STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 8205

Joint Petition of Green Mountain Power Corporation,)
Vermont Electric Power Company, Inc., and)
Vermont Transco LLC, for a certificate of public)
good, pursuant to 30 V.S.A. § 248, authorizing the)
construction of the so-called Georgia 115/34.5 kV)
Interconnection Project, consisting of the)
construction of a transmission line and associated)
improvements in the Towns of Georgia, Milton and)
Fairfax, Vermont)

Entered: 8/7/2014

CERTIFICATE OF PUBLIC GOOD ISSUED PURSUANT TO 30 V.S.A. SECTION 248

IT IS HEREBY CERTIFIED that the Public Service Board ("Board") of the State of Vermont this day found and adjudged that the construction of a transmission line and associated improvements in the Towns of Georgia, Milton and Fairfax, Vermont (the "Project"), by Green Mountain Power Corporation ("GMP"), and Vermont Electric Power Company, Inc. and Vermont Transco LLC (together, "VELCO"), in accordance with the evidence and representations submitted in this proceeding, will promote the general good of the State, subject to the following conditions:

1. Construction, operation, and maintenance of the Project shall be in accordance with the plans and evidence as submitted in this proceeding. Any material deviation from these plans or substantial change in the Project must be approved by the Board. Failure to obtain advance approval from the Board for a material deviation from the approved plans or substantial change in the Project may result in the assessment of a penalty pursuant to 30 V.S.A. §§ 30 and 247.

2. Prior to commencing site preparation or construction, GMP and VELCO shall obtain all necessary permits and approvals. Construction, operation, and maintenance of the Project shall be in accordance with such permits and approvals, and with all other applicable regulations, including those of the Vermont Agency of Natural Resources.

3. GMP and VELCO shall restrict construction activities and related deliveries, except during required outages, to hours between 7:00 A.M. and 7:00 P.M. Monday through Friday and

between 8:00 A.M. and 5:00 P.M. on Saturday, and shall cease construction activities on Sundays and state and federal holidays.

4. All stream crossings for the Project shall be performed in accordance with the VELCO Stream Crossing Guidance, Exhibit TF-6, Attachment E-1, and any relevant updated provisions contained in the new Vermont Stream Alternation general permit issued April 2014.

5. During Project construction, GMP shall replace the existing approximately 18 to 24-inch culvert under the farm road near the proposed Ballard Road switching station with a new structure of similar size. The new structure shall be installed in a manner that maintains connection for aquatic organism passage for frogs, salamanders, and other wetland-dependent species between the existing pond and the downstream wetland complex.

6. GMP shall take the following actions in order control the spread of the invasive species and to limit the introduction of additional invasive species in the Project area:

(a) All equipment shall be cleaned so as to contain no observable soil or vegetation prior to entering the Project site. If any removed material contains invasive species, care shall be taken to dispose of such material in a manner that does not spread the invasive species to new areas. Equipment shall also be cleaned in this manner after working in areas where invasive species have been identified.

(b) Following completion of construction, GMP shall monitor the area of expanded right-of-way for any pioneer populations of invasive species on the Quarantine List and selected Watch List for a period of five years. Such monitoring shall also include the following, regardless of their status on the referenced lists: European Alder (Alnus glutinosa), Wild Chervil (Anthriscus sylvestris), Autumn-Olive (Elaeagnus umbellata), Reed Canary Grass (Phalaris arundinacea), and Rambler Rose (Rosa multiflora).

(c) During the required monitoring period, GMP shall provide the Agency of Natural Resources with an annual report documenting which species were present, their extent, and measures taken to control them. GMP shall take appropriate steps in accordance with an integrated vegetation management plan to control and eradicate any pioneer populations.

7. GMP shall limit its vegetation management practices within riparian corridors and all wetlands and wetland buffers to specific manual and chemical practices which are more fully described in GMP's vegetation management plan. The manual methods include chainsaws and brush saws. The chemical methods include low-volume foliar application, low-volume basal application, and cut stump treatment. Vegetation management for all other areas of the Project

shall be performed in accordance with the suite of practices described in GMP's most recent vegetation management plan.

8. For the riparian areas at Sodom Road Crossing and east of the Georgia substation, the initial clearing and construction activities for the Project, as well as future maintenance activities, shall achieve the following objectives to the maximum extent practicable: (a) maintain stable vegetation canopy cover (with a goal of maintaining shading of streams at or near pre-construction levels); (b) maintain soil and stream bank stability; and (c) maintain native vegetation species, while allowing adequate clearances for the safe and reliable operation of the electrical transmission line.

9. The Project shall adhere to the following work practices to achieve the objectives to limit adverse impacts to the riparian areas at Sodom Road Crossing and east of the Georgia substation:

(a) The utilization of selective clearing methods, such that only the trees and species necessary to ensure safe and reliable operation of the electrical transmission line are removed from these areas;

(b) Allowing cut stumps and root systems to remain in place after clearing activities (i.e. no stumping or grubbing);

(c) All clearing activities will be accomplished utilizing the acceptable vegetation management practices identified in Condition 7; and

(d) If at any time GMP, VELCO, and the Agency of Natural Resources believe the objectives to limit adverse impacts to the riparian areas are not being met, GMP, VELCO, and the Agency of Natural Resources agree to work collaboratively and in good faith to develop alternative work practices in order to meet the riparian objectives, taking into consideration former and current field conditions.

10. GMP shall obtain a Vermont individual wetland permit prior to commencement of construction or site preparation activities for the Project. All construction shall be performed in accordance with the terms and conditions of the wetland permit and this Order.

11. Construction equipment access and work within all wetlands (class II and III) for the Project shall follow a hierarchy which will result in the least impact, given the time, field conditions, safety and feasibility at the time of the activities. The acceptable approach sequence to access and work in wetlands if existing upland access cannot be reasonably obtained, or existing access roads are not available, shall be as follows:

(a) Access wetland during dry or frozen conditions from November 1 through March 15.

(b) Under dry conditions use the "dry evaluation procedure" to determine whether temporary mats are required.

(c) Use temporary construction mats in areas where ruts and soil disturbance are likely.

12. The Project will adhere to the following practices concerning wetlands:

(a) Required restoration activities will be performed as soon as practical after access and construction activities are complete within the wetland. No observable ruts shall remain after restoration efforts are complete.

(b) All equipment shall be cleaned so as to contain no observable soil or vegetation prior to entry into all wetlands and buffer zones to prevent the spread of invasive species. If any removed material contains invasive species, care shall be taken to dispose of such material in a manner that does not spread the invasive species to new areas.

(c) The vegetation management practices described in Condition 7 shall also apply for work in all wetlands and wetland buffers, in addition to applicable Best Management Practices developed by the Agency of Natural Resources' Secretary as incorporated in the Vermont Wetland Rules.

13. GMP shall comply with the following provisions to protect Merritt Fernald's Sedge:

(a) The area of Merritt Fernald's Sedge population located near Pole 77 and depicted on Exhibit GMP-TOU-4A shall be flagged by a qualified botanist prior to construction in order to exclude workers, vehicles and equipment from entering the area. Construction crews shall be briefed on the plant’s identity, location of this population, and the need for avoidance, prior to the commencement of any site preparation and construction activities.

(b) Upon completion of the Project, GMP shall perform monitoring of the Merritt Fernald's Sedge population every eight years and shall implement appropriate best management practices to minimize impacts to the population during all future right-of-way maintenance activities.

14. GMP shall perform all Project work in the vicinity of the Lamoille River crossing in Milton (depicted on Exhibit GMP-TOU-4D) during the period between August 1 and March 15 in order to not disturb osprey (Pandion haliaetus) during their nesting season.

15. Prior to commencing construction of their respective Project components, GMP and VELCO shall each file with the Board, the parties, and the Towns of Georgia, Milton and Fairfax

a letter stating that they have fulfilled all pre-construction Certificate of Public Good conditions and that they intend to commence construction of the Project.

16. Prior to commencing operation of their respective Project components, GMP and VELCO shall each file with the Board, the parties, and the Towns of Georgia, Milton and Fairfax a letter stating that they have fulfilled all pre-operation Certificate of Public Good conditions and that they intend to commence operation of the Project.

This Certificate of Public Good shall not be transferred without prior approval of the Board.

Dated at Montpelier, Vermont, this 7th day of August, 2014.

s/James Volz)
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)
s/John D. Burke)
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)
s/Margaret Cheney)

PUBLIC SERVICE BOARD OF VERMONT

OFFICE OF THE CLERK

FILED: August 7, 2014

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)

STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 8205

Joint Petition of Green Mountain Power Corporation, Vermont Electric Power Company, Inc., and Vermont Transco LLC, for a certificate of public good, pursuant to 30 V.S.A. § 248, authorizing the construction of the so-called Georgia 115/34.5 kV Interconnection Project, consisting of the construction of a transmission line and associated improvements in the Towns of Georgia, Milton and Fairfax, Vermont	)	Hearing at Montpelier, Vermont June 30, 2014

Order entered: 8/7/2014

PRESENT: Mary Jo Krolewski, Hearing Officer

APPEARANCES: Peter H. Zamore, Esq.
Debra L. Bouffard, Esq.
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for Green Mountain Power Corporation

S. Mark Sciarrotta, Esq.
for Vermont Electric Power Company, Inc. and
Vermont Transco LLC

Louise C. Porter, Esq.
for Vermont Department of Public Service

Donald J. Einhorn, Esq.
for Vermont Agency of Natural Resources

I. INTRODUCTION

This case involves a joint petition filed by Green Mountain Power Corporation ("GMP"), and Vermont Electric Power Company, Inc. and Vermont Transco LLC (together, "VELCO"), requesting a certificate of public good ("CPG") pursuant to 30 V.S.A. § 248, authorizing the

construction of a transmission line and associated improvements in the Towns of Georgia, Milton and Fairfax, Vermont (the proposed "Project"). In this Proposal for Decision, I recommend that the Vermont Public Service Board ("Board"), subject to conditions, approve the Project and issue a CPG to GMP and VELCO authorizing construction and operation of the Project.

II. PROCEDURAL HISTORY

On January 13, 2014, GMP and VELCO filed a joint petition for a certificate of public good, pursuant to 30 V.S.A. § 248, authorizing the construction of a transmission line and associated improvements in the Towns of Georgia, Milton and Fairfax, Vermont.

On February 20, 2014, I held a prehearing conference in this Docket.

On March 7, 2014, GMP and VELCO filed supplemental testimony and exhibits.

On March 17, 2014, a public hearing was held at the Georgia Fire Station in Georgia, Vermont. Three members of the public attended the public hearing. Members of the public asked questions with regard to the construction impacts from the Project, including right-of-way clearing.

On April 15, 2014, a site visit was held at the Project site in Georgia, Milton, and Fairfax, Vermont.

On June 9, 2014, GMP, VELCO, the Vermont Department of Public Service ("Department"), and the Vermont Agency of Natural Resources ("ANR"), filed a Memorandum of Understanding ("MOU") with proposed findings of fact and a proposed order. With the June 9, 2014, filing, GMP and VELCO filed additional supplemental testimony and exhibits.

In a June 16, 2014, memorandum, I identified 12 questions regarding the petition and requested that GMP and VELCO file written responses in advance of the technical hearing or be prepared to answer these questions at the hearing. On June 23, 2014, GMP and VELCO filed written responses to the questions.

A technical hearing was held on June 30, 2014, in the Board's hearing room in Montpelier, Vermont. At the hearing, the prefiled testimony, exhibits, and MOU were entered into evidence.

