



Barre Asset Condition Mitigation Project

vermont electric power company



VSPC Geographic
Targeting Subcommittee

October 10, 2017

Project objective

- Barre substation constructed in 1958
 - Located between Granite & Berlin substations
 - Contains one 115/34.5 kV transformer and two 34.5 kV capacitor banks
- Project will mitigate asset condition concerns
 - Obsolete and degraded protection & control equipment
 - Control house rusted and damaged
 - 115 kV & 34.5 kV oil circuit breakers beyond useful life
 - Concrete foundation and structural steel deficiencies
- Also will make some improvements
 - Bring design to current standards
 - Enable use of the existing transformer load tap changer
- Preliminary/conceptual cost estimate is \$12.6M

Barre Project scope of work

Substation Improvements

- New control building
- New protection and controls
- Replace 115 kV & 34.5 kV oil circuit breakers
- Replace 115 kV circuit switcher with 115 kV breaker and disconnect
- Enable transformer load tap changer
- Install passive secondary oil containment system for the transformer
- New 34.5 kV box structure and switches
- Change operational configuration of the 34.5 kV capacitor banks

Temporary 115/34.5 kV Substation

- A temporary 115/34.5 kV substation installed to support loads during construction
- The temporary substation will be physically located across the street from the existing substation

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: <u>Barre Asset Condition Mitigation Project</u>
Date of analysis: <u>August 15th, 2017</u>
<p>1. Does the project meet one of the following criteria that define the term “impracticable” (check all that apply)?</p> <ul style="list-style-type: none">a. Needed for a redundant supply to a radial load; or <input type="checkbox"/>b. Maintenance-related, addressing asset condition, operations, or safety; or <input checked="" type="checkbox"/>c. Addressing transmission performance, e.g., addition of high-speed protection or a switch to sectionalize a line; or <input checked="" type="checkbox"/>d. Needed to address stability or short circuit problems;¹ or <input type="checkbox"/>e. Other technical reason why NTAs are impracticable. Attach detailed justification that must be reviewed by the VSPC. <input type="checkbox"/> <p><i>If any box above is checked, project screens out of full NTA analysis.</i></p>
<p>2. What is the proposed transmission project’s need date? <u>Not applicable</u></p> <p><i>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.</i></p>

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? Yes No
(See note.)

If "no," project screens out of full NTA analysis.

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 "no," project screens out of full NTA analysis.

Sign and date this form.

This analysis performed by: Hantz A. Pr sum  – System Planning Manager
Print name & title

VELCO
Company

August 15th, 2017
Date

Hantz A. Pr sum 
Signature