be implemented as needed in accordance with CCTA's Transit Development Plan. In order to improve the multimodal travel options here, more investments in park and ride facilities are planned – an expansion at Exit 11 and a new facility at Exit 12.

The Genesee & Wyoming rail line traverses the corridor moving freight and the Amtrak Vermonter to and from points north and south.

Corridor Strategies/Projects

In order to meet future transportation needs, while managing increased congestion, the following multimodal approach is recommended. NOTE: The listed sequence does not denote priority rank.

Municipality	Project	Type
Richmond	Richmond Park and Ride -- **TIP Project**	Park & Ride
Richmond	US2/VT117/I-89 Exit 11 -- **TIP Project**	Roadway System Management
South Burlington	Market Street -- **TIP Project**	New Facility or Major Roadway Upgrades
Williston	US2/Industrial Avenue Intersection -- **TIP Project**	Roadway System Management
Williston	Park and Ride South of I-89 -- **TIP Project**	Park & Ride
Essex Junction	Crescent Connector Road - Phase I, VT2A to VT117 (*project also listed under Cross County Corridor and Northeastern Corridor*)	New Facility or Major Roadway Upgrades
Essex Junction	Crescent Connector Road - Phase II, VT117 to VT15 (*project also listed under Cross County Corridor and Northeastern Corridor*)	Roadway System Management
Williston	Exit 12 Improvements -- (*project also listed under Cross County Corridor*)	New Facility or Major Roadway Upgrades
Williston	US7/Trader Lane Signal	Roadway System Management

South Burlington	US2 - Dorset Street to Hinesburg Road Improvements	New Facility or Major Roadway Upgrades
South Burlington	US2/City Center Drive (at Central School) Traffic Signal	Roadway System Management
South Burlington	US2/Dorset Street Intersection Capacity Increase	Roadway System Management
South Burlington	US2/Gregory Drive Turning Lanes and Traffic Signal	Roadway System Management
South Burlington	US2/Kennedy Drive/Airport Road Intersection Improvements	Roadway System Management
South Burlington	US2/Shunpike Road Traffic Signal	Roadway System Management
South Burlington	US2/White Street/Patchen Road Intersection Improvements	Roadway System Management
South Burlington	US2/Windjammer Intersection Improvements - add turning lanes	Roadway System Management
South Burlington / Williston	Muddy Brook Multi-Use Path	Bike & Pedestrian
Williston	Taft Corners Park & Ride (*project also listed under Cross County corridor*)	Park & Ride
Williston	US2 - Industrial Avenue to Commerce Street minor widening (bike lanes, sidewalks)	New Facility or Major Roadway Upgrades
Williston	US2 - Talcott Road to Old Stage Road - shoulder widening for cycling/capacity	New Facility or Major Roadway Upgrades
Williston	US2/Brownell Road - add northbound right-turn lane	Roadway System Management
Williston	US2/North Williston Road/Oak Hill Road Intersection Improvements	Roadway System Management
Williston	US2/VT2A Intersection Improvements - traffic signal additional lanes (*project also listed under Cross County Corridor*)	Roadway System Management

Southern Corridor

The heart of the Southern Corridor is US 7, the main north/south arterial on the western side of the state. A 3.5 mile segment in South Burlington and Shelburne was recently reconstructed allowing more

capacity and making multimodal enhancements. To a lesser extent, the parallel local roads of Spear and Dorset Streets also provide a north/south route along the western edge of Chittenden County. While US 7 serves the majority of the traffic, and operates at times under congested conditions, the two parallel roads increasingly serve as alternate routes, sometimes to the dismay of local officials and neighborhood residents. As the primary north/south route in western Vermont, US 7 also has a considerable amount of truck traffic.

Parallel to US 7 is the Vermont Railway's line whose primary role is to provide freight services to its Burlington yard and move some cargo to the Genesee & Wyoming's line via the Winooski Branch to Essex Junction. Future Amtrak service to Burlington connecting to points south is anticipated.

The northern end of Shelburne Road (US 7) features some of the region's highest traffic volumes and is prone to congestion in the morning and afternoon peak hours. Truck freight traffic adds to the congestion in the US 7 corridor and finding ways to move some of that freight to the parallel rail line could help both congestion levels and wear and tear on the roadway.

The improvements to Shelburne Road have significantly helped bicycle and pedestrian travel along the improved sections. However, north of this area bicycling will remain difficult and the sidewalk system will continue to require improvements to enhance walkers' safety. Any improvements to Spear and Dorset streets should include the needs of bicyclists and walkers in order to encourage the use of these modes. The CCTA Shelburne Road bus route and Middlebury Link Express are the primary public transportation services in the corridor and transit improvements in this area should be in accordance with CCTA's Transit Development Plan.

While the Southern Corridor moves north/south traffic relatively efficiently, it has long been recognized that east/west movement across the corridor is quite limited and inefficiently connected. As development has increased toward Williston, the need for better east/west connections has become evident. The City of South Burlington has recognized this need and proposed new roadways to address the problem. These connections are planned to coincide with residential developments in the City's Southeast Quadrant as this area grows.

Corridor Strategies/Projects

The following will address the longer term issues over the wider corridor. NOTE: The listed sequence does not denote priority rank.

Municipality	Project	Type
Charlotte	US7 Reconstruction -- **TIP Project**	Roadway System Management
Regional Rail	Middlebury to Burlington Rail Upgrades -- Rail upgrades to support Amtrak service.	Rail
Shelburne	Town Center Park and Ride	Park & Ride
Shelburne	US7/Harbor Road Improvements	Roadway System Management
South Burlington	Implement Adaptive Signal Control Upgrades to all signals in the corridor between IDX Drive and I-189 Interchange	Roadway System Management

South Burlington	Pedestrian Signal Improvements on Shelburne Road from IDX Drive to Queen City Park Road	Roadway System Management
South Burlington	Shelburne Road Reconstruction between IDX Drive and Queen City Park Road	New Facility or Major Roadway Upgrades
South Burlington	Swift/Spear Street intersection improvements	Roadway System Management
South Burlington	US7/I-189 Intersection Intercept Park & Ride	Park & Ride

Cross County Corridor

The corridors discussed previously either directly link other parts of the region to the Regional Core or primarily feed those corridors. The Cross County Corridor is different. While it feeds other corridors to and from the Regional Core, it also provides links between activity centers separate from and bypassing the Regional Core. The corridor provides connections between points south and the activity and employment centers in Williston, Essex, and Essex Junction, and to the growing residential and mixed use areas of Colchester.

The primary road in the corridor today is VT 2A complemented in part by completed segments of the Circumferential Highway – VT RT 289. Those segments of the Circumferential Highway through Essex, along with Kellogg Road and Severance Road, also form part of the corridor.

The pace and scale of growth in the Taft Corners area has led to congested roads, most notably on VT 2A from Marshall Avenue south through I-89 Exit 12. In lieu of the Governor's decision to no longer proceed with the remaining segments of the Circumferential Highway, the CCRPC has embarked on a detailed planning study of the impacted area - The Williston Essex Network Transportation Study (WENTS). The goal of this study is to develop a multi-modal transportation improvement plan for the primary corridors in the study area to address mobility, connectivity and safety issues. The Plan will include a comprehensive and coordinated list of highway, transit, bicycle, pedestrian, TDM, Transportation System Management (TSM), access management and land use recommendations that satisfy the overall vision and goals of the study corridors. Without a multimodal and system management approach, the development growth here could eventually overwhelm VT 2A.

Corridor Strategies/Projects

The list below identifies the projects and transportation strategies designed to address the corridor's transportation needs. NOTE: The listed sequence does not denote priority rank.

