



T.J. BOYLE ASSOCIATES
LANDSCAPE ARCHITECTURE & PLANNING

MEMORANDUM

To: Ryan Johnson, VELCO
From: Jeremy B. Owens
Date: December 19, 2024
Re: VELCO K24-5 – Aesthetic Review of Structure Replacement

Introduction

T. J. Boyle Associates, LLC, a landscape architecture and planning firm located in Burlington, Vermont, was retained by Vermont Transco LLC, and Vermont Electric Power Company, Inc. (collectively “VELCO”), to conduct a visual analysis to evaluate potential impacts due to a proposed structure replacement along the 115kV line in the Town of Waterbury, Vermont, known as the K24-5 line (referred to as the “Project”).

T. J. Boyle Associates has conducted field investigations, analyzed geographic information system (“GIS”) data, USGS maps, aerial photography, detailed design plans, and used the latest computer technologies to best understand the Project and how it would alter the visual character of the landscape in which it is located. This aesthetic analysis determines whether changes to the landscape’s visual character attributable to the proposed Project would be adverse, and if so, whether these changes would also be undue.

Methodology

Section 248(b)(5) of Title 30 of the Vermont Statutes Annotated requires that the Vermont Public Utility Commission find a proposed project will not have an “undue adverse effect” on a proposed project site’s aesthetics. This requirement is outlined in the Quechee Lakes Decision (Quechee Lakes Corporation, #3EW0411-EB and #30349-EB [1986]). As explained in the Public Utility Commission’s order in Docket No. 6860, this Commission applies the Quechee Test in Section 248 proceedings, as follows:

The Public [Utility Commission] has adopted the Environmental Board’s Quechee analysis for guidance in assessing the aesthetic impacts of proposed projects under Section 248. We have previously explained the components of the Quechee analysis as follows:

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

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

The next step in the two-part test, once a conclusion as to the adverse effect of the project has been reached, is to determine whether the adverse effect of the project is “undue.” The adverse effect is considered undue when a positive finding is reached regarding any one of the following factors:

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

Our analysis, however, does not end with the results of the Quechee test. Instead, our assessment of whether a particular project will have an “undue” adverse effect on aesthetics and scenic or natural beauty is “significantly informed by overall societal benefits of the project.”

Petitions of the Vermont Electric Power Company, Inc. (VELCO), Vermont Transco, Docket No. 6860, Vt. Pub. Util. Comm’n (Jan. 28, 2005) at 79 (footnotes omitted).

T. J. Boyle Associates interprets the first prong of the Quechee test to first require an assessment of the project’s visibility. Visibility establishes the underlying method for which all visual aesthetics are evaluated to comply with the purpose of the Quechee Test. For instance, a project’s design, materials and colors may be completely out of character with its surroundings, but if such project is not visible to the general public (or “average person”), then there would be no adverse visual effect. Likewise, when a project is determined to be out of character with its surroundings, one solution that the Quechee Test offers to mitigate this is to visually obscure the project with landscape mitigation or other screening, which itself is a simple reduction or occlusion of project visibility. In this way, T. J. Boyle Associates interprets the first prong of the Quechee Test to be asking, “What is the project’s visibility, and is that visibility out of character with its surroundings?” In our experience, if the Quechee Test were not interpreted in this way then a given project could be considered adverse even if it was completely invisible to surrounding areas, which would be an unreasonable interpretation and inconsistent with the purpose of the test.

Our study area for visibility of transmission facilities tends to include locations where upgrades may be visible up to approximately two miles from a project location. This distance tells us whether a given project is, or is not, visible from prominent or protected locations in the study area, or, perhaps more importantly, if a project itself is in a prominent or highly visible location. We may find that a project has an adverse effect on a particular viewpoint, but that the project does not have an adverse impact on the surrounding area as a whole.

In conducting the Quechee Analysis and preparing this report, the following three methods have been used: (1) background data collection, (2) identification of the Project viewshed, and (3) field investigation. The background data and field investigation are used to characterize the study area. Identifying the viewshed determines areas with potential visibility of the Project. All three methods are used to evaluate whether there are in fact “adverse” impacts, and if so, whether those impacts could be considered “undue.”

- (1) **Background Data Collection.** Standard data that can help describe the landscape of the Project site, the surrounding area, and the Project are assembled. These data include available Project plans and details, aerial photography, topographical maps, Geographical Information System (“GIS”) data including digital elevation model data, water and land cover information, transportation data and primary building data (public, commercial, residential), and applicable regulations such as the town plan, zoning ordinances, sub-division regulations, and the regional plan. As part of the background

data collection, a plan view of the area near the Project is created using aerial photos as the base (see Figure 3 & Appendix A). This provides an overview of the general context around the Project site.

