



2018 Chittenden County ECOS Plan

Adopted 6/20/2018

For a healthy,
inclusive, and
prosperous
community



**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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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.

Goals

There are 17 goals, organized under four Broad Goals as follows:

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.

1. Ecological Systems (Habitats, Water Quality, Air Quality) - Conserve, protect and improve the health of native species habitats, water quality and quantity, and air quality.

2. Scenic and Recreational Resources - Conserve, protect and improve valued scenic, recreational, and historic resources and opportunities.
3. Climate Change - Reduce greenhouse gas emissions contributing to climate change and adapt to become more resilient to a changing climate.

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.

4. Education, Knowledge and Skills - All Chittenden County children and adults have the education, skills and opportunities necessary to meet their full economic and social potential and well-being.
5. Health - All Chittenden County residents are healthy.
6. Public Safety and Criminal Justice - Improve the safety of the public including the loss of life and property from natural and manmade hazards.
7. Social Connectedness - Increase opportunities for people of all backgrounds to engage in the multicultural social fabric and activities of the community.
8. Arts, Culture and Recreation - Increase access to, and participation in, arts, culture and recreational opportunities.
9. Civic Engagement and Governance - People from diverse backgrounds feel that they have a say in political and non-political decisions that affect their lives, neighborhoods and communities.

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.

10. Economy - 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.
11. Household Financial Security - Improve the financial security of households.
12. Working Lands - Support the growth and vitality of working farms and managed forests; and sustainably manage sand and gravel extraction operations.

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.

13. Land Use - 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.
14. Housing - Increase the opportunities for safe, decent, energy efficient, affordable, accessible and fair housing for all types of households in all neighborhoods.
15. Transportation - Provide accessible, safe, efficient, interconnected, secure, equitable and sustainable mobility choices for our region's businesses, residents and visitors.
16. Infrastructure - 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.

17. Energy - Move Chittenden County's energy system toward a cleaner more efficient and renewable system that benefits health, economic development, and the local/global climate by working towards the State's Comprehensive Energy Plan goals.

- 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 – Move the Region's energy system to meet the goals of Vermont's energy and greenhouse gas reduction goals while balancing economic vitality and affordability.

- a. Reduce energy consumption and decrease greenhouse gas emissions, to support the State's goals:
- Reduce greenhouse gas emissions 50% from 1990 levels by 2028,
 - Reduce greenhouse gas emissions 75% from 1990 levels by 2050,
 - Reduce per capita energy use across all sectors (electricity, transportation and heating) 15% by 2025,
 - Reduce per capita energy use across all sectors (electricity, transportation and heating) by more than 1/3 by 2050, and
 - Weatherize 25% of all homes by 2020.
- i. Continue and evaluate partnerships with Vermont Gas, Burlington Electric Department, Efficiency Vermont and the State Weatherization Assistance Program to facilitate the weatherization and increased energy efficiency of housing stock and other buildings.
 - ii. Decrease fossil fuel heating by working with partners such as Efficiency Vermont and Burlington Electric Department for Burlington residents to educate developers and homeowners on the benefits of technology such as cold climate heat pumps, wood heating and geothermal systems. Examples include district heating (for example, using waste heat from the McNeil Plant to heat buildings in Burlington) and biogas generation (capturing the methane produced by landfills or farms and using it instead of natural gas).
 - iii. Reduce fossil fuel consumption in the transportation sector, through the Transportation Demand Management and electric vehicle promotion strategies

- outlined in Part 6 of this section and in the Metropolitan Transportation Plan (MTP) included in this plan.
- iv. Collaborate with the State of Vermont and utilities to ensure that state energy policy implementation (i.e. permits for non-renewable fuels) reflect state energy goals and our policies in Section b.
 - v. Encourage the State of Vermont to implement a single energy standard which includes a process for verifying compliance.
 - vi. Provide assistance to municipalities when requested to enhance town plans to be consistent with Act 174 standards for the purpose of enabling municipalities the ability to gain substantial deference in the Certificate of Public Good Section 248 process. This assistance will include working with municipalities to identify natural, cultural, historic, or scenic resources to be protected from all development types, identify preferred locations for renewable energy generation facilities, and encourage municipalities to lead by example with respect to energy efficiency for buildings and transportation and the deployment of renewable energy.
 - vii. Use the Energy Action Network (EAN) [Community Energy Dashboard](#) to educate residents and municipalities about opportunities to reduce energy use and switch to renewable energy sources. Additionally, institutions (including municipalities, institutions of higher education, businesses and non-profits) can use the Vermont Climate Pledge Coalition Tracker to upload actions that will help the State achieve its 90% renewable energy 2050 goal.
 - viii. Support a wide variety of renewable energy generation types, including sustainable uses of biomass for heating, passive solar building design, bio-digesters for electricity generation, photovoltaic solar, wind turbines, and optimizing the energy potential for existing hydro-electric dams.
 - ix. Work with the utilities on long-range infrastructure capacity planning.
 - xi. Support in-place upgrades of existing facilities, including existing renewable energy generation, storage, transmission lines, distribution lines and substations as needed to reliably serve municipalities and the region.
 - xii. Support changes in federal, state, and local policies to achieve the state of Vermont Comprehensive Energy Plan goals.
- b. CCRPC supports the generation of new renewable energy in the County to meet the Vermont Comprehensive Energy Plan's goal of using 90% renewable energy by 2050, in a manner that is cost effective and respects the natural environment. Specifically, Chittenden County needs to generate a total of 756,250 MWh (Megawatt hours) of energy to meet the low target (a 51% increase), or 1,265,134 MWh to meet the high target (a 152% increase). Currently, Chittenden County generates 501,661 MWh of renewable energy. The targets are technology neutral, meaning that they can be met with any mix of technologies. The following statements are CCRPC's renewable energy generation facility siting policies and will inform CCRPC's preferred sites policy.

Constraint Policies: Ground mounted renewable energy generation is constrained in certain areas due to state and local restrictions on development.

- i. Site renewable energy generation to avoid state and local known constraints and to minimize impacts to state and local possible constraints, as defined in Strategy

- 3, Action 1.f, and Strategy 4, Action 1.f, and Action 2.e. Renewable energy generation sited on existing structures or parking lots complies with this policy.
- ii. Site ground-mounted solar development in accordance with setback standards as defined in [30 V.S.A. §248\(s\)](#) and municipal screening requirements adopted in accordance with [30 V.S.A. §248\(b\)\(B\)](#).

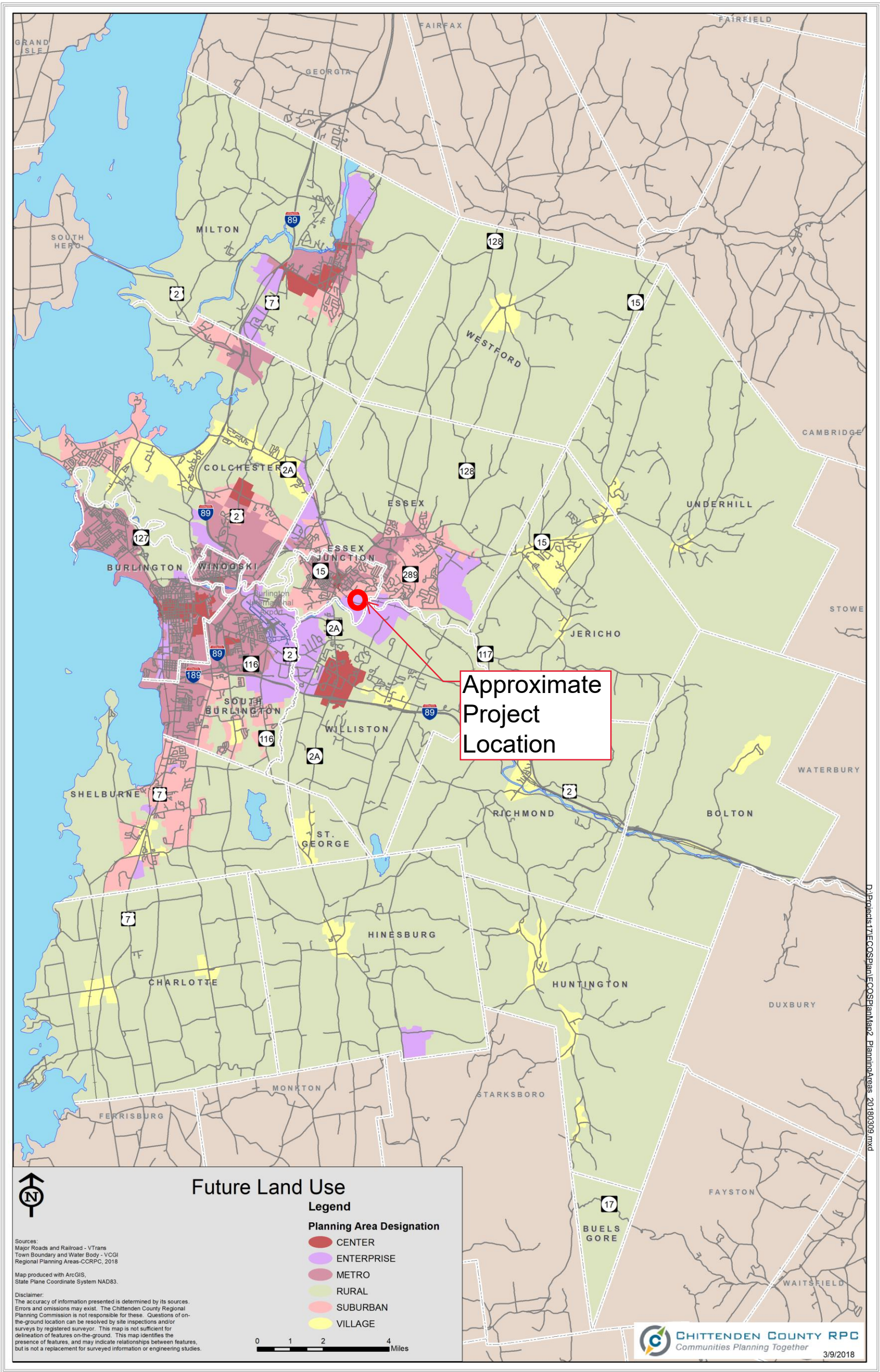
Suitability Policies: After considering the constraints referenced above and found in Supplement 3, different levels of suitability exist for different scales and types of renewable energy generation depending on location within the County. To determine an appropriate location for a facility, first review the constraints above and then look at the policies below to determine how and where CCRPC encourages renewable energy generation facilities. CCRPC recommends the location of renewable energy generation facilities in accordance with the relevant guidelines below. Inability to meet these guidelines does not necessarily preclude the ability to develop renewable energy generation development.

- i. Locate energy generation proximate to existing distribution and transmission infrastructure with adequate capacity and near areas with high electric load (See Green Mountain Power's [Solar Map](#) and Burlington Electric Department's [Distributed Generation Map](#))
- ii. Locate renewable energy generation in areas designated by a municipality in an adopted plan for such use, including specific preferred sites for solar (state preferred sites are mapped on Map 5).
- iii. Locate solar generation (including but not limited to net metering) on previously impacted areas (such as, parking lots, previously developed sites, brownfields, State regulated landfills with post-closure certification, gravel pits/quarries, or on or near existing structures).
- iv. Locate ground-mounted solar larger than 15 kW AC and wind turbines with a hub height larger than 30 meters (98 ft.) outside of state designated village centers, growth centers, downtowns, new town centers, neighborhood development areas, and historic districts on the State or National Register.
- v. Locate ground-mounted solar generation, and small-scale wind (1 or 2 turbines, up to 50 meters (164 ft.) in Chittenden County's areas planned for growth, while allowing infill development wherever reasonably practical.
- vi. Locate wind generation in areas with high wind potential, such as the prime and base wind potential areas shown on Map 7.

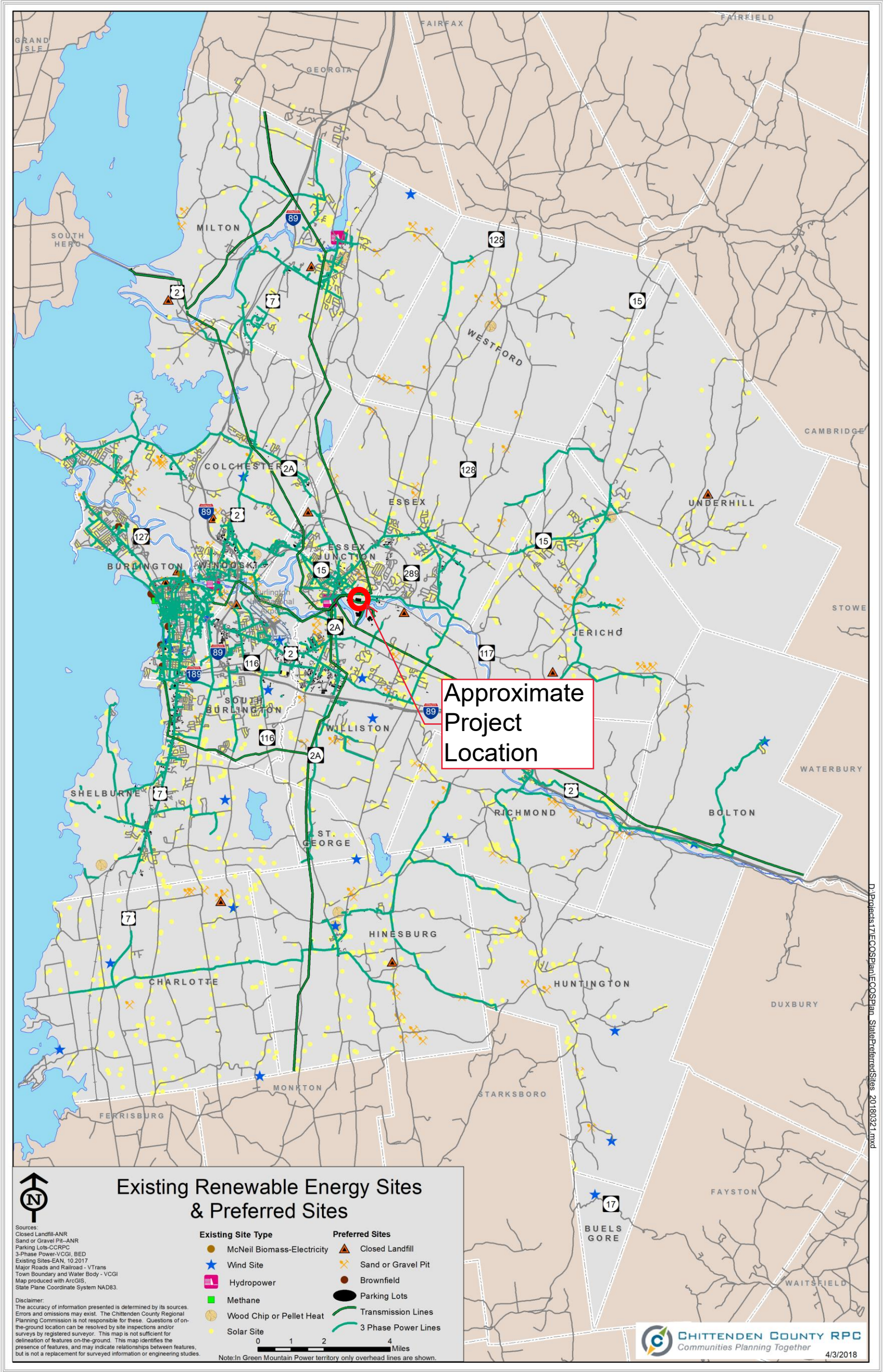
5. State/Local Permitting Coordination & Improvement

- f. Support changes to the local and state permitting process to make the two more coordinated and effective. Participate in the Commission on Act 250 to improve the State's development review process, particularly to encourage development in appropriately planned places and discourage development outside of those areas. This 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. In conjunction with a reduction of permit review redundancies in areas planned for growth it may be appropriate to develop more stringent standards and thresholds for development review in rural areas.