Municipality	Project	Type
Essex	VT117/Sand Hill Road Improvements -- **TIP Project**	Roadway System Management
Essex	Susie Wilson Road / Kellogg Road Intersection Improvements	Roadway System Management

Essex	VT2A/VT289 Interchange Improvements	Roadway System Management
Essex Junction	Crescent Connector Road - Phase I, VT2A to VT117 (*project also listed under Eastern Corridor and Northeastern Corridor*)	New Facility or Major Roadway Upgrades
Essex Junction	Crescent Connector Road - Phase II, VT117 to VT15 (*project also listed under Eastern Corridor and Northeastern Corridor*)	Roadway System Management
Williston	Exit 12 Improvements - (*also listed under Eastern Corridor*)	New Facility or Major Roadway Upgrades
Williston	VT2A/James Brown Drive	Roadway System Management
Essex	Essex Town Path Along VT289 -- VT15 to VT117	Bike & Pedestrian
Williston	Taft Corners Park & Ride (*project also listed under Eastern corridor*)	Park & Ride
Williston	US 2/VT 2A Intersection Improvements - traffic signal additional lanes (*project also listed under Eastern corridor*)	Roadway System Management
Williston	Industrial Avenue Sidewalks	Bike & Pedestrian
Williston	VT RT2A multimodal, Industrial Ave. to Blair Park	Bike & Pedestrian

While nearly all projects can be identified by the corridor(s) they're located in, some defy that categorization and are less place-specific. The table below identifies such projects whose precise location has yet to be determined or reflect a more regional scale strategy. NOTE: The listed sequence does not denote priority rank.

Municipality	Project	Type
Regional ITS	Intelligent Transportation Systems Deployment	Roadway System Management
Regional Sidewalks	Continuation of the TIP sidewalk program – Design and construction funds for municipal sidewalk priorities through regional competitive grant program	Bike & Pedestrian
Regional TDM	Transportation Demand Management Programs – Phase in 10% work trip reductions to 2035 in targeted high employment areas	Transit
Regional Transit	Expansion of the CCTA service area to Colchester, Jericho and Underhill; commuter service to Richmond and Waterbury; increased transit service frequencies on trunk	Transit

	routes, per the CCTA Transit Development Plan – NEAR TERM	
Regional Transit	CCTA Service expansion including increased frequencies, Bus Rapid Transit elements on US2 and VT15 corridors, and implementation of new service, per the CCTA Transit Development Plan – LONG TERM	Transit

SUMMARY

The corridor approach to transportation system description and solutions was selected due to its simplicity and logical, systematic method. Traffic flow is easiest explained using this approach and multimodal strategies are easily presented and understood as solutions. This methodology also was previously used in the CCMPO's *1997 Long Range Transportation Plan* and *2005 Metropolitan Transportation Plan*.

Each of the MTP's recommended projects and strategies was identified by the corridor to which they apply. Below is the full MTP project list including projects not identified as priorities in the corridor discussion above. This list is a comprehensive compilation of projects from many sources: The 2025 MTP, recently completed CCRPC corridor studies, the Regional Pedestrian/Bike and Park and Ride Plan updates, CCTA's Transit Development Plan, and input from each of the CCRPC member towns following their review of projects culled from regional plans/studies.

The projects identified in the tables above by corridor are those that only fall above the dashed line on the full project list below. The sequence of projects, by category, on this list was determined in an evaluation process where ECOS derived criteria were applied to the projects and then ranked. That dashed line represents where the anticipated funding for that category ran out on the ranked list. The ECOS criteria also directed the apportionment of funds to the categories – the most notable shift of this effort, as compared to historical funding patterns, was less going to roadway projects and more to the other modes: transit, walk/bike and TDM. The actual funding levels for the categories can be found in the financial plan in the previous chapter. The complete project list below is quite comprehensive and as the financial plan demonstrated, much of this cannot be implemented under current financial expectations.

4.3.6 MTP PROJECT LIST

Prioritized MTP Transportation Project List by Project Type and Corridor

Municipality	Project	Comments	Cost	Corridor	Cumulative Cost
Bike & Pedestrian / Enhancement -- 12.5 % -- $38,590,187					
Jericho	**VT15 Footbridge**	**TIP Project**	**$450,000**	**Northeastern**	*
Colchester / Essex / Essex Junction	**VT15 Multi-use Path**	**CIRC Alternative Priority Projrect**	**$5,000,000**	**Rt 15 West**	*
Burlington	Burlington Bike Path Rehabilitation	Study completed	$16,800,000	Regional Core	$16,800,000
South Burlington / Williston	Muddy Brook Path	Study completed	$3,230,000	Eastern	$20,030,000
Regional Sidewalks	Continuation of the TIP sidewalk program	Design and construction funds for municipal sidewalk priorities through regional competitive grant program	$9,375,000	Region Wide	$29,405,000
Burlington	Colchester Ave Bicycle and Pedestrian Improvements	Prospect Street to East Avenue	$1,600,000	Regional Core	$31,005,000
Winooski / Burlington	Winooski Main Street Bridge Bicycle and Pedestrian Improvements	Study completed but new study is needed to determine preferred alternative and updated costs	$1,550,000	Regional Core	$32,555,000
Williston	Industrial Avenue Sidewalks	Scoping completed	$400,000	Eastern	$32,955,000
Burlington	Bike Share Program	Establish system infrastructure	$500,000	Regional Core	$33,455,000
Burlington	Colchester Avenue Mid-block Pedestrian Crossing	Trinity Campus to Fletcher Allen Health Care	$110,000	Regional Core	$33,565,000
Williston	VT2A Multimodal Improvements: Industrial Avenue to Blair Park	Identified by WENTS study	$4,948,000	Cross County	$38,513,000
Burlington / Charlotte	Champlain Path Rail Trail	Shared use path along rail right-of-way connecting Charlotte to Burlington	$14,000,000	Regional Core/Southern	$52,513,000
South Burlington	Lindenwood Path and Crossing Improvements	New crossing and connection to Kmart Plaza and future Park and Ride facility. See strategies P2a and P2b and discussion in the Shelburne Road Corridor study's Implementation Plan	$360,000	Southern	$52,873,000
South Burlington	Bike/Ped Bridge over I-89 in the vicinity of Exit 14	Part of mutlimodal alternatives from 1996 Tri-Center Transit study	$840,000	Regional Core	$53,713,000
Williston	Mountain View Road Multimodal Improvements: Old Stage Road to VT2A	Identified by WENTS study	$1,500,000	Cross County	$55,213,000
Essex Junction	Essex Junction VT15 Corridor Path (Village to West Street)	Study completed (VT15 Bicycle and Pedestrian Feasibility Study)	$1,680,000	Rt 15 West	$56,893,000
Burlington	Stairway Street	Pedestrian connection between Battery Park and Depot Street	$850,000	Regional Core	$57,743,000
Burlington	North/South Bicycle Route	Complete bicycle route connection	$550,000	Regional Core	$58,293,000
Essex	VT2A Path	Old Colchester Road to Pinecrest	$400,000	Northern	$58,693,000
Burlington / Winooski	Bike/Ped Bridge Crossing of the Winooski River in the vicinity of the "Blue Bridge"	Adjacent to the railroad bridge	$2,270,000	Regional Core	$60,963,000
Winooski	Riverwalk East	Extend existing riverwalk eastward under I-89 to Colchester	$1,020,000	Rt 15 West	$61,983,000
Essex	Essex Town Path Along VT289	VT15 to VT117	$450,000	Cross County	$62,433,000
Winooski	Riverwalk West	Extend existing riverwalk westward to Colchester town line	$1,569,000	Northern	$64,002,000
Colchester	Heineberg-Blakely Bypass Bike Path	New pedestrian/bike connection between Heineberg Drive and Blakely Road	$365,000	Northern	$64,367,000
Shelburne	Falls Road Bike/Ped Bridge	Erect bridge over LaPlatte Rive for safe pedestrian and bicyclist crossing	$637,000	Southern	$65,004,000
Colchester	Island Line Trail - Causeway Rehabilitation	Study completed	$3,000,000	Northern	$68,004,000
Westford	Sidewalk connecting the Library, Town Offices and Brick Meeting House adjacent to the Town Green	Study completed	$181,000	Northeastern	$68,185,000
Underhill	Pedestrian Improvements in Underhill Flats	Pedestrian improvements in the Underhill flats area	$360,000	Northeastern	$68,545,000
Shelburne	Northeast Loop Road Sidewalk	Sidewalk improvements in the Shelburne Village area	$1,500,000	Southern	$70,045,000
Jericho	MMU Pathway	Construction of Segments 1 (From Ethan Allen Road to MMU, 1,750' including 90' prefab 10' bridge design and construction estimated at $468,000) & 2 (From Pratt Road to Ethan Allen Road, 1,650' design and construction estimated at $325,000)	$793,000	Northeastern	$70,838,000
South Burlington	Spear Street Bike/Ped Improvements - Allen Road to Quarry Hill Road	Cost estimate based on 3 mile segment with sidewalk on both sides and expanded shoulder on one side	$9,540,000	Southern	$80,378,000
Richmond	Bridge Street Streetscape Project	Sidewalks, Street Trees, Lighting	$1,089,201	Eastern	$81,467,201
Richmond	East Main Street Streetscape Project	Sidewalks, Street Trees, Lighting	$1,538,571	Eastern	$83,005,772

