

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 7032

Joint Petition of Vermont Electric Power Company, Inc.,)
Green Mountain Power Corporation and the Town of)
Stowe Electric Department for a certificate of public)
good, pursuant to 30 V.S.A. Section 248, authorizing the)
so-called Lamoille County 115 kV Project, consisting of)
the construction of a transmission line from Stowe to)
Duxbury, Vermont, and accompanying facilities)

Hearings at
Montpelier, Vermont
July 6, 7, 8, and 18, 2005

Order entered: 3/16/2006

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I. INTRODUCTION

On December 6, 2004, Vermont Electric Power Company, Inc. ("VELCO"), Green Mountain Power Corporation ("GMP"), and the Town of Stowe Electric Department ("Stowe Electric") (collectively, "Petitioners") filed a petition with the Vermont Public Service Board ("Board") to construct the proposed Lamoille County Project (the "Project" or "LCP"), which consists of a 115 kV transmission line from Stowe to Duxbury, Vermont, and related facilities. Currently, the subtransmission system in the area is not sufficient to ensure electric reliability. The proposed project, as modified and conditioned by this proposal for decision, will ensure electric reliability for the area and will not result in any undue adverse impacts under the substantive criteria of Section 248(b). Consequently, I recommend that the Board approve the Project as modified and conditioned below.

II. PROCEDURAL HISTORY

A prehearing conference was held on January 7, 2005. Appearances were entered by Sarah Hofmann, Esq., for the Vermont Department of Public Service ("Department"), William B. Piper, Esq. and Russell A. Young, Esq., Primmer & Piper, P.C., for VELCO and Stowe Electric, Peter H. Zamore, Esq., Sheehy Furlong & Behm, P.C., for GMP, and David Englander, Esq., for the Vermont Agency of Natural Resources. The prehearing conference memorandum of January 19, 2005, established February 18, 2005, as the deadline for intervention requests. Individuals and groups granted intervention status were: City of Burlington Electric Department; Gregg Hill Residents; Central Vermont Regional Planning Commission; Lamoille County Planning Commission; Town of Stowe ("Stowe Selectboard"); Vermont Division of Historic Preservation; David and Denise Russo; Town of Waterbury and Village of Waterbury (collectively "Waterbury"); Coalition for Alternative Powerline Options; Meadow Crest Lane Homeowners

Association; David and Carrie Hathaway; Vermont Electric Cooperative, Inc.; Associated Industries of Vermont; James A Harvey; and Jerry McDermott.

A public hearing was held on February 9, 2005, at Thatcher Brook School in Waterbury, Vermont. A site visit was held on March 10, 2005.

Technical hearings were held on July 6, 7, 8, and 18, 2005.

III. FINDINGS

1. The Project proposed by Petitioners includes the following elements:
 - a. Addition of a new 115 kV SF6 circuit breaker in VELCO's Middlesex substation located in Moretown and designation of the facility as permanent.
 - b. Construction of a new 0.3 mile side-by-side single-pole, in-and-out, 115 kV tap off of VELCO's K24 line, and construction of a switching station in Duxbury on approximately 0.5 acres.
 - c. Construction of a new 9.4 mile 115 kV transmission line within existing GMP rights-of-way from the new Duxbury switching station to a new 115 kV substation just south of Stowe's existing Wilkins substation.
 - d. Removal of GMP's existing 34.5 kV line between the new Duxbury switching station and GMP's Blush Hill Switch.
 - e. Construction of a new 115/34.5 kV 4-breaker ring substation just south of Stowe's existing Wilkins substation.
 - f. Relocation of GMP's existing 34.5 kV line between GMP's Blush Hill Switch and the proposed 115 kV substation just south of Stowe's Wilkins substation.
 - g. Construction of 1.05 miles of new 34.5 kV line between the new Stowe substation and the Stowe Mountain tap.
 - h. Removal of Stowe's Moscow substation.

Moulton pf. at 8.

2. The Lamoille County Study Area ("LCSA") is located in the North-Central portion of Vermont. Electrically, it is bounded by VELCO's East Fairfax, Middlesex, Irasburg, Barre, and Berlin 115 kV substations and the New England Power Company's Comerford 230 kV substation. The utilities serving this area are Central Vermont Public Service Corporation, GMP, Washington Electric Cooperative, Inc., Vermont Electric Cooperative, Inc., and the municipal

electric departments of the Town of Stowe, the Town of Hardwick, the Village of Hyde Park, the Village of Johnson, and the Village of Morrisville. Moulton pf. at 5.

3. The proposed Project is designed to address reliability concerns within the LCSA. The areas within the LCSA that do not face reliability issues are the areas served by GMP's Plainfield, Marshfield, and Barnet substations. Moulton pf. at 5.

4. The LCSA currently consists of a network of 34.5 kV subtransmission lines that are primarily supplied by VELCO 115 kV to 34.5 kV step-down substations located in Middlesex, East Fairfax, and Irasburg. Smith pf. at 3–4.

5. The LCSA has had only incremental electrical system improvements over the past 30 years. During that period, the area has experienced significant load growth. The 2006 expiration of transmission agreements among the utilities serving the area led them to the conclusion that an analysis was necessary to determine whether the existing LCSA transmission system needed improvements, and if so, where. In late 2001, these utilities requested that VELCO perform a reliability analysis of the LCSA electric system. Moulton pf. at 4–5.

6. The analysis by VELCO took approximately 18 to 24 months to perform. Tr. 7/6/05 at 93 (Moulton).

7. VELCO found the existing LCSA transmission system to be inadequate for the following reasons: (1) the system is unable to properly back up the load in the event of an outage of key equipment; (2) the system is likely incapable of maintaining adequate voltage levels on the 34.5 kV subtransmission system as analyzed at a coincidental peak load of 75 MW (a peak that was reached in the winter of 2005); and (3) at forecasted future load levels likely to be achieved in 2008, the loss of VELCO's Berlin 115/34.5 kV transformer would cause its Middlesex 115/34.5 kV transformer to overload, exposing the LCSA to voltage collapse and requiring an additional source of capacity in the area. Moulton pf. at 5.

VELCO Project Elements

8. At the VELCO Middlesex substation in Moretown, Vermont, VELCO proposes to expand the existing substation fence to allow for the installation of a new breaker on its K24

115 kV line that would be electrically tied between the new Duxbury tap and the existing Middlesex

115/34.5 kV step-down transformer. VELCO also proposes to expand the existing control building to house needed communication, protection, and fiber equipment. These improvements would be owned and operated by VELCO. Moulton pf. at 8-9; Johnson pf. at 2.

9. In addition, VELCO is requesting that the Certificate of Public Good for the Middlesex substation, issued on October 15, 1969, in Board Docket 3387, be made permanent. Evidently, at the time of the substation's approval and construction, VELCO and the Board anticipated further review of the substation's siting. Neither VELCO nor the Board have revisited the issue, and there is now no plan to reevaluate the location of this substation. Moulton pf. at 9.

10. The proposed Duxbury tap would consist of in-and-out single-pole davit-arm 115 kV structures approximately 0.3 miles from VELCO's existing 115 kV K24 line in Northern Duxbury to a switching station consisting of three pole-mounted, motorized load-break switches with three 115 kV lines terminating at the station. The first line would be the existing VELCO 115 kV tie to VELCO's Essex substation, the second would be the existing VELCO 115 kV tie to VELCO's Middlesex substation, and the third would be the newly proposed 115 kV line to the proposed Stowe substation, to be owned and operated by VELCO. Moulton pf. at 11; Johnson pf. at 3.

11. Between the Duxbury switching station and GMP's existing Blush Hill tap, Petitioners propose to remove GMP's existing 34.5 kV 3347 line and to build a new VELCO-owned-and-operated 115 kV line, starting out as H-frame construction to the I-89 highway crossing, and for the rest of the segment, as single-pole, davit-arm constructed line on the centerline of the existing 100 foot right-of-way. A new right-of-way would be required to run the line from the proposed Duxbury switching station to a point across and approximately 140 feet north of Interstate 89. Moulton pf. at 11; Johnson pf. at 5.

12. From the existing GMP Blush Hill switch heading north to the Waterbury Reservoir crossing, Petitioners propose to reconstruct GMP's existing 34.5 kV 3313 line 25 feet from the edge of the existing 100 foot right-of-way and to build a new VELCO-owned-and-operated 115 kV single-pole, davit-arm constructed line on the 50-foot centerline in parallel with the 34.5 kV line. Moulton pf. at 11; Johnson pf. at 6.

13. At the Waterbury Reservoir crossing, Petitioners propose to build a single, three-pole H-frame 115 kV tower on each side of the reservoir in parallel with the existing GMP H-frame 34.5 kV line. The existing 34.5 kV towers would be replaced by three-pole H-frame structures in the same location. This would require expanding the clearing of the existing GMP right-of-way. H-frame construction in this location would minimize the height of the towers needed to span across the reservoir with acceptable clearances. Moulton pf. at 12; Johnson pf. at 6.

14. From the Waterbury Reservoir crossing to the new Stowe substation, Petitioners propose to reconstruct GMP's existing 34.5 kV 3313 line 25 feet from the edge of the existing 100-foot right-of-way and build a new VELCO-owned-and-operated 115 kV single-pole, davit-arm constructed line on the centerline of the right-of-way in parallel with the 34.5 kV line (pole for pole) to within 1.05 miles of the new substation. From this point (the existing location of Stowe's 34.5 kV Mountain Line tap) north to the new substation, Petitioners are proposing to reconstruct the 34.5 kV line 25 feet from the edge of the 100-foot right-of-way and reconfigure it as a single-pole, double-circuit, vertical configuration to accommodate both the existing GMP line and the proposed Stowe feed to its Mountain Line. In this 1.05-mile section, Petitioners also propose building a new single-pole davit-arm VELCO-owned-and-operated 115 kV line on the 50 foot centerline of the right-of-way in parallel with the 34.5 kV lines. Moulton pf. at 13; Johnson pf. at 6.

15. VELCO proposes to build, own and operate a new substation in Stowe, off the north side of Cady Hill Road in Stowe, 0.4 miles from the intersection of River Road. The location is next to and south of the existing Stowe Wilkins substation. The proposed substation would include a four-breaker 34.5 kV ring bus with a 115/34.5 kV step-down 34/45/56 MVA transformer with a load-tap changer. From this substation, four 34.5 kV lines would connect the sub-transmission system within the area. The first 34.5 kV line would connect to the north to the Morrisville 34.5 kV sub-transmission system, the second 34.5 kV line would connect to the south to GMP's Middlesex sub-transmission system, the third 34.5 kV line would connect to Stowe's Mountain load, and the fourth line would be an underground feed to Stowe's Wilkins substation. There would be one 115 kV line terminating at the substation and connecting to the step-down transformer. Moulton pf. at 14-15; Johnson pf. at 4.

GMP Elements

16. Between the proposed Duxbury switching station and GMP's existing Blush Hill tap, GMP's existing 34.5 kV 3347 line would be removed. Moulton pf. at 11; Johnson pf. at 5.
17. From the GMP Blush Hill tap heading north to the Waterbury Reservoir crossing, GMP's existing 34.5 kV 3313 line would be reconstructed 25 feet from the edge of the existing 100-foot right-of-way. Moulton pf. at 11; Johnson pf. at 6.
18. At the Waterbury Reservoir crossing, the existing 34.5 kV towers would be replaced by three-pole H-frame structures in the same location. Moulton pf. at 12; Johnson pf. at 6.
19. From the Waterbury Reservoir crossing to the new Stowe substation, GMP's existing 34.5 kV 3313 line would be reconstructed 25 feet from the edge of the existing 100-foot right-of-way to within 1.05 miles of the new substation. From this point (the existing location of Stowe's 34.5 kV Mountain line tap), north to the new substation, the GMP 34.5 kV line would be reconstructed 25 feet from the edge of the 100-foot right-of-way and reconfigured as a single pole, double circuit, vertical configuration, along with the proposed Stowe feed to its Mountain Line. Moulton pf. at 13; Johnson pf. at 6.
20. A 34.5 kV line would connect the proposed Stowe substation to the north to the Morrisville 34.5 kV sub-transmission system. A second 34.5 kV line would connect to the south to GMP's Middlesex sub-transmission system. Moulton pf. at 14-15; Johnson pf. at 4.
21. This Project would not remove the need for all of GMP's 34.5 kV lines near the Duxbury Switching station or at the Blush Hill tap. GMP would need to maintain the 34.5 kV lines that serve its Waterbury, Waterbury Center, and Little River substations, as well as the 34.5 kV line that heads north from its Blush Hill tap to Stowe. Moulton pf. at 11; Johnson pf. at 5.
22. GMP does not plan any changes to its existing Waterbury or Waterbury Center substations as part of the Project. Cecchini pf. at 5.
23. GMP plans to relocate the two switches at the existing Blush Hill Switching Station from their present location on the 3347 line to the 3313 line. Cecchini pf. at 5.

24. GMP proposes to remove its existing 3347 34.5 kV line and the relocation and reconstruction of its 3313 34.5 kV line between Blush Hill tap and the existing Stowe Electric Wilkins substation, the costs for which would be part of the Project costs. Cecchini pf. at 5.

Stowe Elements

25. A short segment of underground 34.5 kV line (approximately 350 feet) would be constructed to connect the proposed 115 kV substation to the existing Stowe Wilkins substation. This proposed tie would be within the fences of the two adjacent substations. Machia Supp. pf. at 1-2.

26. From the existing location of Stowe's 34.5 kV Mountain line tap north to the new substation, Petitioners are proposing to relocate the 34.5 kV line 25 feet from the edge of the 100- foot right-of-way and reconfigure it as a single-pole, double-circuit, vertical configuration to accommodate both the existing GMP line and a feed to Stowe's Mountain Line. The section of 34.5 kV line that currently runs from this point south to the Moscow substation would be removed, since the load would be served from the proposed Stowe substation via the second 34.5 kV line. The Moscow substation would also be removed. Moulton pf. at 13; Johnson pf. at 6.

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

27. The proposed Project will not unduly interfere with the orderly development of the region, with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of municipal legislative bodies, and the land conservation measures contained in the plans of affected municipalities. This finding is supported by findings 28 through 41, below.

28. The Towns of Moretown and Duxbury, and the Town and Village of Waterbury are members of the Central Vermont Regional Planning Commission. The Town of Stowe is a member of the Lamoille County Regional Planning Commission. Rowe pf. at 2.

29. VELCO met with representatives from affected towns multiple times to discuss the proposed Project. As a result of these discussions, Petitioners made various modifications to the

design of the proposed Project and delayed the filing of the petition three times to incorporate design changes. Mace pf. at 3–4.

Moretown

30. The Moretown Town Plan does not offer specific guidance related to siting transmission facilities. The Moretown Plan does state that a goal of the town is to preserve its natural environment, rural character, and historic working landscapes. The proposed upgrades at the Middlesex substation would not adversely affect these goals. Rowe pf. at 2–3.

Duxbury

31. The Duxbury Town Plan encourages utility companies to "adhere to environmentally and ecologically sound utility-line maintenance practices" and states that "[m]echanical maintenance procedures are favored over chemical maintenance." VELCO has a state-approved right-of-way vegetation management plan that does employ the use of pesticides. Rowe pf. at 4.

32. The Duxbury Town Plan includes the following recommendation:

utility lines should be placed underground wherever possible or placed so as not to obstruct scenic views. Routine maintenance of utility rights-of-way should preserve the natural vegetative cover whenever possible.

VELCO's vegetation management plan promotes selective clearing of its utility corridors and favors preservation of low-growing corridor vegetation. Rowe pf. at 4–5.

33. The Duxbury Town Plan also "discourage[s] extension of power lines into remote parts of town" and states that "[n]o above ground utility lines may be installed in the Timber Management and Wildlife Zoning District." The proposed Project is not located within the Timber Management and Wildlife Zoning District. Rowe pf. at 5.

34. The proposed Project is consistent with the Duxbury Town Plan's recommendations regarding conservation of natural resources and protection of wildlife (pages 35 and 36), the conservation activities of the Duxbury Land Trust (page 56), and the additional conservation initiatives described on pages 69 through 73. The proposed Project will not impact deeryards

mapped on the Natural Features Map, nor will it affect the lands of high conservation value as shown on the High Conservation Value Map. Rowe pf. at 5–6.

35. The Duxbury Town Plan recognizes six animal species of special interest to the town: black bear, river otter, beaver, moose, deer, and bobcat. The proposed Project will not adversely affect these species. Gilman pf. at 17.

Waterbury

36. The Waterbury Municipal Plan proposes that the Waterbury Conservation Commission and the Planning Commission "[m]onitor the expansion or relocation of utilities (e.g., electric facilities) for their effect on natural and scenic resources." The proposed Project will be located, for the most part, in the existing GMP 100-foot right-of-way through Waterbury. Rowe pf. at 7.

37. The Waterbury Municipal Plan classifies the land surrounding the Waterbury Reservoir as public conserved land. The proposed 115 kV transmission line would cross the Waterbury Reservoir parallel to the existing GMP 34.5 kV line crossing. Rowe pf. at 7.

Stowe

38. The Stowe Town Plan states that the existing local power grid is limited and cannot carry additional loads without substantial system upgrades (page 87). Additional statements in the Stowe Plan on this subject include the following:

The next system upgrade will require the installation of a new transmission line (34.5 kV or 115 kV), from Bolton or Waterbury, into the loop in the vicinity of Moscow.

To allow for higher distribution voltages, future distribution line upgrades may require wider rights-of-way. It is the intent of the town to continue to site new rights-of-way within existing public rights-of-way where feasible.

The region's electric transmission and distribution infrastructure should be upgraded to ensure the long-term availability of affordable electric energy to town residents and businesses.

The proposed 115 kV line is consistent with the upgrades described in these statements and would be built in an existing right-of-way. Rowe pf. at 9.

39. The Stowe Town Plan states that over 30% of Stowe's land has been conserved through efforts of its local land trust and conservation commission. Stowe is working to conserve Nichols Field, a parcel north of Moscow Road. The proposed 115 kV line will utilize the existing GMP right-of-way across Nichols Field. Rowe pf. at 9–10.

Regional Plans

40. The proposed Project is consistent with the goals and policies stated in the Central Vermont Regional Plan. The proposed Project: (1) is the best alternative for meeting present and future reliability needs; (2) utilizes an existing corridor and therefore minimizes archaeological, aesthetic, and environmental impacts; (3) co-locates the new Stowe substation with the existing Wilkins substation; (4) employs a state-approved vegetation management plan; and (5) minimizes aesthetic impacts. Rowe pf. at 12.

41. The Lamoille County Planning Commission Regional Plan does not list any specific electric transmission goals, policies or objectives. Rowe pf. at 12.

Discussion

I recommend that the Board find that the proposed Project does not unduly interfere with the orderly development of the region. The Vermont Supreme Court has previously interpreted the phrase "due consideration" in Section 248(b)(1) to mean that municipal enactments are advisory rather than controlling. The Court has stated that, without a "clear and explicit legislative pronouncement," it would not construe Vermont's statutes "in any manner giving single municipalities the power to subvert utility projects statewide in scope and broadly entrusted to a single planning and supervisory agency."¹

The majority of the proposed Project would be located within an existing transmission corridor or adjacent to an existing substation. The one area where the proposed Project would be constructed outside of an existing right-of-way is the proposed 115 kV tap from the VELCO K24 line to the Duxbury Switching Station, and to its connection with the existing GMP right-of-way. As discussed below, the evidence in this case indicates that the Project as proposed is needed and

1. *City of South Burlington v. VELCO*, 133 Vt. 438, 448 (1975).

is the optimal proposal among several alternatives studied. Additionally, VELCO has rejected other alternatives at this site, including construction of a substation, to minimize the site-specific impacts in this area of Duxbury.

