Aesthetic and Orderly Development Analysis Report

Eversource Q195 Line Reconstruction Project

PREPARED FOR

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Introduction

At the request of the Petitioner, Public Service of New Hampshire doing business as Eversource Energy ("Eversource" or "Applicant"), VHB has prepared this technical memorandum concerning the Q195 Line Reconstruction Project ("Project"), to provide a professional opinion of the potential aesthetic impacts of the proposed reconductoring and rebuild of the ±8.8 miles of transmission line located in the Towns of Concord and Waterford, Vermont.

The content of this analysis presents the results of an assessment of the Project as it relates to the following criteria under 30 V.S.A. § 248(b)(5) and the Act 250 criteria referenced therein:

- Aesthetics (10 V.S.A. § 6086(a)(8))
- Orderly Development of the Region (30 V.S.A. § 248(b)(1))

The Vermont Public Utility Commission ("PUC" or the "Commission") will apply these criteria in its review of the Applicant's request for a Certificate of Public Good ("CPG").

1.1 Project Description

The proposed Q195 Reconstruction Project is further described in the pre-filed testimony of Samuel Harris. In general, the scope of this Project is to fully reconstruct the existing 115 kilovolt ("kV") line located within existing transmission line rights of way in the states of New Hampshire and Vermont. The Q195 Line is owned by Public Service Company of New Hampshire, an electric utility doing business as Eversource Energy ("Eversource"). The Q195 line is a ±17.42 mile line which runs between two Eversource substations: Whitefield Substation, located in Whitefield, New Hampshire, and Littleton Substation, located in Littleton, New Hampshire. The Q195 Line also connects to a National Grid Station: Moore Substation in Littleton, New Hampshire, which is located to the north of Littleton Substation. Approximately 9 miles of the Q195 transmission line is located in Vermont and traverses through the municipalities of Waterford and Concord.

The Q195 Line, including structures, conductor, and static wire, was initially constructed in 1958, with a newer "tap" portion providing the connection to the Moore Substation, constructed in 1987. Subsequent to this initial construction, the line has been subjected to routine maintenance, including certain storm hardening modifications in 2015[1] and the addition of supplemental lighting arrestors in 2019[2] The Q195 transmission line, in total, is supported by 227 wood or weathering steel single-circuit H-frame structures. There are 118 structures supporting the line in Vermont (115 on Q195 line and 3 on the Q195-Tap).

[1] Vermont Public Service Board Docket No. 8487, Order of 5/17 2015.

[2] Vermont Public Utility Commission Case No. 20-3431, Order of 1/20 2021.

For approximately 5.4 miles, the Q195 Line ROW is located parallel to a 450-kV DC Line ROW owned by National Grid/New England Power Company, abutting the Q195 Line ROW to the northwest. A 34-kV distribution line also owned by National Grid/New England Power Company is co-located within the southeast side of the Q195 Line ROW for a distance of approximately 7.6 miles.

The average height of the existing structures in Vermont is 45.3 feet. The average height of the proposed replacement structures in Vermont is 56.6 feet. Height increases range from 1.2 feet to 28.7 feet, with one proposed structure in Concord to increase 35.9 feet. Height increases are driven by the need to adhere to the current National Electrical Safety Code clearance requirements and Eversource standards and to mitigate uplift forces caused by topographic features. Variation in height increases among structures is primarily due to terrain and/or access road and public road crossings.

The existing transmission structures being replaced are wooden H-Frame structures with a single wooden crossarm. The transmission structures and conductors within the Q195 corridor are an established visual component of the surrounding rural landscape.

Example photos of existing structure configurations along the Q195 Transmission Line

H-Frame w/ single cross arm

H-Frame w/ single cross arm and cross bracing

Three pole dead-end

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Methodology

2.1 Criterion 8 Requirements for Aesthetics Analysis

Under Section 248(b)(5), the PUC must find that the Project will not have an undue adverse effect on aesthetics, giving due consideration to Criterion 8 of Act 250. Act 250's Criterion 8 addresses aesthetic impacts within the parameters of the "Quechee Analysis," which was established to provide a consistent and defensible method for evaluating the aesthetic impacts of commercial projects undergoing Act 250 review. The Quechee Analysis is a two-step process, which begins with assessing the nature of the project, its context, and whether it will lead to adverse aesthetic impacts. This first step asks whether the project is in harmony with its surroundings, which is determined based upon:

1. The nature of the project's surroundings;
2. The compatibility of the project's design with those surroundings;
3. The suitability for the project's context of the colors and materials selected for the project;
4. The locations from which the project can be viewed; and
5. The potential impact of the project on open space.

If it is determined that the project "fits" its context, it will not have an adverse effect. If it is concluded that the project has an adverse effect under Criterion 8, the second step of the Quechee Analysis is triggered which requires determining whether the adverse effect is "undue." The second step asks three questions to determine if an adverse effect is undue:

1. Does the project violate any clear, written community standards intended to protect the scenic beauty of the area?
2. Does the project appear shocking or offensive to the average person?
3. Has the applicant failed to take all generally available steps which a reasonable person would take to harmonize the project with its surroundings?

The Commission will conclude that an adverse effect is undue if it reaches a positive finding with respect to any one of the preceding factors. The Commission has clarified that a clear, written community standard must be "*…intended to preserve the aesthetics or scenic beauty of the area where the proposed project is located and must apply to specific resources in the proposed project area*".[3]

In addition to the Quechee Analysis, the Commission's consideration of aesthetics under Section 248 is "significantly informed by overall societal benefits of the project."[4] The

[3] *Petition of Georgia Mountain Community Wind, LLC for a Certificate of Public Good*, Docket No. 7508, PUC Order of June 11, 2010, at p. 52.

[4] *In Re: Vermont Elec. Power Co.*, Docket No. 6792, PUC Order of July 17, 2003.

Commission also has established that the focus of an aesthetics analysis is not "in contemplation of protecting private property, but rather a mechanism for protecting members of the public from exposure to aesthetic degradation."[5]

In order to more accurately describe visibility of the Project's components, the analyses have been divided into areas in which Project components within that portion of the Project located in Vermont will be visible on a segment-by-segment basis. The discussion of the visual impact of these components, in accordance with the Quechee Analysis process described above, are included within the Visual Impact section of this analysis.

2.2 Aesthetic Assessment

The methodology for the aesthetic assessment of this Project includes visibility analysis, field study, and document research and review. Our analysis focuses on the potential for visual and aesthetic impacts from publicly accessible vantage points from major federal, state or local roads; nearby public lands and areas of public interest; and areas with high scenic value or official designation as a cultural, open space, or scenic resource. Residences in close proximity to the proposed Project are also considered, although review of aesthetics under Section 248 using the Quechee Analysis does not specifically guarantee that views from individual private homes and properties will never change.[6]

2.2.1 Visibility Analysis

The visibility analysis calculates the potential for a clear, unobstructed line of sight between an observer and a target. The area from which the Project will be visible is referred to as the "viewshed."

The visibility analysis was performed using the GlobalMapper software viewshed tool in conjunction with ESRI ArcGIS software for pre- and post-processing of data and map preparation. The viewshed tool utilizes Digital Elevation Models ("DEMs") of the terrain and surface and a point shapefile with structure height information to determine where visibility of the structure will occur from a specified search radius. The algorithm incorporates two DEMs, a Digital Terrain Model ("DTM"), the bare terrain, and a Digital Surface Model ("DSM"), which includes terrain and obstructions such as vegetation and buildings to incorporate the screening effects of land cover and other large objects into the terrain-based results. The DSM and DTM are derived from publicly available lidar data. The obstructed viewshed is a more realistic representation of visibility compared to a terrain-based viewshed. An observer height of 1.676 meters (~5.50 feet) is assigned to the terrain layer to assess where visibility would occur for an average person. For this specific study, a three-mile radius was used for the study area because at three miles views from this distance would be considered "middle ground" where a viewer can perceive individual structures and trees but not in great detail.

[5] *Petition of Rutland Renewable Energy, LLC for a Certificate of Public Good*, Docket No. 8188, Final Order of March 11, 2015 at pp. 54-55.

[6] *In re Amended Petition of UPC Wind*, 2009 VT 19, ¶ 27.

At this distance, individual landscape components begin to join together (hillsides become a range, trees become a forest).

The visibility analysis in Appendix A: Project Maps was used as a tool to inform field investigation where potential new Project visibility may occur.

2.2.2 Document Review & Resource Identification

In order to understand the local perceptions of landscape character, designated scenic, open space, or aesthetically significant resources, and goals and objectives regarding aesthetics and visual character, the following local and regional planning documents were reviewed:

- *Town of Concord, Vermont Municipal Plan,* adopted 7/6/2023
- *Waterford Town Plan, adopted 5/12/2016*
- *Regional Plan for the Northeast Kingdom 2015-2023*, amended 4/25/2018

2.2.3 Field Investigation

VHB staff conducted field investigations on April 28, 2023. Weather conditions during the field visit were generally sunny and clear and the Project viewshed was seen and documented during leaf-off conditions. During these field investigations, VHB staff drove public roads and visited public vantage points within the study area to observe the locations from which the proposed Project would be visible, partially screened, or fully screened. Viewpoint locations were captured using hand-held GPS units, and photographs were taken using a digital SLR camera utilizing a fixed focal length equal to 50mm on a 35mm camera in order to reproduce a field of view that appears natural to a human observer. Documentation of the field investigation is included within a photographic inventory of existing conditions, which includes representative photographs and panoramic views, and the viewshed map, which each viewpoint location.

Appendix A – Project Maps: includes Visibility Maps with references to the viewpoint locations depicted in Appendix B.

Appendix B – Photographic Inventory of Existing Conditions includes representative photographs and panoramic views of existing conditions of the surrounding area.

2.3 Impact Analysis

To evaluate visual changes associated with the Project, the following well-established factors in describing visual characteristics were considered[7]:

Landscape Composition: is the arrangement of objects and voids in the landscape categorized based upon spatial arrangement. Major compositional elements that define visual character include:

- ***Form****:* the mass or shape of an object or of objects that appear to be unified (e.g., mountains, large masses of vegetation, lakes, buildings, etc.)
- ***Line:*** the path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture (e.g., edge of shapes or masses in the landscape, silhouette of a mountain against the sky)
- ***Color*****:** the property of reflecting light of a particular intensity, which can vary in hue, value, and chroma.
- ***Texture*****:** the aggregation of small forms or color mixtures into a surface pattern. The perception of texture is highly dependent on distance.

Visibility Factors: are factors that impact the apparent visual characteristics from a view based upon the observer, the observed object, and various factors that affect perception.

- ***Viewer Characteristics*****:** characteristics of the viewer that affect perception of contrast and ability to discern objects in the landscape, such as whether the viewer will typically be in motion when observing the landscape.
- ***Duration of View*****:** longer duration views of a project will have a greater potential for visual impact than quick glimpses.
- ***Distance*****:** the distance of the viewer will affect both the apparent size of an object and the perceived degree of contrast. When other visibility factors are held constant, the greater the distance, the less detail is observable and the more difficult it will be for an observer to distinguish individual features. The distance zones referenced in this report are:
  - *Foreground*: 0 to approximately 0.5 miles. The viewer is able to perceive details of an object with clarity.
  - *Middle ground*: approximately 0.5 to 4.0 miles. The viewer can perceive individual structures and trees but not in great detail. In this zone, the individual landscape components begin to join together (hillsides become a range, trees become a forest).

[7] Methodology based in part upon Chapter 2 of Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands, U.S. Department of Interior, March 2013.

        - *Background*: over 4.0 miles: The viewer is only able to discern broad landforms and patterns. The background contributes to scenic quality by providing a softened backdrop for foreground and middle ground features.

- ***Viewing Geometry*:** the spatial relationship of the viewer to the viewed object, including the observer position and the bearing of the view.
- ***Background/Backdrop*:** Objects that stand out against the visual backdrop typically draw more attention. "*As contrast between an object and its background is reduced, the ability to distinguish the object from the background diminishes. When the contrast becomes too small, the object will no longer be visible as separate from its background."* [8] For example, when transmission structures are located on a ridgeline and are silhouetted against a bright sky (skylining), the structures are more visible than they would be against a darker and more varied backdrop such as a forest.

[8] Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands, U.S. Department of Interior, March 2013.

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First Step of the Quechee Analysis

3.1 Project surroundings

Town of Waterford, Vermont:

The proposed Project is located on the south side of Waterford, Vermont and generally parallels the Moore Reservoir/Connecticut River extending from the Moore Dam north toward Concord, Vermont. The Project is located within Waterford's "Rural Residential" zone.[9] The southern terminus of the Project in Vermont is approximately 1.8 miles from the Waterford village center at the intersection of Lower Waterford Road and Maple Street.

The Project surroundings are rural and largely characterized by rolling hills, open fields, and dense forested areas. The Project is located within an existing, cleared, and well-established electrical transmission line ROW and adjacent to an existing electrical transmission line. Terrain generally rises to the north from the Project corridor, as the transmission line sits lower in the valley, closer to the Moore Reservoir/Connecticut River. At its nearest point, the Vermont portion of Interstate-93 and VT-18 corridor is located approximately 0.6 mile west of the Project area and generally travels North-South. The surrounding landscape has a pattern of sparse rural residential development, open water, rolling hills, and heavily forested lands, with smaller patches of agricultural lands and open meadows. Other transmission line corridors and utility infrastructure (particularly the Moore Dam) are present within the Project surroundings.

Few private residences or seasonal camps are located within the immediate Project surroundings, the closest of which is approximately 320 feet from the Project area and is listed as a seasonal camp.[10] Most private residences are located along Shadow Lake Road or VT-18, approximately 0.7 to 1.2 miles away.

[9] Waterford Zoning Data, VCGI, Updated December 29, 2017

[10] VCGI Parcel Viewer, GIS Year 2022

Town of Concord, Vermont:

The proposed Project is located on the south side of Concord, Vermont and generally parallels the Moore Reservoir/Connecticut River extending from Waterford, Vermont to the southeast and crossing into New Hampshire before reaching the Lunenburg, Vermont border. The Project is primarily located within Concord's "Rural Land" zone. Small portions of the Project pass through the "Medium Density" zone. [11] Concord's East Village is the closest village center to the Project and is approximately 1.1 miles away at its closes point.

The Project surroundings are rural and largely characterized by rolling hills and dense forested areas. The Project is located along an existing and well-established electrical transmission line ROW and cleared of trees. Terrain generally rises to the north from the Project corridor, as the transmission line sits lower in the valley, closer to the Moore Reservoir/Connecticut River. Leonard Hill Road is the main east-west route that connects Concord with neighboring towns and is approximately 1.5 miles away from the Project on average. The surrounding landscape has a pattern of rolling hills, heavily forested lands, wetlands, and open water. Other transmission line corridors are present within the project surroundings.

Few private residences or seasonal camps are located within the immediate Project surroundings, the closest of which is approximately 500 feet from the Project area and is listed as a seasonal camp.[12] Most private residences are located within Concord's three village centers.

3.2 Project Visibility

3.2.1 Lower Waterford Road

Lower Waterford Road is a two-lane local road with a posted speed limit of 40 miles per-hour (mph) that generally runs in an east west direction northwest of the Project. The visibility mapping indicates intermittent visibility of the existing structures associated with the Q195 transmission line along segments of Lower Waterford Road. The net increase of potential new visibility for the proposed Project replacement structures along Lower Waterford Road is almost non-existent. There are several privately owned open fields, lawns, or other cleared areas which may have some increased visibility of Project components as indicated in the visibility map.

Field investigation of publicly accessible locations along Lower Waterford Road confirmed that the likelihood of new visibility of the replacement structures is limited from Lower Waterford Road due to a combination of factors which include intervening topography and existing vegetation, and distance. From vantage points along Lower Waterford Road the Project is not

[11] Concord Zoning Map, April 3, 2015

[12] VCGI Parcel Viewer, GIS Year 2022

skylined and is backgrounded by existing landforms and/or vegetation and the Project appears low on the horizon. Refer to Photographic Inventory, Viewpoints 1-5.

3.2.2 Vermont Route 18 ("VT 18")

VT 18 is a two-lane state highway with a posted speed limit of 50 mph that generally runs in a north-south direction through the Town of Waterford. The southern portion of VT 18 is within 0.60-miles of the Project at its closest point. VT 18 continues south and crosses the Concord River into the state of New Hampshire. The visibility mapping indicates intermittent visibility of the existing structures of the Q195 transmission line along segments of VT 18. The net increase of potential new visibility of the proposed Project along VT 18 is limited and noted in detail below.

Potential visibility of the replacement structures along VT 18 was identified along an approximate continuous 700-foot stretch, approximately 2.90-miles northwest of the Project, however, field investigation revealed potential visibility of the Project is limited due to intervening topography and existing vegetation, and the significant distance from this location. Potential new views from this location are limited only to Project components located in the lands of New Hampshire. Refer to Photographic Inventory, Viewpoint 6 for similar context.

Potential visibility of the replacement structures along a second segment of VT 18 was identified along and approximate 450-foot stretch, approximately 2.61-miles northwest of the Project, however, field investigation revealed potential visibility of the Project is limited due to intervening topography and existing vegetation, and the significant distance away. Potential views from this location are limited only to Project components located in the lands of NH only. Refer to Photographic Inventory, Viewpoint 6.

Potential visibility of the replacement structures along a third segment of VT 18 was identified along and approximate 1,730-foot stretch, approximately 1.21-miles northwest of the Project, however, field investigation revealed potential visibility of the Project is limited due to intervening topography and existing vegetation, and the significant distance away. Potential views from this location are limited only to Project components located in the lands of NH only. Refer to Photographic Inventory, Viewpoint 7.

Potential visibility of the replacement structures along a fourth segment of VT 18 was identified along an approximate 1,173-foot stretch, approximately 08.0-miles northwest of the Project, however, field investigation revealed potential visibility of the Project is limited due to intervening topography and existing vegetation. Potential views of the existing line from this location and to Project components are limited only to the lands of New Hampshire. Refer to Photographic Inventory, Viewpoint 6 for similar context.

Field investigation of publicly accessible locations along VT Route 18 confirmed that the likelihood of new visibility of the replacement structures is limited due to a combination of factors which include intervening topography and existing vegetation, and distance. From identified vantage points along VT 18 the Project is not skylined and is backgrounded by existing landforms and/or vegetation and the Project appears low on the horizon. Potential views of Project components would only be for south-bound travelers only due to the VT Route 18's orientation to the Q195 transmission line corridor.

3.2.3 Riverside Cemetery Road

Riverside Cemetery Road is a two-lane gravel road that generally runs in an east-west direction paralleling the Q195 transmission line corridor until it intersects with Old County Road to the east. The visibility mapping indicates existing intermittent visibility of the existing structures of the Q195 transmission line along segments of Riverside Cemetery Road. The net increase of potential new visibility for the proposed Project replacement structures along Riverside Cemetery Road is very limited and noted in detail below.

Potential visibility of the replacement structures along Riverside Cemetery Road (at Riverside Cemetery) was identified along an approximate continuous 415-foot stretch, approximately 0.83-miles north of the Project, however, field investigation revealed potential visibility of the Project is limited due to intervening topography and existing vegetation, and the distance away. Potential new views from this location are limited only to Project components located in the lands of New Hampshire, only. Refer to Photographic Inventory, Viewpoint 10.

Potential visibility of the replacement structures along a second segment Riverside Cemetery Road was identified along an approximate continuous 95-foot stretch, approximately 0.50-miles north of the Project, however, field investigation revealed potential visibility of the Project is limited due to intervening topography and existing vegetation, and the distance away. The Moore Dam, electrical generation infrastructure, and other unassociated transmission line components are present from this vantage point. Refer to Photographic Inventory, Viewpoint 11.

Field investigation of publicly accessible locations along Riverside Cemetery Road confirmed that the likelihood of visibility is limited due to a combination of factors which include intervening topography and existing vegetation, and distance. From identified vantage points along Riverside Cemetery Road the Project is not skylined and is backgrounded by existing landforms and/or vegetation and the Project appears low on the horizon.

3.2.4 Old County Road

Old County Road is a Class 3 two-lane gravel road that runs in a north-south and east-west direction to the Q195 transmission line corridor. The southern portion of Old County Road terminates at a public boat launch along the Connecticut River. The northern portion of Old County Road intersects with Shadow Lake Road and continues several miles north through the town of Waterford. The visibility mapping indicates existing intermittent visibility of the existing structures of the Q195 transmission line corridor along segments of Old County Road. The net increase of potential new visibility for the proposed replacement structures along Old County Road is limited and noted in detail below.

Potential visibility of replacement structures along a segment of Old County Road was identified along approximate 1,400-foot, 330-foot, and 280-foot stretches, approximately 0.80-miles to 1.18-miles northwest of the Project, however, field investigation revealed potential visibility of the Project is limited in this area due to intervening topography and existing vegetation, and the distance away. Refer to Photographic Inventory, Viewpoints 14 and 15.

The transmission line does cross Old County Road; however, this line and crossing exist today. Other unassociated transmission line components are present from this vantage point, as the Project is co-located with other transmission lines along the same corridor. Refer to Photographic Inventory, Viewpoints 12 and 13.

Field investigation of publicly accessible locations along Old County Road confirmed that the likelihood of new visibility is limited due to a combination of factors which include intervening topography and existing vegetation, and distance. From identified vantage points along Riverside Old County Road, the existing Q195 Line and proposed Project is not skylined, but instead is backgrounded by existing landforms and/or vegetation. As such, the Q195 Line and proposed reconstruction Project appear low on the horizon, with the exception of the short segment where the transmission line crosses Old County Road. Potential views of Project components would be limited to south-bound travelers due to Old County Road's orientation to the Q195 transmission line corridor.

3.2.5 Shadow Lake Road

Shadow Lake Road is a two-lane gravel road that generally runs in an east-west direction paralleling the Q195 transmission line corridor to the north, and has a posted speed limit of 35 mph. The visibility mapping indicates existing intermittent visibility of the existing Q195 transmission line structures along segments of Shadow Lake Road. There are several privately owned open fields, lawns, or other cleared areas from which there may be some increased visibility of the replacement structures. The net increase of potential new visibility for the proposed Project along Shadow Lake Road is limited and noted in detail below.

Potential visibility of the replacement structures along a segment of Shadow Lake Road was identified along an approximate 400-foot stretch, approximately 0.93-miles northwest of the Project, however, field investigation revealed potential visibility of the Project is limited in this area due to intervening topography and existing vegetation, and the distance away. The Moore Dam, electrical generation infrastructure, and other unassociated transmission line components are present from this vantage point. Refer to Photographic Inventory, Viewpoint 16 for similar perspective.

Additional views of the Project were captured along segments of Shadow Lake Road that have currently have existing visibility. The Moore Dam, electrical generation infrastructure, and other unassociated transmission line components are present in vantage points along Shadow Lake Road. From these vantage points, the viewing geometry would require travelers to look due south, generally perpendicular to the direction of travel. Refer to Photographic Inventory, Viewpoints 16 and 17.

3.2.6 Grist Mill Pit Road

Grist Mill Pit Road is a Class 3 gravel road that runs in a north-south direction to the Q195 transmission line corridor to the north. The visibility mapping indicates existing intermittent visibility of the Q195 Line's existing structures along segments of Grist Mill Pit Road. There is no net increase of visibility of the new replacement structures identified along Shadow Lake Road. The transmission line does cross Grist Mill Pit Road; however, this line and crossing exist today. Other unassociated transmission line components are present from this vantage point,

as the Project is co-located with other transmission lines along the same corridor. Views of the Project were captured at this crossing location. Refer to Photographic Inventory, Viewpoint 18.

3.2.7 Royalston Corner Road

Royalston Corner Road is a two-lane gravel road with a posted speed limit of 35 mph that generally runs in a north-south direction north of the Q195 transmission line corridor. The visibility mapping indicates existing intermittent visibility of the existing Q195 Line structures along segments of Royalston Corner Road. There is a limited net increase of potential visibility of the Project's proposed replacement structures identified along Royalston Corner Road. Other unassociated transmission line components are present from this vantage point, as the Project is co-located with other transmission lines along the same corridor. Refer to Photographic Inventory, Viewpoint 19.

Field investigation of publicly accessible locations along Royalston Corner Road confirmed that the likelihood of new visibility of the replacement structures is limited due to a combination of factors which include intervening topography and existing vegetation, and distance. From identified vantage points along Royalston Corner Road, the Project is not skylined, but instead is backgrounded by existing landforms and/or vegetation, and the Project appears low on the horizon. Potential views of Project components would be limited to south-bound travelers only due to Old County Road's orientation to the Q195 transmission line corridor.

3.2.8 Cozy Nook Road

Cozy Nook Road is a Class 3 gravel road that runs in a north-south and east-west direction to the Q195 transmission line corridor to the north. The visibility mapping indicates visibility of the existing Q195 Line structures particularly near the transmission line's crossing of Cozy Nook Road. There are some privately owned open fields, lawns, or other cleared areas which may have some increased visibility of the Q195 Line as a result of the increase in height of the replacement structures, as indicated in the visibility map. There is a limited increase of new visibility of the replacement structures identified along Cozy Nook Road. The transmission line does cross Cozy Nook Road; however, this line and crossing exist today. Other unassociated transmission line components are present from this vantage point, as the Project is co-located with other transmission lines along the same corridor. Views of the Project were captured at this crossing location. Refer to Photographic Inventory, Viewpoint 20.

3.2.9 Walker Pit Road

Walk Pit Road is a Class 3 gravel road that runs in an east-west direction to the Q195 transmission line corridor to the north. The visibility mapping indicates visibility of the existing Q195 Line structures particularly near the transmission line's crossing of Walker Pit Road; however, this line and crossing exist today. There is no net increase of visibility of the new structures identified along Walker Pit Road. Views of the Project were captured at this crossing location. Refer to Photographic Inventory, Viewpoint 21.

3.2.10 Baptist Hill Road

Baptist Hill Road is two-lane paved road that transitions to a gravel road with a posted speed limit of 35 mph that runs in a north-south direction north of the Q195 transmission line corridor. The visibility mapping indicates existing intermittent visibility of the existing structures of the Q195 transmission line along segments of Old County Road. The net increase of potential visibility for the proposed replacement structures along Baptist Hill Road is limited and noted in detail below. Potential visibility of Project components from this area are located in the lands of New Hampshire.

Potential visibility of replacement structures along a segment of Baptist Hill Road was identified along approximate 1,200-foot, and 1,100-foot stretches, approximately 1.50-miles to 1.90-miles north of the Project, however, field investigation revealed potential visibility of the Project is limited in this area due to intervening topography and existing vegetation, and the distance away. Refer to Photographic Inventory, Viewpoint 22.

Field investigation of publicly accessible locations along Baptist Hill Road confirmed that the likelihood of visibility is limited due to a combination of factors which include intervening topography and existing vegetation, and distance. From identified vantage points along Baptist Hill Road the Project would not skylined and would be backgrounded by existing landforms and/or vegetation and the Project appears low on the horizon. Potential views of Project components would only be for south-bound travelers due to Baptist Hill Road's orientation to the Q195 transmission line corridor.

3.2.11 River Road

River Road is a two-lane local road the generally runs in an east-west direction to the Q195 transmission line corridor to the north. The visibility mapping indicates existing intermittent visibility of the existing structures of the Q195 transmission line corridor along segments of River Road. The net increase of potential new visibility for the proposed Project structures along River Road is limited and noted in detail below. There are several privately owned developed sites south of River Road along the Connecticut River which may have some increased visibility of Project components as indicated in the visibility map. Potential visibility of Project components from this area are located in the lands of New Hampshire.

Potential visibility of replacement structures along a segment of River Road was identified along approximate 350-foot, and 360-foot stretches, approximately 1.50-miles to 1.70-miles northeast of the Project, however, field investigation revealed potential visibility of the Project is limited in this area due to intervening topography and existing vegetation, and the distance away. Refer to Photographic Inventory, Viewpoint 23.

Field investigation of publicly accessible locations along River Road confirmed that the likelihood of visibility is limited due to a combination of factors which include intervening topography and existing vegetation, and distance. From identified vantage points along River Road the Project is not skylined and is backgrounded by existing landforms and/or vegetation and the Project appears low on the horizon. From vantage points along River Road, the viewing geometry would require travelers to look due south, generally perpendicular to the direction of travel.

3.2.12 High Ridge Road

High Ridge Road is a two-lane gravel road with a posted speed limit of 35 mph that generally runs in an east-west direction paralleling the Q195 transmission line corridor to the north. The visibility mapping indicates existing intermittent visibility of the existing structures of the Q195 transmission line corridor along segments of High Ridge Road. The net increase of potential new visibility for the proposed Project structures along Riverside Cemetery Road is limited. There are several privately owned open fields, lawns, or other cleared areas which may have some increased visibility of Project components as indicated in the visibility map. The Moore Dam, electrical generation infrastructure, and other unassociated transmission line components are present in vantage points along High Ridge Road. Refer to Photographic Inventory, Viewpoints 24-26.

Field investigation of publicly accessible locations along High Ridge Road confirmed that the likelihood of visibility is limited due to a combination of factors which include intervening topography and existing vegetation, and distance. From identified vantage points along High Ridge Road the Project is not skylined and is backgrounded by existing landforms and/or vegetation and the Project appears low on the horizon. From vantage points along High Ridge Road, the viewing geometry would require travelers to look due south, generally perpendicular to the direction of travel.

3.2.13 Interstate 93 ("I-93")

I-93 is a two-lane divided highway that generally runs in a north-south direction west of the Q195 Project corridor. I-93 crosses the Connecticut River from New Hampshire into Vermont running northbound for several miles. Field work access to I-93 is limited in regard to being able to stop and document potential visibility with photographic inventory of existing conditions. During the site visit documentation of potential views was documented from the Waterford Welcome Center located along the I-93 northbound lane, approximately 2.10-miles north of the Q195 transmission line corridor.

