



CHITTENDEN COUNTY RPC

Communities Planning Together

CCRPC Long Range Planning Committee

AGENDA

DATE: Thursday, March 9, 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 February 9, 2017 Minutes*** (Action) - 5 minutes
3. **Forecasts** (Action)* – 20 minutes
4. **Transportation Schedule*, Initial Project List and Fiscal Constraint** (Discussion) – 20 minutes
5. **Energy Planning Maps and Data Analysis*** (Discussion) – 20 minutes
6. **Comprehensive Economic Development Strategy – Project List*** (Discussion) – 10 minutes
7. **Next Meeting** – 5 minutes
Thursday, April 13, 2017 from 8:30am to 10:00am
8. Adjourn

*=attached to agenda in the meeting packet

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CHITTENDEN COUNTY REGIONAL PLANNING COMMISSION
LONG RANGE PLANNING COMMITTEE - MINUTES

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

Members Present

Ken Belliveau, Williston – PAC Rep
Alex Weinhagen, Hinesburg – PAC Rep
Justin Rabidoux, So. Burlington – TAC Rep
Edmund Booth – ECOS Steering Committee Rep
Chris Shaw, South Burlington – Board Rep
Andrea Morgante, Hinesburg – Board Rep
Marc Landry, Colchester – Board Rep
Heather Danis – ECOS Steering Committee Rep

Staff

Regina Mahony, Planning Program Manager
Melanie Needle, Senior Planner
Charlie Baker, Executive Director
Eleni Churchill, Transportation Program Manager
Christine Forde, Transportation Planner

1. Welcome and Introductions

Chris Shaw called the meeting to order at 8:40 a.m.

2. Approve Minutes

Marc Landry made a motion, seconded by Edmund Booth, to approve the minutes of January 12, 2017. No further discussion. MOTION PASSED. Marc Landry and Andrea Morgante abstained.

3. Transportation Schedule

This agenda item was tabled.

4. Forecasts

Melanie Needle provided an overview of the forecasts we have received from EPR: revised County wide forecast, age cohorts at the County level, municipal population forecasts, and employment forecasts (though we just received these yesterday and haven't had a chance to look at them). Melanie Needle explained the purpose of the forecasts as a planning tool, and how we will use them in the transportation and energy models. With previous forecasts the Board has agreed that they should describe the future as we expect it to be, not as we want it to be. Staff recommends the same approach this time around.

Following a brief discussion on the difference between forecasts and projections, the LRPC had the following questions/comments:

- Alex Weinhagen stated that it is interesting to see the historic population forecasts and how off they were from reality. It would be interesting to see the same history for the employment forecast. Discussion ensued regarding the previous growth trends that were occurring before these forecasts were established. We haven't seen, and don't anticipate seeing, that same level of growth.
- Ken Belliveau added that it is also important to consider the long-term trend of shrinking household size. Melanie Needle indicated that we are expecting to receive the household forecasts in the next few days, and this will take household size trends into account.
- Charlie Baker asked about the rate of growth in the employment forecast v. the rate of growth in the population forecast. The employment rate of growth is twice that of the population rate. What is the logic behind this? The LRPC thought this may be tied to an increase in employees living outside the County, but would like to hear an explanation from EPR.
- Alex Weinhagen asked how demographic changes influence the employment forecast. For example, the aging population will eventually stop working. Will we see this reflected in the number of jobs?