Need for Present and Future Demand for Service

[30 V.S.A. § 248(b)(2)]

42. The proposed Project is required to meet the present and future demand for service which could not otherwise be provided in a more cost effective manner through energy conservation programs and measures and energy efficiency and load management measures. This finding is supported by findings 43 through 68, below.

43. The need for upgraded transmission to the area has been anticipated for decades. Short-term measures, such as installation of capacitor banks in Morrisville and Hardwick and the 34.5 kV rebuild of Morrisville's B-22 line, have been implemented over the past thirty years. Hanners pf. at 3–4; Machia pf. at 3.

44. At an area load level of approximately 40 MW, the system is not capable of serving the load and maintaining acceptable voltages following certain contingencies such as the loss of GMP's 34.5 kV Middlesex-to-Stowe line or the CVPS East Fairfax tie. At a load level of 53 MW or greater, the LCSA would likely suffer a voltage collapse for these contingencies. Smith pf. at 5; tr. 7/6/05, vol. I, at 10–11(Moulton).

45. When the area load reaches 74 MW, the present system could be incapable of supplying the loads and maintaining voltages above 95%, even with all lines in (i.e., all of the area's subtransmission lines in service). A voltage level of 95% is required with all lines in because when a contingency occurs, a voltage drop is normally experienced. Smith pf. at 4.

46. The most recent peak load experienced in the LCSA was 74 MW on December 20, 2004. The last prior reported peak was approximately 68 MW, in 2003. The three years preceding the recent peak, the peak load for the area was fairly steady at just below 68 MW. Allen pf. at 12–15; exh. KSM-2 at 7.

47. When the 74 MW load level was reached, local generation was providing some local voltage support. Allen pf. at 15.

48. At 81 MW, the present system with all lines in cannot maintain voltage levels above 90%, providing essentially no margin for a contingency. At this voltage level, a contingency would have a good chance of causing voltage collapse and loss of load. Smith pf. at 4.

49. The number of hours for which the LCSA load was greater than 40 MW was 4,744 in 2000/2001 (2,797 in the winter season and 1,947 in the summer season), 5,025 in 2001/2002 (2,691 in the winter season and 2,334 in the summer season), and 5,359 in 2002/2003 (2,915 in the winter season and 2,444 in the summer season). Exh. KSM-2 at Appendix 3.

50. Petitioners project that area peak will reach 92.6 MW in 2015, representing peak load growth of approximately 2.3% on a compound annual basis over the next ten years. Allen pf. at 13–14.

51. VELCO's forecast of load ignores some important features of the existing system and fails to reflect customer opportunities. However, the forecast used by VELCO is not unreasonable. Allen pf. at 13.

52. The proposed Project would provide reliable service to the area up to peak loads of 92.6 MW. With the installation of fixed capacitor banks of 5.4 MVARs at the Waterbury Center 34.5 kV substation, the Cambridge 34.5 kV substation, and the Marshfield 34.5 kV substation, and the installation of an additional 5.4 MVAR capacitor at the Lodge 34.5 kV substation, the proposed Project would be capable of serving 98 MW. Tr. 7/6/05, vol. I, at 92-93 (Moulton); exh. KSM-2 at 3, 23.

53. A looped subtransmission system with adequate capacity should be capable of supplying the connected distribution substations following a line or substation contingency. The present looped system is not capable of providing this level of reliability, even at moderate load levels. Smith pf. at 4.

54. A looped system has significant advantages to a radial system, including the ability to restore service to all loads by switching, while repairs to the faulted section are underway. At present load levels the LCSA does not have this capability for over 40% of the hours in the winter, and 27% of the hours in a year. Smith pf. at 7.

55. Without the proposed Project, the LCSA would face challenges in maintenance of existing facilities. Due to the weakness of the system and the projected load growth, it will become more difficult over time to test and maintain existing equipment. Additionally, it will be

difficult to take key equipment out of service to be replaced or upgraded. These factors increase the risk of outages. Moulton pf. at 22.

56. Most of the growth in the LCSA is in just two service territories, Stowe Electric and GMP. The majority of the growth in the system, roughly two-thirds, is projected to occur in Stowe's 34.5 kV Mountain Line and the three distribution circuits in GMP's territory serving Waterbury and Waterbury Center. Allen pf. at 14.

57. Future growth in Stowe includes the recently approved expansion of the Stowe Mountain Resort (known as the Spruce Peak Development) that is currently underway. In 2001, Stowe Electric issued an ability-to-serve letter to the Stowe Mountain Resort that stated that Stowe Electric could provide an additional 2.5 MW to Stowe Mountain Resort. Machia pf. at 3; tr. 7/6/05, vol. II, at 88 (Machia).

58. In determining whether to issue an ability-to-serve letter for the Spruce Peak Development, Stowe Electric only considered the capacity of its distribution system. Stowe Electric did not consult with GMP as to whether GMP could deliver sufficient power to enable Stowe Electric to serve the Spruce Peak Development. Tr. 7/6/05, vol. II, at 89, 92–93 (Machia).

59. VELCO considered all reasonable transmission and distribution alternatives to the proposed Project, including more than 15 transmission alternatives. These alternatives included: (1) adding capacitors to the system; (2) adding Flexible AC Transmission System ("FACTS") devices, which provide dynamic voltage support to the system; and (3) adding a second 34.5 kV subtransmission line from Duxbury to Stowe. Smith pf. at 9–11.

60. VELCO examined transmission alternatives to the proposed Project, including installing a new 34.5 kV source from the Middlesex area to the Stowe/Wilkins area, and installing a FACTS device. Exh. KSM-2 at 5.

61. The proposed Project has several advantages over transmission alternatives, including: (1) the proposed Project could serve the highest peak load levels; (2) it relieves voltage issues; (3) it provides the highest level of loss savings (as discussed in the economic benefit section, below); and (4) it is located at the load center of the LCSA. Exh. KSM-2 at v.

62. Neither demand-side management ("DSM") or distributed generation, alone or combined, could defer the need for the proposed Project. Welch pf. at 2; exh. DWG-2 at 2.

63. VELCO analyzed non-transmission alternatives with the premise that there is an immediate need to provide another source to the subtransmission system, or reduce the load to 40 MW (from a recent peak of 74 MW). Exh. DWG-2 at 2.

64. The VELCO study concluded that after ten years of DSM activity, beginning with implementation in 2005, load could only be reduced to 57 MW. Consequently, DSM alone would be insufficient to defer or eliminate the need for the proposed Project. Exh. DWG-2 at 3.

65. To determine whether distributed generation alone was sufficient to defer the proposed Project, VELCO examined a 50 MW single-cycle combustion turbine that would be built in 2006 and connected to an existing substation. The need for 50 MW of generation was determined based on the amount of generation necessary to defer the proposed Project until 2014. The capital cost to install and operate a 50 MW combustion turbine for eight years would be \$31.3 million, compared to the estimated \$20.3 million capital cost for the proposed Project. Exh. DWG-2 at 3.

66. There are several issues related to distributed generation, including the following: (1) the reliability of a single generator is less than that of a transmission line; (2) the availability of a generator is less than that of a transmission line because scheduled and unscheduled maintenance is more frequent for a generator than a transmission line; and (3) generation needs to be able to stay on-line during faults. Exh. DWG-2 at 9.

67. VELCO studied two alternatives that combined DSM and distributed generation. The first would defer the proposed Project for eight years, and the second would defer the proposed Project for 20 years. Both scenarios used as an assumption, the installation of a 35 MW generating unit. Reducing the peak load with DSM would allow for installation of a smaller generation unit, thus reducing construction and generation costs. The study concluded that the eight-year deferral option would have a capital cost of \$65.5 million and the 20-year deferral option would have a capital cost of \$99.9 million. Exh. DWG-2 at 4–7.

68. VELCO's non-transmission alternatives analysis is flawed in some respects, including the failure to examine non-efficiency DSM options such as load management and load response. However, these flaws do not produce an erroneous conclusion. Even if the non-transmission alternatives were least-cost from a societal perspective, there is insufficient time to achieve sufficient DSM or to site and build generation. Welch pf. at 2.

Discussion

Once again the Board is presented with a petition for a project that, according to Petitioners, must be approved immediately or a portion of the state could face dire consequences such as blackouts.² Due in part to such prior actions on the part of VELCO and GMP, the Board has opened an investigation into the planning practices for Vermont's bulk transmission system and has required all distribution utilities to participate.³ That investigation will also examine the role of the distribution utilities in planning for transmission upgrades. It is expected that, at the conclusion of the investigation, the probability of such last-minute petitions being filed with the Board will decline significantly.

In this instance, I find that the proposed Project is needed now to reliably serve the load in the LCSA. Further, the evidence presented in this Docket indicates that some action to address reliability concerns in the LCSA should have been taken prior to this time. Petitioners and the Department contend that the appropriate level of reliability for a subtransmission system such as the LCSA is the N-1 criterion. The N-1 criterion requires that the system must be able to withstand the loss of one source. The evidence presented indicates that the LCSA has not met the N-1 criterion for thousands of hours of the year for several years and, further, that this exposure will only increase in the future without the construction of the proposed Project.

Waterbury contends that, as the LCSA has been able to serve loads greater than 40 MW for several years, there is not an immediate need for the proposed Project. Because the alternatives examined by Petitioners assumed that peak load must be reduced to 40 MW, Waterbury argues, the Board should deny the proposed Project and require Petitioners to "evaluate the feasibility and cost-effectiveness of alternatives to the LCP that do not assume that sustained loads served by the 34.5 kV Northern Loop system must be constrained to 40 MW."⁴ The testimony put forth by both the Department and VELCO's engineering experts does not

2. See, Docket 6860, "Northwest Reliability Project," filed by VELCO and GMP; and Docket 6839, "Tafts Corner Substation," filed by VELCO and GMP.

3. See, Docket 7081, Order of 7/20/05.

4. Waterbury Initial Brief at 9.

support Waterbury's contention. The N-1 criterion is the appropriate level of reliability for a system such as the LCSA. Currently, the N-1 criterion is not being met whenever area load exceeds 40 MW. Simply because an area has not met the required reliability standards yet has avoided adverse consequences is not a sufficient reason for the area to continue to fail the applicable reliability standard.

Waterbury argues that, should the Board approve the proposed Project, it should do so with the following conditions:

(1) Directives to the affected utilities and VELCO to assure that investment in comprehensive end-use energy efficiency measures in the LCSA is begun immediately. Such investment should be sustained, aggressive, and above all, comprehensive. The Petitioners should be put on notice today that no new supply-side resources will be prematurely approved if there is any evidence of a failure to invest in all cost-effective demand-side resources first.

(2) A commitment by VELCO and the affected utilities not to propose before 2055 any upgrade to the 115 kV transmission line component of the LCA that would (i) allow for any increase in the capacity of the line, as measured in kilovolts, unless such increases can be achieved with no physical changes to the wires or poles, (ii) require a widening of the existing right-of-way, or (iii) increase either the number or height of the line's poles (unless required by safety considerations or is found by the Board to improve the environmental or aesthetic impacts of the line).

For the following reasons, I recommend that the Board decline to include either condition in the order and certificate of public good. With respect to the first condition, the Board cannot prejudge a future petition under Section 248. The Board would examine a petition for a supply-side resource in the LCSA according to all the substantive criteria of Section 248(b), including the issues of need and least-cost planning. Additionally, the Board has opened an investigation into least-cost integrated planning for VELCO's transmission system. As part of that Docket, the Board will be examining methods for the identification and implementation of least-cost options.

Waterbury fails to provide any evidence or rationale to support a condition prohibiting any upgrades prior to 2055. The proposed Project is capable of providing reliable service up to 2015 (2021 with the installation of certain capacitors). A condition such as the one proposed by Waterbury could place severe economic constraints upon the region by not allowing upgrades needed to ensure reliability, and by likely limiting utilities in issuing ability-to-serve letters. For these reasons, I recommend that the Board not impose the conditions requested by Waterbury.

VELCO has represented that the proposed Project will provide reliable service up to 98 MW. However, according to VELCO's own studies, reliability at this load level requires the installation of capacitor banks at several substations in the LCSA. The Petition does not request approval of these capacitor banks at this time. Without the capacitor banks, the load that can be reliably served is 92.6 MW, which is projected to occur in 2015. Since VELCO has represented that the proposed Project can meet a load level of 98 MW, with the capacitor banks referenced on page 23 of exhibit KSM-2, I recommend that the Board require VELCO to inform the Board at least three years prior to the time that the capacitor banks are expected to be needed, and of any communications between VELCO and the distribution utility responsible for the substations where the capacitors are required regarding installation of the required capacitor banks.

Stowe Electric issued an ability-to-serve letter for the Spruce Peak Development, a significant increase in the Stowe Electric system, without determining whether the transmission infrastructure was sufficient to deliver the necessary power to Stowe Electric's distribution system. Regardless of whether Stowe Electric only has "jurisdiction over its own distribution,"⁵ common sense would dictate that Stowe Electric determine whether it could fulfill the 2.5 MW commitment to the Stowe Mountain Resort prior to issuing an ability-to-serve letter. The Board is currently investigating VELCO's transmission planning practices. One of the issues that the Board is considering in that Docket is:

How should Vermont distribution utilities coordinate with VELCO and with each other in . . . undertaking other planning activities, including the distribution utilities' least-cost integrated resource planning, distributed utility planning, and issuance of Act 250 "ability to serve" letters?⁶

The issuance of ability-to-serve letters without knowing whether sufficient power could be delivered is a major failure in utility planning and has implications on the need for, and the timing of, transmission investments. There is not sufficient evidence in the record to determine the impact on the timing of the proposed Project, primarily because this would only address a

5. Tr. 7/6/05, vol. II, at 92 (Machia).

6. Docket 7081, Order of 7/20/05 at Attachment A.

past event that cannot be undone. The Board's investigation in Docket 7081 should help ensure that such mistakes are not repeated.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

69. The proposed Project will not adversely affect system stability and reliability. This finding is supported by findings 70 through 83, below.

70. The addition of the proposed 115 kV source near the electrical center of the LCSA would substantially strengthen the system, such that momentary voltage dips would be substantially reduced in magnitude. The addition of modern relays and breakers at the proposed new Stowe substation would decrease the duration of these voltage dips. Smith pf. at 26.

71. Use of a single-pole, double-circuit design for the 115 kV and 34.5 kV lines would provide an appropriate level of reliability. Smith pf. at 16–20; Smith sur. pf. at 6–8.

72. The incremental costs of using steel poles and concrete foundations for a single-pole, double-circuit design for the 115 kV and 34.5 kV lines (estimated by VELCO to be \$900,000) would not be justified. Embedded poles provide sufficient reliability, as there has been no failure of embedded poles on the VELCO system and, in the improbable event of a double-circuit outage, the outage would be contained in the local area and would not adversely impact the security of VELCO's bulk system. Smith sur. pf. at 8.

73. Design changes could be made to the proposed transmission structures that would have minimal effect on reliability but could provide aesthetic improvements. These include:

- reducing the height of the pole above the highest conductor. Reducing the length from 12.35 feet to slightly less than 8 feet would reduce the lightening shield angle from 60 degrees to 45 degrees without degrading the lightening protection significantly below that of existing VELCO designs.
- Vertical spacing between conductors can be compressed, with a corresponding reduction in pole height.
- A reduction in span length could result in lower pole heights. For example, a reduction in span length from 430 feet to 300 feet can reduce pole height by approximately six feet.

Smith pf. at 18–19.

74. By adding a relatively low impedance transmission path from VELCO's K24 line to the center of the LCSA subtransmission system, the proposed Project would slightly increase the number of momentary voltage dips on the bulk system due to faults on the subtransmission network. However, this impact would be mitigated by the impedance of the 115 kV-to-34.5 kV transformer at Stowe and by the addition of modern high-speed fault-clearing relays and breakers at the proposed Stowe site. Smith pf. at 25.

75. The addition of high-speed automatic sectionalizing equipment at the Duxbury switching station would ensure that outages of the K24 path to Essex would only last for seconds. Smith pf. at 25.

76. Addition of the 115 kV breaker at Middlesex would expedite the determination of fault location on the line section between Barre and Essex, thereby enabling faster repair and restoration of this important transmission path. Smith pf. at 25.

77. Overall, the reliability improvement afforded by the K24 breaker addition would outweigh the slight increase in the number of momentary voltage dips. Smith pf. at 26.

78. The proposed Project would provide benefits to electric power systems outside of the LCSA. The installation of the breaker at the Middlesex substation would reduce the outage exposure of the 115/34.5 kV transformer at this substation and result in added reliability to the load served by this source. These loads include the Berlin, Montpelier, and Bolton areas. Moulton pf. at 17–18.

79. The proposed 115 kV line would result in added exposure to faults, due to the fact that there will be an additional 4.5 miles of line that could potentially cause outages of the line between the Essex and Middlesex substations. Based on historical performance, the added line exposure would increase from a frequency of 1 outage in 2.5 years to 1 in 2 years. This added exposure will not unduly adversely affect the bulk power system. The high-speed relaying to be installed at the Middlesex substation would allow the line to be opened for a momentary fault in the same time period it is today. Moulton pf. at 17; tr. 7/6/05, vol. I, at 103–104 (Moulton).

80. One of the worst contingencies for the LCSA, once the proposed Project is completed, would be an outage on the new 115 kV line. If this should occur, voltages may be low in certain areas at the time of the contingency but could be brought back with capacitor bank switching in accordance with a pre-planned procedure. Moulton pf. at 19.

81. Due to issues related to aesthetics, terrain, and cost, VELCO chose to construct a switching station in Duxbury as opposed to the more robust option of a three-breaker ring substation in this area. The switching station, in combination with the addition of a breaker at the Middlesex substation, does not provide the same level of reliability as the originally conceived three-breaker ring substation at Duxbury. However, the reduced level of reliability is an acceptable alternative given the issues facing construction of a substation. The adverse impact on the reliability of the bulk power system would be minimal. Moulton pf. at 9–10.

82. In the event of a permanent fault on the new 115 kV line, the entire circuit (Essex to Duxbury to Stowe to Middlesex) would be out of service. The likely duration of such an outage would be fifteen minutes. Moulton pf. at 10.

83. The removal of the 34.5 kV line between the proposed Duxbury switch and the Blush Hill Switch (3347 line) does not adversely impact GMP's customers served by this line, and instead provides an overall benefit to those GMP customers. Cecchini pf. at 5.

Discussion

The proposed Project will maintain system stability and reliability up to a peak load of 92 MW, projected to be in 2105. With the installation of certain capacitor banks, as discussed above, the proposed Project can maintain reliability in the area up to a peak of 98 MW, expected in 2021.

