



CHITTENDEN COUNTY RPC

Communities Planning Together

CCRPC Long Range Planning Committee

AGENDA

DATE: Thursday, April 13, 2017

TIME: **8:30am to 10:00am**

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

1. **Welcome** – 5 minutes
2. **Approval of March 9, 2017 Minutes*** (Action) - 5 minutes
3. **Energy Planning*** (Discussion) – 40 minutes
 - a. Regarding wind and solar generation, the current versions of the Act 174 maps are attached (solar potential and wind potential). We've also attached the solar data analysis and targets. Please note that the maps and the spreadsheet accounts for the local known constraints, but not the local potential constraints yet. We will also discuss a change in guidance on planning for wind generation.
 - b. Revisions to the energy elements of the ECOS Plan to start the discussion on the Plan language.
4. **Transportation** (Discussion) – 30 minutes
Staff will present an overview of how the model works; and we'll review and ask for your feedback on the scenarios (see the attached memo).
5. **Comprehensive Economic Development Project List*** (Discussion) – 10 minutes
The LRPC's comments on the project list that were received via email have been incorporated into the attached list; and I've made the changes that appear to have consensus. Generally, we seem on board with keeping airport projects, keeping road/redevelopment projects that are regional in nature, and there are some questions on CWD and CSWD projects. We'll ask for confirmation on the types of projects and get these out to the municipalities for updates, additions and deletions.
6. **Next Meeting**
Thursday, May 11, 2017 from 8:30am to 10:00am
7. **Adjourn**
*=attached to agenda in the meeting packet

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1 CHITTENDEN COUNTY REGIONAL PLANNING COMMISSION
2 LONG RANGE PLANNING COMMITTEE - MINUTES
3

4 DATE: Thursday, March 9, 2017
5 TIME: 8:30 a.m. to 10:00 a.m.
6 PLACE: CCRPC Offices, 110 West Canal Street, Suite 202, Winooski, VT
7

Members Present

Ken Belliveau, Williston – PAC Rep
Alex Weinhagen, Hinesburg – PAC Rep
Edmund Booth – ECOS Steering Committee Rep
Chris Shaw, South Burlington – Board Rep
Heather Danis – ECOS Steering Committee Rep
(via phone)
Jim Donovan – Board Rep

Staff

Regina Mahony, Planning Program Manager
Melanie Needle, Senior Planner
Eleni Churchill, Transportation Program Manager
Christine Forde, Senior Transportation Planner
Peter Keating, Senior Transportation Planner

8
9
10 **1. Welcome and Introductions**

11 Chris Shaw called the meeting to order at 8:35 a.m.
12

13 **2. Approve Minutes**

14
15 Ken Belliveau made a motion, seconded by Alex Weinhagen, to approve the minutes of February 9, 2017. No
16 further discussion. MOTION PASSED. Jim Donovan abstained.
17

18 **3. Forecasts**

19 Melanie Needle indicated that we just received the revised forecast yesterday, and presented it to the PAC
20 yesterday afternoon. Melanie Needle provided some highlights from the revised forecast, taken from the EPR
21 memo (to be clear the changes as described below are from the previous forecast and the revised forecast):

- 22 • With these population and employment forecasts, Chittenden County is expected to be the leader in
23 Northwest Vermont and the State of Vermont in population and employment growth.
- 24 • Keep in mind: High confidence in the county forecasts, significant degree of error in the municipal
25 forecasts given the level of granularity although have taken into account the town perspective and
26 statistical reliability.
- 27 • Population
 - 28 – The 2010 and 2015 population estimates correspond to the U.S. Census estimate and not the
29 adjusted estimates.
 - 30 – Normalized population growth in Bolton, Charlotte, Colchester, Hinesburg, Jericho,
31 Richmond, St. George, and Underhill resulted in a decline, except Charlotte remained steady
 - 32 – Burlington, South Burlington, Williston, Shelburne, Essex, and Milton received residual
33 population. This reallocation accounted for some of the scale issues that we faced in the initial
34 forecast, namely that Williston was increasing at levels that might have been unrealistic
35 especially when compared to other areas like Burlington and South Burlington
- 36 • Households
 - 37 – Change in households in Burlington, to reconsider given the residential development plans
 - 38 – Household levels remain fixed for most of the municipalities in the revised forecast but allow
39 the population living in households fluctuate
- 40 • Employment
 - 41 – In the initial forecast, Essex's share of employment was decreasing and not consistent with a
42 recent GBIC study - we fixed the share of Essex's employment at its 2015 level through 2050.
43 This resulted in an increase of nearly 13,000 jobs from 2015 through 2050 for Essex when
44 compared to the initial forecast.

- 1 – Bolton, Charlotte, Colchester, Milton, Richmond, St. George, Underhill, Westford, and
2 Williston decreased; Burlington, Colchester, Milton, South Burlington, and Williston
3 increased; Hinesburg, Huntington, Jericho, and Winooski, remained steady.
4

5 There was further discussion regarding the household size and confusion over a chart presented by EPR that
6 appears to show that ‘Persons in Households’ would increase, and quite drastically from 2040 to 2050. Staff
7 will get clarification on this. The PAC voted to recommend that the Board adopt the forecast, with
8 clarification on the household size; however, Colchester voted against the motion.
9

10 Peter Keating asked if the GBIC study covered more municipalities than Essex and Essex Junction. Melanie
11 Needle indicated that it does include more. There was some discussion over the bullets in the slides as some
12 municipalities are shown as both ‘decreased’ and ‘increased’. It was clarified that the memo does indeed
13 describe the changes both ways, and it is possible do to the re-distribution. Ken Belliveau stated the numbers
14 in the short run for Williston are going to be off; the long-run they may be right. But I bet the 2020 number is
15 going to be off. The population over the last 5 years went up by 700 people, and they show an increase of only
16 300+. Ken Belliveau added that they say about 100 new households in 2016. Ken Belliveau further explained
17 Williston’s growth management policy – they have a cap of 80 dwelling units per year cap on wastewater
18 allocation; and those allocations are good for 5 years. So 80 is not necessarily a cap on the actual number of
19 housing units built per year. Alex Weinhagen referred to the household size spreadsheet for the revised
20 forecast; and asked specifically about Burlington. The developments Burlington is seeing are not likely to
21 produce an increase in household size. There was some discussion about the top down methodology (state to
22 county to municipality) being a potential reason for this. EPR has been very clear about their lower level of
23 confidence on the municipal forecasts.
24

25 Jim Donovan made a motion, seconded by Ken Belliveau, to recommend that the CCRPC Board approve this
26 forecast, with a clarification on the number of persons in household. No further discussion. MOTION
27 PASSED.
28

29 **4. Transportation Schedule, Initial Project List and Fiscal Constraint**

30 Eleni Churchill gave an overview of the MTP update schedule. Jim Donovan asked about returning back to
31 the project list, once we run the model. Eleni Churchill and Christine Forde stated that we will do that. It is a
32 two phase process – we include committed projects in the model to start, then the model will inform us of
33 areas where other projects may be needed, and so we will go back and revise the list accordingly.
34

35 Christine Forde described the project list and explained that it is currently prioritized based on the
36 methodology we’ve been using for a number of years. We will still need to add the fiscal constraint figure to
37 the list. The list may not be complete. Christine Forde has reached out to the Towns with yellow highlighted
38 projects on the roadway list.
39

40 Chris Shaw asked about the money – do we have separate pots of money for the roadway projects and the
41 bike/ped projects? The fiscal constraint (total amount of dollars we can expect over the life of the plan) is one
42 total number. In the current ECOS Plan, we made some decisions based on ECOS goals about what amount of
43 money went into each funding category. There was a question about the accuracy of the construction cost
44 estimates, and whether they will be increased to FY16 dollars. Peter Keating stated that we should and will do
45 that, as some of these figures might be quite out of date and therefore not a true enough reflection of the real
46 costs.
47

48 Peter Keating described the fiscal constraint process. In planning the last MTP we used 17% of the State’s pot
49 of federal funding as our estimated share. That was the historic average over the previous seven years. It
50 looks like the federal funding looking out into the future will remain flat. But we are meeting with VTrans to
51 talk about Chittenden County’s share of the funding. In the last five years it has only been about 13%, but if
52 you look back over 20 years it was closer to 20%. Once we know the final fiscal constraint figure, we will

1 break it down into the categories. Christine Forde added that the County has never had a consistent share of
2 the state's federal funding because it depends on the projects in the pipeline.

3
4 **5. Energy Planning Maps and Data Analysis**

5 Melanie Needle described the methodology for identifying the wind and solar goals.

6
7 Ken Belliveau stated that we don't want to make this completely additive. If acreage is going to be used for a
8 solar array, it will likely take it out of the running for wind.

9
10 Chris Shaw asked if Staff has asked the municipalities for their input on siting location. Yes, we have. Chris
11 Shaw also asked if the region and the municipalities have to meet the targets. Melanie Needle explained that
12 this is not a requirement. Regina Mahony added if the municipalities want the elevated level of input in the
13 PSB process then they have to show how they are meeting the state energy goals and these targets.

14
15 Alex Weinhagen asked about incorporation of the local constraints in the targets before the low and high range
16 targets are calculated. Melanie Needle stated that the overall goal should be equal at the start. Alex
17 Weinhagen asked if the municipal level 2 constraints (agricultural soils as an example), are being calculated
18 into the targets? Those are real constraints also (in addition to the complete 'no gos') so they should be
19 subtracted from the usable acreage. In addition, Alex Weinhagen stated that not all 'prime' acreage is going to
20 actually be developed 100% with solar. We should add a qualifier that takes this into account.

21
22 There was a discussion regarding state highway ROWs, and whether they are listed as a constraint or not.
23 Melanie Needle brought up the most recent guidelines and state highway ROWs are not included on the
24 constraints list. Ken Belliveau stated that we aren't even allowed to put a bike path in the CIRC ROW, so it
25 shouldn't be in the calculations for solar or wind.

26
27 There was a discussion about how and when we will account for roof-top solar. Melanie Needle described
28 how Bennington accounted for it (they assumed a 50% reduction for the amount of rooftops that could be
29 eligible for solar). That seems high, and the LRPC asked Staff to see if we could get a more accurate 'solar
30 capable' rate from the solar companies. Alex Weinhagen also asked if we could do a rooftop capability GIS
31 exercise since we have the footprint data. Staff will look into this.

32
33 **6. Comprehensive Economic Development Strategy – Project List**

34 Regina Mahony briefly went over the project list that was in the packet. Regina Mahony will follow-up via
35 email with the list and a rationale for why we are suggesting things for removal. Jim Donovan suggested there
36 may be some projects that are more regional and maybe should stay. Jim Donovan will share his thoughts
37 with the LRPC via email.

38
39 **7. Next Meeting**

40 April 13, 2017 from 8:30am to 10:00am

41 **10. Adjourn**

42 The meeting adjourned at 10:05 a.m.

43
44 Respectfully submitted, Regina Mahony

Potential Solar Energy Resource Areas

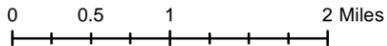
Bolton, Vermont

Act 174

The Energy Development Improvement Act of 2016

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

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"



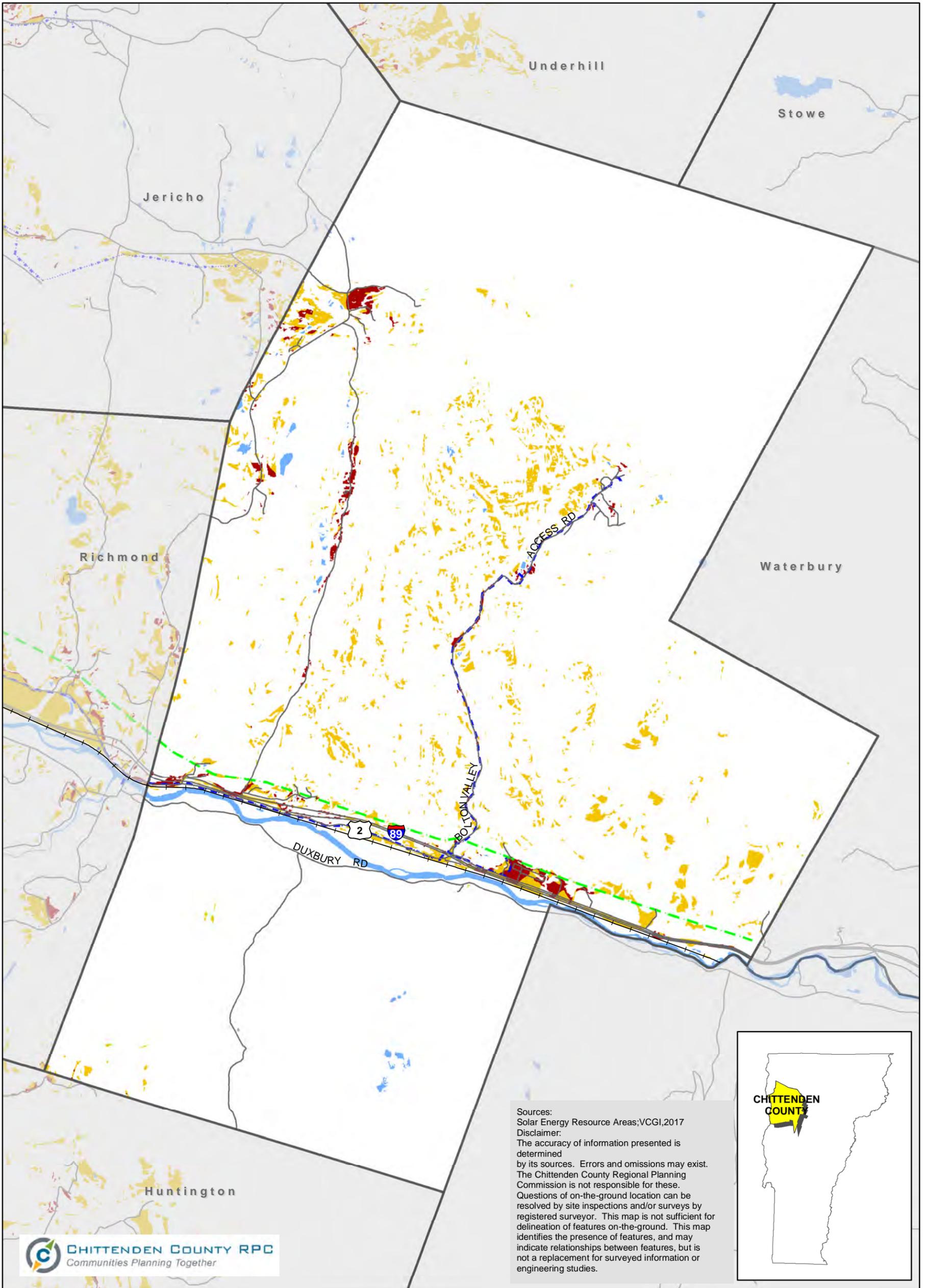
Solar Energy Resource Areas

Type

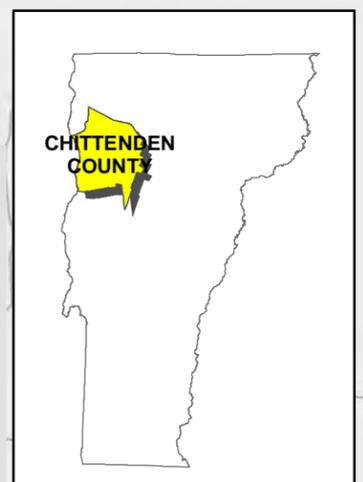
- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 3 Phase Power Lines
- Transmission lines

*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.

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Sources:
Solar Energy Resource Areas;VCGI,2017
Disclaimer:
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Potential Solar Energy Resource Areas

Buels Gore, Vermont

Act 174

The Energy Development Improvement Act of 2016

Local Possible Constraints

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0 0.25 0.5 1 Miles

Solar Energy Resource Areas

Type

Prime Solar/No State or Local Known Constraints*

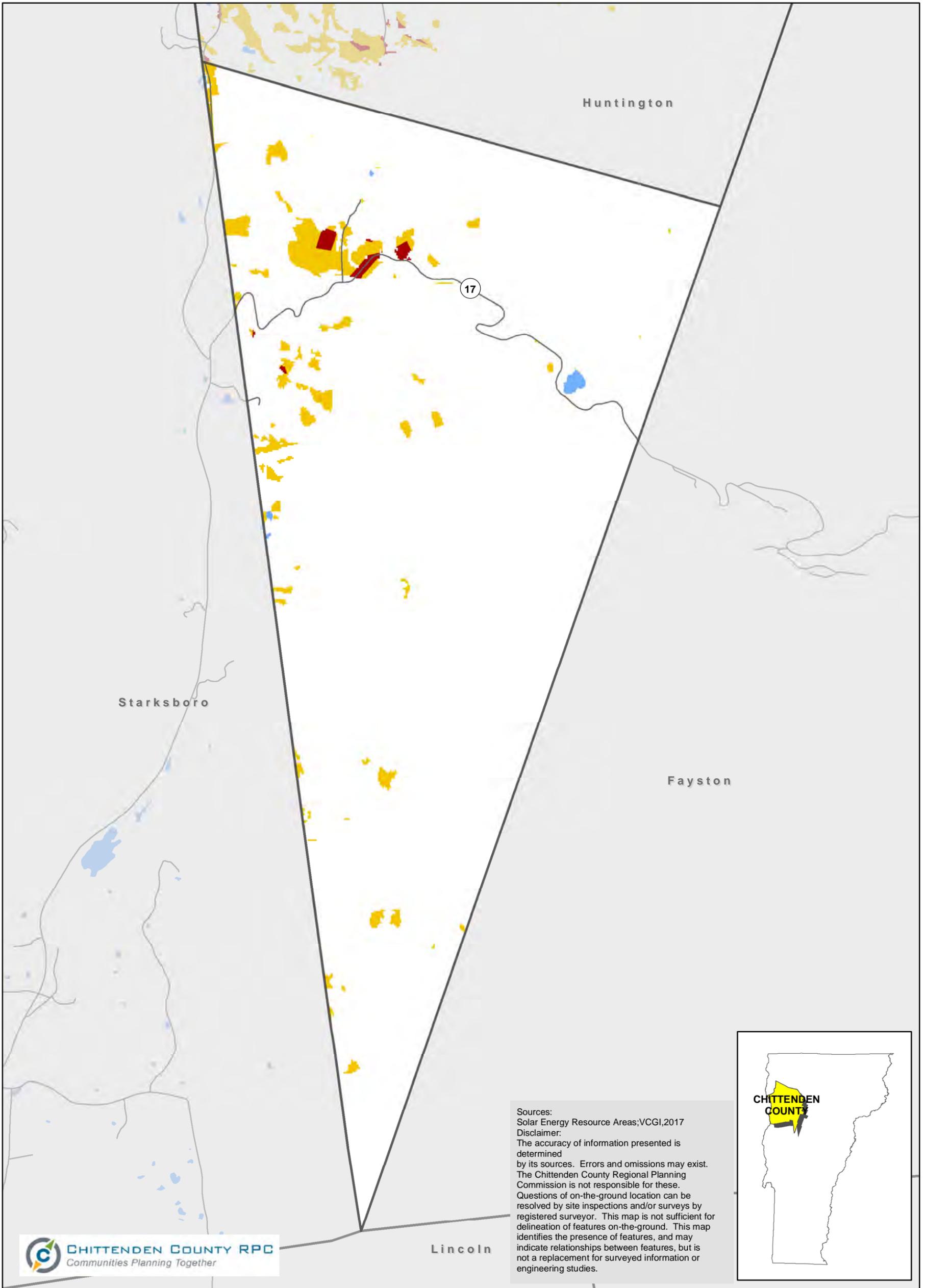
Base Solar/Possible State Constraint

3 Phase Power Lines

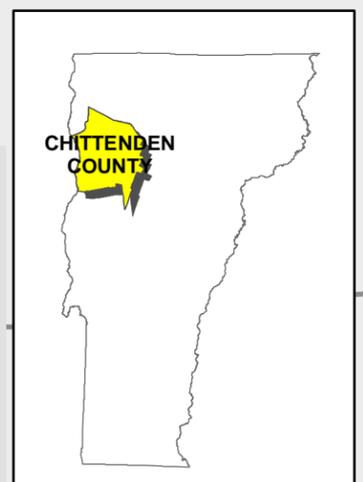
Transmission lines

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Potential Solar Energy Resource Areas

Burlington, Vermont

Act 174

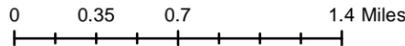
The Energy Development Improvement Act of 2016

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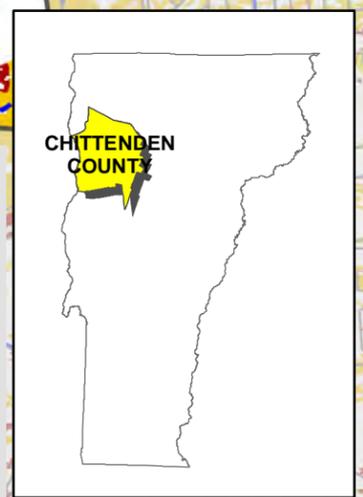
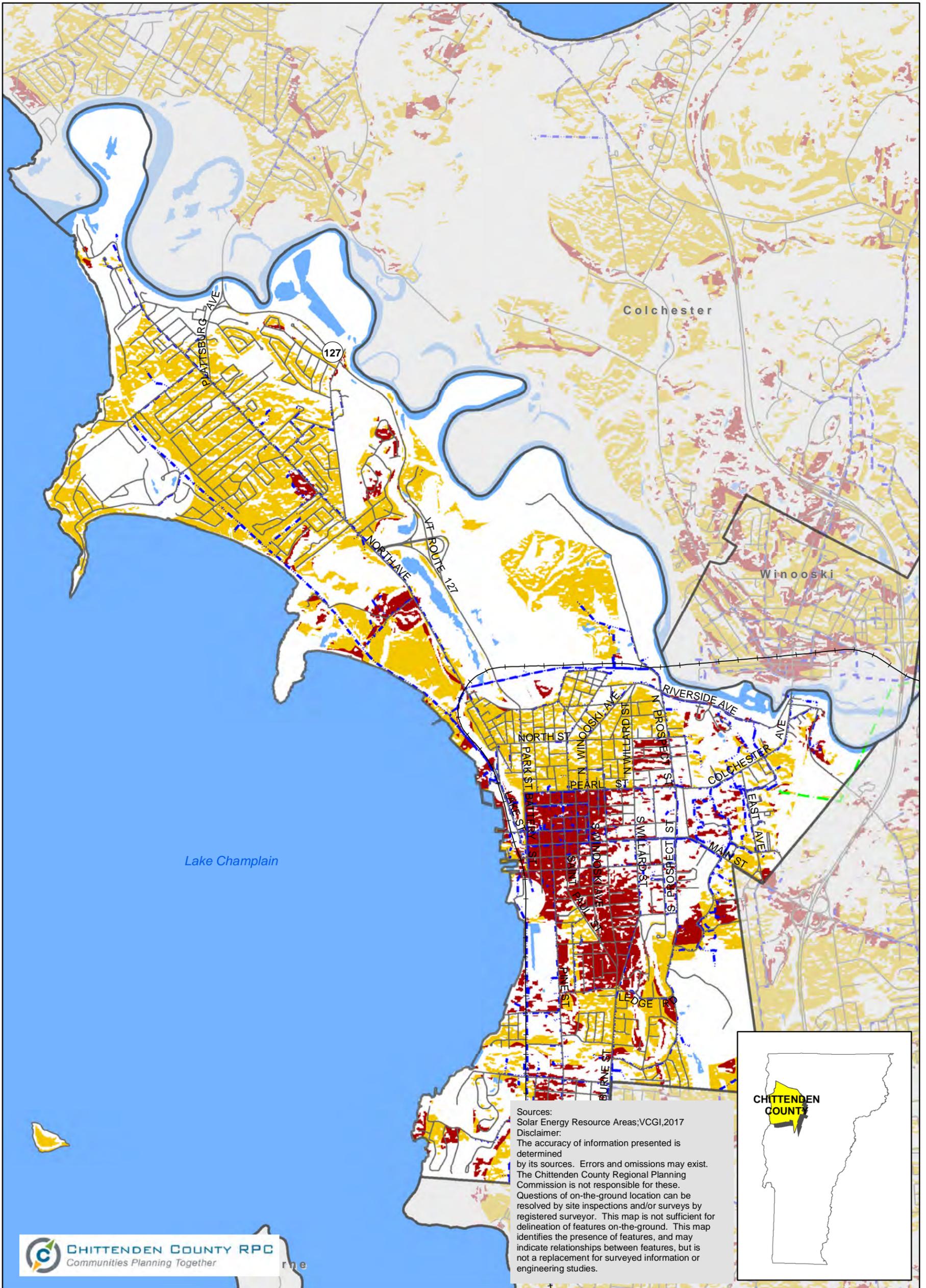
Solar Energy Resource Areas

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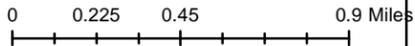
Potential Solar Energy Resource Areas

Essex Junction, Vermont
Act 174

The Energy Development
Improvement Act of 2016

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

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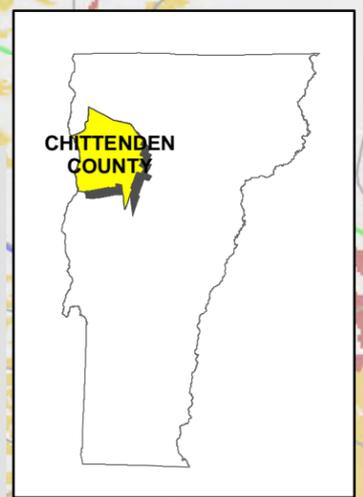
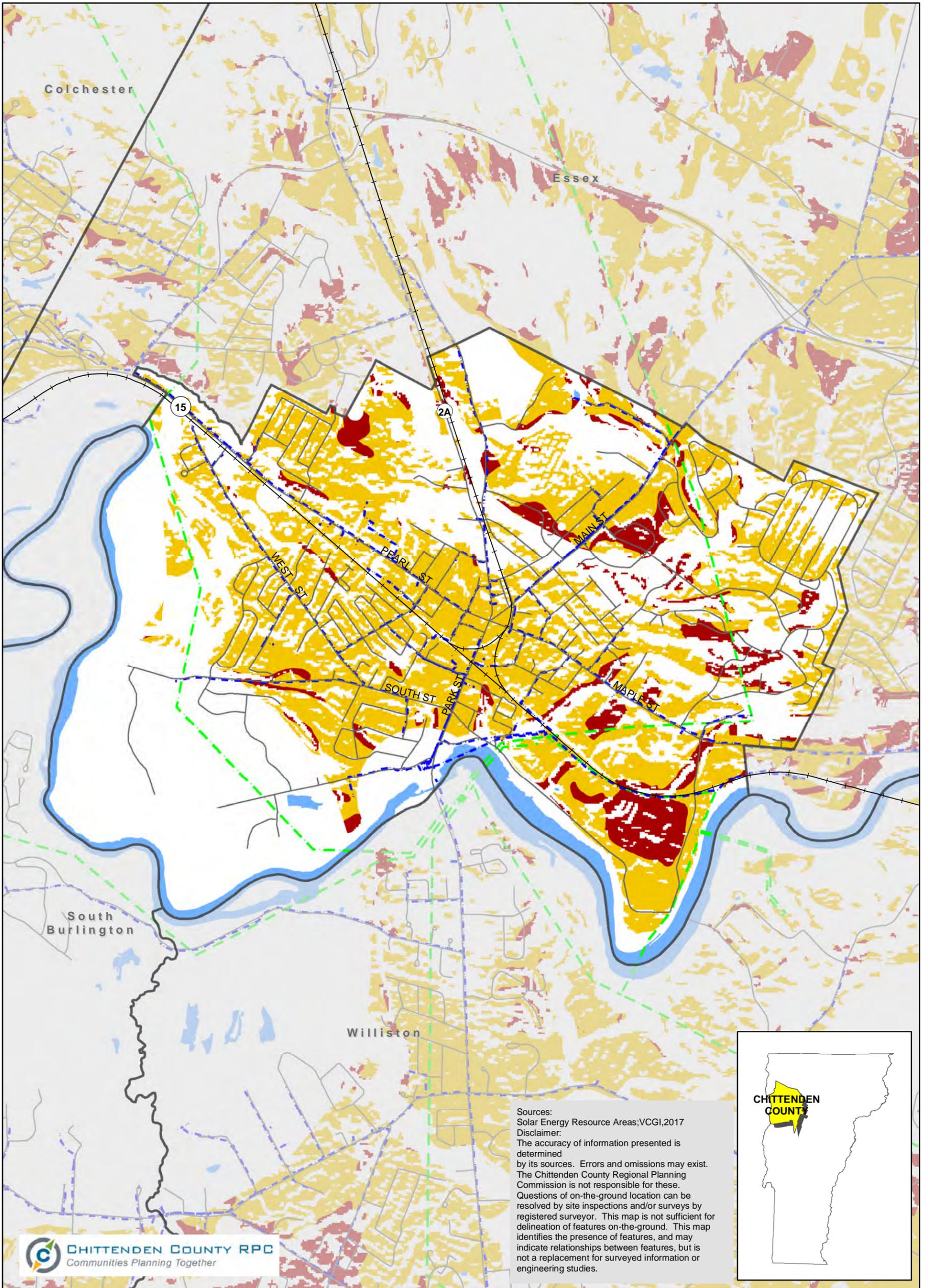
Solar Energy Resource Areas

