NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

April 29, 2021

VIA ELECTRONIC FILING

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: **NERC Full Notice of Penalty regarding Vermont Transco, LLC ,**
FERC Docket No. NP21-_-000

Dear Ms. Bose:

The North American Electric Reliability Corporation (NERC) hereby provides this Notice of Penalty[1] regarding Vermont Transco, LLC (VT), NERC Registry ID# NCR07228,[2] in accordance with the Federal Energy Regulatory Commission's (Commission or FERC) rules, regulations, and orders, as well as NERC's Rules of Procedure including Appendix 4C (NERC Compliance Monitoring and Enforcement Program (CMEP)).[3]

NERC is filing this Notice of Penalty, with information and details regarding the nature and resolution of the violations,[4] with the Commission because Northeast Power Coordinating Council, Inc. (NPCC) and VT have entered into a Settlement Agreement to resolve all outstanding issues arising from NPCC's determination and findings of the violations of the Reliability Standards listed below.

[1] *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards, Order No. 672, 114 FERC ¶ 61,104, order on reh'g, Order No. 672-A, 114 FERC ¶ 61,328 (2006); Notice of New Docket Prefix "NP" for Notices of Penalty Filed by the N. Am. Elec. Reliability Corp., Docket No. RM05-30-000 (February 7, 2008); Mandatory Reliability Standards for the Bulk-Power System, Order No. 693, 118 FERC ¶ 61,218, order on reh'g, Order No. 693-A, 120 FERC ¶ 61,053 (2007).*

[2] VT was included on the NERC Compliance Registry as a Transmission Owner (TO), Transmission Operator (TOP), Transmission Planner (TP), and Transmission Service Provider (TSP) on June 21, 2007.

[3] *See* 18 C.F.R § 39.7(c)(2) and 18 C.F.R § 39.7(d).

[4] For purposes of this document, each violation at issue is described as a "violation," regardless of its procedural posture and whether it was a possible, alleged, or confirmed violation.

According to the Settlement Agreement, VT admits to the violations and agrees to the penalty of one hundred thousand dollars ($100,000) in addition to other activities as outlined in the Settlement Agreement, in addition to other activities as outlined in the Settlement Agreement.

Statement of Findings Underlying the Violations

This Notice of Penalty incorporates the findings and justifications set forth in the Settlement Agreement, by and between NPCC and VT. The details of the findings and basis for the penalty are set forth in the Settlement Agreement and herein. This Notice of Penalty filing contains the basis for approval of the Settlement Agreement by NERC Enforcement staff under delegated authority from the NERC Board of Trustees Compliance Committee (NERC BOTCC).

In accordance with Section 39.7 of the Commission's regulations, 18 C.F.R. § 39.7 (2021), NERC provides the following summary table identifying each violation of a Reliability Standard resolved by the Settlement Agreement. Further information on the subject violations is set forth in the Settlement Agreement and herein.

Violation(s) Determined and Discovery Method
*SR = Self-Report / SC = Self-Certification / CA = Compliance Audit / SPC = Spot Check / CI = Compliance Investigation

NERC Violation ID	Standard	Req.	VRF/VSL	Applicable Function(s)	Discovery Method* & Date	Violation Start-End Date	Risk	Penalty Amount
NPCC2020023721	FAC-003-4	R2	High/ Severe	TO	SR 7/17/2020	6/6/2020 – 6/8/2020	Moderate	$100k
NPCC2020024276	FAC-003-4	R6	Medium/ Lower	TO	SR 12/3/2020	5/17/2010 – 6/17/2020	Moderate	

Information About the Entity

The Vermont Electric Power Company, Inc. (VELCO) and the Vermont electric distribution companies own VT, which is a limited liability company. VT owns 722 miles of transmission lines that directly serve six distribution providers and an additional ten indirectly through the sub-transmission system. VT also owns and (through VELCO) operates 55 facilities that include substations, switching stations, and terminal facilities, a back-to-back High Voltage DC Converter station, and approximately 1,500 miles of fiber optic communications and associated networking equipment. VT owns fourteen tie lines with other Transmission Owners, including two asynchronous ties with the Quebec Interconnection. In 2020, the peak load on the VELCO system was 960 MW. The VT assets are operated and managed by VELCO.

FAC-003-4 R2 (NPCC2020023721)

VT violated FAC-003-4 R2 when a tree encroached into the Minimum Vegetation Clearance Distance (MVCD) and contacted a 345kV transmission line, causing the line to trip and lock out of service as designed. Attachment A includes additional facts regarding the violation.

The root cause was a lack of process. Specifically, the process in place did not adequately capture and integrate asset information into existing programs and databases, resulting in failures to consistently add two 345 kV transmission lines to all company systems and work plans. Internal misunderstandings and ineffective compliance assessments contributed to the continued failure to inspect these applicable lines.

NPCC determined that this violation posed a moderate risk to the reliability of the BPS. Attachment A includes the facts regarding the violation that NPCC considered in its risk assessment.

VT submitted mitigating activities to address the referenced violation. Attachment A includes a description of the mitigation activities VT took to address this violation.

VT certified that it had completed all mitigation activities. NPCC verified that VT had completed all mitigation activities as of December 22, 2020. Attachment A provides specific information on NPCC's verification of VT's completion of the activities.

FAC-003-4 R6 (NPCC2020024276)

VT violated FAC-003-4 R6 by failing to include the same two parallel and redundant 345kV transmission lines in the FAC-003-4 R2 violation in its database used for its Vegetation Management Program. VT did not perform a Vegetation Inspection on these two transmission lines at least once per calendar year with no more than 18 calendar months between inspections on the same Right-of-Way, as required. NPCC determined that the violation spanned prior versions of the Reliability Standard, FAC-003-1 R1 and FAC-003-3 R6. Attachment A includes additional facts regarding the violation.

The root cause was a lack of process. Specifically, the process in place did not adequately capture and integrate asset information into existing programs and databases and VT failed to verify it adequately incorporated the lines into its database used to track its Vegetation Management Program. Internal misunderstandings and ineffective compliance assessments contributed to the continued failure to inspect these applicable lines.

NPCC determined that this violation posed a moderate risk to the reliability of the BPS. Attachment A includes the facts regarding the violation that NPCC considered in its risk assessment.

VT submitted mitigating activities to address the referenced violation. Attachment A includes a description of the mitigation activities VT took to address this violation.

VT certified that it had completed all mitigation activities. NPCC verified that VT had completed all mitigation activities as of December 22, 2020. Attachments A provides specific information on NPCC's verification of VT's completion of the activities.

Regional Entity's Basis for Penalty

According to the Settlement Agreement, NPCC has assessed a penalty of one hundred thousand dollars ($100,000) for the referenced violations. In reaching this determination, NPCC considered the following factors:

1. NPCC considered VT's compliance history and determined that there were no prior relevant instances of noncompliance, as described in Attachment A;
2. The violations of FAC-003-4 R2 and FAC-003-4 R6 posed a moderate risk to the reliability of the BPS, as discussed in Attachment A;
3. VT self-reported the FAC-003-4 R2 violation in a timely manner from the date of discovery;
4. NPCC did not apply mitigating credit for VT's internal compliance program given the importance of preventing tree grow-ins and contacts emphasized by NPCC and NERC combined with the nature of these violations;
5. VT was cooperative throughout the compliance enforcement process;
6. VT agreed to settle these violations and penalty and accepted responsibility and admitted to the violations; and
7. There were no other mitigating or aggravating factors or extenuating circumstances that would affect the assessed penalty.

After consideration of the above factors, NPCC determined that, in this instance, the penalty amount of one hundred thousand dollars ($100,000) is appropriate and bears a reasonable relation to the seriousness and duration of the violations.

Statement Describing the Assessed Penalty, Sanction, or Enforcement Action Imposed[5]

Basis for Determination

Taking into consideration the Commission's direction in Order No. 693, the NERC Sanction Guidelines and the Commission's July 3, 2008, October 26, 2009 and August 27, 2010 Guidance Orders,[6] NERC Enforcement staff reviewed and approved the resolution between NPCC and VT of the violations in this Notice of Penalty under delegated authority from the NERC BOTCC. In approving the resolution, NERC Enforcement staff reviewed the applicable requirements of the Commission-approved Reliability Standards and the underlying facts and circumstances of the violations at issue, and considered the factors listed above.

For the foregoing reasons, NERC Enforcement staff approved the resolution and believes that the assessed penalty of one hundred thousand dollars ($100,000) is appropriate for the violations and circumstances at issue, and is consistent with NERC's goal to promote and ensure reliability of the BPS.

Pursuant to 18 C.F.R. § 39.7(e), the penalty will be effective upon expiration of the 30-day period following the filing of this Notice of Penalty with FERC, or, if FERC decides to review the penalty, upon final determination by FERC.

Attachments to be Included as Part of this Notice of Penalty

The attachments to be included as part of this Notice of Penalty are the following documents:

1. Settlement Agreement by and between NPCC and VT executed February 1, 2021, included as Attachment A;
2. VT's Self-Report for FAC-003-4 R2 dated July 17, 2020, included as Attachment B; and
3. VT's Self-Report for FAC-003-1 R1[7] dated December 3, 2020, included as Attachment C.

[5] *See* 18 C.F.R. § 39.7(d)(4).

[6] *N. Am. Elec. Reliability Corp., "Guidance Order on Reliability Notices of Penalty," 124 FERC ¶ 61,015 (2008); N. Am. Elec. Reliability Corp., "Further Guidance Order on Reliability Notices of Penalty," 129 FERC ¶ 61,069 (2009); N. Am. Elec. Reliability Corp., "Notice of No Further Review and Guidance Order," 132 FERC ¶ 61,182 (2010).*

[7] As noted above, this violation spanned several versions of the relevant Standard, starting with FAC-003-1 R1 and ending with FAC-003-4 R6.

Notices and Communications: Notices and communications with respect to this filing may be addressed to the following:

*Persons to be included on the Commission's service list are indicated with an asterisk. NERC requests waiver of the Commission's rules and regulations to permit the inclusion of more than two people on the service list. Kristin McKeown General Counsel Northeast Power Coordinating Council, Inc. 1040 Avenue of the Americas, 10th Floor New York, NY 10018-3703 (212) 840-1070 kmckeown@npcc.org Scott Nied Assistant Vice-President Northeast Power Coordinating Council, Inc. 1040 Avenue of the Americas, 10th Floor New York, NY 10018-3703 (212) 840-1070 snied@npcc.org Damase Hebert Director, Enforcement Northeast Power Coordinating Council, Inc. 1040 Avenue of the Americas, 10th Floor New York, NY 10018-3703 (212) 840-1070 dhebert@npcc.org	Teresina Stasko* Assistant General Counsel and Director of Enforcement North American Electric Reliability Corporation 1325 G Street NW, Suite 600 Washington, DC 20005 (202) 400-3000 (202) 644-8099 – facsimile teresina.stasko@nerc.net James McGrane* Senior Counsel North American Electric Reliability Corporation 1325 G Street NW, Suite 600 Washington, DC 20005 (202) 400-3000 (202) 644-8099 – facsimile james.mcgrane@nerc.net Joshua Yang* Associate Counsel North American Electric Reliability Corporation 1325 G Street NW, Suite 600 Washington, DC 20005 (202) 400-3000 (202) 644-8099 – facsimile joshua.yang@nerc.net

Thomas Dunn Chief Executive Officer Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 tdunn@velco.com Christopher E. Root Chief Operating Officer Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 croot@velco.com Michele Nelson Chief Financial Officer Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 mnelson@velco.com Dan Nelson VP Technology and CSM Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 dnelson@velco.com Kerrick Johnson Chief Innovation Officer Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 kjohnson@velco.com	

Karin Stamy General Counsel Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 kstamy@velco.com Mark Sciarrotta Assistant General Counsel Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 msciarrotta@velco.com Brian Connaughton Director and CCO Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 bconnaughton@velco.com Kim Moulton Director of Compliance Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 kmoulton@velco.com Deb Ludden Senior Compliance Representative Vermont Electric Power Company (VELCO) 366 Pinnacle Ridge Road Rutland, VT 05701 dludden@velco.com	

Conclusion

NERC respectfully requests that the Commission accept this Notice of Penalty as compliant with its rules, regulations, and orders.