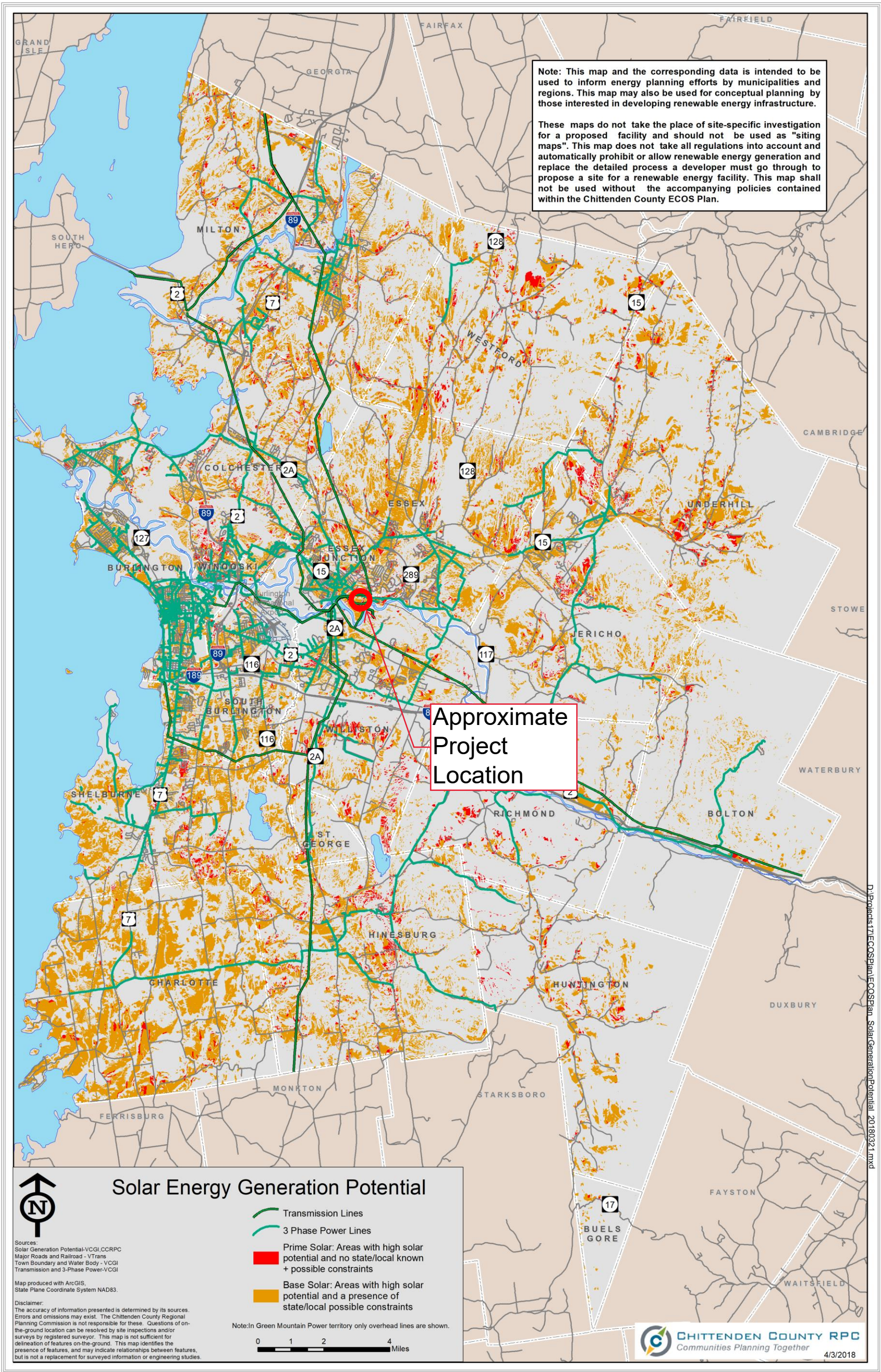
MAP 2 - FUTURE LAND USE



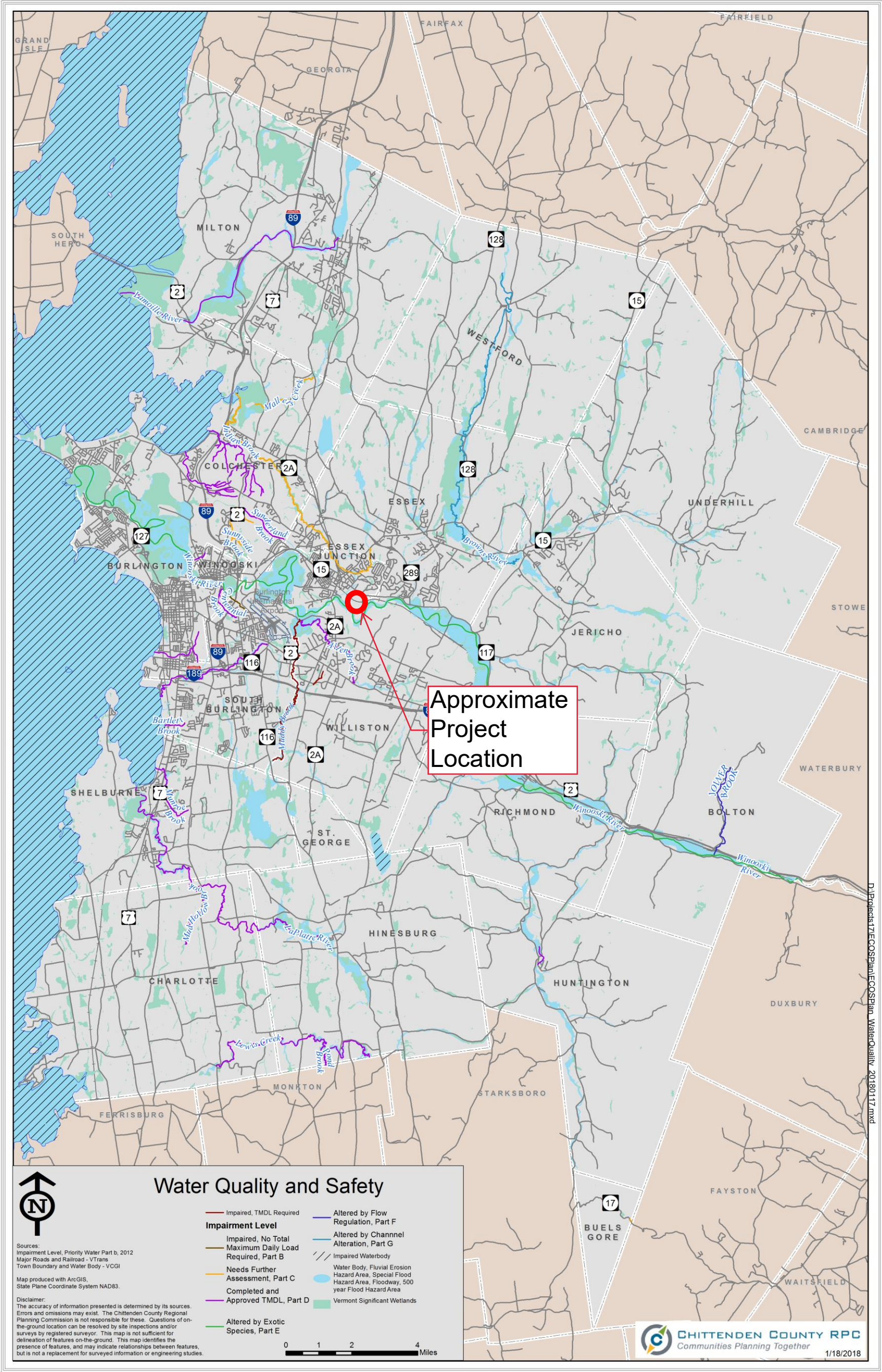
MAP 5 – STATE PREFERRED SITES FOR SOLAR GENERATION + EXISTING RENEWABLE ENERGY GENERATION SITES



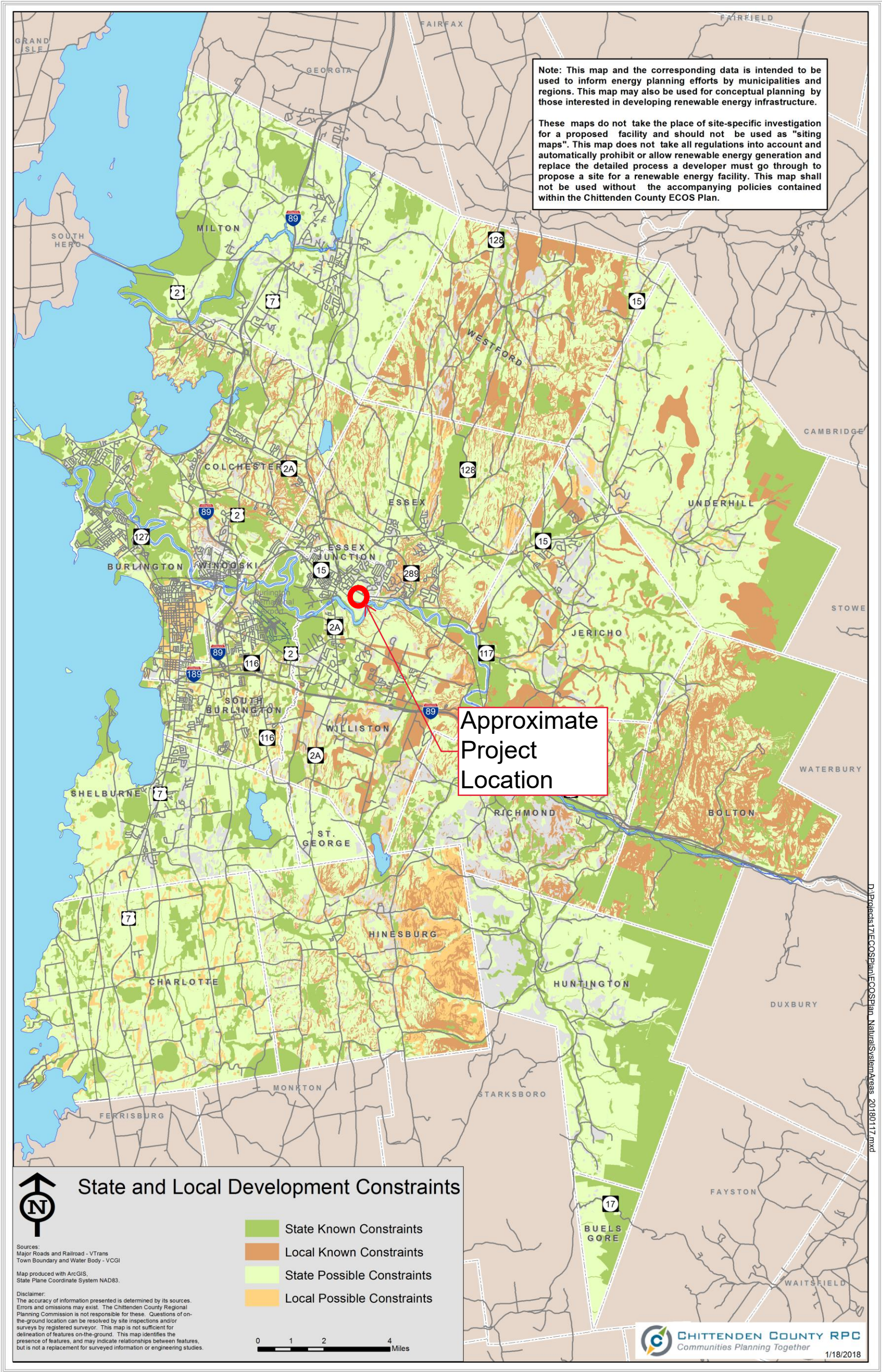
MAP 6 – SOLAR GENERATION POTENTIAL

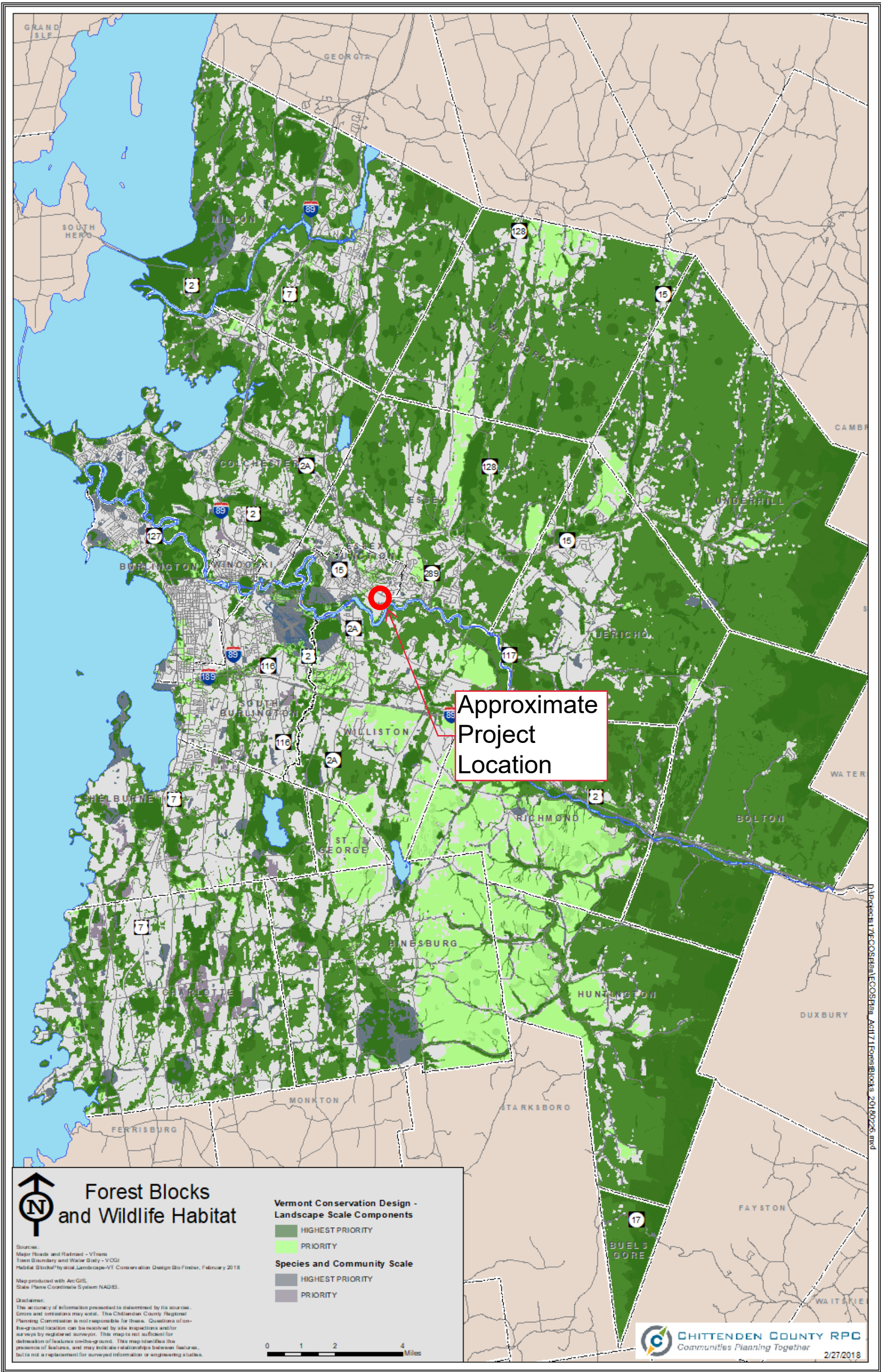


MAP 8 – WATER QUALITY & SAFETY



MAP 9 – NATURAL SYSTEMS/DEVELOPMENT CONSTRAINTS





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 Strategy 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.
 - f. To protect water quality, development should be located to avoid state and local known constraints that have been field verified, and to minimize impacts to state and local possible constraints that have been field verified.
 - i. State and Local Known Constraints, as protected by municipalities and State agencies, are shown on Map 9 and include the following: DEC River Corridors,

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

1. **Habitat Preservation** - Protect forest blocks, wildlife connectivity resources and crossings, surface waters, riparian areas and other significant habitats (e.g. wetlands) from development and fragmentation; and promote vegetative landscaping in urban areas to maintain natural habitats, natural storm water management, water quality, air quality, carbon sequestration and cultural heritage. This work should focus on the broader concept of the pattern of forest cover versus focusing on core forest areas because forest blocks in Chittenden County are getting smaller and more isolated from other forest blocks, as well as surface water and riparian areas. Leaving isolated islands of habitat contributes to losses in biodiversity.
 - a. Inventory – Map 10 provides a starting point for regionally important forest blocks and wildlife habitat and is the basis for this Plan’s compliance with Act 171 of 2016 (Forest Integrity). The map includes Vermont Conservation Design’s highest priority and priority resources defined as two scales: Landscape Scale (aka forest blocks and connectivity resources) and Species and Community Scale (aka rare, threatened and endangered species and other specific habitat sites). This data and the component layers are located on the State’s BioFinder website. Over the coming years CCRPC will work with municipalities to be compliant with this new statutory requirement, by:
 - i. assisting with on the ground surveys and inventories of forest blocks, wildlife crossings, natural communities (i.e. special features within the forest blocks and surface water and riparian areas), and other significant habitats (e.g. wetlands), scenic resources and locations of invasive species and map this information.
 - ii. Prioritize these resources based on ecological information, connectivity and local information. For example, a landscape scale forest block may be more important than another if it contains multiple community species within it. Or a portion of a forest block may be more important than another if it is planned for growth. For example, the Forests, Wildlife & Communities: Science to Action project was done in the Towns of Richmond, Bolton, Jericho, and Huntington, by Vermont Natural Resources Council, Arrowwood Environmental, Vermont Fish & Wildlife Department, VT Forests, Parks & Recreation Department, and CCRPC. Hinesburg has also done some great work in this area. Also, the VT Agency of Transportation’s BioFinder and *Planning: A Key Step Towards Protecting Forest and Wildlife Resources* are helpful resources for this work.
 - iii. incorporate this data into municipal and regional plan text and maps and establish specific policies that address and protect these resources. This data can be added to a natural features map, and the highest priority resources can be added to the future land use map as an area to be protected in the future.

- iv. Aggregate these locally important forest blocks, wildlife habitat and associated resources into a regionally significant map so that we can see these resources across municipal boundaries and work together to protect them.
 - b. Resource Protection Audit – Identify what resources are being protected and to what standard. Map this information based on tiers of resources based on scale (i.e. small scale rare species locations and wetlands versus landscape scale forest blocks) and protection standards. Small scale resources may require higher standards, where landscape scale resources may accommodate some development and require less protective standards to maintain functions and values.
 - c. 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.
 - d. Education - Educate engineers, developers, real estate professionals, planners and the public regarding resources and methods for restoration and protection.
 - e. 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.
 - f. To protect significant habitats, development should be located to avoid state and local known constraints that have been field verified, and to minimize impacts to state and local possible constraints that have been field verified.
 - State and Local Known Constraints, as protected by municipalities and State agencies, are shown on Map 9 and include the following: State - significant natural communities and rare threatened and endangered species, vernal pools (unconfirmed and confirmed), and Class 1 and Class 2 Wetlands, Local Known Constraints: see constraint tables under the description of Map 9 in Supplement 3.
 - Possible State and Local Constraints, as protected by municipalities and State agencies, are shown on Map 9 and include the following: Protected Lands (state lands in fee simple ownership and privately conserved land), deer wintering areas, the Agency of Natural Resources Vermont Conservation Design Highest Priority Forest Blocks, Local Possible Constraints: see constraint tables under the description of Map 9 in Supplement 3.
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



2018 Chittenden County ECOS Plan

Supplement 2 – Regional Analysis
Adopted 6/20/2018

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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.

