CHITTENDEN COUNTY RPC
Communities Planning Together

CCRPC Long Range Planning Energy Sub -Committee

AGENDA

*=attached to agenda in the meeting packet

DATE: **Tuesday, April 18, 2017**

TIME: **5:00 p.m. to 7:00 pm**

PLACE: **CCRPC Office, 110 West Canal Street, Suite 202, Winooski, VT.**

WIFI INFO: **Network = CCRPC-Guest; Password = ccrpc$guest**

1. **Welcome + Introductions (5 minutes)**

2. **Review March 21, 2017 Minutes* (5 Minutes)**

3. **LEAP Presentation (40 minutes)**
   VEIC Staff will present LEAP results that reflect a LEAP model input refinement to better reflect actual travel patterns in Chittenden County. Changes to natural gas that represent trend use into future years may also be included in this presentation.

4. **ECOS Plan Draft Energy Element Revisions* (30 Minutes)**
   Staff will discuss revisions to the energy elements of the ECOS Plan to start the discussion on the Plan language.

5. **Act 174 Package to Municipalities * (20 minutes)**
   As part of our Act 174 training contract with Northwest RPC and the Department of Public Service (DPS) we are required to send municipalities maps showing prime and base energy generation areas for both wind and solar, as well as data analysis results that estimates
   - Current energy use across transportation, heating, and electric sectors
   - 2025, 2035, and 2050 targets for thermal and electric efficiency improvements, and the use of renewable energy for all sectors
   - The amount of thermal-sector conservation, efficiency, and conversion to alternative heating fuels needed to achieve the targets
   - The amount of electric-sector conservation and efficiency needed to achieve the targets.

   Staff will review Northwest RPCs sample of these data as staff will be using this as a template for what we provide to our municipalities. Also, staff is working with a DPS provided methodology to break out the LEAP data for each municipality in our region and will review this with the Committee.

6. **Solar and Wind Targets*** (20 Minutes)
   At the March meeting, the Committee agreed to continue planning for wind in our region and asked staff to assign wind targets to municipality. Staff identified that this creates an equity issue across

the region because not all towns have wind potential according the data we are using. The Committee will discuss how to address this. The attached maps and wind target table identifies which towns have wind potential and which do not.

Additionally, the solar target setting methodology as evolved to address solar local possible constraints. Staff recommends that local possible constraints be used to change the classification of prime solar areas to base solar areas so long as a municipality can achieve its solar target with this change. If a municipality cannot achieve its solar target then the local possible constraints will be listed on the map and identified in the text. Staff is still working on the analysis and will present the analysis table at the meeting.

7. **<u>Next Steps</u>** *(5 minutes)*

Next Meeting May 9th

CHITTENDEN COUNTY RPC
Communities Planning Together

CCRPC Long Range Planning Energy Sub -Committee

Meeting Summary
March 21, 2017

Attendance

Karen Purinton, Colchester	Irene Wrenner, Essex	Catherine McMains, Chair, Jericho	Robin Pierce, Essex Junction
Sharon Murray, Bolton	Keith Epstein, South Burlington	Jeff Forward, Richmond	Jim Donovan, Charlotte
Melanie Needle, CCRPC	Emily Nosse-Leier, CCRPC	Regina Mahony, CCRPC	Marshall Distel, CCRPC

1. **Welcome + Introductions**

2. Review Minutes

The January 31st minutes were revised based on a committee members feedback. The Committee reviewed these changes and approved them. Everyone voted yes except Jim Donovan, who abstained as he was not present. The Committee will also review the February 21st minutes and approved them. Everyone voted yes except Jim and Sharon, who abstained because they were absent.

3. Presentation on New Public Service Department Guidance for Writing Enhance Energy Plans

Utility-scale wind targets

Jeff asked if the region would still have to meet the same MW target. Melanie confirmed that we would. Sharon said that it makes sense to leave wind targets at the regional level but not to break them down to the local level. Melanie showed a map (see corresponding slide). The committee discussed the fact that not splitting the wind targets up by town might mean that it is hard to see whether each town is meeting its energy targets. Would they have to meet it all through solar? Or would there only be region-level wind generation targets, and towns would only have to make as much energy as they could make in solar? What about those towns with wind potential in the regional plan? The committee asked staff to look into the best way to deal with this issue and report back.

Jeff also made the point that the regional plan will hold in Section 248 proceedings so if there is a conflict between the regional and town plan it's important for the regional plan to be in agreement with what the towns want here.

Robin Pierce raised a concern that the plan discusses energy generation too much, and should discuss conservation more. Melanie clarified that the generation targets included here do reflect the 1/3

reduction in energy usage by 2050.

Sharon asked if the plan can have a statement to the effect of deferring to local policies. Melanie made the point that the policies used to make the map are all local policies. Karen mentioned that towns need to be very involved in the process of splitting up wind power if it's not going to be split evenly through the county. The committee agreed, and thought that affected towns should have serious talks with their residents, possibly by hosting specific forums on these issues. Could the town planners in affected communities be the point people for these discussions? The committee agreed that these are discussions that the state needs to have, but that they will be hard discussions to have.

Jeff suggested, and Catherine agreed, that discussing wind energy footprints in terms of turbines rather than acreage might be helpful for communicating the needs of the region.

Staff mentioned that they will have preliminary results of energy consumption per sectors by town at the next meeting.

Acreage Changes

Previously, staff have been using DPS guidance that 1 MW of solar = 8 acres of panels. New DPS guidance suggests that using an overestimation of 60 acres per 1 MW would be better to ensure that we're able to meet the guidance.

Keith suggested that maybe it would be better to list this as a "contingency factor," ex. 1 of every 4 property owners would likely be able to develop as appropriate. Or say that XX acres is the amount of land that is needed physically, but that it's likely that only XX% of properties will be able to make it work.

Discussion continued on whether inflating the number of acres that towns should plan for is appropriate or not. Perhaps the solution is having a paragraph that states that only a certain percentage of prime acres will be developed, and so towns should be cognizant of that.

Keith suggested that dividing the number of acres needed to make a target MW by the number of total prime acreage will give us a percentage showing the town's likely ability to make its targets.

See also the relevant slides in the presentation.

The committee was pleased to learn that a significant portion of the region's solar could likely be met through rooftop systems. Staff will continue to revise these targets.

Defining preferred locations for generation

Preferred locations allow net metering systems to be up to 500 kW in size, rather than the 150 kW caps for non-preferred locations.

Net metering rules that are still being discussed allow for preferred locations to be defined as "a specific location that is identified in a joint letter of support from the municipal legislative body and municipal and regional planning commissions in the community where the net-metering system will be located."

Karen asked if CCRPC will be willing to write supporting letters for issues like this. Regina said that we don't have a policy yet, but likely would not if the town wasn't already fully in support of the project.

Keith suggested that the RPC might want to facilitate a public process for municipalities to come up with preferred sites.

4. Regional Solar + Wind Targets, Solar Town Targets

Based on committee feedback, Melanie analyzed the differences in electricity use per capita between towns, but the committee agreed that it didn't make sense to factor this in.

Melanie also showed the differences between two different methods to split up energy generation targets per town. Method 1 averaged population share and resource share per town, and Method 2 included those and the town's share of electricity consumption. Most towns had a slight reduction in target MW with Method 2, but South Burlington and Burlington had increases. The committee agreed that Method 2 would be the best. Regina asked if this method was anti-smart growth because it means that, for example, Burlington's population growing would mean that their solar targets would grow as well, and it might be impossible for the city to make this amount of energy. Staff will move forward on Method 2.

Melanie informed the committee that all the towns that have provided local constraints can meet their solar targets with the local constraints factored in.

Sharon asked if the state's draft sound standards for wind will be incorporated into the maps. Melanie said she will examine the draft rules for buffers for wind turbines from residential areas. It's unclear when the rules will be adopted. Staff will examine this further.

5. Update on LEAP modeling

Melanie reminded the committee of the discussion that took place with David Roberts at the last subcommittee meeting. David presented several options for future Vehicle Miles Traveled (VMT) to be incorporated into the LEAP model. Staff recommends that the Long-range Energy Alternative Plan (LEAP) model use 9,269 miles as a base VMT per capita number for the model. Melanie clarified that the LEAP model will also consider CCRPC's VMT reduction strategies included in the planning scenarios from the ECOS plan. The committee asked if their local data analysis can include more accurate local data. The answer is yes, but there might not be better data for every analysis option.

LEAP will be revised with CCRPC's population projection model that is in the process of being approved by the board now.

CCRPC staff has spoken with VT Gas staff about the phase out of natural gas use in the LEAP model. This is obviously outside of VT Gas's business plan. The best option going forward is for the plan to include "real world" language saying that the 90X250 scenario is aspirational and that there are a lot factors in play like cost that are not considered in the technical model and do not consider the likelihood of electrifying the heating sector given these factors.

6. Next Steps

The meeting adjourned at 7:04pm. The next meeting will be on April 18.