Respectfully submitted,

/s/ Joshua Yang

Teresina Stasko
Assistant General Counsel and Director of Enforcement
James McGrane
Senior Counsel
Joshua Yang
Associate Counsel
North American Electric Reliability Corporation
1325 G Street NW
Suite 600
Washington, DC 20005
(202) 400-3000
(202) 644-8099 - facsimile
teresina.stasko@nerc.net
james.mcgrane@nerc.net
joshua.yang@nerc.net

cc: Vermont Transco, LLC
Northeast Power Coordinating Council, Inc.

Attachments

In re: **Vermont Transco LLC**	)	**Violation ID Nos.:**
	)	NPCC2020023721 (FAC-003-4 R2)
NERC Registry ID No. NCR07228	)	NPCC2020024276 (FAC-003-4 R6)

SETTLEMENT AGREEMENT
OF
NORTHEAST POWER COORDINATING COUNCIL, INC.
AND
VERMONT TRANSCO LLC.

I. INTRODUCTION

1. Northeast Power Coordinating Council, Inc. ("NPCC") and Vermont Transco LLC ("VT") (collectively, the "Parties") enter into this Settlement Agreement ("Agreement") to resolve violations by VT of the above-captioned Reliability Standards and Requirements.

2. The Parties stipulate to the facts in this Agreement for the sole purpose of resolving the violations. VT admits that these facts constitute violations of the above-captioned Reliability Standards and Requirements and takes responsibility for the noncompliances.

II. OVERVIEW OF VT

3. VT is a Vermont limited liability company (LLC) that is owned by the Vermont Electric Power Co., Inc. ("VELCO") and the Vermont distribution utilities. It does not have employees or a governing board; instead, VT Transco is managed by VELCO. VELCO is a Vermont corporation governed by a Board of Directors consisting of 13 directors: the CEOs/General Managers of Green Mountain Power, Burlington Electric Department and Vermont Electric Cooperative; and General Manager of Vermont Public Power Supply Authority representing its municipal utility members; three directors designated by the Vermont Low Income Trust for Electricity; two directors designated by the public power owners of VT Transco; three additional directors designated by Green Mountain Power as VT Transco's largest shareholder; and the President and CEO of VELCO. Board members serve one-year terms and are subject to annual election by all shareholders, regardless of how designated.

4. VT is registered as a Transmission Owner ("TO"), Transmission Operator ("TOP"), Transmission Planner ("TP") and Transmission Service Provider ("TSP") in the NPCC region. VT, in its capacity as a TO, is subject to compliance with the above captioned Reliability Standards and Requirements.

III. EXECUTIVE SUMMARY

5. This Agreement resolves two violations of the Facilities Design, Connections, and Maintenance (FAC) Reliability Standards and Requirements.[1] The first violation (NPCC202002372) posed a moderate risk to the reliability and resilience of the Bulk Power System (BPS). It was discovered by VT and self-reported in July 2020. The second violation (NPCC2020024276) posed a moderate risk to the reliability and resilience of the BPS. A description of the violation was included in the self-report for the first violation.

6. The first violation involved a tree contact on a very short (0.23 mile long) 345 kV transmission line between two substations. VT failed to include two parallel and redundant 345kV transmission lines in its database used for its Vegetation Management Program and a tree grew underneath one of the transmission lines, which caused the line to trip and lock out of service as designed. The violation posed a moderate risk to the reliability and resilience of the BPS based, in part, on the redundant configuration of the transmission lines. The transmission line was originally constructed in 2010 to connect the Vermont Yankee substation to a newly constructed Vernon substation built concurrently with the transmission line. The Vermont Yankee Nuclear Plant, which was interconnected via the transmission lines serving this area, was permanently retired in 2014.

7. The second violation involved the failure of VT to include the same two parallel and redundant 345-kV transmission lines in its database used for its Vegetation Management Program. Therefore, VT did not perform a Vegetation Inspection on these two transmission lines at least once per calendar year as required. The violation posed a moderate risk to the reliability and resilience of the BPS based, in part, on the redundant configuration of the transmission lines. The transmission lines are 0.23 miles long and traverse primarily over paved parking lots with the exception of a small area. The two lines were originally constructed in 2010 to connect the Vermont Yankee 345 kV substation to the newly constructed Vernon 345 kV substation which was built concurrently with the transmission lines. The original purpose of these transmission reliability upgrades was to strengthen VT's BES transmission network in the area and at the same time, maintain the historic level of redundancy interconnecting the Vermont Yankee Nuclear Plant to the BES transmission network. These upgrades, as designed, minimized the risk of inhibiting power output of the plant due to a local transmission facility outage. The Vermont Yankee Nuclear Plant was permanently retired in 2014 and decommissioning was completed in 2018.

8. VT mitigated the violations by first removing the vegetation in the Right-of-Way (ROW) and including the two transmission lines in the database used for its Vegetation Management Program. Additionally, VT performed an extent of condition review and determined that no other FAC-003 applicable lines were missing from the database used for its Vegetation Management Program.

[1] The facts related to the violations are set forth in Attachment A, which is incorporated herein by reference.

9. NPCC determined that a penalty is appropriate in this case. NPCC has levied a monetary penalty of $100,000.

IV. ADJUSTMENT FACTORS

10. In addition to the facts and circumstances described in section VII of this Agreement, NPCC considered the following factors in its penalty determination.

Self-Identification and Self-Reporting

11. VT self-identified and self-reported this violation prior to detection or intervention by NPCC. Effective oversight of the reliability and resilience of the BPS depends upon self-reporting by registered entities. NPCC seeks to encourage self-reporting of offenses and, therefore, applied mitigating credit relating to the first violation (NPCC2020023721).

Cooperation

12. VT has been highly cooperative throughout the entire enforcement process relating to these violations. Throughout the enforcement process, VT voluntarily provided NPCC with information that was timely, candid, detailed, thoughtful, organized, and thorough. VT fully cooperated in NPCC's investigation of the violations and all associated mitigating activities and openly shared information regarding its processes, procedures, internal controls, assets, systems, and organization. NPCC applied mitigating credit.

Admission of Noncompliance

13. VT recognized and affirmatively accepted responsibility for its conduct by admitting to the violations and entering into this Agreement. NPCC applied mitigating credit since there is independent value in organizations accepting responsibility for their violations.

Internal Compliance Program

14. VT has a comprehensive and detailed internal compliance program, which articulates the company's approach and commitment to providing a reliable, resilient and secure BPS, while at the same time complying with all applicable laws including the approved NERC Reliability Standards. The company's approach in meeting its obligations continues to evolve based on the desire to continuously enhance the culture associated with compliance and the company's ability to meet its obligations through the use of best practices, internal controls, strong procedural controls, and evidence collection. VT's internal compliance program is thoroughly and appropriately executed as evidenced by VT's initiative and recognition of compliance obligations, reliable and accurate self-reporting, history of timely and thorough mitigation and its cooperation with NPCC during monitoring and enforcement activities. NPCC has previously approved VT for the self-logging program and NPCC did not identify any systemic concerns in VT's approach to maintaining compliance to the NERC and NPCC standards. Given the importance of preventing tree grow-ins and contacts emphasized by NPCC and NERC combined with the nature of these

violations, however, NPCC did not apply a mitigating credit to VT for its internal compliance program.

Compliance History

15. NPCC considered VT's compliance history and determined that there were no relevant instances of noncompliance.

V. PENALTY

16. Based upon the foregoing, VT shall pay a monetary penalty of $100,000 to NPCC.

17. NPCC shall present an invoice to VT after the Agreement is approved by the Federal Energy Regulatory Commission ("Commission") or affirmed by operation of law. Upon receipt, VT shall make a payment by the Required Date, which shall be 30 days from the receipt of the invoice. NPCC will notify NERC if it does not timely receive the payment from VT.

18. If VT does not remit the payment by the Required Date, interest payable to NPCC will begin to accrue pursuant to the Commission's regulations at 18 C.F.R. §35.19a(a)(2)(iii) from the date that payment is due, and shall be payable in addition to the payment.

VI. ADDITIONAL TERMS

19. The Parties agree that this Agreement is in the best interest of Bulk Power System reliability. The terms and conditions of the Agreement are consistent with the regulations and orders of the Commission and the NERC Rules of Procedure.

20. NPCC shall report the terms of all settlements of compliance matters in the United States to NERC. NERC will review the Agreement for the purpose of evaluating its consistency with other settlements entered into for similar violations or under similar circumstances. Based on this review, NERC will either approve or reject this Agreement. If NERC rejects the Agreement, NERC will provide specific written reasons for such rejection and NPCC will attempt to negotiate with VT a revised settlement agreement that addresses NERC's concerns. If a settlement cannot be reached, the enforcement process will continue to conclusion. If NERC approves the Agreement, NERC will (a) report the approved settlement to the Commission for review and approval by order or operation of law and (b) publicly post the violations and the terms provided for in this Agreement.

21. This Agreement binds the Parties upon execution and may only be altered or amended by written agreement executed by the Parties. VT expressly waives its right to any hearing or appeal concerning any matter set forth herein, unless and only to the extent that VT

contends that any NERC or Commission action constitutes a material modification to this Agreement.

22. NPCC reserves all rights to initiate enforcement action against VT in accordance with the NERC Rules of Procedure in the event that VT fails to comply with any of the terms or conditions of this Agreement. VT retains all rights to defend against such action in accordance with the NERC Rules of Procedure.

23. VT consents to NPCC's future use of this Agreement for the purpose of assessing the factors within the NERC Sanction Guidelines and applicable Commission orders and policy statements, including, but not limited to, the factor evaluating VT's history of violations. Such use may be in any enforcement action or compliance proceeding undertaken by NERC or any Regional Entity or both, provided however that VT does not consent to the use of the conclusions, determinations, and findings set forth in this Agreement as the sole basis for any other action or proceeding brought by NERC or any Regional Entity or both, nor does VT consent to the use of this Agreement by any other party in any other action or proceeding.

24. VT affirms that all of the matters set forth in this Agreement are true and correct to the best of its knowledge, information, and belief, and that it understands that NPCC enters into this Agreement in express reliance on the representations contained herein, as well as any other representations or information provided by VT to NPCC during any VT interaction with NPCC relating to the subject matter of this Agreement.

25. Upon execution of this Agreement, the Parties stipulate that each possible violation addressed herein constitutes a violation. The Parties further stipulate that all required, applicable information listed in Section 5.3 of the CMEP is included within this Agreement.

26. Each of the undersigned agreeing to and accepting this Agreement warrants that he or she is an authorized representative of the party designated below, is authorized to bind such party, and accepts the Agreement on the party's behalf.

27. The undersigned agreeing to and accepting this Agreement warrant that they enter into this Agreement voluntarily and that, other than the recitations set forth herein, no tender, offer, or promise of any kind by any member, employee, officer, director, agent, or representative of the Parties has been made to induce the signatories or any other party to enter into this Agreement.

28. This Agreement may be signed in counterparts.

29. This Agreement is executed in duplicate, each of which so executed shall be deemed to be an original.

[SIGNATURES ON FOLLOWING PAGE][2]

[2]An electronic version of this executed document shall have the same force and effect as the original.

Agreed to and accepted:

Edward A. Schwerdt
President & CEO
Northeast Power Coordinating Council, Inc.

2/1/2021
Date

Christopher E. Root
Chief Operating Officer
Vermont Transco LLC

January 26, 2021
Date

VII. VIOLATIONS

A. FAC-003-4 R2 (NPCC2020023721)

30. The purpose of FAC-003-4 is to maintain a reliable electric transmission system by using a defense in-depth strategy to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation related outages that could lead to Cascading.