On July 11, 2014, GMP, in response to a discussion at the technical hearing, filed a letter addressing post-construction noise modeling of the Project.

III. FINDINGS

Pursuant to 30 V.S.A. § 8(c), and based on the record and evidence before me, I present the following findings of fact and conclusions of law to the Board.

Background and Project Description

1. GMP is a duly organized public service corporation with a principal place of business at 163 Acorn Lane, Colchester, Vermont, and is subject to the Board's jurisdiction pursuant to 30 V.S.A. § 203. Petition at 1.

2. VELCO's offices are located at 366 Pinnacle Ridge Road, Rutland, Vermont. VELCO is a company as defined by 30 V.S.A. § 201, and as such is subject to the Board's jurisdiction pursuant to 30 V.S.A. § 203. Petition at 2.

3. The Project will address reliability issues within the GMP 34.5 kV subtransmission system serving the St. Albans/Milton/Fairfax/Johnson/Lowell area. The Project consists of five separate components: (a) a new Ballard Road switching station; (b) a new GMP 34.5 kV transmission line between the VELCO Georgia substation and the proposed Ballard Road switching station; (c) the reconductoring of the GMP 34.5 kV transmission line between the GMP Milton substation and the Wyeth Tap; (d) a new transformer at the VELCO Georgia substation; and (e) a new capacitor bank at the VELCO East Fairfax substation. The first three components of the Project are referred to collectively as the "GMP Components" and the last two are referred to as the "VELCO Components." John Fiske, GMP, ("Fiske") pf. at 3-4; Lawrence Kirby, GMP, ("Kirby") pf. at 3; Ryan Johnson, VELCO, ("Johnson") pf. at 3-4; Jose Sebastiao, VELCO, ("Sebastiao") pf. at 2-3; Scott Harding, VELCO, ("Harding") pf. at 5-6.

Ballard Road Switching Station

4. The Project will include a new switching station constructed on a site located approximately 2 miles east of the Georgia substation on Ballard Road in Georgia, Vermont. The

site is located at the southwest corner of the intersection of VELCO and GMP transmission lines, approximately 600 feet east of Ballard Road. Fiske pf. at 4; Timothy Upton, GMP, ("Upton") pf. at 27; exhs. GMP-JRF-1, GMP-JRF-2(rev), and GMP-TOU-6.

5. The Ballard Road switching station is designed as a single bus with two steel bays (each approximately 18 feet wide, 16 feet long, and 26 feet high) providing three circuit positions for 34.5 kV subtransmission lines connected to the station. The switching station will be part of the looped 34.5kV subtransmission system between the Milton substation and the St. Albans substation, which will occupy two of the 34.5 kV circuit positions (B-4 and B-24). The new GMP 34.5 kV subtransmission line between the Georgia substation and the switching station will occupy the third circuit position (B-60). Fiske pf. at 6.

6. Each circuit position will be equipped with a 34.5 kV vacuum circuit breaker with associated foundation and breaker disconnect switches. The B-60 circuit position will be equipped with a breaker bypass switch to energize the switching substation following an extended system outage. Protective relaying and metering will be installed for the three circuits. The relaying and metering at each circuit will use three line-to-ground 34.5 kV bus instrument voltage transformers and one line-to-line instrument voltage transformer. Fiske pf. at 6.

7. A control building, approximately 18 feet wide by 30 foot long and 14.5 feet high at the roof peak, will be installed on the southeast corner of the proposed switching station yard. The control building will house the protection and control panels, 125 V dc battery system, supervisory control and data acquisition ("SCADA") equipment, fiber optic communications equipment, AC/DC distribution panels, and other miscellaneous control devices. The SCADA system will provide control and monitoring of the three station circuit breakers. Fiske pf. at 5; exhs. GMP-JRF–3 through GMP-JRF–9.

8. The Ballard Road switching station will encompass an area approximately 80 feet wide by 110 feet long. The switching station will be enclosed by a fence, approximately 8 feet in height. The switching station lighting will be installed on the fence for maintenance and emergency activities, and will be operated from a switch located within the control building. Fiske pf. at 4-5; exhs. GMP-JRF-2A(rev) and GMP-JRF-2B(rev).

9. The Ballard Road switching station will be accessed by a new gravel drive, approximately 810 feet long by 12 feet wide. The access drive will extend southeast starting from Ballard Road. Fiske pf. at 4; Upton pf. at 27; exhs. GMP-JRF-1, GMP-JRF-2(rev), and GMP-TOU-6.

Georgia-Ballard Road Subtransmission Line

10. The Project will include a new GMP 34.5 kV subtransmission line, approximately 2.07 miles in length, that will travel between the Georgia substation and the proposed Ballard Road switching station. The proposed line will travel through an existing 200-foot-wide easement corridor owned by VELCO, which contains an existing VELCO 115 kV transmission line that runs from the Georgia substation to the East Fairfax substation. Johnson pf. at 2-3.

11. The VELCO easement corridor is currently cleared to a 150-foot width and the VELCO line is centered 75 feet from the southern edge of the easement. To accommodate the proposed line and to maximize protection from vegetation falling into the corridor, the existing easement corridor will be cleared to the full 200-foot width. The proposed line will be centered 60 feet north of the VELCO line and 65 feet from the northern edge of the easement. Johnson pf. at 2-3.

12. The proposed line will connect on the southern side of the Georgia substation. From the substation the proposed line will run along the southern fence, turn and run diagonally across VELCO property, and cross under the VELCO 115 kV transmission line to a point where it will be parallel with the VELCO line. The proposed line will run parallel with the VELCO line for approximately two miles while crossing Sodom and Ballard Roads. On the eastern side of Ballard Road, the line will turn and cross back under the VELCO line and turn to connect to the proposed Ballard Road switching station. Johnson pf. at 3; exhs. GMP-RCJ-1A(rev) and GMP-RCJ-1B(rev).

13. The proposed line will use 954 MCM 45/7 Aluminum Conductor Steel Reinforced ("ACSR") conductor. The proposed line will utilize H-frame construction with horizontal phase spacing at 10 feet on center to better support the large ACSR conductor. The H-frame structures will typically be located adjacent to the H-frame structures of the existing VELCO line. Tangent structures will have two poles and a 21-foot cross arm. Angle structures will have three poles.

The pole heights will typically be 40 to 65 feet above ground, which is generally five to ten feet below the pole heights on the existing VELCO line. Johnson pf. at 3-4; exhs. GMP-RCJ-1A(rev), GMP-RCJ-1B(rev), GMP-RCJ-2A, GMP-RCJ-2B, and GMP-RCJ-2C.

Milton-St. Albans Line Reconductoring

14. The Project will include the reconductoring of the GMP 34.5 kV subtransmission line, approximately 4.58 miles, between the GMP Milton substation and the Wyeth Tap. The Milton to Wyeth Tap line segment is constructed with 4/0 AWG 6/1 ACSR conductor, except for the last span into the Wyeth Tap which is 477 MCM 18/1 ACSR conductor. All 4/0 ACSR conductor will be reconductored with 477 ACSR conductor. Johnson pf. at 4-5; exhs. GMP-RCJ-3A through GMP-RCJ-3F.

15. The majority of the structures on the Milton to Wyeth Tap line segment were built in the mid-1950s and will be replaced as part of the Project. Approximately 68 structures will be replaced and the new pole heights for all of these structures will either be the same or 5 feet taller than the existing structures, except for two structures that will be 10 feet taller. The taller structures are needed to satisfy current clearance and construction standards. Johnson pf. at 4-5; exhs. GMP-RCJ-3A through GMP-RCJ-3F.

Georgia Substation Transformer

16. The Project will include a new transformer at the Georgia substation located on Sand Hill Road in Georgia, Vermont. The new transformer will connect to the proposed GMP 34.5 kV subtransmission line that will travel between the Georgia substation and the proposed Ballard Road switching station. Sebastiao pf. at 4; exh. VELCO-JS-6.

17. The Georgia substation consists of a high-voltage switchyard, with four 115 kV transmission lines terminating in the substation. The substation is contained within a fenced yard, approximately 310 feet by 400 feet. The substation was designed to accommodate four breaker-and-a-half bays, two transformers, and two capacitor banks. The current configuration includes two breaker-and-a-half bays, one capacitor bank, a control building approximately

32 feet by 70 feet, associated bus work, disconnect switches, and auxiliary equipment and structures. Daniel Poulin, VELCO, ("Poulin") pf. at 2.

18. The Project will add one 115 kV to 34.5 kV, 3-phase, 33.6/44.8/56 MVA transformer and oil containment system, one 34.5 kV breaker, voltage transformers, switches, protection equipment, and associated steel and foundations. The new transformer and line will occupy one of the four breaker-and-a-half bays. The existing ground grid and conduit system will be expanded to incorporate the new equipment. Sebastiao pf. at 4; Poulin pf. at 3.

East Fairfax 34.5 kV Capacitor Bank

19. The Project will include a new capacitor bank at the East Fairfax substation on Fisher Street south of Route 104 and west of Allen Irish Road in Fairfax, Vermont. The new capacitor bank will enhance the transmission and subtransmission connection capabilities to meet the local area reliability needs. Sebastiao pf. at 4-5; Poulin pf. at 3; exh. VELCO-JS-7.

20. The East Fairfax substation consists of a radial fed 115 kV to 34.5 kV, 30/40/46.5/51 MVA transformer supplying a bus with three subtransmission line breakers. One 115 kV transmission line terminates in the substation. The substation is contained within a fenced yard, approximately 168 feet by 223 feet. The substation currently includes four breakers, one transformer, a control building approximately 20 feet by 24 feet, associated bus work, disconnect switches, and auxiliary equipment and structures. Poulin pf. at 3.

21. The Project will add one 34.5 kV, 3-phase, 5.4 MVA capacitor bank, one 34.5 kV current limiting reactor, one 34.5 kV circuit breaker, switches, protection equipment, and associated steel and foundations. The capacitor bank will be connected to the existing 34.5 kV bus in East Fairfax through the expansion of the existing steel structure already in place at the substation. Sebastiao pf. at 4; Poulin pf. at 4.

22. Some existing auxiliary equipment will be relocated to the expanded steel structure and new conduit and ground grid will be installed. The substation fence will be relocated 16 feet to the north of the substation to incorporate the new equipment, resulting in a small expansion of the approximately 18,000 square-foot substation area. The existing ground grid and conduit

system will be expanded to incorporate the new equipment. Sebastiao pf. at 4; Poulin pf. at 4; exh. VELCO-JS-7.

Construction Schedule and Project Operation

23. Construction of the Project is proposed to begin in October. The anticipated construction window for the Georgia-Ballard Road line is from October 2014 to January 2015. The Ballard Road switching station and Georgia substation transformer construction are planned to begin in October 2014 and be completed by April 2015. The reconductoring of the Milton-St. Albans line is planned to occur from February 2015 to May 2015. The construction schedule for the East Fairfax capacitor bank is October 2014 to October 2015. The Project, including site restoration activities, is planned to be completed by December 2015. Johnson pf. at 5-6; Fiske pf. at 6-7; Sebastiao pf. at 9; exh. GMP-JRF-10.

24. In accordance with transmission agreements, VELCO will be responsible for the construction, installation, operation and maintenance of all the equipment located within its substation including the Georgia substation transformer and the East Fairfax capacitor bank. Sebastiao pf. at 4.

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

25. The 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 the affected municipality. This finding is supported by findings 26 through 33, below.