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Potential Solar Energy Resource Areas

Hinesburg, Vermont

Act 174

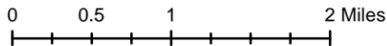
The Energy Development Improvement Act of 2016

Local Possible Constraints

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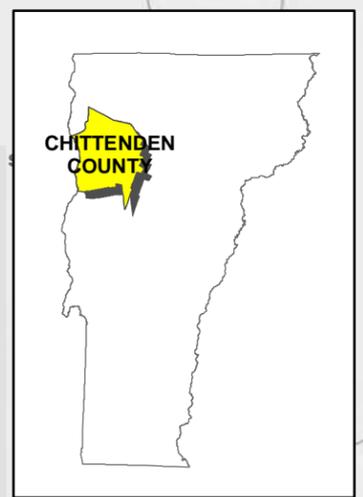
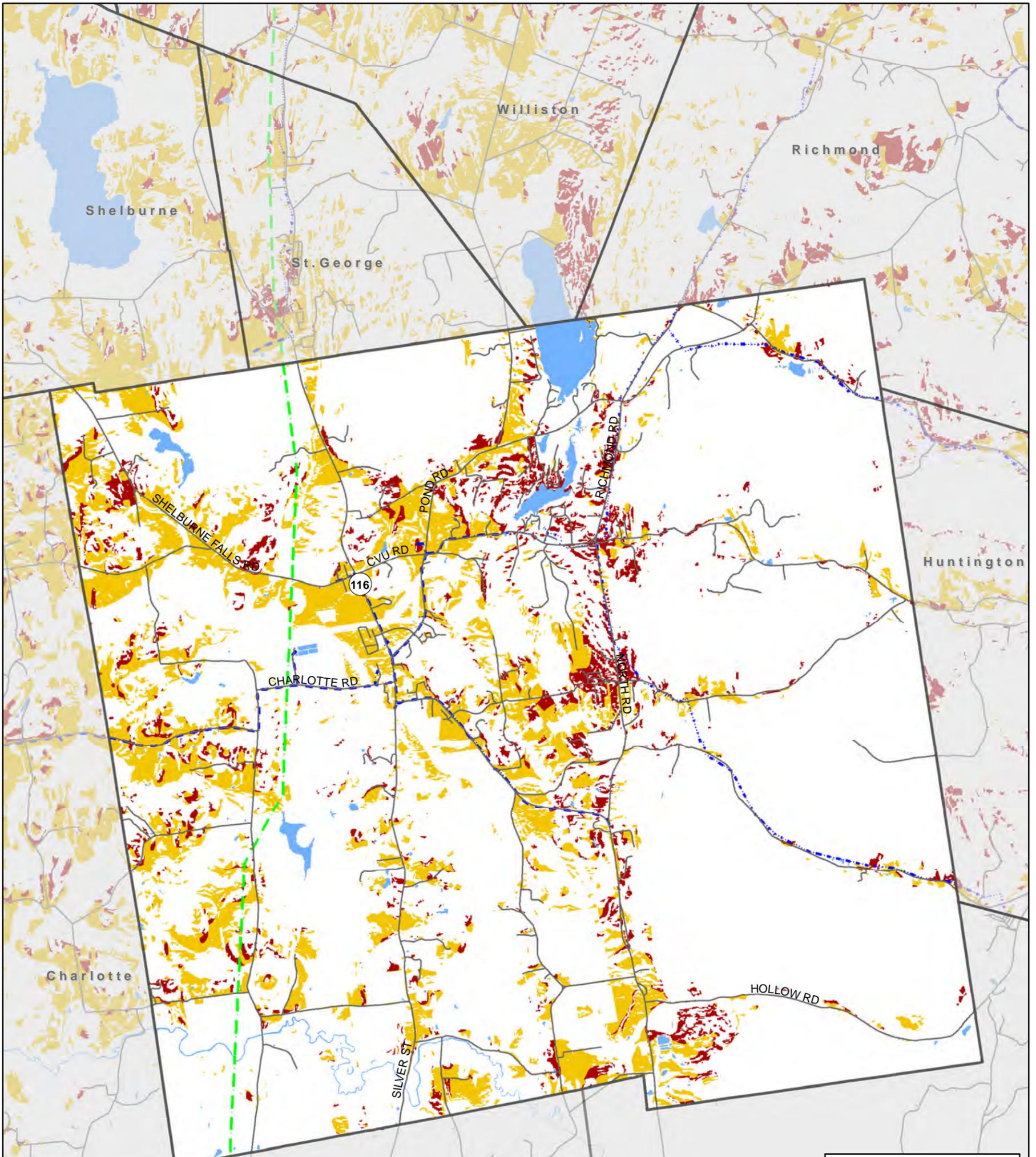
Base Solar/Possible State Constraint

3 Phase Power Lines

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Potential Solar Energy Resource Areas

Huntington, Vermont

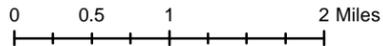
Act 174

The Energy Development Improvement Act of 2016

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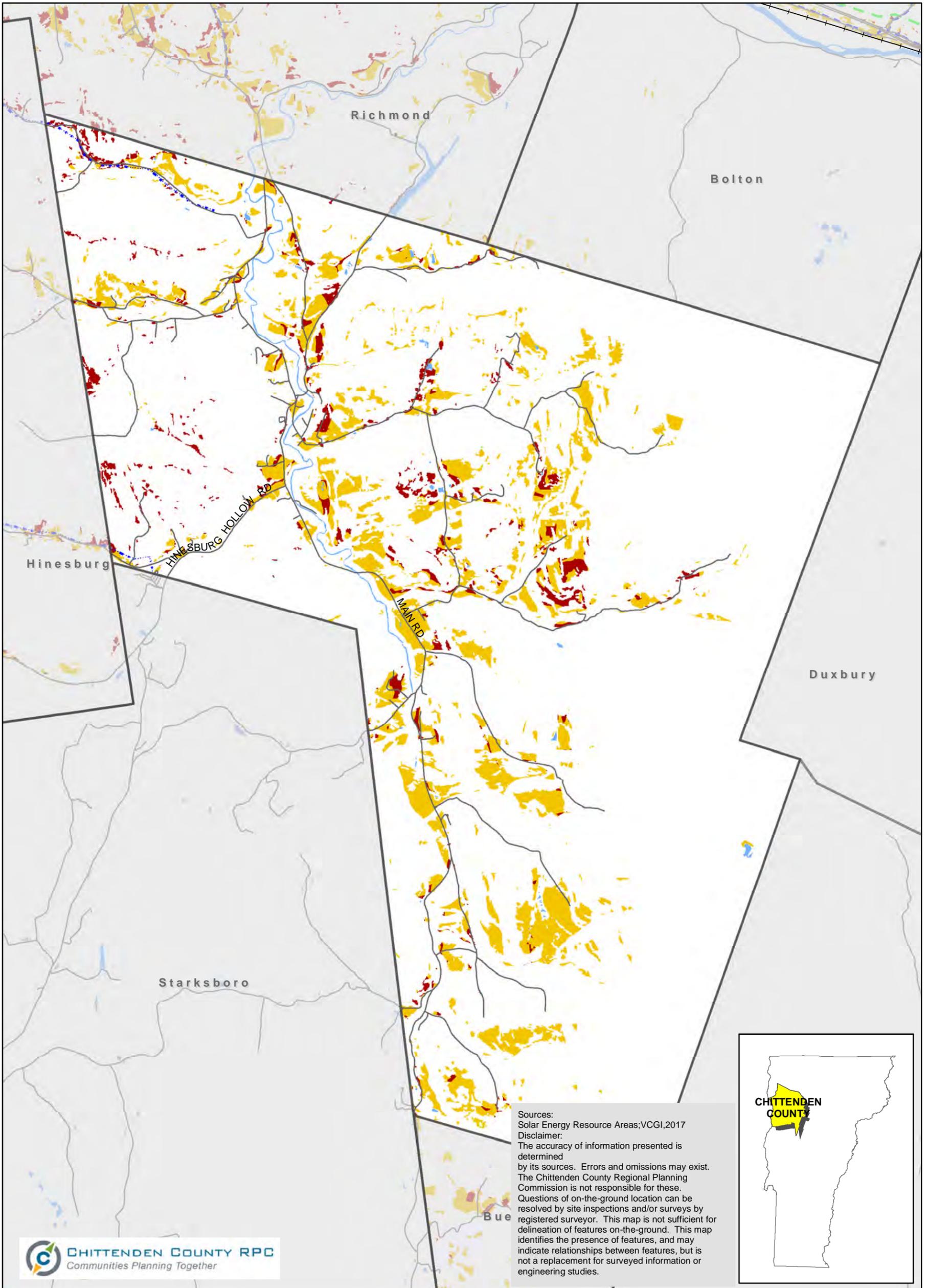
Solar Energy Resource Areas

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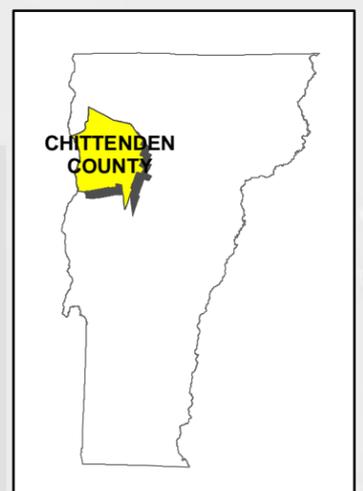
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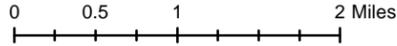
Jericho, Vermont

Act 174

The Energy Development Improvement Act of 2016

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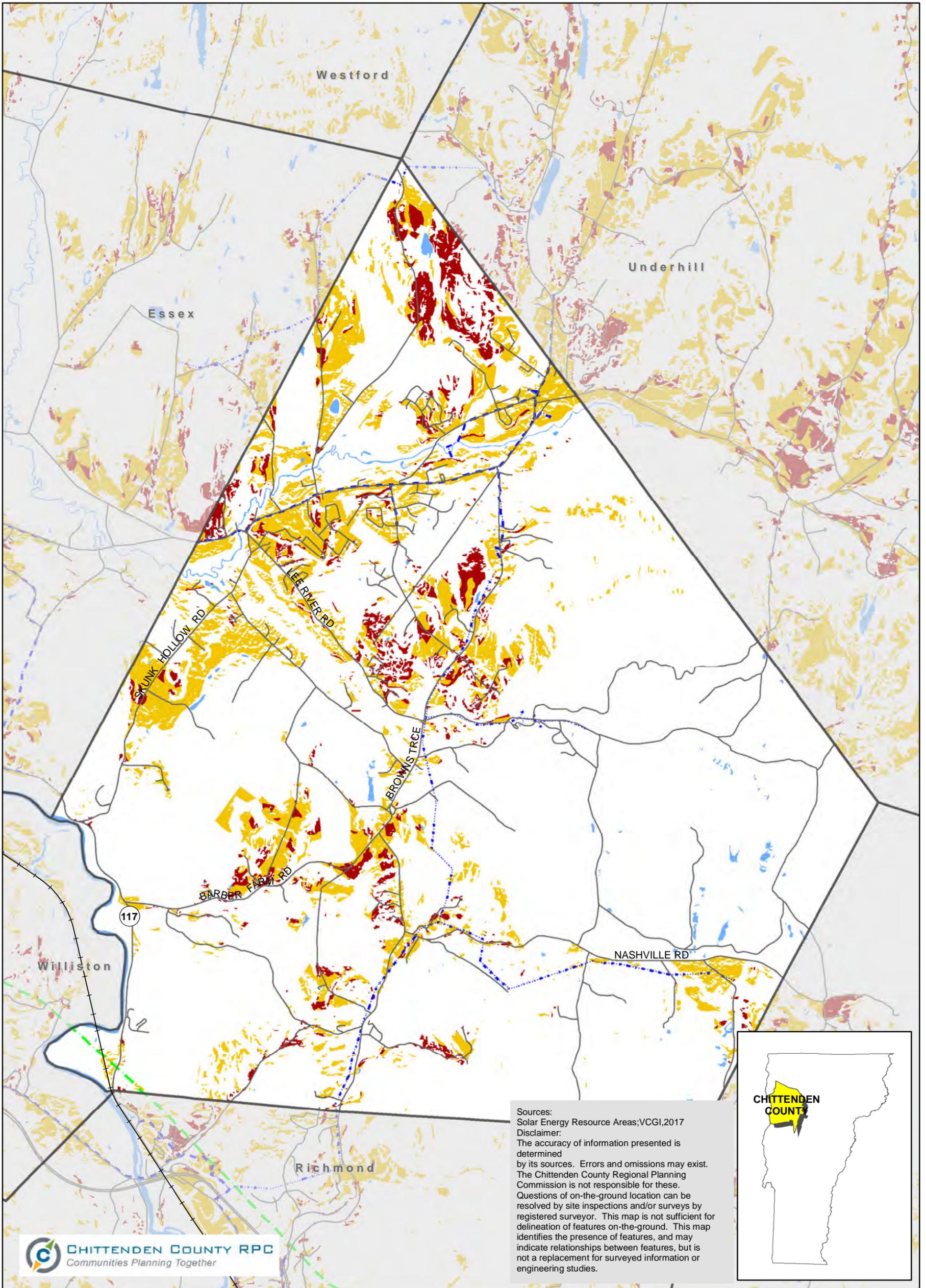
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Potential Solar Energy Resource Areas

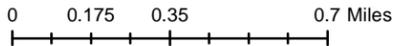
St. George, Vermont
Act 174

The Energy Development Improvement Act of 2016

Local Possible Constraints
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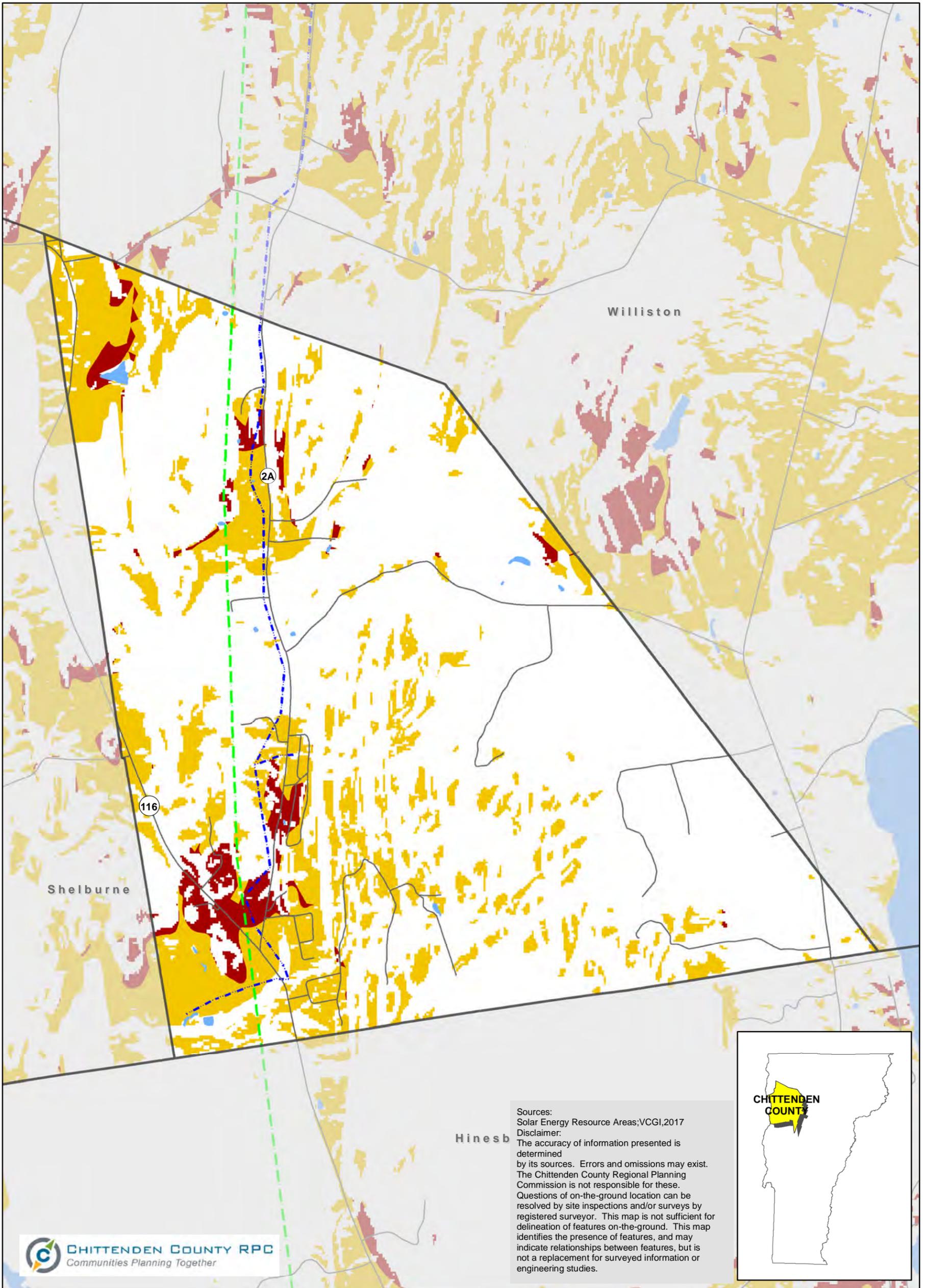
Solar Energy Resource Areas

Type

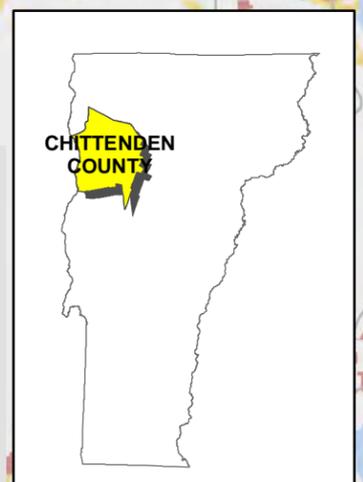
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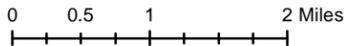
Underhill, Vermont

Act 174

The Energy Development Improvement Act of 2016

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

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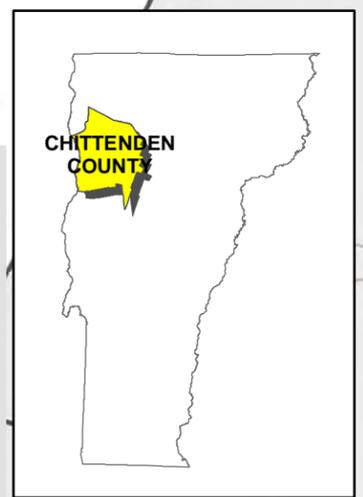
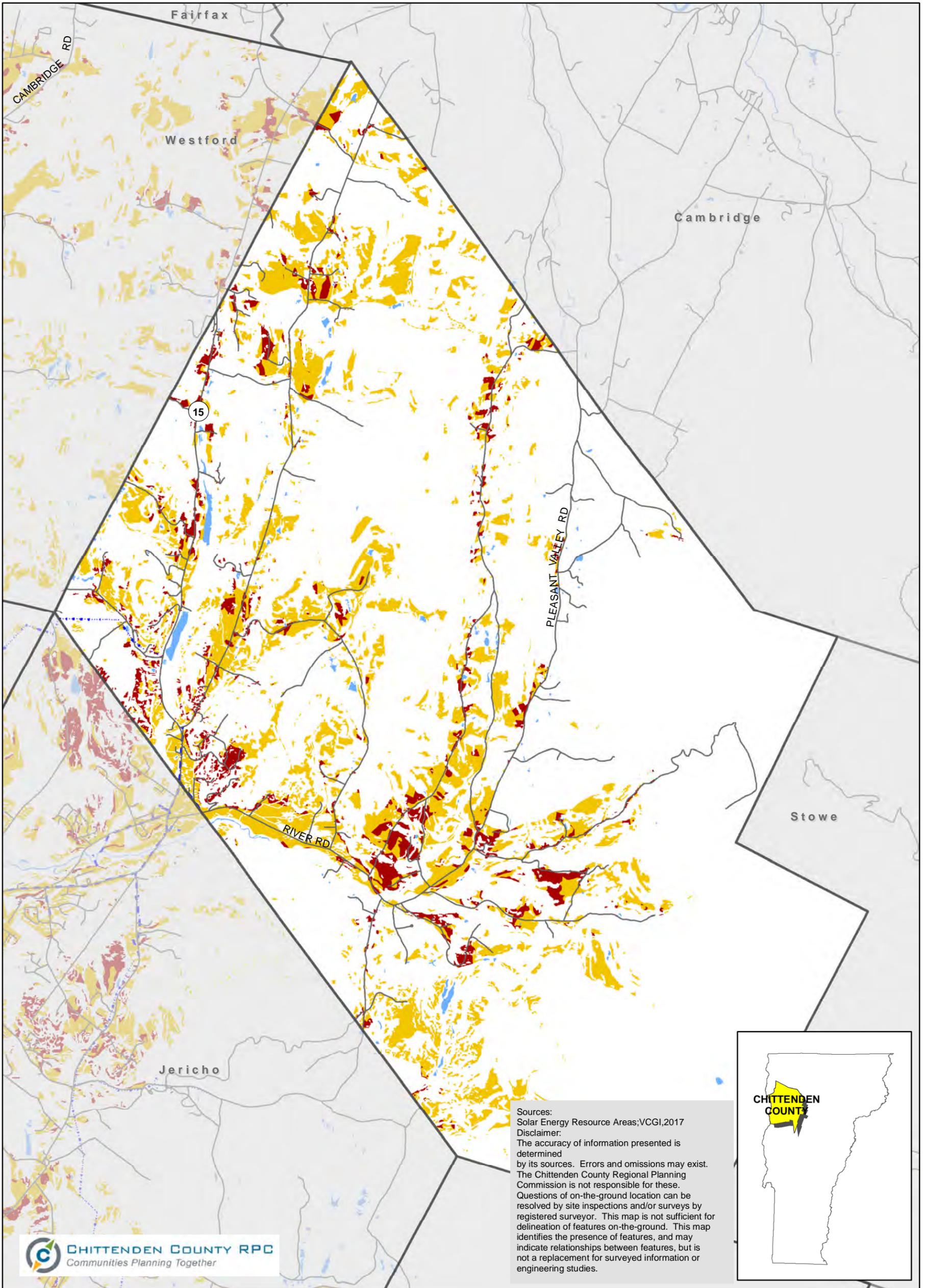
Solar Energy Resource Areas

Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 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:\Projects\17Act174\Maps\Towns\Solar\SolarTownPort...plate.mxd



Sources:
Solar Energy Resource Areas:VCGI,2017
Disclaimer:
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Potential Solar Energy Resource Areas

Westford, Vermont

Act 174

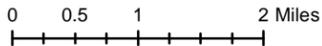
The Energy Development Improvement Act of 2016

Local Possible Constraints

to be added which may turn prime areas to base areas.



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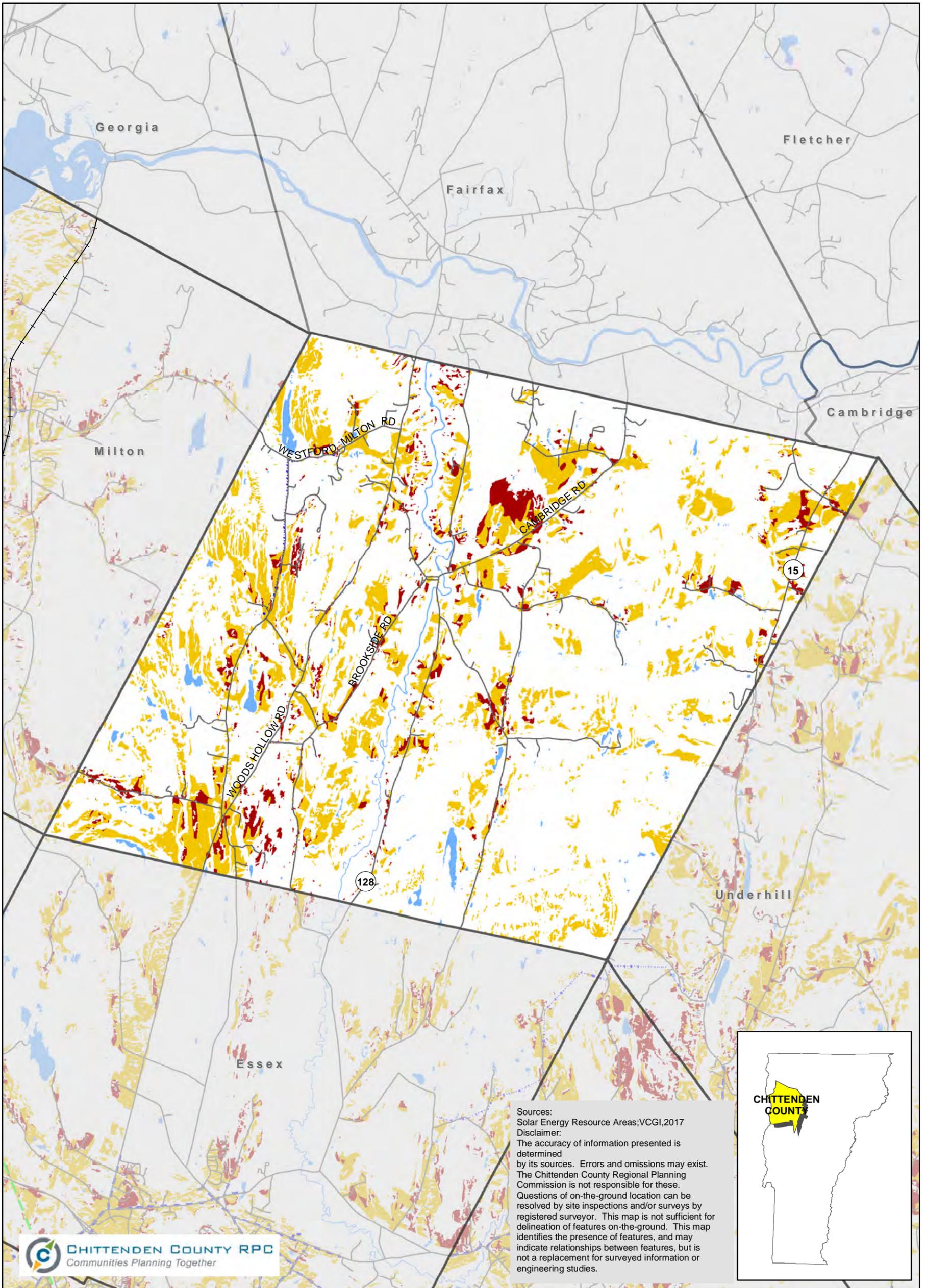
Solar Energy Resource Areas

Type

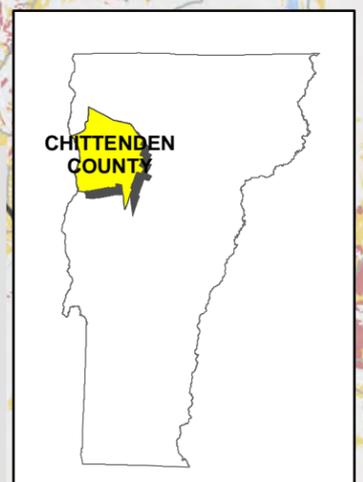
- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 3 Phase Power Lines
- Transmission lines

*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.

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Potential Solar Energy Resource Areas

Williston, Vermont

Act 174

The Energy Development Improvement Act of 2016

Local Possible Constraints

to be added which may turn prime areas to base areas.

