

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 6479

Petition of Vermont Electric Power Company, Inc. for a)
Certificate of Public Good authorizing the construction)
of certain additions to its high-voltage transmission)
facilities located in the Towns of West Rutland and)
Cavendish, Vermont, to be known as the Rutland)
Regional Reliability Project --)

Hearing at
Montpelier, Vermont
May 29, 2001

Order entered: 8/1/2001

PRESENT: Wayne L. Foster, Hearing Officer

APPEARANCES: Kimberly K. Hayden, Esq.
Thomas N. Wies, Esq.¹
for Vermont Electric Power Company, Inc.

Aaron Adler, Esq.
for Vermont Department of Public Service

Warren Coleman, Esq.²
for Agency of Natural Resources

I. INTRODUCTION

This case concerns a petition filed by Vermont Electric Power Company, Inc. ("VELCO") on March 5, 2001, as amended on March 16, 2001³, requesting a Certificate of Public Good ("CPG") pursuant to 30 V.S.A. § 248 for its Rutland Regional Reliability Project ("RRRP"). The RRRP involves construction of transmission facilities at VELCO's existing West Rutland and

1. Did not attend hearing.

2. Did not attend hearing.

3. On March 23, 2001, VELCO amended its Petition to include two 115 kV pole structures and a segment of 115 kV line located within the Town of Proctor, Vermont.

Coolidge Substations in order to interconnect and operate the existing 27.4 mile long Coolidge to West Rutland transmission line at 345 kV (that line is presently operated at 115 kV). It also involves the construction of 1.18 miles of 115 kV transmission line running out of the existing West Rutland Substation and parallel to the existing line.

On April 12, 2001, a public hearing was held in Rutland, Vermont. Notice of the public hearing was sent to all parties and interested persons on March 23, 2001. In addition, notice of the public hearing was published in The Rutland Herald on March 24, 2001, and March 31, 2001. The public hearing was held as scheduled at the Community Room of the Rutland City Police Station, 108 Wales Street, Rutland, Vermont. Also on April 12, 2001, a site visit was held at the Coolidge and West Rutland Substations.

On May 10, 2001, VELCO and the Vermont Department of Public Service ("DPS") submitted a stipulation ("Stipulation") in which the parties agreed that the Board should issue a CPG with certain conditions as described in the Stipulation. On May 11, 2001, the Agency of Natural Resources ("ANR") filed a letter with the Board stating ANR's support for the Stipulation. The Stipulation is conditioned upon Board approval.

Notice of the technical hearing was sent on May 11, 2001, to all parties specified in 30 V.S.A. § 248 and all other interested parties. A technical hearing was held as scheduled on May 29, 2001, at 10:00 a.m. at the Public Service Board Hearing Room, Third Floor, Chittenden Bank Building, 112 State Street, Montpelier, Vermont. No one appeared in opposition to the petition and substantial evidence was presented in support of the petition.

The DPS filed a Determination under 30 V.S.A. § 202(f) on May 29, 2001.

II. FINDINGS

Based upon the substantial evidence of record and the testimony presented at the hearing, I hereby report the following findings to the Board in accordance with 30 V.S. A. § 8.

Background

1. VELCO is a company as defined in 30 V.S.A. § 201. Pet. at 1.

2. VELCO's offices are located at 366 Pinnacle Ridge Road, Rutland, Vermont, 05701. Pet. at 1.

3. VELCO owns and operates most of the high voltage electric transmission system in the State of Vermont, including the existing 27.4 mile long Coolidge to West Rutland 345 kV line. Pet. at 1-2.

4. VELCO plans for the maintenance, upgrade and expansion of the State's transmission system to assure the integrity of the portion of the regional bulk power system for which it is responsible and to assure adequate and reliable transmission of bulk power to the electric utilities in Vermont. Pet. at 1-2.

5. In this proposed project, VELCO seeks a Certificate of Public Good under 30 V.S.A. § 248, authorizing the construction of its Rutland Regional Reliability Project ("RRRP"). Pet. at 2.

6. The RRRP is the second phase of a 345 kV transmission facilities upgrade (the first phase of which was approved by the Board in the early 1980's) as a part of the plan to extend Vermont's 345 kV electric transmission network from Vermont Yankee, located in Vernon, Vermont, to the Coolidge Substation, located in Cavendish, Vermont, then on to the West Rutland Substation, located in West Rutland, Vermont. Johnson pf. at 2.

7. On February 22, 1980, VELCO received a Certificate of Public Good (Docket No. 4381) to construct a 345 kV (to be operated initially at 115 kV), 27.4 mile transmission line from VELCO's Coolidge Substation in Cavendish, Vermont, to its West Rutland Substation in West Rutland, Vermont. Johnson pf. at 2, 3; Docket No. 4649, Order of 9/7/82, at Finding 2.

8. On December 9, 1982, VELCO received a Certificate of Public Good in Docket No. 4649 to complete the first phase of the West Rutland Substation upgrade to 345 kV operation, including site preparation and grading for both the 115 kV and 345 kV bays, 345 kV steelwork, 115 kV substation steel and buswork, three 115 kV line breakers, various protective and relaying equipment, and a control building. Johnson pf. at 2.

Project Description

9. With the RRRP, VELCO proposes to upgrade the existing West Rutland-Coolidge transmission line to operate at 345 kV, and to upgrade the Rutland area 115 kV network, as summarized below:

- a. re-energize the West Rutland-Coolidge line at 345 kV;
- b. build a three breaker, 345 kV ring bus at Coolidge to tie together two 345 kV lines and the Coolidge 345/115 kV autotransformer;
- c. install two, 25 MVAR capacitor banks on the Coolidge 115 kV ring bus;
- d. install a six breaker, 115 kV ring bus at West Rutland; the ring bus will connect the two 345/115 kV transformers, three 115 kV lines and station service;
- e. install two, 180 MVA, 345/115 kV, 6% impedance tap-changing transformers at West Rutland; the transformers will have individual high side breakers to connect to the six breaker, 115 kV ring bus; and
- f. add a second 1.18 mile, 115 kV tap line from the West Rutland Substation to a tap point on the existing North Rutland to Blissville 115 kV line.

Hinners pf. at 4-5; Johnson pf. at 3-10.

10. In addition, the area wide transmission protection and control system will be upgraded to meet Northeast Power Coordinating Council ("NPCC") criteria and recognize the change in system configuration. Hinners pf. at 4.

11. In terms of scope of construction and site impacts, the proposed RRRP is a limited, incremental project. The transmission line between Coolidge and West Rutland has already been constructed to 345 kV specifications. As such, the proposed RRRP does not involve new transmission line rights-of-way or 345 kV line construction. The proposed RRRP will not require substantial new construction at or expansion of the existing Coolidge or West Rutland Substations. Johnson pf. at 3-4; Hinners pf. at 4.

12. The only new line construction required by the proposed project is the addition of a second 1.18 mile, 115 kV tap line from the existing West Rutland Substation to a tap point on the existing North Rutland to Blissville 115 kV line. Hinners pf. at 5.

13. The proposed RRRP will also eliminate some existing pole structures at both existing substation sites. When the 345 kV line becomes energized to its design voltage, existing 115 kV ties at Coolidge and West Rutland will be removed from service. This will eliminate six structures at Coolidge and two structures at West Rutland. Johnson pf. at 3-4; exhs. VELCO/RJ-4 and VELCO/RJ-5.

A. Coolidge Substation Construction

14. All 115 kV and 345 kV site work at the Coolidge Substation was completed in 1973. It will not be necessary to expand the existing fenced area to complete the proposed work. Johnson pf. at 6.

15. The Coolidge Substation is located on Quent Phelan Road in Cavendish, Vermont. Currently there are two transmission facility yards at the substation. The lower yard is a low profile substation yard that contains the 115 kV ring bus, control building, and 345/115 kV step-down transformer. There are three existing 115 kV lines that terminate on the ring bus. One line from Ascutney travels to the east, one line from North Rutland travels to the north, and the third line currently travels around the substation and energizes the subject Coolidge to West Rutland 345kV line at an operating voltage of 115 kV. Johnson pf. at 6; exhs. VELCO/RJ-11 and VELCO/RJ-2.

16. The upper transmission yard contains the 345 kV equipment. The construction is of the low profile type. This includes the termination point for the 345 kV line from Vermont Yankee to the south and switches and bus work that connect to the transformer. *Id.*

17. With the proposed RRRP, a new control building will be added to the upper yard, since the existing two-story building has become unsuitable to accept the proposed expansion of the substation. The proposed new building will be a 32' x 80', single story, pre-engineered type metal building, light gray in color, with a white roof. Johnson pf. at 7; exh. VELCO/RJ-12.

