



**ANNUAL REPORT
TO THE PUBLIC UTILITY COMMISSION &
PUBLIC SERVICE DEPARTMENT**

January 31, 2020

INTRODUCTION

In accordance with the Memorandum of Understanding (MOU) approved by the Public Utility Commission in Docket 7081 as amended¹, this document comprises the annual report of the Vermont System Planning Committee (VSPC) detailing activities undertaken in 2019.

Among its provisions, the Docket 7081 MOU requires that the VSPC provide a report to the Public Utility Commission (PUC or Board) and Public Service Department (PSD) by February 15 of each year and post that report on the VSPC website. The report must consist of at least the following:

89. A report on each Reliability Deficiency identified to date in the [Long-Range Transmission] Plan or through the process described in Steps 1 through 6, above, including:
 - i. The status of NTA [Non-Transmission Alternative] Analysis for the Reliability Deficiency.
 - ii. The status of decision-making on the selection of alternative(s) to address the Reliability Deficiency.
 - iii. The status of decision-making on the allocation of costs of the alternative to address the Reliability Deficiency.
 - iv. The strategy chosen for implementing the alternative selected to address the Reliability Deficiency.

¹ Investigation into Least-Cost Integrated Resource Planning for Vermont Electric Power Company, Inc.'s Transmission System. Amended 1/30/2012, 8/1/2012 & 11/6/2013 & Docket 8875 Order of 6/13/2018.

- v. The status of implementation of the alternative(s) to address the Reliability Deficiency.
 - vi. All documentation pursuant to paragraph 86, above, relating to advisory votes within the preceding calendar year.²
90. A statement of the dates and locations of all VSPC meetings held during the preceding year.³

In 2014, the Commission approved a recommendation by the VSPC, designed to harmonize reporting procedures, that the VSPC annual report incorporate annual utility updates on areas that have been approved for energy efficiency geographical targeting.⁴ At this time, no area of the state is designated for energy efficiency geographic targeting so no such annual utility updates are provided for the current year.

This document represents the VSPC annual report on the status of transmission and non-transmission analysis, solution selection, cost allocation, and implementation planning of all identified reliability deficiencies as required by the MOU, as well as the meetings and organizational work of the VSPC during 2019.

VSPC ACCOMPLISHMENTS, MEETINGS AND PROCESS

The past year was the twelfth full year of VSPC operation. During this year, the major activities and accomplishments of the Committee included:

- Received regular briefings each quarter from lead utilities on all reliability deficiencies identified in the 2018 Vermont Long-Range Transmission Plan.
- Developed, and filed on October 29, 2019, the annual geographic targeting recommendations to the Commission. The Geographic Targeting Subcommittee developed the recommendations following a full review of transmission and subtransmission issues, as established in Docket 7081, and distribution issues, as established in Docket 7873/7874.
- Created the Generation Constraint Subcommittee to serve as a forum for discussion and analysis regarding the development of creative measures to minimize generation constraints on Vermont’s electric distribution system and subtransmission networks with due consideration of the transmission system. The subcommittee will explore strategies that include non-wires alternatives that could cost-effectively minimize generation constraints and provide analysis to inform electric grid, power, and energy planning, including

² ¶ 86 requires the VSPC to take advisory votes to resolve disputes regarding determinations of affected utilities and cost allocation.

³ Docket 7081 MOU at 35-36.

⁴ Docket EEU-2013-11, In re: VSPC Geographic Targeting Improvement Analysis, 1/24/2014.

Integrated Resource Plans, the Vermont Long-Range Transmission Plan, the Demand Resource Plan and the state Comprehensive Energy Plan.

- Received regular briefings on a variety of current policy proceedings, such as the investigation into promoting the ownership and use of electric vehicles (Case 18-2660), investigation into potential fees associated with electric vehicle charging (Case 19-3009), the investigation into the regulation of energy efficiency utilities (Case 18-2872), the investigation into the creation of an all-fuels energy efficiency program, expansion of energy efficiency utility programs and services, and funding options for those programs (Case 19-2956), and the PUC Rulemaking process for rules 5.500 and 4.400.
- Heard presentations on a wide variety of energy-related initiatives, studies and reports including: the Transportation Climate Initiative proposal, the role of Vermont’s electric distribution utilities in promoting the ownership and use of electric vehicles in Vermont, historical trends in Vermont’s peak load, emerging energy system challenges, cyber security regulations, proceedings of the NERC System Planning Impacts from Distributed Energy Resources (SPIDER) working group, and updates from the Sheffield Highgate Export Interface working group.
- Updated participants regularly on significant policy developments at ISO-NE, the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC) with regular participation by an ISO-New England (ISO-NE) representative, and briefings by VELCO. Topics of particular focus included: energy security improvements, the first substitution auction for sponsored policy resources, FERC Order 1000 competitive RFP for transmission, the Distributed Generation Forecast Working Group, and stakeholder input into the Regional System Plan.

