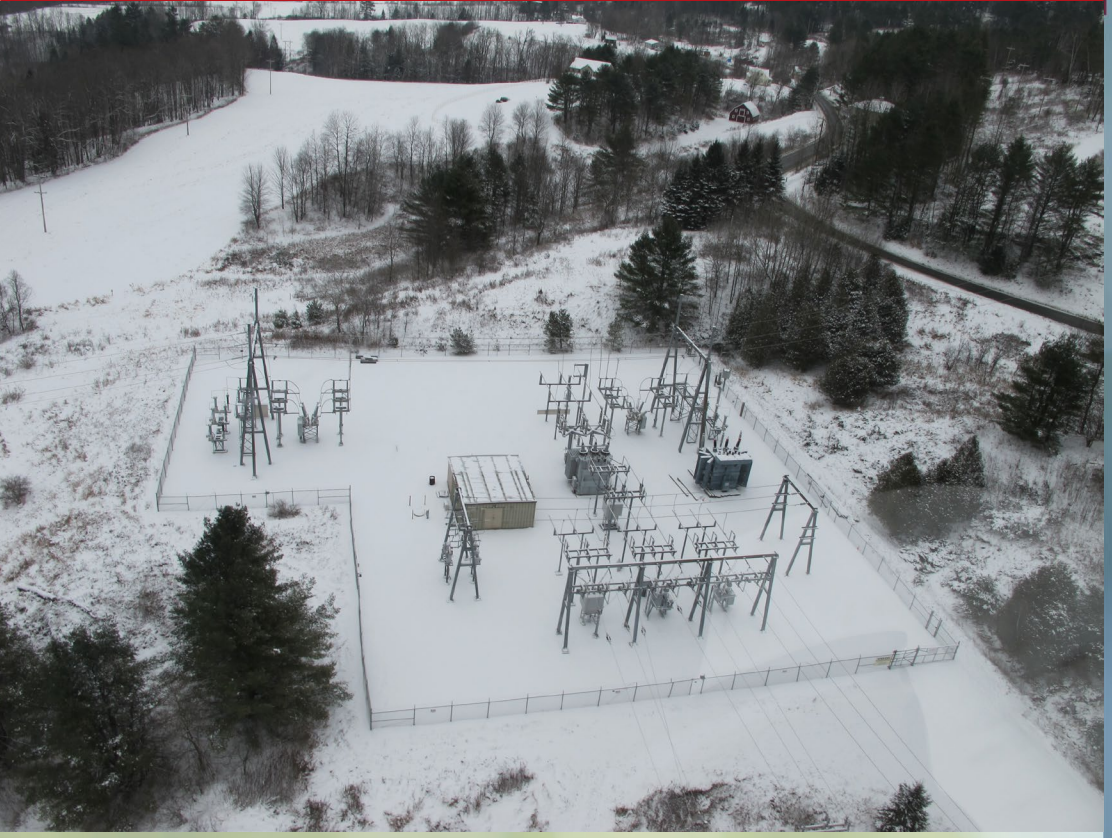

vermont electric power company

VELCO

St Johnsbury Substation Condition Assessment Project

VSPC Geographic Targeting Subcommittee

June 21, 2023

Project objective

- St. Johnsbury substation constructed in 1972
  - Located between Lyndonville & Littleton (Eversource) substations
  - Contains (1) 115/34.5 kV transformer, (1) 115 kV circuit switcher, (2) 115 kV Gas Circuit Breakers, (3) 34.5 kV Vacuum Circuit Breakers (VCB), (1) 34.5 kV 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 inadequate under current conditions
  - Concrete foundation and structural steel deficiencies
- Bring design to current standards
- Preliminary/conceptual cost estimate is $18M
- Expected completion date - 2025

St Johnsbury Project Anticipated Scope of Work

Substation Refurbishment

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

Temporary 115/34.5 kV Substation

- A temporary sub will be installed, as required by GMP, to maintain reliable service to St Johnsbury load during outages

NTA Screening

Vermont Non-Transmission Alternatives Screening Form

*For use in screening to determine whether or not a transmission system **reliability issue** requires non-transmission alternatives (NTA) analysis in accordance with the Memorandum of Understanding in Docket 7081. Projects intended for energy market-related purposes – "economic" transmission – and other non-reliability-related projects do not fall within the scope of the Docket 7081 process.*

Identify the proposed upgrade: St Johnsbury Asset Condition Mitigation Project

Date of analysis: April 18th, 2023

1. Does the project meet one of the following criteria that define the term "impracticable" *(check all that apply)*?

   a. Needed for a redundant supply to a radial load; or ☐
   b. Maintenance-related, addressing asset condition, operations, or safety; or ■
   c. Addressing transmission performance, e.g., addition of high-speed protection or a switch to sectionalize a line; or ☐
   d. Needed to address stability or short circuit problems;[1] or ☐
   e. Other technical reason why NTAs are impracticable. *Attach detailed justification that must be reviewed by the VSPC.* ☐

   If any box above is checked, project screens out of full NTA analysis.

2. What is the proposed transmission project's need date? Not applicable

   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), project screens out of full NTA analysis.

[1] "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% or smaller load reduction or off-setting generation of the same magnitude? *(See note.)* *If "no," project screens out of full NTA analysis.*	❑ Yes ❑ No
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.)* *If "no," project screens out of full NTA analysis.*	❑ Yes ❑ No

Sign and date this form.

This analysis performed by: Hantz A. Présumé – System Planning Director

Print name & title

VELCO

Company

April 18th, 2023

Date

Signature