Other potential reliability issues are presented by design modifications that have been proposed for aesthetic mitigation purposes. First, Petitioners have argued that the Board should not require the use of single-pole, 115 kV/34.5 kV double-circuit design for portions of the Project. The objection to the use of this design has been both reliability and cost. Petitioners further argue that, if the single-pole, double-circuit design is required, the poles must be set in

concrete bases to ensure reliability, thereby significantly adding to the expense of the Project.⁷ However, the Department's engineering witness testified that single-pole, double-circuit design provides an appropriate level of reliability. Additionally, as the Department's witness noted, VELCO has recently proposed, and is currently building, almost seven miles of line in a single-pole 115 kV/48 kV double-circuit configuration, using wooden poles and without the use of concrete bases.⁸

I conclude, based on the record evidence, that the use of a single-pole 115 kV/34.5 kV double circuit configuration will not adversely affect system stability and reliability.

I further conclude that the lightening shield angle can be decreased from 60 degrees to 45 degrees, for limited portions of the proposed line, without having an unduly adverse effect on system stability and reliability. Any adverse effect would be justified by the aesthetic advantages of lower pole heights. In developing final design plans for aesthetically sensitive areas identified in this proposal for decision, Petitioners should incorporate a decrease in the height of the pole structure above the top conductor that reflects the decrease in the lightening shield angle.

Finally, the Department's engineering witness also indicated that it is possible to decrease the vertical distance between conductors. I have significantly more concern with this proposal as it has the potential to cause direct harm to linemen working on the lines.⁹ In the development of final design plans for aesthetically sensitive areas, Petitioners should incorporate a decrease in vertical distance between conductors to the extent that it does not adversely impact worker safety.

Economic Benefit to the State

[30 V.S.A. § 248(b)(4)]

84. The proposed Project will provide an economic benefit to the state. This finding is supported by findings 85 through 89, below.

7. Johnson reb. pf. at 3.

8. See, Docket 6792, Order of 7/17/03 at 5.

9. Johnson reb. pf. at 2.

85. The proposed Project would provide necessary capacity for economic growth in the LCSA and avoid expenses related to unreliable electric service. Moulton pf. at 18; Foley pf. at 7.

86. The need for the Project is a result of load growth in Stowe and the LCSA. The State as a whole benefits from the use of recreational facilities at Stowe, which themselves are dependent on a reliable electric infrastructure. Machia pf. at 9.

87. The proposed Project would reduce 2003 peak winter load losses by 4 MW, 2010 peak winter load losses by 6 MW, and 2021 peak winter load losses by 10 MW for the LCSA. Moulton pf. at 18.

88. The LCP could result in lower market values for some properties near the proposed transmission lines and associated equipment. Foley pf. at 5.

89. Any decrease in property values is likely to be offset by the increase in property values from the Project utility investments and the overall increase in property values in the region due to general economic conditions, which in large measure are driven and supported by utility infrastructure. For example, the expansion at the Stowe Mountain Resort is expected to provide an estimated annual additional property tax revenues of \$162,277. Foley pf. at 6–7.

Discussion

In examining the impact of the proposed Project, the Board is required to look at the general good of the state. While the impact on individual landowners is one consideration in determining the public good, upgrades in infrastructure often have unavoidable negative impacts on some landowners. With Vermont's ever-increasing load, particularly in areas such as the LCSA, it is necessary to upgrade transmission infrastructure even though some landowners will be negatively impacted. The Project will result in an overall economic benefit by allowing growth in the LCSA.

Waterbury contends that the Board must approve the alternative that provides the most economic benefit to the state. However, Waterbury does not provide sufficient evidence to counter the record evidence provided in this Docket that indicates that there are alternatives to the proposed Project which provide a greater economic benefit and ensure sufficient reliability for the region in a timely manner.

Aesthetics, Historic Sites, Air and Water Purity,
the Natural Environment and Public Health and Safety

[30 V.S.A. § 248(b)(5)]

90. The modifications as proposed will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and public health and safety. This finding is supported by findings 91 through 263 below, which are the criteria specified in 10 V.S.A. §§ 1424(a)(d) and 6086(a)(1)-(8)(a) and (9)(k).

Electromagnetic Fields

91. The electromagnetic fields ("EMF") resulting from the proposed Project will not result in an undue adverse effect on the public health or safety. This finding is supported by findings 92 through 100, below.

92. There are two general types of EMF, steady (or direct current fields) and time varying (or alternating current fields). It is time varying or alternating current fields that have been the source of the majority of medical studies. EMF from transmission lines, distribution lines, and electric appliances is an alternating current field and has a frequency of 60 hertz. Valberg pf. at 4–5.

93. EMF has two components, an electric field, measured in volts per meter (V/m), and magnetic field, measured in milligauss (mG). Valberg pf. at 3–4.

94. EMFs are produced by high voltage transmission lines, distribution lines, wiring in buildings, and many commonly used appliances. Magnetic power frequency fields close to electrical appliances are often much stronger than those from other sources, including power lines. Exposures vary widely from clothes washers (up to 3 mG at 4 inches) to can openers (up to 4000 mG at 4 inches). Exh. DPS-VDH-3 at 8.

95. There are currently no federal standards for occupational and residential exposure to EMF. The International Commission on Non-Ionizing Radiation Protection has established guidelines for exposure of the public to magnetic and electric power frequency fields of 833 mG and 4.2 kV/m, respectively. Florida has established guidelines for power lines less than 230 kV of 150 mG and 2.0 kV/m at the edge of the right-of-way when the power line is operating at its highest continuous current rating. The Florida guidelines are not health-based but, instead,

designed so that the maximum power line EMF will not exceed those fields produced by power lines now in operation. Exh. DPS-VDH-3 at 8.

96. The National Institute of Environmental Health Sciences has concluded that:

the probability that ELF-EMF exposure is truly a health hazard is currently small. The weak epidemiological associations and lack of any laboratory support for these associations provide only marginal, scientific support that exposure to this agent is causing any degree of harm.

Valberg pf. at 7.

97. Based on a review of current literature on the possible effects of transmission line EMF on the operation of personal medical devices, VELCO's expert was unable to identify any FDA-issued safety alerts, public health advisories, or medical case reports where power-frequency EMF caused malfunction of medical devices. Exh. DPS-VDH-3 at 35; Valberg pf. at 25.

98. For the proposed Project, with maximum continuous loading at the edge of the right-of-way and directly under the power line, the magnetic field is projected to range from 169 mG to 417 mG in 2015. For average loading at the edge of the right-of-way and directly under the power line, the magnetic field is projected to range from 13 mG to 44 mG in 2015. Exh. DPS-VDH-3 at 5–6.

99. Exposure to magnetic fields can be reduced in a number of ways, most easily by increasing the distance from the power lines. Magnetic field levels decrease rapidly with even minor distance from a source. Placing power lines underground can also decrease EMF exposure. EMF from a transmission line can also be reduced by moving the phase conductors closer together. Exh. DPS-VDH-3 at 11; Valberg pf. at 24.

100. Use of a single-pole 115/34.5 kV double-conductor configuration could produce significantly lower EMF levels than the configuration proposed by Petitioners. Exh. Board-6.

Discussion

The Board has previously found that:

the electric and magnetic fields ("EMF") that will result from the proposed Project are very unlikely to have an undue adverse effect on public health. It is not possible to state unequivocally that there will be no adverse health effects. Some epidemiological studies have found a weak correlation between EMF and

childhood leukemia, despite the fact that no mechanism of causation has been found.¹⁰

The Board specifically declined to set standards for EMF exposure or adopt the guidelines established by other states, and instead adopted a policy of prudent avoidance. The Board identified several definitions of prudent avoidance, including the following:

[A]doption of policies that limit magnetic field exposure whenever this can be done for a small investment of money and effort. Prudent avoidance argues that a sufficient basis for concern does exist but not enough is presently known to justify large investments for avoiding magnetic field exposure. Under this approach, large expenditures would not be made until research provides a clearer picture of the existence and magnitude of the risks involved.¹¹

The Board further examined what would constitute low-cost investment with respect to prudent avoidance and found some general guidance from a decision by the California Public Utilities Commission. In response to the scientific uncertainty surrounding EMF, the California Public Utilities Commission required utilities to undertake low-cost mitigation measures. The California Commission defined "low-cost" as:

in the range of 4% of the total project cost but specified that this 4% benchmark is not an absolute cap. [The Commission] found that, to be implemented, a mitigation measure should achieve some noticeable reduction in EMF but declined to adopt a specific goal for EMF reduction.¹²

The Colorado Public Utilities Commission, in a recent order, describes mitigation techniques such as increasing line clearance and careful line configuration as falling within the parameters of prudent avoidance.

As the Board found in Docket 6860, the National Institute of Environmental Health Sciences does provide some specific guidance as to recommended regulatory action in response to current knowledge of EMF risk:

The NIEHS suggest that the level and strength of evidence supporting . . . EMF exposure as a human health hazard are insufficient to warrant aggressive regulatory actions; thus, we do not recommend actions such as stringent standards on electric appliances and a national program to bury all transmission and

10. Docket 6860, Order of 1/28/05 at 62.

11. Docket 6860, Order of 1/28/05 at 74 citing the Department's 1994 Twenty-Year Electric Plan at 5–12.

12. 236 P.U.R. 4th 406 (Cal. P.U.C., August 19, 2004).

distribution lines. Instead, the evidence suggests passive measures such as continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. NIEHS suggests that the power industry continue its current practice of siting power lines to reduce exposures and continue to explore ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards.¹³

In Docket 6860, the Board declined to place any areas of the proposed 345 kV or 115 kV lines underground solely in response to concerns regarding EMF. However, in explaining the justification for placing a portion of the 115 kV line in the Bay Road area of Shelburne underground, the Board did state:

The proposed 115 kV line would run close to residences in this densely settled area. Underground placement will reduce potential EMF levels near these residences, which is a positive, but not crucial, factor. While, for the reasons stated in Section IV, we do not find there to be sufficient basis to require underground placement due to EMF issues alone, in the Bay Road area the underground placement that is required for other reasons has the added benefit of furthering the policy of prudent avoidance of EMFs.¹⁴

Additionally, the Board directed VELCO to examine the feasibility of EMF mitigation for certain areas where residences were particularly close to the proposed line.

With the proposed Project, there are several areas along the proposed 115 kV line where residences have been built very close to the existing GMP 34.5 kV line. In these areas I recommend that the Board require Petitioners to place both the existing 34.5 kV and the proposed 115 kV lines on a single pole. Not only does this single-pole, double-circuit configuration have substantial aesthetic benefits (see aesthetic findings and discussion, below), but it will significantly reduce EMF levels.

Additionally, in one area, Petitioners propose to utilize a single-pole, double-circuit configuration for GMP's and Stowe Electric's 34.5 kV lines and locate these structures in the same corridor as the proposed 115 kV line. This configuration would run very close to residences in one area (from proposed pole structures 146 to 155 on exhibit KSM-4). I recommend that the Board require Petitioners to examine mitigation EMF options in this area, including the possibility of double-conductoring one of the 34.5 kV line with the proposed

13. Docket 6860, Order of 1/28/05 at 75 (citing exh. VELCO Cross DelPizzo-8 at 37-38).

14. Docket 6860, Order of 1/28/05 at 129, footnote 147.

115 kV line.

Outstanding Resource Waters

[10 V.S.A. § 1424(a)(d)]

101. The proposed Project will not be located near any segment of water designated as outstanding resource waters. Gilman pf. at 5.

Water and Air Pollution

[10 V.S.A. § 6086(a)(1)]

102. The proposed Project will not result in undue air or water pollution. This finding is supported by findings 103 through 118, below.

Water Pollution

103. All new transformer installations would be mounted on concrete foundations with an integral oil retention design sufficient to contain the total transformer oil volume. The containment system is designed with significant volume to permit water to accumulate in the containment area between removal intervals. Foundation design would follow ANSI/IEEE Standard 980, "IEEE Guide for Containment and Control of Oil Spills in Substations." This would meet VELCO's standard practice for environmental protection and VELCO's Spill Prevention Control and Countermeasures Plan, and would be in compliance with applicable federal regulations. Johnson pf. at 7; exh. RCJ-25.

Air Pollution

104. The proposed Project would not produce air emissions. Brush from any clearing would be removed and chipped, and trees would be windrowed for the property owner's use. Dust would be controlled during construction, as necessary, by the application of water. Rowe pf. at 13.

105. Any air pollution associated with construction would be limited to truck and heavy equipment exhaust. Machia pf. at 9.

106. The SF6 breakers would not produce any air quality impacts, provided that such breakers are well maintained in keeping with the manufacturer's specifications. VELCO has not experienced any gas releases from its in-service SF6 breakers. Tr. 7/6/05, vol. II, at 150 (Johnson).

Noise

107. The substation upgrades associated with the LCP would not result in undue noise levels. This finding is supported by findings 108 through 118, below.

108. The Town of Moretown prohibits noise levels that exceed "70 decibels at the property line on a regular or reoccurring basis." Kaliski pf. at 5.

109. The highest sound level recorded at the fenceline of the existing Middlesex substation is 62 dBA. The proposed upgrades to the Middlesex substation do not include modifications to the existing transformers, but involve only the installation of breakers, switchgear, and associated improvements. Consequently, the modifications would not significantly increase noise levels at the fenceline of the substation. Kaliski pf. at 6.

110. Noise generated by the Middlesex substation would not pose a problem, due to the lack of neighbors in the immediate vicinity. The existing and proposed plantings would also provide some noise attenuation at this site. Exh. DPS-DR-1 at 111.

111. The Town of Stowe does not have a quantitative noise standard. VELCO examined three sources for noise guidelines and standards: the Environmental Protection Agency Protective Noise Level Guideline; the World Health Organization Suggested Community Noise Criteria; and Vermont Environmental Board precedents. Kaliski pf. at 3.

112. The U.S. EPA Protective Noise Level Guideline was established to determine a sound level that protects the public health and welfare with an adequate margin of safety. It is not a standard and is not meant to be applied as a standard. For most residential areas, the Protective Level is 55 dBA Ldn. The Ldn is day-night average sound level, with sounds during the night weighted by +10 dBA. Kaliski pf. at 3-4.

113. The World Health Organization's "Guidelines for Community Noise," published in 1999, recommend a limit of 50 dBA, averaged over the day, to protect against moderate

annoyance, and 45 dBA, averaged over the night, to protect against sleep disturbance. Kaliski pf. at 4.

114. The Environmental Board has ruled on a number of cases involving noise. The only case involving nighttime noise was the Hannaford decision, in which the Board imposed a noise limit of 60 dBA during the day and 50 dBA during the night for residences along US 7 (in South Burlington), and 55 dBA during the day and 45 dBA during the night for residences of the quieter Queen City neighborhood behind the store. These standards are based on instantaneous maximum noise levels. Kaliski pf. at 4.

115. Current noise levels at the existing Wilkins substation are within the levels recommended by the guidelines described above. The projected noise levels at the proposed Stowe substation and modified Wilkins substations will also fall within those recommended levels. Kaliski pf. at 5–6.

116. There are several residences within a few hundred feet of the proposed Stowe substation. With the addition of the new substation, the existing residences will experience an increase of noise of up to 35 to 39 dBA above what is experienced from the existing Wilkins substation. Although this would be below the recommended noise levels listed above, this could result in an adverse impact. Exh. DPS-DR-1 at 29–30; Smith pf. at 27–28.

117. VELCO proposes to use a 115/34.5 kV transformer at the proposed Stowe substation that would have guaranteed noise levels at least 9 dB lower than the standard established by the National Electric Manufacturer's Association. Kaliski pf. at 6.

118. The Department recommends that the Board require VELCO to take post-construction noise measurements at the existing and planned home sites in the vicinity of the proposed new Stowe substation to ensure that the "as constructed" operating noise is equal to or lower than the estimated levels arrived at through computer models. Additionally, the Department recommends that the Board retain jurisdiction to require VELCO to take all reasonable steps to address noise concerns identified by the public as a result of the proposed Project. Exh. DPS-DR-1 at 30; Smith pf. at 28.

Discussion

I recommend that the Board require Petitioners to provide post-construction noise measurements at the VELCO Stowe substation due to the proximity of the substation to existing residences and that the Board retain jurisdiction to address noise issues related to this substation. Given the relatively isolated location of the Middlesex substation, I do not recommend that this same condition be applied to the Middlesex substation.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

119. The proposed Project will meet all applicable health and environmental conservation regulations regarding reduction of the quality of the ground or surface waters flowing through or upon headwaters areas. This finding is supported by findings 120 through 122, below.

120. Much of the proposed Project is located within headwaters areas as construed by statute as it lies in the watersheds of many small streams, each with drainage areas of less than twenty square miles. Some of the small watersheds are characterized by steep slopes and many of the delineated wetlands are supported by groundwater discharge, which are generally characteristic of headwater areas. Gilman pf. at 6.

121. No Project facilities are or will be located above 1,500 feet, and few of the watersheds are characterized by shallow soils. Most of the proposed Project lies along the toe slopes of the Little River valley and its environs. Gilman pf. at 6.

122. The majority of the proposed transmission corridor is expected to have few problems associated with soil erosion. However, the new corridor segment in Duxbury poses potential soil erosion problems due to steep slopes, shallow soils, seasonal streams supported by groundwater discharge, and a lack of existing ground-level vegetation beneath mature hemlock trees (which will have to be removed). VELCO will develop a special erosion prevention and sediment control plan for this area to prevent any undue adverse impacts. Any adverse impacts in this area will be temporary and should be corrected once natural ground vegetation becomes well established over the course of two to three years. Gilman pf. at 6–7.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

123. The proposed Project will meet all applicable health and environmental regulations for waste disposal and will not involve the injection of waste materials or any harmful toxic substances into groundwater or wells. This finding is supported by findings 124 and 125, below. Rowe pf. at 14.

124. Construction debris resulting from the proposed Project will be disposed of at approved landfills. Rowe pf. at 14.

125. No sanitary facilities are planned for the Middlesex substation, the Duxbury switching station or the new Stowe substation. Rowe pf. at 14.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

126. The proposed Project will not involve the construction of any water consuming facilities. Rowe pf. at 14; Machia pf. at 11.

Floodways

[10 V.S.A. § 6086(a)(1)(D)]

127. The proposed Project will not restrict or divert the flow of floodwaters or increase the peak discharge of the streams and endanger the health, safety, and welfare of the public or of riparian owners during flooding. This finding is supported by findings 128 through 130, below.

128. The proposed Project crosses floodways in two areas: near the Winooski River and the Little River. Gilman pf. at 7.

129. The proposed Project involves two H-frame structures to be located within the floodplain of the Winooski River. Six new poles would be placed within the floodplain of the Little River. Gilman pf. at 7.

130. Issues associated with placement of transmission lines in floodways are associated with impedance of flood flows (if material is caught on the structures) rather than with diminution of

flood storage capacity. In general, the proposed Project will result in no significant effect on floodways because utility poles do not involve sufficient fill to restrict or divert the flow of floodwaters, and therefore will not threaten public safety. Gilman pf. at 7.

Streams

[10 V.S.A. § 6086(a)(1)(E)]

131. The proposed Project will maintain the natural condition of affected streams and will not endanger the health, safety, or welfare of the public or adjoining landowners. This finding is supported by findings 132 through 146, below.

