Visual Impact Assessment

Supplement

South Ripley Solar Project

Town of Ripley, Chautauqua County, New York

Prepared for:

ConnectGen Chautauqua County LLC
1001 McKinney, Suite 700
Houston, Texas 77002
Contact: Isaac Philips
Phone: (346) 998-2028
Project email: info@southripleysolar.com

Prepared by:

Environmental Design & Research, D.P.C.
217 Montgomery Street, Suite 1100
Syracuse, NY 13202
www.edrdpc.com

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1.0 INTRODUCTION

1.1 Purpose of the Investigation

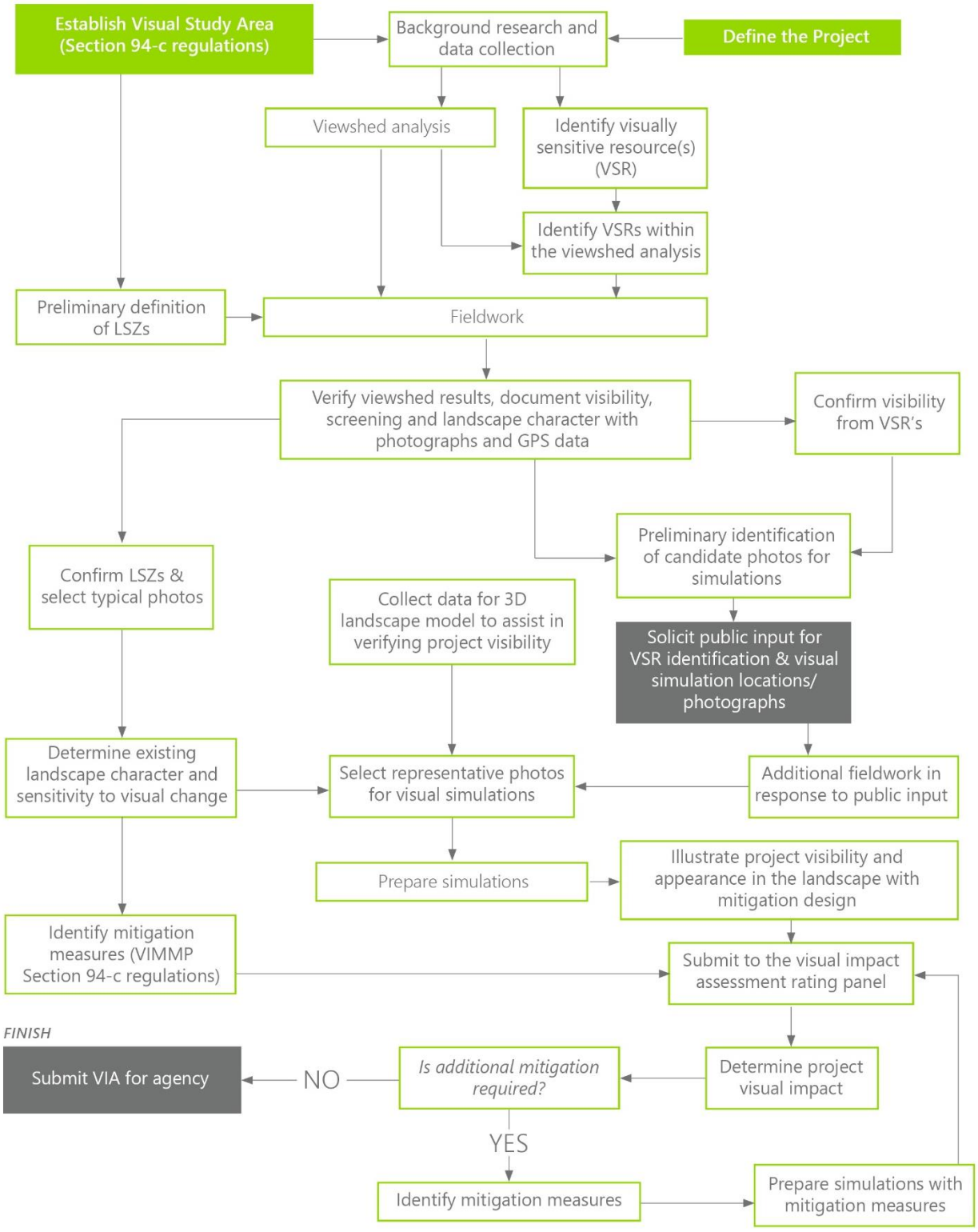
On behalf of ConnectGen Chautauqua County LLC (the Applicant) Environmental Design & Research, D.P.C. (EDR) conducted a Visual Impact Assessment (VIA) for the proposed South Ripley Solar Project (the Facility), located in the Town of Ripley, Chautauqua County, New York. This VIA was prepared in support of the Facility's review under Chapter XVIII, Title 19 of NYCRR Part 900, §900-2.9 (Section 94-c of the New York State Executive Law; hereafter referred to as Section 94-c). It is intended to assist the Office of Renewable Energy Siting (ORES), other state agencies, interested stakeholders, and the public in their review of the proposed Facility in accordance with the requirements of Section 94-c. The purpose of this VIA is to:

- Define the aesthetic character of the visual study area (VSA).
- Inventory and evaluate existing visual resources and viewer groups within the VSA.
- Describe the appearance of the visible components of the proposed Facility.
- Evaluate potential Facility visibility within the VSA, including the visibility of all above-ground infrastructure.
- Identify key views for visual assessment.
- Assess the visual impacts associated with the proposed Facility.
- Determine the need for visual mitigation and propose conceptual mitigation options.

Figure 1.1-1 Regional Facility Location

This VIA was prepared by environmental professionals with educational and career experience in the evaluation of visual impact. As described in more detail in subsequent sections, the VIA methodology and content are consistent with the policies, procedures, and guidelines contained in established visual impact assessment methodologies (see Literature Cited/References in Section 7.0 of this report), and was prepared in accordance with the requirements of Section 94-c. The VIA process followed by EDR is outlined in Figure 1.1-2 (below).

Figure 1.1-2 Visual Impact Assessment Process



2.0 FACILITY DESCRIPTION

The proposed Facility is a utility-scale solar generating project located in Chautauqua County, New York with a generating capacity of up to 270 megawatts (MW). The proposed components of the Facility will include approximately 833 acres of photovoltaic (PV) panels and their racking/support systems, located within 62 individual areas containing a total of 90 PV arrays; direct current (DC) and communications cables connecting the panels to multiple inverters located at the perimeter of the solar arrays; control electronics and step-up transformers; underground and overhead collector circuits; fencing and gates around each PV array; access roads; temporary laydown areas; a battery energy storage system (BESS) with up to 20 MW of battery energy storage capacity; equipment storage containers at the BESS site; a collection substation and a point of interconnection (POI) switchyard.

The proposed Facility Site and Facility components are described in greater detail in Sections 2.1 and 2.2 below.

2.1 Facility Site

The proposed Facility Site includes approximately 3,382 acres of leased private land in the Town of Ripley, Chautauqua County, New York. The site is bounded by the New York-Pennsylvania border to the west, the Town of Mina to the south, the Town of Westfield to the west, and Twentymile Creek to the north (Figure 2.1-1). The area of ground disturbance associated with the construction and operation of the Facility will be approximately 1,275 acres. The Facility Site is located at the northern edge of the Allegheny Plateau physiographic region, with elevations ranging from approximately 1,139 feet to approximately 1,634 feet above mean sea level (AMSL). This area can generally be characterized as an undulating landscape with moderate slopes, occasionally becoming steep around river valleys and gorges (such as Twentymile Creek). The Facility Site is near the border of the Erie-Ontario Lowlands, so elevations to the north are lower and become higher and more variable to the south. The proposed PV arrays are primarily located on level to gently sloping agricultural and post-agricultural fields. However, some of the PV arrays are also proposed within existing woodlots and within the boundaries of large, contiguous forested areas.

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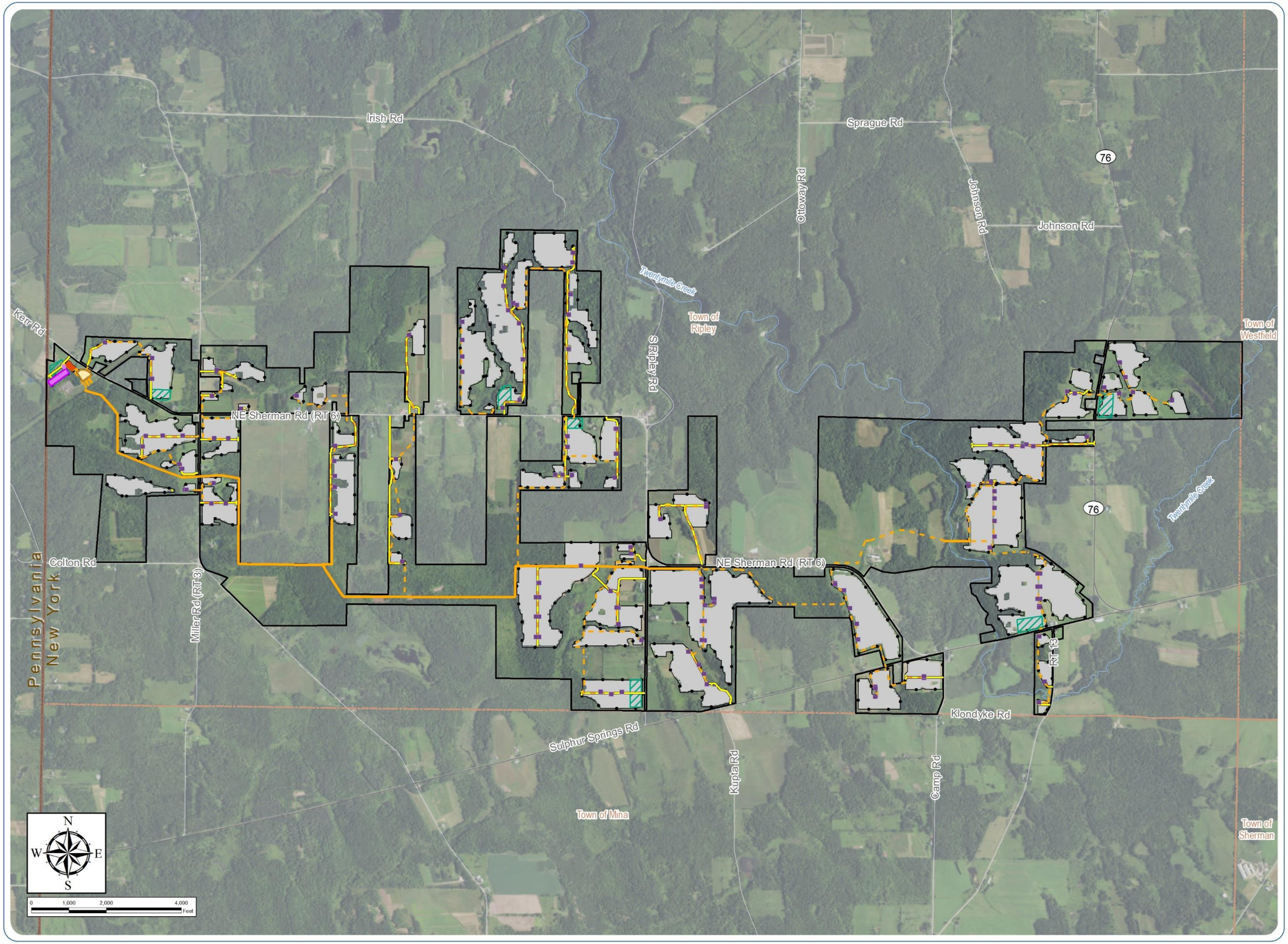
Figure 2.1-1: Bounding Features of the Facility Site and Facility Layout



- Access Road
- Underground Collection Line
- Overhead Collection Line
- Inverter
- Battery Energy Storage System
- Collection Substation
- POI Switchyard
- Laydown Yard
- PV Panel Area
- Fenceline
- Facility Site
- Town Boundary
- State Boundary

Notes: **1.** Basemap: USDA NAIP "2019 New York 60cm" orthoimagery map service. **2.** This map was generated in ArcMap on January 5, 2022. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

2.2 Proposed Facility

2.2.1 Solar Arrays

The Facility includes 90 separate groups of PV panels (i.e., PV arrays or solar arrays) ranging in size from approximately 0.3 to 45.3 acres. Each solar array is surrounded by security fencing and consists of PV panels mounted on racking and arranged in parallel rows. The preliminary design specifies that the distance between rows of PV panels will be approximately 32 feet on-center. In total, the solar arrays will occupy approximately 833.3 acres within the 3,382-acre Facility Site.

The PV panels will be mounted on a fixed-tilt racking system. Fixed-tilt racking systems consist of a steel frame (piles driven into the ground) that creates a "table" on which the individual PV panels are mounted. The panels are fastened together to create continuous rows. The rows of PV panels will generally follow the existing topography of the Facility Site. However, limited grading could be required for installation in areas where slopes exceed 10%. Rows will be aligned east to west, with the PV panels tilted to the south at a fixed angle of 30 degrees from horizontal. The panels will have a maximum height of approximately 13 feet above the ground at their highest point. The PV panels are the major above-ground component of the proposed Facility, and therefore are the focus of this VIA (see Figure 2.2-1).

The PV panel arrays will be fenced for public safety and site security. For the purpose of this VIA, it was assumed that the solar arrays would be surrounded by a 6-foot-tall chain link security fencing with an additional top strand of barbed wire set approximately 1 foot above the chain link panels bringing the total fence height to 7 feet. The perimeter security fence consists of posts spaced approximately 8 feet apart, 2-inch diamond mesh wire, and lateral support posts (as needed). All fencing materials will be galvanized steel. Entry gates will occur at each of the PV array access points, along Facility access roads.

The general design criteria for the Facility includes specific setbacks from various types of adjacent uses. Based on the layout used in this VIA the average fence setback from public roads is approximately 80 feet and ranges from 15 feet to 275 feet. Perimeter fence setback from adjacent residential parcels averages approximately 112 feet and from adjacent vacant parcels is approximately 95 feet. See additional discussion of setbacks required by Local Laws and Ordinances in Exhibits 5 and 24 of the Section 94-c Application.

All proposed fencing and setbacks are incorporated into the proposed Facility layout and illustrated in the visual simulations included in this VIA. To further protect the public, warning signs will be posted on the gates and/or fences that enclose the solar arrays. Such signs are not considered in the VIA due to their relatively small size and because their design and placement are unknown at this time.

2.2.2 Electrical System

The electricity generated by the PV panels will be delivered to the existing electrical grid via a network of underground and overhead low and medium voltage electric cables. These cables collect electricity generated from each PV Array and connect to the collection substation for delivery of generated power onto the high voltage electrical grid through the POI switchyard. These electrical system components are described in greater detail below.

> *Collection System:* Within and between each PV array, an approximately 22-mile network of buried electric lines will collect power from the inverters/transformers within each PV array and transmit it to the collection substation. In addition, approximately 4.6 miles of overhead collection lines will be required to facilitate the

connection in areas where underground burial is not practicable (based on environmental or engineering constraints). The overhead portion of the collection system generally begins along a small portion of County Route 6 (Northeast Sherman Road) near the intersection with Sinden Road and continues west though a relatively remote, forested section of the Facility Site before crossing Miller Road. After crossing Miller Road, the overhead collection line continues in a generally northwesterly direction through agricultural and forested land until reaching the existing National Grid South Ripley to Dunkirk 230 kilovolt (kV) transmission corridor south of the proposed collection substation and adjacent to County Route 6, where it transitions to underground lines until reaching the collection substation. In addition, an approximately 665-foot section of overhead line will be required to cross Twentymile Creek between County Route 6 and New York State Route 76 (Sherman Road) in a heavily forested portion of the Facility Site. Where visible, the overhead collection system is illustrated in the visual simulations included in this VIA (see Appendix D).