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Solar Energy Resource Areas

Type

Prime Solar/No State or Local Known Constraints*

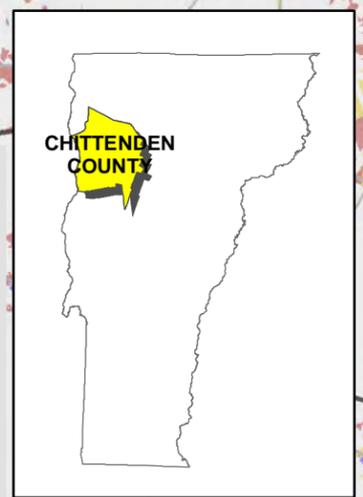
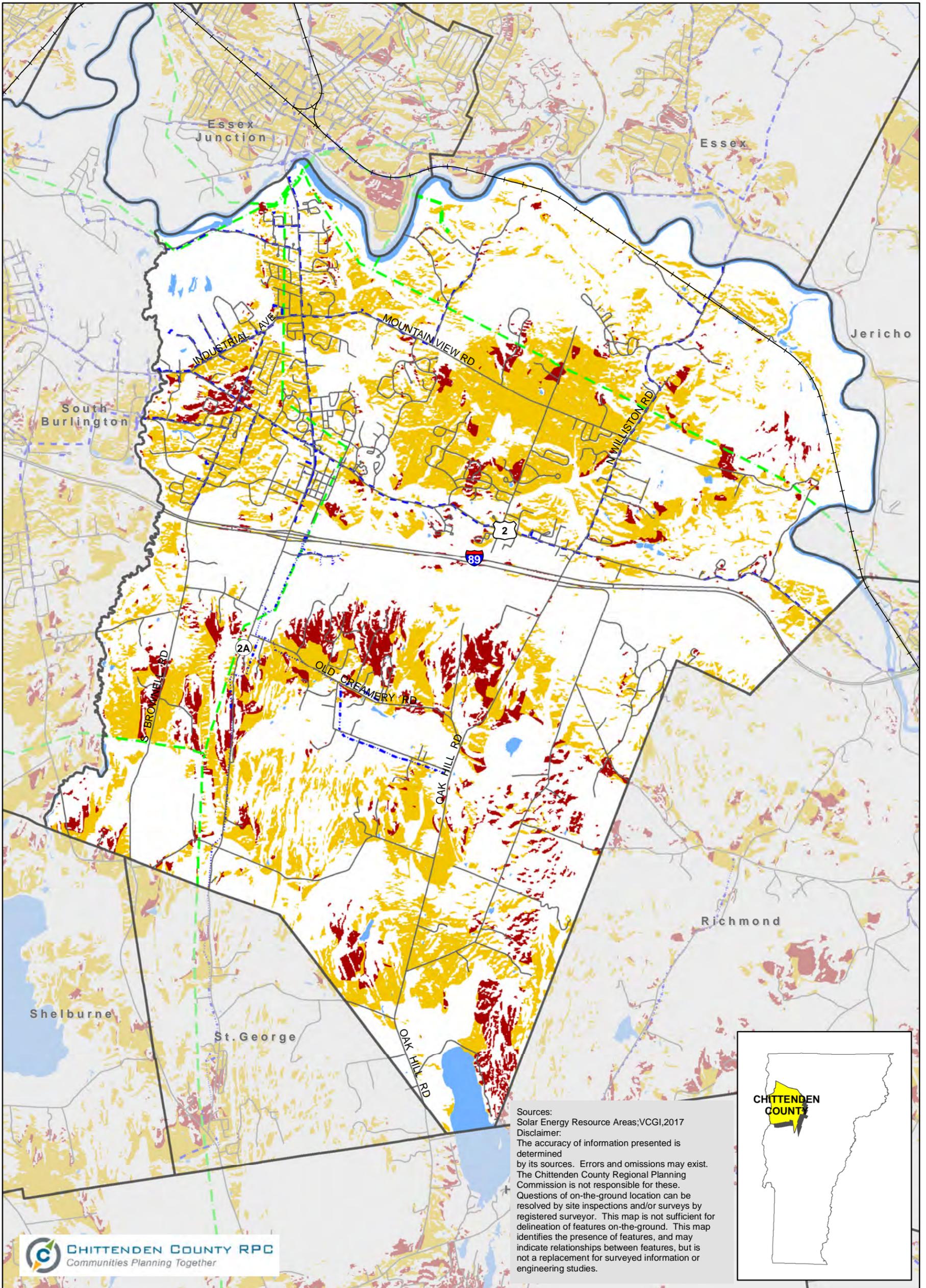
Base Solar/Possible State Constraint

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.

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Solar Energy Resource Areas:VCGI,2017
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Potential Solar Energy Resource Areas

Winooski, Vermont

Act 174

The Energy Development Improvement Act of 2016

Local Possible Constraints

to be added which may turn prime areas to base areas.



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0 0.125 0.25 0.5 Miles

Solar Energy Resource Areas

Type

Prime Solar/No State or Local Known Constraints*

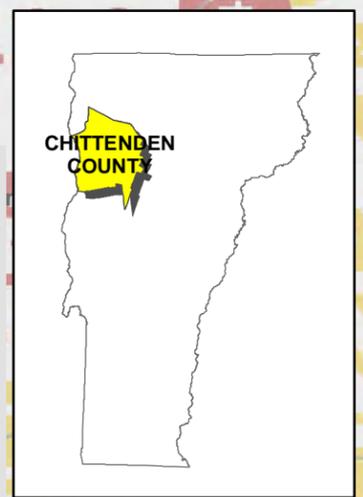
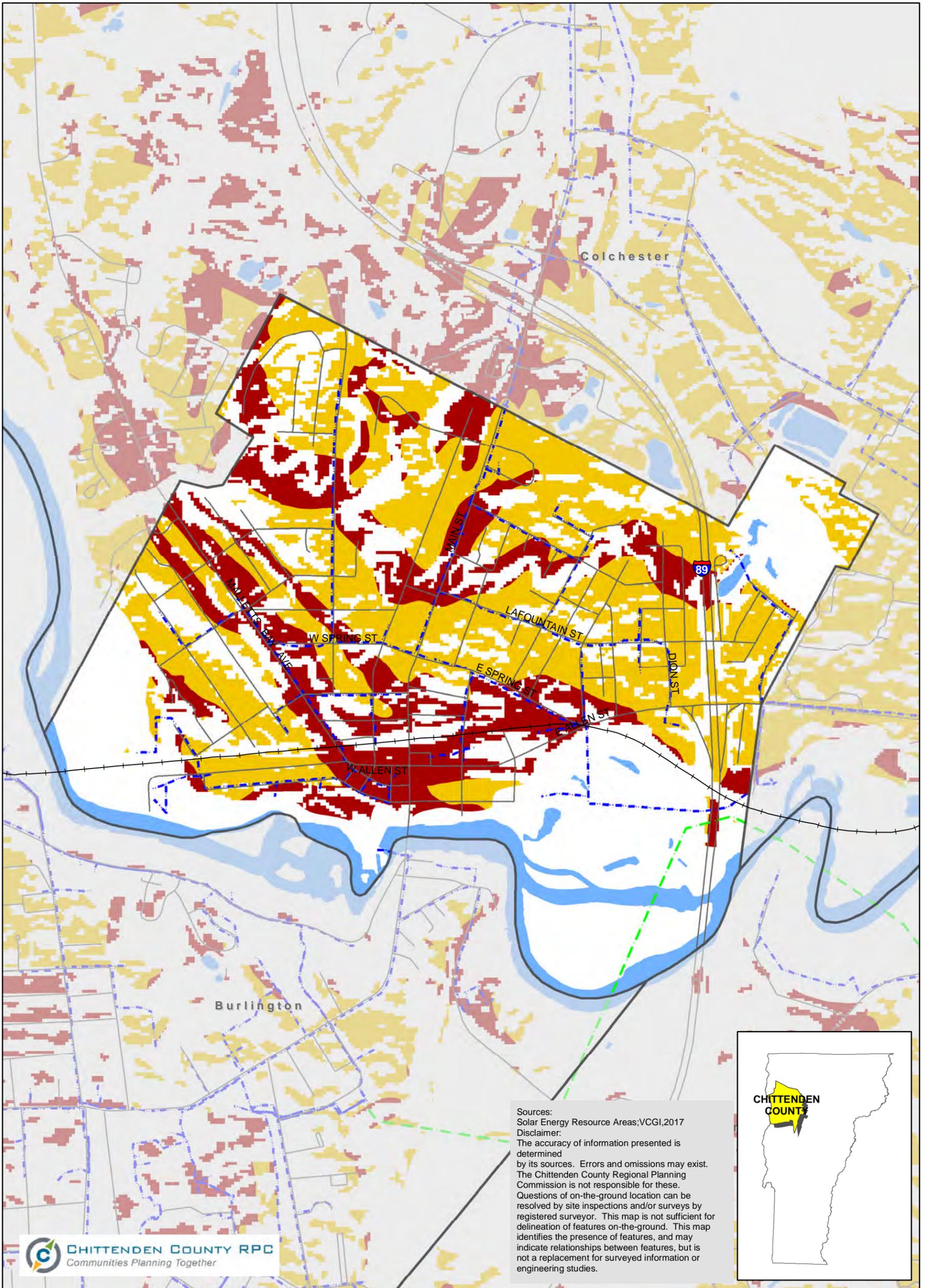
Base Solar/Possible State Constraint

3 Phase Power Lines

Transmission lines

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Sources:
Solar Energy Resource Areas:VCGI,2017
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Potential Solar Energy Resource Areas

Charlotte, Vermont
Act 174

The Energy Development Improvement Act of 2016

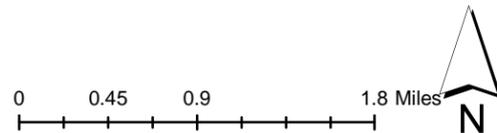
Solar Energy Resource Areas

Type

-  Prime Solar/No State or Local Known Constraints*
-  Base Solar/Possible State Constraint
-  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.

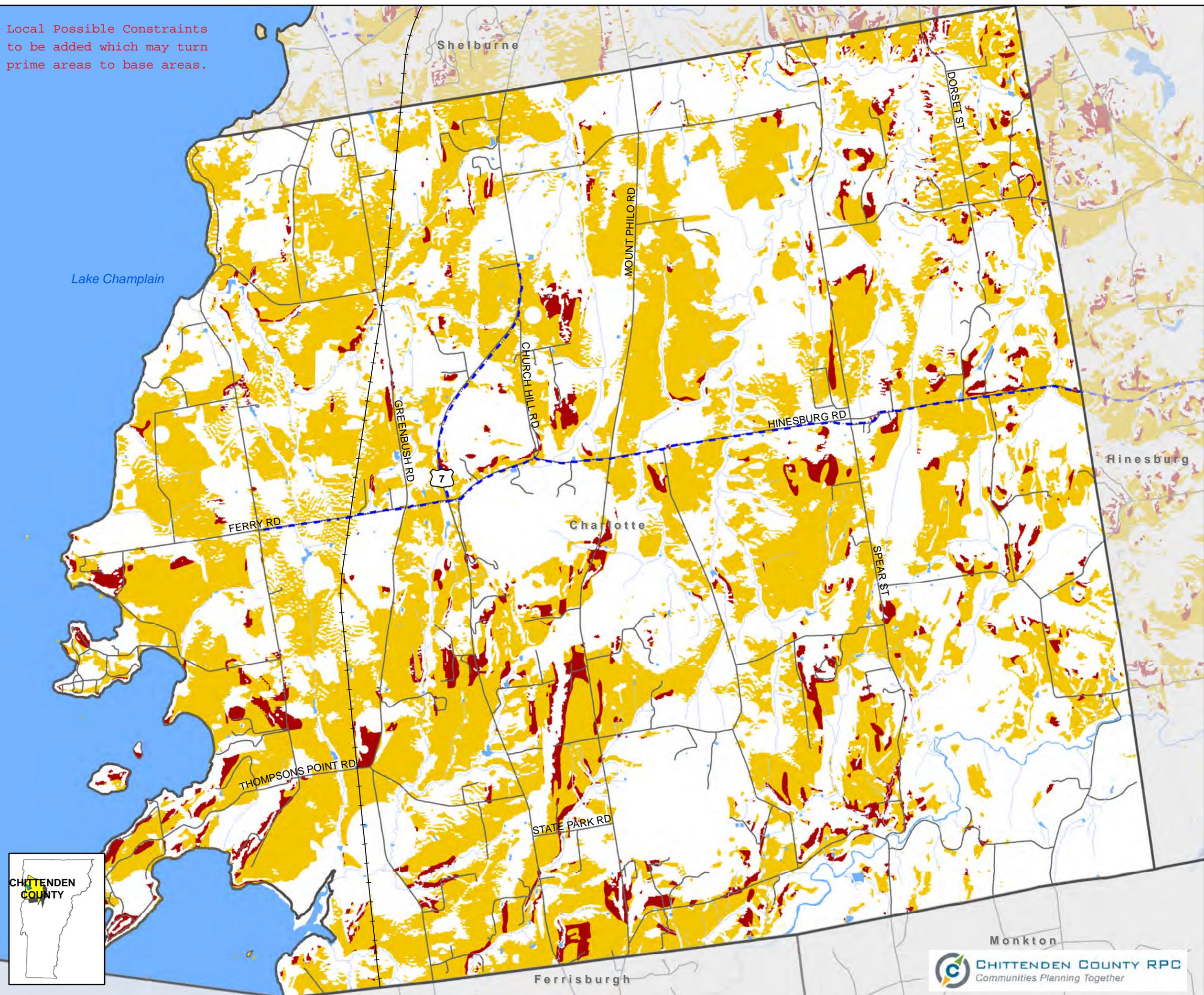
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Sources:
Solar Energy Resource Areas;VCGI,2017
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Date: 4/6/2017

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



Potential Solar Energy Resource Areas

Jericho, Vermont
Act 174

The Energy Development Improvement Act of 2016

Solar Energy Resource Areas

Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 3 Phase Power Lines
- Transmission lines

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

0 0.5 1 2 Miles

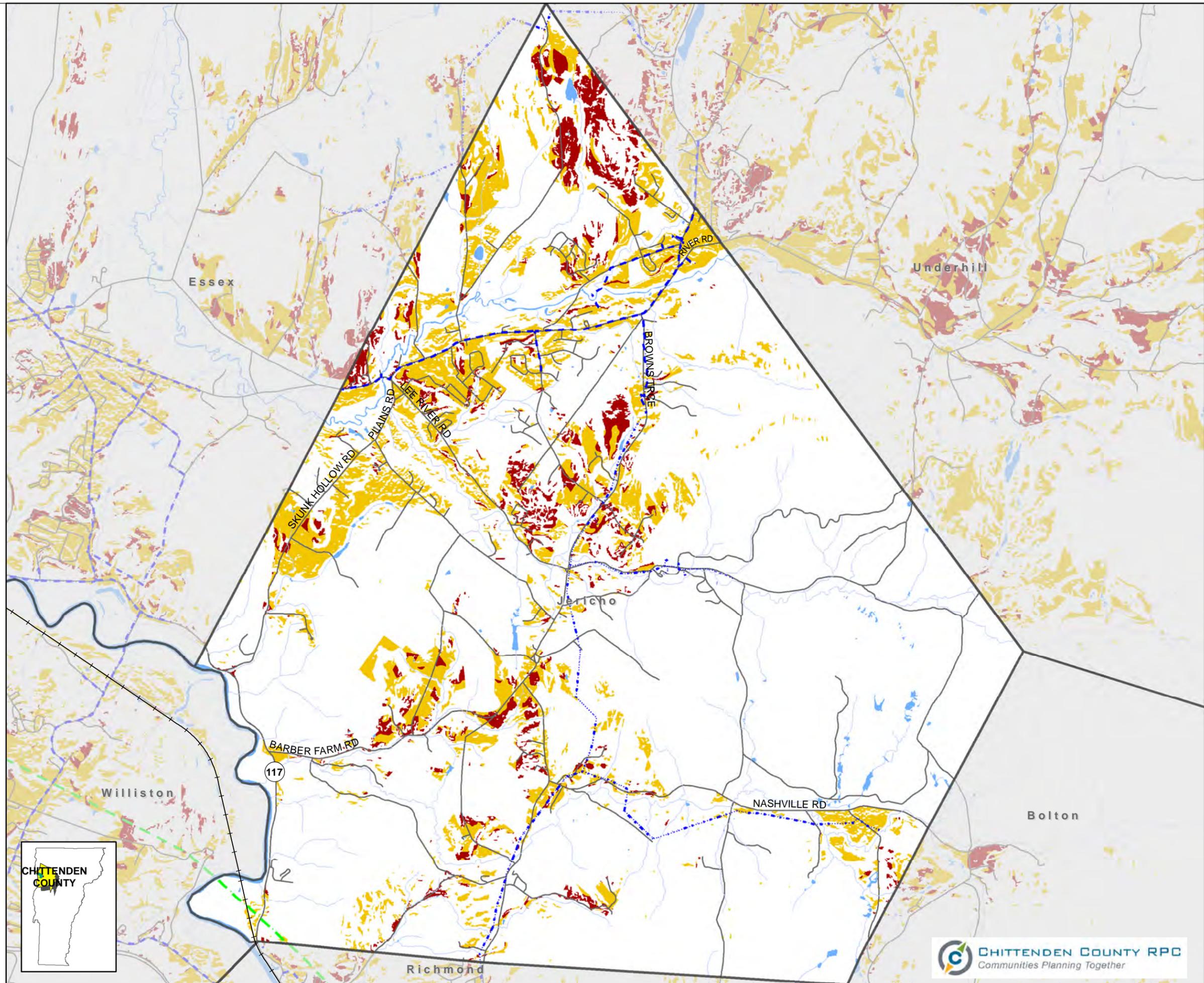


Sources:
Solar Energy Resource Areas;VCGI,2017
Disclaimer:
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Date: 4/6/2017

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Potential Solar Energy Resource Areas

Milton, Vermont
Act 174

The Energy Development Improvement Act of 2016

Solar Energy Resource Areas

Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 3 Phase Power Lines
- Transmission lines

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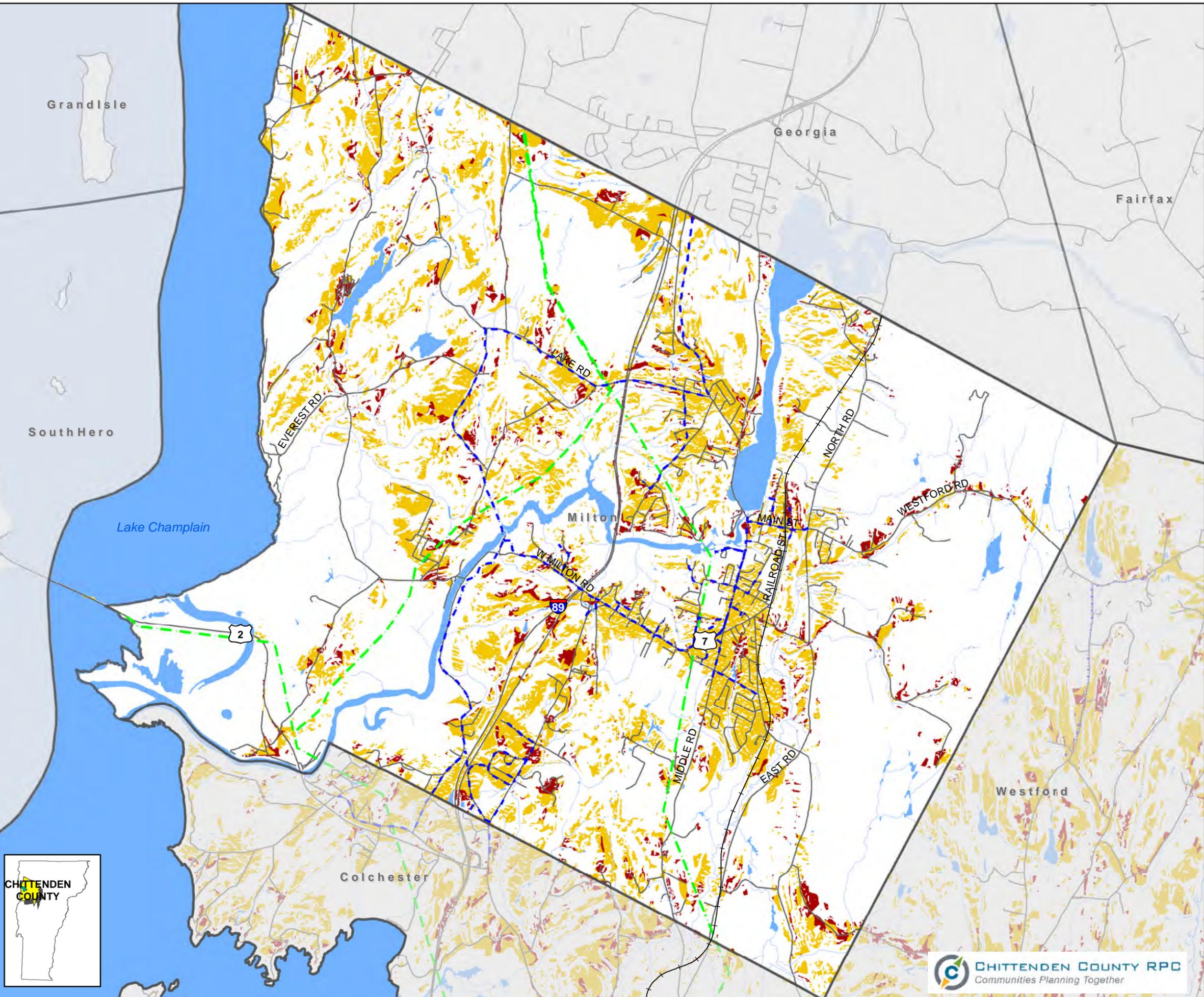
Local Possible Constraints to be added which may turn prime areas to base areas.

0 0.5 1 2 Miles



Sources:
Solar Energy Resource Areas;VCGI,2017
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Date: 4/6/2017



Potential Solar Energy Resource Areas

Richmond, Vermont
Act 174

The Energy Development Improvement Act of 2016

Solar Energy Resource Areas

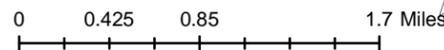
Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 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.

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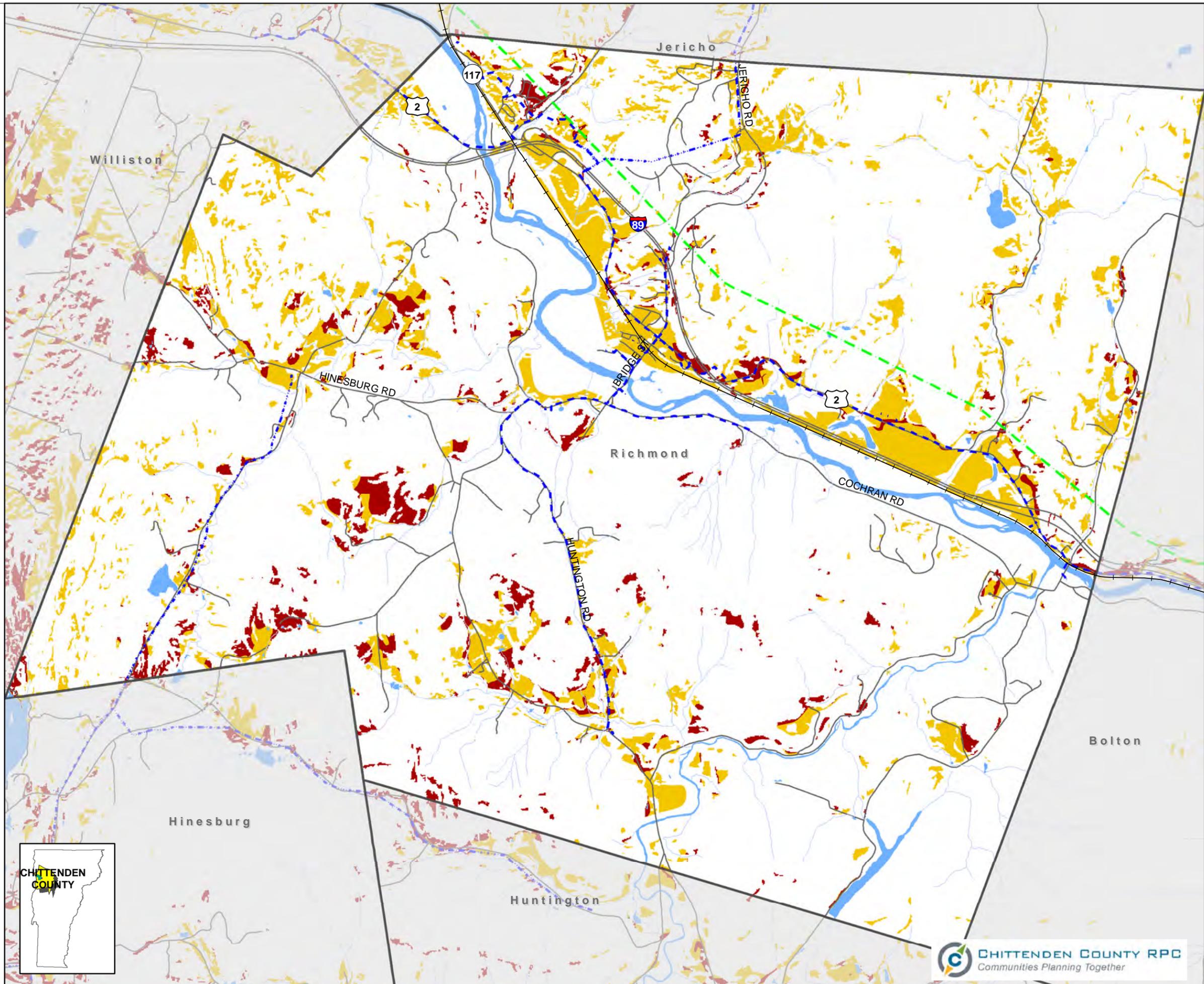
Local Possible Constraints to be added which may turn prime areas to base areas.



Sources:
Solar Energy Resource Areas;VCGI,2017
Disclaimer:

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Date: 4/6/2017



Potential Solar Energy Resource Areas

Burlington, Vermont
Act 174

The Energy Development Improvement Act of 2016

Solar Energy Resource Areas

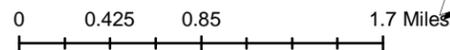
Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 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.

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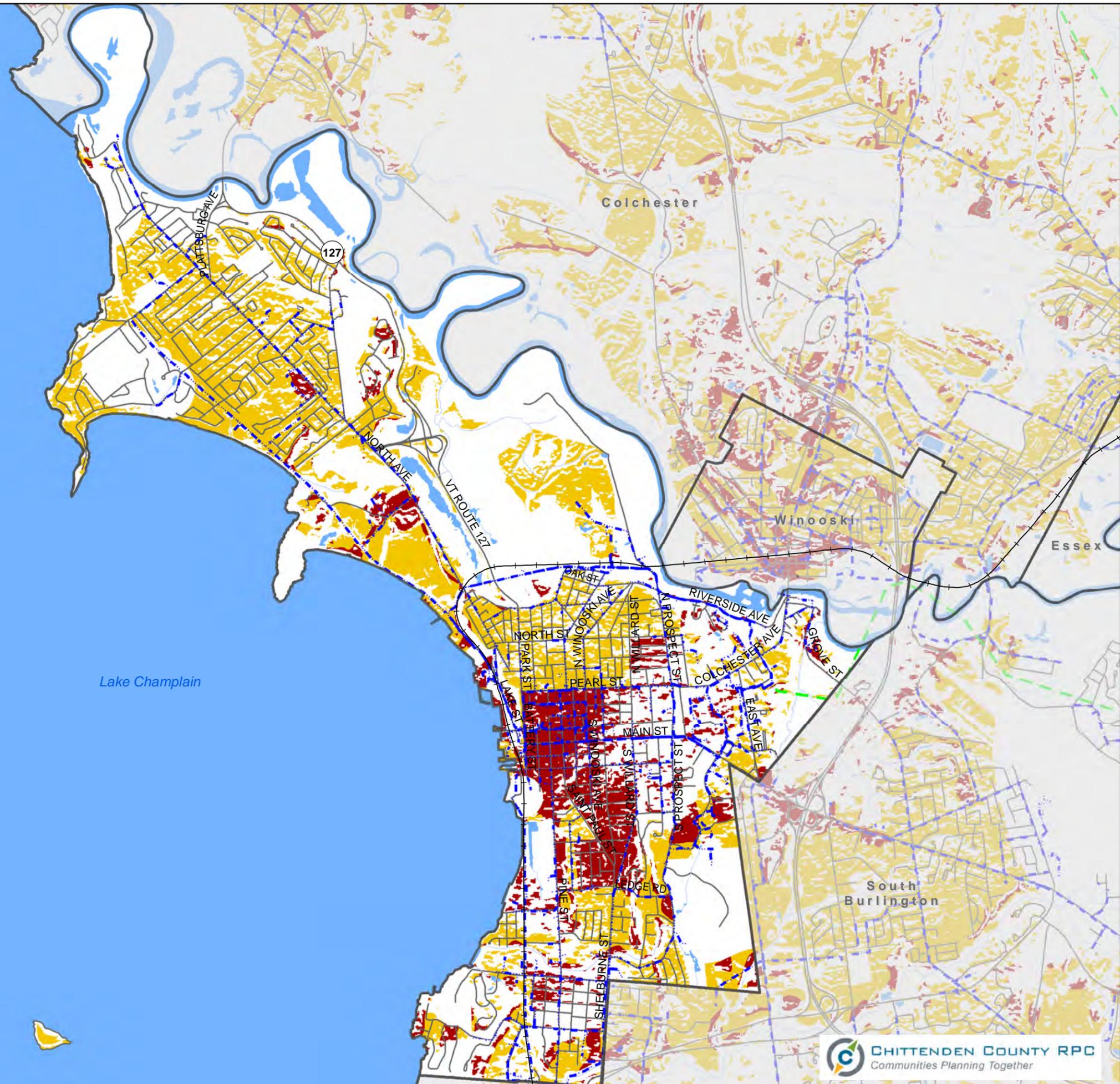
Local Possible Constraints to be added which may turn prime areas to base areas.