31. FAC-003-4 R2 states:

> Each applicable Transmission Owner and applicable Generator Owner shall manage vegetation to prevent encroachments into the MVCD of its applicable line(s) which are not either an element of an IROL, or an element of a Major WECC Transfer Path; operating within its Rating and all Rated Electrical Operating Conditions of the types shown below [Violation Risk Factor: High] [Time Horizon: Real-time]:
>
> 2.1. An encroachment into the MVCD, observed in Real-time, absent a Sustained Outage,
>
> 2.2. An encroachment due to a fall-in from inside the ROW that caused a vegetation related Sustained Outage,
>
> 2.3. An encroachment due to the blowing together of applicable lines and vegetation located inside the ROW that caused a vegetation-related Sustained Outage,
>
> 2.4. An encroachment due to vegetation growth into the line MVCD that caused a vegetation-related Sustained Outage.

Description of Violation

32. On July 17, 2020, Vermont Transco LLC ("VT") submitted a Self-Report stating that, as a Transmission Owner (TO), it was in violation of FAC-003-4, R2. VT experienced an encroachment due to vegetation growth into the Minimum Vegetation Clearance Distance (MVCD).

33. On Saturday, June 6, 2020 at 11:48 a.m., VT's 345 kV "Line A" (3340) connecting the Vernon 345 kV and Vermont Yankee 345 kV substations tripped and locked out of service by design, resulting in a Sustained Outage. The 3340 line is protected by differential protection and is not equipped with automatic reclosing due to the short distance between the two substations.

34. Line A and "Line B" are parallel 345 kV lines that were both built in 2010 as part of the newly constructed 345 kV Vernon substation project in the area of the Vermont Yankee plant. The 620 MW plant was taken offline on December 29, 2014 and decommissioning of the site was completed in 2018.

35. Upon the trip and lock out, VT operations issued an event notification internally and as required, communicated with ISO-New England to confirm the status of the de-energized line. VT dispatched maintenance personnel to the site and upon visual inspection, maintenance personnel determined the cause was likely due to vegetation growth under Line A. Based upon system conditions and the facilities remaining in service, VT determined that Line A could remain out of service throughout the weekend without causing reliability concerns.

36. Upon further investigation on Monday June 8, 2020, VT determined that the Line A trip was caused by vegetation located between structure #1 and structure #2 at a point where the conductor is about 40 feet above the ground. Three trees at this point were burnt or blackened, showing signs consistent with evidence of a line to ground fault. Based on the measurements made in the field, tree 1 and 2 were below the MVCD, and tree 3 was at the MVCD. These three trees and other vegetation in the area were removed and Line A was restored at 12:58 PM on June 8, 2020.

37. The weather at the time of the event was about 85 degrees Fahrenheit (F), dry, with winds from the north/northwest with gusts between 12 and 16 miles per hour. The trees were red maple and black cherry.

38. The violation began on June 6, 2020, when the Line A vegetation contact occurred and ended on June 8, 2020 when VT put Line A back into service.

39. The root cause of this violation was lack of process. In particular, the process in place did not adequately capture and integrate asset information (modified, build, or purchased) into existing programs and databases. In 2010, when Line A and Line B were built as part of a 345 kV substation expansion near the VY plant, VT failed to verify that it had adequately incorporated the new FAC-003 applicable assets into its databases used to track its Vegetation Management Program.

    a. The inadequate processes in place in 2010 also failed to fully capture and integrate compliance obligations with these newly installed assets.
    b. With no formal process in place, adding new asset information to the company's various programs and databases was inconsistent. Both Line A and Line B information was not consistently added across all company systems and work plans. This inconsistency resulted in an error in all downstream processes which included the source of FAC-003-1 applicable lines list used by VT until mid-2014.
    c. On July 1, 2014 FAC-003-3 became enforceable which made the standard applicable to lines identified by the Planning Coordinator as Interconnection Reliability Operating Limit (IROL) lines that, in addition to the historical lines greater than 200 kV, within the region be treated as applicable to the standard.. Due to this requirement change, the VT Compliance team created a list that identified applicable FAC-003 lines as part of the company's internal evidence reviews. However, when this list was created the associated computer database systems used by the

Vegetation Management department was not validated at this time to identify the information gaps. This resulted in both Line A and Line B not being inspected for vegetation between 2010 and the date of the incident. To date, Line B has not experienced an MVCD encroachment.

40. Internal misunderstandings and ineffective compliance assessments are the two identified contributing causes as to why the failure to inspect these applicable lines continued for years.

    a. The location of the applicable lines is complex as there is a perimeter fence encircling the substations within the area which confused ownership demarcation and resulting responsibilities. The nuclear facility is interconnected via the Vernon substation to the BES system and its owner had implemented rigorous access controls and authorizations, including keys, badges, and guard access. The area over the substations is designated a "no-fly zone" and fly-overs required prior approval. Additionally, both Line A and Line B cross primarily over a paved parking lot, which added confusion around the need to inspect the facilities. These factors led to internal misunderstandings around asset information, roles and responsibilities, ownership, obligations, and equipment classifications.

    b. In addition, due to ineffective compliance assessments, several missed opportunities to identify the erroneous data led to the belief VT was in full compliance. Annual compliance assessments between 2010 and 2014 did not identify the error due to reliance on a database set in which Line A information was not included. The annual compliance assessments between 2014 and 2020 did include information of Line A, however, the self-assurance with the vegetation management process, along with past self-assessments, naming convention differences, VT Vegetation Management program, along with past self-assessments, peer reviews, mock and regional audit performance, created misplaced confidence in relying on information later discovered to be inaccurate.

       VT's annual assessment process relies on its' Subject Matter Experts (SMEs), Standard Owners (SOs) and Compliance personnel separately reviewing the accuracy and completeness of the evidence provided. Due to the familiarity with the evidence and no face-to-face discussions between departments, the gap in information was not identified.

Risk Assessment

41. The violation posed a moderate risk and did not pose a serious or substantial risk to the reliability of the bulk power system.[3] While VT's system is designed to minimize cascading events due to a single line outage, the failure to maintain vegetation within the ROW increased the risk of vegetation-caused outages and

[3] FAC-003-4 R2 has a VRF of "High." According to the VSL Matrix, this issue warranted a "Severe" VSL.

faults, which can create a potential for cascading outages depending on system topology.

42. Both of these 345 kV lines run between the Vernon 345 kV substation and the VY 345 kV substations, both are approximately 1,250 feet long, and both are rated the same.
    Summer
    - Normal = 1224 MVA
    - LTE = 1430 MVA
    - STE = 1495 MVA

    Winter
    - Normal = 1649 MVA
    - LTE = 1791 MVA
    - STE = 1842 MVA

43. The Vernon 345 kV station is a Transmission Switching Station. There are no distribution voltages that emanate from it. Four other 345 kV lines terminate in the Vernon 345 kV station. At the time of the incident, the load on Line A was 30 MVA and the Load on Line B was 34 MVA; all flowing from Vernon 345 kV to VY 345 kV. Upon the trip of Line A, Line B carried the entire 64 MVA.

44. Line B, although outside of both substation fences, traverses primarily paved parking areas and did not experience a MCVD violation.

45. The transmission facilities in the area of these substations were upgraded in 2010 to enhance both the BES system performance and interconnection to the generation plant. With the decommissioning of the nuclear plant in 2014, the transmission facilities in this area are overbuilt for the loads experienced in this part of the VT system.

46. Based on the topology of the system, normal flows are from Vernon to VY on both lines and primarily serve subtransmission load. Between January 1, 2015 through July 1, 2020 the highest actual loading on either parallel line was 83 MVA which is 6.8% of the summer normal rating of 1224 MVA and 5.5% of the summer STE rating of 1495 MVA.

47. This was a single line-to-ground fault and the breakers operated as designed to trip Line A as per the differential relay scheme in use. After the incident, VT simulated a scenario in which a three-phase fault occurred and the associated breaker(s) failed to open as designed. This simulation showed that the fault would have been cleared in 12 cycles by clearing the adjacent bus section and that there would not have been generation loss or load loss or any otherwise adverse impact.

48. The trees, red maple and black cherry, exhibit relatively fast growth rates in Vermont, especially at the age of the trees. It is likely that the environmental

conditions, including the hydrology of the site due to a nearby stormwater pond, increased the growth rates.

49. However, the area where the vegetation contact took place was part of the 2010 substation expansion construction site. As such, the earliest that vegetation growth could have started was 2010. In the 2010-2014 timeframe while the VY plant was still online, the offending vegetation could not have grown high enough to reach the MVCD while the 620 MW single reactor plant was still online and sending its output into the VY 345 kV substation.

50. The system conditions during this violation were normal and there were no emergencies that occurred as a result of the vegetation contact. There was no loss of load or significant impact to system reliability. The load in the Vermont Transco TOP control area at the time of the trip was 485 MW.

51. No harm is known to have occurred as a result of this violation.

Mitigation Actions

52. To mitigate this violation, on June 8, 2020, VT removed three trees that were at or just below the MVCD where the evidence of the vegetation contact occurred. VT also removed other vegetation consistent with its TVMP. On June 8, 2020, VT inspected Line A and Line B in their entirety and added them to the database used for its Vegetation Management Program. Additionally, VT performed an extent of condition review and determined that there were no other FAC-003 applicable lines that were omitted from VT's Vegetation Management Program.

53. On January 7, 2021, VT certified to NPCC that it completed its mitigation activities as of December 22, 2020. On January 21, 2021, NPCC verified VT's completion of the mitigation activities.

54. Since 2010, VT's project commissioning process has evolved as part of the corporate goal of continual learning and operational effectiveness. Prior to the current process the term "commissioning" focused primarily on "energizing new equipment" whereas today, the commissioning process consists of project check lists, sign offs from all departments and the completion of their department checklists. This process has continued to broaden and mature over time but has traditionally been forward looking and did not consider reverse looking to identify errors from past projects. VT took immediate actions to adjust the commissioning process to address asset information needs associated with the Vegetation Management Program as part of the mitigating activity for this 2020 event. In addition, the VT corporate process will continue to be reassessed to further identify any existing gaps that require process enhancements to prevent issues such as this from occurring in the future.

B. FAC-003-4 R6 (NPCC2020024276)

55. The purpose of FAC-003-4 is to maintain a reliable electric transmission system by using a defense in-depth strategy to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation related outages that could lead to Cascading.

56. FAC-003-4 R6 states:

> Each applicable Transmission Owner and applicable Generator Owner shall perform a Vegetation Inspection of 100% of its applicable transmission lines (measured in units of choice - circuit, pole line, line miles or kilometers, etc.) at least once per calendar year and with no more than 18 calendar months between inspections on the same ROW [Violation Risk Factor: Medium] [Time Horizon: Operations Planning].

Description of Violation

57. On July 17, 2020, VT submitted a Self-Report stating that, as a Transmission Owner (TO), it was in violation of FAC-003-4, R2. Although VT did not submit a separate Self-Report for R6, the Self-Report for R2 identified that VT was also in violation of FAC-003-4, R6 and previous versions of the Reliability Standard. NPCC investigated these two related violations together. On December 3, 2020, after discussions with NPCC, VT submitted a Self-Report stating that, as a Transmission Owner (TO), it was in violation of FAC-003-1, R1.

58. On Saturday, June 6, 2020, VT had a vegetation contact on its 345 kV Line A connecting the Vernon and Vermont Yankee substations. During the investigation to determine the cause of the vegetation contact, VT determined that two applicable lines, both 345 kV lines connecting the Vernon 345 kV and Vermont Yankee 345 kV substations, were not included in the applicable database and therefore were not part of VT's Vegetation Management Program resulting in vegetation inspections not being performed for these two lines. As such, VT did not perform a Vegetation Inspection of 100% of its FAC-003 applicable transmission lines at least once per calendar year and with no more than 18 calendar months between inspections on the same ROW.

59. This violation began on May 17, 2010, when the two applicable lines were constructed and ended on June 8, 2020, when the two lines were inspected in their entirety and entered into VT's applicable databases used in support of its Vegetation Management Program. NPCC determined that the violation spans multiple versions of the Reliability Standard as follows:
    - FAC-003-1, R1, from May 17, 2010, when the two applicable lines were constructed to June 30, 2014, when version 1 of the standard was retired.

