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# VERMONT SYSTEM PLANNING COMMITTEE

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December 27, 2012

Mrs. Susan Hudson, Clerk  
Vermont Public Service Board  
112 State Street  
Montpelier, VT 05620

Re: Vermont System Planning Committee Geotargeting Recommendations

Dear Mrs. Hudson:

The Vermont System Planning Committee (VSPC) respectfully submits its recommendations for geographical targeting (GT) of energy efficiency in 2013, as requested by the Public Service Board (Board).<sup>1</sup> These recommendations were developed by the Energy Efficiency & Forecasting Subcommittee (EE&F) of the VSPC and were adopted by the VSPC at its 12/12/2012 quarterly meeting.

## SUMMARY

We make two recommendations in this memorandum:

- *St. Albans (GMP; former CVPS service area)*: Continue GT in the St. Albans area. During 2013, GMP will continue to plan for the delivery of demand response programs (DR), consider the role for cost-effective technologies that are not currently supported by Efficiency Vermont (such as ice storage) and encourage the development of generation that has a high on-peak coincidence.
- *Susie Wilson Road (GMP service area)*: Continue GT in the Susie Wilson area to achieve 0.7 MW of energy efficiency incremental to statewide services at the currently approved incremental budget of \$2.7 million from 2012-2014, for a total savings acquisition of 1.6 MW.

Pursuant to its 8/23/12 recommendation to the Board<sup>2</sup>, the VSPC also recommends preliminary classification of the potential infrastructure solutions. The VSPC recommends the St. Albans solution be classified as distribution and the Susie Wilson Road solution be classified as sub-transmission. The VSPC makes no recommendation in this memorandum with regard to the

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<sup>1</sup> EEU-2010-06 Public Service Board Order of 2/16/2012, p. 6

<sup>2</sup> EEU-2010-06: Vermont System Planning Committee Recommendation Regarding Funding sources for Geographic Targeting of Energy Efficiency, p.3.  
<http://www.vermontspc.com/VSPC%20Reports%20%20Correspondence/VSPC%20Ltr%20to%20PSB%20Re%20Recommendation%20Re%20Funding%20Sources%20for%20GT%20of%20EE.pdf>

potential funding of these geotargeted areas. Finally, the VSPC has directed EE&F<sup>3</sup> to continue to monitor and update its analysis and recommendations at least annually.

In the following sections, a description of the information and considerations for each of the currently targeted areas is provided. No other areas were found to be appropriate for the application of GT.

***St. Albans (GMP; formerly CVPS service area)***

By Order of February 16, 2012, the Board approved the recommendations of the VSPC regarding the GT territories for the 2012 through 2014 time period and approved a budget of approximately \$4.0 million for St. Albans GT efforts to acquire 1.1 MW of energy efficiency incremental to statewide services for a total savings acquisition of 1.8 MW in the area—all available cost-effective potential. At that time the VSPC represented that the St. Albans area faced a future summer reliability constraint from the loss of one of the area's 34.5/12.47 kV substations in the event of a planned or unplanned transformer outage. Although load growth had been flat, 1.5 MW of new demand was expected to come on line in the next several years, and, in conjunction with any ancillary growth, would likely require construction of a new 34.5/12.47 kV substation at a cost of \$1.5 million to maintain existing backup capability. The VSPC analysis showed that targeted energy efficiency could possibly delay the project for several years, allowing time for investigation of other resources to address forecasted load growth, and to reduce uncertainty regarding forecasted load. The VSPC estimated that the annual deferral value would be \$250,000 (exclusive of energy and non-energy benefits associated with the cost-effective measures installed as a part of this effort).

In addition to the targeted efficiency, CVPS planned to explore opportunities to implement existing and new DR and to encourage deployment of ice-storage air conditioning in the St. Albans area to reduce area summer peak coincident loads. The plan also recognized that, beyond energy efficiency, the constraints on the St. Albans area could be mitigated with peak load reductions brought about with generation additions that run on-peak or as needed, or have operating characteristic that result in a high on-peak coincidence.<sup>4</sup>

As planned, EE&F met numerous times in recent months (following the summer peak period) to review the status of the GT efforts targeted at the St. Albans area. An updated GT selection template<sup>5</sup>, provided below, was developed, which contained information on changed conditions, loads and projections for the area.

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<sup>3</sup> The VSPC is currently evaluating its committee structure to improve functional efficiency. One potential change is to create a "Geotargeting" subcommittee. If that change occurs, then the Geotargeting subcommittee would likely take on this responsibility.

<sup>4</sup> See *CVPS Geographic Targeting Plan for St. Albans Area*, filed with the Board by CVPS in EEU-2010-06 on 3/16/12 via electronic mail.