Sources:
Solar Energy Resource Areas;VCGI,2017
Disclaimer:

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Date: 4/6/2017



Potential Solar Energy Resource Areas

Colchester, Vermont
Act 174

The Energy Development Improvement Act of 2016

Solar Energy Resource Areas

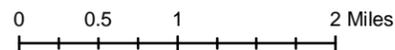
Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 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.

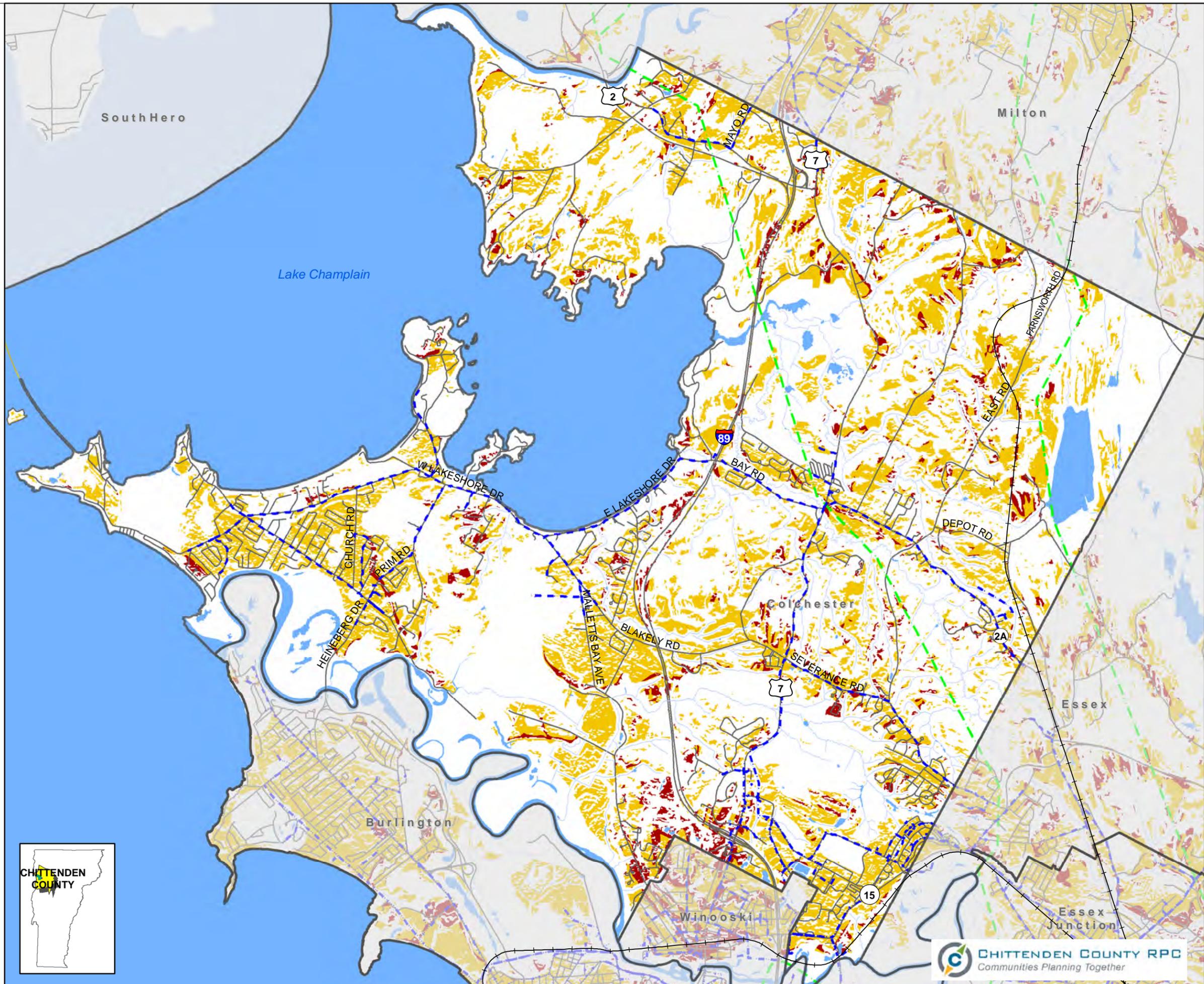
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Potential Solar Energy Resource Areas

Shelburne, Vermont
Act 174

The Energy Development Improvement Act of 2016

Solar Energy Resource Areas

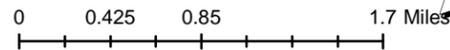
Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 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.

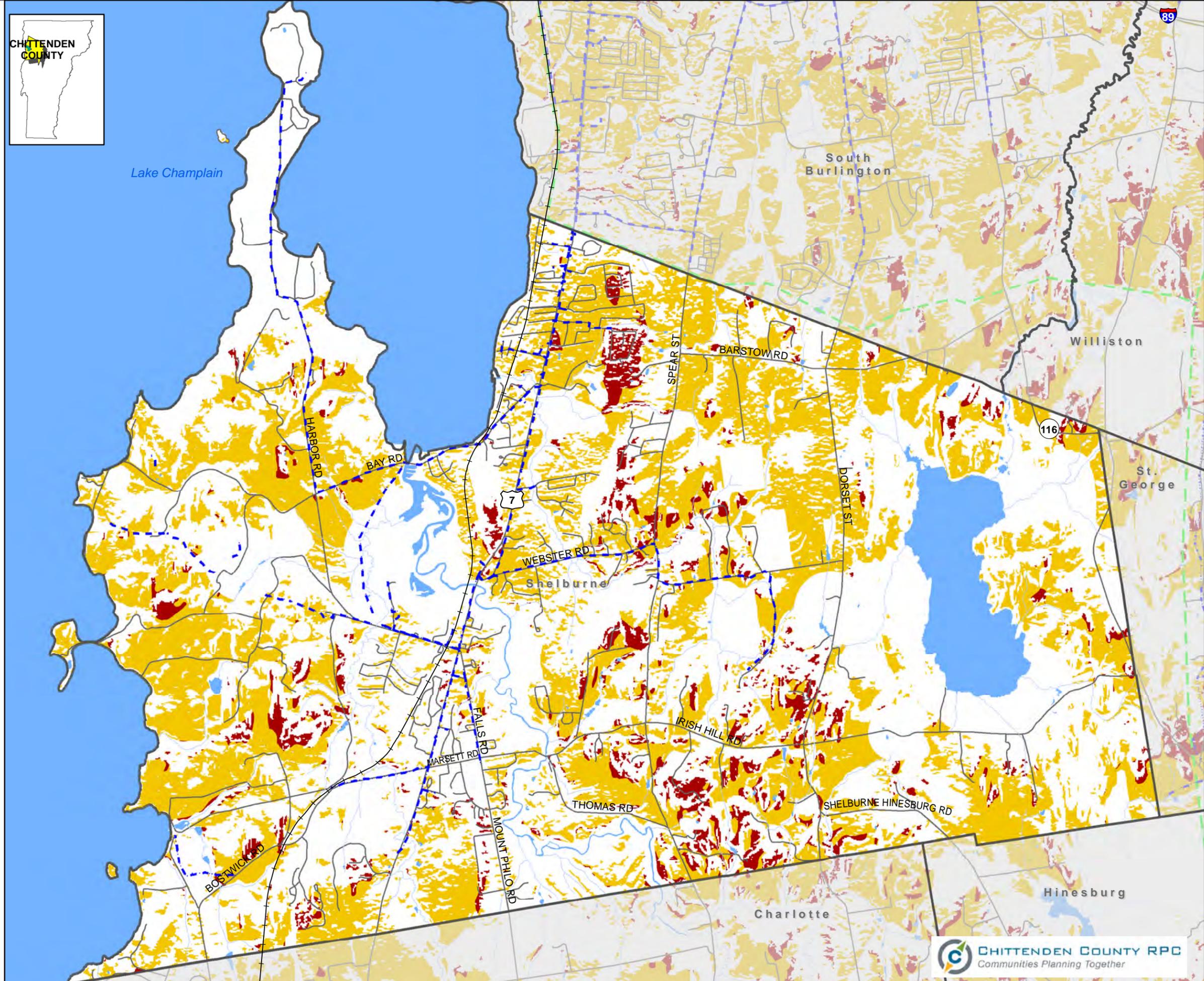
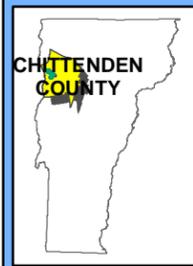
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Date: 4/6/2017



Potential Solar Energy Resource Areas

South Burlington, Vermont
Act 174

The Energy Development
Improvement Act of 2016

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

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0 0.35 0.7 1.4 Miles

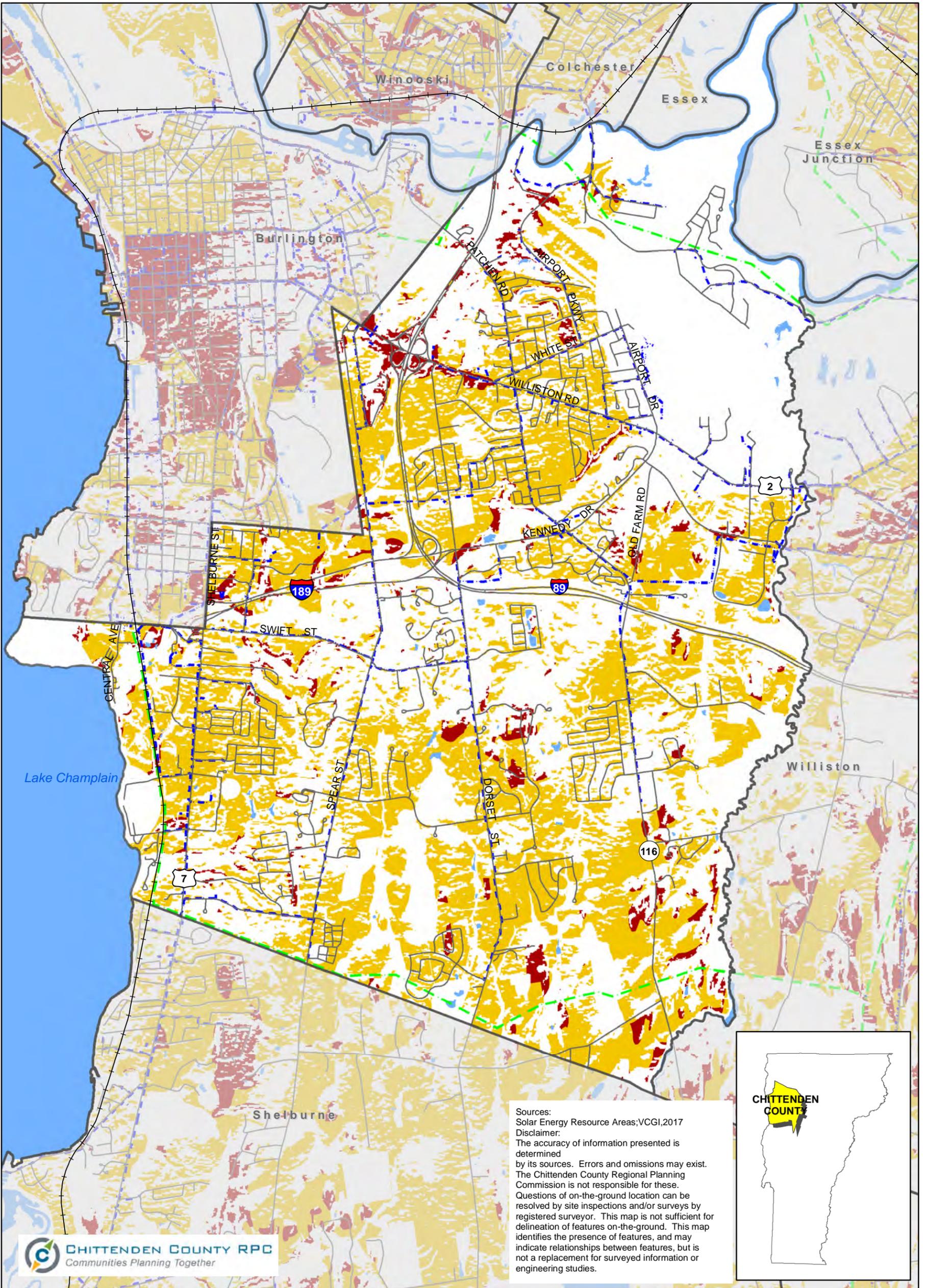
Solar Energy Resource Areas

Type

- Prime Solar/No State or Local Known Constraints*
- Base Solar/Possible State Constraint
- 3 Phase Power Lines
- Transmission lines

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Lake Champlain



Sources:
Solar Energy Resource Areas: VCGI, 2017
Disclaimer:
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Solar Targets April 7, 2017

Town Name (bold means local constraint received)	Population Share		Electricity Share		Solar Resource Share												Prime Solar (w/local known constraints) 1 mile from 3 Phase Power
	Population	County Share	2012 Electricity	County Share	Prime Solar (acres)	Prime Solar Resource Share	Average (Pop Share+ Elect. Share +Resource Share)	Low Range Solar MW	High Range Solar MW	Low Range Prime Target (Acres)	High Range Prime Target (Acres)	Local Known Constraints on Prime Solar (acres)	Local Possible Constraints on Prime Solar (acres)	Base Solar (Acres)	Prime Solar minus Local Constraints	Accommodate Known Constraints	
Buels gore	39	0%	16,646	0%	9	0%	0%	0	0	0	1	0		94			0
St. George	764	0%	2,701,993	0%	63	1%	0%	1	1	6	10	0		442			21
Bolton	1,236	1%	6,482,663	1%	197	2%	1%	2	3	14	23	14		1,221	182	YES	4.5
Huntington	1,875	1%	6,383,457	1%	411	3%	2%	3	5	25	40	0		1,941			-
Winooski	7,223	5%	43,016,819	4%	157	1%	3%	6	9	46	76	0		295			157
Richmond	4,115	3%	18,130,701	1%	556	4%	3%	5	9	42	69	0		1,863			319
Essex Junction	9,709	6%	57,376,792	5%	168	1%	4%	8	12	61	99	0		992			168
Underhill	3,061	2%	10,900,002	1%	924	7%	3%	6	10	51	83	82		4,581	842	YES	119
Shelburne	7,566	5%	50,553,885	4%	583	5%	5%	8	14	67	110	0		4,710			121
Westford	2,013	1%	7,547,451	1%	1,069	9%	3%	6	11	52	85	277		5,702	793	YES	48
Jericho	5,043	3%	21,016,703	2%	918	7%	4%	8	12	61	99	211		4,405	707	YES	85
Charlotte	3,822	2%	17,999,536	1%	1,051	8%	4%	8	12	61	100	Pending		9,927			25
Williston	9,054	6%	114,591,648	9%	1,011	8%	8%	14	24	115	189	0		4,355			371
Milton	10,610	7%	68,659,920	6%	961	8%	7%	12	20	99	163	15		7,811	946	YES	288
South Burlington	18,536	12%	221,942,238	18%	339	3%	11%	20	33	162	266	7		3,350	332	YES	140
Hinesburg	4,472	3%	21,060,110	2%	1,539	12%	6%	10	17	84	137	594		4,595	944	YES	418
Essex Town	10,710	7%	73,536,448	6%	1,196	10%	7%	14	23	111	181	437		6,375	759	YES	289
Colchester	17,293	11%	131,496,553	11%	836	7%	9%	18	29	141	231	479		5,142	357	YES	177
Burlington	42,570	27%	338,105,043	28%	585	5%	20%	37	60	295	482	Pending		585			
Total	159,711		1,211,518,608	100%	12,573	100%	100%	187	305	1,494	2,443			68,384			
Totals provided by DPS/BCRPC					12,578*			187	305			2,443					

*acreage lost due to GIS clipping analysis

Population-American Community Survey (2011-2015)

Solar Rooftop Capacity

TOWNNAME	Total Residential Buildings	25% of Residential Buildings	Total Residential Rooftop Capacity	Small Commercial Buildings	Total Small Commercial Rooftop Capacity on 25 % of buildings	Large Commercial	Total Capacity on 50% of Buildings	Grand Total kWh	Grand Total MW
BOLTON	424	106	424		0			424	0
BUELS GORE	11	3	11		0			11	0
BURLINGTON	10,448	2,612	10,448	445	2,225	16	1,600	14,273	14
CHARLOTTE	1,719	430	1,719	11	55	0	0	1,774	2
COLCHESTER	5,088	2,544	10,176	147	735	9	900	11,811	12
ESSEX JUNCTION VILLAGE	2,987	1,494	5,974	161	805	9	900	7,679	8
ESSEX TOWN	3,603	1,802	7,206	1	5		0	7,211	7
HINESBURG	1,667	834	3,334	21	105	2	200	3,639	4
HUNTINGTON	840	420	1,680	7	35		0	1,715	2
JERICO	1,871	936	3,742	20	100		0	3,842	4
MILTON	3,986	1,993	7,972	48	240	5	500	8,712	9
RICHMOND	1,562	781	3,124	28	140		0	3,264	3
SAINT GEORGE	312	156	624	4	20		0	644	1
SHELBURNE	2,706	1,353	5,412	66	330	8	800	6,542	7
SOUTH BURLINGTON	5,337	2,669	10,674	363	1,815	15	1,500	13,989	14
UNDERHILL	1,197	599	2,394	8	40		0	2,434	2
WESTFORD	799	400	1,598	5	25		0	1,623	2
WILLISTON	3,484	1,742	6,968	261	1,305	11	1,100	9,373	9
WINOOSKI	1,596	798	3,192	51	255	6	600	4,047	4
County		21,668	86,672	346,688	1,386,752	5,547,008	22,188,032	88,752,128	103

Potential Wind Energy Resource Areas

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

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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

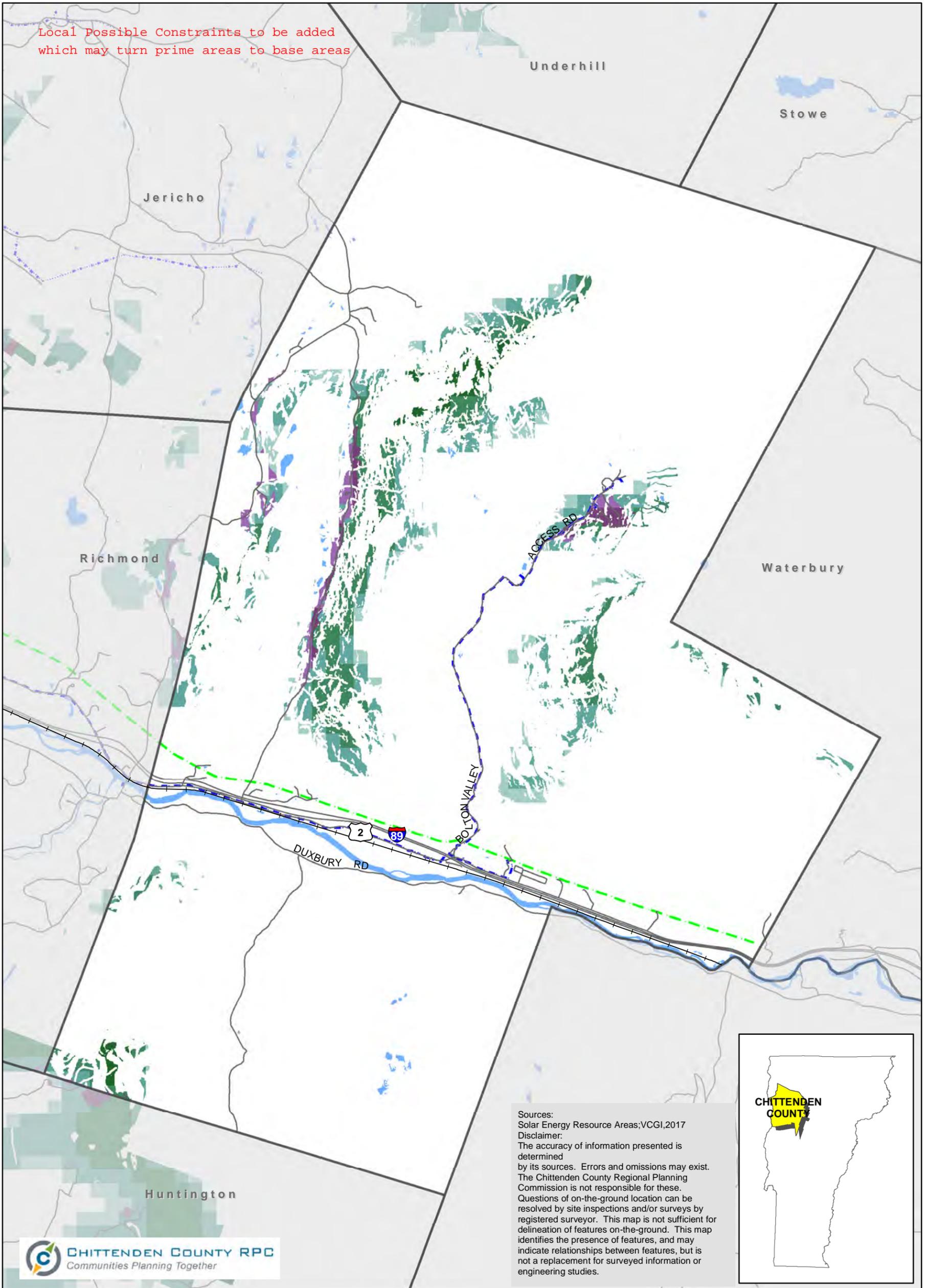
- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

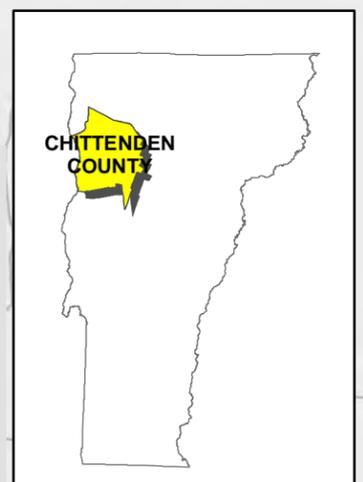
*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

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0 0.5 1 2 Miles



Sources:
Solar Energy Resource Areas;VCGI,2017
Disclaimer:
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Potential Wind Energy Resource Areas

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

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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

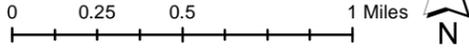
Commercial Generation WindSpdmph

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

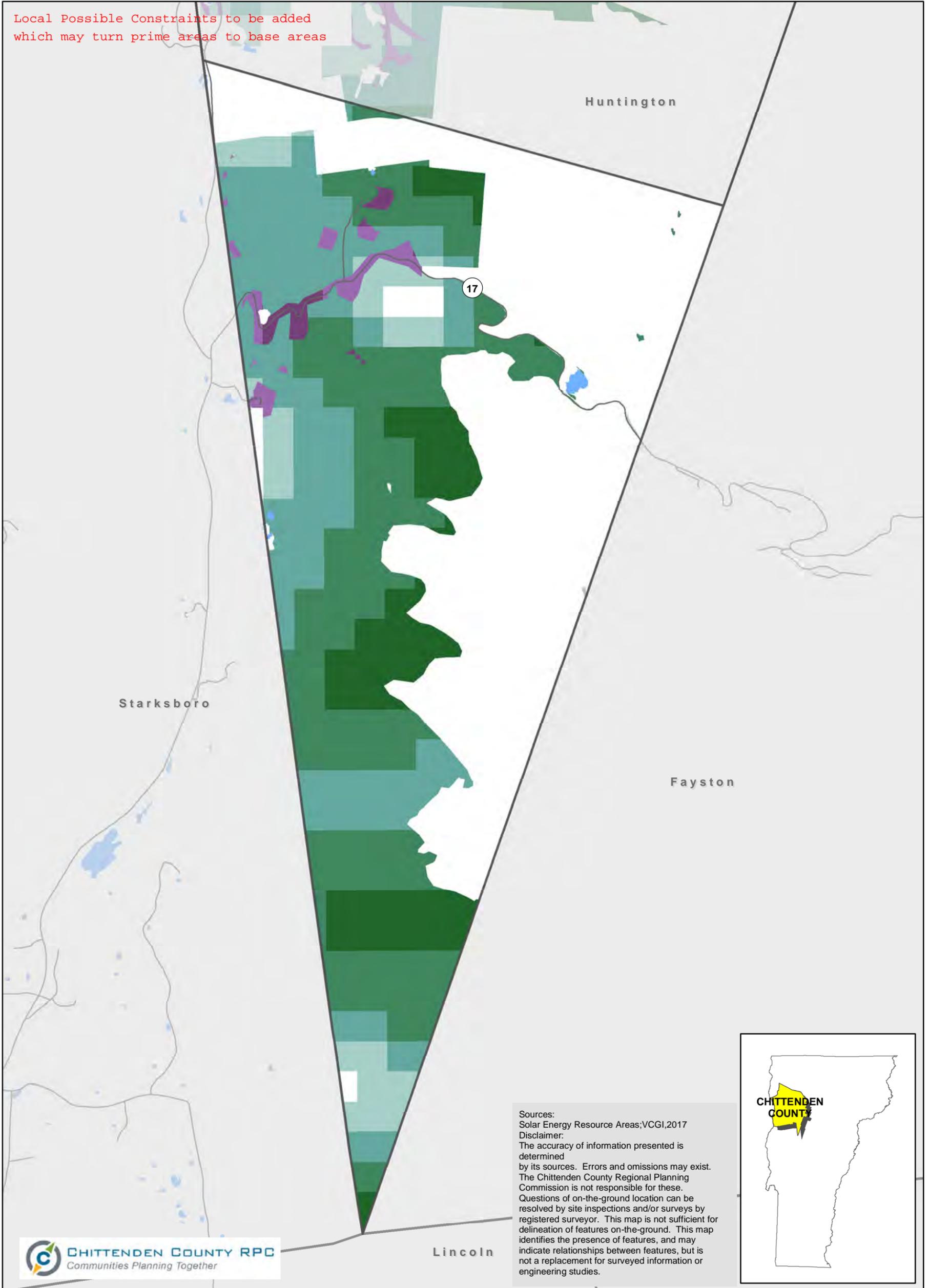
- 3 Phase Power Lines
- Transmission lines

*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.