132. The proposed Project crosses approximately 32 streams, defined as areas of water flow with a bed-and-bank configuration and mineral bottom (versus overland flow that is not strong enough to scour away leaf litter or vegetation). Of these, eight are seasonal streams, seventeen are perennial streams, and two are rivers. There are also five ditches. Gilman pf. at 7.

133. Improper pole placement could lead to problems of pole stability and increased erosion. Gilman pf. at 8.

134. Naturally vegetated riparian buffers provide a variety of ecological functions and values, including:

- shade that moderates extreme water temperatures, affecting how much oxygen the water can hold;
- producing lower light levels, thus inhibiting algal growth;
- slowing overland runoff, allowing the buffer to filter out sediment originating from upland areas;
- minimize bank erosion, instream scour, and sedimentation associated with channel instability, thereby reducing sediment loads to receiving water bodies.

Hunter pf. at 3.

135. The functions of shading and erosion control are essential in protecting aquatic biota and the habitat on which they depend. Hunter pf. at 3.

136. Stream crossings for construction or maintenance should be avoided to the greatest extent possible. Where stream crossings are necessary for construction or maintenance, site-specific erosion-prevention standards should be strictly adhered to in order to minimize downstream sedimentation. Hunter pf. at 4.

137. To maximize erosion prevention and sediment control, an attempt should be made to design perpendicular, or nearly perpendicular, stream crossings to lessen impact to riparian vegetation. Riparian vegetation should be protected during construction, leaving streambank vegetation intact as much as possible to help prevent streambank erosion and provide shading. All instream work should be performed from June 1 to October 1 to protect certain fish species during spawning season. The work area should be isolated from stream flow, or in-the-dry, as much as possible. Construction should take place under conditions which prevent downstream sedimentation where possible. Hunter pf. at 4.

138. VELCO may need to construct roads and install culverts for temporary and permanent stream crossings. Design plans would assist in determining the potential impacts to water quality. Greenwood pf. at 7.

139. Most streams along the corridor have overhanging shrubs or low vegetation along their banks, with the exception of the area of new right-of-way in Duxbury. At that area, if pole placement is such to avoid the streambed, growth of vegetation should preserve the stream bank configuration. Improper pole placement would lead to problems of pole stability and increased erosion. Gilman pf. at 8–9.

140. The proposed crossings of most streams are more or less perpendicular, except the crossing of Little River, which is oblique. The pole placements in this area will be relatively near the river, in farm field areas or on river terraces. Gilman pf. at 9.

141. For the proposed Project, the pole structures will generally be set well back from river and stream banks, and the rivers and streams will be spanned by the conductors, leaving the stream morphology, bottom, banks, and other characteristics intact. Gilman pf. at 9.

142. Stream banks and shorelines cleared for power line corridors generally become thickly re-established with vegetation within two to three years, thus mitigating to some extent concerns regarding erosion. Gilman pf. at 9.

143. Seasonal streams carry a lesser volume of water and generally do not have as much erosion potential. Because they are seasonal in nature they do not provide the fisheries habitat of permanent streams. Nonetheless, seasonal streams can be protected with temporary bridges or wooden mats. Tr. 7/7/05, vol. II, at 24–25 (Gilman).

144. ANR recommends buffer widths that are designed to maintain or enhance the functions and values of the riparian area. ANR would normally request a minimum buffer of 50 feet for all streams associated with the proposed Project; however, the final recommendation will depend on the specific characteristics of the site. Hunter pf. at 7.

145. The specific characteristics of a particular riparian corridor are important in determining the appropriate width of the buffer zone. Those characteristics may include channel stability, slope of the land, and aquatic habitats or communities present. Hunter pf. at 7.

146. Petitioners should delineate the top of the bank, or the top of the slope of the affected rivers and streams, and the proposed buffers on Project site plans. Additionally, the Petitioners should describe how riparian buffer functions will be protected within the framework of ANR recommendations. Hunter pf. at 8.

Discussion

ANR recommends that Petitioners provide plans for stream crossings in order to allow ANR to effectively evaluate the potential impact of the proposed Project. I recommend that the Board require Petitioners to develop specific plans, in consultation with ANR, to meet the

informational requirements of ANR. Additionally, I recommend that these plans be filed with the Board for review and approval.

Shorelines

[10 V.S.A. § 6086(a)(1)(F)]

147. The proposed Project will, insofar as possible, retain all shorelines and waters in their natural condition, allow continued access to the waters and the recreational opportunities provided by the waters, retain or provide vegetation which will screen the proposed Project from the waters, and stabilize the bank from erosion, as necessary, with vegetation cover. This finding is supported by findings 148 through 153, below.

148. The proposed Project crosses several shorelines, including Waterbury Reservoir, Little River, and the Winooski River. Gilman pf. at 7, 9.

149. Any proposed transmission structures adjacent to water bodies would be set back from shorelines to minimize impacts. Gilman pf. at 9.

150. A minimum buffer of 100 feet is needed for the Winooski River and Little River crossings. Hunter pf. at 7.

151. In the area of the Waterbury Reservoir, the existing transmission corridor would be widened to accommodate the proposed 115 kV line crossing. The south shore is relatively steep and ledgy, with a line of shrubs, while the north shore is also ledgy, but less steep. There is a wetland area within the corridor on the north side of the reservoir. Neither the south nor the north shore have any apparent erosion problems resulting from the existing powerline corridor, and following additional clearing of the corridor, it is anticipated that the natural vegetation will fill in rather thickly and be protective of the shoreline. Gilman pf. at 9.

152. As the proposed 115 kV line crosses the Waterbury Reservoir, it would be located 75 feet east of the 34.5 kV line. An additional 100 feet of right-of-way clearing would be required at this area, and would then transition back to the 100-foot right-of-way shortly past the north shore of the reservoir. New 34.5 kV crossing structures would be installed. Exh. Boyle-Portz-3 at 39-41.

153. Existing vegetation at the edge of the right-of-way reaches approximately 60 feet in height, mitigating the visual impact of the existing 34.5 kV structures. In order to minimize the visual impact of the proposed Project at the Waterbury Reservoir, Petitioners propose selective clearing and vegetative management on the reservoir banks and along the corridor from the Blush Hill Switch. VELCO will strive to retain vegetation on the east side of the right-of-way along the south bank, and will relocate the existing and proposed lines slightly to the west if necessary to retain the vegetation. VELCO will also utilize the minimum pole heights necessary, consistent with National Electric Safety Code clearance requirements. Exh. Boyle/Portz-3 at 39–41.

Discussion

Subsection 6086(a)(1)(F) provides:

A permit will be granted whenever it is demonstrated by the applicant that, in addition to all other criteria, the development or subdivision of shorelines must of necessity be located on a shoreline in order to fulfill the purpose of the development or subdivision, and the development or subdivision will, insofar as possible and reasonable in light of its purpose:

- (i) retain the shoreline and the waters in their natural condition,
- (ii) allow continued access to the waters and the recreational opportunities provided by the waters,
- (iii) retain or provide vegetation which will screen the development or subdivision from the waters, and
- (iv) stabilize the bank from erosion, as necessary, with vegetation cover.

This subsection makes clear that the intent of the Vermont General Assembly in passing this statute was to provide substantial protection for the environmental, scenic, and recreational characteristics of the State's shorelines.

No party has questioned whether the proposed Project "must of necessity be located on a shoreline in order to fulfill the purpose" of the Project. In any event, this standard has been met in this case. The transmission lines will follow an existing transmission corridor for the majority of its length. This route is therefore the most economic and environmentally feasible route. In addition, it would be impossible to construct a statewide transmission system without crossing shoreline of any rivers in Vermont.

The evidence indicates that the proposed Project can be constructed to ensure that it will not have an adverse environmental impact on shorelines. Petitioners will develop erosion control plans for the proposed Project, for approval by ANR and the Board. In the post-certification proceedings, I recommend that the Board require erosion control plans specific to each affected shoreline, in addition to revegetation plans.

In Docket 6860, the Board required that a proposed 115 kV line be placed underground along Shelburne Bay. The Board based its decision partly on the impact of the proposed Project on the shorelines criterion of Act 250. In particular, the Board found that there was not sufficient vegetative screening of the proposed Project from Shelburne Bay.

In this case, the proposed lines would cross Waterbury Reservoir where existing transmission structures are clearly visible. The second set of structures will increase the visibility of the transmission line crossing. However, as I find in the section on aesthetics, below, placing the proposed and existing lines underground at the Waterbury Reservoir crossing does not constitute reasonable mitigation, and consequently, I recommend that the Board not require underground placement in this area.

Subsection 6086(a)(1)(F) also requires that a project not unreasonably interfere with access to the recreational opportunities on the shorelines. There is no indication that physical access to the Waterbury Reservoir or the two affected rivers will be impaired by the proposed Project.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

154. The proposed Project will not violate the rules of the Water Resources Board relating to significant wetlands. This finding is supported by finding 155 through 164, below.

155. No Class One wetlands have been identified anywhere along the proposed route. A total of eighty-four identified wetlands have been delineated in the Project area, of which twelve are considered Class Two, significant wetlands under the Vermont Wetlands Rules. The balance of the wetlands are believed to be Class Three wetlands. Gilman pf. at 10; tr. 7/7/05, vol. II, at 23-24.

156. The design objective for the proposed Project avoids construction in wetlands and buffers whenever possible. However, total avoidance is not feasible. Johnson pf. at 8.

157. The proposed Project includes structures placed in wetlands and buffers. If the Project is approved and constructed, access to these structures will be necessary and will likely require temporary or permanent roads. The small foot print of individual structures and the long spans (hundreds of feet) between them result in little permanent impact to wetlands from the structures themselves. The impacts from construction activities, access roads, and right-of-way maintenance, while greater than those from pole placements, will be temporary in nature. Gilman pf. at 14.

158. The least environmentally destructive time to perform any construction in wetlands is during the winter. During this time, the majority of delineated wetland areas are frozen or snow covered, thereby allowing construction vehicles to cross into the wetland without significant disturbance. Similarly, there is little disturbance to assembly areas when the wetlands are frozen. Johnson pf. at 8–9.

159. If line construction near wetlands cannot be undertaken when the ground is frozen or snow covered, and if the ground is too saturated to support construction equipment, construction mats would be used to reduce disturbance. This technique is initiated by placing a mat on the edge of the wetland, usually by an excavator. The excavator drives onto the mat, rotates around, picks up another mat, then "walks" that mat to the edge of the first mat furthest into the wetland and sets it down. This process is repeated until access to the area of structure placement is reached. Additional matting is placed near the area for structure placement. A silt fence is then placed around the area of excavation and spoil stockpiling. Johnson pf. at 9.

160. There are significant wetlands at the Stowe substation site. The construction at this site will result in a permanent impact to the wetlands due to the fill at the site. Additionally, construction access into a wetland for substation development is over a longer period of time than access for line construction. However, the impact to wetland functions and values will not be unduly adverse, given that the nature of the site is mostly as an "old field" or "wet meadow" type of wetland. Gilman pf. at 13; Johnson pf. at 9.

161. The Stowe substation construction will impact a previously disturbed wetland. In such situations, the Vermont Wetland Rules require the Project to be examined in the context of

cumulative impacts. The Rules reflect the necessity to evaluate cumulative and ongoing impacts from surrounding development in conjunction with proposed impacts from the Project under review. Morrison pf. at 6.

162. One wetland, a Class Three wetland, is significant for hydrophytic vegetation, as it has the characteristics of an intermediate fen as described by the Vermont Wetlands Rules. The Project would span the fen. Gilman pf. at 10–11, 13.

163. VELCO will obtain a Conditional Use Determination ("CUD") from ANR for impacts to Class Two wetlands and their 50-foot buffer zones. The proposed Project also requires an Army Corps of Engineers permit (a "404 permit") for the discharge of dredged or fill material into waters of the United States. Both the CUD and the 404 permit will likely have a series of detailed conditions designed to protect wetlands from undue adverse impacts. Gilman pf. at 14–15.

164. ANR will consider impacts to Class Three wetlands as part of its Water Quality Certificate review, and also as they pertain to other criteria such as water quality protection, habitat for rare, threatened, and endangered species, rare and irreplaceable areas, and necessary wildlife habitat. Morrison pf. at 3.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

165. No sanitary or other water-using facilities will be constructed in connection with the proposed Project. Two springs and one deep well that service an apartment complex, located approximately 250 feet west of the proposed Project in the vicinity of Holmes Lane, have been identified. The proposed Project would not impact these water sources. Rowe pf. at 14.

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

166. The proposed Project will not cause unreasonable soil erosion or reduction of the land to hold water. This finding is supported by findings 167 through 171, below.

167. In order to determine whether Petitioners must receive a Construction General Permit or an Individual Construction Permit from ANR, Petitioners must calculate the amount of earth that is to be disturbed. For any project that disturbs five or more acres of soil, the Construction General Permit requires the development and submittal of an Erosion Prevention and Sediment Control ("EPSC") Plan. Greenwood pf. at 2.

168. VELCO will require contractors to develop an erosion control plan that complies with the Vermont Handbook for Soil Erosion and Sediment Control of Construction Sites, and will require contractors to install and maintain control measures as specified by the plan. Johnson pf. at 8.

169. To minimize soil erosion, an EPSC Plan should be filed with, and approved by, ANR prior to construction. Greenwood pf. at 2.

170. An EPSC Plan consists of: a location map; an existing conditions site plan; a grading plan and timetable; an erosion prevention and sediment control plan; and a narrative that summarizes the four other plans. Greenwood pf. at 4.

171. Erosion control, or prevention, measures seek to limit the amount of soil that has eroded by preventing the soil from mobilizing in the first place. Sediment control measures try to capture soil that has escaped the erosion control measures. Erosion control measures are far more effective than sediment control measures. Greenwood pf. at 4.

Discussion

I recommend that Petitioners be required to develop an EPSC Plan for approval by ANR and the Board.

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

172. The proposed Project will not cause unreasonable congestion or unsafe conditions with respect to transportation systems. Traffic congestion due to construction will be kept at a minimum, and there will be minimal traffic to the substations for maintenance if the proposed Project is constructed. Johnson pf. at 10.

Educational Services

[10 V.S.A. § 6086(a)(6)]

173. The proposed Project will not have an impact on educational services, as it will not bring additional students into the area or otherwise impair the ability of the involved municipalities to provide educational services. Rowe pf. at 15.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

174. The proposed Project will result in increased taxable property and tax revenue to the Towns of Moretown, Duxbury, Waterbury, and Stowe. Additionally, the proposed Project will improve the reliability of the local electric systems. Rowe pf. at 15.

175. The proposed Project will not place an unreasonable burden on the ability of the involved municipalities to provide municipal services, will not create an additional burden on local fire departments or local law enforcement officers, and will not generate significant solid waste. Rowe pf. at 15; Machia pf. at 12.

**Aesthetics, Historic Sites
and Rare and Irreplaceable Natural Areas**

[10 V.S.A. § 6086(a)(8)]

176. The proposed Project will not have an undue adverse impact on aesthetics, historic sites, or rare and irreplaceable natural areas if the conditions outlined below are met. This finding is supported by findings 177 through 253, below.

Aesthetics

Criterion 8 of Act 250 does not guarantee that views of the landscape will not change.¹⁵ It does, however, require that as development does occur, reasonable consideration will be given to the visual impacts on neighboring landowners, the local community, and on the specific scenic resources of Vermont.¹⁶

The proposed Project will have some adverse aesthetic impacts. However, the aesthetic mitigation recommended in this proposal for decision will prevent an undue adverse impact on the aesthetics of the area.

This proposal for decision will specifically address only the areas identified as aesthetically sensitive. I recommend that the Board adopt the Department's proposed mitigation for all areas of the proposed Project except where otherwise noted in this proposal for decision. In those areas where the Department has not identified specific aesthetic mitigation measures, I recommend that the Board require Petitioners to adopt the mitigation requirements of its aesthetic consultants.

The Public Service Board has adopted the Environmental Board's Quechee analysis for guidance in assessing the aesthetic impacts of proposed projects under Section 248. The Board has previously explained the components of the Quechee analysis as follows:

In order to reach a determination as to whether the Project will have an undue adverse effect on the aesthetics of the area, the Board employs the two-part test first outlined by the Vermont Environmental Board in Quechee, and further defined in numerous other decisions.

Pursuant to this procedure, first a determination must be made as to whether a Project will have an adverse impact on aesthetics and the scenic and natural beauty. In order to find that it will have an adverse impact, a Project must be out of character with its surroundings. Specific factors used in making this evaluation include the nature of the Project's surroundings, the compatibility of the Project's design with those surroundings, the suitability of the Project's colors and materials with the immediate environment, the visibility of the Project, and the impact of the Project on open space.

The next step in the two-part test, once a conclusion as to the adverse effect of the Project has been reached, is to determine whether the adverse effect of the Project

15. Van Sicklin, at 36, *citing In Re: Okemo Mountain, Inc.* #2W5051-8-EB (Findings of Fact, Conclusions of Law and Order 12/18/86) at 9 ("Okemo Mountain").

16. Okemo Mountain at 9.

is "undue." The adverse effect is considered undue when a positive finding is reached regarding any one of the following factors:

1. Does the Project violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area?
2. Have the applicants failed to take generally available mitigating steps which a reasonable person would take to improve the harmony of the Project with its surroundings?
3. Does the Project offend the sensibilities of the average person? Is it offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area?¹⁷

The Board's analysis does not end with the results of the Quechee test. Instead, the assessment of whether a particular project will have an "undue" adverse effect on aesthetics and scenic or natural beauty is "significantly informed by overall societal benefits of the project."¹⁸

177. The proposed Project, with the modifications and conditions described below, will not have an undue adverse impact on aesthetics. This finding is supported by findings 178 through 242, below.

Context and Overview of Proposed Project

178. The proposed 115 kV line would generally follow the existing GMP 34.5 kV line right-of-way. The existing 34.5 kV line was constructed in approximately 1949. There are two minor deviations that take the proposed 115 kV line outside the existing right-of-way, and the tap from the VELCO K24 line to the Duxbury Switching Station is not within any existing right-of-way. Development that has occurred since the construction of the GMP 34.5 kV lines has brought several residences adjacent to the right-of-way. Exh. Boyle/Portz-3 at 7.

179. The LCSA includes extensive state-owned land, including the Mount Mansfield State Forest and Waterbury Reservoir, and has traditionally been a locus for tourism and recreational

17. *In re Petition of Tom Halnon*, CPG NM-25, Order of 3/15/01 at 10–11.

18. *In Re: Northern Loop Project*, Docket 6792, Order of 7/17/03 at 28.

activities. The affected towns include Moretown and Duxbury, which are predominantly rural, and Waterbury and Stowe, which are developing with tourism, commercial, industrial, and residential uses and their associated infrastructure. Exh. DPS-DR-1 at 4.

180. The existing GMP 34.5 kV lines generally consist of wooden single-pole structures that are approximately 35 to 40 feet in height, with a single cross-arm and top-mounted insulators supporting three conductors in a horizontal configuration. The conductors generally span about 350 to 400 feet between poles, depending on terrain. Exh. Boyle/Portz-3 at 7.