18. Two 115 kV, 24.75 MVA capacitor banks will also be added to the 115 kV ring bus. One will be installed on the north bus and the other on the south bus. These capacitor banks will tie to the ring through 115 kV breakers. The control system will be completely upgraded with the proposed installation of new redundant control panels and cabling. Johnson pf. at 7.

19. In the upper yard, the existing switches and bus work will be expanded to form a 345 kV three position ring bus. The positions will be for the line from Vermont Yankee to the south, the line from West Rutland to the north, and the transformer to the east. All steel towers for terminating lines already exist. Therefore, all additional proposed structures will be much lower than the existing towers. Three 345 kV breakers will be installed for protection of the lines and transformer. All new redundant control panels and cabling will be installed in the new control building. All new grounding will tie into the existing grid system. Johnson pf. at 7-8; exh. VELCO/RJ-4.

20. The location of the proposed equipment in the Coolidge Substation is along Nelson Road on the west side of the substation. The proposed new control building is to be located on the south east corner of the site and it will be painted light gray, consistent with the other existing and proposed structures within the yard. Boyle pf. at 6.

21. The screen planting of pines that was placed in the 1970's does a generally good job of screening the substation, but some holes remain in the screen that will be plugged with proposed new plantings. Some clearing was recently conducted along the north/south hedgerow to protect an existing CVPS distribution line. Although some deciduous trees and brush remain and provide a summer screen, new plantings along Nelson Road are proposed to provide a winter screen as well. The proposed planting plan also includes a new hedgerow along the south line of the substation yard to screen the substation from the south. Boyle pf. at 5-6; exh. VELCO/TJB-4.

B. West Rutland Substation Construction

22. The existing West Rutland Substation is located on Pleasant Street in West Rutland, Vermont. Currently there are two transmission facility yards at the substation that were completed in 1983. The lower yard contains a two-story control building, two bays of lattice steel, and the 115 kV bus work. It serves as a termination point for the existing Coolidge to West Rutland 345 kV line (currently operating at 115 kV) to the south, the existing tap from the 115 kV North Rutland to Blissville line to the south, and an existing 115 kV line from Middlebury to the north. Johnson pf. at 8.

23. The upper yard of the existing West Rutland Substation was cleared in 1983 in anticipation of 345 kV equipment in the future. At that time, all that was installed was a tower for the termination of the future 345 kV line. A small ground grid was also installed around the tower and tied into the existing 115 kV grid. Johnson pf. at 8; exhs. VELCO/RJ-13 and VELCO/RJ-3.

24. All site work for the West Rutland Substation 115 kV and 345 kV yards was completed by 1983 and will not require expansion for this proposed project. The West Rutland Substation 345 kV yard was not fenced in at the time of the 1983 construction, therefore, the proposed 345 kV addition will require that a fence be placed around the already developed site. Johnson pf. at 6.

25. Modifications to the existing West Rutland Substation lower 115 kV yard will include the transition of the three position radial bus to a six-position ring bus. The positions will accommodate the existing 115 kV line to the south coming from the North Rutland Substation, the proposed 115 kV tap line to connect to the existing 115 kV line from Blissville to the south, the existing 115 kV line from Middlebury to the north, the low-side buses of two 345-115 kV step-down transformers to the east, and a future 24.75 MVA capacitor bank. To make the proposed transformation, two lattice steel bays will be added to the north of the existing two bays. A rigid bus will then be installed to the north of the new bays (identical to the existing rigid bus south of the existing bays). The rigid buses will be used to tie the strain buses in the lattice bays together and form the ring. Johnson pf. at 9; exh. VELCO/RJ-5.

26. A proposed 30-foot addition will be made to the existing West Rutland Substation control building and will be constructed of the same material and color. This proposed building is also a pre-engineered type similar to the proposed building at the Coolidge Substation. This proposed addition will be necessary to accommodate the new 115 and 345 kV control gear. *Id.*

27. The transmission control system is proposed to be completely upgraded to include redundant control panels and cabling. The existing ground grid will be expanded and will tie into the new proposed 115 kV equipment and structures. *Id.*

28. In the upper yard, proposed new structures and bus work will be installed to form a section of a four-position 345 kV ring bus. There will be three positions occupied upon

completion. One position will be for the subject 345 kV line coming from the Coolidge Substation. The other two positions will be occupied by two 345-115 kV step-down transformers that will run in parallel. These transformers will be installed with the intent that one can be removed from service and replace either the 25-year old unit at the Coolidge Substation or the 30-year old unit at Vermont Yankee. Two 345 kV breakers will be installed on either side of the line to protect each transformer. Johnson pf. at 9-10; exh. VELCO/RJ-5.

29. The proposed type of construction will be very similar to that at the Coolidge Substation. All towers will be the same size as the existing tower. Redundant control panels and cabling will be installed. The ground grid in the 115 kV yard will be expanded into the 345 kV yard and tied to the equipment and structures. *Id.*

30. VELCO's aesthetic consultant has recommended additional plantings for screening at the West Rutland Substation. VELCO proposes to plant additional conifers (47 spruce) west of the existing substation to infill gaps in the trees planted 25 years ago, as well as 20 new white pine south of the 345 kV yard. Exh. Joint-1.

New 115 kV Tap Line from West Rutland Substation

31. The existing 1.18 mile 115 kV tap line from the West Rutland Substation connects to the North Rutland to Blissville 115 kV line, and is located south of the substation, running parallel and to the west of the subject Coolidge-West Rutland 345 kV line. Johnson pf. at 4; exh. VELCO/RJ-6.

32. The West Rutland Substation 115 kV bus is designed so that no one bus or breaker failure can interrupt power supply to more than one element relying on the West Rutland Substation for supply. In order to facilitate this objective, the existing 115 kV line, which presently serves the dual objective of connecting the West Rutland Substation to both North Rutland and Blissville, is proposed to be split by building a second 115 kV line alongside the first. This proposed separation will allow the Blissville and North Rutland interconnections to be brought into the West Rutland Substation separately. This proposed separation also avoids the reconductoring which would have to be done to the single existing 115 kV line if it were to

continue its dual role after the proposed 345 kV operating voltage upgrade is brought to West Rutland. Hinnars pf. at 20.

33. Roughly 350 feet of the existing 1.18 mile 115 kV tap to the West Rutland Substation is located in the Town of Proctor, and the remainder is located in the Town of West Rutland. No new structures are proposed to be added to the section of line in Proctor, just the proposed conversion of two existing VELCO Type A tangent structures (see exh. VELCO/RJ-Supp-1), to VELCO Type DA three-pole angle structures (see exh. VELCO/RJ-Supp-2). Johnson supp. pf. at 2.

34. The location of the proposed 115 kV circuit is in the so-called Whipple Hollow area in West Rutland. Whipple Hollow runs north from West Rutland to Florence, and is traversed on the west side of the valley floor by Whipple Hollow Road, which is the only road with homes in the area. The West Rutland Substation and 115 kV lines are located at the southern end of the valley on the eastern slope. A few farms on the north and a cluster of suburban residences on the south end characterize the valley. There is a cluster of 6-8 homes on Whipple Hollow Road opposite the West Rutland Substation, about 0.84 miles away. The substation's visibility from most vantage points south of Pleasant Street in West Rutland is obscured by existing vegetation lower on the hill or by foreground vegetation in the valley floor. Boyle pf. at 2-3, 5-6; exh. VELCO/TJB-2; 3B-3H.

35. The proposed new 115 kV line will be constructed within the existing VELCO 490-foot right-of-way. The proposal widens the existing 250 feet of cleared right-of-way by 75 feet on the down slope side (west) of the corridor. To do this, approximately 75 feet of additional clearing is required for the wooded portions. These woods extend down slope below the corridor and partially screen the west sloping corridor from across the valley to the west. Even with a cross slope, at a gradient of 10-15%, the proposed newly constructed line will not be visible from the west where the woods will be cleared. Other portions of the proposed new 115 kV line, as well as portions of the existing corridor, will continue to be visible from various locations across the valley on Whipple Hollow Road where vegetation does not currently exist. Johnson pf. at 5; Boyle pf. at 2.

36. The proposed new 115 kV line will be constructed parallel to and 75 feet west of the existing 115 kV tap line. The resulting two parallel 115 kV lines will allow the North Rutland and Blissville lines to have individual positions on the West Rutland 115 kV ring bus. The existing 115 kV line will become the circuit to North Rutland, and the proposed new line will become the circuit to Blissville. Johnson pf. at 4, 5; exh. VELCO/RJ-5.

