

STATE OF VERMONT  
PUBLIC SERVICE BOARD

Joint Petition of Vermont Electric Power Company, Inc., )  
and Vermont Transco LLC (collectively known as )  
VELCO) and the Village of Lyndonville Electric )  
Department (LED) for a Certificate of Public Good )  
pursuant to 30 V.S.A. § 248 authorizing the construction )  
of a Substation in the Town of Lyndon, Vermont )

Docket No. \_\_\_\_

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DIRECT TESTIMONY OF WITNESS  
KIM L. JONES, P.E.  
ON BEHALF OF LYNDONVILLE ELECTRIC DEPARTMENT

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September 1, 2009

Ms. Jones' testimony describes the system reliability problems in the area and supports the need  
for the Project.

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1 **I. INTRODUCTION**

2 **Q. Please state your name and address.**

3 A. My name is Kim L. Jones. My business address is 2152 Post Road, Rutland  
4 Town, Vermont, 05701.

5 **Q. With whom are you employed and for how long?**

6 A. I am employed by Central Vermont Public Service Corporation (“CVPS” or the  
7 “Company”). I have 23 years of experience in the field of Transmission and  
8 Distribution power system planning.

9 **Q. What is your present position and what are your responsibilities with**  
10 **Central Vermont?**

11 A. I am Manager of T&D Planning and Budgets. I am also a licensed professional  
12 engineer also a registered Professional Engineer in the discipline of Electrical

1 Engineering in the State of Vermont. I am responsible for Transmission and  
2 Distribution (“T&D”) Planning at CVPS. These responsibilities include the  
3 performance and/or oversight of integrated utility planning studies involving  
4 transmission and distribution system reliability, operability, loss mitigation and  
5 cost-justification. These studies typically assess options for electrical system  
6 improvements ranging from traditional T&D solutions, to more contemporary  
7 solutions such as Demand Side Management (“DSM”) and Distributed  
8 Generation (“DG”). I also oversee and coordinate the Transmission and  
9 Distribution capital budgets.

10 **Q. Are you familiar with the proposed project?**

11 A. Yes, I am.

12 **Q. What is the purpose of your testimony?**

13 A. My testimony will describe the system reliability problems in the area and support  
14 the need for the Lyndonville 115/34.5 kV substation. I conclude that the  
15 proposed project:

- 16 • will not adversely affect system stability and reliability;
- 17 • is consistent with the principles for resource selection expressed in the Company's  
18 least cost integrated resource plan.

19 **Q. Please describe the CVPS system reliability concerns in this area.**

20 A. The electric system in the St. Johnsbury area has an existing reliability exposure in  
21 the event of the loss of the VELCO St. Johnsbury 115/34.5 KV transformer (Higgins

1 Hill) or other piece of key substation equipment. There is only one VELCO 115 kV  
2 source feeding this area. There is also exposure related to the radial 34.5 KV line  
3 feeding two CVPS distribution substations and the Lyndonville Electric Department  
4 (“LED”) from the VELCO St. Johnsbury substation.

5 Due to existing loading and the radial nature of the system it is very difficult to  
6 schedule maintenance for the St. Johnsbury VELCO substation. The time periods  
7 are currently limited and require temporary electrical equipment to be installed at an  
8 additional cost.

9 Also, any necessary work on the CVPS line feeding toward Lyndonville requiring  
10 deenergization would result in loss of all LED load and possibly loads at the CVPS  
11 St. Johnsbury Center and Fairbanks substations.

12 **Q. How much load does CVPS have fed off the St. Johnsbury 115/34.5 KV**  
13 **substation?**

14 A. The peak 2007 *winter* load for the St. Johnsbury transformer was 29.2 MW with  
15 coincident loading for LED of 9.7 MW. Therefore the CVPS portion of load was  
16 19.5 MW. The peak 2007 *summer* load for the St. Johnsbury transformer was 30.2  
17 MW with coincident loading of for LED of 10.96 MW. Therefore the CVPS portion  
18 of this load was 19.3 MW.