181. The proposed 115 kV line would generally consist of wooden single-pole structures ranging between 61 and 92.5 feet in height, with three vertically arrayed conductors in a davit-arm configuration. The conductors would have a typical span of about 350 feet, typically matching the spans of the existing 34.5 kV lines. The 0.33-mile connecting tap from the existing VELCO K24 115 kV line to the proposed Duxbury switching station will differ from the standard design, incorporating two side-by-side single-pole lines for in-and-out circuits. Exh. Boyle/Portz-3 at 9.

182. VELCO has designed the line to enable the proposed 115 kV line and the existing 34.5 kV line to be placed within the existing 100-foot GMP right-of-way. Moulton pf. at 11-13.

183. An advantage of taller structures is that it may allow the retention of some danger trees that would otherwise have to be removed. Additionally, increased ground clearance may allow for taller vegetation in the managed corridor, especially near the structures. The higher the structures, the less conservative VELCO needs to be in determining which trees must be cut to protect reliability. Boyle/Portz reb. pf. at 14; tr. 7/18/05 at 181–182 (Wright).

184. It is possible for VELCO to modify its vegetation management practices in limited areas to minimize the amount and extent of cutting that must occur at any one time. Although it would prefer not to, VELCO does make special accommodations in sensitive areas, and could undertake vegetation management practices on a more frequent basis than the once-in-four-year cycle prescribed by its Vegetation Management Plan. Tr. 7/18/05 at 162–164 (Wright).

185. The use of single-pole double-circuit configuration would result in a net pole height increase of 6.5 feet above Petitioners' proposed single-pole 115 kV structures. Smith sur. pf. at 7.

Middlesex Substation

186. The proposed upgrade to the Middlesex substation represents a modest expansion with a proposed 110 feet by 120 feet footprint. The highest point of the substation would be 73 feet, at a termination structure. Exh. DPS-DR-1 at 111.

187. The Middlesex substation is well screened from the access road with a semi mature forest predominantly composed of red pines to the west, ranging in height from 35 feet to 70 feet, although there is some visibility to the north, potentially from across the valley. Overall, the Middlesex substation is a good site for the expansion and presents minimum aesthetic impacts with its limited visibility, with sufficient plantings. Exh. DPS-DR-1 at 111; exh. Boyle/Portz-3 at 11.

188. Petitioners propose to reinforce the existing screen of Red Pines along the north side of the substation with native evergreen vegetation. In addition, Petitioners propose selective clearing and vegetative management along the northern edge of the expansion to preserve the existing vegetation. Additional plantings, beyond those proposed by the Petitioners, are necessary to adequately mitigate the aesthetic impact of the substation expansion. Exh. Boyle/Portz-3 at 13; exh. DPS-DR-1 at 111.

189. Petitioners propose to install one light on as photocell at the Middlesex substation. This light will not pose a problem due to the lack of abutting neighbors in the immediate vicinity. Exh. DPS-DR-1 at 111.

Discussion

The proposed Middlesex substation expansion will have limited aesthetic impact. Petitioners' proposed aesthetic mitigation is adequate if additional plantings are included, as recommended by the Department.

Duxbury Tap to Mile 0.5

190. The area of the proposed Duxbury tap is a scenic area identified in the Duxbury Town Plan. The area is characterized by the open meadows and historic agricultural uses and architecture associated with the historic Atherton Harvey Farm. Exh. DPS-DR-1 at 14.

191. The proposed 175-foot right-of-way for the two proposed 115 kV lines from the tap to the switching station will traverse the slopes of Crosset Hill obliquely, which will help reduce the visual impact of the clearing. Exh. Boyle/Portz-3 at 19.

192. The 175-foot right-of-way clearing for the new line, from the tap to the switching station (approximately 0.33 miles), will significantly alter the intact wooded lower hillside of the north end of Crosset Hill. Exh. DPS-DR-1 at 14.

193. Each of the three lines at the Duxbury switching station will terminate on its own two-pole dead-end structure that will also support a 115 kV disconnect switch for isolating that specific line segment from the others. The disconnects will be SCADA (Supervisory Control and Data Acquisition) operated over VELCO's fiber optic network. The facility will not have a control building and will not be fenced. There will be no lighting installed at the proposed Duxbury Switching station. Johnson pf. at 3, 5.

194. VELCO is proposing to use H-frame structures from the switching station to the connection with the GMP right-of-way to reduce the height of the poles in this section. H-frame structures are approximately 15-20 feet lower than a single-pole structure. Exh. Boyle/Portz-3 at 20.

195. From the switching station, the proposed 115 kV line will follow a proposed 150-foot right-of-way northeastward across River Road and the open field of the Harvey Farm to the Winooski River. Exh. Boyle/Portz-3 at 19.

196. VELCO has worked with the affected landowner and has proposed moving the 115 kV line to the western edge of the Harvey property. This does not comply entirely with the reroute proposed by the Harvey family, but difficult terrain and wetlands along the landowner's proposed route make that proposal impractical. VELCO's reroute proposal results in a small change to the aesthetic impact from the original filing. The topographic configuration is similar to the originally proposed route and will not have an undue adverse aesthetic impact. Moulton sur. pf. at 3; Boyle/Portz sur. pf. at 2.

197. The following mitigation measures should be employed in this section of the proposed 115 kV line:

- use of the lowest possible single-pole construction, except where higher structures reduce clearing widths;
- employment of single-pole double-circuit configuration, with the lowest possible structure heights to limit visibility of the line and its structures as it crosses the open areas and the highways to Blush Hill;
- set poles back as far as feasible from road crossings to minimize their visibility;
- detailed plans for clearing and retention of existing screen vegetation; and
- detailed plans for developing effective "vegetative plugs" and street tree plantings and screen plantings along River Road, North Main Street, and along the Interstate, particularly as the corridor ascends Blush Hill.

Exh. DPS-DR-1 at 15.

Discussion

I recommend that, in this area, the Board require the aesthetic mitigation described in finding 197 for this area. The use of single-pole structures coming out of the switching station will result in a narrower cleared right-of-way for this area and thus less visibility.

Blush Hill — Mile 0.8 to Mile 2.0

198. This area is aesthetically sensitive due to the proximity of residences to the corridor. The presence of radio towers and the development pattern of the area undermines some of the aesthetic values of this area. Exh. DPS-DR-1 at 16.

199. The proximity of the lines to residences in many locations, the increase in the cleared right-of-way, and the structure height of the 115 kV poles will result in an adverse aesthetic impact. The existing lines and poles at the road crossings at Blush Hill and within several of the developments are currently readily visible. Exh. DPS-DR-1 at 16.

200. The proposed 115 kV line would be placed very close to residences in this area, particularly between proposed structures 15 to 18 and 22 to 27. Exh. KSM-4.

201. Undue, adverse impacts can be avoided if the following mitigation measures are implemented:

- Poles need to be set back from road crossings and properly screened with sufficient numbers of native plant associations;
- Careful pole placement to avoid conflict and structure visibility where residences are in close proximity to such structures. Minimal clearing and vegetative retention details must be provided to ensure that the available mitigation measures have been utilized to their fullest extent possible;
- Pole heights and distances must be revisited in the context of local visibility so as to remove them from the view of the impacted traveling public and/or residences;
- Selected street tree plantings are required in the vicinity of corridor miles 1.2 to 1.4 to minimize views from Blush Hill Road.

Exh. DPS-DR-1 at 16–17.

Discussion

In addition to the mitigation measures identified in finding 201, I recommend that the Board require the use of single-pole double-circuit configuration in some portions of this area. I find that, due to the proximity of residences to the transmission right-of-way, effective aesthetic mitigation, combined with the EMF mitigation described above, requires the installation of single-pole double-circuit configuration in much of this area. Specifically, this configuration should be employed between proposed structures 15 to 18 and 22 to 27, as identified on exhibit KSM-4.

Blush Hill — Mile 2.0 to 2.8

202. The proposed route in this area parallels Blush Hill Road. The views from the majority of the residences in this area are to the east, and include views of the Worcester Range. The area is highly scenic, and because it is open, affords less backgrounding and buffering with other vegetation and built elements. Exh. DPS-DR-1 at 17.

203. VELCO is proposing to reroute the new 115 kV line from mile 2.1 to 2.43. The line would be relocated approximately 150 feet further east and downhill (50 feet in elevation), thereby reducing the impact on public views from Blush Hill Road. In addition, Petitioners are proposing to use H-frame structures in this area to minimize pole heights. Exh. Boyle/Portz-3 at 35–36; Boyle/Portz reb. pf. at 3–4.

204. VELCO's proposed reroute does not completely background the proposed 115 kV structures. However, by placing the poles at an elevation 50 feet lower than the existing 34.5 kV line, the poles will marginally break the foreground tree line, depending on the vantage point of the viewer on Blush Hill Road. Boyle/Portz reb. pf. at 3.

205. The Department recommends that the proposed line must be moved further to the east to take the route below the line of sight and reduce the visibility of the transmission structures and conductors. The Department recommends that single-pole structures be used in this area to create a more uniform appearance with less mass visible in the landscape. Exh. DPS-DR-1 at 17–18.

206. Landowners along the Department's proposed reroute have not been notified of the Department's proposal. An analysis of the aesthetic impact on such newly affected landowners has not been conducted. Tr. 7/8/05, vol. II, at 69–70 (Raphael).

207. The Department's proposed reroute would involve additional properties that do not currently contain a transmission right-of-way, and would provide only a small aesthetic improvement. Boyle/Portz reb. pf. at 3.

Discussion

I find that VELCO's reroute of the proposed 115 kV line, from the existing 34.5 kV right-of-way, provides sufficient aesthetic mitigation if the shortest possible pole structures are utilized in this area. In this instance, the use of H-frame structures would result in the lowest pole heights.

I have significant concerns with involving additional property owners, who do not currently have an electric transmission easement on their property, for a small aesthetic benefit. I also am further concerned that the Department's proposal would route a transmission line onto the property of landowners not currently directly affected by the proposed Project, without notifying these landowners.

Mile 3.5 to 4.0 Waterbury Reservoir

208. At the Waterbury Reservoir crossing, VELCO proposes to rebuild the existing 34.5 kV lines with taller structures, add new structures to carry the 115 kV lines, and widen the cleared

area on both sides to accommodate the new and larger structures. Exhs. DPS-DR-1 at 21; Boyle/Portz-2 at 39–40; exh. RCJ-22.

209. The Waterbury Reservoir crossing is a scenic and visually sensitive landscape, because of the wide open views of the water backdropped by the mountain landscape. Exh. Boyle/Portz-3 at 39.

210. VELCO proposes to widen the existing right-of-way at the Waterbury Reservoir crossing by an additional 100 feet, on both sides of the Reservoir, to accommodate a second set of H-frame structures for the proposed 115 kV line. Frederick pf. at 3–4.

211. The clearing of an additional 100-foot right-of-way would be visible from locations on and around the Waterbury Reservoir, including the Blush Hill Boat Ramp, Sunbather's Rock (from the perspective of boaters and users on the Reservoir), and potentially other locations. Frederick pf. at 3–5; Bulmer pf. at 5.

212. The proposed Project would significantly degrade user's visual experience from the water and environs of the Reservoir crossing because the new proposed 115 kV transmission structures would be 33 percent and 100 percent larger than the existing structures. Exh. DPS-DR-1 at 21; Bulmer reb. pf. at 2.

213. The incremental cost of placing the 115 kV and 34.5 kV lines under the Waterbury Reservoir could likely be between \$4.1 to \$5.9 million. This would increase Project costs by an estimated 20%. Smith pf. at 23; Moulton reb. pf. at 4.

214. By providing greater clearances, the proposed additional heights of the 34.5 kV transmission structures would allow for the removal of the marker-ball warning devices presently located on the 34.5 kV line. VELCO has contacted the Federal Aviation Administration, U.S. Coast Guard, and the Army Corps of Engineers and has found no requirements for marker balls on the lines, and consequently, VELCO would not place marker balls on the 34.5 kV or the 115 kV lines across the Waterbury Reservoir unless required to do so in the future. Moulton sur. pf. at 4.

Discussion

The Waterbury Reservoir is a significant recreation area in Vermont, with approximately 60,000 visitors per year. It is clear that the crossing represents an adverse aesthetic impact, and

that impact would be undue without reasonable mitigation. The difficult question is determining what constitutes reasonable mitigation.

The Department's aesthetic witness, David Raphael, has proposed placing the transmission lines under the reservoir as the only available option to mitigate the adverse aesthetic impact of the crossing.¹⁹ Although its witness recommends burial of the crossing, the Department contends that placing the lines under the Waterbury Reservoir does not constitute reasonable mitigation given the cost. Project costs are being allocated among the utilities benefitting from the proposed Project and one municipal utility — Stowe Electric — is bearing approximately half the costs of the proposed Project. No party has proposed an allocation scheme whereby costs would be borne by the state as a whole, rather than the utilities in the LCSA. Given the cost of burial, and the burden of this cost on a small number of ratepayers, I find that placing the proposed line underground in this area is not a reasonable mitigation option.

During the post-certification process, I recommend that Petitioners work with ANR and the Department to determine the most appropriate aesthetic mitigation for the crossing.

Gregg Hill Road — Mile 4.0 to Mile 5.7

215. At the point at which the transmission corridor emerges from the State Forest, it crosses and then parallels Gregg Hill Road, then proceeds northerly and traverses near a cluster of homes as it crosses the road again. This area is scenic and has a rural feel of woodlands and open pastures, treelines and hedgerows. The area would be adversely impacted by the presence of a second line with higher poles and increased clearing. Exh. DPS-DR-1 at 24.

216. Currently, the existing GMP 34.5 kV right-of-way is within a portion of the Mount Mansfield State Forest in the proximity of Gregg Hill Road. Exh. KSM-4.

217. The Gregg Hill Residents propose to reroute the 115 kV line and move the existing GMP 34.5 kV line from the current GMP right-of-way. The lines would be moved from in front of the residences along Gregg Hill Road to behind the properties. Exh. GRR-1; Frederick reb. pf. at 5–7.

19. Exh. DPS-DR-1 at 23.

218. Petitioners examined three alternatives to the proposed Gregg Hill Residents' reroute. Each presents difficulties. The first reroute would be visible from areas of Waterbury Reservoir. The second, as proposed by the Gregg Hill Residents, would not be visible from the reservoir but would result in greater visibility of the transmission structures by travelers on Gregg Hill Road. The third would move the point where the line crosses Gregg Hill Road, and therefore allow the angle structure to be set back from the road to allow for sufficient screening. The third alternative, recommended by VELCO, presents significant engineering challenges. Boyle/Portz sur. pf. at 4; exh. Boyle/Portz-surrebuttal-1.

219. Moving the existing and proposed line behind the residences along Gregg Hill Road has aesthetic advantages from the perspective of the residents of Gregg Hill Road. Boyle/Portz surr. pf. at 4.

220. The existing GMP right-of-way, constructed in 1949, predates the purchase of several of the residences in this vicinity. Tr. 7/7/05, vol. I, at 110 (Orr); exh. Boyle/Portz-3 at 7.

221. The proposed Gregg Hill Residents' reroute has the potential to impact the visual experiences of visitors to Mount Mansfield State Forest, the Waterbury Reservoir, and Waterbury Center State Park. The visual impact would be greater from the reroute than from Petitioners' proposal to install the proposed 115 kV line in the existing GMP right-of-way. Bulmer pf. at 6; Frederick pf. at 7–8; tr. 7/8/05, vol. II, at 31–32 (Boyle).

222. The footprint of disturbed land would be greater with the Gregg Hill Residents' reroute than the originally proposed route within the existing GMP right-of-way. The proposed reroute would travel at least 200 feet further than the originally proposed line, and would likely require more poles and an angle structure. Frederick pf. at 4–7; Raphael sur. pf. at 1; Moulton sur. pf. at 5.

223. The difficult terrain in the area of the Gregg Hill Residents' and Petitioners' proposed reroutes may require extensive clearing from construction. The landscape, aesthetic, and natural resource values would be irreparably degraded by the construction of a new corridor in this area. Raphael sur. pf. at 2.

224. The management goal for the Blush Hill Block of the Mount Mansfield State Forest is to maintain a closed canopy forest. The 100-foot cleared right-of-way required for the Gregg Hill

Residents' reroute would be inconsistent with this goal. Tr. 7/18/05 at 76–77 (Frederick); exh. ANR-DF-2.

225. The proposed reroutes would represent a new use for undeveloped state land and is subject to Forest, Parks and Recreation Policy # 16: Utility Easements, and ANR Policy: Uses of State Lands. The ANR Policy was developed to ensure that state lands do not become the repository for all uses not desired on private lands, especially where there is not benefit to state lands and recreational facilities and the public who use the land and facilities. The proposed reroutes would use public land for private benefit and therefore contravenes this policy. Frederick pf. at 3; Frederick reb. pf. at 3; exhs. ANR-DF-3, ANR-Rebuttal-SB-1; Raphael sur. pf. at 1–2; tr. 7/18/05 at 55–77 (Frederick).

226. The cost of Petitioners' third proposed reroute in this area would be approximately \$173,850 greater than if construction occurred in the existing right-of-way. This includes construction and clearing costs. Moulton sur. pf. at 5; exhs. KSM-Surrebuttal-3 and 4.

227. The original route proposed by VELCO, within the existing 34.5 kV right-of-way can be sufficiently mitigated to satisfy the Quechee test and thus would not have an undue adverse impact, with the mitigation. Raphael sur. pf. at 1.

228. The Gregg Hill Residents' and Petitioners' proposed reroutes would primarily benefit private residents and result in increased impacts to the Mount Mansfield State Forest and Waterbury Reservoir. Bulmer reb. pf. at 10-11, 15–16; tr. 7/8/05 at 107 (Bulmer); tr. 7/18/05 at 57–64, 66–69 (Frederick); Raphael sur. pf. at 1–2.

Discussion

On June 3, 2005, the Vermont General Assembly passed J.R.H. 40, a joint resolution involving state forest lands. Included in the joint resolution is the following language:

Resolved: That if, pursuant to 30 V.S.A. § 248, the public service board finds that an expansion and relocation of the transmission line between the towns of Duxbury and Stowe will promote the general good of the state, and if the board further finds that rerouting a portion of the proposed line and the existing line to run behind existing homes in Waterbury Center immediately to the north of Waterbury Reservoir in a manner that would require a new right-of-way through state-owned real property at that location will also promote the general good of the state and not result in undue adverse impacts, then, notwithstanding 10 V.S.A. § 2606(b), the commissioner of forest, parks and recreation is directed to convey

to the company or companies that will undertake such relocation a right-of-way sufficient to allow the relocation in exchange for abandonment of the section of the existing right-of-way and the removal of the existing line on that right-of-way within state-owned real property. In considering whether to authorize such rerouting of the line, the board shall give due consideration to the recommendations of the commissioner of forests, parks and recreation. The right-of-way, if approved by the public service board, shall be located with the approval of the commissioner of forests, parks and recreation.

I find that the proposed reroutes in the Gregg Hill Road area are not in the public good. The reroutes would provide an aesthetic benefit to a small group of residents along the Gregg Hill Road. However, it would also create a new, cleared corridor in the State Forest. The proposed corridors would create environmental impacts through the new clearing, and is inconsistent with Forest, Parks and Recreation policy goals for the Mount Mansfield State Forest. The proposed placement of transmission structures would have visual impacts from the viewpoint of users of the Mount Mansfield State Forest.