- (2) **Viewshed Identification.** While GIS software may be used to run a viewshed analysis, for this Project, the area of visibility is easily determined through the review of aerial photography and field investigation. This is an existing line and the Project will replace an existing structure(s) that are currently visible within the landscape.

- (3) **Field Investigation.** The background review is used to focus the field investigation on areas most likely to have views of the Project. The purpose of the field investigation is to:
 - a. Verify potential visibility
 - b. Photograph views toward the Project from these and any other sensitive areas (parks, public facilities, etc.)
 - c. Photographically document the landscape’s visual character within the study area
 - d. Record notes concerning each viewpoint where photographs are taken
 - e. Identify location of photograph viewpoints using a global positioning system (“GPS”) unit

On completion of the field investigation, the GPS data is transferred to a GIS database and synchronization of the data and photograph locations is verified. Documentation of the field investigation is then prepared, which includes: (1) mapping of the routes traveled and locations of photograph viewpoints (Figure 3), and (2) a catalog of photographs or photographic inventory (Viewpoints A through F). The map and photographic inventory are coordinated through indexed viewpoint numbers. Unless specified otherwise, all single-frame photos included are captured with a ‘normal lens’ or a focal length equivalent to 50mm on a full frame camera, to most accurately replicate a person’s field of view.

TJB evaluates data from the steps above and compares existing conditions with proposed Project upgrades. The following sections of this report describe in detail the collection and evaluation of data and the resulting conclusions.

Project Description

This aesthetic review analyzes the replacement of the K24-5 structure LCP-020 in the Town of Waterbury, Vermont (the “Project”). The original structure LCP-020 was a laminated wooden angle structure located east of Blush Hill Road within the Blush Hill Meadows apartment complex. Due to premature deterioration of the original laminate wood structure and the need to avoid possible structure failure, LCP-020 was removed and replaced with two temporary angle structures while a plan for permanent replacement could be implemented. The Project involves removing the temporary angle structures and installing a new permanent self-weathering steel angle structure near the original LCP-020 structure location. A summary of the original and permanent replacement structures is provided in Table 1.

Table 1 – LCP-020 Replacement Summary*

Structure	Material	Above-Ground Length	Approximate Top of Pole Elevation	Location
Original LCP-020	Laminated Wood	88 ft	730.2'	Original
Proposed LCP-020	Self-weathering Steel (Self-supporting)	71.5 ft	724'	Approx. 23' north of original LCP-020

* See Prefiled Testimony of Ryan Johnson and William McNamara for full Project details

Evaluation of Adverse Impacts

To understand potential visibility and change in nearby landscape character between the original condition and the proposed conditions, site visits were conducted on October 23, 2024, and December 3, 2024. A map of resulting viewpoint locations is provided in Figure 3, and the associated images are provided in Viewpoints A through F at the end of this aesthetic review.

During the installation of the temporary angle structures, existing vegetation needed to be removed to provide space for the temporary poles, installation equipment and allow for conductor clearances. The removed vegetation included ten (10) common lilac shrubs that were part of the landscape mitigation required for the Lamoille County 115 kV Project (PUC Docket No. 7032). An image of the original LCP-020 laminate wood structure is provided in Figure 1 below, which was captured prior to the removal of the original LCP-020 and some of the nearby existing vegetation. The temporary angle structures as well as the stub of the original LCP-020 laminate wood pole are visible in Viewpoints A through F, and these will be removed during construction of the Project.

Because its location was near a retaining wall and in close proximity to an existing roadway within the Blush Hill Apartments property, the original laminate structure LCP-020 was previously visible from most areas of apartment complex, as can be seen in Viewpoints A, E and F.



Figure 1: Image showing original laminate wood structure #LCP-020 prior to removal of the structure and some of the existing vegetation.

The new LCP-020 self-weathering steel pole is proposed approximately 23 feet north of the original laminated pole and will have a base diameter of approximately 3-4 feet, tapering to approximately 1-2 feet at the top. The proposed overall structure height of the steel LCP-020 will be similar to (though slightly less than) the original laminated pole (see Table 1). Because the new LCP-020 pole location is 23 feet further north than the original pole location, the new pole will be more visible from the adjacent residence to the west, and existing vegetative screening that was more effective under the original conditions will become less effective with this change in pole location. Compared with the original laminated wood pole, which is larger but otherwise similar to typical round wooden poles, the new steel pole will have a dark brown color and somewhat more industrial character compared to a wood pole (see Figure 2). The new steel pole will also be visible from approximately the same area as the original structure, and will have a similar visual profile.



Figure 2: Image showing an existing self-weathering steel structure on the K24-5 line near Moscow Road in Stowe, VT.

From more distant locations, the visibility of the K24-5 transmission line is not expected to significantly change compared to the original conditions. Because the top of pole elevation of the proposed steel pole will be lower than the previous laminated pole, the proposed pole will be slightly less visible from more distant locations. Where visible, the dark brown color of the weathering steel pole will help the proposed structure blend with any background views (similar to the contrasts seen in Figure 2).