Medium Voltage Inverters/transformers: Each PV array will include one or more medium voltage paired inverter(s) and transformer(s), which resemble storage containers and will be installed on metal skids or concrete pads set on the ground surface. The inverters and transformers will be located within or on the edge of the PV arrays, are anticipated to have a maximum height of approximately 8 feet and will be painted off-white to grey. Inverters and transformers are primarily screened from view by the panels within each PV array. In the simulations they are only visible in views that feature moderate to substantial grade change. An illustration of the inverter unit is included in Figure 2.2-2.

Collection Substation: The collection substation will be located at the western edge of the Facility Site on a parcel south of County Route 6 in the Town of Ripley. Components of the station will consist of standard electrical, control and protective equipment, including collection line feeders, high-voltage breakers, metering/relaying transformers, disconnect switches, and an equipment enclosure containing power control electronics (also referred to as a control building). This equipment will generally not exceed approximately 28 feet in height. A 20-foot-tall sound barrier wall is also proposed along the northern fence line. The wall will consist of concrete posts supporting pre-cast panels with a neutral color and stone texture. The tallest component of the collection substation is an overhead gantry H-frame structure, which is anticipated to be up to 70 feet tall. The substation area will be surfaced with crushed stone and enclosed within chain-link fencing, occupying an area measuring approximately 280 feet long by 175 feet wide. Simulations of the collection substation are included in Appendix D (Viewpoints 63S and 63SE), and an illustration of the collection substation is presented in Figure 2.2-3.

POI Switchyard: The POI switchyard will be located at the western edge of the Facility Site on a parcel south of County Route 6, immediately south of the proposed collection substation and the existing South Ripley to Dunkirk 230 kV transmission line. Components of the switchyard will include standard electrical control and protective equipment, including transformers, disconnect switches, bus supports, and high-voltage breakers. This equipment will generally not exceed approximately 38 feet in height. The tallest components of the POI switchyard are the overhead gantry H-frame structures, which are anticipated to be up to 70 feet tall. The switchyard area will be surfaced with crushed stone and enclosed within chain-link fencing, occupying an area measuring approximately 280 feet long by 280 feet wide. A simulation of the POI switchyard is included in Appendix D (Viewpoint 59), and an illustration of the POI switchyard is presented in Figure 2.2-4.

Battery Energy Storage System: The BESS is proposed to be located adjacent to the collection substation southwest of County Route 6. The BESS will occupy an area approximately 597 feet long by 152 feet wide that will be surfaced with crushed stone and enclosed within chain-link fencing. The BESS will include 21 steel structures that resemble shipping containers and will be painted a neutral off-white color. Within the fence, the site will be encircled by a gravel access road and outside of the fence a separate access road will provide access to an emergency response water storage basin measuring approximately 33,453 square feet. The BESS container units were modeled for the simulations based on preliminary design drawings at approximately 53 feet long, 8 feet wide, and 10 feet high. Figure 2.2-5 provides an illustration of the BESS. A simulation of the BESS is included in Appendix D (Viewpoint 63S).

Three steel storage containers, each approximately 40 feet long and 8 feet wide with a total height of approximately 9.5 feet, are also proposed to be located along the BESS access road for general Facility storage purposes.

The potential visual effects associated with the collection substation, POI switchyard, and BESS (collectively referred to as the interconnection facility in this report) and the overhead collection line are described in Section 5.3.4. Lighting for the interconnection facility will be provided by light fixtures mounted on 30-foot-tall poles within the collection substation and POI switchyard, and LED lighting fixtures mounted to the façades of control building. The light fixtures will be shielded to minimize light trespass and off-site spillage and will be placed on an auto-off switch to minimize the duration of required lighting. Additional discussion of Facility lighting is included in the Lighting Plan included in the Visual Impact Minimization and Mitigation Plan (VIMMP) (see Appendix 8-B of the Section 94-c Application).

Figure 2.2-1 PV Panel Appearance and Dimensions

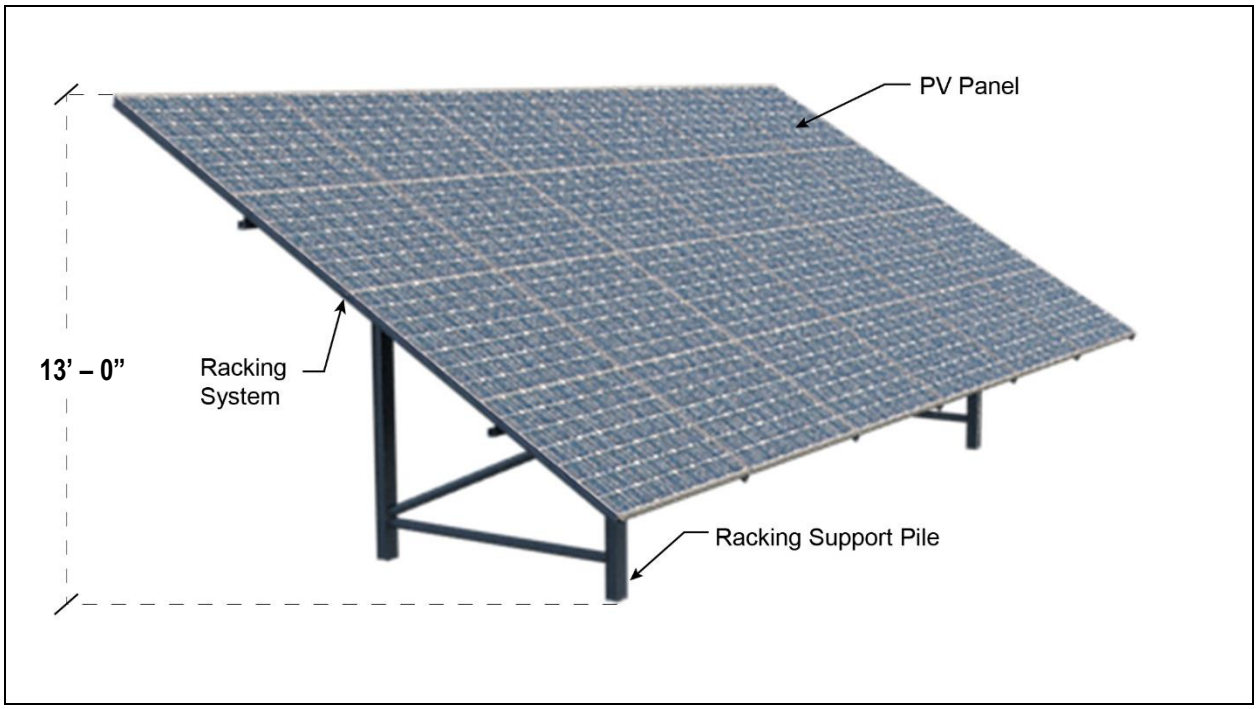


Figure 2.2-2 Inverter Unit Appearance and Dimensions

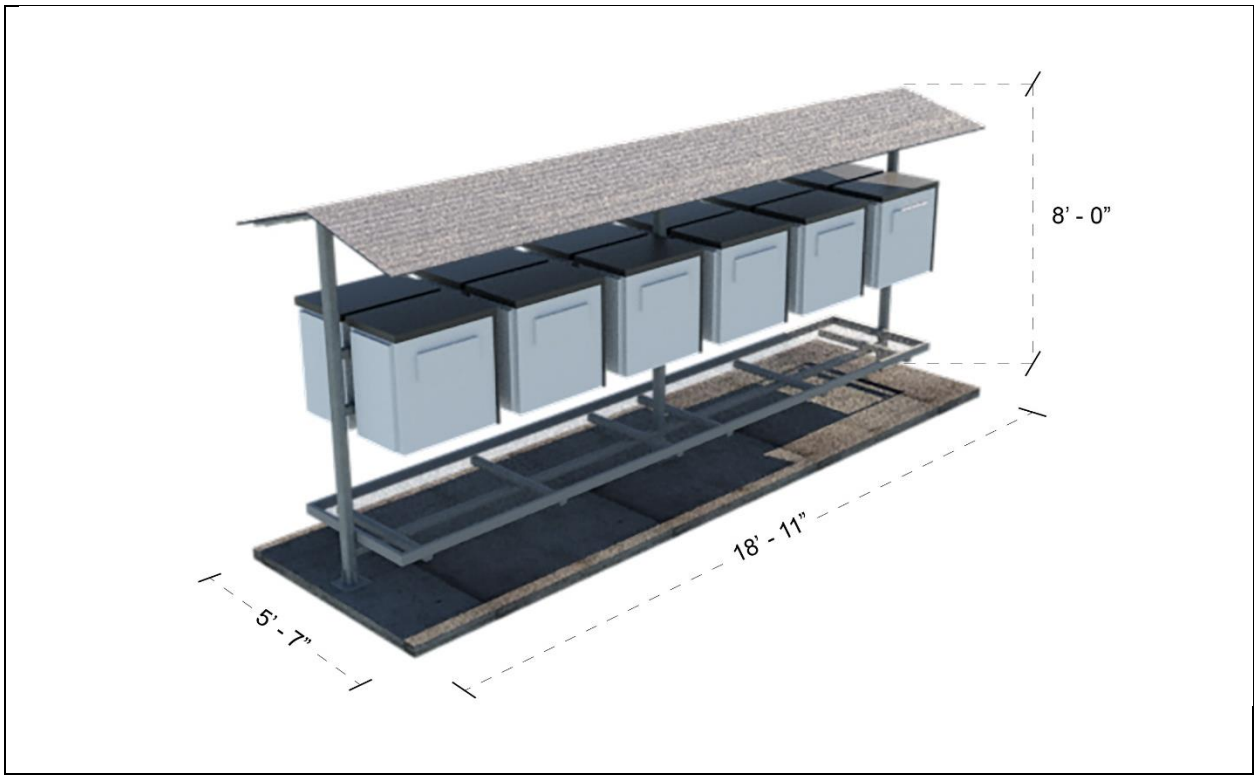


Figure 2.2-3 Collection Substation Appearance and Dimensions

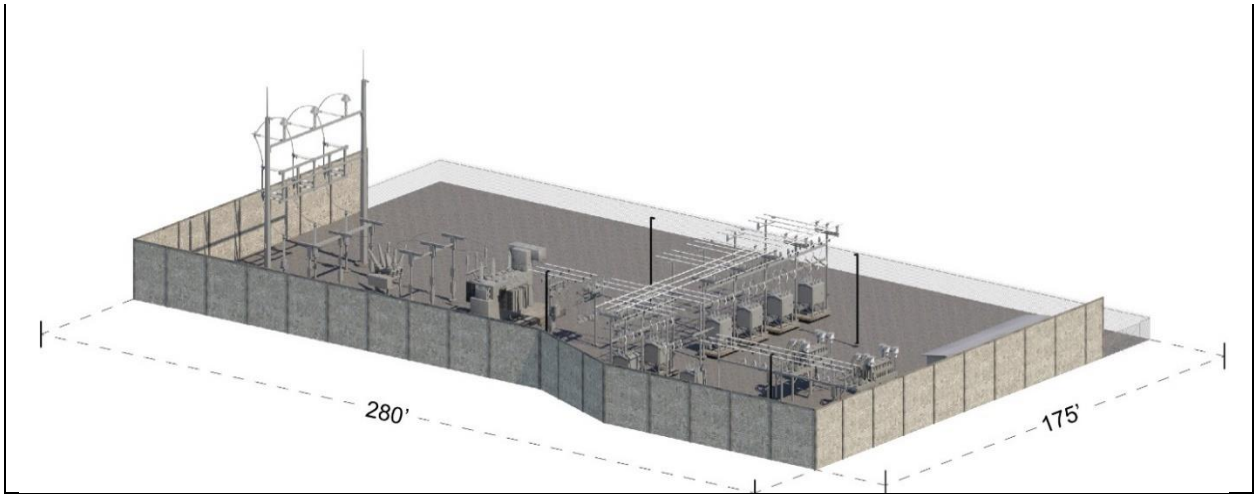


Figure 2.2-4 POI Switchyard Appearance and Dimensions

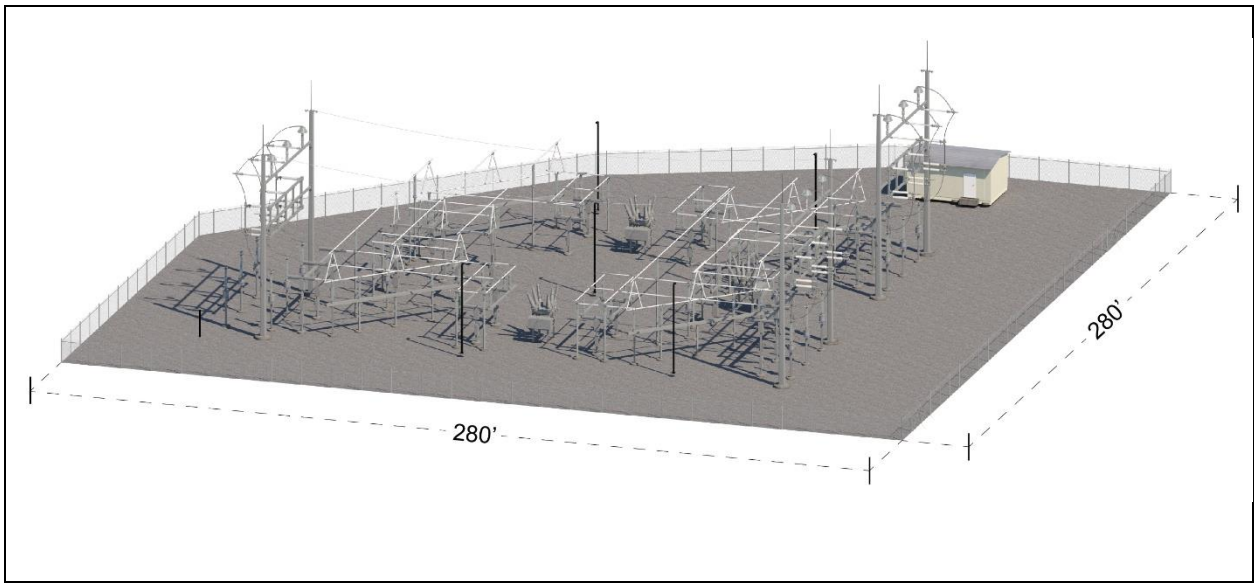
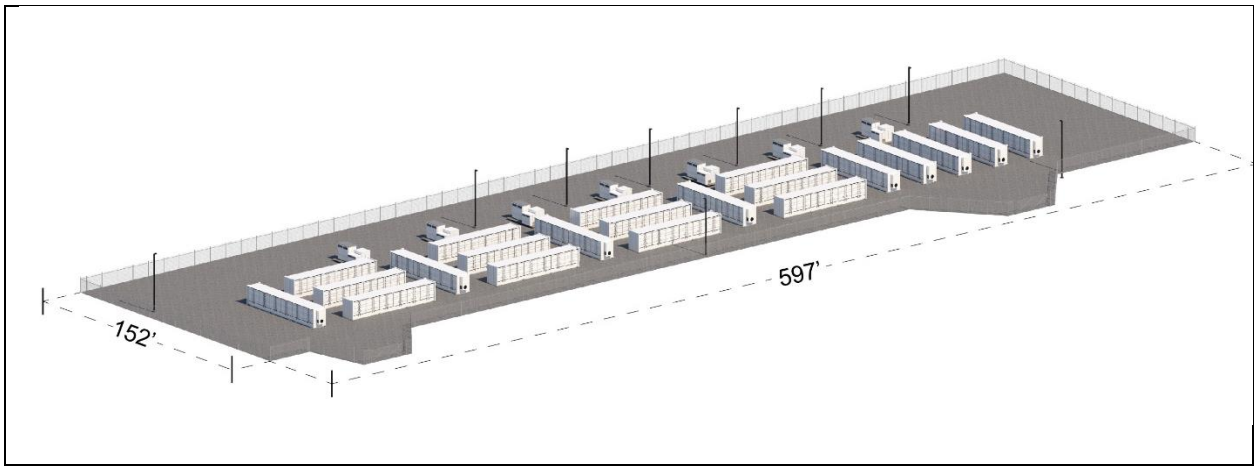


Figure 2.2-5 Battery Energy Storage System Appearance Dimensions



2.2.3 Access Roads

The PV arrays will be served by a network of access roads totaling approximately 11.3 miles. These roads will allow for delivery of Facility components during construction and access to the Facility for maintenance purposes during operation. The access roads for the Facility are anticipated to be surfaced with crushed stone or gravel and will be approximately 20 feet wide. The proposed access roads represent relatively minor alterations to the landscape that are rarely visible due to their low profile, unpaved surface, and location primarily within the PV arrays. However, as part of this VIA, access roads are shown in any simulations where they will be visible. A typical access road is depicted in Figure 2.2-6 below. Temporary visual impacts associated with the construction of these facilities are discussed in Section 5.3.5.

