STATE OF VERMONT
PUBLIC SERVICE BOARD

Joint Petition of Vermont Electric Power Company, Inc., (VELCO) Vermont Transco LLC, Green Mountain Power Corporation (GMP) and Vermont Electric Cooperative, Inc. (VEC) for a Certificate of Public Good pursuant to 30 V.S.A. § 248 authorizing them to upgrade VELCO's Tafts Corners substation in Williston, Vermont and to Remove VEC's existing substation	)	Docket No. 7453

SUPPLEMENTAL PANEL PREFILED TESTIMONY OF SCOTT MALLORY, HARRY ABENDROTH, AND TERRY CECCHINI ON BEHALF OF VERMONT ELECTRIC POWER COMPANY, INC. VERMONT ELECTRIC COOPERATIVE, INC. GREEN MOUNTAIN POWER CORPORATION

Summary of Testimony

The Panel's testimony responds to transmission alternative questions raised at the Public Service Board site visit on October 15, 2008.

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Introduction

Q1. What is the purpose of this testimony?

A1. During the October 15, 2008 site visit, the Public Service Board Hearing Officer in this Docket posed several questions regarding transmission alternatives to the Project that were studied or could be studied. Our testimony responds to these questions. In sum, based on the Petitioners' study of area loads and subtransmission infrastructure, the alternative proposed at the site visit is more expensive, likely to face municipal opposition, and is inferior from an electrical and system planning perspective.

Q2. Please address the possibility of substituting a 34.5/12.47 kV transformer within this Project instead of the proposed 115/12.47 kV transformer, thus supplying load from the 34.5 kV network instead of the 115 kV network.

A2. The Petitioners have evaluated this hypothetical alternative from system planning, engineering, and least cost planning perspectives and do not believe it to be a lower cost alternative.

System Planning:

Broadly stated, the goal of system planning is to solve electric reliability and supply problems at the least cost, using existing corridors and facilities regardless of ownership, with the least possible aesthetic and environmental impact. From a system planning perspective, the alternative concept is inferior because it will negatively affect the 34.5 kV system and the 115/34.5 kV transformers supplying the local area 34.5 kV system, and will needlessly require expansion of the existing substation site. The proposed Project will supply a current load of approximately 12.5 MW from the 115 kV system and remove the same amount of load from the 34.5 kV system. This will defer the need for system improvements to the 34.5 kV network and 115/34.5 kV substations. The alternative concept will not reduce load on the 34.5 kV network, and would actually negatively affect the 34.5 kV network by adding the load growth of the developing

Williston area to it. Compared to the Project, the alternative concept would increase the load on the 34.5 kV network by 12.5 MW in 2009 and an estimated 20 MW in 2018.

The Petitioners would need to conduct further extensive system planning studies to determine exactly what and when other improvements would be needed to keep the 34.5 kV system and supplying transformers reliable with this additional load. The proposed alternative would trigger the need for additional investments in the local 34.5 kV sub-transmission network earlier than with the proposed Project. The most likely additional investment would be an additional or larger capacity 115/34.5 kV transformer and supporting infrastructure at the Tafts Corners Substation.[1] This is because the only electrical source at the Williston load center is the 115 kV substation installed as the original Tafts Corners project (Docket No. 6839). It is therefore likely that adding another 115/34.5 kV transformer at the Tafts Corners Substation would require adding another 115 kV ring bus position and supporting equipment. Thus, over the long term planning horizon, the alternative will likely require the build-out of the current Tafts Corners Substation site beyond the space currently enclosed by the substation fence.

[1] The Petitioners note that protection of the Queen City and Essex substation transformers from overload was one of the major reasons for constructing the present Tafts Corners Substation, as authorized by the Board in Docket 6839.

The alternative concept needs to allow for two 34.5/12.47 kV transformers (i.e., an additional transformer for the planned phase III build out of the site[2]) in order to be electrically equivalent to the Project. This would require a 34.5 kV ring bus, circuit breakers, and relay and control equipment to be planned now within the Tafts Corners Substation site, and built in about ten years with present load projections. This is impractical due to space constraints.