Based on this analysis, the combination of vegetation that was removed during the installation of the temporary angle structures combined with the relocation and installation of the new weathering steel pole will result in a limited adverse change to the visual character of the area compared with the original conditions.

Evaluation of Undue Adverse Impacts

Since it was determined that the Project may result in limited adverse impacts, this review continues to assess the Project under the second part of the *Quechee* Test to see if the Project impacts could be considered ‘undue’.

Community Standards: Town and Regional Plan Review

A review of both the Central Vermont Regional Plan¹ (“Regional Plan”) and the Town of Waterbury Municipal Plan² (“Town Plan”) did not reveal any scenic protections or specific policies related to the Project location or transmission facilities in general. At most, the Regional Plan states a “desire to ensure that energy generation, distribution and transmission facilities are located, designed and sized to support the Region’s economic and lifestyle demands with minimal adverse impact” (Regional Plan at p. 5-3). As such, the Project is considered compatible with the Regional and Town Plans and would not violate a clear, written community standard intended to preserve the aesthetics of scenic beauty of the area.

Project Mitigation

Several mitigation measures to help reduce visual impact of the Project were considered, such as retaining the two temporary wooden angle structures, use of a galvanized steel pole rather than weathered steel, and use of a new laminate pole similar to the original laminated pole used for LCP-020. These measures were dismissed due to the PUC’s requirement in Case No. 24-2234-PET that VELCO seek permission to install a permanent replacement of Structure LCP-020 with a steel pole and remove temporary Structure LCP-021, the high character contrast associated with using large galvanized structures in proximity to residential development, and the potential long-term hazards due to premature failure that are associated with using laminated wood structures, respectively.

To help soften the visual change to the nearest residence and the apartment complex, landscape mitigation plantings have been proposed to help restore the existing vegetation removed for installation of the temporary angle structures and to reduce visual impact associated with the new proposed self-weathering steel pole (see **Appendix A, Landscape Mitigation Plan L3.3a**). In addition to replacing the ten (10) lilac shrubs that were removed, the proposed landscape mitigation plan includes nine (9) Hawthorne shrubs, four (4) fruiting apple trees, three (3) fir trees, and forty (40) sumac shrubs. These plantings will help screen the new LCP-020 structure and help reestablish the vegetation that was removed during the installation of the emergency replacement structures.

Mitigation incorporated with the Project would reduce and limit the extent of potential adverse impacts and in time, would further reduce visibility of the structure replacement. These efforts represent generally available mitigating steps which a reasonable person would take to improve the harmony of the Project with its surroundings.

Shocking or Offensive

When evaluating whether a project would offend the sensibilities of the average person, the criteria to make this assessment is related back to the first part of the *Quechee* Test; how the project ‘fits’ within its surroundings. An ‘average person’ is considered a disinterested party, not an affected neighbor. The threshold for a project to be shocking or offensive is high, and a project would need to be entirely inconsistent with the surrounding land uses or exceptionally out of scale with the surroundings.

This assessment found the Project will result in an adverse aesthetic impact. However, visibility of the Project will be relatively limited and similar to the original conditions. Where visibility of the Project will be possible, mitigation measures have been incorporated to reduce the extent of visibility and allow the Project to fit into the character of the surrounding area. The proposed self-weathering steel pole is also similar to other self-weathering steel poles found elsewhere on the K24-5 corridor, including in Waterbury and further north in Stowe. Additionally, the original laminated wood structure was taller than the proposed structure, and located in a similar position. Based on these

¹ https://centralvtplanning.org/wp-content/uploads/2024/07/2016-CVRPC-Regional-Plan-readopted-2024_Effective-July-9-2024.pdf

² https://www.waterburyvt.com/fileadmin/files/Zoning_Planning/bb_Town_of_Waterbury_Municipal_Plan_2018_Adopted_12-3-18.pdf

considerations, as well as the mitigation measures proposed, the Project will not offend the sensibilities of the average person and will not be offensive or shocking.

Findings and Conclusions

Based on this review of potential visibility of the Project, it was concluded that the proposed self-weathering steel structure will have an adverse effect on the character of the area, particularly to the residential uses in the immediate vicinity of the Project. The removal of existing vegetation for placement of the two temporary angle structures, the slight relocation of the new structure LCP-020, and the change in material from a laminated wood pole to a self-weathering steel pole result in a limited increase in transmission structure visibility and industrial character. However, the incorporation of new and replacement landscape plantings and the use of self-weathering steel rather than galvanized steel will lessen the industrial character of the proposed structure, as well as match materials on other existing structures elsewhere along the K24-5 transmission corridor. Additionally, the proposed Project incorporates line design characteristics and materials permitted and installed for the original Lamoille County 115 kV Project (PUC Docket No. 7032). As such, the Project as proposed will not be unduly adverse to the aesthetics and the scenic and natural beauty of the area.

