

**STATE OF VERMONT
PUBLIC UTILITY COMMISSION**

Case No. _____

Petition of Vermont Transco LLC and Vermont Electric Power Company, Inc. (collectively, "VELCO"), for a Certificate of Public Good pursuant to 30 V.S.A. § 248(j) authorizing upgrades to VELCO's existing Irasburg Substation, located in Irasburg, Vermont	
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PREFILED TESTIMONY OF EDWARD J. MCGANN
ON BEHALF OF VERMONT ELECTRIC POWER COMPANY, INC.
AND VERMONT TRANSCO LLC

November 18 , 2020

Ed McGann's testimony describes the proposed Project's engineering and design details related to upgrading VELCO's existing Irasburg substation.

EXHIBITS

Exhibit Petitioner EJM-1	Résumé of Edward J. McGann
CONFIDENTIAL Exhibit Petitioner EJM-2	Irasburg Substation One-Line Diagram
Exhibit Petitioner EJM-3	Irasburg Substation Aerial Photograph and Plan
Exhibit Petitioner EJM-4	Irasburg Substation General Arrangement Plan and Elevations
Exhibit Petitioner EJM-5	Irasburg Substation Site Plan

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1 **Q1. Please state your name, occupation, and business address.**

2 **A1.** My name is Ed McGann. I am the Manager of Engineering for Vermont Electric Power
3 Company, Inc. and Vermont Transco LLC (collectively referred to as “VELCO” or the
4 “Petitioners”) and I am responsible for the overall technical design of VELCO’s transmission
5 facilities. I have served in an engineering capacity since joining VELCO in 2004. My business
6 address is 366 Pinnacle Ridge Road, Rutland, Vermont 05701.

7
8 **Q2. Please describe your educational background and work experience.**

9 **A2.** I received my Bachelor of Science degree in Electromechanical Engineering Technology
10 from Vermont Technical College in 1999. Specific information regarding my work experience is
11 detailed in my resume, attached as **Exhibit Petitioner EJM-1**.

12
13 **Q3. Have you previously provided testimony before the Vermont Public Utility**
14 **Commission (the “Commission” or “PUC”)?**

15 **A3.** Yes, I have provided testimony in Docket No. 8604, the PV20 Cable Replacement
16 Project; Docket No. 8605, the Connecticut River Valley Project; Case No. 17-3808-PET, St.
17 Albans Project; and Case No. 20-0444-PET, Sandbar Project.

18
19 **Q4. Do you hold any professional licenses or certifications?**

20 **A4.** Yes, I am a registered Professional Engineer in the State of Vermont.

1 **Q5. What is the purpose of your testimony?**

2 **A5.** My testimony addresses VELCO's proposed Irasburg Project's engineering and design
3 details related to upgrading VELCO's existing substation located at 1364 Route 14, Irasburg,
4 Vermont (the "Project").

5

6 **Q6. Have you prepared exhibits relating to the proposed substation work?**

7 **A6.** Yes. Exhibits related to the substation include **CONFIDENTIAL Exhibit Petitioner**
8 **EJM-2**, which contains a One-Line Diagram of the Irasburg substation. **Exhibit Petitioner**
9 **EJM-3** contains an aerial photograph of the substation. **Exhibit Petitioner EJM-4** contains the
10 general arrangement plan and elevation drawings for the substation. **Exhibit Petitioner EJM-5**
11 contains the overall site plan.

12

13 **Q7. Please explain the need for replacing the 390 Circuit Switcher with a circuit**
14 **breaker.**

15 **A7.** As detailed in Dan Poulin's Prefiled Testimony, this Project involves replacing the 390
16 Circuit Switcher with a circuit breaker. The existing 115 kV, 390 circuit switcher fault current
17 interrupting rating is insufficient to be operated under a present day transformer fault scenerio.
18 Over the life of the 390 circuit switcher the available system short circuit strength has surpassed
19 the equipment's design capability resulting in the circuit switcher not being able to be used for its
20 intended purpose. The intent of the 390 circuit switcher is to isolate a faulted transformer from
21 the 115kV system while the H39 breaker isolates the transformer from the 46kV system
22 whenever the transformer protection detects and operates for a transformer fault. Due to the 390

1 circuit switcher short circuit rating limitation, the existing transformer protection and control
2 design at the Irasburg substation is required to trip the 115kV K46 and K47 line circuit breakers,
3 instead of the 390 circuit switcher, resulting in the north-south transmission corridor being
4 temporarily opened until the faulted transformer can be sectionalized from the 115kV system,
5 and the K46 and K47 line circuit breakers are allowed to be reclosed. Replacing the 390 circuit
6 switcher with equipment with sufficient fault current ratings allows the faulted transformer to be
7 isolated from the 115kV system without interrupting continuity of the K46 and K47 transmission
8 lines.

9 The circuit breaker solution also offers the benefits of placing the interrupting equipment
10 at ground level for improved inspection and maintenance access. In addition, the circuit breaker
11 is equipped with a current transformer compliment that allows for the overlapping zones of
12 transformer and 115kV bus protection criteria to be improved by relocating protection zone
13 overlap around the K390 interrupting device versus where it currently exists at the transformer
14 external slip over current transformers.

15

16 **Q8. What design standards did VELCO use to design the proposed Irasburg substation**
17 **upgrades?**

18 **A8.** VELCO followed its Substation Design Standards for the design of the Irasburg
19 substation upgrades. VELCO's Substation Design Standards are based on industry standards,
20 including the National Electrical Safety Code ("NESC"), Institute of Electrical and Electronic
21 Engineers ("IEEE"), American National Standards Institute ("ANSI") and National Electrical
22 Manufacturer's Association ("NEMA").

1 **Q9. Will VELCO need to perform any grading for the substation upgrades?**

2 **A9.** No. VELCO will not be performing any grading for the substation upgrades.

3

4 **Q10. In your opinion, have the Project elements included in the VELCO Irasburg**
5 **substation proposals, as described in the exhibits you have sponsored, reached a design**
6 **level of detail?**

7 **A10.** Yes. The plans and elevations that VELCO has included as exhibits to this testimony
8 reflect the locations and heights of the equipment proposed for the Project elements at the
9 Irasburg substation.

10

11 **Q11. Does this conclude your testimony at this time?**

12 **A11.** Yes, it does.