The visibility mapping indicates visibility of the existing structures of the Q195 transmission line corridor. The net increase of potential new visibility for the proposed Project replacement structures along I-93 is limited. While visibility of Project components will be possible for southbound travelers only, the views along the I-93 corridor will only be able to see Project components located in the lands of New Hampshire due to I-93's orientation relative to the Q195 transmission line corridor.

Field investigation documented potential views from the northbound lane of I-93, which would be representative of the views for travelers in the I-93 southbound lane. Electrical generation infrastructure, and other unassociated transmission line components are present from this vantage point. Refer to Photographic Inventory, Viewpoint 27.

3.2.14 Limited Increase in Visibility

The overall net increase in publicly accessible areas in the surrounding landscape that will have new visibility of Project replacement structures is relatively low, as supported by the field investigation and documented viewpoints in the Photographic Inventory of Existing Conditions (Appendix B). Generally, the areas where potential new visibility of replacement structures is possible already has visibility of the existing transmission structures, and or other unassociated existing transmission lines, and electrical generation equipment in the area. There will be very few instances of new and separate areas of visibility. Where new visibility will occur, it will almost always be partially obstructed, and or seen at distance.

Generally, Project components visible in these areas will be backgrounded by a combination of landform and or vegetation which will reduce visual contrast. Instances where skylining occurs are typically at or near road crossings, which generally have a short duration of visibility due to design of the corridor which generally crosses roads perpendicularly. In all instances of road crossings, the existing structures are already skylined at these locations.

The likelihood of new visibility is very limited due to a combination of factors which include intervening topography and existing vegetation, and distance. For these reasons, the Project will have relatively insignificant impacts from public vantage points in the surrounding area.

3.3 Suitability of Project Colors and Materials

The Petitioner is proposing to replace existing wood transmission structures with new weathering steel structures that can support the replacement of the existing static wire with OPGW, as well. The structures to be replaced are primarily of an "H-frame" design with a single crossarm. Existing H-frame structures with cross bracing will be replaced in-kind, no new structures will have any additional cross bracing. Refer to reference photos in section 1.1 Project Description.

The replacement structures will be constructed of weathering steel, which is a dark colored brown in appearances Weathering steel is generally perceived as more aesthetically pleasing than galvanized steel structures, which are silvery in appearance. Weathering steel is considered to be a compatible material to the existing wood structures and will blend with the texture of naturalized landscapes and produce less glare.

The proposed materials are similar to other materials that currently exist in the existing transmission line corridor and surrounding area and are not in themselves unsuitable or incompatible in the context of the surrounding landscape. For these reasons, the proposed Project's colors and materials are considered compatible with the surroundings.

3.4 Impact on Open Space

A definition for the term "Open Space" is not provided within Act 250 or Section 248. The Project is proposed to be constructed within an existing ROW occupied by an electrical transmission line and is not located within any identified conserved lands or open space identified within the Town Plan or Regional Plan. Therefore, the Project will have no direct impact on identified or protected Open Space.

3.5 Summary of Potential Adverse Impacts

In review, the overall visual impact of the Q195 Line Reconstruction Project will **not** result in adverse or unduly adverse impacts upon the aesthetics or scenic quality of its surroundings.

This conclusion is largely based upon the fact that the existing Q195 transmission line is a well-established visual component of the landscape that dates back to the 1950s, which greatly reduces the perception of aesthetic degradation or loss of scenic quality for most observers who are familiar with the landscape. The existing transmission line's placement within the landscape utilizes existing dense vegetation and topography to help buffer potential new visibility of the replacement structures, resulting in very few instances of new and separate areas of visibility. As a result, the Project will not result in adverse or unduly adverse impacts. Regardless, the second step of the Quechee Analysis was prepared to reinforce the Project's lack of potential adverse impacts.

4

Second Step of the Quechee Analysis

4.1 Clear Written Community Standards

The Project is located in the Towns Concord, and Waterford, Vermont, which is within the region covered by the Northeastern Vermont Development Association ("NVDA").

Local and regional planning documents were reviewed in order to determine if the Project would violate a clear written community standard pertaining to the policies and goals of the region. The following is a summary of potentially relevant provisions in those plans:

Regional Plan

- The Regional Plan discusses an energy strategy to support the upgrade of regional transmission lines. "An adequate, reliable, diverse, and secure energy supply will benefit the region", "Support the upgrade of regional transmission lines to continue to reduce constraints."[13]

- *"Open space provides not only scenic beauty and wildlife habitat, but is necessary for the numerous outdoor activities enjoyed by the region's residents and visitors, and is key to the agricultural and forestry traditions of the region."*[14] The Project is not within any identified open space referenced in the regional plan.

- Conserved lands are referenced on the "NVDA Region: Conserved Lands"[15] map, however the Project is not within any identified conserved lands; Federal, State, Municipally, or Other.

- *"Preserving historic, archeological, and scenic resources enables communities to retain links to their past, maintain their traditions (including quality of life), and can bring economic benefits through increased property values and tourism."*[16] The Project is not identified within any of the regions historic districts or state parks listed on the National Register of Historic Places.

- The Regional Plan identifies goals and strategies for Historic, Cultural and Scenic Resources. *"Significant historic, cultural, and scenic resources within the region should*

[13] Regional Plan for the Northeast Kingdom 2015-2023 – Goals and Strategies pg. 10

[14] Regional Plan for the Northeast Kingdom 2015-2023 – Open Space pg. 187

[15] Regional Plan for the Northeast Kingdom 2015-2023 – Conserved Lands Map pg. 188

[16] Regional Plan for the Northeast Kingdom 2015-2023 – Historic, Cultural & Scenic Resources pg. 124

be identified and preserved."[17] The Project is not included in any identified historic, cultural or scenic resources.

As is common within Regional Plans, encouragement and support is provided for towns to identify scenic resources; however, the Regional Plan for the Northeast Kingdom does not itself provide a clear written community standard under Quechee. The Regional Plan does not contain specific language that would constitute a clear written community standard that the proposed Project violates.

Waterford Town Plan

- The Town Plan references scenic roads. *"Most roadways in Waterford are scenic in one way or another, but some deserve special attention to preserve their scenic character."*[18]

  Roads identified in the Town Plan within the Project's immediate area are as being particularly scenic include:

  - *"Old County Road with views overlooking the Connecticut River Valley from Mad Brook Road south to the picnic area on the Connecticut River."*
  - *"High Ridge Road has a variety of views for its full length from Old County Road to the Concord Town Line."*
  - *"Shadow Lake Road has grand views from Old County Road to the Concord Town Line, especially to the south overlooking Moore Reservoir."*

  While portions of these roads are identified as being scenic, existing transmission infrastructure is a well-established visible component of the visible landscape. There will be limited increase of visibility of the replacement structures from public vantage points along these roads.

- The Town Plan references industrial and commercial use of land, specifically referencing transmission lines and their importance to the town's tax base. *"The hydroelectric plant and transmission lines, which cross Waterford and utilize a small amount of land in a linear fashion, generate revenue for the town. There are cable and electric transmission lines throughout the town, which add to the tax base."* [19]

- The Town Plan refers to the importance of preserving open space. *"The land-based economy is a critical part of the Northeast Kingdom's traditional landscape that preserves open spaces and enhances the region's scenic beauty."*[20] While the Town Plan

[17] Regional Plan for the Northeast Kingdom 2015-2023 – Historic, Cultural & Scenic Resources pg. 129

[18] Waterford Town Plan, Adopted May 16, 2016 – Scenic Roads pg. 26

[19] Waterford Town Plan, Adopted May 16, 2016 – Industrial and Commercial Use of Land pg. 52

[20] Waterford Town Plan, Adopted May 16, 2016 – Agricultural Economy pg. 39

refers to open space throughout the plan, the Project is not identified within any defined open space.

Town of Concord

- The Town Plan references the importance of scenic and natural resources under Land Use & Growth. "*Concord's scenic and natural resources are among the town's primary*".[21] In this chapter under Rural Lands the Town plan further reinforces maintaining the rural character of the area. *"Growth should be managed and consistent with the rural character of the area and site conditions, and conservation of open spaces and natural resources should be a high priority to maintain Concord's rural atmosphere."*

- Under "Natural Landscape"[22] the Town Plan references scenic viewsheds:
  - Royalston Corner Road
  - Street Road
  - Goudreault Hill
  - Miles Mountain Ridge
  - Shadow Lake
  - Miles Pond area

  The Project would not impact views from these identified scenic viewsheds.

- Utility distribution lines are referenced in so far the Town Plan refers to Green Mountain Power "GMP" transmission lines and how they are designed to minimize their effect on scenic areas. "*GMP distributes the power of positive electrical energy through the distribution system on pre-determined rights-of-ways designed not to affect the character of scenic areas, views, and contiguous land use."*[23]

- Scenic roads and vistas are identified in the Town Plan:[24]
  - Goudreault Hill Road
  - High Ridge Road
  - Royalston Corner Road
  - Shadow Lake Road
  - Streeter Road
  - Theodore Roosevelt Memorial Highway (Route 2)

While segments of the Project may be visible from the referenced scenic roads, views of the existing transmission line already exist today. In review, the Project is consistent with the intent of the Regional and Town Plans since it has been sited to maintain the rural character of the

[21] Town of Concord, Vermont Municipal Plan, Adoption July 6, 2023 – Land Use & Growth pg. 8

[22] Town of Concord, Vermont Municipal Plan, Adoption July 6, 2023 – Natural Landscape pg. 10

[23] Town of Concord, Vermont Municipal Plan, Adoption July 6, 2023 – Utility Distribution Lines pg. 24

[24] Town of Concord, Vermont Municipal Plan, Adoption July 6, 2023 – Transportation pg. 34

area and avoids, minimizes, and/or mitigates, as the case may be, impacts to open space, and scenic roads or vistas. The Project's siting is sensitive to aesthetics of the region and results in limited potential visibility from public roads and public lands. The Project does not violate a clear, written community standard intended to protect the scenic beauty of the area.

4.2 Shocking or Offensive to the Average Person

In order for a Project to be deemed shocking or offensive to an average person, which is a neutral party and not an affected neighbor, the Project would need to be entirely inconsistent with its surroundings or the surrounding land use, or exceptionally out of scale with its surroundings.

Our evaluation of impacts under the first step of the Quechee Analysis determined that the Project's visibility would not cause an adverse impact.

The Petitioner has made efforts to reduce potential visibility of the Project from surrounding roads and nearby residences through site selection and design that retains existing dense vegetative buffers, takes advantage of replacing structures within the existing transmission line corridor, and collocating the transmission line with existing transmission lines in the same corridor.

The limited potential visibility from surrounding roads, residences, and the lack of any effect on identified scenic resources, public lands, or recreation resources limits the potential impacts to the average person.

Thus, we conclude that the Project will not be shocking or offensive to the average person.

4.3 Compatibility of Project Design and Mitigation Measures

The existing Q195 transmission line is a well-established visual component of the landscape that dates to the 1950s, which greatly reduces the perception of aesthetic degradation or loss of scenic quality for most observers who are familiar with the landscape. The existing corridor was intelligently designed and follows many best management practices identified by the Bureau of Land Management[25] for reducing visual impacts when siting transmission lines:

Minimize impacts of linear views and crossings: the location of crossings of roadways is minimal, and where crossings do occur, they generally minimize visual exposure for observers by crossing at right angles.

Collocation: The Q195 transmission line is collocated within the corridor of the existing transmission line structures for approximately 5.36 miles of the approximate 8.8 mile line replacement project, minimizing the impacts from clearing, access, and maintenance.

Avoidance of Ridgetops: because the eye follows strong natural lines in the landscape, ridgelines tend to focus the attention of viewers. The transmission corridor avoids the major ridgetops.

[25] Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM Administered Lands, United States Department of Interior, 2013.

With these measures, the Project has taken generally available mitigation steps a reasonable person would take to harmonize the Project with its surroundings and reduce potential visibility from the surrounding area.

4.4 Closing Statement

In review, the findings of this assessment conclude that the overall visual impact of the Project would not be adverse or unduly adverse for the following reasons:

- The Project does not violate any clearly written community standard intended to preserve the aesthetics or scenic beauty of the specific area at and around the Project site.
- The Applicant has taken reasonable steps to mitigate the visual impact of the Project by rebuilding the transmission line along the existing alignment, and collocation of the transmission line within a well-established transmission line ROW already cleared of trees.
- The Project would not be considered shocking or offensive to the average person because it is not sited in a prominent location, lessening potential visual impact from surrounding areas.

5

Orderly Development

Section 248(b)(1) of Title 30 of the Vermont Statutes Annotated requires that the PUC find that a proposed project will not unduly interfere with the orderly development of the region, with due consideration having been given to the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality. "In making this finding, the PUC is required to give 'due consideration' to the 'recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of an affected municipality.'"[26]

"For a provision in a municipal plan to constitute a 'measure' that is cognizable under Section 248(b)(1), that provision must 'evince a sufficiently 'specific policy' promoting land conservation."[27] The Vermont Supreme Court recently affirmed that unlike Act 250, Section 248(b)(1)'s due consideration standard does not mandate conformance with municipal or regional plans:

> In contrast to the Act 250 permitting context, where compliance with duly adopted local or regional plans is a prerequisite to an Act 250 permit, see 10 V.S.A. § 6086(a)(10), for purposes of § 248 review, land-conservation measures in municipal plans are entitled only to "due consideration." 30 V.S.A. § 248(b)(1). As a consequence, even a clear, written land-conservation measure in a municipal land-use plan does not present an insurmountable obstacle to approval of a certificate of public good under § 248.[28]

The following discusses the standards and land conservation measures as detailed in the Northeast Vermont Development Association Regional Plan for the Northeast Kingdom 2015-2023 (the "Regional Plan"), the Waterford Town Plan, and the Town of Concord, Vermont Municipal Plan (the "Concord Municipal Plan").

5.1 Regional Plan

Chapter 1 – Land Use: The Regional Plan lists goals for recreational land use stating that *"sufficient open space will be available for current and future outdoor recreational pursuits"* and *"public access to water bodies will be protected."*[29] The Project area is not identified as

[26] *In re Acorn Energy Solar 2, LLC*, 2021 Vt. 3, ¶ 87 (quoting 30 V.S.A. § 248(b)(1)).

[27] Petitions of Vermont Electric Power Company, Inc. et. al to construct the so-called Northwest Vermont Reliability Project, Order of 1/28/2005 at 202 (quoting *In re John A. Russell Corp*., 2003 VT 93, ¶ 19, 838 A.2d 906, 913 (Vt. 2003).

[28] *In re Petition of Apple Hill Solar LLC*, 2021 VT 69, ¶ 31. *See also Petition of Rutland Renewable Energy LLC*, 2016 VT 50, ¶ 36 ("recognizing that municipalities' role in § 248 matters is advisory" and that § 248 "did not give 'single municipalities the power to subvert utility projects statewide in scope and broadly entrusted to a single planning and supervisory agency'").

[29] Regional Plan for the Northeast Kingdom 2015-2023, Vol 2: Ch. 1 Land Use, Public Lands Map, Figure 1.2, Page 11

Public Land on Figure 1.2 Public Lands.[30] Access to the Moore Reservoir/Connecticut River is permitted through the Project area by way of a public right-of-way (Old County Road in Waterford and Walker Pit Road in Concord). The Waterford Town Plan indicates that this site is a publicly accessible boat launch.[31] Site observation suggests that the Walker Pit Road site functions as a boat launch, but the site is not confirmed in the Concord Municipal Plan.

Chapter 2 – Energy: Unlike many other regional planning commissions, the Regional Energy Plan for the Northeast Kingdom is contained with the Regional Plan; a separate document has not been created.[32]

This chapter discusses the region's energy sources and uses, conservation strategies, and renewable energy development. The Regional Plan notes that *"an adequate, reliable, diverse, and secure energy supply will benefit the region"* and lists strategies that can be followed to support this goal. The Regional plan states that the region should *"support the upgrade of regional transmission systems to continue to reduce constraints"* and *"support the maintenance and upgrade of existing energy generation facilities and related infrastructure."*[33] The Project will upgrade a significant transmission line for the region.

Within the Energy Goals and Strategies section, the Energy Plan state's that "environmental and aesthetic impacts of energy generation and usage will be considered" though the Regional Plan does not outline siting policies for transmission lines as it does for energy generation facilities.[34]

Chapter 4 – Historic, Cultural, and Scenic Resources: The Regional Plan indicates that *"significant historic, cultural, and scenic resources within the region should be identified and preserved."* To this end, a strategy is outlined: *"Assist communities to preserve and maintain historic downtowns, village centers, buildings, and rural and scenic landscapes."*[35] This Project is not located within an area identified as having historic or cultural value. The Project is primarily located within rural zones. Additionally, the Regional Plan does not identify the Project area as having significant scenic value. Potential impact to the surrounding area is minimized by locating the transmission line within the already disturbed corridor.

Chapter 7 – Natural Resources: The Regional Plan recognizes that the *"natural resources in the Northeast Kingdom have intrinsic scenic and economic values that require careful consideration when making planning decisions. The overarching goal for the region is to*

[30] Regional Plan for the Northeast Kingdom 2015-2023, Vol 2: Ch. 1 Land Use, Public Lands Map, Figure 1.2, Page 9

[31] Waterford Town Plan, Adopted May 16, 2016, Ch. 9 Land Use, Page 53

[32] http://www.nvda.net/land-use-planning.php

[33] Regional Plan for the Northeast Kingdom 2015-2023, Vol 2: Ch. 2 Energy, Regional Energy Goals and Strategies, Page 69

[34] Regional Plan for the Northeast Kingdom 2015-2023, Vol 2: Ch. 2 Energy, Regional Energy Goals and Strategies, Page 72

[35] Regional Plan for the Northeast Kingdom 2015-2023, Vol 1: Regional Goals and Strategies, Historic, Cultural, and Scenic Resources, Page 24

balance local economic needs with the protection of the resources that so many of region's residents enjoy and depend upon."[36] The Project is located within an existing energy transmission corridor. The Regional Plan does not indicate that this corridor has significant value with regards to natural resources.

The Regional Plan recognizes the importance of open space in that it *"provides not only scenic beauty and wildlife habitat but is necessary for the numerous outdoor activities enjoyed by the region's residents and visitors, and is key to the agricultural and forestry traditions of the region."*[37] The Regional Plan does not identify the Project area as having significant open space value, nor is the Project area identified on Figure 7.3 Conserved Lands.[38]

This review highlights how the Project is compatible with the orderly development of the region based on a review of the Regional Plan. The Project site and design address many of the region's goals by maintaining the rural character of the area and avoiding and minimizing impacts to regulated natural resources, and historic and cultural resources. Additionally, the Project's siting is sensitive to aesthetics of the region and results in limited potential visibility from public roads and public lands.

5.2 Regional Energy Plan

Regional Energy Goals & Strategies: The Regional Energy Plan references the need to maintain and provide upgraded electrical transmission lines as one of the region's goals:

- *"Support the upgrade of regional transmission systems to continue to reduce constraints."*[39]
- *"Support the maintenance and upgrade of existing energy generation facilities and related infrastructure."*

Transmission: The Regional Energy Plan references the importance of continued upgrade of transmission lines and related electricity transmission capacity and limitations within the region:

"the region generates far more power than it consumes, causing generation to exceed the capacity of the export line. The continued addition of new sources of generation, like solar, forces existing resources, like Kingdom Community Wind and Sheffield Wind to curtail their output due to the lack of capacity to export power. Adding more renewables to an already full grid at this point can simply mean replacing other renewables. While modest transmission upgrades may help to alleviate some congestion in the short-term, the situation will require robust, long-term solutions that are complex and possibly costly."[40]

[36] Regional Plan for the Northeast Kingdom 2015-2023, Vol 2: Ch. 7 Natural Resources, Page 172

[37] Regional Plan for the Northeast Kingdom 2015-2023, Vol 2: Ch. 7 Natural Resources, Open Space, Page 187

[38] Regional Plan for the Northeast Kingdom 2015-2023, Vol 2: Ch. 7 Natural Resources, Conserved Lands Map Figure 7.3, Page 188

[39] NVDA Regional Plan – Energy, page 69

[40] NVDA Regional Plan – Energy, page 44

The Regional Energy Plan does not reference specific siting requirements for transmission lines, because it notes that the Plans' focus is more targeted for electrical and energy generation facilities.

5.3 Waterford Town Plan

The Waterford Town Plan speaks generally about the desire to preserve open space and the scenic quality of the landscape but does not provide a definition for open space. Similarly, the Waterford Town Plan does not identify the Project area as conserved or public land.[41]

Chapter 5 – Transportation: Within the Transportation chapter, the Waterford Town Plan indicates that, "*most roadways in Waterford are scenic in one way or another, but some deserve special attention to preserve their scenic character."*[42] The Waterford Town Plan then lists scenic roads, several of which the Project is partially viewable from.

- *"Old County Road with views overlooking the Connecticut River Valley from Mad Brook Road south to the picnic area on the Connecticut River."*
- *"High Ridge Road has a variety of views for its full length from Old County Road to the Concord Town Line. (Note: the last ¾ mile of this road is a class 4 road with limited maintenance; travel should be with care or by foot)."*
- *"Shadow Lake Road has grand views from Old County Road to the Concord Town Line, especially to the south overlooking Moore Reservoir."*
- *"… sections of Route 18 afford scenic views."*[43]

The Waterford Town Plan outlines a goal for scenic roads, stating: *"1. Maintain the scenic character and/or scenic views from the roads identified above."*[44] While segments of the Project may be visible from the referenced scenic roads, views of the existing transmission line already exist today.

Chapter 6 – Energy: This chapter of the Waterford Town Plan is focused on renewable energy and does not provide standards or guidance for updating existing transmission lines. In the Policy section of the chapter, it states that, "*the Town does not support the development of renewable energy installations that negatively impact scenic views or remove valuable agricultural land from current or potential productive use*"[45] and then outlines standards for what Waterford considers "Orderly Development." Many of these standards for solar/wind projects are irrelevant given that the Project is a proposed transmission line upgrade. Still, the Project can be judged against the following standards as outlined in the Waterford Town Plan.

[41] Waterford Town Plan, Adopted May 16, 2016, Ch. 9 Land Use, Page 54-55
[42] Waterford Town Plan, Adopted May 16, 2016, Ch. 5 Transportation, Scenic Roads, Page 26
[43] Waterford Town Plan, Adopted May 16, 2016, Ch. 5 Transportation, Scenic Roads, Page 27
[44] Waterford Town Plan, Adopted May 16, 2016, Ch. 5 Transportation, Scenic Roads, Page 28
[45] Waterford Town Plan, Adopted May 16, 2016, Ch. 6 Energy, Policy, Page 33

"Standards:

Projects must meet the following standards outlined below in order to be considered "orderly development" supported by this plan and in order to not unduly impact the productive use of agricultural lands and the aesthetics of the rural countryside this plan intends to protect:

A. *Siting. Where a project is placed on the landscape constitutes the most critical element in the aesthetic siting of a project. Poor siting cannot be adequately mitigated. Accordingly, all renewable energy projects must evaluate and address the proposed site's aesthetic impact on the surrounding landscape.*

a. Good sites have one or more of the following characteristics:

- *Roof-mounted systems;*
- *Systems located in close proximity to existing larger scale, commercial,*
- *industrial or agricultural buildings;*
- *Proximity to existing hedgerows or other topographical features that naturally screen the proposed array from view from at least two sides;*
- *Reuse of former brownfields or otherwise impacted property.*

b. Poor Sites have one or more of the following characteristics:

- *No natural screening;*
- *Topography that causes the arrays to be visible against the skyline from common vantage points like roads or neighborhoods;*
- *A location in proximity to and interfering with a significant viewshed (significant viewsheds within Waterford include, but are not limited, to those identified in the Transportation section of this Plan.)*
- *The removal of productive agricultural land from agricultural use*
- *Sites that require public investment in transmission and distribution infrastructure in order to function properly.*

B. *Mass and Scale: The historical working landscape that defines Waterford currently and that the Town desires to preserve is dominated by viewsheds across open fields to wooded hillsides and views of distant mountain ranges. Rural structures like barns fit into the landscape because their scale and mass generally do not impact large tracts of otherwise open land. All commercial scale solar arrays shall also be limited in mass and scale, and/or have their mass and scale broken by screening, to fit in with the landscape. Commercial solar projects larger than ½ acre are larger than any other structure within the municipality of Waterford, cannot be adequately screened or mitigated to blend into the municipality's landscape and are therefore prohibited."*[46]

The Project is collocated along an existing transmission line corridor which is located low in the valley along the Connecticut River/Moore Reservoir. The existing dense tree cover and topography naturally screen the Project area and limit sky-lining of the Project. Given that

[46] Waterford Town Plan, Adopted May 16, 2016, Ch. 6 Energy, Policy, Page 33-34

the project is low on the horizon, the project does not interfere with significant viewsheds of the scenic roads listed within the Transportation chapter. The mass and scale of the Project fits within the landscape of open fields and wooden hillsides. Views of distant mountain ranges are not disrupted, and no single structure of the Project is larger than ½ acre.

5.4 Concord Town Plan

The Concord Municipal Plan states that *"Concord's scenic and natural resources are among the town's primary assets."*[47] Later in the Implementation Goals, the Concord Municipal Plan outlines the following goal, "*Preserve the town's scenic resources and open space through land use regulations."*[48] The Concord Municipal Plan does not provide specific land use measures to accomplish this goal.

With regards to the "Rural Lands" district in the Land Use and Growth section, the Concord Municipal Plan indicates that, *"Growth should be managed and consistent with the rural character of the area and site conditions, and conservation of open spaces and natural resources should be a high priority to maintain Concord's rural atmosphere. Any development should not alter the area's character or result in changes that could significantly disrupt the wildlife habitat."*[49]

The Concord Municipal Plan does not define open space nor is the Project area identified as open space or public lands on maps within Municipal Plan.[50] The Project is within an existing transmission corridor. The character of the area or wildlife habitat will not be significantly altered.

In the Transportation chapter, the Concord Municipal Plan discusses scenic roads within town. "*Due to the rural and pastoral nature of Concord in general, there are many scenic roads and vistas that are enjoyed by residents, non-residents and tourists alike. These include Goudreault Hill Road, High Ridge Road, Royalston Corner Road, Shadow Lake Road, and Streeter Road."*[51] While segments of the Project may be visible from the referenced scenic roads, views of the existing transmission line already exist today.

Within the Energy chapter, the Concord Municipal Plan mentions Green Mountain Power and distribution lines but does not mention the Project area specifically. It states that, "*Green Mountain Power (GMP) is the electricity provider in the Town of Concord. GMP distributes the power of positive electrical energy through the distribution system on pre-determined rights-of-ways designed not to affect the character of scenic areas, views, and*

[47] Concord Municipal Plan, Adopted July 6, 2023, Land Use and Growth, Page 8
[48] Concord Municipal Plan, Adopted July 6, 2023, Implementation Goals, Page 40
[49] Concord Municipal Plan, Adopted July 6, 2023, Land Use and Growth, Page 8
[50] Concord Municipal Plan, Adopted July 6, 2023, Maps, Pages 43-48
[51] Concord Municipal Plan, Adopted July 6, 2023, Scenic Roads, Page 34

contiguous land use."[52] The Project is located within an existing transmission line corridor in Concord.

The Concord Municipal Plan features a prominent picture of a transmission line labeled "DC Powerline" in the Land Use and Growth chapter.[53] Another photo of "Utility Lines" is included in the Energy chapter.[54] No comment, positive or negative, is provided regarding the photos or transmission lines. These utility photos are placed side by side with other images and themes that define the town's character.

Conclusion:

In conclusion, the Project will not unduly interfere with orderly development of the region, after consideration of any specific provisions of the town and regional plans that would apply to a section 248 energy transmission project. There are no specific local or regional land conservation measures that would apply to the Project, and the Project will not interfere with any specific local or regional recommendations regarding the proposed land use for this site. The town and regional plans also include statements supporting the use of upgrading regional transmission lines and related infrastructure to support a reliable electrical transmission grid.