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** Vermont's forest cover was as low as 35% in the mid to late 1800's; but after major reforestation it is now 74%. However, for the first time in a century the State is experiencing an overall loss of forest cover. This is true in Chittenden County as well; the County sees fragmentation and loss of forest blocks and *habitat* connectors largely due to scattered residential development. While 86% of our growth has occurred in our areas planned for growth since 2011; we still experience incremental growth that breaks up the forests. The most significant change is the pattern of the forest cover and relative connectedness of forest blocks to each other and riparian areas. The Agency is seeing forest blocks in Chittenden county getting smaller and more isolated from other forest blocks, as well as surface water and riparian areas. Leaving isolated islands of habitat contributes to losses in biodiversity. Growth outside of planned areas has had a visible (and ecological) impact on the pattern of forests and forest cover. These trends speak to the broader concept of the pattern of forest cover versus focusing on core forest areas. 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 forest and 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. Support of water quality improvement has been an ongoing effort of the Vermont Agency of Natural Resources and since 2012 the following initiatives have come into effect or been updated: Shoreland Protection Act and Permit; Update of Lake Champlain Watershed Basin Plans - Lamoille and Northern Lake Champlain; Flood Hazard Area and River Corridor Protection Rule and Permit; Update of Stormwater Rules and Permits; and Designation of Sandbar Wetlands as a Class I Wetland.
- **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 the Public Safety, Criminal Justice & Hazard Mitigation Section in this Supplement 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://dec.vermont.gov/air-quality>).
- **Climate Change Mitigation & Adaptation** – Plants 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. Also, reducing fragmentation of forest blocks and riparian areas will help limit the effects of climate change on species. As species adjust their ranges, they will need to cross roads and less suitable habitats. Maintaining a connected network of lands and waters is the one of the most important climate change adaptation strategies.

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.

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 Supplement 4 for cost estimates, funding sources and proposed timelines for six 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 site 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://map.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

- **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

Additional Indicators can be found on the ECOS Scorecard.

Indicator	Location
Conserved Land, 2010,2015	Scorecard

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](#); [Vermont Wood Fuel Supply Study](#) – Biomass Energy Resource Center, 2010]

- 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.
- Meeting Vermont's goal of obtaining 90% of energy from renewable sources by 2050 may necessitate an increase in biomass used for advanced wood heating, district heat and electricity production. The McNeil Generating Station in Burlington is the region's largest user of biomass for energy generation. Most of the wood fueling the McNeil Station in Burlington comes from within 60 miles of the station and is a byproduct of other forestry operations. At full load, approximately 76 tons of wood chips are consumed per hour (about 30 cords). This far exceeds Chittenden County's abilities to produce biomass. A study conducted in 2010 showed that even if Chittenden County's entire annual wood harvest was put towards the McNeil Station, and all non-constrained forest land were harvested at a comparable rate, the McNeil Station could only run for 57 days on wood from Chittenden County. Large amounts of available wood can be found in other parts of Vermont, and neighboring counties in New Hampshire, Massachusetts and New York. Chittenden County may continue to rely on sustainably harvested forest products from both inside and outside the county to meet its biomass needs.
- 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. Working lands are also a significant contributor to our economy. The harvest and manufacturing of forest products is a \$1.4 billion annual industry in the state. The challenge is to plan and manage future growth, including economic development, so that it sustains and enhances these economic resources. 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,

13. 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. Since 2011, the region has seen at least 80% of new housing built in the areas planned for growth which are the center, metro, suburban, and village planning areas. This land use pattern reduces energy for transportation and land use because homes are located near jobs and services which promotes increased opportunities for carpooling, pedestrian/bicycle travel, availability of transit, and reduction in vehicle miles traveled.
- 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).

17. ENERGY

Energy Goal: Move Chittenden County's energy system toward a cleaner, more efficient and renewable system that benefits health, economic development, and the local/global climate by working towards the State's Comprehensive Energy Plan goals.

The goals of the 2016 Vermont Comprehensive Energy Plan are to:

- Weatherize 80,000 Vermont homes by 2020
 - Intermediate goal of 60,000 homes by 2017
- Get 90% of Vermont's energy from renewable sources by 2050
 - Intermediate goal of 25% of energy from renewable sources by 2025, including 10% of transportation energy
 - Intermediate goal of 40% of energy from renewable sources by 2035
- Reduce total Vermont energy consumption by more than 1/3 by 2050
 - Intermediate goal of 15% reduction by 2025

To meet state energy goals, the region is planning for a major shift away from fossil fuels in the transportation and heating sector to renewable sources of energy, efficiency in all sectors, and an increase in state renewable energy generators.

Key Issues/Trends/Insights

[Data for this section drawn from: Energy Analysis, Targets & Methodology in Supplement 6 of this Plan, [Energy Analysis Report](#) and associated appendices and [Climate Change Trends and Impacts Report](#)].

Efficiency and Conservation

- 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. Following the Home Performance with ENERGY STAR® guidelines and building/renovating to the State's Building Energy Code are two programs which assist Vermonters with reducing energy consumption from heating and electricity in homes and businesses. See Indicators for data on efficiency gains.
- The State of Vermont's goal to weatherize 80,000 Vermont homes by 2020 and 60,000 homes by 2017 is optimistic. Progress on weatherization has been low despite programs such as the State of Vermont's Heat Saver Loan Program. According to the LEAP analysis Chittenden County would need to weatherize 14% of homes by 2025 and 70% of homes by 2050.
- Electric efficiency programs have always worked to reduce the region's overall load. As demand for electricity increases and renewables continue to become part of our energy supply managing demand is vital to maintaining grid health. Smart Grid technology coupled with education, behavior change, price signaling (e.g. time of use rates), and load control technologies can help reduce peak demand and defer substation upgrades which can result in substantial cost saving.

for a switch to electric vehicles, carpooling, transit ridership, walking/biking and a smaller energy footprint per household. Dense population centers make distributed generation easier, because energy can be produced near significant numbers of customers. Finally, the county's dense land use pattern may allow for innovative energy solutions, such as district heating and microgrids. Switching home heating away from fossil fuels is a key strategy for meeting our energy goals. Cold climate heat pumps, which use heat from the outside air to heat a home, and biomass systems, such as pellet stoves, are home heating alternatives that do not use fossil fuels.

- Chittenden County citizens, businesses, and industries spent about \$669 million on energy in 2015 (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.
- 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 gasoline and diesel for transportation. Gasoline consumption has increased as more residents drive to and from work, and run errands.
- 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. It is important to note fuel use in the aviation sector was removed from CCRPC's LEAP analysis and modeling of future energy use, as this is a sector the region will have little influence over.
- As we transition to more renewables, grid resilience is valued by both residents and business, especially because Vermont's climate makes us vulnerable to grid outages. When storage is coupled with distributed energy generation it can provide a source of backup power and also offer the potential to minimize loads at peak times, thereby reducing energy costs.
- A Vermont statute passed in 2015, Act 56 requires Vermont's Electric Utilities to be 55% renewable by 2017, 75% by 2032, and 90% by 2050. Also as part of Act 56, electric utilities need to work with customers to reduce fossil fuel and decrease carbon emissions from transportation and thermal heating by offering new innovative programs and services to their customers. Shifting from fossil fuels to an ever-increasing renewable energy resource will drive down carbon emissions. The electric utilities subject to Act 56 are offering innovative products and services to meet the statute and deliver innovation. These electric utilities offer a host of services and programs that encourage strategic electrification to reduce fossil fuel use.
- Vermont Gas Systems is currently working to deploy renewable natural gas in their service territory. The economic viability of renewable natural gas, its impacts on climate change, and its classification as a renewable resource will be monitored.

Renewable Energy Generation

- 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.
- 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; and Extension of natural gas service to St. George village center; and Burlington is hoping to advance a district heating system using McNeil's waste heat for distribution to the down town core, among other venues. See the CEDS Project list in Supplement 4 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. An adequate distribution grid that is able to accommodate the planned increase in electricity use and reduces energy loss is necessary to meet the goals of this section.
- CCRPC has undergone a process to look at areas suitable for solar and wind energy generation to determine our ability to meet the 90% renewable by 2050 goal. See the key indicators below for an analysis of existing generation and future generation possibilities.
- In 2016, the Vermont Legislature Enacted Act 174 to improve energy planning and give town and regional plans greater weight or "substantial deference" in Public Service Board proceedings. The effects of "substantial deference" have yet to be tested in PSB proceedings.

Key Indicators

Additional indicators can be found on the ECOS Scorecard.

Indicators	Location
Annual Natural Gas Consumption	Scorecard
Annual Electricity Consumption	Scorecard
Percent of Electricity Saved	Scorecard
Renewable Energy Capacity Sited in Chittenden County	Scorecard

See Supplement 6 for the complete Act 174 Energy Planning Analysis and Targets



2018 Chittenden County ECOS Plan

Supplement 3 – Regional Plan
Adopted 6/20/2018

For a healthy,
inclusive, and
prosperous
community



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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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.



2018 Chittenden County ECOS Plan

Supplement 6 – Energy Analysis,
Targets, & Methodology
Adopted 6/20/2018

For a healthy,
inclusive, and
prosperous
community



**This plan is the Regional
Plan, Metropolitan
Transportation Plan, and
Comprehensive Economic
Development Strategy in
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**This plan can be found
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TABLE 29. MUNICIPAL RENEWABLE ENERGY TARGETS

Town Name	Population	Population Share	Electricity Use (2016) kWh	Electricity Share	Average of Population and Electricity Use	Total Low Target (MWh)	Total High Target (MWh)	Existing Renewables (MWh)	Low Range New (MWh)	High Range New(MWh)
Bolton	1,236	1%	6,438,601	0%	1%	4,218	7,057	328	3,890	6,729
Buels Gore	39	0%		0%	0%	92	154	6	86	148
Burlington	42,570	27%	337,120,744	18%	22%	168,431	281,769	285,442	✓	✓
Charlotte	3,822	2%	17,731,242	1%	2%	12,607	21,090	5,059	7,548	16,031
Colchester	17,293	11%	130,883,974	7%	9%	67,204	112,427	2,086	65,119	110,341
Junction + Town	20,419	13%	812,560,922	43%	28%	211,386	353,629	43,750	167,636	309,879
Hinesburg	4,472	3%	21,863,227	1%	2%	14,975	25,051	1,457	13,517	23,594
Huntington	1,875	1%	6,006,362	0%	1%	5,644	9,442	629	5,016	8,814
Jericho	5,043	3%	19,583,562	1%	2%	15,869	26,547	1,347	14,523	25,201
Milton	10,610	7%	73,247,256	4%	5%	39,817	66,610	102,752	✓	✓
Richmond	4,115	3%	18,449,817	1%	2%	13,445	22,491	4,485	8,960	18,006
Shelburne	7,566	5%	52,476,876	3%	4%	28,443	47,582	4,648	23,795	42,934
South Burlington	18,536	12%	209,096,439	11%	11%	85,841	143,604	13,988	71,853	129,616
St. George	764	0%	2,785,411	0%	0%	2,368	3,961	312	2,056	3,649
Underhill	3,061	2%	10,831,229	1%	1%	9,420	15,759	765	8,656	14,995
Westford	2,013	1%	7,193,338	0%	1%	6,209	10,387	411	5,798	9,976
Williston*	9,054	6%	115,680,384	6%	6%	44,647	74,691	3,435	41,213	71,256
Winooski	7,223	5%	42,522,563	2%	3%	25,633	42,882	30,297	✓	12,584
County Total	159711	100%	1,884,471,945	100%	100%	756,250	1,265,134	501,196	255,054	763,938



Village of Essex Junction
Comprehensive Plan 2019-2027
Adopted: August 13, 2019

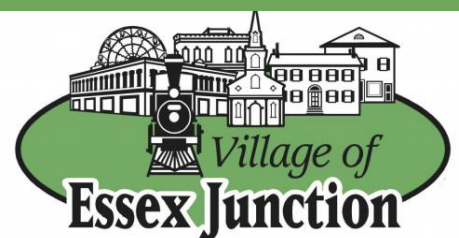
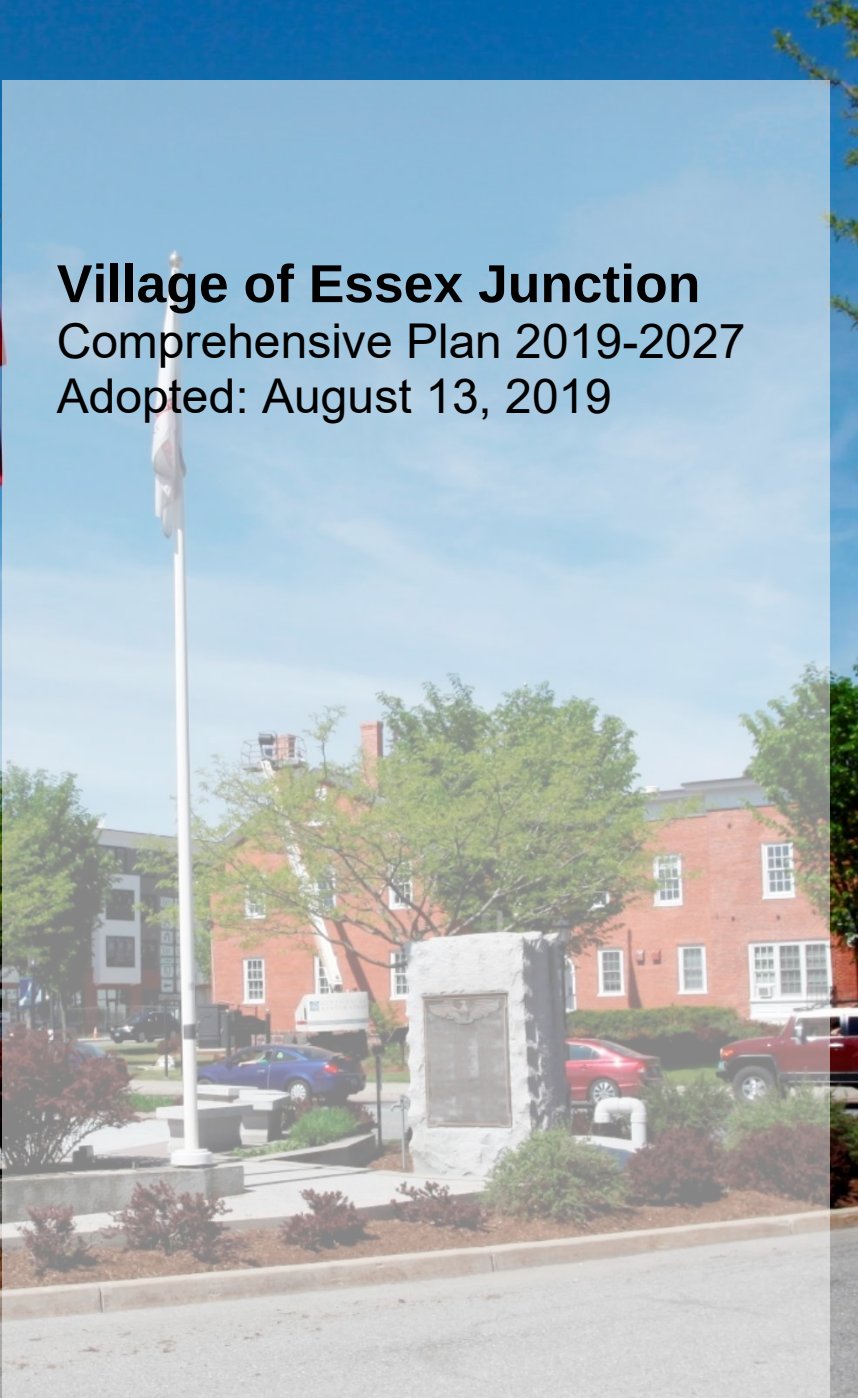


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Vision and General Goal: To recognize and enhance the role of Essex Junction's existing business and industrial base for both the local **ECONOMY** and the Chittenden County **REGION** as a major employment and transportation center.

Thoughtful Growth: We value wide-open spaces and tight-knit neighborhoods, rural roads and vibrant downtown streets. Essex is a place where we can enjoy a beautiful view, walk in the woods, and go out to eat without ever leaving town. We support a diverse housing mix, opportunities for business development and a transportation system with a variety of options including a connected network of walking and biking routes.

Vision and General Goal: To ensure a well-balanced and desirable **COMMUNITY** with a **DIVERSITY** of options to live, work and play. With a healthy and vibrant Village Center (aka **DOWNTOWN**) as the focal point including a full range of services and activities, surrounded by the Junction's highly valuable **NEIGHBORHOODS**, and connected with a network of walking and biking routes. This vision can only be reached by encouraging new development in commercial, industrial and multi-family districts within the Village while managing this new **GROWTH** with high standards to both protect and improve the **IDENTITY** of the Village's historic character, and to minimize **LAND USE** conflicts that may occur from infill and redevelopment of underutilized properties. Additional General Goals include: Cultivate public and private investment options for community improvements. Cooperate with adjoining communities to ensure quality development; and to protect the Village from negative impact of adjoining development. Minimize the total economic cost of providing housing, utilities, transportation and public facilities and services (aka **COST EFFICIENCY**).

Health and Recreation: We value public places for outdoor and indoor recreation for all ages and abilities. We treasure Indian Brook reservoir, Tree Farm Recreation Facility, neighborhood parks and the chance to connect by bicycle or on foot. We believe the design of the Village should support positive health behaviors and food access. Community institutions provide education and programs to support healthy lifestyles.

Vision and General Goal: Maintain an aesthetically attractive **URBAN ENVIRONMENT** that is sensitive to the **NATURAL ENVIRONMENT**.

Community Connections: Our deep connections with each other make Essex special. Neighbors help each other during good times and bad. We value diversity and welcome everyone. We build our sense of community at local events such as the Memorial Day Parade,

2.3. The Planning Challenge: Toward 2027 and Beyond

Essex Junction is a dynamic and largely developed community with a good mix of residential, commercial, and industrial development. It has desirable neighborhoods, accessible parks, and open space areas, and established downtown and commercial centers. Portions of its commercial areas can be classified as mature urban with underutilized properties that present opportunities for redevelopment and renewed investment. Therefore, the planning challenge for Essex Junction is to manage growth, encourage reinvestment in the existing urban environment, protect existing neighborhoods and ensure that redevelopment or new development enhances the vitality and "Village" character of Essex Junction.

Land use goals that the Village has set for itself will be detailed in the chapters and sections that follow. However, the most important issues that are being grappled with today will define the priorities for Essex Junction for the coming eight years.

Goal 1: Assist and work with existing businesses to stay and grow in Essex Junction.

Objective 1.1 Encourage and assist new businesses and clean industries to invest in Essex Junction.

Objective 1.2: Maintain a favorable business climate in Essex Junction.

Objective 1.3: Engage in policies to make progress on the transit specific strategies in the Town's Economic Development and Vision Plan including #4 (regional multi-modal improvements), #10 (freight rail service expansion), and #12 (transit-oriented development).

Objective 1.3: Continue efforts to revitalize the Village center and attract business through public investment in infrastructure.

Goal 2: Promote thoughtful growth.