- FAC-003-3 R6, from July 1, 2014, the effective date of version 3 of the Reliability Standard to September 30, 2016, the retirement date of version 3 of the Reliability Standard.
- FAC-003-4 R6, from October 1, 2016, the effective date of version 4 of the Reliability Standard, to June 8, 2020, when the two applicable lines were were inspected in their entirety and included in VT's Vegetation Management Program.

NPCC further determined that, for purposes of this noncompliance, there was no substantive change in the Entity's compliance obligations under the three applicable Standard Requirements.

60. VT performed an extent of condition review and determined that no other applicable lines or portions of applicable lines were omitted from the the Vegetation Management Program.

61. The root cause of this violation was lack of process. In particular, there was no formal processes in place to adequately capture and integrate asset information (modified, built, or purchased) into existing programs and databases. In 2010, when Line A and Line B were built as part of a 345 kV substation expansion near the VY plant, VT failed to verify that it had adequately incorporated the new FAC-003 applicable assets into its database used to track its Vegetation Management Program.

    a. Inadequate processes in place in 2010 also failed to fully capture and integrate compliance obligations with these newly installed assets.
    b. With no formal process in place, adding new asset information to the company's various programs and databases was inconsistent. Both Line A and Line B information was not consistently added across all company database systems and work plans. This inconsistency resulted in an error in all downstream processes which included the source of FAC-003-1 applicable lines list used by VT until mid-2014.
    c. On July 1, 2014 FAC-003-3 became enforceable which made the standard applicable to lines identified by the Planning Coordinator as Interconnection Reliability Operating Limit (IROL) lines within the region required that, in addition to the historical lines >200 kV lines. . Due to this new requirement, the VT Compliance team created a new list identifying the company's applicable FAC-003 lines that was then used as part its evidence used to review and verify compliance to the standard. However, this list was not fully validated with the information included in the database system used by the Vegetation Management department to identify the information gaps between the two for the lines in question. This resulted in a false sense of compliance to the standard. In addition, this resulted in both Line A and Line B not being inspected for vegetation between 2010 and the

date of the incident. To date, Line B has not experience an MVCD encroachment.

62. Internal misunderstandings and inadequate compliance assessments are identified as contributing causes as to why the failure to inspect these applicable lines continued for years..

    a. The location of the applicable lines is complex as there is a perimeter fence encirculing the area which confused ownership demarcation and resulting responsibilities. The nuclear facility, which is interconnected via the Vernon substation to the BES system, owner had rigorous access controls and authorizations, including keys, badges, and guard access. The area over the substations is designated a no-fly zone and fly-overs required prior federal government approval. Additionally, both of the applicable lines cross primarily over a paved parking lot, which added confusion around the need to inspect the facilities. These factors led to internal misunderstandings around asset information, roles and responsibilities, ownership, obligations, and equipment classifications.

    b. In addition, due to ineffective compliance assessments, several missed opportunities to identify the erroneous data led to the belief VELCO was in full compliance. Annual compliance assessments between 2010 and 2014 did not identify the error due to reliance a database set in which the two lines' information was not included. The annual compliance assessments between 2014 and 2020 included information about the lines, however, confidence in the overall VT Vegetation Management program, along with past self-assessments, peer reviews, mock and regional audit performance, created misplaced confidence in relying on information later discovered to be inaccurate.

       Moreover, evidence used to verify compliance during the company's annual assessments included information beyond what was applicable to FAC-003 which hindered the accuracy of the review due to the amount of data presented.

Risk Assessment

63. The violation posed a moderate risk and did not pose a serious or substantial risk to the reliability of the bulk power system.[4] While VT's system is designed to minimize cascading events due to a single line outage, the failure to perform an annual vegetation inspection does increase the risk of vegetation-caused outages

[4] FAC-003-4 R6 has a VRF of "Medium." According to the VSL Matrix, this issue warranted a "Lower" VSL.

and faults, which can create a potential for cascading outages depending on system topology.

64. Both of the 345 kV lines run between the Vernon 345 kV substation and the VY 345 kV substation, both are approximately 1,250 feet long, and both are rated the same.
    Summer
    - Normal = 1224 MVA
    - LTE = 1430 MVA
    - STE = 1495 MVA

    Winter
    - Normal = 1649 MVA
    - LTE = 1791 MVA
    - STE = 1842 MVA

65. Line B, although outside of both substation fences, traverses primarily over a paved parking area and did not experience a MCVD violation.

66. The transmission facilities in the area of these substations were upgraded in 2010 to enhance both the BES system performance and interconnection to the generation plant. With the decommissioning of the nuclear plant in 2014, the transmission facilities in this area are overbuilt for the loads experienced in the part of the VT system.

67. Based on the topology of the system, normal flows are from Vernon to VY on both lines and primarily serve subtransmission load. Between January 1, 2015 through July 1, 2020 the highest actual loading on either parallel line was 83 MVA which is 6.8% of the summer normal rating of 1224 MVA and 5.5% of the summer STE rating of 1495 MVA.

68. The area where the vegetation contact took place was part of the 2010 substation expansion construction site. As such, the earliest that vegetation growth could have started was 2010. In the 2010-2014 timeframe while the VY 620 MW single reactor plant was still online, the offending vegetation could not have grown high enough to reach the MVCD.

69. Based on the extent of condition performed by VT, all other applicable lines are included in the database used for the Vegetation Management program.

70. Absent the inclusion of these two transmission lines in the Management Program, VT has a strong Vegetation Management Program. The corporate Vegetation Management Program is applied to it's entire transmission system regardless of voltage class and/or applicability to FAC-003. The VT system includes voltages of 115 kV, 230 kV, 345 kV, and 450 kV DC that travel throughout the state of Vermont and portions of New Hampshire. The management program includes: a four year vegetation management cycle; each year the company performs tree-

contact-avoiding vegetation management on 1/4th of its overall system; VT uses a Geographic Information System (GIS) mapping system to track this work from development through completion and performs a quarterly aerial inspection of its entire system, annual ground inspections; and a cyclical vegetation-based LiDAR program. VT employs and trains a qualified staff of foresters. VT's foresters are active with peer companies and with the North American Transmission Forum (NATF) with respect to the development and utilization of vegetation management best practices. The last outage VT had on an FAC-003 NERC applicable line was in its F206 corridor on 5/10/2002. This outage was due to an off-ROW danger tree falling into the ROW. The last grow-in outage experienced by VT was on its 340 line on 7/8/1993.

71. The length of each line is 0.23 miles. VT has 228.08 miles of applicable lines. The two lines make up 0.2 percent of the applicable lines. (0.46/228.02 miles).

72. No harm is known to have occurred as a result of this violation.

Mitigation Actions

73. To mitigate this violation, on June 8, 2020, VT removed three trees that were at or just below the MVCD where the evidence of the vegetation contact occurred. On June 8, 2020, VT inspected Line A and Line B in their entirety and added them to its coporate Vegetation Management Program. VT's Vegetation Management Program has been successful in preventing vegetation related outages for applicable lines that are within the documented program and now including these lines in the program should prevent recurrence. Additionally, VT performed an extent of condition review and determined that there were no other FAC-003 applicable lines that were omitted from VT's Vegetation Management Program.

74. Additionally, VT assessed and verified its Vegetation Management controls used to maintain and monitor rights of way along with its processes used to document and validate compliance to FAC-003 as well as asset information needs. VT has documented the processes used to maintain its rights of way and created additional controls that will mitigate future occurrences such as this. This includes an annual review, not to exceed 18 calendar months..

75. On January 7, 2021, VT certified to NPCC that it completed its mitigation activities as of December 22, 2020. On January 21, 2021, NPCC verified VT's completion of the mitigation activities.

76. Since 2010, VT's project commissioning process has evolved as part of the corporate goal of continual learning and operational effectiveness. Prior to the current process the term "commissioning" focused primarily on "energizing new equipment" whereas today, the commissioning process consists of project check lists, sign offs from all departments and the completion of their department checklists. This process has continued to broaden and mature over time but has

traditionally been forward looking and did not consider reverse looking to identify errors from past projects. VT took immediate actions to adjust the commissioning process to address asset information needs associated with the Vegetation Management Programs part of the mitigating activity for this 2020 event. In addition, the VT corporate process will again be reassessed to further identify any existing gaps that require process enhancements to prevent issues such as this from occurring in the future.

VIEW SELF-REPORT: FAC-003-4 R2. (COMPLETED)

This item was submitted by Deb Ludden (dludden@velco.com) on 7/17/2020

Please note that the circumstances under which an Entity would submit a Scope Expansion form are different from what would require a new Self-Report. Please review the material in this link to see clarifying information and examples of these differences before continuing with this form.

FORM INFORMATION

Registered Entity:	Vermont Transco, LLC
NERC Registry ID:	NCR07228
JRO ID:	
CFR ID:	
Entity Contact Information:	Deb Ludden

REPORTING INFORMATION

Applicable Standard:	FAC-003-4
Applicable Requirement:	R2.
Applicable Sub Requirement(s):	2.4.
Applicable Functions:	TO

Has a Possible violation of this standard and requirement previously been reported or discovered: No

Has this Possible Violation previously been reported to other Regions: No

Date Possible Violation was discovered: 6/6/2020

Beginning Date of Possible Violation: 6/6/2020

End or Expected End Date of Possible Violation: 6/8/2020

Is the violation still occurring? No

Provide detailed description and cause of Possible Violation:

R2.4 This requirement was violated due to a tree contact on the 3340 345 kV line.
Less than adequate on-boarding controls at the time the 3340 345 kV line was constructed resulted in the line not being included in the company Vegetation Management program. This resulted in the 3340 line not being maintained according to the program causing a tree encroachment to the minimum vegetation clearance distance (MVCD).

R6 was violated due to the same root cause as R2.4 which resulted in the 3340 and 3381 345 kV lines not being inspected within the required “at least once per calendar year with no more than eighteen calendar months between inspections”.

How was the issue discovered?
Operational detective controls (i.e. SCADA alarms) identified on Saturday, June 6, 2020, at 11:48 a.m., the 3340 line, an approximately 1,200 foot 345kV line tripped and locked out of service (see attached aerial map of the tree contact location and associated facilities). Upon receiving notice from Operations, an Asset Maintenance staff member responded to the site to perform an inspection and evaluate the likely cause of the trip. Upon visual inspection, he determined that the likely cause was nearby trees. There was no loss of load or significant impact to system reliability as both the Vernon and Vermont Yankee 345 kV Substations remained connected by a parallel 345kV line (3381). VELCO Operations and Asset Maintenance personnel decided to leave the 3340 line de-energized for further evaluation. They planned the removal of the suspected vegetation on Monday, June 8, 2020.

Operational real time assessments were performed as required and did not signify reliability concerns with keeping the line out of service through the weekend.

Engineering detective controls included relay settings that detected the fault and opened the line as designed to protect the equipment within both connected Substations.

On June 8, 2020, Vegetation Management personnel responded to the site and concluded from visual inspection of the vegetation closest to the line that the line trip was caused by vegetation located about 236 feet north of structure #1 and 384 feet south of structure #2 at a point where the conductor is about 40 feet above the ground. Three trees were removed from beneath the 3340 line. Based on the measurements made in the field, tree #1 was below the MVCD, tree #2 was also below the MVCD, and tree #3 was at the MVCD. Other vegetation in the area was also removed, consistent with VELCO’s vegetation management program, and the 3340 line was restored on June 8, 2020.

Based upon an initial review, the review team determined that the 3340 line was not part of the company’s maintenance systems, i.e., vegetation management and the Vegetation Inventory Program (VIP), or asset maintenance (Cascade). Upon this discovery, information pertaining to the lines was added to the respective systems as well as the land management database (referred to by the name of the company that developed the tool as Contract Land Staff or CLS). Information was also added to the Company’s shared mapping system to depict the line and Substation assets, as well as the underlying easements and leased areas.

