

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 7433

Petition of Green Mountain Power Corporation)
for a Certificate of Public Good, pursuant to)
30 V.S.A. § 248(j), for authority to make)
changes at its Vergennes Substation #9)
necessitated by Vermont Electric Power)
Company, Inc's. Northwest Reliability Project)

Order entered: 8/27/2008

I. INTRODUCTION

This case involves a petition filed by Green Mountain Power Corporation ("GMP") on February 20, 2008, requesting a certificate of public good under 30 V.S.A. § 248(j) to make changes at its Vergennes Substation #9 necessitated by Vermont Electric Power Company, Inc's. ("VELCO's") Northwest Reliability Project ("NRP"). GMP submitted prefiled testimony, proposed findings, and a proposed order pursuant to the requirements of 30 V.S.A. § 248(j).

After review of the original petition, the Clerk of the Public Service Board ("Board") sent a letter to GMP on March 3, 2008, stating that additional information was needed before the petition could be processed. The Board received supplemental testimony from GMP on April 11, 2008, and the petition was determined to be complete at that time.

Notice of the filing was sent on May 23, 2008, to all entities specified in 30 V.S.A. § 248(a)(4)(c) and all other interested parties. The notice stated that any party wishing to submit comments as to whether the petition raises a significant issue with respect to the substantive criteria of 30 V.S.A. § 248 needed to file comments with the Board on or before June 26, 2008. A similar notice of the filing was published in the *Addison County Independent* on May 29 and June 5, 2008.

The only comment received was from the Vermont Department of Public Service ("DPS"), filed on June 26, 2008, stating that it does not believe that the petition raises a significant issue with respect to the criteria of Section 248 and has no objection to the issuance of a certificate of public good without further investigation or hearing.

The Board has determined that the proposed construction will be of limited size and scope and that the petition has effectively addressed the issues raised with respect to the substantive criteria of 30 V.S.A. § 248. Consequently, we find that the procedures authorized by Section 248(j) are sufficient to satisfy the public interest, and no hearings are required.

In Docket 6860, the Board authorized VELCO to construct the NRP, including the removal of the existing GMP 46 kV line from New Haven to Vergennes. Docket 6860, Order of 1/28/05 at 189. The Board also approved a new feed to be built from the VELCO Vergennes substation to the City of Vergennes at a voltage of 34.5 kV. *Id.* at 191. GMP's Vergennes Substation #9 is equipped for the existing 46 kV transmission line. The substation modifications needed to accommodate the new 34.5 kV line are the subject of this Order.

II. FINDINGS

1. GMP is a company subject to the Board's jurisdiction, as defined in 30 V.S.A. § 201.
2. In addition to removal of all 46 kV equipment at the substation, the proposed project includes replacing the 10MVA transformer with a 14MVA transformer. Nadeau pf. at 2.
3. The substation is located adjacent to the Otter Creek in Vergennes, Vermont, alongside GMP's Vergennes Federal Energy Regulatory Commission ("FERC")-licensed hydroelectric generating plant. The substation is currently fed by three sources; a 46 kV transmission line from New Haven, a 34.5 kV transmission line from the Queen City substation in South Burlington, and a 34.4 kV transmission line from the Vergennes hydroelectric generating plant located approximately 50 feet from the substation. There are currently two transformers in the substation: (1) a 46 kV/34.5 kV autotransformer; and (2) a 46 kV/12.47 kV step-down transformer rated at 10.5 MVA. Three 12 kV circuits exit the substation, feeding the City of Vergennes and parts of Ferrisburg, Addison and Panton. Nadeau pf. at 2; GMP-PN Exh. A.

4. The 46 kV-rated components at the substation to be removed include the existing 46 kV/34.5 kV auto-transformer, which will not be replaced, and the 46 kV/12.47 kV-rated 10.5 MVA transformer. GMP is proposing to replace the 10.5 MVA transformer with a 34.5 kV/12.47 kV-rated 14 MVA transformer. In addition, the available fault current at the substation will increase beyond the ratings of the existing breakers, requiring replacement of those breakers. Nadeau pf. at 3.