37. The proposed 115 kV line will be conductored with 795 MCM ACSR. Roughly for the first 2000 feet out of the West Rutland Substation, this proposed new line will be constructed as double circuit, over/under construction with the existing 115 kV line, to avoid costly ledge boring and several archeological sites. Johnson pf. at 4; exh. VELCO/RJ-7.

38. For several reasons, the over/under construction will not continue the entire length of the proposed new line. First, to be in compliance with reliability standards of the Northeast Power Coordinating Council ("NPCC"), only a maximum of five double circuit structures can be in succession. Also, a double circuit configuration makes maintenance of the top line impossible without taking the lower line out of service. Johnson pf. at 5; exhs. VELCO/RJ-8; VELCO/RJ-9; and VELCO/RJ- 10.

Stipulation

39. On May 10, 2001, VELCO and the DPS submitted a Stipulation, which states that these two parties agree that the Board should issue a CPG for the proposed project provided that all of the terms of the Stipulation are met. Exh. Joint-1 at ¶ 2. On May 11, 2001, the ANR filed a letter with the Board supporting approval of the Stipulation and stating that the ANR's issues of concern have been incorporated into paragraph six of the Stipulation. Exh. Joint-2.

40. In the Stipulation, the parties agree that any CPG issued for the proposed project does not constitute approval of any further related projects planned by VELCO. The parties also agree to a detailed least-cost planning provision relating to the future so-called West Rutland to Williston upgrade, which for purposes of this Stipulation is defined also to include the future completion of a 115 kV loop between the VELCO East Avenue and Queen City Substations. The least-cost planning provision includes, but is not limited to, evaluation of generation and DSM alternatives with respect to the need which said future upgrade is intended to address. VELCO is

to comply with this provision prior to applying for a CPG for that upgrade and no later than March 31, 2002. The relevant paragraph of the Stipulation contains other agreements, including but not limited to an agreement that the Board should approve that paragraph by order in this docket, but the CPG issued for the proposed project shall not be revocable based on noncompliance with that paragraph. Exh. Joint-1 at ¶ 3.

41. The Stipulation includes conditions to be placed in the CPG regarding plantings to be made as part of the proposed project, compliance with the stipulations of the Division for Historic Preservation, and maintenance of buffer zones. Exh. Joint-1 at ¶¶ 4, 5, 6.

42. The Stipulation includes an agreement regarding information provision in Geographic Information System ("GIS") format. VELCO agrees to supply the DPS, by June 30, 2001, with certain information related to the proposed project in GIS format. VELCO also agrees to supply the DPS with the same type of information for the future West Rutland to Williston upgrade prior to applying for a CPG for that upgrade. VELCO and the DPS further agree to a collaborative effort to produce a viewshed analysis and maps concerning the proposed project, as specified in the Stipulation, and to make good faith efforts to complete the agreed-upon work products and file them with the Board by August 31, 2001. The parties additionally agree that the Board should approve the relevant paragraph of the Stipulation by order in this docket but the CPG issued for the proposed project shall not be revocable based on noncompliance with the paragraph. Exh. Joint-1 at ¶ 7.

43. The Stipulation contains other provisions, including but not limited to provisions relating to its ineffectiveness if it is not approved in its entirety, its nonprecedential nature, and the parties' acknowledgment of the Board's continuing jurisdiction to resolve disputes arising under the Stipulation. Exh. Joint-1, ¶¶ 8, 9, 11.

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

44. 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 plan of any affected municipality. This finding is supported by findings 45 through 56, below.

45. The Coolidge Substation is located in the Town of Cavendish, Vermont and as such falls within the jurisdictions of the Cavendish and the South Windsor Regional Planning Commissions. Karnedy pf. at 2.

46. The West Rutland Substation is located in the Town of West Rutland, Vermont, and is subject to the West Rutland and the Rutland Regional Planning Commissions. Karnedy pf. at 2-3.

47. Approximately 350 feet of the proposed new 115 kV tap line to be built south of the West Rutland Substation is located within the Proctor town limits. The remainder of the proposed new line will be located within the Town of West Rutland. Johnson supp. pf. at 1.

48. Letters waiving the 45-day notice condition specified in 30 VSA § 248(f) were supplied by all of the town and regional planning commissions. Karnedy pf. at 3; exhs. VELCO/TK-3, 3A and VELCO/TK-Supp-1.

49. The towns and regional planning commissions have all provided written support for the proposed project. Exhs. VELCO/TK-3, 3A, and VELCO/TK-Supp-1.

50. The RRRP is not inconsistent with any portion of the West Rutland Town Plan. Karnedy pf. at 3-4; exh. VELCO/TK-4, at 29.

51. The Comprehensive Plan for the Town of Proctor states in pertinent part that "[c]onstruction of any larger transmission facilities would follow along the existing lines or within natural resource areas if the present corridor is not satisfactory." Consistent with this statement, the construction of the proposed new 115 kV transmission line will be within the existing transmission corridor, which is satisfactory for the existing and planned 115 kV lines. Karnedy supp. pf. at 2; exh. VELCO/TK-Supp-2, at 20.

52. The Rutland Regional Plan encourages "where possible, taking advantage of existing utility facilities rather than relying on new construction (multi-use of poles, lines, easements, etc.)", and "the use of existing utility corridors, wherever possible, for the placement of transmission lines." Another Rutland Regional Plan recommendation is to "[e]ncourage the location of substations in areas suited for them, i.e., industrial areas or areas planned for industrial

use, wherever practicable. When not practicable, the facilities should be sited as unobtrusively as possible." Karnedy pf. at 4-5; exh. VELCO/TK-6, at 73, 76.

53. The RRRP is consistent with the above recommendations. The proposed 345 kV line upgrade essentially involves operation of the existing Coolidge-West Rutland line at its design capacity, and does not require new rights-of-way, utility corridors or line construction. The proposed new 1.18 mile, 115 kV tap line will be built within the existing VELCO right-of-way, next to the existing 115 kV tap line and the subject 345 kV line (constructed, but currently operating at 115 kV) between the West Rutland and Coolidge Substations. Additionally, the proposed substation work is being done within existing VELCO property boundaries, taking advantage of previous site preparation and construction work done in anticipation of this proposed project. The West Rutland Substation has been in existence since 1969, and the changes to be made by this proposed project will not alter the essential nature of the facility. Karnedy pf. at 5-6.

54. VELCO's Coolidge Substation and associated transmission lines are mentioned on page 15 of the Town of Cavendish Town Plan. Most of the policies outlined in this plan regarding electric facilities pertain to the placement of utility lines. In this regard, the only transmission line changes associated with the RRRP in the Town of Cavendish involve the removal of a 115 kV tap line, not the placement of new lines. The Cavendish Plan also speaks to providing "residents with safe, effective, and efficient electric utility service." VELCO's transmission system currently provides safe, effective and efficient service to the state, and this proposed project will further enhance the reliability and efficiency of the existing system. Karnedy pf. at 6; exh. VELCO/TK-7, at 15.

55. The Southern Windsor County 1997 Regional Plan discusses the importance of placing transmission lines and substations in areas that have been designated as desirable for growth. The plan also contains several goals and policies on electric system infrastructure. One policy is that "location and expansion of utilities and facilities should occur in areas best able to serve the public interest with the fewest negative side effects." Another is that "[m]ultipurpose use of existing utility corridors and placement of new lines or extensions in existing corridors is encouraged wherever possible." Karnedy pf. at 6-7; exh. VELCO/TK-8, at 27.

56. The proposed addition of equipment at VELCO's Coolidge Substation is consistent with the above policies because the proposed new facilities are to be added within existing VELCO property and easements, resulting in the capabilities of existing facilities being maximized. Karnedy pf. at 7.

Need For Present and Future Demand for Service

[30 V.S.A. § 248(b)(2)]

57. The proposed project meets the need for 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 58 through 83, below.

58. As a member of the New England Power Pool ("NEPOOL"), VELCO is required to keep its system in compliance with the reliability standards of NEPOOL and the Northeast Power Coordinating Council ("NPCC"). Unreliable operation of any part of the total NEPOOL interconnected system can cascade problems to neighbors. Therefore, common standards have been developed to preempt potential problems on any New England Participant's system, and the Revised NEPOOL Agreement requires that each transmission owning member design, build and operate its system such that it does not have adverse impact on its interconnected, neighboring transmission systems. Hinnens pf. at 6.

