



CHITTENDEN COUNTY RPC

Communities Planning Together

CCRPC Long Range Planning Energy Sub -Committee

AGENDA

*=attached to agenda in the meeting packet

DATE: Tuesday, January 31, 2016

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

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

1. **Welcome + Introductions** (5 minutes)
2. **Review Minutes from the December 20, 2016 meeting*** (5 Minutes)
3. **Review Regional Energy Plan Schedule*** (5 minutes)
4. **Act 174 Technical Assistance Project + VEIC Transportation Energy Project Update** (5 minutes)
5. **Regional Solar + Wind Targets, Solar Town Targets, Draft County Maps*, Update on Local Constraint Mapping Process *** (40 minutes)
6. **Review of draft Regional Energy Plan Strategies*** (55 minutes)
7. **Next Steps** (5 minutes)
By April 2017, CCRPC must have municipal energy analysis and targets set. The draft plan is due to DPS in May 31, 2017.



CHITTENDEN COUNTY RPC

Communities Planning Together

DRAFT Minutes

CCRPC Long Range Planning Energy Sub-Committee

DATE: Tuesday, November 15, 2016

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

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

Attendees Present:

Matt Burke, Charlotte
Jim Donovan, Charlotte
Keith Epstein, South Burlington
Jeff Forward, Richmond
Robin Pierce, Essex Junction
Catherine McMains, Jericho
Sharon Murray, Bolton
Karen Purinton, Colchester
Irene Wrenner, Essex

Staff Present:

Charlie Baker, Executive Director
Marshall Distel, Transportation Planner
Regina Mahony, Planning Program Manager
Melanie Needle, Senior Planner
Emily Nosse-Leirer, Planner

1. Welcome + Introductions* (5 minutes)

No changes were made to the agenda and there was no public comment.

2. Review Minutes from the October 18, 2016 meeting*

The minutes were approved.

3. Brief update on Department of Public Service's Energy Compliance Standards (5 minutes) *

4. Melanie summarized the comments submitted to the Department of Public Service by CCRPC regarding the Energy Planning Standards for Municipal Plans. Most of the committee had seen the comments already. Robin Pierce raised the concern that conserved land is a Level 2, or possible, constraint, rather than a Level 1, or definite, constraint. Melanie replied that determining the specific deed restrictions on individual parcels of conserved land is time prohibitive. Jeff Forward

asked whether the Energy Subcommittee or towns would be identifying preferred locations in addition to identifying constraints, and Melanie clarified that such a process would take place. Robin raised a concern that renewable energy development should be subject to the same state goal that all development is subject to – compact settlements surrounded by rural country side. Regina Mahony suggested that we save that for the local comments part of the agenda as we’ve received some conflicting comments. Catherine McMains made the point that fire departments face a steep learning curve in terms of dealing with rooftop solar during fires since they are always live.

5. Review DRAFT FAQ* (10 minutes)

Staff has developed a FAQ for this project based on the questions that have come up at planning commission meetings. Many of questions still need to be answered, and the committee suggested other questions, such as defining what renewable energy credits are and how they work. RECs are a controversial issue, because many towns wish to retain the RECs for renewable energy development in their town. Karen Purinton suggested that clarifying what happens if a town disagrees with the regional energy plan would be a good FAQ.

6. Presentation on Mapping Energy Resource Areas (20 minutes)

Melanie gave a presentation on the process CCRPC is using to map local energy constraints. The presentation can be found here: http://www.ccrpcvt.org/wp-content/uploads/2016/08/SouthBurlington_RegionalEnergyPlanningPresentation_20160831.pptx Questions arose about how biomass resources will be mapped. This is an ongoing issue. Jim Donovan raised the point that the regional energy plan needs to be clear that the maps may not capture “all” possible solar and wind generation areas and so the word should be removed from all future writing. Sharon Murray asked why ANR lands were not included as a Level 1 constraints and Melanie mentioned that the PSD decided to leave it as a Level 2 constraint because the policy of not allowing renewable development on ANR land is not allowed does not apply to every ANR parcel and the policy could be changed at any time as it is not law.

Sharon suggested that seeing topography would be helpful on the wind maps.

Jim was concerned that wetlands are much larger than shown on the maps, and Melanie and Regina confirmed that the maps and plan will be clear that the maps are a high-level representation of specific policies.

Multiple committee members raised the point that Deer Wintering Area maps are outdated and not an accurate representation of deer habitat.

Jeff Forward brought up whether the regional energy plan should take a position that solar projects that are compatible with farms are encouraged. Robin Pierce disagreed, saying that the Vermont brand would be harmed and that he disagrees with the Agency of Agriculture’s determination that agricultural potential is not harmed by solar development. Matt Burke said that this is all a matter of scale. Sharon asked if there is the potential to be more restrictive for certain farms at the local level while not elevating all agricultural soils to a Level 1 constraint.

Jim brought up the question of whether there is an opportunity to reduce the level of constraints. Specifically, he said that many Class II wetlands are used as (poor quality) ag soils and perhaps it would be better to put solar panels in Class II wetland ag soils and leave prime ag soils alone.

The committee made the point that if it is possible in later iterations of data, it would be useful to see the scale of projects that are appropriate in each area. This would ideally take into account both

constraints and necessary infrastructure like 3-phase power.

Keith Epstein made the point that it might be useful to show more specificity on why certain areas are shown as not being solar or wind resources. Currently, a white area could be either a Level 1 constraint or no good for solar/wind and you can't tell.

7. **Update on municipal planning commission meetings and feedback on local constraints to date***

As of 11/17, staff will have met with 14 municipalities, and conversations are ongoing. Many municipalities have offered additional local constraints, which are provided starting on page 12 of the meeting packet found [here](#).

The committee brought up again the issue of renewables not being appropriate development even in some places where development is encouraged, ex. village centers. Melanie mentioned that she has brought this question up with the DPS and the Bennington RPC. This might be resolved by having maps that show different scales/sizes of energy development that are appropriate in different places. This might be the second step of mapping. Some town comments might also be addressed by this.

The committee also raised concerns about whether the region will be able to meet its goals given all the constraints—they would like to see all these constraints mapped and to see how much energy generation space is left. This is CCRPC staff's next step.

Jeff raised the idea of a potential "bonus" criteria to encourage co-location of renewable energy generation in places where it should be encouraged.

8. **Next Steps** (5 minutes)

Draft Energy Resource Maps are due to DPS on December 15. Melanie will finish mapping all local constraints and bring the updated maps to the next Energy Subcommittee meeting on December 6 at 5pm in the CCRPC Main Conference Room.

Chittenden County Regional Energy Plan

LRPC Energy Sub-Committee Meeting Schedule

This document provides a brief description of each committee meeting scheduled to take place over the next 18 months to guide the development of the Chittenden County Regional Energy Plan.

- ~~September: Kick-off, review schedule, project overview, and discuss staff recommendation for accepting local input on constraints to renewable energy generation~~
- ~~October: LEAP Analysis Presentation, Draft data on current level of energy use (and generation) within the region across all sectors: thermal (building heating and cooling), transportation, and residential and commercial electricity (VEIC Presentation), Discussion on Act 174 standards~~
- ~~November: LEAP Data (if needed), Future transportation Energy Demand, draft Renewable Energy Resource Maps, Reviewed Comments from Municipalities~~
- ~~December: Draft Renewable Energy resource maps (delayed), Act 174 Training, Discussion on draft Strategies Transportation Energy Demand (Delayed)~~
- January- regional solar and wind targets, municipal solar targets, Draft County Renewable Energy resource maps, and discussion on draft Strategies
- February- VEIC Presentation on Transportation Energy Demand, Regional Solar and Wind Targets, Municipal Solar + Wind Targets, Local + Regional Constraints acreage estimates, Draft Renewable Energy resource maps (County + Town), and Discussion on draft Strategies
- March- Draft town level future energy data, narrative sections of the Plan, Targets and Mapping work continues
- April – Draft town level future energy data, VEIC presentation on Energy Scenario Modeling, Narrative sections of the Regional Energy Plan.
- May: Narrative sections of the Regional Energy Plan to prepare for the May 31, 2017 deadline when the first draft of the energy plan will be due.
- June – December 2017: Reviewing comments on the draft plan and producing final draft plan by December. CCRPC considers Regional Energy Plan for approval December 2017. Public Service Department review will begin and continue through February 2018.