The joint resolution requires that the Board give due consideration to the recommendations of the Commissioner of Forests, Parks and Recreation. The Commissioner, through his counsel, has strongly opposed the proposed reroute for environmental, aesthetic, and policy reasons.

The Gregg Hill Residents contend that, over time, there would be no net environmental impact as the existing corridor could be allowed to revegetate over time. While this is true, the Gregg Hill Residents have not provided any compelling rationale as to why the public good would require the creation of a 100-foot wide clearcut through state forest.

The Gregg Hill Residents also argue that the proposed Project would negatively impact property values in the area. Consequently, they argue, rerouting the line through the state forest would be in the public good as the reroute would maintain property values and therefore maintain tax revenues. However, as I concluded in the economic benefit section, above, while the proposed Project will likely have some impact on property values, it will also maintain electric reliability in the area, therefore allowing additional economic growth and enhanced tax revenues.

Stowe — Mile 6.8 to Mile 7.7

229. The corridor in this section comes very close to residences in the Black Bear Run Development and in the vicinity of Marshall Road. The existing 34.5 kV line is immediately next to or in very close proximity to a number of residences with mature vegetation currently screening or buffering those residences. Exh. DPS-DR-1 at 25.

230. The presence of a second line in the corridor, combined with the increased size of the transmission structures in this area and the clearing that would need to occur to accommodate the new line, would result in an adverse aesthetic impact. Exh. DPS-DR-1 at 26.

231. A single-pole double-circuit configuration should be required in this area, to limit height and visibility of the line and its structures as it crosses open and settled areas. Pole structures should be set back from road crossings and properly screened. Poles should be carefully placed, and clearing minimized, to reduce the impact on residences. Street tree plantings should be installed along Route 100 as it parallels the line at mile 7.5 to mile 7.7 in order to screen or buffer the line from travelers on Route 100. Exh. DPS-DR-1 at 26.

Discussion

I find that the proposed Project will have an undue adverse aesthetic impact in this area unless the measures described in finding 231 are implemented. The Stowe Selectboard recommends that the pole heights in this area not be minimized to take the conductors out of the direct view of the residences.²⁰ I recommend that the height of the proposed structures be determined in post-certification proceedings. In determining the appropriate height, parties should balance the aesthetic effect of increased structure heights on residents immediately adjacent to the existing right-of-way and the public traveling on nearby roadways.

Moscow Road, Little River, and Nichols Field — Mile 7.7 to Mile 8.2

232. This area is highly visible and well-traveled. The area is aesthetically sensitive due to the use of Little River for recreational purposes and the presence of a public investment in Nichols Field. Travelers along Route 100 and Moscow Road would have specific views of the

20. Teffner reb. pf. at 3.

proposed Project. The Little River itself is picturesque and represents an important natural feature in this area. Exh. DPS-DR-1 at 27.

233. The removal of the Moscow substation represents an improvement to the aesthetics of the area, but the addition of the new 115 kV line, and the attendant required clearing, would increase the scale and impact of the existing corridor. In the open visible landscape, the clutter of poles in the viewshed from the roads would be particularly disturbing and offensive. Without sufficient and reasonable mitigation, there is a potential for the proposed Project to have an undue adverse aesthetic impact. Exh. DPS-DR-1 at 27.

234. The following mitigation measures would lessen the aesthetic impacts of the proposed 115 kV line in this sensitive area:

- employment of a single-pole double-circuit configuration with minimum heights as the lines cross Moscow Road and proceeds to Mile 8.2 beyond River Road;
- roadside and street tree plantings widely spaced along Moscow Road and Route 100 to buffer views of the corridor; and
- a detailed planting plan for extensive floodplain plantings, and buffer plantings along River Road and to "plug" the corridors as it ascends the hill above River Road. The floodplain plantings should follow the river course and help address streambank restoration efforts as well.

Exh. DPS-DR-1 at 27–28.

Discussion

In this area, I recommend that the Board require the mitigation measures described in finding 234. The Stowe Selectboard disagrees with the use of single poles in the area near Nichol's Field and instead recommends the use of the lowest possible poles north of South Marshall Road and across Nichol's Field, which might require the transition to H-frame structures.²¹ However, the use of single poles will create less of a visual presence in the open fields²² and I recommend that the single-pole double-circuit configuration be implemented.

21. Teffner reb. pf. at 3.

22. Raphael sur. pf. at 4.

River Road to proposed Stowe Substation — Mile 8.2 to Mile 9.4

235. Most of the route in this area is located away from residences and is less visible than the previous sections until mile 9.15, where it emerges from a wooded corridor and travels through open land and near residences located on or along Holmes Lane and Cady Hill Road. Exh. DPS-DR-1 at 28; exh. KSM-4 at 5.

236. Construction of the lines as proposed in this area could have an adverse aesthetic impact which would be unduly adverse without appropriate and reasonable mitigation measures. Exh. DPS-DR-1 at 28.

237. The following mitigation measures would prevent an undue, adverse aesthetic impact:

- employment of the lowest height pole configurations, for each line, to limit visibility of the line and its structures as it crosses open and settled areas in the vicinity of Cady Hill Road, and to reduce clearing widths;
- detailed plans for existing vegetation showing what will be retained, as well as proposed new plantings to buffer and screen the line and poles in the open area; and
- details of mitigation plantings at the residences.

Exh. DPS-DR-1 at 28.

Discussion

I conclude that the mitigation measures described in finding 237 are appropriate and should be required. However, I would note that I have recommended that Petitioners explore EMF mitigation options in this area that include the possibility of double-conductoring the 115 kV line with one of the 34.5 kV lines. Consequently, the final design plans may need to revisit what would be considered appropriate aesthetic mitigation in this area.

The Stowe Selectboard recommends, and the Department supports, that the Board require Petitioners to work with landowners in the Shaw Hill Road/River Road area to relocate the right-of-way to the east (down the bank, toward River Road), to the extent feasible.²³ I recommend that the Board require Petitioners to examine the Selectboard's proposal for this area, and file a report with parties and the Board on this issue prior to developing final design plans.

23. Teffner reb. pf. at 4; Raphael sur. pf. at 4.

New Stowe Substation

238. The proposed new substation at Stowe would have a footprint of 190 feet by 230 feet. There would be limited views of the substation from Cady Hill Road, surrounding residences, and the Stowe Lower Village Historic District. The existing Wilkins substation, currently located at the site, is small. Its scale and the existing vegetation are appropriate to the site topography. Exh. DPS-DR-1 at 29.

239. The Lower Village Historic District is a scenic area that would be adversely impacted by the proposed new substation. The Lower Village District is approximately 1000 feet away from the new substation site, close enough to experience an adverse impact from the proposed substation, which is not consistent with its surroundings. Exh. DPS-DR-1 at 29.

240. The new substation is proposed to have one light on a photocell, which will not create a visual impact due to the distance of abutting neighbors and the proposed new screening vegetation. Perimeter lights will be installed at the substation but will only be used for emergency purposes. Exh. DPS-DR-1 at 29.

241. The following measures would lessen the aesthetic impacts of the new substation:

- redesign and expansion of the berming and planting to reflect natural patterns and extension of existing topography;
- additional native plantings with a range and diversity of native species to create a natural vegetative pattern on the north, south, and east sides of the Project area; and
- preparation of a reliable map of existing vegetation and delineation of all existing vegetation outside of the expansion footprint and, where important or part of a screening plan, protection of the existing vegetation.

Exh. DPS-DR-1 at 30.

242. Separation of the proposed new substation from the Wilkins substation, and shifting the new substation slightly to the south to allow the retention of the existing row of deciduous vegetation just south of the Wilkins substation, would reduce the aesthetic impact of the new substation. However, the two substations may not need to be separated, if it can be demonstrated that equally effective screening can be accomplished with more effective berming and planting of larger trees. If that can be accomplished, then that may be acceptable and adequate to avoid an undue adverse determination. Exh. DPS-DR-1 at 30; Raphael sur. pf. at 9.

Discussion

The aesthetic mitigation measures identified in finding 241 are sufficient to avoid an undue adverse impact, and should be required. However, it is unclear whether moving the substation is required. I recommend that Petitioners work with parties to attempt to develop effective berming and plantings that would obviate the need to move the substation and file a plan with the Board for approval. If an effective screening plan is not developed, the two substations would need to be separated to avoid an undue adverse aesthetic impact.

Historic Sites

243. The proposed Project will not have an undue adverse impact on archaeological resources and historic sites. This finding is supported by findings 244 through 251, below.

Archaeological Resources

244. VELCO hired Archaeology Consulting Team, Inc. ("ACT") to assess the potential impacts that the Project might have upon archaeological resources. ACT conducted a Phase IA archaeological site sensitivity assessment of the areas potentially affected by the proposed Project. The site sensitivity assessments were used to provide VELCO with planning information and to assist the Vermont Division for Historic Preservation ("VDHP") in its determination of effect on potential historic properties for the proposed undertaking. Frink pf. at 3-4.

245. The proposed Middlesex substation upgrade and Stowe substation construction do not fall within the location of known European American or Native American historic properties, or locations identified as having potential for high archaeological sensitivity. With respect to the power line corridors studied, where the potential for moderately or highly archaeologically sensitive locations were identified, ACT has recommended that these locations be added to the design plans. Frink pf. at 6.

246. Pole placements and substation locations will be planned to avoid areas of archaeological sensitivity. Where avoidance is not possible, further investigation of the areas that will require construction activity will be performed by archaeologists prior to

commencement of construction. Appropriate archaeological recovery or protection measures will be employed. Johnson pf. at 9.

247. The proposed Project will not have an undue adverse effect on any archaeological resources if the following requirements are satisfied:

- All known archeological sites and archeologically sensitive areas in the estimated Area of Potential Effect (APE) shall be marked on project plans and identified as not-to-be-disturbed buffer zones. VELCO shall also conduct archeological resources assessments on any project component not currently within the estimated APE to identify any known sites and archeological sensitive areas. Any such assessments must be reviewed and approved by the Division for Historic Preservation (Division) and all known sites and archeologically sensitive areas must be mapped and identified as not-to-be-disturbed buffer zones.
- Topsoil removal, grading, scraping, cutting, filling, stockpiling, logging or any other type of ground disturbance is prohibited within the buffer zones prior to conducting all appropriate archeological studies. Clearing of vegetation with no associated ground disturbance such as stumping or rutting from vehicular traffic is permissible. All project contractors will be fully notified about the buffer zone restrictions.
- Archeological studies to identify or evaluate sites will be carried out by a qualified consulting archeologist in all archeologically sensitive and known site areas to be impacted by the proposed project. The archeological studies will be scheduled accordingly so that mitigation measures that may be necessary can be satisfactorily planned and accomplished prior to construction.
- All archeological studies and assessments must be conducted by a qualified consulting archeologist and must follow the Division's Guidelines for Conducting Archeological Studies in Vermont. The permittee's archeological consultant must submit any scope of work to the Division for review and approval.
- Archeological sites within the project area will not be impacted until any necessary mitigation measures have been carried out. Mitigation may include but is not limited to further site evaluation, data recovery, redesign of one or more proposed project components, or specific conditions that may be imposed during construction, such as installation of construction barriers or protective matting etc.
- Proposed mitigation measures will be discussed with and approved by the Division prior to implementation, and a copy of all mitigation proposals will be filed with the Public Service Board (PSB). The archeological studies will result in one or more final reports, as appropriate, that meet the Division's Guidelines for Conducting Archeological Studies in Vermont. Copies will be submitted both to the Division and to the PSB.

Exhibit DHP-1 at 4-5.

248. VELCO hired T.J. Boyle and Associates, aesthetic experts, and Hugh Henry, architectural historian, to conduct a viewshed analysis of the Project's potential impacts upon above-ground historic sites and to recommend mitigation measures. Henry pf. at 2.

249. The Project will not have any direct, physical effect on individual historic properties; its impacts will be solely visual. As the proposed transmission line will generally follow a sub-transmission right-of-way designed to avoid settled areas, it will have little effect on the built or, specifically, the historic built environment in the towns along the route. Exh. HHH-2 at 5.

250. A handful of sites were identified where the Project may have an adverse impact, but appropriate pole locations and screening would mitigate such impacts and ensure that the proposed Project would not cause undue adverse effects on historic properties. Henry pf. at 3; exh. HHH-2.

251. The proposed Project will have no adverse effect to historic architectural resources provided the conditions identified in exhibit DHP-1 are met. Exhibit DHP-1 at 3; Exhibit DHP-4 at 2.

Discussion

The proposed Project would not result in an undue adverse impact on any historic sites. While increasing the size or number of existing power lines visible from such sites along the route may have impacts on the viewsheds of the sites in some places, Petitioners have proposed mitigating steps such as limiting pole heights, rerouting lines down slope, matching spans and planting vegetation in order to substantially limit these impacts and preserve the character of the historic sites.

Rare and Irreplaceable Natural Areas

252. The proposed Project will not have an undue adverse impact on rare and irreplaceable natural areas. This finding is supported by finding 253, below.

253. The proposed 115 kV line passes through a fen in Stowe. Fens are rare wetland community types that support hydrophytic vegetation and are sensitive to stormwater run-off due to their pH. The fen itself would be spanned by the line. Morrison pf. at 4–5; tr. 7/7/05 at 22 (Gilman).

Discussion

It is important to protect the fen to the extent possible. ANR recommends the following conditions relating to the fen:

- during construction no poles should be placed in the vicinity of the fen or in any location that would impede the groundwater that supplies the fen;
- there should be no vehicular or foot access across the fen;
- removing large woody species would help maintain the open nature of the fen, but, the peat soils require that this be done in the winter with frozen ground;
- no large vehicles, tracked or otherwise, should cross the fen under any condition;
- pesticides should not be used in the proximity of the fen; and
- the buffer for the fen should depend on the terrain in the area, such that the steeper the slope, the larger the buffer.²⁴

However, some of the conditions requested by ANR seem impractical on their face. Depending on the size of the fen, I do not see that maintenance of the line and right-of-way can be conducted without "vehicular or foot access across the fen" at some point. I recommend that the Board require Petitioners to work with ANR to develop a plan that will minimize the impact to the fen of both the construction and maintenance of the proposed Project to be filed with the Board for approval.

Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

254. The proposed Project will not have an undue adverse impact on necessary wildlife or endangered species. This finding is supported by findings 255 through 258, below.

255. There are two areas of mapped deer wintering area in the vicinity of the proposed Project; one near Ashford Lane in Waterbury and the second near River Road in Stowe. Both are in close proximity to residential areas. Gilman reb. pf. at 3.

256. Approximately one acre of deer wintering area will be directly impacted by the proposed Project. That impact can be mitigated by deer "crossing lanes." Tr. 7/7/06 at 19–20 (Gilman).

257. VELCO has agreed to manage the two crossing areas in such a way as to promote deer crossing under adverse winter conditions by allowing maximum growth of vegetation, consistent with safety. Gilman reb. pf. at 4.

24. Morrison pf. at 4–5.

258. The New England grape (*vitis novae-angliae*) is considered "rare" by the Vermont Nongame and Natural Heritage Program. This species occurs in a hedgerow at the Stowe substation site but will be avoided during construction. Gilman pf. at 18; tr. 7/7/05 at 27–28 (Gilman).

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

259. The proposed Project will not materially jeopardize or interfere with the function, efficiency, safety, or the public's use, access to, or enjoyment of public resources facilities, services, or lands. This finding is supported by findings 260 through 263, below.

260. The proposed Project passes through a small portion of the Mount Mansfield State Forest and crosses the Waterbury Reservoir. Rowe pf. at 15.

261. The proposed 115 kV line is located within an existing GMP right-of-way as it passes through the State Forest. Frederick pf. at 3; exh. ANR-DF-2 at 11–12, Appendix A.

262. The Waterbury Reservoir is one of Vermont's most important and most used day-use areas. Exh. DPS-DR-1 at 19.

263. The proposed Project will cross VT Route 2 and Interstate 89, and will require a permit from the Vermont Agency of Transportation ("AOT"). After VELCO submits the application for work in the highway right-of-way, AOT will review the design. Rowe pf. at 15.

Discussion

Criterion 9(K) addresses developments affecting public investments and states:

A permit will be granted for the development or subdivision of lands adjacent to governmental and public utility facilities, services and lands, including, but not limited to, highways, airports, waste disposal facilities, office and maintenance buildings, fire and police stations, universities, schools, hospitals, prisons, jails, electric generating and transmission facilities, oil and gas pipe lines, parks, hiking trails and forest and game lands, when it is demonstrated that, in addition to all other applicable criteria, the development or subdivision will not unnecessarily or unreasonably endanger the public or quasi-public investment in the facility, service, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, the public's use or enjoyment of or access to the facility, service, or lands.

In addition to the public investments listed in the statute, the Environmental Board has determined that bodies of water such as Lake Champlain and the White River constitute public

investments.²⁵ In addition, the Environmental Board has examined the meaning of the word "adjacent" in this statute and has concluded that it "is a relative term that must be considered in the context of the scale of a project."²⁶

The proposed Project involves the construction of substantial transmission facilities, and the scope of impact extends beyond the land through which it passes. Review of the proposed Project under criterion 9(k) thus should not be limited to the lands immediately adjacent to the proposed Project and instead should include an analysis of the broader visual impacts.²⁷ Consequently, the Board should review the impact of the proposed Project on lands physically adjacent to the proposed Project and lands where the proposed Project has an adverse aesthetic impact.

The Environmental Board offers the following framework for analyzing a development's impact on public investments:

The Board interprets Criterion 9(K) to call for two separate inquiries with respect to public facilities. First, the Board is to examine whether a proposed project will unnecessarily or unreasonably endanger the public investment in such facilities. Second, the Board is to examine whether a proposed project will materially jeopardize or interfere with (a) the function, efficiency or safety of such facilities, or (b) the public's use or enjoyment of or access to such facilities.²⁸

Under the first prong of this test, the Board must determine whether the proposed Project will endanger the public investment itself. The right-of-way clearing for the proposed Project might constitute such endangerment. However, the proposed line is within or adjacent to an existing transmission corridor and existing cleared right-of-way. The increased clearing associated with the proposed Project would impact the public investment but is necessary to ensure reliability. In order to minimize the impact to public investments, I recommend that the right-of-way clearing through public lands be minimized to the extent possible.

25. See, *Northshore Development, Inc.*, No. 4C0626-5-EB at 12 (Environmental Board, December 29, 1988) and *Robert B. & Deborah J. McShinsky*, No. 3W0530-EB at 10 (Environmental Board, April 21, 1988).

26. *Re: L & S Associates*, No. 2W0434-8-EB at 37 (Environmental Board, September 22, 1993).

27. See, *Vermont Department of Forests, Parks, and Recreation (Phen Basin)*, No. 5W0905-7-EB at 10 (Environmental Board, July 15, 2004); "The purposes of Criterion 9(K) include promoting the Park's recreational values, while protecting its scenic and natural qualities."

28. *Swain Development Corporation*, No. 3W0445-2-EB at 33 (Environmental Board, August 10, 1990).

The second prong of this test examines whether the proposed Project will "materially jeopardize or interfere with (a) the function, efficiency or safety of such facilities, or (b) the public's use or enjoyment of or access to such facilities." The only potential impact that the proposed Project would have on conserved and protected lands is aesthetic. As discussed earlier, the proposed Project would not have an undue adverse impact upon aesthetics or the scenic beauty, with the modifications and conditions set forth in this proposal for decision. I thus conclude that the proposed Project would not materially jeopardize or interfere with the public investments located along the Project corridor.

