

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No.

Petition of Vermont Transco LLC and Vermont)
Electric Power Company, Inc., requesting a)
certificate of public good, pursuant to 30 V.S.A.)
§ 248, authorizing the construction of the PV20)
Cable Replacement Project)

**PREFILED TESTIMONY AND EXHIBITS OF
HANTZ PRESUME
ON BEHALF OF
VERMONT TRANSCO LLC & VERMONT ELECTRIC POWER COMPANY, INC.**

September 8, 2015

Mr. Pr sum 's testimony explains the adverse electric transmission system impacts in the event of a PV20 cable failure and assesses the Project's consistency with the VELCO Long-Range Transmission Plan and the Vermont Electric Plan. Mr. Pr sum  concludes that the Project will not adversely impact the bulk transmission system's stability and reliability, and is necessary to meet present and future demand for service.

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EXHIBITS

Exhibit Petitioner HAP-1
Exhibit Petitioner HAP-2

R sum  of Hantz Pr sum 
ISO New England I.3.9 Approval Letter

1 **Introduction**

2 Q1. Please state your name, occupation, and business address.

3 A1. My name is Hantz Pr sum . I am currently employed by Vermont Electric
4 Power Company Inc. and Vermont Transco LLC (collectively referred to as
5 "VELCO") with a business address of 366 Pinnacle Ridge Road, Rutland, VT
6 05701. I am an electrical engineer employed as a principal system planning
7 engineer at VELCO. I have special training and experience in the area of
8 transmission system planning including the modeling and simulation of electric
9 power systems.

10 Q2. Please describe your education and employment background.

11 A2. My r sum  is included with this filing as Exhibit Petitioner HAP-1.

12 Q3. Have you previously provided testimony before the Vermont Public Service
13 Board?

14 A3. Yes. I have provided testimony on behalf of VELCO in Board Dockets 6860
15 (Northwest Vermont Reliability Project) and 7751 (Ascutney Substation Project).

1 **Testimony Overview**

2 Q4. Please describe the scope of your testimony.

3 A4. My testimony explains the need for the Project and the electrical system impacts
4 in the event of a PV20 cable failure, and I describe how the Project is consistent
5 with VELCO's transmission plan and the Vermont Electric Plan.

6 **Project Need**

7 Q5. Please describe the significance of the PV20 line to the electric system and the
8 concerns raised by a cable failure.

9 A5. The PV20 transmission line, located between Beekmantown, New York and
10 Milton, Vermont, is a critical link to support the transmission system on either
11 side of Lake Champlain. The line supports the transmission of power from New
12 York to the New England region and vice versa, and provides Vermont and New
13 Hampshire with critical contingency support. In addition, the line supports
14 power transfers from Vermont to the New York Independent System Operator
15 for New York reliability.

16 The existing PV20 line is one of the five transmission lines required to supply
17 Northwest Vermont and is included in several "flow gates" or "interfaces"
18 within and between the ISO New England and the New York Independent
19 System Operator areas that impact system reliability and market efficiency.

1 Interfaces are either one transmission line or a set of lines that are monitored and
2 managed in real-time to maintain system reliability.

3 Currently active cables for each of the three phases are one 500 kcmil cable
4 and one 1000 kcmil cables connected in parallel. If one of the existing working
5 cables fails, the PV20 line will be disconnected automatically by protection
6 equipment. Bringing the line back into partial service in the event of
7 disconnection involves work by both New York Power Authority (“NYPA”) and
8 VELCO taking approximately two days. VELCO would need to implement a
9 restoration procedure involving reconfiguring the cables to reestablish some
10 capacity; with one of six working cables failing, the PV20 line’s transfer ratings
11 would be reduced by 40%.

12 Failure of two of more of the existing working cables could result in the total
13 disconnection of the PV20 line. Restoration would require repairing the cables,
14 and a lengthy outage would negatively impact Vermont’s and New York’s
15 ability to manage contingencies, to conduct day-to-day maintenance activities,
16 and reduce ISO-NE’s and NYPA’s reliability and market efficiency. In addition,
17 an outage would restrict New York’s and northern Vermont’s generation output,
18 reduce in-area short circuit strength, and reduce Vermont’s transmission system
19 capacity by as much as 350 MW, likely increasing the operating costs for the

1 electric distribution utilities in Vermont. This condition would also expose the
2 system to voltage collapse problems for several contemporaneous contingencies,
3 which could not be remedied with area generation.

4 Mr. Mallory's testimony details the age and condition of the cables and
5 related equipment and the need to replace them. Both VELCO and NYPA have
6 determined that this underwater segment and associated terminals of the PV20
7 circuit should be replaced.