59. The regional reliability standards of NEPOOL and NPCC require bulk systems to be capable of sustaining any single, major contingency without the loss of any major portion of the interconnected bulk power system. The details are set forth in NEPOOL Planning Procedure No. 3 and 5.3. Hinnens pf. at 6; exhs. VELCO/RFH-2 and VELCO/RFH-3.

60. With current load growth rates in Vermont, particularly in Chittenden County,⁴ VELCO's system is in danger of becoming out of compliance with the above referenced regional

4. The number of hours Vermont is seeing higher summer peak loads has been steadily increasing (at a rate of approximately 2% annually) since 1993. Much of this is driven by Chittenden County's summer load growth which, at an annual rate of almost 4%, is double that of the rest of the state. See Docket No. 6252, Order of 10/8/99, at Findings 39-41; Docket No. 6473, Order of 4/11/01, at Finding 11.

reliability standards if the proposed RRRP system improvements are not undertaken. VELCO's loadflow analyses reveal that for certain first contingency failures, the existing system either suffers voltage collapse or causes thermal overloads on facilities in New Hampshire and Vermont. These analyses were performed in accordance with NEPOOL Planning Procedure 5.3. Hinnners pf. at 5, 9 - 11.

61. Specifically, the transmission system's performance was analyzed under a number of scenarios with and without the proposed RRRP in service and for selected single outage conditions. The most dramatic results -- voltage collapse -- occurred following the loss of the PV20 transmission line when the Highgate Converter is off. This means that without the RRRP, Highgate imports at some level must be maintained for reliability. The case did converge with the RRRP, but the results still revealed a slightly depressed 115 kV voltage profile and small overloads above LTE (Long Term Emergency) ratings on the Granite-Barre and West Rutland-Florence 115 kV line sections. Hinnners pf. at 10.

62. The biggest concern with respect to the Highgate Converter is a sustained outage. Such an outage could result from a catastrophic event, such as a fire in the thyristor valve hall. At least three of these valve hall fire events have occurred worldwide, in Brazil, India and California. Or an outage at Highgate could result from a sustained interruption of the Hydro Quebec contract that results, for example, from a failure of the Hydro Quebec transmission system, such as occurred during the winter of 1998. Hinnners pf. at 14.

63. While VELCO does not expect spontaneous equipment failure at Highgate, various major system component failures on or directly affecting the VELCO system (the 1994 loss of the PV20 to ice flows; the 1996 failure of the Highgate converter transformers; the 1998 loss of the Hydro Quebec system due to the ice storm; and the March 2000 failure of the Plattsburgh Phase Angle Regulator) demonstrate that such events can and do occur and that, if they do, they can place the Vermont transmission system in a very precarious position. Hinnners pf. at 14.

64. Unacceptable transmission system performance would also occur as a result of loss of the Coolidge Substation autotransformer. A loss of this transformer on the existing system results in thermal overloads on the 115 kV circuits from Keene (NH) to Monadnock (NH) to Bellows Falls to the Ascutney Tap. Under thermal overload conditions, should any of these line sections open,

the 230 MW loading on the PV20 transmission circuit would increase and likely cause the insertion of the OMS reactor at the Sandbar Substation so that flows over PV20 would be immediately reduced, creating the potential for yet more problems. Hinnners pf. at 11.

65. The loadflow analysis with the proposed RRRP in service showed no overloaded circuits plus a much lower loading (169 MW) on the PV20 circuit (a minimal 7 MW increase). Hinnners pf. at 11.

66. System performance was also analyzed following the loss of the Granite Substation autotransformer. While the system voltage profile under this situation was satisfactory without the proposed RRRP, the Coolidge Substation autotransformer was shown loaded up to its thermal rating when the PV20 is coincidentally loaded to 220 MW. Such a load on the PV20 line is likely to cause the OMS series reactor at Sandbar to be inserted into the system (see finding 64, above), further increasing the loading on the Coolidge Substation autotransformer. Hinnners pf. at 10.

67. With the proposed RRRP in service, loss of the Granite Substation autotransformer resulted in the Coolidge Substation autotransformer loading below its thermal rating and PV20 loaded at only 200 MW. Hinnners pf. at 10-11.

68. The unacceptable system performance results described above (without the proposed RRRP) occurred at a statewide summer load level of 1038 MW. The 1038 MW summer peak load level will be reached in 2004 at a growth rate of only 1.7 percent, which is actually slightly lower than the 2% per year statewide summer growth rate observed in the 1999 statewide load forecast used in PSB Docket 6252 (the Essex Substation FACTS installation). Hinnners pf. at 11-12.

69. Recent load growth and load projections reported to VELCO by Green Mountain Power Corporation ("GMP") and the City of Burlington Electric Department ("BED") for the Chittenden County area indicate that a two percent summer growth rate may be conservative. The recent GMP load growth projections were higher than the values predicted by the 1999 statewide forecast in Docket 6252. Hinnners pf. at 13.

70. The growth rate assumed for VELCO's contingency analyses is reasonable. Hinnners pf. at 13.

71. VELCO's analyses demonstrate that the RRRP is needed, it significantly enhances local reliability, and significantly diminishes reliance on transmission ties to New York State or local energy resources to maintain system reliability. Hinnners pf. at 11.

72. The Project will also give greater operating flexibility on the Plattsburgh, NY phase angle regulator ("PAR") and the PV 20 line, further improving system reliability. Hinnners pf. at 6.

73. In addition to enhanced reliability, the proposed RRRP will provide the following electric system benefits:

- significantly reduces power flow on the Coolidge 345/115 kV autotransformer;
- reduces power flow on the Granite Substation 230/115 kV autotransformer;
- reduces power flow on PV 20 line / increases PAR's ability to "retard" flow; and
- reduces net New England losses by 3.6 to 4.5 MW on peak.

Hinnners pf. at 15.

74. The loss benefit (reduced losses), resulting from implementing the proposed RRRP, should manifest itself throughout most of the annual load cycle. If priced at \$3000 to \$4000 per KW (of losses saved), the potential loss reductions create savings of from \$10.8M to \$18.0M, mostly outside Vermont, depending on how often the Highgate Converter runs and what happens to the price of electricity. Hinnners pf. at 15-16.

75. The potential power flow reduction on the Coolidge and Granite autotransformers, neither of which presently have spares, should extend the transformers' lives and minimize tap changer wear. In addition, the proposed RRRP improves voltage performance during Coolidge transformer maintenance or possible replacement, and reduces exposure to the possible need to run local, above clearing price generation after a major contingency. Hinnners pf. at 16.

76. Alternatives to the proposed RRRP that would increase system reliability to keep pace with load growth were considered by VELCO, but, with regard to supply side alternatives, nothing other than building new transmission lines or running generation met the need. VELCO is not aware of any plans for new generation additions within the timeframe needed to support demand. Hinnners pf. at 16.

77. The fastest growing load area in Vermont is centered in Chittenden County. Chittenden County has four external and two internal sources of power supply, some or all of which may be

in service at any one time depending on a host of factors. The external sources are 115 kV transmission lines from the four points of the compass. The internal sources are the McNeil plant in Burlington, and a composite of gas turbine and diesel generators scattered within Chittenden County at various sites. The internal sources, due to changing NEPOOL rules concerning congestion uplift, and because of their age and failure records, do not contribute to system reliability with nearly the same benefit as transmission lines to external sources do, so they are typically only utilized on peak. Nonetheless, as the peak grows and the number of hours at higher load levels expands, the utilization of these internal sources increases to meet the unchanging reliability need. Ultimately, all available resources will become fully utilized, and a supplemental addition to resources will have to be made to maintain reliability, absent further development of demand-side management and distributed utility planning alternatives. Hinnars pf. at 16-17.

78. The Essex FACTS device (See Docket No. 6252) and bus rebuild is one such supplemental addition to the Chittenden County resources. Its location right in the heart of the load pocket maximizes its effectiveness in mitigating contingency failure of any of the six existing sources that may be in service. However, because the FACTS device is only a VAR source and not a MW source, it can only supplement the supply of MVAR'S to Chittenden County and surrounding transmission during a contingency. Chittenden County's first need was a FACTS dynamic VAR source (provided by the Essex FACTS device), but as the load area continues to grow, its MW supply will need to be supplemented next. Hinnars pf. at 17-18.

79. The proposed RRRP essentially moves the 345 kV transmission source from the Coolidge Substation in Cavendish to West Rutland, 27 miles closer to the region where the load is growing. Since a major concern is the contingency involving collapse of the existing system resulting from loss of the PV20 line with the Highgate Converter out of service, it becomes critical to strengthen either the Granite or Coolidge source. Strengthening the Coolidge source (by electrically moving it to West Rutland) is what the proposed RRRP does. Hinnars pf. at 18.