<sup>5</sup> A number of significant changes were made to this template relative to the 2011 version. First, new ability to serve letters were included in the analysis (assuming 75% coincidence). Second, forecasted embedded efficiency was reduced from 0.5MW to 0.43MW, consistent with the amount of summer kW historically acquired by Efficiency Vermont in the constrained area. Third, available baseline EE beyond 2014 was assumed to be equal to the assumed baseline portion of the EE to be acquired in St. Albans 2012-2014 (700kW, or 233kW annually). Third, zero ancillary growth was assumed in this analysis as new ability to serve letters are considered every year by the VSPC.

<b>Critical Load level</b>									<b>28</b>
<b>Year</b>	<b>50/50 forecast (MW)</b>	<b>90/10 forecast (MW)</b>	<b>Ability to serve letters *.75 coincidence (MW)</b>	<b>Total Estimated 90/10 Load (MW)</b>	<b>Est. EE embedded in forecast (MW)</b>	<b>EE or other resources needed (MW)</b>	<b>DG or other offsetting gen cumulative MW</b>	<b>Available EE MW (baseline plus incremental)</b>	<b>Remaining Resource Need (MW)</b>
<b>2012</b>	25.31								
<b>2013</b>	25.45	26.35	5.80	32.15	0.43	4.58	0.77		
<b>2014</b>	25.45	26.35	5.80	32.15	0.43	5.01	0.77	1.600	2.64
<b>2015</b>	25.45	26.35	5.80	32.15	0.43	5.43	0.77	0.233	
<b>2016</b>	25.45	26.35	5.80	32.15	0.43	5.86	0.77	0.233	
<b>2017</b>	25.45	26.35	5.80	32.15	0.43	6.29	0.77	0.233	3.22
<b>2018</b>	25.45	26.35	5.80	32.15	0.00	6.29	0.77	0.233	
<b>2019</b>	25.45	26.35	5.80	32.15	0.00	6.29	0.77	0.233	
<b>2020</b>	25.45	26.35	5.80	32.15	0.00	6.29	0.77	0.233	2.52

This updated analysis performed on the St. Albans area suggests that up to approximately 3.2 MW of additional area load reductions would now be required to maintain load under the critical load level, *declining* to approximately 2.5 MW by 2020. This exceeds the amount of load reduction initially anticipated to be necessary, and results primarily from the addition of load associated with an unexpected request for 4.33 MW of demand from a new manufacturing load that materially changed the expected need for area system upgrades. This new facility, now under construction, has informed GMP that it will utilize electricity for chilling operations around the clock and, based on existing load information, is expected to have a load factor greater than seventy percent (70%).<sup>6</sup> The customer has declined invitations to participate in demand response programs. Table 1 above continues to show an area with a relatively stable load, even declining load over time. Although the “remaining resources needed” after 2012-2014 targeted efficiency continues to be positive, the VSPC considered a number of other factors prior to making its recommendation. First, the administration of GT efforts in the St. Albans area is being undertaken at a time of significant change. CVPS and GMP have completed their merger and are working to integrate system operations. GMP is implementing the SmartPower plan that will result in the introduction of advanced metering infrastructure and other smart grid technologies system wide and in the St. Albans area. Second, the Board is implementing the Act 170 changes to the SPEED standard offer program, which has authorized the introduction of additional small renewable resources some of which may be developed in areas affecting St. Albans.<sup>7</sup> Third, impacts from ice storage or other load-shifting technologies could further reduce peak. Fourth, deployment of DR in the area has not yet occurred nor been projected in the analysis. As such, opportunities remain within the affected area that may close the gap.

<sup>6</sup> The ability to serve letter issued to this customer directed that “[g]iven that your development is located in a capacity constrained area, you should implement all cost-effective electric energy efficiency measures[.]”

<sup>7</sup> The 2012 peak for the affected circuits in the St. Albans area occurred at 5pm; the 2011 peak was at 3pm. This needs to be taken into account when considering the impact of distributed generation on the constraint, ideally in a manner consistent with those being considered in Docket 7873 processes. For purposes of this analysis, the one known standard offer project expected to be operating in St. Albans area was de-rated by 65% given the 5pm peak.

In addition, the analysis conducted and presented in Table 1 necessarily includes an array of assumptions. Thus, the VSPC considered a sensitivity to those assumptions by replicating the analysis applying conditions favorable to the continuation of geotargeting. As shown in Table 2, adjusting the 50/50 forecast to be consistent with the 2012 actual peak, assuming a slightly higher coincidence of the known solar project to be sited in the area (40% versus 35%), and assuming a greater amount of achieved efficiency prior to 2014 and available efficiency after 2014<sup>8</sup> results in a clearly declining trend in the “remaining resource need,” down to 630 kW in 2020. In consideration of the other factors mentioned above, it appears there would be significant potential to defer (and avoid completely given the assumed declining need) this project.