- 1 - Discussion ensued around the relatively fact employment growth in the past. The population has
2 grown but they've just moved into jobs that open from retirement. There hasn't been a lot of new
3 jobs.
- 4 - Andrea Morgante asked if the transportation model will take the age cohorts and demographic shifts
5 into account? Justin Rabidoux added that the retired population does not have the same driving habits
6 of the working population. The inputs to the model are only households and employment, but those
7 inherently include some assumptions based on shrinking household size and land uses. Charlie Baker
8 pointed out that the age cohort forecast doesn't show a decrease in the actual number of working age
9 people; it is just the percentage of the total shifts more to the retirement age cohorts.
- 10 - Marc Landry added that it would be interesting to see the forecasts for areas that may be seeing
11 population and housing growth, as the potential result of the high cost of housing in Chittenden
12 County (i.e. Georgia, Fairfax, etc.).
- 13 - Additional questions on the employment forecast include:
 - 14 ○ The forecast includes full time and part time employment? Does it not convert to full time
15 equivalent?
 - 16 ○ It would be helpful to see the actual employment figures for 2000 and 2005 on the graph so
17 we can see the previous trends.
 - 18 ○ Historic employment forecasts would be helpful to see (like we've done for the population
19 forecasts).
- 20 - Justin Rabidoux stated that it would be really helpful to understand exactly how these forecasts are
21 used to inform the TAZs in the transportation model. Melanie Needle and Eleni Churchill provided an
22 overview of this process. Eleni Churchill stated that we can do a demonstration for the LRPC when
23 we get to that step.
- 24 - Justin Rabidoux asked how we might accommodate for situations like GE Healthcare – they employ a
25 large number of people and if you just looked at the building you would assume a large number of
26 trips; however, there is a lot of telecommuting particularly on Thursdays and Fridays in the summer.
27 Staff explained that the model is at a macro scale that can't accommodate these case by case situations
28 and further it is important to remember that it is calibrated to one day a year. Usually a day in the Fall
29 that includes school travel. However, we may be able to consider telecommuting in a future scenario
30 that takes some of this into account.
31

32 **5. New Comprehensive Economic Development Strategy Outline**

33 Regina Mahony provided an overview of the changes to the federal requirements for a Comprehensive
34 Economic Development Strategy (CEDS) – they've gotten much less specific and flexible to allow regions to
35 address relevant topics rather than a standard template. The information in the packet is the existing text re-
36 organized into the new required elements: Summary Background (our key issues and summaries of the three
37 analysis reports), SWOT Analysis (some analysis from the Competitive Assessment), Strategic
38 Direction/Action Plan (our goals, strategies and actions), Evaluation Framework (our indicators) and
39 Economic Resilience (we don't have existing text for this section). In the coming months Staff will work to
40 update the information within this format.
41

42 The LRPC had the following questions/comments on the existing text:

- 43 - Alex Weinhagen suggested that we de-emphasize IBM (now GlobalFoundries) as they are no longer
44 the driving force that they once were. The text itself is too dense, and should be made much more
45 readable.
- 46 - Andrea Morgante stated that UVM and UVM-MC aren't mentioned at all.
- 47 - Charlie Baker added that the previous CEDS was largely developed from three analysis reports
48 conducted by economists. They, as their industry suggests, were very focused on value added
49 industries, and the sale of VT products outside of the state – these are traditionally important
50 components of a healthy economic environment. While GlobalFoundries are not what they used to be
51 in terms of employment numbers, they are still a major player in terms of patents/capita. They are still
52 innovating. Staff will research these numbers.

- Ken Belliveau stated that GlobalFoundries is certainly an important player, but we should also explain the importance of smaller businesses and entrepreneurs.
- Chris Shaw asked if we should discuss the changing face of retail, a different industry than the service industry, as you can't buy the latter online.
- Marc Landry found an imbalance between once sentence on housing and paragraphs on agriculture. There was clear consensus on the role of housing that is affordable as an impediment to economic growth in the region. There was also a discussion regarding the role of the construction industry as an economic driver. Regarding the agricultural industry, Charlie Baker suggested that we may want to look at the industry as part of the larger food systems industry. We really didn't include this in the last plan in any real way. Charlie Baker stated that we'll likely have some tough conversations around encouraging high wage jobs over others, just as we did last time.
- Charlie Baker suggested that other CEDS that he has seen really focus on placemaking as an economic strategy – we want to establish a fertile place for a variety of businesses to grow. Ken Belliveau suggested that we look at local Town Plans since that is exactly how they are looking at economic development – through land use and transportation.
- Ken Belliveau suggested that we refrain from use of the word “skewed” as it comes up again and again in the SWOT and strategy sections. Further the language is not clear between high wage employers skewing the data, and wanting to encourage more high wage jobs.
- Alex Weinhausen stated that he is unsure of the need for more industrial land. GBIC has been saying this for a long time, but it would be good to look into this and see if that is still the case, and if so, why? Marc Landry suggested that we are also not particularly well suited with highway access.
- Marc Landry asked about the second bullet on page 5 which states that our climate may be the reason for our slow growth. He suggests that we should examine what the real impediments to our growth are, rather than identifying things that are out of our control. We are the second slowest growing State in the county, so other New England states with the same climate are growing. The Committee discussed that our lack of a big urban core may be more relevant to our slow growth.