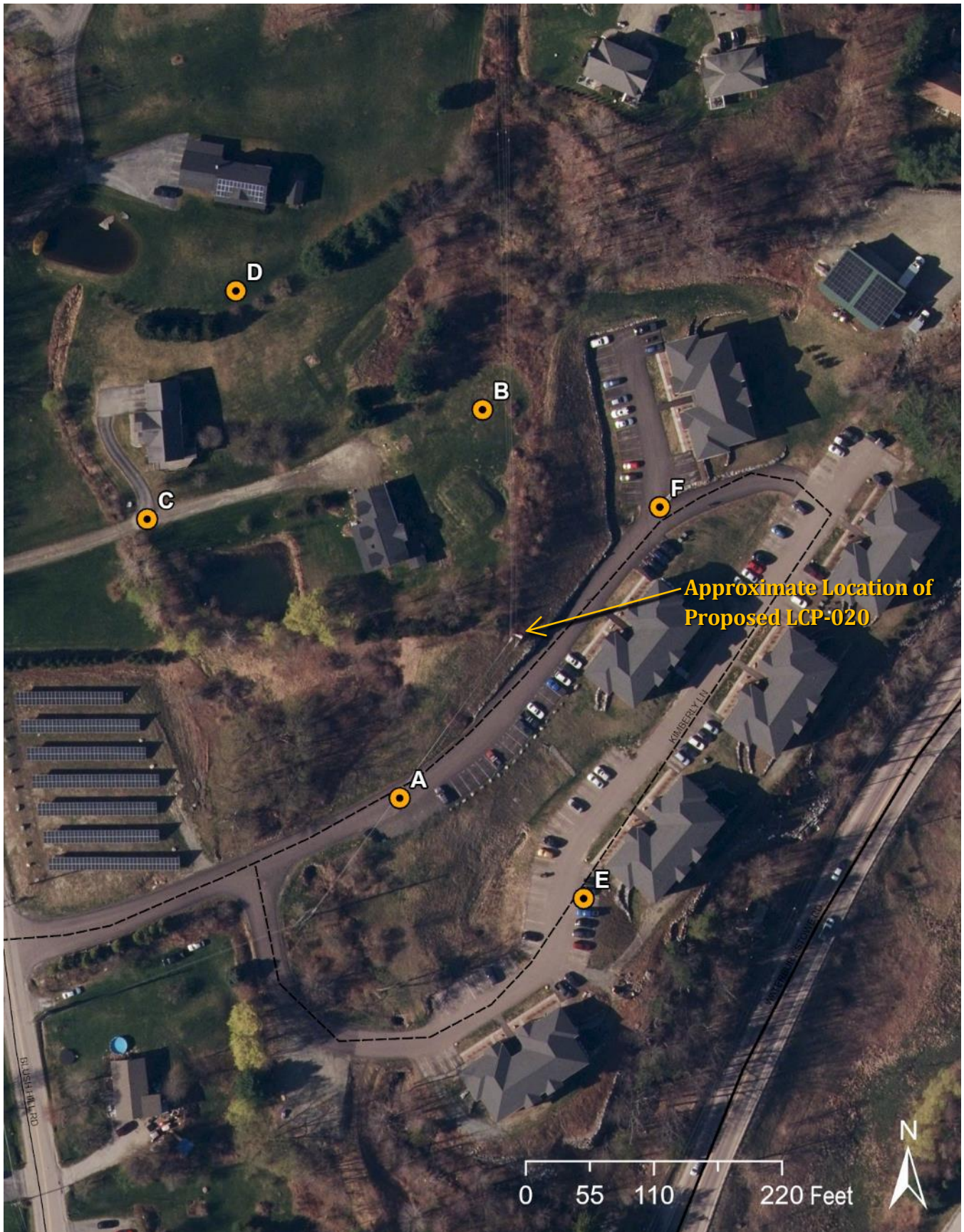


Figure 3: Aerial Image showing the area around LCP-020, including residences and the Blush Hill Meadows apartment complex.



Viewpoint A: Approximately 180° view from the Blush Hill Meadows apartment complex, southwest of LCP-020, panning from southwest (left) to northeast (right). The orange rectangle represents the image below, which is taken with a 50 mm equivalent focal length.



Viewpoint A: View from the Blush Hill Meadows apartment complex looking northeast. (50 mm equivalent.)



Viewpoint B: Approximately 270° view from the west side of the VELCO K24-5 corridor, panning from north (left) to west (right). The orange rectangle represents the image below, which is taken with a 50 mm equivalent focal length.



Viewpoint B: View from the west side of the K24-5 corridor looking south toward the proposed LCP-020 pole location. (50 mm equivalent.)