Important Dates

May 31, 2017 – First Draft of Regional Energy Plan due to the Department of Public Service

Energy Building Codes: May 10, 2017

This presentation will be relevant to Planners and Zoning Administrators (and any Board/Committee members who are interested). Efficiency Vermont will provide an update on residential and commercial building codes (RBES and CBES). The State of Vermont recently updated RBES and CBES and adopted a stretch code that enables municipalities to adopt enhanced energy standards above code. We will hold this presentation following the CCRPC Planning Advisory Committee (PAC) meeting on **May 10th at either 4pm or 4:30pm (start time will be finalized when the PAC agenda is finalized, and the meeting will run for one hour) at the CCRPC Offices**. Please RSVP [here](#).

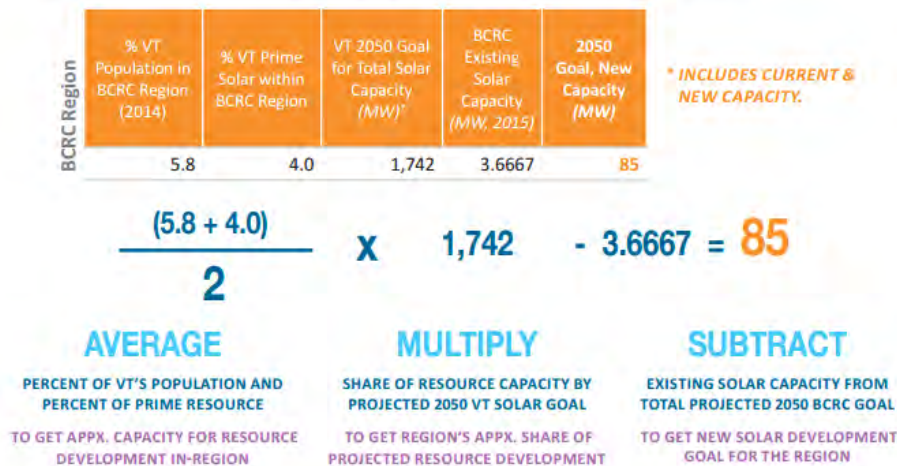
Energy Planning Training: May 11, 2017

This presentation will be relevant to Planning Commissioners and Energy Committee members. The presentation will cover regional and municipal roles in complying with [Act 174](#), the energy planning bill. CCRPC will present a first draft of the Chittenden County Energy Plan as well as municipal level baseline and future demand energy use by fuel source and sector. For additional information on the Chittenden County Regional Energy Plan, click [here](#). **This will be held on Tuesday, May 11th from 6pm to 8pm at the CCRPC Offices**. Please RSVP [here](#).

METHODOLOGY FOR REGIONAL WIND AND SOLAR GOALS

In order to develop more specific goals for in-state wind and solar generation, the regional planning commissions involved in this energy planning project created a simple formula to guide the development of regional electricity generation goals, which is partially based on the energy potential mapping analysis. By averaging a region’s share of the Prime Resource area for each resource with the that region’s share of the state’s population—which served as an easy proxy for that region’s share of electricity consumption—a total percentage of overall capacity for each resource for each region. In other words, the calculation showed the percent of total solar capacity and total wind capacity that each region should hope to achieve. Using that percentage, the LEAP System’s total estimated amount of capacity needed by 2050 was allocated regionally. From there, regional goals were reduced by the amount of capacity that existed in that region for each resource (as of 2015). Facilities that have been developed after these goals were created should be considered “new generation” for the purpose of these plans. The final goals, therefore, reflect the total capacity that the LEAP System suggests is needed by 2050, allocated based on resource availability, demand, and existing capacity. An example of the calculation (for the BCRC region) is shown below in Figure C.1.

FIGURE C.1: REGIONAL RENEWABLE GENERATION GOAL FORMULA—BCRC REGION SOLAR EXAMPLE



Regional Goals

By averaging population and prime resource area, the calculation accounted for the concentrations of population and urban infrastructure that exist in more densely populated regions, suggesting higher capacities for in-region generation, but also factored in the prevalence of areas of resource availability, thereby considering where facilities would most likely be feasible to develop. In the end, no region has

particularly high or low overall goals. The Chittenden region, which has by far the largest population, also has the highest goals, but less populated regions that have more land and more prime resource area (such as the Northeastern Vermont Region and the Windham Region) also have relatively high goals. Because the amount of existing capacity was factored in, some regions with more existing renewable generation facilities were reduced. In the Northeastern Vermont Region (which would have the highest wind generation goal of any region, if existing capacity were not included) the amount of existing wind exceeds the region's suggested goal, so NVDA has effectively accomplished its 2050 goal related to wind development according to this process. Bennington, like Addison and Southern Windsor, does not have particularly high concentrations of either prime resource (due largely to the amount of conserved forest land) or population, and therefore has relatively low goals.

RPCs	SOLAR	Existing Solar MW*	New Solar By 2050 Goal MW		Prime Solar Acres (1 MW per 8 Acres)	WIND	Existing Wind MW*	New Wind By 2050 Goal MW		Prime Wind Acres
			Low Range	High Range				Low Range	High Range	
Addison County RPC	8.07%	33.1	87.9	148.4		7.61%	0.41	19.4	36.7	
Bennington County RC	5.21%	9.9	68.3	107.3		6.95%	0.07	18.0	33.8	
Central Vermont RPC	8.65%	20.9	108.8	173.6		8.56%	0.03	22.2	41.7	
Chittenden County RPC	15.81%	50.4	186.8	305.4	1,494 2,443	15.02%	5.60	33.4	67.6 TBD	TBD
Lamoille County PC	4.61%	5.7	63.5	98.0		3.18%	0.06	8.2	15.4	
Northeastern Vermont	17.54%	16.1	247.0	378.5		14.37%	103.44	-66.1	-33.4	
Northwest RPC	9.94%	15.4	133.7	208.2		9.27%	5.17	18.9	40.0	
Rutland Regional PC	9.00%	28.1	107.0	174.5		10.35%	0.16	26.7	50.3	
Southern Windsor Coui	3.63%	9.6	44.8	72.0		3.44%	0.02	8.9	16.8	
Two Rivers-Ottawuecl	9.00%	24.7	110.3	177.8		9.80%	0.18	25.3	47.6	
Windham RC	8.55%	15.7	112.5	176.6		11.45%	36.06	-6.3	19.8	
Total		230	1,270	2,020			151.19	108.81	336.31	

The above percentages were calculated by taking the average of the:
 1) Percentage of population living in each region; and
 2) Percent of total Prime and Secondary Renewable Resource area (for wind, at 50 M Hub Height) in each region
 *Existing Renewables Generation as of Dec 17, 2016