10079218_6:12570-00003

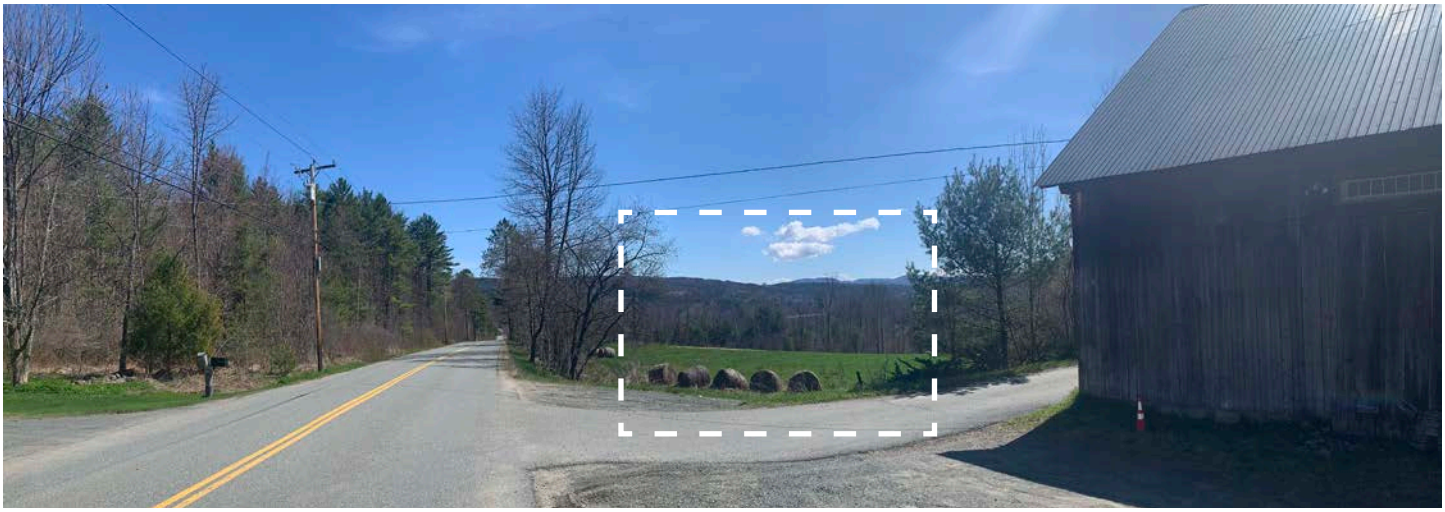
[52] Concord Municipal Plan, Adopted July 6, 2023, Energy, Page 24

[53] Concord Municipal Plan, Adopted July 6, 2023, Land Use and Growth, Page 8

[54] Concord Municipal Plan, Adopted July 6, 2023, Energy, Page 31

Appendix B

Photographic Inventory of Existing Conditions

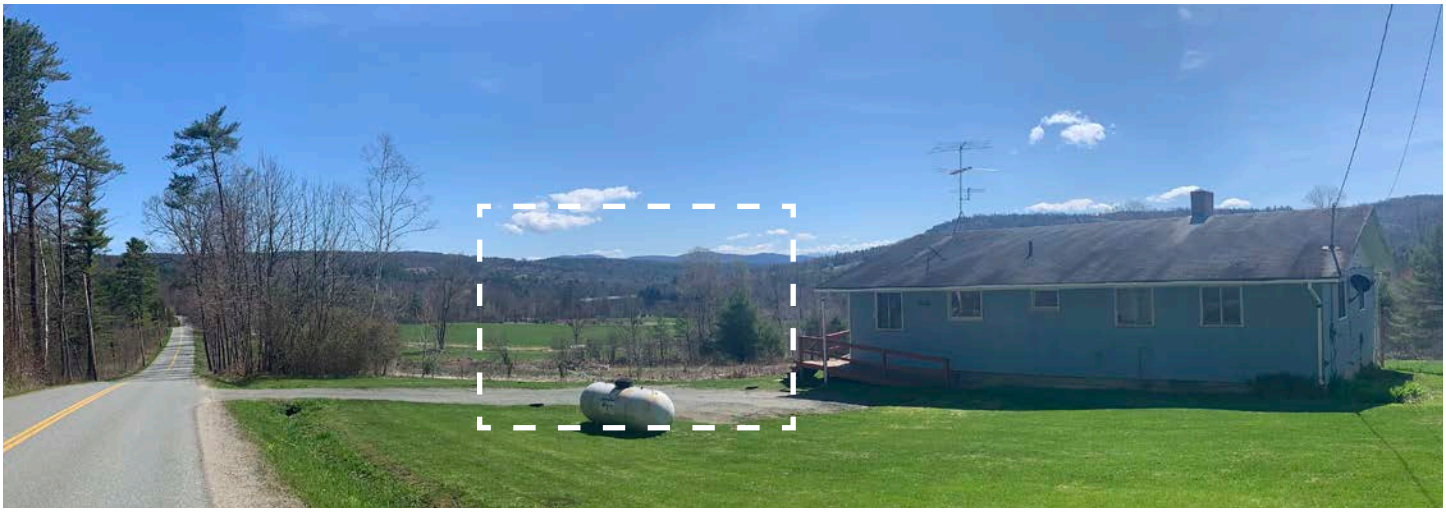


Viewpoint 1

Panorama view from Lower Waterford Road Fork in the town of Waterford, VT, panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

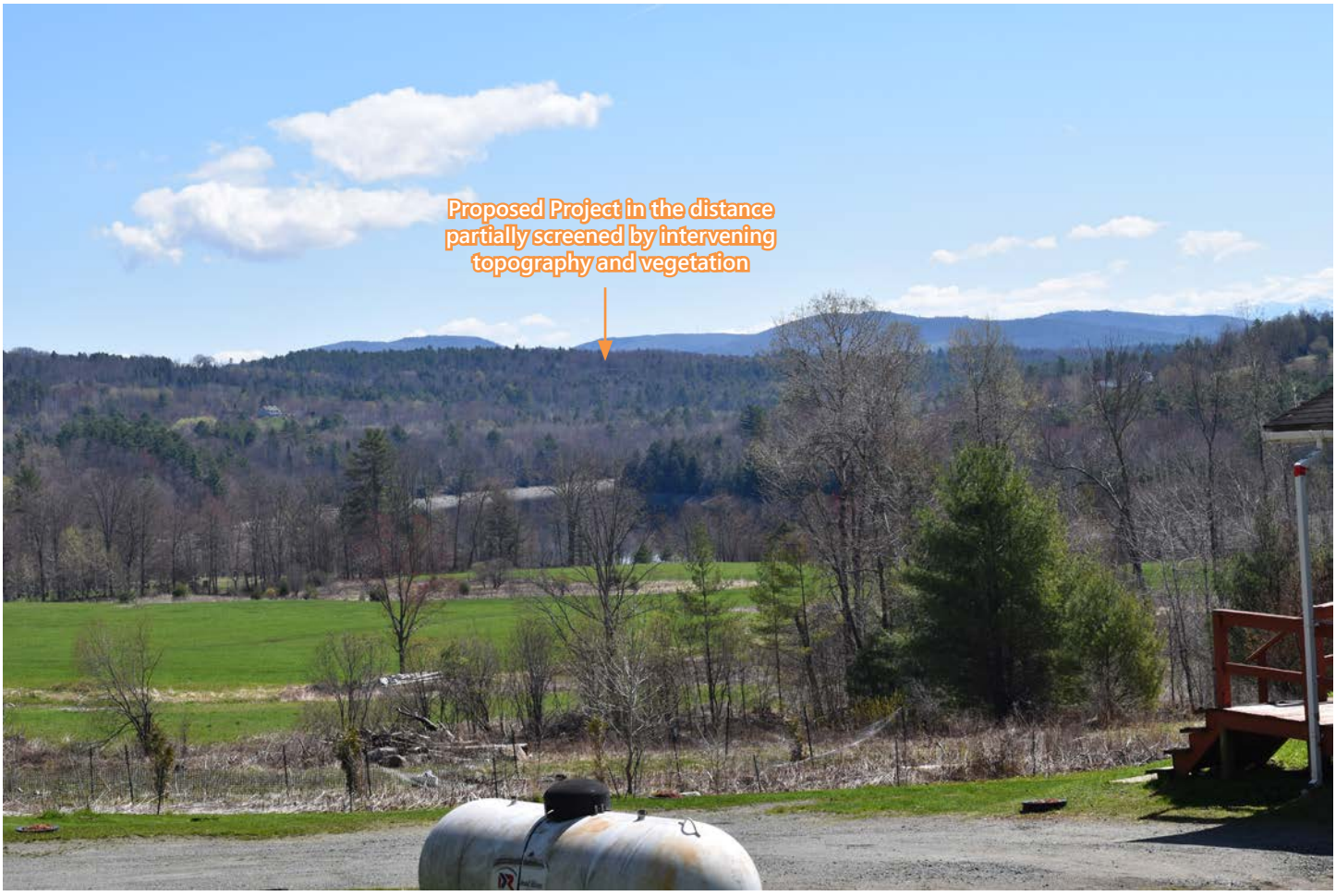
Viewpoint 1

View from Lower Waterford Road Fork, approximately 3.15-miles west, looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



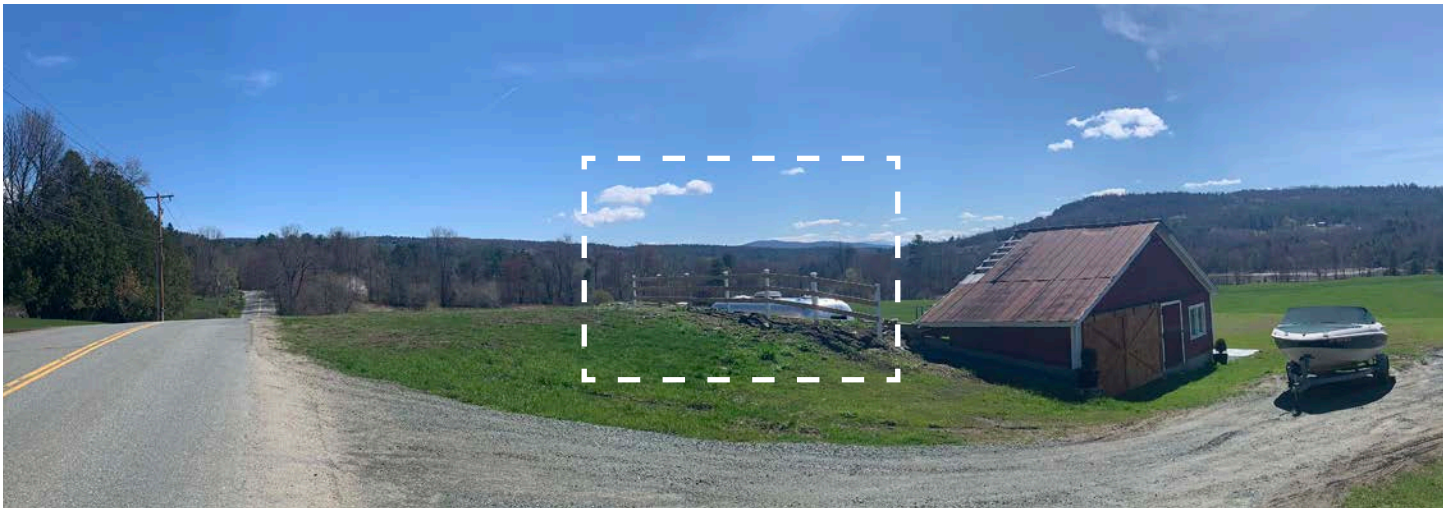
Viewpoint 2

Panorama view from Lower Waterford Road Fork in the town of Waterford, VT, panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.



Viewpoint 2

View from Lower Waterford Road Fork, approximately 3.05-miles west, looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 3

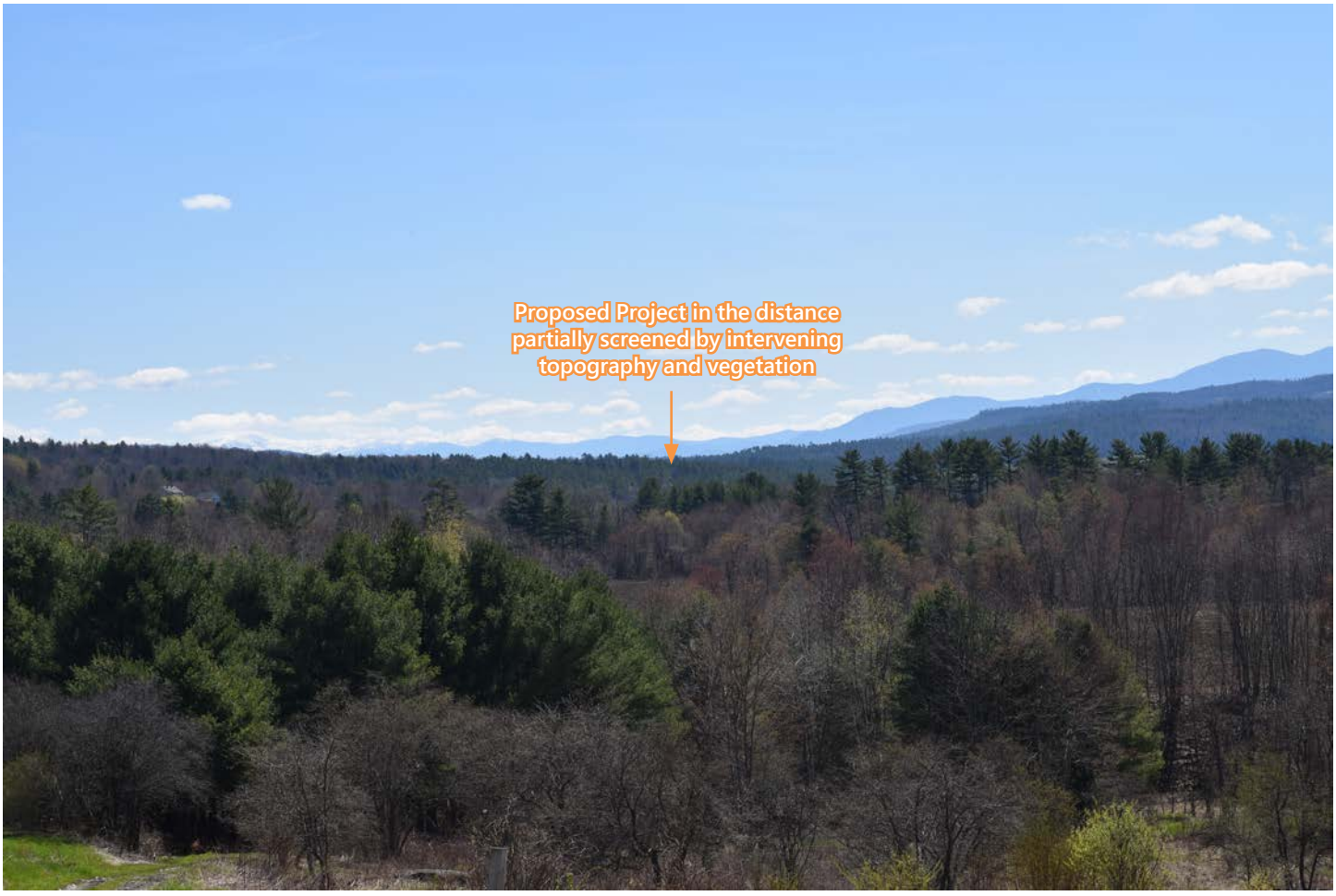
Panorama view from Lower Waterford Road Fork in the town of Waterford, VT, panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 3

View from Lower Waterford Road Fork, approximately 2.90-miles west, looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 4

Panorama view from Lower Waterford Road Fork in the town of Waterford, VT, panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

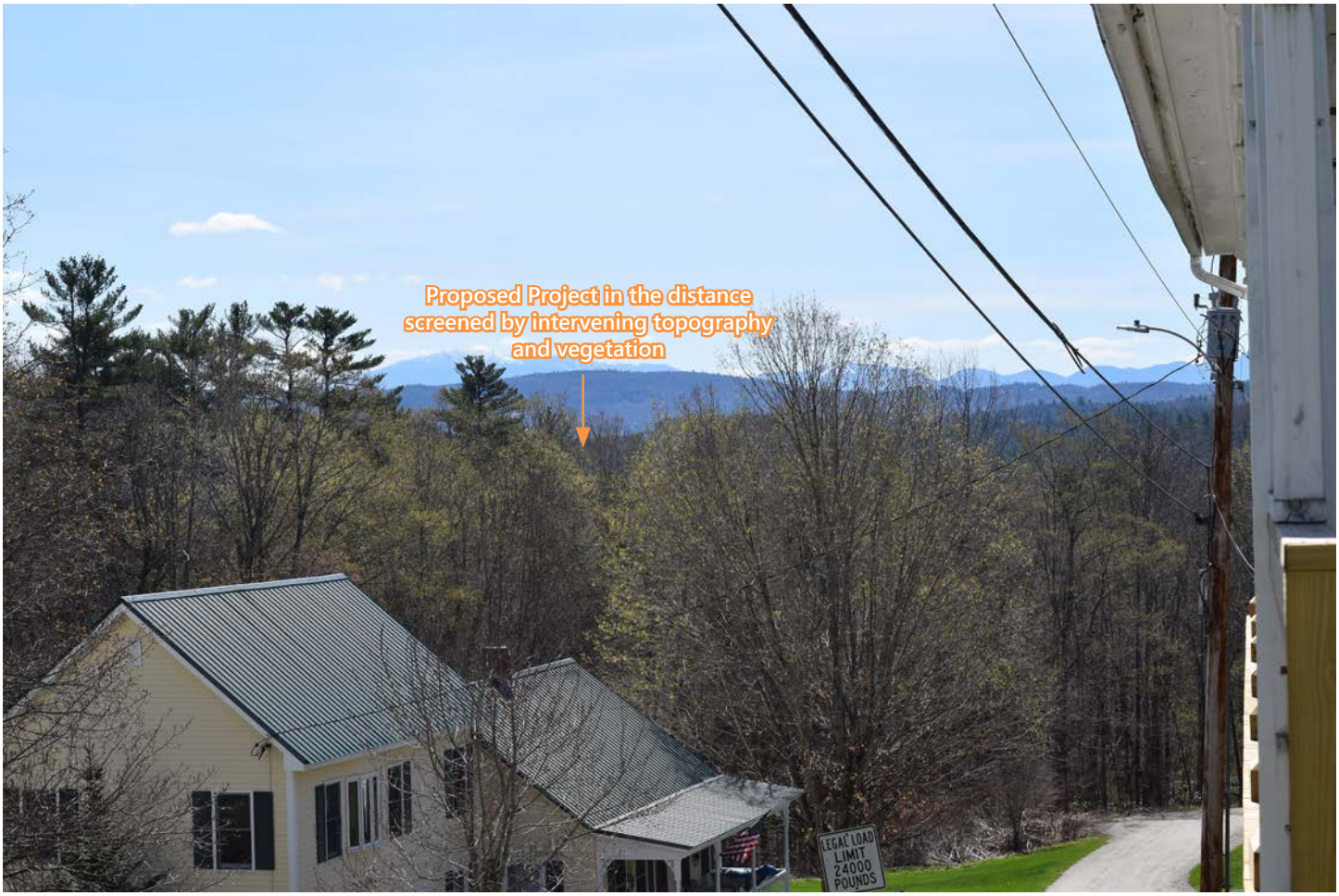


Viewpoint 4

View from Lower Waterford Road Fork, approximately 2.10-miles northwest, looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

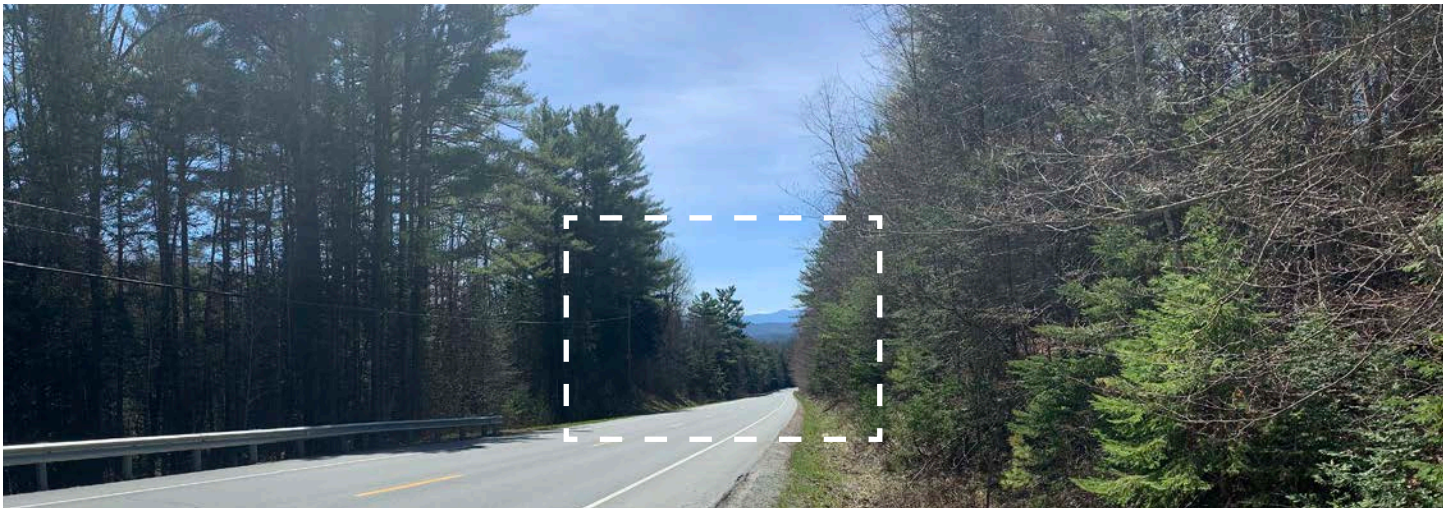
Viewpoint 5

Panorama view from the intersection of Lower Waterford Road Fork and Maple Street in the town of Waterford, VT, panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.



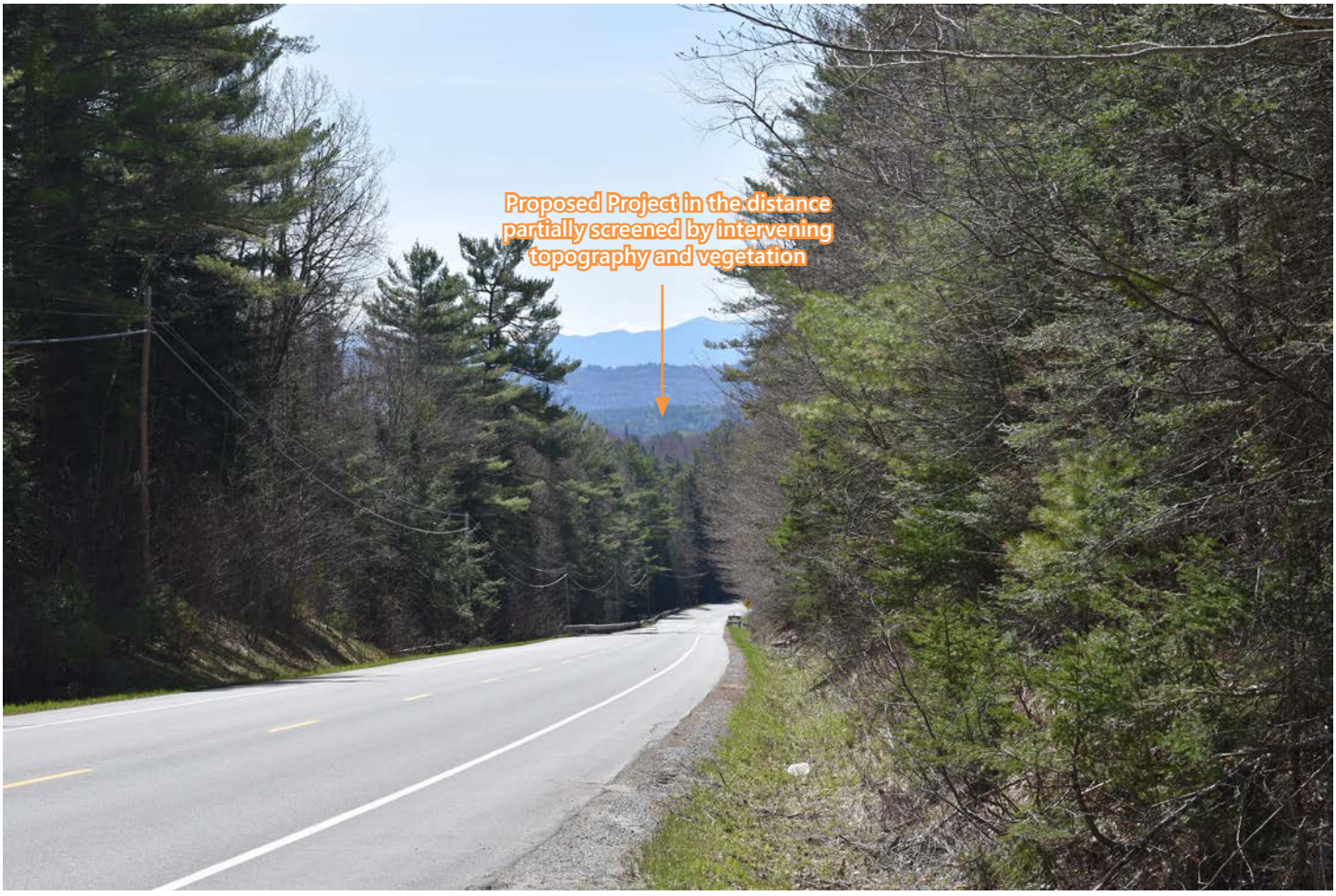
Viewpoint 5

View from the intersection of Lower Waterford Road Fork and Maple Street, approximately 1.81-miles northwest, looking southeast towards the proposed Project. Potential visible Project components from this viewpoint are located in the lands of New Hampshire. (50mm equivalent focal length). Captured April 28, 2023.



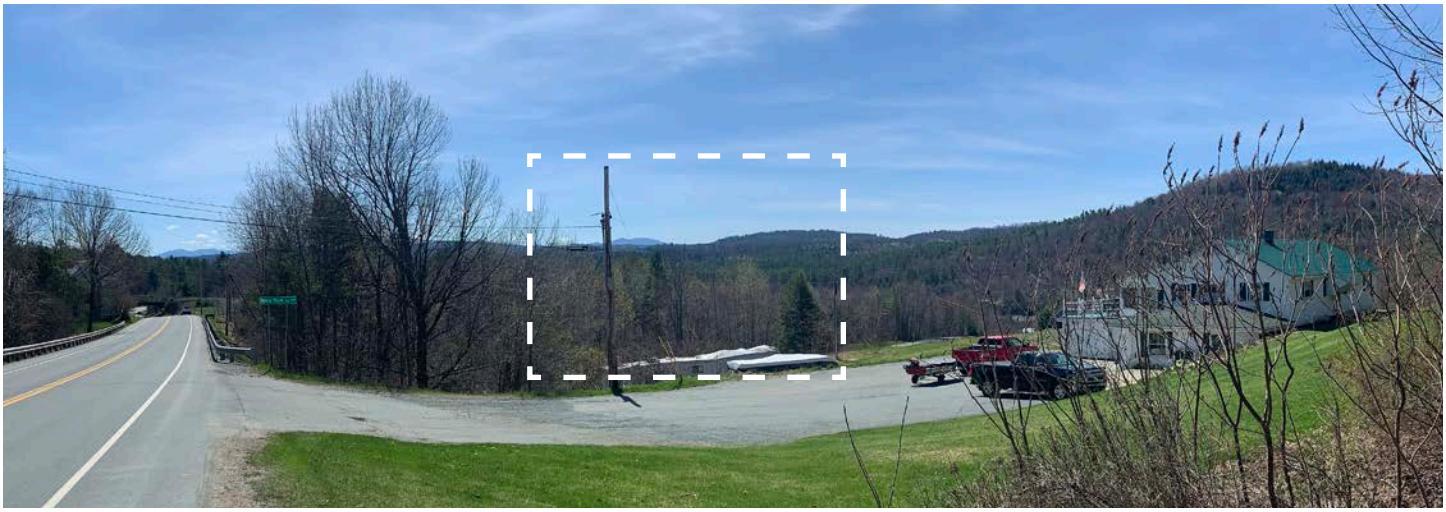
Viewpoint 6

Panorama view from Route 18 in the town of Waterford, VT, panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.



Viewpoint 6

View from Route 18, approximately 2.61-miles northwest, looking southeast towards the proposed Potential visible Project components from this viewpoint are located in the lands of New Hampshire. (50mm equivalent focal length). Captured April 28, 2023.

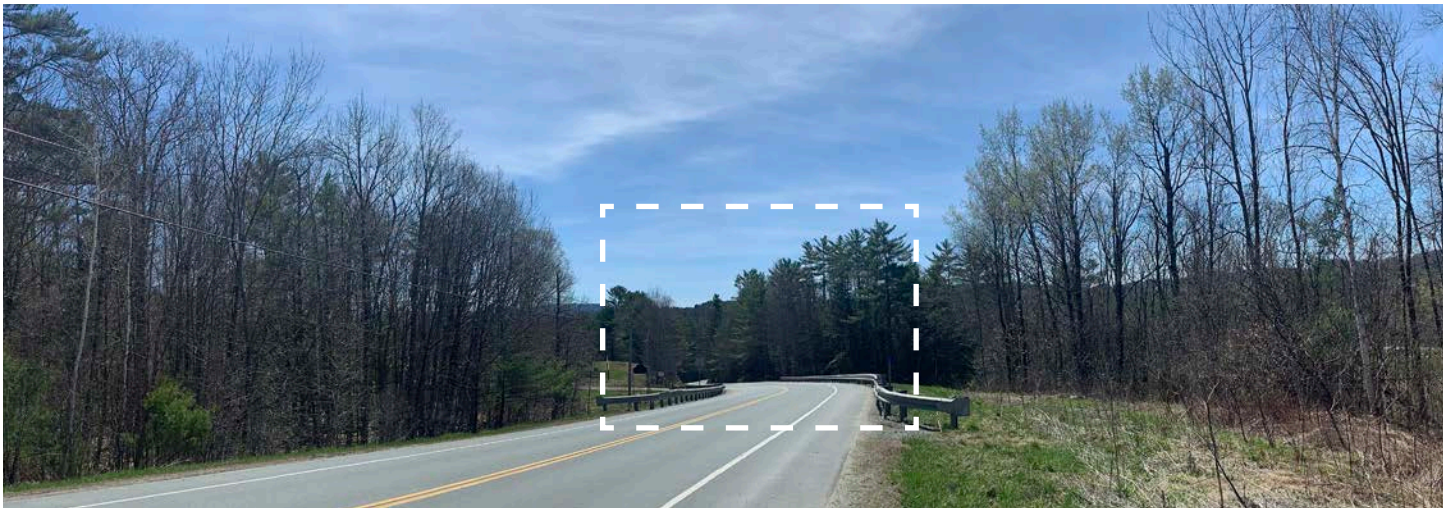


Viewpoint 7

Panorama view from Route 18 in the town of Waterford, VT, panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 7

View from Route 18, approximately1.21-miles northwest, looking southeast towards the proposed Project. Potential visible Project components from this viewpoint are located in the lands of New Hampshire. (50mm equivalent focal length). Captured April 28, 2023.