Objective 2.1: Ensure that new development and rehabilitation efforts enhance and reinforce the existing architecture, design and layout along major arterials and historic neighborhoods.

Objective 2.2: Encourage mixed-income infill housing within existing developed areas in the commercial and multi-family districts.

Objective 2.3: Promote the redevelopment of underutilized properties in the Transit Oriented Development (TOD) and Village Center District.

4.1. Energy

To align this plan with the State of Vermont's Comprehensive Energy Plan goals, the Village and the Town of Essex developed a joint enhanced energy plan. The enhanced energy plan, found in Appendix D, is the Essex Community's plan for shifting away from fossil fuels to renewable sources of energy in the transportation and heating sectors, increase energy efficiency in all sectors and site additional renewable energy generators.

The Comprehensive Energy Plan aims to reduce total energy consumption per capita by 15% by 2025, and by more than 33% by 2050; to weatherize 25% of all homes by 2020; and to reduce greenhouse gas emissions from within the state to 50% of 1990 levels by 2028, and to 75% of those same levels by 2050. The challenges set forth in the Comprehensive Energy Plan are not easily met.

The energy plan describes how the Essex Community intends to act to implement the state energy goals outlined above. Meeting these goals will require ambitious action to transform the way the Essex Community uses, stores, and produces energy.

The following transformations are needed for the Essex Community as the most likely pathway to meet these goals by 2050, given current technologies:

- Establish enough renewable energy generation sites to generate between 211,386 to 353,629 MWh of electricity.¹
- Increase electric vehicles to 89% of passenger vehicles registered in the Essex Community.
- Fuel 96% of heavy-duty vehicles with biodiesel or other renewable carbon free fuel sources.
- Weatherize 100% of homes and 38% of commercial and industrial establishments.
- Heat 60% of homes with electric heat pumps and 14% of homes with wood.
- Heat 38% of businesses with electric heat pumps and 11% with wood.

¹ The renewable energy target is expressed in MWh because the target is intended to be technology neutral. The Essex Community's target takes into account both electricity used in the commercial, industrial, and residential sectors. The target is modeled based on population and electricity usage. The Essex Community makes up 43% of electricity used in Chittenden County; therefore, the community's target is among the highest in the County.

4.2. Agriculture and Community Forestry

Agriculture is alive and strong in Essex Junction as evidenced by conservation of the Whitcomb Farm, a waitlist for community garden plots, restaurant participation in the Vermont Fresh Network, and Farm to School.

The Whitcomb Farm provides many valuable resources to the Village, including productive agricultural land. The Whitcomb Farm also promotes agriculture education, open space, recreation and wildlife habitat. The Whitcombs and the Village also benefit from the farm's utilization of treated biosolids from the Waste Water Treatment Plant as fertilizer. Additionally, a 2.2 MW solar project was installed on the Whitcomb Farm in 2014 which contributes to the Village's renewable energy generation target. See the Essex Community Energy Plan for more information regarding energy.

The Village Trustees provided the Whitcomb Farm with a three-year tax break in 2011, securing public recreation on the property and supporting the Whitcomb's efforts to conserve the land. In addition, the Village voted to use \$20,000 of the land acquisition fund toward the Vermont Land Trust's purchase of development rights from the Whitcomb Farm. This resulted in 414 acres being protected from development and will keep it as a working farming in perpetuity.

In addition to the Whitcomb Farm, the importance of local agriculture to the residents of the Village is evidenced by:

- Restaurants have joined the movement by participation in the Vermont Fresh Network;
- The Village Recreation and Parks Department also run a Community Garden Program with approximately 150 garden plots at the West Street Garden and the Meadow Terrace Garden (and there are waitlists for use of these plots). The Department also hosts gardening classes;
- The Village adopted a chicken ordinance to allow homeowners to have chickens in their backyard. As of March 2019, 9 chicken permits have been issued; and
- Essex Westford School District is committed to providing the best in nutrition and overall wellness education for students of all ages, their families, and the surrounding community.

Just as agriculture is important to the residents of the Village, so is community forestry. The benefits of a healthy and robust community tree canopy are extensive. The International Society of Arboriculture, names the following (plus many more) benefits:

4.3. Business/Economic Development

Essex Junction continues to be a strong employment center for large and small, service oriented, retail, and manufacturing enterprises. As the host community for Global Foundries the Village has a proven track record of developing business partnerships that last. The following strengths combine to make Essex Junction a great place to locate and/or invest in a business:

- The Village is strategically located within the region and has the infrastructure to support new businesses and business expansion. The Village is a transportation hub, with close access to Interstate 89 and Vermont Routes 15, 2A, and 117, and Burlington International Airport. In addition, the Village is working towards the construction of the Crescent Connector- a Circ alternatives project that will help to mitigate traffic at Five Corners and open areas of underutilized land in the designated Village Center to development. The downtown transportation terminal is a major stop for Amtrak and for Green Mountain Transit which provides county-wide public transportation.
- The Village has a variety of old and new, large, and small business properties. The historic Village Center and Pearl Street commercial corridor have had multimillion dollar, federally funded restorations, and redevelopment. In addition to Global Foundries, the Village is home to the Center for Technology, Essex, which is Vermont's largest secondary technical education facility and the Champlain Valley Exposition, Vermont's largest indoor and outdoor exposition center.
- There are approximately 225 small businesses in Essex Junction, according to the Village's March 2019 List of Businesses.
- Agriculture is an important industry in Essex Junction as evidenced by conservation of the Whitcomb Farm, a waitlist for community garden plots, restaurant participation in the Vermont Fresh Network, and the Farm to School program. More information can be found in the Agriculture & Community Forestry section.
- The Village maintains an inventory of existing businesses and available properties to help connect new or expanding businesses with local resources and building space. The inventory of businesses can be found on the Village of Essex Junction website (<http://www.essexjunction.org/business/list/>).
- The Village has adequate sewer capacity for new development.
- The Village has a [Commercial Tax Stabilization Policy](#) intended to encourage economic development, diversify the tax base, enhance the street scape and provide long-term growth in the Grand List and help maintain the vitality of the Village of Essex Junction's commercial business district. Any for-profit or non-profit corporation, partnership,

Village plans for an economic strategy that capitalizes on the economic impact of CVE fair and non-fair related events, and works with property owners to develop underutilized sites for residential and mixed-use development.

Tourism

The cultural resources found in the Village are part of the economy. Since 2002, the Village has been one of twenty-two communities of the Lake Champlain Byway designated by the Vermont Transportation Board. The byway supports projects that balances the promotion, preservation, enjoyment, and stewardship of the Byway's intrinsic resources primarily scenic, outdoor recreation, and historic resources. The Village has worked with the Byway to install outdoor interpretative panels and a large informational kiosk and provided information about the Village's intrinsic resources for inclusion in the Byway's brochures and on the [Byway's website](#).

Innovation and Entrepreneurial Development

The Chittenden County ECOS Plan states the need for opportunities to nurture the entrepreneurial environment and provide support systems for new startups. Business incubator spaces are a key ingredient to fostering innovation and entrepreneurial development. Incubator spaces can attract a technologically skilled workforce by offering networking opportunities and infrastructure (such as broadband and marketing) at a smaller scale. These are critical resources for new business which spur economic growth and bring entrepreneurs together. [Excelerate Essex](#), an innovative co-working space providing various amenities and essentials to modern professionals is an asset to the Village.

Champlain Valley Exposition Fairgrounds

CVE is a major year-round events venue. CVE is strategically located close to the Village Center and on a main road, which creates opportunities for local business to capitalize on the influx of people to the Village for CVE events. Public Village representatives should participate in the planning of any changes to the present use, or to the present master plan, as this will affect both the surrounding residents and the entrance into Essex Junction. Any new Master Plan or changes to the existing Master Plan should emphasize mixed use with a base of light industry and commercial uses. In addition, the Village should carefully consider and encourage businesses that support the events at CVE such as hotels and restaurants.

Global Foundries

Essex Junction maintained a strong employment base since IBM located within the Village 1957. In 2014, IBM paid Global Foundries to take over the site. Global Foundries is Vermont's

second largest private employer and has a major economic impact on the local, regional, and state economies. While Global Foundries has decreased in size, they remain the employment "anchor" in Essex Junction, as well as within the surrounding communities. The demand for commercial and professional services is largely the result of Global Foundries.

Prior to Global Foundries acquiring IBM, the site was renamed the Champlain Valley Technology and Innovation Park (Innovation Park) and a master planning process was completed to attract additional businesses to the site. The intent of the master plan is to develop 300,000 square feet of Light Industrial space on Maple Street to diversify and attract more employers. Diversification on this site will help the Village, Region and State to continue to concentrate investment in this area and increase employment opportunities. The plan's first piece, a new headquarters for the Essex Police Department, was already completed. The Village should support development and infrastructure policies and investments that meet the needs of Global Foundries and other Innovation Park businesses, but also minimize impacts on the local residents.

Implementation Strategies from the Town's Economic Development and Vision Plan

The Village Planning Commission endorses the implementation strategies of the Town's Economic Development and Vision Plan and should engage in policies to make progress on the strategies as opportunity arises. The Village is particularly interested in maximizing success in the transit specific strategies as identified in #4 (regional multi-modal improvements), #10 (freight rail service expansion), and #12 (transit oriented development). The Essex Selectboard asked the Economic Development Committee (EDC) to prioritize the 13 implementation strategies that were identified in the 2010 Economic Development and Vision Plan: Essex, Vermont prepared by BBP and Associates. Many of the strategy recommendations are resource expansive and intertwined, and as a result, were prioritized by the EDC with the goal of maximizing the potential effectiveness of strategies within the human and fiscal resources available. The following list shows the strategies ranked in priority order, from highest to lowest, as summarized and/or amended by the EDC:

1. Major Roadway Improvements- The Town is encouraged to engage actively in infrastructure improvement projects, such as completion of the Circ Highway, VT Route 15 corridor improvements, and VT Route 117 improvements, along with the Crescent Connector, (in the Village).
2. Strategic Industrial Park Evaluation- The evaluation, with regards to the Town's two industrial parks, should enable a better understanding of what is working, what is not, and what is next.

3. Government Service Retention and Expansion -The focus would be on the retention of current government services and the attraction and expansion of Federal and State government services, along with the development and submittal of projects that may not be feasible without appropriations from other governmental sources.
4. Regional Multi-Modal Improvements - Multi-modal projects can improve both the economic climate and the quality of life in Essex, with a focus on local projects.
5. Marketing Program -A marketing program should define an Essex brand, modes to present that brand, and identify niches the Town seeks to occupy (such as outdoor recreation, "green businesses," food commerce, and technology).
6. Champlain Valley Technology and Innovation Park- Communications should be established and maintained with the businesses here that better enable local government and the community to understand site opportunities and future plans and challenges.
7. Infill Development- Infill should be facilitated where appropriate, with care taken to preserve the character of neighborhoods and surrounding areas.
8. Business Visit/Assistance Team -A pilot program should be established to test the value of reaching out to existing Town businesses on a regular basis.
9. Business Development Data Center- Collecting and updating data on business status and infrastructure is resource intensive, with the costs outweighing potential benefits.
10. Freight Rail Service Expansion- Further investments in freight rail infrastructure can have a positive effect the Town's ability to attract business, as well as providing opportunities for expanded passenger rail access and service.
11. Local Education Resource Promotion - Promoting the high caliber local school system should be incorporated into a marketing program.
12. Transit-Oriented Development (TOD)- The Town should remain vigilant in its search for TOD opportunities and flexible in its response.
13. Green Entrepreneurial Center- A low priority, given the estimated price (\$5.3 million) to build a green incubator space.

The EDC believes housing, particularly affordable housing, is a critical component of an economic development strategy, though it was not included in or attached to any of the 13 implementation strategies.

Business/Economic Development Goals

Goal 1: Assist and work with existing businesses to stay and expand within Essex Junction. Assist and work with new businesses to invest in Essex Junction.

Objective 1.1: Maintain a favorable business climate in Essex Junction.

Objective 1.2: Encourage the development of a diverse array of residential units in the Village Center and Pearl St. Districts.

Objective 1.3: Consider performing market studies or other effort to identify and attract businesses to the Village.

Objective 1.4: Work with officials at Global Foundries, as well as the other businesses located at Innovation Park campus, to meet their future development needs. Develop a plan for diversifying the Innovation Park property.

Objective 1.5 Encourage opportunities for bandwidth improvements.

Objective 1.6: Work with [Excelerate Essex](#) to support efforts to create a culture and environment that encourages entrepreneurs and their start-ups (i.e. co-working spaces, technology training, maker & hacker spaces).

Objective 1.6: Work with Essex Economic Development Committee to help identify underutilized structures in the Village and assist in matching the landowners with business prospects.

Goal 2: To increase the Village's relationship with the local business community.

Objective 2.1: Look for strategic opportunities to work with business and property owners on economic development.

Objective 2.2: Work closely with regional businesses through active membership in such organizations as the Greater Burlington Industrial Corporation.

Objective 2.3: Encourage Village membership on key and regional committees involved with business expansion and economic development. Continue to work with the Essex Economic Development Commission, and the CCRPC.

Objective 2.4: Promote the Village as a destination for shopping, services, and tourism. Provide mechanisms for increased communication between the business community and Village Officials.

Objective 2.5: Continue to work with the Town and Essex Economic Development Commission on the implementation strategies from the Economic Development and Vision Plan: Essex.

Goal 3: To provide mechanisms for efficient and timely review of development applications.

Objective 3.1: While maintaining environmental standards, ensure that the local codes do not inhibit or prohibit local development.

Objective 3.2: Continue to provide an application checklist of all requirements for each stage of review.

Goal 4: To preserve and enhance the appearance and historical character of the Village of Essex Junction.

Objective 4.1: Maintain Design Review in the Village Center.

Objective 4.2: Design publicly financed improvements to preserve the character of the Village Center.

Objective 4.3: Establish local historic districts or other mechanisms to preserve existing residential structures of significant historic village character along major arterials and in historic neighborhoods.

Objective 4.4: Continue streetscape and landscaping efforts to attract private sector investment.

4.4. Open Space/Recreation/Public Health

Open Space bolsters local economies, ensures residents have opportunities for physical activity, preserves significant natural resources, provides recreational opportunities, and guides growth into appropriate areas. Through the Heart & Soul project residents put great value in their public places for outdoor and indoor recreation for all ages and abilities. Residents treasure Indian Brook Reservoir, neighborhood parks and the chance to connect by bicycle or on foot. This section describes the protection and management of these valued open spaces as follows: local parks, schools and recreational facilities that provide extensive active recreational opportunities; urban amenities such as sidewalks and plazas. Additionally, this section discusses the link between the health of the population on the design of the community in which people live, work, and recreate.

Local Parks, Schools and Recreational Facilities

The provision of parks and open space for active and passive recreation is an essential and treasured urban function. The 2007-2016 Essex Junction Recreation and Park Master Plan identified all park lands within the Village and determined that there is sufficient parkland to serve Essex Junction's residents. The plan also noted significant natural areas in close proximity to the Village including the Indian Brook Reservoir in the Town of Essex.

Within Essex Junction, the management of the parks, recreation programs and facilities are the responsibility of the Village. In 2017 the Essex Junction Recreation Program governance transferred from the school district back to the Village. This includes the management of all three of Essex Junction's formal parks along with all the school properties that contain the majority of active recreation facilities within the village. A full-time Recreation Director administers the program. A Recreation and Park Master Plan for 2007-2016 sets the vision, goals and implementation of future recreation projects and park maintenance.

Essex Junction's existing parks and open space include the following (See Map 3):

- A. Stevens' Park: 8.2-acre neighborhood park designed for passive, nature-oriented activities. Designed walking/jogging trail system (also used by bikers).
- B. Cascade Park: 10-acre neighborhood park designed for active recreation use. Youth baseball field; three (3) tennis courts; one (1) basketball court; one (1) mini-basketball court; one (1) established play equipment area; one (1) picnic pavilion; parking lot for 18 vehicles.

Wildlife Habitat/Connectivity & Forest Integrity

Considering Essex Junction is a growth area, this plan calls for promotion of vegetative landscaping in new development projects and municipal improvement projects to manage storm water, protect water quality and air quality, increase carbon sequestration, establish urban place making and wildlife habitat. Secondly this plan calls for protection of forest blocks, wildlife connectivity resources and crossings/corridors, surface waters, riparian areas, and other significant habitats (e.g. wetlands) from development and fragmentation, especially along the undeveloped parts of the Winooski River and the Indian Brook. These resources are further described below in the context of the Agency of Natural Resource's Vermont Conservation Design (VCD) Project.

The Essex Junction landscape is mostly a developed urban core which, for wildlife, presents highly fragmented and isolated backyard, woodlot, wetland, and streamside environments marked by a strong human presence. This type of habitat is home to wildlife species that can live near roads, houses, industry, people, and their pets.

Much of the land that was forested has been developed within the Village. The State of Vermont abandoned its tree nursery operation on Old Colchester Road and has sold the property to the Village and Town for recreational use. Other heavily forested areas are located on the Whitcomb Farm. Maintaining the forested areas on the Whitcomb Farm along the Winooski River is particularly critical for wildlife habitat and flood protection.

Vermont's Act 171 calls for the protection of "forest blocks" to maintain current biological diversity and allows for wildlife to move throughout their natural habitat. The Village relies on the VCD project's highest priority and priority landscape, species, and community components to identify areas of important ecological function. Use of VCD will inform decision making regarding identification of locations most suitable for development and those on which to focus conservation efforts. Considering some of these areas are in developed neighborhoods of the Village, the community will work to ascertain local choices for protecting the functional forest network identified in the VCD project to support species and to connect habitats. Areas of ecological significance, mapped on Map 1, include highest priority and priority components found at both the landscape and species/community scale. These areas are described below.

- **Landscape Scale Components** are identified at a larger scale than species specific habitats. Landscape scale components are areas of land that need to remain healthy and intact to provide plants, animals, and natural resources the best chance of survival over time. These landscape scale components consist of interior forest blocks, connectivity blocks, riparian wildlife connectivity, surface water and riparian areas, and various physical landscapes.

Because a fully functional landscape includes all components, all areas are amassed and given a ranked status being either priority or high priority. The ranking and location of the landscape components found in Essex Junction are mapped on Map 1 and the State's [BioFinder](#).