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

264. The proposed Project is consistent with the least-cost integrated resource plans filed by the participating utilities, and is consistent with the principles of least-cost planning. This finding is supported by findings 265 through 269, below.

265. VELCO does not have an approved least-cost integrated resource plan ("IRP"). Allen pf. at 11.

266. The Project, as it relates to GMP, is consistent with Green Mountain Power's most recently approved IRP, which was prepared in 1991 and approved by the Board in 1994. Docket No. 5270-GMP-4 (Order dated May 3, 1994).

267. GMP's approved IRP provides that subtransmission improvements will be undertaken primarily to serve immediate area growth and to interface with any proposed expansion or upgrades to VELCO's bulk transmission system. It further indicates that reliability and loss reduction are two major factors in the selection of alternatives. Cecchini pf. at 6-7.

268. The Project is undertaken to serve area growth, interfaces with new VELCO facilities, and results in increased reliability and lower losses. Although GMP's IRP suggests that a new 34.5 kV line to the Stowe area might be sufficient, this conclusion is based on information that is over a decade old, while the analysis filed in this case demonstrates that the 115 kV proposal is superior. Cecchini pf. at 6-7.

269. The proposed Project is consistent with Stowe Electric's IRP. The proposed Project was evaluated using the tenets of least-cost integrated resource planning, including the societal test based on Stowe Electric's avoided costs, life-cycle costing techniques, and the externalities

adjustment ordered by the Board in Docket 5270. In addition, the components of the proposed Project have been selected based on their having the lowest life-cycle costs. Machia pf. at 9-10.

Discussion

Section 248(b)(6) requires that the Board find that any proposed construction of transmission facilities be "consistent with the principles for resource selection expressed in that company's approved least cost integrated plan" prior to issuing a certificate of public good. Stowe Electric and GMP have presented evidence that the proposed construction comports with their most recently approved IRPs. VELCO has not been required by the Board to develop an IRP. However, the Vermont General Assembly has made provisions for a filing under Section 248 by a company that does not have an IRP. The legislature has expressly provided that Section 248(b)(6):

does not prohibit the public service board from granting a certificate of public good under 30 V.S.A. § 248 for a utility which does not have an approved least cost integrated plan; provided that the board shall consider in its review under that section those environmental effects which the utility must consider in developing a least cost integrated plan.²⁹

As the findings and discussion concerning the need for the proposed Project makes clear, the Project is consistent with the principles of least-cost planning because it has the lowest societal cost of the possible alternatives that could meet the area's reliability needs.

Compliance with Electric Energy Plan

[30 V.S.A. § 248(b)(7)]

270. The proposed Project complies with the Department's electric energy plan. Tr. 7/18/05 at 10 (Allen); exh. Cross Riley-1.

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

271. The Project is not located on any segment of water that has been designated outstanding resource waters by the Water Resources Board. Gilman pf. at 5.

29. P.A. No. 259, § 8 (1992 Vt., Adj. Sess.).

Existing or Planned Transmission Facilities

[30 V.S.A. § 248(b)(10)]

272. The proposed Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers, and will improve reliability in the Project area. This finding is supported by findings 70 through 81, above.

IV. SECTION 248(C) — MUNICIPAL VOTE

Section 248(c) provides:

In the case of a municipal plant or department formed under local charter of chapter 79 of this title . . . any proposed investment, construction or contract which is subject to this section shall be approved by a majority of the voters of a municipality . . . at a duly warned annual or special meeting to be held for that purpose. The municipal department . . . shall provide to the voters . . . written assessment of the risks and benefits of the proposed investment, construction or contract which were identified by the public service board in the certificate issued under this section. The municipal department . . . also may provide to the voters an assessment of any other risks and benefits.

The statute is unclear as to situations where the municipal electric department is a co-petitioner for a proposed Project that encompasses the construction of facilities by other utilities within its service territory. Petitioners contend that the vote should be limited to those facilities that would be constructed and owned by Stowe Electric. However, Stowe Electric's ratepayers will bear approximately half the overall cost of the proposed Project. Consequently, I recommend that the Board require Stowe Electric to identify the total cost to its ratepayers, including the reasonably estimated costs of the requirements included in the Board's Order. The statute does not explicitly define the terms "risk" and "benefits;" however, the goal of the statute is clearly to allow voters to make an informed decision. Therefore, I conclude that the risks of the project include the environmental and aesthetic impacts of the proposed Project.

Petitioners provide a list of the benefits that would accrue from the proposed Project; including the provision of adequate and reliable transmission service, eliminating the future risk of outages and severe limits on the economic growth of the area, enhanced power quality, and decreased line losses. Petitioners identify the risks as follows: "It is possible that the

construction of the Project could be more expensive than projected and that, accordingly, the cost to the Stowe ratepayers would be higher."³⁰

As Petitioners point out, one of the unknown factors in the proposed Project is the amount that Stowe ratepayers will pay. Stowe Electric has indicated that, as of the hearings in July, it was in negotiations with Stowe Mountain Resort as to the amount of money that the Resort would contribute toward the proposed Project.³¹ Stowe Electric is paying approximately half of the costs of the proposed Project, currently estimated at \$20.3 million. Stowe Mountain Resort accounts for approximately 14% of the projected increase in load for Stowe Electric, significantly more than any other customer.³² Any portion that the Resort will pay will go directly to reduce Stowe Electric's share of the Project costs.³³

In order for Stowe voters to adequately assess the proposed Project, they should be aware of the cost that they would likely pay. This cost cannot be known until such time that Stowe Electric and the Resort reach agreement on the Resort's payment toward the Project. Consequently, I recommend that the Board require Stowe Electric to identify the portion that the Resort would pay toward the Project, with an explanation as to how that figure was arrived at, in any notice issued under Section 248(c).

Additionally, Stowe voters should be cognizant of the full risks of the proposed Project, including the aesthetic and environmental impacts. This is not to say that Petitioners must inform voters of every adverse impact identified in the Board's Order. Rather, the notice to voters should state generally that the proposed Project would have adverse impacts in these areas and, further, make available a copy of the final order in the offices of Stowe Electric³⁴ so that voters can carefully examine the full range of impacts and make an informed decision on the proposed Project.

In terms of the benefits of the proposed Project, I recommend that the Board direct Stowe Electric to include the following benefits in its notice to voters: the provision of adequate and

30. Petitioners initial brief at 99.

31. Tr. 7/6/05, vol. I, at 42–43 (Machia).

32. Tr. 7/6/05, vol. I, at 74–76 (Machia).

33. Tr. 7/6/05, vol. I, at 76 (Machia).

34. I would also encourage the Stowe Selectboard to make the order available in its office as well.

reliable transmission service, eliminating the future risk of outages and severe limits on the economic growth of the area, enhanced power quality, and decreased line losses.

V. POST-CERTIFICATION REVIEW

The Board typically will issue a certificate of public good for a proposed Project that prohibits commencement of construction prior to the fulfillment of certain conditions. For transmission line projects, the Board generally requires that final design details be filed for Board approval prior to construction. This use of post-certification review is at least partially due to the cost of developing final design detail plans, a cost that is passed on to ratepayers, whether or not the Board approves the proposed Project.³⁵

I recommend that the Board continue its historical post-certification review practice for this case and require the specific post-certification procedures that follow.

Stowe Landowners contend that final design review should be completed prior to the issuance of a certificate of public good:

Given that there is ample time to work out detailed design plans prior to issuance of a CPG, the parties should set about doing that now. There is no reason whatsoever that VELCO should be given the leverage of a CPG in hand in its discussions with landowners, towns and consultants on these matters.³⁶

However, Stowe Landowners has not provided a compelling reason why mitigation issues cannot be adequately addressed in post-certification proceedings. The expert witnesses on aesthetics all agree that the proposed Project can be built in such a manner as to not violate the Quechee Test. The level of required mitigation is not dependent on whether Petitioners have received a certificate of public good. The post-certification process set out below will sufficiently consider the concerns of the affected landowners.

Petitioners should file a proposed schedule within one month of the date of the certificate of public good that includes filing dates for design plans, reports, and permits. The schedule should provide for design plans to be filed with affected parties one month prior to filing the design plans with the Board. This period of time allows Petitioners to work with affected parties to attempt to resolve any issues prior to the filing of the final design plans.

35. See, Docket 6860, Order of 1/28/05 at 213–214.

36. Stowe Landowners Reply Brief at 1–2.

For some areas of the proposed line, there are residences built along the existing right-of-way. Petitioners should be required to work with affected landowners in these areas, and affected landowners, including those who have not participated as parties to this proceeding, should have the opportunity to provide comments on the proposed mitigation to the Board. These individuals will be directly impacted by the final design of the line and the attendant aesthetic mitigation, and should have the opportunity to provide input into this process. However, the post-certification review does not represent an opportunity to relitigate issues that have already been decided.

Petitioners should stake out the final design, proposed mitigation, and mark all trees that would need to be cleared (both trees within the existing right-of-way and threat trees outside of the right-of-way) in the field. These actions must be done at the substations, road crossings, and other sensitive areas as identified in the Order.

The Department has requested that Petitioners be required to develop digital representations of the final design for these areas, in addition to marking in the field. I recommend that the Board not require Petitioners to develop computer models or other digital representations for all areas. Computer models are not always informative, and depending on the individual model, can be misleading. The Board will have the ability to require computer models for key areas, if the need for such models arises. Parties may request such models for areas that they believe merit this additional expenditure of time and money. In making such requests, parties could request specific views of specific areas, resulting in more accurate representations of the final design.

The Department recommends that parties be required to attend sessions with a facilitator or negotiator if disputes cannot be resolved, with the attendant costs passed on to VELCO. I recommend that the Board not require this. Instead, a hearing officer could resolve any disputes.

Petitioners suggest that only parties should be allowed to participate in the post-certification proceedings. Considering the proximity of the Project to residences, I strongly disagree with this suggestion. As the Department's aesthetic witness indicates, for much of the line effective aesthetic mitigation will require careful placement of transmission structures and screening vegetation. I recommend that the Board require Petitioners to work with individual landowners in determining the appropriate placement of structures and screening vegetation.

Finally, the Department recommends that:

the standard for post-certification review should be whether the final design plans are consistent with the Board's approval and whether the proposed plans and mitigation function as anticipated. In this regard, the Board should clearly state, in its decisions, its expectations for the effectiveness of design and mitigation.

Petitioners agree with the Department's proposed standard. I recommend that the Board approve the use of this standard.

VI. PERMANENT APPROVAL FOR THE MIDDLESEX SUBSTATION

Petitioners request that the Board make permanent the Certificate of Public Good, issued in 1969, for the VELCO Middlesex substation. That Certificate of Public Good, by its own terms, expired on December 31, 1972. The Board's Order approving construction of the Middlesex substation states:

The Board is not satisfied that the location is the best one for installing the permanent substation. It is quite possible that a location could be found, in cooperation with the Mad River Regional Planning Commission and the Scenery Preservation Council, which could satisfy power and reliability needs and not be as conspicuous. We shall expect VELCO to explore this possibility further in connection with its design of a permanent substation for this general area.³⁷

The Order states that VELCO was proposing a temporary substation at the site at that time. The Scenery Preservation Council had opposed the proposed site due to the visibility of the substation from Interstate 89.

In the present Docket, no party has contended that the expansion of the Middlesex substation, with sufficient screening mitigation, would present an undue adverse aesthetic impact. Over the past 36 years it is likely that some of the original concerns about visibility have been addressed by the natural growth of vegetation in the area, including the screening trees required by the October 1969 Order. Consequently, I do not believe that the aesthetic concerns raised at the time the temporary substation was proposed remain a sufficient reason to deny permanent approval for the Middlesex substation. I recommend that the Board grant permanent status to the Middlesex substation.

Finally, this proposal for decision does not address whether any penalties, such as those pursuant to 30 V.S.A. §§ 30 and 247, should be imposed for VELCO's 33 years of apparent non-compliance with the requirement contained in the Certificate of Public Good.

37. Docket 3387, Order of 10/15/69 at 3.

VII. CONCLUSION

I conclude that the proposed Project satisfies the substantive criteria of Section 248(b). There will undoubtedly be adverse impacts, primarily aesthetic, from the construction of the proposed Project. However, the consequences of not building the proposed Project would be more severe. Accordingly, I recommend that the Board approve the proposed Project, as conditioned above, and issue a certificate of public good for construction of the Project.

This Proposal for Decision has been served on all parties to this proceeding in accordance with 3 V.S.A. § 811.

Dated at Montpelier, Vermont, this 8th day of November, 2005.

s/Ed McNamara
Edward McNamara, Esq.

VIII. BOARD DISCUSSION

Comments on the Proposal for Decision ("PFD") were received from several parties in this case. In addition, several parties provided comments during Oral Argument, held on December 7, 2005. Most parties generally recommend approval of the Hearing Officer's PFD with some changes. Waterbury recommends that we reject the underlying finding of the PFD, and each of the other parties either objects to portions of the PFD or requests that the Board make technical corrections to the PFD. After considering these comments, which we address below, we largely accept the Hearing Officer's recommendations.

Need for Project

Waterbury disagrees with the Hearing Officer's recommendation that the Board issue a CPG for the project because there is a need for transmission in the area that cannot be met through DSM or other non-transmission options. Specifically, Waterbury argues that, because the load in the LCSA has exceeded 40 MW for several years, that the N-1 criteria should not be

required to be met. However, we agree with the Hearing Officer, who stated, "Simply because an area has not met the required reliability standards yet has avoided adverse consequences is not a sufficient reason for the area to continue to fail the applicable reliability standard." The Hearing Officer found that the N-1 criteria is appropriate, and no party, including Waterbury, offered evidence to the contrary. We thus reject Waterbury's contention that the LCSA can continue to meet a load of 40 MW until such a time that an alternate resource configuration could be employed.

Waterbury also expresses concern that the proposed Project would maintain reliability in the LCSA only until 2015, under current demand projections. Waterbury requests that the Board impose a condition on Petitioners that they not propose any new transmission line in the area until 2055.³⁸ We agree with the Hearing Officer that: "A condition such as the one proposed by Waterbury could place severe economic constraints upon the region by not allowing upgrades needed to ensure reliability, and by likely limiting utilities in issuing ability-to-serve letters." As the Hearing Officer stated in the PFD, Waterbury provides no evidence or rationale to support such a condition. We decline to include such a condition.

Waterbury also requests that the Board include a condition that no supply side resources will be approved in the future unless Petitioners implement all cost-effective demand side resources. The Hearing Officer recommended that the Board not adopt this condition. We agree with the Hearing Officer. The Board has inserted such conditions in prior orders. However, this has typically occurred when a utility has been intransigent with respect to certain statutory requirements. In this case, as the Hearing Officer points out on page 20 of the PFD, the Board has opened an investigation into VELCO's long-term planning and has required that all Vermont electric distribution utilities participate in the docket. Additionally, any petition for transmission options in the area would be reviewed according the statutory criteria of Section 248, including the requirements of Section 248(b)(2). Consequently, we do not conclude that such a condition should be included in the final Order and CPG.

Economic Benefit

Waterbury rejects the Hearing Officer's statement that:

38. In its Brief, Waterbury used the year 2055; during Oral Argument, Waterbury suggested 2035, 2030, or "some reasonable number of years thereafter." Tr. 12/7/05 at 13. (Weston).

Waterbury does not provide sufficient evidence to counter the record evidence provided in this Docket that indicates that there are no alternatives to the proposed Project which provide a greater economic benefit and ensure sufficient reliability for the region in a timely manner.³⁹

Waterbury contends that it "has identified shortcomings in the proof offered by the Petitioners and has suggested analyses that should be conducted before the LCP or any other resource configuration can be judged to satisfy the statute." However, we have accepted the Hearing Officer's recommendation that the project is needed now, and that there are no alternatives that could adequately provide the necessary level of reliability. Consequently, Waterbury did not identify shortcomings in the Petition such that the Board should reject the project. Therefore, we do not believe that such a condition is warranted.

Gregg Hill Reroute

The comments of the Gregg Hill Residents focused exclusively on the PFD's rejection of their proposed reroute. Those comments are addressed below.

There is no question that the Gregg Hill Residents' proposed reroute would be the optimal solution for reducing the aesthetic impact of the project on the Gregg Hill Road area. The question that must be addressed, however, is whether the proposed reroute promotes the public good.

Gregg Hill Residents argue that, because the area is scenic and rural, the preservation of that area is a significant public good. However, even if it were true that the preservation of this area would be in the *public* good, there must be a balancing between the impact of the project on the Gregg Hill Road neighborhood and the impact of rerouting the line through the state forest. In this case, after examining the costs and benefits of the proposed reroute, we conclude that the public good favors preserving the state forest, conserved for the people of Vermont. One of our primary reasons for rejecting the proposed reroute is that there is an alternative reroute that would minimize the impacts on the Gregg Hill Road area, as discussed below. The impacts the reroute would have on the state forest are not outweighed by the preservation of the status quo in the Gregg Hill neighborhood.⁴⁰

39. This quote reflects the corrections made by the Board in the Technical Corrections section below.

40. The proposed Gregg Hill reroute would actually improve the aesthetics of the area by removing the existing transmission line.

The Gregg Hill Residents argue that preservation of the scenic, historic, and rural character of the area promotes the public good of the state. However, representatives of both the Department of Public Service and the Agency of Natural Resources testified that the proposed reroute would primarily benefit private residents of the Gregg Hill Road area.⁴¹ There is ample evidence in the record to reach such a conclusion, and we concur with the Hearing Officer in this regard.

The Gregg Hill Residents further contend that the aesthetic mitigation measures proposed by VELCO are insufficient. The Department recommends more intensive aesthetic mitigation than that proposed by VELCO and admits that the scenic value of the area would be degraded by the project. However, the Department's aesthetic witness stated with certainty that the proposed Project could be adequately mitigated to pass the Quechee test.⁴² In particular, the Department's aesthetic witness provides specific recommendations for mitigation. The Hearing Officer did not address the mitigation that would be required for this area. Therefore, the Board makes the following additional finding:

273. The following mitigation measures would be necessary to provide adequate aesthetic mitigation of the project:

- limiting the height of the transmission poles to the extent feasible;
- at the Gregg Hill Road crossing, the poles must be set back as far as feasible to minimize visibility;
- vegetative plugs must be installed at the Gregg Hill Road crossing; and
- a detailed plan for screen planting and buffering residences, along with retaining and protecting the existing screen and buffer vegetation.

Exh. DPS-DR-1 at 24–25.

The Gregg Hill Residents contend that the proposed reroute is the least-cost mitigation measure when compared to the costs of aesthetic mitigation. The Gregg Hill Residents compare the cost of the proposed reroute with the typical cost of aesthetic mitigation measures and conclude that their proposed reroute would be less expensive than the cost of aesthetic mitigation. Additionally, the Gregg Hill Residents claim that the impact on property values in their neighborhood would argue for their proposed reroute.