Was the issue discovered by an internal control?
Yes, the event was discovered through the detective controls listed above

If discovered through detective controls, explain how the detective control led to the discovery of the noncompliance.
Please see response above.

In addition, were there prevention controls in place to alert responsible staff of activities needed to avoid a lapse in compliance?

VELCO utilizes multiple controls to monitor compliance activities to prevent non- compliance with any of its required NERC obligations. However, the controls in place did not identify the historical data gap that led to this oversight which resulted in the primary source of data used by the vegetation management department to meet compliance was inaccurate or incomplete. Summarized below are the key controls VELCO uses to maintain compliance. This is not meant to be a complete list but rather those that are directly applicable to this event.

Preventive controls:
Compliance: Annual compliance assessments and review of evidence are performed using the AssurX database action tracking program. This database is used to identify all upcoming deadlines, assignments, evidence collections and regularly scheduled obligations. In addition, the tool reminds SMEs to collect specific pieces of evidence to store for evidence to be used in the future. External contracted resources are utilized to assess the company's level of compliance and to perform mock audits, train SME's, perform internal control evaluations, process mapping and document enhancements. Additionally, North American Transmission Forum (NATF) peer reviews have taken place.

Facility Maintenance: Utilizes Cascade to identify all field equipment and maintenance deadlines. Perform monthly Substation inspections.

Vegetation Management: Transmission Vegetation Management Plan (TVMP)
- Four-year vegetation management cycle
- Integrated Vegetation Management Program and industry best practices
- Integrated Vegetation Management is an assessment and management program for maintaining desired compatible low growing vegetation within right-of-way
- Follow NERC, NESC, and ANSI standards for Vegetation management
- On file with Vermont Public Service Board, Vermont Agency of Natural Resources and the Vermont Agency of Agriculture
- Vegetation Inventory Program (VIP), a GIS based work management system that in house foresters use to scope, record and track quality assurance of vegetation management through completion
- Exercise full easement widths
- Quarterly Aerial patrols
- Annual ROW ground patrols
- Light detection and ranging (LiDAR) survey of the transmission system

If so, why did the preventive controls fail?
As discussed above, the asset onboarding controls in place at the time this line was constructed failed in this instance to align all program databases with the applicable information. The lack of adequate controls resulted in not identifying the underlying gap in information used as part of corporate compliance oversight, even though these preventive controls are robust regarding their respective scopes.

Since then, the company's project commissioning process has evolved as part of the corporate goal of continual learning and operational effectiveness. Prior to the current process the term "commissioning" focused primarily on "energizing new equipment" whereas today, the commissioning process consists of project check lists, sign offs from all departments and the completion of their department checklists. This process has continued to broaden and mature over time but has traditionally been forward looking and did not consider reverse looking to identify errors from past projects. As part of the mitigations associated with this event, this process will again be assessed to identify any existing gaps in the process that require process enhancements to further mitigate issues such as this in the future

Inadequate Processes - VELCO had less than adequate on-boarding controls at the time the applicable assets were constructed. The controls in place at the time failed to adequately capture and integrate new asset information (modified, built, or purchased) into the existing programs and databases.

Consequences:
Less than adequate on-boarding controls at that time of construction resulted in information inconsistences across the various databases used to monitor and maintain compliance by the applicable departments. Specifically, the asset information for both the 3340 and 3381 lines were not captured in the applicable systems used to maintain rights of way vegetation compliance.

A4–Management/Organization, B5-Change Management LTA, C04-Risks/consequences associated with change not adequately reviewed / assessed

Internal Misunderstandings - Due to the complexity of the Vermont Yankee/ Vernon facility where the 3340 line is located there were internal misunderstandings around asset information, flight restrictions, roles and responsibilities, ownership, obligations, and equipment classifications.
Consequences: There was internal miscommunication. The particular layout of these facilities is unusually complex and unique on our system. The various departments involved for ensuring our compliance with the various requirements did not, in retrospect, coordinate and communicate as optimally as they could have, resulting in what we have now identified as the data and process gaps leading to this potential non-compliance.

Cause Code:
A4–Management/Organization, B3-Work Organization & Planning LTA, C08 Job scoping did not identify special circumstances and/or conditions.

Inadequate Compliance Assessments – Several opportunities failed to identify the erroneous data that led to the belief VELCO was in full compliance.

Consequences: Annual compliance assessments between 2010 and 2014 did not identify the error due to reliance on the facility maintenance data set in which the 3340 line information was not included. Annual compliance assessments between 2014 and 2020 included the 3340 line in the list of applicable lines, implying inaccurately that the line was being maintained based on the evidence provided and reviewed.

Further, self-assurance with the vegetation management process, along with past self-assessments, mock audit, and audit performance created misplaced security with the reliance on information then unknown to be inaccurate. Aerial patrol evidence included as part of the evidence package includes information beyond what is applicable to FAC-003 and is presented in a manner that did not easily align the listed lines with the records of work performed which hindered the accuracy of the reviews.

Cause Code:
A3 – Individual Human Performance, B1- Skill Based Errors, C07-Omission/repetition of steps based on assumptions for completion.
R2.4 the 3340 345 kV line was in scope.

For R6 both the 3340 and 3381 345 kV lines are in scope. These two lines make up 0.2 percent of the applicable line miles to FAC-003 (0.46 miles / 228.08 miles)..

As provided in the aerial photo, the facility includes two 345 kV and two 115 kV Substations, two parallel 345kV lines and one 115 kV line that interconnect the Substations at this location. The two 345 kV lines are each 0.23 miles in length, were installed to meet the interconnection requirements of the generation plant and serve to connect the plant to the BES grid via the Vernon 345 KV Substation. All facilities listed above are located inside the fence line owned by the generator facility. VELCO uses its TVMP to support its vegetation management processes, controls and to meet its requirements.

R2.4: VELCO 3340 345 kV line connecting the Vernon and Vermont Yankee Substations.
R6: VELCO 3340 and 3381 345 kV lines connecting the Vernon and Vermont Yankee substations.

Are Mitigating Activities in progress or completed? No

Potential Impact to the Bulk Power System: Minimal

Actual Impact to the Bulk Power System: Minimal

Provide detailed description of Potential Risk to Bulk Power System:

R2.4 noncompliance:

The 3340 345 kV line is not a designated IROL line by ISO-NE.

The 3340 345 kV NX9 line ratings are:
Summer
- Normal = 1224 MVA
- LTE = 1430 MVA
- STE = 1495 MVA
- DAL = 1713 MVA
Winter
- Normal = 1649 MVA
- LTE = 1791 MVA
- STE = 1842 MVA
- DAL = 2036 MVA

The historical flow values on the 3340 line between January 1, 2017 and July 1, 2020 were:
From Vernon end:
- Average = 11.8 MW / 2.752 MVAR
- Maximum = 39.7 MW / 6.12 MVAR
- Minimum = -13.3 MW / -4.054 MVAR
From VT Yankee end:
- Average = -11.4 MW / -1.438 MVAR
- Maximum = 13.12 MW / 3.432 MVAR
- Minimum = -39.7 MW / -6.494 MVAR

R6 noncompliance:

The 3340 and 3381 345 kV lines are not designated as IROL lines by ISO-NE.
As provided in the aerial photo the applicable assets within the facility are described as:
- Both the 3340 and 3381 345 kV lines connecting these two Substations

In addition, the facility includes the assets listed below along with a brief history of their evolution and the timing of applicable in-service dates:

- Vernon Substation is a 345kV BPS Substation which supports the BES transmission grid.

- Vermont Yankee is a 345kV BPS Substation that serves to interconnect the now de-energized generation plant to the BES grid via the Vernon 345 kV Substation.

History of facility assets within the outer fence line:

The Vermont Yankee 345 kV and 115 kV Substations were both originally constructed by the owner of the Vermont Yankee generation plant.

The assets designated with “Vermont Yankee” act as the interconnection point for the generator to the electric grid via the two 345 kV lines to the Vernon 345 kV Substation constructed beginning in 2009 and completed in 2010 with power flowing on the 3340 345 kV line beginning May 17, 2010.

2009 to present:
- On May 18, 2009 VELCO and Entergy signed an operating agreement based on the sale of their two Substations to be maintained by VELCO as of May 18, 2009.
- The Vernon 345kV and 115 kV Substation was constructed by VELCO in 2010 to support the reliability needs of the Bulk Electric System (BES) by interconnecting a new 345 kV line directly into the BES grid. This Substation was designed and engineered to serve and protect the grid.
- Between the Vernon and Vermont Yankee facilities are three redundant interconnectors, 1-115 kV and 2-345 kV (each 0.23 miles long) serving the generator. The two 345 kV lines maintain adequate reliability to the generation plant and they act similar to a bus jumper. All three of these lines are protected and relayed as a bus differential due to their short distance and primary purpose of interconnecting the generator to the Vernon Substation.
- At the time of purchase VELCO, in its efforts to minimize impacts to the grid and the generator, decided to keep the original Vermont Yankee Substations in place and in service while the Vernon project was constructed. In addition, VELCO aligned its energization of the project with the generator plants 28 day scheduled maintenance outage therefore limiting and operational impact.
- On December 29, 2014, the Vermont Yankee generation plant was decommissioned.

The added complexity of this facilities proximity to the generation plant contributed to this noncompliance:
- Rigorous access controls and authorizations including keys, badging, training and/or guard access authorization depending on the access point within the facility due its status as a former generation plant.
- The physical configuration of the generator makes visual inspection of line 3340 difficult from the helicopter’s traditional approach route. Since line 3340 was inadvertently omitted from the vegetation management plan, as noted previously, the pilots did not alter their route to make visual inspection of line 3340. Now that lines 3340 and 3381 are included in the vegetation management plan, future visual inspections of line 3340 and 3381 from the helicopter will take place, from an updated approach route that accommodates both pilot safety and the physical plant configuration.

Risk associated with the non-compliance:
- At the time of the tree contact there was no loss of load or significant impact to system reliability.
- Due to the limited subsequent impact to the reliability of the grid based contingency analysis by both VELCO and its RC/BA, personnel determined that the line could remain out of service until Monday when it would be fully assessed and mitigated.

Entity Description:
VT Transco is a Vermont manager-managed limited liability company (LLC) that is owned by VELCO and the Vermont distribution utilities. It does not have employees or a governing board; instead, VT Transco is managed by VELCO.
VELCO is a Vermont corporation governed by a Board of Directors consisting of 13 directors: the CEOs/General Managers of Green Mountain Power, Burlington Electric Department and Vermont Electric Cooperative; and General Manager of Vermont Public Power Supply Authority representing its municipal utility members; three directors designated by the Vermont Low
Income Trust for Electricity; two directors designated by the public power owners of VT Transco; three additional directors designated by Green Mountain Power as VT Transco’s largest shareholder; and the President and CEO of VELCO. Board members serve one-year terms and are subject to annual election by all shareholders, regardless of how designated.
VT Transco is registered as a TO, TOP, TP and TSP with NERC. ISO-NE is its BA, RC and PC. VT Transco RRO is NPCC.
VELCO executive management consists of the CEO and five Executive Officers that report to the CEO: a Senior Vice President, General Counsel, Chief Compliance Officer and Corporate Secretary; a Vice President and Chief Operating Officer; a Vice President, Chief Financial Officer and Treasurer; a Vice President of Strategic Business Development; and a Vice President of Technology.

Vermont is located in northwest New England and bordered by Canada to the north, New York to the wes-t, New Hampshire to the east and Massachusetts to the south. As described below, Vermont is electrically connected to Hydro Quebec through a back-to-back 225MW High Voltage Direct Current station, and asynchronously through a second (block-loaded) connection.
Our transmission neighbors to the west are New York Power Authority and National Grid-New York, our transmission neighbors to the east are the Eversource-New Hampshire and National Grid-New England and our transmission neighbors to the south are National Grid-New England
and Eversource (CONVEX).