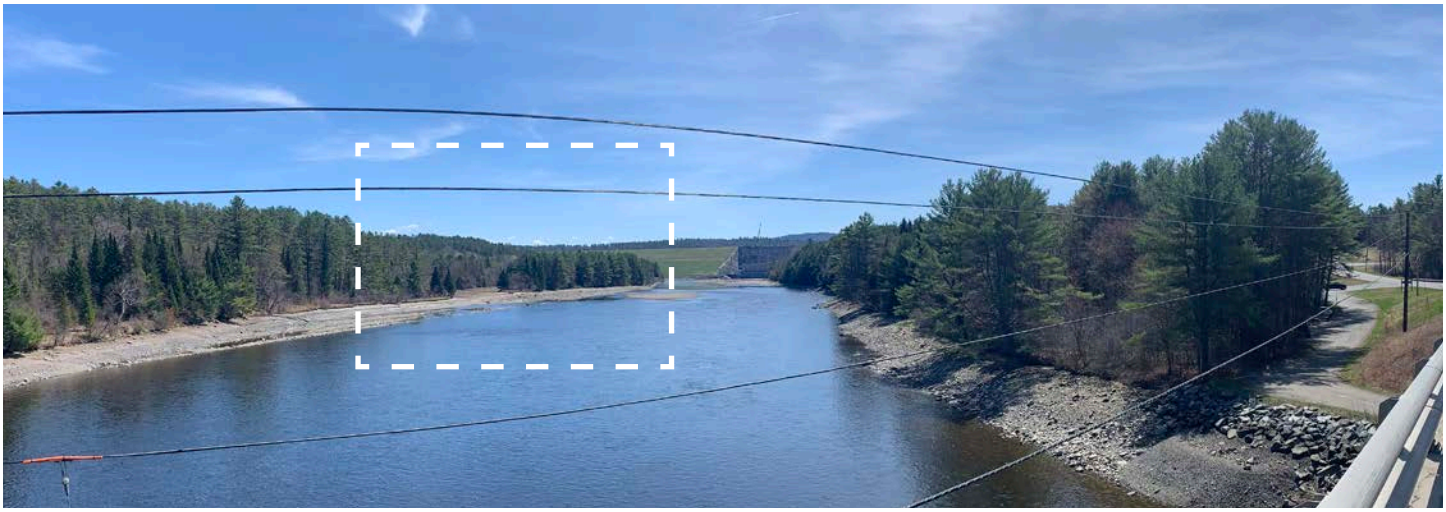


Viewpoint 8

Panorama view from Route 18 in the town of Waterford, VT, panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 8

View from Route 18, approximately 0.80-miles northwest, looking southeast towards the proposed Project. Potential visible Project components from this viewpoint are located in the lands of New Hampshire. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 9

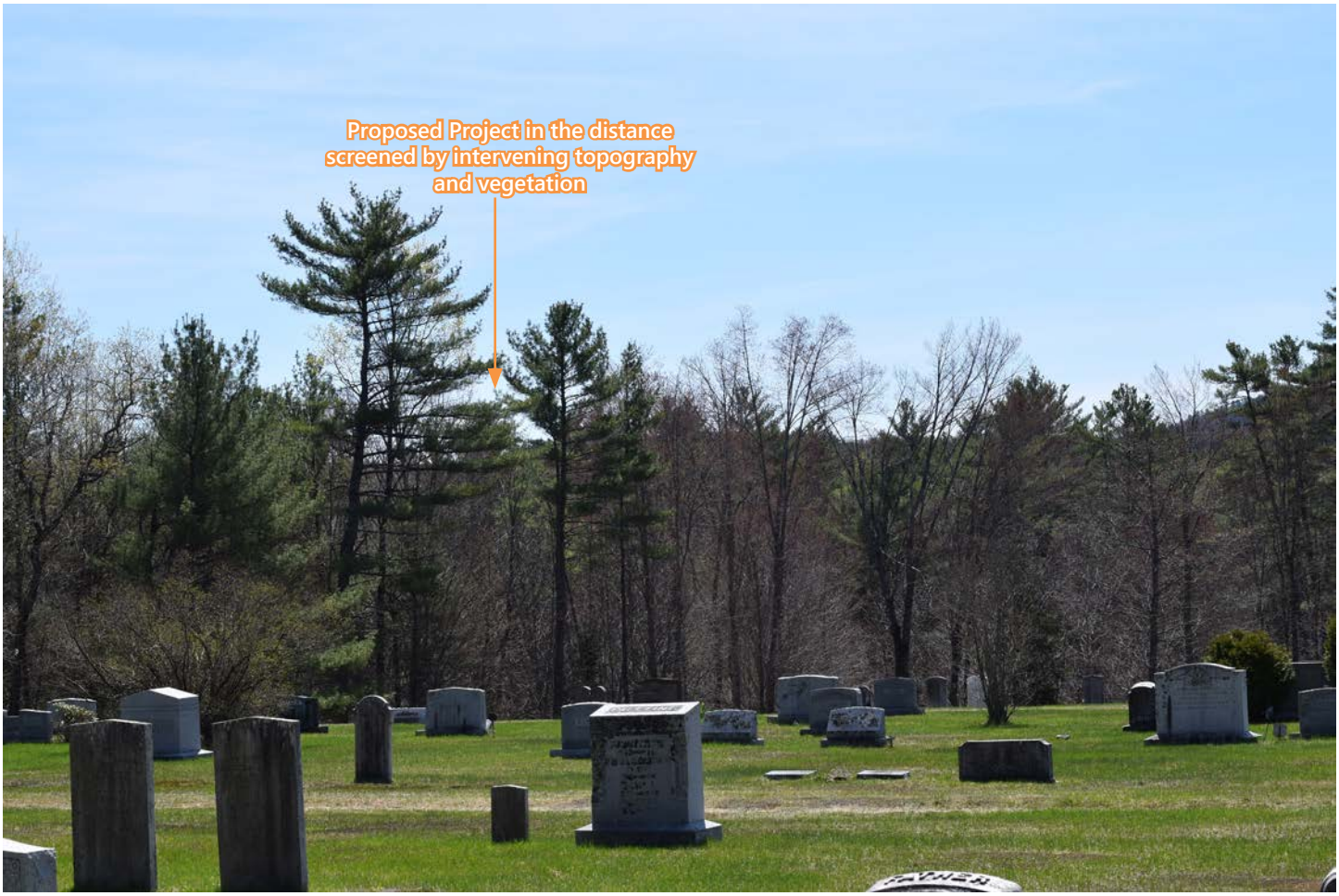
Panorama view from Route 18 in the town of Waterford, VT, panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 9

View from Route 18, approximately 0.58-miles west, looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 10

Panorama view from Riverside Cemetery Road (at Riverside Cemetery) in the town of Waterford, VT panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.



Viewpoint 10

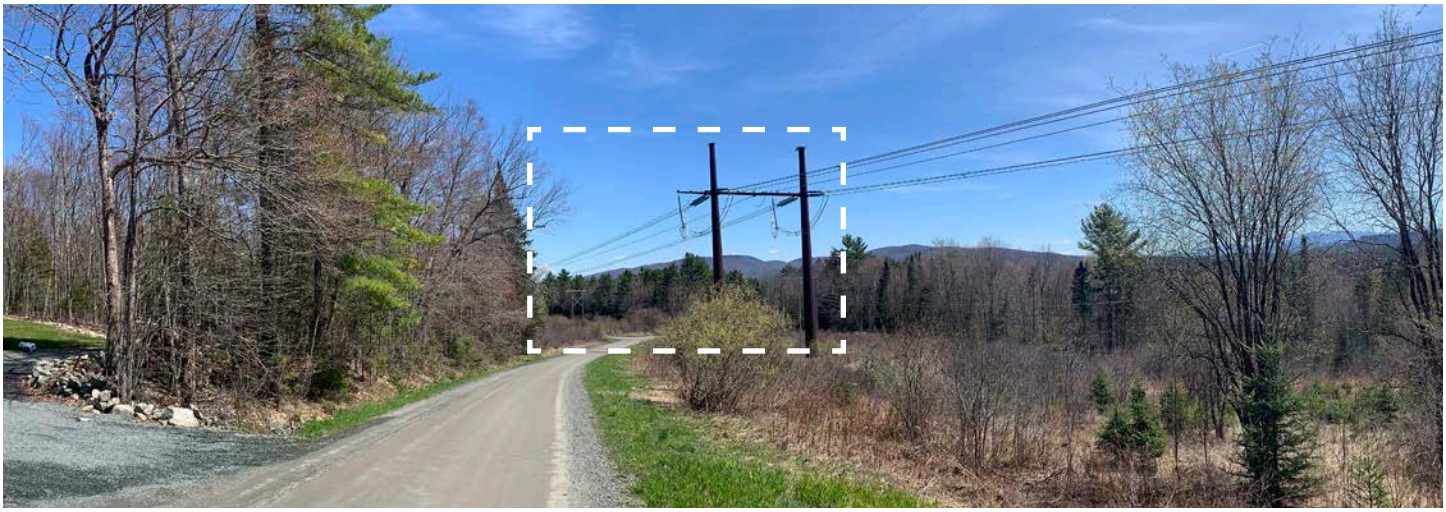
View from Riverside Cemetery Road (at Riverside Cemetery), approximately 0.83-miles north, looking south towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 11

Panorama view from Riverside Cemetery Road in the town of Waterford, VT panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 11

View from Riverside Cemetery Road, approximately 0.50-miles northwest, looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 12

Panorama view from Old Country Road in the town of Waterford, VT panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 12

View from Old Country Road, approximately 535-feet west, looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 13

Panorama view from Old Country Road in the town of Waterford, VT panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 13-Photo A

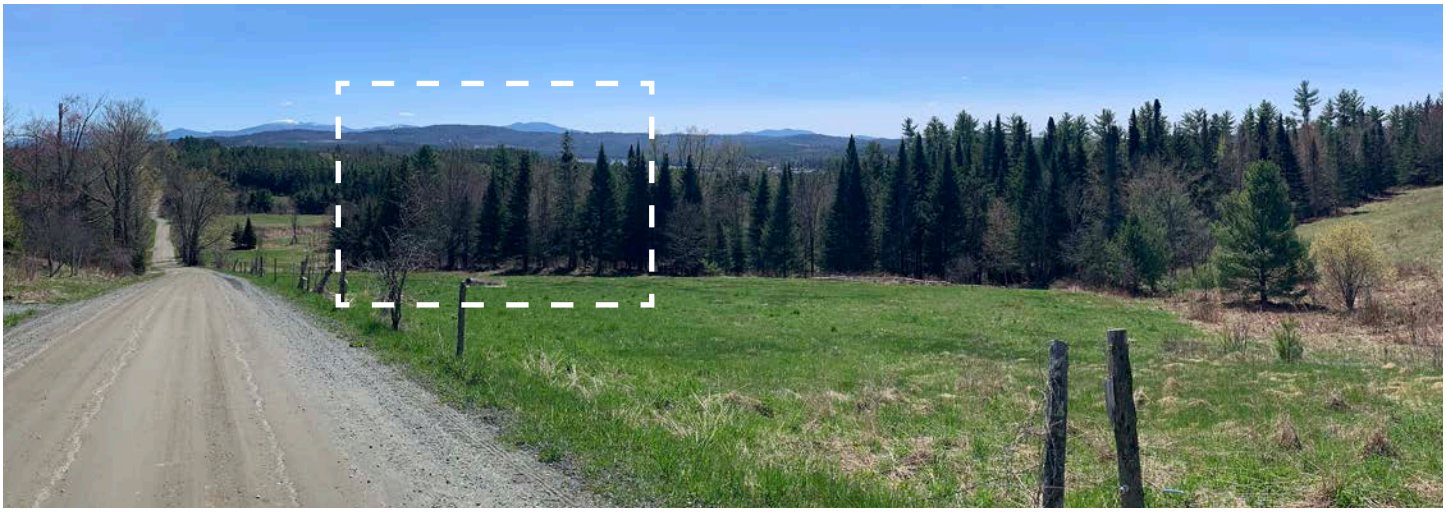
View from Old Country Road, approximately 236-feet southwest, looking northeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 13

Panorama view from Old Country Road in the town of Waterford, VT panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 13-Photo B

View from Old Country Road, approximately 205-feet northeast, looking southwest towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

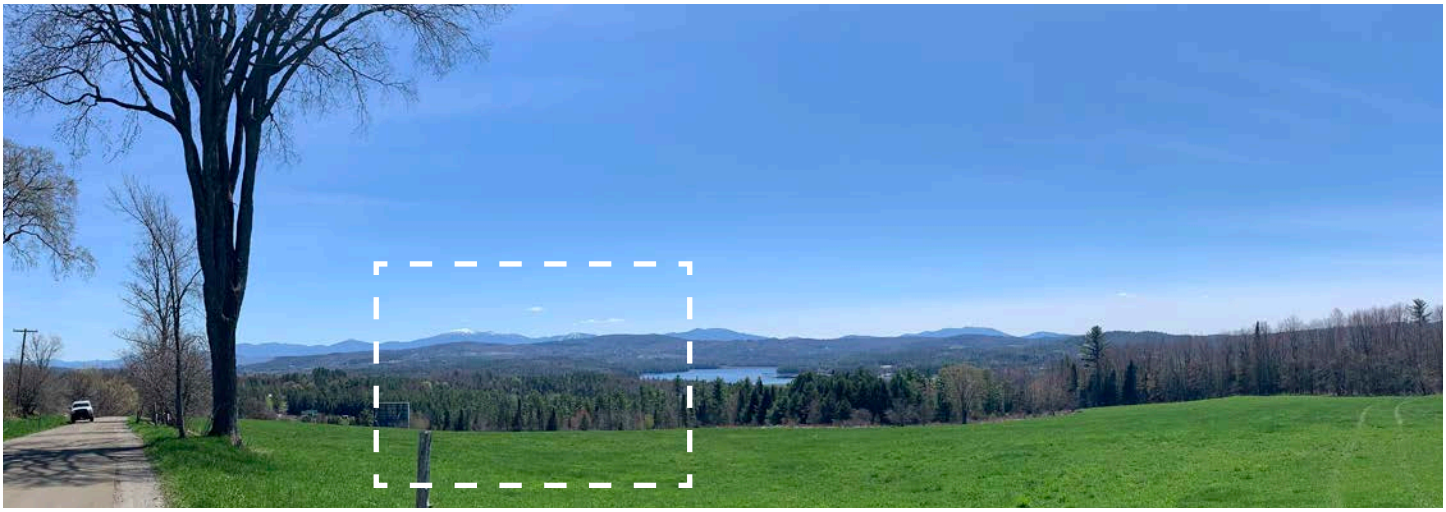


Viewpoint 14

Panorama view from Old Country Road in the town of Waterford, VT panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 14

View from Old Country Road, approximately 0.80-miles northwest, looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 15

Panorama view from Old Country Road in the town of Waterford, VT panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 15

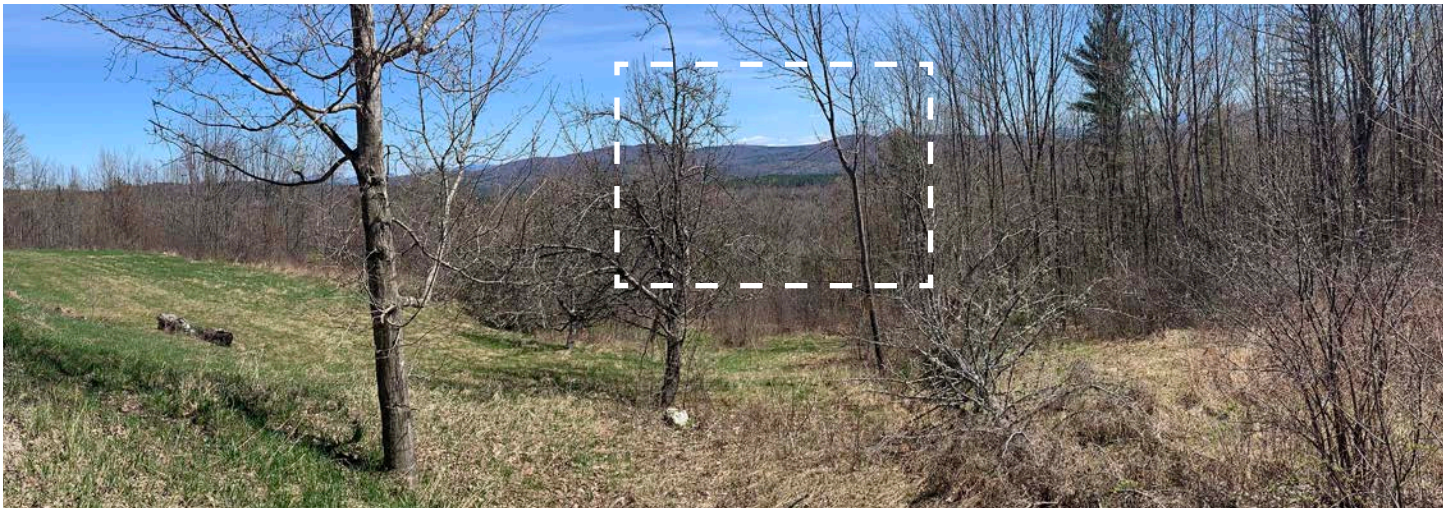
View from Old Country Road, approximately 0.94-miles northwest, looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 16

Panorama view from Shadow Lake Road in the town of Waterford, VT panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 16

View from Shadow Lake Road, approximately 0.96-miles northwest, looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

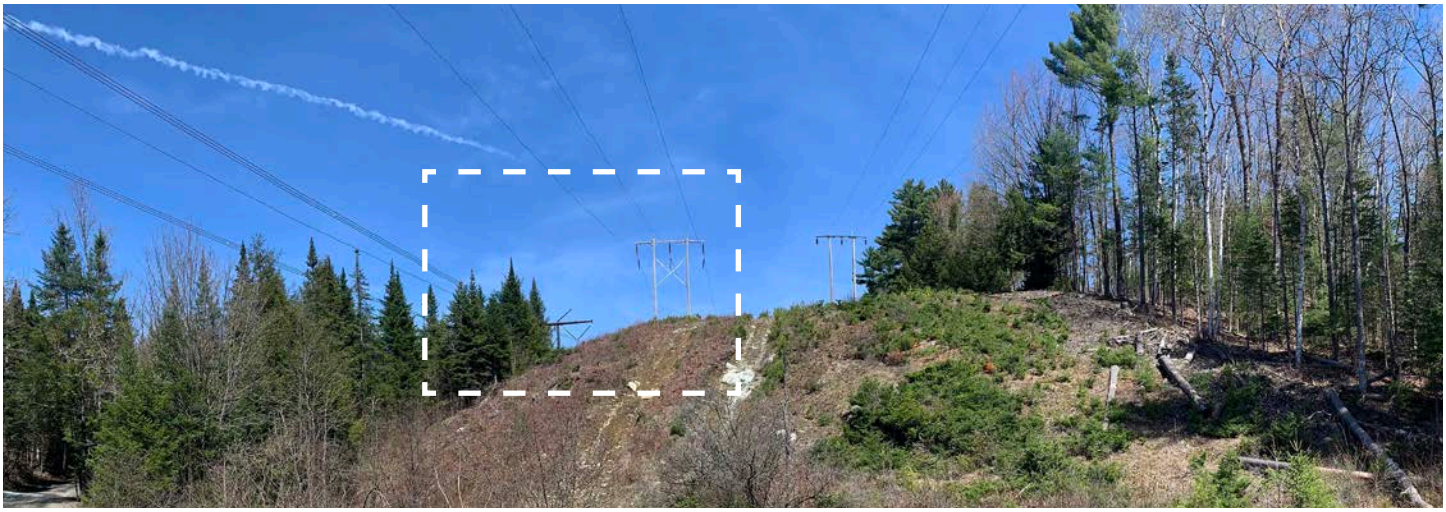


Viewpoint 17

Panorama view from Shadow Lake Road in the town of Waterford, VT panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 17

View from Shadow Lake Road, approximately 0.90-miles west, looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

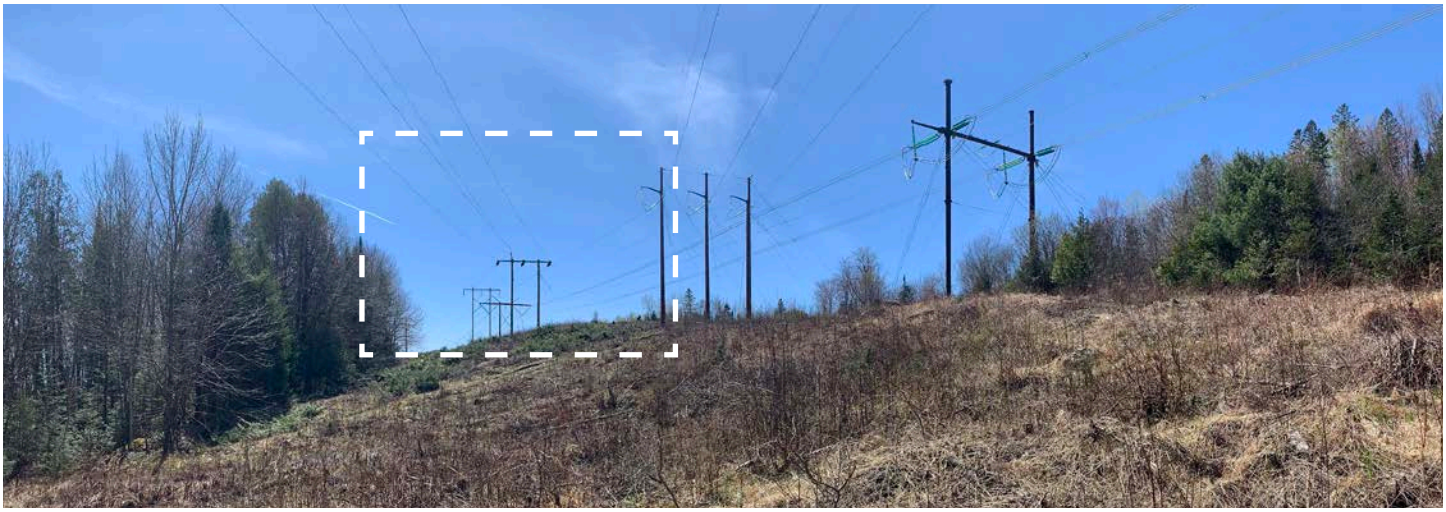


Viewpoint 18

Panorama view from Grist Mill Pit Road in the town of Concord, VT panning from west to east. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 18 - Photo A

View from Grist Mill Pit Road, approximately 330-feet southwest, looking northeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 18

Panorama view from Grist Mill Pit Road in the town of Concord, VT panning from west to east. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 18 - Photo B

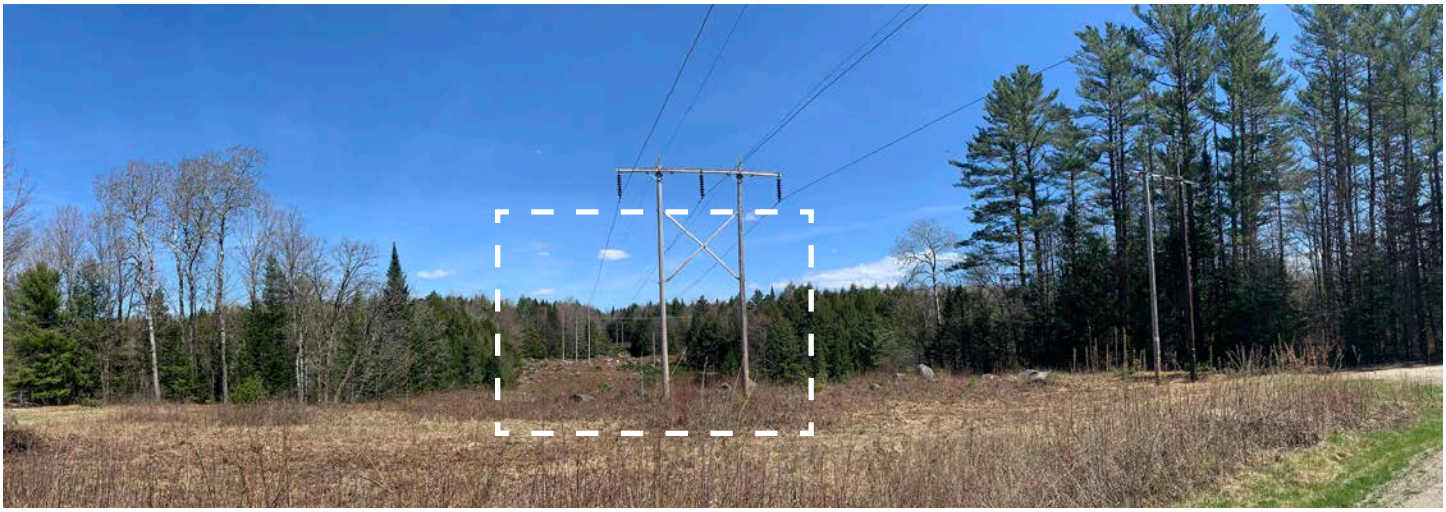
View from Grist Mill Pit Road, approximately 265-feet northeast, looking southwest towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 19

Panorama view from Royalston Corner Road, near the intersection with Streeter Road in the town of Concord, VT panning from west to east. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 19

View from Royalston Corner Road, approximately 2.65-miles northwest looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 20

Panorama view from Cozy Nook Road, in the town of Concord, VT panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 20 - Photo A

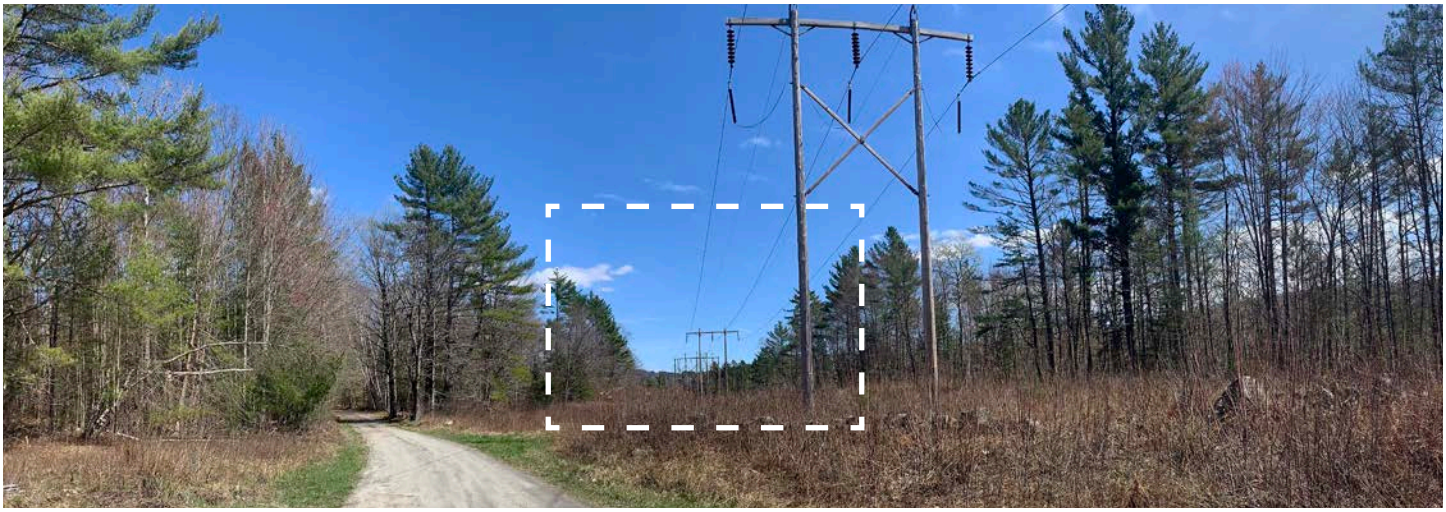
View from Cozy Nook Road, approximately 110-feet west looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 20

Panorama view from Cozy Nook Road, in the town of Concord, VT panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 20 - Photo B

View from Cozy Nook Road, approximately 256-feet east looking west towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 21

Panorama view from Walker Pit Road, in the town of Concord, VT panning from north to south. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 21 - Photo A

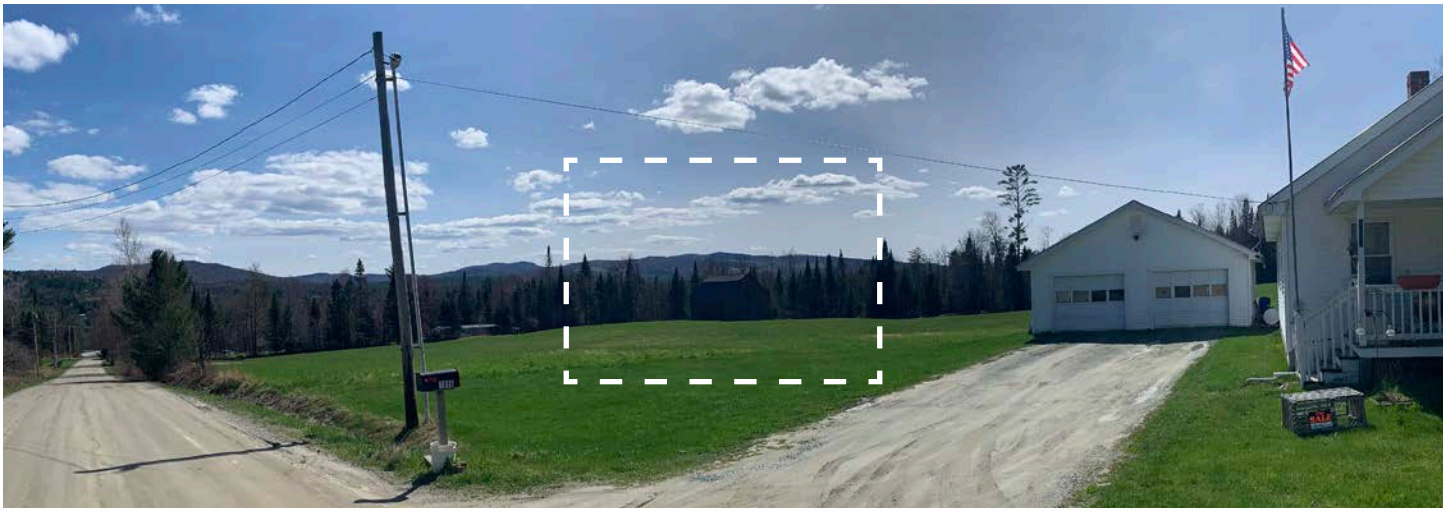
View from Walker Pit Road, approximately 256-feet west looking east towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 21