2.2.3 CLIMATE CHANGE

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

Key Issues/Trends/Insights

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

- Temperature and precipitation records for the latter half of the 20th century show that Chittenden County's climate has changed: winters became warmer and summers became hotter. Lake Champlain freezes over later and less frequently and the growing season lasts longer. Annual precipitation has increased, but more falls as rain instead of snow.
- Scientists overwhelmingly agree that changes in climate worldwide are a result of human activities, mainly the burning of fossil fuels. Climate model forecasts for the Northeast US predict that during this century temperatures will continue to increase, as will extreme heat days and heat waves. More precipitation and extreme precipitation events are expected to increase, although short-term summer droughts may also become more frequent.
- These current and predicted changes in climate have broad implications for our region.
    - Environmental Quality - Summer air quality will deteriorate, as warmer temperatures promote the formation of smog. More intense rainfall will increase storm water runoff and the potential for flooding. Increased rain and runoff will wash pollutants into our waterways, and warmer waters and nutrients will encourage growth of bacteria and blue-green algae.
    - Natural Communities - Cold-water aquatic species, such as brook trout, will struggle to survive in warmer waters and in competition with better-adapted species. Our forests will change: maple, beech and birch trees will gradually be replaced by oak and hickory trees that are better adapted to warmer, wetter conditions. Invasive species, like the hemlock wooly adelgid, will further affect change in forest composition.
    - Public Health - Warmer temperatures allow the spread of insect-borne diseases, such as West Nile virus and Lyme disease. Air pollution and higher pollen production will increase problems for people with allergies, chronic respiratory diseases and asthma. High temperatures and heat waves will increase the risk of heat stress for the elderly, very young children and other vulnerable populations.
    - Built Environment – Flooding will put homes, businesses and public infrastructure in flood-prone areas at risk. Flooding may impact the safety of the water supply; droughts will also threaten water supplies. Although warmer winters will require less fuel for heating, hotter summers will increase electricity demands for cooling.
    - Local Economy - Warmer temperatures will hurt maple sugar production. Farmers can expect declining yields for cool-weather crops and depressed milk production from heat-stressed dairy cows. Less-colorful foliage seasons will hurt fall tourism. Less predictable snow will jeopardize winter sports and recreation and compromise Vermont's image as a winter sports destination.
- We can respond to climate change in two different ways.
    - **Climate mitigation** strategies will reduce the region's contribution of greenhouse gases. Although Chittenden County may be a small part of global greenhouse gas emissions, it is important that Chittenden County do its part to help solve the problem. More specifically Chittenden County should do what we can to help the State reach the goals of reducing 50% of greenhouse gas emissions from the 1990 baseline by 2028 and 75% of greenhouse gas emissions from the 1990 baseline by 2050.

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

Key Indicators

- **Greenhouse Gas Emissions** – Vermont's goal is to reduce 50% of greenhouse gas emissions from the 1990 baseline by 2028 and 75% of greenhouse gas emissions from the 1990 baseline by 2050. In 2010, Chittenden County emitted approximately 1,193,000 metric tons of carbon dioxide equivalents (MTCO2e).

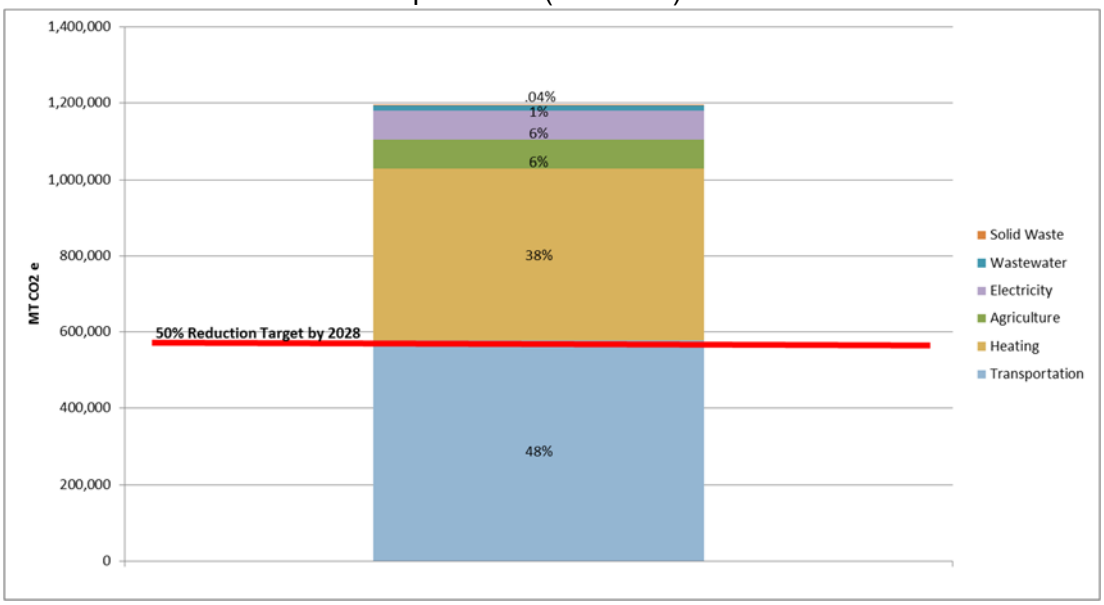


FIGURE 15 - CHITTENDEN COUNTY GREENHOUSE GAS EMISSIONS BY CATEGORY

THIS TABLE WILL ALSO INCLUDE THE 75% REDUCTION TARGET LINE?

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

2.5.3 TRANSPORTATION

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

Key Issues/Trends/Insights

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

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

Estimated Transportation Funding for Chittenden County: 2010 - 2035

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

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

- While our rate of driving alone to work increased by 36% between 1980 and 2000 (to 76% of all work trips), in more recent years this trend has shown improvement to 71% in 2010. We've also seen a nearly 60% increase in transit ridership the past decade. Vehicle Miles of Travel (VMT) per person is also on the decline, down 8% between 2000 and 2010. It is imperative that we maintain these positive recent trends in order to reduce congestion, reduce transportation energy use, decrease greenhouse gas emissions, and more efficiently utilize all of our transportation resources.
- Note: Aviation transportation is planned for by the Burlington International Airport (BIA) according to Federal Aviation Administration procedures. Air to ground transportation planning is coordinated between CCRPC, BIA, and the City of South Burlington and is considered in this Plan.
- The State of Vermont has a goal of obtaining 90% of energy across all sectors from renewable sources by 2050. This includes energy used for transportation. A key strategy for meeting this goal is shifting energy use in the transportation system: light duty vehicles will switch entirely from gasoline and diesel to electric, and medium and heavy duty vehicles will switch entirely from diesel to biodiesel or renewable diesel.

Key Indicators

- **Percent of workers commuting by non-Single Occupant Vehicle (SOV) mode (walk, bike, transit, carpool, telecommute).** Recent data suggests the reversal of a negative trend going back at least 30 years and probably longer.
- **Number of electric vehicles registered.** Increasing the number of electric vehicles is key to reducing the use of fossil fuels for transportation and to reducing transportation energy use. There were 542 electric vehicles registered in Chittenden County in January 2017, or ##% of all vehicles.

2.5.5 ENERGY

Energy Goal: Reduce Chittenden County's consumption of energy across all sectors (heating, electricity and transportation) by 15% by 2025, and by more than 1/3 by 2050. ~~and reliance on non-renewable, energy.~~Obtain 90% of the County's energy from renewable sources by 2050. Improve the cost-effectiveness, efficiency and reliability of the energy production, transmission, and distribution system.

Key Issues/Trends/Insights

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

Transition to Renewable Energy

- The State of Vermont has established goals of obtaining 90% of energy across all sectors (heating, electricity and transportation) by 2050, using more than 1/3 less energy by 2050, and weatherizing 25% of homes by 2020. A significant shift in behavior and energy generation sources will be necessary to meet these goals. The Long-Range Energy Alternatives (LEAP) model, as discussed later in this section, shows one possible scenario for meeting this goal.
- Chittenden County citizens, businesses, and industries spent about $617 million on energy in 2009 (25% of Vermont's total). Much of this money leaves the County and state immediately. This outflow of energy dollars acts as a drain on the local economy (data need to be updated).
- 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 (needs to be updated—is this still true?).
- Fossil fuel combustion increases the atmospheric concentration of carbon dioxide and other greenhouse gases, which are the causes of global climate change. Climate change will have profound impacts on the environment, public health, infrastructure, and economy of Chittenden County.
- Vermont, and the County, relies heavily on fuel oil for building heat and on gasoline and diesel for transportation. Gasoline consumption has increased as more residents drive to and from work, run errands, and consume for goods.
- 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.
- ~~The more widespread adoption of electric vehicles should reduce the total energy consumption in the County, due to better efficiency (an EV gets the equivalent of 100 miles/gallon). To prepare for widespread adoption of electric vehicles, charging infrastructure should be developed. In addition, policies and pricing structures to encourage off peak charging need to be considered to mitigate grid constraints.~~
- Chittenden County is home to an international airport and a National Guard base, therefore the transportation fuel consumption in the County not only includes gasoline, diesel, and compressed natural gas, but also aviation gasoline and jet fuel. Fuels used by airplanes are unlikely to have renewable alternatives. The remaining 10% of energy left out of the 90% renewable by 2050 goal takes this into account.
- Though the State has set a goal for obtaining 90% of energy across all sectors from renewable sources by 2050, we must recognize that natural gas serves much of Chittenden County, has recently expanded its service area, and is a cheap fuel source. Therefore, meeting the 90% by

2050 goal will be a challenge, especially in the heating sector. This goal hinges upon thermal efficiency improvements in buildings and equipment upgrades to increase efficiency. Increasing the availability of renewable natural gas may also allow us to meet this goal.