26. The Project is consistent with the Town of Georgia, Vermont 2011 Comprehensive Municipal Plan. The Plan provides that "[p]ublic utilities and services should be enhanced in ways that improve economic development opportunities and quality of life, but that do not jeopardize public health, the environment or scenic resources." The Plan also includes a policy that "[w]herever possible, new facilities shall be co-located on or near existing structures, unless

the Planning Commission determines that separate facilities will create less visual and aesthetic impact." The Plan recognizes the importance of energy to Town residents and notes that electricity consumption in Georgia increased steadily between 2004 and 2008. The Project will enhance system reliability, while not adversely impacting the environment and scenic resources. The Project components will be located within or on existing facilities or located adjacent to existing facilities. The components are in locations screened from public view by topography and existing vegetation, and will be constructed to minimize impacts from tree clearing. Upton pf. at 3-4; Sebastiao pf. at 11; exh. GMP-TOU-10a.

27. The Project is consistent with the Milton Town Plan. The goals of the Plan include location of utility facilities within existing utility corridors, minimizing impacts on the community, natural resources, scenic ridgelines and viewsheds, and placement of facilities underground where feasible. Project work in Milton will consist of the replacement of electrical conductors and in-place replacement of selected utility poles within an existing transmission right-of-way. Impacts to natural and cultural resources in Milton will be minimized during construction through the use of an existing right-of-way and through avoidance and other best management practices. Upton pf. at 4-5; exh. GMP-TOU-10b.

28. The Project is consistent with the Fairfax Town Plan. The Plan contains general goals related to the protection of natural and cultural resources, and does not directly address the expansion of substation facilities. The Project involves installation of capacitors within an existing substation facility, and requires the relocation of the fence within the existing portion of the substation property. Upton pf. at 5; exh. GMP-TOU-10c.

29. There are no applicable land conservation measures in the municipal plans of the affected communities. Land uses in the Project area will be the same as or similar to existing uses. The Project will be located within or adjacent to existing transmission facilities and right-of-ways. The proposed new switching station is sited to not adversely impact environmental, cultural, and aesthetic resources. Upton pf. at 3.

30. The Project is consistent with the Northwest Regional Plan ("NRP"). The NRP includes a goal to "insure that the region's infrastructure has adequate capacity to meet current needs and planned growth in a timely and cost-effective manner." The Plan contains polices encouraging:

(a) shared right-of-ways; (b) minimized cultural and environmental impacts; (c) undergrounding or strategic location when crossing historic, cultural and scenic areas; (d) avoidance of resource and conservation lands; (e) avoidance of adverse impacts on significant wetlands, plant and animal habitat, historic, natural, or cultural resources, and municipal services; and (f) consideration of a broad range of options to meet energy needs. The NRP disfavors utility lines that divide land uses or forested parcels. The Project will enhance system reliability in northwest Vermont, while not adversely impacting natural, cultural, and scenic resources. Several alternatives to the Project were considered, including new sources of generation and alternative substation construction projects, with the Project representing the best combination of effectiveness, cost, and land-use impacts. Upton pf. at 5-7; Kirby pf. at 6-7; Sebastiao pf. at 11-12; exhs. GMP-TOU-10d, VELCO-JS-6, VELCO-JS-7, VELCO-TF-4, and VELCO-TF-5.

31. The Project is consistent with the Chittenden County Regional Plan ("CCRP"). The CCRP contains goals encouraging protection of native species habitats, water quality and quantity, air quality, scenic, recreational, and historic resources, and investments to minimize environmental impact, maximize financial efficiency, optimize social equity and benefits, and improve public health. The CCRP also includes a goal to improve the cost-effectiveness, efficiency, and reliability of the energy production, transmission, and distribution system. The Project will protect natural, cultural, and scenic resources in Chittenden County, through avoidance, use of existing infrastructure and right-of-ways, and the implementation of best management practices during construction. The Project will increase the reliability of the regional electric transmission system, along with the system operational efficiency. Upton pf. at 7-8; exh. GMP-TOU-10e.

32. On May 13, 2013, a public meeting was held in Georgia, to provide affected landowners and members of the public with information about the Project, and with the opportunity to ask questions and provide input on Project design. The meeting was coordinated through the Northwest Regional Planning Commission ("NRPC") and meeting invitations were sent to the Georgia Planning Commission, the Georgia Selectboard, each adjoining landowner around the Ballard Road switching station, and each adjoining landowner along the route of the proposed

Georgia-Ballard Road subtransmission line. The meeting was attended by GMP, VELCO, NRPC, and one adjoining landowner. Upton pf. at 8-9.

33. On September 3, 2013, the selectboards and planning commissions of the Towns of Georgia, Milton, and Fairfax, the NRPC, and the CCRPC were provided a 45-day notice of the Project pursuant to 30 V.S.A. §248(f). At the request of the Milton Planning Commission, GMP staff attended its October 1, 2013, meeting to provide an overview of work proposed in the town of Milton and answer questions about the overall Project. None of these entities recommended changes to the Project's design. Upton pf. at 9.

Need for Present and Future Demand for Services

[30 V.S.A. § 248(b)(2)]

34. The 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. This finding is supported by findings 35 through 50, below.

35. The Project will address the reliability needs of the 34.5 kV subtransmission system in the St. Albans/Milton/Fairfax/Johnson/Lowell area. This area has a summer peak load of approximately 83 MW, which is forecasted to be 101 MW in ten years, a 22 percent increase. Kirby pf. at 3; Harding pf. at 4.

36. The Project area is served by the 115 kV to 34.5 kV interconnection at the VELCO St. Albans (Nason Street) substation, the 115 kV to 34.5 kV interconnection at the East Fairfax substation, a 34.5 kV line from the Johnson/Lowell/Stowe area, and local hydroelectric generators at Milton, Peterson, Clark Falls, and Fairfax. The two transmission injection points (115 kV to 34.5 kV) are served by three transformers, two transformers located at the Nason Street substation and the third transformer located at East Fairfax substation. There are a total of six subtransmission lines fed from these sources to serve the local load area. Kirby pf. at 3; Harding pf. at 4.

37. The Project area is served by the Georgia switching substation which interconnects four 115 kV lines: K-42, K-21, K-19, and K-80. The K-42 line connects to an energy resource, the

Highgate high-voltage direct current converter terminal. The K-21 line connects to the VELCO Essex substation, which serves a significant load level located in that area. The K-19 line connects to a transmission tie with an adjacent transmission utility, New York Power Authority ("NYPA"), through the Sand Bar phase shift transformer and the K-20 line, which travels northwest to the PV-20 interconnect with the NYPA system. The K-80 line connects to the local load-serving subtransmission system through the 115/34.5 kV step-down transformer located in the East Fairfax substation. The area is also served by one 25 MVAR 115 kV capacitor bank at the Georgia substation. Harding pf. at 3-4.

38. The GMP subtransmission network planning guideline, the *Equal Slope Criterion*, requires that the area subtransmission system be capable of providing a calculated minimum threshold of electric demand with adequate voltage and with no equipment overloading, following any credible single contingency (i.e. single element out of service). Kirby pf. at 3; exh. GMP-LRK-2, Appendix A.

39. The planning standards used by VELCO for the transmission system are established by the federal and regional reliability organizations: North American Electric Reliability Corporation ("NERC"), Northeast Power Coordinating Council ("NPCC"), and ISO New England ("ISO-NE"). The standards for reliability on the bulk power transmission network are generally known as N-1 (single contingency or single element out of service) and N-1-1 (multiple elements removed from service due to a single contingency or a sequence of contingencies). Harding pf. at 6: exh. GMP-LRK-2.

40. In 2003, a major reliability project, known as the #1 Transmission Upgrade Plan ("TUP"), was constructed in the St. Albans area, which included several new 34.5 kV breakers, 2.1 miles of new 34.5 kV line, and a reconfiguration of the old 34.5 kV "Radar Tap" lines. At the time of construction, it was understood that the #1 TUP was a first step at addressing the area reliability needs and that an additional upgrade project would be needed in the St. Albans area within a period of five to six years. Kirby pf. at 3-4.

41. Reliability deficiencies in the Project area can occur as a result of a single outage event. The loss of the transmission source at the Nason Street substation leaves the system in severe condition both thermally and reactively, and severely in violation of the Equal Slope Criterion,

because the remaining power sources (local hydroelectric generation and East Fairfax substation) are inadequate or too distant to supply such a large load level. The loss of the East Fairfax substation source, although less severe than that of the Nason Street substation source, is still quite serious, resulting in widespread undervoltages and some equipment overloads at higher load levels. Kirby pf. at 4-5; Harding pf. at 4-5; exh. GMP-LRK-2.

42. The loss of the 34.5 kV Nason-Ben & Jerry's line (one of the six subtransmission lines serving the local area) represents another possible contingency for the Project area. The loss of the Nason-Ben & Jerry's line results in a large concentration of load near the end of a long 34.5 kV radial segment that would be supplied by power contributions coming from the Nason Street and East Fairfax substations. This post-contingency configuration results in serious undervoltage at the Ben & Jerry's substation. The isolation of the Ben & Jerry's substation at the end of this load corridor makes the undervoltage difficult to remedy unless a supplemental real power source, or other remedy, is carefully located. Other less severe contingencies may also have significant reliability impacts on the Project area. Kirby pf. at 4-5; Harding pf. at 4-5; exh. GMP-LRK-2.

43. Under the current ring-bus configuration at the Georgia substation without the proposed transformer addition, the loss of a single transmission element (N-1 condition) results in a voltage collapse event and loss of load at or near present peak load levels. Starting at load levels as low as approximately 65 percent of peak, significant voltage depressions on the local system and thermal criteria violations emerge on 34.5 kV lines in the Project area. Local generation, if on line during critical N-1 conditions, is also at risk of tripping off line due to the weak system stability conditions as a result of the voltage collapse in the impacted area. Harding pf. at 5; Harding pf. supp. at 1-2.

44. A load flow analysis for the Project area was conducted in accordance with NERC, NPCC, and ISO-NE planning standards. Thermal and voltage limits applicable to transmission and subtransmission systems were used to assess system performance for the conditions studied. ISO-NE participated in the planning process from the system needs study stage to the selection of the preferred solution. As part of these studies, the Georgia transformer addition was identified as the preferred solution to resolve the transmission deficiency that was causing voltage collapse

in the Project area. The ISO-NE planning process concluded that the addition of the transformer at the Georgia substation would have no adverse impact on the regional bulk electric system. Harding pf. at 6-7.

45. The Project will meet the Equal Slope Criterion for a period of 10 years, based on the worst recognized contingencies, by addressing the Project area weakness through the addition of a large new power source near its most concentrated demand. The proposed Ballard Road switching station represents the optimal reinforcement location because of its close proximity to major load concentration in downtown St. Albans as well as to several large commercial and industrial customers. The location is well-positioned to enable continued supply to the majority of load that is isolated when the Nason-Ben & Jerry's line or the Ben & Jerry's-Georgia 34.5 kV line is lost. The location performs adequately for all other recognized single contingencies that may occur in the Project area. Kirby pf. at 5-6.

46. The proposed transformer at the Georgia substation is a critical component of the overall reinforcement of the Project area. The addition of the transformer fully mitigates the voltage collapse transmission deficiency in the Project area and provides additional benefit by reducing post-contingency flow-through loading at the three step-down transformers located at the Nason Street and East Fairfax substations. The proposed capacitor bank at the East Fairfax substation will provide voltage support under certain contingencies such as a loss of the K-80 line or an element on the local 34.5 kV subtransmission network. Harding pf. at 7.