Dashed line indicates target funding level for each project type with estimated new funding. Note that implementation of projects is dynamic and may not strictly adhere to this sequencing.
* TIP and CIRC Alternative projects are totaled separately.

Prioritized MTP Transportation Project List by Project Type and Corridor

Municipality	Project	Comments	Cost	Corridor	Cumulative Cost
Park & Ride/ Intermodal Facility -- 1.1% -- $3,425,082					
Richmond	**Richmond Park and Ride at Exit 11**	**TIP Project**	**$100,100**	**Eastern**	*
Williston	**Park and Ride South of I-89**	**TIP Project**	**$1,400,000**	**Eastern**	*
South Burlington	US7/I-189 Intercept Park & Ride	Park & Ride Plan #4 priority intercept facility	$5,000	Southern	$5,000
Williston	Taft Corners Park & Ride	Park & Ride Plan #2 priority	$255,000	Eastern, Cross Country	$260,000
Shelburne	Town Center Park & Ride	Improve rail station lot for park and ride use	$15,000	Southern	$275,000
Hinesburg	Hinesburg Village Park & Ride	Park & Ride Plan #7 priority	$90,000	Rt 116	$365,000
Shelburne	Shelburne Village Park & Ride	Park & Ride Plan #3 priority	$2,250	Southern	$367,250
Essex	Essex Center, VT15/VT289 Park & Ride	Park & Ride Plan priority #12	$186,000	Northeastern	$553,250
St. George	VT116/VT2A Intersection Park & Ride	Park & Ride Plan #21 priority	$248,000	Rt 116	$801,250
Burlington	Northern Connector/VT127/Railroad Park & Ride	Park & Ride Plan priority #13	$959,000	Regional Core	$1,760,250
South Burlington	I-89/VT116 Park & Ride	Park & Ride Plan #22 priority	$2,329,000	Eastern	$4,089,250
Colchester	VT15/Barnes Avenue Intersection Park & Ride	Park & Ride Plan #5 priority intercept facility	$10,000,000	Rt 15 West	$14,089,250
Williston	Williston Town Office Park & Ride	Park & Ride Plan #5 priority	$120,000	Eastern	$14,209,250
Charlotte	Charlotte Ferry Road/US7 Park & Ride	Park & Ride Plan #8 priority	$215,000	Southern	$14,424,250
Jericho	VT15 Park and Ride	Park & Ride Plan #11 priority	$120,000	Northeastern	$14,544,250
Essex	Essex Center VT15 and Allen Martin Drive Park & Ride	Park & Ride Plan #6 priority	$200,000	Northeastern	$14,744,250
Milton	Milton Town Office Park & Ride/Multimodal Center	Park & Ride Plan #4 priority	$870,000	Northern	$15,614,250
Colchester	US7/Severance Road Park & Ride	Park & Ride Plan priority #18	$372,000	Northern	$15,986,250
South Burlington	I-89 Exit 14 Intercept Park & Ride Facility	New park and ride intercept facility with direct access from I-89 southbound off ramp	$18,000,000	Regional Core	$33,986,250
Burlington	South End Transit Center Expansion	Park & Ride Plan #2 priority Intercept facility	$18,000,000	Regional Core	$51,986,250
Bolton	US2/Bolton Access Road Park & Ride	Park & Ride Plan #10 priority	$50,000	Eastern	$52,036,250
Richmond	Richmond Village Park & Ride	Park & Ride Plan #9 priority	$165,000	Eastern	$52,201,250
Colchester	US7/I-89 Exit 16 Intercept Park & Ride	Park & Ride Plan Intercept #3 priority	$14,000,000	Northern	$66,201,250
Williston	Redmond Road/CIRC Intersection Park & Ride	Park & Ride Plan priority #19	$496,000	Cross Country	$66,697,250
Essex	VT117/CIRC Park & Ride	Park & Ride Plan priority #17	$186,000	Eastern	$66,883,250
Colchester	VT127/Proposed CIRC Terminus Park & Ride	Park & Ride Plan priority #16	$548,000	Northern	$67,431,250
Richmond	US2/Cochran Road/Jonesville Park & Ride	Park & Ride Plan #14 priority	$62,000	Eastern	$67,493,250
Rail -- 8.7% -- $26,805,678					
Regional Rail	Middlebury to Burlington Rail Upgrades	Rail upgrades to support Amtrak service. Cost only includes Chittenden County portion for rail, crossings and lights. No operating costs included.	$1,600,000	Southern	$1,600,000
Regional Rail	Essex Junction to Burlington Commuter Rail	Improvements to allow passenger rail including freight and storage sidings,passing tracks, signals crossings and 5 stations for hourly service. Includes estimated 25 years of operating expenses of $48,400,000	$84,000,000	Rt 15 West, Regional Core	$85,600,000
Regional Transit	Passenger Rail Service to Adjoining Regions: St. Albans to Montpelier	Commuter rail service as included in the 2025 MTP - connecting north and east. Track improvements in place, cost is for 2 anticipated new stations and CC share of annual operating expenses	$53,500,000	Northern, Eastern	$139,100,000
Regional Rail	Essex Junction to Burlington 286 Rail Upgrade	Freight rail structural upgrades to allow railcars up to 286,000 pounds	$5,500,000	Rt 15 West, Regional Core	$144,600,000

Dashed line indicates target funding level for each project type with estimated new funding. Note that implementation of projects is dynamic and may not strictly adhere to this sequencing.
* TIP and CIRC Alternative projects are totaled separately.