80. An equivalent (to the proposed RRRP) strengthening of the Granite Substation source would require building a new 230 kV line from the existing Granite Substation closer to Essex at an approximate estimated cost of at least \$35M. On the other hand, the proposed strengthening

of the Coolidge source by extending it to West Rutland requires only re-energizing an existing 345 kV line already built for this purpose in 1982 and 1983, at a total cost of approximately \$13M. Both alternatives involve substation upgrades, new transformers, etc., so in that regard they are relatively equivalent. Hinnens pf. at 17-18.

81. A spare 345/115 kV transformer at Coolidge Substation was considered as an alternative to the proposed RRRP, but the transformer alone would be insufficient to meet system reliability needs. For reasons having to do with the age of the existing Coolidge Substation transformer (26 years), lack of regional transformer spares, plus difficulty in maintaining reliable system operation and the inability to do other system maintenance without a Coolidge transformer in service, VELCO has, in fact, ordered a spare 345/115 kV transformer which could be used at either Coolidge or Vermont Yankee (the VY transformer is 30 years old). It is important to have a spare transformer that can be used at either of these locations. Hinnens pf. at 18.

82. VELCO has incorporated the above mentioned spare transformer into the design of the West Rutland Substation portion of the proposed RRRP. With the proposed RRRP, the more desirable location for instantaneous isolation of the load onto a second 345/115 transformer after the failure of a first transformer is at West Rutland, because it is closer to the load centers in Rutland and Chittenden County than is the Coolidge Substation. The 180/240/300/336 MVA capacity of each proposed West Rutland Substation transformer is such that one transformer can carry the entire West Rutland load and part of the Coolidge load at the highest rating, if the other West Rutland transformer must be moved to Coolidge following a failure. Hinnens pf. at 19.

83. Another advantage of having the proposed spare transformer in service at West Rutland as part of the proposed RRRP, is that its cost will be supported by NEPOOL. NEPOOL has already determined, pursuant to section 15.5 of the Restated NEPOOL Agreement, that the proposed RRRP is needed for regional reliability. One consequence of that determination is that the proposed project's costs will be "regionalized" or "socialized" as PTF (Pool Transmission Facilities). Vermont's load share within the Pool will determine its share of the proposed project's costs. Vermont's average load share for the year 2000 was 4.2%. Using this value, Vermont's share of the total (\$13M) proposed project's cost will be approximately \$546,000, and its share of the proposed spare transformer costs will be approximately \$105,000. Thus, Vermont's share of

the total proposed project costs of the RRRP will be less than one quarter of the cost of a spare transformer (\$2.5M) to back-up the aging Coolidge and Vermont Yankee 345/115 kV transformers (age 26/30 years, respectively). On the other hand, without the proposed RRRP, the full cost of a spare Coolidge transformer (\$2.5M) would fall to VELCO. Hinnners pf. at 7, 19.

84. In the Stipulation, VELCO has agreed to a detailed least-cost planning provision regarding the future West Rutland to Williston upgrade project as defined in the Stipulation, which like the proposed RRRP is part of a larger VELCO plan to address load growth issues. Exh. Joint-1 at ¶ 3; Hinnners pf. at 21.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

85. The proposed project is necessary to ensure stability and reliability, and will not adversely affect system stability and reliability. This finding is supported by findings 58 through 83, above, and finding 86, below.

86. The proposed project was designed so that system stability will not be compromised. Hinnners pf. at 18.

Economic Benefit to the State

[30 V.S.A. § 248(b)(4)]

87. The proposed project will result in an economic benefit to the State. This finding is supported by finding 86, and findings 88 through 93, below.

88. The approximate total cost of the proposed project is \$13,000,000. A breakdown of the costs is as follows:

Coolidge 345 kV - \$2,550,000

- \$ 225,000 Engineering and Design
- \$1,885,000 Equipment and Materials
- \$ 440,000 Labor

Coolidge 115 kV - \$900,000

- \$ 90,000 Engineering and Design
- \$610,000 Equipment and Materials
- \$200,000 Labor

West Rutland 345 kV - \$7,000,000

- \$ 250,000 Engineering and Design
- \$6,150,000 Equipment and Materials
- \$ 600,000 Labor

West Rutland 115 kV - \$2,000,000

- \$ 225,000 Engineering and Design
- \$1,300,000 Equipment and Materials
- \$ 475,000 Labor

115 kV Line - \$225,000

- \$ 15,000 Engineering and Design
- \$180,000 Equipment and Materials
- \$ 30,000 Labor

Other Substation Protections Modifications - \$325,000

Johnson pf. at 11-12.

89. Because NEPOOL has determined that the total proposed project costs will be regionalized as Pool Transmission Facilities ("PTF"), Vermont's share of the proposed project costs will be limited to Vermont's load share within the Pool (4.2% in 2000). Using this value, Vermont's share of the estimated total proposed project's cost (\$13M) will be approximately \$546,000. This amount is less than one quarter of the cost of a spare transformer to back-up the aging Coolidge and Vermont Yankee 345/115 kV transformers (age 26/30 years, respectively).

Hinners pf. at 7.

90. In addition, the estimated loss savings from the proposed project are between \$10.8M to \$18M (mostly outside Vermont), or 83 to 138 percent of the estimated total proposed project costs. Hinnners pf. at 15-16.

91. On a per-kilowatt-hour basis, the estimated cost of the proposed project is \$0.00043 per KWH, based on the year 2000 energy use. If Vermont ratepayers alone had to pay the entire estimated cost of the proposed project, a customer with 600 kWh of usage per month would pay about 26 cents per month, or about \$3.10 per year. Hinnners pf. at 22.

92. Since the proposed project costs will be regionalized throughout New England, the 600 kWh customer will actually pay about one penny per month for the proposed project. Hinnners pf. at 22.

93. The proposed project will result in increased property tax revenues to the Towns of West Rutland and Cavendish. Hinnners pf. at 22.

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

Health and Safety

[30 V.S.A. § 248(b)(5)]

94. The project as proposed will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and the public health and safety. This finding is supported by findings 95 through 165, below, which are based on the criteria specified in 10 V.S.A. §§ 1424a(d) and 6086(a)(1) through (8), 8(A) and (9)(K).

Outstanding Resource Waters

[10 V.S.A. § 1424a(d)]

95. The proposed project as built does not involve a facility affecting or located on any segment of water designated "outstanding resource waters." Karnedy pf. at 9; exh. VELCO/TK-12.

Water and Air Pollution

[10 V.S.A. § 6086(a)(1)]

96. The project as proposed will not result in undue water or air pollution. This finding is supported by findings 97 through 127, below.

Water Pollution

97. There are two streams in the vicinity of the existing West Rutland Substation. One small stream flows around the substation into a man-made ditch that was constructed by VELCO in 1983 at the time the 345 kV yard at the West Rutland Substation was graded. The other stream crosses the existing transmission lines corridor approximately 3100 feet south of the substation. These streams meet the definition of headwaters because of their steep slopes and small drainage areas. Karnedy pf. at 11.

98. The small stream near the West Rutland Substation will experience no change in water quality because there will be no activity related to the proposed project that will change the stream in any way. The water quality of the stream that crosses the transmission corridor south of the substation will be positively impacted; it will be improved as VELCO will continue to maintain good vegetative cover on its banks and will construct a culvert under the existing access road crossing to prevent erosion. Although VELCO's proposed new construction in the area does not require the construction of a culvert, the addition of the culvert is a condition requested by the ANR due to the current use of VELCO's access road as a snowmobile trail. Karnedy pf. at 11-12; exh. VELCO/TK-10.

99. In addition, to protect the integrity of this stream, VELCO will maintain the following buffer zones⁵: (a) one zone of at least one hundred feet in width on each side of the stream that crosses beneath the transmission lines running in a southerly direction from the West Rutland substation, at a location approximately 3100 south of that substation; (b) two additional zones, each at least one hundred feet in width, one being beneath the above-referenced transmission lines and approximately 5300 feet south of the substation, and the other being approximately 1100 feet west of the 115 kV tap line. Karnedy pf. at 12; exh. Joint-1, at para. 6.

100. Because there will be no change to this stream, a Stream Alteration Permit will not be required. Karnedy pf. at 12.

101. During the proposed construction, VELCO will require the contractor to install and

5. For purposes of this finding, "buffer zone" means an area within which no new structures will be erected and within which vegetation will be permitted to grow to a height of at least twelve feet.

maintain the erosion control measures outlined in "VELCO Rutland Regional Reliability Project Sedimentation and Erosion Control plan," dated June 13, 2001 and that comply with the Vermont Handbook for Soil Erosion and Sediment Control on Construction Sites. *See* findings under Soil Erosion, 10 V.S.A. § 6086(a)(4), below.