5. The 46 kV-rated components that will need to be replaced with 34.5 kV-rated components include: airbreak switches; fuses; lightning arresters; circuit switches; metering; the 4465 circuit breaker; and the 3322 circuit breaker. Nadeau pf. at 3.

6. The proposed changes also include construction of a new oil-containment system for the new 14MVA 34.5 kV/12.47 kV transformer and replacement of the existing control cabinet with a prefabricated building. Modifications to the steel structure and bus work will be minimal and all electrical work will take place within the substation footprint. However, the new relay building will extend beyond the current boundaries of the substation fence. This will result in a net expansion to the substation footprint of about 97 square feet. Nadeau pf. at 3; GMP-PN Exhs. B, C, D and E; Nadeau supp. pf. at 7.

7. All work will be performed in compliance with the latest National Electric Safety Code requirements. Nadeau pf. at 3.

8. System reliability will be enhanced by the proposed changes. The new breaker on the high side of the new transformer and upgraded reclosers on the low side will include a high-speed differential protection scheme, reducing damage and shortening recovery time for the most common types of low-side bus faults. By reducing the time that the transformer is exposed to through-fault current during a low-side bus fault, the life of the transformer will be prolonged. In the event of a transformer fault, the high-speed differential protection scheme may reduce damage, simplify repairs and improve safety. Nadeau pf. at 3-4.

9. Additional reliability will be provided by the breaker located on the 34 kV feed from the VELCO Vergennes substation. This breaker will have phasing capability between the Vergennes generation and the VELCO system. Its intended use will be for black-start situations or

reconnecting local load to the system following contingencies. Protection will be integrated with the generation bus so that units are quickly tripped in the event of a bus fault. Nadeau pf. at 4.

10. The replacement of the present 3322 and 4465 breakers will enhance reliability by meeting increased interrupting requirements resulting from the new VELCO substation. Nadeau pf. at 4.

11. GMP will replace the 3322 and 4465 breakers with two ABB Type V vacuum circuit breakers. The vacuum circuit breakers reduce the risk of an oil spill on the river bank because they contain no oil and use a vacuum as the interrupting medium. The current breakers are General Electric Type FK Oil Blast Circuit Breakers with oil-filled tanks as an interrupting medium and are over 40 years old. Nadeau pf. at 4-5; Nadeau supp. pf. at 7.

12. The new oil-containment system will provide additional oil-spill protection to the Otter Creek. A steel-reinforced-concrete oil-containment pit will be constructed to contain the new transformer's maximum oil capacity of 1965 gallons. The pit will be adequately sized to contain the entire volume of the power-transformer oil, as well as at least 5 inches of precipitation. The pit will conform to IEEE Standard 980-1994, *IEEE Guide for Oil Containment and Control of Spill in Substations*. The existing engineered structural berm 12 to 18 inches high and 2 feet wide will be reconstructed prior to the completion of the proposed project. The berm is located inside the substation security fence. This system is in compliance with the U.S. Environmental Protection Agency requirements for the prevention of oil pollution. Nadeau pf. at 5; GMP-PN Exh. E.

13. GMP intends to replace the 10.5 MVA transformer with a 14 MVA transformer for several reasons. The existing loading at the substation peaks at 96% of capacity for a short time in summer months; the larger transformer, which is the next standard size, will accommodate load growth in the area. GMP-PN Exh. F.

14. A 14 MVA transformer suitable for use in Vergennes may become available when the GMP Shelburne substation is replaced by the VELCO NRP 115 kV Shelburne substation. If the timing does not work out, a spare GMP 14 MVA transformer will be used in Vergennes. Nadeau pf. at 6.

15. The proposed project is estimated to cost \$848,337. GMP-PN Exhibit H sets forth the currently projected costs, based primarily on recent estimates for other work by contractors, legal, engineering and other professionals. These costs will be refined once the contracts have been entered into, including with equipment vendors. Nadeau pf. at 7.