Engineering and Space Utilization:

From an engineering standpoint, Petitioners' preliminary review of this alternative has highlighted bus and circuit breaker, land acquisition, and design problems that would make the alternative more costly than the proposed Project. Given the system planning need for an additional 34.5 kV bus structure with 5 or 6 circuit breakers and relay and control equipment in the future, the Petitioners should plan for space within the substation to accommodate these components.[3] The planned space utilization of the Tafts Corners Substation site should also take into consideration the potential for an additional 115/34.5 kV transformer, 115 kV bus work, and circuit breakers because this site is a likely location to support the local 34.5 kV network.

[2] Terry Cecchini testified in Docket 6839 that the "thing that drives the second distribution transformer is when the load on the first distribution transformer goes above 20 MVA will require the need for the second one." Docket 6839 TR 07/02/2003 at 72.

[3] The existing substation provides for a second 34.5 kV line exiting the substation so alternatives would need to maintain that option to maintain electrical equivalence.

If the Petitioners construct the alternative design with the 34.5 kV and 115 kV items within the substation yard, the Petitioners will need to expand the Tafts Corners Substation to the west. This expansion will be necessary because the current yard does not have enough space for the equipment that the alternative suggested during the site visit would require (i.e., 34.5 kV transformer, bus, and equipment), the existing substation items, plus the potential additional 115/34.5 kV transformer, bus, and equipment. The Petitioners have not calculated the cost of this expansion, but would include land acquisition, the possible additional regulatory costs of land condemnation and expense in moving and replanting the berm.

Also, to fully assess the alternative design's viability, the Petitioners would need to conduct a substantial amount of engineering design work, and analyze land use impacts, all of which will create additional delay and expense in meeting the reliability needs of the local area.

Least Cost Planning:

The proposed substation site was permitted and constructed with the Petitioners' proposed expansion in mind. The alternative examined above is likely to cost significantly more than the Project on the one hand, and will not be the best use of

Petitioners' investments in the proposed site on the other. Specifically, the alternative design would require the following items which would directly cause it to be more costly than the proposed Project and its previously planned build-out:

- additional 34.5 kV bus, 34.5 kV circuit breakers, 34.5 kV relay and control panels (including a structure to enclose them within)
- additional land to expand the substation yard
- new system planning studies (estimated to take at least 6 months)
- engineering work to design the conceptual alternative

Additionally, an un-quantified potential exists for the alternative to increase costs because of required upgrades to the 34.5 kV network (i.e., an additional 115/34.5 kV transformer, bus, circuit breakers, and relay and control equipment) due to Williston area load growth that would be added to the 34.5 kV system by the alternative. These costs would be significant (e.g., the uninstalled cost of a comparable transformer is estimated at $1.3 million). Overall, implementing the Board alternative design would significantly increase the total project costs over the life of the substation with no reliability gains and thus would be less likely to meet the requirements of 30 V.S.A. § 218c.

In sum, the additional cost and additional burdens on the 34.5 kV system make the alternative inferior from system planning, engineering and least-cost perspectives.

Q3. Please explain the integrated solution benefit of the proposed Project.

A3. The Petitioners developed the proposed Project solution via integrated planning to solve the Williston area needs of both VEC and GMP with a shared substation located purposely near the growing area load center and on the border of their service territories. Should the Project as proposed not be permitted within this site, GMP and VEC would need to plan for their Williston area solutions independently. The benefit of the integrated solution proposed by Petitioners is that it provides the least cost solution to the problem of forecasted Williston area load using existing infrastructure, with municipal support and the least aesthetic and environmental impact.

Ignoring integrated planning for this project will be more expensive overall, result in new, separate distribution utility facilities on green field sites, and will be built in contravention of the goals set forth in the Williston Town Plan. For VEC, this would likely require VEC to proceed with engineering, permitting and construction of its own replacement substation and related new 34.5 kV transmission lines, separate from the Tafts Corners and VEC Williston substation sites, instead of joining in the joint substation Project with GMP. VEC currently estimates that a replacement substation is estimated to cost approximately $7 million as per a similar substation quote for its system. Such an outcome would eliminate the financial benefit of the integrated solution

of the proposed Project, causing two substation projects to be built instead of one[4] with a resultant duplication in project costs and land use impacts, as well as likely municipal opposition.