Air Pollution

102. The proposed project will not result in undue air pollution. This finding is supported by findings 103 through 106, below.

103. There will be no air emissions resulting from this project. Maintenance traffic on the access road will be infrequent, and any dust generation caused by vehicles will be minimal. Dust from vehicular traffic will be controlled during construction, as necessary, by the application of water or calcium chloride. Karnedy pf. at 9-10.

104. During the construction phase, no brush will be burned. The contractor will be required to chip all small brush and trees, and to windrow all larger material for the property owners' use, if they so choose. Karnedy pf. at 10.

105. After completion of the proposed project, there will be no potential for air pollution, with one exception. New sulfur hexafluoride (SF₆) "gas" breakers will be installed at both the West Rutland and Coolidge substations. These are the same type of breakers that the Board recently authorized VELCO to install at the Essex Substation (See Docket No. 6252). Six new 115 kV gas breakers are proposed to be installed at the West Rutland Substation, each containing 55 pounds of SF₆. At the Coolidge Substation, three new 345 kV gas breakers are proposed to be installed, each containing 365 pounds of SF₆. Karnedy pf. at 10.

106. One of the benefits of using the above type of breaker is the reduction of mineral oil-filled substation equipment at the site. Although SF₆ is a "greenhouse gas," it is not emitted into the air as part of the proper operation of the breakers. The possibility of a catastrophic failure that could result in a release of this gas is minimal. Additionally, VELCO carefully monitors circuit breakers for leakage prior to installation and during time of service. When maintenance is done on this type of breaker, the gas is recycled with a gas cart to prevent emissions. Karnedy pf. at 10.

Noise

107. The proposed project will not result in undue adverse noise pollution. This finding is supported by findings 108 and 109, below.

108. No noise-producing equipment will be added to the Coolidge Substation. Karnedy pf. at 11.

109. The two 345 kV/115 kV tap-changing transformers that are proposed to be installed at the West Rutland Substation will increase noise levels at that location. VELCO has instructed transformer manufacturers to provide noise data detail in their bids to VELCO. VELCO will ensure that the noise levels meet the required standards (NEMA Standard TR-1 and ANSI C57.12.90-1993) in addition to Environmental Protection Agency (EPA) recommended guidelines. Further, the West Rutland Substation is located in a remote area, with the nearest residence located approximately 1150 feet away. Therefore, any noise resulting from this proposed new equipment should not have an undue adverse effect. Karnedy pf. at 11.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

110. The proposed project will not have an undue adverse effect on any headwaters of the state. Findings 97 through 101, above.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

111. Sewage systems, consisting of septic tanks and leach fields, currently exist at both the West Rutland and Coolidge Substations. Neither facility is manned, nor will it be, so there will continue to be infrequent use of the systems. Karnedy pf. at 13.

112. There will be no changes to the septic system at the West Rutland Substation. The proposed new control building to be constructed at the Coolidge Substation will require construction of a new septic system. On July 13, 2001, VELCO filed a copy of a Wastewater Disposal Permit (WW-2-1319) for this proposed construction at the Coolidge Substation, issued on July 6, 2001, by the Water Supply/Wastewater Management Division of the ANR. Karnedy pf. at 13; exh. VELCO/TK-18.

113. The existing drainage system at the Coolidge Substation will be sufficient to meet stormwater runoff needs, as there will be no changes in grading at the Coolidge Substation. Although new concrete foundations are proposed to be constructed to hold the proposed new substation equipment, the increase in impervious area will be less than 1%. Karnedy pf. at 13.

114. At the West Rutland Substation, preliminary grading of the proposed new 345 kV-substation yard was completed in the early 1980's. Some additional cuts will be required for laying the appropriate amount of crushed stone in the yard. A drainage ditch that was constructed at the time of the initial grading of the site in the 1980's will be reinforced to accommodate the proposed changes to the site and to serve its intended purpose. Karnedy pf. at 13-14.

115. The construction of the proposed new 115 kV tap line at West Rutland will not result in any significant increases in stormwater flow. Since the proposed 115 kV line will be constructed in a corridor with two other existing VELCO transmission lines, the access to the proposed line is already established. Karnedy pf. at 14.

116. No new roads will be constructed. Although tree clearing will be required, ground layer plants, such as grasses, sedges, and ferns, and understory plants (shrubs) will take over, thus not increasing and, quite possibly, decreasing, the overland flow rate. Karnedy pf. at 14; exh. VELCO/TK-11, page 4.

117. The proposed new substation transformers at West Rutland will be mounted on concrete foundations with integral oil retention sufficient to contain the total transformer oil volume. The proposed transformer foundation design will follow ANSI/IEEE Standard 980, "IEEE Guide for Containment and Control of Oil Spills in Substations." This meets VELCO's current standard practice for environmental protection, and exceeds State and Federal requirements. Karnedy pf. at 14.

118. VELCO maintains a Spill Prevention Control and Countermeasures Plan as required by Federal Regulations. In addition to the proposed containment, the new transformers will have low oil alarms, which should minimize any leakage amounts. Karnedy pf. at 14.

119. All construction debris will be disposed of at an approved landfill. Excavated material, such as soil and stones, will be spread in a designated location at the 100-acre West Rutland site. If excavated quantities are too great, they will be disposed of off-site. There will be no negative

effect on the stability of the roadway, existing drainage patterns, or environmentally sensitive areas due to excavation or fill. Karnedy pf. at 15.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

120. Use of water at both the West Rutland and Coolidge Substations will be consistent with historic operation. The plumbing fixtures at the proposed new building at the Coolidge Substation will use low-flow water conserving devices. Karnedy pf. at 15.

Floodways

[10 V.S.A. § 6086(a)(1)(D)]

121. No portion of the proposed project is located within a 100-year flood boundary or floodplain. Karnedy pf. at 15; exh. VELCO/TK-13.

Streams

[10 V.S.A. § 6086(a)(1)(E)]

122. There are two streams in the vicinity of the proposed project, and VELCO has undertaken measures such that the proposed project will not have an undue adverse effect on these streams. Findings 91 through 95, above.

Shorelines

[10 V.S.A. § 6086(a)(1)(F)]

123. There are no shorelines located in the vicinity of the proposed project. Karnedy pf. at 15.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

124. Since no changes at the Coolidge Substation will occur outside the existing substation fence, there will be no wetlands issues associated with that site. Karnedy pf. at 16.

125. At the West Rutland site, there is a narrow strip of wetlands along the stream that crosses the existing transmission line corridor. This wetland is contiguous to a state designated

Class II wetland, and therefore, on July 23, 2001, VELCO obtained a Conditional Use Determination ("CUD") Permit from the Water Quality Division of ANR. This permit is for the above-described cutting of forest trees in the buffer zone of the wetland and upgrading the stream crossing. VELCO obtained a permit from the Army Corps of Engineers on July 9, 2001. Karnedy pf. at 16-17; exh. Joint-1, at para. 6; exh. VELCO/TK-19; CUD filed by VELCO on July 26, 2001.

126. In addition, VELCO has agreed to maintain a good vegetative cover of shrubs and trees for 50 feet on either side of the stream crossing and, as noted in Finding 98, above, to construct a culvert under the existing access road to prevent erosion. Karnedy pf. at 17.

Air Pollution

[10 V.S.A. § 6086(a)(1)]

127. The proposed project will not result in unreasonable air pollution. This finding is supported by findings 102 through 109, above.

Sufficiency of Water And Burden on Existing Water Supply

[10 V.S.A. § 6086(a)(2)&(3)]

128. There will be no burden on existing water supplies because this proposed project will not change water use at either of the subject substations. Karnedy pf. at 18.

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

129. The proposed project will not result in unreasonable soil erosion or reduce the ability of the land to hold water. This finding is supported by findings 130 through 132, below.

130. The Coolidge Substation will not require any new grading to implement the proposed project. Any erosion possible from the proposed project work at Coolidge would be minor. Erosion control during the proposed construction at the West Rutland Substation will involve lining the existing drainage ditch with straw bales and filter fabric. Karnedy pf. at 18.

131. The potential for erosion during the construction of the proposed new 115 kV line at West Rutland will also be minimal. The only disturbance of soil will be from the excavation of holes to set poles. The soil will be back-filled in the same area immediately. VELCO will clear

trees from the extra 75 feet of corridor width needed to accommodate the proposed new line. Low growing species will take over in this newly cleared area which will result in water moving more slowly to minimize any potential for soil erosion. Karnedy pf. at 18.