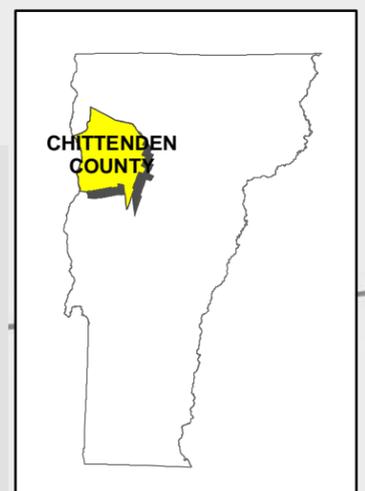
Document Path: D:\Projects\17\Act174\Maps\Towns\Wind\TownPortrait\WindTemplate_20170406



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



Sources:
 Solar Energy Resource Areas: VCGI, 2017
 Disclaimer:
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Potential Wind Energy Resource Areas

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

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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

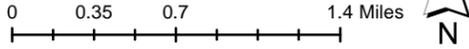
Commercial Generation WindSpdmph

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

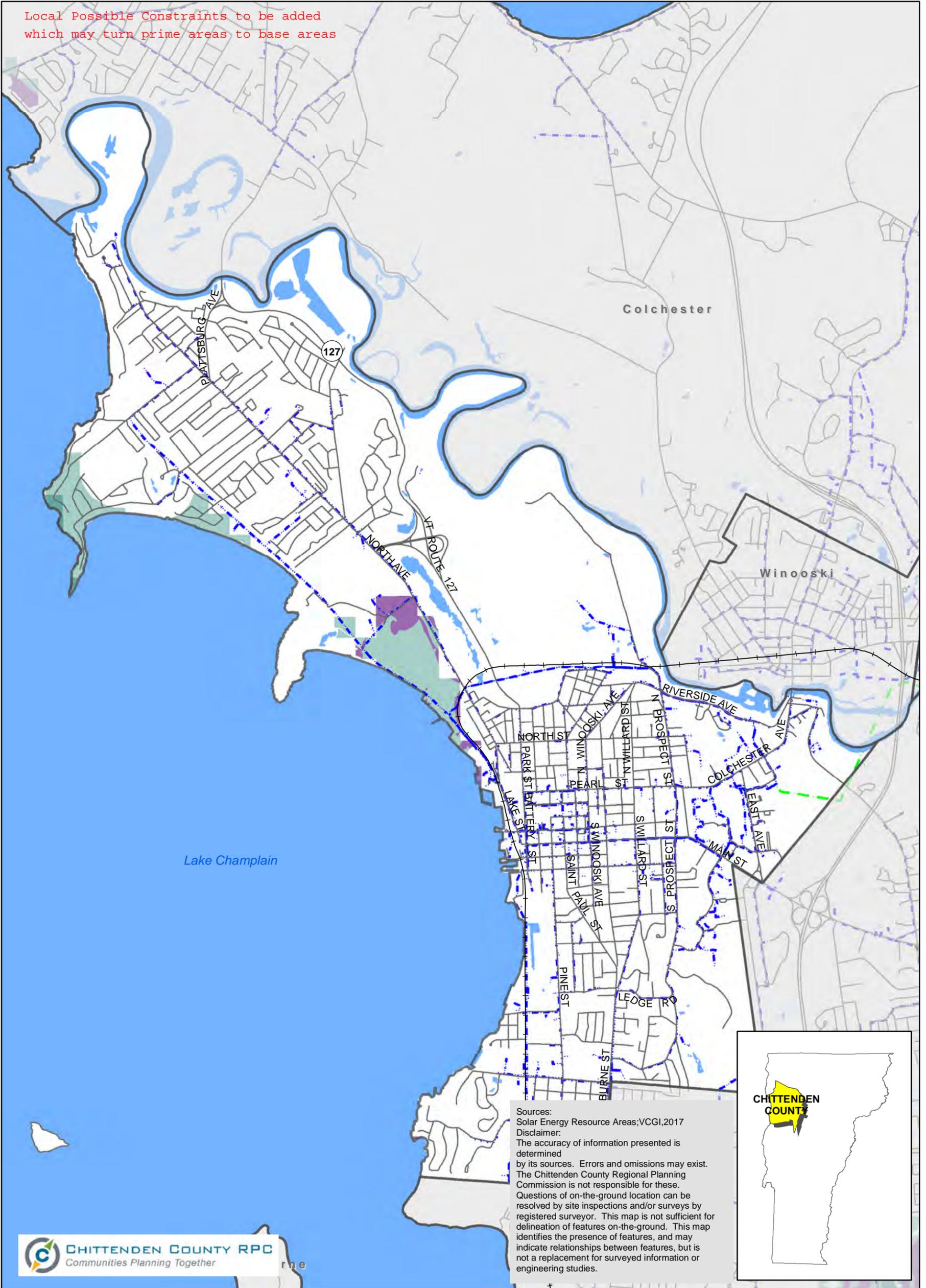
- 3 Phase Power Lines
- Transmission lines

*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.

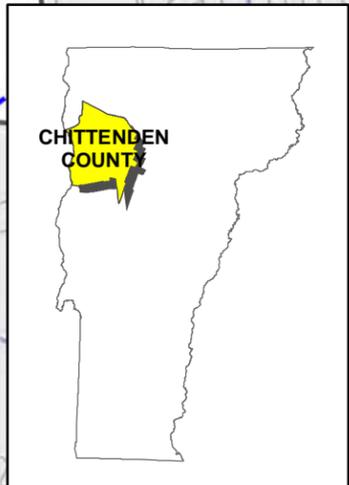
Document Path: D:\Projects\17Act174\Maps\Towns\Wind\TownPortrait\WindTemplate_20170406



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



Sources:
 Solar Energy Resource Areas: VCGI, 2017
 Disclaimer:
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Potential Wind Energy Resource Areas

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

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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

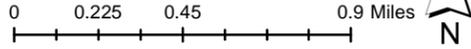
Commercial Generation WindSpdmph

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

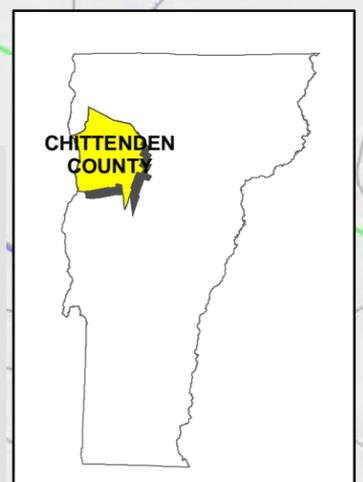
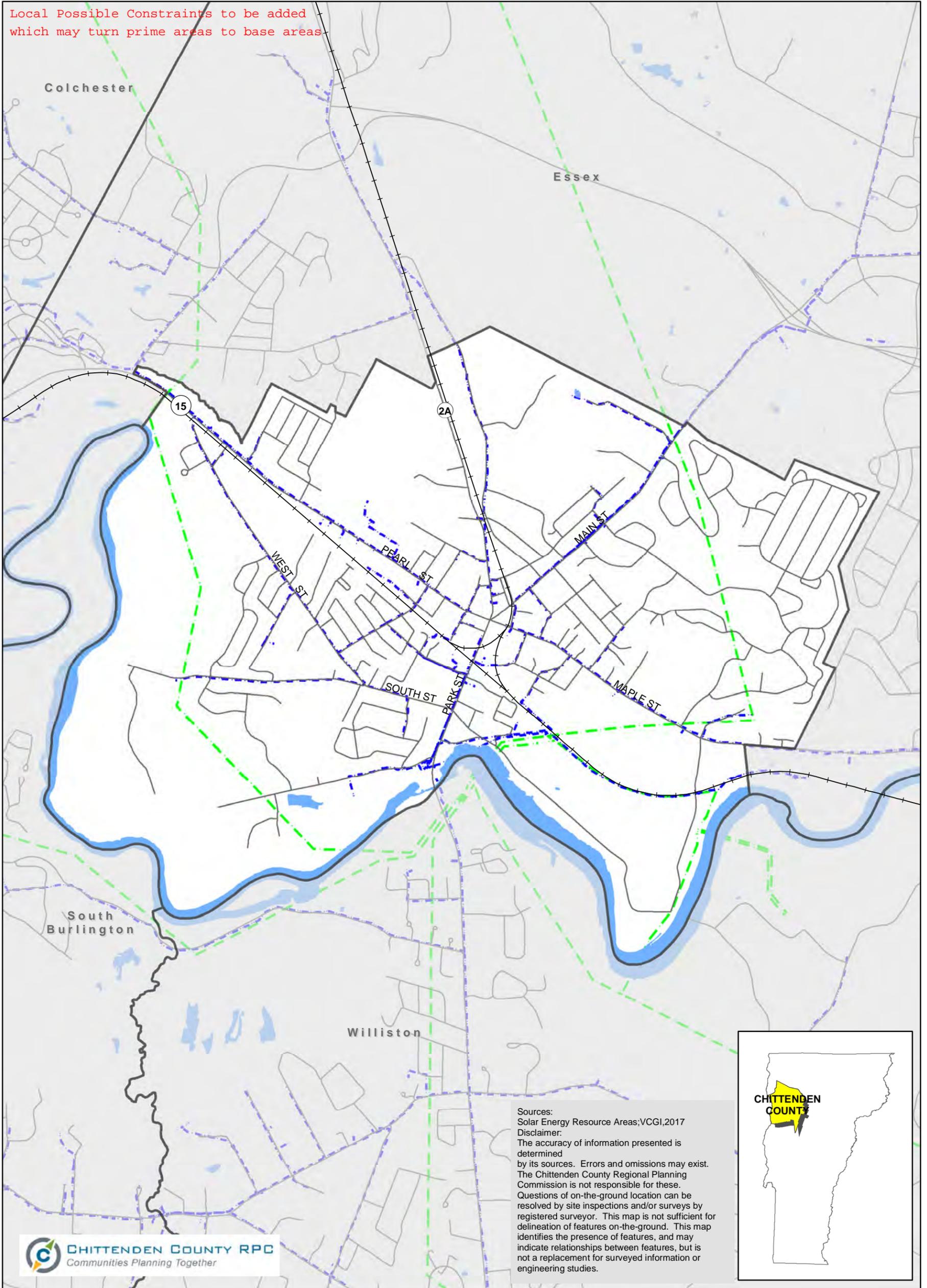
- 3 Phase Power Lines
- Transmission lines

*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.

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



Sources:
Solar Energy Resource Areas; VCGI, 2017
Disclaimer:
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Potential Wind Energy Resource Areas

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

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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

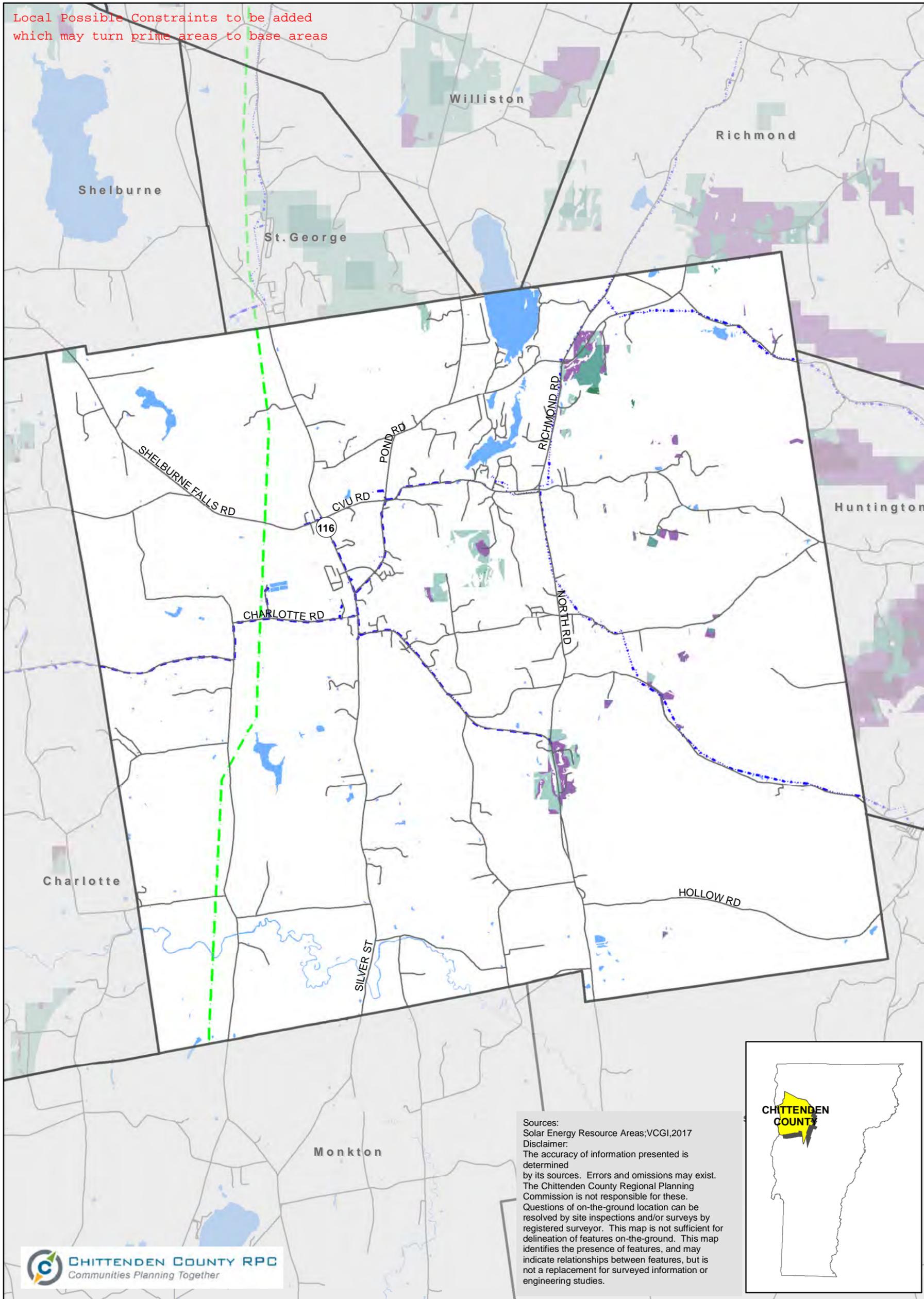
*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

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0 0.5 1 2 Miles



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



Sources:
Solar Energy Resource Areas;VCGI,2017
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Potential Wind Energy Resource Areas

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

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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

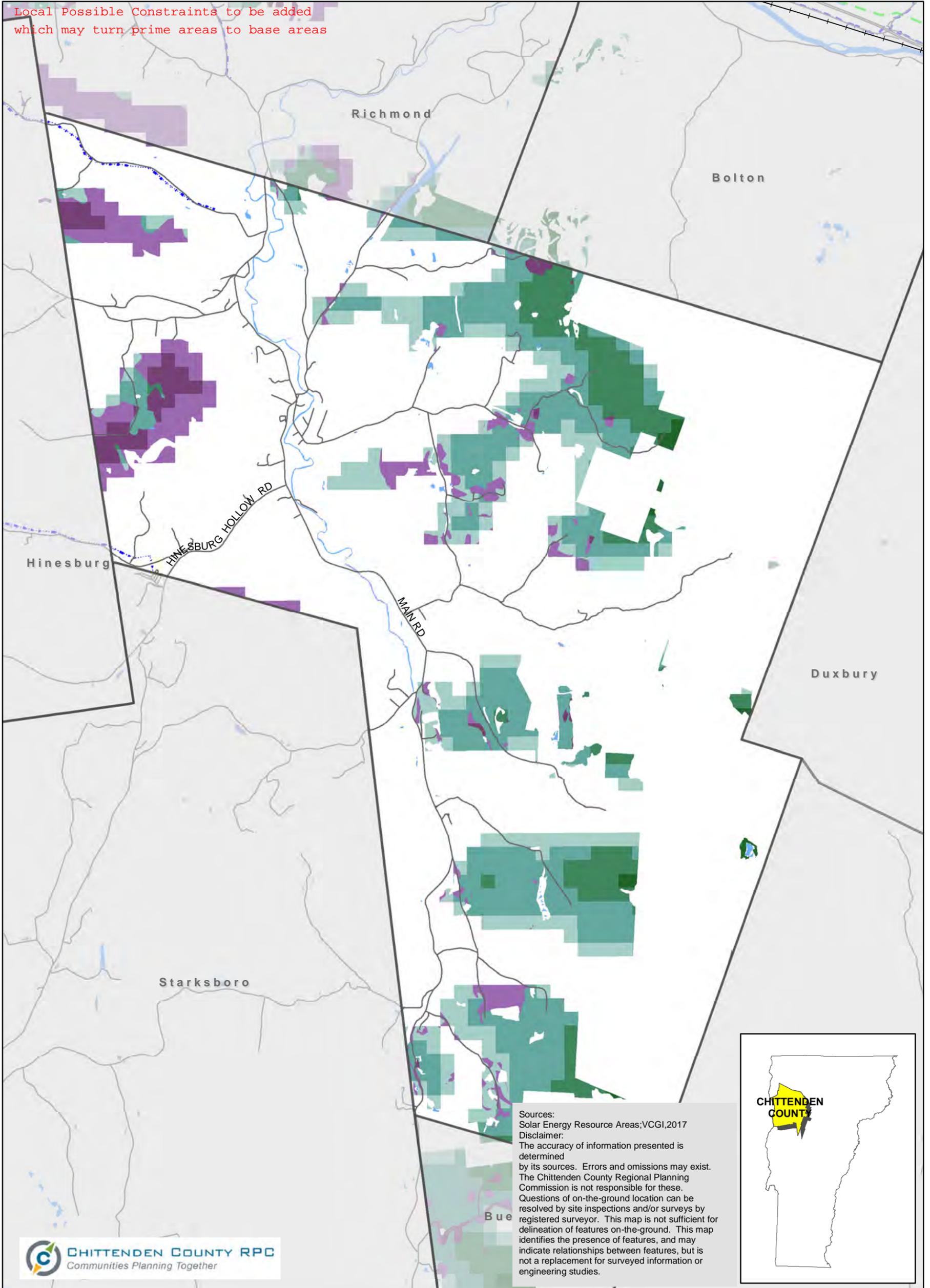
*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

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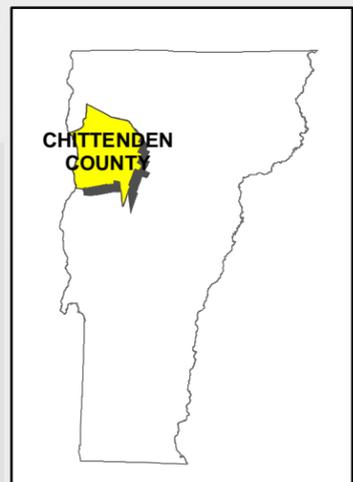
0 0.5 1 2 Miles



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



Sources:
 Solar Energy Resource Areas;VCGI,2017
 Disclaimer:
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Potential Wind Energy Resource Areas

Jericho, Vermont

Act 174

The Energy Development Improvement Act of 2016

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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

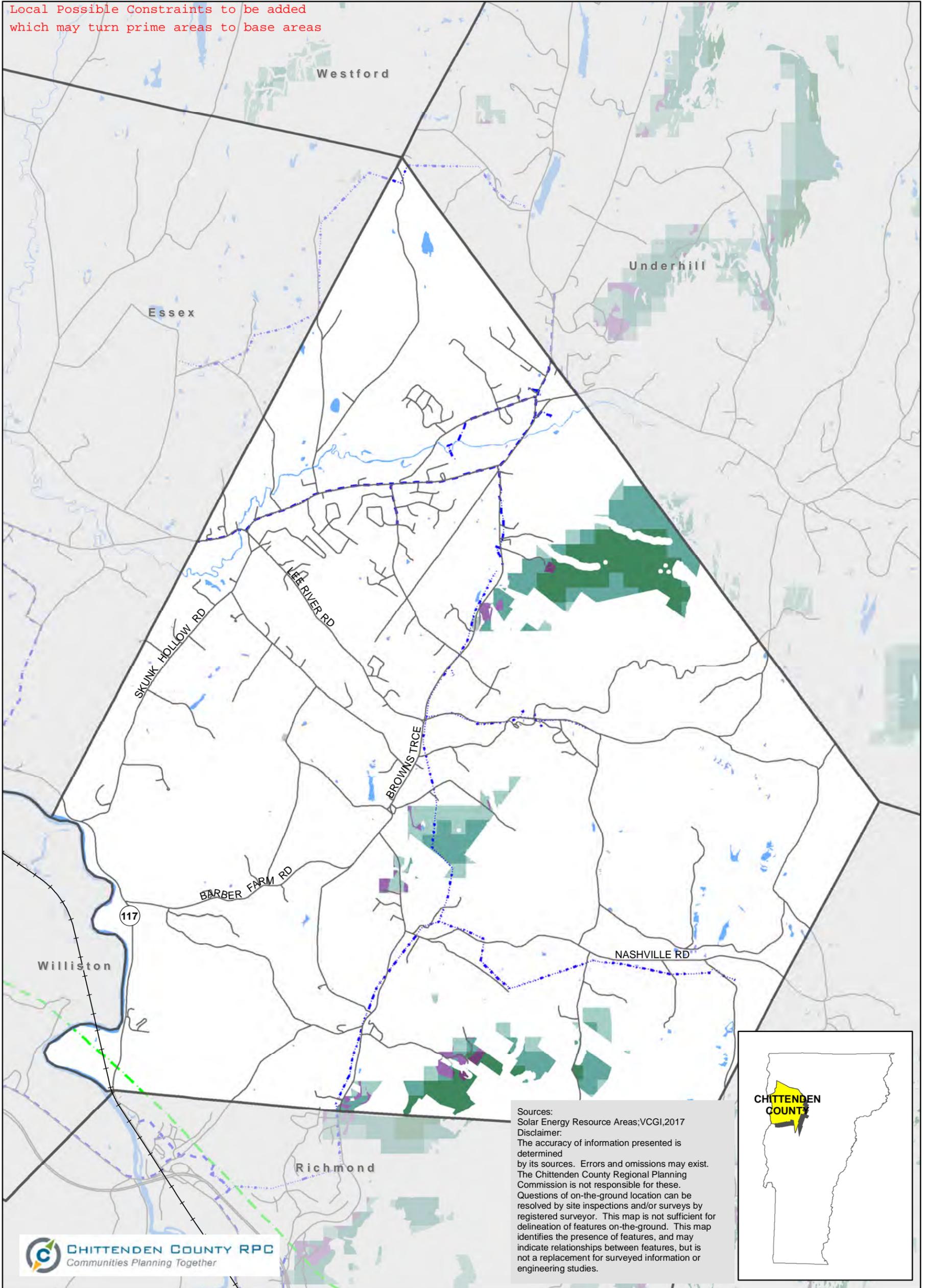
*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

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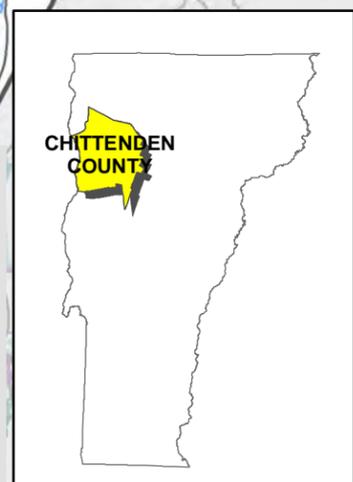
0 0.5 1 2 Miles



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



Sources:
Solar Energy Resource Areas:VCGI,2017
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Potential Wind Energy Resource Areas

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

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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

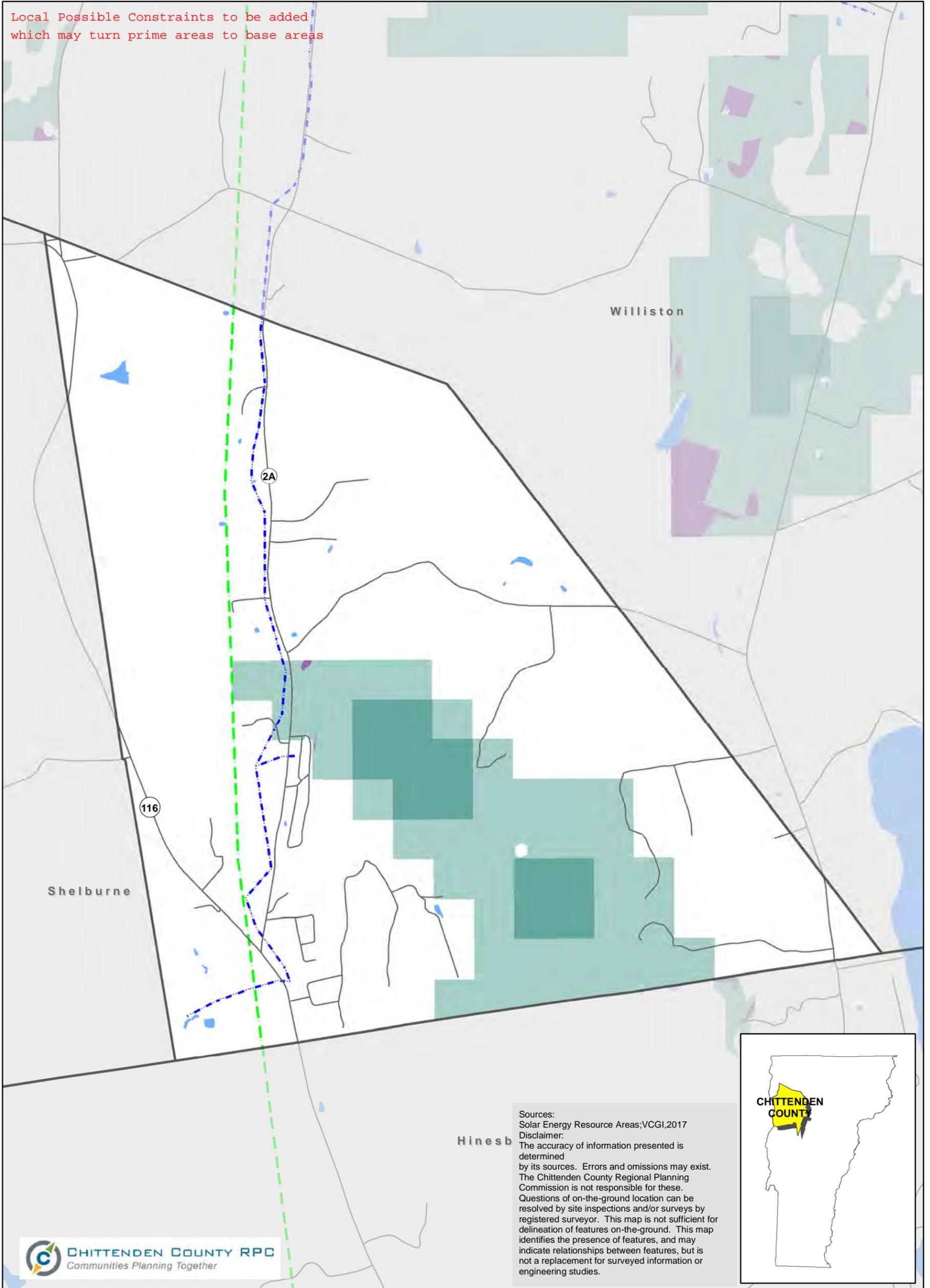
*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

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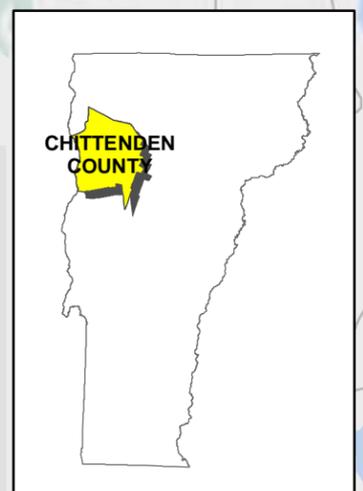
0 0.175 0.35 0.7 Miles



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



Sources:
Solar Energy Resource Areas; VCGI, 2017
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Potential Wind Energy Resource Areas

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

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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

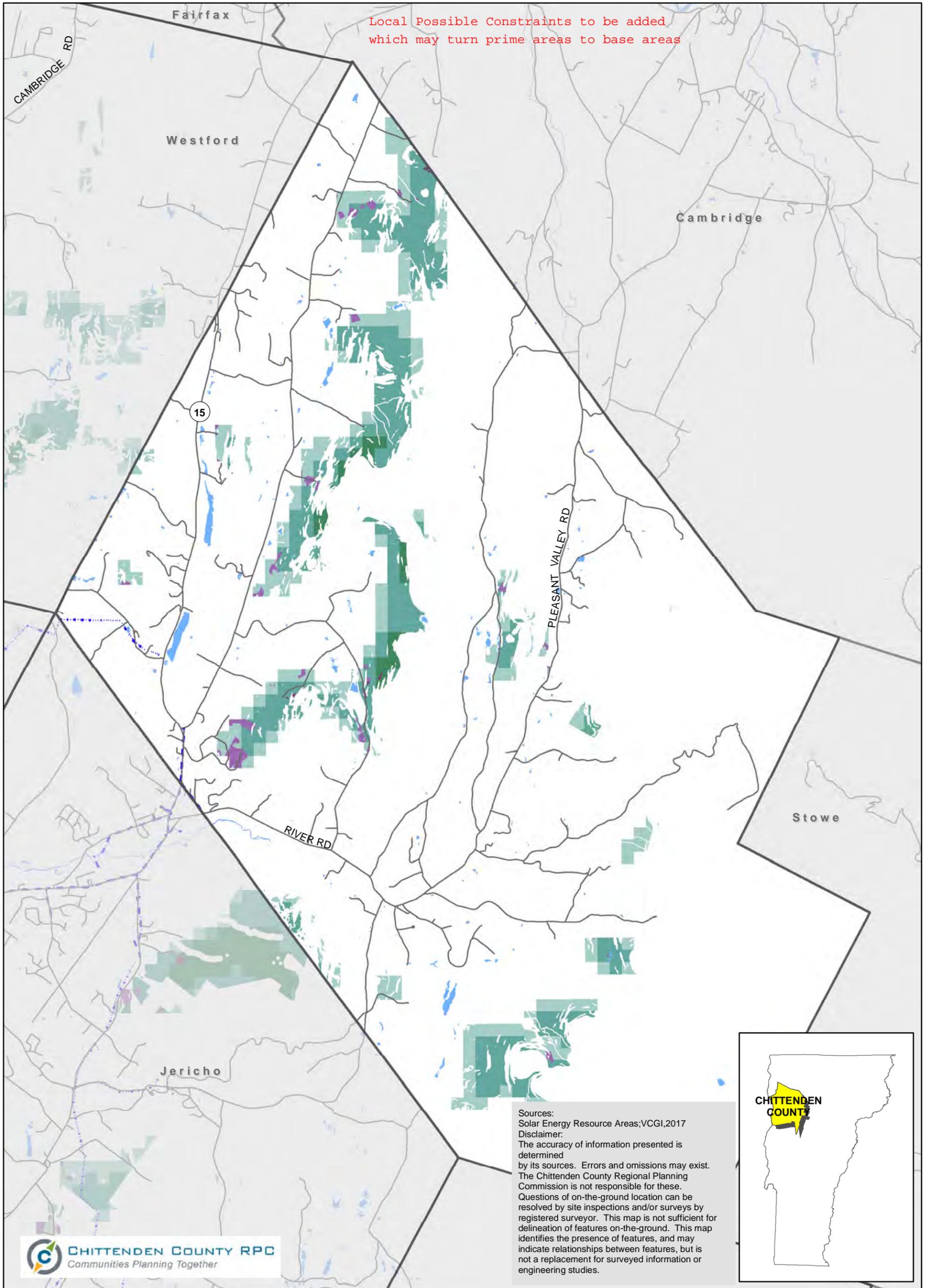
- 10.07 - 11.45
- 11.46 - 12.82
- 12.83 - 14.32
- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

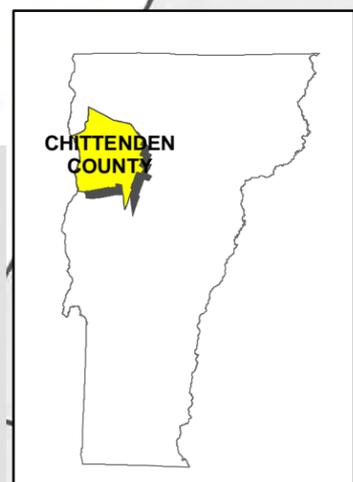
*Note: Local Known Constraints for Bolton, Colchester, Town of Essex, Hinesburg, Jericho, Milton, South Burlington, Underhill, and Westford have been mapped. Burlington and Charlotte are pending. The other remaining towns have not identified known local constraints.