Figure 2.2-6 Photograph of a Typical Access Road

2.2.4 Temporary Laydown Areas

Construction of the Facility will require the development of seven temporary laydown areas which will accommodate construction trailers, storage containers, construction materials, and parking for construction workers. The laydown areas will be located north and south of County Route 6, west of Sinden Road, and east of New York State Route 76 (Sherman Road), in the Town of Ripley. These areas will be surfaced with crushed stone or gravel and will range from approximately 2.8 to 5.5 acres in size. The laydown areas are temporary features that will be removed and restored at the end of construction. No permanent fencing, permanent lighting or future Facility-related use of the laydown areas is proposed. The location of the proposed temporary laydown areas is indicated in Figure 2.1-1. Temporary visual impacts associated with construction of the Facility, including the laydown areas are discussed in Section 5.3.5.

2.2.5 Operations and Maintenance Facility

The collection substation control building will be located within the fence line of the collection substation and will serve as the operations and maintenance (O&M) facility. Additionally, the Applicant intends to use three O&M storage containers adjacent to the collection substation and BESS (also referred to as the O&M Yard) off County Route 6 in the Town of Ripley. Accordingly, a stand-alone O&M facility is not addressed separately from the collection substation and/or BESS in this VIA.

2.2.6 Vegetative Screening

The Facility will include perimeter visual mitigation plantings at identified locations to integrate the proposed solar arrays with adjacent vegetation and soften views of the Facility within the surrounding landscape. Proposed vegetative screening following five to seven years of growth is shown in all visual simulations where such plantings are proposed. For more information on the Facility's landscape mitigation planting plan, see the VIMMP in Appendix 8-B of the Section 94-c Application.

3.0 EXISTING VISUAL CHARACTER

3.1 Definition of Visual Study Area

Section 94-c (§900-2.9 Exhibit 8: Visual Impacts) references a "VIA study area" but does not specifically define the required size of this study area. However, the Section 94-c regulations include the following requirement:

"*Viewshed maps depicting areas of facility visibility within two (2) miles of a solar facility and five (5) miles of a wind facility, as well as any potential visibility from specific significant visual resources beyond the specified study area, shall be prepared…*"

As viewshed maps define a project's area of potential visual impact, the viewshed radius essentially defines the visual study area (VSA). Consequently, the South Ripley Solar Project VSA has been defined as the area within 2-miles of the Facility Site consistent with the viewshed mapping required by the Section 94-c regulations. This VSA was used for all the visual analyses presented herein (i.e., viewshed analysis [for both the PV arrays, collection substation, POI switchyard, BESS, and overhead collection line], field verification, and visual simulations). It should be noted that any visually sensitive resources (VSRs) with federal jurisdiction (e.g., National Register of Historic Places, National Natural Landmarks, National Wildlife Refuges) were identified within 5 miles of the Facility, in accordance with the requirements of Section 94-c (§900-1.2).

The 2-mile radius VSA covers an approximate 44 square mile area and includes portions of the Towns of Ripley, Mina, Westfield, and Sherman, all of which occur within Chautauqua County. The VSA is illustrated in Figure 3.1-1 and a description of the visual setting within the VSA is provided below.

*Please note that the 2-Mile Visual Study Area is defined as a 2-mile radius from the Facility Site, whereas the distance zones are defined by distance to visible Facility Components (PV Panels, Collection and POI Substation, Battery Energy Storage System, Overhead Collection Line).

Middle Ground

Foreground

Near-Foreground

0.5-Mile

1.5 Miles

Pennsylvania

New York

Irish Rd

Sprague Rd

Ottoway Rd

Johnson Rd

Kerr Rd

NE Sherman Rd (RT 6)

S Ripley Rd

Town of Ripley

Town of Westfield

Parker Rd

RT-21

Napper Rd

Jones Rd

Kent Rd

Colton Rd

Miller Rd (RT 3)

NE Sherman Rd (RT 6)

Klondyke Rd

Sulphur Springs Rd

Kupta Rd

Camp Rd

Town of Mina

Town of Sherman

Hazen Rd

Sherman Findley Lake Rd

Southern Tier Expy

76

86

N

W

E

S

0 1,000 2,000 4,000 Feet

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Figure 3.1-1: Visual Study Area

- Distance Zone Transition
- Overhead Collection Line
- Battery Energy Storage System
- Collection Substation
- POI Switchyard
- PV Panel Area
- Facility Site
- 2-Mile Visual Study Area
- Town Boundary
- State Boundary

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic Map" map service. **2.** This map was generated in ArcMap on January 5, 2022. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

3.2 Physiographic/Visual Setting

3.2.1 Landform and Vegetation

The VSA is located within the New York State Low Lime Drift Plain subregion of the Erie Drift Plane Ecoregion which marks the region between the Allegheny Plateau (southern portion of the VSA) and the Erie/Ontario Lake Plain (Bryce, et. al. 2010). This subregion is defined by an irregular plain containing moraines, kames, kettle ponds, and poorly drained depressions. The poorly drained soils historically hosted beech-maple forest with hemlock in better drained areas. Elevations within the VSA range from approximately 766 feet to 1,799 feet AMSL. The VSA is primarily a forested landscape, particularly in the higher and steeper portions of the plateau. These forested areas are interrupted by a patchwork of agricultural fields and pastures which typically have undulating topography and are enclosed by adjacent forest and woodlots.

3.2.2 Land Use

The majority of the VSA consists of mixed deciduous forest vegetation with use generally limited to outdoor recreation and timber harvest. Active land uses within the VSA consist primarily of agricultural and rural residential uses. The majority of the agricultural land within the VSA is actively managed pastureland and hayfields. Development consists primarily of widely scattered rural homes and farms, with a few areas of more regular settlement along County Route 64, Miller Road, State Line Road, and New York State Route 76.

3.2.3 Water Features

The VSA is within the Chautauqua-Conneaut (HUC 04120101) watershed, on the southwestern edge of New York State along Lake Erie. This watershed's northern boundary connects to the southeastern boundary of Lake Erie, which is located over 3 miles to the north of the VSA. National Wetlands Inventory (NWI) mapping indicates the presence of 32 wetland communities within the VSA, consisting primarily of forested/shrub wetlands. Other NWI-mapped communities within the VSA include emergent wetlands, unnamed open water ponds and lakes, and riverine wetlands (USFWS, 2021). Named streams in the vicinity of the VSA include Twentymile Creek, Chautauqua Creek, and West Branch French Creek. Despite numerous small open water bodies scattered throughout the VSA, there are no individually named lakes or ponds.

3.3 Landscape Similarity Zones

In accordance with the requirements set forth in 19 NYCRR § 900.8(b)(1), Landscape Similarity Zones (LSZs) were defined and mapped within the VSA. Defining distinct landscape types within a given study area provides a useful framework for the analysis of a project's potential visual effects. LSZs within the VSA were defined based on the similarity of various landscape characteristics including landform, vegetation, water, and land use patterns, in accordance with established visual assessment methods (notably, United States Department of Agriculture (USDA) Forest Service, 1995; Smardon et al., 1988: United States Department of Transportation (USDOT) Federal Highway Administration, 1981; United State Department of Interior (USDI) Bureau of Land Management, 1984, 1999). Within the VSA, the following four distinct LSZs were identified:

- Forest
- Rural Residential/Agricultural
- River Gorge
- Transportation Corridor

LSZs within the 2-mile study area were mapped using a Geographic Information System (GIS) classification exercise. The LSZ classifications are based on aerial imagery, mapped land cover, and proximity to various landscape or land use features. The mapping of LSZs is a generalization exercise intended for viewing at the macroscopic scale of the entire study area. Therefore, it is possible that field review at a given viewpoint would change the initial GIS-derived LSZ classification based on observed landscape characteristics that are beyond the scale of the GIS analysis. The classification analysis is subtractive, meaning that a given criterion is used to classify a portion of the VSA as a particular LSZ, and then the next criterion is applied to classify portions of the remaining land, and so forth until the entire area is mapped. The classification and mapping of LSZs within the VSA followed the following order of criteria:

- The Transportation Corridor LSZ is identified as areas within 300 feet of the Interstate Route 86 centerline from the New York State Streets dataset published by the New York State GIS Program Office.
- The River Gorge LSZ was identified using topographic data to identify shale cliffs and areas within 150 feet of Twentymile Creek and Belson Creek. Aerial imagery was then used to refine the boundaries of the River Gorge LSZ based on the presence of recognizable cliffs and exposed rock.
- The Forest LSZ is primarily comprised of deciduous forest, evergreen forest, mixed forest, and woody wetlands, (along with small areas of emergent wetland occurring entirely within contiguous forest areas), as defined by the 2016 USGS National Land Cover Dataset (NLCD).
- Finally, The Rural Residential/Agricultural LSZ is comprised of the remaining area which primarily includes Shrub/Scrub, Grassland/Herbaceous, Pasture/Hay, Cultivated Crops, and Developed (including Open Space, Low, Medium, and High) land covers, as identified in the NLCD. Emergent wetlands, as defined by the NLCD, were also included in the Rural Residential/Agricultural LSZ where they occurred adjacent to or within Shrub/Scrub, Grassland/Herbaceous, Pasture/Hay, or Cultivated Crop areas.

The extent of each LSZ within the visual study area is summarized in Table 3.3-1 and depicted in Figure 3.3-1. Descriptions of the visual characteristics of each LSZ, along with representative photographs, are provided in Sections 3.3.1 through 3.3.6, below.

Table 3.3-1 Landscape Similarity Zones

Landscape Similarity Zone	Total Area of LSZ within the Visual Study Area (square miles)	Percent of Total Area[1] within Visual Study Area
Forest	28.6	65.3%
Rural Residential/Agricultural	13.3	30.3%
River Gorge	1.6	3.7%
Transportation Corridor	0.3	0.7%

[1]The visual study area includes approximately 43.8 square miles, or approximately 28,026 acres

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Figure 3.3-1: Landscape Similarity Zones

Landscape Similarity Zone
- Forest
- Gorge
- Rural Residential/Agriculture
- Transportation Corridor
- Distance Zone Transition
- Facility Site
- 2-Mile Visual Study Area
- Town Boundary
- State Boundary

Notes: 1. Basemap: USDA NAIP "2019 New York 60cm" orthoimagery map service. **2.** This map was generated in ArcMap on July 2, 2021. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

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3.3.1 Forest

Figure 3.3-2 Representative Photographs of the Forest LSZ

Left: South Ripley Road, Town of Ripley (Viewpoint 18)
Right: Irish Road, Town of Ripley, (Viewpoint 65)

Forested land comprises the largest LSZ, covering approximately 65.3% of the VSA. This LSZ is primarily represented by mixed deciduous forest occurring in large contiguous areas throughout the VSA, with the largest areas found in the northern portion of the VSA. Forest areas are occasionally interrupted by agricultural fields or residential properties occurring within the Rural Residential/Agriculture LSZ, which in concentration, can reduce contiguous forested areas to large woodlots or wide hedgerows. This condition is particularly prevalent in the central and southern portions of the VSA including the Facility Site itself. Typical views within this LSZ are short range and include substantial foreground screening. Where forested areas occur on steep slopes, outward views may be available in areas with sparse vegetative cover and elevated vantage points. This condition is most likely in areas bordering other LSZs with less screening features, such as the Rural Residential/Agricultural or River Gorge LSZs. Users of this LSZ are primarily local residents, drivers on local roadways, and recreational users. While there are limited public recreational amenities within this VSA, private forestlands are often used for recreational activities such as hunting, walking, and the enjoyment of nature.

3.3.2 Rural Residential/Agricultural

Figure 3.3-3 Representative Photographs of the Rural Residential/Agricultural LSZ
Left: County Touring Route 3, Town of Ripley (Viewpoint 5).
Right: Northeast Sherman Road, Town of Ripley (Viewpoint 15)

The Rural Residential/Agricultural LSZ is primarily comprised of agricultural fields and low-density residential development. Although this LSZ is found throughout the VSA it is most concentrated in areas south of Twentymile Creek to the southern portion of the VSA. The Rural Residential/Agricultural LSZ can be characterized by relatively small open fields framed or enclosed by large woodlots and forest vegetation. However, where these fields occur in succession, property divisions are often marked by narrow hedgerows composed of deciduous vegetation. The Rural Residential/Agricultural LSZ typically consists of rolling hills with gentle slopes and is conducive to active farming. Often, these agricultural fields have associated homes or farmsteads, which typically occur along the road frontage. This condition is exemplified along County Route 64, Miller Road, and Sinden Road. In these locations residences and farmsteads often occur in small groupings surrounded by landscaped yards with small fields extending to a forest or woodlot. Residential structures range in size, age, and condition, and those associated with farm operations typically include older style farmhouses along with accessory structures such as sheds, barns, and silos. Views from within the Rural Residential/Agricultural LSZ are generally the most open views within the VSA, but typically do not extend beyond the near foreground due to intervening woodlots and forest vegetation. However, topographic highpoints combined with multiple agricultural fields in succession results in some more distant outward views. This condition occurs along portions of County Route 64, where several farms provide opportunities for long-distance, elevated views. User groups within this LSZ are likely limited to local residents and through-travelers (see discussion of viewer groups in Section 3.5).

3.3.3 River Gorge

Figure 3.3-4 Representative Photographs of the River Gorge LSZ

South Ripley Road, Town of Ripley, bridge crossing over Twenty Mile Creek. Photographs were provided by the Town of Ripley.