Commented [EN1]: The Long-Range Planning Committee discussed this statement at their meeting on 4/13. They suggested possibly including:
- A statement acknowledging that all the state's energy goals are very aspirational and may not be possible
- A statement recognizing that this is an issue of state policy. The state cannot both have a goal of 90% renewable energy by 2050 AND grant CPGs for natural gas infrastructure expansion.
- A statement recognizing that while this heating sector goal is a challenge for Chittenden County, we may be able to complete more of the transportation goals than other counties, and so it may be possible to meet the 90% renewable by 2050 goal at the state-wide scale, if not at the county scale.

Electric Efficiency

- 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. See Indicators for data on efficiency gains.
- Electric efficiency programs have always worked to reduce electrical demand especially during peak periods but the development of the Smart Grid will provide a powerful tool to address this issue. Smart Grid coupled with education, behavior change, and load control technologies can help reduce peak demand and defer substation upgrades which can result in substantial cost saving.
- While efficiency programs targeting electricity and natural gas have been largely successful, there is an urgent need to fund and develop similar programs for non-regulated thermal fuels and for the transporation sector. The more widespread adoption of electric vehicles should reduce the total energy consumption in the County, due to better efficiency (an EV gets the equivalent of 100 miles/gallon). To prepare for widespread adoption of electric vehicles, charging infrastructure should be developed. In addition, policies and pricing structures to encourage off peak charging need to be considered to mitigate grid constraints.
- It is necessary to shift the heating sector away from fossil fuel use. Promoting cold climate heat pumps, in addition to wood, biogas and geothermal heating systems, will be key to meeting this goal.
- There is a need for focused study to determine solutions for vermiculite removal as it relates to weatherization, in particular low income weatherization. Vermiculite was used as an insulator for decades (1960-1990) and was mined with asbestos. Thus any home with vermiculite is assumed to be contaminated.

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; Extension of natural gas service in Hinesburg up Richmond Road by VT Gas; and Extension of natural gas service to St. George village center. In addition, Burlington's plan to recapture "waste heat" from the McNeil power plant and distribute it to the Old North End of Burlington and heat greenhouses at the Intervale is a thermal energy project with a more efficient distribution of a previously wasted energy source. See the CEDS Project list in Section 4.2.6 for cost estimates, funding sources and

proposed timelines for these projects. (This will be updated to reflect the completion of some 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 increase energy planning and give towns and regions the ability to seek "substantial deference" for their land use policies, a policy change intended to remedy these concerns. The effects of "substantial deference" have yet to be tested in PSB proceedings.

Key Indicators (This section will be updated with data provided by LEAP and will allow this plan to meet the Act 174 Target and Analysis Standards)

- **Current energy Consumption in the Transportation Sector, and 2025, 2035 and 2050 targets for consumption.** The graph below shows current energy consumption across all sectors and sets targets for future consumption in line with the goals of a greater than 1/3 reduction by 2050.

- **Current energy Consumption in the Heating Sector, and 2025, 2035 and 2050 targets for consumption.** The graph below shows current energy consumption across all sectors and sets targets for future consumption in line with the goals of a greater than 1/3 reduction by 2050.

- **Number of homes energy audits completed.** Vermont has a goal of using more than 1/3 less energy by 2050. Home energy audits develop strategies for residents to use less energy. ### homes have been audited since 2010. (Source: VT Gas, Efficiency Vermont and Burlington Electric department)

- **Current energy Consumption in the Electric Sector, and 2025, 2035 and 2050 targets for consumption.** The graph below shows current energy consumption across all sectors and sets targets for future consumption in line with the goals of a greater than 1/3 reduction by 2050.

- **Number of home weatherization projects completed.** Vermont has a goal of weatherizing 25% of homes by 2020. ### homes, or ##%, have been weatherized since 2010, leading a ##% decrease in energy use. (Source: ???)

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

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

Source: VT GAS, 2010

FIGURE 4951 - 2010 NATURAL GAS EFFICIENCY SAVINGS AS A PERCENTAGE OF THE NATURAL GAS CONSUMED

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

FIGURE 5052 - ELECTRICITY EFFICIENCY SAVINGS AS A PERCENT OF TOTAL ELECTRICITY CONSUMED

- **Sources of total regional energy generation.** The graph below shows how energy in the region is currently produced.

- **Targets for total regional energy generation sources in 2025, 2035 and 2050.** The graph below shows the targets for the region to meet the goal of obtaining 90% of all energy in all sectors from renewable sources by 2050. ~~e~~

- **Current Solar Generation in Chittenden County and Solar Generation Goals Needed to Meet 2050 Goals.** The table below shows solar generation and solar generation targets for the region and each municipality. See Map ## for more details.

- **Current Wind Generation in Chittenden County and Wind Generation Goals Needed to Meet 2050 Goals.** The table below shows solar generation and solar generation targets for the region and each municipality. See Map ## for more details.

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

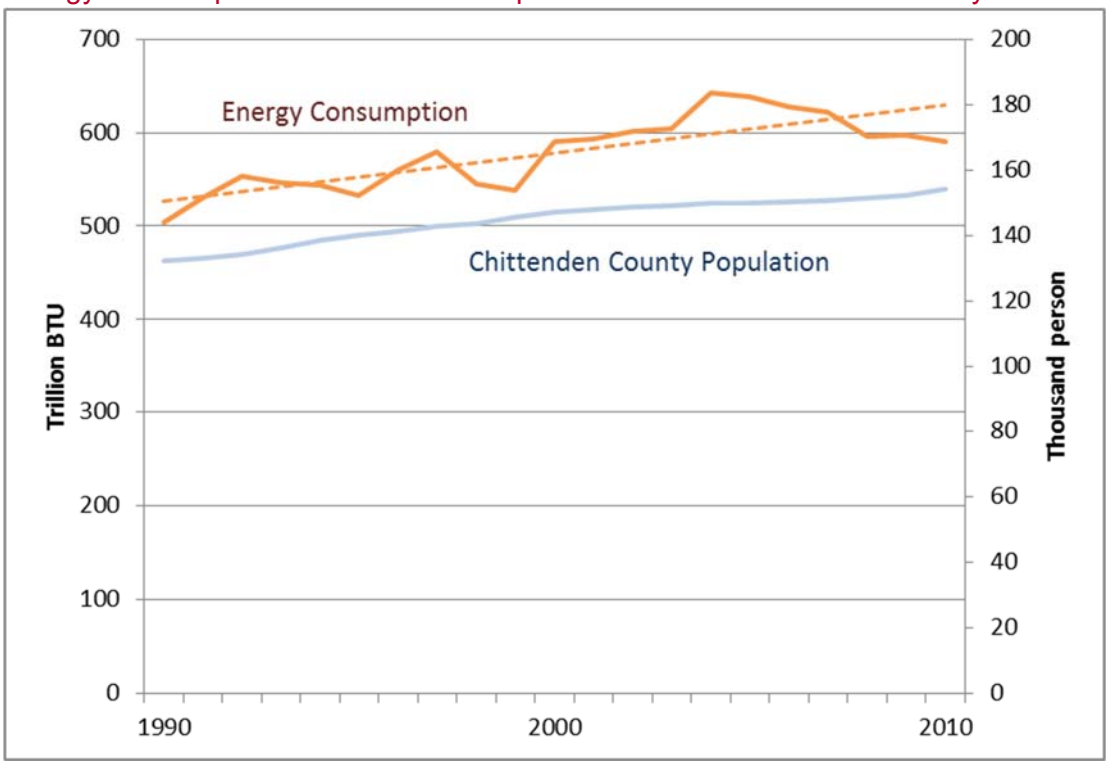
- ~~Number and capacity of renewable energy production sites in the County (Source: VT Energy Atlas, Oct. 12, 2011)~~