16. GMP proposes to commence work on the proposed project in the fall of 2008 and complete the proposed project by the end of the first quarter of 2009. Nadeau pf. at 7.

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

17. 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 and the municipal legislative bodies. This finding is supported by findings 18 through 19, below.

18. Because the upgrade will take place almost entirely within the existing substation footprint, and will not have an adverse aesthetic impact, the proposed project will not impact the land conservation measures contained in the plan of any affected municipality. Nadeau pf. at 8.

19. GMP provided notice of the proposed project to the City of Vergennes Planning Commission and the Addison County Regional Planning Commission by letters, dated October 17, 2007, copies of which are included with GMP's filing with the Board. Neither Planning Commission provided comments. Nadeau pf. at 8.

Need for Present and Future Demand for Service

[30 V.S.A. § 248(b)(2)]

20. The proposed project 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 load management measures. This finding is supported by findings 21 through 25, below.

21. The lack of feeder backup in the area necessitates increased transformer size for electric service reliability at the substation. There are currently no ways of tying the Vergennes circuits to

another substation through its feeders to transfer the Vergennes substation load to another substation to reduce the peak loading at Vergennes. Nadeau supp. pf. at 4.

22. As discussed above, the proposed project is necessitated by the construction of VELCO's NRP. The existing 46 kV/12.47 kV transformer must be replaced with a 34.5 kV/12.47 kV transformer for the NRP. The replacement of the 10.5 MVA transformer with a 14 MVA transformer, in addition to providing additional capacity for increased demand in the area, will enhance reliability, as found above. The cost of a 14 MVA transformer compared to a 10.5 MVA transformer is essentially the same. Accordingly, energy efficiency measures or distributed generation, including but not limited to, those developed pursuant to 30 V.S.A. §§ 209(d), 218(c) and 218(b), would not be more cost effective. Nadeau pf. at 8; Nadeau supp. pf. at 4-5.

23. The substation circuits are not candidates for conservation voltage reduction due to bus regulation and the disparate nature of the three circuits. Nadeau pf. at 6; Nadeau supp. pf. at 5.

24. The proposed project will produce savings in substation transformer losses. The removal of the auto-transformer (46 kV/34.5 kV) and a 46 kV/12.47 kV 10.5 MVA distribution transformer and the installation of a 34 kV/12.47 kV 14 MVA distribution transformer results in a transformer-loss savings of approximately \$650,000 over a 20-year period. Nadeau pf. at 7; GMP-PN Exh.G.

25. The proposed project is not required for distributed utility planning ("DUP") under the Docket 6290 guidelines. The projected capital cost is less than the \$2 million threshold and based on the *Form for Selection of Distributed Utility Target Areas*, further distributed utility analysis is not required for this proposed project. Nadeau pf. at 9.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

26. The proposed project will not adversely affect system stability and/or reliability, and in fact will enhance system reliability. Nadeau pf. at 9; *see* findings 8-10, 21, above.

Economic Benefit to the State

[30 V.S.A. § 248(b)(4)]

27. The proposed project's improvement of system stability and reliability will provide economic benefits to GMP customers located in the area served by the substation, and, thus, will benefit the State. In addition, the proposed project should result in lower operating and maintenance costs, benefitting GMP's ratepayers and the State. The proposed project will also result in additional capacity, which will benefit the future economic development of the area. Finally, the proposed project will result in work being performed and jobs supporting the proposed project by various contractors and suppliers which will be of economic benefit to the State by providing some additional tax revenues. Nadeau pf. at 9.

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

[30 V.S.A. § 248(b)(5)]

28. The proposed project 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 29 to 54 below, which are the criteria specified in 10 V.S.A. §§ 1424(a)(d) and 6086(a)(1)-(8)(a) and (9)(k).