- **Species and Community Scale** represents lands and waters highly important for maintaining individual species or groups of species that contribute to Vermont's biodiversity. Similar to landscape-scale priorities, the dataset was created by assigning a priority status to numerous components, then amassing these components so that a location appearing as "highest priority" on any component appears as "highest priority" on the map. Highest priority components include rare species, rare natural communities, wildlife, wildlife crossing, and class 2 wetlands. Priority components include uncommon species.

As Map 1 shows there are a number of these habitat locations - most, but not all, are associated with the Winooski River, Indian Brook, Sunderland Brook, and the tributaries that feed them. The intact floodplain forest in the Winooski Valley Park District's Woodside Natural Area is significant because this type of forest is uncommon in Vermont as most have been cleared for agriculture. Efforts to protect these habitats and species are critical to protecting and preserving Vermont's heritage and can include conservation, restoration, and management plans. In summary, significant wildlife habitat includes those natural features that contribute to the survival and/or reproduction of the native wildlife of Essex Junction.

Scenic Views

Although there are many outstanding view sheds within the Village, three areas have been particularly identified. First, in the northeasterly section of the Village, between Upper Main Street and the Countryside development, is the highest point within the Village. Spectacular views of Mount Mansfield and the Adirondack Mountains are visible from this location. Second, the river crossing on Park Street provides views of the Winooski River and serves as a scenic entrance to the Village. Third, along the westerly end of Pearl Street there are spectacular views of the Winooski River Valley.

Agricultural Areas

The Village is fortunate to have an active farm still in existence. The Whitcomb Farm is in the southwest sector of the Village and has been actively farmed by the Whitcombs since 1879. The Vermont Land Trust, with funding assistance from the Village, purchased development rights on 414 acres of the Whitcomb Farm in March 2014. See the Agriculture section for more details.

Natural Environmental Resource Goals

Goal 1: Preserve the natural beauty indigenous to Vermont within the Village of Essex Junction.

Objective 1.1: Maintain regulations which encourage the preservation of trees in new development.

Objective 1.2: Implement a program of selective planting of trees on private property adjacent to existing road right-of-ways.

Objective 1.3: Promote and actively participate in an annual tree planting program.

Objective 1.4: Consider protection of the outstanding view sheds identified in this Plan through amendments to the Land Development Code.

Goal 2: Continue protection of existing natural resources identified in this section.

Objective 2.1: Continue to enforce stormwater treatment standards in the Land Development Code to improve water quality in impaired waters and to minimize non-point source water pollution from new development.

Objective 2.2: Continue to require retention of vegetation or effective re-vegetation of areas vulnerable to erosion.

Objective 2.3: Continue to work with the Center for Technology Essex to develop a nursery to raise street trees for the Village and Town.

Objective 2.4: Continue incentivizing growth in the areas planned for growth, so that development pressures on natural resources and open spaces are lessened.

Objective 2.5: Ensure protection of the Village's significant wildlife habitat as identified by the Vermont Conservation Design's highest priority and priority landscape and species/community components identified on Map 1 by inventorying the resources, determining their current level of protection, and if necessary, define them and establish standards for protection of them in the Land Development Code.

Objective 2.6: Analyze the thrust faults to determine how properties in these areas should be managed for protection of aquifer recharge and minimizing undue property damage.

Land Use Goals

Goal 1: Provide sufficient locations within the Village to accommodate a variety of land uses including public, quasi-public, residential, retail, commercial and industrial uses.

Objective 1.1: Consider redefining zoning district boundaries of the Village Center to address differences in land development patterns between the core commercial areas and the residential neighborhoods.

Objective 1.2: Encourage the development of a variety of residential units in the Village Center and Pearl Street Districts.

Objective 1.3: Study the purchase of key properties in and around the Village Center for public use.

Objective 1.4: Encourage a mix of land uses and mixed-use buildings to enhance the streetscape and add value aesthetically, economically, and socially to the Village Center.

Goal 2: Promote responsible residential growth and encourage the growth and maintenance of quality residential areas.

Objective 2.1: Conserve open space/agricultural land for future generations.

Goal 3: Mitigate negative impacts of contiguous but different land uses.

Goal 4: Ensure that quality land planning and structural design occur in all commercial and industrial areas in a manner compatible with surrounding architecture.

Goal 5: Coordinate land use decisions with associated public infrastructure needs including streets, sidewalks, bicycle paths, drainage, water, sewer, schools, recreation, and other public needs.

Goal 6: Provide mechanisms which encourage innovative development while maintaining the existing urban character of the Village.

Objective 6.1: Consider overlay districts and development agreements and enact design review to achieve innovative development.

protected from the adverse effects of urban developments. If development is to occur, the preservation of open space for agricultural or recreation purposes is important to the long-term environmental sustainability and quality of life in the district. Projects are reviewed on an overall project density basis to allow for the preservation of open space while achieving full build out. Open space networks and preservation of important natural resources should be integrated with new development in such a way as to allow for continued agricultural uses or emerging open space opportunities with responsible development.

Floodplain: To promote the public health, safety, and general welfare, to prevent increases in flooding and to minimize losses due to floods.

Open Space: To provide and maintain open lands within the Village and its neighborhoods, and to provide locations for public recreation and school facilities.

North Lincoln Street Overlay District: To allow land uses beyond those allowed by the underlying zoning district due to the fact that the properties within this district are not served by municipal sewer and property is relatively isolated.