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

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

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

- ~~Energy Consumption Estimates and Population Trend in Chittenden County~~



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

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

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

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

FIGURE 50 – 2009/2010 TOTAL ENERGY CONSUMPTION PER CAPITA

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

23. Affordable Homes - An increase of 1,000 homeownership units in the County priced under $300,000 is needed by 2015 to increase housing choices and lower costs. This need could be met through existing permitted developments, however many are not being built due to challenges with condominium financing. For the same reason as mentioned above, the 1,000 units is based on a conservative vacancy rate figure.
24. Maintenance of Existing Housing – There is a need to adequately maintain existing housing stock to preserve it as a viable option for the future.
25. Supportive Housing - There is a need to increase the number of units of permanent supportive housing throughout the County in addition to Burlington. Supportive housing is a combination of housing and services intended as a cost-effective way to help people live more stable, productive lives. Supportive housing is widely believed to work well for those who face the most complex challenges—individuals and families who have very low incomes and/or disabilities, and/or may suffer from substance abuse, addiction or alcoholism, mental illness, HIV/AIDS, or other serious challenges to a successful life.
26. Mode Share - While our rate of driving alone to work increased by 36% between 1980 and 2000 (to 76% of all work trips), in more recent years this trend has shown improvement to 71% in 2010. We've also seen a nearly 60% increase in transit ridership the past decade. Vehicle Miles of Travel (VMT) per person is also on the decline, down 8% between 2000 and 2010. It is imperative that we maintain these positive recent trends in order to reduce congestion, decrease greenhouse gas emissions, and more efficiently utilize all of our transportation resources.
27. Road System & Funding - Roadway condition is rated poor or worse for over half of the arterial highway mileage in Chittenden County. The costs associated with maintaining and improving this infrastructure exceeds our fiscal capacity to fully address it. Nor do we have adequate funds needed to grow transit, walking/biking, and Transportation Demand Management (TDM) programs. Compounding our poor roadway conditions and inadequate investment, transportation funding in general is overly reliant on the state and federal gas taxes which are decreasing in value as inflation lowers purchasing power and revenues decline due to improving vehicle fuel efficiency and fewer VMT. The prospect of less funding in a time of increasing transportation investment need is a worrisome trend and needs to be addressed.
28. Meeting Vermont's State Energy Goals – Vermont has set ambitious goals to reduce the state's consumption of energy across all sectors (heating, electricity and transportation) by 15% by 2025, and by more than 1/3 by 2050 and to obtain 90% of energy from renewable sources by 2050. Meeting these goals will require a large increase in efficiency measures, the electrification of the transportation sector, and a significant increase in renewable energy production sited in Chittenden County. While CCRPC and municipalities are undertaking a planning effort to meet these goals, the goals cannot be met without the involvement of private-sector energy developers, working in cooperation with regional and state-wide utilities.
29. ~~Energy Conservation - Vermont and Chittenden County lead the nation with respect to initiatives that support efficiency and renewable energy, however, more efficiency programs are needed~~

~~for non-regulated thermal fuels and energy for transportation to keep costs down and to reduce GHG emissions.~~

~~30. Renewables Siting - With the rise of renewable energy sources, municipalities are struggling with being left out of the conversation and are making specific recommendations within their Town Plans regarding how they want the Public Service Board to review petitions in their Towns.~~

~~31.~~29. Water and Wastewater– In order for municipalities to implement their plans for future growth in their urban or village improved water and wastewater services (both on-site, community systems, and sewer) are often necessary, including financial assistance. Colchester, Essex Junction, Huntington, Hinesburg, Westford, and Williston were among the municipalities raising this concern.

~~32.~~30. Stormwater Investments – Municipalities are committed to making improvements in storm water quality, but are concerned about the costs and how to pay for them.

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

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

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

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

Increasing investment in denser, mixed use growth areas will improve economic opportunities, housing options, transportation options and improve community health. Focusing growth in the appropriate planning areas is also a cost- ~~-~~effective approach to increasing the supply of affordable housing~~,~~ ~~reducing energy consumption~~ and using existing infrastructure efficiently. Finally, this pattern of growth reduces energy consumption for transportation. Homes are in closer proximity to jobs and other services, making trips shorter and making travel by walking, biking, transit and carsharing more feasible.

Actions

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

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

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

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

Vermont Legal Aid to test and enforce state protected classes (Age, marital status, sexual orientation, gender identity, receipt of public assistance).

4. **Energy – Transform the Region's energy system to meet the goals of Vermont's energy and greenhouse gas reduction goals.**

~~a. Reduce Energy Consumption - Education and outreach to key sectors regarding weatherization, life cycle fuel costs, and behavioral adjustments will be essential elements for reducing energy use and costs over time.~~

a. Reduce energy consumption and ~~D~~decrease greenhouse gas emissions, to support the State's goal~~s of reducing greenhouse gas emissions~~:
   - 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 capital 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 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. ~~Encourage individual homes and businesses to include electric and thermal energy efficiency in building and/or retrofitting. Weatherization should be promoted and executed as a first step to reduce overall energy consumption before investing in renewable energy systems.~~ Promote alternatives to fossil fuels for heating by working with partners such as Efficiency Vermont to educate developers and homeowners on the benefits of technology such as cold climate heat pumps, wood heating and geothermal systems, and by supporting alternative forms of heating. Examples of alternative forms of heating 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). ~~Provide alternatives to fossil fuels for heating.~~

   ~~i.~~iii. Work with partners to promote stretch energy codes and assist municipalities wishing to adopt Stretch Energy Codes.

   ~~ii.~~iv. Reduce fossil fuel consumption in the transportation sector, through the Transportation Demand Management and electric vehicle promotion strategies outlined in Part 6c of this section and in the Metropolitan Transportation Plan (MTP) included in this plan.~~.~~

   ~~iii.~~i. ~~Increase resilience to potential interruptions of grid power, especially for maintaining essential services (including water supply and sewage disposal) without electrical power. Such services need, in the short term, backup power with at least a week's supply of stored fuel. In the long term, redesign these services in a more resilient way.~~

b. Increase Renewable Energy Generation, to support the State's goal of 25% renewable energy by 2025 and 90% renewable energy by 2050.

i. Renewable energy generation is strongly encouraged in areas identified as prime solar or wind generation areas, or on preferred sites. ~~Determine appropriate sites for community-level renewable energy generation. Recent work on this topic has included the Legislature's Solar Siting Task Force Committee in 2015; and three Regional Planning Commissions have received Department of Energy grants. CCRPC has not yet received these funds, but will benefit from the work of the other three RPC's – and will hopefully be able to build on that work if CCRPC receives its own grant to work on this task further.~~ Renewable energy generation shall not take place in areas with state or local known constraints. Renewable energy generation on areas with state or local possible constraints may require mitigation, and further investigation may deem the site unsuitable. See the discussion of Maps ## and ## for further details on known and possible constraints, and for a listing of preferred sites.

While it may not be feasible for energy generation facilities to be bound by this plan's goal of 80% of new development in areas planned for growth, it is this Plan's policy to highly encourage rooftop solar generation wherever possible, as this promotes distributed generation and lessens greenfield development.

~~i.~~ Use the Vermont Energy Action Network (VEAN) Energy Dashboard to educate residents and municipalities about opportunities to reduce energy use and switch to renewable energy sources. ~~Encourage individual homes and businesses to include renewable energy options in building and/or retrofitting.~~

5. State/Local Permitting Coordination & Improvement

a. Support changes to the local and state permitting process to make the two more coordinated and effective. Participate in the Agency of Commerce and Community Development's (ACCD) process to improve the State's designation programs designed to encourage development in appropriately planned places and discourage development outside of those areas. This program could be improved with regulatory and/or fiscal incentives. These could include expedited permitting processes for projects in areas that are: a) designated for growth; and, b) where a community has a robust plan, regulations and staff capacity; and reduction of redundancies such as delegation of permitting for certain local and state reviews (such as exemption from Act 250). In conjunction with delegation it may be appropriate to develop more stringent standards and thresholds for development review in rural areas.
b. Collaborate with stakeholders to ensure local and state regulations, bylaws and plans encourage transparency, predictability and timely review of sustainable and environmentally sound development applications.
c. Develop a transportation assessment process that supports existing and planned land use densities and patterns in Center, Metro, Suburban, Village, and Enterprise Planning Areas to allow for more congestion and greater mode choice than allowed by current standards. The CCRPC will collaborate with the Vermont Agency of Transportation (VTrans), the Natural Resources Board, and other state and local stakeholders to develop a process that evaluates the transportation impact from a multi-modal perspective rather than just a traffic flow standpoint.
    - Policies and planning studies that are adopted as part of this ECOS Plan and subsequent amendments will guide CCRPC's position in permit proceedings.

6. Metropolitan Transportation Plan Investments

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

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

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

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

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

Map 3 – Existing Utilities and Facilities

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

Map 4 - Future Transportation Improvements

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

Possible New Map 5 – Solar Generation Potential

This map combines GIS analysis of solar generation potential with *known* and *possible* constraints. For more information on the methodology used to determine solar generation potential, please visit http://www.vtenergyatlas-info.com/solar/methodology. This map and the corresponding data are 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.

Known constraints signal likely, though not absolute, unsuitability for development based on statewide or local regulations or designated critical resources. *Possible* constraints signal conditions that would likely require mitigation, and which may prove a site unsuitable after site-specific study, based on

statewide or regional/local policies that are currently adopted or in effect. Areas with known constraints are removed from the Solar Generation Potential map completely, leaving:

1. Prime Solar Areas: areas with generation potential and no constraints, and
2. Base Solar Areas: areas with generation potential and possible constraints.