The VSPC held the following full committee meetings during 2019:

1/23/2019	Quarterly meeting, South Burlington, VT
4/24/2019	Quarterly meeting, Middlebury, VT
7/17/2019	Quarterly meeting, Stowe, VT
10/16/2019	Quarterly meeting, Killington, VT

The subcommittees of the VSPC met throughout the year as follows:

- Coordinating Subcommittee: The Coordinating Subcommittee met by phone January 11, April 12, July 2 and October 1 to plan the agendas for regular VSPC meetings.
- Forecasting Subcommittee: The Forecasting Subcommittee met on September 9 and November 7. The focus of the subcommittee was to advise VELCO and its contractor, Itron, on the development of the Vermont statewide load forecast for the 2021 Vermont Long-Range Transmission Plan. In particular, the subcommittee was consulted on various assumptions regarding the treatment of distributed generation, cold-climate heat pumps, electric vehicle adoption, and climate impact and weather trends.

- Geographic Targeting Subcommittee: The Geographic Targeting Subcommittee met on January 17 and May 31 to carry out its responsibilities regarding geographic targeting recommendations to the full VSPC on energy efficiency and distributed generation.
- Generation Constraint Ad Hoc Subcommittee: The Generation Constraint Ad Hoc Subcommittee met on April 9, May 21, July 3, and September 9. The newly formed subcommittee developed a charter and work plan, reviewed the Vergennes area generation constraints as a case study, and agreed on the required data for further analysis. The subcommittee will continue to meet through 2020 to develop the process for reviewing and resolving future generation constraint areas.

The calendar of all VSPC meetings is posted on the VSPC website at:

<http://www.vermontspc.com/calendar>

Agendas and meeting minutes for the full VSPC meetings are posted on the VSPC website at:

<http://www.vermontspc.com/vspc-at-work/meetings>

Subcommittee agendas and meeting minutes are posted on the VSPC website at:

<http://www.vermontspc.com/vspc-at-work/subcommittees>

No advisory votes were taken in 2019.

REPORT ON IDENTIFIED RELIABILITY DEFICIENCIES

Paragraph 51 of the Docket 7081 MOU requires that the VSPC, VELCO and the distribution utilities report progress on identified reliability deficiencies at least annually to the Commission. In past years, this portion of the report has included several sections detailing the status of transmission and subtransmission issues identified in the currently applicable Vermont Long-Range Transmission Plan. This year, however, the current plan, published in July 2018, identifies no reliability deficiencies. Consequently, this report is briefer than in the past, addressing only a single open issue.

One distribution issue in Hinesburg is currently under review, as detailed in the reliability plan filed with the Commission on October 1, 2016. The following section provides an update on the Hinesburg distribution issue that is the focus of that reliability plan, as required by the Docket 7873/7874 Screening Framework and Guidelines for Implementation of 30 V.S.A. § 8005a(d)(2).

DISTRIBUTION ISSUES THAT ARE THE FOCUS OF RELIABILITY PLANS

HINESBURG

GMP has identified a distribution system constraint in the Hinesburg area for which it filed a reliability plan on October 1, 2016. GMP customers in the Town of Hinesburg are served by an eight-mile-long distribution line, the 28G2, which originates at the GMP Charlotte substation. The load concentration in Hinesburg, together with its distance from the Charlotte substation, results in potential thermal overloads, voltage limitations, and

challenges to adequately protect the distribution line for contingencies. While GMP has identified a solution to the existing protection issues, a number of issues remain, including the potential for future load growth, voltage constraints, high solar penetration, and motor start limitations. GMP analyzed a number of possible solutions to address the long-term reliability needs of the Hinesburg area. These solutions were considered in combination with the goal of producing a robust, cost-effective, long-term solution for the area. The potential solutions include: a new GMP substation; a new or upgraded substation with the Vermont Electric Cooperative (VEC); distance relaying; distributed generation; energy efficiency; and battery energy storage.

Based on its analysis, the GMP plan supports the future installation of a battery energy storage system (BESS) in the Hinesburg area while participating with VEC in a future new or upgraded substation. The actual timing of the BESS has not been determined. GMP has been monitoring area load growth to aid in the decision of when and where to construct the BESS. Loads have not grown in recent years, with the 2019 peak being 5.32 MVA compared to the 2015 peak at 5.91 MVA. GMP will continue to monitor the magnitude and location of area load growth. Due to higher priority projects, GMP will defer the BESS, including purchasing property, until area load growth materializes.

In 2018, GMP became aware of a potential Tier III⁵ strategic electrification opportunity in Hinesburg that would remove large gravel pit motors from local diesel generation and interconnect these loads onto the 28G2. Analysis indicates that, while the 28G2 could reliably serve these new loads, voltage flicker due to motor starts is a concern. To address this concern, in 2019 GMP installed a dynamic volt-ampere reactive compensation device (DVAR) on the 28G2. A DVAR uses power electronics to rapidly inject precise amounts of reactive power onto a distribution feeder to support motor starting and avoid excessive voltage flicker. This was the first DVAR installed on the GMP system and is providing GMP with further insights on methods to enhance distribution system capabilities while deferring large capital investments. It should be noted that even with this Tier III load addition, the peak demand for the 28G2 showed no growth.

⁵ Act 56 of the Vermont Legislature, enacted in June 2015, established renewable energy standard requirements for Vermont electric distribution utilities utilizing three categories, or Tiers. Tier III requirements are met either through additional new distributed energy resources, or as illustrated here, through energy transformation projects that reduce fossil fuel consumption.