Prioritized MTP Transportation Project List by Project Type and Corridor

Municipality	Project	Comments	Cost	Corridor	Cumulative Cost
Roadway / Safety & Traffic Operations -- 47.3% -- $146,537,117					
Burlington	**Champlain Parkway**	**TIP Project**	**$28,000,000**	**Regional Core**	*
Burlington	**Shelburne Street Roundabout**	**TIP Project**	**$3,900,000**	**Regional Core**	*
Charlotte	**US7 Reconstruction**	**TIP Project**	**$13,000,000**	**Southern**	*
Colchester	**VT2A/US7/Creek Road/Bay Road Intersection**	**TIP Project**	**$3,000,000**	**Northern**	*
Essex	**VT117/Sand Hill Road**	**TIP Project**	**$900,000**	**Cross County**	*
Hinesburg	**VT116/CVU Road Improvements**	**TIP Project**	**$1,500,000**	**Rt 116**	*
Jericho	**VT15/Browns Trace Intersection**	**TIP Project**	**$1,000,000**	**Northeastern**	*
Richmond	**US2/VT117/I-89 Exit 11**	**TIP Project**	**$1,200,000**	**Eastern**	*
South Burlington	**Market Street**	**TIP Project**	**$4,600,000**	**Eastern**	*
South Burlington	**US2/Exit 14 Improvements -- Staples Lane**	**TIP Project**	**$2,200,000**	**Regional Core**	*
Williston	**US2/Industrial Avenue Intersection**	**TIP Project**	**$2,900,000**	**Eastern**	*
Essex	**VT2A/VT289 Interchange Improvements**	**TIP/CIRC Alternatives Priority Project**	**$100,000**	**Cross County**	*
Essex Junction	**Crescent Connector Road - Phase I VT2A to VT117**	**TIP/CIRC Alternatives Priority Project**	**$3,000,000**	**Cross County, Eastern, Northeastern**	*
Essex Junction	**Crescent Connector Road - Phase II VT117 to VT15**	**TIP/CIRC Alternatives Priority Project**	**$830,000**	**Cross County, Eastern, Northeastern**	*
Williston	**VT2A/James Brown Drive**	**TIP/CIRC Alternatives Priority Project**	**$2,500,000**	**Cross County**	*
Colchester	**Blakely Road / Laker Lane Intersection Improvements**	**CIRC Alternative Priority Project**	**$130,000**	**Northern**	*
Colchester	**Exit 16 Improvements**	**CIRC Alternative Priority Project**	**$6,250,000**	**Northern**	*
Colchester	**US 2/7 at Blakely/Severance Road**	**CIRC Alternative Priority Project**	**$6,000,000**	**Northern**	*
Colchester	**W Lakeshore Drive / Prim Road Intersection Improvements**	**CIRC Alternative Priority Project**	**$350,000**	**Northern**	*
Essex	**VT15/Sand Hill Road Signals**	**CIRC Alternative Priority Project**	**$1,050,000**	**Northeastern**	*
Essex Junction	**Pearl Street / Post Office Square / Five Corners Improvements**	**CIRC Alternative Priority Project**	**$2,000,000**	**Rt 15 West**	*
Williston	**US7/Trader Lane Signal**	**CIRC Alternative Priority Project**	**$550,000**	**Eastern**	*
Winooski	Circulator Improvements	Safety study currently underway	$700,000	Northern, Rt 15 West, Regional Core	$700,000
Burlington	Colchester Avenue/East Avenue Intersection Improvements	Realign East Avenue to the west approach and lengthen the right turn lane	$660,000	Regional Core	$1,360,000
Burlington	Colchester Avenue/Prospect Street Intersection Improvements	Align South and North Prospect Street approaches	$980,000	Regional Core	$2,340,000
Winooski	Main Street (US7) - West Allen Street to City Line Improvements	Intersection and corridor upgrades	$500,000	Northern	$2,840,000
Burlington	Colchester Avenue/Riverside Avenue Intersection Improvements	Reconstruct intersections to create one signalized intersection at Riverside/Barrett	$1,400,000	Regional Core	$4,240,000
Essex	VT15/Susie Wilson Road Intersection	Signal upgrades	$200,000	Rt 15 West	$4,440,000
South Burlington	US2/City Center Drive (at Central School) Traffic Signal	US2 Corridor Study long term recommendation - signalized intersection	$418,709	Eastern	$4,858,709
South Burlington	US2/Windjammer Intersection Improvements - add turning lanes	US2 study mid to long term recommendation	$520,780	Eastern	$5,379,489
Colchester	VT15/Lime Kiln Road Intersection Improvements	VT15 Corridor Study - add left turn lane on Lime Kiln and right turn lane on eastbound VT15	$1,000,000	Rt 15 West	$6,379,489
South Burlington	US2/Kennedy Drive/Airport Road Intersection Improvements	US2 Corridor Study long term recommendation - roundabout or signalized	$1,145,942	Eastern	$7,525,431
Regional ITS	Intelligent Transportation Systems Deployment	Implement ITS Deployment Plan recommendations	$11,400,000	Various	$18,925,431
South Burlington	US2/Dorset Street Intersection capacity Increase	US2 Corridor Study long term recommendation - roundabout or additional westbound lane	$1,740,950	Eastern	$20,666,381
South Burlington	US2/White Street/Patchen Road Intersection Improvements	US2 Corridor Study long term recommendation - roundabouts or signalized	$5,641,558	Eastern	$26,307,939
Burlington	US 2 - No Southbound East Avenue Left Turns at Jughandle	US2 Corridor Study long term recommendation	$154,261	Regional Core	$26,462,201
Williston	US2/VT2A Intersection Improvements	US2 Corridor Study long term recommendation	$1,046,774	Eastern, Cross Country	$27,508,974

Dashed line indicates target funding level for each project type with estimated new funding. Note that implementation of projects is dynamic and may not strictly adhere to this sequencing.
* TIP and CIRC Alternative projects are totaled separately.

Prioritized MTP Transportation Project List by Project Type and Corridor

Municipality	Project	Comments	Cost	Corridor	Cumulative Cost
South Burlington	Implement Adaptive Signal Control Upgrades, Shelburne Road between IDX Drive and I-189	US2 Corridor Study Strategy R1e (*Recommendations and Implementation Plan*)	$400,000	Southern	$27,908,974
Milton	US7/Middle Road/Railroad Street Safety Improvements	Design funds included in TIP	$3,800,000	Northern	$31,708,974
Burlington	Railyard Enterprise Project	From Waterfront South Access Project	$13,000,000	Regional Core	$44,708,974
South Burlington	US2 Improvements - Dorset Street to Hinesburg Road	US2 Corridor Study long term recommendation	$7,000,000	Eastern	$51,708,974
Shelburne	US7/Harbor Road Improvements	Scoping study underway	$500,000	Southern	$52,208,974
Williston	US2/North Williston Road/Oak Hill Road Intersection	Scoping Study and US2 study	$960,000	Eastern	$53,168,974
Essex	Susie Wilson Road/Kellogg Road Intersection	Northbound and eastbound left turn lanes or roundabout	$1,500,000	Rt 15 West	$54,668,974
South Burlington	Pedestrian Signal Improvements on Shelburne Road from IDX Drive to Queen City Park Road	Improvements include additional crosswalks at 2 intersections (Strategy P1a); pedestrian countdown timers (P1b); leading pedestrian interval at 5 intersections (P1c); turn restrictions/regulatory signs (P1d); and crosswalk and median refuge at Imperial Drive	$468,000	Southern	$55,136,974
Essex Junction	VT15/West Street Intersection Improvements	Add second northbound lane	$200,000	Rt 15 West	$55,336,974
South Burlington	US2/Gregory Drive Turning Lanes and Traffic Signal	US2 study mid to long term recommendation	$781,170	Eastern	$56,118,144
South Burlington	US2/Shunpike Road Traffic Signal	US2 study mid to long term recommendation	$937,404	Eastern	$57,055,548
Williston	US2 - Talcott Road to Old Stage Road - Shoulder Widening (bike lanes, capacity)	US2 Corridor Study long term recommendation	$3,107,265	Eastern	$60,162,813
South Burlington	Exit 14, US2 Eastbound Improvements	Additional lane between southbound on-ramp and southbound off-ramp. US2 study mid-term recommendation	$2,499,744	Regional Core	$62,662,557
Williston	US2 - Industrial Avenue to Commerce Street Minor Widening (bike lanes, sidewalks)	US2 Corridor Study long term recommendation	$4,154,038	Eastern	$66,816,595
Milton	US7/Main Street Intersection Improvements	Traffic signal	$500,000	Northern	$67,316,595
Williston	US2/Brownell Road Improvements (add northbound Brownell right turn lane)	US2 short term recommendation	$41,662	Eastern	$67,358,257
Williston	Exit 12 Improvements and Local Road Connections	CIRC Alternatives scoping study underway	$31,000,000	Eastern, Cross Country	$98,358,257
Milton	US7/Rebecca Lander Drive/Barnum Street Intersection Improvements	New traffic signal	$1,240,000	Northern	$99,598,257
Burlington	North Avenue Improvements	Implement complete streets treatment	$20,000,000	Regional Core	$119,598,257
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (US2/Jasper Mine Road)	Study update planned for FY13	$312,000	Northern	$119,910,257
Essex	VT15/Towers Road/VT128 Intersection Improvements		$300,000	Northeastern	$120,210,257
Burlington	Winooski Avenue Improvements	Implement complete streets treatment	$11,000,000	Regional Core	$131,210,257
South Burlington	Swift Street/Spear Street Intersection Improvements	Study completed	$500,000	Southern	$131,710,257
Williston	VT2A/Industrial Avenue Improvements and Improvements to VT2A to James Brown Drive	Identified by WENTS study	$2,500,000	Cross County	$134,210,257
South Burlington	Shelburne Road Reconstruction between IDX Drive and Queen City Park Road	Long-term recommendation from *"Recommendations and Implementation Plan"* section of the corridor study	$10,700,000	Southern	$144,910,257
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (Chimney Corners & US2/Northbound Ramps)	Study update planned for FY13	$861,000	Northern	$145,771,257
Colchester	VT127 Intersection Improvements	Includes 5 Intersections in the VT 127 Corridor (Bean/Prim, Lakeshore/Blakely, Blakely/Malletts Bay, Blakley/Williams, Blakely/Lavigne)	$690,000	Northern	$146,461,257
Milton	US7/Centre Drive Intersection Improvements	Traffic signal proposed to accompany shopping center redevelopment	$500,000	Northern	$146,961,257
Burlington	Depot Street	Waterfront access	$1,200,000	Regional Core	$148,161,257
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (US7/Brentwood Drive and US7 to Chimney Corners)	Study update planned for FY13	$5,467,000	Northern	$153,628,257
Colchester	VT127 Roadway Improvements - East (TIP Illustrative Project)	Includes 2 roadway segments in the VT127 Corridor (Heineberg Drive and Prim Road)	$9,720,000	Northern	$163,348,257