<b>Critical Load level</b>									<b>28</b>
<b>Year</b>	<b>50/50 forecast (MW)</b>	<b>90/10 forecast (MW)</b>	<b>Ability to serve letters * .75 coincidence (MW)</b>	<b>Total Estimated 90/10 Load (MW)</b>	<b>Est. EE embedded in forecast (MW)</b>	<b>EE or other resources needed (MW)</b>	<b>DG or other offsetting gen cumulative MW</b>	<b>Available EE MW (baseline plus incremental)</b>	<b>Remaining Resource Need (MW)</b>
<b>2012</b>	25.31								
<b>2013</b>	25.32	26.22	5.80	32.02	0.43	4.45	0.88		
<b>2014</b>	25.32	26.22	5.80	32.02	0.43	4.87	0.88	1.84	2.15
<b>2015</b>	25.32	26.22	5.80	32.02	0.43	5.30	0.88	0.47	
<b>2016</b>	25.32	26.22	5.80	32.02	0.43	5.73	0.88	0.47	
<b>2017</b>	25.32	26.22	5.80	32.02	0.43	6.15	0.88	0.47	2.03
<b>2018</b>	25.32	26.22	5.80	32.02	0.00	6.15	0.88	0.47	
<b>2019</b>	25.32	26.22	5.80	32.02	0.00	6.15	0.88	0.47	
<b>2020</b>	25.32	26.22	5.80	32.02	0.00	6.15	0.88	0.47	0.63

Given the uncertainty in the forecast, it is important to also consider the impacts of GT program design and delivery on customers. GT programs are fully mobilized in the area. Ramping down these programs now, only to find in a year that they are needed again, would have an adverse impact on both customers and program delivery. The VSPC emphasizes that the provision of GT efforts in this area has had a positive effect on area reliability, and will continue to do so. GMP has yet to commit to the development of the substation upgrade for the St. Albans area. The earliest the project could be implemented is likely 2015. This means there is more time for GT and other efforts to further defer or completely avoid infrastructure investments. A premature decision to terminate GT efforts would create the risk of losing the opportunity to successfully defer or avoid the infrastructure investment.

Given these factors, staying the course through 2013 represents a reasonable exercise of expert judgment that should help to assure the safe and reliable provision of service to customers in a cost-effective manner.

<sup>8</sup> While GT programs were designed to acquire the maximum achievable potential in 2012-2014, they are not able to acquire all achievable potential. Ramp up and other program considerations, such as long lead times for large potential projects, indicate that more potential incremental to baseline would be available after 2014.

**Susie Wilson Road (GMP service area)**

By Order of February 16, 2012, the Board approved the recommendations of the VSPC regarding the GT territories for the 2012 through 2014 time period and approved a budget of approximately \$2.7 million for Susie Wilson Road GT efforts to acquire 0.700 MW of energy efficiency incremental to statewide services for a total savings acquisition of 1.4 MW in the area—all available cost-effective potential. At that time, the VSPC represented that this area is constrained by both feeder capability and substation transformer capacity. The area had experienced nearly 3 percent annual load growth over the previous five years despite the recession. In addition, a large portion of a 5 MW industrial load had been expected to come on line by 2012. Based on that load forecast, and absent GT, a new 115 kV/12.47 kV substation would be needed by 2017 at a cost of \$8 million. The incremental GT energy efficiency was expected to defer the substation project by one year, to 2018, at a deferral value of \$1.4 million. More energy efficiency was expected to be available in 2015-2017 as new technologies and services became available, non-participants chose to participate in energy efficiency programs, and energy efficiency projects with long lead times were completed.

The following table shows the 2011 load forecast for the Susie Wilson area and the incremental GT needed to defer the project. This information was used in 2011 to justify GT for this area.

Original 12-1-11 included impact of renewables				
Critical Load Level				53
Year	50/50 forecast (MW) [N2]	90/10 forecast (MW) [N1]	"High Scenario" (MW)	Incremental GT EE needed [N3]
2012	41.5	43.0		(10.0)
2013	44.7	46.2		(6.8)
2014	46.3	48.2		(4.8)
2015	47.9	49.9		(3.1)
2016	49.5	51.0		(2.0)
2017	51.1	53.1		0.08
2018	52.6	54.5		1.46
2019	54.2	56.3		3.3
2020	55.7	57.9		4.9
2021	57.3	59.4		6.4
2022	58.8	61.0		8.0
2023	60.3	62.6		9.6
2024	61.8	64.1		11.1
2025	63.3	65.7		12.7
2026	64.8	67.2		14.2
2027	66.3	68.8		15.8
2028	67.7	70.3		17.3
2029	69.2	71.8		18.8
2030	70.6	73.3		20.3
2031	72.1	74.8		21.8

As planned, the VSPC EE&F re-considered its recommendation in 2012. GMP completed an updated load forecast and updated energy efficiency potential estimates. These new estimates indicate that without GT, the Susie Wilson project would be needed in 2025.