RPC	SOLAR NO KNOWN CONSTR		PRIME SOLAR	
Addison County Regional Planning Commission	138162	10.34%	13400	5.7%
Bennington County Regional Commission	64196	4.80%	11457	4.9%
Central Vermont Regional Planning Commission	93292	6.98%	19190	8.2%
Chittenden County Regional Planning Commission	81948	6.13%	12578	5.4%
Lamoille County Planning Commission	69825	5.23%	9342	4.0%
Northeastern Vermont Development Association	331406	24.80%	39124	16.8%
Northwest Regional Planning Commission	147596	11.05%	26313	11.3%
Rutland Regional Planning Commission	112782	8.44%	22512	9.6%
Southern Windsor County Regional Planning Commission	43723	3.27%	13757	5.9%
Two Rivers-Ottawuechee Regional Commission	122643	9.18%	28746	12.3%
Windham Regional Commission	130741	9.78%	37012	15.9%
TOTAL	1336313		233432	

			WIND NO KNOWN CONSTR		PRIME WIND	
			HUB HEIGHT		HUB HEIGHT	
			50		50	
RPC						
Addison County Regional Planning Commission			107,307	0	9,817	0
Bennington County Regional Commission			94,232	0	3,605	0
Central Vermont Regional Planning Commission			77,641	0	15,082	0
Chittenden County Regional Planning Commission			51,795	0	7,724	0
Lamoille County Planning Commission			26,940	0	271	0
Northeastern Vermont Development Association			210,356	0	12,335	0
Northwest Regional Planning Commission			110,634	0	14,951	0
Rutland Regional Planning Commission			126,772	0	16,053	0
Southern Windsor County Regional Planning Commission			32,989	0	7,637	0
Two Rivers-Ottawaquechee Regional Commission			122,813	0	15,022	0
Windham Regional Commission			177,536	0	41,928	0
TOTAL			1,139,014		144,425	

METHODOLOGY FOR TOWN SOLAR GOALS

To better understand how the region can achieve its goal of XX MW new solar capacity by 2050, the CCRPC used a methodology to determine new solar capacity targets for each town in its region. The formula used for these calculations is simple and similar to that used for the regional projections just discussed. In order to calculate town-level targets, the CCRPC first considered a town's share of the region's population and averaged that with its allocation of the region's prime solar land. These averaged proportions approximate each town's overall capacity to develop new solar based on existing conditions and demand. The CCRPC formula took each town's capacity and applied it to the future total solar generation needed in the region as determined by the regional target discussed above. Town targets were then reduced by the amount of existing local capacity (as of 2015 - facilities that have been developed after these goals were created should be considered "new generation" for the purpose of these plans). The final goals, therefore, reflect town-level capacity that the LEAP System suggests is needed by 2050, allocated based on resource availability, demand, and existing capacity. A summary of final town-level targets are displayed in Section IV of this plan. An example of the calculation for the town of Bennington is shown below in Figure C.3.

FIGURE C.3 TOWN-LEVEL SOLAR GOAL FORMULA—TOWN OF BENNINGTON EXAMPLE

Bennington Town	2014 Town Population	Total BCRC Regional Population	Town Prime Solar in one mile of 3-phase (Acres)	Total Regional P. Solar in one mile of 3-phase (Acres)	Total Regional Existing Solar (MW)	Total Regional New Solar Generation (MW)	Town Existing Solar Capacity (MW, 2015)	2050 Goal, New Capacity (MW)
	15,633	35,369	1,624	7,776	3.6667	85	0.4254	28.4

$$\frac{(15,633 / 35,369) + (1,624 / 7,776)}{2} \times (3.6667 + 85) - 0.2 = 28.4$$

AVERAGE

PERCENT OF BCRC'S POPULATION AND PERCENT OF PRIME RESOURCE

TO GET TOWN'S APPX. CAPACITY TO DEVELOP AND CONSUME SOLAR ENERGY

MULTIPLY

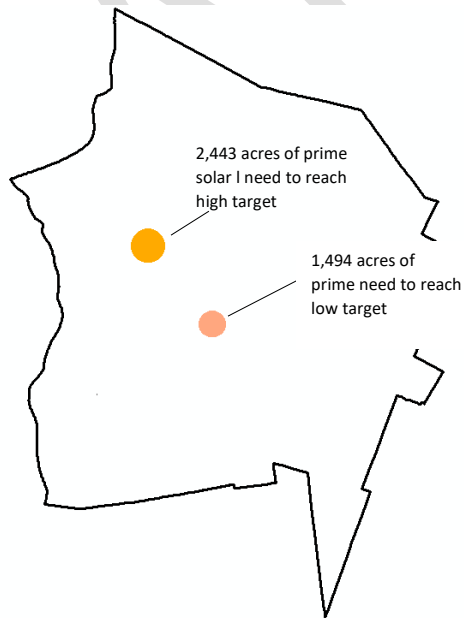
SHARE OF RESOURCE CAPACITY BY PROJECTED 2050 BCRC SOLAR GOAL

TO GET TOWN'S APPX. SHARE OF PROJECTED RESOURCE DEVELOPMENT

SUBTRACT

EXISTING TOWN SOLAR CAPACITY FROM PROJECTED 2050 TOWN GOAL

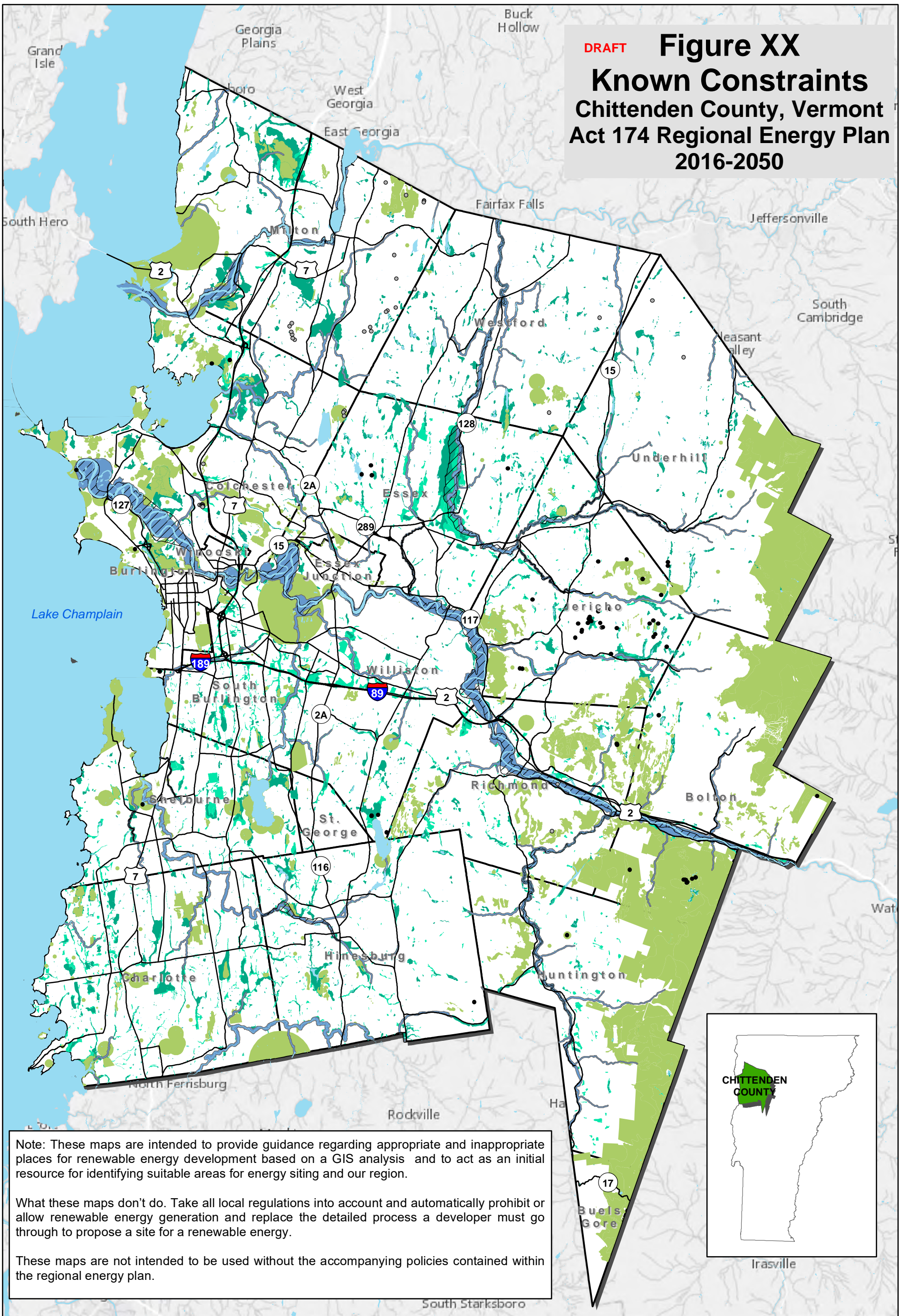
TO GET NEW SOLAR DEVELOPMENT GOAL FOR TOWN



Commented [MN1]: Bennington imposed a regional constraint of limiting the energy resource to within 1 mile of 3-phase power. What is the energy sub-committee's position on this? Other regional constraints?