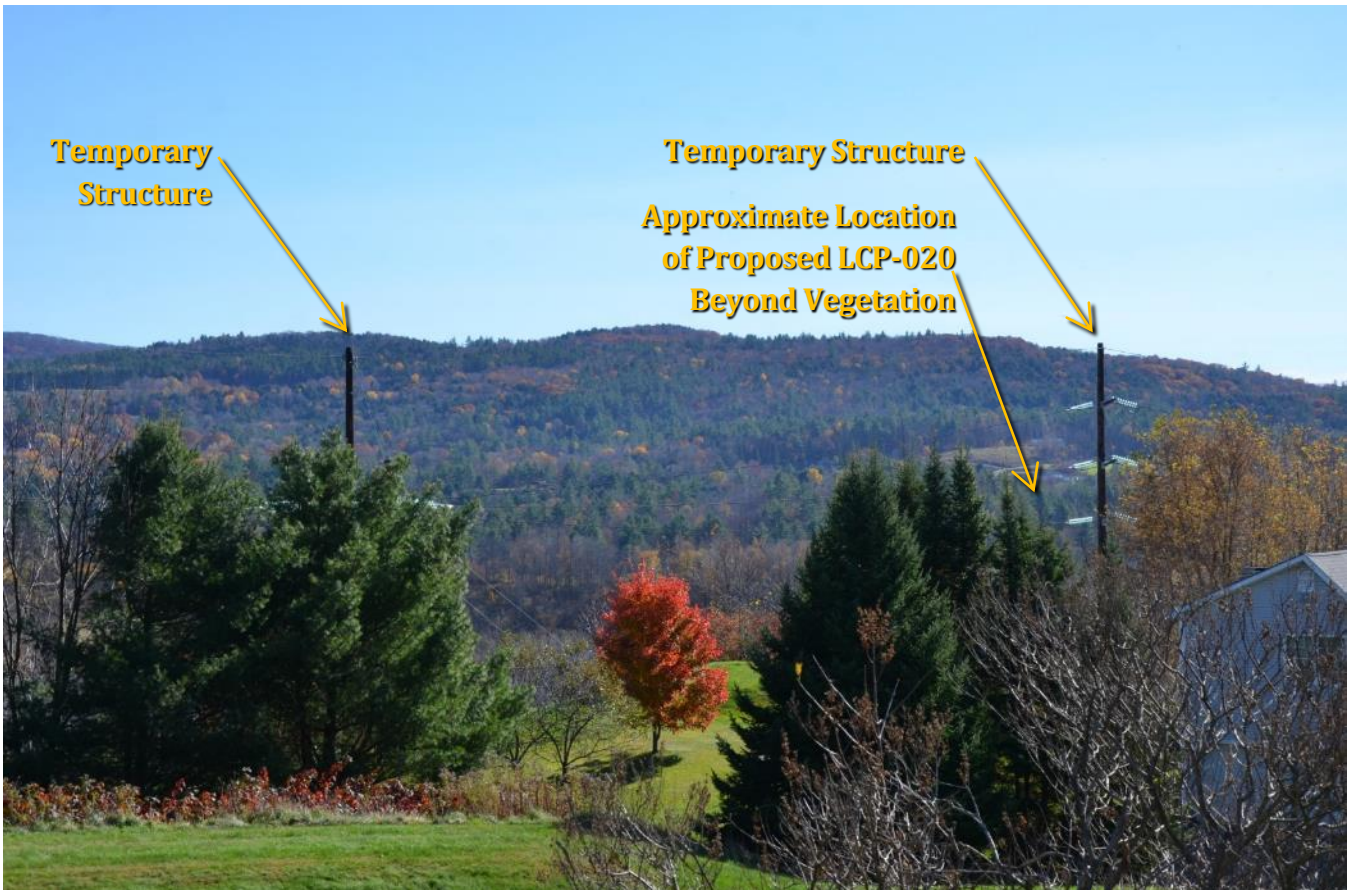
Viewpoint C: Approximately 180° view from the existing shared private drive on the west side of the K24-5 corridor, panning from north (left) to south (right). The orange rectangle represents the image below, which is taken with a 50 mm equivalent focal length.



Viewpoint C: View from the existing shared private drive looking east toward the LCP-020 structure location. (50 mm equivalent.)



