



NORTHEAST POWER COORDINATING COUNCIL, INC.  
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# **Compliance Audit Report Public Version**

**Vermont Transco LLC  
NCR07228**

**June 16 to June 18, 2009**

**Confidential Information (including Privileged and  
Critical Energy Infrastructure Information)  
Has Been Removed**

**June 30, 2009**

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## Executive Summary

This final compliance audit report is the public version. Confidential information (including privileged and critical energy infrastructure information) has been redacted from this report. The full final compliance audit report was submitted to the audited entity and NERC.

The on-site compliance audit of Vermont Transco LLC (Vermont Transco), NERC ID #NCR07228 was conducted between June 16 and June 18, 2009. At the time of the audit, Vermont Transco was registered for the TO, TOP, TP and TSP functions. The audit was completed using data submitted by Vermont Transco prior to the on-site audit being started and data provided by way of follow-up emails and phone calls and as a result of questions raised during the interviews of their subject matter experts on-site. All evidence requested by the audit team was supplied before leaving the site.

The auditors evaluated Vermont Transco's compliance with thirty-three reliability standards and two hundred fifty-three requirements and sub-requirements in the 2009 NERC Compliance Monitoring and Enforcement Program (CMEP). The audit reviewed reliability standards identified in the NERC 2009 Implementation Plan for the period of the last twelve months or monitoring timeframes specified in each reliability standard. A sampling of past revisions of the current in-force documents was done on-site to verify that appropriate documentation was in place for the entire audit period. If any anomalies were discovered in the samples, then a full review would have been initiated.

The results of the audit were that of the thirty-three standards and two hundred fifty-three requirements and sub-requirements audited for the functions Vermont Transco is registered for, all thirty-three standards and two hundred thirty-four requirements and sub-requirements were judged to be compliant. Nineteen sub-requirements were judged to be not applicable. The review of the samples of past revisions concluded that appropriate and adequate documentation existed for the entire audit period. There were no ongoing or recently completed mitigation plans and, therefore, none were reviewed by the audit team.

Vermont Transco LLC has its assets managed by the Vermont Electric Power Company (VELCO). VELCO staff provided an overview resulting in a more clear understanding of their business model and accelerated the audit process. The evidence provided to demonstrate compliance was extremely well presented and well organized. The auditors would like to thank the Vermont Transco audit preparation team for the support offered throughout the audit.

## Audit Process

The compliance audit process steps are detailed in the NERC CMEP. The NERC CMEP generally conforms to the United States Government Accountability Office Government Auditing Standards and other generally accepted audit practices.

## Objectives

All registered entities are subject to audit for compliance with all reliability standards applicable to the functions for which the registered entity is registered.<sup>1</sup> The audit objectives are to:

- Independently review Vermont Transco LLC's compliance with the requirements of the reliability standards that are applicable to Vermont Transco based on the functions Vermont Transco is registered for.
- Validate compliance with applicable reliability standards from the NERC 2009 Implementation Plan list of actively monitored standards and additional NERC reliability standards selected by NERC.
- Validate compliance with applicable Regional Standards from the NPCC 2009 Implementation Plan list of actively monitored standards.
- Validate evidence of self-reported violations and previous self-certifications and confirm compliance with other requirements of the reliability standard.
- Review the status of associated mitigation plans.
- Observe and document the Vermont Transco LLC compliance program and culture.

## Scope

The audit included all standards identified in the April 3, 2009 audit letter. The audit was a regularly scheduled audit and no self-reported violations or compliance investigations were involved.

At the time of the audit, Vermont Transco LLC was registered for the functions TO, TOP, TP and TSP. The audit team evaluated Vermont Transco LLC for compliance during the period of June 18, 2007 to June 18, 2009.

## Confidentiality and Conflict of Interest

Confidentiality and Conflict of Interest of the audit team are governed under the Delegation Agreement with NERC and Section 1500 of the NERC Rules of Procedure.