Regina Mahony added that one other requirement that has changed is the project list. Project lists are no longer a required element of the CEDS document. There was discussion around whether there were any other benefits to keeping and maintaining the list. Regina Mahony explained that the list currently contains a lot of things from library and town hall improvements, to parks and programs, and infrastructure/utility needs. The LRPC ultimately decided to retain a list of basic infrastructure needs such as stormwater, wastewater and water. It is important to understand these needs and issues at the regional level, and also important to understand the disconnect between the costs of these facilities for the greater good of economic development in the region and the inability of local municipalities to pay for it themselves. There was a suggestion that perhaps we could prioritize these projects much like we do with the transportation projects.

6. Indicators – Primary Research

Regina Mahony handed out a list of indicators that we have in the current Plan that require primary research. We haven't been able to do this research so far, and Staff would like to know if there is still interest in keeping these in the Plan. Essentially, would these inform our planning in any way or change a course that we are on? Most of these are in the Social Community section. Melanie Needle added that UVM conducts a happiness survey and they are willing to include some of these questions and increase the surveying in Chittenden County so that we would get a useful sample size. The cost of that would be about \$10,000, and we don't currently have that. We could try to make room for it in the FY18 budget, but it wouldn't be eligible for PL funds, so it would be challenging. But if it were important to keep these in the Plan we could look into funding options. The Committee asked if some of the Happiness Survey questions could be a substitute for the data we are trying to collect. It would be state wide data but maybe that would be better than nothing. Staff will share the Happiness Survey questions at the next meeting.

7. Potential Planning Area Updates

This agenda item was tabled.

1 **8. Next Meetings**

2 March 9, 2017 from 8:30am to 10:00am

3 **10. Adjourn**

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

5
6 Respectfully submitted, Regina Mahony

DRAFT



CCRPC Long Range Planning Committee

03/09/2017

Background:

As you know, we have been working on the demographic forecasts for the 2018 ECOS Plan update, and we are aiming for Board approval of the forecasts at the March 15th meeting. [Here](#) is all of the information that was presented to the Board, and sent to you by Melanie Needle following the Board presentation on Feb. 15th. The information includes: the 2050 population forecast, municipal population forecast, employment forecast and household forecast; as well as a presentation.

We have asked the PAC and LRPC to review the forecasts for their respective towns and consider the predications for population, employment, and households in light of the town plans and other relevant studies. We've requested that they, focus comments on the near future period ending at 2030 as it is difficult to estimate demographics out into the future and the estimations become less accurate the further the prediction is extended out. We have already received comments from some of the municipalities and have sent those on to the consultants.

Please provide your comments and questions as soon as possible (Friday, March 3rd is the deadline if possible), as we hope to go over the comments received, at your meeting.

Staff

Recommendation:

Staff recommends that the Long Range Planning Committee recommend approval of the Chittenden County Demographic Forecasts to the CCRPC Board.

Staff contact:

Melanie Needle: mneedle@ccrpcvt.org or (802) 846-4490, ext. *27.

Attachments:

See above link.