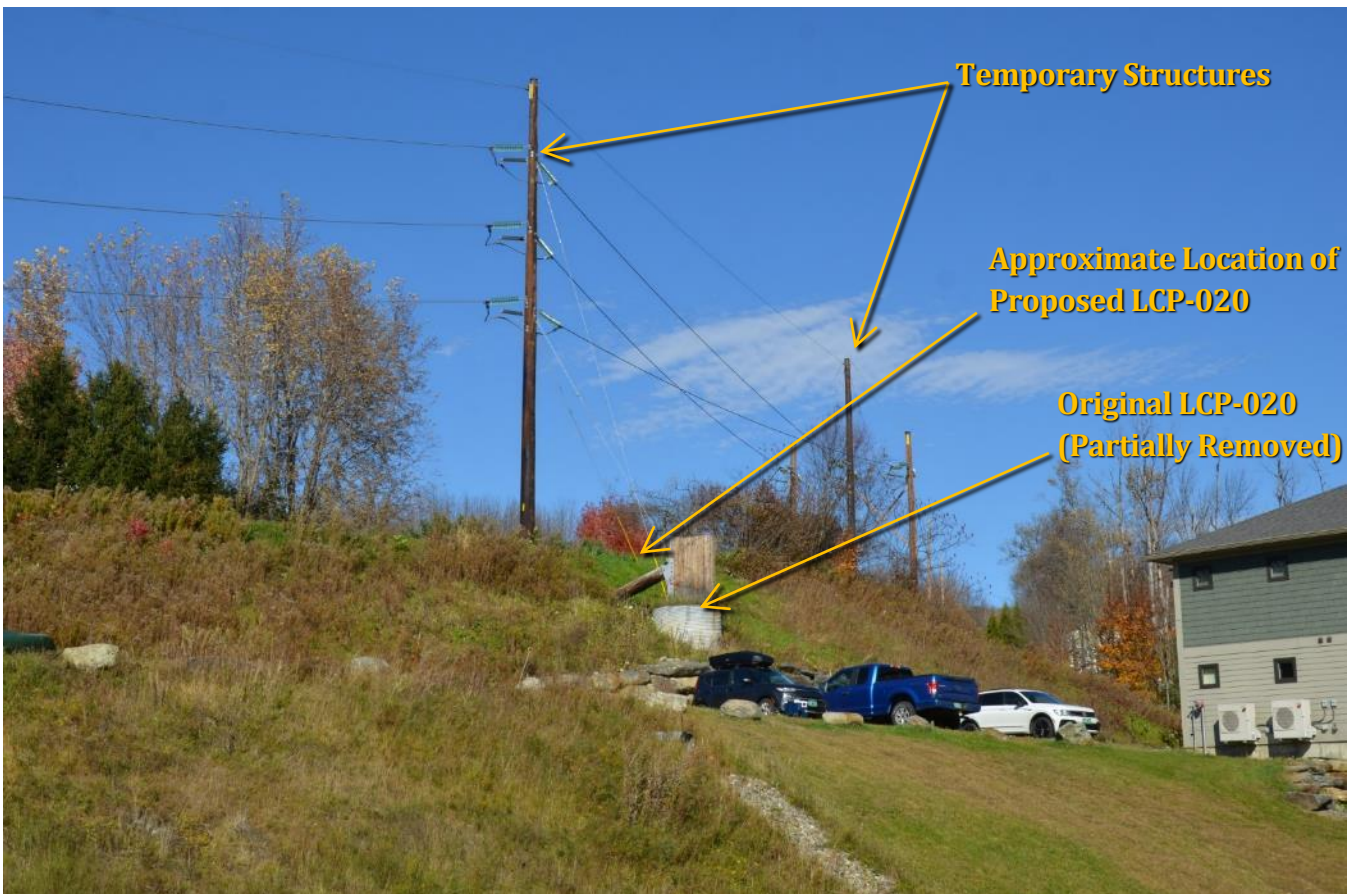
Viewpoint D: Approximately 220° view from a private property northwest of the LCP-020 structure location, panning from northwest (left) to southwest (right). The orange rectangle represents the image below, which is taken with a 50 mm equivalent focal length.



Viewpoint D: View from a private property looking southeast toward the LCP-020 structure location. (50 mm equivalent.)



Viewpoint E: Approximately 180° view from the Blush Hill Meadows apartment complex southeast of the K24-5 corridor, panning from southwest (left) to northeast (right). The orange rectangle represents the image below, which is taken with a 50 mm equivalent focal length.



Viewpoint E: View from the Blush Hill Meadows apartment complex looking northwest toward LCP-020. (50 mm equivalent.)