Panorama view from Walker Pit Road, in the town of Concord, VT panning from south to north. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 21 - Photo B

View from Walker Pit Road, approximately 307-feet east looking west towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 22

Panorama view from Baptist Hill Road in the town of Lunenburg, VT panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 22

View from Baptist Hill Road, approximately 1.63-miles north looking south towards the proposed Project. Potential visible Project components from this viewpoint are located in the lands of New Hampshire. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 23

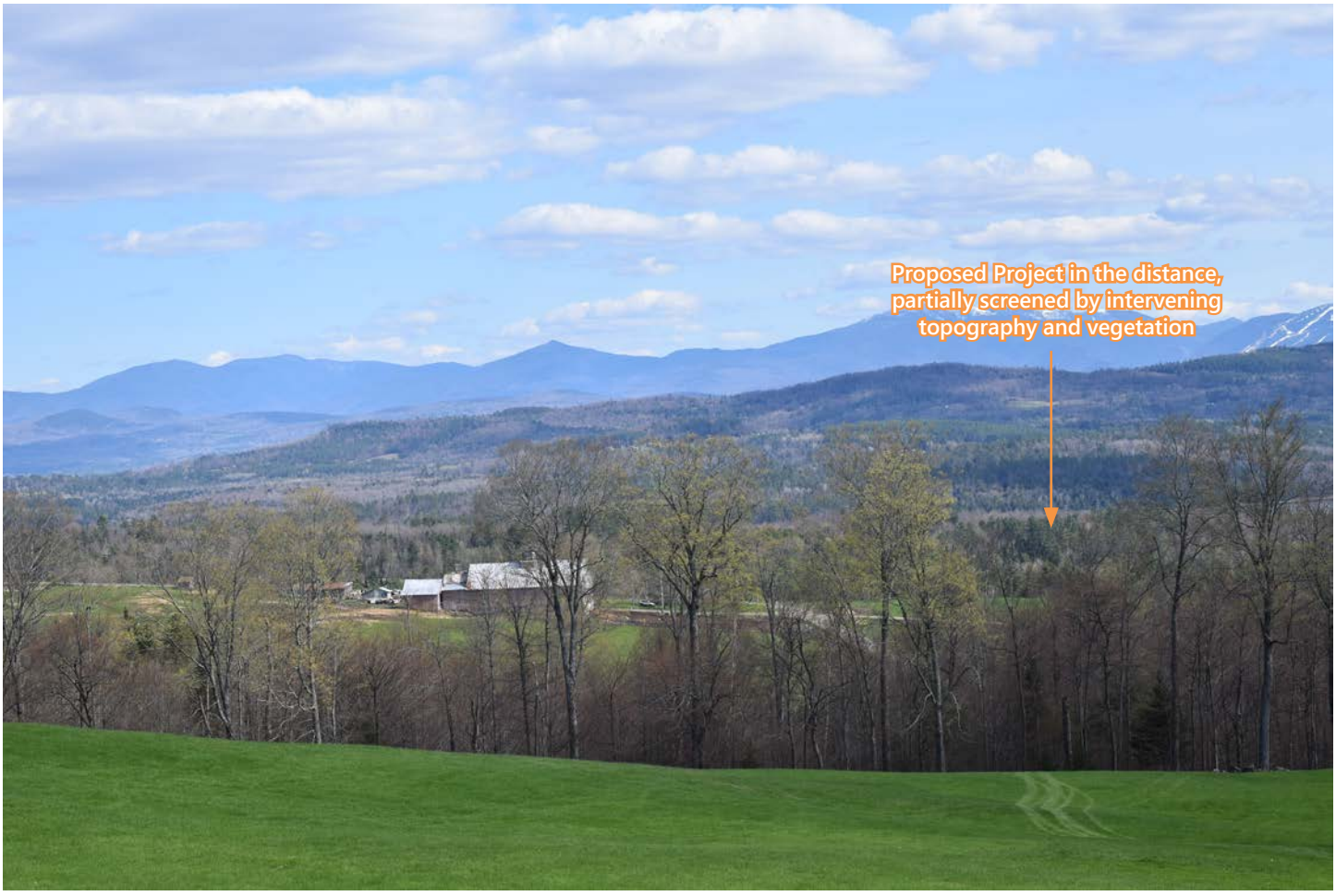
Panorama view from River Road in the town of Lunenburg, VT panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

Viewpoint 23

View from River Road, approximately 2.41-miles north looking south towards the proposed Project. Potential visible Project components from this viewpoint are located in the lands of New Hampshire. (50mm equivalent focal length). Captured April 28, 2023.

Viewpoint 24

Panorama view from High Ridge Road in the town of Waterford, VT, panning from esat to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

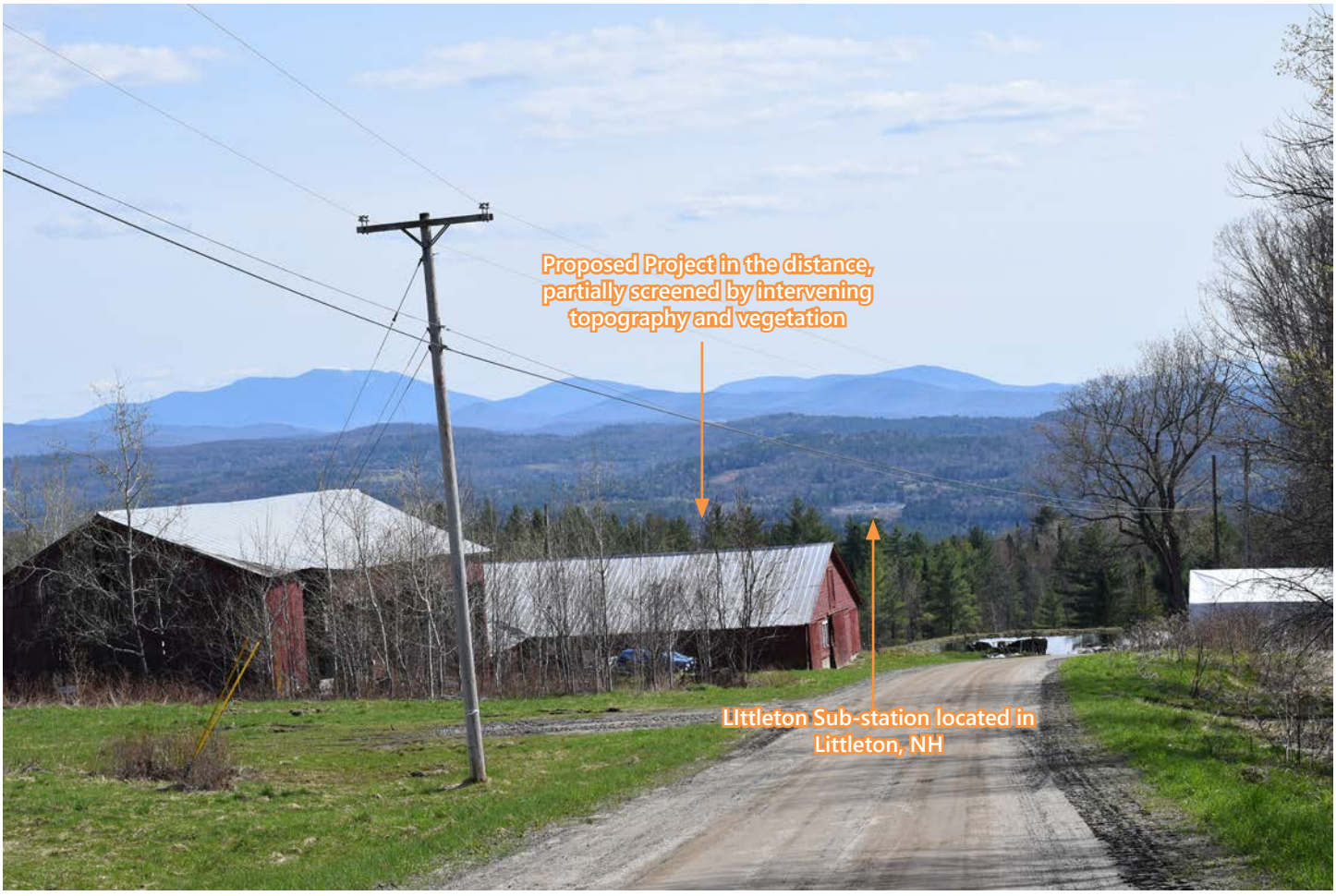


Viewpoint 24

View from High Ridge Road, approximately 1.49-miles northwest looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

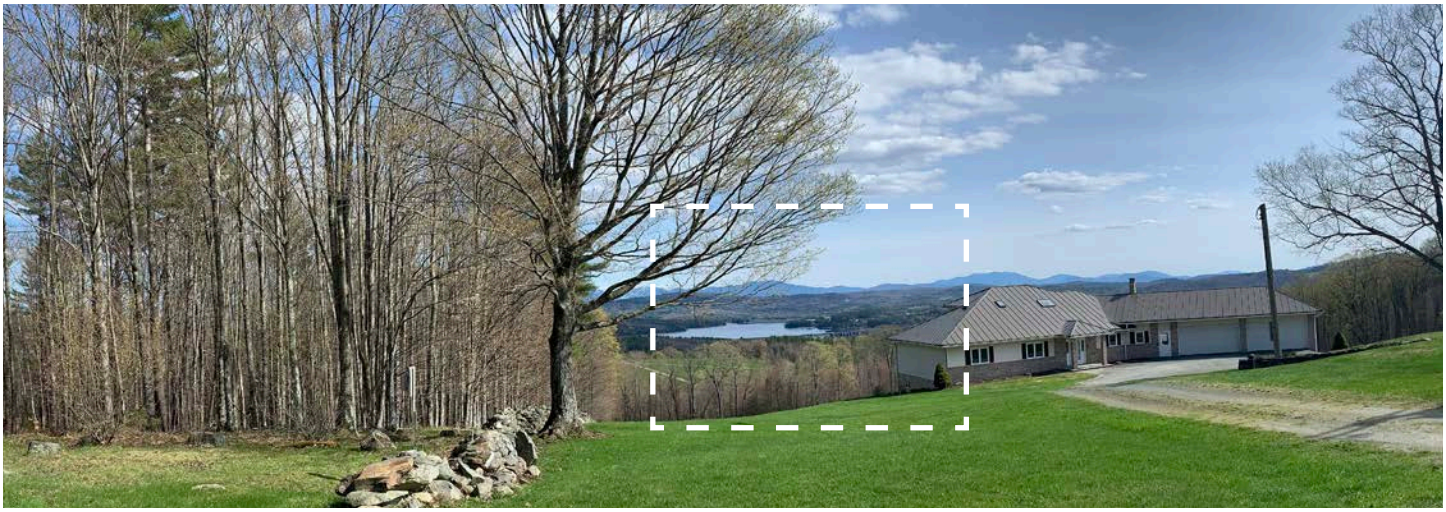
Viewpoint 25

Panorama view from High Ridge Road in the town of Waterford, VT, panning from esat to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.



Viewpoint 25

View from High Ridge Road, approximately 2.30-miles north looking south towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.

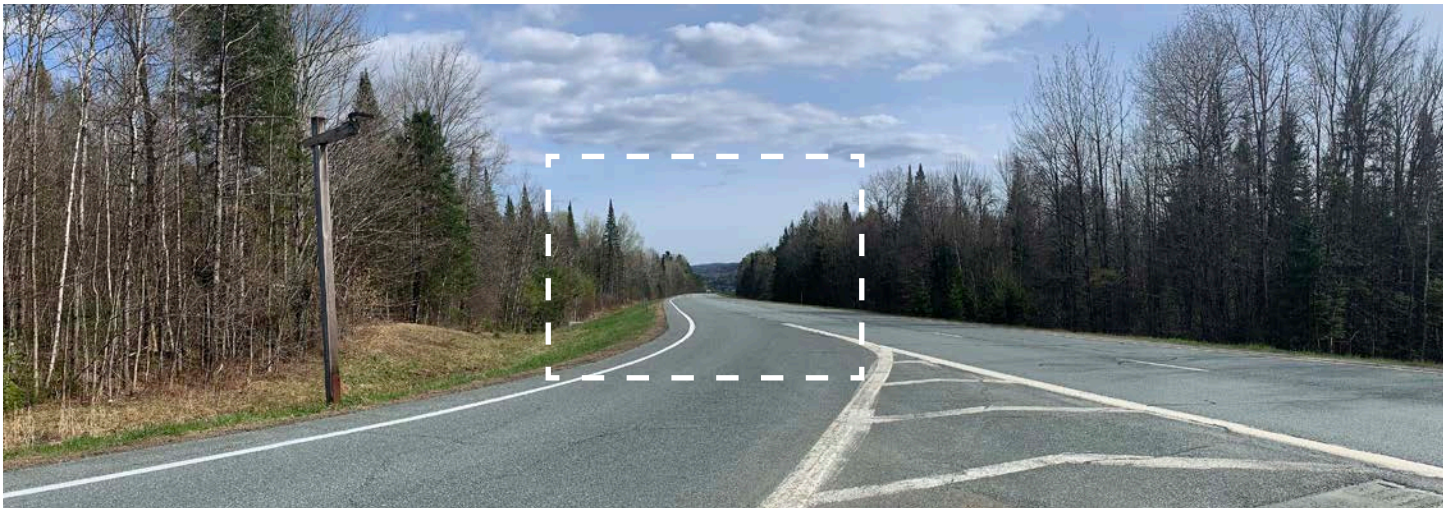


Viewpoint 26

Panorama view from High Ridge Road in the town of Waterford, VT, panning from esat to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.

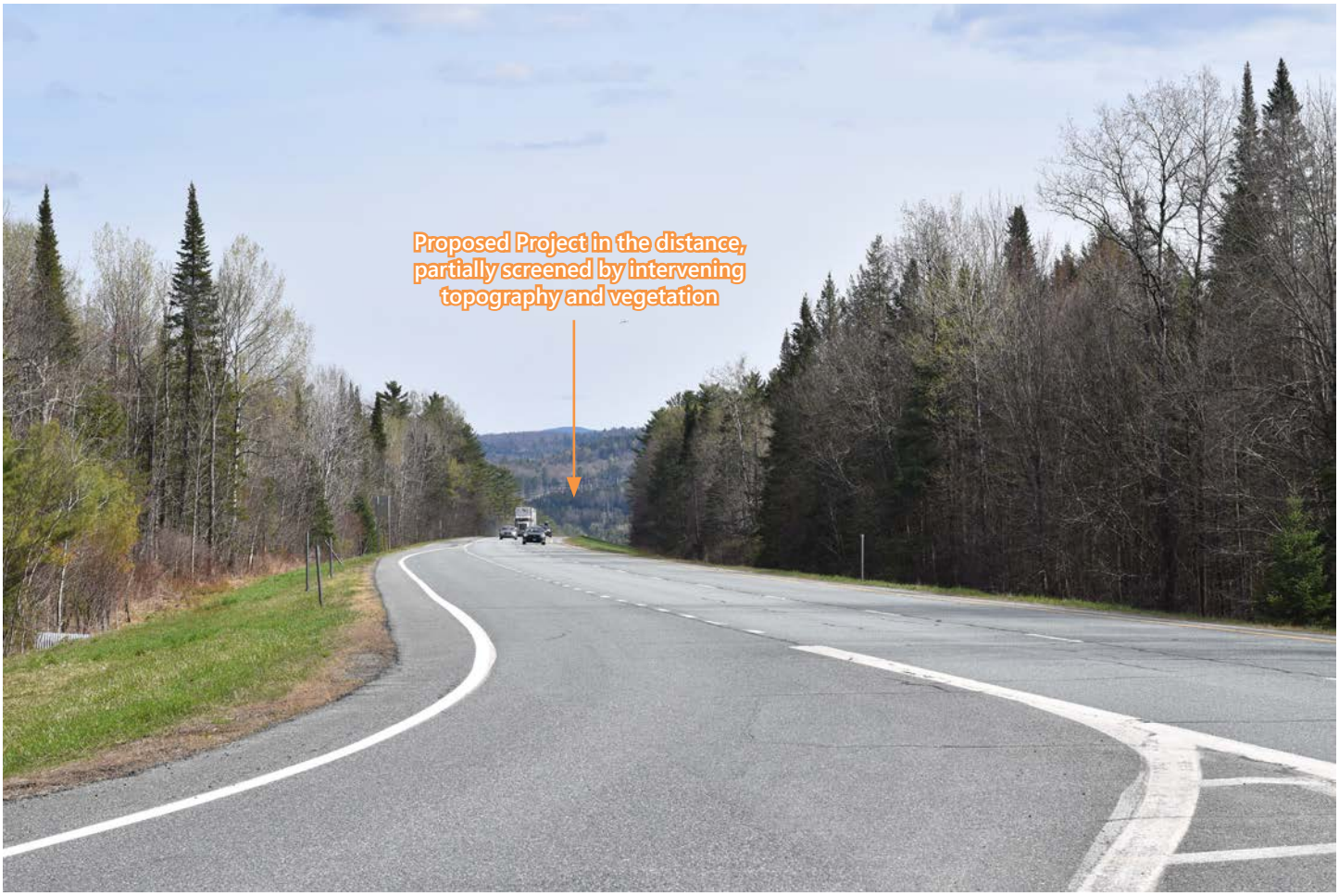
Viewpoint 26

View from High Ridge Road, approximately 1.42-miles northwest looking southeast towards the proposed Project. (50mm equivalent focal length). Captured April 28, 2023.



Viewpoint 27

Panorama view from I-89 Northbound lane in the Town of Waterford, VT, panning from east to west. The white frame represents the extent of the 50mm (35mm equivalent) photograph below.



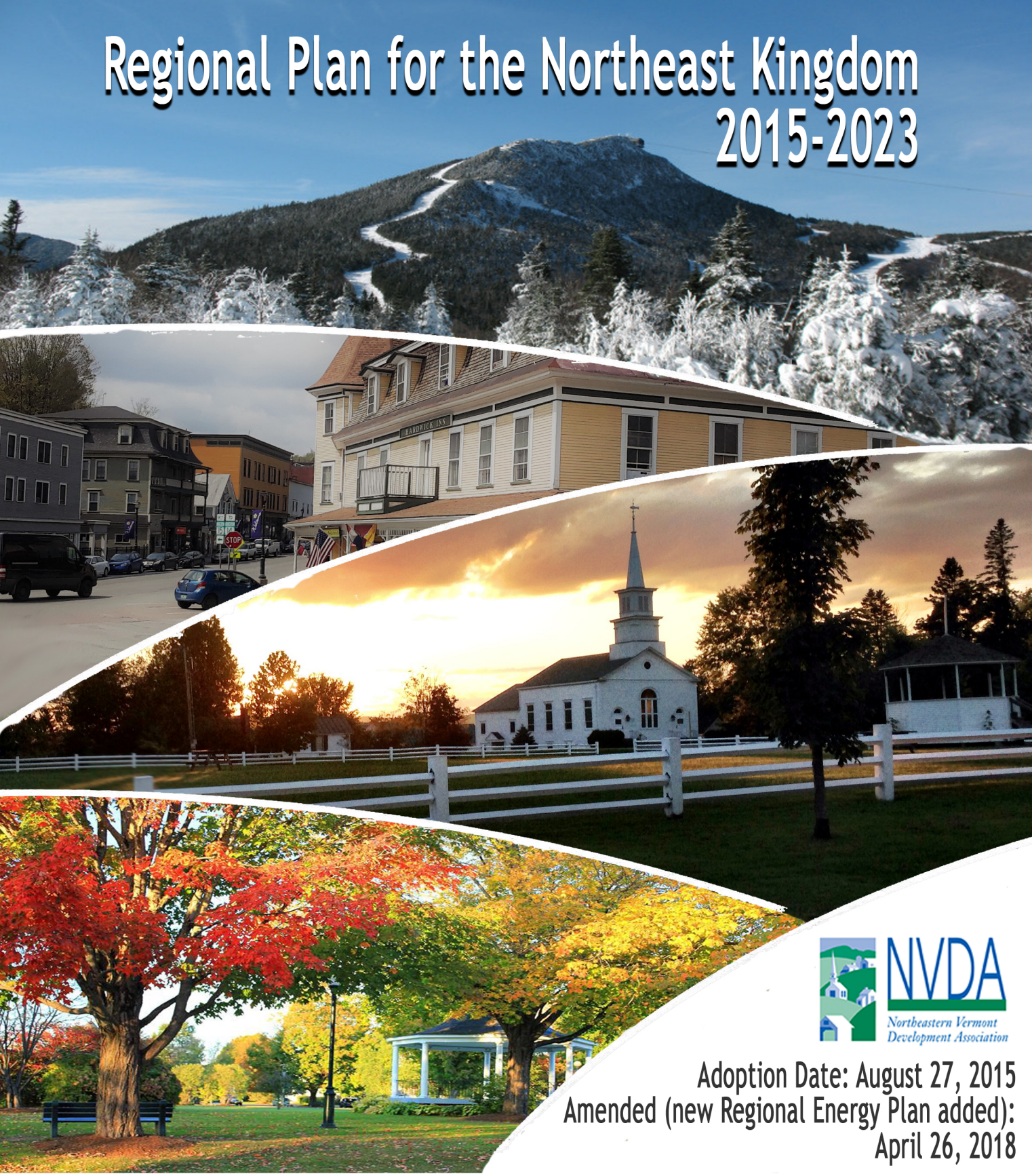
Viewpoint 27

View from I-89 Northbound lane, approximately 2.10-miles north looking south towards the proposed Project. (50mm equivalent focal length). Potential visible Project components from this viewpoint are located in the lands of New Hampshire. Captured April 28, 2023.

Appendix C

Regional and Town Plan Excerpts

Regional Plan for the Northeast Kingdom 2015-2023



NVDA
Northeastern Vermont Development Association

Adoption Date: August 27, 2015
Amended (new Regional Energy Plan added):
April 26, 2018

NORTHEASTERN VERMONT DEVELOPMENT ASSOCIATION

TABLE OF CONTENTS

VOLUME I REGIONAL GOALS & STRATEGIES

VOLUME II REGIONAL ANALYSIS

Sufficient open space will be available for current and future outdoor recreational pursuits. A variety of year-round and seasonal, indoor and outdoor recreation opportunities will be available for residents and visitors. Public access to water bodies will be protected.	Assist towns to plan for future recreation needs, recognizing that privately-held land may not be available for passive recreational use in the future.	G	A, F	B
	Assist with financing to develop additional facilities such as sports fields, playgrounds, trail systems, ice rinks, skateboard parks, and recreation/bike paths, coordinating actions with the goals in the SCORP in order to access dedicated federal funds.		F	
	Identify and protect public access to water bodies.	G	A, F	
	Identify the recreation facilities and activities most needed by youths and seniors and help towns identify and secure funds for their development.		A	F
	Support local and regional recreation events (e.g. fairs, festivals, etc.).	G		
Future Land Use and Development Use Goals	**Strategies**	**Ongoing**	**Short-term**	**Longer-Term**
Established centers will be an economically vital mix of commercial and residential uses, and will offer a variety of housing types available at different price points to support long-term sustainability. Towns will be supported in identifying and implementing strategies that reverse the current trend of new residential development occurring primarily outside of centers. Traditional development patterns will be maintained and linear "strip"	Direct public investment and create financial incentives for the development of a balanced mix of low-income, work-force, and upper-income housing in and adjacent to village centers and downtowns, with the goal of allowing all communities to develop into high-opportunity areas.	G , B , E	B, A	E
	Direct public investment for new elderly and affordable housing to town and village centers in locations with access to public transportation routes. Aside from promoting traditional settlement patterns, this will put seniors closer to such amenities as shopping, and community facilities, and enable income-stressed residents to have cost-saving access to services, employment centers, and public transportation options to places of employment.	A, G	A, B, F	
	Work with housing developers and communities to assure that all residents have the opportunity for access to high-performing schools and economically-sustainable employment.	A, G	B, F	E
	Assist communities applying for designation under the Vermont Downtown, Village Center, and/or Neighborhood Development Programs where appropriate to encourage mixed-use development (residential, commercial and appropriate light-industrial) in centers.	G	B	

An adequate, reliable, diverse, and secure energy supply will benefit the region.	Support the upgrade of regional transmission systems to continue to reduce constraints.	E	A, B	C
	Support the maintenance and upgrade of existing energy generation facilities and related infrastructure.	E	A	C
	Encourage local responders to plan for emergency energy resources (VEM Emergency Generators Grant Program generators.)	G	F	
Affordable energy alternatives will be available for the region's users.	Assist in the development of businesses that support alternatives energy use.	B, G	A, D	C, F
	Work with Tier 3 energy service providers to promote the installation of cold climate heat pumps and geothermal systems by facilitating outreach and education on their benefits.	G		
	Partner with Efficiency Vermont and Tier 3 energy service providers to increase the use of efficient wood heat and biomass systems.	G		
	Support the development of small-scale renewable resources, such as wind and solar and the use of supplemental sources (wood) to stabilize energy costs.	G, E	F	C
	Promote and support rail infrastructure as a cost-effective transportation resource for the energy industry.	E.		C
	Encourage and support agricultural production of biofuels and oilseed crops, and explore ways to broaden access to processing infrastructure.	G	A, B, F	
	Identify potential users of district heating and wood heating systems and provide assistance to communities seeking to develop them.		A	
	Encourage the legislature to increase incentives and rebates for efficient wood heat systems.	E		
	Provide outreach and education among vendors, contractors, and the general public through venues such as tradeshows and workshops.	G		
	Provide communities with an analysis of potential areas that are suitable for ground source heat pumps.		A	
	Support upgrade and trade-out programs and incentives for older, higher emission wood-burning stoves and boilers.	G		

	loan and USDA Direct and Guaranteed Loan Programs, for single homes and multi-family homes.			
Energy generation that provides the best cost-benefit to the region will be promoted.	Promote wood-based energy generation to support the region's forest industry. Encourage the development of energy facilities and resources that help sustain local agriculture and forestry (i.e. grass/wood-pellets, small wind, solar, farm-methane, wood-chip, biodiesel.	B, G	A, E	G
Environmental and aesthetic impact of energy generation and usage will be considered. There will be broad public participation in the decision-making process.	Encourage the Vermont Legislature to develop policies that support the development of solar, small-wind, hydro-electric, farm methane and biomass generation facilities, while respecting current local land use and the culture of the region. Encourage the PUC to examine the long-term sustainability of proposed facilities	G, E		
Assessment of local needs and values on new energy development will be encouraged.	Encourage towns to address energy development in town planning and zoning. Provide assistance to businesses/municipalities to develop cogeneration and other alternative energy strategies.	G	A, G	

	Support efforts to aggregate and distribute gleaned agricultural products.	G	A, F	
	Support efforts to efficiently aggregate and distribute recovered food in a manner that minimizes spoilage and trucking miles.		A	C, F
	Support the expansion and viability of commercial composting operations.			C, G
	Help communities plan for and create municipal composting facilities, where feasible. Explore and facilitate the sustainable use of food residuals and other waste byproducts.		A, F	
Historic, Cultural & Scenic Goals	**Historic, Cultural & Scenic Strategies**	**Ongoing**	**Short-Term**	**Longer-Term**
Future development should follow traditional development patterns, while providing for economic development opportunities and livable communities.	Promote local and regional tourism, since it an important part of our economic base.	B	A	
	Promote local traditions, skills, crafts, and the performing arts within the region.	B G		
	Assist communities to designate downtowns and village centers under the Vermont Downtown Program.	G, B	A,); B, F	
	Support local cultural resource initiatives to revitalize communities and downtowns.	G, B	A, B	F
Significant historic, cultural, and scenic resources within the region should be identified and preserved.	Assist communities to preserve and maintain historic downtowns, village centers, buildings, and rural and scenic landscapes.	G	A, B, D, F	C, F
	Rehabilitate and re-use significant cultural, architectural, and historic sites, and community facilities, whenever feasible.	G	A, B, D	C, F
	Utilize federal, state, and local programs for developing or preserving local cultural and historic assets.	G.	B, F	
	Disseminate information about historic tax credits to businesses and property owners.	G.		
	Assist municipalities with securing funding and technical assistance to conduct a comprehensive survey of local historic resources.		F, B	
Housing Goals	**Housing Strategies**	**Ongoing**	**Short-Term**	**Longer-Term**

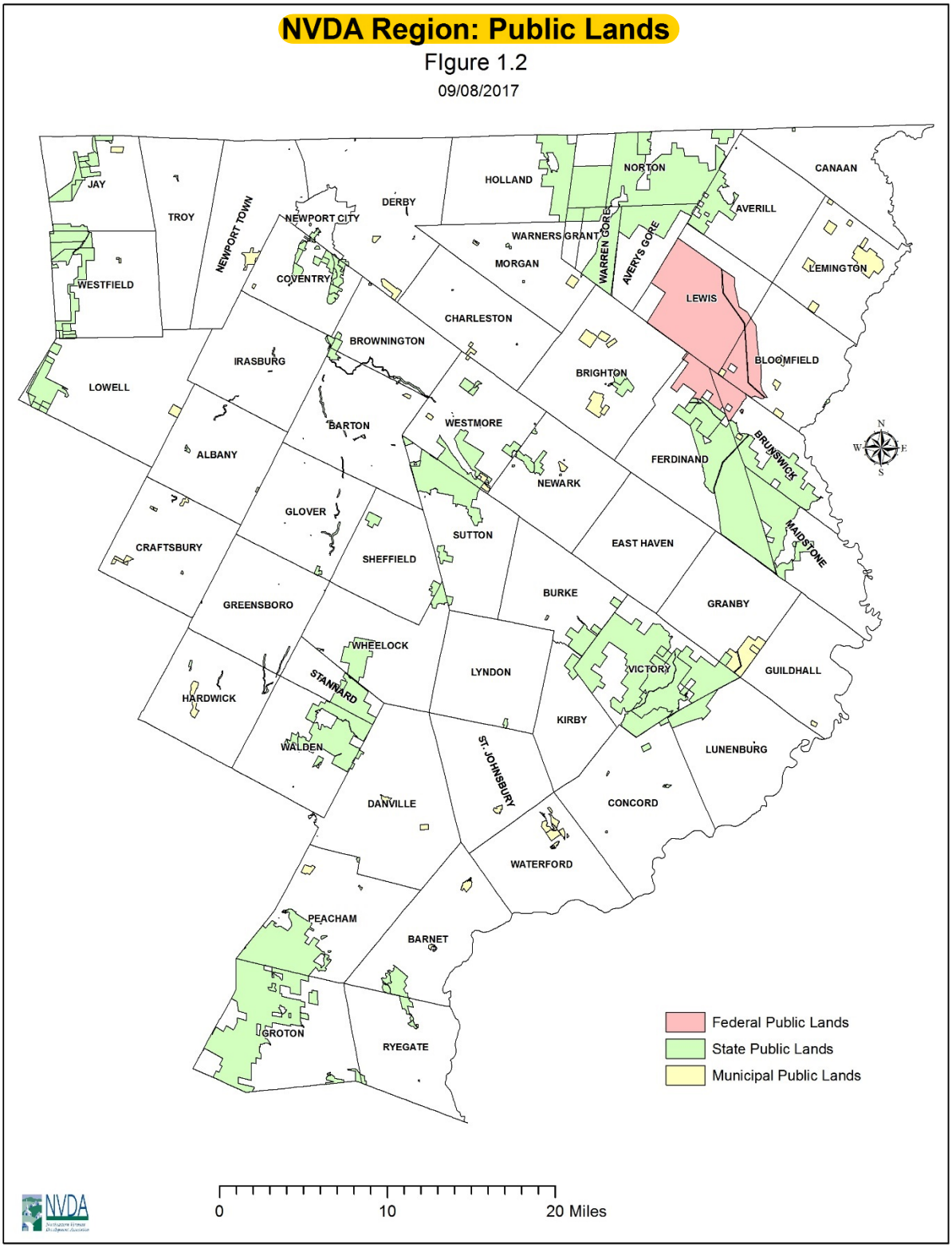
portion of Darling State Park has been leased to the Burke Mountain Ski area for alpine and Nordic ski trails. In northern Essex County there are vast tracts of forest land containing networks of four-season trails that are also used for forestry operations.