47. VELCO and GMP evaluated various options to reinforce the transformation capacity into the Project area. One alternative consisted of constructing a new substation in the K-42 transmission line (between Highgate and Georgia) right-of-way at the St. Albans Tap location to provide two separate feeds into the St. Albans area. Another alternative consisted of installing the new load-serving transformer at a new facility south of the Georgia Substation. The proposed transformer at the Georgia substation was selected because it performed better, and resolved the reliability concerns at a lower cost by leveraging existing infrastructure already in place. Harding pf. at 8.

48. GMP evaluated the alternative of relocating the switching station from Ballard Road to a site adjacent to the Georgia substation. That analysis demonstrated that the alternative would be

more costly, result in less reliable service, and probably have a greater aesthetic impact and a slightly lower environmental impact. Kirby pf. supp. at 1-4; Johnson pf. supp. at 1-2; Upton pf. supp. (6/7/14) at 1-3.

49. The benefits of the Project cannot be achieved in a more cost-effective manner by efficiency, generation, conservation or other load management measures. Non-transmission alternatives ("NTAs") appear to be technically feasible but more expensive than the Project. The Ballard Road Switching Station will be located close to an existing 115 kV substation, thereby minimizing the necessary 34.5 kV subtransmission build-out and its consequent expense. The existing reliability problem is so severe that a significant amount of NTA resources (several tens of megawatts) would be required for adequate reinforcement. There is not enough area potential to meet this need with demand response, demand side management, or other load management techniques. Therefore, a large portion of the required NTA resources would have to come from generation resources, which would cost significantly more (tens of millions of dollars) than the Project. Kirby pf. at 6-7.

50. In connection with the Vermont System Planning Committee ("VSPC") review process, an analysis of NTAs as a means of solving the St. Albans/Georgia area system deficiencies was performed. The report, entitled *Non-Transmission Alternatives Assessment for the Georgia Reliability Project* (issued April 1, 2011) concluded that "the transmission solution has a significantly lower cost than any NTA scenarios studied with or without PTF treatment." This conclusion is also supported by the St. Albans/Georgia Area Transmission Study conducted by GMP. Kirby pf. at 7; exh. GMP-LRK-2.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

51. The Project will not have an adverse impact on system stability or reliability. The Project will improve system stability and reliability. In particular, the Project will substantially improve system performance for a number of definitive contingencies and will not degrade performance for any known contingency. Kirby pf. at 8; Harding pf. at 8; exh. VELCO-SAH-3.

Economic Benefit to the State

[30 V.S.A. §248(b)(4)]

52. The Project will result in an economic benefit to the State and its residents. This finding is supported by findings 53 through 58, below.

53. The Project will benefit the state and its residents by improving the reliability of the electrical system in the Project area. The Project will increase property tax revenues based on the capital investment and provide local economic benefits associated with engaging local businesses and contractors during the construction phase of the Project. Sebastiao pf. at 13.

54. The Project area businesses depend on reliable service for continued profitability and employment. The Project area has historically experienced significantly above-average load growth and a noticeable expansion of commercial businesses. By reducing reliability problems, the Project will help maintain and promote commerce in the area, providing an economic benefit to the state and its residents. Kirby pf. at 10-11.

55. The use of a larger ACSR conductor on the Milton-St. Albans line will give this section of the transmission system a 79 percent increase in current carrying capacity and a 41 percent greater breaking strength over the existing ACSR conductor. As a result, the transmission system in the Project area will be reinforced to better handle contingencies such as an ice storm, tree contact, or other contingency. Johnson pf. at 6.

56. The Project will improve the efficiency of the transmission and subtransmission systems. The Project will produce state-wide loss savings of approximately 180 kW at peak load and 50 kW at 81 percent of peak load. Kirby pf. at 11.

57. GMP will construct, own, operate, and be responsible for the cost of the GMP Components of the Project. The transformer at the Georgia substation will be constructed, owned, and operated by VELCO. The costs for the transformer at the Georgia substation will be classified as specific facilities in accordance with the 1991 Vermont Transmission Agreement and paid for by GMP for 10 years as the beneficiary of the transmission service provided by the equipment being installed. After 10 years, these facilities will become common facilities and will be paid for by the Vermont distribution utilities based on their state peak billing demand ratio. The capacitor bank at the East Fairfax substation will be constructed and operated by

VELCO, but owned and paid for by GMP pursuant to the Substation Participation Agreement. Sebastiao pf. at 9; Johnson pf. at 5-6.

58. The cost of the Project is estimated to be: (a) $1,116,396 for the Georgia-Ballard Road line; (b) $870,555 for reconductoring Milton-St. Albans line; (c) $1,641,377 for the Ballard Road Switching Station; (d) 4,623,491 for the transformer at the Georgia substation; and (e) $866,363 for the capacitor bank at the East Fairfax substation. The total Project cost is estimated to be $9,118,183. Kirby pf. at 8-10.

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

[30 V.S.A. §248(b)(5)]

59. The Project will not have an undue adverse effect on aesthetics, historic sites, air and water purity, the natural environment, and public health and safety and greenhouse gas impacts. This finding is supported by findings 60 through 166, below, which give due consideration to the criteria specified in 10 V.S.A. §§ 1424(a)(d) and 6086(a)(1)–(8)(a) and (9)(k).

Public Health and Safety

[30 V.S.A. § 248(b)(5)]

60. The Project will not have any undue adverse impacts on public health or safety. This finding is supported by findings 61 and 62, below.

61. The Project has been designed and will be constructed in accordance with National Electrical Safety Code requirements. The Project will comply with all other applicable civil and electrical engineering standards for conductor clearances, substation equipment clearances, insulation strength, structural integrity, safety barriers, relay and protection schemes, and similar requirements. Fiske pf. at 8; Kirby pf. at 14; Sebastiao pf. at 16.

62. The improved reliability resulting from the Project will enhance public safety, by reducing the failure of critical infrastructure such as traffic lights, medical equipment, and other devices vital to public health and safety. Sebastiao pf. at 16.

Outstanding Resource Waters

[10 V.S.A. § 1424a(d)]

63. The Project will not result in undue adverse impacts on outstanding resource waters, because the Project is not located on or near any segment of such waters. Upton pf. at 32; Timothy Follensbee, VELCO, ("Follensbee") pf. at 6.

Air Pollution and Greenhouse Gas Impacts

[30 V.S.A. § 248(b)(5) and 10 V.S.A. § 6086(a)(1)]

64. The Project will not result in undue air pollution, including greenhouse gas emissions. This finding is supported by findings 65 through 72, below.

65. The Project may result in brief discharges of dust generated during equipment and material transport, earthmoving, and general construction activities. Any dust from construction activities will be suppressed through the application of water or chloride as needed. Upton pf. at 10; Follensbee pf. at 6.

66. The Project does not involve any burning. Work during the construction phase of the Project will result in minor vehicle emissions from the use of diesel and gasoline powered vehicles and equipment. Upton pf. at 10; Follensbee pf. at 6.

67. The operation of the Project will not produce any regulated air emissions. Follensbee pf. at 7.

68. The Project does not involve any generation or other equipment that will emit or store greenhouse gases, including sulfur hexafluoride. Emissions from construction vehicles and equipment will be small in scale and temporary in nature. There will be no sustained releases of greenhouses gases associated with the operation of the facilities. Upton pf. at 31-32; Follensbee pf. at 15.

69. The proposed Ballard Road switching station will not contain substation transformers, capacitors, or other equipment that may generate significant levels of noise. Upton pf. at 10.

70. The Georgia substation is located in a relatively rural location with the closest residences located 370 meters to the west, 6,200 meters to the south, 660 meters to the east, and 540 meters to the north. Based on modeling and background sound measurements, sound levels

for the Project at nearby residences are predicted to be no higher than 11 dBA (with the transformer cooling fans off) and 16 dBA (with the transformer cooling fans on). The predicted sound levels for the Project are below the lowest measured levels taken at long-term monitors. Sebastiao pf. at 14; exh. VELCO-JS-3.

71. The East Fairfax substation is located on Fisher Street south of Route 104 and west of Allen Irish Road. The closest residences are 90 meters to the north and 100 meters to the northeast. The primary noise producing existing equipment at the substation includes one transformer. Based on modeling and background sound measurements, sound levels for the Project at nearby residences are predicted to be no higher than 34 dBA (with the transformer cooling fans off) and 40 dBA (with the transformer cooling fans on). The addition of the capacitor bank is predicted to raise sound levels at nearby residences between 0 dBA and 1 dBA. Sebastiao pf. at 14-15; exh. VELCO-JS-4.

72. Project construction, except during required outages, will be limited to hours between 7:00 A.M. and 7:00 P.M. Monday through Friday and between 8:00 A.M. and 5:00 P.M. on Saturday, and will not occur on Sundays and state and federal holidays. Outages needed to maintain system reliability are sometimes required to be taken during periods of lighter load, which often coincide with weekend and evening hours. Any construction-related activity during outages will be limited to what is required as a result of the outage, and not involve regular Project construction activity unrelated to the outage. Upton pf. at 10; exh. Joint-2 at 1.

Discussion

VELCO has proposed to conduct noise field measurements at the Georgia and East Fairfax substations after the Project goes into service to validate the noise modeling performed for the Project.[1] At the technical hearing, VELCO's witness estimated that these noise field measurements would cost approximately $15,000 for each substation.[2] With the addition of the transformer at the Georgia substation, sound levels at nearby residences are not predicted to be above background measurements. With the addition of the capacitor bank at the East Fairfax

1. Sebastiao pf. at 16; exh. Joint-2 at 4 and Attachment C.
2. Tr. 6/30/14 at 16-17 (Sebastiao).

substation, sound levels at nearby residences are predicted to increase no higher than 1 dBA. The need for post-construction noise monitoring was discussed at the technical hearing. In a July 11, 2014, letter, GMP, VELCO, and the Department represented that they were in agreement that post-construction noise measurement was not "necessary to satisfy the public good."

Given the results of the noise modeling performed for the Project and the further recommendations by the parties, I recommend that the Board not require VELCO to conduct noise field measurements after the Project goes into service. In addition, I recommend that the Board reserve its authority to require post-construction noise measurements and noise mitigation measures if it determines, after the Project goes into service, that the Project has resulted in potentially undue noise impacts.

Water Pollution

[10 V.S.A. § 6086(a)(1)]

73. The Project will not result in undue water pollution. This finding is supported by findings 74 through 79, below, and by the specific findings under the criteria of 10 V.S.A. §§ 6086(a)(1)(A) through (G), below.

74. Construction of the proposed Ballard Road switching station will require a stormwater construction permit from the Vermont Department of Environmental Conservation ("DEC") under the National Pollutant Discharge Elimination System ("NPDES") program. On March 13, 2014, GMP received a stormwater construction permit for the Project from DEC. The permit's requirements include periodic site inspections, standards for temporary and final stabilization of all earth disturbance and adherence to *The Low Risk Site Handbook for Erosion Prevention and Sediment Control*. Adherence to the permit and its associated erosion and sediment control requirements will prevent and minimize the transport of construction-related sediment to nearby surface water features. Upton pf. at 10.

75. The VELCO Components of the Project will not require a stormwater construction permit because the Project activities will involve less than one acre of earth disturbance. Erosion controls will be installed during construction, as needed, and the work will be performed in

accordance with the VELCO *Environmental Guidance Manual* and DEC standards for erosion prevention and sediment control. Follensbee pf. at 7.