Dashed line indicates target funding level for each project type with estimated new funding. Note that implementation of projects is dynamic and may not strictly adhere to this sequencing.
* TIP and CIRC Alternative projects are totaled separately.

Prioritized MTP Transportation Project List by Project Type and Corridor

Municipality	Project	Comments	Cost	Corridor	Cumulative Cost
Colchester	VT127 Roadway Improvements - West	Includes 4 roadway segments in the VT127 Corridor (West Lakeshore Drive, Malletts Bay Avenue and Blakely Road to Lavigne Road)	$12,100,000	Northern	$175,448,257
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (Widening of US2/7 South of Chimney Corners)	Study update planned for FY13	$1,781,000	Northern	$177,229,257
Williston	US2 - Commerce Street to Talcott Road Widening	US2 Corridor Study long term recommendation	$8,264,002	Eastern	$185,493,259
Jericho	VT15/Dickinson Street Modifications	Complete streets alignment and VT15 intersection upgrades	$1,400,000	Northeastern	$186,893,259
Colchester	I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (US2 Southbound Ramps, Bridge Widening and US2 to Jasper Mine Road)	Study update planned for FY13	$15,576,000	Northern	$202,469,259
South Burlington / Williston	US2 - Kennedy Drive to Industrial Avenue Widening	US2 Corridor Study long term recommendation - 2 lanes with 2-way left-turn lane	$9,090,402	Eastern	$211,559,661
Burlington	Shelburne Street Improvements	Implement complete streets treatment	$11,000,000	Regional Core	$222,559,661
Burlington	Battery Street Improvements	Implement complete streets treatment	$3,000,000	Regional Core	$225,559,661
South Burlington	Airport Drive Extension to Airport Parkway	New roadway segment	$12,200,000	Cross County	$237,759,661
Colchester	US7 - Rathe Road to Severance Corners Improvements (widening to add lanes)	Western Corridor Study recommendation	$3,000,000	Northern	$240,759,661
Essex	VT117/North Williston Road Intersection Improvements	CIRC Alternatives scoping study underway	$400,000	Eastern	$241,159,661
South Burlington	I-89/VT116 New Interchange (12B)	Several studies completed to date.	$33,400,000	Eastern, Rt 116	$274,559,661
South Burlington / Colchester	I-89 Widening, Exit 13, South Burlington to Exit 16, Colchester (3 lanes in each direction)	Widen I-89 to 3 lanes in each direction	$100,000,000	Eastern, Northern, Regional Core	$374,559,661
Essex	North Williston Road Flood Plain Elevation Improvements	CIRC Alternatives scoping study underway	$16,000,000	Eastern	$390,559,661
Williston	North Williston Road/Mountain View Road Improvements	Identified by WENTS study	$600,000	Cross County	$391,159,661
Colchester	Realignment of East Lakeshore Drive	Through Lakeside property to form a 4-way intersection with Laker Lane	$2,400,000	Northern	$393,559,661
Milton	I-89/West Milton Road New Interchange	Previously included in 2030 MTP	$29,300,000	Northern	$422,859,661
Colchester	Heineberg-Blakely Bypass	Alternate route to West Lakeshore Drive	$18,400,000	Northern	$441,259,661
Colchester	Greenway Drive North	North-south connector between Hazelett Strip Casting and West Lakeshore Drive	$1,600,000	Northern	$442,859,661
Colchester	Greenway Drive South	North-south connector between the Heineberg-Blakely Bypass to south of Hazelett Strip Casting	$4,000,000	Northern	$446,859,661
Essex	Allen Martin Parkway Connection to VT289	New roadway connection	$3,663,000	Northeastern	$450,522,661
Colchester/Essex	VT2A Improvments	A planning study is currently underway looking at potential capacity and mobility improvemens in this corridor		Cross County	$450,522,661
Colchester/Essex	Severance Road/Kellogg Road Improvements	A planning study is currently underway looking at potential capacity and mobility improvemens in this corridor		Cross County	$450,522,661
Transit - 30.47% -- $94,391,936					
Regional Transit	Expansion of the CCTA service area to Colchester, Jericho and Underhill; commuter service to Richmond and Waterbury; increased transit service frequencies on trunk routes	CCTA Transit Development Plan Buildout Recommendations (NEAR TERM - 1 to 3 years)	$16,704,000	Various	$16,704,000
Regional Transit	CCTA Service expansion including increased frequencies, BRT elements on US2 and VT15 corridors, and implementation of new service	CCTA Transit Development Plan Buildout Recommendations (LONG TERM - Over 3 years)	$27,112,000	Various	$43,816,000
Regional TDM	Transportation Demand Management Programs	Phase in 10% work trip reductions out to 2035 in targeted high employment areas	$5,700,000	Various	$49,516,000
Burlington	Streetcars	Develop city network	$80,000,000	Regional Core	$129,516,000
Burlington	Colchester Avenue Transit Shelters	Corridor wide	$220,000	Regional Core	$129,736,000
Burlington	Colchester Avenue Transit Signal Priority	Corridor wide	$70,000	Regional Core	$129,806,000
Burlington	Funicular	Waterfront access	$2,500,000	Regional Core	$132,306,000
Burlington	US2 - South Winooski to South Prospect Bus or HOV lanes	US2 Corridor Study long term recommendation	$2,490,219	Regional Core	$134,796,219

Dashed line indicates target funding level for each project type with estimated new funding. Note that implementation of projects is dynamic and may not strictly adhere to this sequencing.
* TIP and CIRC Alternative projects are totaled separately.