Outstanding Resource Waters

[10 V.S.A. § 1424(a)(d)]

29. No outstanding resource waters are located in the vicinity of the proposed project. Nadeau pf. at 10.

Water and Air Pollution

[10 V.S.A. § 6086(a)(1)]

30. The proposed project will not produce any emissions. The improved oil-spill-containment system and vacuum breakers will provide greater protection to water resources than the current systems. Accordingly, the proposed project will not result in any undue water or air pollution. Nadeau pf. at 10.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

31. The proposed project is not near any headwaters and will not have any undue adverse impact on any headwaters. Nadeau pf. at 10; GMP-PN Exh. A.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

32. The proposed project will not result in the production of any wastes, and, accordingly, the proposed project will meet all applicable health and environmental conservation department regulations for the disposal of wastes, and will not involve the injection of waste materials or any harmful or toxic substances into ground water or wells. The improved oil-containment system and replacement of the existing breakers with vacuum breakers will reduce the risk of oil contamination. Nadeau pf. at 10-11.

33. The transformers that are presently operating the substation will be removed, tested and put back in GMP inventory. In the event that it is necessary to remove oil, then the work will be performed by a recycler that is licensed in the State of Vermont for disposal. There are no PCBs in the oil. Nadeau pf. at 6.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

34. The proposed project will not utilize any water during or after construction and, accordingly, the criteria specified in 10 V.S.A. § 6086(a)(1)(C) relating to water conservation is inapplicable. Nadeau pf. at 11.

Floodways

[10 V.S.A. §6086(a)(1)(D)]

35. The proposed project will not be located in a floodway. Nadeau pf. at 11.

Streams

[10 V.S.A. §6086(a)(1)(E)]

36. The proposed project is located near the Otter Creek. Protection to the Otter Creek will be enhanced over existing conditions by the new oil-containment system and the replacement of the current breakers with vacuum breakers, reducing the risk of an oil spill in the Creek. Accordingly, no streams will be adversely affected, nor will the proposed project endanger the health, safety or welfare of the public or of adjoining landowners. Nadeau pf. at 11.

Shorelines

[10 V.S.A. §6086(a)(1)(F)]

37. 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 38 through 41, below.

38. The shoreline and the waters will retain their natural condition. The proposed changes to the existing substation will result in a net expansion to the substation fence-line of about 97 square feet to accommodate a new relay building. This expansion will not affect the portion of the fence-line located along the Otter Creek. Nadeau supp. pf. at 7; GMP-PN Exh. B.

39. There will be continued access to the waters and recreational opportunities provided by the water. Because the expansion of the fence is not along the Otter Creek, access to the water will not be impacted. GMP-PN Exh. B.

40. The proposed project will not necessitate the removal of vegetation that currently provides screening for the existing substation. GMP-PN Exh. B.

41. If the proposed project requires the stabilization of the bank to prevent erosion, disturbed soils will be restored with appropriate soil-erosion measures. Nadeau pf. at 12; *see* finding 44 below.

Discussion

_____ Subsection 6086(a)(1)(F) provides that a permit may be granted if the applicant demonstrates that "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, . . ."

No party has questioned whether the proposed project "must of necessity be located on a shoreline in order to fulfill the purpose" of the proposed project. The proposed project involves construction at an existing substation; rebuilding the substation at a site distant from shorelines could have significant economic and environmental impacts. Accordingly, the necessity standard has been met in this case.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

42. The proposed project is not located near any wetlands and the proposed project work is to occur almost entirely within the existing fence. Accordingly, no wetlands will be impacted. Nadeau pf. at 12.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

43. Since the proposed project will not utilize any water, existing water supplies will not be affected and the proposed project will not place a burden on any existing water supply. Nadeau pf. at 12.

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

44. The proposed project will not result in unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result. Any soils that are disturbed by the proposed project will be restored with appropriate soil-erosion measures. The proposed project will be constructed and operated in compliance with the Low Risk Site Handbook for Erosion Prevention and Sediment Control (VT DEC. 2006). Nadeau pf. at 12.

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

45. The proposed project will not cause unreasonable congestion or unsafe conditions with respect to the use of highways, waterways, railways, airports, and airways, and other means of transportation existing or proposed. There will be a minimal increase in traffic during the construction period. Equipment and supplies will be transported by truck. Parking will be at the substation site and on GMP-owned property. Nadeau pf. at 12.