The River Gorge LSZ occupies approximately 3.7 % of the VSA and includes portions of the Twentymile Creek and Belson Creek valleys along with their forested riparian zones. Within the VSA both Twentymile Creek and Belson Creek are isolated from the surrounding landscape by deep, narrow gorges until they merge to form Gage Gulf in the northwestern portion of the VSA. Views from within the River Gorge LSZ are typically focused inward and oriented upstream and downstream due to the steep, exposed shale walls and abundant vegetation lining the riverbanks. More distant elevated views are generally restricted to areas where small clearings occur at bridge and road crossings (County Route 6 and South Ripley Road). Where longer distance views are available within this zone, they typically provide views across or along the Gorge, and are framed by trees. Users within the River Gorge LSZ typically include local residents and recreational users, particularly fishermen and white-water rafters/kayakers. Official public access points to the Gorge were not identified in any mapping databases consulted for the development of the VIA, and Twentymile Creek does not appear to have public fishing rights.

3.3.4 Transportation Corridor

Figure 3.3-5 Representative Photographs of the Transportation Corridor LSZ

Southern Tier Expressway (I-86, NY 17). Exported from Google Earth Street View.

The Transportation Corridor LSZ occupies approximately 0.3% of the VSA and consists of areas within 300 feet of Interstate Route 86 (I-86). Views along I-86 are dominated by automobiles, pavement, guard rails, and roadway signage. The roadway is a limited access divided highway with a broad vegetated median and mowed grass shoulders backed by dense forest vegetation, which typically screens visibility of the opposing travel lanes and outward views. Occasional outward views occur along portions of the highway that abut farm fields or open meadows. However, in these instances viewer attention is generally focused on the roadway and associated traffic. Travel is at high speed, and these outward views are peripheral and fleeting in nature. Users within the Transportation Corridor LSZ include residents and through-travelers. Representative views in this LSZ are shown in Inset 3.3.5 above.

3.4 Distance Zones

Distance zones are typically defined in visual studies to divide the VSA into distinct sub-areas based on the various levels of landscape detail available to the viewer. To define these zones, EDR consulted several well-established agency protocols, including those published by the U.S. Forest Service (USFS), Bureau of Land Management (BLM), and USDOT, to determine the appropriate area of each distance zone. It is important to note that the distance zones recommended by each of these protocols was considered in the context of this VSA. For example, the BLM (1999) recommends a combined foreground-middle ground zone extending from 0 to 5 miles. While this may be appropriate in a western landscape with frequent, unscreened views over very long distances, it does not translate to northeastern landscapes where views are often contained within 1.0 mile of the viewer. Conversely, the USFS (1995) suggests the foreground be defined as an area extending 0.5 mile from the viewer. Due to the characteristics of the specific landscape being evaluated in this VIA, EDR defined the following four distance zones (as measured from the proposed Facility:

- *Near-Foreground*: 0 to 0.5 mile. At this distance, a viewer is able to perceive details of an object with clarity. Surface textures, small features, and the full intensity and value of color can be seen on foreground objects.

- *Foreground*: 0.5 to 1.5 miles. At this distance, elements in the landscape tend to retain visual prominence, but detailed textures become less distinct. Larger scale landscape elements remain as a series of recognizable and distinguishable landscape patterns, colors, and textures.
- *Middle ground*: 1.5 to 4.0 miles. The middle ground is usually the predominant distance at which landscapes are seen. At these distances a viewer can perceive individual trees and larger built features, but not in great detail. This is the zone where the parts of the landscape start to join together; individual hills become a range, individual trees merge into a forest, and buildings appear as simple geometric forms. Colors will be distinguishable but subdued by a bluish cast and softer tones than those in the foreground. Contrast in texture between landscape elements will also be reduced.
- *Background*: Over 4.0 miles. The background defines the broader regional landscape within which a view occurs. Within this distance zone, the landscape is simplified; only broad landforms are discernable, and atmospheric conditions often render the landscape an overall bluish color. Texture has generally disappeared and color has flattened, but large patterns of vegetation are discernable. Silhouettes of one land mass set against another and/or the skyline are often the dominant visual characteristics in the background. Although outside the VSA, the background contributes to scenic quality by providing a softened backdrop for foreground and middle ground features, an attractive vista, and/or distant focal points.

To better understand the distribution of landscape types within each distance zone a breakdown of the area of each LSZ occurring within each distance zone is summarized in Table 3.4-1. The Forest LSZ is the most dominant cover type in the VSA and makes up over 50% of each of the distance zones, ranging from 59.7% in the near foreground to 72% in the foreground. The Rural Residential/Agricultural LSZ is most prevalent in the near-foreground, making up approximately 5.5 square miles, or 39.1% of that distance zone. This area includes the Facility itself, which will be built primarily within agricultural fields included in this LSZ. The Rural Residential/Agricultural LSZ makes up approximately 24.1% of the foreground zone and 29% of the middle ground zone. The River Gorge LSZ makes up approximately 1.1% of the near-foreground zone and includes the river valley associated with Twentymile Creek. As the river flows north into the foreground distance zone, the River Gorge LSZ broadens, making up approximately 3.7% of this zone and 6.5% of the background zone. The Transportation Corridor LSZ only occurs in the middle ground zone and makes up approximately 2.7% of this zone in the southern portion of the VSA.

Table 3.4-1 Distance Zone by Landscape Similarity Zones

Landscape Similarity Zone	Total Area (square miles) and Percent of LSZ[1]		
	Near-Foreground (0 – 0.5 mile)	Foreground (0.5 – 1.5 miles)	Middle Ground (1.5 – 2.0 miles)
Forest	8.4 (59.7%)	12.8 (72.2%)	7.4 (61.7%)
Rural Residential/Agricultural	5.5 (39.1)	4.3 (24.1%)	3.5 (29%)
River Gorge	0.2 (1.1%)	0.7 (3.7%)	0.8 (6.5%)
Transportation Corridor	0.0 (0.0%)	0.0 (0.0%)	0.3 (2.7%)
Total Distance Zone Area	**14.1**	**17.7**	**12.0**

[1]The calculations used to generate this table were based on unrounded numbers, therefore, the rounded results may not add up precisely.

3.5 Viewer/User Groups

Three categories of viewer/user groups were identified within the VSA. These include the following:

3.5.1 Local Residents

Local residents include those who live and work within the VSA. These individuals generally view the landscape from their yards, homes, local roads, schools, and places of employment. Residents are concentrated along main roads throughout the VSA including County Route 6 and New York State Route 76 (Sherman Road). Except when involved in local travel, residents are likely to be stationary, and have frequent or prolonged views of the landscape. Local residents may view the landscape from ground level or elevated viewpoints (typically upper floors/stories of homes). Residents' sensitivity to visual quality is variable. However, it is assumed that residents may be sensitive to changes in views from their homes, yards, and local communities.

3.5.2 Through-Travelers

Travelers passing through the area view the landscape from motor vehicles on their way to work or other destinations. These viewers are typically moving, have a relatively narrow field of view, and are destination oriented. Drivers on major roads in the area (e.g., I-86 and County Road 76) will generally be focused on the road and traffic conditions but do have the opportunity to concentrate on passing roadside scenery. Passengers in moving vehicles will have greater opportunities for prolonged off-road views than will drivers, and accordingly, may have greater perception of changes in the visual environment. Travelers' sensitivity to visual quality is variable. However, it is assumed that local commuters may be sensitive to changes in views of areas that they travel through on a regular basis, while those traveling to and from more distant locations will generally be less aware and less concerned about visual changes to the landscape.

3.5.3 Tourists/Recreational Users

Tourists and recreational users include residents as well as out-of-town visitors involved in recreational activities at local destinations such as the Blueberry Sky Farm Winery, Hazen Manor, Ripley Rod & Gun Club, Chautauqua Gorge State Forest, the Twentymile Creek and Belson Creek gorges, and other undeveloped natural portions of the VSA. These individuals will view the landscape from specific recreational sites within the VSA, as well as from area highways while on their way to these destinations. This group includes hikers, hunters, fishermen, snowmobilers and those involved in more passive recreational activities such as, picnicking, bird watching, and walking. Tourists and

recreational users will often have continuous but changing views of landscape features over relatively long periods of time. Visual quality may or may not be an important part of the recreational activities for these viewers. However, for many, scenery will serve to at least enhance their recreational experience.

3.6 Visually Sensitive Resources

Visually Sensitive Resources (VSRs) within the VSA were identified in accordance with guidance provided by New York State Department of Environmental Conservation (NYSDEC) Program Policy DEP-00-2 *Assessing and Mitigating Visual Impacts* (NYSDEC, 2019), the community and host municipal outreach identified below in Section 3.6.2 and the requirements of Section 94-c. In addition, EDR identified other resources that could be considered visually sensitive based on the type or intensity of use they receive. The categories of VSRs typically addressed in VIAs for projects in New York include the following:

- **Properties of Historic Significance** (National Historic Landmarks, Sites Listed on the State or National Registers of Historic Places [S/NRHP]; Properties Eligible for Listing on the S/NRHP; National or State Historic Sites).

- **Designated Scenic Resources** (Rivers Designated as National or State Wild, Scenic, or Recreational; Adirondack Park Scenic Vistas; Sites, Areas, Lakes, Highways or Overlooks Designated or Eligible for Designation as Scenic; Scenic Areas of Statewide Significance; Other Designated Scenic Resources).

- **Public Lands and Recreational Resources** (National Parks, Recreation Areas, Seashores, and/or Forests; Heritage Areas; State Parks; State Nature and Historic Preserve Areas; State Forest Preserve Lands; Wildlife Management Areas/Wildlife Refuges s; State Forests; Other State Lands; State Boat Launches/Waterway Access Sites; Designated Trails; Palisades Park Lands; Local Parks and Recreation Areas; Publicly Accessible Conservation Lands/Easements; Rivers and Streams with public fishing rights easements; Named Lakes, Ponds, and Reservoirs).

- **High Use Public Areas** (State, U.S., and Interstate Highways, Cities, Villages and Hamlets; Schools;).

- **Locally Identified Resources** (Other resources identified through the agency/public outreach process – see discussion in Section 3.6.2, below)**.**

To identify VSRs within the VSA, EDR consulted a variety of publicly available data sources, including geospatial resources. A complete listing of the resources used in the identification of VSRs is included in the Literature Cited section of this report (see Section 7.0). Review of these data sources resulted in the identification of seven VSRs within the VSA. Other sources of information used to identify additional VSRs are described in Sections 3.6.1 and 3.6.2, below.

3.6.1 Municipal Document Review

A thorough examination of local zoning ordinances and regional planning documents was undertaken to obtain any additional information regarding identified scenic resources within or near the VSA. The following discussion provides an overview of existing local plans and ordinances and the extent to which they identify scenic/visual resources (including open space) within the VSA.

Town of Ripley Zoning Ordinance

Zoning regulations were adopted in the Town of Ripley in 2017. Goals of the Zoning Ordinance (Town of Ripley, New York, 2017) include protection of the integrity of scenic views, ridgelines, steep slopes, agricultural land, existing and potential recreation areas, surface and groundwater supplies, ecological systems, wetlands, wildlife habitat, and natural vegetation, as a means of maintaining property values while preserving the open and rural character of the Town. The Ripley Zoning Ordinance (including Section 620 – Solar and Wind Systems) does not reference specific scenic views or include provisions for the preservation of scenic resources. On September 9, 2021, the Town of Ripley adopted amendments to its solar law (2021 Solar Zoning Law Amendment). As explained in Exhibit 24, it is unclear whether the 2021 Solar Zoning Law Amendment is applicable to the Facility because it was adopted after the Application was submitted. Nevertheless, the proposed Zoning Ordinance states that the standards regarding solar shall:

> *Avoid, or if avoidance is impossible, mitigate the impacts of Solar Energy Systems on environmental resources such as important agricultural lands, forests, wildlife, waterways, unique views and other protected resources;* (See proposed Zoning Ordinance Section 1504(4)).

The locations of "unique views" are not specifically defined in the 2021 Solar Zoning Law Amendment.

Chautauqua 20/20 Comprehensive Plan

The Chautauqua County Comprehensive Plan was adopted in 2011. The Comprehensive Plan (CCDPED, 2011) lists lakes, streams, forests, gorges, scenic farms, and other components of the natural environment as assets to the community. In addition, the comprehensive plan identifies environmental goals, concepts and strategies to protect historic villages, working farms, and scenic landscape, although no locations within the VSA are specifically identified. In the discussion about county-wide agriculture, the comprehensive plan encourages local farms to identify potential renewable energy opportunities.

Chautauqua County Greenway Plan

The Chautauqua County Greenway Plan (Pashek Associates et al., 2012) focuses heavily on connectivity through trail development within the county and neighboring counties. Of the priority trails addressed in the plan, none occur in the VSA, and of the 20 towns named as "Trail Towns", Westfield and Sherman are the only two that occur in the VSA. However, the suggested amenities (main street, food, lodging, and fuel) associated with these "Trail Towns" suggests that these would specifically include villages and hamlet areas, none of which occur within the VSA.

Lake Erie Concord Grape Belt Heritage Area Management Plan

The Lake Erie Concord Grape Belt Heritage Area Management Plan (Peter J. Smith & Company, 2010) focuses on the region's unique grape heritage, and proposes strategies to preserve, interpret, and celebrate related cultural and natural resources. Of the intrinsic and scenic resources identified in the plan, none occur within the VSA. Resources specifically addressed in this management plan are concentrated in the area surrounding Lake Erie and are all contained along the Allegany Plateau Escarpment and within Erie-Ontario Lowlands, which are primarily outside of the VSA.

3.6.2 Agency and Stakeholder Recommendations

Per the requirements set forth in of Section 94-c, the Applicant conducted a systematic program of public outreach to assist in the identification of any additional VSRs. Copies of correspondence sent by the Applicant as part of this

outreach process, and the responses received from state agencies and municipal stakeholders are included as Attachment F of this VIA. In total, 27 locations were identified as VSRs during stakeholder outreach and recommended as viewpoints for evaluation in the VIA. Twenty of these locations were either already included as identified VSRs or are located outside of the VSA. The remaining seven locations, listed below, were added to the VSR analysis and addressed through the preparation of visual simulations (see Section 4.2.1).

- South Ripley Methodist Church
- Ripley Volunteer Fire Department
- Chautauqua County Reforestation Land
- An unnamed pond
- County Touring Route 9 (South Ripley Road) Bridge
- Ripley Rod & Gun Club
- Irish Road Sportsman's Club

See Appendix F for a full overview of the comments received and actions taken as part of the public outreach process.

3.6.3 VSR Summary

A summary of all the VSR types that were identified within the VSA based on document review and public outreach are presented in Table 3.6-1, below. The location of these resources is indicated in Figure 3.6-1.