As with all maps included in the ECOS Plan, the solar generation map is intended to provide a general overview of existing conditions. The accuracy of information presented in the maps is limited due to scale. Errors and omissions may exist, including in the analysis of whether a site has solar generation potential to begin with. These maps are not sufficient for delineation of features on-the-ground. To determine whether a site is appropriate for solar development, surveyed information or engineering studies will likely be necessary to determine whether known or possible constraints exist. Finally, the maps indicate land-based potential and existing development is not taken into account. Rooftop solar panels may be appropriate on existing structures in areas with known constraints.

Known Constraints

- FEMA Floodways
- DEC River Corridors
- National Wilderness Areas
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- Vernal Pools (confirmed and unconfirmed)
- Class 1 and 2 wetlands (VSWI and advisory layers)
- Local Known Constraints—see table below (table will be reformatted for ease of reading)

Bolton	
Conservation District	Very steep slopes (25% or greater)
Flood Hazard Overlay II	Wetland Buffers
Surface Water Buffers	Town-Owned Lands
Burlington	
Historic Districts	Mixed Use, Institutional Core Campus & Enterprise Zoning Districts
Historic Neighborhoods (Eligible for Listing)	Official Map Features and View Corridors
Charlotte	
Conserved Land	Shoreland Setback and Buffer Areas
Flood Hazard Areas	Special Natural Areas
Historic District, Sites, and Structures	Steep Slopes (15% or Greater)
Land in Active Agricultural Use	Surface Waters, Wetlands, and Buffers
Primary Agricultural Soils	Water Supply Protection Areas
Scenic View	Wildlife Habitats
Colchester	
Gd4 Open Space Overlay District	Steep Slopes over 20%
Shore Land Overlay District	Water Protection Overlay District
Essex	
Core Habitat	Scenic Resources Overlay
Habitat Blocks	Steep Slopes 20 Percent ~~o~~or Higher
Essex Junction	
Conserved Lands	
Hinesburg	

Conserved Land	Town-Owned Parcels
State-Owned Parcels	Wildlife - Core Habitat Areas
Steep Slopes (25% oer Greater)	
Jericho	
Conserved Land	Primary Conservation Areas (PCA)
Current Use	Well Protection Area
Natural Resource Overlay	
Milton	
Agricultural Soils	Hydric Soils
Conserved Lands	Parks + Rec
Habitat Blocks	
South Burlington	
SPA-Zone 1	
Underhill	
Above 1500'	Very steep slopes (more than 25%)
Mt. Mansfield Scenic Preservation District	Wetland Setbacks (100 ft. from Class I Wetlands (none in town); 50 ft. from Class II Wetlands; and 25 ft. from Class III Wetlands)
Stream and waterbody setbacks (100 ft. from named streams as measured horizontally from the top of the bank or 50 ft. if measured from top of slope; 25 ft. from unnamed streams	
Westford	
Deer Wintering Habitat	Slopes 25% or Greater
Flood Hazard Overlay District	Water Resources Protection Overlay District, River Corridor and Streams Draining less than 2 square miles
Ledge outcrop	

Possible Constraints

- Agricultural Soils + Hydric Soils
- Act 250 Ag. Soil Mitigation Areas
- FEMA Special Flood Hazard Areas
- VT Conservation Design Highest Priority Forest Blocks
- Protected Lands (State feel lands and private conservation lands)
- Deer Wintering Areas
- Regional or Locally Identified Resources
- Local Known Constraints—see table below (table will be reformatted for ease of reading)

Bolton	
Forest District	Steep Slopes (15-25%)
Burlington	
Rock Point	Urban Reserve
Barge Canal	
Charlotte	
Historic Protection Overlay District	Town-owned Parks and Recreational Property

Essex	
Resources Protection District (Industrial)	Steeps Slopes 15-20%
Hinesburg	
Industrial Zoning	Moderately Steep Slopes
Village Growth Area	
Jericho	
Secondary Conservation Areas (PCA)	Village Centers
Shelburne	
Lake Champlain 100-foot Buffer	Scenic View Sheds
Significant View Areas	
South Burlington	
Class 3 Wetland Buffers	Class 3 Wetlands
Habitat Blocks	Riparian Connectivity
Scenic Views	SEQ Natural Resource Protection Area
Slopes 20% or greater	Class 1 and 2 Wetland Buffers (50 ft)
Underhill	
Private Wells	Steep Slopes (15-25%)
Westford	
Prime and state-wide significant agriculture soils	

Possible New Map 6 – Wind Generation Potential

This map combines GIS analysis of wind generation potential with *known* and *possible* constraints. For more information on the methodology used to determine wind generation potential, please visit http://www.vtenergyatlas-info.com/wind/methodology. This map and the corresponding data are 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.

Known constraints signal likely, though not absolute, unsuitability for development based on statewide or local regulations or designated critical resources. *Possible* constraints signal conditions that would likely require mitigation, and which may prove a site unsuitable after site-specific study, based on statewide or regional/local policies that are currently adopted or in effect. Areas with known constraints are removed from the Wind Generation Potential map completely, leaving:

3. Prime Wind Areas: areas with generation potential and no constraints, and
4. Base Wind Areas: areas with generation potential and possible constraints.

As with all maps included in the ECOS Plan, the wind generation map is intended to provide a general overview of existing conditions. The accuracy of information presented in the maps is limited due to scale. Errors and omissions may exist, including in the analysis of whether a site has wind generation potential to begin with. These maps are not sufficient for delineation of features on-the-ground. To determine whether a site is appropriate for wind development, surveyed information or engineering studies will likely be necessary to determine whether known or possible constraints exist. Finally, the maps indicate land-based potential and existing development is not taken into account.

Known Constraints

- FEMA Floodways

- DEC River Corridors
- National Wilderness Areas
- State-significant Natural Communities and Rare, Threatened, and Endangered Species
- Vernal Pools (confirmed and unconfirmed)
- Class 1 and 2 wetlands (VSWI and advisory layers)
- Local Known Constraints—see table below (table will be reformatted for ease of reading)

Bolton	
Conservation District	Very steep slopes (25% or greater)
Flood Hazard Overlay II	Wetland Buffers
Surface Water Buffers	Town-Owned Lands
Burlington	
Historic Districts	Mixed Use, Institutional Core Campus & Enterprise Zoning Districts
Historic Neighborhoods (Eligible for Listing)	Official Map Features and View Corridors
Charlotte	
Conserved Land	Shoreland Setback and Buffer Areas
Flood Hazard Areas	Special Natural Areas
Historic District, Sites, and Structures	Steep Slopes (15% or Greater)
Land in Active Agricultural Use	Surface Waters, Wetlands, and Buffers
Primary Agricultural Soils	Water Supply Protection Areas
Scenic View	Wildlife Habitats
Colchester	
Gd4 Open Space Overlay District	Steep Slopes over 20%
Shore Land Overlay District	Water Protection Overlay District
Essex	
Core Habitat	Scenic Resources Overlay
Habitat Blocks	Steep Slopes 20 Percent ~~o~~or Higher
Essex Junction	
Conserved Lands	
Hinesburg	
Conserved Land	Town-Owned Parcels
State-Owned Parcels	Wildlife - Core Habitat Areas
Steep Slopes (25% ~~o~~or Greater)	
Jericho	
Conserved Land	Primary Conservation Areas (PCA)
Current Use	Well Protection Area
Natural Resource Overlay	
Milton	
Agricultural Soils	Hydric Soils
Conserved Lands	Parks + Rec
Habitat Blocks	
South Burlington	
SPA-Zone 1	
Underhill	
Above 1500’	Very steep slopes (more than 25%)

Mt. Mansfield Scenic Preservation District	Wetland Setbacks (100 ft. from Class I Wetlands (none in town); 50 ft. from Class II Wetlands; and 25 ft. from Class III Wetlands)
Stream and waterbody setbacks (100 ft. from named streams as measured horizontally from the top of the bank or 50 ft. if measured from top of slope; 25 ft. from unnamed streams	
Westford	
Deer Wintering Habitat	Slopes 25% or Greater
Flood Hazard Overlay District	Water Resources Protection Overlay District, River Corridor and Streams Draining less than 2 square miles
Ledge outcrop	

Possible Constraints

- Agricultural Soils + Hydric Soils
- Act 250 Ag. Soil Mitigation Areas
- FEMA Special Flood Hazard Areas
- VT Conservation Design Highest Priority Forest Blocks
- Protected Lands (State feel lands and private conservation lands)
- Deer Wintering Areas
- Regional or Locally Identified Resources
- Local Known Constraints—see table below (table will be reformatted for ease of reading)

Bolton	
Forest District	Steep Slopes (15-25%)
Burlington	
Rock Point	Urban Reserve
Barge Canal	
Charlotte	
Historic Protection Overlay District	Town-owned Parks and Recreational Property
Essex	
Resources Protection District (Industrial)	Steeps Slopes 15-20%
Hinesburg	
Industrial Zoning	Moderately Steep Slopes
Village Growth Area	
Jericho	
Secondary Conservation Areas (PCA)	Village Centers
Shelburne	
Lake Champlain 100-foot Buffer	Scenic View Sheds
Significant View Areas	
South Burlington	
Class 3 Wetland Buffers	Class 3 Wetlands
Habitat Blocks	Riparian Connectivity
Scenic Views	SEQ Natural Resource Protection Area
Slopes 20% or greater	Class 1 and 2 Wetland Buffers (50 ft)
Underhill	
Private Wells	Steep Slopes (15-25%)

Westford	
Prime and state-wide significant agriculture soils	

Map 5 - Water Quality and Safety Map

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

Map 6 - Natural Systems Map

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

Map 7 - Opportunity and Race Map

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

Map 8 - 2013 Metropolitan Transportation Systems Map

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

Map 9 - 2006-2010 High Crash Locations-Intersections

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

Map 10 - 2006-2010 Crash Locations-Segments

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

Map 11 - Transportation Corridors

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

4.1.2 ACT 250, SECTION 248 & SUBSTANTIAL REGIONAL IMPACT

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

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

2. Section 248 – Certain proposed utility facilities are required to obtain a permit from Vermont's Public Service Board to establish that the proposed facility will satisfy criteria defined by Section 248 (30 VSA §248). One of the Section 248 criteria is that the proposed facility will "not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions."