8 Q6. Please describe the reliability criteria applicable to this Project.

9 A6. Federal and regional system planning standards were the basis for evaluating
10 system impacts in the event of a PV20 line outage. Therefore, the criteria we
11 considered include good utility practice, safety, and risk of environmental
12 impact. However, the Project is driven by asset condition concerns.

13 Q7. Would a reduction in the circuit's rating, in the event of a single cable failure, be
14 acceptable for weeks or months while a new cable segment was manufactured,
15 delivered, and installed?

16 A7. No, a reduction in the line's capacity would negatively affect wind generation in
17 New York, reduce our ability to conduct day-to-day maintenance activities, and
18 reduce the import capacity into the Northwest Vermont region. Those

1 circumstances would result in the need to run more expensive generation, reduce
2 the capacity of the system to transfer power between regions, and limit the
3 amount of generation that could be run at individual power plants.

4 Q8. How does the Project mitigate the concerns that you have described?

5 A8. Replacement of the aged submarine cables, including a spare cable, will alleviate
6 the risks of long-term outages, and the adverse reliability and market
7 consequences described above. The Project will assure VELCO and NYPA of the
8 integrity of the cables and the cable terminations and will provide a sustainable
9 level of service to meet present and future demand. If there is an issue with one
10 cable, the spare could be switched into place within one day to put the circuit
11 back in service at the full rating.

12 Q9. When is the Project needed?

13 A9. The Project is needed now. NYPA and VELCO have determined that the risk of
14 a cable failure is too high based on the evaluation of the condition of the cables.

15 **Least Cost Integrated Resource Planning and Long-Range Transmission Planning**

16 Q10. Is the Project consistent with Least Cost Integrated Resource Planning?

17 A10. VELCO is a transmission-only company and does not have an integrated
18 resource plan. As a transmission-only company VELCO periodically performs

1 transmission studies to determine whether reinforcements to the transmission
2 system are necessary, and whether system constraints can be mitigated by non-
3 transmission solutions. VELCO also produces a long range transmission plan at
4 least every three years. Specifically, VELCO last issued a new plan at the end of
5 June 2015. This Project is a reconstruction of an existing transmission line and
6 falls outside the scope of the long-range planning process required for upgrades
7 to VELCO's system because it involves reconstruction of a portion of an existing
8 line. However, this PV20 line segment is an integral component of the VELCO
9 network and considered to be in service within its transmission planning
10 process. The continued use of this line segment is consistent with VELCO's
11 Vermont Long-Range Transmission Plans.

12 Q11. Would another transmission alternative to replacing the PV20 provide the same
13 benefits at lower overall cost?

14 A11. No. VELCO has followed least cost planning principals by proposing to rebuild
15 an existing line as close as possible to the existing line and minimize right-of-way
16 usage and construction impacts. If the PV20 were removed and not replaced, the
17 basis for VELCO's Vermont Long-Range Transmission Plan would change and
18 the plan itself would need substantial revision. The likely possible result would
19 be the need for a new transmission line to supply Northwest Vermont, in

1 addition to upgrades to other parts of the bulk transmission system to reliably
2 incorporate the new line. Any new transmission line would likely involve either
3 a new right-of-way and the associated cost, environmental impacts, and property
4 owner concerns associated with acquisition and clearing of a new utility right of
5 way, or an expansion to an existing right-of-way with similar impacts and
6 significantly taller support structures. It is more cost effective overall to rebuild a
7 transmission line within or close to an existing right-of-way than it is to construct
8 a new line in a new corridor. Thus, no transmission alternatives were considered
9 with this replacement of an existing facility.

10 Q12. Are there any non-transmission alternatives to replacing the PV20 line?

11 A12. No. This Project is an in-kind replacement of an existing transmission facility.
12 Non-transmission alternatives, such as energy efficiency, load management
13 measures, and energy conservation programs, cannot resolve the need to restore
14 a redundant supply line to the North West Vermont and Plattsburg area loads.

15 Q13. Please explain how VELCO analyzed the environmental and economic costs of
16 replacing the PV20 line against other alternatives.

17 A13. A typical non-transmission alternatives analysis, or NTA, for a transmission
18 project would assess the environmental and economic costs of the proposed

1 project investment as compared to other alternatives. A maintenance project like
2 the replacement of an existing facility such as the PV20 screens out of the need
3 for a detailed NTA analysis. Nevertheless, VELCO analyzed the environmental
4 costs associated with this Project in the manner set out in § 218c(a)(1). There are
5 no environmental costs associated with this Project per § 218c(a)(1)(A), (B) and
6 (C) because there are no air emissions caused by the long-term operation of the
7 PV20 or other transmission lines. Furthermore, the Project promotes the
8 renewable energy goals in § 8001 by enabling reliable electric transmission
9 service to continue to support the flow of renewable energy into and around the
10 state.