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0 0.5 1 2 Miles



Sources:
Solar Energy Resource Areas;VCGI,2017
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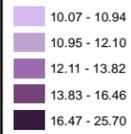
Potential Wind Energy Resource Areas

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

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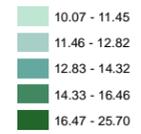
Prime Wind Potential: Areas of high wind potential and no known local or state constraints*

Commercial Generation WindSpdmph



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

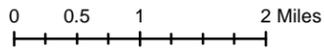
Commercial Generation WindSpdmph



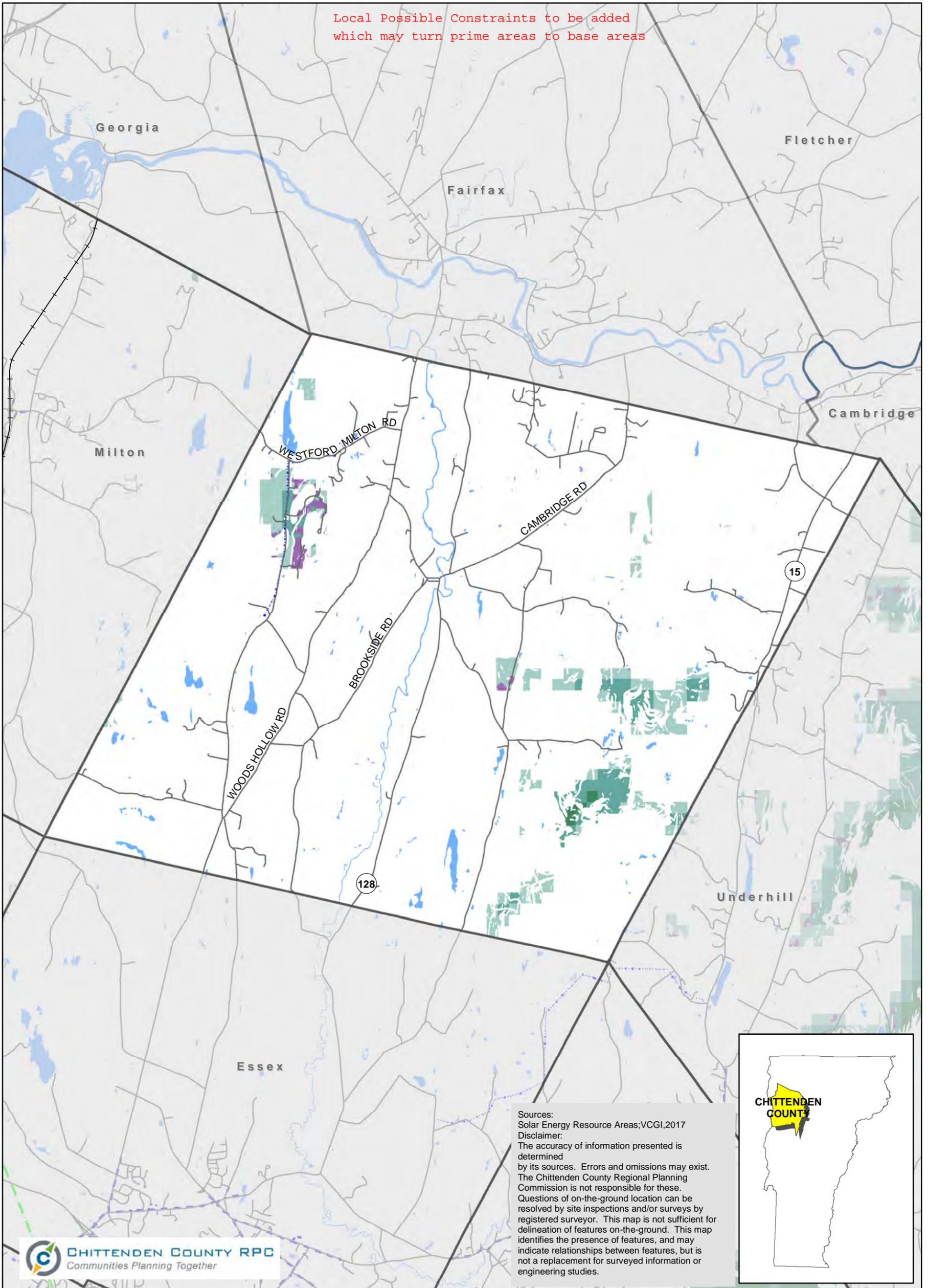
--- 3 Phase Power Lines
--- Transmission lines

*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.

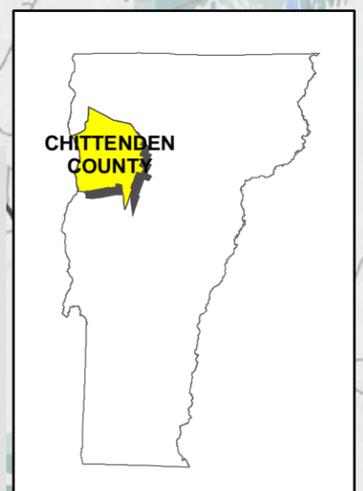
Document Path: D:\Projects\17Act174\Maps\Towns\Wind\TownPortrait\WindTemplate_20170406



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



Sources:
Solar Energy Resource Areas: VCGI, 2017
Disclaimer:
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Potential Wind Energy Resource Areas

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

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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

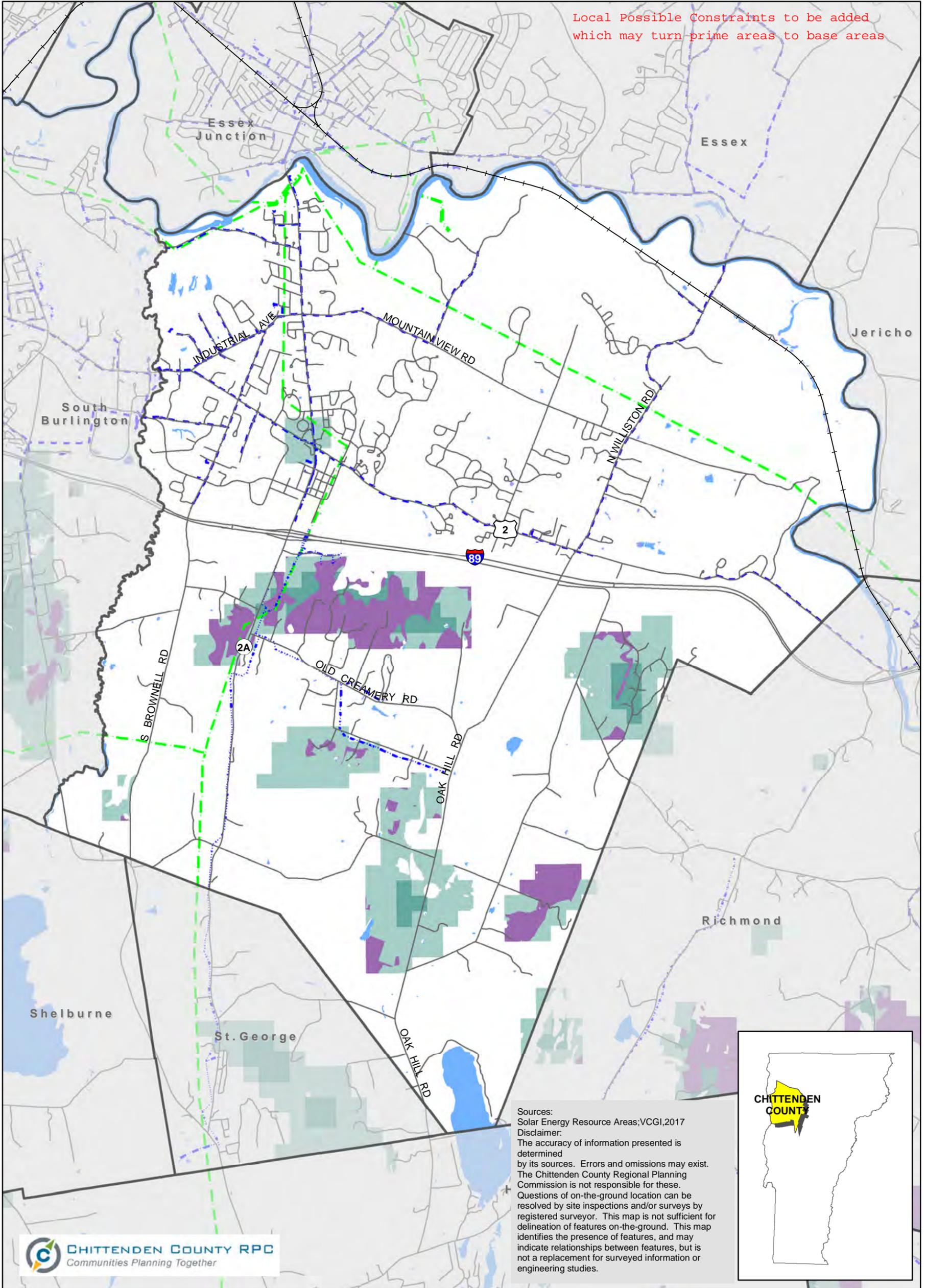
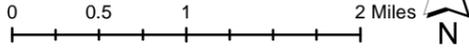
Commercial Generation WindSpdmph

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

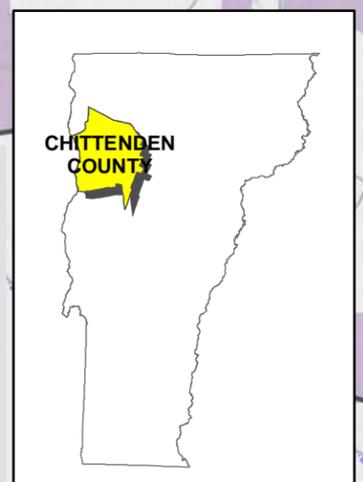
- 3 Phase Power Lines
- Transmission lines

*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.

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Sources:
Solar Energy Resource Areas:VCGI,2017
Disclaimer:
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Potential Wind Energy Resource Areas

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

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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

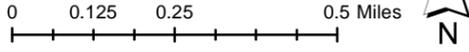
Commercial Generation WindSpdmph

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

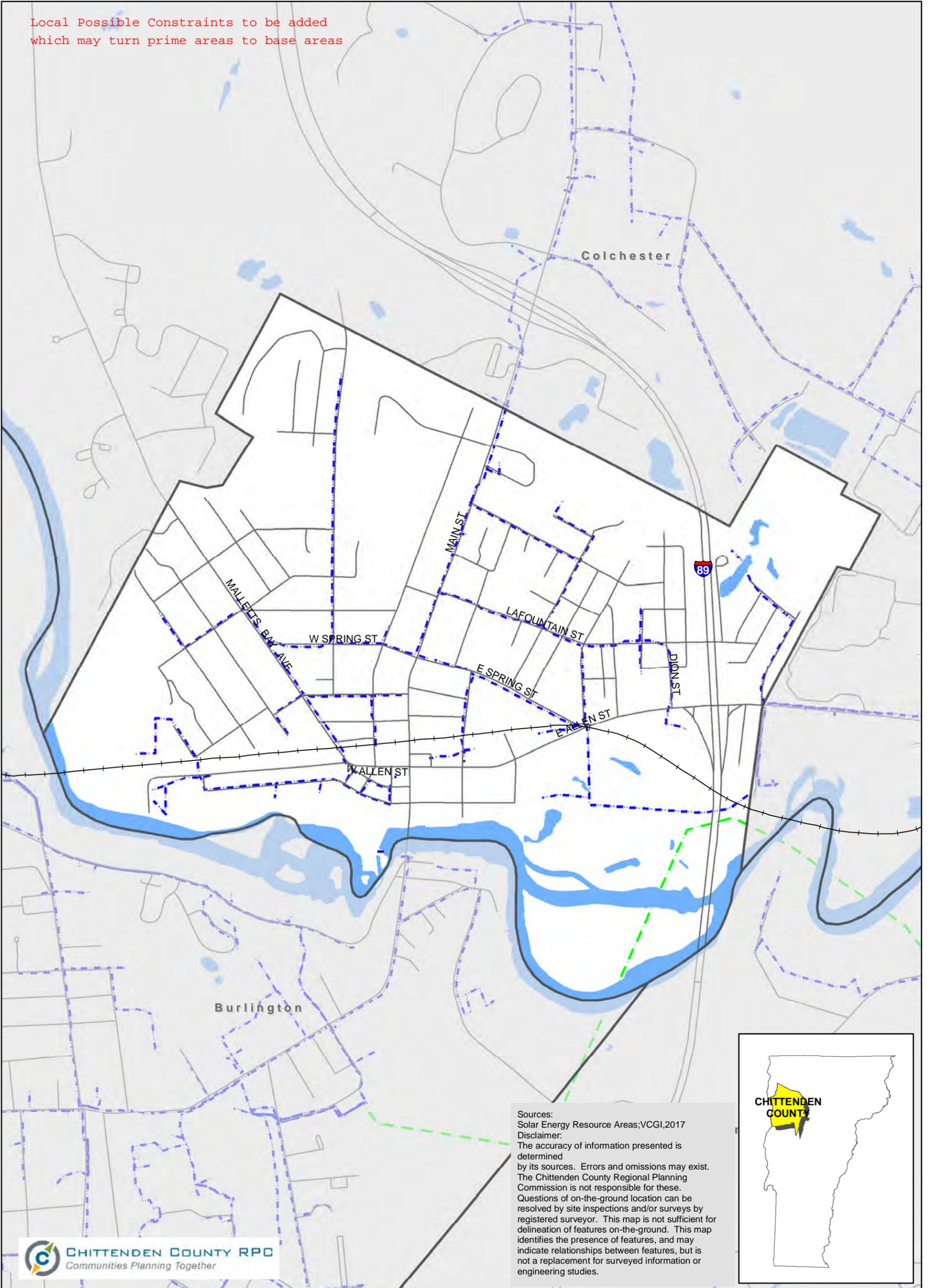
- 3 Phase Power Lines
- Transmission Lines

*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.

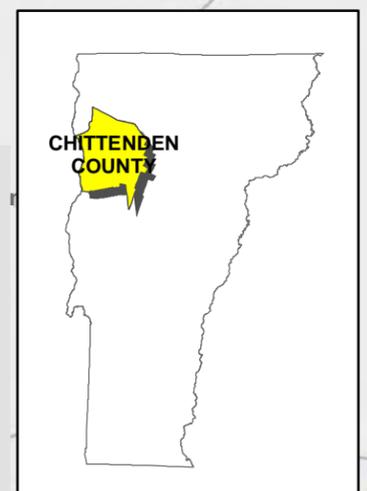
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Local Possible Constraints to be added which may turn prime areas to base areas



Sources:
 Solar Energy Resource Areas; VCGI, 2017
 Disclaimer:
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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*

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

Commercial Generation WindSpdmph

Commercial Generation WindSpdmph

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

- 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

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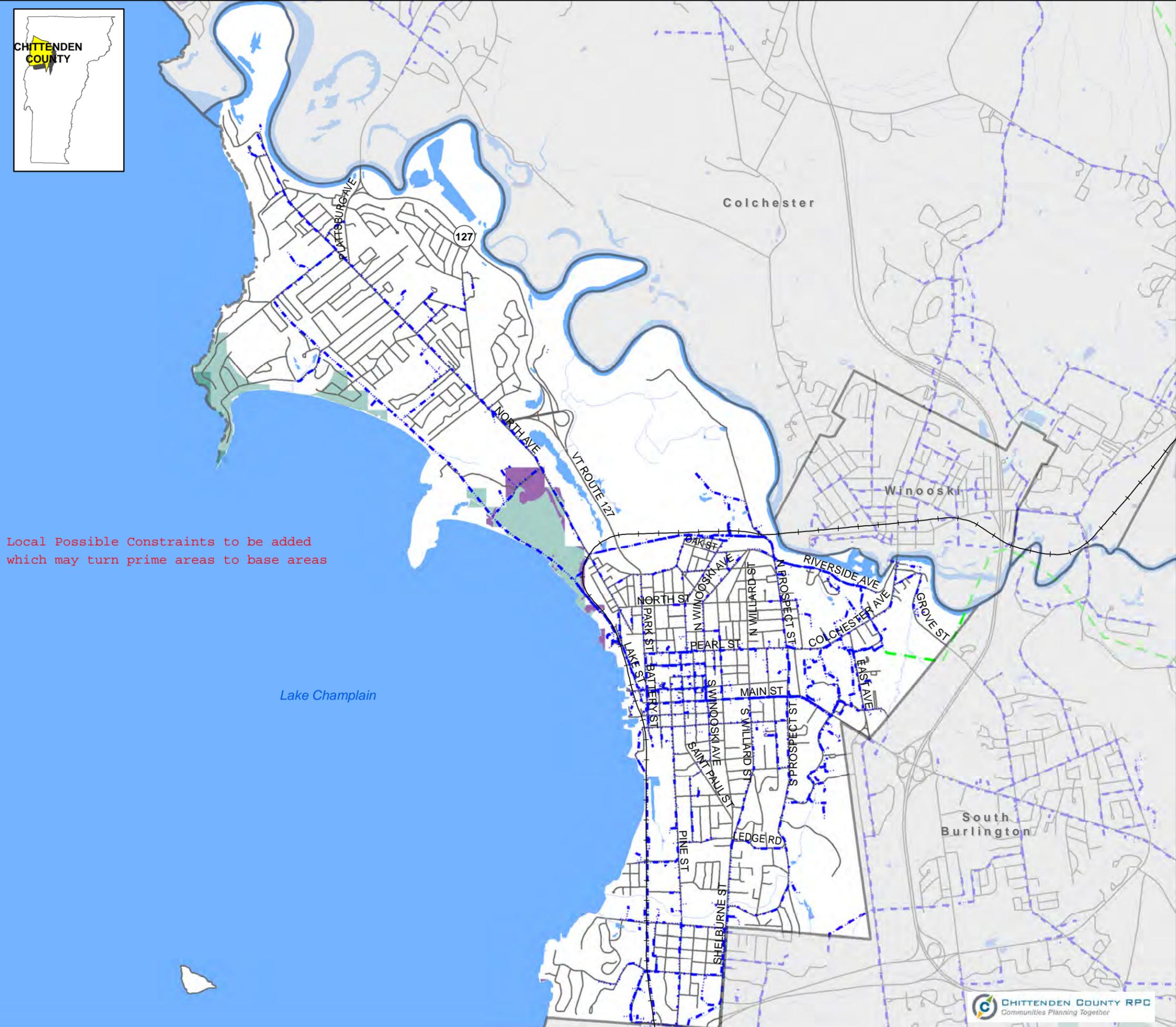
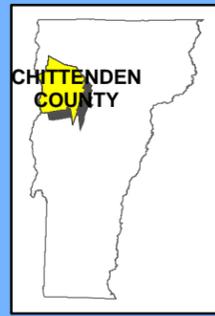
0 0.475 0.95 1.9 Miles



Sources:
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Disclaimer:
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Date: 4/6/2017

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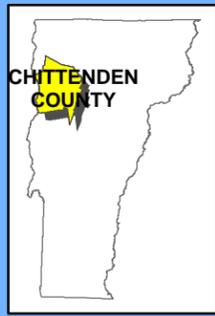


Potential Wind Energy Resource Areas

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*

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

Commercial Generation WindSpdmph

Commercial Generation WindSpdmph

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

- 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

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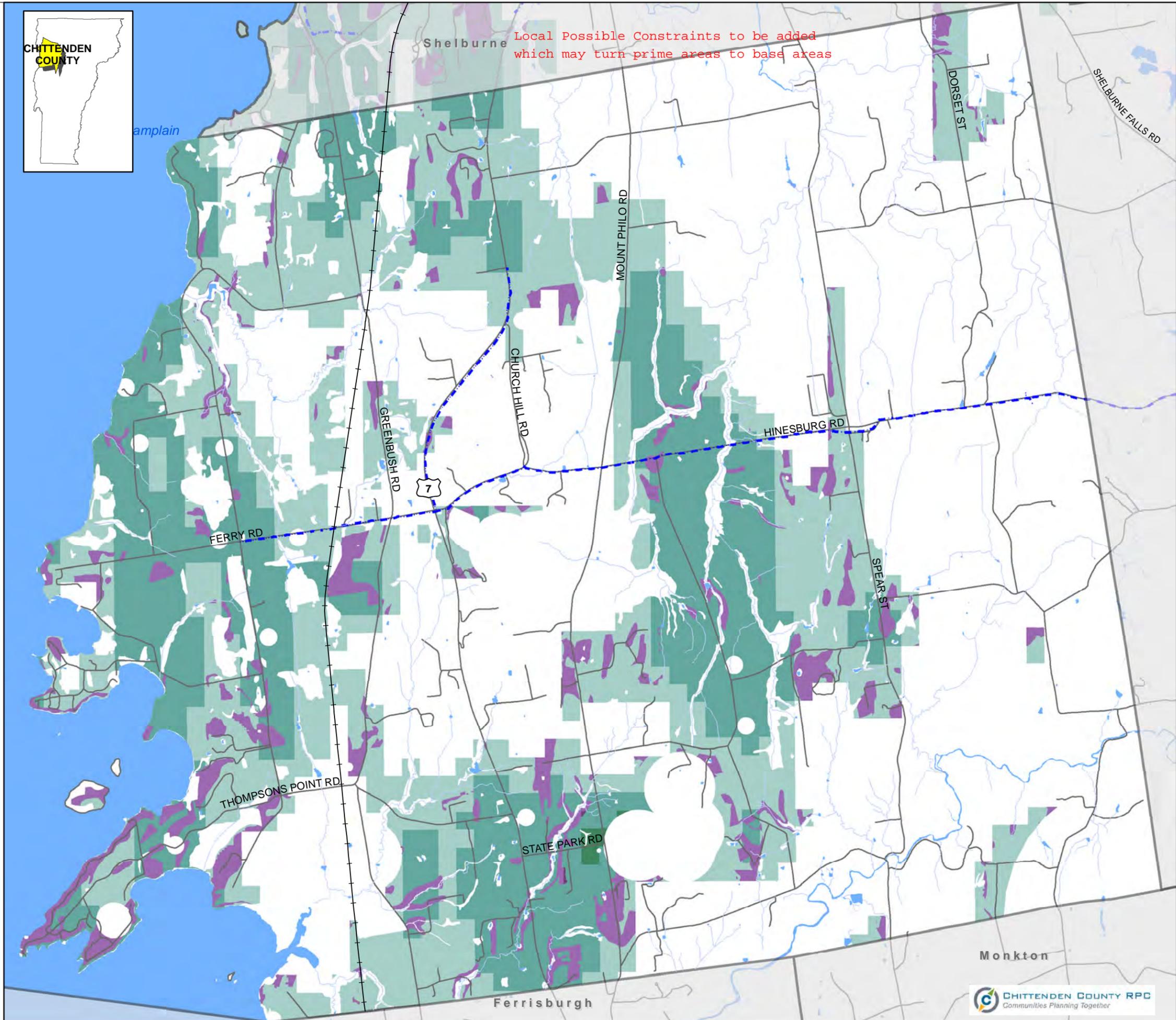
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Sources:
Wind Energy Resource Areas;VCGI,2017
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Potential Wind Energy Resource Areas

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*

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

Commercial Generation WindSpdmph

Commercial Generation WindSpdmph

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

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- 11.46 - 12.82
- 12.83 - 14.32
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- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

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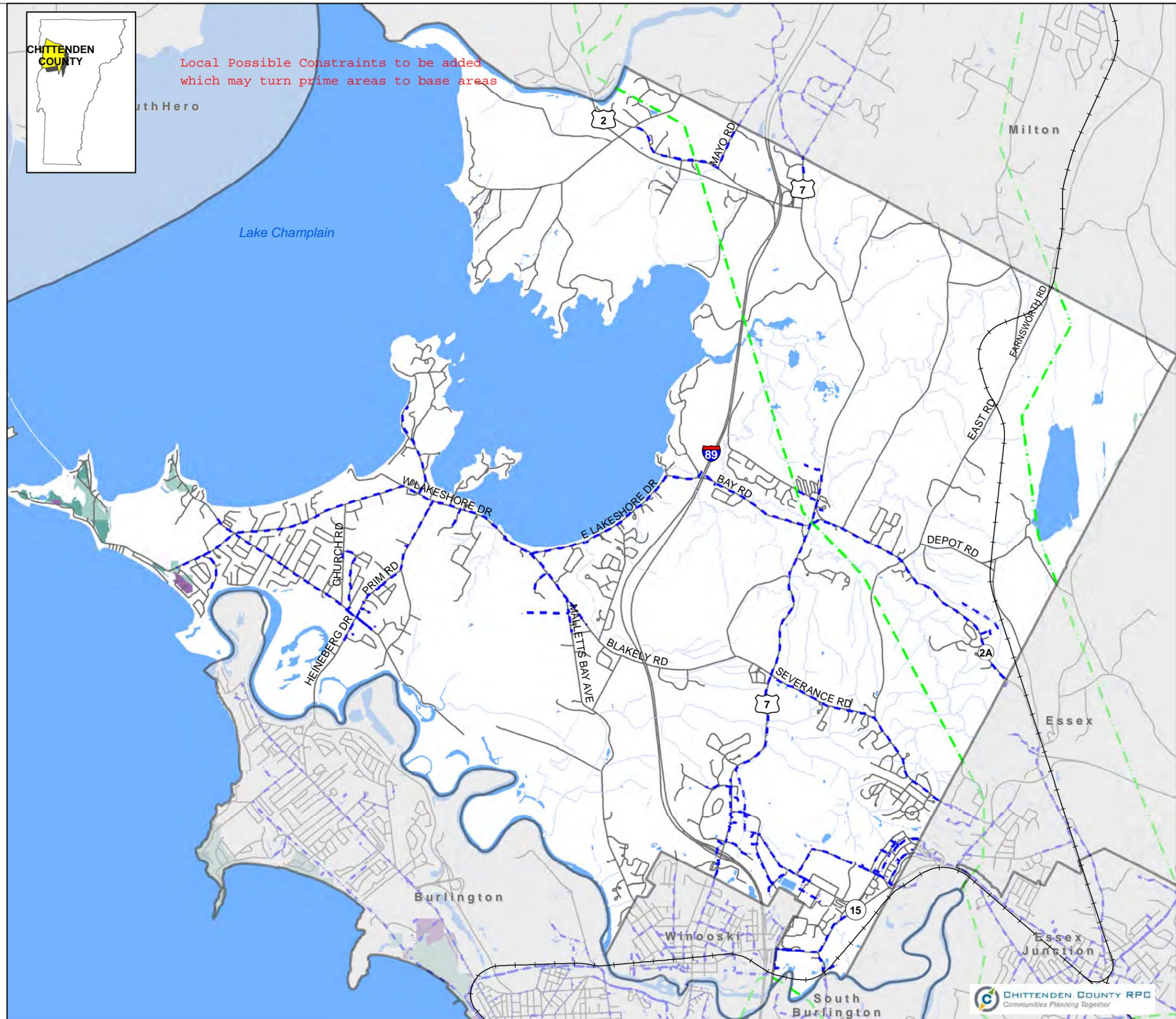
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Sources:
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Potential Wind Energy Resource Areas