DRAFT 2050 MTP Development Schedule

January 16, 2017

Major MTP Tasks		Jan 2017	Feb 2017	Mar. 2017	Apr. 2017	May 2017	June 2017	July 2017	Aug. 2017	Sept. 2017	Oct. 2017	Nov. 2017	Dec. 2017	Jan 2018	Feb. 2018	Mar. 2018	Apr. 2018	May 2018
Task #																		
1.	Update Forecasts, TAZs, LUAM, Regional Model (Separate schedule for these tasks)																	
2.	Develop transportation scenarios																	
3.	Determine initial list of MTP Projects																	
4.	Decide on a potential new land use scenario based on the Energy Plan outcomes (?)																	
5.	Update Metropolitan Transportation System (MTS) map																	
6.	Update transportation conditions maps (Congestion, Crashes, etc.) /Curent Conditions																	
7.	Determine financial constraint																	
8.	Update financial plan																	
9.	Forecast of future transportation conditions/analyze transportation scenarios/MTP Project List																	
10.	Update MTP Corridors (include new section on reducing vulnerability from natural disasters)																	
11.	Environmental consultation with Resource Agencies and Mitigation Report																	
12.	Draft MTP and municipal outreach																	
13.	Develop crosswalk (note new FAST planning factors)																	
14.	Issues, Indicators/Performance measures and targets, strategies & actions for ECOS																	
15.	TAC Recommends Approval of Draft MTP to the Board/CCRPC Board Warns 1st Public Hearing for Draft MTP																	
16.	1st Public Hearing																	
17.	Warn 2nd Public Hearing																	
18.	Revise MTP as needed based on Public Comments																	
19.	2nd Public Hearing & MTP Board Adoption																	

Key: = Work = Committee and Public Engagement = Action / Deliverable

Tasks – Committee Review Process - #'s in chart below relate to tasks above and indicate when the groups below will be reviewing those tasks.

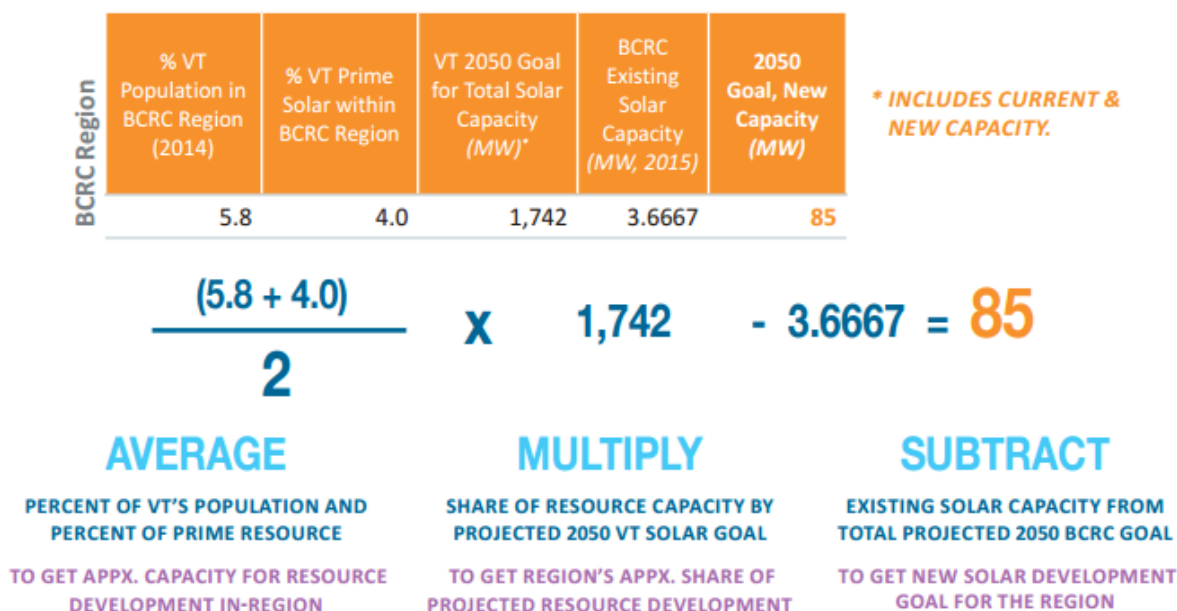
CCRPC Board, Executive Committee and Long Range Planning Committee (LRPC)	Receive monthly updates as necessary									Receive monthly updates as necessary								
TAC updates		1,3	3,7	2,7	2,4	5,6	8,9	9,10		9,11,12		13,14	15	Updates as necessary				
Local Government Updates and Comments						9	9	9		12	12	12	15					
Resource Agency Outreach*							11	11										
Outreach to tourism, intercity bus (optional) and natural disaster risk reduction organizations (new rule from FAST Act)		6	6				9,10	9,10										
Public Review														16 - 19			19	