Table 3.6-1 Summary of Visually Sensitive Resource Types Identified in the VSA

Visually Sensitive Resources	Total Number of Resources within the VSA
Properties of Historic Significance [6 NYCRR 617.4 (b)(9)]	**Total 2**
National Historic Landmarks (NHL)	0
Properties/Districts Listed on National or State Registers of Historic Places (NRHP/SRHP)	0
Properties Eligible for Listing on NRHP or SRHP	2
National/State Historic Sites	0
Designated Scenic Resources	**Total 0**
Rivers Designated as National or State Wild, Scenic or Recreational	0
Adirondack Park Scenic Vistas [Adirondack Park Land Use and Development Map]	0
Sites, Areas, Lakes, Reservoirs or Highways Designated or Eligible for Designation as Scenic ([ECL Article 49Title 1] or equivalent)	0
Scenic Areas of Statewide Significance [Article 42 of Executive Law]	0
Other Designated Scenic Resources (Easements, Roads, Districts, and Overlooks)	0
Public Lands and Recreational Resources	**Total 2**
National Parks, Recreation Areas, Seashores, and/or Forests [16 U.S.C. 1c]	0

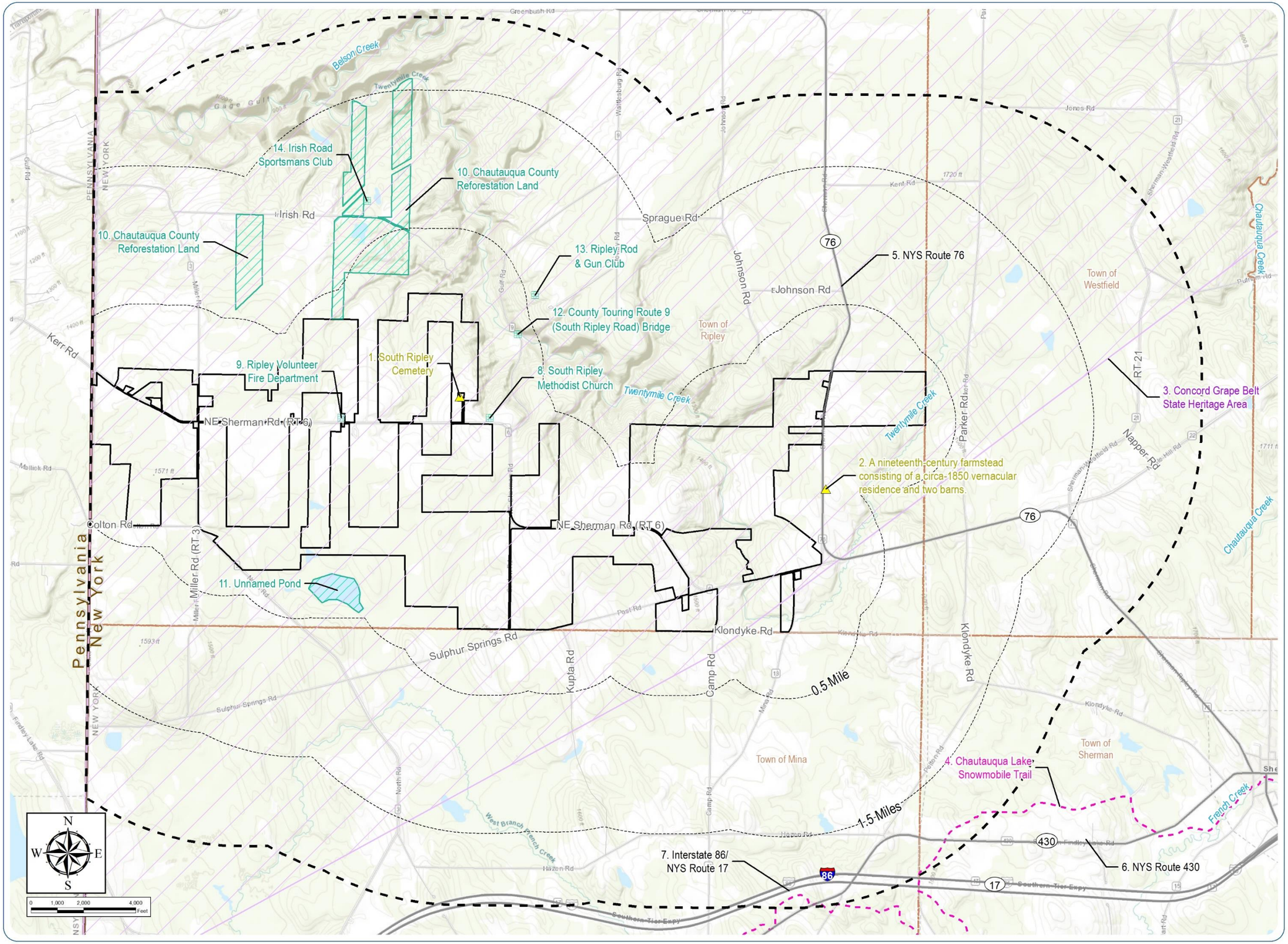
Visually Sensitive Resources	Total Number of Resources within the VSA
National Natural Landmarks [36 CFR Part 62]	0
National Wildlife Refuges [16 U.S.C. 668dd]	0
Heritage Areas [Parks, Recreation and Historic Preservation Law Section 35.15]	1
State Parks [Parks, Recreation and Historic Preservation Law Section 3.09]	0
State Nature and Historic Preserve Areas [Section 4 of Article XIV of the State Constitution]	0
State Forest Preserve [NYS Constitution Article XIV]	0
Other State Lands	0
Wildlife Management Areas & Game Refuges	0
State Forests	0
State Boat Launches/Waterway Access Sites	0
Designated Trails	1
Palisades Park [Palisades Interstate Park Commission]	0
Local Parks and Recreation Areas	0
Publicly Accessible Conservation Lands/Easements	0
Rivers and Streams with public fishing rights easements	0
Named Lakes, Ponds, and Reservoirs	0
High-Use Public Areas	**Total 3**
State, US, and Interstate Highways	3
Cities, Villages, Hamlets	0
Schools	0
Native American Lands	**Total 0**
Other Resources Identified by Stakeholders	**Total 7**
Total Number of VSRs in the VSA	**14**

South Ripley Solar Project

Town of Ripley, Chautauqua County, New York

Visual Impact Assessment

Figure 3.6-1: Visually Sensitive Resources



- NRHP-Eligible Site
- Snowmobile Trail
- State and Interstate Highway
- Distance Zone Transition
- Resource Identified by Stakeholder
- Concord Grape Belt State Heritage Area
- Facility Site
- 2-Mile Visual Study Area
- Town Boundary
- State Boundary

Notes: 1. Basemap: ESRI ArcGIS Online "World Topographic" map service. **2.** This map was generated in ArcMap on November 5, 2021. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

4.0 VISUAL IMPACT ASSESSMENT METHODOLOGY

The visual impact assessment procedures used for this study are consistent with methodologies developed by the BLM (1984 and 1999), USFS (1974), USDOT (1981), U.S. Army Corps of Engineers (Smardon, et al., 1988), and the NYSDEC (2019). These procedures also comply with the requirements of Section 94-C and are widely accepted as standard visual impact methodologies for renewable energy projects (CEIWEP, 2007). The specific techniques used to assess potential Facility visibility and visual impacts are described in the following section.

4.1 Facility Visibility

An analysis of Facility visibility was undertaken to identify those locations within the VSA where there is potential for the proposed PV panels and above-ground electrical components (interconnection facility and overhead collection line) to be seen from ground-level vantage points (i.e., defining the Facility's area of potential effect [APE]). This analysis included identifying potentially visible areas on viewshed maps and verifying potential Facility visibility in the field. The viewshed analysis and field verification methodology are described in greater detail, below.

4.1.1 Viewshed Analysis

PV Panel Array Viewshed Analysis

To identify areas where the proposed PV panel arrays would potentially be visible, a lidar-based digital surface model (DSM) viewshed analysis was conducted. A DSM viewshed analysis evaluates potential Facility visibility considering the screening effects of topography and existing structures and vegetation. A viewshed analysis based on bare-earth Digital Elevation Model (DEM) topography alone is not provided because the results of such an analysis do not accurately represent conditions within the VSA. The DSM viewshed analysis for the proposed PV panel arrays was prepared using: 1) a DSM derived from 2017 New York State Geographic Information System (GIS) Program Office (NYSGPO) lidar data for Chautauqua County; 2) sample points representing PV panel locations placed 300 feet apart in a grid pattern throughout all proposed PV arrays; 3) an assumed maximum PV panel height of 13 feet applied to each sample point; 4) an assumed viewer height of 6 feet; and 5) ESRI ArcGIS Pro® software with the Spatial Analyst extension.

A few modifications were made to the lidar-derived DSM prior to conducting the analysis. Transmission lines and road-side utility lines that are included in the lidar data are generally mis-represented in the DSM as opaque screening features. In order to correct this inaccuracy, DSM elevation values within transmission line corridors and within 50 feet of road centerlines were replaced with bare earth elevation values. It is important to note that this clearing of the DSM may also eliminate legitimate screening features such as roadside vegetation and structures, which may result in an overstatement of potential Facility visibility along all road corridors within the VSA. Additionally, all areas within the proposed PV array fence lines and along the route of the proposed overhead collection line were cleared of any vegetation to reflect the bare-earth elevation in these locations. This modified DSM was then used as a base layer for the viewshed analysis. Once the viewshed analysis was complete, PV panel visibility was set to zero in locations where the DSM elevation exceeded the bare earth elevation by 6 feet or more, indicating the presence of vegetation or structures that exceed viewer height. This was done for two reasons: 1) in locations where trees or structures are present in the DSM, the viewshed would reflect visibility from the tree-tops or building roofs, which is not the intent of this analysis, and 2) to reflect the fact that ground-level vantage points within buildings or areas of vegetation exceeding 6 feet in height will generally be screened from views of the Facility.

Because it accounts for the screening provided by topography, vegetation and structures, the DSM viewshed analysis is an accurate representation of potential Facility visibility. However, because certain characteristics of the Facility and the VSA that may serve to restrict visibility (e.g., color, atmospheric/weather conditions, and distance from viewer) are not taken into consideration in the analysis, being located within the DSM viewshed does not necessarily equate to actual Facility visibility, nor does it indicate that adverse visual impacts will occur in these areas. There is also the possibility of the viewshed analysis overstating screening/underestimating the visibility in locations where views are available through trees during the dormant season. Potential changes to the landscape (e.g., tree clearing, addition of new buildings) since the date of lidar collection (2017) could also lead to minor inaccuracies in the analysis. To minimize the chance of this occurring, any noticeable changes to the landscape observed from the field visits (see Section 4.1.2 Field Verification) and recent aerial imagery were incorporated into the lidar data.

Interconnection Facility Viewshed Analysis

A DSM viewshed analysis was also conducted for the proposed collection substation and associated O&M building, POI switchyard, and BESS and adjacent O&M yard (collectively referred to as the interconnection facility). The tallest proposed components of the collection substation and POI substation are the overhead gantry H-frame structures, with a maximum height of 70 feet. The analysis was run based on 18 representative sample points placed in the center and along the perimeters of the collection substation and POI switchyard, each with an assigned height of 70 feet. The maximum potential height of both the BESS and the O&M Equipment Storage Containers (included as part of the BESS due to their small size and adjacency to the BESS) is 12 feet and these structures were similarly represented by seven sample points within the BESS facility site. Other data sources and assumptions used in this viewshed analysis are as described above for the PV panel array viewshed analysis.

Overhead Collection Line Viewshed Analysis

A DSM viewshed analysis was also conducted for the proposed overhead collection line. The viewshed analysis used pole locations obtained from preliminary design drawings (Appendices 5-A and 5-C), and proposed pole heights ranging from 41 feet for tangent structures to 75 feet for dead-end structures. All other data sources and assumptions used in this viewshed analysis are as described above for the PV panel array viewshed analysis.

4.1.2 Field Verification

EDR personnel conducted field review within the VSA on two separate occasions: August 2, 2020 and March 15, 2021. During the site visits, EDR staff members travelled public roads and visited public vantage points throughout the VSA to observe the character of the existing landscape, document potential facility, and/or confirm the results of the viewshed analysis. In particular, field work was focused on public vantage points near where the viewshed analysis results indicated visibility was most concentrated, such as Miller Road, Sinden Road, County Highway 303, County Route 64, Post Road, and New York State Route 76 (Sherman Road), South Ripley Cemetery, and the Ripley Volunteer Fire Department. In addition, EDR personnel visited more distant public vantage points where visibility was less concentrated within the VSA to document potential Facility visibility and to confirm the results of the viewshed analysis. The determination of potential Facility visibility was based on the known location and dimensions of Facility components, the location of screening vegetation and structures, and the visibility of existing identifiable fields and landscape features on and around the Facility Site, which served as location and scale references. In addition, the existing National Grid Ripley Substation provided a visual reference point for the proposed collection substation, POI switchyard, and BESS. Field personnel also used live maps in ESRI Collector® (Collector) containing Facility

components which allowed for the identification of fields, structures, and hedgerows proximate to the proposed Facility location.

During field verification photographs were obtained from 77 representative viewpoints within the VSA. The viewpoints document views from multiple directions toward the Facility Site from the various LSZs, distance zones, VSRs, and areas of high public use throughout the VSA. During the field visits, weather conditions were sunny to partly cloudy, thus representing typical high visibility viewing conditions within the VSA. A representative photograph documenting the general view toward the Facility Site from each viewpoint and an accompanying map is included in Attachment B.

Photographs were taken using digital SLR cameras with a minimum resolution of 24 megapixels. All photos were obtained at lens settings (focal lengths) between 24 and 38 mm (equivalent to between 37 and 58 mm on a 35mm sensor). A 50 mm focal length is the standard typically used in visual studies because it provides an accurate scale perspective. However, when projects are viewed in the near-foreground as solar facilities typically are, 50mm photographs do not provide sufficient context and therefore, do not capture the range of potential visual effects associated with a large, contiguous area of PV panels. To adjust for this, slightly wider-angle photos were taken alongside the standard 50 mm photographs. To assist with viewer orientation and determination of potential Facility visibility in the field, global positioning system (GPS) units were combined with the live mapping unit Collector. The data contained in the Collector unit included the viewshed analysis results, VSR locations, a topographic and aerial base map, and the current user location. At each of the viewpoints, the GPS was used to document the camera location, direction of view, time, and notes for each photo position. Viewpoints photographed during field review generally represented the most open, unobstructed available views toward the proposed Facility Site.

4.1.3 Line of Sight Cross Section Analysis

Line of sight cross sections (LOS) were also prepared to illustrate potential Facility visibility and sources of screening from precise locations (typically including VSRs) along a single line "cut" through the landscape. To prepare the LOS, bare-earth DEM and DSM based upon 2017 NYSGPO lidar data for Chautauqua County were used to demonstrate the potential screening effects of topography, vegetation, and structures along each LOS. Using Global Mapper® software, data regarding the VSRs, Facility components, and viewpoint locations were overlaid on the lidar and DEM data. Next, a line was drawn through the landscape from a selected viewpoint to the Facility. This line was specifically placed to intersect with VSRs, points of interest, and Facility components. The Global Mapper® software then sampled elevations along the entire line. The resulting output includes a bare earth profile line and a separate line demonstrating additional screening provided by trees and structures. These lines are exaggerated five times on the vertical axis in order to effectively demonstrate the site relief over long distances. The LOS was then rendered in Adobe Illustrator® in order to differentiate between the profile lines, depict the PV arrays and other Facility components, and add labels identifying the position and extent of VSRs and other features. Two LOS to illustrate visibility from State Routes are presented in Figure 5.2-3, and five LOS to illustrate visibility from a historic 19th century farmstead are presented in Figure 5.2-2.