132. VELCO has prepared an erosion control plan identified as VELCO "Rutland Regional Reliability Project Sedimentation and Erosion Control Plan," dated June 13, 2001, and will require the contractor to install and maintain control measures accordingly. In addition, VELCO will require the contractor to install and maintain the erosion control measures that comply with the Vermont Handbook for Soil Erosion and Sediment Control of Construction Sites. Karnedy pf. at 18; exh. VELCO/TK-20.

Traffic

[10 V.S.A. § 6086(a)(5)]

133. The proposed project will not cause unreasonable congestion or unsafe conditions with respect to transportation systems. Karnedy pf. at 19.

134. Traffic congestion, if any, will be kept to a minimum since most of the proposed construction will take place at existing substation sites that are in rural areas and removed from town streets and state highways. Construction vehicles should be able to park at the existing parking lots adjacent to the subject substation sites. There will only be minimal traffic to the subject substations for maintenance efforts once the project is completed. Karnedy pf. at 19.

Educational Services

[10 V.S.A. § 6086(a)(6)]

135. There will be no impact on educational services, as the proposed project will not bring additional students into the area or otherwise impair the ability of the municipalities involved to provide educational services. Karnedy pf. at 19.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

136. The proposed project will result in increased taxable property and tax revenue to the Towns of West Rutland, Cavendish and Proctor. Karnedy pf. at 19.

137. The proposed project will not place an unreasonable burden on the ability of the involved municipalities to provide municipal services. The project will not create an additional burden on

local fire departments or local law enforcement officers. The project will not generate significant solid waste. Any solid waste that is generated will be transported to state approved landfills.

Karnedy pf. at 19.

**Aesthetics, Historic Sites or Rare
And Irreplaceable Natural Areas**

[10 V.S.A. § 6086(a)(8)]

138. The proposed project will not have an undue adverse effect on the scenic or natural beauty of the area, or upon aesthetics, historic sites or rare and irreplaceable natural areas. This finding is supported by findings 139 through 153, below.

139. There will be no impact to historic sites at either subject substation, because all work is being done on previously graded sites and, therefore, previously disturbed soils. The corridor of the proposed new 1.18 mile 115 kV transmission line out of the West Rutland Substation is the only portion of the proposed RRRP that involves areas of new soil disturbance. The impact on historic sites will not be undue, as supported by findings 140 through 144 below. Karnedy pf. at 7.

140. VELCO's archaeological consultant prepared a Phase 1A Archaeological Site Sensitivity Study of the proposed project area in West Rutland. All work was conducted in accordance with the State of Vermont's Guidelines for Archaeological Studies. The report identifies three historic sites along the route of the proposed new 1.18 mile, 115 kV line at West Rutland. Karnedy pf. at 7; exh. VELCO/TK-9.

141. Two of the historic sites are classified as European American sites, and are determined to be stone foundations. To avoid these foundations, the proposed new 115 kV line will be overbuilt along the existing 115 kV-tap line for the first five structures out of the West Rutland Substation. There will be no construction within the foundation boundaries. Karnedy pf. at 7; exh. VELCO/TK-9.

142. The third identified historic site is a Native American quarry site whose edge is along the centerline of the proposed line for a distance of approximately 430 feet. To avoid construction in this area, the proposed new transmission structures will be located at either end of the site. Karnedy pf. at 7-8; exh. VELCO/TK-10.

143. The proposed new 115 kV line requires that the existing transmission corridor be cleared another 75 feet, into the aforementioned Native American quarry site. The impact on the quarry site will not be undue. The trees will be hand-cut using chainsaws. Larger items will be windrowed and smaller brush will be chipped and left onsite. The only vehicular activity will be to bring the chipper onsite. There will be no soil disturbance from the felling of these trees and, therefore, no impact to the historic site. Karnedy pf. at 8.

144. By letter dated April 6, 2001, the Division of Historic Preservation reported its determination that the proposed project will not have an undue adverse effect on any historic or archeological resources as long as the proposed project is constructed and maintained in accordance with certain conditions specified by the Division. Exh. VELCO/TK-18; exh. Joint-1, ¶ 5 and Attachment B.

145. VELCO's aesthetic consultant provided an aesthetic analysis of the proposed project and determined that the aesthetic exposure of the proposed new facilities will not be of visual significance. Boyle pf. at 4-7.

146. The location of the proposed 115 kV tap line in West Rutland is in the so-called Whipple Hollow area. Whipple Hollow runs north from West Rutland to Florence, and is traversed on the west side of the valley floor by Whipple Hollow Road, which is the only road in the area with homes. The proposed project is located at the southern end of the valley on the eastern slope. A few farms on the north and a cluster of suburban residences on the south end characterize the valley. There is a cluster of 6-8 homes on Whipple Hollow Road opposite the West Rutland Substation and about 0.84 miles away. Boyle pf. at 3; exh. VELCO/TJB-2.

147. The exposure of the proposed new 115 kV tap line will not be of visual significance. The proposed line lies within an existing transmission corridor and substation that have been in this location for many years. The resulting added width and limited clearing will not be significant when viewed from Whipple Hollow Road, or the residences along the road. The existing and proposed line's visibility from most vantage points south of Pleasant Street is obscured by existing vegetation lower on the hill or by foreground vegetation in the valley floor. Boyle pf. at 3; exh. VELCO/Boyle-3B-3H.

148. The proposal widens the existing 250 feet of cleared right-of-way by another 75 feet on

the down slope side of the corridor. The approximately 75 feet of additional clearing required for the wooded portions of the corridor extend down slope below the corridor and partially screen the west sloping corridor from across the valley to the west. Even with a cross slope, at a gradient of 10-15%, the newly constructed proposed line will not be visible from the west where the woods will be cleared. Other portions of the proposed new 115 kV line, as well as portions of the existing corridor, will continue to be visible from various locations across the valley on Whipple Hollow Road where vegetation does not currently exist. Boyle pf. at 2-3.

149. The addition of the proposed 345 kV structures in the West Rutland Substation will not create a significant visual impact. These structures are planned to be located on the east side of the existing substation, and since all existing and future land development is most likely to occur to the west, new added components to the existing yard would only be seen through the existing structures. Such visibility is not likely because of screening vegetation planted to the west of the substation during its initial construction in the 1970's. The West Rutland Substation is situated low in the landscape and generally only the upper part of the substation's structures or transmission poles can be seen. Boyle pf. at 5.

150. As noted previously in Finding 30, above, VELCO will install additional plantings for better screening at the West Rutland Substation. Exh. Joint-1 at ¶ 4a and Attachment A.

151. At the Coolidge Substation, the location of the proposed equipment is along Nelson Road on the west. The new control building is proposed to be constructed on the southeast corner of the site, and it is to be painted light gray, consistent with the other existing and proposed structures within the yard. Boyle pf. at 6.

152. Although the screen planting of pines that was placed in the 1970's around the Coolidge Substation does a generally good job of screening, some holes exist in that screen which need to be plugged. exh. Joint-1; Boyle pf. at 6.

153. Some clearing was recently conducted along the north/south hedgerow near the Coolidge Substation to protect an existing Central Vermont Public Service Corporation distribution line. Although some deciduous trees and brush remain and provide a summer screen, it would be desirable to provide a winter screen, as well, with proposed new infill planting along Nelson Road. The proposed planting plan includes twenty 5-6' spruce trees at 10-12' on center

between the existing large pines, a hedgerow along the south line of the subyard to screen the substation from the south, plus an additional twenty 5-6' spruce trees to the south. VELCO has stipulated to complete this proposed planting work. Boyle pf. at 6; exh. VELCO/TJB-4; exh. Joint-1 at ¶ 4b.

Discussion

Based on the above findings, the Board finds that this proposed project will not have an undue adverse effect on the aesthetics or scenic and natural beauty of the area. In reaching this conclusion, the Board has relied upon the Environmental Board's methodology for determination of "undue" adverse effects on aesthetics and scenic and natural beauty as outlined in the so-called Quechee Lakes decision. Quechee Lakes Corporation, #3W0411-EB and 3W0439-EB, dated January 13, 1986.

As required by this decision, it is first appropriate to determine if the impact of the proposed project will be adverse. The proposed project would have an adverse impact on the aesthetics of the area if its design is out of context or not in harmony with the area in which it is located. If it is found that the impact would be adverse, it is then necessary to determine that such an impact would be "undue". Such a finding would be required if the proposed project violates a clear written community standard intended to preserve the aesthetics or scenic beauty of the area, if it would offend the sensibilities of the average person, or if generally available mitigating steps will not be taken to improve the harmony of the proposed project with its surroundings.