Educational Services

[10 V.S.A. § 6086(a)(6)]

46. The proposed project is unrelated to and will not cause any burden on the ability of any municipality to provide educational services. Nadeau pf. at 12.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

47. The proposed project will not require any municipal or governmental services. Nadeau pf. at 13.

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

[10 V.S.A. § 6086(a)(8)]

48. The proposed project will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historical sites, or rare and irreplaceable natural areas because it will be located almost entirely within the existing footprint of the substation with almost no change to its current visual appearance. Nadeau pf. at 13; GMP-PN Exh. B.

49. The height profile will be essentially the same. Any visual impact of the new control building will be offset by removal of the existing control cabinet. The adverse visual impact of the changes within the substation will be minimal, if any. Nadeau pf. at 13, GMP-PN Exhs. B and I.

50. Although noise levels from the 14 MVA transformer may increase slightly from those produced by the existing transformer, they will be at a similar level and will be obscured by the Otter Creek and other noise from the area, including traffic. Nadeau pf. at 5.

51. The proposed project will not impact historic or archeological sites. Nadeau pf. at 13.

52. The proposed project will not impact any rare or irreplaceable natural areas. Nadeau pf. at 14.

Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

53. The proposed project will not impact, destroy or imperil necessary wildlife habitat or any endangered species. Nadeau pf. at 14.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

54. The proposed project will not unnecessarily or unreasonably endanger the public or quasi-public investment in the facilities listed in 10 V.S.A. § 6086(a)(9)(K), or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to such facilities. Nadeau pf. at 14.

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

55. The proposed project is consistent with the provisions of GMP's Integrated Resource Plan (IRP), as approved by the Board's Order in Docket No. 6895, entered on July 13, 2006. The IRP provides at Section III c, 2., b, at pp. 36-37:

Green Mountain Power desires to provide consistent, reliable service throughout its distribution system. Adequate reliability often requires additional contingency capacity, system interconnections and back-up circuits in areas where reliability problems have become significant. There may be situations where the existing facilities require replacement because of poor physical condition, even though capacity is still adequate. Alternatives involving enhanced system protection and distribution system automation will be evaluated to provide improved reliability where needed.

The proposed project is consistent with the above-stated goals in the IRP. There will be little environmental impact from the proposed project. Nadeau pf. at 14-15.

Compliance with Electric Energy Plan

[30 V.S.A. § 248(b)(7)]

56. Based on the analysis and benefits found above, the proposed project is consistent with the Vermont Twenty-Year Electric Plan (*see*, in particular, Appendix A-8 of the 2005 Vermont Electric Plan). Nadeau pf. at 15.

57. On July 25, 2008, the DPS filed a letter stating that it has determined that the proposed project is consistent with the Vermont Twenty-Year Electric Plan provided that GMP's actions are consistent with its petition and testimony.

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

58. No waters of the state that might be designated outstanding resource waters are located in the vicinity of the proposed project and, thus, no such waters will be affected by the proposed project. Nadeau pf. at 15.

Existing or Planned Transmission Facilities

[30 V.S.A. § 248(b)(10)]

59. The proposed project can be served economically by the planned transmission facilities without undue adverse affect on Vermont utilities or customers. The work to be performed at the Vergennes substation is a result of the NRP. Nadeau pf. at 15.

II. CONCLUSION

Based upon all of the above evidence, we conclude that the proposed construction will be of limited size and scope; the petition does not raise a significant issue with respect to the substantive criteria of 30 V.S.A. § 248; the public interest is satisfied by the procedures authorized by 30 V.S.A. § 248(j); and the proposed project will promote the general good of the state.

III. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board of the State of Vermont that the proposed changes to Green Mountain Power Corporation's Vergennes Substation #9 , in accordance with the evidence and plans presented in this proceeding, will promote the general good of the State of Vermont in accordance with 30 V.S.A. Section 248, and a certificate of public good shall be issued in the matter.

Dated at Montpelier, Vermont this 27th day of August, 2008.

<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: August 27, 2008

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 in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@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.