The updated peak load forecast for the Susie Wilson area is lower than that forecasted in 2011. This lower forecast is driven largely by the actual 2012 peak being only 35.8 MW—which is 5.7 MW less than the 41.5 MW forecasted in 2011. The lower 2012 peak is the result of the following:

- A large portion of a 5.0 MW industrial load did not come on line in 2012 as expected. This load is anticipated to come on line in 2013 and 2014 and is included in the updated forecast.
- Corrupt SCADA data inflated the 2011 loads by 3.0 MW. This corrupted data was discovered only recently.
- General area load growth was 0.2 MW lower than forecasted. This prompted adjustments to reflect a lower anticipated underlying annual load growth in the area for the remainder of the forecast.

Recently, it was discovered that a number of accounts within the Susie Wilson area were not included for development of the initial estimate of energy efficiency potential (they were included in the load forecast). Including these accounts increases the amount of energy efficiency estimated to be acquired by statewide programs (efficiency savings that would occur by 2014 absent GT programs) by 200 kW, from 700 kW to 900 kW. The amount of GT potential that EVT could achieve by the end of 2014 has increased by 250 kW, from 700 kW to 950 kW. The additional 200 kW of baseline efficiency potential has no effect on EVT's current budget goal for incremental savings in the Susie Wilson area.<sup>9</sup> The 250 kW in additional GT potential is not included in the current Susie Wilson GT budget nor is this additional GT potential part of EVT's QPI.

The following table shows the impact of the lower forecast and increased expected efficiency acquisition from statewide programs on the date of need for the Susie Wilson project. As described above, this table shows that the Susie Wilson project is not needed until 2025. If EVT continues its GT programs with its current budget through 2014 and achieves its original GT incremental savings goal of 700 kW, the project would be deferred one year until 2026. The additional 250 kW of unfunded GT potential would not be able to defer the project a second year, falling 140 kW short of what would be needed.<sup>10</sup>

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<sup>9</sup> Because VEIC's Quantifiable Performance Indicator is set based on the total amount of savings acquired in an area (baseline + incremental), adjustment in that overall target would be warranted.

<sup>10</sup> For a two-year deferral the load would need to be reduced 1.09 MW ( $0.14+0.95=1.09$  MW) and the total funded and unfunded GT potential for the area is only 0.95 MW which is 0.14 MW short of what is needed.

Susie Wilson Load Forecast as of 11-27-12				
Critical Load Level				52.7
Year	50/50 forecast (MW) [N2]	90/10 forecast (MW) [N1]	"High Scenario" (MW)	Incremental GT EE needed [N3]
2012	35.8	35.8		(16.9)
2013	40.1	41.4		(11.3)
2014	41.4	43.1		(9.6)
2015	42.3	44.0		(8.7)
2016	43.2	44.6		(8.1)
2017	44.1	45.9		(6.8)
2018	45.0	46.6		(6.1)
2019	45.9	47.7		(5.0)
2020	46.8	48.6		(4.1)
2021	47.6	49.5		(3.2)
2022	48.5	50.3		(2.4)
2023	49.3	51.2		(1.5)
2024	50.1	52.0		(0.7)
2025	50.9	52.8		0.14
2026	51.7	53.6		0.95
2027	52.5	54.4		1.7
2028	53.2	55.2		2.5
2029	53.9	56.0		3.3
2030	54.6	56.7		4.0
2031	55.3	57.4		4.7

The VSPC has been operating under the general principle that a system constraint may be eligible for geotargeting if the need date falls within 3-10 years. Although it now appears that the Susie Wilson project is not needed until 2025, the VSPC still recommends that GT programs continue for at least one more year in this area, because:

- There is significant uncertainty in the load growth forecast. The large industrial load is still not fully on line and the true impact of this load on the area peak remains uncertain. Further, the economy has not yet fully recovered and the annual growth rate could return to that forecasted in 2011.
- GT programs are already fully mobilized in the area. Ramping down these programs now, only to find out in a year that they may need to be ramped back up given the above uncertainty, would be costly for EVT and confusing to customers being served by these programs.

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- There is potential to defer the project for two years. Only a limited amount of additional energy efficiency is necessary to defer the project for a second year. Not acquiring efficiency now limits that opportunity.

Respectfully submitted,

/s/

Deena L. Frankel, Secretary  
Vermont System Planning Committee