*Groups include ANR staff responsible for environmental conservation, air and water quality, river management, wetlands, river health, policy/planning, and stormwater. Also, VTrans staff on historic preservation and archeology, and stormwater. Also, state fish & wildlife and federal, Army Corps, fish and wildlife. Winooski Valley Park District, Nature Conservancy and Lake Champlain Basin program.

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 Cou	3.63%	9.6	44.8	72.0			3.44%	0.02	8.9	16.8		
Two Rivers-Ottawuec	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

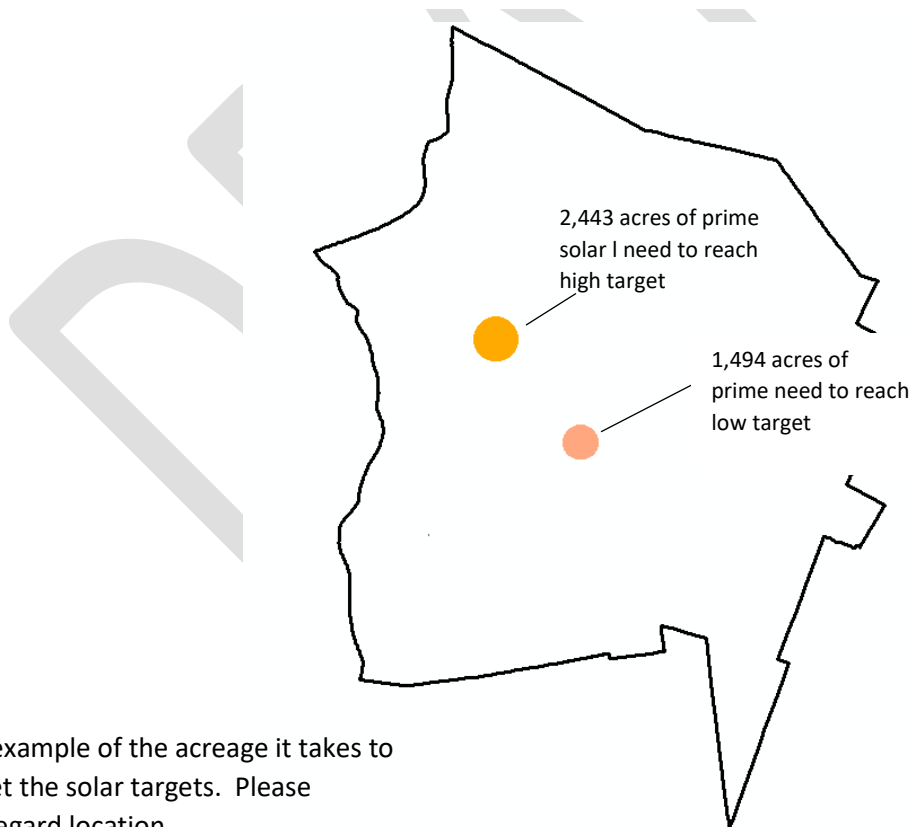
SHARE OF RESOURCE CAPACITY BY PROJECTED 2050 BCRC SOLAR GOAL

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

SUBTRACT

EXISTING TOWN SOLAR CAPACITY FROM PROJECTED 2050 TOWN GOAL

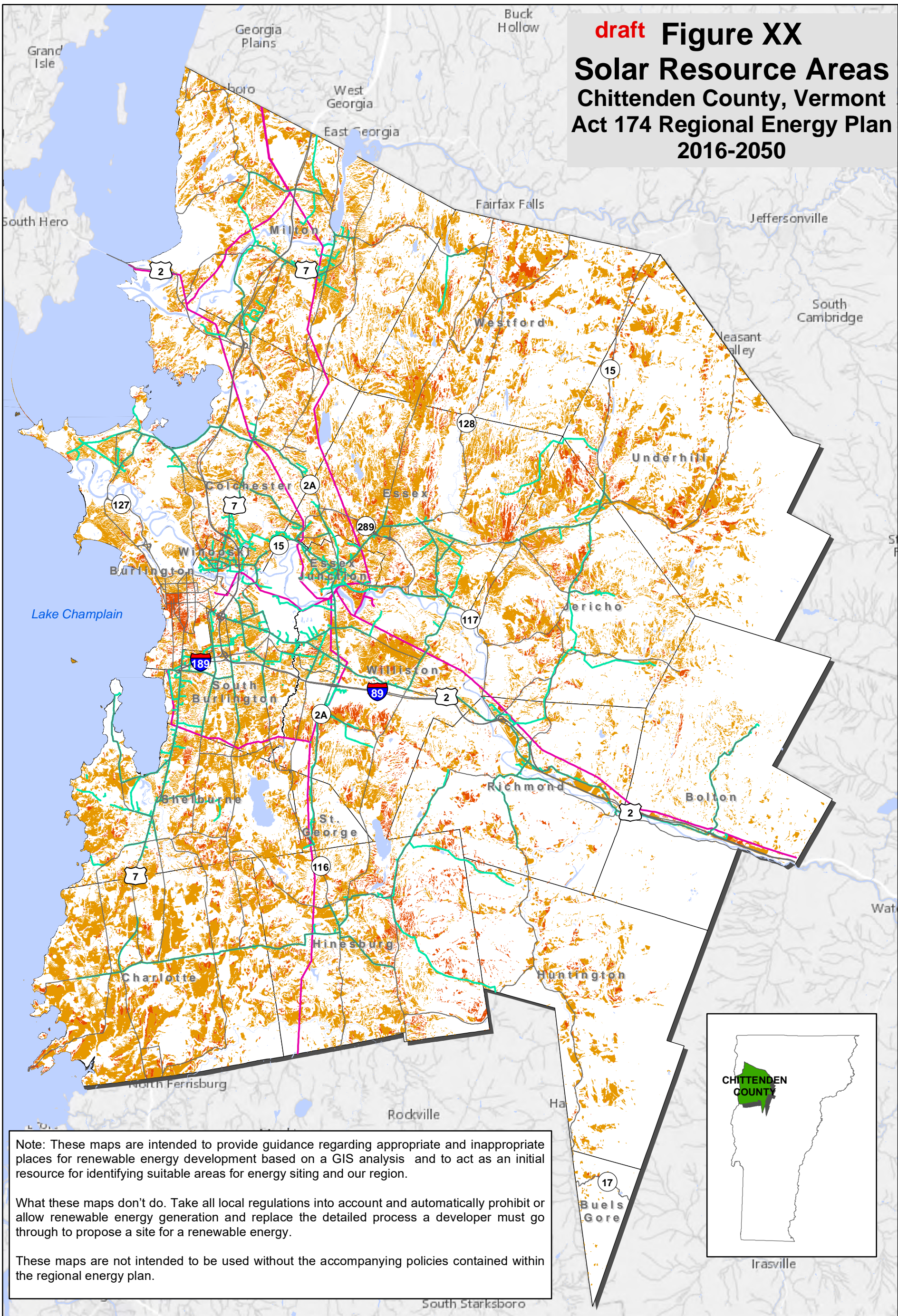
TO GET NEW SOLAR DEVELOPMENT GOAL FOR TOWN



An example of the acreage it takes to meet the solar targets. Please disregard location.