Private land owners have been generous in allowing recreational use of their land. Educating users about respectful and safe use is important in maintaining access to private lands in the future. However, residential development and the subdivision of land over time can reduce the amount of private lands available for recreation. This increases the pressure on public lands and those private lands that are still accessible. State-wide, the number of acres of posted property registered with town clerks was relatively constant from 2000 through 2010.

Conserved Lands for Passive Recreation

Federal, state, and municipally-controlled land, whether conserved by fee ownership or by an easement on privately-held land, allow for varying levels of public access and are an important passive recreational resource. Some trails and logging roads are actively maintained by the state or non-profit land conservation organizations. The Vermont Association of Snow Travelers (VAST) is one such organization that maintains trails on both private, unencumbered land and publicly held land.

Figure 1.2 "NVDA: Public Lands" shows the location of lands held or controlled by local, state and federal agencies.


NVDA Region: Public Lands
FIgure 1.2
09/08/2017
JAY
TROY
NEWPORT TOWN
NEWPORT CITY
DERBY
HOLLAND
NORTON
CANAAN
AVERILL
WARNERS GRANT
WARREN GORE
AVERYS GORE
LEMINGTON
MORGAN
WESTFIELD
COVENTRY
LEWIS
CHARLESTON
BROWNINGTON
IRASBURG
BRIGHTON
BLOOMFIELD
LOWELL
BARTON
WESTMORE
ALBANY
FERDINAND
BRUNSWICK
NEWARK
GLOVER
SUTTON
EAST HAVEN
MAIDSTONE
CRAFTSBURY
SHEFFIELD
BURKE
GRANBY
GREENSBORO
WHEELOCK
LYNDON
VICTORY
GUILDHALL
STANNARD
HARDWICK
KIRBY
WALDEN
ST. JOHNSBURY
LUNENBURG
DANVILLE
CONCORD
WATERFORD
PEACHAM
BARNET
GROTON
RYEGATE
Federal Public Lands
State Public Lands
Municipal Public Lands
0
10
20 Miles
NVDA

that have land use regulations, encourage the use of planned unit development coupled with low density zoning to preserve larger blocks of forestland while facilitating efficient residential and commercial development.

- Connect municipalities with appropriate agencies and resources providing management assistance with municipal forests.
- Provide management, financial, and technical assistance to local forest product industries, including wood product manufacturers, sawmills, paper mills, and wood-powered electrical generators (cogeneration).
- Support the development and marketing of distinctive wood products identifiable with Vermont and/or the Northeast Kingdom.
- Support owners of forestland who implement sustainable forestry practices to market their wood and wood products.
- Expand usage of existing rail infrastructure for shipping and interface with trucking. Explore the creation of forest-related industrial zones (i.e. rail sidings for sawmills)

AGRICULTURAL LAND USE GOALS

- Farming and agriculture will remain an important and viable sector of the regional economy.
- Contiguous tracts of agricultural soils will be preserved.
- Development of residential and commercial uses will not significantly reduce the amount of open and productive farm land.

AGRICULTURAL LAND USE STRATEGIES

- Continue to provide planning assistance to communities seeking to conserve productive agricultural land. Encourage the use of "planned unit development" coupled with low density zoning and other tools to preserve agricultural resources.
- Provide technical assistance to towns seeking to encourage on-farm enterprises, through the use of land use regulations or incentives.
- Provide support to farmers interested in diversification and/or product development. Assist with grants and low-interest loans for value-adding businesses and diversification.
- Identify funding sources for, and market existing and new food ventures in the region.
- Support education efforts that teach sustainable agricultural practices, and the tax benefits of enrollment in the "current use" program.
- Support succession planning and efforts to connect new and expanding farmers with affordable farmland.

RECREATION LAND USE GOALS

- Sufficient open space will be available for current and future outdoor recreational pursuits.
- A variety of year-round and seasonal, indoor and outdoor recreation opportunities will be available for residents and visitors.
- Public access to water bodies will be protected.

RECREATION LAND USE STRATEGIES

- Assist towns to plan for future recreation needs, recognizing that privately-held land may not be available for passive recreational use in the future.
- Assist with financing to develop additional facilities such as sports fields, playgrounds, trail systems, ice rinks, skateboard parks, and recreation/bike paths, coordinating actions with the goals in the SCORP in order to access dedicated federal funds.
- Identify and protect public access to water bodies.
- Identify the recreation facilities and activities most needed by youths and seniors and help towns identify and secure funds for their development.
- Support local and regional recreation events (e.g. fairs, festivals, etc.).

II. EXISTING LAND USE & DEVELOPMENT TRENDS

Development patterns in northeastern Vermont have historically followed the valleys and waterways of the region. Early European settlers farmed the fertile soils of Orleans, Caledonia Counties and the Connecticut River valley in Essex County, using the rivers for moving logs and powering mills. Through the years, Caledonia and Orleans received the bulk of development, particularly around St. Johnsbury and Lyndon in the south, and Newport and Derby in the north. Smaller population and commercial centers also dotted the region. Development historically occurred in the form of compact village centers surrounded by a working landscape of farms and forestland. Though much of the old farmland has returned to forest, this traditional Vermont landscape has remained the dominant pattern of land use in the region. The map on the following page, "NVDA: Current Land Use," illustrates the region's current development patterns.

Most communities in the U.S. today have had to deal with some form of suburbanization, sprawl, loss of farmlands, and/or Brownfield issues influencing their development. To insure appropriate development for the Northeast Kingdom it is necessary to observe the development factors affecting other communities in order to direct future land uses appropriately.

Suburbanization and Sprawl

Population and transportation changes, expanded road systems, a loss of farms, and an increase in regional tourism have all contributed to alter the patterns of settlement in Vermont. Visitors, second-home owners, and increasingly mobile residents often desire homes and services in the region's scenic rural settings. Dispersed residential development can fragment wildlife habitats and productive forestland and agricultural land, and can result in sprawling local road networks that are difficult and expensive to maintain.

When residential development occurs in remote areas, driving becomes a requirement for most trips, increasing traffic congestion and causing greater demands on road infrastructure. The cost of associated improvement of roads, and increased demand for services including fire, ambulance and law enforcement, are often not covered by the tax revenues generated by these developments. This is particularly true when resulting disinvestment occurs in the existing town or village center, thus lowering property values and the grand list. The economic decline of established centers and the depletion of agricultural and forested land through residential subdivisions is a self-perpetuating problem that is hard to correct without intervention. Intervention can come in the form of financial incentives, local land use regulations, and transportation and housing policies that direct new development and public investment to Town centers. (See discussion of State designation programs in Section III. Future Land Use & Development).

Local land use regulations that establish low residential densities, (e.g., one residential unit per 25 acres) in agricultural areas, coupled with mandatory clustering or "planned unit development" is an effective way for Towns to protect valuable agricultural and forested land while promoting efficient, well-designed residential

children would be expected with this growth, most schools in the region have been experiencing declining enrollment so the growth is expected to support rather than overwhelm existing schools. Schools operating close to capacity reach economic efficiencies not possible in schools with very low enrollment.

..

IV. DEVELOPMENTS OF SUBSTANTIAL REGIONAL IMPACT

For the purposes of this plan, Developments of Substantial Regional Impact are defined by the Northeastern Vermont Development Association as:

1. Projects that would have substantial and ongoing impact on two or more municipalities, including the host municipality.
2. Projects that would likely have substantial impact on a resource within the region that is widely used by people outside of the municipality in which it is located.
3. Projects that may affect development patterns to the extent that the character or identity of neighboring municipalities is significantly affected.

The projects described previously – major expansions at the Burke Mountain and Jay Peak resorts, the new biotechnology facility in Newport, and the expansion of Northeast Kingdom International Airport – would all qualify as Developments of Substantial Regional Impact. Also, qualifying as a Development of Substantial Regional Impact is the Casella Waste USA Landfill located in Coventry VT. This landfill currently accepts most of the solid waste generated in the State of Vermont. Trucks traveling to and from the facility from all parts of Vermont are a common sight.

Other developments having a substantial regional impact are the industrial-scale wind facilities located in Sheffield and Lowell. These facilities have impacted the view sheds in a number of adjoining communities.

V. ADJACENT REGIONS

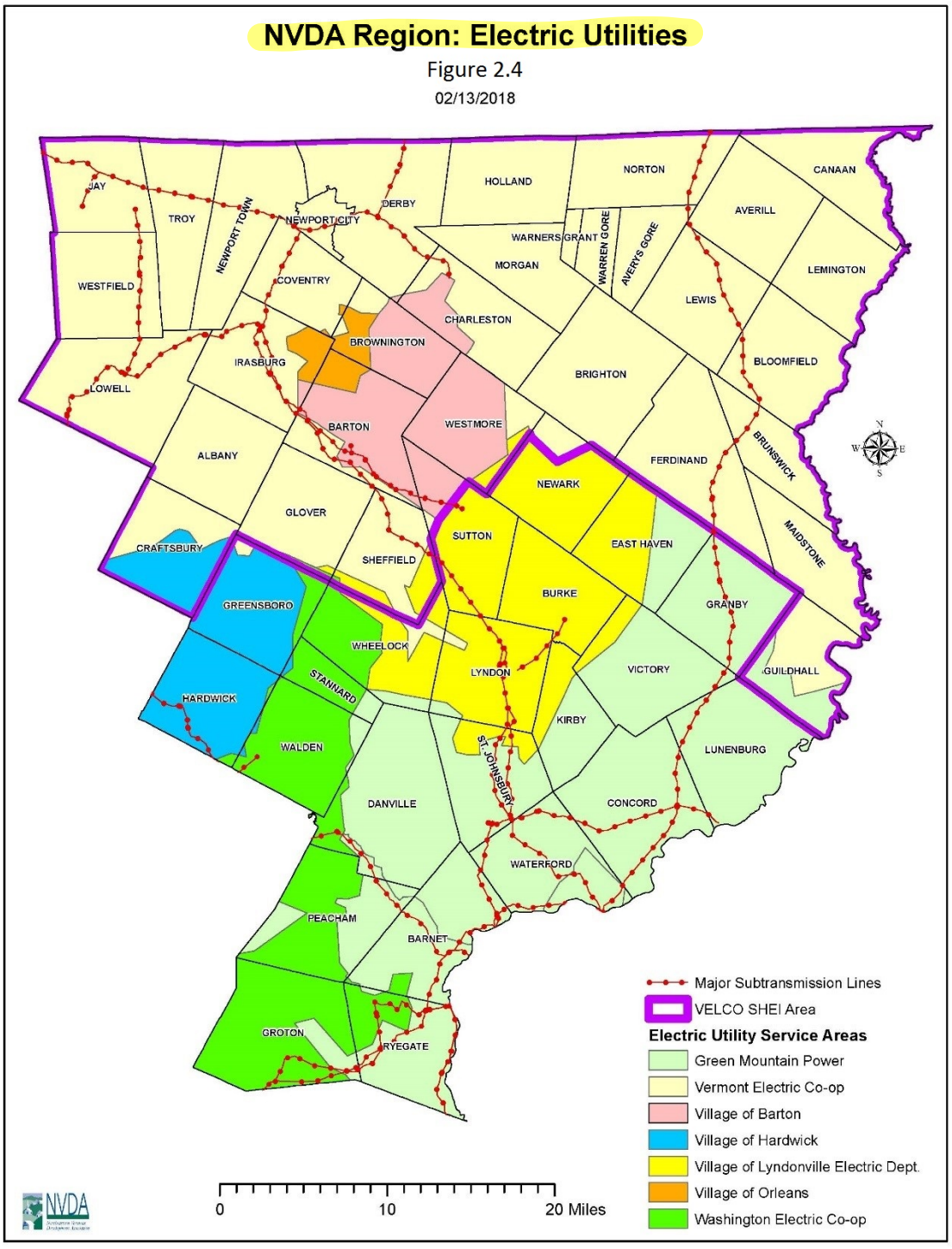
The Northeast Kingdom does not exist or function independently from those regions that surround it. Therefore, it is critically important that this plan take into account the planning for these neighboring areas to insure a smooth transition between the regions. This will also reduce the adverse impacts that development in one region might have on the adjoining region.

The Northeast Kingdom is surrounded by five different planning regions in Vermont and New Hampshire and one Canadian Province. Four of these regions are located to the south and west of the Northeast Kingdom in Vermont and include the Northwest Regional Planning Commission, the Lamoille County Planning Commission, the Central Vermont Regional Planning Commission and the Two-Rivers-Ottauquechee Regional Commission. New Hampshire's North Country Council abuts the Northeast Kingdom to the east and, finally, the Canadian Province of Quebec is to the north.

It is expected that the projected job growth in the Northeast Kingdom region will draw workers from adjacent communities, particularly those from the Northwest Regional Planning Commission and the Lamoille Country Planning Commission regions. The expected job growth in Jay and the Newport area also may spur new housing and/or commercial developments in communities from those regions – i.e. Montgomery or Morrisville. The success of value-added agricultural enterprises in Hardwick over recent years has had some effect on developments in Wolcott.

Other substantial developments in the Northeast Kingdom that have likely land use impacts on adjoining regions include: The Waste USA Landfill in Coventry (transportation and solid waste impacts); The Lamoille Valley Rail Trail (economic development and transportation impacts); And, the VAG Asbestos Mine (hazardous site in the communities of Lowell and Eden). Watershed boundaries also do not correspond to

municipal electric utilities include Barton Electric, Orleans Electric, Lyndonville Electric, and Hardwick Electric. Together the municipal utilities provide service to 19 different towns and villages (Figure 2.4[9]).



[9] Latest version of mapped Utility Service Territories (VCGI ArcGIS) data available.

Green Mountain Power estimates that as of 2016, the market purchase mix is more than half natural gas, followed by nuclear, and oil.[10]

Although the NEK is a net exporter of energy, Vermont has traditionally been a net importer. Technically, the state produces enough generation; however, due to the performance characteristics of the in-state generation, Vermont has relied heavily on its transmission network to import power from neighboring states. When Vermont Yankee shut down, Vermont's net import rate rose significantly, making the state a net importer of power at virtually all hours from New York, New Hampshire, Massachusetts and Canada in order to meet the state's load requirements. Without significant new in-state generation, this situation will be a long-term operating condition.[11]

Purchase & Distribution

The state of Vermont belongs to the ISO-New England Regional Transmission Organization (RTO). The ISO-New England RTO operates all of New England's bulk electric power system and works in coordination with the New England Power Pool (NEPOOL). NEPOOL is Vermont's regional representative of the electric power businesses, including utilities, independent power producers (IPP), suppliers, end-users, and transmission providers. In 1997, the RTO was developed as a means to create competitive wholesale electricity markets. Their responsibilities include developing, overseeing and operating the New England wholesale electric market, as well as managing and planning for regional electric needs.

The RTO wholesale electric market operates on a per-hour bid system that incorporates some short-term and long-term contracts. The bid system requires generation units to bid into the system based on what it costs them to produce for that hour. The hourly price is then set based on the most expensive facility needed to meet demand. As demand increases, the higher-priced facilities are pulled online to meet the increasing load. In Vermont, many of the "peaking" plants utilize diesel fuel. New England is also heavily dependent on natural gas generation facilities, which set the hourly price 85% of the time. Even though natural gas prices have dropped recently, New England households retain the highest electric costs in the country. As part of the RTO, Vermont is subject to these higher electric costs, even though there is only one natural gas generation facility in the state. According to the Public Service Department, the higher pricing is caused by existing long-term contracts and restrictive pipeline infrastructure. In other words, New England is still paying natural gas pricing that was set in a multi-year contract, plus its limited pipeline capacity means it cannot access additional volumes of natural gas outside of those contracts. Massachusetts is currently pursuing the expansion of a major pipeline to be able to utilize larger volumes of natural gas.

Transmission

A majority of Vermont's electric transmission system is operated by the Vermont Electric Power Company (VELCO), which was established by Vermont's utilities in 1956. VELCO is responsible for bulk transmission lines with a voltage rating of 115kV and above. Lines with a rating of 34.5kV, 46kV, and 69kV are considered sub-transmission lines. The Northeast Kingdom has roughly 325 miles of transmission and sub-transmission lines (Figure 2.3) and serves as an important gateway for electricity coming from both Canada and New Hampshire.

VELCO is responsible for planning and constructing upgrades that ensure system reliability and maintain the grid. Several upgrades in recent years should significantly increase transmission capacity

[10] Green Mountain Power: Our 2016 Fuel Mix Information
http://www.greenmountainpower.com/2016/12/01/fuel-mix/

[11] VELCO: 2015 Long-Range Transmission Plan
https://www.velco.com/assets/documents/2015Plan_Final_toPSB.pdf

on existing lines: new lines between Irasburg and Newport; upgrades to the St. Johnsbury, Irasburg, and Newport substations; and the reconfiguration of the Hydro Quebec interconnection at Highgate. In 2010 VELCO upgraded the Hill Street substation in Lyndonville, which provided a secondary connection between Lyndonville Electric's grid and the larger VELCO transmission lines. In 2011, a new substation in Jay established redundancy in transmission paths and increased capacity to delivery power to the Jay area.

VELCO maintains a long-range transmission plan that must be updated every three years for the PUC. The plan and subsequent updates are vetted through a stakeholder group called the Vermont System Planning Committee (VSPC), which is made up of VELCO, electric distribution utilities, the Department of Public Services, representatives of demand and supply resources, and representatives of the general public. The most recent Long-Range Transmission Plan (June 2015) acknowledges that a profound transformation of the electric grid is already underway. The grid must become more agile and diverse by retiring traditional base load generation, increasing distributed renewable generation, and investing in demand-side resources, such as energy efficiency and demand response. Emerging technologies, such as heat pumps and electric vehicles, are reflected in the load forecast of the 2015 Plan, but their full impact cannot yet be quantified with confidence.

One ongoing VPSC initiative of particular concern to the Northeast Kingdom is grid congestion in the Sheffield Highgate Export Interface (SHEI), the northwestern area of our region where generation exceeds load. (Figure 2.4) In essence, the region generates far more power than it consumes, causing generation to exceed the capacity of the export line. The continued addition of new sources of generation, like solar, forces existing resources, like Kingdom Community Wind and Sheffield Wind to curtail their output due to the lack of capacity to export power. Adding more renewables to an already full grid at this point can simply mean replacing other renewables. While modest transmission upgrades may help to alleviate some congestion in the short-term, the situation will require robust, long-term solutions that are complex and possibly costly.[12] Utilities, clean energy advocates, regulators and other stakeholders are currently discussing ways that the SHEI limitations can be addressed to reduce or eliminate curtailments of generation located within the interface.

Regional Generation Facilities

(Note: For municipal-level generation estimates, see Appendix B.)

The Northeast Kingdom has a very large share of generation resources compared to other regions of the state. (Table 2.11) The region is home to four major renewable generation facilities: the Ryegate Wood-Chip Plant, the Coventry Landfill methane-generator, the Sheffield Wind Farm, and Kingdom Community Wind in Lowell. Collectively, these facilities produced 80% of the region's total electricity generation that is not net-metered (i.e. grid-tied). 2005 saw the first major jump in regional generation growth with the development of the Coventry Landfill methane generator, which doubled its output in 2009. The region also produces a significant amount of hydro power. Collectively, hydro power (excluding Connecticut River production, which is technically in New Hampshire), the Northeast Kingdom's hydro resources account for 18% of regional generation.

[12] Frank Ettori, SHEI Overview, VSPC, July 12, 2017 v. 2

Granite State Power Link (GSPL)

Plans have been announced for the development of a new electric transmission line in Vermont and New Hampshire that will deliver up to 1,200 MW of hydro power to southern New England. The infrastructure will consist of two converter stations (one in Vermont), 59 miles of high-voltage direct current line (used for transmitting large amounts of power over great distances), 109 miles of alternating-current line, and a switching station in New Hampshire. The line is proposed to be built adjacent to an existing VELCO transmission corridor and will require a 150 foot expansion. About 53 miles of GSPL will be high-voltage direct current line running through the towns of the Essex County. (Table 2.15) Because the NEK portion of the line is direct-current only, the line will not expand the region's transmission capacity to host new energy development (like wind or solar). The project is located alongside an existing transmission corridor, so visual impacts are expected to be minimal. Project developers are currently working with Vermont Association of Snow Travelers (VAST) to explore recreation opportunities, and the project will bring revenues and other financial benefits into the region and affected communities. The project has been found to be in conformance with NVDA's regional plan

Table 2.15: Vermont Communities in the GSPL

Community	Approximate miles
Norton	4.6
Avery's Gore	0.7
Averill	1
Lewis	6.7
Bloomfield	5.1
Brunswick	3
Ferdinand	5.7
Granby	8.5
Victory	2.4
Lunenburg	3.8
Concord	8.8
Waterford	2.1

REGIONAL ENERGY GOALS & STRATEGIES

An adequate, reliable, diverse, and secure energy supply will benefit the region.

- Promote a diversified energy portfolio for the region.
- Support the upgrade of regional transmission systems to continue to reduce constraints.
- Support the maintenance and upgrade of existing energy generation facilities and related infrastructure.
- Encourage local responders to plan for emergency energy resources (VEM Emergency Generator Grant Program generators).

Affordable energy alternatives will be available for the region's users that decrease the region's reliance on fossil fuel.

- Assist in the development of businesses that support alternative energy use.
- Work with Tier 3 energy service providers to promote the installation of cold climate heat pumps and geothermal systems by facilitating outreach and education on their benefits.
- Partner with Efficiency Vermont and Tier 3 energy service providers to increase the use of efficient wood heat and biomass systems.
- Support the development of small-scale renewable resources, such as wind and solar, and the use of supplemental sources (wood) to stabilize energy costs.
- Promote and support rail infrastructure as a cost-effective transportation resource for the energy industry.
- Encourage and support agricultural production of biofuels and oilseed crops and explore ways to broaden access to processing infrastructure.
- Identify potential users of district heating and wood heating systems and provide assistance to communities seeking to develop them.
- Encourage the legislature to increase incentives and rebates for efficient wood heat systems.
- Provide outreach and education among vendors, contractors, and the general public through venues such as tradeshows and workshops.
- Provide communities with an analysis of potential areas that are suitable for ground source heat pumps.
- Support upgrade and trade-out programs and incentives for older, higher emission wood burning stoves and boilers.

Decrease the region's reliance on single occupancy vehicle trips and gas/diesel powered vehicles.

- Continue to advocate for better telecommunications infrastructure so employees can work from home.
- Encourage local employers to reduce VMTs through programs such as ride sharing and Go Vermont.

Energy generation that provides the best cost-benefit to the region will be promoted.

- Promote wood-based energy generation to support the region's forest industry.
- Encourage the development of energy facilities and resources that help sustain local agriculture and forestry (i.e. grass/wood-pellets, small-wind, solar, farm-methane, wood-chip, biodiesel).

Environmental and aesthetic impacts of energy generation and usage will be considered.

There will be broad public participation in the decision-making process.

- Encourage the Vermont Legislature to develop policies that support the development of solar, small-wind, hydro-electric, farm methane, biodiesel and biomass generation facilities, while respecting current local land use and the culture of the region.
- Encourage the PUC to examine the long-term sustainability of proposed facilities.

Assessment of local needs and values on new energy development will be encouraged.

- Encourage towns to address energy development in town planning and zoning.
- Provide assistance to businesses/municipalities to develop cogeneration and other alternative energy strategies.

Reduce the region's carbon footprint through the expansion of a closed loop soil-to-soil regional food system that sustains and feeds the people of the Northeast Kingdom.