4.3.7 2035 MTP DRAFT ENVIRONMENTAL CONSULTATION AND MITIGATION REPORT

Introduction

The construction and operations of any transportation infrastructure, facilities or services, while enhancing economic and social well-being, can also contribute to environmental degradation and cultural resource loss. Such impacts from transportation are not always clear however. They can be direct or indirect and can accumulate over time. They also have impacts at different geographic (local to global) and temporal (momentary to many years) scales. The chart below provides a broad overview from the causes behind transportation activities through consequent environmental and societal impacts. For our purposes in this regional level report we focus on the impacts from the infrastructure and travel activities – those that our planning activity can clearly influence.

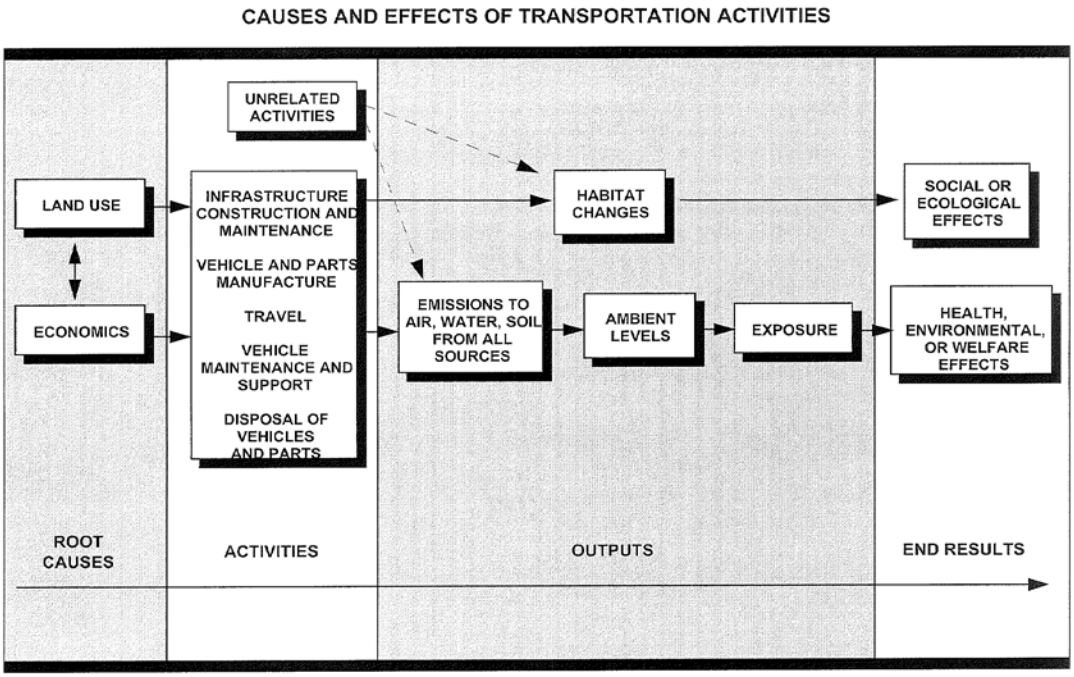


FIGURE 83 - INDICATORS OF THE ENVIRONMENTAL IMPACTS OF TRANSPORTATION, 1996

Source: EPA

A federal requirement for the MTP requires a consultation process with groups that represent environmental and cultural resource constituencies and that the MTP also identify mitigation strategies for those planned projects or services that could impact those resources.

As noted previously, a significant thrust of this MTP is to 1) focus first on system preservation and maintenance, 2) focus less on system expansion and 3) turn more to alternative modes (walking, biking and transit) and to programs that improve the existing system's efficiency (Transportation Demand Management – TDM and Transportation Systems Management – TSM). This is the direction the ECOS sustainability project is leading us and one the public supports as well.

Consultation Background

The CCRPC first began the environmental consultation process while updating the MTP in May 2009. A comprehensive list of natural resource related interest groups and government agencies was assembled and their representatives invited to a meeting to inform/educate these groups on transportation plans and the CCRPC's responsibilities regarding environmental mitigation. RPC staff explained the federal guidelines requiring input from resource agencies, gave background information on CCRPC responsibilities, and presented the strategy areas from the previous, 2025 MTP. Staff also explained that it was likely that many recommendations in the updated MTP could mirror those in the previous plan.

Staff gave the following overview of the 2025 MTP: Priority one is to preserve our existing transportation infrastructure and facilities in serviceable condition. Second, all of the projects in the CCRPC's four year Transportation Improvement Program (TIP) need to be completed. Next, the MTP focused on six strategic areas:

1. Transportation Demand Management/Transportation Systems Management (TDM/TSM) – park and ride facilities, traffic signal coordination, intersection improvements, and employer incentives for alternative transport. TDM/TSM are essentially programs/strategies/projects that allow the more efficient use of existing transportation investments thus avoiding expensive capital expansion projects like new or wider roads.

2. Expand public transportation (bus and eventually rail)

3. Grow the pedestrian/bicycle network and facilities

4. Complete the building of the Circumferential Highway (***Eliminated in most recent version***)

5. Make key interstate improvements including new interchanges in South Burlington and Milton, and widen I-89 between Exit 13 and the new Circumferential Highway interchange in Colchester to three lanes in each direction. (***These remain on the project list but are no longer priorities, primarily due to cost***.)

6. Alleviate congestion on selected road segments around the county and complete new connector roads in South Burlington. (***No longer included on the project list***.)

Staff then went over potential environmental impacts from some of the MTP recommendations which led to a broader discussion on more specific types of environmental impact issues. The consensus was to continue the discussions and outreach in order to more fully recognize transportation's environmental consequences and work to minimize the potential negative impacts. The May 2009 session provided a forum for interactive conversation between resource agency staff and regional transportation planners that continues as the CCRPC progresses with the MTP update in the context of ECOS.

The latest round of consultation involves a review of this mitigation report and project impacts by the ECOS Natural Systems working group. This review occurred during the 30-day comment period prior to the first public hearing. Comments were incorporated as a result of this process.

The ECOS Impact in Developing Transportation Strategy

The thrust of the ECOS project has been to look at transportation more comprehensively than before and with the intent to move transportation priorities in a more sustainable direction. The broad ECOS goal under which transportation is included states: *Make public and private investments in the built*

environment to minimize environmental impact, maximize financial efficiency, optimize social equity and benefits, and improve public health.

While the previous MTP presented a balance of investments in all modes and included projects to improve existing system efficiency, the ECOS influence pushed our project recommendations even further in a non- traditional direction. As a consequence there's been a further shift in project and strategy recommendations toward more alternative modes and efficiency program projects – and away from facility expansion. That shift is reflected in the financial plan's apportionment of funding to these categories at the expense of roadway expansion. The result is that major expansion projects from the 2025 MTP such as adding lanes and interchanges to I-89 are now no longer high priorities. With these large projects gone from the priority list, the scale of potential environmental impacts is significantly reduced.

Environmental Mitigation

The MTP recommends a series of specific projects, and more broadly transportation strategies, to meet current and projected future transportation demand. These recommendations are designed to provide a safe system meeting the public's needs, while limiting any negative environmental and cultural impacts and thus more closely reflecting the overall values expressed in ECOS. Some impacts however may be unavoidable. The focus of this section is to highlight potential impacts in order to minimize the potential negative consequences when projects move to implementation.