Jericho, Vermont
Act 174

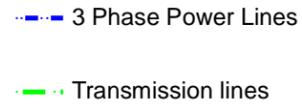
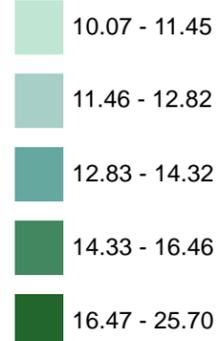
The Energy Development Improvement Act of 2016

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

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

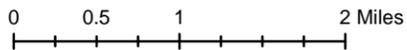
Commercial Generation WindSpdmph

Commercial Generation WindSpdmph



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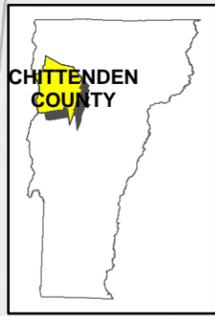
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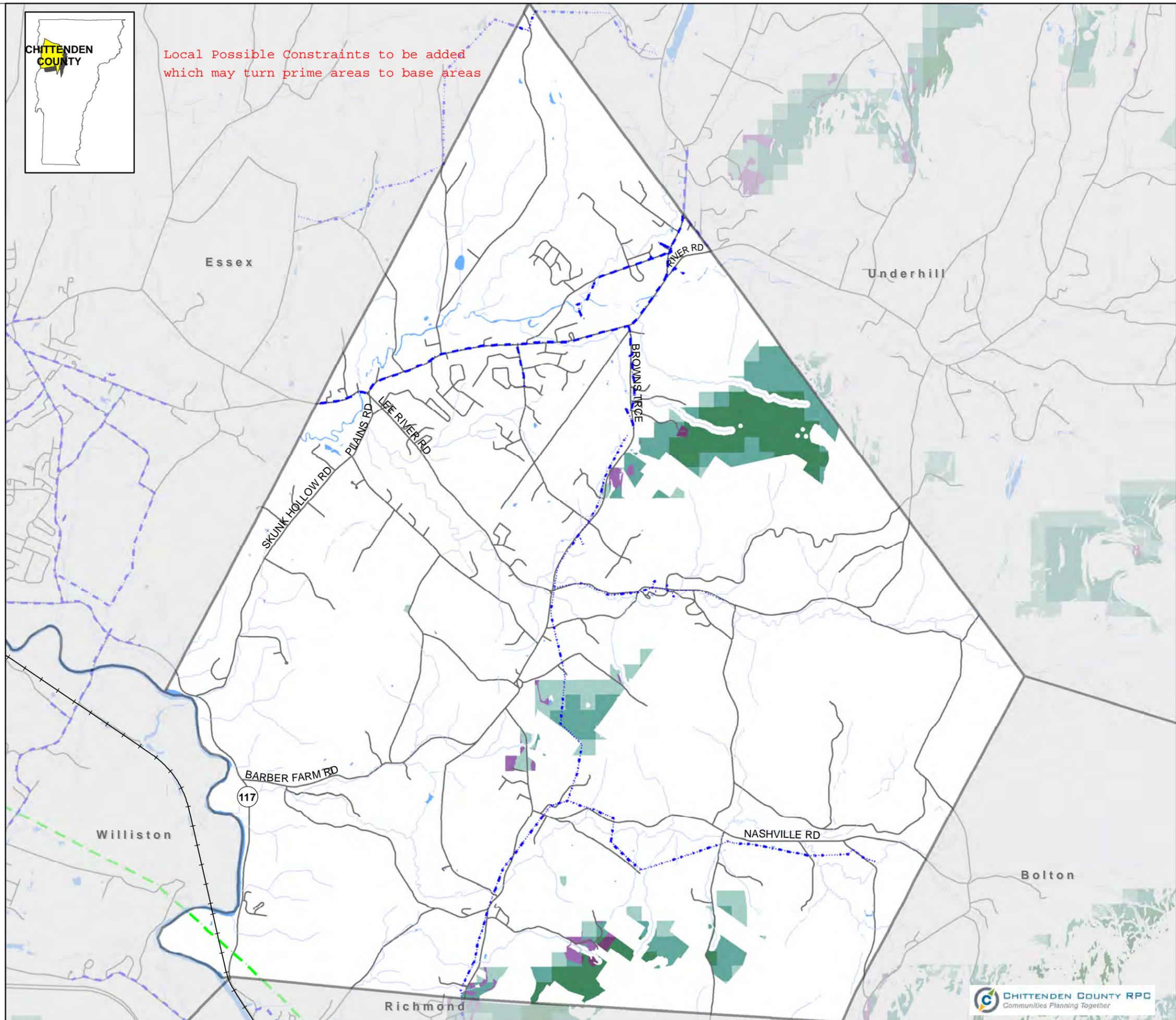
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Local Possible Constraints to be added which may turn prime areas to base areas



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*

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

Commercial Generation WindSpdmph

Commercial Generation WindSpdmph

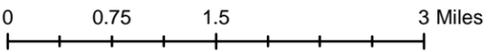
- 10.07 - 10.94
- 10.95 - 12.10
- 12.11 - 13.82
- 13.83 - 16.46
- 16.47 - 25.70

- 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

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Sources:
Wind Energy Resource Areas;VCGI,2017
Disclaimer:

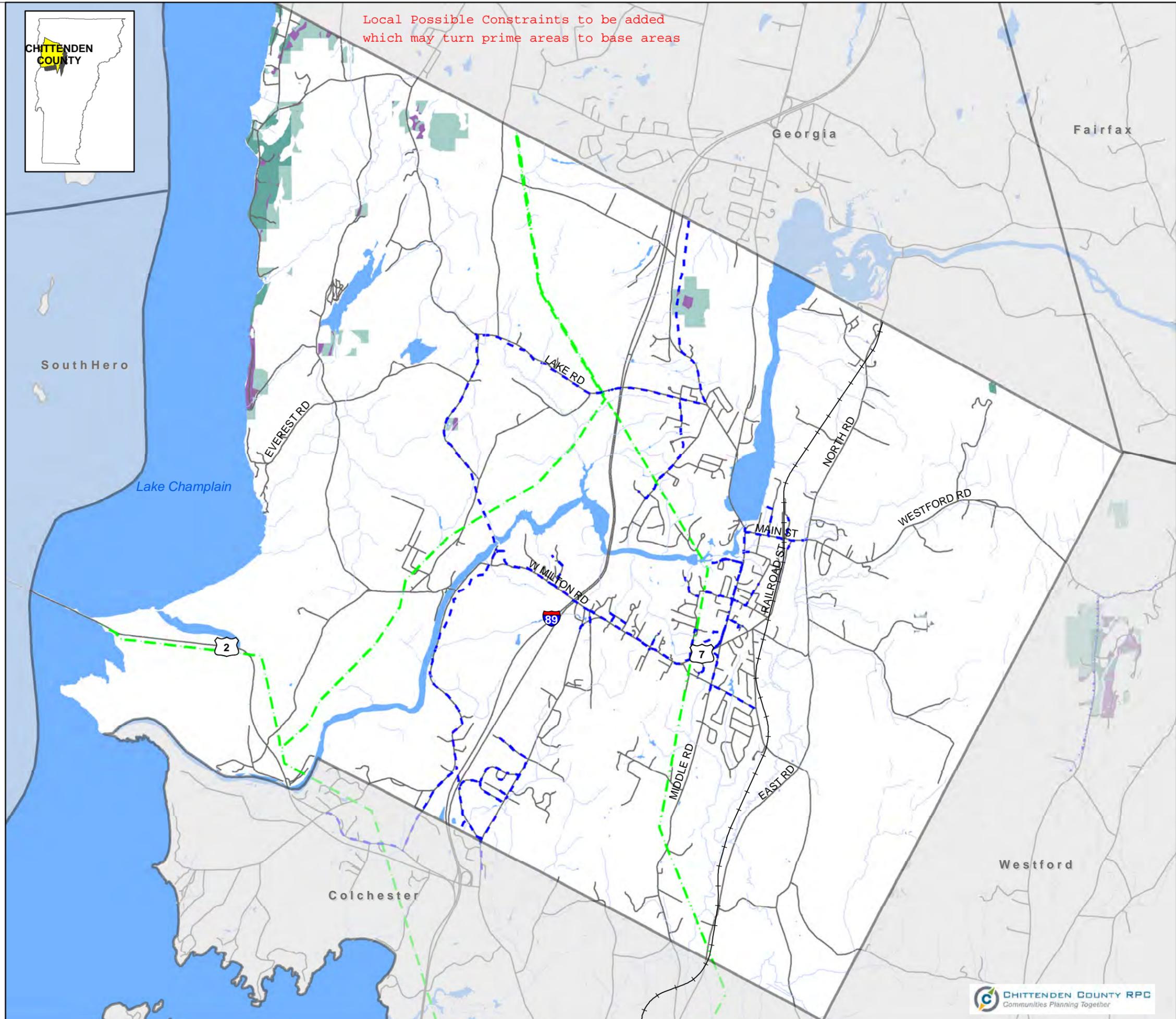
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Local Possible Constraints to be added which may turn prime areas to base areas



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*

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

Commercial Generation WindSpdmph

Commercial Generation WindSpdmph

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

- 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

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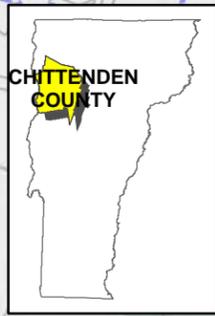
0 0.5 1 2 Miles

Sources:
Wind Energy Resource Areas;VCGI,2017
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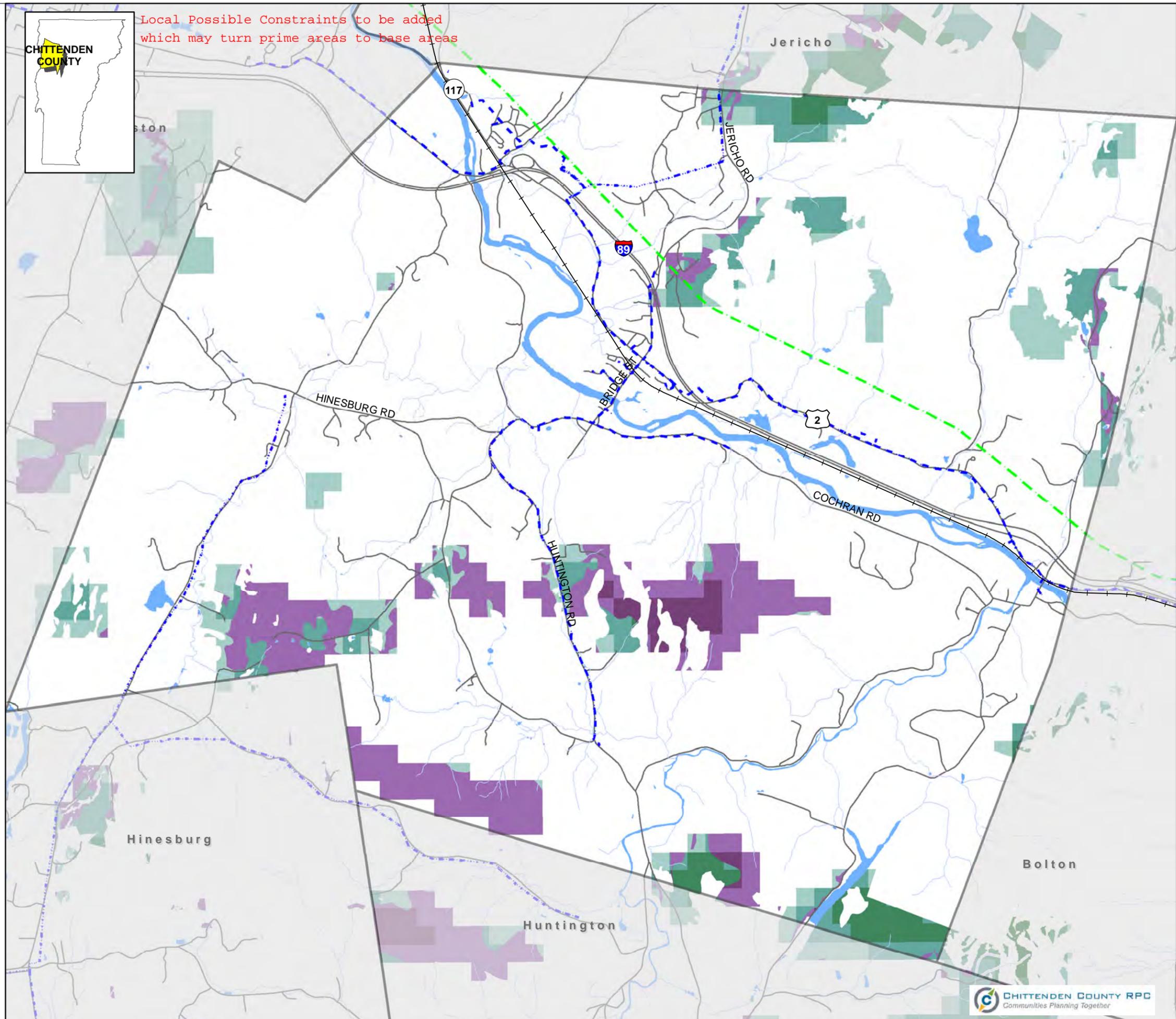
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Local Possible Constraints to be added which may turn prime areas to base areas



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*

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

Commercial Generation WindSpdmph

Commercial Generation WindSpdmph

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

- 10.07 - 11.45
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- 14.33 - 16.46
- 16.47 - 25.70

- 3 Phase Power Lines
- Transmission lines

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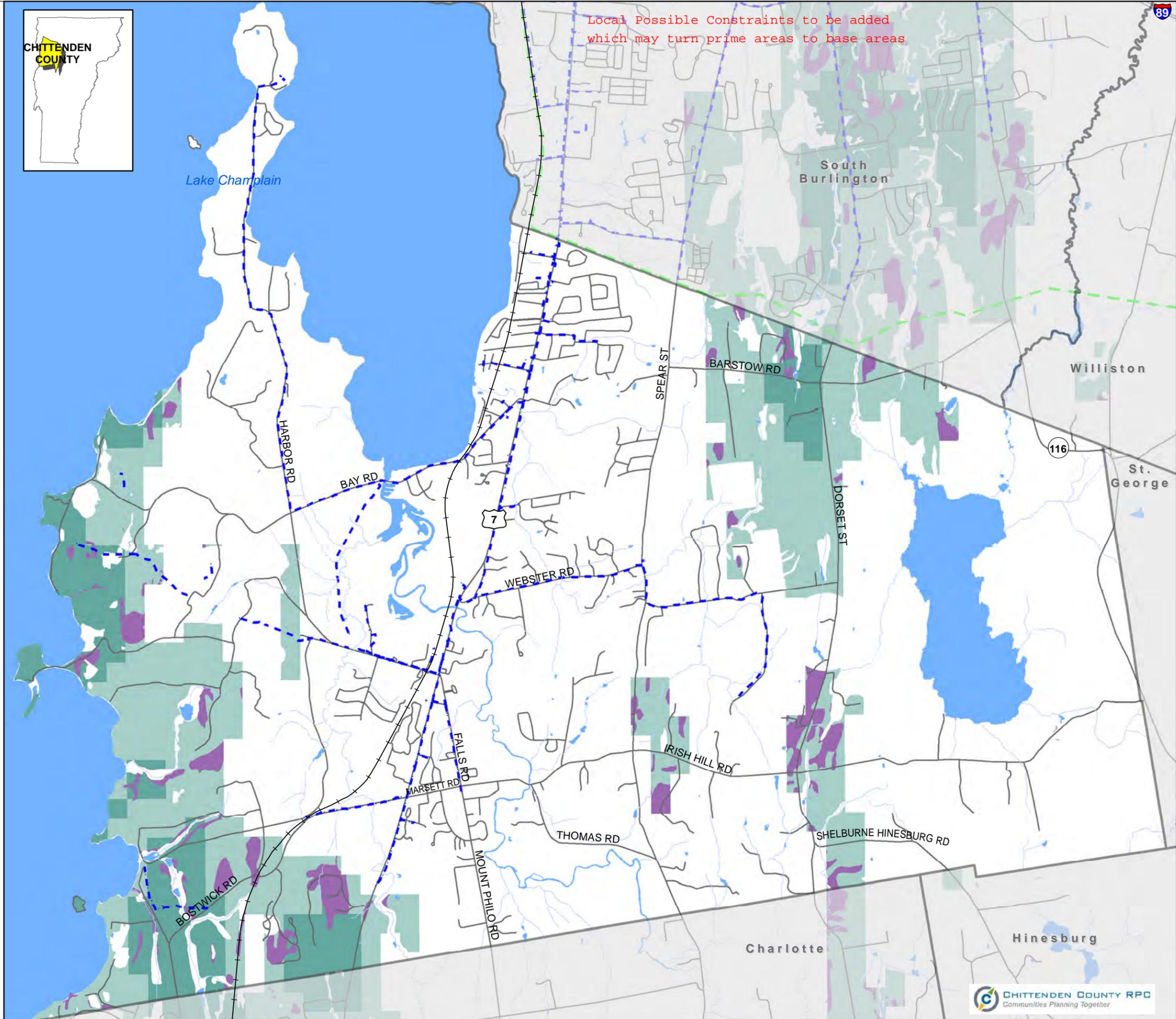
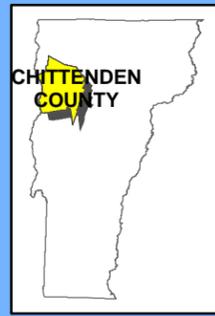
0 0.475 0.95 1.9 Miles



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Potential Wind Energy Resource Areas

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

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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

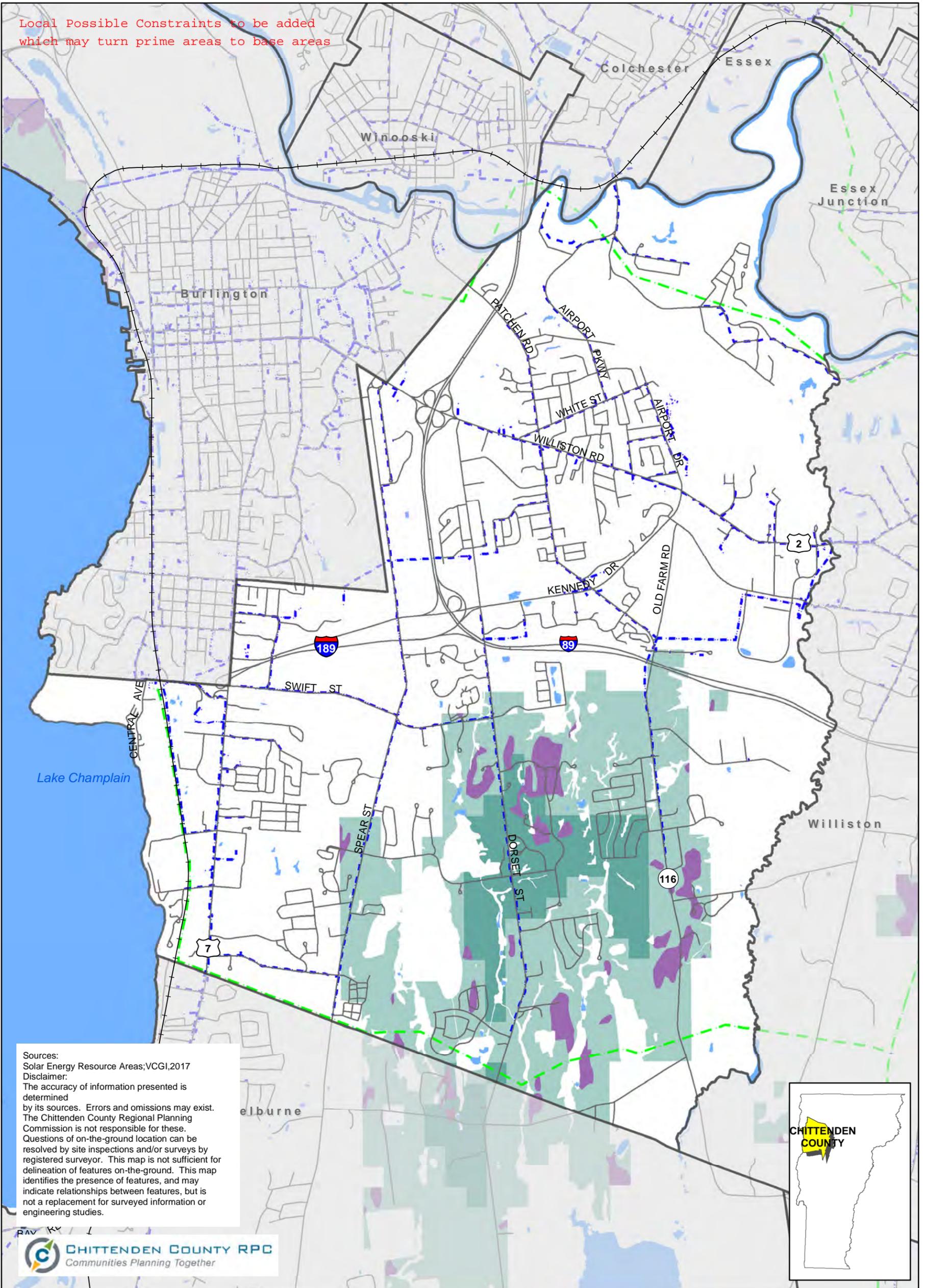
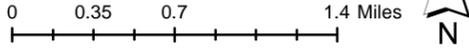
Commercial Generation WindSpdmph

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

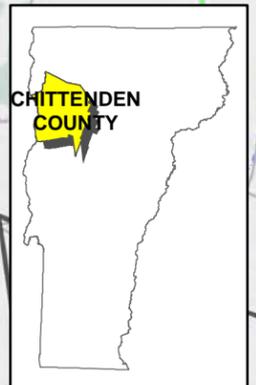
- 3 Phase Power Lines
- Transmission lines

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Sources:
Solar Energy Resource Areas;VCGI,2017
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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).

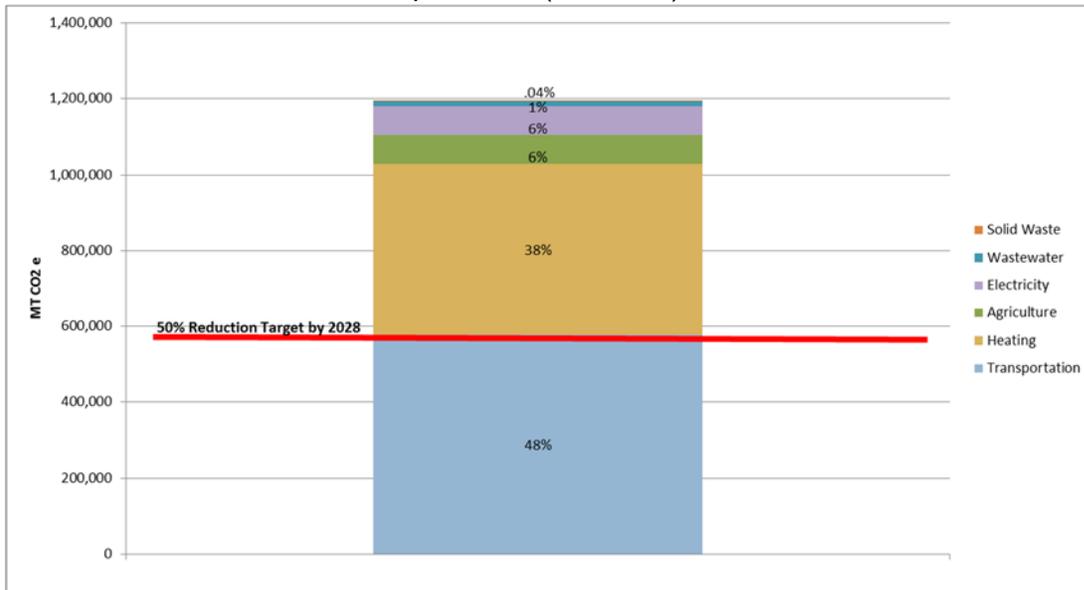


FIGURE 15 - CHITTENDEN COUNTY GREENHOUSE GAS EMISSIONS BY CATEGORY

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 the transportation system from gas and diesel powered vehicles to electric vehicles.

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.
- 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.
- ~~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.
- 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.

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 transportation 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 solar and wind generation sites 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.

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 49 - 2010 NATURAL GAS EFFICIENCY SAVINGS AS A PERCENTAGE OF THE NATURAL GAS CONSUMED

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

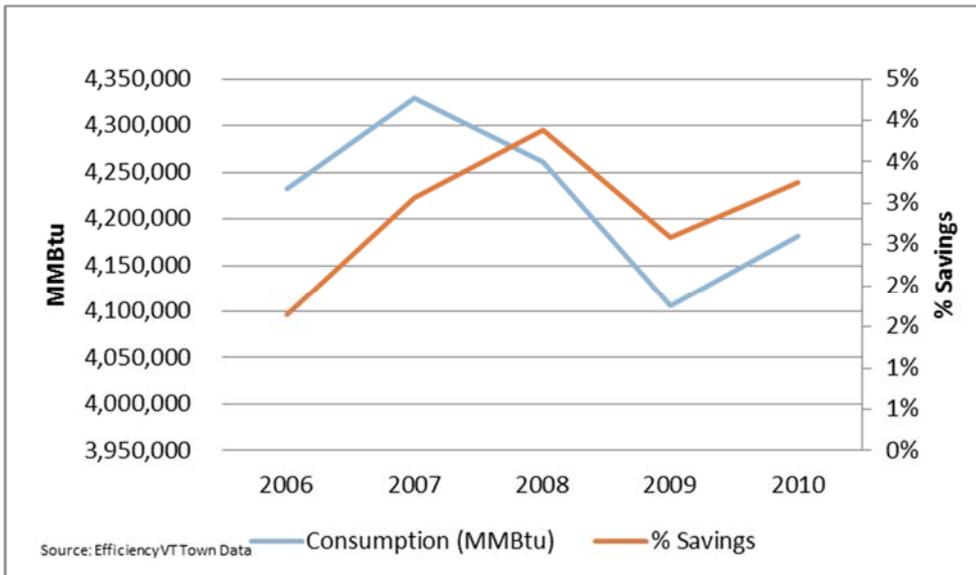


FIGURE 50 - ELECTRICITY EFFICIENCY SAVINGS AS A PERCENT OF TOTAL ELECTRICITY CONSUMED

- **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.
- **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.~~

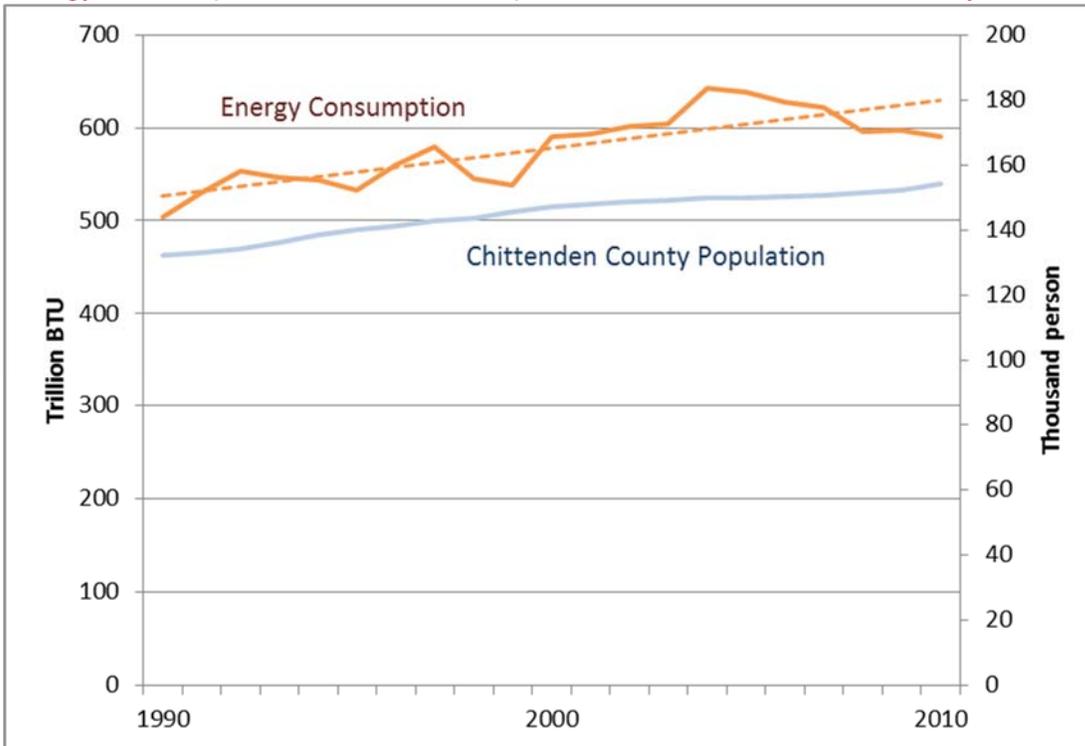
➤ ~~Number and capacity of renewable energy production sites in the County (Source: VT Energy Atlas, Oct. 12, 2011)~~

	# 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~~

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.~~ 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.~~ 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.