The audited entity was informed in advance of the audit that the independent contractors executed confidentiality agreements, and code of conduct documentation was in place for the NERC representative and regional entity staff. Work history and conflict of interest forms submitted by each audit team member are on file in the NPCC corporate offices. The audited entity was given an opportunity to object to an audit team member on the basis of a possible conflict of interest or the existence of other circumstances that could interfere with the audit team member's impartial performance of duties. The audited entity accepted the audit team member participants with no objections.

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<sup>1</sup> North American Electric Reliability Corporation CMEP, paragraph 3.1, Compliance Audits

## **On-site Audit**

Vermont Transco LLC was provided with a pre-audit request letter identifying the standards and requirements subject to audit. The audit letter was sent to Vermont Transco LLC more than 60 days in advance of the scheduled audit. This is an on-site audit conducted every three years or as determined to be necessary by the region. Vermont Transco had not self reported any violations. At the time of the audit, Vermont Transco LLC was registered for TO, TOP, TP and TSP functions in NPCC.

The auditors requested interviews with VELCO employees representing subject matter expertise regarding all of the registered functions of Vermont Transco. These interviews, in conjunction with the evidence submitted, provided the auditors with a basis for professional judgment when validating compliance with reliability standards.

## **Methodology**

The auditors prepared reliability standards audit worksheets (RSAWs) to evaluate each standard. The RSAWs are used to ensure consistency and to document evidence of compliance or non-compliance with the standards. All relevant documents are considered and to the extent they form a portion of the audit trail are included in the RSAWs.

## **Audit Overview**

The initial audit overview was conducted on June 16, 2009. The presentation was led by the Manager of the Compliance Audit Program, with the NPCC Audit Team and VELCO staff in attendance. An explanation of the audit process was given and the timelines were discussed. VELCO was given an opportunity to reject the auditors but accepted the auditors and their credentials for this audit.

## **Audit**

The audit was performed on-site by the NPCC audit team. Additional questions were provided to VELCO by way of emails and phone calls prior to the audit, and the VELCO staff then took the time necessary to develop the answers and submitted them by way of email and phone calls to the auditors. On-site interviews were conducted with subject matter experts, and additional evidence was requested and was provided to the NPCC Audit team before leaving the site.

## **Exit Presentation**

The exit presentation was led by the Manager of the NPCC Compliance Audit Program on June 18, 2009 and was attended by the NPCC Audit team and VELCO staff. The Manager reviewed the audit process and summarized the preliminary findings of the audit.

The results of the audit were that of the thirty-three standards and two hundred fifty-three requirements and sub-requirements audited for the functions Vermont Transco is registered for, all thirty-three standards and two hundred thirty-four requirements and sub-requirements were judged to be compliant. Nineteen sub-requirements were judged to be not applicable. The review of the samples of past revisions concluded that appropriate and adequate documentation existed for the entire audit period.

The exit presentation is also a forum for the audit team to offer informal suggestions for process improvement. The suggestions to VELCO staff were included in the exit presentation.

## **Company Profile**

Vermont Transco LLC is the entity responsible for ownership of Transmission Assets within Vermont. VELCO is the management Company and is responsible for all the standard requirements.

### **Vermont Electric Power Company Overview**

The Vermont Electric Power Company (VELCO), as the first ever transmission only company in the United States, has been providing non-discriminatory access to generators and shippers on comparable terms and conditions for 50 years. VELCO was organized in 1956 to develop an integrated transmission system to interconnect the numerous Vermont electric utilities and to provide them with access to economic power from the St. Lawrence River project. The initial 224-mile 115 kV VELCO system was placed in service in September 1958. Since that time, VELCO has expanded its facilities and services as required by the needs of its participants and the evolution of the industry.

In 2006, the Vermont Public Service Board approved the formation of the Vermont Transco LLC as the owning entity for all of the Transmission Assets in the State of Vermont. VT Transco is owned by the Vermont Distribution Utilities. The largest owning utilities of VT Transco are Central Vermont Public Service, Green Mountain Power, Vermont Electric Cooperative, and Burlington Electric. VELCO is the management organization for the Vermont Transco's assets.