11 **Impact on System Stability and Reliability**

12 Q14. What impact will this Project have on system stability and reliability?

13 A14. There will be no adverse impact on system stability with this replacement
14 project. System reliability will be improved with this Project.

15 Q15. Has the regional system operator, ISO-New England, reviewed this Project and if
16 so, what has it determined?

17 A15. ISO-New England has reviewed the Project design and potential for impacts to
18 the bulk power system of New England and has issued a letter of no adverse
19 impact which supports VELCO to construct. Exhibit Petitioner HAP-2

1 **Consistency with Vermont Electric Plan**

2 Q16. Will the Project conform to the Vermont Electric Plan?

3 A16. The 2011 Vermont Electric Plan and the 2013 addendum require utilities to
4 provide reliable and efficient electric service within the context of least cost
5 integrated resource planning and inter-utility planning. The Project, as an
6 existing integral component of the Vermont network, is considered to be in
7 service within VELCO's Vermont Long-Range Transmission Plan as well as
8 within the market price forecasts within the Vermont Electric Plan. Continuing
9 to maintain this transmission line segment allows for efficient and least cost
10 electricity flows within Vermont, New England and between New England and
11 New York. As the Project is within VELCO's plan and maintains strategic least
12 cost electricity flows, it conforms to the Vermont Electric Plan. VELCO has
13 coordinated with other Vermont utilities by providing updates on the Project to
14 the Vermont System Planning Committee. VELCO has also requested the
15 Department of Public Service to provide its concurrence with this conformance.

16 Q17. The 2011 Vermont Electric Plan characterizes the PV20 line as "underutilized."
17 What does this characterization mean?

18 A17. It is my understanding that the Vermont Electric Plan described the PV20's
19 potential to allow delivery of lower-cost power to Vermont by upgrading the line

1 to relieve system constraints in New York. This could have the potential effect of
2 giving rise to a more favorable price node at the sending end of the PV20 line
3 and thereby allowing market participants to schedule energy transactions along
4 the line.

5 Q18. Is VELCO aware of, and can VELCO comment on efforts to promote construction
6 in New York to alleviate this restriction?

7 A18. To my knowledge, there are no plans to construct new facilities to specifically
8 alleviate this restriction. In February 2014, two New York transmission lines that
9 previously shared the same set of towers were reconfigured so that each line is
10 now supported on its own separate set of towers. Although this upgrade
11 alleviated the most severe reliability concerns, which were the primary reason
12 for the New York restrictions, the New York Independent System Operator has
13 requested that the New England Independent System Operator within its long
14 term planning studies and day ahead operational studies assume that the PV20
15 line is in service, but limited to 0 MW prior to testing outages elsewhere on the
16 system, i.e. pre-contingency. The line is allowed to respond to system outages by
17 injecting as much power as the line is designed to carry immediately following
18 the outage. Therefore, the line does provide support post-contingency and
19 continues to be a needed critical facility for maintaining system reliability. As

1 noted earlier, system performance during an outage of the PV20 line would be
2 unacceptable.

3 The establishment of a pricing node at the sending end of the PV20 line is also
4 necessary for scheduling energy across the PV20 line. VELCO is not aware of any
5 efforts to implement such a market change. Therefore, the delivery of potentially
6 lower-cost energy at this location cannot be realized at this time.

7 Q19. If the PV20 line is limited by the New York Independent System Operator at 0
8 MW for day ahead and longer term contingency planning studies, does power
9 actually flow across this line?

10 A19. Yes. In addition to providing power flows after a contingency, electrical power
11 is generally allowed to flow freely, and as adjusted from time to time by the
12 Independent System Operators of New York and New England.

13 **Impact on Existing or Planned Transmission Facilities, Utilities & Utility Customers**

14 Q20. Will the Project impact existing or planned transmission facilities without
15 creating an undue adverse effect on Vermont utilities or customers?

16 A20. Yes. The Project does not require any additional transmission facilities and
17 replaces existing facilities, maintaining the current level of electric service
18 reliability to Vermont utilities and customers. VELCO personnel will coordinate

1 with the New York Power Authority, ISO New England, and local distribution
2 utilities during construction and placement of the Project into service, with the
3 goal of maintaining continued service to customer loads.

4 Q21. Does this conclude your testimony at this time?

5 A21. Yes.