- Coordinate movement and storage of goods to achieve maximum efficiency.
- Redirect food scraps and other organics from the waste stream in a manner that maximizes efficiency and minimizes hauling.
- Support and further the goals and strategies of the NEK Food System Plan through its Leadership Group.
- Identify and publicize opportunities for shared truck space among existing growers and producers.
- Generate better awareness of existing distribution resources, such as freight service.
- Identify and publicize opportunities for shared storage space among existing growers and producers.
- Explore the feasibility of establishing a leased storage facility.
- Assess market demand for products and existing shippers and distributors already moving to external (New York and Boston) markets (including opportunities for backhauling).
- Identify infrastructure needed to maximize inbound, outbound, and internal freight movement.
- Promote the use of and increase the amount of on-farm power and community energy generation and the use of renewable energy for farming and food production (such as

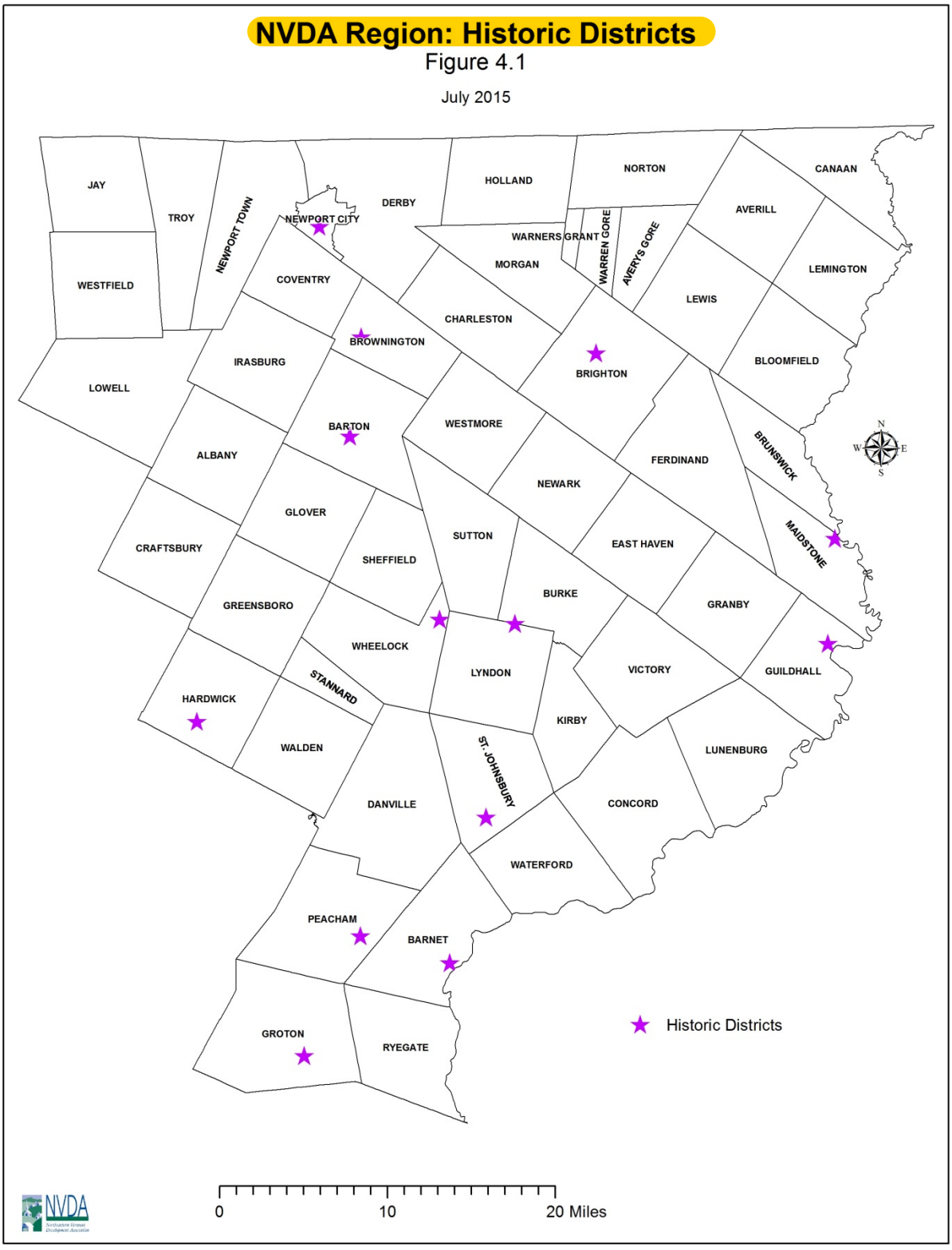
Chapter Four: Historic, Cultural & Scenic Resources

I. HISTORIC & SCENIC RESOURCES

Preserving historic, archeological, and scenic resources enables communities to retain links to their past, maintain their traditions (including quality of life), and can bring economic benefits through increased property values and tourism. Indeed, there are federal and state programs to assist communities with preservation. Tourism has been increasingly beneficial for much of the New England region, and particularly for Vermont due to its abundance of scenic resources. The Northeast Kingdom is fortunate to have communities that have already identified some of their assets and protected a significant number of historic resources. These include historic districts, a large number of historic buildings, archeological sites, covered bridges, barns, and areas of natural or scenic beauty. Despite the work that has already been done, there are many historic, community buildings and meeting houses still in need of restoration and preservation. Table 4.1 gives some representation of the existing historic and cultural resources within the region. For more information on individual properties listed on the state and national registers, go to http://orc.vermont.gov/Resource/Show-Resource-Table.aspx

Table 4.1: Northeast Kingdom Historic Districts and State Parks Listed on the National Register of Historic Places

Caledonia County:	**Date**
Barnet Center Historic District	07-12-1984
Darling Estate Historic District, Burke and Lyndon	08-23-2011
Downtown Hardwick Village Historic District	09-30-1982 Boundary increased 03-10-2004
Hardwick Street Historic District, Hardwick	06-22-1979
Maple St./Clarks Ave. Historic District, St. Johnsbury	04-05-1994
Peacham Corner Historic District, Peacham	12-18-2003
Railroad Avenue Historic District, St. Johnsbury	06-25-1974
Ricker Pond State Park, Groton	03-29-2002
St. Johnsbury Historic District (extension of Railroad Street district to include Eastern Avenue and connect with Main Street)	04-28-1980
St. Johnsbury Main Street Historic District (along Main Street, Eastern and Western Avenues, Park and Belvidere Streets, and Summer Street Common)	05-28-1975
Stillwater State Park, Groton	02-29-2002
Wheelock Common Historic District, Wheelock	08-30-2007
Essex County:	
Guildhall Village Historic District	09-27-1980
Maidstone State Park	11-29-2001
Island Pond Historic District, Brighton	01-31-1979
Orleans County:	
Brownington Village Historic District	05-09-1973
Crystal Lake Falls Historic District, Barton	07-07-1994
Crystal Lake State Park, Barton	08-30-2005
Newport Downtown Historic District, Newport City (Main, Coventry, Central, Second Summer, Third, School, Bayview, Eastern, Field, Seymour, Fyfe)	09-28-2006
Source: National Park Service	



Each historic district also contains a number of properties listed on, or eligible for the National Register.

Fairbanks, and Maple museums in St. Johnsbury. Each of these has a wide array of exhibits and programs for all ages. Table 4.5 lists the region's resources for historic information and museum collections.

Table 4.5: Historical and Museum Collections in the Northeast Kingdom	
	Location
Barnet Historical Society – Goodwillie House	Barnet
Crystal Lake Falls Historical Society - Pierce House	Barton
Old Stone House Museum / Orleans County Historical Society	Brownington
Alice Ward Library	Canaan
Concord Historical Society (http://www.concordvthistorical.noconek.com/)	Concord
Craftsbury Public Library	Craftsbury
Derby Historical Society	Derby
Hardwick Historical Society (Memorial Bldg.)	Hardwick
Haskell Library and Opera House	Derby Line
White School Museum	East Burke
Bread and Puppet Museum	Glover
Greensboro Historical Society	Greensboro
Holland Historical Society	Holland
Island Pond Historical Society	Island Pond
Shores Memorial Museum	Lyndon Center
Goodrich Memorial Library	Newport
Missisquoi Valley Historical Society	North Troy
Peacham Historical Society	Peacham
Maple Grove Museum and Factory	St. Johnsbury
St. Johnsbury Athenaeum	St. Johnsbury
St. Johnsbury History & Heritage Center	St. Johnsbury
Fairbanks Museum and Planetarium	St. Johnsbury
Stannard Historical Society	Stannard
Hitchcock Memorial Library and Museum	Westfield
Source: NVDA 2015	

GOALS AND STRATEGIES FOR HISTORIC, CULTURAL & SCENIC RESOURCES

HISTORIC, CULTURAL & SCENIC RESOURCE GOALS

- Future development should follow traditional development patterns, while providing for economic development opportunities and livable communities.
- Significant historic, cultural, and scenic resources within the region should be identified and preserved.

HISTORIC, CULTURAL & SCENIC RESOURCE STRATEGIES

- Promote local and regional tourism, since it is an important part of our economic base.
- Assist communities to preserve and maintain historic downtowns, village centers, buildings, and rural and scenic landscapes.

receipts in Jay (town wide) account for more than 83% of all room tax receipts in the Essex/Orleans area. Burke Mountain has also made recent expansions, including a 100+ unit hotel, and recreation facilities.

The regional tourism industry also incorporates activities such as: biking, snowmobiling, hunting, cross-country skiing, and hiking to attract numerous visitors to the Northeast Kingdom. Along with the Jay Peak Resort and Burke Mountain, the four-season destinations mentioned above, there are numerous cross-country ski and cycling centers in the region. Kingdom Trails, the Craftsbury Outdoor Center, the Northwoods Stewardship Center, Lyndon Outing Club, Mempremagog Ski Touring Association, and Jay Peak include a thorough network of cross-country ski and cycling trails. The Vermont Association of Snow Travelers (VAST) has an extensive system of trails throughout the region for snowmobiles. As the Lamoille Valley Rail Trail continues to develop, this will bring additional visitors to the NEK region.

Fishing and boating are popular activities on the region's many lakes and streams. Recognized water trails located within the Northeast Kingdom include the Passumpsic Valley Riverway, a 20-mile water trail from East Burke to Barnet; the Northern Forest Canoe Trail, a 723-mile historic trail, follows a route used by native Americans to move from Lake Champlain to the Connecticut River Watershed; and the recently designated Connecticut River Water Trail are all popular canoeing waters. In the northwest part of the region, the Missisquoi River was recently designated as Wild & Scenic River by the federal government.

Fall foliage and scenic landscapes continue to be popular attractions. The Northeast Kingdom has developed a reputation as one of the best places to bicycle in the country. Many cyclists come during the foliage season or during the summer months, and most tour along the state highways. NVDA, with Agency of Transportation financing assistance, has identified a network of on and off-road bicycle touring routes throughout the Northeast Kingdom, consisting of a "loop and link" system, with courses ranging from 10 miles to 80 miles. Kingdom Trails, in East Burke, has an extensive all-season trail network, which is nationally popular with mountain bike enthusiasts (60,000+ visitors annually) and cross-country skiers. Other bicycle path projects are still in the planning stages including paths in St. Johnsbury and Newport.

Education and Knowledge Creation (Opportunity Cluster)

Composed of private education services, publishers and other information services, the education and knowledge creation cluster is in its incipient stage. This cluster showcases a number of nationally (and internationally renowned) educational institutions such as the St. Johnsbury Academy, Burke Mountain Academy, and Sterling College. While connections with other sectors of the regional economy are currently limited, forging stronger partnerships with these institutions (as well as the region's Career and Technical Centers) will be critical to building a skilled labor force.

Other Sectors

Health Care

The Northeastern Vermont Regional Hospital in St. Johnsbury and the North Country Hospital in Newport are among the largest employers the Northeast Kingdom. Employee counts in Essex are suppressed, but this sector, along with social assistance and education, make up the largest employment sector in the Northeast Kingdom.

Retail

Retail trade remains a challenge for many Northeast Kingdom communities. Taking into account the region's low population densities and changes in the retail industry, it has been difficult to attract or retain retailers of all sizes. There has been some growth through the 'dollar store' chains in a number of communities – Island Pond, North Troy, Hardwick, and Orleans. Other retail businesses that have located or remained in the region have often found the best strategy is to identify and concentrate on "niche" markets for specialty goods and services. These are areas where large retailers typically cannot compete efficiently or effectively. With a new Wal-Mart Supercenter in Derby, this strategy may make sense. Local merchants have been able to

Chapter Seven: Natural Resources

I. OVERVIEW

The Northeast Kingdom is recognized for its diverse wildlife, large undeveloped areas, and vast woodlands. The region's natural resources (depicted in Figure 7.1 on the following page) provide residents and others a variety of benefits. The largest source of revenue in the region is from outdoor recreation, and much of the tourism industry relies on the healthy and scenic environment to remain viable.

Therefore, the natural resources in the Northeast Kingdom have intrinsic scenic and economic values that require careful consideration when making planning decisions. The overarching goal for the region is to balance local economic needs with the protection of the resources that so many of region's residents enjoy and depend upon.

The Northeast Kingdom lies mostly within three physiographic regions:

- *The Northeast Highlands*, an extension of New Hampshire's White Mountains, make up most of Essex County and northern Caledonia County. On average, this area is cooler than the rest of the state. The growing season here averages less than 90 days and snowfall accumulation frequently exceeds 36 inches.
- In much of Orleans County and parts of Caledonian County the topography is primarily *rolling hills* interspersed with occasional plains of fertile agricultural soils. Both of these physiographic regions have extensive glacial deposits.
- The third region is the *Connecticut River Valley*, which extends the length of the region along its eastern border. Level topography and rich alluvial soils well suited for agriculture characterize this physiographic region.

The forests are mainly northern hardwoods with large stands of red spruce and balsam fir. Black spruce and succession species such as white pine and aspen fill recent clearings. The region contains some of the State's largest bog and wetlands complexes, with fabulous stands of red pine, black spruce, hemlock, northern white cedar and hardwoods dispersed throughout. Essex County has more wetlands than any other county in Vermont.

The majority of the region's water drains either north to Quebec as part of the St. Francois River watershed or east and south as part of the Connecticut River watershed. Much of the region's western edge drains north and west as part of the vast Lake Champlain basin. The region's lakes, ponds, streams and rivers are famous for the excellent and diverse fishing opportunities they offer. The more than 130 lakes and ponds found concentrated in the region represent a disproportionately high share of the State's total. This region is home to most of Vermont's larger, deeper lakes and the legendary 20-30 pound lake trout that have inhabited them since the last ice age.

This combination of forest and water resources creates prime habitat for many wildlife species, and draws many tourist and visitors to the Northeast Kingdom to enjoy them.

Open Space

The Northeast Kingdom is composed of rolling hills, farmlands, lakes and rivers, forests, country roads, and compact village centers. These areas combined create an open, picturesque landscape unlike any other. Open space provides not only scenic beauty and wildlife habitat, but is necessary for the numerous outdoor activities enjoyed by the region's residents and visitors, and is key to the agricultural and forestry traditions of the region. The region contains more than 1,300,000 acres of land. Almost 200,000 acres are either publicly owned or have public recreation/access easements. Many recreational activities rely on private landowners allowing access to their properties, so it is the responsibility of users to respect the landowner and their land. Vermont landowner liability law (12 V.S.A. 5793) maintains "an owner shall not be liable for property damage or personal injury sustained by a person who, without consideration, enters or goes upon the owner's land for a recreational use unless the damage or injury is the result of the willful or wanton misconduct of the owner." Still, according to the Vermont Department of Forests, Parks & Recreation, posting of private land in the state doubled in the last decade from approximately 100,000 acres in 1988 to approximately 250,000 acres in 1997.

Public Lands

The region contains many conserved public lands. Recently, more than 132,000 acres of remote forestland, primarily in Essex County, was conserved by Vermont's largest land conservation project. Of this, 84,000 acres was resold to Essex Timber Co. LLC, with easements to ensure that these lands are conserved as a working forest for the sustainable production of wood products as well as to maintain public access. In the same transaction, U.S. Fish and Wildlife Service formed the Silvio O. Conte National Wildlife Refuge in the towns of Lewis, Ferdinand, Bloomfield and Brunswick totaling nearly 28,000 acres. The 23,000 acre West Mountain Wildlife Management Area was created in this land transfer, as well. The goals of this purchase were to protect public access to the land; conserve and protect biological diversity, wildlife habitat and natural communities; and conduct sustainable management and utilization of forest products.

Table 7.3: Public Lands in the NEK

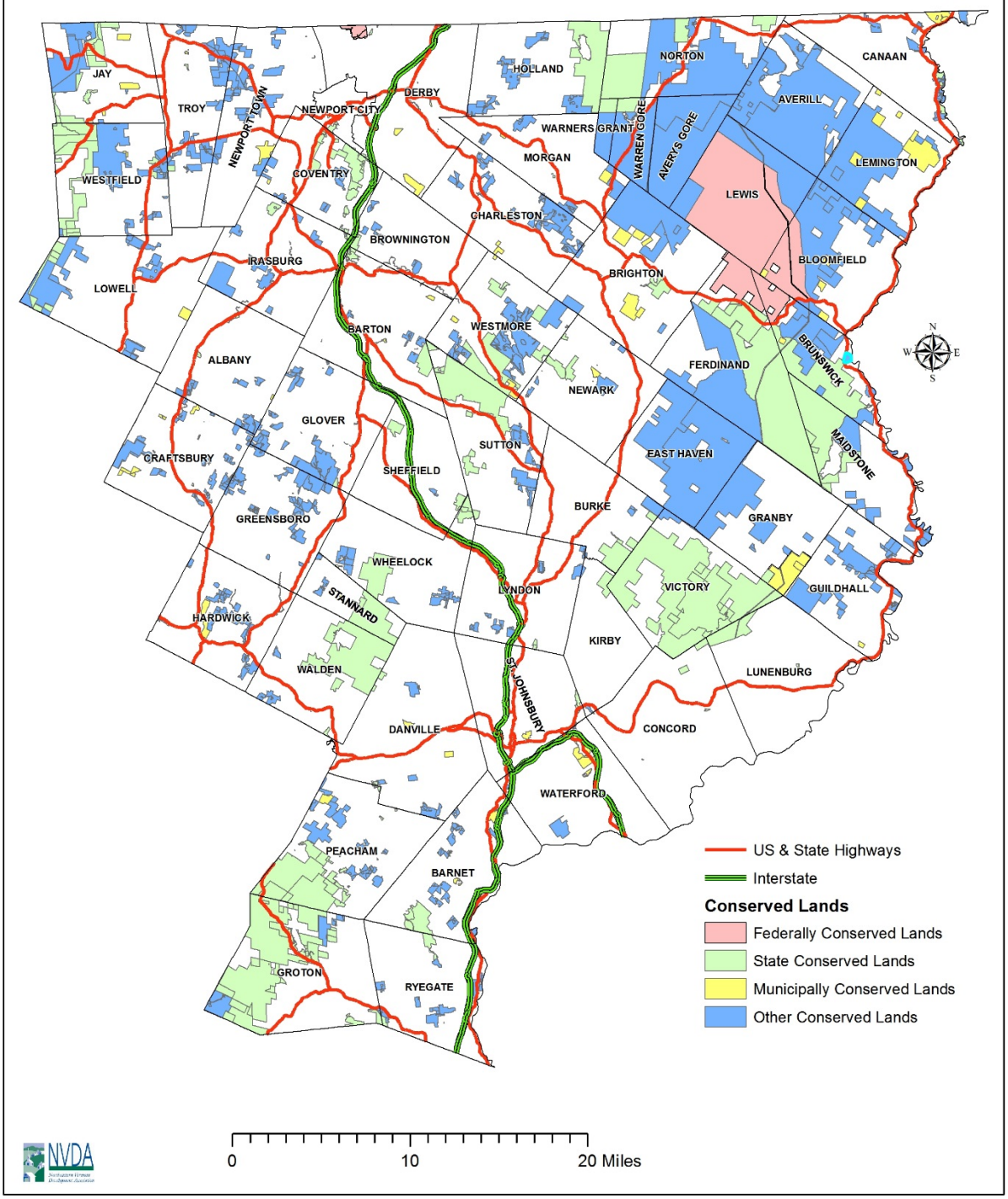
Town	Parcel Name	Acres
Averill	Averill Mountain WMA	510
Newark	Bald Hill Wildlife Management Area	932
Troy	Big Falls SP	16
Holland	Bill Sladyk WMA	9,496
Norton	Black Turn Brook SF	593
Brighton	Brighton SP	152
Sutton	Calendar Brook WMA	340
Barton	Crystal Lake SP	16
Burke	Darling State Park	1,997
Groton, Peacham	Groton SF	23,706
Burke	Hazens Notch SP	307
Sheffield	Holbrook SP	202
Jay	Jay SF	3,877
Peacham	Levi Pond WMA	260
Jay	Long Trail SF	2,774
Lyndon	Lyndon State Forest	72
Maidstone	Maidstone SF	475
Wheelock, Sheffield	Mathewson SF	795
Rvegate, Barnet	Roy Mountain WMA	1,590
Westmore	Sentinel Rock SP	330
Irasburg	South Bay WMA	1,515
Walden, Stannard, Wheelock	Steam Mill Brook	10,421
Victory	Victory Basin WMA	4,970
Victory, Lunenburg	Victory SF	15,997
Barton	Wenlock WMA	1,994
Brunswick, Ferdinand, Maidstone	West Mountain WMA	22,738
Barton	Willoughby Falls WMA	130
Westmore, Sutton	Willoughby SF	7,300

Source: NVDA, 2002

NVDA Region: Conserved Lands

FIgure 7.3

January 2018



GOALS AND STRATEGIES FOR NATURAL RESOURCES

NATURAL RESOURCE GOALS

- The overarching goal for the region is to balance local economic needs with the protection of the natural resource that so many of the region's residents enjoy and depend upon.
- The quality and quantity of the region's surface waters should be protected, maintained, and restored.
- The quality and quantity of existing and potential groundwater resources should be protected and improved.
- Significant wetlands within the region should be protected. The region's mineral and soil resources should be used in a manner that will support the sustainable growth and development of the region.
- A consistently high level of air quality should be maintained for the health, safety, and enjoyment of the region's residents and visitors.
- Adequate resource information for the region should be maintained to improve the region's ability to plan for protection of wildlife resources in the area.
- Critical wildlife habitat should be protected.
- The native biodiversity of the region should be maintained, and restored when appropriate.
- Private, public and community interests should be considered in matters affecting local recreation and open space.

NATURAL RESOURCE STRATEGIES

- Provide public education on state and local water quality issues as they relate to local planning and development.
- Discourage inappropriate development in flood hazard areas and floodplains. Support compatible land uses in flood areas, such as agriculture and passive recreation.
- Support the efforts of watershed organizations working in the region.
- Coordinate the region's basin planning efforts with local plans and related activities.
- Encourage and assist communities to identify and protect community water supplies. Education on water conservation and resource protection should accompany these efforts.
- Prevent the degradation of significant wetlands through public education.
- Minimize the negative impacts of mineral and earth resource extraction and processing facilities.
- Support development of new markets and uses for local mineral resources. Encourage the use of locally obtained minerals for building construction and highway construction and maintenance.
- Support efforts to reduce air pollutants generated in the region from the residential, commercial, industrial, and transportation sectors.

Town of Concord,Vermont Municipal Plan

ADOPTION
JULY 6, 2023

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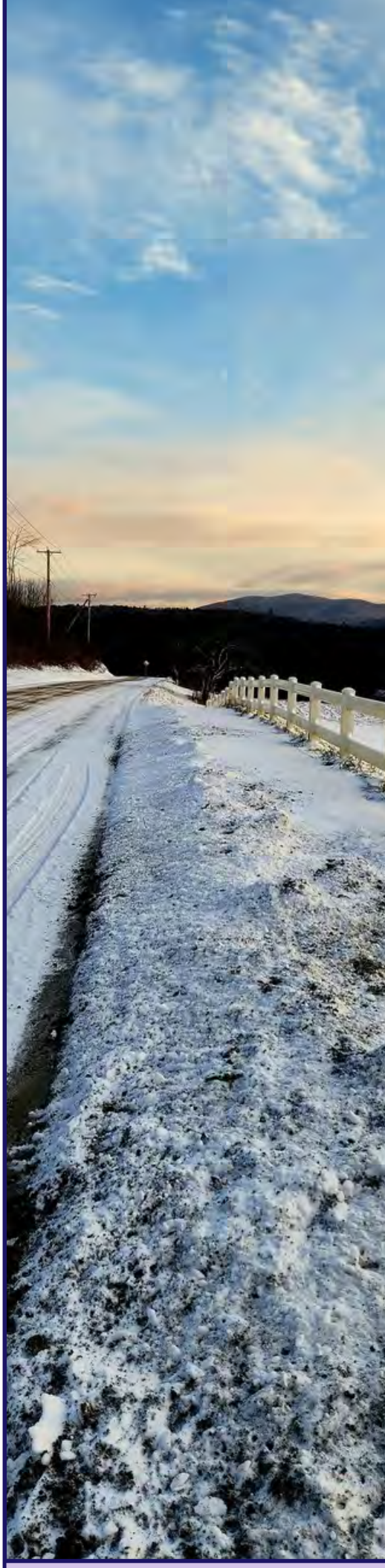


LAND USE & GROWTH

Concord's scenic and natural resources are among the town's primary assets. Therefore, the land use patterns defined by the Concord Land Use Regulations (zoning bylaws) are the basis for preferred development patterns. The regulations intend to accommodate future growth in harmony with the land's natural capabilities and the town's ability to provide municipal services adequately. The land use districts defined in the following paragraphs guide the town's growth and development in the following districts: Rural Lands, Low Density, Medium Density, High Density, and Lakeshore.

Rural Lands

The Rural Lands district includes land generally characterized by poor access, steep topographic conditions, and remoteness from existing concentrated settlements, which would be unduly expensive to serve with public utilities and services. Primary uses in this district are forestry and other non-intensive uses such as agriculture. This district allows for 1-acre lots as long as 9 additional acres are permanently set aside from development. This conservation approach is no more restrictive to development than a 10-acre minimum lot size, however, it allows the flexibility for landowners to chunk off smaller lots for children, grandchildren, or anyone while also protecting the remaining acres of land from development to encourage contiguous forest blocks and/or agricultural land. In addition, valuable wetlands, floodplains, and attenuating flood flows protect overall water quality. Growth should be managed and consistent with the rural character of the area and site conditions, and conservation of open spaces and natural resources should be a high priority to maintain Concord's rural atmosphere. Any development should not alter the area's character or result in changes that could significantly disrupt the wildlife habitat.

Low Density

The Low Density District is designed to maintain an open quality through a large part of the more developable parts of Concord by requiring a five-acre minimum lot size. As Concord does not have municipal sewer or water service, five acres is the minimum lot size in this district to support the sewage disposal and water needs of a proposed use.

Gravel Roads

DC Powerline

Concord Main Street Village

Natural Landscape

The rural lands within the Town of Concord include a mixture of agricultural and woodland corridors, large-to-small lot residential areas, recreation land, wetland areas, open space, forested areas, two recreational bodies of water, and a few commercial enterprises throughout the town. The town would like to maintain the sense of rural open and woodland space.

Some of the sensitive areas identified by residents in past community surveys include Miles Pond, Shadow Lake, the Moose River, and its floodways, traditional farming areas, prominent local hills, scenic viewsheds [Royalston Corner Road, Streeter Road, Goudreault Hill, the Miles Mountain ridge, the Shadow Lake area, the Miles Pond area], significant forest areas, and important wildlife habitats. As the Town grows, these sensitive areas should not end up in isolated pockets due to residential sprawl but rather be maintained in corridors that complement the local landscape, encourage connectivity to the villages, and provide significant recreation opportunities.

Concord has typically relied on ACT 250 to regulate business development, including the appropriate extraction of earth resources and the proper restoration and preservation of the aesthetic qualities of the area. When updating the Land Use Regulations, the town may want to consider addressing earth extraction and its potential impact on Concord's natural landscape.

As Concord was molded by the environment, now the Town's future growth will affect the environment. Overall, the future vision of the Town of Concord includes bustling village centers surrounded by a scenic rural landscape with all the elements identified in this plan cooperatively working together to welcome economic development and accommodate new growth that protects our natural resources, endorses new technology, and ensures a rich quality of life without changing the character of the town.

Shadow Lake Scenic View

Health Services

Concord Health Center, located just east of ConcordVillage, is a member of Northern Counties Health Care, a nonprofit that serves the Northeast Kingdom. Hospitals covering the area are Northeastern VermontRegional Hospital (NVRH) in St. Johnsbury; Weeks Hospital in Lancaster, New Hampshire; Littleton Regional Hospital in Littleton, New Hampshire; and Dartmouth- Hitchcock MedicalCenter (DHMC) in Lebanon, New Hampshire. In emergencies, patients can be transported to DHMC by its DART helicopter using the town-owned ballfield as a helicopter landing area. The Concord ball field has served as a landing pad. Calex Ambulance Service, located in St. Johnsbury, handles most emergency calls.

Cemeteries

There are nine cemeteries in town. Five of these cemeteries – Pike, Frye, Graves, Royalston Corner, and North Concord – are cared for by the Town, and the remaining four are private cemeteries and are cared for by separate boards. Concord's cemeteries have significant historical value. Civil and Revolutionary War veterans are buried there. The Pike Cemetery is one of the oldest because the Connecticut River area was one of the first settled areas. The first white female settler is buried there. The cemeteries have seen some restoration to date. There is a book in the Town Clerk's office that identifies all burial sites.

Postal Services

There are two post offices in the town of Concord, one in Concord Village and one in North Concord. East Concord residents receive mail via a rural route carrier out of the Lunenburg Post Office.

Utility Distribution Lines

Green Mountain Power (GMP) is the electricity provider in the Town of Concord. GMP distributes the power of positive electrical energy through the distribution system on pre-determined rights-of-ways designed not to affect the character of scenic areas, views, and contiguous land use.

Solid Waste Disposal

The Town of Concord is a member of the Northeast Kingdom Waste Management District (NEKWMD) and works cooperatively with the District to manage solid and hazardous wastes through the District's Solid Waste Implementation Plan. The Town maintains a solid waste Transfer Station at the Town Highway property on Brook Road.

Water and Sewage

Concord is a rural community. Water supply and sewage disposal are the responsibility of private landowners. Potable water is obtained using drilled wells and springs. Sewage disposal is accomplished through on-site septic systems. In 2007, the State of Vermont – Agency of Natural Resources assumed the responsibility of permitting and overseeing all septic systems.

RECREATION

Bodies of Water

Concord has several bodies of water within its boundaries, including Halls Brook, Mink Brook, Cutting Brook, Carr Brook, Dudley Brook, Roaring Brook, Miles Stream, and the Moose River. There are also numerous unnamed brooks, streams, and small ponds. There are three bodies of open water: Shadow Lake, Miles Pond, and the Moore Reservoir.

The Connecticut River runs along the Southerly border of Concord for approximately eight and one-half miles and is accessible at the end of Cozy Nook Road and Walker Pit Road. Shadow Lake is located at Concord Corners, about two and one-half miles from Concord Village. It is one mile long and one-half mile wide. There is no public beach, but a public boat access is maintained by the State Fish and Wildlife Service and is accessible from Shadow Lake Road at the north end of the lake.

Miles Pond is located about seven miles east of Concord Village, just off Route 2: It is approximately two miles long and one-half mile wide at the widest point. A private beach on Miles Pond was used for public swimming until the sawmill buildings and 17 acres were purchased by the Vermont Water Resources Department in 1968, and the area was leased to the town for recreation and swimming. Across from the beach is the Miles Pond Recreation Area Shelter (AKA the Miles Pond Pavilion), which the town makes available for rent to the public. In 1962 a fishing access area was developed at the east end of Miles Pond, with a public boat access which is maintained by the State Fish and Wildlife Service and is accessible just past the beach on Campers Lane.

Campgrounds

Concord has two campgrounds, both of which are located on Route 2. Breezy Meadows has 82 sites. Ninety percent of its occupants rent sites for the entire season (May through October). Alpine Valley (formerly Rustic Haven) has 64 sites, and roughly half are occupied for the season. Both have retail amenities, and Alpine Valley has a restaurant.

Miles Pond

Top of the World ATV

Gravel Biking

Town-owned highway maintenance equipment housed at the Town Garage located on Brook Road includes:

- 2005 Cat Loader
- 2016 12M Cat Grader
- 1992 Cat Backhoe
- 2021 Ford F-550 with plow and sander
- 2011 International 10-wheel dump truck with plow
- 2014 Western Star 10-wheel dump truck with plow
- 2018 Kioti tractor with attachments
- 1997 International 6-wheeler water truck
- 2023 Freightliner 10-wheel dump truck with plow

The rear of the Town garage area has been excavated and provides space for storage of winter sand and gravel for road maintenance, both of which are purchased locally. In 2014, a new salt shed was erected.