76. The Project will not require a stormwater operating permit. Upton pf. at 10; Follensbee pf. at 7.

77. Any inadvertent release of hazardous material during construction will be contained and reported to the DEC (if necessary), contaminated material will be removed from the site, and the area will be restored in accordance with applicable state and federal regulations. Follensbee pf. at 7.

78. The proposed transformer at the Georgia substation will be installed with an oil containment system. The oil containment system consists of a concrete catchment surrounding the transformer, which diverts all rainfall and oil to a sump containing an oil sensor and a pump. If the oil sensor detects the presence of oil, the contents of the sump are gravity fed into containment tanks. Follensbee pf. at 7-8; Poulin pf. at 4-5; exh. VELCO-DAP-8.

79. The containment tanks for the Project transformer are sized to hold 110 percent of the oil in the transformer plus the rainfall due to a 25-year, 24-hour storm event. If the oil sensor does not detect the presence of oil in the sump, the rainwater is pumped and day-lighted to a location on the property. The oil containment system will be inspected on a monthly basis by VELCO personnel. Maintenance of the system will be performed as required, based on the findings of the monthly inspections. Poulin pf. at 4-5; exhs. VELCO-DAP-8 and Joint-2 at 4.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

80. The Project will not have an undue adverse impact on headwaters. This finding is supported by findings 81 and 82, below.

81. The majority of the GMP Components of the Project are not located in headwaters. A portion of the Milton-St. Albans line (between poles 71 and 89) passes through the watershed of the South Georgia Fire District public water supply, a headwaters area. The closest pole is over 1,300 feet from the system supply source. Construction activities will not impact the public water supply because erosion control measures will be taken as needed and construction at the

closest point will be separated by forested land and other utility right-of-ways. Upton pf. at 10-11; tr. 6/30/14 at 19-20 (Upton); exhs. GMP-TOU-1 and Joint-2 at 2.

82. The VELCO Components of the Project are not located on lands that are considered headwaters. Follensbee pf. at 8.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

83. The Project will meet all applicable Vermont Department of Health and DEC regulations for the disposal of wastes, and will not involve the injection of waste materials or any harmful or toxic substances into groundwater or wells. This finding is supported by findings 84 through 87, below.

84. The following existing invasive species populations were identified within the Project area: purple loosestrife (Lythrum salicaria), common buckthorn (Rhamnus cathartica), Tatarian honeysuckle (Lonicera tataria), Japanese barberry (Berberis thunbergii), and reed canary grass (Phalaris arundinacea). GMP will take the following actions in order control the spread of the invasive species and to limit the introduction of additional invasive species:

> a. All equipment shall be cleaned so as to contain no observable soil or vegetation prior to entering the Project site. If any removed material contains invasive species, care shall be taken to dispose of such material in a manner that does not spread the invasive species to new areas. Equipment shall also be cleaned in this manner after working in areas where invasive species have been identified.
>
> b. Following completion of construction, GMP shall monitor the area of expanded right-of-way for any pioneer populations of invasive species on the Quarantine List and selected Watch List for a period of five years. Such monitoring shall also include the following, regardless of their status on the referenced lists: European Alder (Alnus glutinosa), Wild Chervil (Anthriscus sylvestris), Autumn-Olive (Elaeagnus umbellata), Reed Canary Grass (Phalaris arundinacea), and Rambler Rose (Rosa multiflora).
>
> c. During the required monitoring period, GMP shall provide ANR with an annual report documenting which species were present, their extent, and measures taken to control them. GMP shall take appropriate steps in accordance with an integrated vegetation management plan to control and eradicate any pioneer populations.

Upton pf. supp. (3/7/14) at 1-2; exh. Joint-1, Attachment 1.

85. Unused and retired materials and vegetation will be removed from the Project site and reused, recycled, or disposed of in accordance with all applicable DEC regulations, and invasive species control requirements, as appropriate. Upton pf. at 11; Follensbee pf. at 8-9; exh. Joint-1, Attachment 1.

86. The Project activities at the East Fairfax substation require the removal of a small area of vegetation. The woody debris will be either chipped for on-site disposal or transported off-site for disposal. Follensbee pf. at 8.

87. Procedures for the operation of the proposed transformer at the Georgia substation will be captured in VELCO's *Spill Prevention Control and Countermeasures* ("SPCC") plan. The SPCC plan includes spill control and response measures in the event of a release of oil and/or hazardous material. Follensbee pf. at 8.

Water Conservation

[10 V.S.A. § 6086(a)(1)(C)]

88. The Project will not have an undue adverse impact on water supplies. The operation of the GMP Components of the Project will not involve the use of water. The East Fairfax and Georgia substations are not manned full time and require only minimal amounts of water, which is supplied from existing private water supply wells. Upton pf. at 11; Follensbee pf. at 9.

Floodways

[10 V.S.A. § 6086(a)(1)(D)]

89. The Project will not have undue adverse impacts on floodways or floodway fringes. This finding is supported by findings 90 through 93, below.

90. No structures for the GMP Components of the Project will be located within a floodway. Upton pf. at 11-12.

91. The proposed Georgia-Ballard Road line is located partly within an area identified as a floodway fringe. In particular, Structures 5 and 11 may be located within the mapped floodway fringe. Pole and anchor structures will not materially restrict or divert the flow of flood waters,

and will pose no danger to downstream structures and properties. Upton pf. at 11-12; exhs. GMP-TOU-2, GMP-RCJ-1A(rev), and GMP-RCJ-1B(rev).

92. The proposed Ballard Road switching station is not located within a flood hazard area. The number and location of pole structures in the Milton-St. Albans line will not change, and there will be no impacts to flood waters or floodplain function. Upton pf. at 11-12.

93. The VELCO Components of the Project are not located within a floodway or floodway fringe. Follensbee pf. at 9-10.

Streams

[10 V.S.A. § 6086(a)(1)(E)]

94. The Project will not have undue adverse impacts on streams. This finding is supported by findings 95 and 105, below.

95. All stream crossings for the Project will be performed in accordance with the VELCO *Stream Crossing Guidance*, contained in Attachment E-1 to Exhibit VELCO-TF-6, and any relevant updated provisions contained in the Vermont Stream Alteration general permit issued in April 2014. Exh. Joint-1, Attachment 1.

96. At the proposed Ballard Road switching station, the access road will follow the route of an existing farm road adjacent to the outlet of a constructed farm pond. GMP will replace the existing approximately 18 to 24- inch culvert under the farm road near the switching station with a new structure of similar size. The new structure will be installed in a manner that maintains connection for aquatic organism passage for frogs, salamanders, and other wetland dependent species between the existing pond and the downstream wetland complex. Upton pf. at 14; exhs. GMP-JRF-2(rev), GMP-TOU-6, GMP-TOU-6A through 6H, GMP-TOU-11A, and Joint-1, Attachment 1.

97. The closest stream to the Georgia substation is located over 700 feet away. There are three intermittent streams on the East Fairfax substation parcel, with the closest stream located over 500 feet to the southwest of the proposed expansion area. The Project will not impact the streams located near the Georgia and East Fairfax substations. Follensbee pf. at 11; exhs. VELCO-TF-2 and VELCO-TF-4.

98. The proposed Georgia-Ballard Road line and the Milton-St. Albans line cross a number of small tributary streams. The reconductoring the Milton-St. Albans line will require no clearings along or adjacent to any streams. By utilizing an existing right-of-way, the Georgia-Ballard Road line design greatly reduces the amount of clearing required along and adjacent to stream banks. The Project will not result in changes to the stream channels or substrate. Low-growing vegetation will be maintained along all stream banks to the greatest extent possible. Upton pf. at 12-13; exhs. GMP-TOU-3A, GMP-TOU-3B, GMP-TOU-11A, GMP-TOU-RCJ-1A(rev), and GMP-TOU-1B(rev).

99. Structure 11 on the proposed Georgia-Ballard Road line will be the closest pole to a stream bank. Just west of Sodom Road, the nearby stream drops sharply in elevation. The south bank is heavily forested, primarily with hemlock and some white pine. Structure 11 will be installed on level ground between the road and the drop-off, in a location presently cleared of vegetation and approximately 50 feet from the stream bank. GMP anticipates the need to remove two hemlocks within 50 feet of the stream bank, several elms, some of which are dead or dying, and a small number of white pines at the top of the bank and adjacent to the existing cleared corridor. The majority of the trees near the stream bank will be left in place, and will continue to provide significant shading to the stream. Upton pf. at 12-14.

100. At the Sodom Road crossing, the proposed Georgia-Ballard Road line runs parallel and adjacent to a stream for approximately 350 feet. On the east side of the road there is a small wetland feature which creates an opening in the existing overstory. Between the south stream bank and the existing cleared right of way, a small number of white pines will be removed, along with several mature hardwoods. GMP will remove only the minimum number of trees necessary to ensure reliable service, and will maintain as much low-growing vegetation as possible. Upton pf. at 13; exhs. GMP-TOU-3A and GMP-RCJ-1A(rev).

101. Crossing of streams during Project construction will be avoided to the greatest extent possible through careful management of access points, including using multiple access points to avoid unnecessary crossings, and scheduling work to reduce the number of times a stream is crossed. Upton pf. at 14.

102. GMP typically utilizes a number of different vegetation management practices throughout its right-of-ways. For the Project area, GMP will limit its vegetation management practices within riparian corridors and all wetlands and wetland buffers to specific manual and chemical practices which are more fully described in GMP's vegetation management plan. The manual methods include chainsaws and brush saws. The chemical methods include low-volume foliar application, low-volume basal application, and cut stump treatment. Vegetation management for all other areas of the Project will be performed in accordance with the suite of practices described in GMP's most recent vegetation management plan. Exh. Joint-1, Attachment 1.

103. In the right-of-way for the proposed Georgia-Ballard Road line, two riparian areas warrant special considerations to minimize potential adverse impacts to the streams and associated ecosystems:

> (a) Area of Sodom Road Crossing – The northern portion of the right-of-way where the stream enters the right-of-way from the northeast approximately 75 feet from the east side of Sodom Road and extends westerly on the west side of Sodom Road for approximately 225 feet.
>
> (b) Area East of Georgia Substation – The area of the small stream that comes out of a Class 3 wetland just east of the Georgia substation near proposed GMP structure #5, and runs along and adjacent to the buffer associated with the Class 2 wetland designated as Wetland A1 in the GMP wetland permit application.

Upton pf. supp. (3/7/14) at 2; exh. Joint-1, Attachment 1.

104. For the riparian areas at Sodom Road Crossing and east of the Georgia substation, the initial clearing and construction activities for the Project, as well as future maintenance activities, will achieve the following objectives to the maximum extent practicable: (a) maintain stable vegetation canopy cover (with a goal of maintaining shading of streams at or near pre-construction levels); (b) maintain soil and stream bank stability; and (c) maintain native vegetation species, while allowing adequate clearances for the safe and reliable operation of the electrical transmission line. Upton pf. at 13; Upton pf. supp. (3/7/14) at 2; exhs. GMP-TOU-3A, GMP-RCJ-1A(rev), and Joint-1, Attachment 1.