Appendix C Maps

Map 1: Natural Resources

Map 2: Historic Sites

Map 3: Recreation

Map 4: Transportation

Map 5: Community Facilities

Map 6: Non-Motorized Transportation

Map 7: Wastewater

Map 8: Water Distribution

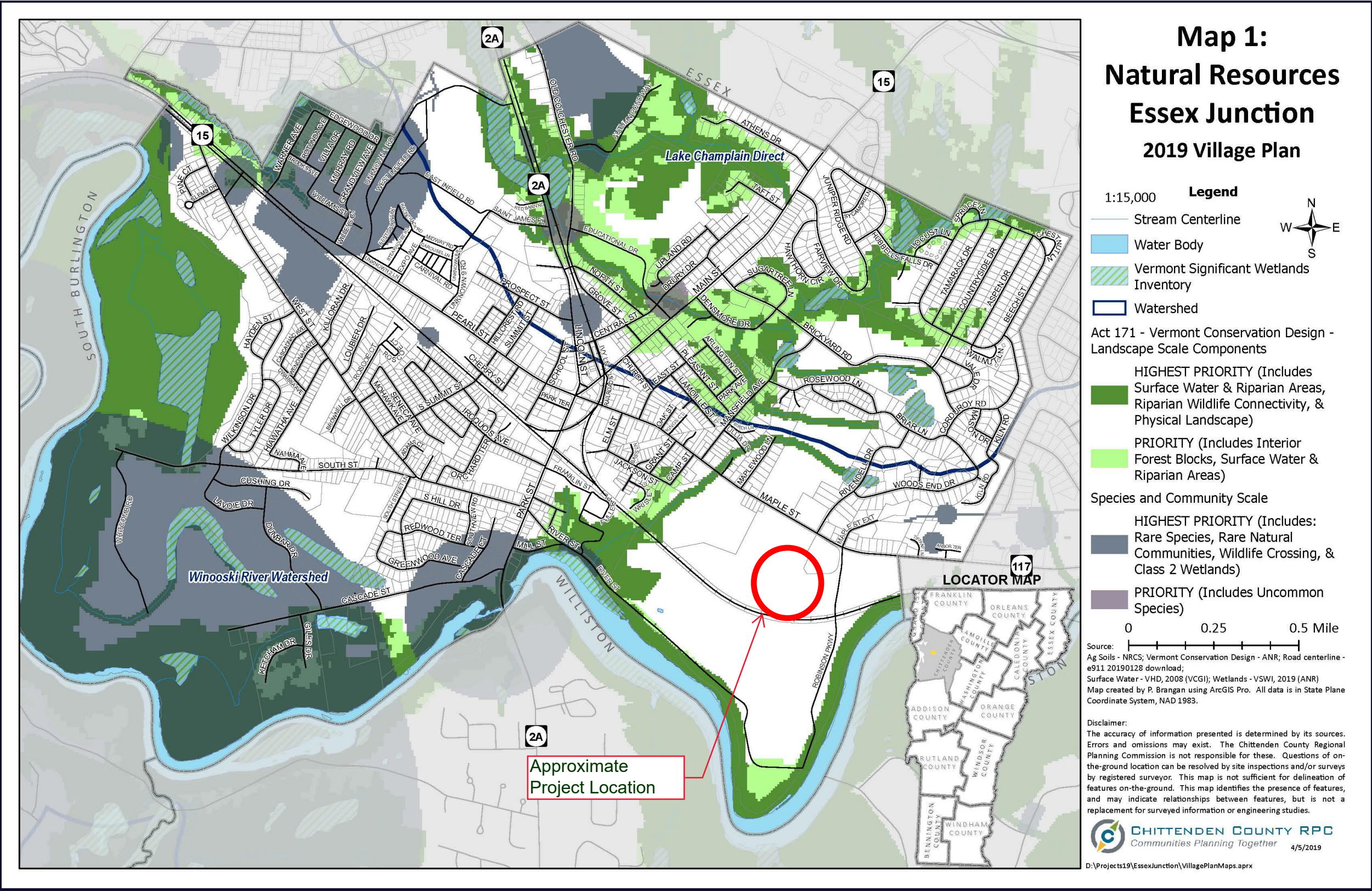
Map 9: Existing Land Use

Map 10: Future Land Use

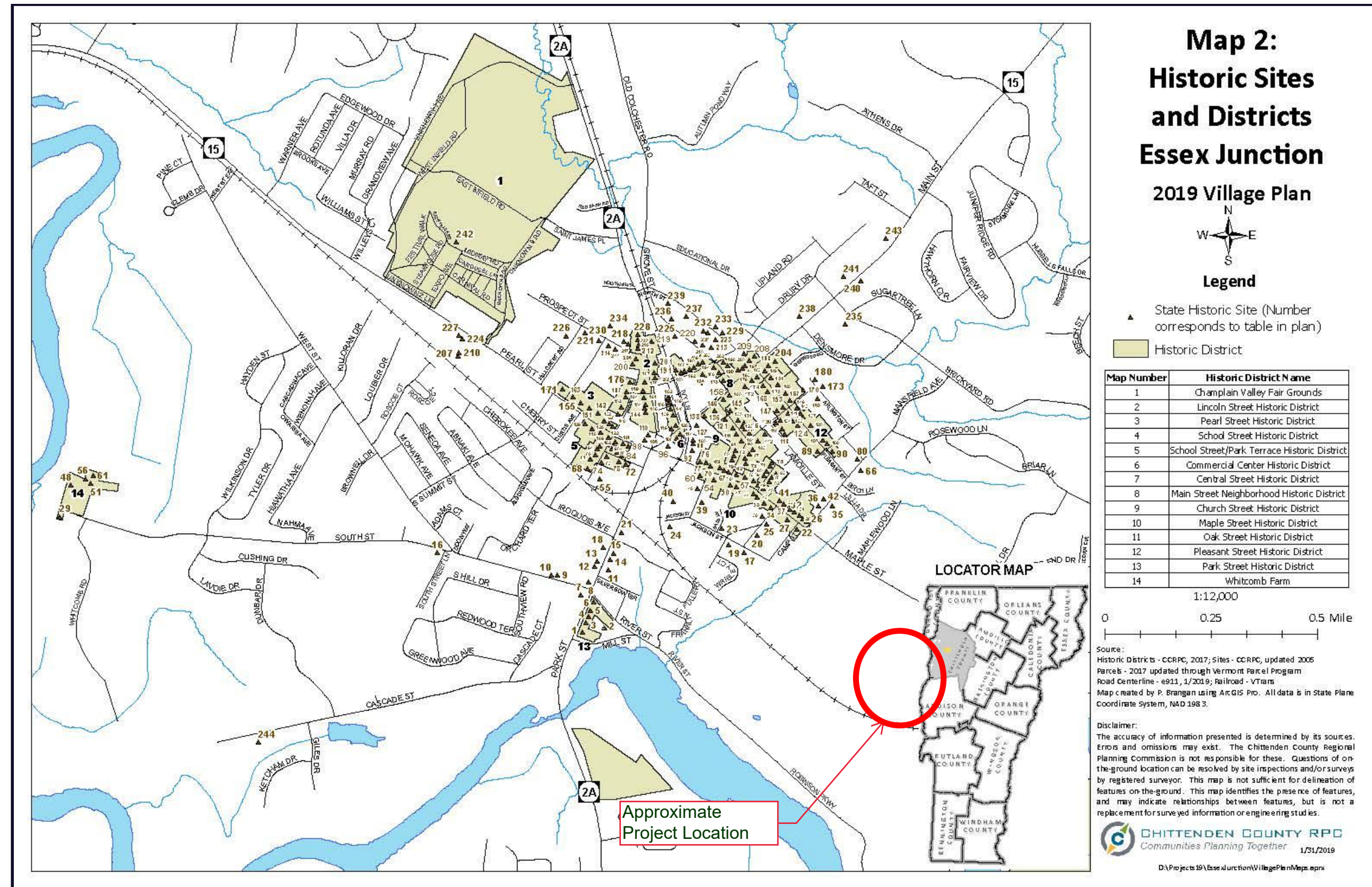
Map 11: Flood Hazard Areas

Map 12: Parking

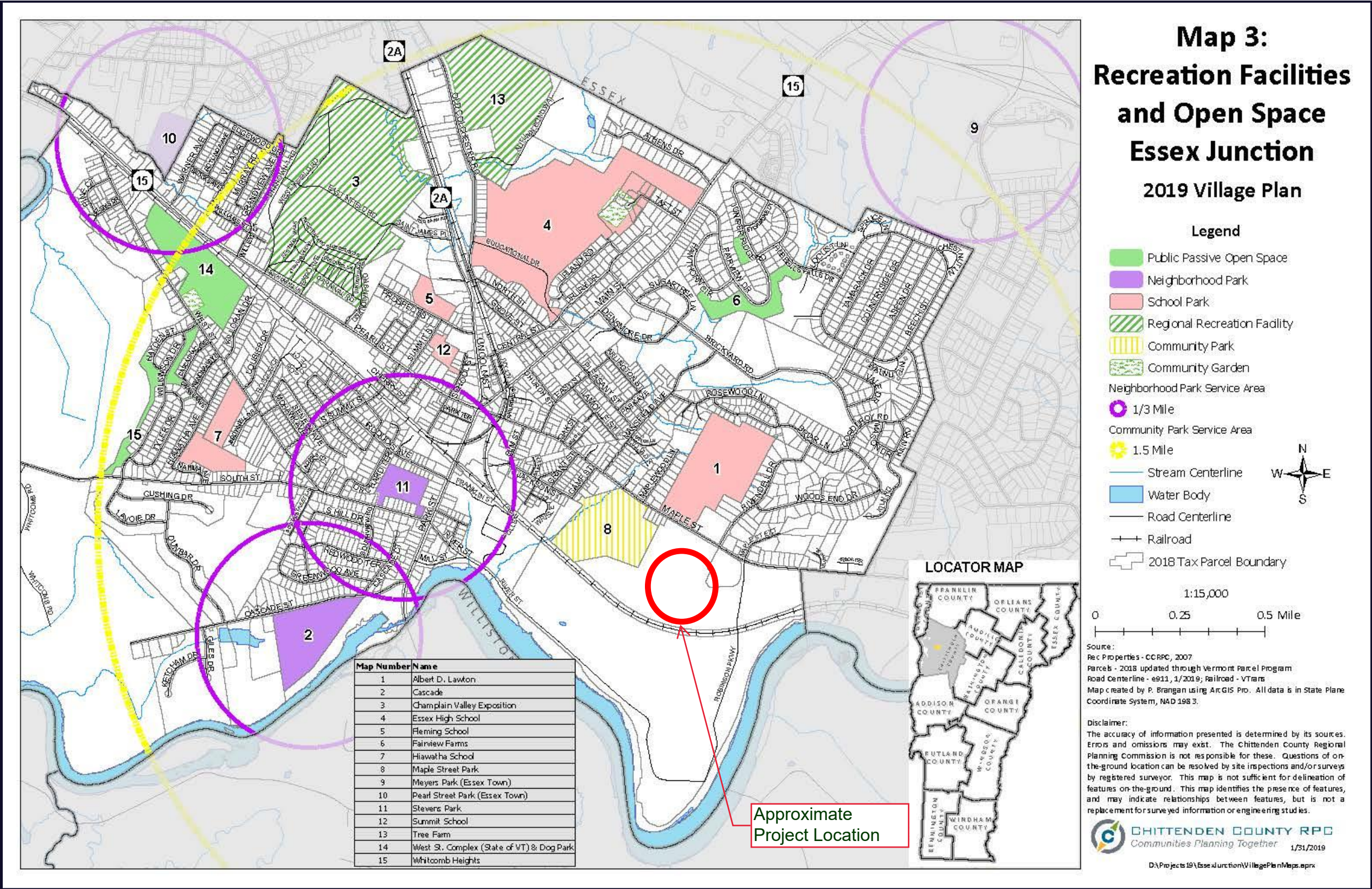
Map 1 Natural Resources



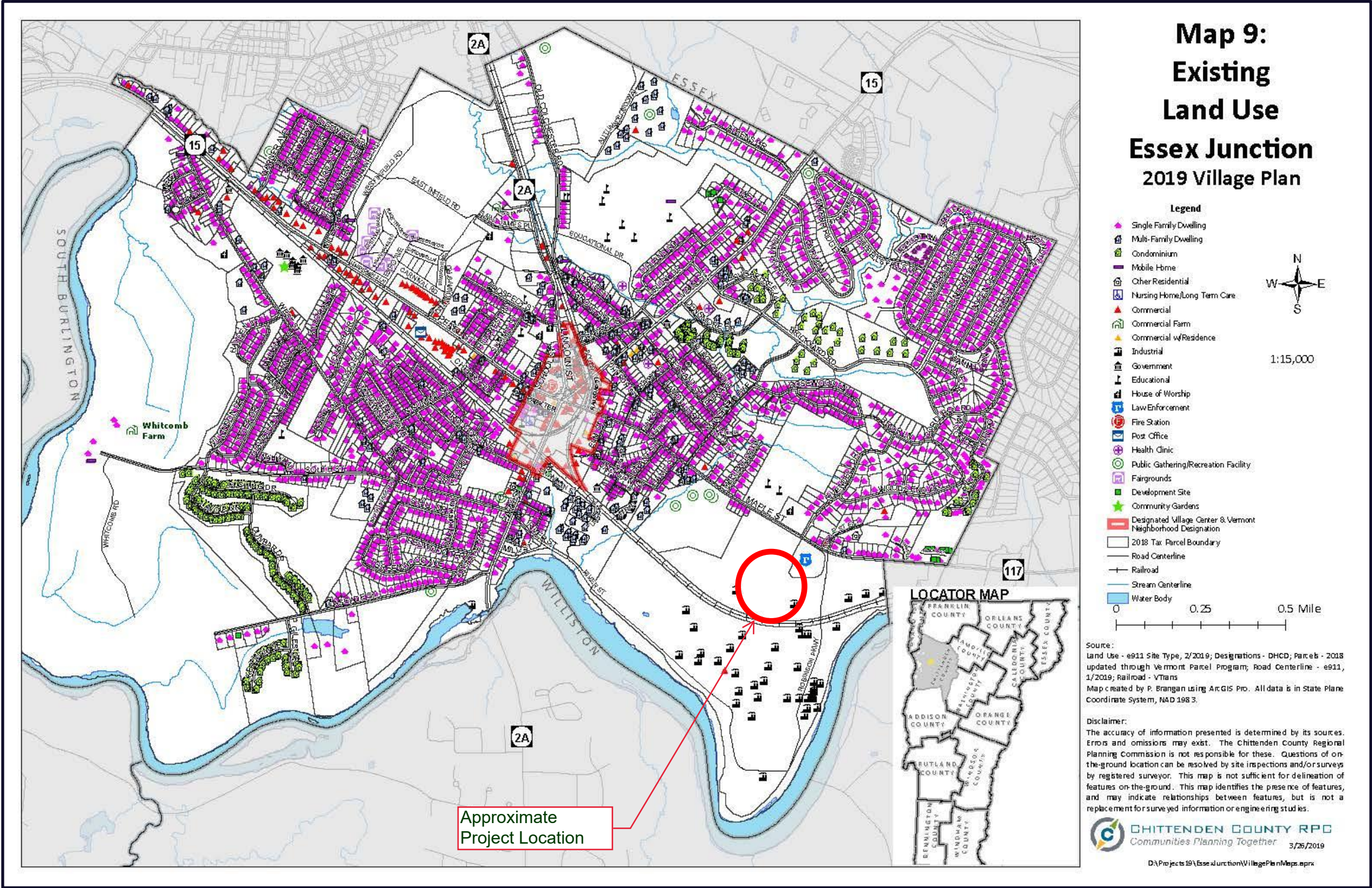
Map 2 Historic Sites



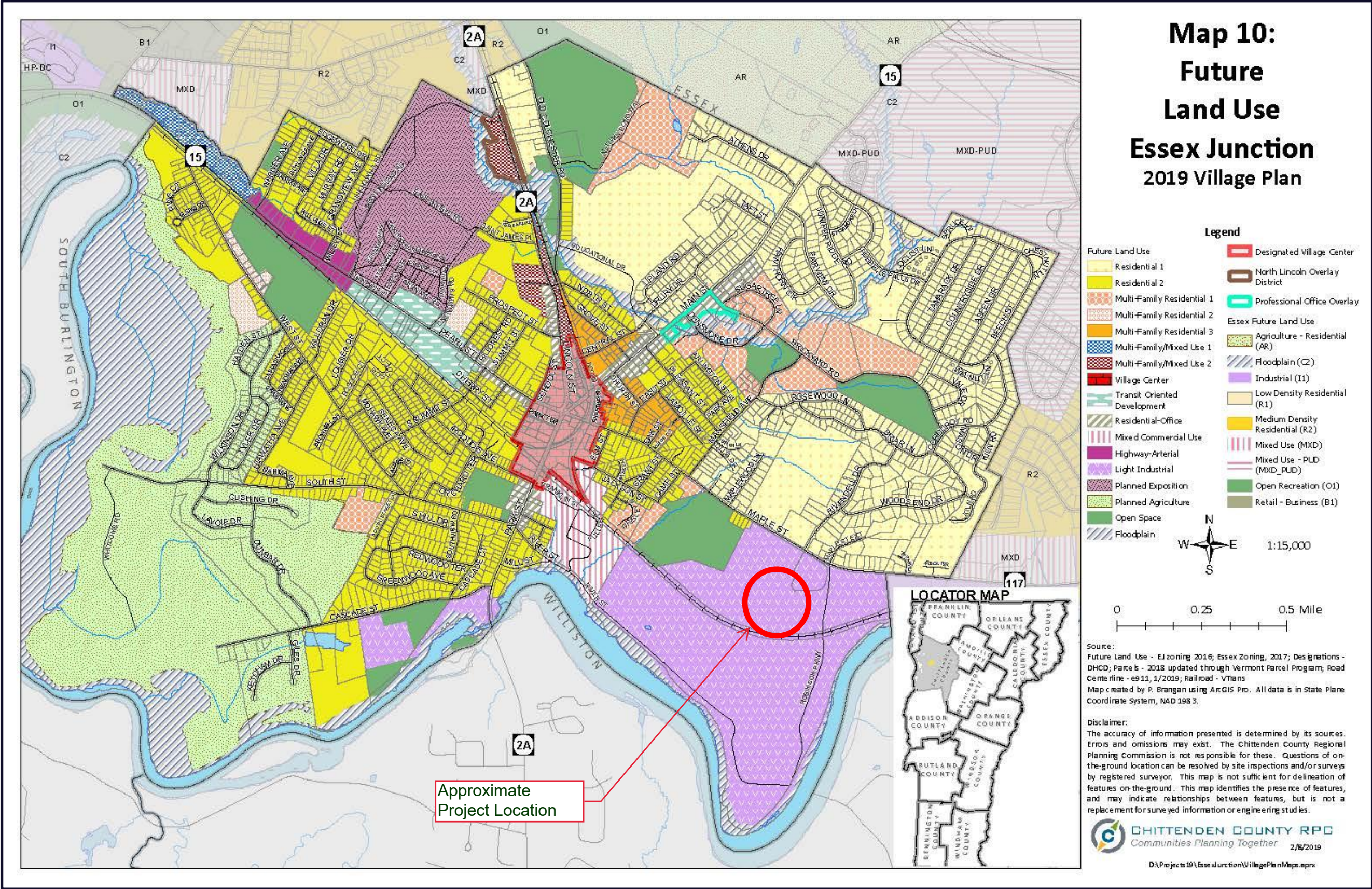
Map 3 Recreation



Map 9 Existing Land Use



Map 10 Future Land Use



Appendix D

Essex Community Enhanced Energy Plan



Prepared by Chittenden County Regional Planning Commission, in coordination with Town and Village Community Development staff, the Essex Energy Committee, the Village of Essex Planning Commission, and the Town of Essex Planning Commission, with support from the Vermont Department of Public Service.



Approved by the Town of Essex June 17, 2019

Adopted by the Village of Essex Junction August 13, 2019

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goal of 50% below 1990 emissions levels by 2028. Without greater participation and mobilization at a local level, these goals are unlikely to be achieved.

This plan describes how the Essex Community intends to act to implement the state energy goals outlined above. Meeting these goals will require ambitious action to transform the way the Essex Community uses, stores, and produces energy.

The following are transformations needed for the Essex Community, as the most likely pathway to meet these goals by 2050, given current technologies:

- Establish enough renewable energy generation sites to generate between 211,386 to 353,629 MWh of electricity³.
- Increase electric vehicles to 89% of passenger vehicles registered in the Essex Community
- Fuel 96% of heavy-duty vehicles with biodiesel or other renewable carbon free fuel.
- Weatherize 100% of homes and 38% of commercial and industrial establishments
- Heat 60% of homes with electric heat pumps and 14% of homes with wood
- Heat 38% of businesses with electric heat pumps and 11% with wood

Led by its [Energy Committee](#), the Essex Community is striving to match the state's 90 percent goal. The Essex Energy Committee has taken the position that, "For the Essex Community to achieve the 90 percent renewables level of success for the overall betterment of our community, we must develop and implement plans which aggressively change the way in which we view energy from the standpoint of cost, use and conservation." The Town of Essex Selectboard also adopted the [Vermont Climate Pledge Coalition](#) by virtue of a resolution voted on November 2, 2017, recognizing the goal of reducing greenhouse gas emissions by 26 to 28 percent from 2005 levels by 2025 in addition the 90 percent goal. The Village of Essex Junction Trustees have not adopted the Vermont Climate Pledge Coalition.

To meet these goals, the Essex Community has prioritized multiple actions under the following general categories: (i) Land Use Implementation; (ii) Transportation, (iii) Thermal and Electric Energy Conservation and Efficiency; and (iv) Renewable Energy Generation and Storage. See the implementation section for additional information.

Energy Compliance

In 2016, Act 174 established a process for "enhanced energy planning" for municipalities. Enhanced energy planning sets up the framework for municipalities to update their **Municipal Plans** according to a set of energy standards developed by the Vermont Department of Public Service. If a **Municipal Plan** meet these standards, the **Municipal Plan** is given a determination of energy compliance from the regional planning commission. The detailed standards for **Municipal Plans** are available [here](#).

³ The renewable energy target is expressed in MWh because the target is intended to be technology neutral. The Essex Community's target takes into account both electricity used in the commercial, industrial, and residential sectors. The target is modeled based on population and electricity usage. The Essex Community makes up 43% of electricity used in Chittenden County; therefore, the community's target is among the highest in the County.

A determination of energy compliance means that the PUC will give the **Municipal Plan** substantial deference. This means that a land conservation measure or specific policy shall be applied by the PUC in determining whether a jurisdictional energy siting project meets the orderly development criterion in the Section 248 process, unless there is a clear and convincing demonstration that other factors affecting the general good of the State outweigh the application of the measure or policy. This is a higher standard of review than a **Municipal Plan** would otherwise receive in the Section 248 siting process.

At present, the Essex Community municipalities will seek their own affirmative determination from CCRPC to amend or supplement an existing **Municipal Plan**. This is being done with the understanding that the two plans may eventually be combined for the Essex Community in the future.

Siting

The Essex Community can have input over the siting of renewable generation facilities in a few ways through the policies contained in this plan. The community can define preferred sites for net-metering facilities and include policies to identify the scale and type of renewable energy generation facilities to occur in specific areas within the community. Also, the Essex Community can restrict renewable generation facilities where appropriate.

[Vermont's Net Metering Rules](#) (Rule 5.100, effective 7/1/2017) defines preferred sites for renewable energy development (any renewable technology besides hydroelectric). Compared to non-preferred sites, net metering on preferred sites can be larger (up to 500 kW instead of 150 kW) and such projects receive financial benefits in the net metering rates. See the latest Vermont Public Utility Commission Rule Pertaining to Construction and Operation of Net-Metering Systems for details on the financial and scale benefits of preferred sites. Systems up to 15kW and rooftop solar systems up to 500kW go through a registration process rather than the full Public Utilities Commission process. However, all other projects do not have an expedited review process and must meet the same requirements as any other system. Preferred sites as defined under the PUC rule include:

- On a pre-existing structure
- Landfills
- Parking lot canopies over permitted paved areas
- Gravel pits
- Previously developed land
- Superfund sites
- Brownfields
- Municipal-designated sites
- On the same parcel or directly adjacent parcel as a customer taking 50% or more of the output

ACT 174 AND SUBSTANTIAL DEFERENCE

In 2016, Act 174 established a process for “enhanced energy planning,” which encourages municipalities to write plans that are “energy compliant.” This plan meets the standards for energy planning established by Act 174 and outlined in 24 V.S.A. §4352. Therefore, the policies of this plan will receive substantial deference in §248 proceedings. The Public Utility Commission shall apply the land conservation measures or specific policies in accordance with their terms unless there is a clear and convincing demonstration that other factors affecting the general good of the State outweigh the application of the measure or policy. This is a higher standard of review than “due consideration,” which the municipal plan’s policies would otherwise receive.

The Essex Community strongly encourages the siting of net-metered systems on parking lots. Municipally designated preferred sites can be identified in a duly adopted municipal plan or through a joint letter of support by the Town and/or Village planning commissions, Town and Village legislative bodies and regional planning commission. Project developers are encouraged to reach out the Energy Committee, the Planning Commission(s), and the Essex Community staff to discuss projects in advance of submitting a petition.

Constraints

Some areas are not appropriate for any type of development, including types of renewable energy generation facilities existing as of the date of this plan. The State of Vermont has defined certain resources as known and possible constraints, which are protected by the ECOS Regional Plan and state agency review during the Public Utility Commission review process. The Essex Community have added additional constraints based on local policy. In determining whether known or possible constraints are present, on-site field verification should be conducted.

Known constraints are areas in which development, including renewable energy generation, is not appropriate. See Map 2 for the location of known constraints within the community. Known constraints are:

- | <u>State Known Constraints</u> | <u>Local Known Constraints</u> |
|---|---|
| <ul style="list-style-type: none"> • FEMA Designated Floodway • DEC River Corridors • National Wilderness Areas State-significant Natural Communities • Vernal Pools (confirmed and unconfirmed) • Class 1 and 2 wetlands (VSWI and advisory layers) | <ul style="list-style-type: none"> • Slopes of 20% and steeper • Recreation/Conservation areas within the Resource Preservation-Industrial District |

Possible constraints are areas in which the effects of development, including current types of renewable energy generation facilities, may need to be mitigated. See Map 3 for the location of possible constraints in the community. Possible constraints are:

- | <u>State Possible Constraints</u> | <u>Local Possible Constraints</u> |
|---|---|
| <ul style="list-style-type: none"> • Agricultural Soils (<i>While the State will review agricultural soils, it is not the intent of the Village of Essex Junction to protect primary agricultural soils from development considering agricultural operations (outside of community gardens) are not feasible on small parcels isolated from more intact open agricultural areas. Further, mitigation of these soils through state development approval processes does not seem</i> | <ul style="list-style-type: none"> • Industrial designated areas of the Resource Preservation-Industrial District (see siting policy 8) • Designated Village Center Historic District in the Village, Town Center and Design Control Districts in the Town • Scenic Resource Protection Overlay District (including portions of Bixby Hill Road, Browns River Road, Chapin Road, Colonel Page Road, Jericho Road/VT Route 15, Naylor Road, North Williston Road, Old Stage Road, Pettingill Road, River Road/VT Route 117, Towers Road, Upper Main |

appropriate in such an urban environment).

- Hydric Soils
- Act 250 Agricultural Soil Mitigation Areas
- FEMA Special Flood Hazard Areas
- Protected Lands
- Deer Wintering Areas
- Vermont Conservation Design Highest Priority Landscape Scale Components. These include highest priority interior forest blocks, surface water and riparian areas, and connectivity blocks, and wildlife crossings.

Street/VT Route 15, Weed Road, and Woodside Drive

- 15 % or steeper and less than 20%
- Vermont Conservation Design Priority Landscape Scale Components. These include priority forest blocks, connectivity blocks, surface water and riparian areas, and physical landscapes).
 - Forest blocks are areas of contiguous forest and other natural communities and habitats, such as wetlands, ponds, and cliffs that are unfragmented by roads, development, or agriculture (Sorenson and Osborne 2014).
 - Connectivity Blocks are the network of forest blocks that together provide terrestrial connectivity at the regional scale.
 - Physical landscapes (often referred to as enduring features) are the parts of the landscape that resist change. They are the hills and valleys, the underlying bedrock, and the deposits left behind by glaciers.
 - Surface Waters and Riparian Areas

Siting Policies

The policies in this section are the land conservation measures to be applied in the Section 248 decision making process with respect to the PUC's review of a petition for a renewable generation facility. The Essex Community will use the following siting policies to determine support for identifying a municipally designated preferred site and in the review of Section 248 applications.

1. The Essex Community strongly encourages development of renewable energy generation facilities on rooftops, parking lots, on parcels or directly adjacent parcels to a customer that has been allocated more than fifty percent of the net-metered system's electrical output, previously-developed sites, brownfields, landfills, former mineral resource extraction areas, and municipally designated sites. In the state designated Village Center in the Village of Essex Junction, the Essex Town Center, and the Historic Preservation and Business Design Control Districts design control best practices must be applied to integrate development into the built environment to the extent feasible. (See Appendix A for these standards).
2. Locate ground-mounted solar and wind turbines outside of the state designated Village Center in the Village of Essex Junction, the Essex Town Center, and the Business and Historic Preservation Design Control Districts.
3. Development of renewable energy generation facilities shall not take place in areas with known constraints and shall first explore alternatives to and then mitigate adverse impacts in areas with possible constraints, as identified in the constraints section of this plan. In determining whether known or possible constraints are present, on-site field verification should be conducted.

4. With the exception of preferred sites listed in policy 1, development of large-scale renewable energy generation facilities (capacity greater than 500kW) shall be located only within industrial zones, including the industrial zoned portion of the Resource Preservation District, in the Town of Essex.
5. Locate energy generation proximate to existing distribution and transmission infrastructure with adequate capacity and near areas with high electric load (See [Green Mountain Power's Solar Map](#)) to reduce the need for new distribution and transmission extensions.
6. Avoid or minimize the adverse impacts of development (including renewable energy development and associated transmission and distribution infrastructure) on identified scenic resources, viewsheds and roadscape corridors in the Town of Essex Scenic Resource protection overlay district (See Map 3) through appropriate site planning and design practices. See Appendix A for appropriate planning guidance on siting or site development design standards
7. Apply the Design Control Best Practices (see Appendix A) when locating roof-mounted photovoltaic net metering systems in the Village Center, Town Center, and the Town's Historic Preservation and Business Design Control Districts
8. Within the Resource Preservation Industrial District the following policies apply:
 - a. 200-foot vegetative buffer shall be maintained along adjacent residential areas and streets, including VT Route 15, Sand Hill Road and Saxon Hill Road and where development abuts a residential property not located in a residential district.
 - b. A 100-foot vegetative buffer shall be maintained along Allen Martin Drive. Parking areas, components of stormwater management systems may not be located within the 100- or 200-foot buffer in this district.
 - c. Underground utility easement crossings are permitted only within the 200 ft. and 100 ft. buffer. Utility easements are permitted if ledge, underground water or other conditions make underground installation infeasible. Areas cleared for utility crossings shall be re-vegetated.
9. Development (including renewable energy generation facilities and associated transmission and distribution infrastructure) is discouraged on slopes of 15 % or steeper and less than 20% due to the likelihood of erosion and stormwater runoff problems. Development shall be prohibited on slopes of 20 percent and steeper due to the likelihood of environmental damage.
10. Development (including renewable energy generation and associated transmission and distribution infrastructure) will not destroy or significantly imperil wildlife habitat identified on Map 3 as highest priority and priority landscape scale components) or all reasonable means of minimizing the destruction or imperilment of such habitat or species will be utilized.
11. Where feasible, pair renewable energy generation with electrical energy storage to ensure energy is utilized to the fullest potential, to increase resiliency/reliability of electricity during outages and decrease fossil fuel usage during peak periods. Renewable energy generation projects that can accommodate energy storage are strongly encouraged.