	Population		Prime Solar													
Town Name (bold means local constraint received)	Population	County Share	Prime Solar (acres)	Prime Solar Resource Share	Average Pop + Resource Share	Low Range Solar MW	High Range Solar MW	Existing Solar MW (TBD)	Low Range Prime Target (Acres)	High Range Prime Target (Acres)	Local Known Constraints on Prime (TBD)	Local Possible Constraints on Prime Solar (TDB)	Preferred Area	Prime Solar Local Constraints	Accommodate Constraints	Staff Comments
Bolton	1,236	1%	197	2%	1%	2.18	4		17	29						
Buels gore	39	0%	9	0%	0%	0.09	0		1	1						
Burlington	42,570	27%	585	5%	16%	29.24	48		234	382						
Charlotte	3,822	2%	1,051	8%	5%	10.05	16		80	131						
Colchester	17,293	11%	836	7%	9%	16.32	27		131	213	0	12		824	yes	need to add slope, proposed trans
Essex Junction	9,709	6%	168	1%	4%	6.93	11		55	91						
Essex Town	10,710	7%	1,196	10%	8%	15.15	25		121	198			13.23			
Hinesburg	4,472	3%	1,539	12%	8%	14.05	23		112	184						
Huntington	1,875	1%	411	3%	2%	4.15	7		33	54						
Jericho	5,043	3%	918	7%	5%	9.77	16		78	128						
Milton	10,610	7%	961	8%	7%	13.34	22		107	175						
Richmond	4,115	3%	556	4%	4%	6.54	11		52	86						
St. George	764	0%	63	1%	0%	0.91	1		7	12						
Shelburne	7,566	5%	583	5%	5%	8.75	14		70	114						
South Burlington	18,536	12%	339	3%	7%	13.36	22		107	175						
Underhill	3,061	2%	924	7%	5%	8.65	14		69	113						
Westford	2,013	1%	1,069	9%	5%	9.12	15		73	119						
Williston	9,054	6%	1,011	8%	7%	12.81	21		102	167						
Winooski	7,223	5%	157	1%	3%	5.39	9		43	70						
Total	159,711		12,573	100%	100%	186.81	305		1,494	2,443						
Totals provided by DPS/BCRPC			12,578*			186.8	305.4		1,494	2,443						
*acreage lost due to GIS clipping anlysis																
Population-American Community Survey (2011-2015)																

DRAFT **Figure XX**
Known Constraints
Chittenden County, Vermont
Act 174 Regional Energy Plan
2016-2050



Note: These maps are intended to provide guidance regarding appropriate and inappropriate places for renewable energy development based on a GIS analysis and to act as an initial resource for identifying suitable areas for energy siting and our region.

What these maps don't do. Take all local regulations into account and automatically prohibit or allow renewable energy generation and replace the detailed process a developer must go through to propose a site for a renewable energy.

These maps are not intended to be used without the accompanying policies contained within the regional energy plan.

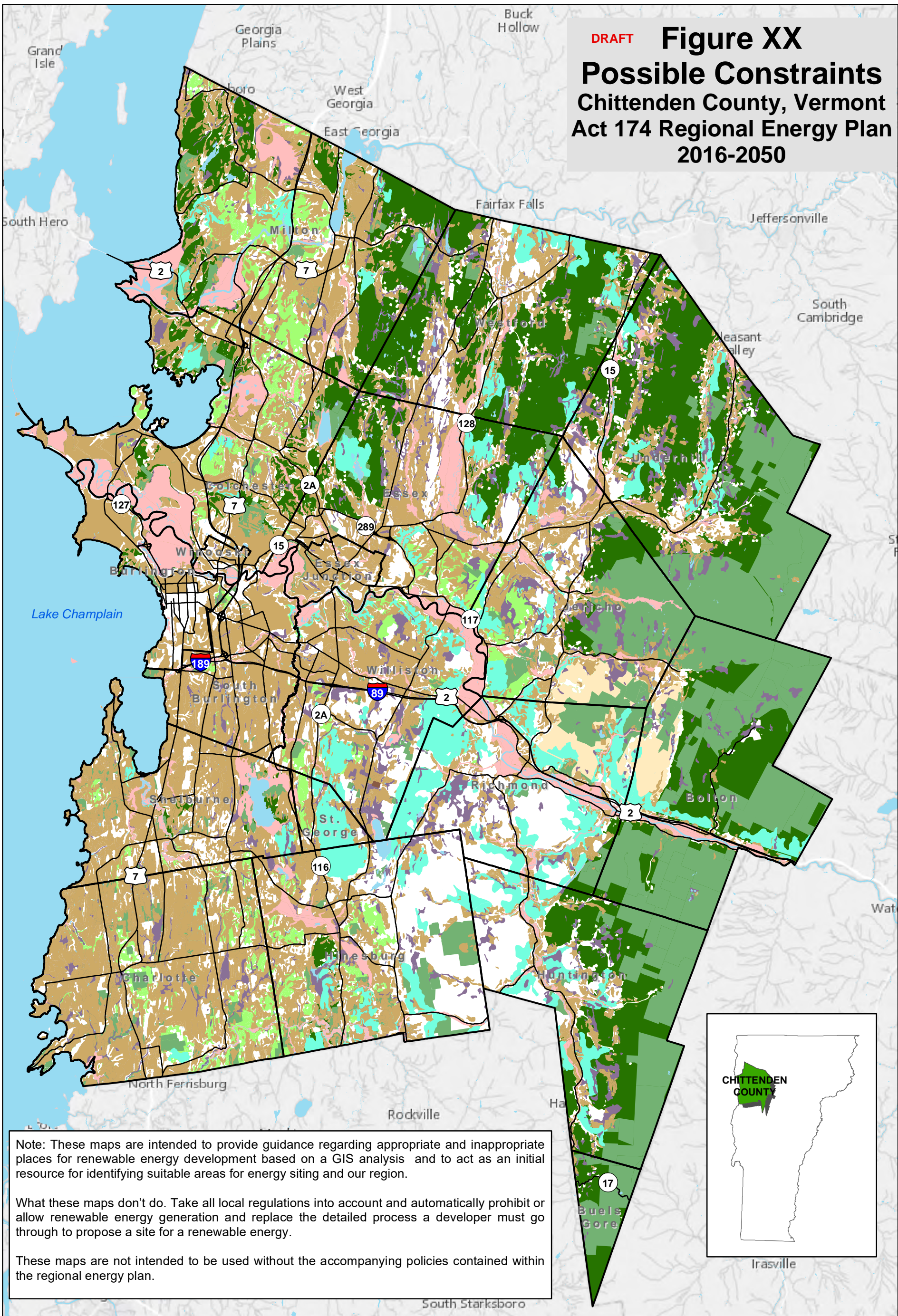
- Vernal Pools (Confirmed)
- Vernal Pools (Unconfirmed)
- Surface Waters
- FEMA Floodway
- DEC River Corridors
- State-significant Natural Communities & RTE Species
- Class 1 and 2 Wetlands
- VSWI_June_4_2010_Wetlands_Advisory_Layer_CC