105. The Project will adhere to the following work practices to achieve the objectives to limit adverse impacts to the riparian areas at Sodom Road Crossing and east of the Georgia substation:

(a) The utilization of selective clearing methods, such that only the trees and species necessary to ensure safe and reliable operation of the electrical transmission line are removed from these areas;

(b) Allowing cut stumps and root systems to remain in place after clearing activities (i.e. no stumping or grubbing);

(c) All clearing activities will be accomplished utilizing the acceptable vegetation management practices identified in Finding 102; and

(d) If at any time GMP, VELCO, and ANR believe that the objectives to limit adverse impacts to the riparian areas are not being met, GMP, VELCO, and ANR agree to work collaboratively and in good faith to develop alternative work practices in order to meet the riparian objectives, taking into consideration former and current field conditions.

Upton pf. supp. (3/7/14) at 2; exh. Joint-1, Attachment 1.

Shorelines

[10 V.S.A. § 6086(a)(1)(F)]

106. The Project will not have undue adverse impacts on shorelines. This finding is supported by findings 107 and 110, below.

107. The proposed Georgia-Ballard Road line and the Ballard Road switching station are not located on or adjacent to a shoreline. Upton pf. at 14-15.

108. The Milton-St. Albans line crosses the Lamoille River adjacent to the GMP Milton Station hydroelectric generation facility. The Project will require the replacement of the electrical conductors between existing structures on both riverbanks. The existing structures will remain in place. The replacement of the electrical conductors will have no impact on the shoreline because: (a) the condition of the shoreline or the water will not change; (b) access to the river and its associated recreational opportunities will not change; (c) existing riverbank vegetation or screening will not be cleared; and (d) existing vegetative cover will continue to stabilize the riverbank from erosion. Upton pf. at 15; exhs. GMP-TOU-4D, GMP-TOU-11A and Joint-1 at 2.

109. The Milton-St. Albans line must of necessity be located on the shoreline because it connects facilities on opposite sides of the river, neither of which can practicably be relocated.

The crossing will require approval from the U.S. Army Corps of Engineers ("ACOE") under Section 10 of the federal Rivers and Harbors Act. The replacement of the electrical conductors at the crossing will not occur until the Section 10 permit is received. Upton pf. at 15.

110. The VELCO Components of the Project are not located on or adjacent to a shoreline. Follensbee pf. at 11.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

111. The Project will not have undue adverse impacts on significant wetlands under the Vermont Wetlands Rules. This finding is supported by findings 112 through 118, below.

112. Wetland impacts have been avoided to the greatest practical extent in the proposed design of the Project. Impacts to significant wetlands associated with very small amounts of fill for the proposed Ballard Road switching station and Georgia-Ballard Road line will require wetland permits from the ACOE and DEC. Applications for the ACOE and ANR wetland permits have been filed and construction will not commence until both approvals are received. Upton pf. at 15-16; exhs. GMP-JRF-2A(rev), GMP-JRF-2B(rev), GMP-RCJ-1A(rev), GMP-RCJ-1B(rev), GMP-TOU-3A, GMP-TOU-3B, GMP-TOU-11A, and Joint-2 at 3.

113. The reconductoring of the Milton-St. Albans line is non-jurisdictional maintenance work under the Clean Water Act and qualifies as an allowed use under the Vermont Wetland Rules, provided that best management practices ("BMPs") are followed. GMP will follow the applicable BMPs during the reconductoring work. If any unanticipated grading or temporary construction matting is required within wetlands or their protected upland buffers, those activities will not commence until GMP has obtained any required approvals from DEC and ACOE. Upton pf. at 15-16; exhs. GMP-TOU-4A through 4D, and GMP-TOU-11A.

114. The closest wetland to the Georgia substation is a Class III wetland located approximately 60 feet from the proposed work activities. Three wetlands were also identified within the East Fairfax substation parcel. One is located in the southwestern corner of the parcel and the other two are located along the western side of the parcel. The Project will not impact

the wetlands located near the Georgia and East Fairfax substations. Follensbee pf. at 11-12; exhs. VELCO-TF-2, VELCO-TF-4, and VELCO-TF-5.

115. GMP will obtain a Vermont individual wetland permit prior to commencement of construction or site preparations activities for the Project. All construction will be performed in accordance with the terms and conditions of the wetland permit and this Order. GMP will consult with ANR's wetlands program for guidance in the event of an apparent conflict between terms and conditions of this Order and the wetland permit issued for the Project. Upton pf. at 15-16; exh. Joint-1, Attachment 1.

116. Construction equipment access and work within all wetlands (class II and III) for the Project will follow a hierarchy which will result in the least impact, given the time, field conditions, safety and feasibility at the time of the activities. The acceptable approach sequence to access and work in wetlands if existing upland access cannot be reasonably obtained, or existing access roads are not available, will be as follows:

> (a) Access wetland during dry or frozen conditions from November 1 through March 15.
>
> (b) Under dry conditions use the "dry evaluation procedure" to determine whether temporary mats are required.
>
> (c) Use temporary construction mats in areas where ruts and soil disturbance are likely.

Exh. Joint-1, Attachment 1.

117. The Project will adhere to the following practices concerning wetlands:

> (a) Required restoration activities shall be performed as soon as practical after access and construction activities are complete within the wetland. No observable ruts shall remain after restoration efforts are complete.
>
> (b) All equipment shall be cleaned so as to contain no observable soil or vegetation prior to entry into all wetlands and buffer zones to prevent the spread of invasive species. If any removed material contains invasive species, care shall be taken to dispose of such material in a manner that does not spread the invasive species to new areas.
>
> (c) The vegetation management practices, described in Finding 102, shall also apply for work in all wetlands and wetland buffers, in addition to applicable

> BMP's developed by the Agency of Natural Resources' Secretary as incorporated in the Vermont Wetland Rules.

Exh. Joint-1, Attachment 1.

118. The Project will not have an undue adverse impact on wetlands. GMP will comply with applicable BMPs for affected wetlands and comply with the identified wetland conditions in this Order and the Vermont individual wetland permit. Upton pf. supp. at 2; exhs. Joint-1, Attachment 1 and Joint-2 at 3.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

119. The Project will not have an undue adverse impact on water supplies. A water supply will not be required for the GMP Components of the Project. There is sufficient existing water supply for the VELCO Components of the Project. For the construction activities, any necessary water will be obtained from the private water supplies on-site, a local municipal water source, or other approved location. Upton pf. at 16; Follensbee pf. at 9-10.

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

120. The Project will not result in unreasonable soil erosion or a reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result. This finding is supported by findings 121 through 123, below.

121. All Project work will take place within or adjacent to existing substation facilities or transmission right-of-ways. All tree clearing will be in accordance with GMP's vegetation maintenance plan. Upton pf. at 17.

122. GMP received a stormwater construction permit for the construction of the proposed Ballard Road switching station. The permit's requirements include standards for temporary and final stabilization of all earth disturbance and adherence to *The Low Risk Site Handbook for Erosion Prevention and Sediment Control*. Upton pf. at 17; exh. Joint-2 at 1-2.

123. Project work at the Georgia substation will occur within areas of previous disturbance and/or within the substation fence atop the gravel substation yard. Project work at the East

Fairfax substation will require minimal tree clearing and the expansion of the fence and gravel substation yard. Project work will be limited in nature and will involve less than one acre of earth disturbance. Erosion controls will be installed during construction, as needed, and the work will be performed in accordance with the VELCO *Environmental Guidance Manual* and DEC standards for erosion prevention and sediment control. Follensbee pf. at 5; exh. VELCO-TF-6.

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

124. The 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. This finding is supported by findings 125 through 127, below.

125. Access to the proposed Ballard Road switching station will be from Ballard Road through a new driveway. GMP has submitted plans for the driveway entrance to the Town of Georgia for review. When construction is complete, traffic to the substation will be minimal, consisting of periodic inspection and maintenance visits. The Project will not impact access to the right-of-ways affected by the Project. Upton pf. at 17.

126. The GMP Components of the Project will require the use of oversized vehicles, and coordination with and permits from the Vermont Agency of Transportation. GMP will obtain all required permits and comply with all conditions included in the permits. Exh. Joint-2 at 3.

127. The VELCO Components of the Project will pose only minor, short duration traffic impacts, if any, due to deliveries of equipment and material to the Georgia and East Fairfax substations during the construction period. Deliveries will use existing roads with vehicles that are commonly used on public roads. During delivery of any large equipment, VELCO will employ the services of traffic control personnel to manage traffic flow. VELCO will obtain all required highway permits associated with the Project work and deliveries. Sebastiao pf. at 17-18.

Educational Services

[10 V.S.A. § 6086(a)(6)]

128. The Project will not cause any unreasonable burden on the ability of any municipality to provide educational services. Upton pf. at 17; Sebastiao pf. at 18.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

129. The Project will not cause any unreasonable burden on the ability of any municipality to provide municipal or governmental services. Upton pf. at 18; Sebastiao pf. at 18.

Aesthetics, Historic Sites and Rare and Irreplaceable Natural Areas

[10 V.S.A. § 6086(a)(8)]

130. The Project will not have any undue adverse impacts on the scenic or natural beauty, aesthetics, historic sites, or rare and irreplaceable natural areas. This finding is supported by findings 131 through 160, below.

Aesthetics

131. The proposed Georgia-Ballard Road line will be located within an existing VELCO transmission right-of-way traveling generally east to west between the Georgia Substation and the Milton-St. Albans transmission line, which runs north to south. The VELCO right-of-way is 200 feet wide, contains a single 115 kV transmission line with H-frame structures, and is generally maintained with a cleared width of 150 feet. East of the Milton-St. Albans line, the VELCO right of way contains a second, subtransmission line owned by GMP (the Wyeth Tap). Upton pf. at 19; exhs. GMP-TOU-5A and GMP-TOU-5B.

132. The proposed Georgia-Ballard Road line will occupy the northern edge of the VELCO right-of-way and will require an additional 50 feet of clearing along its entire length. The proposed line will run parallel with the existing VELCO line for virtually its entire length, with the exception of its connections with the substations at either end, where it will need to cross under the VELCO line. Structures will be H-frame construction and will match the style and

alignment of the existing VELCO structures. Along the majority of the right-of-way, both the VELCO and GMP lines will be carried on two-pole, H-frame structures; at angle points, there will be three-pole structures. Upton pf. at 20; exhs. GMP-TOU-5A and GMP-TOU-5B.

133. The area east of Ballard Road is already occupied by multiple transmission lines. The proposed Georgia-Ballard Road line will appear similar to these lines, which will avoid the introduction of a new element into the affected views of nearby agricultural land and the more distant Green Mountains. Upton pf. at 20-21; exhs. GMP-RCJ-1A(rev) and GMP-RCJ-1B(rev).

134. The proposed Georgia-Ballard Road line will approximately double the number of pole structures in the existing right-of-way. The cleared width of the right-of-way will be expanded by 50 feet, which is significant in the context of a corridor currently maintained at a width of 150 feet. Upton pf. at 21-22.

135. Views from public vantage points and homes are extremely limited along the proposed Georgia-Ballard Road line, but they do exist in the immediate area of the Sodom Road and Ballard Road crossings. At these crossings, views of the expanded right-of-way and proposed line will be briefly visible to traveling motorists and from one adjacent home at each location. Upton pf. at 22.

136. At the Ballard Road crossing, northbound motorists will have extremely brief and limited views, less than five seconds, of the proposed Georgia-Ballard Road line. The area just south of the right of way is wooded on both sides, and with the exception of conductor wires crossing the road, the lines will not be clearly visible until the observer is under them. Southbound motorists will see the VELCO and proposed lines clearly as they drive to and under the right-of-way and where it crosses under the VELCO line and enters the substation area. These views will still be quite short in duration, approximately 6 to 8 seconds. The presence of a steep bank on the west side of the road, which is vegetated primarily with sumac and small hardwoods, will greatly limit the extent of views of motorists to the west. Upton pf. at 22; exhs. GMP-TOU-6, GMP-TOU-6A through 6D.