VT Transco's assets consist of approximately 660 miles of 115 kV, 230 kV, and 345 kV transmission lines, approximately 3,411 MVA of transformer capacity, and approximately 37 substations. 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 20 Vermont distribution utilities.

Vermont is located geographically in northwest New England along the Canadian border. 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. Neighbors to the West are New York Power Authority and National Grid-New York; Neighbors

to the East are the Public Service of New Hampshire and National Grid-New England, and neighbors to the south are National Grid-New England and Northeast Utilities.

Vermont is unique in its approach to real and reactive power needs utilizing real and reactive controllers to manage system performance. Vermont has a STATCOM device in Essex Vermont and synchronous condensers in Williamstown, Vermont, both to aid in dynamic reactive support. Vermont also has four Phase Shifting Transformers to regulate our 115 kV interconnections to NY and NH. Another unique feature of Vermont is its extensive fiber optic network. VT Transco has fiber optic connectivity to most of the VT Transco substations. The fiber optic network is used for voice, data, and relay communications.

Vermont has historically been a winter peaking area with an all-time winter peak load of 1,086 MW. However, as of summer of 2006, Vermont's peak changed to a summer peak. The summer peak demand of 2006 was 1,118 MW.

VT Transco is registered as the Transmission Owner for Vermont. Vermont Electric Power Company (VELCO), or the management staff, is registered as the Transmission Operator, Transmission Service Provider, and Transmission Planner.

### Audit Specifics

The compliance audit was conducted on-site between June 16 and June 18, 2009.

<b>NPCC Audit Team Role</b>	<b>Title</b>	<b>Company</b>
Lead	Contracted Consultant	NPCC-Compliance Audit Program
Auditor	Contracted Consultant	NPCC-Compliance Audit Program
Auditor	Contracted Consultant	NPCC-Compliance Audit Program
Auditor	Contracted Consultant	NPCC-Compliance Audit Program
Regional staff	Manager Compliance	NPCC-Compliance Audit Program

### Vermont Transco LLC.

<b>Title</b>	<b>Audited Entity's Organization</b>
Compliance/Operations/Protection &	

Title	Audited Entity's Organization
Control	VELCO
Compliance Specialist	
Operations Engineer	
Operations Team Lead	
Operations Trainer	
Operations Trainer	
System Operator	
System Operator	
Right-Of-Way Management Lead	
Protection and Control Lead	
System Planning Lead	
EMS Lead	
Communications Lead	
Engineering Lead	

## Audit Results

The auditors evaluated Vermont Transco's compliance with thirty-three reliability standards and two hundred fifty-three requirements and sub-requirements identified in the NERC 2009 Implementation Plan for the period of the last twelve months or monitoring timeframes specified in each reliability standard. A sampling of past revisions of the current in-force documents was done to verify that appropriate documentation was in place for the entire audit period.

The results of the audit were that of the thirty-three standards and two hundred fifty-three requirements and sub-requirements audited for the functions Vermont Transco is registered for, all thirty-three standards and two hundred thirty-four requirements and sub-requirements were judged to be compliant. Nineteen sub-requirements were judged to be not applicable. The review

of the samples of past revisions concluded that appropriate and adequate documentation existed for the entire audit period.

VELCO provided an overview resulting in a clear understanding of their business model and accelerated the audit process. The evidence provided to demonstrate compliance was extremely well presented and well organized. The auditors would like to thank the Vermont Transco audit preparation team for the support offered through the audit.

## Findings

The following table details findings for compliance with the reliability standards listed in the NERC 2009 Implementation Plan.

Vermont Transco LLC.