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

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

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

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

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

Municipal Template - Energy Data

The following is an explanation of the information displayed in the Municipal Template for Alburgh.

The intent of the Municipal Template is to provide the municipality with data required to ensure compliance with the requirements of Act 174 and "Enhanced Energy Planning" (24 V.S.A. 4352). The spreadsheet contains data that estimates current energy use and provides targets for future energy use across all sectors (transportation, heating, and electricity). It also sets targets for renewable energy generation within the municipality.

This data is meant to be a starting point for the municipality to begin planning its energy future and to talk about the changes that may need to occur within the municipality to ensure that local, regional and state energy goals are met. This includes the goal that 90% of all energy demand be met by renewable sources by 2050.

Estimates of current energy use consist primarily of data available from the American Community Survey (ACS), the Vermont Agency of Transportation (VTrans), the Vermont Department of Labor (DOL), and the Vermont Department of Public Service (DPS). Targets for future energy use are reliant upon the Long-range Energy Alternatives Planning (LEAP) analysis for the region completed the Vermont Energy Investment Corporation (VEIC). Targets for future energy generation have come from the regional planning commission and DPS. For more information on LEAP, see Figure 4. Targets for both future energy use and energy generation have been generally developed using a "top down" method of disaggregating regional data to the municipal level. This should be kept in mind when reviewing the template. It is certainly possible to develop "bottom up" data. For those municipalities interested in that approach, please see the Department of Public Service's Analysis and Targets Guidance.

Figure 1 - Data Sources

ACS – American Community Survey

DOL –Vermont Department of Labor

DPS – Vermont Department of Public Service

EIA – Energy Information Administration

EVT – Efficiency Vermont

LEAP – Long-range Energy Alternatives Planning

VEIC – Vermont Energy Investment Corporation

VTrans – Vermont Agency of Transportation

There are some shortcomings and limitations associated the data used in the Municipal Template. For instance, assumptions used to create the LEAP analysis are slightly different than assumptions used to calculate current municipal energy use. Regardless, the targets established here show the direction in which change needs to occur to meet local, regional and state energy goals. It is important to remember that the targets established by LEAP represents only on way to achieve energy goals. There may several other similar pathways that a municipality may choose to take in order to meet the 90x50 goal.

Below is a worksheet by worksheet explanation of the Municipal Template spreadsheet:

1. Municipal Summary

The Municipal Summary worksheet summarizes all data that is required to be in the Municipal Plan if the plan is to meet the "determination" standards established by the Vermont Department of Public Service.

1A. Current Municipal Transportation Energy Use

Transportation Data	Municipal Data
Total # of Vehicles (ACS 2011-2015)	713
Average Miles per Vehicle (Vtrans)	11,356
Total Miles Traveled	8,096,828
Average Gallons Use per Vehicle per Year (VTrans)	684
Total Gallons Use per Year	487,621
Transportation BTUs (Billion)	59
Average Cost per Gallon of Gasoline (RPC)	2
Gasoline Cost per Year	1,126,404

This table uses data from the American Community Survey (ACS) and Vermont Agency of Transportation (VTrans) to calculate current transportation energy use and energy costs.

1B. Current Municipal Residential Heating Energy Use

Fuel Source	Municipal Households (ACS 2011-2015)	Municipal % of Households	Municipal Square Footage Heated	Municipal BTU (in Billions)
Natural Gas	2	0.3%	228,480,000	0
Propane	77	10.8%	8,036,160,000	8
Electricity	0	0.0%	0	0
Fuel Oil	478	67.0%	49,791,360,000	50
Coal	0	0.0%	0	0
Wood	146	20.5%	15,454,080,000	15
Solar	0	0.0%	0	0
Other	10	1.4%	1,142,400,000	1
No Fuel	0	0.0%	0	0
Total	**713**	**100.0%**	**74,652,480,000**	**75**

This table displays data from the ACS that estimates current municipal residential heating energy use.

1C. Current Municipal Commercial Energy Use

	Commercial Establishments in Municipality (VT DOL)	Estimated Thermal Energy BTUs per Commercial Establishment (in Billions) (VDPS)	Estimated Thermal Energy BTUs by Commercial Establishments in Municipality (in Billions)
Municipal Commercial Energy Use	38	725,000	27,550,000

The table uses data available from the Vermont Department of Labor (VT DOL) and the Vermont Department of Public Service (DPS) to estimate current municipal commercial establishment energy use in the municipality.

1D. Current Electricity Use

Use Sector	Current Electricity Use
(Efficiency Vermont)	To Be Determined (TBD)
Commercial and Industrial (kWh)	To Be Determined (TBD)
Total (kWh)	To Be Determined (TBD)

This table displays current electricity use within the municipality. This data is available from Efficiency Vermont (EVT).

1E. Residential Thermal Efficiency Targets

	2025	2035	2050
Residential - Increased Efficiency and Conservation (% of municipal households to be weatherized)	5%	16%	78%

This table displays targets for thermal efficiency for residential structures based on a methodology developed by DPS using data available from the regional Long-range Energy Alternatives Planning (LEAP) analysis and ACS. The data in this table represents the percentage of municipal households that will need to be weatherized in the target years.

1F. Commercial Thermal Efficiency Targets

	2025	2035	2050
Commercial - Increased Efficiency and Conservation (% of commercial establishments to be weatherized)	25%	25%	73%

This table shows the same information as Table 1E, but sets a target for commercial thermal efficiency. Information from the VT DOL is required to complete this target.

1G. Thermal Fuel Switching Targets (Residential and Commercial) - Wood Systems

	2025	2035	2050
New Efficient Wood Heat Systems (in units)	20	53	158

This table provides a target for new wood heating systems for residential and commercial structures in the municipality for each target year. This target was calculated using data from LEAP and ACS.

1H. Thermal Fuel Switching Targets (Residential and Commercial) - Heat Pumps

	2025	2035	2050
New Heat Pumps (in units)	34	82	185

This table provides a target for new heat pump systems for residential and commercial structures in the municipality for each target year. This target was calculated using data from LEAP and ACS.

1I. Electricity Efficiency Targets

	2025	2035	2050
Increase Efficiency and Conservation	25.2%	48.3%	100.7%

Data in this table displays a target for increased electricity efficiency and conservation during the target years. These targets were developed using regional LEAP analysis.

1J. Use of Renewables - Transportation

	2025	2035	2050
Renewable Energy Use - Transportation	2.7%	18.2%	83.4%

This data displays targets for the percentage of transportation energy use coming from renewable sources during each target year. This data was developed using the LEAP analysis.

1K. Use of Renewables - Heating

	2025	2035	2050
Renewable Energy Use - Heating	42.7%	53.4%	82.3%

This data displays targets for the percentage of heating energy use coming from renewable sources during each target year. This data was developed using information from the LEAP analysis.

1L. Use of Renewables - Electricity

	2025	2035	2050
Renewable Energy Use - Electricity	TBD	TBD	TBD

This data displays targets for the percentage of electricity generation coming from renewable sources within the municipality during each target year. This data was developed using information from the regional planning commission and DPS. This data is the same as the data in Table 1Q.

1M. Transportation Fuel Switching Target - Electric Vehicles

	2025	2035	2050
Electric Vehicles	116	869	2067

This tables displays a target for switching from fossil fuel based vehicles (gasoline and diesel) to electric vehicles. This target is calculated on Worksheet 2. by using LEAP and ACS data.

1N. Transportation Fuel Switching Target - Biodiesel Vehicles

	2025	2035	2050
Biodiesel Vehicles	26	48	83

This tables displays a target for switching from fossil fuel based vehicles to biodiesel-powered vehicles. This target is calculated on Worksheet 2. by using LEAP and ACS data.