Implementation

Land Use and Development Policies

The relationship between transportation, land use and energy consumption is extremely important and is an area in which the community can have a large impact through development regulations and infrastructure. According to the Vermont Total Energy Study, "more than one third of the state's energy consumption, and nearly half of its greenhouse gas emissions, are tied to the transportation sector." Therefore, a reduction in vehicle miles traveled by passenger vehicles can have a big impact on energy consumption.

In recent years communities are realizing the important connection between transportation and land use, which impacts energy use. Certain land use patterns can reduce dependency on the automobile by providing greater transportation options through compact mixed-use developments where people can choose to walk, bike, use public transportation or drive an automobile.

For new construction and building renovations, the State of Vermont has an energy building code, the Vermont Residential and Commercial Building Energy Standard. Compliance with the energy code is necessary to ensure that new development and alterations to existing buildings are using all types of energy efficiently. To meet the code, the zoning administrator is responsible for providing the energy code to land use permit applicants and must see a completed energy certificate that certifies that the applicant has complied with the code before issuing a certificate of occupancy. Even though a certificate of occupancy may not be needed for all types of buildings, all buildings must comply with the State energy code. Additionally, the Community should consider incorporating language into zoning ordinances requiring new homes and commercial buildings to be built to higher levels of efficiency.

To improve the thermal efficiency of existing commercial and residential buildings, a municipality could implement a time of sale energy retrofit ordinance for rental housing. Time of sale retrofits target older buildings, particularly multi-family housing, that aren't being reached by voluntary incentive programs. Building energy retrofits offer multiple benefits that include saving money on utility bills, improved safety and maintenance, and comfort. Additionally, the money saved from doing energy improvements gets recirculated into the community instead of being exported out of the region. As an example, the City of Burlington has a time of sale energy retrofit ordinance.

Goal: The Essex community is committed to development patterns and building energy use that result in the efficient use of energy.

General Policy: The Town Center in the Town is a focus of concentrated growth and community life intended to encourage energy efficient development and travel. (See the Land Use and Development section of the Essex Town Plan for more detail). Higher density infill and redevelopment is supported in the core areas of the Village to reduce demand on energy. (See the Land Use section of the Essex Junction Comprehensive Plan for more detail).

Actions

1. Consider including the Vermont Building Energy Stretch Code to cover all development in the Zoning Regulations for the Town (including the ETC Next Plan) and in the Village of Essex Junction Land Development Code.
2. Consider implementing a time of sale policy to ensure existing buildings, especially older rental housing, are in compliance with the State of Vermont Building Energy Code.

3. Review the zoning regulations and associated parking standards and sign regulations to encourage installation of electric vehicle charging stations.
4. Adopt a municipal screening requirement for solar generation facilities in accordance with 30 V.S.A. §248(b)(1)(B).
5. Consider reviewing the process for LEED density bonuses to increase utilization, in the Town.
6. Evaluate a process for incentivizing the creation of energy efficient buildings in the Essex Community.
7. Explore the idea of an energy fee or revolving loan fund that would fund public improvements to renewable energy infrastructure, such as rooftop solar and electric vehicle charging stations, with waivers for development that meets energy goals, such as installing electric vehicle charging infrastructure and providing ride-sharing options.
8. Continue to require energy efficient street lighting for new developments and when replacing existing lamps
9. Refer to the land use sections of both the 2019 Village of Essex Junction Comprehensive Plan and the 2016 Essex Town Plan for more information related to land use in the Community.

“Stretch code” means a building energy code that achieves greater energy savings than the base code. All development subject to Act 250 must follow the energy stretch code. Efficiency Vermont offers an incentive-based program to improve insulation/air-sealing and heating systems to support energy projects.

Transportation

The Community has a relatively unique opportunity within the county to support greater transportation choice and reduce automobile dependency since it is a relatively compact community with an extensive sidewalk network, especially in the Village, where local services are within walking distance to residences. The Community is also served by public transportation and rail. Residents have more transportation choices than many neighboring communities that have a more suburban/rural land use pattern. Further support of higher density infill and redevelopment in core areas of the Village may reduce demand on energy.

Goal: The community should be served by varied modes of transportation with automobile use balanced by increased availability of public transit, sidewalks, and multi-use trails to reduce transportation energy demand.

General Policy: Transportation systems shall be integrated with land use policy in such a way that improvements are compatible with the overarching settlement pattern of compact settlement surrounded by a productive rural countryside.

Actions

1. Design and construct pedestrian/bike paths on VT Route 2A, Pinecrest Drive, and Towers Road.
2. Construct a new multi-use path from Susie Wilson Road to the City of Winooski.
3. Reduce single-occupancy vehicle trips by establishing strategic park-and-ride locations, and by partnering with ridesharing, car-sharing, and public transit organizations.
4. Partner with [Drive Electric Vermont](#), nonprofit organizations, vehicle dealers, and/or state agencies to organize high-visibility events where people can see and test drive EVs, such as energy fairs and summer festivals. Particular attention should be made to electric pickup trucks and motorcycles, since these represent nearly ½ the existing non-electric vehicle stock in the community. Events should also leverage local newspaper and public access coverage to showcase residents and organizations that are helping to propel the transition to EVs.

Actions

1. Fund an Energy Coordinator position to develop energy implementation plans, coordinate efforts for both the Town and the Village and encourage residential and commercial energy conservation. As an initial step, make this goal a priority for the new Building Manager.
2. Continue to explore energy efficiency and renewable energy options for all Town and Village-owned and Town/Village-sponsored facilities, from buildings to street lighting. Findings and recommendations should be based on an audit of all municipally owned and municipally sponsored facilities and a subsequent cost-benefit analysis for upgrading or replacing those facilities
3. Host education programs and collaborate with Efficiency Vermont, utilities, and energy vendors to encourage energy efficiency in existing residential and commercial buildings and to educate residents and businesses about heating pumps, advanced wood heating, geothermal heating, renewable natural gas, and other renewable technologies. Provide residents with information on heating assistance programs on an annual basis to make those in need aware of the programs.
4. Promote wood stove change-out programs that take older non-EPA certified stoves out of service and replace them with more efficient and lower emitting cord and pellet stoves.
5. Facilitate a workshop and/or conduct building walk-throughs for owners of rental housing to encourage implementation of energy efficiency measures.
6. Through the Building Manager, monitor energy used by the Town and Village buildings annually to describe progress towards energy goals, working closely with the Energy Committee
7. Work towards a plan to replace existing municipally owned-streetlamps with solar-generating lamps, provided that these can be harmonized to the extent feasible with design constraints.

Renewable Energy

Goal: Generate 183,587 -325,830 MWh of new renewable energy by 2050.

General Policy: The Essex Community shall support regulatory and non-regulatory initiatives that result in decreased greenhouse gas emissions, reduced energy consumption, and increased renewable energy generation.

Actions

1. Identify and map specific preferred sites for renewable energy generation to send a message to potential developers that these are the locations where the Town and Village would like to see renewable energy generation development.
2. Promote community solar net metering.
3. Encourage and support renewable energy projects consistent with the siting policies of this plan through letters of support to the Public Utilities Commission.
4. Explore possible municipally owned sites for renewable energy generation, such as the Town landfill, rooftop solar on municipal buildings, and parking lot canopies on public lots.
5. Study the capabilities of existing buildings to support roof-mounted solar PV systems in zoning districts where it is deemed appropriate for a better estimate of this potential.

Table 6 Estimate Future Electricity Usage (2025-2050)

	2025	2035	2050
Total electrical energy use (MWh)	859,118	1,098,896	1,436,730
Total electrical energy savings (MWh)	14,092	28,447	53,207
Percent of Residences that should increase their electric efficiency	30%	58%	98%
Percent of Commercial and Industrial Establishments that should increase their electric efficiency	30%	58%	98%
<i>Source: CCRPC LEAP Model, Vermont Department of Public Service</i>			

Within the Essex Community there are currently 432 sites that generate 27,799MWh of electricity from renewable sources, with a total capacity of 12 megawatts (MW). Green Mountain Power's Essex #19 hydroelectric dam on the Winooski River at VT-2A accounts for 18,300 MWh, or 66% of this total. The energy generated from the hydro dam is split between the Essex Community and the Town of Williston because the jurisdictional boundaries split the centerline line of the Winooski River. The next largest producer is the wastewater treatment facility's combined heat and power system, which provides 760 MWh of electricity to the facility (in addition to heat). The remaining 8 MW/8,739 MWh come from 430 roof-mounted or ground-mounted photovoltaic ((PV) solar systems scattered throughout the community. By securing a power purchase agreement with Green Lantern Solar, LLC, which supplies 80% of municipal buildings' electricity needs from a 500 kW PV facility on River Road, the Essex Community has demonstrated leadership in deployment of renewable energy resources. These sources supply approximately 3.4% of the current (2017) electric energy used within the community.

Table 7 Existing Renewable Energy Generation

	Sites	Power (MW)	Energy (MWh)
Solar	430	8	8,739
Hydro	1	4	18,300
WWTP	1		760
Total	432	12	27,799

Source: Community Energy Dashboard, 10/23/2018

Renewable Energy Generation Targets

Regardless of ultimate use, the transformation to renewable sources of electricity will require increased generation from a variety of sources including biomass, hydro, solar, and wind. Additionally, electricity storage technologies such as batteries, fuel cells, pumped hydroelectric, and compressed air systems store excess power generated by intermittent renewable sources. These will become more important as the technology develops and the proportion of generation from renewable sources increases. The community should work with electric utility companies to support these infrastructure needs.

Table 9 Potential Renewable Energy by Technology

	Power (MW)	Energy (MWh)
Rooftop Solar	15	18,262
Ground-Mounted Solar – Prime	110	135,323
Ground-Mounted Solar – Base	129	157,707
Wind – Prime	5	15,278
Wind – Base	132	405,570

Source: CCRPC, Vermont Department of Public Service

Figure 5 Land Area Available to Reach Low Target

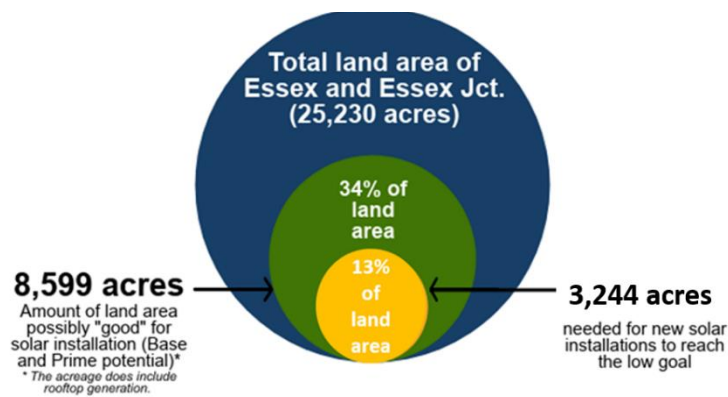


Table 10 Renewable Energy Generation Target

	Low	High
Additional Target (Mwh)	183,587	325,830
Existing (Mwh)	27,799	
Total (Mwh)	211,386	353,629
Additional Acres Needed to Meet Target	1,198 (5% of Community)	2,125 (8% of Community)

Of the total solar generation potential, 15 MW (18,262 MWh) could be located on existing impervious surfaces, such as rooftops and paved areas. Because these sites are already developed, solar generation may be compatible with other land uses if developed in a way that is in harmony with existing development patterns and existing aesthetic norms especially in the Village Center District and the Town's Historic Preservation and Business Design Control Districts. Preferred sites should be the focus of renewable energy development over undeveloped land, or historic districts. The Essex Energy Committee has partnered with solar developers to promote adoption of rooftop solar in the community by hosting informational events for both residential and commercial building owners.

Other preferred sites for net metering systems include brownfields, landfills, and former mineral resource extraction areas. For instance, the Town strongly supported Green Mountain Power's 4.5-MW photovoltaic array and battery storage facility at River Road on the site of a reclaimed sand and gravel extraction area. Wind turbines may also be located on previously-developed sites, but wind generation efficiency drops exponentially with turbine size, and only small-scale turbines should be sited near developed areas, so the generation potential for these sites would be limited. There are nevertheless good reasons to consider small-scale wind on municipal lands as a means of reducing electrical costs and setting an example of the small-but-important steps residents and businesses can take to work towards Essex's goals.

Renewable energy generation facilities shall not take place in areas with known constraints; if impacts to possible constraints cannot be avoided, they shall be mitigated. Renewable energy installers should be encouraged to develop in tandem with other uses that could occur on a given site to add value in a way that speaks to holistic development patterns rather than a standalone facility. This type of development could also locate renewable energy installations on the same site as high energy users and reduce the need for distribution and transmission line upgrades.

Facilities with a generation capacity greater than 500kW are considered utility-scale and shall be located in designated industrial or commercial zones, where constraints are less numerous, impacts are more easily mitigated, and there is less competition for other land uses than in other areas. Other areas would have to be considered on a case by case basis, with developers encouraged to interact directly with Essex's municipal planners and committees in advance of issuing an advance notice under Section 248.

Within the Town of Essex's Scenic Resource Protection Overlay District, the designated Village Center District, the Town of Essex's Historic Preservation Design Control District, and the Business Design Control District, all renewable energy generation facilities shall follow the siting, design, and screening standards/best practices as other forms of development to avert or minimize undue adverse impact on scenic resources.

Transportation

As noted in the Transportation section of the Essex Village Comprehensive Plan and Essex Town, the Essex Community has been and continues to be, a transportation hub. The only Amtrak station in Chittenden County exists in the Village, an active bus terminal, and five state highways are also present. Promoting compact development, providing more options for walking, biking, and public transit, and reducing single-occupancy vehicle trips can reduce energy use in the transportation sector. The park and ride on Landfill Lane provides one option to carpool and reduce single-occupancy vehicle use; the community should explore other strategic locations for park and ride lots.

Scenic Resource Protection Standards

The scenic resource protection standards should be applied to the Town of Essex's Scenic Resource Protection District. The purpose of these standards is to avert or minimize the adverse impacts of development (including renewable energy generation) on identified scenic resources, viewsheds and roadscape corridors through appropriate siting and design practices. A proposed development along any of the scenic road segments identified in this section shall address any impacts on scenic resources as seen from public roads using these standards.

1. To minimize the loss of scenic character renewable energy generation facilities shall be designed and located to minimize the intrusion of incompatible and unharmonious development into existing scenic vantage points as viewed from public vantage points identified in the list of scenic streets.
2. Renewable energy generation facilities shall be positioned so that views to distant mountains remain as natural as possible.
3. Renewable energy generation facilities should be arranged in a manner that protects a significant portion of open space.
4. The use of vegetation to screen renewable energy generation facilities and associated fencing in all seasons is strongly encouraged. Plantings shall be of sufficient height, density and maturity to serve as a visual barrier from buildings and the roadscape identified in this section
5. Shorter structures may be more appropriate in certain spaces than taller structures to keep the project from obstructing public vantage points identified in this section. Avoid locating a renewable energy generation facility in a location which diminishes the visual impact of the array from the owner's property but places the array immediately within their neighbor's or the public's viewshed. Locate facilities in a manner designed to reduce impacts on neighbors or public viewsheds.

SCENIC STREETS

Portions of the following streets are included in the Scenic Resource Protection Overlay District. To see which portions of the streets are in the district, refer to the SRPO map.

- Bixby Hill Road
- Browns River Road
- Chapin Road
- Colonel Page Road
- Jericho Road/VT Route 15
- Naylor Road
- North Williston Road
- Old Stage Road
- Pettingill Road
- River Road/VT Route 117
- Towers Road
- Upper Main Street/VT Route 15
- Weed Road
- Woodside Drive

Map 1.

Existing Renewable Energy Sites & Preferred Sites

Essex Community, Vermont

Existing Site Type

- Roof-Mounted Solar
- Ground-Mounted Solar
- Solar Canopy
- Hydropower
- Combined Heat and Power System

State Designated Preferred Sites*

- Closed Landfill
- Sand or Gravel Pit
- Brownfield
- Parking Lot
- 3 Phase Power Lines
- Transmission Lines

*Additional state designated preferred sites not shown on this map include roof-tops, parking lot canopy, a previously developed site, or a parcel or adjacent parcel to a customer that has been allocated more than 50 percent of the net-metered output.

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. They may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. They should NOT take the place of site-specific investigation for a proposed facility and should not be used as "siting maps".