Given the facts of this case, it would be difficult to find that this proposed project would have an adverse effect on the aesthetics of the area. The proposed project's aesthetic impact is consistent with the industrial character of existing electrical transmission facilities. In the case of the one mile of proposed new 115 kV transmission line, such a facility is an expansion of an existing corridor within an existing right-of-way. The corridor is only partially visible from limited locations in a rural valley. Existing vegetation that provides a screen of the corridor from Whipple Hollow Road will still be effective, even with the removal of an additional 75 feet of vegetation from part of the western side of the corridor. The expansion of the West Rutland Substation is to the east of the existing substation, against an uninhabited steep slope and away from potential viewers. As for the Coolidge Substation, the proposed construction adds a small

electrical component within the fenced yard of an existing large substation.

Even if the Board considered this proposal to be an adverse impact, it would not be unduly adverse. Regarding the three prongs of this part of the "Quechee test": first, there is no clear written community standard that identifies the valley or landscape in which the proposed project will be located as unique or scenic, and there are no clear standards in regard to transmission facilities in relation to a scenic resource. Second, this proposed project will not be "shocking or offensive" to the average person, particularly since the new facilities will be installed in areas with existing concentrations of electric transmission facilities and equipment. Finally, the proposed project is adequately mitigated by the screen planting which is proposed to enhance and supplement existing screen planting that was part of the original construction in the 1970's. These proposed plantings will further screen the existing facility.

Necessary Wildlife Habitat and
Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

154. The proposed project will not result in an undue adverse effect on rare and irreplaceable natural areas or necessary wildlife, endangered species or primary agricultural soils. This finding is supported by findings 155 through 162, below.

155. The proposed project was analyzed for impact on wetlands, wildlife habitat, rare and irreplaceable natural areas, rare, threatened, and endangered species, and primary agricultural soils. No undue adverse impacts associated with the proposed RRRP were identified. Karnedy pf. at 9; exh. VELCO/TK-11.

156. The geographic areas involved within the proposed project do not constitute rare and irreplaceable natural areas. No rare animal species were identified within the proposed project areas. Karnedy pf. at 11; exh. VELCO/TK-11.

157. Three types of rare plants were encountered in the vicinity of the proposed project. These species are not located in areas planned for construction, but will be flagged to be sure that they are avoided during construction of the proposed project. Karnedy pf. at 11.

158. A letter dated 2/9/01 from the Nongame Natural Heritage Program states that: "A search of our database reveals no known occurrences of significant natural communities or rare,

threatened, or endangered animals or plants at this site." Karnedy pf. at 11; exh. VELCO/TK-15.

159. The Vermont Department of Fish and Wildlife has stated that, from the standpoint of deer wintering areas, it will view the proposed project favorably if the following conditions are met: quantify the amount of softwood cover along the proposed newly widened corridor; use manual vegetation management practices along this corridor segment; allow a few specified areas to grow to heights conducive to wildlife movement across the subject corridor; and promote the growth of some existing apple trees in the subject corridor. Karnedy pf. at 21; exh. VELCO/TK-16.

160. VELCO has agreed to meet the requests of the Department of Fish and Wildlife. VELCO's vegetation control methods currently encourage saving low growing trees such as apple trees, since they do not usually grow to be a clearance problem. VELCO's current vegetation control practices focus on manual methods of control (e.g., chainsaws, brushsaws, back-pack hand-sprayers) that target the removal of specific tall growing tree species. Karnedy pf. at 21.

161. There are several areas on the existing VELCO system designated as wildlife crossings, and VELCO personnel and contractors are familiar with vegetation control procedures that promote their existence. One of the subject deer crossings is by the aforementioned stream where a 100-foot vegetation buffer will be left on either side of the stream. Karnedy pf. at 21.

162. Based on an analysis summarizing the soil types in the area, there is one area of soil that is considered as having "good" agricultural potential and information has been provided to the Department of Agriculture for a primary agricultural soil determination. VELCO will design its proposed line giving consideration to any recommendations from the Department of Agriculture. Karnedy pf. at 22; exh. VELCO/TK-11; exh. VELCO/TK-17.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

163. The proposed project is not located near any public resource and, consequently, will not have any negative effects on public resources. However, by improving the reliability of electric service to the area, the proposed project will benefit any such public investments. The proposed improvement of existing facilities will increase the reliability of electric service to Vermont utilities and its customers. Karnedy pf. at 22.

Public Health and Safety

[30 V.S.A. § 248(b)(5)]

164. The proposed project will not have an adverse effects on the health, safety, or welfare of the public or adjoining landowners. This finding is supported by finding 165, below.

165. All VELCO electrical facilities, including the proposed RRRP, are designed and constructed in accordance with the current National Electrical Safety Code (NESC, ANSI Std. C2). In many cases, VELCO applies a more strict standard that more specifically addresses the environment in which a given system is placed. All appropriate safety considerations were incorporated into the initial design of the existing Coolidge – West Rutland high voltage transmission line to allow its operation at 345 kV. Karnedy pf. at 8.

Compliance with IRP

[30 V.S.A. § 248(b)(6)]

166. As part of a non-precedential Stipulation, the DPS and VELCO have agreed that the proposed project meets the criteria to receive a CPG, provided in relevant part that VELCO complies with the least-cost planning provision contained in the Stipulation regarding the future West Rutland to Williston upgrade as defined in the Stipulation. Exh. Joint-1.

Compliance With Electric Energy Plan

[30 V.S.A. § 248(b)(7)]

167. The DPS determined, in a letter dated May 29, 2001, that the proposed RRRP is consistent with the Vermont 20-Year Electric Plan, in accordance with 30 V.S.A. § 202(f), provided the proposed project is constructed as described by VELCO and provided that VELCO complies with the terms of the Stipulation between the DPS and VELCO in this matter. Exh. DPS-1.

Outstanding Water Resources

[30 V.S.A. § 248(b)(8)]

168. No waters of the state that have been designated as Outstanding Resource Waters will be affected by the proposed project. Finding 95, above.

Existing Transmission Facilities

[30 V.S.A. § 248(b)(10)]

169. This proposed project will have no adverse affect on Vermont customers or utilities. Findings 57 through 86, above.

III. CONCLUSION

Based upon all the above evidence, the Rutland Regional Reliability Project:

- (a) 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, and the recommendations of the municipal legislative bodies;
- (b) is required to meet the need for 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 land management measures;
- (c) will not adversely affect system stability and reliability;
- (d) will result in an economic benefit to the state and its residents;
- (e) will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment and the public health and safety, with due consideration having been given to the criteria specified in 10 V.S.A. § 1424a(d) and § 6086(a)(1) through (8) and (9)(K);
- (f) is consistent with the principles of least-cost integrated planning;
- (g) is in compliance with the electric energy plan approved by the DPS under § 202 of Title 30 V.S.A.;
- (h) does not involve a facility affecting or located on any segment of the waters of the State that has been designated as outstanding resource waters by the Water Resources Board; and
- (i) can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers.

To the extent these findings are inconsistent with any proposed findings, such proposed findings are denied.

The parties have waived the opportunity to comment on this Proposal for Decision in accordance with 3 V.S.A. § 811.

Dated at Montpelier, Vermont, this 1st day of August, 2001.

s/Wayne L. Foster

Wayne L. Foster
Hearing Officer

IV. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that:

1. The construction of transmission facilities at Vermont Electric Power Company, Inc's. existing West Rutland and Coolidge Substations, in order to reliably interconnect and operate the existing 27.4 mile long Coolidge to West Rutland transmission line at 345 kV, plus the construction of 1.18 miles of 115 kV transmission line from the existing West Rutland Substation and parallel to the existing 115 kV line, in accordance with the evidence and plans submitted in this proceeding, will promote the general 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.

2. The Stipulation, filed by VELCO and the DPS on May 10, 2001, is accepted and approved. Compliance with all terms of the Stipulation is required; however, noncompliance with paragraphs 3 and 7 of the Stipulation shall not constitute grounds for revocation of the CPG issued herewith.

Dated at Montpelier, Vermont, this 1st day of August, 2001.

s/Michael H. Dworkin) PUBLIC SERVICE
)
s/David C. Coen) BOARD
)
s/John D. Burke) OF VERMONT

OFFICE OF THE CLERK

FILED: August 1, 2001

ATTEST: s/Susan M. Hudson

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 mail) of any technical 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.