DATA SOURCES:
Vernal Pools, confirmed and unconfirmed - VT Fish and Wildlife
DEC River Corridors - DEC WSMD Rivers Program
FEMA Floodway included in Zones AE - FEMA Map Service Center
State-significant Natural Communities and Rare, Threatened, and Endangered Species - VT Fish and Wildlife, Natural Heritage Inventory
Class 1 & 2 Wetlands (VSWI) and Advisory Layers - VT WSMD

0 2.5 5 10 Miles

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DRAFT **Figure XX**
Possible Constraints
Chittenden County, Vermont
Act 174 Regional Energy Plan
2016-2050



Surface Waters	Hydric Soils
FEMA Special Flood Hazard Areas	Deer Wintering Areas
Agricultural Soils	Protected Lands
ACT 250 Ag Mitigation Parcel	Priority Forest Blocks (Connectivity)
	Priority Forest Blocks (Interior)
	Priority Forest Blocks (Physical Landscape Diversity)

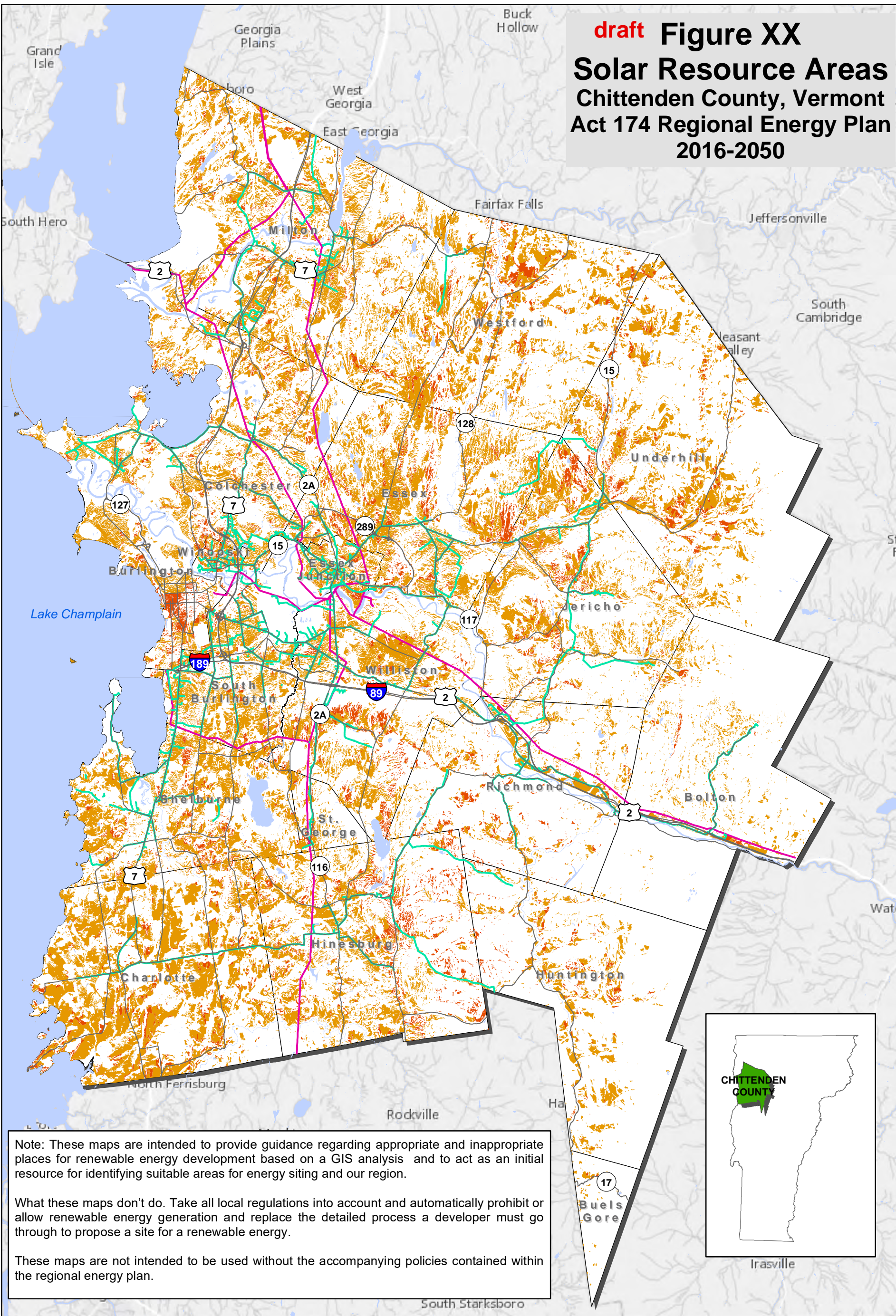
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DATA SOURCES:
Agricultural Soils include local, prime and statewide classifications NRCS
Special Flood Hazard Areas Zones A and AE - FEMA Map Service Center
Protected Lands (State fee and private conservation lands) - VCGI
Act 250 Ag Mitigation Parcels as of 2006 - VT Dept. of Ag
Deer Wintering Areas - VT Fish and Wildlife
Vermont Conservation Design include the following Highest Priority
Forest Blocks: Connectivity, Interior, and Physical Landscape Diversity) - VT
Fish and Wildlife
Hydric Soils - NRCS





0 2.5 5 10 Miles

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draft Figure XX
Solar Resource Areas
Chittenden County, Vermont
Act 174 Regional Energy Plan
2016-2050



Type

-  Prime Solar/No Constraint
-  Base Solar/Possible Constraint
-  3 Phase Power Lines
-  Transmission lines

