vermont electric power company

VELCO

East Fairfax Substation Condition Assessment Project

VSPC Geographic Targeting Subcommittee

July 9, 2025

Project objective

- East Fairfax substation constructed in 1971
  - Radial 115/34.5 kV substation out of VELCO Georgia substation
  - Contains (1) 115/34.5 kV transformer, (1) 115kV circuit switcher, (1) 34.5 kV SF6 Gas Circuit Breaker, (2) 34.5kv VCBs, (2) 34.5kV Oil Circuit Breaker
- Project will mitigate asset condition concerns
  - Protection & control equipment obsolete
  - Size-restricted control building unable to meet future needs
  - 34.5 kV oil circuit breaker beyond useful life
  - Circuit Switcher does not accommodate switch failure scheme or redundant transformer protection
  - Structural steel deficiencies
- Also will make some improvements
  - Bring design to current standards
  - Use outages to complete maintenance upgrades
- Preliminary/conceptual Class A cost estimate is $15M

Anticipated Scope of Work

Substation Improvements

- New control building
- New protection and control system
- Replace 34.5 kV oil circuit breaker
- Replace 34.5 kV SF6 gas circuit breaker
- Replace 115 kV circuit switcher with 115 kV breaker and disconnect switch
- Replace and expand the substation fence around the new control building
- Replace station service
- Bring telecommunication, security, and monitoring systems up to VELCO Standard
- Perform maintenance upgrades

Temporary 115/34.5 kV Substation

- GMP has confirmed the need for a temporary 115/34.5 kV substation during construction.

NTA Screening

Vermont Non-Transmission Alternatives Screening Form

For use in screening to determine whether or not a reliability issue requires non-transmission alternatives (NTA) analysis in accordance with the Memorandum of Understanding in Docket 7081.

Identify the proposed upgrade: East Fairfax Asset Condition Mitigation Project
Date of analysis: July 7, 2025

1 Does the project meet the following definition of "impracticable": ☑ Yes ☐ No

a. The need for a redundant supply to a radial load; or
b. An economic transmission project[1], transmission built to achieve a public policy objective other than reliability, or other non-reliability-driven transmission or
c. Maintenance-related, addressing asset condition, operations, or safety; or
d. Addressing transmission performance, e.g., addition of high-speed protection or a switch to sectionalize a line; or
e. Needed to address stability or short circuit problems.[2].

If so, check "yes" and discontinue screening; otherwise, continue to #2.

2 What is the proposed transmission project's need date? _____

If the need for the project is based on existing or imminent reliability criteria violations (i.e., arising within one year based on the controlling load forecast), discontinue NTA screening; otherwise continue to #3.

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[1] "Economic transmission" used in this context refers to projects so classified under ISO-New England's planning process as defined in the ISO-NE Open Access Transmission Tariff (OATT).

[2] "Stability" refers to the ability of a power system to recover from any disturbance or interruption. Instability can occur when there is a loss of synchronism at one or more generators (rotor angle stability), a significant loss of load or generation within the system (frequency stability), or a reactive power deficiency (voltage stability). Stability problems are influenced by system parameters such as transmission line lengths and configuration, protection component type and speed, reactive power sources and loads, and generator type and configuration. Due to the nature of instability, non-transmission alternatives involving addition of generation or reduction of load will not solve these problems.

NTA Screening (continued)

3 Could elimination or deferral of all or part of the upgrade be accomplished by a 25% load reduction or off-setting generation of the same magnitude? *(See note.)*

❑ Yes
❑ No

If so, check "yes" and continue to question 5; otherwise, check "no" and discontinue the NTA screening.

4 Is the likely reduction in costs from the potential elimination or deferral of all or part of the upgrade greater than $2.5 million. *(See note.)*

❑ Yes
❑ No

If so, check "yes" proceed to define the scope and timing of non-transmission alternative analysis.

Sign and date this form.

This analysis performed by: Marc Allen, Senior Transmission Planning Engineer
Print name & title

VELCO
Company

July 7, 2025
Date

Marc Allen
Signature