<b>Reliability Standard</b>	<b>Requirement</b>	<b>Finding</b>
COM-001-1	R1	Compliant
COM-001-1	R1.1	Compliant
COM-001-1	R1.2	Compliant
COM-001-1	R1.3	Compliant
COM-001-1	R1.4	Compliant
COM-002-2	R1	Compliant
COM-002-2	R1.1	Compliant
CIP-001-1	R1	Compliant
CIP-001-1	R2	Compliant
CIP-001-1	R3	Compliant
CIP-001-1	R4	Compliant
EOP-001-0	R2	Not Applicable
EOP-001-0	R3	Compliant
EOP-001-0	R3.1	Compliant
EOP-001-0	R3.2	Compliant
EOP-001-0	R3.3	Compliant
EOP-001-0	R3.4	Compliant
EOP-001-0	R4	Compliant
EOP-001-0	R4.1	Compliant
EOP-001-0	R4.2	Compliant
EOP-001-0	R4.3	Compliant
EOP-001-0	R4.4	Compliant
EOP-001-0	R5	Compliant
EOP-001-0	R6	Compliant
EOP-001-0	R7	Compliant
EOP-001-0	R7.1	Compliant

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EOP-001-0	R7.2	Not Applicable
EOP-001-0	R7.3	Not Applicable
EOP-001-0	R7.4	Not Applicable
EOP-003-1	R1	Compliant
EOP-003-1	R2	Compliant
EOP-003-1	R3	Not Applicable
EOP-003-1	R4	Compliant
EOP-003-1	R5	Compliant
EOP-003-1	R6	Compliant
EOP-003-1	R7	Not Applicable
EOP-003-1	R8	Compliant
EOP-005-1	R1	Compliant
EOP-005-1	R2	Compliant
EOP-005-1	R3	Compliant
EOP-005-1	R4	Not Applicable
EOP-005-1	R5	Compliant
EOP-005-1	R6	Compliant
EOP-005-1	R7	Compliant
EOP-005-1	R8	Not Applicable
EOP-005-1	R9	Compliant
EOP-005-1	R10	Not Applicable
EOP-005-1	R10.1	Not Applicable
EOP-005-1	R11	Compliant
EOP-005-1	R11.2	Compliant
EOP-005-1	R11.4	Compliant
EOP-005-1	R11.5.1	Compliant
EOP-005-1	R11.5.2	Compliant
EOP-005-1	R11.5.4	Compliant
EOP-008-0	R1	Compliant
EOP-008-0	R1.1	Compliant
EOP-008-0	R1.2	Not Applicable
EOP-008-0	R1.3	Compliant
EOP-008-0	R1.4	Compliant
EOP-008-0	R1.5	Compliant
EOP-008-0	R1.6	Compliant
EOP-008-0	R1.7	Compliant
EOP-008-0	R1.8	Not Applicable
FAC-001-0	R1.	Compliant
FAC-001-0	R1.1.	Compliant
FAC-001-0	R1.2.	Compliant
FAC-001-0	R1.3.	Compliant
FAC-001-0	R2.	Compliant

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FAC-001-0	R2.1.	Compliant
FAC-001-0	R2.1.1.	Compliant
FAC-001-0	R2.1.2.	Compliant
FAC-001-0	R2.1.3.	Compliant
FAC-001-0	R2.1.4.	Compliant
FAC-001-0	R2.1.5.	Compliant
FAC-001-0	R2.1.6.	Compliant
FAC-001-0	R2.1.7.	Compliant
FAC-001-0	R2.1.8.	Compliant
FAC-001-0	R2.1.9.	Compliant
FAC-001-0	R2.1.10	Compliant
FAC-001-0	R2.1.11	Compliant
FAC-001-0	R2.1.12	Compliant
FAC-001-0	R2.1.13	Compliant
FAC-001-0	R2.1.14	Compliant
FAC-001-0	R2.1.15	Compliant
FAC-001-0	R2.1.16	Compliant
FAC-001-0	R3.	Compliant
FAC-003-1	R1.	Compliant
FAC-003-1	R1.1.	Compliant
FAC-003-1	R1.2.	Compliant
FAC-003-1	R1.2.1.	Compliant
FAC-003-1	R1.2.2.	Compliant
FAC-003-1	R1.2.2.1.	Compliant
FAC-003-1	R1.2.2.2.	Compliant
FAC-003-1	R1.3.	Compliant
FAC-003-1	R1.4.	Compliant
FAC-003-1	R1.5.	Compliant
FAC-003-1	R2.	Compliant
FAC-008-1	R1.	Compliant
FAC-008-1	R1.1.	Compliant
FAC-008-1	R1.2.	Compliant
FAC-008-1	R1.2.1.	Compliant
FAC-008-1	R1.2.2.	Compliant
FAC-008-1	R1.3.	Compliant
FAC-008-1	R1.3.1.	Compliant
FAC-008-1	R1.3.2.	Compliant
FAC-008-1	R1.3.3.	Compliant
FAC-008-1	R1.3.4.	Compliant
FAC-008-1	R1.3.5.	Compliant
FAC-008-1	R2.	Compliant
FAC-008-1	R3.	Not Applicable