Mitigating the environmental and cultural resource impacts of transportation projects and strategies covers a spectrum of possible actions. For example, mitigation can mean any of the following:

- Avoiding impacts altogether
- Minimizing impacts by limiting the extent of the action
- Repairing the impact through a restoration or rehabilitation process
- Reducing impacts through on-going preservation and maintenance operations
- Compensating for the impact by replacing or providing a substitute resource

Whichever option above is used, the intent is the same: Restore, enhance or preserve natural resources in order to compensate for the resource impacts, and to ensure ecosystems remain sustainable and productive into the future.

It should be noted that few of the MTP's recommendations appear to have significant environmental impacts that are place specific or, for that matter, harm the environment. In fact, some will likely make positive environmental contributions. For instance, the transit system improvements recommended would see more buses that should reduce the growing number of passenger cars and thereby reduce negative air quality impacts. These public transportation systems will use current road, and perhaps in the future rail, infrastructure and therefore not impact natural resources through expansion projects outside existing rights-of-way. Similarly, the TDM/TSM projects are designed to postpone infrastructure expansion projects by facilitating the shift of people into alternative transport modes and a more efficient use of the transportation infrastructure already in place. This will reduce the growth in vehicle miles traveled with consequent air quality benefits.

Other MTP project recommendations will more clearly impact our natural environment and cultural resources, and some in negative ways should we fail to recognize them and identify appropriate mitigation strategies. The method we use here to identify natural and cultural resource impacts is by employing the CCRPC's Geographic Information Systems (GIS) resources inventory maps overlain with the recommended MTP transportation system projects. A series of natural and cultural resources data layers, including:

- rare plant and animal communities,
- natural areas, parks and other conserved lands,
- floodplains, wetlands,
- streams, deer wintering areas, historic sites/buildings, and
- historic districts

were displayed over the locations of MTP projects. Transportation project locations that reveal potential resource conflicts are identified in the tables below. Other resources such as steep slopes, impaired watersheds, contaminated sites, and agricultural soils could be considered in future reviews. See the general location of the transportation projects by type on the map in Chapter 3, MAP 4 – FUTURE TRANSPORTATION IMPROVEMENTS.

The online mapping tool at the CCRPC, which includes the appropriate natural and cultural resource data layers, can reveal the potential impacts in considerable detail. These maps can be viewed at relatively large scales to more precisely detail the impacts and interested readers are encouraged to use this tool for their own analysis. (See: http://maps.ccrpcvt.org/ChittendenCounty)

NOTE: The projects listed in the tables below are only those that fall above the fiscal constraint line in the full project list. These are the same projects identified in the tables after each of the transportation corridors discussed earlier.

Bike and Pedestrian Projects

Only two of the projects below, shared use paths in Essex/Colchester and Williston, reveal major impacts as these proposed facilities will likely fall, at least partly, outside existing road rights-of-way (ROW). The other projects should have minimal impacts due to their probable locations within the footprint of existing facilities.

BIKE AND PEDESRIAN PROJECTS	***POTENTIAL RESOURCES IMPACTED***
VT RT 15 Multi-use path, Essex and Colchester	Wetlands and streams; historic district; rare, threatened or endangered plants/animals
Burlington Bike Path reconstruction	Wetlands, floodplains; rare, threatened or endangered plants/animals
Muddy Brook Path, South Burlington and Williston	Conserved lands, streams, wetlands
VT RT 15 Footbridge Jericho	Streams, historic site
CCRPC Sidewalk program	*TBD as projects are awarded*
Colchester Ave. Bike/Pedestrian improvements, Burlington	None anticipated

Winooski Main Street Bridge, US 2 and 7	Streams and historic sites
Industrial Ave. sidewalk	None anticipated
Bike Share program	None anticipated
Colchester Ave. mid-block crossing	None anticipated
Williston VT RT 2A from Industrial Ave. to Blair Park	Floodplains and streams; historic site; rare, threatened or endangered plants/animals

Park and Ride Projects

The footprint of these facilities is relatively small and in some cases just a repurposing of an already existing parking facility. Their environmental impacts tend to be commensurately low.

PARK AND RIDE PROJECTS	***POTENTIAL RESOURCES IMPACTED***
Richmond Park and Ride Expansion	Floodplains
Williston Park and Ride south of I-89 Exit 12	Stream
Williston Taft Corners, site to be determined	None anticipated
Shelburne Village, two potential sites on already paved lots	None anticipated
Hinesburg Village at Fire station	None anticipated
Essex Center, VT RT 15/VT RT 289, site to be determined but likely on or adjacent to existing paved lot	None anticipated
St. George, VT RT 2A/VT RT 116, site to be determined	Wetlands, stream
Burlington, Northern Connector vicinity of Railroad crossing, site to be determined	Wetlands
South Burlington, intersection of I-189 and US RT 7, site to be determined	Stream

Rail Projects

The lone rail project here calls for extensive improvements along a length of track from the Addison County line into Shelburne and potentially other crossing improvements further north to Burlington. Given the potential length of this project, the potential list of impacts appears quite long. However, the project itself will take place entirely within an existing transportation right-of-way.

RAIL PROJECT	*POTENTIAL RESOURCES IMPACTED*
Middlebury to Burlington upgrades to allow Amtrak service	Streams, wetlands, conserved lands, historic sites

Transit and Transportation Demand Management (TDM) Projects

These projects, designed simply to improve the efficiency of existing transportation infrastructure and services, are not anticipated to have any natural or cultural resource impacts.

Roadway/Safety and Traffic Operations Projects

By far, most project recommendations relate to roadway issues caused by congestion and/or safety concerns. These issues are current or anticipated in the future.

ROADWAY/SAFETY AND TRAFFIC OPERATIONS PROJECTS	*POTENTIAL RESOURCES IMPACTED*
Champlain Parkway, Burlington	Stream, wetlands, historic sites
Shelburne Street Roundabout, Burlington	Historic site
US7 Reconstruction, Charlotte	Historic sites, conserved lands, streams
VT2A/US7/Creek Road/Bay Road Intersection, Colchester	Streams, wetlands, floodplains, historic sites
VT117/Sand Hill Road, Essex	Wetlands, stream, floodplain
VT116/CVU Road Improvements, Hinesburg	None anticipated
VT15/Browns Trace Intersection, Jericho	Historic sites
US2/VT117/I-89 Exit 11, Richmond	Floodplains, wetlands
Market Street, South Burlington	Wetlands, stream
US2/Exit 14 Improvements -- Staples Lane, South Burlington	None anticipated
US2/Industrial Avenue Intersection, Williston	Wetlands, historic sites
VT2A/VT289 Interchange Improvements, Essex	None anticipated
Crescent Connector Road - Phase I VT2A to VT117, Essex Junction	None anticipated
Crescent Connector Road - Phase II VT117 to VT15, Essex Junction	Historic sites, historic district
VT2A/James Brown Drive, Williston	None anticipated
Blakely Rd / Laker Ln Intersection Improvements, Colchester	None anticipated

Exit 16 Improvements, Colchester	Wetlands
US 2/7 at Blakely/Severance Rd, Colchester	None anticipated
West Lakeshore Drive / Prim Rd Intersection Improvements, Colchester	None anticipated
VT15/Sand Hill Road Signals, Essex	Historic site
Pearl St / Post Office Square / Five Corners Improvements, Essex Junction	Historic sites
US2/Trader Lane Signal, Williston	None anticipated
Circulator Improvements, Winooski	Historic sites, historic district
Colchester Avenue/East Avenue Intersection Improvements, Burlington	Historic sites
Colchester Avenue/Prospect Street Intersection Improvements, Burlington	Historic sites, historic district
Main Street (US7) - West Allen Street to City Line Improvements, Winooski	Historic sites
Colchester Avenue/Riverside Avenue/Barrett St. Intersection Improvements, Burlington	Historic sites, historic district
VT15/Susie Wilson Road Intersection, Essex	Stream, floodplain
US2/City Center Drive (at Central School) Traffic Signal, South Burlington	None anticipated
US2/Windjammer Intersection Improvements - add turning lanes, South Burlington	None anticipated
VT15/Lime Kiln Road Intersection Improvements, Colchester	None anticipated
US2/Kennedy Drive/Airport Road Intersection Improvements, South Burlington	None anticipated
Intelligent Transportation Systems Deployment - various yet to be determined locations within roadway rights-of-way	None anticipated
US2/Dorset Street Intersection capacity increase, South Burlington	None anticipated
US2/White Street/Patchen Road Intersection Improvements, South Burlington	None anticipated
US 2 - Stop southbound East Avenue Left Turns at Jughandle, South Burlington	None anticipated