For GMP, this would likely consist of a scaled down expansion proposed for the Tafts Corners Substation for its own needs, likely costing approximately $8 million. GMP investigated existing substation alternatives but found them electrically inferior and not equivalent to the Project because they involved expansions at remote locations that require additional distribution lines to reach the Williston load center. Exhibit Green Mountain Power-Cecchini-2. If a separate GMP facility were built in the Tafts Corners area close to GMP's expected load growth, GMP would require a green field site and likely face the same land acquisition hurdles and lack of municipal support noted above.

With the cost of combined independent solutions by VEC and GMP at an estimated $15 million (i.e., $7 million for VEC + $8 million for GMP), the Project creates a benefit of approximately $5.7 million (i.e., $15 million VEC & GMP - $9.3 million for the Project).

[4] The Williston Town Plan notes VEC's longstanding desire to utilize an expanded Tafts Corners Substation to avoid additional substation construction in the town. See 30 V.S.A. § 248(b)(1).

Q4. Would the alternative cause delay in meeting the needs of GMP and VEC and their respective customers?

A4. Yes. The Petitioners are seeking approval of this Project because they expect to begin Project construction within the next year. Further extensive and expensive study regarding the Project would cause significant delay and prevent the Project from being built in time to meet the pressing reliability needs of GMP and VEC.

In sum, the Petitioners do not believe this alternative deserves further study because of: (1) the Petitioners' determination that the alternative will likely require other transmission projects to support the 34.5 kV system more quickly than anticipated; (2) the Petitioners' determination that the Board alternative will most likely be more costly than the proposed Project; (3) the years of related discussion within the Area Specific Collaborative process for this Project; and (4) the years of system planning analysis already performed by the Petitioners to derive an integrated solution for both GMP and VEC.

Q5. Please explain the potential affect of a Board alternative design (i.e., a 34.5 to 12.47 kV transformer) on the concrete foundations that the Petitioners previously installed for the Project within the Tafts Corners Substation.

A5. If such an alternative was found feasible, acceptable, and least cost, the Petitioners would engineer it to either work around the existing foundations or they would remove the existing foundations. Given the Petitioners' long-range planning desire to optimize the use of this site, it is likely that the existing foundations for the 115 kV bus would be kept intact in anticipation of their potential future use.

The Petitioners saved costs by installing the Tafts Corners Phase II and III foundations during initial construction of the substation. By previously installing the foundations (as compared with installing the foundations today) VELCO estimates it saved approximately 25-30% in reduced labor hours (due to being less technical than installing within an existing substation yard) and approximately $50 thousand in avoided contractor mobilization and demobilization charges.

Q6. Please explain VELCO's interest in the Project and why this Project involves VELCO.

A6. VELCO builds its projects to serve transmission system related needs, including distribution connections to its transmission system, at the request of its owners or interconnecting generators. This Project involves a request by two of its owners, GMP and VEC, to design and construct this addition to the VELCO Tafts Corners Substation.

The utilities address solutions to reliability problems on an integrated basis and design solutions that best utilize the resources in the problem area. If additional electrical line capacity is needed to serve the load in a particular area, the utilities evaluate all available sources regardless of utility ownership for their ability to provide electrical benefits to the problem area. VELCO and/or the distribution utility(s) perform system planning studies to evaluate the systems impacts of connecting one line with another to provide additional support to a problem area. Determining whether these connections to other higher capacity/voltage lines include a VELCO line depends on the proximity to a VELCO line and an evaluation of impacts to the connecting systems. In the case of this Project, VELCO's 115 kV line is nearby and would provide additional capacity to the 34.5 and 12.47 kV systems that could not be supplied solely by a single connection to a 34.5 kV line in the area of need. This creates positive benefits for the lower voltage lines.

Q7. Does this conclude your testimony?

A7. Yes.

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