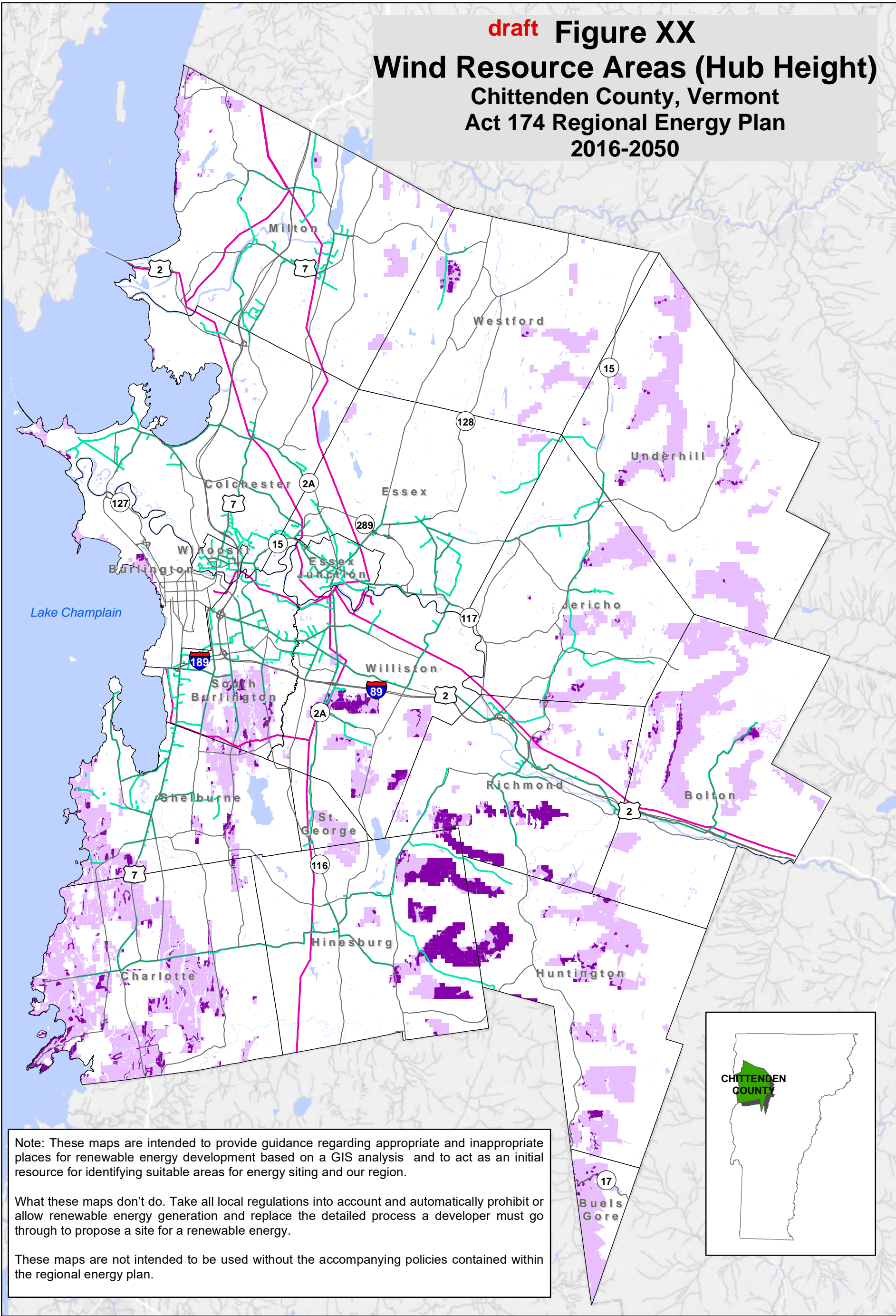
DATA SOURCES:
Prime and Base Solar Resource Areas - VCGI
Prime and Base Wind Resource Areas - VCGI
Known and Possible Constraints on Renewable Energy Generation Areas - VCGI
3 Phase Power Lines - VCGI
VELCO Transmission Lines - VCGI

0 2.5 5 10 Miles



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draft Figure XX
Wind Resource Areas (Hub Height)
Chittenden County, Vermont
Act 174 Regional Energy Plan
2016-2050



Note: These maps are intended to provide guidance regarding appropriate and inappropriate places for renewable energy development based on a GIS analysis and to act as an initial resource for identifying suitable areas for energy siting and our region.

What these maps don't do. Take all local regulations into account and automatically prohibit or allow renewable energy generation and replace the detailed process a developer must go through to propose a site for a renewable energy.

These maps are not intended to be used without the accompanying policies contained within the regional energy plan.

3 Phase Power Lines
Transmission lines

Large + Small Commercial Wind Resource Areas

Prime Wind Resource Areas 50m + 70m Hub Heights
Based Wind Resource Areas 50m + 70m Hub Heights

DATA SOURCES:
Prime and Base Solar Resource Areas - VCGI
Prime and Base Wind Resource Areas - VCGI
Known and Possible Constraints on Renewable Energy Generation Areas - VCGI
3 Phase Power Lines - VCGI
VELCO Transmission Lines - VCGI








0 2.5 5 10 Miles





Figure XX
Solar Resource Areas
Colchester, Vermont
Act 174 Regional Energy Plan
2016-2050

Need to add Slopes Over 20 Percent
+ Proposed Trans. Infrastructure
as Possible Constraints

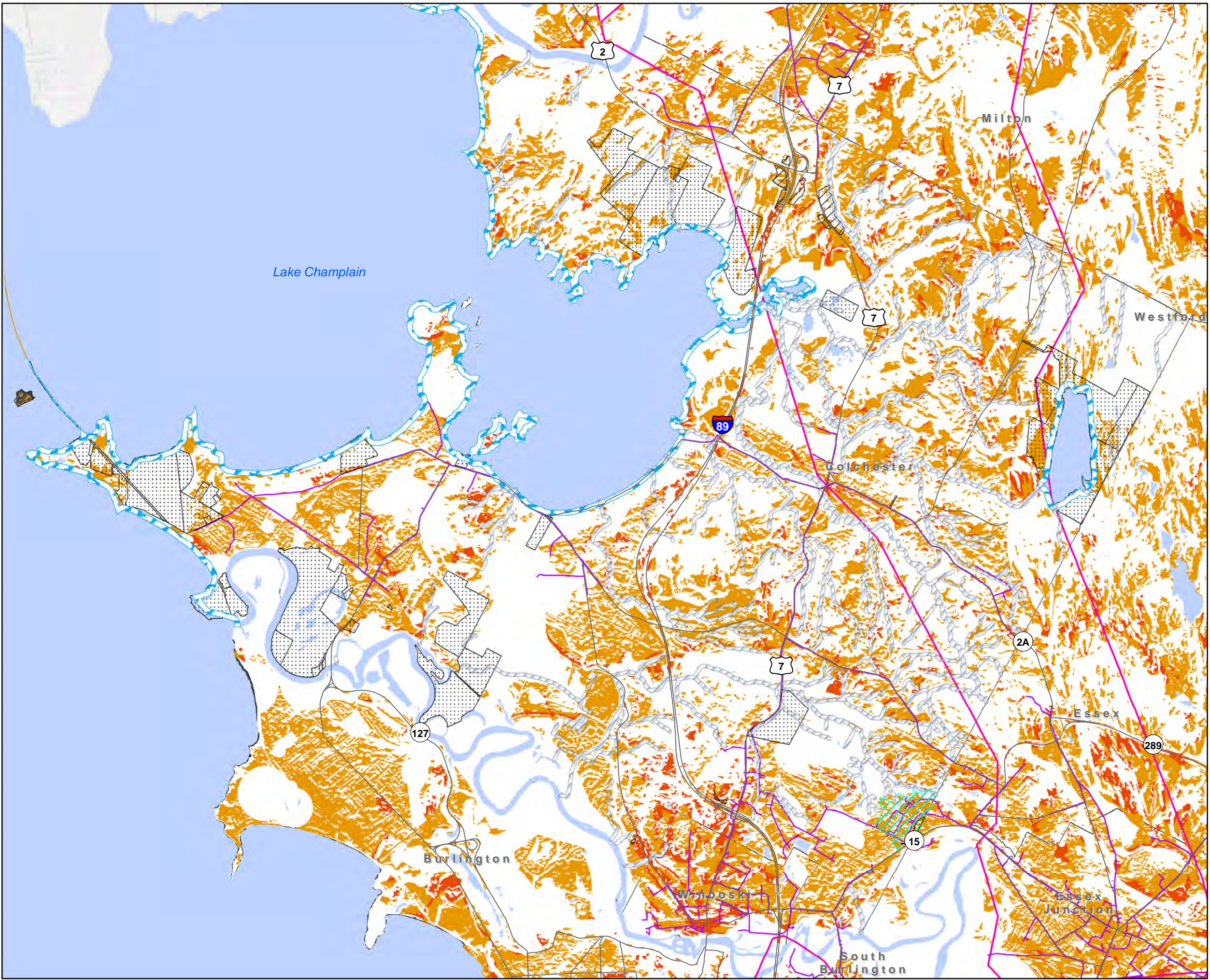
Possible Local Constraints

-  Water Protection Overlay District
-  Shoreland Overlay District
-  Town Park
-  Historic Overlay District
-  GD4 Openspace Overlay District
-  3 Phase Power Lines
-  Transmission lines