41. See finding number 228, p. 57 of the PFD.

42. Raphael sur. pf. at 1.

However, the economics of the reroute is only one factor that must be considered. The overall goal is to ensure that the route through this area promotes the public good. As we have already discussed, the proposed reroute through the state forest is, in this instance, not weighted towards the public good compared to the alternatives.

The Gregg Hill Residents, in response to the PFD, contend that the preference for locating transmission lines "in existing corridors need not apply in the case of the Gregg Hill Reroute." The Gregg Hill Residents assert that the PFD states, in effect, "that persons who purchase property within an existing utility right-of-way thereby forfeit their right to object to any upgrade of that utility, regardless of the additional size and aesthetic offensiveness of the upgrade." There is no hard and fast rule that transmission lines need to be located in existing corridors. However, as this Board stated in Docket 6860, by constructing a new transmission line within an existing transmission corridor, "VELCO and GMP avoid, for the most part, the development of previously undeveloped lands."⁴³ There should be a compelling reason for imposing a new land use, such as a transmission line, on land that does not currently host a transmission line.

The Gregg Hill Residents contend that the proposed reroute would not affect the Waterbury Reservoir. However, the record does not contain a full aesthetic analysis of the proposed reroute. Without such a complete analysis, and the opportunity for other parties to respond to such an analysis, there is no basis for making a positive determination that the proposed reroute would not have an aesthetic impact on the reservoir.

The Gregg Hill Residents state that the reroute would actually benefit the state forest. This claim is based on the aesthetic impact of the project on the Gregg Hill Road crossing and a trail leading to a popular area along the reservoir's waterfront. This argument ignores the repeated opposition that ANR, the stewards of the state forest, have put forth regarding the proposed reroute. ANR primarily opposed the proposed reroute on the grounds that it would create a new, cleared right-of-way within the state forest, thus creating environmental and aesthetic impacts on public lands. Allowing the proposed reroute would also contravene ANR's

43. Docket 6860, Order of 1/28/05 at 203.

general policy regarding new uses on state lands and its specific management goals for the Mount Mansfield State Forest.⁴⁴

Although the proposed reroute may enhance some areas of the state forest, the overall finding of the Department, ANR, and the Hearing Officer was that rerouting the existing and proposed lines through a new corridor in the state forest was not in the public good. As stated above, we agree with the Hearing Officer's recommendations in this regard, especially in light of the fact that a reasonable alternative to incursion on the state forest may exist (see below).

The Gregg Hill Residents characterize Joint Resolution 040 as "the elected representatives of all the people of Vermont expressed their qualified support for the Gregg Hill Reroute." Based on the language of the resolution, this is not a wholly accurate interpretation. The resolution states that the Department of Forests, Parks and Recreation must convey a right-of-way to Petitioners to construct the project *if* the Board finds that the proposed reroute promotes the general good. We do not see how the resolution provides support for a finding that the proposed reroute is in the public good.

For the reasons stated above, we reject the Gregg Hill Residents' proposed reroute to the extent that it would require a new corridor in the state forest. Exhibit GHR-1 provides an orthophoto of the Gregg Hill neighborhood and illustrates the general path of the Gregg Hill Residents' proposed reroute. Our examination of this exhibit indicates that there is a possibility that a reroute could be devised that would move the line farther from Gregg Hill Road and the majority of the existing houses. Such a reroute, in avoiding any incursion on the state forest, would most likely need to cut across the land of the property owner adjacent to the state forest. We would encourage the Gregg Hill Residents to explore this opportunity and determine whether the landowners could collectively reach such terms and conditions that would make such a reroute possible. If an appropriate reroute could be devised that does not impact the state forest, the Gregg Hill Residents are encouraged to propose the reroute for consideration during the post-certification proceedings.

44. The fact that the reroute would contravene these policies and goals does not, by itself, provide an insurmountable barrier to the proposed reroute. However, we must give due consideration to ANR's recommendations in making our determination on this issue.

Harvey Property

The Board is not convinced that VELCO's proposed route through the Harvey property, including the location of the switching station, is in the public good. Our thinking on this issue is informed by the fact that the Harvey property is the only location along the nine-mile route of the 115 kV line where there would be a newly created transmission corridor.

We will require VELCO to further investigate possible alternate routes through Mr. Harvey's property during the post-certification proceedings. Petitioners should work with Mr. Harvey to explore alternative options for the 115 kV lines and the switching station.

Single-Pole Configuration

Several parties pointed out that the Hearing Officer did not make a final determination regarding what material the single-pole double-circuit structures should be made of. This determination should be made during the post-certification proceeding. As the Hearing Officer stated, there is no need for *all* of such structures to consist of steel poles with concrete bases, as VELCO originally claimed. However, the actual material type of individual poles should be decided during the post-certification proceedings. Some areas, such as those requiring long spans, may require more robust structures than other areas.

VELCO has requested that the Board provide a table that summarizes the configuration of the transmission structures for each area. As this Discussion makes clear, there are some areas where the final configuration must be decided in the post-certification proceedings.

Section	Configuration
Duxbury Tap to Duxbury Switch	side-by-side single-pole, single-circuit
0.0 to 0.5	to be determined during post-certification proceedings
0.5 to 0.8	single-pole, single-circuit
0.8 to 2.0	single-pole, single-circuit
2.1 to 2.43	H-frame, single-circuit
2.43 to 2.7	single-pole, single-circuit
2.7 to 2.9	H-frame, single-circuit
2.8 to 3.5	single-pole, single-circuit
3.5 to 4.0	side-by-side single-pole, single-circuit

4.0 to 5.7	single-pole, double circuit in open and settled areas, otherwise side-by-side single-pole, single-circuit
5.7 to 6.8	side-by-side single-pole, single-circuit
6.8 to 7.7	single-pole, double-circuit
7.7 to 8.2	single-pole, double-circuit
8.2 to 9.4	side-by-side single-circuit 115 kV and double-circuit 34.5 kV

Aesthetically Sensitive Areas

Petitioners note that the Hearing Officer uses the term "aesthetically sensitive areas" on page 25 of the PFD without identifying such areas in that section of the PFD. The PFD provides specific mitigation requirements throughout the findings and discussion in the aesthetics section. These findings and conclusions provide the specific guidance that Petitioners appear to be seeking. Any remaining issues can be resolved in the post-certification process.

The Stowe Selectboard requests that the Board include the following requirement for aesthetic mitigation in the Black Bear Run/Marshall Road area:

Petitioners shall develop design detail level plans for the post-certification review process that shall depict their proposed selective clearing and mitigation plantings, including plant species and the number and proposed location of plantings. Without limitation, Petitioners, in consultation with landowners and the Selectboard, shall plant slow growing species of softwoods and hedges, as necessary and appropriate, both within and outside the right-of-way to maintain/recreate the visual buffer between the line and residences, and the 'privacy' buffer between residences.

Typically, the Board has required that the final design plans in the post-certification review process include aesthetic mitigation plans that identify proposed plantings. We will require such plans in this case. We agree with the Stowe Selectboard that Petitioners should be required to work with affected landowners regarding the placement of plantings. However, we will not require Petitioners to install plantings outside the right-of-way, unless landowners agree to the installation.

Construction Cost Estimates

The Stowe Landowners argue that Petitioners should be required to submit a revised cost estimate for the proposed Project, and provide quarterly updates on the costs. The Stowe Landowners are apparently concerned that, once the construction phase of the project is

completed, Petitioners will argue that they do not have enough funds to provide adequate aesthetic mitigation.

We will require Petitioners to provide a revised cost estimate that reflects the requirements of this Order.⁴⁵ The cost estimate should be provided within 60 days of the date of this Order. We do not share the concern regarding sufficiency of funds for aesthetic mitigation that were expressed by Stowe Landowners. The issuance of a CPG in this Docket, as in every other Section 248 proceeding, is conditioned upon Petitioners providing the level of aesthetic mitigation required by the Board.

With respect to the quarterly reports requested by Stowe Landowners, there must be some balance between the cost of preparing these reports and the need to know if the costs of the project will rise. We are therefore requiring Petitioners to propose a procedure, for approval by the Board, that would keep the Board and parties aware of any substantial cost increases without creating a costly administrative burden. All parties will have the opportunity to comment on Petitioners' proposal.

Issuance of CPG prior to Final Plans

Stowe Landowners have reiterated their request, addressed by the Hearing Officer in the PFD, that a CPG not be issued until the Board has approved final design of the project, including all aesthetic mitigation measures. We reject this argument for the reasons set forth in the PFD — that the post-certification procedures detailed in the PFD will ensure that there is sufficient aesthetic mitigation of affected properties.

Capacitor Banks

The Hearing Officer recommends that VELCO inform the Board at least three years prior to the time that the capacitor banks are expected to be needed. VELCO requests that this requirement be amended "to allow for the inclusion of an ongoing analysis of the LCSA system performance in its compliance with the requirements of Act 61."

Act 61 requires that VELCO work with the Vermont electric distribution utilities to prepare a transmission system plan. In addition, the Board has opened an investigation into

45. We recognize that this Order does not provide certainty with respect to the final configuration of all aspects of the project. However, Petitioners should be able to provide a reasonable estimate.

VELCO's least-cost planning practices (Docket 7081). These procedures should adequately address the Board's concerns regarding the capacitor banks. However, these procedures are not in place as of this Order. We will therefore require Petitioners to make the required filings recommended by the Hearing Officer, unless they can demonstrate that the filings that would be required as a result of Act 61 or Docket 7081 will provide information to the Board similar to that described in the Hearing Officer's recommended filing.

Nichols Field

The Stowe Selectboard requests that we reject the Hearing Officer's recommendation to require VELCO to utilize a single-pole double-circuit configuration in the area near, and in, Nichols Field. The Selectboard has expressed concerns regarding the height of the poles if this configuration was utilized, and the cost of constructing single-pole double-circuit structures. The Stowe Selectboard recommends instead that "these issues should be further evaluated in the post-certification review process." We agree with the Selectboard's recommendation. Parties shall be given the opportunity to further explore the alternate pole configurations for this area during the post-certification process.

Shaw Hill Area

The Stowe Selectboard and the Stowe Landowners have requested that the Board require VELCO to consider a reroute in this area. These groups recommend that the proposed line be brought from the existing location, downhill towards River Road, in an attempt to mitigate the impact of the project on residents of the Shaw Hill area.

There is currently no evidence in the record that provides sufficient information to allow us to make a determination regarding whether the proposed reroute in this area would promote the public good. Therefore we will require the Hearing Officer to examine the proposed reroute during post-certification proceedings.

Waterbury Reservoir

Waterbury continues to recommend that Petitioners be required to place both the existing and proposed transmission lines under the Waterbury Reservoir. We reject this recommendation

for two reasons. The first, and most important reason, is that the record does not support placing the lines under the Waterbury Reservoir as necessary to comply with the Quechee test.

The Hearing Officer emphasized the issue of reasonable mitigation and whether placing the transmission lines under the Waterbury Reservoir constitutes reasonable mitigation. In particular, the PFD cites to the allocation of costs for the project and the burden of the cost of undergrounding on the utilities in the LCSA. There is presently an existing transmission line spanning the reservoir. The project would involve spanning the reservoir with an additional, parallel set of lines and removing the marker balls on the existing lines. The mitigation proposed includes selective clearing and vegetative management on the reservoir banks and removal of the marker balls. We conclude that this mitigation is adequate to satisfy the Quechee test. In addition, we find that the cost of placing the transmission lines under the reservoir, estimated at an incremental cost of between \$4.1 and \$5.9 million, is not reasonable considering the adequacy of the mitigation proposed.

Waterbury recommends that the Board consider methods of spreading the costs of undergrounding on a statewide basis. This argument is predicated on the statewide significance of the Waterbury Reservoir. However, since we have determined that placing the transmission lines under the reservoir is not necessary to comply with the Quechee test, there is no need to determine whether, and how, the costs of undergrounding can be allocated statewide.

Municipal Vote

Several parties have commented that, while the PFD addresses the risks and benefits that must be provided to the voters under Section 248(c), the PFD does not explicitly address what the vote is authorizing. However, we note that Section 248(c) requires only that the Board identify the risks and benefits, which the Hearing Officer has done, and which we adopt. It is unclear whether the Board has any jurisdiction to determine the scope of the vote itself. Presumably, Stowe's counsel will advise the municipality on the scope of the vote and the wording of the notice.

McDermott Reroute

One landowner in the Blush Hill area, Jerry McDermott, has proposed a relocation of the proposed transmission structures. The Hearing Officer did not address this proposed reroute in

the PFD. The McDermott reroute is proposed to allow better use of the McDermott property and would increase the cost of the project by approximately \$60,000.⁴⁶ The Board received several public comments asserting that this reroute would have a negative impact on other properties. There is insufficient evidence in the record to determine whether the impact of the McDermott reroute would have an impact on adjoining properties.

A Section 248 review must examine whether any proposed actions, including relatively minor reroutes such as this, promote the public good.⁴⁷ In this instance, there is evidence that the proposed reroute would have an economic impact, albeit a relatively small impact, on ratepayers; however, there is no indication that the proposed reroute would provide any benefit to the public. We therefore reject the proposed McDermott reroute.

Certificate of Public Good

The Department recommends that "for purposes of administrative regularity there ought to be three CPGs issued in this proceeding, one flowing to each Petitioner" ⁴⁸ However, the proposed Project was presented as an interdependent whole, which is how we reviewed it. Without all of the components, there is no indication that the proposed Project would be able to effectively meet the load in the LCSA. Consequently, we will issue one CPG for the project.

Technical Corrections

Several parties proposed technical corrections to the PFD. Those corrections are presented below.

On page 6 of the PFD, finding 1(d) is deleted and the following sentence is inserted: "Removal of GMP's existing 34.5 kV line between GMP's existing Duxbury switching station and GMP's Blush Hill Switch."

On page 10, finding 16 is deleted and the following sentence is inserted: "Between GMP's existing Duxbury switching station and GMP's existing Blush Hill tap, GMP's existing 34.5 kV 3347 line would be removed. Moulton pf. at 11; Johson pf. at 5."

46. Exh. JM-1; Moulton sur. pf. at 4

47. *See*, Auclair v. Vermont Electric Power Co., 133 Vt. 22 (1974).

48. Tr. 12/7/05 at 91–92.

On page 18, the third sentence of finding 65 is deleted and the following sentence is inserted: "The capital cost to install a 50 MW combustion turbine would be \$31.3 million, compared to the estimated \$20.3 million capital cost for the proposed Project."

On page 22, finding 72, the citation is deleted and replaced with the following: "Smith sur. pf. at 5–6."

On page 24, the first sentence of the discussion is deleted and replaced with the following sentence: "The proposed Project will maintain system stability and reliability up to a peak load of 92 MW, projected to be in 2015."

On page 26 of the PFD, the last sentence in the second paragraph of the Discussion section currently states:

Waterbury does not provide sufficient evidence to counter the record evidence provided in this Docket that indicates that there are alternatives to the proposed Project which provide a greater economic benefit and ensure sufficient reliability for the region in a timely manner.

The sentence is corrected to read:

Waterbury does not provide sufficient evidence to counter the record evidence provided in this Docket that indicates that there are no alternatives to the proposed Project which provide a greater economic benefit and ensure sufficient reliability for the region in a timely manner.

On page 33, the second sentence of finding 116 is deleted and replaced with the following sentence: "With the addition of the new substation, the existing residences will experience a noise level of up to 35 to 29 dBA from the proposed substation."

On page 51, in discussing the section of line between the Duxbury Tap and Mile 0.5, the PFD recommends the use of single-pole double-circuit configuration for the area. As stated above, we are requiring Petitioners to develop an alternative route for this area. However, we wish to clarify that we would not require VELCO to utilize a single-pole double-circuit configuration from the Duxbury Tap to the switching station. VELCO has proposed separate, single-pole lines for this portion of the line. In this area, we accept VELCO's proposal.

From the switching station to mile 3.5, the project would consist of only the new 115 kV line. The existing GMP 34.5 kV line would be removed between its Duxbury Switch and the GMP Blush Hill Switch at mile 3.5. Consequently, the second bullet point of finding 197 is deleted. We will require parties to consider during the post-certification proceedings for this area whether Petitioners should be required to utilize single-pole or H-frame structures.

In the discussion concerning mile 0.8 to mile 2.0, on page 51, the Discussion section is deleted and the following words are inserted in its place: "The Board will require the aesthetic mitigation described in finding 201 for this area."

IX. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that the proposed Project, in accordance with the evidence and plans submitted in this proceeding, and as modified and conditioned by this Order, will promote the public good of the State of Vermont in accordance with 30 V.S.A. § 248, and a certificate of public good to that effect shall be issued with the conditions set forth below. Additionally, the Certificate of Public Good for the Middlesex substation, issued on October 15, 1969, in Docket No. 3387, shall be made permanent.

1. The Hearing Officer's findings and conclusions are adopted, except to the extent that they are modified by the Board discussion.

2. Construction, operation, and maintenance of the proposed Project shall be in accordance with the findings and requirements set forth in this Order.

3. Petitioners shall file, for the Board's approval, final construction plans for the proposed upgrades, concurrent with plans for aesthetic mitigation, as required by the post-certification process described in the proposal for decision. Petitioners may commence construction only after receiving approval for such plans.

4. VELCO shall inform the Board at least three years prior to the time that the capacitor banks, required to maintain the reliability of the LCSA up to a load of 98 MW, are needed. In the same filing, VELCO shall provide copies of any communications on this issue between the distribution utilities and VELCO.

5. Petitioners shall provide post-construction noise measurements at the VELCO Stowe substation to the Board and parties within 60 days of completion of the new substation. The Board shall retain jurisdiction to decide any issues associated with post-construction noise at the Stowe substation.

6. Petitioners shall examine EMF mitigation options in the area of the proposed single-pole, double-conductor 34.5 kV lines and 115 kV line (from proposed pole structures 146 to 155 on exhibit KSM-4), including the possibility of double-conductoring one of the 34.5 kV lines

with the proposed 115 kV line. Petitioners shall file a report addressing EMF mitigation with the Board and parties within 90 days of the issuance of a certificate of public good in this Docket, and prior to the filing of final design plans for this area. The Board shall retain jurisdiction to require further changes in the design of this portion of line, if necessary.

7. Petitioners shall consult with ANR to develop the plans described in Section 248(b)(5) of this Order and file any final plans with the Board and parties for approval by the Board.

8. Petitioners shall develop an aesthetic mitigation plan at the new Stowe substation with effective berming and plantings that would obviate the need to move the substation and file a plan with the Board for approval. Such a plan must be filed within 90 days of the date of the certificate of public good. If an effective screening plan is not developed, the two substations would need to be separated to avoid an undue adverse aesthetic impact.

9. Petitioners may not commence construction until all necessary permits have been received.

10. Petitioners shall comply with the stipulations of the Division of Historic Preservation as detailed in the Division's letters of April 11, 2005, and May 10, 2005.

Dated at Montpelier, Vermont, this 16th day of March, 2006.

<u>s/James Volz</u>)	
)	PUBLIC SERVICE
)	
<u>s/David C. Coen</u>)	BOARD
)	
)	OF VERMONT
<u>s/John D. Burke</u>)	

OFFICE OF THE CLERK

FILED: March 16, 2006

ATTEST: s/Judith C. Whitney
Deputy Clerk of the Board

NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: Clerk@psb.state.vt.us)

Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further Order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and order.