

**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 authorizing upgrades to VELCO’s existing Middlebury Substation, located in Middlebury, Vermont

**PREFILED TESTIMONY OF EDWARD J. MCGANN
ON BEHALF OF VERMONT ELECTRIC POWER COMPANY, INC.**
This testimony and associated exhibits have been filed ePUC

January 17, 2023

Ed McGann’s testimony describes the proposed Middlebury Project’s engineering and design details related to upgrading VELCO’s existing substation located at 522 Quarry Road, Middlebury, Vermont. Mr. McGann also addresses 30 V.S.A. § 248(b)(5) (public health and safety) in regards to the substation work.

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PREFILED TESTIMONY OF EDWARD J. MCGANN
ON BEHALF OF VERMONT ELECTRIC POWER COMPANY, INC.

1 **Introduction**

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

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

9
10 Q2. Please describe your educational background and work experience.

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

15
16 Q3. Have you previously provided testimony before the Vermont Public Utility
17 Commission (“the Commission” or “PUC”)?

18 A3. Yes, I have provided testimony in PUC Docket No. 8604, the PV20 Cable
19 Replacement Project, PUC Docket No. 8605, the Connecticut River Valley Project,

1 PUC Docket No. 17-3808, the St. Albans Project, and PUC Docket No. 20-0444,
2 the Sandbar Project.

3

4 Q4. Do you hold any professional licenses or certifications?

5 A4. Yes, I am a registered Professional Engineer in the state of Vermont.

6

7 **2. Testimony Overview**

8 Q5. What is the purpose of your testimony?

9 A5. My testimony addresses VELCO's proposed Middlebury Project's engineering and
10 design details related to upgrading VELCO's existing substation located at 522
11 Quarry Road, Middlebury, Vermont, that are not otherwise addressed in Dan
12 Poulin's prefiled testimony. I also address 30 V.S.A. § 248(b)(5) (public health
13 and safety) in regard to the substation work.

14

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

16 A6. Yes. Exhibits related to the substation include Exhibit Petitioner EJM-2, which
17 contains a One-Line Diagram of the Middlebury substation. Exhibit Petitioner
18 EJM-3 contains an aerial photograph of the substation. Exhibit Petitioner EJM-4
19 contains the general arrangement plan and elevation drawings for the substation.
20 Exhibit Petitioner-EJM-5 contains the overall site plan and grading details for the
21 substation.

22

23

1 Q7. Please explain the need for replacing the 720 circuit switcher with a circuit
2 breaker.

3 A7. The existing 115 kV, 720 circuit switcher interrupter and integrated air-break
4 disconnect arrangement does not allow for VELCO to perform maintenance on
5 the interrupting bottle without scheduling a bus outage due to its close proximity
6 to the energized bus. In recent history, two significant repairs have occurred
7 which resulted in a forced outage of the 115 kV bus. VELCO selected a circuit
8 breaker solution to locate the interrupting equipment at ground level for improved
9 inspection and maintenance access. In addition, a circuit breaker is equipped with
10 a current transformer compliment that allows for overlapping zones of
11 transformer and 115 kV bus protection criteria to be improved by relocating
12 protection zone overlap around the K720 interrupting device versus where it
13 currently exists at the transformer bushing current transformers.

14

15 Q8. Please describe the Middlebury substation lighting plans.

16 A8. The existing substation lighting plan includes perimeter fence mounted lights. With
17 replacement of the perimeter fence, VELCO will remove the existing fence lights.
18 For replacement lighting, VELCO will mount yard lights on the building and on
19 the lattice box steel structures. The new lights will consist of high efficiency Light
20 Emitting Diode down-lights. The building mounted lights are controlled by a
21 photocell and therefore will be on continuously at night and off during the day.
22 Perimeter fence lighting and lights mounted to the steel structures will be manually

1 switched remotely by SCADA and VELCO security or locally by on-site personnel
2 during emergency repair and security response events.

3

4 Q9. What design standards did VELCO use to design the proposed Middlebury
5 substation upgrades?

6 A9. VELCO followed its Substation Design Standards for the design of Middlebury
7 substation upgrades. VELCO's Substation Design Standards are based on industry
8 standards, including the National Electrical Safety Code ("NESC"), Institute of
9 Electrical and Electronic Engineers ("IEEE"), American National Standards
10 Institute ("ANSI") and National Electrical Manufacturer's Association ("NEMA").