The following describes the system’s voltage levels, number of miles by voltage class, and the interconnection points:
450kV line: 52.4 miles (owned by the Vermont Electric Transmission Company (VETCO) with maintenance performed by VELCO under a 30 year agreement with New England Utilities)
345kV lines: 167.4 miles
230kV lines: 32.5 miles
115kV lines: 465.1 miles
115kV underground and submarine cable: 4.9 miles Interconnections:
2 line ties with Eversource at 345kV
3 line ties with Eversource at 115kV
1 line tie with National Grid (New England) at 230kV
2 line ties with National Grid (New York) at 115kV
3 line ties with National Grid (New England) at 115kV
1 line ties with New York Power Authority at 115kV
2 line ties with Hydro Quebec at 115k
In addition, Vermont has several reactive devices positioned throughout the state to aid in dynamic reactive support. These include a STATCOM in Essex, an SVC in

Weathersfield, four synchronous condensers in Williamstown, one variable reactor in New Haven, two variable reactors in Ludlow, and one fixed reactor in Vernon. Vermont also has four Phase Shifting Transformers to regulate our 115 kV interconnections to NY and NH.

Another unique feature of VELCO's system is its looped fiber optic network that connects to all of the VT Transco Substations and control centers. The fiber optic network is used for voice, video, data, and relay communications which enables fact reclosing.

VT Transco also owns the 115 kV to lower voltage step down transformers with their associated low voltage bus, and is the operating authority for the low voltage feeders out of the VT Transco Substations (13.8, 34.5, and 46kV). The low voltage lines leaving the Substations are owned and operated by the Vermont distribution utilities.

VELCO has direct connections with six of the 17 Vermont distribution utilities.

The 2019 peak load on the VELCO system was 940 MW on July 20th and the 2019 minimum load was 308 MW on June 8th.

The highest recorded winter peak load was 1086 MW on 12/20/04 and the highest recorded summer peak was 1118 MW on 8/2/06.

As described above, this line's purpose was to support a now decommissioned generation plant and therefore did not result in any significant impact on the BPS. As required, VELCO communicated the event to ISO-NE.

The noncompliance did not result in load loss or significant impacts to the BPS

Yes the annual TPL assessments, Vermont Long Range Studies and other planning work have identified that single-element and multi-element contingencies at Vernon and Vermont Yankee 345 kV and 225 kV Substations, including the Vermont Yankee 345 kV Substation loss does not adversely impact the BES. And as noted above, VELCO performed contingency analysis before and after the event, and did not identify system concerns.

Provide detailed description of Actual Risk to Bulk Power System:

As stated previously, there was no loss of load or significant impact to system reliability as the Vernon Substation and Vermont Yankee Substation remained connected by a parallel 345kV line (3381). Nevertheless, we note the following.

Preventive Controls:
- Long Term Planning processes used to identify reliability needs and design system to minimize the risks
- Design and engineering processes used to verify protection system performances
- Facility Maintenance processes used to maintain equipment within the Substations
- Operational processes used to monitor status of equipment, verification of system operating limits and corrective actions taken for an outage such as this.
- Cyber security processes used to maintain access controls to the equipment in the Substations.
- Physical security access controls
- Cyber asset list assessments performed via facility walk downs

Detective Controls:
- SCADA
- Alarming
- Protective relay coordination

Corrective:
- Facility walk down to both identify the cause of the outage and also after the fact to verify all equipment has been accurately documented in all applicable databases used to maintain the facilities and rights of way.
- Vegetation management assessment and rectification of applicable vegetation. All assets now identified in the corporate plan for right of way maintenance.

VELCO currently utilizes multiple preventive controls and processes to avoid noncompliance's such as this. However, since the database tools used to monitor and maintain compliance of these obligations, deadlines and responsibilities did not include the asset information, they were not afforded the high level of controls normally allowed the rights of way and Substation equipment.

As stated previously, there was no loss of load or significant impact to system reliability as the Vernon Substation and Vermont Yankee Substation remained connected by a parallel 345kV line (3381). The BPS system did not experience any reliability or security issues due to this noncompliance.

As stated previously, there was no loss of load or significant impact to system reliability as the Vernon Substation and Vermont Yankee Substation remained connected by a parallel 345kV line (3381).
As identified, in the photo included, within the Vermont Yankee fence line there are two primary facilities that were each engineered and designed to perform different purposes.
- The Vermont Yankee 345 kV and 115 kV Substations were originally constructed by the generator owner and designed to interconnect the generator to the BES grid. These facilities are designed and engineered to act as a generator node.
- The Vernon 345kV and 115 kV Substation facilities were constructed by VELCO in 2010 to support the reliability needs identified as part of VELCO's 2009 Long Range Transmission Plan of the Bulk Electric System (BES) by interconnecting a new 345 kV line into the greater BES grid. This Substation was designed and engineered to act as a transmission node.
- Between these two Substations are three lines, 1-115 kV and 2-345 kV (each 0.23 miles long), to provide redundant feeds to the generation plant. All three lines are protected and relayed as a bus differential due to their short distance and primary purpose of interconnecting the generator to the Vernon Substation.
- The Vermont Yankee generator has been decommissioned since December 29, 2014. However, the proximity of the plant and strict ground and air access controls contributed to the noncompliance.
- The minimal impact to both the local area and BES for the loss of this line is due to many factors including: redundant connections between the Vernon and Vermont Yankee Substations; the fact that the Vermont Yankee Substations were designed to interconnect the generation plant to the BES grid; the fact that the plant has been decommissioned; and the fact that the overall system load levels have declined.
- If the generation plant had not been at this location the configuration at this site may not have required the redundant lines and protection systems installed to meet its reliability needs.
- Due to the needs of the generationplant, the facility was designed to minimize any time associated with tying in the new transmission Substation to the interconnection facility and avoid any issues with safety, security and reliability of both the plant, the State, and the grid itself.

Additional Comments:

NOTE: While submittal of a mitigation plan is not required until after a determination of a violation is confirmed, early submittal of a mitigation plan to address and remedy an identified deficiency is encouraged. Submittal of a mitigation plan shall not be deemed an admission of a violation. (See NERC Rules of Procedure, Appendix 4C, Section 6.4.)

VIEW SELF-REPORT: FAC-003-1 R1. (COMPLETED)

This item was submitted by Deb Ludden (dludden@velco.com) on 12/3/2020

Please note that the circumstances under which an Entity would submit a Scope Expansion form are different from what would require a new Self-Report. Please review the material in this link to see clarifying information and examples of these differences before continuing with this form.

FORM INFORMATION

Registered Entity:	Vermont Transco, LLC
NERC Registry ID:	NCR07228
JRO ID:	
CFR ID:	
Entity Contact Information:	Deb Ludden

REPORTING INFORMATION

Applicable Standard:	FAC-003-1
Applicable Requirement:	R1.
Applicable Sub Requirement(s):	R1.1.
Applicable Functions:	TO

Has a Possible violation of this standard and requirement previously been reported or discovered: No

Has this Possible Violation previously been reported to other Regions: No

Date Possible Violation was discovered: 6/6/2020

Beginning Date of Possible Violation: 9/1/2011

End or Expected End Date of Possible Violation: 6/8/2020

Is the violation still occurring? No

Provide detailed description and cause of Possible Violation:

-- How was the Standard and Requirement violated? How did it happen?
The vegetation inspections were not performed for the 3340 and 3381 345 kV lines which are applicable to FAC-003.

-- How was the issue discovered? Was the issue discovered by an internal control? If discovered through detective controls, explain how the detective control led to the discovery of the noncompliance. In addition, were there prevention controls in place to alert responsible staff of activities needed to avoid a lapse in compliance? If so, why did the preventative controls fail?
On Saturday June 6, 2020, at 11:48 a.m., the 3340 line, an approximately 1,200 foot 345kV line tripped and locked out of service. This line connects the VELCO Vernon Substation to the VELCO Vermont Yankee Substation (comprised of an 115kV and a 345kV yards).

Due to the short distance between these two substations, the circuit is protected by differential protection and is not equipped with reclosing, and the line tripped as designed and remained de-energized following the line trip. There was no loss of load or significant impact to system reliability as the Vernon Substation and Vermont Yankee Substation remained connected by a parallel 345kV line (3381). Both circuits (3340 and 3381) were designated as being subject to North American Reliability Corporation (NERC) standards, and in particular FAC-003. Weather close to the time of the event (11:50 am), was recorded by a nearby weather station as well as a company weather system. The weather was about 85 degrees Fahrenheit (F), dry, with winds from the north/northwest with gusts between 12.8 and 16 miles per hour.

Upon the indication of the line trip, Operations issued an event notification e-mail to 44 recipients at the company, including staff from Operations, Telecom, Legal, Information Technology, Environmental, Engineering, Vegetation Management and Asset Maintenance. Communications between the ISO-New England (ISO-NE) Control Room and the VELCO Control Center confirmed the status of the de-energized 3340 line and that the suspected fault was being investigated.

Upon receiving notice from Operations, an Asset Maintenance staff member responded to the site to perform an inspection and evaluate the likely cause of the trip. Upon visual inspection, he determined that the likely cause was nearby trees. Since the trip did not result in a loss of load or significant impact to reliability, VELCO Operations and Asset Maintenance personnel decided to leave the 3340 line de-energized for further evaluation. They planned the removal of the suspected vegetation on Monday, June 8, 2020.

On June 8, 2020, Vegetation Management personnel responded to the site and concluded preliminarily from visual inspection of the vegetation closest to the line that the line trip was caused by vegetation located about 236 feet north of structure #1 and 384 feet south of structure #2 at a point where the conductor is about 40 feet above the ground. Three trees were removed and were burnt or blackened, consistent with evidence of a line to ground fault. Three trees were removed from beneath the 3340 line. Based on the measurements made in the field, tree #1 was below the MVCD, tree #2 was also below the MVCD, and Tree #3 was at the MVCD. Other vegetation in the area was also removed, consistent with VELCO's vegetation management program, and the 3340 line was restored on June 8, 2020.

Based upon an internal review, the review team determined that both the 3340 and 3381 lines were not listed as part of the company's maintenance database systems, Vegetation Inventory Program (VIP), or asset management (Cascade). Upon this discovery, information pertaining to the lines was added to the respective systems and the land management database (CLS). Information was also added to the company's shared mapping system to depict the lines and substation assets, as well as the underlying easements and leased areas.

-- What was the root cause?
Inadequate Processes – At the time of the substation construction (2009 to 2010) VELCO did not have a strong internal process in place to adequately capture and integrate compliance obligations with newly installed, modified, or purchased assets. In addition, external resources were utilized for much of the project management tasks during this time leading to inadequate communications with internal staff. Since then VELCO has continued to enhance its capital project program tracking to better document these assets within the applicable programs and databases. The existing process is being reviewed to identify additional enhancements that should be made based on the lessons learned from this event to avoid future occurrences.

Consequences: With no formal process at the time of the purchase of the existing Vermont Yankee assets and construction of the Vernon substation in place, adding new asset information to the company programs and databases was inconsistent and resulted in the omission of information from some sources used to monitor compliance obligations including that used to meet the FAC-003 requirements. The 3340 and 3381-line information was not captured in the company asset maintenance systems (Cascade, VIP) or the company GIS/mapping and CLS systems, but was correctly added to systems supporting Operations (SCADA, system models, engineering documentation, system and substation one lines, procedures, CPR). This omission from the Cascade and VIP systems resulted in an error in all downstream processes that originate from it, which included the source of FAC-003 applicable lines.

FAC-003-3 became enforceable on July 1, 2014. At that time, the Standard required that lines identified by the Planning Coordinator (ISO-NE) as IROL lines within the region be considered applicable in addition to lines >200kV. This led to Compliance personnel consolidating the applicable lines as part of an updated document.

