

Vermont System Planning Committee
Geotargeting Subcommittee
March 18, 2015
Meeting Summary

In Attendance:

TJ Poor, PSD
Al St. Peter, PSD
John Woodward, PSD
Gillian Eaton, VEIC
Damon Lane, VEIC
Rebecca Foster, VEIC
Mike Wickenden, VEIC
Steve Litkovitz, GMP
Carolyn Anderson, GMP
Kim Jones, GMP
Rip Kirby, GMP
Deena Frankel, VELCO
Hantz Presume, VELCO
Melissa Bailey, VPPSA
Jen Lee-Therault, BED

Agenda:

- Agenda review
- Review and approval of the January 20, 2015 meeting minutes
- GMP update on the Rutland Reliability Plan
- Presentation by VEIC of the Rutland Area Energy Efficiency Assessment
- Review GT process status following the publication of the Long Range Transmission Plan
- Next meeting date and agenda

Discussions:

- Review and approval of the January 20, 2015 meeting minutes
 - Comments were received on the draft January 20, 2015 Geotargeting Subcommittee meeting minutes from TJ Poor. The minutes have been updated to reflect these comments and will be posted to the VSPC website. If further issues arise, the minutes can be updated as needed.

- GMP update on the Rutland Reliability Plan
 - Rip Kirby reviewed the subtransmission constraints in Rutland area. The defining constraint is the loss of the Cold River 115 kV to 46 kV transformer, at summer peak loads, which results in a thermal overload of the North Rutland 115 kV to 46 kV transformer.
 - The GMP gas turbine located at Rutland Gas Turbine Substation is old and cannot be counted on as a completely reliable resource, even though it does operate at various times.
 - The reliability gap in the Rutland area has been significantly reduced with the addition of significant solar power and is presently slightly less than zero, i.e. there is a small margin for load growth in the existing system. The 46 kV subtransmission line between West Rutland and Florence will be reconducted to enhance the reliability between the legacy CVPS system and the legacy VMPD system. The normally-open second 46 kV line between the Rutland and West Rutland systems will be closed and reconducted as well. Also, a number of photovoltaic systems have been installed in the Rutland area resulting in a shift of the remaining peak to late afternoon / early evening. The loss of Rutland Plywood and the gradual loss of load at the Diamond Run Mall is also reducing area load.
 - The proposed VMPD-related upgrades will increase the area's load-serving margin to approximately 11 Mw, assuming uniform "wide area" load growth. .
 - Load growth in the area is expected to return in 10 years, though it could occur sooner. Load could be driven by heat pumps, electric vehicles, and growth in the Rutland economy.
 - GMP's plan is to stay ahead of the Rutland area load and constraint issues. Resources that could be brought forward include:
 - i. Energy efficiency
 - ii. Hot water heater control
 - iii. Post-contingency dispatch of Stafford Hill energy storage
 - iv. Other new storage
 - v. Post-contingency islanding of the GMP Rutland operations headquarters (by means of a recently installed diesel generator)
 - vi. New GMP E-Company initiatives
 - New solar likely will not be helpful in addressing future constraints given the shift of the peak to late afternoon / early evening.
 - Using information provided by VEIC (and described below), GMP developed a cost-curve showing the cost per kW of energy efficiency available in the Rutland core area and wide area. Energy efficiency investments in the core area were found to be the most cost-effective energy efficiency resource.