4.2 Facility Visual Impact

Beyond evaluating potential Facility visibility, the VIA also examined the visual impact of the proposed Facility on the LSZs, VSRs, and viewer groups within the VSA. This assessment involved preparing visual simulations of the proposed Facility (including the PV panels, racking, fencing, inverters, collection substation, POI switchyard, BESS, and landscape mitigation plantings as applicable) from representative viewpoints. These simulations were evaluated by a

rating panel consisting of four registered landscape architects to determine the type and extent of visual impact resulting from installation of the proposed Facility. Further information on rating panel personnel and procedures can be found in Attachment E. Details of the visual impact assessment procedures are described below.

4.2.1 Viewpoint Selection

The Section 94-c regulations require that *"In developing the application, the applicant shall confer with municipal planning representatives, the Office (ORES), and where appropriate, OPRHP and/or APA in its selection of important or representative viewpoints*."[1] As discussed previously, in addition to consultation with the required agencies mentioned above, municipal representatives and local stakeholders were also asked to help identify VSRs and determine an appropriate selection of viewpoints for the development of visual simulations. Copies of correspondence sent to agencies and stakeholders as part of this process, as well as the responses received, are included in Attachment F.

Based on the results of VSR research, field verification, and stakeholder/agency consultation, a total of 14 viewpoints were selected for the development of visual simulations. These viewpoints were selected based upon the following criteria:

- They provide open views of proposed PV panels or provide representative views of the screening effects of vegetation, topography, or structures from selected areas.
- They illustrate representative Facility visibility from specific VSRs.
- They illustrate typical views from LSZs where open views will be available.
- They illustrate typical views of the proposed Facility that will be available to representative viewer/user groups.
- They illustrate typical views of different amounts of PV panels, from a variety of viewer distances and directions, to illustrate the range of visual change that will occur with the Facility in place.
- The selected photos displayed appropriate composition, lighting, and exposure.

During preparation of the visual simulations one of the 14 viewpoints selected for the production of visual simulations, located 0.3 mi from the nearest Facility component and within the Rural Residential/Agricultural LSZ, turned out to have minimal visibility of the Facility. Rather than include the visual simulation in the visual impact analysis, a wireframe alignment was produced to illustrate the screening elements and lack of potential visual effect from the selected viewpoint. The wireframe alignment methodology is described in section 4.2.2 and the wireframe alignment is presented in Section 5.1.2. Of the remaining 13 simulated viewpoints, 12 are located within the Concord Grape Belt State Heritage Area and the near-foreground distance zone, and 12 viewpoints occur within the Rural Residential/Agricultural LSZ and one occurs within the Forest LSZ. Because of the location of the Facility Site, potential visibility, and the availability of open views from other LSZs and distance zones were either non-existent or substantially screened (see discussion of Field Review in Section 5.1.3). Consequently, the selected viewpoints represent the closest, most unobstructed views available within the VSA.

In addition to the criteria identified above, proposed land uses were considered as part of the viewpoint selection process. The clearest indication of proposed land uses is provided by the local zoning ordinances, which describe allowable future uses within various districts. Therefore, the zoning districts for each town within the VSA were reviewed, and the districts mapped in order to inform the viewpoint selection process (see Attachment A: Facility

[1] The APA is not applicable in this instance due to the Project's location outside the Adirondack Park.

Visibility and Zoning). The four zoning districts that fall within the VSA include the Town of Ripley Rural/Agricultural and Recreation/Conservation districts, the Town of Mina A1 – Agricultural District, and the Town of Westfield Residential – Agricultural district. Other than the Town of Ripley's Recreation/Conservation District, where future uses are limited to wildlife habitat or game preserves, limited agriculture (grapes and orchards), and utilities (i.e., public water), primary "as of right" uses in all of these districts include active agriculture and rural residential development. Consequently, these are the types of land uses most likely to be proposed in the future. Other uses, such as gravel and sand operations, storage warehouses, and manufacturing facilities are also allowed in these districts through the issuance of a Special Use Permit. However, most of these uses are anticipated to be relatively uncommon and would not make up a significant component of future land use within the VSA. As indicated in the composite overlay maps (see Attachment A), Facility visibility is largely concentrated within the Town of Ripley's Rural/Agricultural District (83.7%) and Town of Mina's A1 – Agricultural District (13.9%). All of the selected viewpoints fall within these zoning districts and the simulations prepared for these viewpoints thus represent likely available views from existing as well as future agricultural residential properties. Additional information on land use and zoning regulations is presented in Exhibit 3 of the 94-c Application (Location of Facility and Surrounding Land Use).

Future land uses not specifically addressed in the local zoning ordinances include renewable energy developments proposed under Section 94-c. However, the possible location and extent of such uses are not predictable and are not in and of themselves considered sensitive to visual impact. Consequently, these potential future land uses were not considered during viewpoint selection.

Location details and the criteria for selection of each visual simulation viewpoint are summarized in Table 4.2-1.

Table 4.2-1. Viewpoints Selected for Visual Simulations and Wireframe Renderings

Viewpoint Number	Location and/or VSR Represented	LSZ Represented[3]	Zoning District Represented[4]	Viewer Group Represented	Viewing Distance[1]	View Orientation[2]
Viewpoints Selected for Visual Simulations						
VP 5	County Route 6 and Miller Road Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	167 feet	SE
VP 15	County Route 6 Concord Grape Belt State Heritage Area, South Ripley Cemetery	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	170 feet	SW
VP 16	County Route 6 Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	179 feet	S
VP 20	NYS Route 76 NYS Route 76, Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	84 feet	SE
VP 24	NYS Route 76 NYS Route 76, Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	654 feet	SW
VP 40	County Route 6 Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	118 feet	S
VP 44	Sinden Road Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents	344 feet	W
VP 56	County Route 6 Concord Grape Belt State Heritage Area	Forest	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	139 feet	NE
VP 59	County Route 6 Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	177 feet	S
VP 63S	County Route 6 Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	225 feet	S
VP 63SE	County Route 6 Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	240 feet	SE
VP 69	South Ripley Cemetery off of County Route 6 Concord Grape Belt State Heritage Area, South Ripley Cemetery	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Tourists/Recreational	417 feet	N
VP 75	County Route 622	Rural Residential/ Agricultural	Town of Mina A-1 Agricultural District	Local Residents, Through-Travelers	7,450 feet	NE
Viewpoint Selected for Visual Simulation Resulting in Minimal Visibility (wireframe)						
VP 51	County Route 6 Concord Grape Belt State Heritage Area	Rural Residential/ Agricultural	Town of Ripley Rural/Agricultural District	Local Residents, Through-Travelers	1,836 feet	NE

[1] As measured to the nearest visible PV Panel Array, POI switchyard component, collector substation component, or battery energy storage container unit.
[2] N = North, S = South, E = East, W = West.
[3] The Forest, Gorge, and Transportation Corridor LSZs were considered in the selection of viewpoints but were not included due to lack of Facility visibility.
[4] The Town of Ripley Recreation/Conservation district and Town of Westfield Residential – Agricultural district were considered in the selection of viewpoints but were not included due to lack of Facility visibility.

4.2.2 Visual Simulations

To show anticipated visual changes associated with the proposed Facility, three-dimensional (3D) modeling software was used to create realistic photographic simulations of the proposed Facility from each of the 13 selected viewpoints. The photographic simulations were developed by using Autodesk 3ds Max Design® to create a simulated perspective (camera view) to match the location, bearing, and focal length of each existing conditions photograph. Existing landscape elements in the view were modeled using detailed lidar data representing roads, buildings, vegetation, and topography. Once the camera was roughly aligned to match the photo, minor adjustments were made to the camera and target location, focal length, and camera roll to align all modeled elements with the corresponding elements in the photograph. This assures that any elements introduced to the model space (e.g., the PV panels) will be shown in proper proportion, perspective, and relation to the existing landscape elements in the view. Consequently, the alignment, elevations, dimensions, and locations of the proposed Facility structures in the simulations will be accurate.

Computer models of the proposed PV panels, racking, fencing, inverters, overhead collection line, collection substation, POI switchyard, BESS, and access roads were prepared based on specifications and data provided by the Applicant (see Section 2.2.1 for a description of dimensions, materials, and color). Using the camera view as guidance, the visible portions of the modeled Facility components were imported to the landscape model space described above, and set at the proper coordinates. Locations for proposed Facility components were provided to EDR by the Applicant.

Once the proposed Facility was accurately aligned within the camera view, a lighting system was created based on the actual time, date, and location of each photograph in order to accurately represent light reflection, highlights, color casting, and shadows. The rendered Facility was then superimposed over the photograph in Adobe Photoshop®, and portions of the Facility that fell behind vegetation, structures, or topography were masked out. Photoshop was also used to take out any existing vegetation proposed to be removed as part of the Project. Additional information on the extent of vegetation removal is discussed in Exhibit 11 of the Section 94-c Application (Terrestrial Ecology) and illustrated in the site plan drawings included in Exhibit 5 (Design Drawings) as Appendix 5-A. Once the Facility was added to the photograph, any shadows cast on the ground by the proposed structures were included by rendering a separate “shadow pass” over the DEM or lidar model in 3ds Max® and then overlaying the shadows on the simulated view with the proper fall-off and transparency using Photoshop®. A graphic illustration of the simulation process is included in Figure 4.2-1.

Proposed mitigation plantings were also incorporated into the simulations where they would be visible (see Landscape Mitigation Planting Plan in Appendix 8-B of the Section 94-c Application). To accomplish this, 3D plant models representing each of the species proposed were placed into the simulation model at the locations specified in the plan. The models were sized to reflect five to seven years of growth based on region-specific growth rates. The plantings were then rendered to accurately represent shading that would occur on the ground and/or on the proposed Facility components based upon the time of year and day the photos were captured. The visual simulations include both leaf-on and leaf-off conditions of the proposed mitigation plantings.

“Wireframe” Renderings

As mentioned previously, one viewpoint (Viewpoint 51) met a majority of the selection criteria but was located where Facility components were determined to be substantially screened from view which would make a simulation ineffective for impact evaluation purposes. A wireframe alignment was prepared to illustrate the degree of screening provided by existing landscape features within the photograph. In this wireframe alignment, the PV panels (shown in bright green

for illustrative purposes), are placed on top of the image at the proper scale and location in which they would appear if no intervening topography or vegetation was present. The wireframe alignment produced for this report is included in Section 5.2.

Figure 4.2-1 Visual Simulation Methodology

Photographs taken from viewpoints collected in the field are selected to illustrate typical views of the proposed facility that will be available to representative viewer/user groups from the study area.

Orthoimagery and GPS data collected in the field are used to determine the viewpoint location and a virtual 3D camera matching the exact specifications of the photograph is created.

Lidar data is used to generate a model of the existing terrain, vegetation, buildings, and other physical features that are visible in the photograph. This information is used to precisely align the camera to ensure an accurate alignment with the selected photograph.

A three-dimensional computer model of the facility is built based on proposed specifications of the solar panels, racking, and fencing. The model is then placed in the correct geographic position within the 3D model.

Mitigation plantings are sized based upon region-specific growth rates and vegetation models are placed in the scene at the locations specified in the mitigation planting plan.

The appropriate sun angle is simulated based on the specific date, time and location (latitude and longitude) at which each photo was taken. The model is rendered and merged into the scene.

4.2.3 Visual Contrast Rating

To evaluate anticipated visual change associated with the Project, the visual simulations of the completed Facility were compared to photos of existing conditions from each of the 13 selected viewpoints. These "before" and "after" photographs, identical in every respect except for the Facility components shown in the simulated views, were provided to the rating panel, who were then asked to determine the effect of the proposed Facility in terms of its contrast with existing elements of the landscape. The methodology utilized in this evaluation was developed by EDR in 1999 (and subsequently updated) based on agency-approved/recommended methodologies (e.g., Smardon, et al., 1988, BLM, 1999). It involves using a short evaluation form and a simple numerical rating process to assign visual contrast ratings on a sale of 0 (insignificant) to 4 (strong). This methodology: 1) documents the basis for conclusions regarding visual impact, 2) allows for independent review and replication of the evaluation, and 3) allows a large number of viewpoints to be evaluated in a reasonable amount of time. Landscape, viewer, and Facility-related factors considered by the rating panel in their evaluation included the following:

- *Form, Line, Color, and Texture*: These are the four major compositional elements that define the perceived visual character of a landscape, as well as a project. Form refers to the shape of an object that appears unified; often defined by edge, outline, and surrounding space. Line refers to the path the eye follows when perceiving abrupt changes in form, color, or texture and is usually evident as the edges of shapes or masses in the landscape. Texture in this context refers to the visual surface characteristics of an object. The extent to which form, line, color, and texture of a project are similar to, or contrast with, these same elements in the existing landscape is a primary determinant of visual impact.
- *Landscape Composition:* The arrangement of objects and voids in the landscape that can be categorized by their spatial arrangement. Basic landscape components include vegetation, landform, water and sky. Some landscape compositions, especially those that are distinctly focal, enclosed, detailed, or feature-oriented, are more vulnerable to modification than panoramic, canopied, or ephemeral landscapes.
- *Focal Point:* Certain natural or man-made landscape features stand out and are particularly noticeable as a result of their physical characteristics. Focal points often contrast with their surroundings in color, form, scale or texture, and therefore tend to draw a viewer's attention. Examples include prominent trees, mountains, and water features. Cultural features, such as a distinctive barn or steeple can also be focal points. If possible, a proposed project should not be sited to obscure or compete with important existing focal points in the landscape.
- *Order*: Natural landscapes have an underlying order determined by natural processes. Cultural landscapes exhibit order by displaying traditional or logical patterns of land use/development. Elements in the landscape that are inconsistent with this natural order may detract from scenic quality. When a new project is introduced to the landscape, intactness and order are maintained through the repetition of the forms, lines, colors, and textures existing in the surrounding built or natural environment.
- *Scenic or Recreational Value*: Designation as a scenic or recreational resource is an indication that there is broad public consensus on the value of that particular resource. The particular characteristics of the resource that contribute to its scenic or recreational value provide guidance in evaluating a project's visual impact on that resource.

- *Duration of View*: Some views are seen as quick glimpses while driving along a roadway or hiking a trail, while others are seen for a more prolonged period of time. Longer duration views of a project, especially from significant aesthetic resources, have the greatest potential for visual impact.
- *Atmospheric Conditions*: Clouds, precipitation, haze, and other ambient air-related conditions, which affect the visibility of an object or objects. These conditions can temporarily impact the visibility and contrast of landscape and project components, and the design elements of form, line, color, texture, and scale.
- *Lighting Direction*: Backlighting refers to a viewing situation in which sunlight is coming toward the observer from behind a feature or elements in a scene. Front lighting refers to a situation where the light source is coming from behind the observer and falling directly upon the area being viewed. Side lighting refers to a viewing situation in which sunlight is coming from the side of the observer to a feature or elements in a scene. Lighting direction will affect the perceived color and reflectivity of PV panels, and can have a significant effect on the visibility and contrast of landscape and project elements.
- *Project Scale*: The apparent size of a proposed project in relation to its surroundings can define the compatibility of its scale within the existing landscape. Perception of project scale is likely to vary depending on the distance from which it is seen and other contextual factors.
- *Spatial Dominance*: The degree to which an object or landscape element occupies space in a landscape, and thus dominates landscape composition from a particular viewpoint.
- *Visual Clutter*: Numerous unrelated built elements occurring within a view can create visual clutter, which adversely impacts scenic quality.

To conduct their evaluation, the rating panel received the following VSA and viewpoint-specific information (Attachment E).