137. At the Ballard Road crossing, one residence is located on the west side of Ballard Road, approximately 150 feet from the edge of the expanded cleared area within the right-of-way. The residence is approximately 350 feet from Ballard Road and 25 to 30 feet above the road. Views

of the proposed line on the west side of Ballard Road will be screened by existing vegetation, which will not be impacted by the Project. A sugarhouse, portions of the lawn and driveway, and several trees along the driveway are located within the right-of-way. Several mature cottonwoods along the driveway, and a group of small maples behind the sugarhouse, will be removed to accommodate the proposed line. The addition of two pole structures on the property and the removal of some of the trees lining the driveway will change the appearance of the right-of-way in close proximity to the residence. Upton pf. at 22-23; exh. GMP-TOU-7.

138. At the Sodom Road crossing, views of the proposed Georgia-Ballard Road line are limited by existing terrain and vegetation. The Project will require selective clearing on the west side of Sodom Road, which will increase the visual impact for the brief view in the east direction. Views will remain brief for motorists traveling in either direction. There is a very brief long-distance view of the right-of-way to the west, which will be less than five seconds in duration. Upton pf. at 23-24; exhs. GMP-TOU-3A and GMP-TOU-5A.

139. At the Sodom Road crossing, one residence is located on the west side of Sodom Road, approximately 70 feet from the limits of clearing on the southern edge of the right-of-way. The VELCO line is located between the residence and the proposed Georgia-Ballard Road line. Views of the proposed line to the west will be screened by existing vegetation, which will not be impacted by the Project. The residence will be screened from views along the right-of-way by trees lining the east side of Sodom road and the south side of the right-of-way. From the lawn of the residence, the additional clearing between the road and the top of the hill to the east will be plainly visible. GMP met with the property owner on December 10, 2013, to discuss the proposed line, including the goals to minimize tree removal and avoid impacts to the streambank. Upton pf. at 24-25; exh. GMP-TOU-8.

140. The proposed Georgia-Ballard Road line will not be offensive or shocking because the proposed line will be located in an existing right-of-way and will not change the character of the surrounding landscape. Upton pf. at 25-26.

141. The proposed Georgia-Ballard Road line will not violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area. There is no clear, written community standard in the municipal or regional plan that would prevent the addition of

transmission facilities in order to improve electric reliability, provided that necessary infrastructure upgrades are designed and constructed in ways that will protect important natural and cultural resources. The proposed line meets this standard. Upton pf. at 25.

142. All reasonable mitigation steps have been taken for the proposed Georgia-Ballard Road line. The structures for the proposed line will be located within the already cleared portion of the right-of-way, reducing the area of needed new tree clearing by roughly half. The proposed line will run parallel with the existing VELCO line, maintaining the alignment of the existing corridor, and changing only in increased width. The pole structures will match the existing VELCO structures in material, pole placement, and span length. Upton pf. at 26.

143. The proposed Georgia-Ballard Road line will not have undue adverse aesthetic impact. Upton pf. at 26.

144. The proposed Ballard Road switching station will consist of a fenced area, 110 feet by 80 feet, gravel yard, structural steel and related components, and a control building. The site is currently wooded, with a mixture of mature upland hardwood and softwood, and an emergent wetland in the northernmost portion, which extends into an adjacent pasture. The proposed station will be located directly adjacent to the existing VELCO line and the Milton–St. Albans line, immediately southwest of the Wyeth Tap. Upton pf. at 26-28; exhs. GMP-TOU-6, GMP-TOU-6A through 6H.

145. North of the proposed Ballard Road switching station are open agricultural fields, traversed by the VELCO line, which runs east to west, and the Milton–St. Albans line, which runs north to south. The closest farm structure is approximately 750 feet from the proposed switching station, at an elevation 20 to 30 feet higher than the station. A barn is visible from the site, but vegetation and farm buildings screen the proposed switching station from the farmhouse. Upton pf. at 26-27; exhs. GMP-TOU-6, GMP-TOU-6A through 6H.

146. The proposed Ballard Road switching station will be located at 60 to 70 feet below the elevation of Ballard Road. The closest residence is located approximately 450 feet west of the site on Ballard Road, at the crossing for the proposed Georgia-Ballard Road line. Fontaine Drive is located south of the proposed station, with the closest residences at a distance of 600 to 800 feet and at an elevation 30 to 50 feet above the substation. Existing topography screens the site

from Fontaine Drive and from the residences directly west of the site on Ballard Road. Upton pf. at 27.

147. GMP met with the property owner on Ballard Road on November 8, 2013, to explain the Project and determine whether the remaining uncleared trees will provide an adequate visual screen after construction of the proposed line and switching station. GMP, at the property owners' request, will conduct a post-construction site visit with the home owners to review the effectiveness of the mitigation measures. Upton pf. at 28; exh. Joint-2 at 3.

148. The proposed Ballard Road switching station will be situated on level ground, in order to avoid excessive earthwork in the surrounding slopes and maintain appropriate distances from the closest residences. The yard will be located to avoid unnecessary wetland fill and maintain a portion of the existing tree cover between the north fence and the adjacent pasture and right-of-way. Upton pf. at 27-28.

149. The switching station will not be visible from homes or public vantage points in any direction, with the exception of Ballard Road from the northwest, where it will be briefly visible to southbound travelers, and the residence on the west side of Ballard Road. Upton pf. at 28.

150. The proposed Ballard Road switching station will not be offensive or shocking because the switching station has been located and designed to minimize visibility from surrounding properties and public vantage points. The proposed switching station will be located in an area already dedicated to utility use and is not out of character with its surroundings. Upton pf. at 28-29; exh. Joint-2 at 3.

151. The proposed Ballard Road switching station will not violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area. There is no clear, written community standard in the municipal or regional plan that would prevent the upgrade and expansion of transmission facilities, provided that appropriate steps are taken to identify and protect potentially significant natural and cultural resources. The Project has taken these steps. Upton pf. at 28-29; exh. Joint-2 at 3.

152. All reasonable mitigation steps have been taken for the proposed Ballard Road switching station. The proposed switching station is located on a parcel of land that is almost hidden from view from nearby roads and residences. The proposed switching station has been

designed to minimize earthwork and wetland impacts while retaining some of the forest cover between the north fence and the VELCO right-of-way. Upton pf. at 29; exh. Joint-2 at 3.

153. The proposed Ballard Road switching station will not have an undue adverse aesthetic impact. Upton pf. at 28-29; exh. Joint-2 at 3.

154. The proposed reconductoring of the Milton-St. Albans line will consist entirely of the replacement of component parts. The existing electrical conductors will be replaced with slightly larger wire, and most of the pole structures will be replaced. None of the replacement poles will be more than ten feet taller than the existing poles. All poles will be replaced in place, with no change to the existing alignment, structure type, or span lengths. Therefore, the reconductored line will not result in an adverse aesthetic impact. Upton pf. at 29-30; exhs. GMP-TOU-4A through GMP-TOU-4D.

155. The proposed upgrades to the Georgia substation will be within the existing fenced yard of the substation and will be of a similar scale as existing equipment. The vegetation and topography surrounding the Georgia substation effectively hide the substation from most roadside views. Therefore, the proposed upgrades to the Georgia substation will not result in an adverse aesthetic impact. Sebastiao pf. at 17; exh. VELCO-JS-6.

156. The proposed upgrades to the East Fairfax substation will result in a minor expansion to the fenced area of the substation and some tree clearing to the north of the yard. The proposed upgrades will result in no major changes or large structural additions to the substation yard, and the upgrades will be similar to the existing equipment. The dense existing woodland surrounding the East Fairfax substation effectively hides the substation from view. Therefore, the proposed upgrades to the East Fairfax substation will not result in an adverse aesthetic impact. Sebastiao pf. at 17; exh. VELCO-JS-7.

Historic Sites

157. The GMP Components of the Project and related construction activities will not have an undue adverse impact on historic sites. The GMP Components would not impact any significant historic structures. Five archeologically sensitive areas were identified and further field studies

concluded the area contains no below-ground historic sites. Upton pf. at 30; exhs. GMP-TOU-9, GMP-TOU-11A, and Joint-2 at 4 and Attachment B.

158. The VELCO Components of the Project and related construction activities will not have an undue adverse impact on historic sites. There is one previously listed State Register historic property identified in the Georgia substation area that has been completely altered, compromising its listing in the State Register. There is one archeological site, located over 750 feet north of the Georgia substation. This site will be avoided and not impacted by the Project. There are no historic sites at the East Fairfax substation. Follensbee pf. at 4-5; exh. VELCO-TF-3.

Rare and Irreplaceable Natural Areas

159. There are no known rare or irreplaceable natural areas in the vicinity of the GMP Components of the Project. Upton pf. supp. (3/7/14) at 30; exhs. GMP-TOU-11A and GMP-TOU-11B.

160. There are no known rare or irreplaceable natural areas in the vicinity of the VELCO Components of the Project. Follensbee pf. at 12-13; exhs. VELCO-TF-4 and VELCO-TF-5.

Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

161. The Project will not have undue adverse impacts on any necessary wildlife habitat or endangered species. This finding is supported by findings 162 through 165, below.

162. One site along the Milton–St. Albans line was found to contain a small population of Merritt Fernald's Sedge (Carex merritt-fernaldii), a state ranked S1 species. GMP will comply with the following provisions to protect the Fernald's Sedge:

> (a) The area of Merritt Fernald's Sedge population located near Pole 77 and depicted on Exhibit GMP-TOU-4A shall be flagged by a qualified botanist prior to construction in order to exclude workers, vehicles or equipment from entering the area. Construction crews shall be briefed on the plant's identity, location of this population, and the need for avoidance, prior to the commencement of any site preparation and construction activities.
>
> (b) Upon completion of the Project, GMP shall perform monitoring of the Fernald's Sedge population every eight years and shall implement appropriate best

management practices to minimize impacts to the population during all future right-of-way maintenance activities.

Upton pf. supp. (3/7/14) at 1-2; exhs. GMP-TOU-4D, GMP-TOU-11A, GMP-TOU-11B, and Joint-1, Attachment 1.

163. GMP will perform all Project work in the vicinity of the Lamoille River crossing in Milton (depicted on Exhibit GMP-TOU-4D) during the period between August 1 and March 15 in order to not disturb osprey (Pandion haliaetus) during their nesting season. Upton pf. supp. (3/7/14) at 1-2; exh. Joint-1, Attachment 1.

164. The GMP Components of the Project will not have an undue, adverse impact on any necessary wildlife habitat or endangered species. Upton pf. supp. (3/7/14) at 1-2; exh. Joint-1, Attachment 1.

165. The VELCO Components of the Project will not have an undue, adverse impact on any necessary wildlife habitat or endangered species. The presence of one population of the rare Fernald's Sedge has been identified near the eastern side of the Georgia Substation. This species will be avoided during Project construction and will not be affected by the Project. There are no occurrences of necessary wildlife habitat or rare, threatened and endangered species in the vicinity of the East Fairfax substation. Follensbee pf. at 12-13; exhs. VELCO-TF-4 and VELCO-TF-5.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

166. The Project will not unnecessarily or unreasonably endanger any public or quasi-public investment in any facility, service, or lands, and it will not materially jeopardize the function, efficiency, or safety of, or the public's use or enjoyment of or access to, any facility, service, or lands. Access to the switching station will be from Ballard Road. Access to the affected substations and right-of-ways will be unchanged. Upton pf. at 31; Sebastiao pf. at 19.