- About 250 kW of load relief may be available from controlling 150 hot water heaters in the Rutland area. Up to 1 MW may be available in the future with the control of 500 to 600 water heaters.
 - Up to 2.9 MWh of stored energy (2MW limit demand due to inverters) may be available from the Stafford Hill battery storage. The location of Stafford Hill is favorable as it is close to the North Rutland substation.
 - Post-contingency islanding of GMP's Rutland operations headquarters with its emergency diesel generator could provide load relief of at least 250 kW on a peak summer day.
 - The order of cost-effective resource deployment is expected to be the following:
 - i. Post-contingency dispatch of Stafford Hill energy storage
 - ii. Post-contingency dispatch of hot water heater interruption
 - iii. Post-contingency islanding of GMP's Rutland operations headquarters
 - iv. New energy efficiency programs
 - v. Future GMP E-Company initiatives
 - Next steps:
 - i. Complete the load flow assessments
 - ii. File the Rutland Area Reliability Plan with the PSB
 - iii. Monitor the Rutland area load growth into the future and deploy resources, as needed, in the most cost-effective manner
 - The Rutland area peak is now about 116 MW, down from a previous high of 127 MW. This translates to a post-contingency, negative deficiency on the North Rutland transformer of about 11 Mw if uniform growth occurs in the "wide area" or about 5.5 MW if uniform growth occurs in the "core area". The final report will include the load level at which action on acquiring resources is needed. All figures assume that the West Rutland to Florence 46 kV subtransmission line reconductoring has been completed.
 - PSD reinforces the idea that the Reliability Plan should address why the acquisition of Standard Offer generation projects would not be a cost-effective solution in this area.
- Presentation by VEIC of the Rutland Area Energy Efficiency Assessment
- The goals of the Assessment were to:
 - i. Quantify the amount of demand reduction available in both the core area and the wide area;
 - ii. Determine whether sufficient energy efficiency resources are available to defer traditional transmission system investments; and
 - iii. Determine the cost per kW of energy efficiency resources in both the core area and the wide area
 - The Assessment was undertaken as three tasks:

- i. Task 1 quantified the avoided kW demand from both past and current energy efficiency programs in the Rutland area
 - ii. Task 2 quantified the remaining potential energy efficiency in the Rutland area
 - iii. Task 3 quantified the costs required to achieve savings potentials in both core and wide areas
 - o VEIC described its study methodology, and its results, for Tasks 1, 2, and 3. Details of the methodology and results are available in the meeting slides and draft report provided to the geotargeting subcommittee in advance of this meeting.
 - o Among the most important results is that, at a 100% incentive level, 4,520 kW of energy efficiency savings is achievable in the core area. This level addresses the previously identified goal of reducing load by 4.2 MW in the core area.
 - o PSD notes that the 4,520 kW is not the incremental available savings, but rather the total available savings, which includes 820 kW of savings expected from the demand resource plan (DRP). Similarly, the cost of \$17.5M to achieve 4,520 kW of savings is the total cost to obtain this level of savings and includes \$2.5M of DRP costs.
- To the extent possible, and if received by early next week, GMP will incorporate suggestions into the Rutland Area Reliability Plan. After the Reliability Plan has been filed with the Public Service Board, entities will be provided an opportunity to comment directly to the PSB.
- Review GT process status following the publication of the Long Range Transmission Plan
 - o Normally, publication of the Long Range Transmission Plan marks the start of various tasks for the GT subcommittee. This includes the screening of constraints to identify whether a reliability plan will be required. However, few constraints were identified in Long Range Plan. The Rutland Area is already subject to a reliability plan. VELCO notes that the Northern Area constraint is hard to pin down given load growth uncertainty, and that the Central Vermont constraint is 15 years out in the future. Given this set of circumstances, there is likely a limited role for the subcommittee at present.
 - o In upcoming months, the DUs will provide information on their distribution and non-bulk subtransmission constraints and bring these forward to the subcommittee for vetting.
 - o GMP continues to examine alternatives for the Hinesburg area. Further discussions on Hinesburg are expected later in 2015 following analysis by RES Americas for GMP.
 - o The subcommittee discussed how and when to comment on the process and successes regarding the vetting of the Hinesburg constraint. No conclusion was reached, however this may be a good discussion to bring to next VSPC quarterly meeting.
- Next meeting date and agenda
 - o There is no need to schedule the next meeting at this time. The next GT subcommittee meeting will be for the DUs to describe their distribution and non-bulk subtransmission

constraints that have not been identified in the VELCO Long Range Plan. This effort, however, remains several months out.