A4–Management/Organization, B5-Change Management LTA, C04-Risks/consequences associated with change not adequately reviewed / assessed

-- Identify all contributing causes in order to effectively correct the noncompliance and prevent recurrence.
Internal Misunderstandings –
Uniquely complex locational characteristics contributed to the tree contact event which likely resulted from the missed inspections :
Rigorous Entergy access controls and authorizations including keys, badging, training and/or guard access authorization depending on the access point within the facility.
As a designated no-fly zone without prior authorization by the federal government, the area in question was undesirable to fly over during routine helicopter assessments.
A perimeter fence encircling the facility further confused lines of ownership demarcation and resultant responsibilities.
This resulted in internal misunderstandings around asset information, flight restrictions, roles and responsibilities, ownership, obligations, and equipment classifications.
In addition, due to the fact that both the 3340 and 3381 lines cross primarily across a paved parking lot added to the confusion around the need to inspect facilities between the Vernon and Vermont Yankee substations.

Consequences: There were many missed opportunities to identify and correct the error as part of the management of the facilities. Both the 3340 and 3381 lines were constructed to connect the Vermont Yankee and Vernon 345 kV substations that both reside within the fence line of the now decommissioned Vermont Yankee generating plant.

Cause Code:
A4–Management/Organization, B3-Work Organization & Planning LTA, C08 Job scoping did not identify special circumstances and/or conditions.

Inadequate Compliance Assessments – Several missed opportunities resulted in the failure to identify the erroneous data that led to the belief VELCO was in full compliance.

Consequences: Annual assessments after the 2014 enforcement date did not identify the error primarily due to reliance on the Cascade data set and VIP, in which the 3340 and 3381 line information were not included.

The following is a list of the primary causes that resulted in the error:
1. Different “naming” conventions used by the Vegetation Management and Compliance departments led to confusion that the lines were indeed compliant when in fact they were not.
2. The Compliance listing for its annual compliance assessments between 2014 and 2020 included the 3340 and 3381 lines in the list of applicable lines, implying the line was being maintained based on the evidence provided and reviewed.
3. The information provided as part of the evidence used to verify compliance included information outside the audit scope for the standard. The aerial patrol evidence included as part of the evidence package included information for all of the VELCO transmission line rights of way which is beyond the lines applicable to FAC-003. This additional information and the manner in which it was presented did not easily align the listed lines with the records of work performed which hindered the accuracy of the reviews.
4. The evidence packages were not detailed enough to easily identify errors and alluded to the idea that we were indeed compliant.
5. Further, self-assurance with the vegetation management process, along with the results of past self-assessments, mock audit, and NPCC audit performance created a false sense of security that the information was beyond reproach when in fact it was erroneous.
6. Since VELCO’s approach to right of way inspections has always been the same for all of its rights of way and not only for those lines applicable to the FAC-003 standard, it was believed that the lines were done since we do all lines each year. This false sense of security was built on VELCO’s record of not having had any significant outages due to vegetation during natural events. Such a sense security, or pride, was not completely unfounded given the Company’s rural, forested and mountainous service territory.
7. Due to the items listed above, communications between departments broke down through misunderstanding and interpretations of the evidence provided.

Cause Code:
A3 – Individual Human Performance, B1- Skill Based Errors, C07-Omission/repetition of steps based on assumptions for completion.

-- Describe the number of facilities, elements, relays, components, or procedures in scope.
Two parallel 345 kV lines that interconnect the Vermont Yankee and Vernon 345 kV substations. The two 345 kV lines are each 0.23 miles in length, were installed to meet the interconnection requirements of the generating plant and serve to connect the plant to the BES grid via the Vernon 345 KV substation. All facilities listed above are within the fence line owned by the decommissioned generator facility.

These two lines make up 0.2 percent of the applicable line miles to FAC-003 (0.46/228.08 miles)

-- Provide the unique identifier for each facility, element, component, or procedure in scope.
VELCO 3340 Line
VELCO 3381 Line

Are Mitigating Activities in progress or completed? Yes

An informal Mitigation Plan will be created upon submittal of this Self-Report with mitigating activities. If you would like to formalize that Mitigation Plan, please contact the Region.

If Yes, Provide description of Mitigating Activities:

-- Has the scope of the noncompliance been verified? Provide details of the steps taken to determine the extent of condition.
Based upon the initial review of the event, the assigned review team determined that neither the 3340 or 3381 line were part of the company’s maintenance systems (vegetation management, VIP), or asset management (Cascade). Upon this discovery, information pertaining to the lines was added to the respective systems and the land management database (CLS). Information was also added to the company’s shared mapping system to depict the line and substation assets, as well as the underlying easements and leased areas.

Upon discovering the omission of data in the company's asset maintenance systems, Vegetation Management, Operations, and Asset Maintenance personnel conducted a system-wide review to determine if similar data gaps existed for other assets. Any identified omitted information has since been added to the respective maintenance and mapping system.

VELCO has mitigated the risk of recurrences by identifying the list of actions below. All actions are planned to be completed by end of year.

Provide details to prevent recurrence:

-- Describe action taken to address and eliminate the root cause.
VELCO assigned a review team to assess the event, its root and contributing causes and mitigations to avoid issues in the future. The resulting mitigations are listed above.

-- Describe other action taken to prevent recurrence. (e.g. implemented enhanced training, added alarms to EMS, purchased compliance software solutions, updated procedures, perform monthly reviews, etc.)
Upon discovering the omission of data in the company's asset maintenance systems, Vegetation Management, Operations, and Asset Maintenance personnel conducted a system-wide review to determine if similar data gaps existed for other assets. This review resulted in the discovery of an omission of asset information associated with a 115kV line between the VELCO Coolidge Substation and the NextEra Barker Substation as well as a 115kV steel lattice tower, a conductor span connecting the Vermont Yankee 345kV yard to the Vermont Yankee 115kV yard, and a structure associated with the "K40 line" connecting the Vernon Substation to the Vermont Yankee 115kV yard. The omitted information has since been added to the respective maintenance and mapping system.

With these assets now listed in the applicable programs the applicable controls have been put into place. The current company controls used to inspect and maintain rights of way and pole equipment maintenance will now provide preventive controls used to mitigate future occurrences

VELCO is also assessing its NERC compliance training program to identify gaps, subject matter expert needs, and desired tool enhancements and support by external resources. These findings will then be used to initiate the enhanced program with all VELCO employees assigned NERC compliance responsibilities.

In addition, VELCO is initiating an effort to establish a company-wide document/information management solution including change control and communication of changes made when assets are purchased, constructed, or replaced to be certain all applicable databases are updated accordingly for compliance, maintenance and operational needs.

INADEQUATE PROCESSES (ROOT CAUSE)
Enhance Vegetation Managements process used to capture, integrate and manage asset data and information into vegetation management databases with other corporate databases and mapping systems to successfully identify all applicable FAC-003 assets as required within the NERC standard.
? Review existing processes used by the Vegetation Management Team to verify data to meet the FAC-003 requirements
? Define information needs.
? Review existing information.
? Identify possible information misalignments and update Vegetation Management information accordingly.
? Develop Vegetation Management process to be utilized during its annual compliance assessment to verify information.
- Annual review with information owners to determine changes since the last compliance assessment.
- Update the Vegetation Management program as needed to align information across the impacted departments

INADEQUATE COMPLIANCE ASSESSMENTS (CONTRIBUTING FACTOR)
Review and modify, as needed, the annual assessment of the FAC-003 Standard requirements to mitigate future occurrences.
? Enhance compliance documentation used to identify FAC-003 applicable assets.
? Document processes used to meet the compliance requirements of FAC-003, identify and mitigate gaps, and update accordingly.
? Develop enhanced FAC-003 program documentation specific to meeting the applicable requirements of the standard.
? Identify new format of evidence used to verify aerial patrols demonstrating compliance.
? Enhance the assessment tool (CATSWeb) to provide additional instructions for those signing off on actions to take, evidence to collect, and approvals needed.
Train all SMEs associated with FAC-003 on: processes used; how to interpret standard; how to present evidence effectively; and their specific roles and responsibilities.

INTERNAL MISUNDERSTANDINGS (Contributing Factor)
Communicate the FAC-003 3340 tree contact RCA findings to VELCO leadership
Communicate to all employees the findings of the RCA, the root cause and the importance of compliance being everyone's responsibility.

-- Describe action taken to restore compliance with the standard (e.g. performed missing maintenance, communicated the change to the PC, updated relay settings, etc.)
The 3340 and 3381 lines were added to the Cascade and Vegetation Management databases on June 8, 2020, ensuring that the lines would now be part of the annual inspection and thus annual work plan cycle.

The lines were inspected in their entirety on June 8, 2020 and a follow up site visit was completed on October 8, 2020 with the vegetation management team and line crew to ensure familiarity with all assets at Vermont Yankee yard.

Date Mitigating Activities (including activities to prevent recurrence) are expected to be completed or were completed:

12/31/2020

MITIGATING ACTIVITIES

Title	Due Date	Description	Prevents Recurrence
No data available in table			

Potential Impact to the Bulk Power System: Minimal

Actual Impact to the Bulk Power System: Minimal

Provide detailed description of Potential Risk to Bulk Power System:

-- Describe the facility, elements, or components' inherent properties. (e.g. MW, MVA, Voltage, generation type by fuel, historical (past two-three years) capacity factor of noncompliant generating assets, and whether they are part of designated IROLs/Inter-Area interfaces.
The 3340 and 3381 345 kV lines are not a designated IROL line by ISO-NE.

The 3340 and 3381 345 kV NX9 line ratings are:
Summer
- Normal = 1224 MVA
- LTE = 1430 MVA
- STE = 1495 MVA
- DAL = 1713 MVA
Winter
- Normal = 1649 MVA
- LTE = 1791 MVA
- STE = 1842 MVA
- DAL = 2036 MVA
Both conductors are 2 x 954 ACSR, 2 x 927 ACSR

The historical flow values on the 3340 line between January 1, 2017 and July 1, 2020 were:
From Vernon end:
- Average = 11.8 MW / 2.752 MVAR
- Maximum = 39.7 MW / 6.12 MVAR
- Minimum = -13.3 MW / -4.054 MVAR
From VT Yankee end:
- Average = -11.4 MW / -1.438 MVAR
- Maximum = 13.12 MW / 3.432 MVAR
- Minimum = -39.7 MW / -6.494 MVAR

R1.1 noncompliance (properties of the applicable trees causing the contact):

The three tree's identified by field personnel are listed below:

Below is the summary table which includes information about the trees in question
see attachment for the chart showing details for the trees in question
The three tree's identified are listed in the chart above. These types of tree
Both red maple and black cherry will exhibit relatively fast growth rates in Vermont, especially at the age of the trees that were at the MVCD. It is likely that the environmental conditions, including the hydrology of the site due to a nearby stormwater pond increased the growth rates.
Weather close to the time of the event was recorded by a nearby weather station as well as by a VELCO weather system. The weather was about 85 degrees Fahrenheit (F), dry, with winds from the north/northwest and gusts between approximately 12 and 16 miles per hour.

It is not known what caused the contact. Tree #3 above (Red Maple) was recorded to be at the MVCD of 4.3 feet from the conductor.
The assets designated with "Vermont Yankee" act as the interconnection point for the generator to the electric grid via the two 345 kV ties to the Vernon 345 kV Substation constructed in the 2009/2010 time period.

- Between these two facilities are three interconnectors, 1-115 kV and 2-345 kV (each 0.23 miles long), as required to meet regulatory requirements for interconnecting a nuclear generator. All three of these lines are protected and relayed as a bus differential due to their short distance and primary purpose of interconnecting the generator to the Vernon substation.
- To minimize impact on the grid and/or plant itself VELCO chose to tie the two facilities together via to lines that act similar to a bus jumper

-- Describe your entity and any relevant details related to the risk of the noncompliance (e.g. total load served, total generation owned, your host Transmission Owner, Reliability Coordinator, or Planning Coordinator, or Transmission Planner)
Risk associated with the non-compliance: There was no loss of load or significant impact to system reliability as only the 3340 line was taken out of service with the remaining 3381 345 kV line remaining. Due to the limited impact to the reliability of the grid, personnel determined that the line could remain out of service until the following Monday when the area could be fully assessed and successfully mitigated.
As required, VELCO did communicate the event to ISO-NE.