Town Name (bold means local constraint received)	Population		Prime Solar								Local Known Constraints on Prime (TBD)	Local Possible Constraints on Prime Solar (TDB)	Preferred Area	Prime Solar Local Constraints
	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)				
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
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
Solar Resource Areas
Chittenden County, Vermont
Act 174 Regional Energy Plan
2016-2050



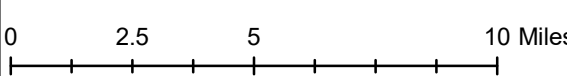
Note: These maps are intended to provide guidance regarding appropriate and inappropriate places for renewable energy development based on a GIS analysis and to act as an initial resource for identifying suitable areas for energy siting and our region.

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.

- 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



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
Burlington/South Burlington	Airport	Airport Improvements - South End Development Engineering Design - General Aviation/Corporate Taxiway & Apron.	\$9,780,000	2013-2016
Burlington/South Burlington	Airport	Airport Improvements - South End Development PHASE 6 - Taxiway G Extension, Taxiway B rehabilitation.	\$80,000,000	2014
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
Burlington, South Burlington	Airport	Airport Improvements - South End Development PHASE 5 - Construction of New Cargo Area.	\$5,000,000	2018-2019
Burlington, South Burlington	Airport	Airport Improvements - South End Development PHASE 7 - General Aviation/Corporate Taxiway & Apron.	\$5,000,000	2020
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
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
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	
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

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe
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
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
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

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe
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
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
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
Williston	Roadway	Taft Corner Grid Streets - construct local streets in Taft Corner area to improve circulation	\$3,900,000	TBD

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe
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
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
Westford	Sidewalks	Pedestrian infrastructure - construct sidewalks connecting public facilities (common, library, town office, post office, school, meeting house, etc.)	\$250,000	2017
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
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
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
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
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
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
CSWD, Burlington, Hinesburg	Waste Disposal	Construct new relocated Burlington and Hinesburg Drop-Off Centers - Construct new Drop-Off Centers.	\$1,000,000	2016 & ongoing
CSWD	Waste Disposal	Design & Construction for HHW Facility Upgrades	\$185,000	2016
CSWD	Waste Disposal	Design, Permitting & Construction of Regional Landfill - New Regional Landfill in Williston, design presently on hold indefinitely.	\$50,400,000	On hold
CSWD	Waste Disposal	Construction of Special Waste Management System - Special Waste & C&D Facility.	\$1,000,000	TBD

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe
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
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
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
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
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
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

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe
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
Champlain Water District	Water	Interior piping upgrades for existing Well #7 meter vault	\$150,000	2017 to 2018
Champlain Water District	Water	Replacement of the existing Milton meter vault	\$175,000	2017 to 2018
Champlain Water District	Water	New communications tower at Williston South Tank to replace antenna at Williston East Tank	\$125,000	2017 to 2018
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
Champlain Water District	Water	Filter Effluent Pump System Upgrade - Upgrade of existing filter effluent pumps, piping, and controls	\$300,000	2018 to 2021
Champlain Water District	Water	Allen Road Meter Vault Improvements - Replacement of the existing Allen Road meter vault	\$100,000	2018 to 2021
Champlain Water District	Water	Spear Street PRV Replacement - Replacement of the existing Spear Street PRV vault	\$150,000	2018 to 2021
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
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
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
Champlain Water District	Water	Old Filtered Water Tank Rehabilitation - Rehabilitation of the existing filtered water tank	\$200,000	2018 to 2021
Champlain Water District	Water	Permanganate Process Upgrade - Upgrade of the permanganate feed system at the plant	\$30,000	2018 to 2021
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
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
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
Champlain Water District	Water	Treatment Plant HVAC Improvements - Upgrade of the plant HVAC system	\$150,000	2018 to 2021
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
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	

Municipality	Infrastructure Type	Project Summary	Estimated Cost	Timeframe
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
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

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