Scenic Roads

Due to the rural and pastoral nature of Concord in general, there are many scenic roads and vistas that are enjoyed by residents, non-residents and tourists alike. These include Goudreault Hill Road, High Ridge Road, Royalston Corner Road, Shadow Lake Road, and Streeter Road. The Theodore Roosevelt Memorial Highway (Route 2 in Concord) is part of the Connecticut River Scenic Byway, which is more than 500 miles and incorporates both sides of the Connecticut River. The nearest Waypoint Interpretative Center (Welcome Center), which supports increased tourism along the byway, is in St. Johnsbury.

Speed Limits

All town roads have a speed limit of not more than thirty-five (35) miles per hour for gravel-surfaced roads and not more than forty (40) miles per hour for paved roads in accordance with the Town of Concord Traffic Ordinance adopted on August 3, 2006. Speed limits for US Route 2 are governed by the State of Vermont.

Other Transportation Services

Locally, Rural Community Transportation (RCT) provides limited bus service. Caledonia County State Airport in Lyndonville and Whitefield Regional Airport in Whitefield, NH, are approximately 10 to 25 miles from Concord. Major airlines serving the area are in Burlington, VT, Lebanon, NH, and Manchester, NH. The former Maine Central Railroad line through town is independently owned but has been dormant for many years. In addition, there are numerous potential landing sites for DART medical transport. These sites are documented in the Town's Emergency Operations Plan.

State Highways

In July 2014, the State statute was revised to require that local site plan approvals involving access to a State highway include a "Letter of Intent" from the Vermont Agency of Transportation. The letter should confirm that the Agency has reviewed the proposed site plan and is prepared to issue an access permit under 19 VSA section 1111, and include any conditions that the Agency proposes to attach to the permit. This would affect site plans for developments adjacent to Route 2.

Transporation Advisory Committee

Vermont Agency of Transportation (VTrans) accepts project suggestions from the regional planning commissions. These suggestions usually come out of the monthly Transportation Advisory Committee meetings. They are prioritized, submitted to the Secretary of Transportation for approval, and added to the State Transportation Improvement Plan if approved.

Concord is part of VTrans Maintenance District 7. The Transportation Advisory Committee (TAC) for Concord's region meets on the second Tuesday of each month. Community officials, public transportation providers, interest groups, and individual citizens are encouraged to attend these meetings. Each year a list of suggested projects is compiled from the TAC meetings. It is sent to the Secretary of Transportation for approval and possible inclusion in the State Transportation Improvement Plan.

Figure 12

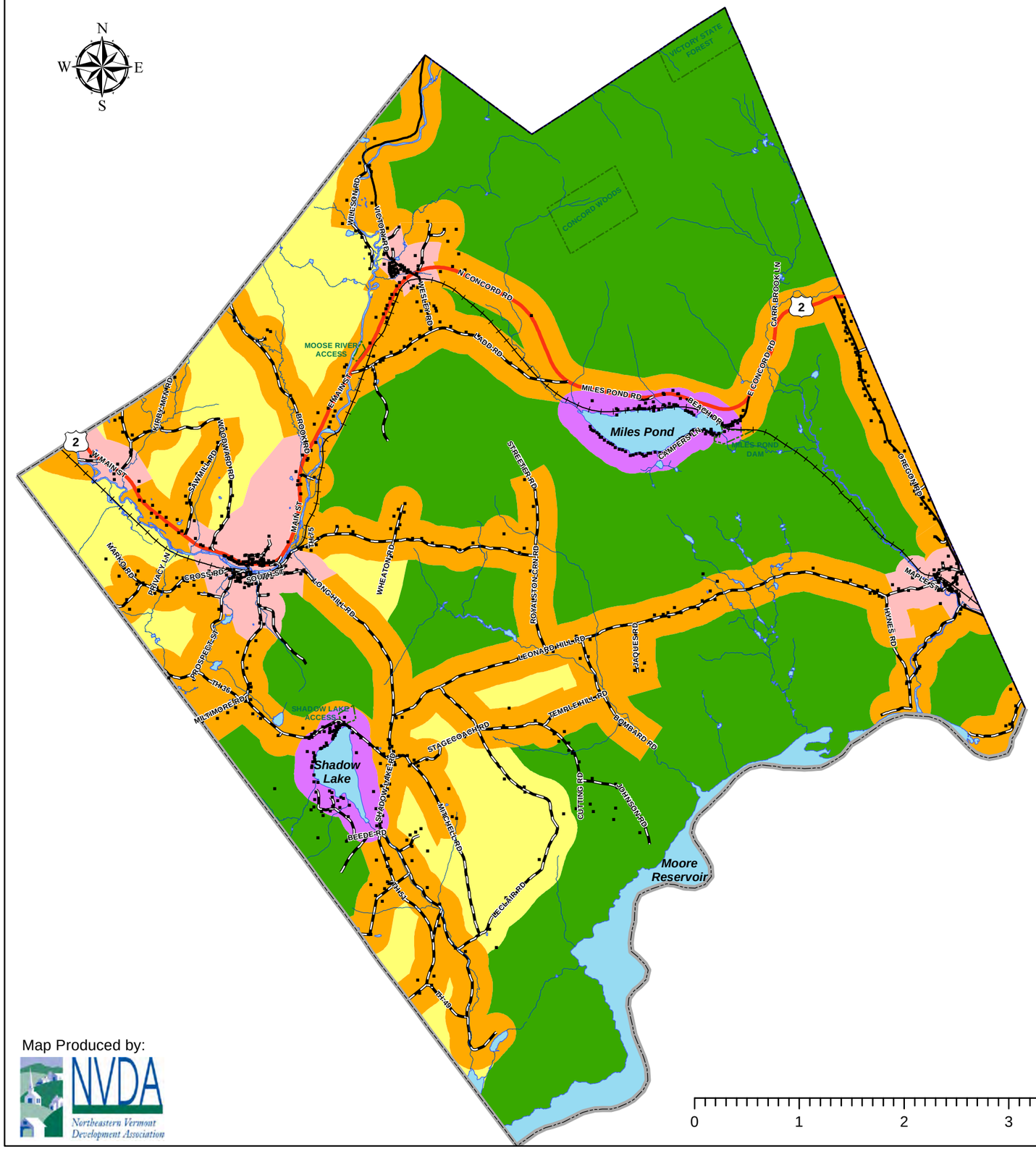
IMPLEMENTATION GOALS

FACILITIES			
GOALS	**Responsible Party**	**Ranking**	
Hire technical assistance providers (architects, engineers, consultants) utilizing ARPA funding expert to **evaluate the facility needs of all town owned buildings**, explore opportunities to make improvements and maintain the structures, and document all findings and information accordingly. Start with Town Hall in order to utilize the timebound $50,000 Freeman Foundation grant for a handicap accessible lift.	Selectboard	10	Ongoing
Seek **energy efficient options** as appropriate for town owned facilities. Consider having an enhanced energy plan performed that would give the town heightened consideration in the Section 248 process for renewables.	Selectboard	5	Ongoing
Focus on improving the two **town owned bridges** in Concord Village (#32 & #38) by working with the transportation district to create a scope of work and preliminary budget for a bridge restoration project for both bridges.	Selectboard	4	2024 - 2029
Focus on **beautifying and improving the walkability and aesthetic appeal of Concord Village**.	Planning & Zoning		Ongoing
Participate in NVDA's **Municipal Energy Resilience Program** (MERP) to become more energy resilient, reduce energy use and operating costs, and curb greenhouse emissions by promoting renewable energy, battery storage, electric vehicle charging, weatherization, thermal improvements, fuel switching, and enhanced building comfort in municipal buildings and facilities.	Planning & Zoning		2023
Proactively promote low and no cost opportunities for residents to weatherize homes and businesses within Concord.	Planning & Zoning		2023 - 2024
Maintain and install **new town signs** as needed to communicate accurate directional guidance and improve overall aesthetics of the town.	Town Crew		2023 & Ongoing

LAND USE			
GOALS	**Responsible Party**	**Ranking**	
Update the Land Use Regulations in accordance with state laws and regulations when necessary. Focus to ensure regulations address housing, wind towers, solar fields, historic preservation, FEMA flood regulations requirements, etc. Consider strategies to minimize potential forest fragmentation through clustering and shared driveways. Evaluate opportunity to incorporate earth extraction regulations. Consider identifying areas where conservation easements would be most impactful.	Planning & Zoning	8	2024
Maintain and improve the quality of air, water, wildlife, forests, and other land resources. **Encourage management of Concord's forestlands** to maintain and improve forest blocks and habitat connectors through the town's practices and land use regulation updates. ACTION EXAMPLE: Develop a flyer to be distributed electronically and with new zoning applications to explain the value of forest blocks and habitat connectors.	Planning & Zoning		Ongoing
Update the **Local Hazard Mitigation Plan** that expires in 2024	Selectboard		2024
Continue to **maintain the Village Center Designation** to provide incentives for building improvements and priority with some available grant funding.	Planning & Zoning		2024
Actively participate in the **Conservation Union District** (CUD) to promote and implement broadband expansion in Concord.	Selectboard Designee		Ongoing
Preserve the **town's scenic resources and open space** through land use regulations.	Planning & Zoning		Ongoing

Town of Concord, VT
Zoning District Map

04/03/2015



- Building Locations
- State Boundary
- County Boundary
- Town Boundary
- Streams
- US & State Highway
- Paved Town Road
- Unpaved Town Road
- Railroad
- Public Lands
- Lakes, Ponds & Rivers

Zoning Districts

- High Density
- Medium Density
- Low Density
- Rural Land
- Lake Shore

0 1 2 3 4 Miles

Map Produced by:

NVDA
Northeastern Vermont Development Association

Warning- This Data is for planning purposes only and does not replace a survey and/or engineering study. Because this map is developed from various scale sources, there may be some discrepancies between data layers.

WATERFORD TOWN PLAN

Adopted May 16, 2016

Waterford Planning Commission:

Bill Dimick
Howard Remick
Mike Barrett
Bob DuMaire
John Gillott
Tom Robinson
Dave Senio

Michelle Collins, Planning Commission Secretary

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Municipalities will need to inventory their road network and identify priority road segments that are connected to surface waters through ditches, culverts or other drainage structures. Towns will then report to DEC which of these priority road segments meet and do not meet MRGP standards. Towns will prioritize road segments and develop remediation plans and implementation schedules (capital budgets).

Towns can apply for funding through the Better Back Roads Program for both the inventory and remediation process. There is technical assistance through the County Conservation District, VTrans Maintenance District, Vermont Local Roads and NVDA.

DEC will be developing a draft MRGP and standards by December 2016 and a final version one year later. Towns will begin applying for MRGP coverage between 2018-2021. Exact dates are to be determined. Towns can be apprised of the coming requirements through participation in the Regional Road Foreman's Group facilitated by NVDA and their VTrans District, or by going to the DEC MRGP website above. Before the MRGP and standards are finalized, towns can begin identifying road erosion sites that could potentially impact waterways and begin implementing road best management practices. Towns identifying sites and implementing BMPs will be credited for this work as part of the MRGP.

Scenic Roads

Most roadways in Waterford are scenic in one way or another, but some deserve special attention to preserve their scenic character.

View South from Hale Rd near Intersection of Suitor Rd

The following are several of the many roads in town with grand views:

- The intersection of Hale Road and Valley View Road has views overlooking the Connecticut River Valley and good vistas for 1,000' west along Hale Road, a mile to the south along Valley View Road, and east along Hale Road to Suitor Road.

- East Village Road has exceptional views for its entire length from the St. Johnsbury line to its end.

- Campbell Road, from Old County Road north through the woods, to its terminus at I-93.

- Old County Road with views overlooking the Connecticut River Valley from Mad Brook Road south to the picnic area on the Connecticut River.

- High Ridge Road has a variety of views for its full length from Old County Road to the Concord Town Line. (Note: the last ¾ mile of this road is a class 4 road with limited maintenance; travel should be with care or by foot).

- Shadow Lake Road has grand views from Old County Road to the Concord Town Line, especially to the south overlooking Moore Reservoir.

- Daniels Farm Road and sections of Route 18 afford scenic views.

View Southwest from Daniels Farm Rd at intersection of Valley View Rd.

Speed Limits

All town highways should have a speed limit of not more than 35 miles per hour for gravel-surfaced roads, and not more than 40 miles per hour for paved roads. The White Village Area is 25 miles per hour. For safety of pedestrians and cyclists, a lower speed limit on State Route 18 as it approaches Lower Waterford Village is advisable.

Policies

Orderly growth in Waterford is not dependent on any new road construction or acceptance of roads built by others. Present service is quite adequate and there is plenty of room for growth on existing roads. There are no traffic congestion problems, but the number and concentration of access points should be closely monitored to retain this situation. The Town has no desire to upgrade any roads from their present classification. Should the public good and necessity require the Town to take over any road, it is the Town's desire that those directly benefiting from this action bear the cost of building or upgrading any such road to State of VT Agency of Transportation standards. The level of maintenance will be related to the classification system and the level, type and intensity of use.

View southwest along Hale Road between Suitor Rd and Valley View

Goals and Action Steps

1. Maintain the scenic character and/or scenic views from the roads identified above.

- The Selectboard and the State of Vermont District Highway Engineer should consult with the Planning Commission regarding its recommendations concerning any plans for any reconstruction or major maintenance affecting these designated scenic roads (such as proposed road widening or tree removal).

As part of this legislation, setbacks requirements for solar energy plants requiring a Certificate of Public Good from the Vermont Public Service Board were added to 30 V.S.A., Section 248, in response to concern with the visual impact of such installations. The Act also requires that ground-mounted solar plants comply with the screening requirements of a municipal bylaw, unless such compliance would "prohibit or have the effect of prohibiting the installation of such a facility or have the effect of interfering with the facility's intended functional use."

The minimum setbacks are different depending on the size of the solar facility. For a facility with a plant capacity exceeding 150 kW, the plant must be set back 100 feet from the traveled way of a State or municipal highway, and 50 feet from all other property boundaries. For a facility with a plant capacity less than or equal to 150 kW but greater than 15 kW, the setback is 40 feet from a highway or 25 feet from other property boundaries. No setbacks are established for facilities less than or equal to 15 kW.

In 2015-2016, industrial-scale solar energy developments were proposed in the Town of Waterford, which are subject to review and approval by the Public Service Board in accordance with State statute.

A local planning consideration for these installations is the potential impact on scenic and agricultural resources. The preservation of Waterford's rural setting and scenic views, and support for an agriculturally-based economy are values expressed in this Plan, and reflect the opinion of the community as demonstrated in the 2015 Waterford Community Survey. If the solar arrays are located on property that is being used for or has potential to be used for productive farmland, it removes this land from the local inventory of land available for agricultural uses. Although the land is typically leased by the company installing the solar array, the lease term is typically 30 years. Based on current technology, solar arrays typically have a 25 year lifespan, so a decommissioning plan is an important consideration.

Policy

The Town of Waterford supports the use of responsibly sited and developed residential-scale and commercial renewable energy projects. The Town does not support the development of renewable energy installations that negatively impact scenic views or remove valuable agricultural land from current or potential productive use. Waterford desires to maintain the working landscape and views important to its rural cultural aesthetic.

1. Standards:

Projects must meet the following standards outlined below in order to be considered "orderly development" supported by this plan and in order to not unduly impact the productive use of agricultural lands and the aesthetics of the rural countryside this plan intends to protect:

A. Siting. Where a project is placed on the landscape constitutes the most critical element in the aesthetic siting of a project. Poor siting cannot be adequately mitigated. Accordingly, all renewable energy projects must evaluate and address the proposed site's aesthetic impact on the surrounding landscape.

a. Good sites have one or more of the following characteristics:
   - Roof-mounted systems;
   - Systems located in close proximity to existing larger scale, commercial, industrial or agricultural buildings;
   - Proximity to existing hedgerows or other topographical features that naturally screen the proposed array from view from at least two sides;
   - Reuse of former brownfields or otherwise impacted property.

b. Poor Sites have one or more of the following characteristics:
   - No natural screening;
   - Topography that causes the arrays to be visible against the skyline from common vantage points like roads or neighborhoods;
   - A location in proximity to and interfering with a significant viewshed (significant viewsheds within Waterford include, but are not limited, to those identified in the Transportation section of this Plan.)
   - The removal of productive agricultural land from agricultural use
   - Sites that require public investment in transmission and distribution infrastructure in order to function properly.

B. Mass and Scale: The historical working landscape that defines Waterford currently and that the Town desires to preserve is dominated by viewsheds across open fields to wooded hillsides and views of distant mountain ranges. Rural structures like barns fit into the landscape because their scale and mass generally do not impact large tracts of otherwise open land. All commercial scale solar arrays shall also be limited in mass and scale, and/or have their mass and scale broken by screening, to fit in with the landscape. Commercial solar projects larger than ½ acre are larger than any other structure within the municipality of Waterford, cannot be adequately screened or mitigated to blend into the municipality's landscape and are therefore prohibited.

Projects found to have poor siting characteristics pursuant to the standards contained in Section 1 above and/or projects larger than ½ acre in size violate the municipalities' standards regarding orderly development.

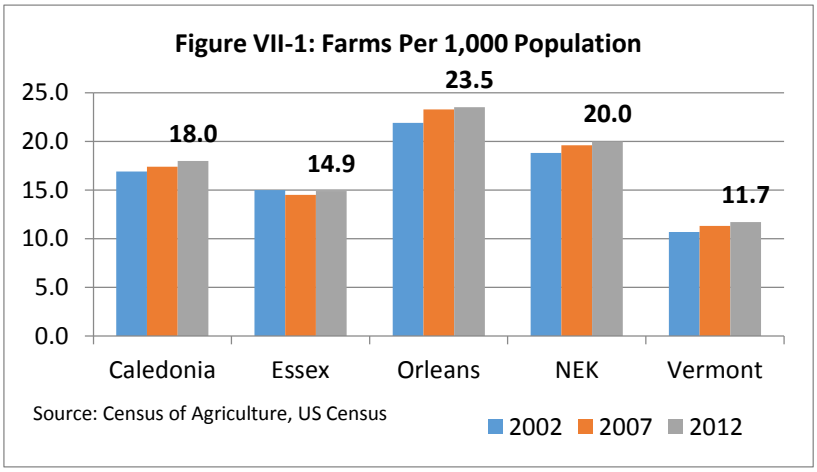
2. Average person:
For the purposes of this plan, either the municipal legislative body or the planning commission (depending upon which body is selected by the legislative body to represent the municipality before the Public Service Board in any Section 248 hearing), shall be deemed to represent the voice of the "average person" with respect to the "Quechee Test" when evaluating the aesthetics of a proposed solar array.

3. Mitigation methods:
In addition to properly siting a project, solar developers must take the following action to mitigate all project sites:

a. Locate the structures on the site to keep them from being "skylined" above the horizon from public and private vantage points;

- Strategies to protect long-term viability of agricultural and forest lands should be encouraged and should include maintaining low overall density
- The manufacture and marketing of value-added agricultural and forest products should be encouraged.
- The use of locally-grown food products should be encouraged.
- Sound forest and agricultural management practices should be encouraged
- Public investment should be planned so as to minimize development pressure on agricultural and forest land.

The land-based economy is a critical part of the Northeast Kingdom's traditional landscape that preserves open spaces and enhances the region's scenic beauty.



The United States Department of Agriculture (USDA) conducts a Census of Agriculture every five years. According to the 2012 Census of Agriculture, there are 1,291 farms in the Northeast Kingdom, which represents an 8.9% increase from 2002. The region has more farms per population than statewide.

The total market value of all Northeast Kingdom agricultural products (crops and livestock) grew to $148,204,000 in 2012, an increase of 6.2% since 2007. While the value of livestock sales in the Northeast Kingdom dropped by 4.6% from 2007 to 2012, it still accounted for the majority (83%) of the value of all agricultural sales in the region. Livestock sales include all animals and their products (meat, eggs, milk, etc.). Dairy remains a top commodity in the Northeast Kingdom. The top two livestock products by value of sales in the region according to the 2012 census were "milk from cows," and "cattle and calves," which together accounted for about 98% of all livestock product sales. The value of crop sales in the Northeast Kingdom more than doubled from 2007 to 2012. While crop sales only accounted for 7.4% of Northeast Kingdom total agricultural sales in 2007, it represented 17% in 2012. Crops include nursery and greenhouse crops.

The forest industry is also an integral part of the region's economic and social identity, and logging continues to be a locally important economic activity. These include jobs in logging and trucking, wood products and furniture manufacturing, paper manufacturing, wood energy, maple syrup and Christmas trees.

Table VII-2 Waterford Labor Force Employment by Industry		
Industry	**# of workers**	**% of workers**
Civilian employed population 16 years and over	797	100%
Agriculture, forestry, fishing and hunting and mining	11	1.4
Construction	62	7.8
Manufacturing	81	10.2
Wholesale trade	56	7.0
Retail Trade	158	19.8
Transportation and warehousing, and utilities	30	3.8
Information	3	0.4
Finance and insurance, and real estate and rental and leasing	45	5.6
Professional, scientific, and management, and administrative and waste management services	40	5.0
Educational services, and health care and social assistance	216	27.1
Arts, entertainment, and recreation, and accommodation and food services	30	3.8
Other services, except public administration	42	5.3
Public administration	23	2.9
Source: U.S. Census Bureau, 2009-2013 American Community Survey, Table DP03		

As shown on the table above, the largest percentage of Waterford residents in the workforce are employed in education, health care and social services (27.1%). The next highest industry category employing local residents is retail trade (19.8%), with manufacturing in third place (10.2%). Only 1.4% of the local labor force is employed in the category "agriculture, forestry, fishing, hunting and mining."

The median earnings for the employed population 16 years and older was $34,338. The median household income in Waterford was estimated at $64,653 and median family income was $79,250.

Existing Commercial and Industrial Uses in Waterford

Commercial/Industrial uses in town include the hydroelectric dam operated by TransCanada, the Pike Company rock quarry and asphalt plant, Matthews Construction Co., Eddies' Bakery, Fenoff Excavating, Calco, Inc. concrete plant, and numerous home-based industries. The Rabbit Hill Inn includes the commercial use of lodging, restaurant and retail sales in the gift shop.

Existing land use regulations in Waterford provide for three zoning districts: Industrial Commercial, Village District, and Rural Residential. The Industrial Commercial zoning district

Village Residential

Lower Waterford (White Village) is the only remaining historic village type concentration within the town. Most of the surviving structures were constructed during the early 1800's and remain much as they were then. It was formerly a full scale, self-sufficient village, but most industrial uses have completely vanished, and the only remaining commercial use is the historic colonial Rabbit Hill Inn. The rest of the buildings and surrounding lands are either for public uses or private residences. The White Village has been preserved due to the Village's population decline and the efforts of a former owner of the Rabbit Hill Inn who bought and restored all but two of the houses in the Village area during the 1930's. The result is an historic and classic Vermont scene, which is much photographed and frequented by many vacationers and tourists. It is a fine example of functional historic and scenic preservation as an appropriate land use.

Rural Residential

Other than the concentrations noted above, most houses in the town are on large lots and with a good deal of open space around them thus lending to the rural character of the town. See the housing section for information on trends in residential development.

Industrial and Commercial Use of Land

Present industries in the town include a hydroelectric dam on the Connecticut River operated by TransCanada, the Pike Company asphalt plant and rock quarry (which provides gravel for use on Town roads), Matthews Construction Co. and Eddie's Bakery on Duck Pond Road; Fenoff Excavating on Duck Pond Road, and Calco, Inc., a precast concrete plant and construction operation located between Route 18 and Duck Pond Road. There are also numerous home industries.

The Rabbit Hill Inn, Restaurant and Gift Shop at Lower Waterford consists of a group of 18th and 19th century buildings at the corner of Route 18 and Lower Waterford Road.

The hydroelectric plant and transmission lines, which cross Waterford and utilize a small amount of land in a linear fashion, generate revenue for the town. There are cable and electric transmission lines throughout the town, which add to the tax base. Another utility, St. Johnsbury's water supply, comprises Stiles Pond and 1,132 acres of its watershed.

In 2014 National Grid, which owns and operates the transmission line between the Moore and Comerford Hydroelectric Stations, announced plans to relocate the existing lines from the current right of way corridor in Vermont to an existing utility corridor on the New Hampshire side of the Connecticut River.

Recreational uses

Town-owned recreational facilities consist of the Waterford School playground and a closed loop trail adjacent to the school. Class 4 Town Roads are also a potential recreational resource for

biking, hiking and cross-country skiing. The Vermont Association of Snow Travelers maintains trails across private property in Waterford.

Private community recreational facilities include a private playground and ballfields on the property of the Union Baptist Church, on Route 5; and tennis courts, beach access and a clubhouse that is part of the Waterford Springs residential development adjacent to the Comerford Reservoir. Although there is no town-owned land that provides access to the Connecticut River, TransCanada maintains land along the Connecticut River for passive recreational use by the public. There is a public boat launch and fishing pier on the Moore Reservoir, (formed by the Moore hydroelectric dam on the Connecticut River), and a picnic area located on TransCanada land at the end of Old County Road.

Moore Reservoir

For the past eight years an annual fishing tournament has been held on the Moore Reservoir, sponsored by TransCanada.

The Passumpsic and Connecticut Rivers are both popular for fishing and boating. Launch points and portage locations along the Connecticut River have been mapped by the Appalachian Mountain Club in its *River Guide*, and by the Connecticut River Paddlers' Trail (http://www.connecticutriverpaddlerstrail.org/).

The Moose River is also used for fishing, canoeing and kayaking. The stretch from the Victory Basin Wildlife Management Area to Fred Mold Park in St. Johnsbury features both flat water and Class III rapids.

Since Stiles Pond, located in the northeast of Waterford, is the public water source for the Town of St. Johnsbury, recreational access is somewhat restricted. The Town of St. Johnsbury's water treatment plant is located on the north side of the Pond, and the Town of St. Johnsbury owns the land surrounding the Pond. However, legal public access to Stiles Pond exists along State Highway 18, which is located along its eastern edge, and the spot is used for fishing.

Agricultural land uses

corner of town, and along two sections of the Passumpsic River in the western corner of town. (See Map 1,"Base Map")

There is common open space that is part of the Waterford Springs residential subdivision, but this is not open to the public.

Public and Institutional Use of Land

Lands and facilities devoted to public or institutional uses in Waterford consist of the Town Hall and Library on Lower Waterford Road, the Congregational Church on Lower Waterford Road, the Fire House and Town Garage on Duck Pond Road, the public elementary school on Duck Pond Road, the Baptist Church on Route 5, and nine cemeteries: Riverside, Lower Waterford, Passumpsic, Stiles, Charles Hill, Powers-Wheeler, West Waterford, Adams-Babcock, and Cushman.

West Waterford Cemetery

Lower Waterford Cemetery

See the Community Facilities section of the Plan for a detailed discussion of public buildings.

Existing Land Use Regulations

There are currently three zoning districts in Waterford: Village District, Rural Residential and Industrial Commercial. Minimum lot size and frontage requirements are the same in all districts: 2 acre minimum lot size and 200 feet of required frontage. The front, side and rear setbacks are the same in the Industrial Commercial and Rural Residential district (50 foot front yard and 35 feet for side and rear yards). The Village District requires a front yard setback of 35 feet, and side and rear yards of 25 feet. Lot coverage (coverage of lots by impervious surfaces) is not regulated by the zoning ordinance.

The vast majority of land area in town is zoned Rural Residential. The Village District consists of an area of a circle with a radius of .5 mile, the center being the intersection of Maple Street and Lower Waterford Road.

There are three areas zoned "industrial commercial" in town: one is near the interchange of Route 18 and Interstate 93 at the northwest boundary of Waterford with St. Johnsbury; one is located on Duck Pond Road, and includes the area owned by Pike Industries; and one is located on the northwest side of State Route 5.

The Town also has subdivision regulations, and while there are general statements regarding the protection of natural features and provision of open space, they are unspecific.

There are currently no provisions in the town's land use regulations for planned unit developments.

Planning Considerations for Future Land Use

Preservation of Water Resources and Flood Resilience:
The Tactical Basin Plan for the Upper Connecticut River and Passumpsic River watersheds, prepared by the Vermont Agency of Natural Resources, provides guidance for the protection and enhancement of water resources for public use and enjoyment, and to protect public health and safety. Appendix A of the Tactical Basin Plan identifies existing uses of water resources, including swimming, boating, fishing, and water supply. The Tactical Basin Plan can be found online here: http://www.vtwaterquality.org/mapp/docs/mapp_b15-16tbp.pdf.

The quality and quantity of water resources must be very carefully considered when development is contemplated and since most all (surface and subsurface) water sources and streams in Waterford are presently in near pristine quality (except portions of the Connecticut and Passumpsic Rivers), it is important to protect this valuable resource from pollution. Potential public and/or commercial and industrial water supplies deserve special attention as do water recharge areas.

To address negative impacts on water quality that can result from the clearing and development of shorelines, the State enacted the Vermont Shoreland Protection Act in 2014. The provisions of this Act require property owners to obtain a state permit for most development and clearing activities within 250 feet of the shores of lakes that are 10 acres or larger in size. Water bodies in Waterford that are subject to the State Act are Stiles Pond, Duck Pond, Comerford Reservoir, and Moore Reservoir.

Current Use Program
The program is a way to support agricultural and forestry uses as an economically profitable use of land. While enrollment in the program does not place a permanent conservation easement on the land, it does help discourage land speculation in response to residential development pressure. In places where land values are high and subject to development pressure, landowners can realize significant property tax savings by enrolling land in the current use program, since land is assessed at its use value rather than market value. Detailed information on this program can be provided by the Caledonia County Forester, or by visiting the website of the Vermont Department of Forests, Parks and Recreation: **http://fpr.vermont.gov/ .**