- General information for the VSA:
    - VSA Location Map
    - LSZ definitions and map
    - Description of user/viewer group types
    - List and map of identified VSRs
    - Contrast rating forms
    - Instructions for the completion of rating forms
    - Information on the Landscape Mitigation Planting Plan
- Specific information for each viewpoint including a Google Earth File (KMZ), indicating:
    - Viewpoint location
    - Direction of view/cone of view
    - Location of adjacent Facility components
    - Distance to nearest Facility component
    - Applicable LSZ, user/viewer groups, and VSRs
    - The selected viewpoint photo (Existing Condition)
    - Context photographs showing the views adjacent to the viewpoint Location
    - Visual simulations (with and without mitigation plantings)

5.0 VISUAL IMPACT ASSESSMENT RESULTS

5.1 Project Visibility

5.1.1 Viewshed Analysis Results

PV Panel Array Viewshed Analysis Results

The PV Panel viewshed analysis (Figure 5.1-1 and Table 5.1-1) suggests visibility of the Facility will be heavily concentrated within the Facility Site and directly abutting open fields. Visibility is largely contained within and adjacent to the Facility Site due to the screening effects of topography, vegetation, and structures. Potential visibility extending beyond the Facility Site itself is largely contained to within the near-foreground (0.5 mile) and occurs in discrete areas of open field. In many of these areas the analysis suggests only a small portion of the Facility would be potentially visible. This condition is most notable along portions of County Route 6 (Northeast Sherman Road), Klondyke Road, Sulpher Springs Road, and Kupta Road where multiple open fields, topography, and lack of screening features allow for open views of the Facility. Potential visibility extends beyond 0.5 mile in isolated locations in the southeastern, eastern, and northern portion of the VSA. These areas of potential visibility beyond 0.5 mile occur on both sides of Camp Road in the Town of Mina, and south of Klondyke Road, Sulpher Springs Road, and South Ripley Road. In these locations, the visibility is generally restricted to topographic highpoints or cleared hillsides oriented toward the Facility Site. The viewshed analysis generally indicates that only a portion of the Facility would be potentially visible at most of these locations. As indicated by the DSM viewshed, topography, in combination with vegetation and structures, will serve to screen views of the solar arrays from approximately 88.6% of the VSA (i.e.,11.4% of the VSA is indicated as having potential PV panel visibility). Based on the results of the DSM viewshed analysis, the greatest level of predicted visibility occurs within the near-foreground distance zone (panels potentially visible within 26.7% of this zone). It should also be noted that visibility within the near-foreground zone occurs primarily within the Facility Site itself, (accounting for 64.8% of all near-foreground visibility). Potential visibility drops off significantly within the foreground zone (panels potentially visible within 2.5% of this zone) and the middle ground zone (panels potentially visible in 1.5% of this zone). As these numbers indicate, potential PV panel visibility diminishes quickly at distances over 0.5 mile. However, some portions of the VSA predicted as being screened by wooded hedgerows may have some degree of Facility visibility depending on the density of the vegetation and the time of year (i.e., leaf-on vs. leaf-off conditions).

Potential solar panel viewshed visibility is based on the screening effects of topography, vegetation, and man-made structures as represented in the 2017 NYSGPO lidar dataset. Sample points representing solar panels were placed throughout the PV Panel Layout areas in a grid pattern with a spacing of 300 feet and an assumed maximum height of 13 feet above grade as a basis for this analysis.

14. Irish Road Sportsmans Club
10. Chautauqua County Reforestation Land
10. Chautauqua County Reforestation Land
Irish Rd
Sprague Rd
13. Ripley Rod & Gun Club
5. NYS Route 76
Johnson Rd
Johnson Rd
Town of Westfield
Rt 21
Kerr Rd
12. County Touring Route 9 (South Ripley Road) Bridge
1. South Ripley Cemetery
9. Ripley Volunteer Fire Department
8. South Ripley Methodist Church
Town of Ripley
3. Concord Grape Belt State Heritage Area
Parker Rd
NE Sherman Rd (RT 6)
2. A nineteenth-century farmstead consisting of a circa-1850 vernacular residence and two barns.
Colton Rd
Miller Rd (RT 3)
Pennsylvania
New York
11. Unnamed Pond
Klondyke Rd
Klondyke Rd
Sulphur Springs Rd
Kupka Rd
Camp Rd
0.5 Mile
Town of Mina
4. Chautauqua Lake Snowmobile Trail
Town of Sherman
1.5 Miles
7. Interstate 86/ NYS Route 17
6. NYS Route 430
N
W
E
S
0 1,000 2,000 4,000 Feet

South Ripley Solar Project

Town of Ripley, Chautauqua County, New York

Visual Impact Assessment

Figure 5.1-1: PV Panel DSM Viewshed Analysis

Viewpoint Location
- Viewpoint
- Simulation Location

Visually Sensitive Resource
- NRHP-Eligible Site
- Snowmobile Trail
- State and Interstate Highway
- Resource Identified by Stakeholder
- Concord Grape Belt State Heritage Area

Facility Visibility

Potential PV Panel Visibility
- Many PV Panels Visible
- Few PV Panels Visible

Facility Components
- Distance Zone Transition
- PV Panel Area
- Facility Site
- 2-Mile Visual Study Area
- Town Boundary
- State Boundary

Notes: 1. Basemap: USDA NAIP "2019 New York 60cm" orthoimagery map service. **2.** This map was generated in ArcMap on January 5, 2022. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

Potential visibility of the PV arrays (based on DSM viewshed analysis) from the various LSZs within the VSA is summarized as follows:

- The greatest potential for visibility of the proposed arrays is indicated within the Rural Residential/Agricultural LSZ. The DSM viewshed indicates that 28.7% of this LSZ within the VSA could potentially have views of the proposed PV panels. Visibility within this LSZ is most heavily concentrated in the near-foreground distance zone, including areas within the Facility Site itself. Potential visibility within the Rural Residential/Agricultural LSZ extends beyond the near-foreground zone in a few discrete locations south of Klondyke Road and within agricultural fields bordering Camp Road, south of the Facility Site. This condition also occurs in several agricultural fields to the southeast of the Facility Site.
- The potential for PV panel visibility is indicated in approximately 4.2% of the areas within the Forest LSZ. Visibility within the Forest LSZ is primarily the result of tree clearing within the Facility Site to accommodate the installation of PV panels. This clearing will convert approximately 521 acres (3.2%) of the Forest LSZ to non-forested area, thus accounting for almost all increased Facility visibility within this LSZ. The remaining 1% of potential visibility within the Forest LSZ generally occurs along the periphery of forested areas that occur directly adjacent to the Facility Site or have open fields between the Facility and forest edges.
- The Transportation Corridor LSZ will not have significant visibility of the Facility (less than 0.1 acre) due to the screening effects of intervening topography, vegetation, and structures.
- The River Gorge LSZ will not have any potential visibility of the PV panels due to the combined effects of forest vegetation and steep slopes that characterize this LSZ.

Areas where views of the PV panels will actually be available are anticipated to be more limited than indicated by the DSM viewshed analysis due to the low profile of the panels, the effects of distance, and the fact that in many areas views will be limited to only a small portion of the proposed PV panel arrays. However, some portions of the VSA predicted as being screened by wooded hedgerows may have some degree of Facility visibility depending on the density of the vegetation and the time of year (i.e., leaf-on vs. leaf-off conditions).

Interconnection Facility Viewshed Analysis Results

As indicated in Figure 5.1-2 and Table 5.1-1, the DSM viewshed analysis suggests that portions of the collection substation, POI switchyard, and/or BESS could be visible from 0.4% of the VSA while views from the remaining 99.6% of the study area will be screened by vegetation, structures, and/or topography. Consistent with the PV panel array viewshed analysis results, the greatest level of interconnection facility visibility is predicted to occur within the near-foreground distance zone. However, even within this area the percentage of the zone with potential views is minimal (1.0%). Potential visibility in this distance zone will generally be limited to nearby portions of Northeast Sherman Road (County Route 6) and in open fields, non-forested wetlands, and the existing utility corridor immediately adjacent to the interconnection facility components. Visibility within the foreground and middle ground distance zones is predicted in <0.1% and 0.2% of these zones, respectively. Potential visibility in these distance zones is indicated in small, narrow corridors of visibility areas along South Ripley Road within the foreground, and in portions of agricultural fields surrounding Wattlesburg Road and Nettle Hill Road within the middle ground distance zone. Potential visibility at these more distant locations is likely to be limited to the upper portions of the collection substation and/or POI switchyard structures due to screening provided by intervening vegetation, and it would be difficult to distinguish these relatively small components when viewed at distances over 1 mile.

Overhead Collection Line Viewshed Analysis Results

DSM viewshed results for the overhead collection line are depicted in Figure 5.1-3. These results indicate that the overhead collection line will be visible from approximately 5.7% of the VSA, with visibility occupying 15.4% of the near-foreground distance zone. As with the other above-ground Facility components, potential visibility drops off quickly in the foreground and middle ground distance zones. Overhead collection line visibility is most heavily concentrated in agricultural fields that the line passes through and in roadways near crossings, and in open areas on more distant Facility-facing slopes.

Table 5.1-1 Summary of Viewshed Results

Analysis	Visibility within the VSA (square miles)	Visibility by Distance Zone (square miles) [1]		
		Near-Foreground 0-0.5 Mile	Foreground 0.5-1.5 Miles	Midground 1.5-2.0 Miles
Total Area	43.8	14.1	17.7	12.0
PV Panel DSM Viewshed Visibility	5.0 (11.4%)	4.4 (31.1%)	0.4 (2.4%)	0.2 (1.5%)
Interconnection Facility DSM Viewshed Visibility	0.2 (0.4%)	0.1 (1.0%)	<0.1 (<0.1%)	<0.1 (0.2%)
Overhead Collection Line DSM Viewshed Visibility	2.5 (5.7%)	2.2 (15.4%)	0.1 (0.8%)	0.2 (1.5%)
Combined DSM Viewshed Visibility or Area of Potential Effect (APE)	5.4 (12.4%)	4.7 (33%)	0.5 (2.7%)	0.3 (2.3%)

[1]The calculations used to generate this table were based on unrounded numbers, therefore, the rounded results may not add up precisely.

South Ripley Solar Project

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Potential Interconnection Facility viewshed visibility is based on the screening effects of topography, vegetation, and man-made structures as represented in the 2017 NYSGPO lidar dataset. A maximum height of 12 feet was used for the BESS structures and a maximum height of 70 feet was used for the collection substation and POI switchyards.

Figure 5.1-2: Interconnection Facility DSM Viewshed Analysis

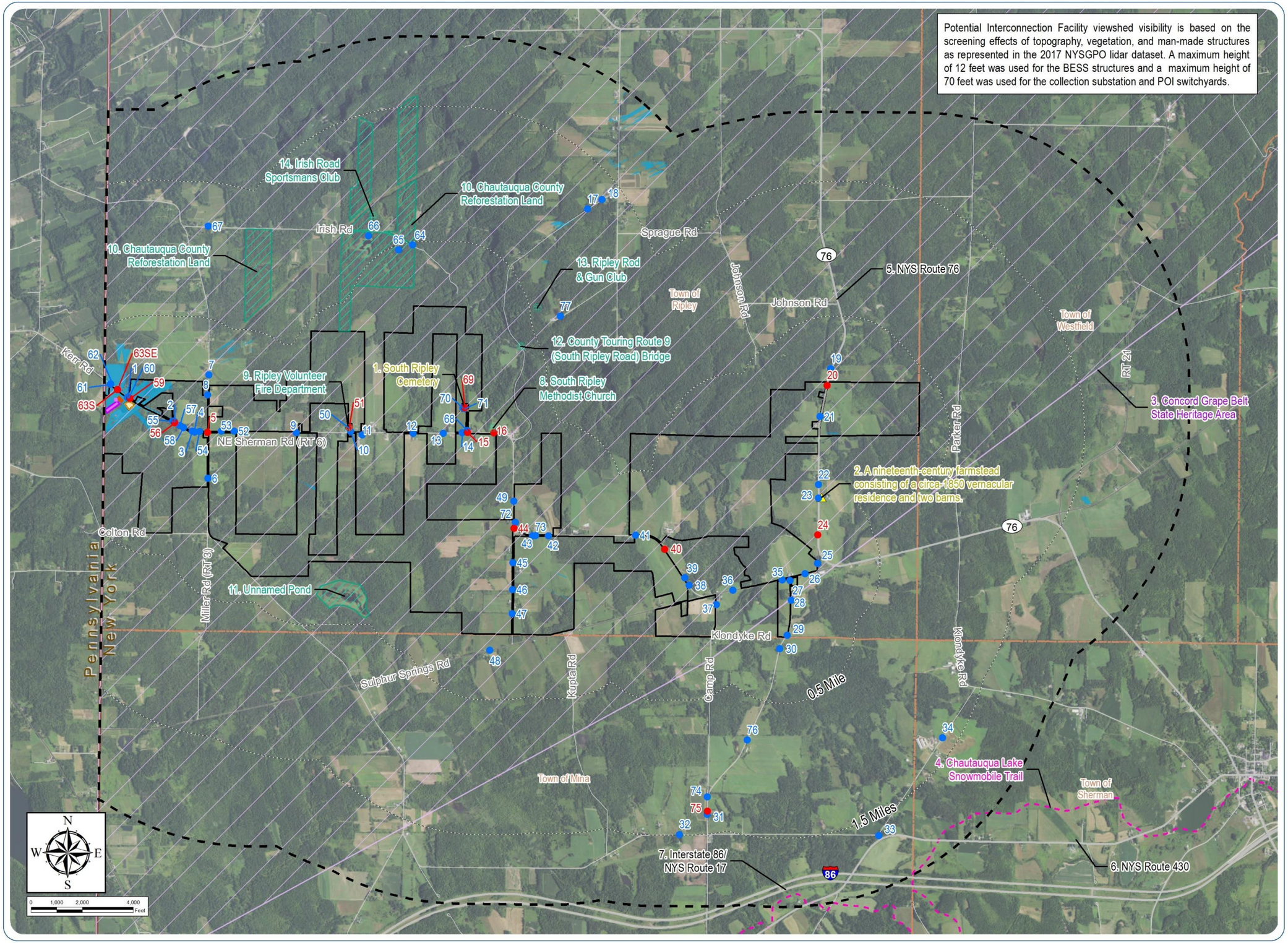
Viewpoint Location
- Viewpoint
- Simulation Location

Visually Sensitive Resource
- NRHP-Eligible Site
- Snowmobile Trail
- State and Interstate Highway
- Resource Identified by Stakeholder
- Concord Grape Belt State Heritage Area

Facility Visibility
- Potential Interconnection Facility Visibility

Facility Components
- Distance Zone Transition
- Battery Energy Storage System
- Collection Substation
- POI Switchyard
- Facility Site
- 2-Mile Visual Study Area
- Town Boundary
- State Boundary

Notes: **1.** Basemap: USDA NAIP "2019 New York 60cm" orthoimagery map service. **2.** This map was generated in ArcMap on January 5, 2022. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.



South Ripley Solar Project

Town of Ripley, Chautauqua County, New York

Visual Impact Assessment

Figure 5.1-3: Overhead Collection Line DSM Viewshed Analysis

Potential overhead collection line viewshed visibility is based on the screening effects of topography, vegetation, and man-made structures as represented in the 2017 NYSGPO lidar dataset. Heights of 41 and 75 feet were used for the overhead collection line poles.