1O. Existing Renewable Generation

Renewable Type	MW	MWh
Solar	0.11	134.90
Wind	0.00	0.00
Hydro	0.00	0.00
Biomass	0.00	0.00
Other	0.00	0.00
Total Existing Generation	**0.11**	**134.90**

Table 1O shows existing renewable generation in the municipality, in MW and MWh, based on information available from the Vermont Department of Public Service.

1P. Renewable Generation Potential

Renewable Type	MW	MWh
Rooftop Solar	1	1,107
Ground-mounted Solar	14	17,520
Wind	3	7,665
Hydro	0	28
Biomass and Methane	0	0
Other	0	0
Total Renewable Generation Potential	**18**	**26,320**

Renewable generation potential is based on mapping completed by the regional planning commission that is based on the Municipal Determination Standards and associated guidance documents developed by DPS. The renewable generation potential is expressed in MW and MWh by the type of renewable resource (solar, wind, hydro, etc.).

1Q. Renewable Generation Targets

	2025	2035	2050
Total Renewable Generation Target (in MWh)	TBD	TBD	TBD

Renewable generation targets for municipalities were developed by the regional planning commission.

1R. Sufficient Land

	Y/N
Solar	Y
Wind	Y

This table shows whether or not there is sufficient land in the municipality to meet the renewable generation targets based on the renewable generation potential in the municipality.

Potential Wind Energy Resource Areas

Bolton, Vermont
Act 174
The Energy Development Improvement Act of 2016

0 0.5 1 2 Miles

N

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added which may turn prime areas to base areas

Underhill

Stowe

Jericho

Richmond

Waterbury

Huntington

ACCESS RD

BOLTON VALLEY

DUXBURY RD

2

89

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Buels Gore, Vermont
Act 174
The Energy Development Improvement Act of 2016

0 0.25 0.5 1 Miles

N

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added
which may turn prime areas to base areas

Huntington

17

Starksboro

Fayston

Lincoln

CHITTENDEN COUNTY

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Burlington, Vermont
Act 174
The Energy Development Improvement Act of 2016

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.35 0.7 1.4 Miles

N

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added
which may turn prime areas to base areas

Colchester
Winooski
Lake Champlain
127
PLATTSBURG AVE
NORTH AVE
VT ROUTE 127
RIVERSIDE AVE
NORTH ST
PEARL ST
LAKE ST
PARK ST
BATTERY ST
SAINT PAUL ST
PINE ST
BURNE ST
LEDGE RD
MAIN ST
COLCHESTER AVE
EAST AVE
N WINOOSKI AVE
S WINOOSKI AVE
N WILLARD ST
S WILLARD ST
N PROSPECT ST
S PROSPECT ST

CHITTENDEN COUNTY

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Essex Junction, Vermont
Act 174
The Energy Development Improvement Act of 2016

0 0.225 0.45 0.9 Miles

N

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added which may turn prime areas to base areas

Colchester

Essex

South Burlington

Williston

15

2A

PEARL ST

WEST ST

MAIN ST

SOUTH ST

PARK ST

MAPLE ST

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Hinesburg, Vermont
Act 174
The Energy Development Improvement Act of 2016

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.5 1 2 Miles

N

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph
- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph
- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added which may turn prime areas to base areas

Williston
Richmond
Shelburne
St.George
Huntington
Charlotte
Monkton
SHELBURNE FALLS RD
POND RD
RICHMOND RD
CVU RD
116
CHARLOTTE RD
NORTH RD
HOLLOW RD
SILVER ST

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Huntington, Vermont
Act 174
The Energy Development Improvement Act of 2016

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.5 1 2 Miles

N

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph
- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph
- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added which may turn prime areas to base areas

Richmond

Bolton

Hinesburg

HINESBURG HOLLOW RD

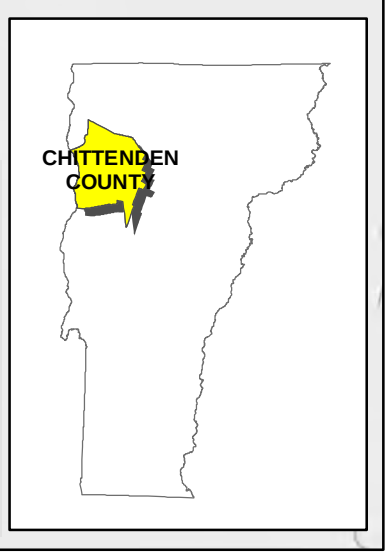
MAIN RD

Duxbury

Starksboro

Bue

Sources:
Solar Energy Resource Areas;VCGI,2017
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.



CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Jericho, Vermont
Act 174
The Energy Development Improvement Act of 2016

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.5 1 2 Miles

N

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph
- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph
- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added
which may turn prime areas to base areas

Westford
Essex
Underhill
Williston
Richmond
SKUNK HOLLOW RD
LEE RIVER RD
BROWNS TRCE
BARBER FARM RD
NASHVILLE RD
117

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

St. George, Vermont
Act 174
The Energy Development Improvement Act of 2016

0 0.175 0.35 0.7 Miles

N

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added which may turn prime areas to base areas

Williston

Shelburne

Hinesb

2A

116

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Underhill, Vermont
Act 174
The Energy Development Improvement Act of 2016

0 0.5 1 2 Miles

N

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added
which may turn prime areas to base areas

Fairfax
CAMBRIDGE RD
Westford
Cambridge
15
PLEASANT VALLEY RD
RIVER RD
Stowe
Jericho

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Westford, Vermont
Act 174
The Energy Development Improvement Act of 2016

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.5 1 2 Miles

N

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph
- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph
- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added
which may turn prime areas to base areas

Georgia
Fletcher
Fairfax
Milton
Cambridge
Underhill
Essex
WESTFORD MILTON RD
CAMBRIDGE RD
BROOK-SIDE RD
WOODS HOLLOW RD
15
128

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Williston, Vermont
Act 174
The Energy Development Improvement Act of 2016

0 0.5 1 2 Miles

N

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added which may turn prime areas to base areas

Essex Junction
Essex
Jericho
South Burlington
Shelburne
St.George
Richmond
INDUSTRIAL AVE
MOUNTAIN VIEW RD
N WILLISTON RD
S BROWNELL RD
OLD CREAMERY RD
OAK HILL RD
2
2A
89

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Winooski, Vermont
Act 174
The Energy Development Improvement Act of 2016

0 0.125 0.25 0.5 Miles

N

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\TownPortraitWindTemplate_20170406

Local Possible Constraints to be added
which may turn prime areas to base areas

Colchester

Burlington

MAIN ST

MALLETTS BAY AVE

W SPRING ST

E SPRING ST

LAFOUNTAIN ST

DION ST

W ALLEN ST

E ALLEN ST

89

CHITTENDEN COUNTY

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Burlington, Vermont
Act 174
The Energy Development Improvement Act of 2016

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

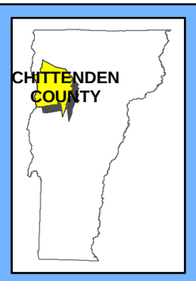
0 0.475 0.95 1.9 Miles

N

Sources:
Wind Energy Resource Areas;VCGI,2017
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.

Date: 4/6/2017

Document Path: D:\Projects17\Act174\Maps\Towns\Wind_TownTemplateLandscape_20170406.mxd



Local Possible Constraints to be added which may turn prime areas to base areas

Lake Champlain

Colchester

Winooski

South Burlington

127

VT ROUTE 127

NORTH AVE

PLATTSBURG AVE

OAK ST

RIVERSIDE AVE

COLCHESTER AVE

GROVE ST

NORTH ST

PEARL ST

MAIN ST

LAKE ST

PARK ST

BATTERY ST

WINOOSKI AVE

N WILLARD ST

S WILLARD ST

N PROSPECT ST

S PROSPECT ST

EAST AVE

SAINT PAUL ST

LEDGE RD

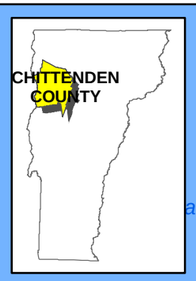
PINE ST

SHELBURNE ST

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Charlotte, Vermont
Act 174
The Energy Development Improvement Act of 2016



Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.5 1 2 Miles

N

Sources:
Wind Energy Resource Areas;VCGI,2017
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.