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

167. The Project is consistent with the principles for resource selection expressed in GMP's Integrated Resource Plan ("IRP"). The Project is the least cost among those alternatives that meet GMP's reliability criteria. The Project takes advantage of nearby VELCO facilities and was planned through collaboration among GMP, VELCO, and the VSPC. The Project will alleviate the severe reliability deficit that currently affects this area, leaving the area well-positioned to respond to future reliability concerns through NTAs, if appropriate, at a pace commensurate with its future load growth. Kirby pf. at 12; exh. GMP-LRK-2.

168. As a transmission-only company, VELCO does not have an integrated resource plan but periodically produces transmission studies. The Project was identified in VELCO's *2012 Vermont Long-Range Transmission Plan*, as well as in the previous two VELCO *Long-Range Transmission Plans* (2006 and 2009). Harding pf. at 8-9.

Compliance With Twenty-Year Electric Plan

[30 V.S.A. § 248(b)(7)]

169. The Project complies with the *Vermont Electric Plan* (the "Plan"). The relevant tenets of the 2011 *Vermont Electric Plan* and its 2013 addendum require utilities to provide reliable electric service at the lowest possible life-cycle cost, with due consideration for public health and safety, as well as for environmental and aesthetic impacts. The Project will improve electric service reliability on a least-cost basis. Kirby pf. at 13.

170. On July 10, 2014, the Department filed a determination, pursuant to 30 V.S.A. § 202(f), stating that the Project is consistent with the *Vermont Electric Plan*.

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

171. The Project will not result in undue adverse impacts on any waters that have been designated as outstanding resource waters by the Water Resources Board, because the Project is not located on or near any segment of such waters. Upton pf. at 32; Follensbee pf. at 6.

Waste-to-Energy Facility

[30 V.S.A. § 248(b)(9)]

172. The Project does not involve construction of a waste-to-energy facility. Therefore, this criterion is inapplicable.

Existing or Planned Transmission Facilities

[30 V.S.A. § 248(b)(10)]

173. The Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers. This finding is supported by findings 174 and 175, below.

174. The Project will interconnect with existing transmission lines, providing improved reliability and operational flexibility. The Project's main component, a load-serving transformer, provides a significant improvement in system performance and reliability for the local load serving subtransmission system. Harding pf. at 9.

175. The Project is reinforcing the existing 34.5 kV system providing service in the Milton, Georgia, and St. Albans areas, the majority of which was originally constructed in 1956. The Project will impose no significant disadvantages or liabilities on any Vermont utilities or their customers. Johnson pf. at 6; Kirby pf. at 13.

IV. CONCLUSION

GMP, VELCO, the Department, and ANR filed an MOU with proposed findings of fact and order and all parties agreed that the Board should issue a CPG. The parties have waived their rights under 3 V.S.A. § 811 to review and comment upon a Proposal for Decision, or present oral argument, provided that the Board issues an order consistent with the MOU. Given that the Proposal for Decision is consistent with the MOU, I am not circulating this Proposal for Decision to the parties for their review and comment.

GMP and VELCO have provided sufficient evidence to demonstrate that the Project complies with all applicable Section 248 criteria. Based upon the evidence in the record, I conclude that the Project, with the conditions identified below:

(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 load 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 resource 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;

(i) does not involve a waste-to-energy facility; and

(j) can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers.

I recommend that the Board approve the Project and issue a CPG for construction of the Project with the conditions set forth in the proposed Order and CPG, below.

Dated at Montpelier, Vermont, this 30th day of July, 2014.

s/Mary Jo Krolewski
Mary Jo Krolewski
Hearing Officer

V. ORDER

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

1. The findings, conclusions, and recommendations of the Hearing Officer are adopted.

2. The construction of a transmission line and associated improvements in the Towns of Georgia, Milton, and Fairfax, Vermont (the "Project"), by Green Mountain Power Corporation ("GMP"), and Vermont Electric Power Company, Inc. and Vermont Transco LLC (together, "VELCO"), 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.

3. Construction, operation, and maintenance of the Project shall be in accordance with the plans and evidence as submitted in this proceeding. Any material deviation from these plans or substantial change in the Project must be approved by the Board. Failure to obtain advance approval from the Board for a material deviation from the approved plans or substantial change to the Project may result in the assessment of a penalty pursuant to 30 V.S.A. §§ 30 and 247.

4. Prior to proceeding with construction, GMP and VELCO shall obtain all necessary permits and approvals. Construction, operation, and maintenance of the Project shall be in accordance with such permits and approvals, and with all other applicable regulations, including those of the Vermont Agency of Natural Resources.

5. GMP and VELCO shall restrict construction activities and related deliveries, except during required outages, to hours between 7:00 A.M. and 7:00 P.M. Monday through Friday and between 8:00 A.M. and 5:00 P.M. on Saturday, and shall cease construction activities on Sundays and state and federal holidays.

6. All stream crossings for the Project shall be performed in accordance with the VELCO Stream Crossing Guidance, Exhibit TF-6, Attachment E-1, and any relevant updated provisions contained in the new Vermont Stream Alternation general permit issued April 2014.

7. During Project construction, GMP shall replace the existing approximately 18 to 24-inch culvert under the farm road near the proposed Ballard Road switching station with a new structure of similar size. The new structure shall be installed in a manner that maintains

connection for aquatic organism passage for frogs, salamanders, and other wetland-dependent species between the existing pond and the downstream wetland complex.

8. GMP shall take the following actions in order control the spread of invasive species and to limit the introduction of additional invasive species in the Project area:

(a) All equipment shall be cleaned so as to contain no observable soil or vegetation prior to entering the Project site. If any removed material contains invasive species, care shall be taken to dispose of such material in a manner that does not spread the invasive species to new areas. Equipment shall also be cleaned in this manner after working in areas where invasive species have been identified.

(b) Following completion of construction, GMP shall monitor the area of expanded right-of-way for any pioneer populations of invasive species on the Quarantine List and selected Watch List for a period of five years. Such monitoring shall also include the following, regardless of their status on the referenced lists: European Alder (Alnus glutinosa), Wild Chervil (Anthriscus sylvestris), Autumn-Olive (Elaeagnus umbellata), Reed Canary Grass (Phalaris arundinacea), and Rambler Rose (Rosa multiflora).

(c) During the required monitoring period, GMP shall provide the Agency of Natural Resources with an annual report documenting which species were present, their extent, and measures taken to control them. GMP shall take appropriate steps in accordance with an integrated vegetation management plan to control and eradicate any pioneer populations.

9. GMP shall limit their vegetation management practices within riparian corridors and all wetlands and wetland buffers to specific manual and chemical practices which are more fully described in GMP's vegetation management plan. The manual methods include chainsaws and brush saws. The chemical methods include low-volume foliar application, low-volume basal application, and cut stump treatment. Vegetation management for all other areas of the Project shall be performed in accordance with the suite of practices described in GMP's most recent vegetation management plan.

10. For the riparian areas at Sodom Road Crossing and east of the Georgia substation, the initial clearing and construction activities for the Project, as well as future maintenance activities, shall achieve the following objectives to the maximum extent practicable: (a) maintain stable vegetation canopy cover (with a goal of maintaining shading of streams at or near pre-construction levels); (b) maintain soil and stream bank stability; and (c) maintain native

vegetation species, while allowing adequate clearances for the safe and reliable operation of the electrical transmission line.

11. The Project shall adhere to the following work practices to achieve the objectives to limit adverse impacts to the riparian areas at Sodom Road Crossing and east of the Georgia substation:

(a) The utilization of selective clearing methods, such that only the trees and species necessary to ensure safe and reliable operation of the electrical transmission line are removed from these areas;

(b) Allowing cut stumps and root systems to remain in place after clearing activities (i.e. no stumping or grubbing);

(c) All clearing activities will be accomplished utilizing the acceptable vegetation management practices identified in paragraph 9; and

(d) If at any time GMP, VELCO, and the Agency of Natural Resources believe the objectives to limit adverse impacts to the riparian areas are not being met, GMP, VELCO, and the Agency of Natural Resources agree to work collaboratively and in good faith to develop alternative work practices in order to meet the riparian objectives, taking into consideration former and current field conditions.

12. GMP shall obtain a Vermont individual wetland permit prior to commencement of construction or site preparation activities for the Project. All construction shall be performed in accordance with the terms and conditions of the wetland permit and this Order.

13. Construction equipment access and work within all wetlands (class II and III) for the Project shall follow a hierarchy which will result in the least impact, given the time, field conditions, safety and feasibility at the time of the activities. The acceptable approach sequence to access and work in wetlands if existing upland access cannot be reasonably obtained, or existing access roads are not available, shall be as follows:

(a) Access wetland during dry or frozen conditions from November 1 through March 15.

(b) Under dry conditions use the "dry evaluation procedure" to determine whether temporary mats are required.

(c) Use temporary construction mats in areas where ruts and soil disturbance are likely.

14. The Project will adhere to the following practices concerning wetlands:

(a) Required restoration activities will be performed as soon as practical after access and construction activities are complete within the wetland. No observable ruts shall remain after restoration efforts are complete.

(b) All equipment shall be cleaned so as to contain no observable soil or vegetation prior to entry into all wetlands and buffer zones to prevent the spread of invasive species. If any removed material contains invasive species, care shall be taken to dispose of such material in a manner that does not spread the invasive species to new areas.

(c) The vegetation management practices described in Paragraph 9 shall also apply for work in all wetlands and wetland buffers, in addition to applicable Best Management Practices developed by the Agency of Natural Resources' Secretary as incorporated in the Vermont Wetland Rules.

15. GMP shall comply with the following provisions to protect Merritt Fernald's Sedge:

(a) The area of Merritt Fernald's Sedge population located near Pole 77 and depicted on Exhibit GMP-TOU-4A shall be flagged by a qualified botanist prior to construction in order to exclude workers, vehicles and equipment from entering the area. Construction crews shall be briefed on the plant's identity, location of this population, and the need for avoidance, prior to the commencement of any site preparation and construction activities.

(b) Upon completion of the Project, GMP shall perform monitoring of the Merritt Fernald's Sedge population every eight years and shall implement appropriate best management practices to minimize impacts to the population during all future right-of-way maintenance activities.

16. GMP shall perform all Project work in the vicinity of the Lamoille River crossing in Milton (depicted on Exhibit GMP-TOU-4D) during the period between August 1 and March 15 in order to not disturb osprey (Pandion haliaetus) during their nesting season.

17. Prior to commencing construction of their respective Project components, GMP and VELCO shall each file with the Board, the parties, and the Towns of Georgia, Milton and Fairfax a letter stating that they have fulfilled all pre-construction Certificate of Public Good conditions and that they intend to commence construction of the Project.

18. Prior to commencing operation of their respective Project components, GMP and VELCO shall each file with the Board, the parties, and the Towns of Georgia, Milton and Fairfax

a letter stating that they have fulfilled all pre-operation Certificate of Public Good conditions and that they intend to commence operation of the Project.

Dated at Montpelier, Vermont, this 7th day of August, 2014.

s/James Volz	
	PUBLIC SERVICE
s/John D. Burke	BOARD
	OF VERMONT
s/Margaret Cheney	

OFFICE OF THE CLERK

FILED: August 7, 2014

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.