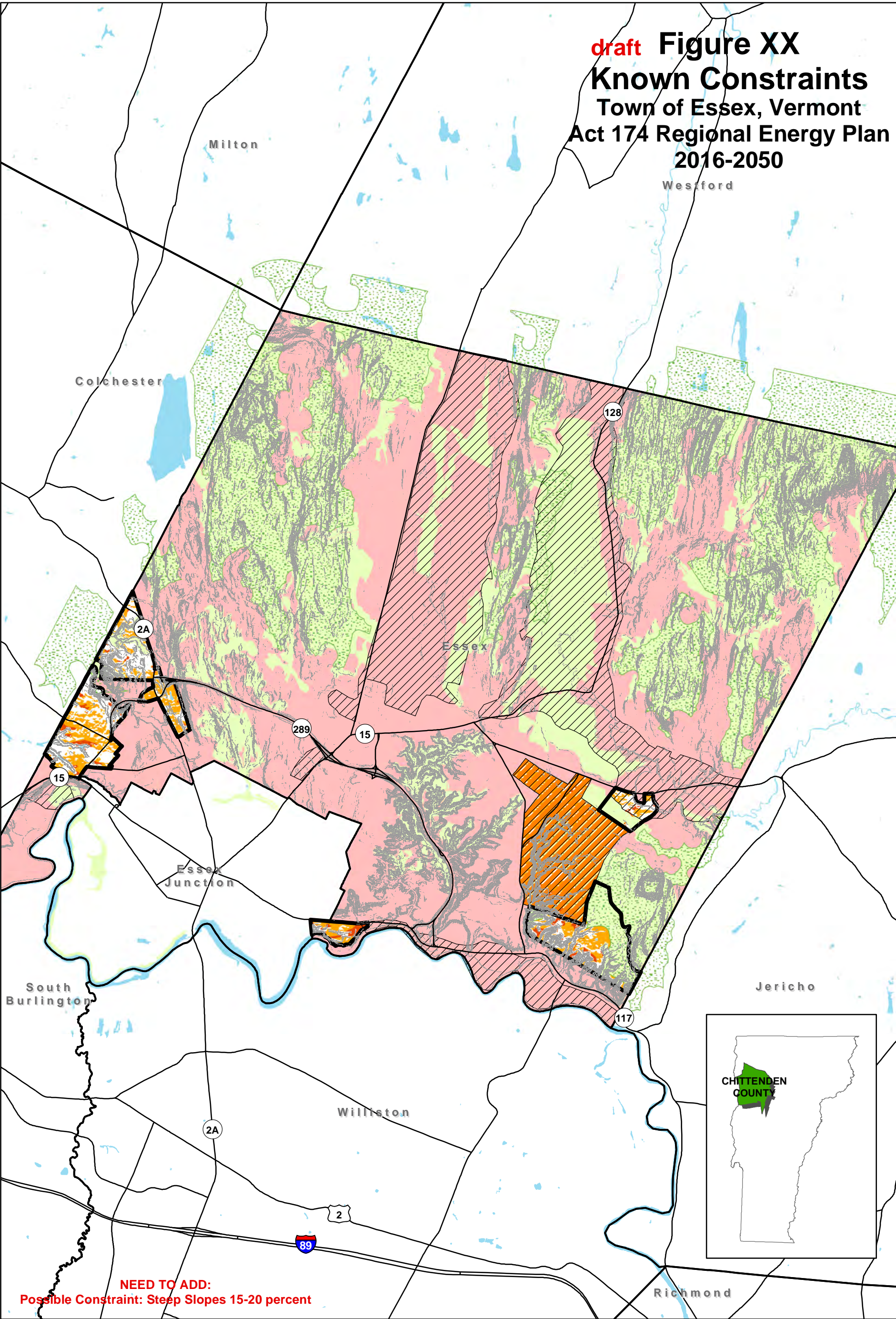
Solar Energy Resource Areas

- Type**
-  Prime Solar/No Constraint
 -  Base Solar/Possible Constraint

DATA SOURCES:
Prime and Base Solar Resource Areas - VCGI
Prime and Base Wind Resource Areas - VCGI
Known and Possible Constraints on Renewable Energy
Generation Areas - VCGI
3 Phase Power Lines - VCGI
VELCO Transmission Lines - VCGI



draft Figure XX
Known Constraints
Town of Essex, Vermont
Act 174 Regional Energy Plan
2016-2050



- | | |
|--|---|
| Slope20_orHigher_Dsslv | Possible Constraint: Contiguous Habitat |
| Locally Preferred Area For Renewable Generation | Known Constraint: Outside of Commercial and Industrial Zoning Districts |
| Possible Constraint: Resource Protection District Industrial | Solar_Essex |
| Known Constraint: Scenic Resource Overlay | Constraint |
| Known Constraint: Scenic Resource Overlay | No Constraint |
| Possible Constraint: Core Habitat | Possible Constraint |

DATA SOURCES:
Vernal Pools, confirmed and unconfirmed - VT Fish and Wildlife
DEC River Corridors - DEC WSMD Rivers Program
FEMA Floodway included in Zones AE - FEMA Map Service Center
State-significant Natural Communities and Rare, Threatened, and Endangered Species - VT Fish and Wildlife, Natural Heritage Inventory
Class 1 & 2 Wetlands (VSWI) and Advisory Layers - VT WSMD



Regional Energy Plan Draft Strategies

This document includes the existing Climate Action Guide strategies prioritized by subcommittee members for inclusion in this plan, existing ECOS strategies that are relevant to the requirements of this plan, and new suggestions from subcommittee members.

6. Does your plan's energy element contain a statement of policy on the conservation and efficient use of energy?

A. Does the plan encourage conservation by individuals and organizations?

Prioritized Climate Action Guide Strategies

1. Municipal Action 2.9: Promote energy efficiency programs and emissions reductions campaigns (EO-1)

ECOS Strategies

1. ECOS Action 3.2.2.4(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.
2. ECOS Action 3.2.7.3: Energy Investment – Encourage property assessed clean energy (referred to as PACE) efforts, weatherization, tax incentives and other financing opportunities for investments in energy efficiency and renewable energy.

New Suggested Strategies

1. Facilitate community choice aggregation to enable municipalities to aggregate electricity demand within their jurisdictions in order to procure renewable energy supplies (Matt Burke)
2. Strengthen energy building code standards (South Burlington requires all new development to meet Stretch Codes, for example)
3. Property Owner and User Conservation Manual (Robin Pierce)
4. Wastewater (and water?) treatment energy efficiency retrofits
5. Commit to procurement of renewable electric power for schools and municipal facilities
6. Group buyer program for energy efficiency equipment (Karen Purinton)
7. Continue to explore energy efficiency and renewable energy options for all Town-owned and Town-sponsored facilities, from buildings to street lighting. Findings and recommendations should be based on an audit of all Town-owned and Town-sponsored facilities and a subsequent cost-benefit analysis for upgrading or replacing those facilities
8. Provide financial incentives for energy efficiency

B. Does the plan promote efficient buildings?

Climate Action Guide Strategies

1. Municipal Action 2.8: Require energy efficient retrofit in existing building stock at time of sale (EE-6)

ECOS Plan Strategies

1. ECOS Action 3.2.2.4(b): Decrease greenhouse gas emissions, to support the State's goal of reducing greenhouse gas emissions 50% from 1990 levels by 2028.
 - i. Encourage individual homes and businesses to include electric and thermal energy efficiency in building and/or retrofitting. Weatherization should be promoted and executed as a first step to reduce overall energy consumption before investing in renewable energy systems. There is a need for focused study to determine solutions for vermiculite removal as it relates to weatherization, in particular low income weatherization. Vermiculite was used as an insulator for decades (1960-1990) – and was mined with asbestos thus any home with vermiculite is assumed to be contaminated.
 - ii. Provide alternatives to fossil fuels for heating.
 - iii. Reduce fossil fuel consumption in the transportation sector.
 - iv. Increase resilience to potential interruptions of grid power, especially for maintaining essential services (including water supply and sewage disposal) without electrical power. Such services need, in the short term, backup power with at least a week's supply of stored fuel. In the long term, redesign these services in a more resilient way.