Date: 4/6/2017

Document Path: D:\Projects17\Act174\Maps\Towns\Wind_TownTemplateLandscape_20170406.mxd

Local Possible Constraints to be added which may turn prime areas to base areas

Shelburne

amplain

MOUNT PHILO RD

DORSET ST

SHELBURNE FALLS RD

CHURCH HILL RD

GREENBUSH RD

HINESBURG RD

7

FERRY RD

SPEAR ST

THOMPSONS POINT RD

STATE PARK RD

Monkton

Ferrisburgh

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Colchester, Vermont
Act 174
The Energy Development Improvement Act of 2016

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

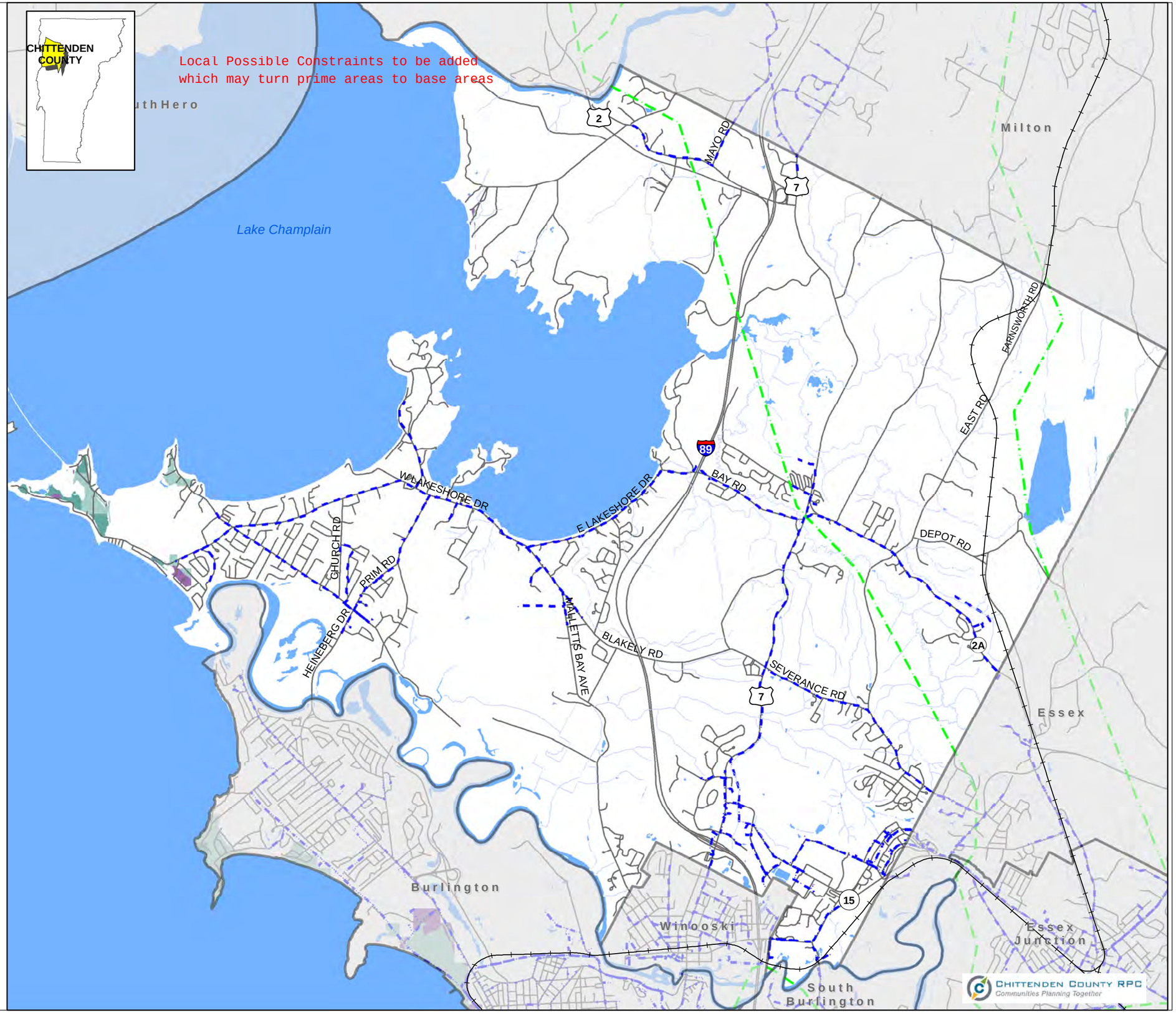
0 0.5 1 2 Miles

N

Sources:
Wind Energy Resource Areas;VCGI,2017
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.

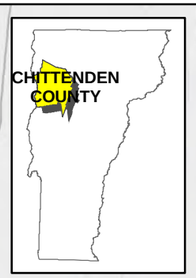
Date: 4/6/2017

Document Path: D:\Projects17\Act174\Maps\Towns\Wind_TownTemplateLandscape_20170406.mxd



Potential Wind Energy Resource Areas

Jericho, Vermont
Act 174
The Energy Development Improvement Act of 2016



Local Possible Constraints to be added which may turn prime areas to base areas

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.5 1 2 Miles

N

Sources:
Wind Energy Resource Areas;VCGI,2017

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.

Date: 4/6/2017

Document Path: D:\Projects17\Act174\Maps\Towns\Wind_TownTemplateLandscape_20170406.mxd

Potential Wind Energy Resource Areas

Milton, Vermont
Act 174
The Energy Development Improvement Act of 2016

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.75 1.5 3 Miles

N

Sources:
Wind Energy Resource Areas;VCGI,2017
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.

Date: 4/6/2017

Document Path: D:\Projects17\Act174\Maps\Towns\Wind_TownTemplateLandscape_20170406.mxd

Local Possible Constraints to be added
which may turn prime areas to base areas

Chittenden County RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Richmond, Vermont
Act 174
The Energy Development Improvement Act of 2016

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

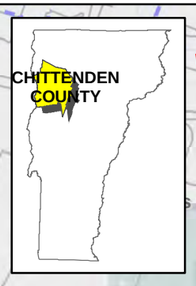
0 0.5 1 2 Miles

N

Sources:
Wind Energy Resource Areas;VCGI,2017
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.

Date: 4/6/2017

Document Path: D:\Projects17\Act174\Maps\Towns\Wind_TownTemplateLandscape_20170406.mxd



Local Possible Constraints to be added which may turn prime areas to base areas

Jericho
Hinesburg
Huntington
Bolton
117
89
2
JERICHO RD
BRIDGE ST
HINESBURG RD
HUNTINGTON RD
COCHRAN RD

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

Shelburne, Vermont
Act 174
The Energy Development Improvement Act of 2016

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph

- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph

- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.475 0.95 1.9 Miles

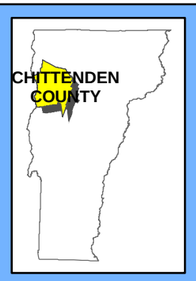
N

Sources:
Wind Energy Resource Areas;VCGI,2017

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.

Date: 4/6/2017

Document Path: D:\Projects17\Act174\Maps\Towns\Wind_TownTemplateLandscape_20170406.mxd



Local Possible Constraints to be added which may turn prime areas to base areas

Lake Champlain

South Burlington

Williston

St. George

Hinesburg

Charlotte

HARBOR RD
BAY RD
SPEAR ST
BARSTOW RD
DORSET ST
WEBSTER RD
FALLS RD
MARSETT RD
IRISH HILL RD
THOMAS RD
SHELBURNE HINESBURG RD
BOSTWICK RD
MOUNT PHILO RD

7
89
116

CHITTENDEN COUNTY RPC
Communities Planning Together

Potential Wind Energy Resource Areas

South Burlington, Vermont
Act 174
The Energy Development Improvement Act of 2016

This map and the corresponding data is intended to be used to inform energy planning efforts by municipalities and regions. The 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 of as "siting maps"

0 0.35 0.7 1.4 Miles

N

Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph
- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

Base Wind Potential: Areas of high wind potential and a presence of possible state constraints

Commercial Generation WindSpdmph
- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70
- 3 Phase Power Lines
- Transmission lines

*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

Document Path: D:\Projects17\Act174\Maps\Towns\Wind\WindSoBu_20170401.mxd

Local Possible Constraints to be added which may turn prime areas to base areas

Colchester
Essex
Winooski
Essex Junction
Burlington
Williston
Lake Champlain
PATCHEN RD
AIRPORT PKWY
WHITE ST
WILLISTON RD
AIRPORT DR
KENNEDY DR
OLD FARM RD
SWIFT ST
CENTRAL AVE
SPEAR ST
DORSET ST
189
89
2
116
7

Sources:
Solar Energy Resource Areas;VCGI,2017
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.

CHITTENDEN COUNTY RPC
Communities Planning Together

CHITTENDEN COUNTY

	Wind Potential				
Town Name (bold means local constraint received)	**Prime wind (acres)**	**Prime wind Resource Share**	**Low Range wind MW**	**High Range wind MW**	**Existing wind MW (TBD)**
Buels gore	58	1%			
St. George	2	0%			
Bolton	270	3%			
Huntington	1,037	13%			
Winooski	-	0%			
Richmond	1,175	15%			
Essex Junction	-	0%			
Underhill	172	2%			
Shelburne	347	4%			
Westford	129	2%			
Jericho	96	1%			
Charlotte	1,157	15%			
Williston	606	8%			
Milton	85	1%			
South Burlington	199	3%			
Hinesburg	2,351	30%			
Essex Town	-	0%			
Colchester	34	0%			
Burlington	46	1%			
Total	**7,762**	100%			
Totals provided by DPS/BCRP(	7,724		33.4	67.6	305.4