11

12 Q10. Does VELCO plan on making any changes to the existing Middlebury substation
13 access driveway? If yes, please describe.

14 A10. Yes, VELCO needs to redesign the existing access driveway. As part of the
15 perimeter fence replacement, VELCO needs to expand the north facing fence line
16 to accommodate the new control building. VELCO proposes to widen the primary
17 entrance drive path to the substation and reduce it to a single, double swing-gate
18 entrance along with provisions for a vehicular turnaround outside of the primary gate
19 entrance.

20

21 To facilitate construction and maintenance access to the temporary mobile
22 substation, VELCO will need to permanently widen a small portion of the existing
23 farm road access off Quarry Road to support a larger vehicular turning radius. With

1 respect to the existing farm road itself that runs along the western substation fence
2 line, VELCO will temporarily widen this portion of the road so it can transport the
3 temporary mobile substation. VELCO will restore this portion of road to its initial
4 and existing width after it removes the temporary substation. Exhibit Petitioner
5 EJM-5 (Site Grading Plan).

6

7 Q11. Will VELCO need to perform any grading for the substation upgrades?

8 A11. Yes, VELCO will adjust the grading on the perimeter fence sections planned for
9 expansion on the northeast side of the property. Presently, the grading on the
10 southwest fence line directs site drainage to a culvert running through the center of
11 the substation yard. VELCO will replace this culvert and route the site drainage
12 around the substation. VELCO will also need to perform minor grading for the
13 mobile temporary substation. Please see Exhibit Petitioner EJM-5 for details on
14 the proposed grading plan.

15

16 Q12. Will the Project add any noise producing equipment?

17 A12. No, VELCO is not adding, relocating nor replacing a permanent transformer as part
18 of the Project.

19

20 Q13. Are there any proposed changes to the existing spill containment system as part of
21 the Project?

22 A13. Yes. While the Project does not involve the installation of a transformer, VELCO
23 plans to install a new transformer oil spill containment system as a maintenance

1 item that will consist of a polyurea lined catchment surrounding the transformer.
2 The system diverts all rainfall and oil to a sump containing a passive filtration
3 media, which filters oil allowing water to drain from the sump outlet. In the event
4 of an oil spill, the filtration media will plug the sump outlet preventing any fluid
5 from draining. Once plugged, the liquid will rise in the sump until the liquid level
6 reaches the overflow outlet to subsurface stage 2 storage. An alarm float located in
7 the sump notifies the VELCO 24-hour staffed System Operations Center of an oil
8 spill containment abnormal event. The stage 2 storage are sized to hold 110% of
9 the oil in the transformer, plus the level of rainfall associated with a 25-year, 24-
10 hour storm event. Exhibit Petitioner EJM-5 illustrates the proposed location of the
11 oil containment catchment, sump structure, storage tanks and discharge.

12

13 Q14. In your opinion, have the Project elements included in the VELCO Middlebury
14 substation proposals, as described in the exhibits you have sponsored, reached a
15 design level of detail?

16 A14. Yes. The plans and elevations that VELCO has included as exhibits to this
17 testimony reflect the locations and heights of the equipment proposed for
18 construction of the Middlebury substation.

19

20 **3. Public Health and Safety [30 V.S.A. § 248(b)(5)]**

21 Q15. Will the substation upgrades have any adverse effects on the health, safety, or
22 welfare of the public or adjoining landowners?

1 A15. No. The substation is an existing facility and not accessible to the general public.
2 VELCO has designed and will construct the Project in accordance with industry
3 safety standards, including the National Electric Safety Code requirements.
4 VELCO will adhere to prudent utility construction practices throughout the
5 construction phase and the Project will not endanger the public or adjoining
6 landowners. The substation will be fenced in at all times during and after
7 construction to protect against unauthorized access. VELCO will operate and
8 maintain the upgraded substation in the same, safe manner that the company
9 operates and maintains all of its facilities.

10

11 Q16. Does this conclude your testimony at this time?

12 A16. Yes, it does.