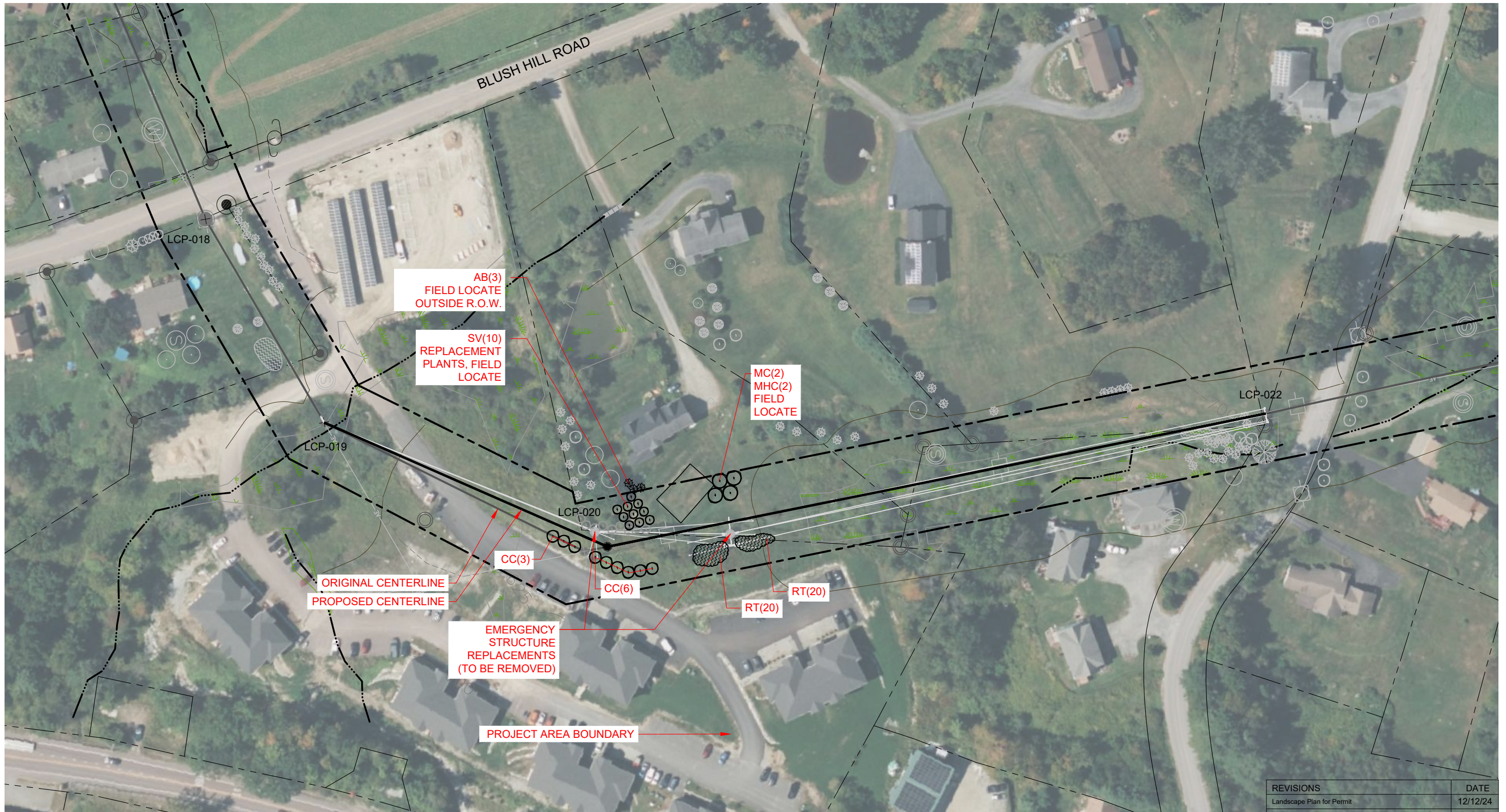


Viewpoint F: Approximately 180° view from the Blush Hill Meadows apartment complex southeast of the K24-5 corridor, panning from southwest (left) to northeast (right). The orange rectangle represents the image below, which is taken with a 50 mm equivalent focal length.



Viewpoint F: View from the Blush Hill Meadows apartment complex looking southwest toward LCP-020. (50 mm equivalent.)

Appendix A



REVISIONS	DATE
Landscape Plan for Permit	12/12/24
As-Built Plan	07/01/10
Issued for Bid	12/01/09
Revised per PSD Aug. 12th Mtg. & landowner	08/12/09
Revised per Landowner Mtg., Bravin - TJB, JDS	03/16/09
Revised to include Willow Trees	10/29/08
Revised per Ulteig Line Design	06/20/08
Revised per site visit	04/24/08
Revised per landowners visits	04/18/08
Revised to remove plants from road ROW	01/30/08

L3.3a - Blush Hill Road and Crossroad Waterbury, VT

Qty	Code	Scientific Name	Common Name	Size	Spec	Notes	Original Location	Growth Rate	Max. Height
3	AB	ABIES balsamea 'Phanerolepis'	Caanan Fir	6' Ht.	B&B		NEW	Slow to Medium	50-90'
9	CC	CRATAEGUS crusgalli inermis 'Crusader'	Crusader Hawthorn	8' Ht., Heavy	B&B	multi-stem, 3-5 stems	NEW	Slow to Medium	15-20'
2	MC	MALUS 'Cortland'	Cortland Apple	1 1/4" cal.	B&B		NEW	Medium	15-20' Ht.
2	MHC	MALUS 'Honeycrisp'	Honeycrisp Apple	1 1/4" cal.	B&B		NEW	Medium	15-20' Ht.
40	RT	RHUS typhina	Staghorn sumac	30" Ht.	#3 Cont.		NEW	Medium	10-12' Ht.
10	SV	SYRINGA vulgaris	Common Lilac	7' Ht.	B&B	multi-stem	REPLANT 10	Medium	12-15'