Actions

1. Invest in Areas Planned for Growth -

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

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

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

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 Decrease greenhouse gas emissions, to support the State’s goals 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.
~~Encourage individual homes and businesses to include electric and thermal energy efficiency in building and/or retrofitting. Weatherization should be promoted and executed as a first step to reduce overall energy consumption before investing in renewable energy systems. There is a need for focused study to determine solutions for vermiculite removal as it relates to weatherization, in particular low income weatherization. Vermiculite was used as an insulator for decades (1960-1990) and was mined with asbestos thus any home with vermiculite is assumed to be contaminated.~~
- ii. 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.~~
- ~~iii. Work with partners to promote stretch energy codes and assist municipalities wishing to adopt Stretch Energy Codes.~~
- 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)

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

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

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 fee 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)

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

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

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)

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

<u>Mt. Mansfield Scenic Preservation District</u>	<u>Wetland Setbacks (100 ft. from Class I Wetlands (none in town); 50 ft. from Class II Wetlands; and 25 ft. from Class III Wetlands)</u>
<u>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)</u>	
<u>Westford</u>	
<u>Deer Wintering Habitat</u>	<u>Slopes 25% or Greater</u>
<u>Flood Hazard Overlay District</u>	<u>Water Resources Protection Overlay District, River Corridor and Streams Draining less than 2 square miles</u>
<u>Ledge outcrop</u>	

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

<u>Private Wells</u>	<u>Steep Slopes (15-25%)</u>
<u>Westford</u>	
<u>Prime and state-wide significant agriculture soils</u>	

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 if it 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.

DRAFT Scenarios

As part of the MTP development, and especially as we look long term, we will be relying on our transportation model to evaluate different transportation futures and measure their impacts. Our first scenario, or base case, will be run first and will look at what happens as the region grows in future years with only our current transportation system and the additional projects identified in our 4-year TIP. The other three scenarios will include the base case, but will be built on very different and distinct strategies so that any differences can be better evaluated in helping to determine the MTP scenario. It is likely that the MTP scenario will incorporate elements from all the scenarios. The scenarios and their elements are identified in the table below.

Scenarios Evaluated for Years 2015, 2030, & 2050				
Base Build	Technology Intensive	Transportation Demand Management/ Energy Conservation	Capacity Expansion	Hybrid/MTP Scenario
Existing transportation system plus all TIP projects	Base Build, plus... Autonomous and connected vehicle deployment; Intelligent Transportation Systems implementation; MaaS (Mobility as a Service) expansion – car sharing, ride-hailing (Uber, Lyft), bikeshare, flexible transit; communications infrastructure to make these possible	Base Build, plus... Significant fleet conversion to EVs; Mode shifts from SOV to expanded alternatives (transit, walk, bike, rideshare); Telework/work-at-home expansion; Vehicles per household decline; Increase policy of 80% future growth in the areas planned for growth to 90%	Base Build, plus... New local connector roads (from official maps); Other potential priority congestion relief projects as revealed by model analysis; expansion of 89 and interchanges will be considered for this scenario	Base Build; Plus... Projects and Strategies TBD

All scenarios will be evaluated to ensure that they are consistent with our projected long term fiscal constraints. Each scenario is also proposed to use the same level of growth in population, housing, and employment out to 2050.

In the MTP Scenario, we will look closely at the model results from the three scenarios and build a long range MTP project and strategy list that will likely pick aspects from each. This “hybrid” scenario will also be tested, and modified to become the proposed MTP long term recommendations in the fall. The MTP scenario will also loop back with the energy planning work to determine the impact this scenario has on advancing the State’s goal of 90% renewable energy by 2050.

Issues for TAC Consideration and Feedback

We are somewhat limited in the number of scenarios we can test and are looking for TAC guidance. Have we selected the right ones? What might be another and what elements would it include? Are there other components we should include in any of the scenarios we've proposed? Each transportation scenario is using the same land use (numbers of jobs and homes in the same places, given the recently approved 2050 Demographic Forecast, except the TDM/Energy scenario which includes a denser land use pattern.

Evaluation Criteria

In the last MTP we used the following measures to evaluate the scenarios:

1. Future congestion – volume to capacity ratios
2. Daily total vehicle miles of travel (internal/external)
3. Daily transit trips
4. PM peak hour vehicle hours of delay
5. Cost

Others to be considered:

6. Energy usage/greenhouse gas emissions
7. Other?

Color Key:

~~strikethrough~~ Projects proposed for removal (as well as programs that are already removed) so we can instead focus on major infrastructure/utilities.

 Projects proposed for removal because they are on the MTP project list

 Questionable infrastructure projects - keep these or remove?

 Cost estimate or date from old CEDS list that needs to be updated

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe	Comments
Burlington/South Burlington	Airport	Airport Improvements - South End Development Engineering Design - General Aviation/Corporate Taxiway & Apron.	\$9,780,000	2013-2016	Alex, Justin, GBIC - keep
Burlington/South Burlington	Airport	Airport Improvements - South End Development PHASE 6 - Taxiway G Extention, Taxiway B rehabilitation.	\$80,000,000	2014	Alex, Justin, GBIC - keep
Burlington	Airport	Vermont Aviation Center (CEDO)- Working with VTC, Heritage Aviation and the Airport to establish a facility housing the Burlington Aviation Tech Program, Vermont Flight Academy and allowing room for VTC to expand their future aviation program offerings.	\$5,250,000	2019	Alex, GBIC - keep; Justin - check with CEDO, may be a dead project
Burlington, South Burlington	Airport	Airport Improvements - South End Development PHASE 5 - Construction of New Cargo Area.	\$5,000,000	2018-2019	Alex, GBIC - keep. Justin - check with airport
Burlington, South Burlington	Airport	Airport Improvements - South End Development PHASE 7 - General Aviation/Corporate Taxiway & Apron.	\$5,000,000	2020	Alex, GBIC - keep. Justin - check with airport
Burlington	All	General utility upgrades in waterfront district - Water, sewer, lighting, electrical, conduit, telecommunications upgrades to prepare sites for development and enhanced public space.	\$6,500,000	2014	
Burlington	Broadband	Burlington High School Renovations - to meet 21st century learning needs, such as electrical outlets and capacity, wireless infrastructure, smart boards and projectors.	\$6,500,000	2016	
Colchester	Broadband	Community Broadband Wireless Technology Access	\$25,000,000	TBD	Alex - need more info.
Burlington	Brownfield	Redevelopment of 453 Pine (CEDO) - Redevelop Brownfield at 453 Pine St to allow growth in the South End. Possible inclusion of solar array.	\$6-12,000,000	2013	GBIC - keep
South Burlington	City Hall	New City Hall - Expanded facility to meet community needs for municipal services and municipal meeting space.	\$8,900,000	2018	
CVE, Essex Junction	Culture	Champlain Valley Exposition (CVE) music pavilion/grandstand - Renovation & expansion	\$8,000,000	TBD	
Hinesburg	Electric	Extension of 3-phase power - to South Hinesburg along VT116 by Green Mountain Power. Job creation possibly substantial, service extension to existing industrial district with ample build out potential.	TBD		Alex - keep
Chittenden County	Emergency Services	New regional dispatch facility and technology capital costs.	\$1,140,000	2018	
Burlington	Ferry - Waterfront	Redevelopment of King Street Dock Site / Ferry Yard Relocation (CEDO) - Relocation of maintenance yard, and redevelopment of King Street dock site and ferry terminal - mixed use development.	\$60-65,000,000	2014	
Burlington	Food Systems	Intervale Heated Greenhouse (CEDO) - Build greenhouses on Intervale land heated by excess heat from the McNeil Plant.	\$65,000,000	2015	
Burlington	Food Systems	Burlington Food Enterprise Center (CEDO) - Finalize Environmental remediation of the site (CAP) and possibly sell property to Intervale Center for future redevelopment.	TBD	TBD	
CVE, Essex Junction	Food Systems	Champlain Valley Exposition Agricultural Center - create an agricultural center	\$8,000,000	TBD	
Burlington	Heating	District Heating Plan (CEDO) - Plan to recapture "waste heat" from the McNeil power plant and distribute it to the Old North End of Burlington, a densely populated area within the City.	\$21,000,000		
Hinesburg	Heating	Extension of Natural Gas service in Hinesburg up Richmond Road.	TBD	TBD	Alex - keep
St. George	Heating	Vermont Gas service to enable concentrated growth center.	TBD	TBD	
Essex	Highway - Garage	Highway Garage planning, design and construction - Expand existing space to accommodate all vehicles and repair activities.	\$103,000	After 2018	

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe	Comments
Hinesburg	Highway-Garage	planning, design and construction	TBD	2016	
Essex	Historic	Historic Structure repairs, construction – Fort Ethan Allen Water Tower requires funds for preservation of structure.	\$1,000,000	2016 and beyond	
Colchester	Library	Burnham Memorial Library Expansion – The current public community library has outgrown its space and is limited to what it can and should potentially offer to the public. Serving 60,000+ patrons.	\$5,000,000	TBD	
Essex	Library	Library Expansion and Renovation, Planning, design and construction – expand existing space to meet current needs.	\$100,000	2016	
South Burlington	Library	Library and recreation facility serving community.			
University of Vermont Medical Center	Medical Facility	UVM Medical Center Inpatient Facility – Development of a new inpatient facility to serve the population of Northwest Vermont. Design completed, in permit process.	\$187,000,000	2016	
Burlington	Parking	Downtown parking garage on the campus of Edmunds School for the use of School, Champlain College and the community (BSD). Underground facility with turf surface above to extend green area for School. Consider parking revenue as one source of funding.	\$5-10,000,000	2015	
South Burlington	Parking	City Center Parking Decks – Construct 500 spaces to provide necessary infrastructure to facilitate business and residential development.	\$6,300,000	2018	
Westford	Parking	Formalize on-street parking in front of brick meeting house – upgrade, pave and stripe parking.	\$15,000	2020	
Burlington	Parks	Leddy Arena Parking Lot Renovation (Parks) – Existing parking lot deteriorating and in need of major reconstruction.	\$1,500,000	2015	
Burlington	Parks	Boathouse Public Restroom Renovation (Parks) – Significant leaking has deteriorated existing facilities. Need for renovation.	\$15,000	In progress	
Burlington	Parks	Waterfront Electrical Distribution Design (Parks) – Improvements needed to better support waterfront events.	TBD	TBD	
Burlington	Parks	Miller Community Recreation Center Roof Renovation (Parks) – Facility currently experiences serious, extensive leaking throughout building. Repair/replace existing roof; remove chimney.	\$7-10,000,000	2013	
Burlington	Parks	City Hall Park (BCA/Parks) – Imagine City Hall Park master planning process completed; park slated for major reconstruction. Stimulate downtown business growth.	\$575,000	In progress	
Burlington	Parks–Waterfront	Marina Expansion and Long-term Improvements (Parks) – In conjunction with Plan BTV, the Parks Master Plan, and an assesment of the existing Boathouse, opportunities to improve/renovate/replace the Boathouse, increase transient boater slips, and improve land side amenities should be considered.	\$2-3,000,000	2014	
Burlington	Parks–Waterfront	Continue reconstruction of and enhancement of 7.5 mile bike path	\$17,000,000	Ongoing	
Colchester	Recreation	Multi-Generational Community Recreation Center – Land secured; funding needed to build.	\$500,000	In Progress	
Burlington	Redevelopment	Town Center Mall redevelopment – associated public infrastructure and parking	\$200,000,000	2017	
Burlington	Redevelopment	Gateway Block Redevelopment (CEDO) – Redevelopment of the Gateway Block at Main and North Winooski. Properties include Memorial Auditorium, Municipal surface lot, motel and firehouse.	\$10,000,000	2014	
Burlington	Redevelopment	Moran Plant/Waterfront Redevelopment (CEDO) – To redevelop one of the last parcels/vacant buildings on the shores of Lake Champlain in downtown Burlington. The Moran plant has been vacant for decades and the city is now working to develop a private/public partnership to renovate the facility.	\$330,000	2013	
Burlington	Redevelopment	YMCA – Redevelopment of current site.	\$95,000	2013	
South Burlington	Redevelopment	City Center Development – Assure there is an adequate inventory of "develop-able" sites with the necessary infrastructure to promote retention and expansion of existing firms and the recruitment of new startup operations in strategic business clusters in the region and workforce housing.	\$7,200,000	TBD	

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe	Comments
South Burlington	Redevelopment	Market Street – Assure there is an adequate inventory of "develop-able" sites with the necessary infrastructure to promote retention and expansion of existing firms and the recruitment of new-startup operations in strategic business clusters in the region and workforce housing.–	\$12,000,000	2017	
Burlington	Road	North Beach Emergency Access Road Improvement (Parks) – Renovation of roadway to better accommodate emergency vehicle access to North Beach Campground.	\$300,000	TBD	Alex - remove b/c don't seem to have a clear economic development nexus; Justin - remove b/c seems hyper-loc
Burlington	Roadway	Railyard Enterprise District (CEDO) – Develop and build out new street grid including bike/ped/, mixed use, greenspace and connections to the lake and bike path.	\$10-30,000,000	2012	
Burlington	Roadway	Realignment of Birchcliff Pkwy and Sears Lane - Realigning the roads to facilitate better, safer traffic connections.	\$2,500,000	2016	Alex - remove b/c don't seem to have a clear economic development nexus; Justin - keep
Williston	Roadway	Taft Corner Grid Streets - construct local streets in Taft Corner area to improve circulation	\$3,900,000	TBD	Ken - important both locally and regionally, part of WENTS; Justin - keep
Milton	Roadway	Milton Hourglass Intersection – this project invests in an area planned for growth and would address a high accident intersection at US7, Middle and Railroad Street by creating an hourglass shape intersection scoped by the RPC.	\$1,200,000	2017?	
Burlington	Roadway - Complete Streets	Pine Street Corridor Redevelopment (CEDO) - Ongoing work with businesses along Pine St. (Sondik, Noyes, Champ. Choc., Dealer and others). Individual Projects may be funded by private businesses. Complete street improvements would be publicly funded.	\$10,000,000	Ongoing	Alex - keep b/c of clear nexus to E.D.; Justin - too much \$
Westford	Salt Shed	Town Salt & Salted Sand Shed – protect water resources from salt contamination.	\$250,000	TBD	
Winooski	School	Winooski School District Renovations and Upgrades	\$591,000	TBD	
Westford	Sidewalk/Path	Create a path from the common to the school along the Browns River.	\$10,000	In Process	Justin - keep
Westford	Sidewalks	Pedestrian infrastructure - construct sidewalks connecting public facilities (common, library, town office, post office, school, meeting house, etc.)	\$250,000	2017	Justin - keep
Essex Town	Stormwater	Stormwater projects – planning, design and construction to meet MS4 permit and Flow Restoration Plans	\$50,000,000	Ongoing	
South Burlington	Stormwater Improvements	Continue to comply with State Standards. Prepare for the implementation of the MS-4 Permits.	\$2,835,000	TBD	
Burlington	Streetscape	Cherry Street Streetscape - Phase 1 - Creating walkable environment and links between the waterfront and Church Street Marketplace.	\$1,500,000	2015	Alex - remove b/c more maintenance in fully-formed E.D. areas; Justin - keep
Burlington	Streetscape	Cherry Street Streetscape - Phase 2 - Creating links from Battery Street at foot of Cherry Street down to Lake Street.	\$23,000,000	TBD	Alex - remove b/c more maintenance in fully-formed E.D. areas; Justin - maybe, too much \$
Burlington	Streetscape	Side Streets Project (CEDO) - Expand amenities of Church Street Market Place to more of the downtown district. Add connectivity to waterfront from CSMP. Stimulate downtown business growth.	\$28,000,000	2013-25	Alex - remove b/c more maintenance in fully-formed E.D. areas; Justin - maybe, too much \$
Milton	Streetscape	Milton 4D Streetscape Improvements: Defining Downtown from the Diner to the Dam - this project invests in lighting, street trees, sidewalk improvements, and wayfinding/placemaking signage along US Route 7 in the Town Core.	\$2,300,000	2016 & ongoing	Alex - keep b/c of clear nexus to E.D.; Justin - keep
Burlington	Transit	Gilbane Smart Growth Center, Phase III (CEDO) - South End Transit Center - This is an ongoing discussion on how best to utilize the site.	\$13,000,000	Ongoing	Alex - remove b/c too conceptual; Justin - why would we do this since we just built the DT Transit Center?

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe	Comments
University of Vermont	University Facility	UVM STEM Building— Development of a University building designed to meet the specific needs of classes to teach Science, Technology, Engineering, and Mathematics related courses. Under construction.	\$106,000,000	In Progress	
CSWD, Burlington, Hinesburg	Waste Disposal	Relocate Burlington, Colchester and Hinesburg Drop-Off Centers - Build New Drop-Off Centers.	\$1,300,000	2016 & ongoing	Alex - remove; Justin - check with CSWD
CSWD, Burlington, Hinesburg	Waste Disposal	Construct new relocated Burlington and Hinesburg Drop-Off Centers - Construct new Drop-Off Centers.	\$1,000,000	2016 & ongoing	Alex - remove; Justin - check with CSWD
CSWD	Waste Disposal	Design & Construction for HHW Facility Upgrades	\$185,000	2016	Alex - remove; Justin - check with CSWD
CSWD	Waste Disposal	Design, Permitting & Construction of Regional Landfill - New Regional Landfill in Williston, design presently on hold indefinitely.	\$50,400,000	On hold	Alex - remove; Justin - check with CSWD
CSWD	Waste Disposal	Construction of Special Waste Management System - Special Waste & C&D Facility.	\$1,000,000	TBD	Alex - remove; Justin - check with CSWD
Burlington	Wastewater	Burlington North Wastewater Treatment Plant - increased capacity needed to meet TMDL phosphorous reduction requirements (currently at 59% of the proposed TMDL phosphorous load). North Plant began optimizing in August 2015, thus 2015 load for those plants is reduced from previous years.	\$4,300,000	near-term	
Burlington	Wastewater	Burlington Riverside Wastewater Treatment Plant - increased capacity needed to meet TMDL phosphorous reduction requirements (currently at 90% of the proposed TMDL phosphorous load).	\$4,300,000	near-term	
Burlington	Wastewater	Burlington Main Wastewater Treatment Plant - increased capacity needed to meet TMDL phosphorous reduction requirements (currently at 110% of proposed TMDL phosphorous load). Main Plant began implementing additional chemically based phosphorus removal in June 2015.	\$29,400,000	near-term	
Burlington	Wastewater	Data are not available for Burlington Electric's wastewater treatment plant.	TBD	TBD	
Colchester	Wastewater	Recent studies concluded that Goodsell Point and East Lakeshore Drive, realistically, could only be served by a centralized sewer system. With the most logical treatment option being the North Plant in the City of Burlington, the sewer line would extend from Goodsell Point, East Lakeshore Drive, West Lakeshore Drive, Prim Road, Heineberg Drive, and then into Burlington. Capacity will be needed from the North Plant. This project may be affected by any work needed to meet TMDL for the Burlington North Wastewater Treatment Plant. This project was listed on the 2017 Pollution Control Priority and Planning List distributed by the Clean Water State Revolving Fund.	\$1,000,000	TBD	
Colchester	Wastewater	Sewer infrastructure may be needed around Exit 17. The project would utilize the Milton Wastewater Treatment Plant. This project may be affected by any work needed to meet TMDL for the Milton Wastewater Treatment Plant.	\$1,200,000	long-term	
Essex & Essex Junction	Wastewater	Additional capacity needed over the long term to meet TMDL phosphorous reduction requirements. Essex Junction Wastewater Treatment Plant is currently at 25% of its phosphorous load after a \$15 million refurbishment. Over the long term, \$1,200,000 may need to be invested to maintain the TMDL.	\$250,000	TBD	
Essex	Wastewater	Construction of new municipal sewers is needed on Pinecrest Drive, Blair and portions of Pioneer and Ira Allen. Essex may be affected by any work needed to meet TMDL for the Essex Junction Wastewater Treatment Plant.	\$360,000	After 6/2018	
Shelburne	Wastewater	Additional capacity needed in the future to meet the new 2016 TMDL phosphorous reduction goals. Shelburne Wastewater Treatment Plant #1 is currently at 60% of its phosphorous load and Shelburne #2 is at 50%. Improving these plants was listed on the 2017 Pollution Control Priority and Planning List distributed by the Clean Water State Revolving Fund.	TBD	TBD	
South Burlington	Wastewater	Additional wastewater treatment capacity needed in the future to meet the TMDL phosphorous reduction. The Bartlett Bay Wastewater Treatment Plant upgrade is currently at 80% of its phosphorous load.	\$88,000,000	TBD	

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe	Comments
Winooski	Wastewater	Additional capacity needed in the future to meet the TMDL phosphorous reduction. The Winooski Wastewater Treatment Plant is currently at 130% of its phosphorous load. Winooski WWTF headworks and phosphorous removal was listed on the 2017 Pollution Control Priority and Planning List distributed by the Clean Water State Revolving Fund.	\$7,052,897; \$525,000 for Headworks and P removal	near-term	
Hinesburg	Wastewater	The Hinesburg Wastewater Treatment Plant is currently at 71% of its phosphorous load, but future upgrades may be needed. This project was listed on the 2017 Pollution Control Priority and Planning List distributed by the Clean Water State Revolving Fund.	\$3,250,000 - \$7,800,000	long-term	Alex - keep
Richmond	Wastewater	Possible upgrades may be needed to meet the TMDL in the long term	\$1,620,150	long-term	
Williston	Wastewater	Addition to an existing gravity sewer line on Route 2A.	\$140,000	Done?	
Huntington	Wastewater - New	Stone Environmental completed a village wastewater system feasibility study in 2012. There are no current plans to implement this plan.	\$10,461,000	long-term	Alex - remove since no plans to implement & price tag
St. George	Wastewater - New	The town completed a feasibility study on expanding the town center's community septic system, but have no immediate plans to implement it. A developer is currently working with the DRB to complete a development in the town center, which will be served by the community septic system. All costs for septic hookup will be borne by the developer. In 2015, funding for a treatment building and pumping facility improvements was bypassed by the Drinking Water State Revolving Fund Capitalization Grant.	TBD	long-term	Alex - remove since no plans to implement & no price tag
Westford	Wastewater - New	The town is currently investigating a large scale community wastewater system. Study and planning are funded by a Municipal Planning Grant. Cost includes engineering and construction. Land acquisition is expected in 2017. This project was listed on the 2017 Pollution Control Priority and Planning List distributed by the Clean Water State Revolving Fund.	\$2,090,000	2019	
Colchester	Water	Colchester Fire District #3 also requires additional water storage capacity and an expanded distribution system to provide necessary fire storage capacity for the growth center.	\$10,000,000	TBD	
Essex	Water	Additional water system capacity is needed. New waterlines with increased pipe sizes have been studied for Susie Wilson Road to provide adequate fire flows and pressures.	\$200,000	In progress	
Essex	Water	Sandhill Road Waterline Improvements planning, design and construction. Increase waterline with 8 inch pipe to replace section of 3 inch piping and add pressure reducing valves.	\$700,000	After 6/2018	
Williston	Water	In the process of replacing the water storage tank on Tower Lane.	\$1,150,000	2020	
Champlain Water District	Water	Twin Filtered Water Tank & Wet Well - New redundant 1.0 MG filtered water tank and wet well expansion	\$3,800,000	2017 to 2018	Alex - unsure
Champlain Water District	Water	Close-in Transmission Main Cross-tie - 1,300' of new 24" transmission main along Farrell Street to tie HS1 and HS2 together close to the plant	\$500,000	2017 to 2018	Alex - unsure
Champlain Water District	Water	Williston High Service Storage Tank - New 0.6 MG tank in Williston High Service area	\$1,700,000	2017 to 2018	Alex - unsure
Champlain Water District	Water	Interior piping upgrades for existing Well #7 meter vault	\$150,000	2017 to 2018	Alex - unsure
Champlain Water District	Water	Replacement of the existing Milton meter vault	\$175,000	2017 to 2018	Alex - unsure
Champlain Water District	Water	New communications tower at Williston South Tank to replace antenna at Williston East Tank	\$125,000	2017 to 2018	Alex - unsure
Champlain Water District	Water	Exit 16 Double Diamond Transmission Main - Replacement of 1,300' of 16" main as part of VTrans interchange project	\$600,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Filter Effluent Pump System Upgrade - Upgrade of existing filter effluent pumps, piping, and controls	\$300,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Allen Road Meter Vault Improvements - Replacement of the existing Allen Road meter vault	\$100,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Spear Street PRV Replacement - Replacement of the existing Spear Street PRV vault	\$150,000	2018 to 2021	Alex - unsure

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe	Comments
Champlain Water District	Water	Essex West PS and Transmission Main - New pump station and transmission main at Essex West tank for interconnection with the Town of Essex	\$750,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Treatment Plant Emergency Generators - Three new emergency generators for backup power at the plant and raw water pump station	\$1,000,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Second Emergency Backup PRV Feed from HS to MS - New PRV vault to feed water from High Service to Main Service	\$50,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Old Filtered Water Tank Rehabilitation - Rehabilitation of the existing filtered water tank	\$200,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Permanganate Process Upgrade - Upgrade of the permanganate feed system at the plant	\$30,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	North Intake Sample / Chemical Feed Upgrade - Upgrade of the North Intake sample and chemical feed lines	\$200,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Main Service Pump #3 and Discharge Header - Upgrade of Main Service Pump #3 and the Main Service discharge header	\$150,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Parallel Lake Water Transmission Main - Plant End - Completion of a parallel transmission main from the Lake Water Pump Station to the plant	\$250,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Treatment Plant HVAC Improvements - Upgrade of the plant HVAC system	\$150,000	2018 to 2021	Alex - unsure
Champlain Water District	Water	Essex South Tank Flow Control Valve & Passive Mixing System - Installation of a flow control valve and passive mixing system at the Essex South tank	\$80,000	2018 to 2021	Alex - unsure
Hinesburg	Water	Another water source is still needed for projected demand in the village center. The town hopes to build two new wells and a nanofiltration system.	\$1,175,000		Alex - keep
Champlain Water District	Water	A project is being planned to install a new 1 million gallon Filtered Water Tank and wet well expansion project at the CWD treatment facility in South Burlington. The project will provide redundancy of two critical elements at the plant: filtered water storage and filtered water effluent wet well volume. The total project cost includes both the new tank and the wet well expansion. CWD is planning to begin design this summer, conduct a bond vote on November 1, 2016, and construction in 2017. \$2,000,000 of the project will be funded by a Drinking Water State Revolving Fund Capitalization Grant.	\$3,000,000	2017	Alex - unsure
Jericho-Underhill Water District	Water	The system needs a new Maple Ridge pump station and distribution system, as well as other minor improvements, beginning in 2018. This project was determined to be Non Fundable on the 2015 Drinking Water State Revolving Fund Capitalization Grant Revised Comprehensive Project Priority List.	\$250,000	2018	
Huntington	Water - New	Publically regulated water systems serve Huntington Woods/Roberts Park and the BPMS elementary school. Additional capacity may be needed.	\$8,164,000	long-term	
Richmond	Water and Wastewater	System improvement needed. Water and sewer lines on Pleasant Street and Bridge Street need to be improved. \$957,550 loan obtained in 2015 from the Drinking Water State Revolving Fund Capitalization Grant.	\$2,100,000 for system improvement; \$10,170,000 for extension	2017	
Richmond	Water and Wastewater	Scoping study completed in 2015 re: extending water and sewer into the West Main Street area			
Charlotte	Water and Wastewater - New	The town is investigating sites for potential community sewage disposal and drinking water supply in the Village and Commercial districts.	TBD	long-term	
Burlington	Water, wastewater or both?	This is an asset management project. City-wide gravity pipe assessment and rehabilitation is needed.	\$5,020,000	TBD	
Burlington	Waterfront	Breakwater planning and construction - Breakwater to protect harbor from north and south winds	\$4,300,000	2015	
Burlington		Fire station consolidation (CEDO) - This is an ongoing conversation related to Gateway Block-Redevelopment.	TBD	TBD	
Region	Transportation	Reference to the MTP List.			From Charlie

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe	Comments
Richmond	Redevelopment	Creamery Site			From GBIC
Burlington	Redevelopment	Burlington Town Center			From GBIC

Color Key:

- ~~strikethrough~~ Projects proposed for removal (as well as programs that are already removed) so we can instead focus on major infrastructure/utilities.
- Projects proposed for removal because they are on the MTP project list
- Questionable infrastructure projects - keep these or remove?
- Cost estimate or date from old CEDS list that needs to be updated
- New projects