Entity Description:
VT Transco is a Vermont manager-managed limited liability company (LLC) that is owned by VELCO and the Vermont distribution utilities. It does not have employees or a governing board; instead, VT Transco is managed by VELCO.
VELCO is a Vermont corporation governed by a Board of Directors consisting of 13 directors: the CEOs/General Managers of Green Mountain Power, Burlington Electric Department and Vermont Electric Cooperative; and General Manager of Vermont Public Power Supply Authority representing its municipal utility members; three directors appointed by the Vermont Low Income Trust for Electricity, a public benefits corporation; two directors appointed by the public power owners of VT Transco; three additional directors appointed by Green Mountain Power as VT Transco's largest shareholder; and the President and CEO of VELCO.

VT Transco LLC is registered as a TO, TOP, TP and TSP with NERC. ISO-NE is its BA, RC and PC. VT Transco LLC RRO is NPCC.

VELCO executive management consists of the CEO and four Executive Officers that report to the CEO: a Vice President and Chief Operating Officer; Vice President, Chief Financial Officer and Treasurer; a Vice President of Technology; and, a Chief Innovation and Communications Officer.
Entity Description:
VT Transco is a Vermont manager-managed limited liability company (LLC) that is owned by VELCO and the Vermont distribution utilities. It does not have employees or a governing board; instead, VT Transco is managed by VELCO.
VELCO is a Vermont corporation governed by a Board of Directors consisting of 13 directors: the CEOs/General Managers of Green Mountain Power, Burlington Electric Department and Vermont Electric Cooperative; and General Manager of Vermont Public Power Supply Authority representing its municipal utility members; three directors appointed by the Vermont Low Income Trust for Electricity, a public benefits corporation; two directors appointed by the public power owners of VT Transco; three additional directors appointed by Green Mountain Power as VT Transco's largest shareholder; and the President and CEO of VELCO.

VT Transco LLC is registered as a TO, TOP, TP and TSP with NERC. ISO-NE is its BA, RC and PC. VT Transco LLC RRO is NPCC.

VELCO executive management consists of the CEO and four Executive Officers that report to the CEO: a Vice President and Chief Operating Officer; Vice President, Chief Financial Officer and Treasurer; a Vice President of Technology; and, a Chief Innovation and Communications Officer.

Vermont is located in northwest New England and bordered by Canada to the north, New York to the west, New Hampshire to the East and Massachusetts to the south. As described below, Vermont is electrically connected to Hydro Quebec through a back-to-back 225MW High Voltage Direct Current station, and asynchronously through a second (block-loaded) connection. Our transmission neighbors to the west are New York Power Authority and National Grid-New York, our transmission neighbors to the east are the Eversource-New Hampshire and National Grid-New England and our transmission neighbors to the south are National Grid-New England and Eversource (CONVEX).

The following describes the system's voltage levels, number of miles by voltage class, and the interconnection points:
450kV line: 52.4 miles (owned by the Vermont Electric Transmission Company (VETCO) with maintenance performed by VELCO under a 30 year agreement with New England Utilities)
345kV lines: 167.4 miles
230kV lines: 32.5 miles
115kV lines: 465.1 miles
115kV underground and submarine cable: 4.9 miles Interconnections:
2 line ties with Eversource at 345kV
3 line ties with Eversource at 115kV
1 line tie with National Grid (New England) at 230kV
2 line ties with National Grid (New York) at 115kV
3 line ties with National Grid (New England) at 115kV
1 line ties with New York Power Authority at 115kV
2 line ties with Hydro Quebec at 115kV
In addition, Vermont has several reactive devices positioned throughout the state to aid in dynamic reactive support. These include a STATCOM in Essex, an SVC in Weathersfield, four synchronous condensers in Williamstown, one variable reactor in New Haven, two variable reactors in Ludlow, and one fixed reactor in Vernon. Vermont also has four Phase Shifting Transformers to regulate our 115 kV interconnections to NY and NH. Another unique feature of the system is its fiber optic network that connects to all of the VT Transco substations. The fiber optic network is used for voice, video, data, and relay communications. VT Transco also owns the 115 kV to lower voltage step down transformers with their associated low voltage bus, and is the operating authority for the low voltage feeders out of the VT Transco substations (13.8, 34.5, and 46kV). The low voltage lines leaving the substations are owned and operated by the Vermont distribution utilities. VELCO has direct connections with six of the 17 Vermont distribution utilities.

A description of VELCO's holistic approach to vegetation management:
The Vegetation Management Program has long been founded on combination of maintenance policies, procedures and specifications that it uses to prevent the encroachment of vegetation into the Minimum Vegetation Clearance Distances (MVCD) of its FAC-003 applicable lines and to its entire 726 miles of overhead electric transmission system regardless of voltage class, with voltages of 115kV, 230kV, 345kV, and 450kV DC that travel along nearly 13,000 acres of ROW throughout the state of Vermont and portions of New Hampshire.

The goal of the Vegetation Management program is to establish a sustainable vegetation management plan that minimizes the potential for an encroachment into the MVCD including:
• A fall-in from inside the ROW that causes a vegetation-related Sustained Outage
• Blowing together of applicable lines and vegetation located inside the ROW that causes a vegetation-related Sustained Outage
• Vegetation growth into the MVCD that caused a vegetation-related Sustained Outage.
In order to accomplish this goal, VELCO utilizes a system of vegetation management that manages plant communities in which compatible and incompatible vegetation

are identified, action thresholds are considered, control methods are evaluated, and selected control(s) are implemented to achieve a specific objective. Choice of control methods is based on safety, environmental impact, effectiveness, site characteristics, security, and economics. This system of vegetation management is called Integrated Vegetation Management.

VELCO recognizes its responsibility to maintain its ROW in the manner that most appropriately balances promoting the reliability of the VELCO electric transmission system and avoiding unreasonable risk of harm to the environment, neighbors, occupants, workers, and users of the land on which or adjacent to which its ROW lie, and minimizing the expense of vegetation management over the long term. VELCO accomplishes these goals by utilizing the following industry Best Practices as elements of its vegetation management program, many of which are beyond what is required by FAC-003.
• Transmission Vegetation Management Plan
• Consistent 4 year Vegetation Management Cycle
• GIS based work management system that tracks the annual work plan from development through completion
• Quarterly aerial inspection program
• Annual ground inspection
• A cyclical vegetation based LiDAR program
• Trained and qualified staff of Foresters
• Learning from events and sharing lessons learned within the company as well as with peers

Company foresters are also very active in the North American Transmission Forum (NATF), which allows for the collaboration with peers, the development and utilization of vegetation management best practices, as well as knowledge sharing. On November 18, 2020, company staff shared the Root Cause Assessment Report for this event with an NATF member review team consisting of vegetation management professionals from member utilities. The purpose of this review was to receive feedback from peers as well as to share the lessons learned so that other NERC-registered entities could take proactive actions to address similar process gaps as outlined in the Root Cause above. This event will also be shared with all NATF member utilities in December 2020 as part of wider sharing of lessons learned from this event.

The elements above have been combined to realize the goals above successfully over the years. In regards to reliability goal, VELCO has only experienced one vegetation caused sustained outage in the last 13 years of any voltage class prior to the 3340 incident.

-- What are the potential consequences to the BPS by this noncompliance?
There were little to no possible consequences to the BPS facility due to the outage. There are multiple lines in parallel that connect the two facilities and the generating plant that the facility interconnects was decommissioned on December 29, 2014.

-- Have you performed analytical studies (e.g. power flow)? Have you reviewed historical loads if necessary?
Yes the annual TPL studies, Vermont Long-Range Transmission Plan studies and other planning work have identified that the Vermont Yankee facilities loss does not adversely impact the BES. There are capacitor banks at the substation that can support the grid if needed that would be lost for a loss of the entire Vermont Yankee facility. However, this would not result in a significant impact on the grid within the area.

-- What is the potential reliability impact (serious/moderate/minimal)?
Minimal

Provide detailed description of Actual Risk to Bulk Power System:

-- Explain any circumstances or existence of processes/ procedures that served to reduce the actual risk. Explain in detail the degree that there were: • Preventive Controls: • Detective Controls: • Corrective Controls: Explain the functionality of each control and specify whether they are software-controlled and/or staff enabled.
Preventive Controls:
- Long-term planning processes used to identify reliability needs and design system to minimize the risks.
- Design and engineering processes used to verify protection system performances.
- Facility Maintenance processes used to maintain equipment within the substations.
- Operational processes used to monitor status of equipment, verification of system operating limits and corrective actions taken for an outage such as this.
- Cyber security processes used to maintain access controls to the equipment in the substations.
- Physical security access controls
- Cyber asset list assessments performed via facility walk downs
Detective Controls:
- SCADA
- Alarming
- Protective relay coordination
Corrective:
- Facility walk down to both identify the cause of the outage and also after the fact to verify all equipment has been accurately documented in all applicable databases used to maintain the facilities and rights of way.
- Vegetation management assessment and rectification of applicable vegetation. All assets now identified in the corporate plan for right of way maintenance.

VELCO currently utilizes multiple preventive controls and processes to avoid incidents of noncompliance such as this. However, since the database tools used to monitor and maintain compliance said obligation deadlines and responsibilities did not include the asset information, they were not provided the high level of controls normally allowed the rights of way and substation equipment. As a best practice VELCO does maintain all of its rights of way to the same standards as those applicable to FAC-003 which provides for a more resilient system during natural events.

-- Explain if there were any actual issues on the BPS that were experienced due to this noncompliance.
The BPS system did not experience any reliability or security issues due to this noncompliance.

-- Elaborate on the inherent design of the local system affected by the noncompliance and its ability to sustain potential outages without shedding load.
As stated previously, the loss of this line does not impact the reliability of the BES grid. As identified, in the photo included, within the Vermont Yankee fence line there are two primary facilities that were each engineered and designed to perform different purposes.
- The Vermont Yankee 345 kV and 115 kV substations were originally constructed by the generator owner and designed to interconnect the generator to the BES grid. These facilities are designed and engineered to act as a generator node.
- The Vernon 345kV and 115 kV substation facilities were constructed by VELCO in 2010 to support the reliability needs identified as part of VELCO's 2009 Vermont Long-Range Transmission Plan of the Bulk Electric System (BES) by interconnecting a new 345 kV line into the greater BES grid. This substation was designed and engineered to act as a transmission node.
- Between these two facilities are three interconnectors, 1-115 kV and 2-345 kV (each 0.23 miles long), as required to meet regulatory requirements for interconnecting a nuclear generator. All three lines are protected and relayed as a bus differential due to their short distance and primary purpose of interconnecting the generator to the Vernon substation.
- The Vermont Yankee Nuclear generator has been decommissioned since December 29, 2014. However, the proximity of the nuclear plant, the federal regulations for design and protection, and strict ground and air access controls contributed to the noncompliance.
- The minimal impact to both the local area and BES for the loss of this line is due to many factors including: redundant connections between the Vernon and Vermont Yankee substations; the fact that the Vermont Yankee substations were designed to interconnect the generating plant to the BES grid; the fact that the plant has been decommissioned; and the fact that the overall system load levels have declined.
- If the generating plant had not been a nuclear facility the configuration at this site would have not resulted in the need for the redundant lines and protection systems, which were installed to meet the reliability needs of the plant and minimize any time associated with tying in the new transmission substation to the interconnection facility and avoid any issues with safety, security and reliability of both the plant, the State, and the grid itself.

-- Based on the controls in place and system design above, what was the risk the noncompliance posed to the reliability of the BPS?
Minimal

Additional Comments:

Please see NPCC Self-Report # NPCC2020023721 for more information as needed

NOTE: While submittal of a mitigation plan is not required until after a determination of a violation is confirmed, early submittal of a mitigation plan to address and remedy an identified deficiency is encouraged. Submittal of a mitigation plan shall not be deemed an admission of a violation. (See NERC Rules of Procedure, Appendix 4C, Section 6.4.)