**PERMIT
PLAN
12/12/2024**

(1" = 100' at Sheet Size 11"x17" Only)

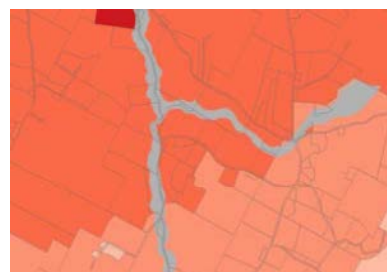
Appendix B



Central Vermont Regional Plan

2016

Readopted: July 9, 2024
Effective: July 9, 2024



Central Vermont Regional Planning Commission
29 Main Street, Suite 4, Montpelier, Vermont 05602-2952
Phone: 802-229-0389 Fax: 802-223-1977
Email: cvrpc@cvregion.com Web: www.centralvtplanning.org

UTILITIES

Electric Power

It goes without saying that electric power is a vital component of life in modern America. When our sources of power are lost, even temporarily, as a result of weather conditions or technical difficulty, the result may be chaos and hardship. Perishables perish, business and industry halts, and the rhythms of domestic life are profoundly interrupted.

As the Region grows, so does its demand for reliable and affordable electricity, but existing sources of electric power are limited and the costs of developing new ones are dear. Neither is electricity completely benign in its impacts. Its generation, transmission, and distribution raise issues of environmental protection, public health, land use and aesthetics. Fortunately, studies have shown that kilowatt-hours can be saved at an expenditure of far less than it takes to generate them; furthermore, conserving electricity creates jobs, conserves natural resources, curbs pollution, and expands opportunities for self-reliance too.

Vermont has become a leader in the move towards energy independence and is undertaking an ambitious renewable energy program that could at least put it on a path toward obtaining 90% of its energy from renewable sources by 2050.

These facts did not escape the Department of Public Service (DPS) as it prepared its Comprehensive Energy Plan as directed by Executive order # 79. A fundamental theme of the DPS plan is its promotion of "least cost integrated planning" as "a way for electric utilities to plan for a portfolio of supply resources, demand-side management programs, and transmission and distribution improvements that will enable the company to serve its customers at the lowest life-cycle cost, including environmental and economic costs."

Regional electric markets have restructured, and electricity is now sold in a regionally competitive market. Recent narrowing between Vermont retail electric rates and New England rates is due in part to low natural gas prices driving costs down elsewhere in the region. However, challenges remain to carry out transmission upgrades needed in the years ahead and to ensure that long-term electricity needs are met in a cost-effective and environmentally-sustainable manner.

CVRPC's desire to ensure that energy generation, distribution and transmission facilities are located, designed and sized to support the Region's economic and lifestyle demands with minimal adverse impact, supports, and is supported by, the concept of "least cost integrated planning" and its attendant objectives.

The activities and choices of the area's utility companies can have direct and indirect impacts on land use (both locally and elsewhere). Locally, distribution line extensions can spur residential, commercial and industrial growth. Decisions regarding future power sources will also have regional or even global impacts.

Electric Utilities

Five different utility companies provide power to Central Vermont's homes and businesses. As of 2009, the majority of the electric power they provided came from Vermont Yankee, Hydro-Quebec, and the Ryegate and McNeil wood generating systems. Residential users demand about half of this power. (Further analysis of energy uses and sources can be found in the Energy Element.)

Green Mountain Power (GMP) is the Region's largest utility, serving a population of about 26,000 in Central Vermont. GMP's customers are located primarily in the more populous valley areas such as Barre, Montpelier, and many of the Region's villages. GMP is continually expanding and upgrading their facilities to meet new growth. According to Vermont Public Service, GMP's output in 2005 was 2,007 million kWh².

GMP also provides electric power to about 500 customers in Roxbury and Northfield and serves 123,048 residential customers and 17,851 commercial customers in total with output in 2005 of 2,300 million Kwh³.

The Washington Electric Cooperative Inc. (WEC) provides electricity to more rural areas throughout Central Vermont. Its service territory covers a larger area in Central Vermont than any other utility with 10,170 customers. Due to the rural nature of WEC's service area, residential users account for an unusually high percentage of total demand. In 2005, WEC's output was about 69 million kWh².

The Cooperative is committed to the concept of least cost integrated planning as

2 2008 Data