US2/VT2A Taft Corners Intersection Improvements, Williston	Historic site
Implement Adaptive Signal Control Upgrades, Shelburne Road between IDX Drive and I-189, South Burlington	Historic sites
US7/Middle Road/Railroad Street Safety Improvements, Milton	None anticipated
Waterfront South Roadway and Rail improvements, Burlington	Historic sites, historic district, rare plant site, floodplains
US2 Improvements - Dorset Street to Hinesburg Road, South Burlington	None anticipated
US7/Harbor Road Improvements, Shelburne	Historic sites, historic district
US2/North Williston Road/Oak Hill Road Intersection, Williston	Historic sites, historic district
Susie Wilson Road/Kellogg Road Intersection, Essex	Rare plant site
Pedestrian Signal Improvements on Shelburne Road from IDX Drive to Queen City Park Road, South Burlington	Historic sites
VT15/West Street Intersection Improvements, Essex Junction	Rare plant sites
US2/Gregory Drive Turning Lanes and Traffic Signal, South Burlington	None anticipated
US2/Shunpike Road Traffic Signal, South Burlington	None anticipated
US2 - Talcott Road to Old Stage Road - Shoulder Widening (bike lanes, capacity), Williston	Wetlands, floodplains, conserved lands, historic sites
I-89 Exit 14, US2 Eastbound Improvements, additional lane between southbound on-ramp and southbound off-ramp, South Burlington	None anticipated
US2 - Industrial Avenue to Commerce Street Minor Widening (bike lanes, sidewalks), Williston	Wetland, historic sites
US7/Main Street Intersection Improvements, Milton	Historic district, historic sites
US2/Brownell Road Improvements, Williston	Historic site
US7/Rebecca Lander Drive/Barnum Street Intersection Improvements, Milton	None anticipated
North Avenue Complete Streets Improvements, Burlington	Historic sites, conserved lands

I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (US2/Jasper Mine Road), Colchester	None anticipated
VT15/Towers Road/VT128 Intersection Improvements, Essex	Historic district, historic sites, rare plant site
Blakely Road/Laker Lane Intersection Improvements, Colchester	None anticipated
Winooski Avenue Complete Streets Improvements, Burlington	Historic sites
Swift Street/Spear Street Intersection Improvements, South Burlington	None anticipated
Shelburne Road Reconstruction between IDX Drive and Queen City Park Road, South Burlington	Historic sites
I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (Chimney Corners & US2/Northbound Ramps), Colchester	None anticipated
VT127 Intersection Improvements, Colchester - (Bean/Prim, Lakeshore/Blakely, Blakely/Malletts Bay, Blakely/Williams, Blakely/Lavigne)	Conserved lands, rare plant site
US7/Centre Drive Intersection Improvements, Milton	None anticipated
Depot Street waterfront access, Burlington	Conserved lands
I-89 Exit 17/US2/US7 Interchange Improvements Signal Alternative (US7/Brentwood Drive and US7 to Chimney Corners), Colchester	None anticipated
VT127 Roadway Improvements - East (Heineberg Drive and Prim Road)	None anticipated

While the MTP can point out the transportation/resource conflicts early on, defining more specifically what those impacts are will be part of the project development process and the permitting systems that go with that process. This would involve the National Environmental Policy Act (NEPA) and possibly Vermont's Act 250. In these regulatory proceedings the precise mitigation strategy, if needed, will be defined. Environmental reviews and permitting begin in the project definition phase of the VTrans project development process. For more detail on this process see: http://www.aot.state.vt.us/caddhelp/download/Details/Project%20Development%20Process.pdf This MTP effort, taking a cursory examination of potential impacts very early in the planning phase, only provides an early warning system to be on the lookout for issues and to begin thinking of mitigation measures sooner rather than later.

In looking further down the planning road and the beginning phases of project implementation, project planners will need to start thinking about mitigating environmental and cultural resource impacts.

Identifying the impacts is the first step in the mitigation process. The table below identifies the organizations that need to be involved in the respective resource issues and identifies possible mitigation strategies and locations. Through project definition and the project development phases beyond, these parties and activities will become more prominent.

Possible Mitigation Strategies

Resource	***Regulatory and Information Contacts***	***Mitigation Activities***	***Mitigation Areas***
Cultural and Historic Resources	VTrans Historic Preservation and Archeology Officers, VT Agency of Commerce and Community Development Historic Preservation Office	Avoid or minimize impacts; appropriate landscaping; excavation for archeological sensitive areas; project design exceptions; environmental compliance monitoring	Preserve in place; on-site landscaping; on-site mitigation of archeological impacts
Water Resources, Wetlands and Floodplains	VT Agency of Natural Resources: Water Quality Division, Dept. of Environmental Conservation, Dept. of Fish and Wildlife. US Army Corps of Engineers, US Fish and Wildlife Service, Lake Champlain Basin Program, Winooski Valley Park District	Mitigation sequence: avoid, minimize, compensate (could include preservation, creation, restoration, riparian buffers); design exceptions; environmental compliance monitoring; storwater system retrofits; low-cost, low-tech infiltration improvements	On site to the extent possible/appropriate; off-site through mitigation banking program as permitting requires
Parks/Recreation Areas	VT Agency of Natural Resources Dept. of Parks and Recreation, Winooski Valley Park District, Municipal Parks and Recreation departments	Avoidance, minimization, mitigation; design exceptions; environmental compliance monitoring	On site screening or facility replacement; offsite replacement adjacent to existing
Conserved Lands/Natural Areas	Winooski Valley Park District, Nature Conservancy, Vermont Land Trust, Municipal Land Trusts, Dept. of Fish and Wildlife Natural Heritage Program	Avoidance, minimization; any replacement to be of equal value and of equivalent usefulness; design exceptions; environmental compliance monitoring	Landscaping within existing rights-of-way; replacement property to be contiguous
Endangered Plants or Animals	VT Agency of Natural Resources: Dept. of Environmental Conservation, Dept. of Fish and Wildlife Natural Heritage Program	Avoidance, minimization; time of year restrictions, construction sequencing/timing; design exceptions; environmental compliance monitoring	Species relocation to suitable habitat adjacent to project limits

Air Quality	VT Agency of Natural Resources Air Quality Division, Vermont Climate Collaborative, Vermont Energy Investment Corporation, VTrans Policy and Planning Division	Transportation Demand Management programs; Transportation Systems Management projects; No Idling ordinances	Throughout the region

The MTP's primary focus, as has been previously noted, is to maintain and preserve the transportation infrastructure and services already in place. With the limited amount of anticipated funding available for new projects, and a higher proportion of that funding going to transportation alternatives – transit, walk/bike, TDM/TSM – roadway expansion projects are relatively few and those projects will mostly be confined to existing roadway rights-of-way. This will result in fewer and less significant environmental and cultural impacts from the proposed projects. Nonetheless, impacts however small may occur and the purpose of this report is to make us aware of these as early as possible.

APPENDICES AT WWW.ECOSPROJECT.COM/PLAN

These are available digitally here: www.ecosproject.com/plan

A. Plan Requirements Crosswalk

This shows how and where Regional Plan and MTP requirements are met.

B. ECOS Criteria