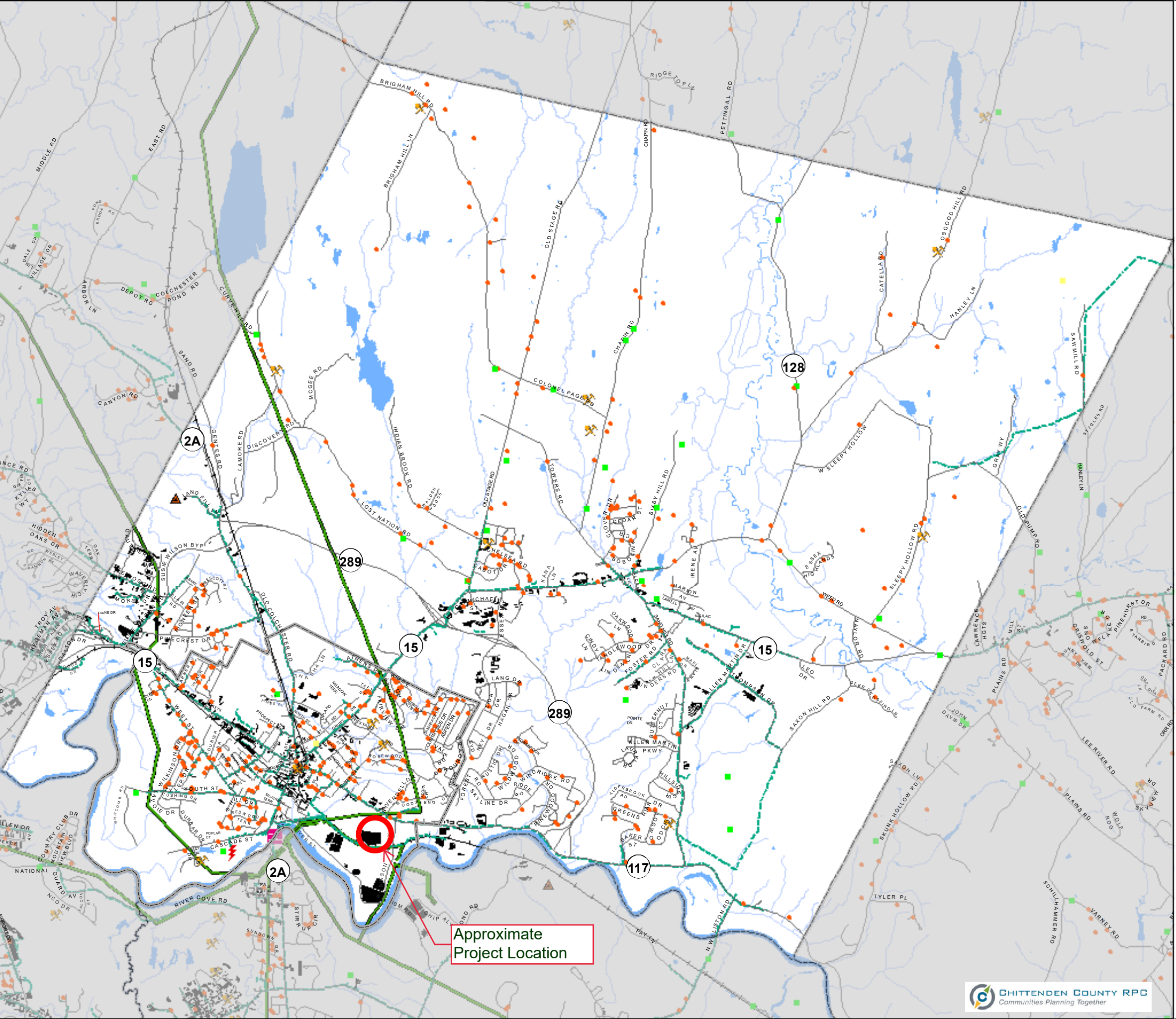
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Sources:
Closed Landfill-ANR
Sand or Gravel Pit-ANR
Parking Lots-CCRPC, 2008
3-Phase Power-VCGI, BED
Existing Sites-EAN, 11.2018
Major Roads and Railroad - VTrans
Town Boundary and Water Body - VCGI
Map produced with ArcGIS,
State Plane Coordinate System NAD83.

Date: 5/31/2019

Disclaimer:
The accuracy of information presented 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. This map is not sufficient for delineation of features on-the-ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.

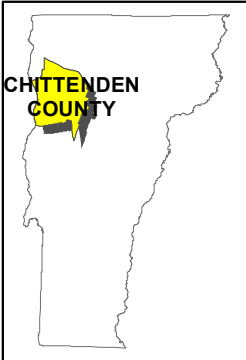
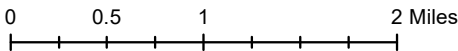
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Map 2. Known Constraints Essex Community, Vermont

State and Local Constraints

- Vernal Pools (Confirmed and Unconfirmed)
- FEMA Designated Floodway
- Vermont Department of Environmental Conservation River Corridors*
- State-significant Natural Communities & RTE Species
- Wetland (Vermont Significant Wetlands Inventory and Advisory Layer)
- Recreation/Conservation Area within Resource Preservation-Industrial Zoning District
- Slopes of 20% and steeper
- Stream Centerline
- Water Body

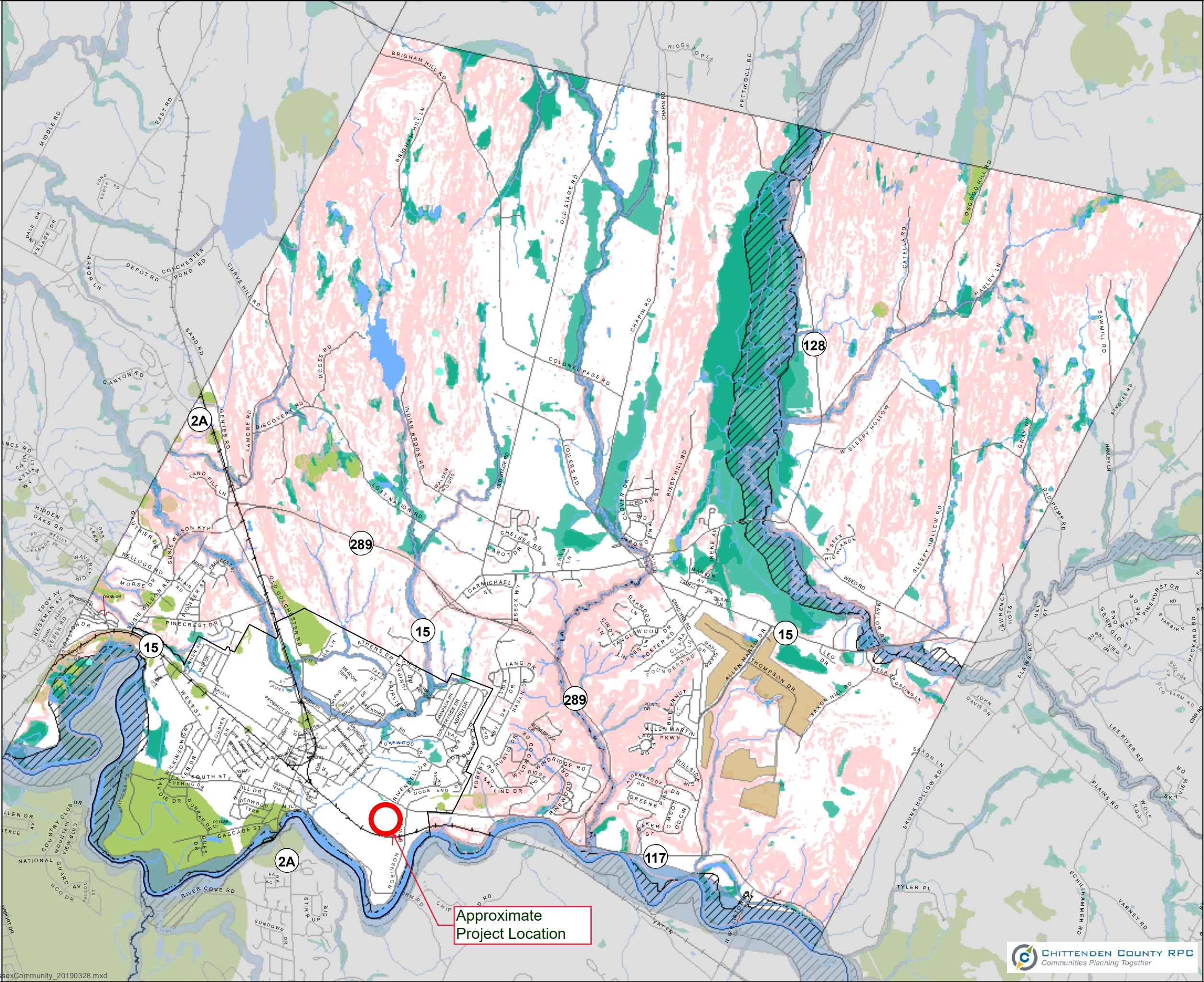


*Note: River corridors are comprised of meander belt and riparian buffer components for the purpose of achieving and maintaining stream equilibrium conditions. Small streams draining 0.5 to 2 square miles and a 50 ft. buffer are also included.

Sources:
Vernal Pools; VCGI, 2017
DEC River Corridors; VCGI, 2019
FEMA DFIRM Floodways; VCGI, 2017
RTE + Sig. Natural Comm; VCGI, 2017
Wetlands; VSWI Wetlands Class Layer, VSWI Advisory Layer, 2017
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Date: 5/31/2019

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Approximate
Project Location

Map 3. Possible Constraints Essex Community, Vermont

State and Local Constraints

- Stream Centerline
- Water Body
- FEMA Special Flood Hazard Areas
- Agricultural Soils
- ACT 250 Ag Mitigation Parcel
- Hydric Soils
- Deer Wintering Areas
- Protected Lands
- Slope 15% to 20%
- Resource Preservation Industrial District

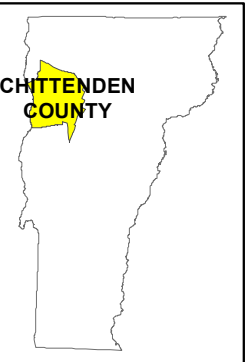
- Areas where design control best practices apply
- Scenic Resource Overlay

Vermont Conservation Design - Landscape Scale Components

PRIORITY

- HIGHEST PRIORITY
- PRIORITY

0 0.5 1 2 Miles

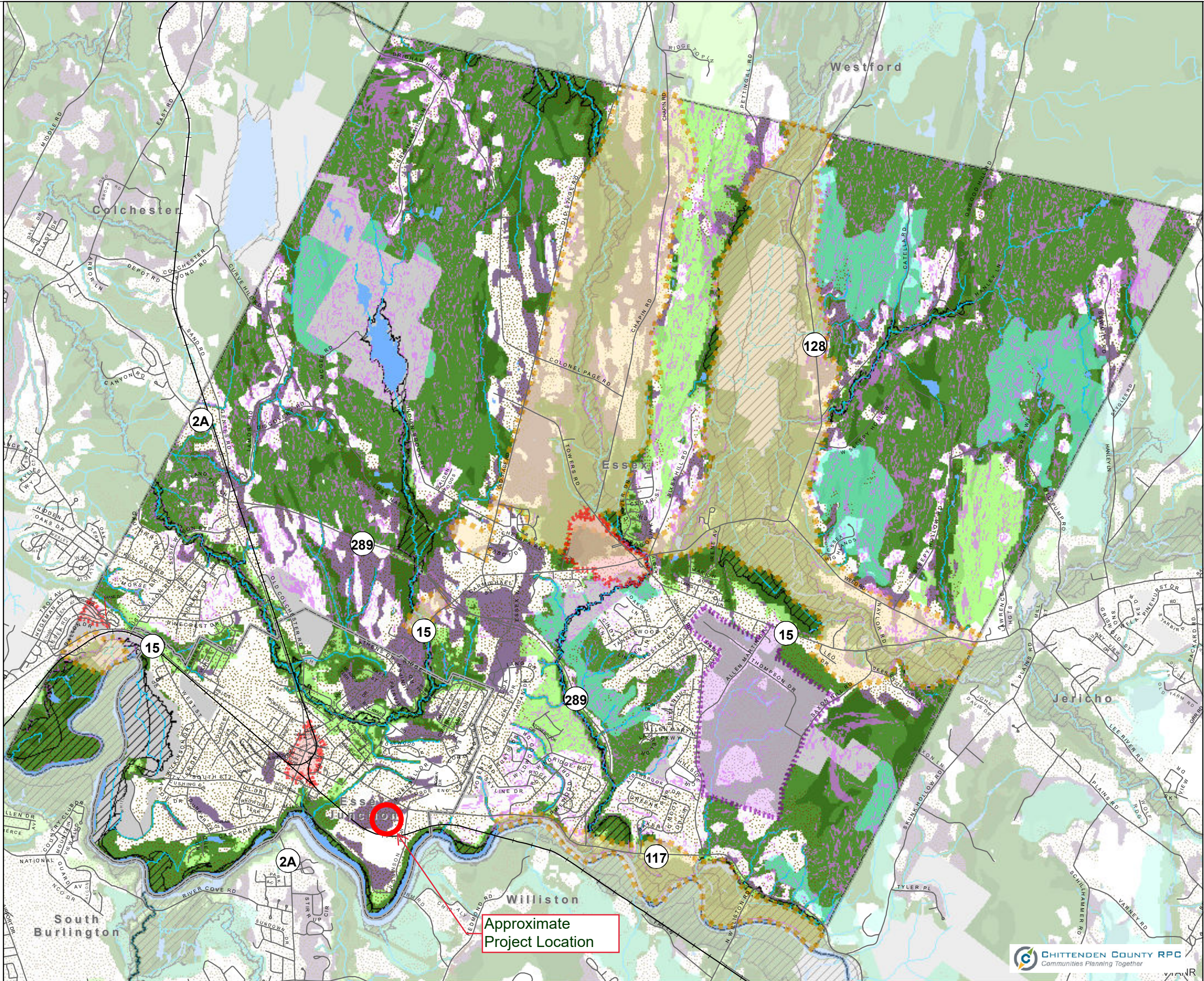


Sources:
Agricultural Soils; VCGI, 2017
FEMA Special Flood Hazard Areas; VCGI, 2017
Protected Land; VCGI
Act 250 Mitigation Areas; VCGI, 2017
Deer Wintering Areas; VCGI, 2017
Priority Forest Blocks; Vermont Conservation Design
Hydric Soils; VCGI, 2017

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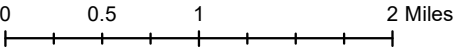
Document Path: D:\Projects\17\Act174\Maps\Towns\PossibleConstraints\PossibleConstraints_EssexCommunity_20190328.mxd



Map 4. Potential Solar Energy Resource Areas Essex Community, Vermont

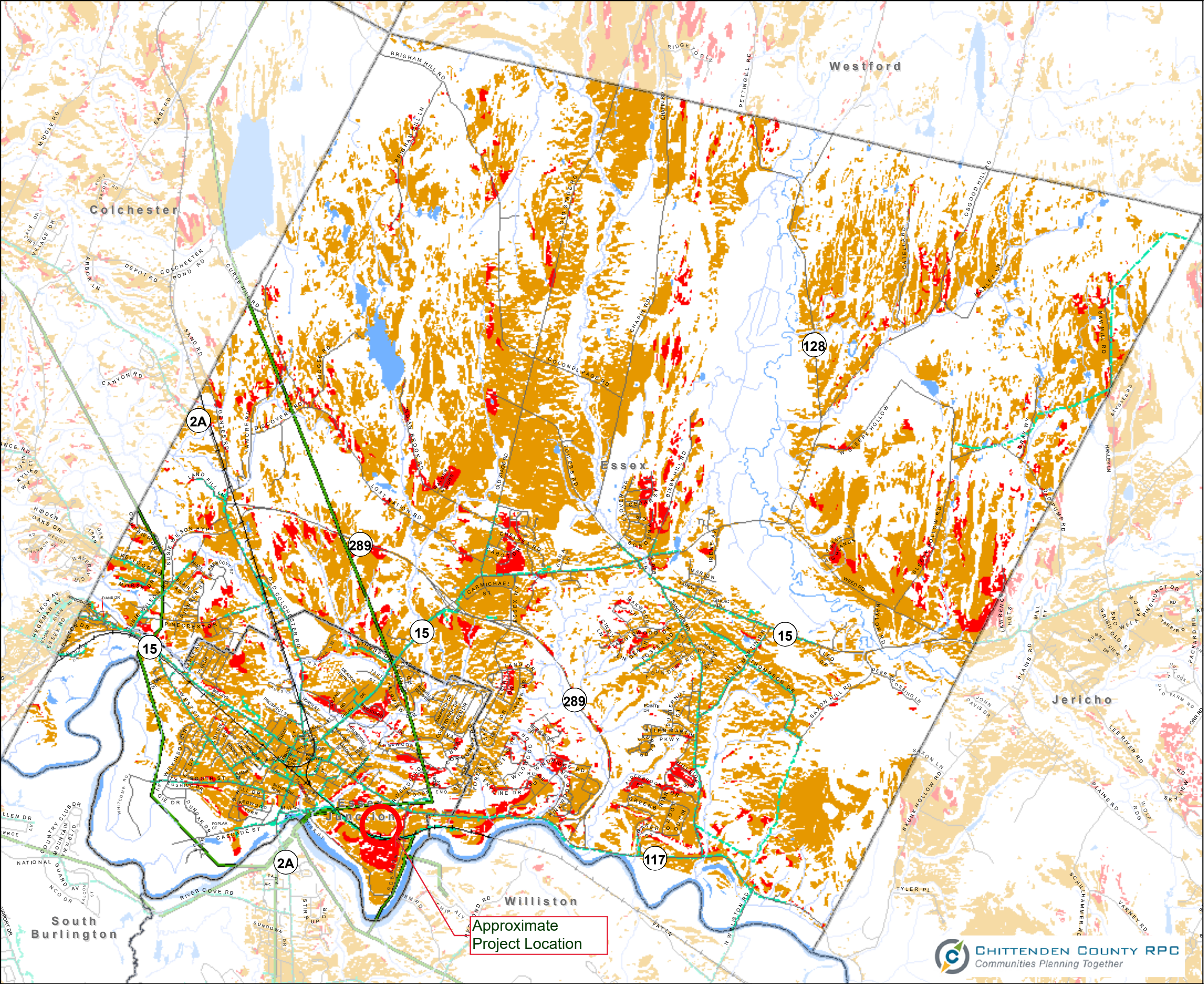
-  Prime Solar: Areas with high solar potential and no state/local known & possible constraints
-  Base Solar: Areas with high solar potential and a presence of state/local possible constraints
-  3 Phase Power Lines
-  Transmission lines

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. They may also be used for conceptual planning or initial site identification by those interested in developing renewable energy infrastructure. They should NOT take the place of site-specific investigation for a proposed facility and should not be used as "siting maps"



Sources:
Solar Energy Resource Areas;VCGI,2017
Disclaimer:
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Date: 5/31/2019



VIEWS TO THE MOUNTAIN: A SCENIC PROTECTION MANUAL

***A RESOURCE PREPARED FOR THE TOWNS OF ESSEX
AND JERICHO BY SMART GROWTH VERMONT***



VIEWS TO THE MOUNTAIN: A SCENIC PROTECTION MANUAL

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APPENDIX 11: ESSEX SCENIC RESOURCE PROTECTION OVERLAY DISTRICT MAP