19 **Q. Please describe the impact on CVPS if there was a failure of the VELCO St.**  
20 **Johnsbury 115/34.5 kV transformer.**

21 A. CVPS has approximately 6,240 customers fed off the VELCO St. Johnsbury

1           substation. In the event of a failure of the VELCO transformer, all 6,240  
2           customers could be out for at least two days, possibly up to 4 days depending on  
3           weather and soil conditions, and on the location of spare units. This would result  
4           in at least 17,971,200 customer minutes of outage.

5           **Q.    What has the five year history of actual outages represented for customer**  
6           **minutes out for CVPS?**

7           A.    The five year history of outages includes the following:

8	2003	137,126	*Location of line problem allows part of load to be picked up
9	2004	355	*Location of line problem would prevent most load from being backed up
10	2005	0	
11	2006	82,224	*Location of line problem allows part of the load to be picked up
12	2007	0	
13	5 Year TOTAL	<u>219,705</u>	Customer minutes out

14  
15  
16           **Q.    What has the five year history of actual outages represented for customer**  
17           **minutes out for Lyndonville Electric Department?**

18           A.    Based on CVPS reliability data, the five year history of outages impacting LED  
19           was estimated at 4,995,000 customer minutes out.

20           **Q.    Will the proposed Lyndonville substation project adversely affect system**  
21           **stability and reliability?**

22           A.    No. The addition of the Lyndonville source is being proposed in order to improve  
23           the system stability and reliability of both the LED and Central Vermont Public  
24           Service electric systems, as discussed in this testimony and the testimony of  
25           Mssrs Mallory and Mason. The project is expected to improve reliability by  
26           reducing the number of customer minutes out.

1           **Q.    Is the proposed project required to meet the need for present and future**  
2           **demand for service that could not otherwise be provided in a more cost-effective**  
3           **manner through conservation, efficiency, and load management?**

4           A.    Yes, the project is required to meet present and future system needs which could not  
5           be met through more cost-effective means. The exposure of 30+ MW of area load to  
6           loss of a single radial (non-redundant) power source at the VELCO St. Johnsbury  
7           substation, cannot be resolved cost effectively by conservation, efficiency, or load  
8           management measures. The “back of the envelope” Non Transmission Alternative  
9           (“NTA”) analysis presented to the Vermont System Planning Committee concluded  
10          that, without fully addressing the technical feasibility, full costs, or equivalence of a  
11          DG option, it would be at least 45% (or \$10.9 million) more costly than the proposed  
12          transmission solution and would not accommodate future growth. The NTA analysis  
13          also concluded that, with the assumption of maximum DSM penetration being  
14          implemented in the area with no cost to society and no consideration of the capital  
15          investment, a DG option of reduced size would still be required. In looking at only  
16          part of the DG costs as noted above, this reduced size DG option would still be more  
17          costly than the project.

18          **Q.    Is the project consistent with the principles for resource selection expressed**  
19          **in the Company's least cost integrated resource plan?**

20          A.    Yes. The Company seeks to improve reliability and work in collaboration with other  
21          utilities as outlined in its Integrated Resource Plan. The IRP states

- 1                   ▪ The Company participates in subarea or local subtransmission and distribution  
2                   planning which may involve the participation of adjacent affected utilities and  
3                   stakeholders as appropriate.  
4                   ▪ CVPS's T&D planning analysis has increasingly focused on studies designed to  
5                   improve system operation under contingency situations.  
6                   ▪ The Company in conjunction with other utilities will conduct preliminary NTA  
7                   analysis for study areas where VELCO's Long-Range plan has identified  
8                   deficiencies.  
9

10                   The Lyndonville substation project will improve reliability for unplanned and  
11                   planned contingencies for both CVPS and LED and cost-effectively  
12                   addresses a deficiency identified in the VELCO Long Range Plan.

13  
14                   **Q. Does this conclude your testimony?**

15                   A. Yes.