New Suggested Strategies

1. Weatherizing older homes and buildings, including providing assistance to low-income households

C. Does the plan promote decreased use of fossil fuels for heating?

ECOS Strategies

1. See ECOS Action 3.2.2.4(b) above

New Suggested Strategies

1. Fossil Fuel Tax
2. Identify the potential challenges for district heat and/or energy systems in the region or town and complete recommendations for a clear method to identify potential communities for the deployment of this technology and how to address the first cost capital costs of construction
3. Alternative fuels planning
4. Identify the barriers for biomass CHP systems in the town or region and provide recommendations for a clear method for the deployment of this technology and how to address the upfront capital costs of construction

D. Other (please use the notes section to describe additional approaches that your region is taking)

1. Municipal Action 2.6: Utilize demand side management and energy efficiency measures to reduce energy use, particularly during peak periods (EE-14)
2. Work with fuel dealers to encourage them to become energy service providers
3. Work with the Vermont Energy Education Program to support educational initiatives related to renewable energy

4. A strategy related to things towns can do to support and increase the morale of energy committees? (Irene Renner)
5. Development of Energy Conservation Policies for municipalities (Richmond is a good example)
6. Establish revolving loan funds as a source of credit that families and/or community institutions can access in order to make energy efficiency improvements or switch to renewable power generation

7. Does your plan's energy element contain a statement of policy on reducing transportation energy demand and single-occupancy vehicle use, and encouraging use of renewable or lower-emission energy sources for transportation?

ECOS Strategies:

1. ECOS Action 3.2.2.6(c)iii-vi: Metropolitan Transportation Plan Investment
 - c. Future project investments and specific focal areas for targeted implementation impact include:
 - 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.

A. Does the plan encourage increased use of public transit?

Climate Action Guide Strategies:

1. Strategy 1.4/Municipal Action 1.9: Increase transit service area, frequency and hours to make transit competitive with driving (T-10)
2. Strategy 1.5/Municipal Action 1.10: Invest in transit passenger facilities and technology to make transit more appealing to existing and future riders (T-11)

ECOS Strategies

1. See ECOS Action 3.2.2.6(c)iv above

New Strategies

1. Increasing the frequency and availability of passenger rail travel specifically

B. Does the plan promote a shift away from single-occupancy vehicle trips through strategies appropriate to the region?

Climate Action Guide Strategies

1. Municipal Action 1.6: Bring car-share programs to your community (T-13)

ECOS Plan Strategies

1. See ECOS Action 3.2.2.6(c)iii above

C. Does the plan promote a shift away from gas/diesel vehicles to electric or other non-fossil fuel transportation options through strategies appropriate to the region?

Climate Action Guide Strategies

1. Strategy 1.8: Promote development of infrastructure for electric vehicle charging.
2. Employer Action 1.3: Transportation Fleet Management (T-14)
3. Municipal Action 1.3: Become an EV-ready town (T-15)
4. Municipal Action 1.5: Implement policies that shift funding away from roads and highways to alternative transportation (T-4)

ECOS Plan Strategies

1. See ECOS Action 3.2.2.6(c)vi above

D. Does the plan facilitate the development of walking and biking infrastructure through strategies appropriate to the region?

Climate Action Guide Strategies

1. Strategy 1.7/Municipal Action 1.12: Fund construction, operation and maintenance of facilities that support bicycles and pedestrians
2. Strategy 1.9: Work with municipalities to update local zoning regulations to allow for and encourage compact development that supports alternative transportation modes.

ECOS Plan Strategies

1. See ECOS Action 3.2.2.6(c)v above

E. Other (please use the notes section to describe additional approaches that your region is taking)

Climate Action Guide Strategies

1. Employer Action 1.5: Rail freight (T-19)

8. Does your plan's energy element contain a statement of policy on patterns and densities of land use likely to result in conservation of energy?

A. Does the plan include land use policies (and descriptions of current and future land use categories) that demonstrate a commitment to reducing sprawl and minimizing low-density development?

ECOS Plan Strategies

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

B. Does the plan strongly prioritize development in compact, mixed-use centers when physically feasible and appropriate to the use of the development, or identify steps to make such compact development more feasible?

Climate Action Guide Strategies

1. Municipal Action 4.2: Preserve forests, open space and agricultural land (A-7)

ECOS Plan Strategies

1. ECOS Action 3.2.2.1: Invest in areas planned for growth
2. ECOS Action 3.2.2.2: 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.

C. Other (please use the notes section to describe additional approaches that your region is taking)

New Suggested Strategies

1. Increasing the production of local food by keeping prime ag soils undeveloped

9. Does your plan's energy element contain a statement of policy on the development and siting of renewable energy resources?

ECOS Plan Strategies

1. ECOS Action 3.2.2.4(c): Increase Renewable Energy Generation, to support the State's goal of 90% renewable energy by 2050.
 - i. Determine appropriate sites for community-level renewable energy generation.
 - ii. Encourage individual homes and businesses to include renewable energy options in building and/or retrofitting

New Suggested Strategies

1. Increased municipal planning capacity for planning activities related to increasing renewable energy use and reducing fossil fuel use, for developing siting and screening standards that ensure that renewable energy is encouraged in places appropriate to the community, and for writing regulations to implement those plans

A. Does the plan evaluate (estimates of or actual) generation from existing renewable energy generation in the region, and break this information out by municipality?

Dependent on maps and data analysis

B. Does the plan analyze generation potential, through the mapping exercise (see Mapping standards, below), to determine potential from preferred and potentially suitable areas in the region, and break this information down by municipality?

Dependent on maps and data analysis

C. Does the plan identify sufficient land in the region for renewable energy development to reasonably reach 2050 targets for renewable electric generation, based on population and energy resource potential (from potential resources identified in the Mapping exercise, below), accounting for the fact that land may not be available due to private property constraints, site-specific constraints, or grid-related constraints?

Dependent on maps and data analysis

D. Does the plan ensure that any regional or local constraints (regionally or locally designated resources or critical resources, from 11B and 11C under Mapping, below) do not prohibit or have the effect of prohibiting the provision of sufficient renewable energy to meet state, regional, or municipal targets?

Dependent on maps and data analysis

E. Does the plan include statements of policy to accompany maps (could include general siting guidelines), including statements of policy to accompany any preferred, potential, and unsuitable areas for siting generation (see 11 and 12 under Mapping, below)?

Dependent on maps and data analysis

F. Does the plan maximize the potential for renewable generation on preferred locations (such as the categories outlined under 11E in the Mapping standards, below)?

Dependent on maps and data analysis

G. Other (please use the notes section to describe additional approaches that your region is taking)

Climate Action Guide Strategies

1. Implement On-Site Renewable Energy Applications (RE-2)

New Suggested Strategies

1. Support the development of methane digesters, on farms and in other places with lots of food waste, to convert manure and food waste into energy.
2. Designate Energy Investment Districts with municipalities to channel investment into green energy projects that directly benefit marginalized low-income communities (Matt Burke)
3. Incentivize community solar/wind and community purchasing cooperatives for people who don't own homes/land to generate electricity
4. Support green energy worker cooperatives
5. Adopt community benefit agreements that mandate that any jobs created through local programs to promote renewables be good jobs with living wages

6. Support options for municipal ownership of renewable generating facilities and microgrids
7. Green power purchasing