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FAC-009-1	R1.	Compliant
FAC-009-1	R2.	Compliant
FAC-014-1	R5	Compliant
IRO-001-1	R8.	Compliant
IRO-004-1	R3	Compliant
IRO-004-1	R4.	Compliant
IRO-004-1	R7.	Compliant
IRO-005-1	R8	Compliant
IRO-005-1	R13.	Compliant
PER-001-0	R1	Compliant
PER-002-0	R1	Compliant
PER-002-0	R2	Compliant
PER-002-0	R2.1	Compliant
PER-002-0	R2.2	Compliant
PER-002-0	R3	Compliant
PER-002-0	R3.1	Compliant
PER-002-0	R3.2	Compliant
PER-002-0	R3.3	Compliant
PER-002-0	R3.4	Compliant
PER-002-0	R4	Compliant
PER-003-0	R1	Compliant
PER-003-0	R1.1	Compliant
PER-003-0	R1.2	Compliant
PRC-001-1	R1	Compliant
PRC-001-1	R2	Compliant
PRC-001-1	R2.2	Compliant
PRC-001-1	R3.2	Compliant
PRC-001-1	R4	Compliant
PRC-001-1	R5	Compliant
PRC-001-1	R5.2	Compliant
PRC-001-1	R6	Compliant
PRC-004-1	R1.	Compliant
PRC-004-1	R3	Compliant
PRC-005-1	R1.	Compliant
PRC-005-1	R1.1.	Compliant
PRC-005-1	R1.2.	Compliant
PRC-005-1	R2.	Compliant
PRC-005-1	R2.1.	Compliant
PRC-005-1	R2.2.	Compliant
PRC-008-0	R1.	Compliant
PRC-008-0	R2.	Compliant
PRC-017-0	R1.	Compliant

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PRC-017-0	R1.1.	Compliant
PRC-017-0	R1.1.1.	Compliant
PRC-017-0	R1.1.2.	Compliant
PRC-017-0	R1.1.3.	Not Applicable
PRC-017-0	R1.1.4.	Compliant
PRC-017-0	R1.2.	Compliant
PRC-017-0	R1.3.	Compliant
PRC-017-0	R1.4.	Compliant
PRC-017-0	R1.5.	Compliant
TOP-001-1	R1	Compliant
TOP-001-1	R2	Compliant
TOP-001-1	R3	Compliant
TOP-001-1	R5	Compliant
TOP-001-1	R6	Compliant
TOP-001-1	R7	Compliant
TOP-001-1	R7.1	Not Applicable
TOP-001-1	R7.2	Compliant
TOP-001-1	R7.3	Compliant
TOP-001-1	R8	Compliant
TOP-002-2	R1	Compliant
TOP-002-2	R3	Not Applicable
TOP-002-2	R4	Compliant
TOP-002-2	R11	Compliant
TOP-002-2	R16	Compliant
TOP-002-2	R16.1	Compliant
TOP-002-2	R16.2	Compliant
TOP-002-2	R17	Compliant
TOP-002-2	R18	Compliant
TOP-002-2	R19	Compliant
TOP-004-1	R1	Compliant
TOP-004-1	R2	Compliant
TOP-004-1	R3	Compliant
TOP-004-1	R4	Compliant
TOP-004-1	R5	Compliant
TOP-006-1	R2	Compliant
TOP-006-1	R6	Compliant
TOP-006-1	R7	Compliant
TOP-007-0	R1	Compliant
TOP-007-0	R2	Not Applicable
TOP-007-0	R3	Not Applicable
TOP-008-1	R1	Compliant
TOP-008-1	R2	Compliant

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TOP-008-1	R3	Compliant
TPL-001-0	R1	Compliant
TPL-001-0	R1.1	Compliant
TPL-001-0	R1.2	Compliant
TPL-001-0	R1.3	Compliant
TPL-001-0	R1.3.1	Compliant
TPL-001-0	R1.3.2	Compliant
TPL-001-0	R1.3.3	Compliant
TPL-001-0	R1.3.4	Compliant
TPL-001-0	R1.3.5	Compliant
TPL-001-0	R1.3.6	Compliant
TPL-001-0	R1.3.7	Compliant
TPL-001-0	R1.3.8	Compliant
TPL-001-0	R1.3.9	Compliant
TPL-001-0	R1.4	Compliant
TPL-002-0	R1	Compliant
TPL-002-0	R1.1	Compliant
TPL-002-0	R1.2	Compliant
TPL-002-0	R1.3	Compliant
TPL-002-0	R1.3.1	Compliant
TPL-002-0	R1.3.10	Compliant
TPL-002-0	R1.3.11	Compliant
TPL-002-0	R1.3.12	Compliant
TPL-002-0	R1.3.2	Compliant
TPL-002-0	R1.3.3	Compliant
TPL-002-0	R1.3.4	Compliant
TPL-002-0	R1.3.5	Compliant
TPL-002-0	R1.3.6	Compliant
TPL-002-0	R1.3.7	Compliant
TPL-002-0	R1.3.8	Compliant
TPL-002-0	R1.3.9	Compliant
TPL-002-0	R1.4	Compliant
TPL-002-0	R1.5	Compliant
TPL-003-0	R1	Compliant
TPL-003-0	R1.1	Compliant
TPL-003-0	R1.2	Compliant
TPL-003-0	R1.3	Compliant
TPL-003-0	R1.3.1	Compliant
TPL-003-0	R1.3.10	Compliant
TPL-003-0	R1.3.11	Compliant
TPL-003-0	R1.3.12	Compliant
TPL-003-0	R1.3.2	Compliant

TPL-003-0	R1.3.3	Compliant
TPL-003-0	R1.3.4	Compliant
TPL-003-0	R1.3.5	Compliant
TPL-003-0	R1.3.6	Compliant
TPL-003-0	R1.3.7	Compliant
TPL-003-0	R1.3.8	Compliant
TPL-003-0	R1.3.9	Compliant
TPL-003-0	R1.4	Compliant
TPL-003-0	R1.5	Compliant
VAR-001-1	R1	Compliant
VAR-001-1	R2	Not Applicable
VAR-001-1	R7	Compliant
VAR-001-1	R8	Compliant
VAR-001-1	R9	Compliant
VAR-001-1	R9.1	Compliant
VAR-001-1	R10	Compliant
VAR-001-1	R12	Compliant

## Compliance Culture

The audit team reviewed Vermont Transco’s compliance culture. During all contacts, Vermont Transco and the VELCO staff were professional in their approach to compliance.

It is the NPCC audit team’s opinion that VELCO takes compliance very seriously and understands the overall goal of the compliance program; namely to strive for a more reliable interconnected bulk power system. VELCO’s compliance culture, compliance commitment and overall company approach to following the Reliability Standards is exceptional and may be used as an example by NPCC for other entities to follow as a “best practice”.

NPCC thanks the VELCO audit preparation team for providing exceptional documentation, flexibility and cooperation throughout the audit process and to the subject matter experts present throughout the process for their time, openness and knowledge.