14. Irish Road Sportsmans Club
10. Chautauqua County Reforestation Land
10. Chautauqua County Reforestation Land
Irish Rd
Sprague Rd
13. Ripley Rod & Gun Club
Johnson Rd
5. NYS Route 76
Town of Ripley
12. County Touring Route 9 (South Ripley Road) Bridge
Town of Westfield
Kerr Rd
9. Ripley Volunteer Fire Department
1. South Ripley Cemetery
8. South Ripley Methodist Church
Rt 21
3. Concord Grape Belt State Heritage Area
Parker Rd
NE Sherman Rd (RT 6)
2. A nineteenth-century farmstead consisting of a circa-1850 vernacular residence and two barns.
Colton Rd
Pennsylvania
New York
Miller Rd (RT 3)
11. Unnamed Pond
Klondyke Rd
Sulphur Springs Rd
Kurtis Rd
Camp Rd
0.5 Mile
Town of Mina
4. Chautauqua Lake Snowmobile Trail
Town of Sherman
1.5 Miles
7. Interstate 86/ NYS Route 17
6. NYS Route 430

N W E S

0 1,000 2,000 4,000 Feet

Viewpoint Location

- Viewpoint
- Simulation Location

Visually Sensitive Resource

- NRHP-Eligible Site
- State and Interstate Highway
- Snowmobile Trail
- Resource Identified by Stakeholder
- Concord Grape Belt State Heritage Area

Facility Visibility

Potential Overhead Collection Line Visibility

- Many Structures Visible
- Few Structures Visible

Facility Components

- Distance Zone Transition
- Overhead Collection Line
- Facility Site
- 2-Mile Visual Study Area
- Town Boundary
- State Boundary

Notes: **1.** Basemap: USDA NAIP "2019 New York 60cm" orthoimagery map service. **2.** This map was generated in ArcMap on January 5, 2022. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

5.1.2 Area of Potential Effect

Definition of an Area of Potential Effect (APE) allows visual impact evaluations to focus on the resources with the highest probability of project visibility. As described in Section 4.1.1, the DSM viewshed analysis used to define the APE for the proposed Facility considered the screening effects of existing topography, vegetation, and structures in order to delineate those areas that could potentially have views of any portion of the Facility (PV panels, collection substation, POI switchyard, BESS, or overhead collection line). As indicated in Table 5.1-1, the APE consists of approximately 5.4 square miles, or 12.4% of the VSA. It is worth noting that over half of the APE (2.9 square miles) occurs within the boundaries of the Facility Site itself. While the VIA considers the existing environment for the entire VSA, the APE was used to define those areas in which further analysis is warranted to determine the degree of Facility visibility and visual impact (see discussion in Section 5.2).

5.1.3 Field Evaluation

Field review suggests that the DSM viewshed results generally provide an accurate indication of potential Facility visibility within the VSA (see Figures 5.1-1 and 5.1-2). As discussed in Section 4.1.2, field crews had the advantage of observing their position relative to the viewshed results while travelling public roads throughout the VSA. The results of EDR's field review are summarized below including viewpoint mapping (see Figure 5.3-3). All photographs referenced in this summary can be found in the viewpoint photolog included as Attachment B.

Forest LSZ

Visibility toward the Facility Site was found to be very limited within the Forest LSZ. Photographs from Viewpoints 64 through 66 illustrate the type of short-distance, enclosed views of the Facility Site occasionally available from within this LSZ. In most instances the forest vegetation completely screens views of more distant landscape features. Views down forest roads (Viewpoint 64) provide opportunities for extended visibility down the road corridor, but such views are tightly framed by forest vegetation. Field review also determined that the proposed vegetative clearing within the Facility Site would generally be difficult to discern due to the distance at which it occurs from public vantage points and the screening provided by the remaining forest stands. Exceptions to this were noted in the vicinity of Viewpoint 5, 20, and 44 where elevated views of the Facility Site allow for extended views toward areas where forest clearing is proposed.

Rural Residential/Agricultural LSZ

Field review within the Rural Residential/Agricultural LSZ revealed that the greatest concentrations of open views toward the proposed Facility occur within this zone, confirming the results of the viewshed analysis. Agricultural fields in the vicinity of the Facility will provide open views of near-foreground PV panels. County Route 6, which essentially bisects the Facility Site from east to west, has the highest probability for visibility of both discrete portions of the Facility in the near-foreground (Viewpoints 5, 15, and 16) and less frequently, broad elevated views of multiple PV arrays (Viewpoints 9 and 20). Sinden Road also bisects a portion of the Facility Site in a north-south direction and includes a similar variability in the number of PV panel arrays that will be potentially visible. Viewpoint 44 on Sinden Road offers a significantly elevated view of multiple PV panel arrays, overhead collection lines, tree clearing, and access roads. However, just a quarter mile to the south, views will include only small discrete portions of the Facility (Viewpoint 49)

as a result of intervening topography, hedgerow vegetation, and structures. While County Route 6 and Sinden Road both have a relatively high degree of Facility visibility, these roads also have a variety of natural and build elements that serve to screen views of significant portions of the Facility. Field review suggests that viewers will experience include irregular, but repeated, exposure to views of the Facility as one progresses along these roads.

Visibility of the Facility Site from the Agricultural/Rural Residential LSZ was significantly less frequent in the foreground zone (0.5-1.5 mile) due to intervening topography, vegetation, and structures. However, elevated views from public roads bordered by open fields did offer potential views from discrete locations. Viewpoints 31, 74, and 75 illustrate long distance views toward the Facility Site from the foreground distance zone. Visibility of the Facility Site at middle ground distances was found to be almost nonexistent from public vantage points within this LSZ due to the combined screening effects of topography and intervening forest vegetation. Photographs from the viewpoints listed above illustrate how slight topographic changes and existing hedgerows within the LSZ will introduce variability to potential views of the Facility. In addition, the wireframe alignment shown in Figure 5.1.1-1 below also illustrates how the gently rolling topography can limit near-foreground and foreground visibility of the Facility (shown in green) within this LSZ.

Figure 5.1.1-1: Wireframe Alignment (Viewpoint 51)

River Gorge LSZ

During field review, the River Gorge LSZ was inaccessible due to the lack of public access. However, a detailed review of desktop resources such as Google Earth and Bing Maps suggest that the viewshed accurately predicted no potential visibility of the Facility from within this LSZ.

Transportation Corridor LSZ

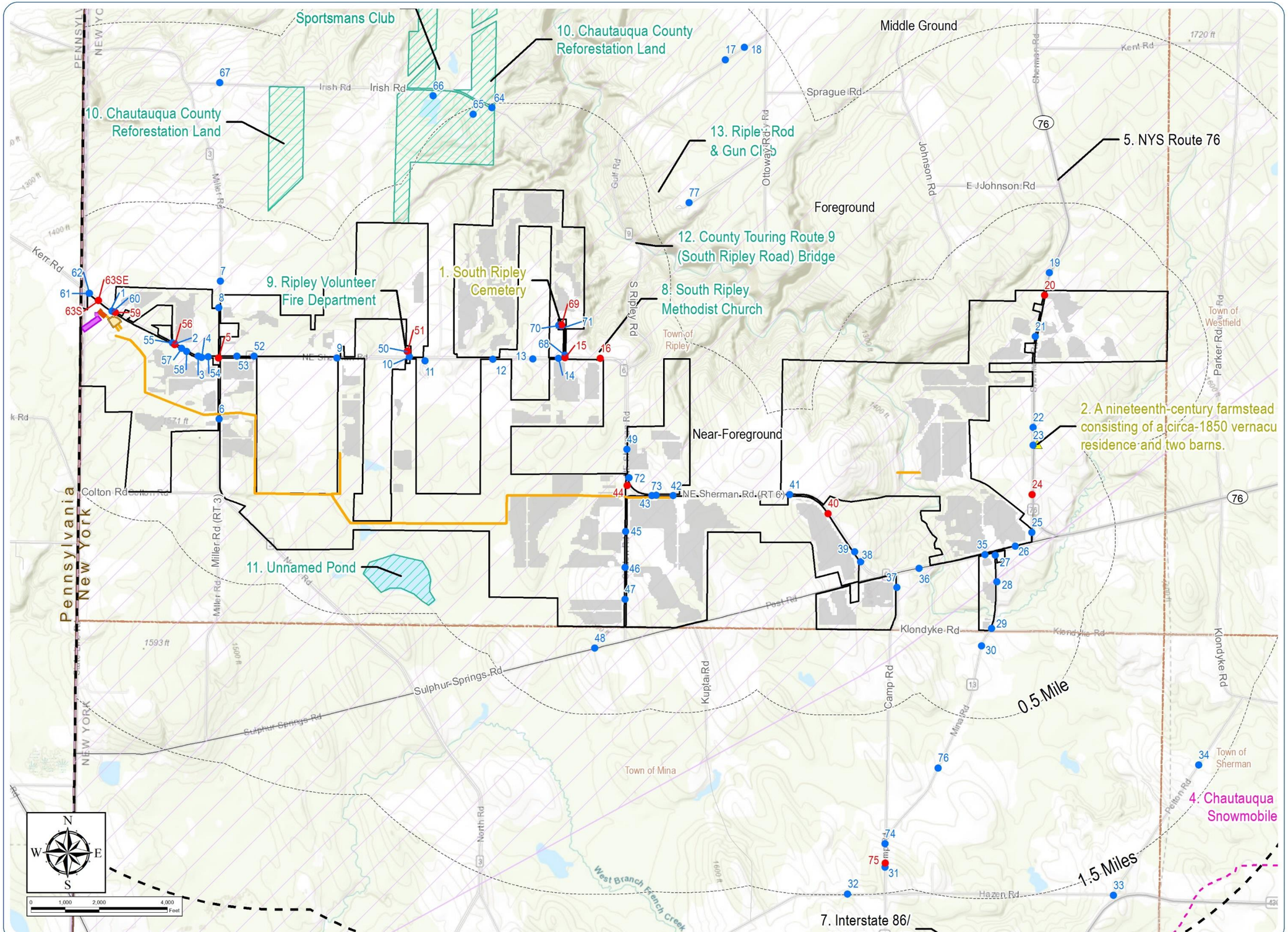
No photos were obtained from I-86 during field review due to safety concerns. Viewpoint 33, taken less than 0.3 mile north of Interstate Route 86, suggests that the Facility Site will be significantly screened by the combination of vegetation and topography. In this region, field review confirmed that I-86 includes multiple changes in direction, high speeds, and visual distractions such as exits, bridge overpasses, and other traffic. Given the viewing environment, the distinct lack of visibility (as predicted by the viewshed analysis), and distance from the Facility Site, it is anticipated that the Facility will not be visible from the Transportation Corridor LSZ.

South Ripley Solar Project

Town of Ripley, Chautauqua County, New York

Visual Impact Assessment

Figure 5.1-4: Viewpoint Locations



Viewpoint Location

- Viewpoint
- Simulation Location

Visually Sensitive Resource

- NRHP-Eligible Site
- Snowmobile Trail
- Resource Identified by Stakeholder
- State and Interstate Highway

Facility Components

- Distance Zone Transition
- Overhead Collection Line
- Battery Energy Storage System
- Collection Substation
- POI Switchyard
- PV Panel Area
- Facility Site
- 2-Mile Visual Study Area
- Town Boundary
- State Boundary

Notes: **1.** Basemap: ESRI ArcGIS Online "World Topographic Map" map service. **2.** This map was generated in ArcMap on January 5, 2022. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

5.2 Visually Sensitive Resources

A total of 14 VSRs were identified within the VSA, with 11 of those indicated as having potential Facility visibility based on viewshed analysis. Results of this analysis are summarized in Table 5.2-1, followed by a brief description of the specific VSRs that occur within the APE of the proposed Facility.

Table 5.2-1 Total VSRs with Visibility

Visually Sensitive Resources	Total Number of Resources within the VSA	Total Number of Resources within the APE
Properties of Historic Significance [6 NYCRR 617.4 (b)(9)]	**Total 2**	**Total 2**
National Historic Landmarks (NHL)	0	0
Properties Listed on National or State Registers of Historic Places (NRHP/SRHP)	0	0
Properties Eligible for Listing on NRHP or SRHP	2	2
National/State Historic Sites	0	0
Designated Scenic Resources	**Total 0**	**Total 0**
Rivers Designated as National or State Wild, Scenic or Recreational	0	0
Adirondack Park Scenic Vistas [Adirondack Park Land Use and Development Map]	0	0
Sites, Areas, Lakes, Reservoirs or Highways Designated or Eligible for Designation as Scenic ([ECL Article 49Title 1] or equivalent)	0	0
Scenic Areas of Statewide Significance [Article 42 of Executive Law]	0	0
Other Designated Scenic Resources (Easements, Roads, Districts, and Overlooks)	0	0
Public Lands and Recreational Resources	**Total 2**	**Total 2**
National Parks, Recreation Areas, Seashores, and/or Forests [16 U.S.C. 1c]	0	0
National Natural Landmarks [36 CFR Part 62]	0	0
National Wildlife Refuges [16 U.S.C. 668dd]	0	0
Heritage Areas [Parks, Recreation and Historic Preservation Law Section 35.15]	1	1
State Parks [Parks, Recreation and Historic Preservation Law Section 3.09]	0	0
State Nature and Historic Preserve Areas [Section 4 of Article XIV of the State Constitution]	0	0
State Forest Preserves [NYS Constitution Article XIV]	0	0
Other State Lands	0	0
Wildlife Management Areas & Game Refuges	0	0
State Forests	0	0
State Boat Launches/Waterway Access Sites	0	0
Designated Trails	1	1
Palisades Park [Palisades Interstate Park Commission]	0	0
Local Parks and Recreation Areas	0	0
Publicly Accessible Conservation Lands/Easements	0	0

Visually Sensitive Resources	Total Number of Resources within the VSA	Total Number of Resources within the APE
Rivers and Streams with public fishing rights easements	0	0
Named Lakes, Ponds, and Reservoirs	0	0
High-Use Public Areas	**Total 3**	**Total 3**
State, US, and Interstate Highways	3	3
Cities, Villages, Hamlets	0	0
Schools	0	0
Native American Lands	**Total 0**	**Total 0**
Other Resources Identified by Stakeholders	**Total 7**	**Total 4**
Total Number of VSRs in the VSA	**14**	**11**

5.2.1 Properties of Historic Significance

Based on EDR's review of the NRHP website, the New York State Office of Parks, Recreation and Historic Resources (NYSOPRHP) Cultural Resources Information System (CRIS) website, and the NYSOPRHP shapefile for buildings, structures, sites and historic districts listed in the NRHP (NPS, 2020c, 2020e; NRHP, 2020a, 2020b; NYSHPO, 2020), there are no NRHP-listed resources within the Facility APE. However, per the requirements set forth in Section 94-c, a Historic Resources Survey (EDR, 2019) was also conducted. Based on that survey, two historic properties were identified within the VSA that have been determined by the NYSOPRHP to be NRHP-eligible.

Potential Facility visibility from one of these properties, a nineteenth-century farmstead located at 4704 State Route 76, was evaluated through viewshed and line-of-sight analyses (see Figure 5.2-1). These analyses indicate that visibility of a portion of the PV array, located to the south at a distance of approximately 0.4 mile, will be available from the Farm Complex and in the adjacent open fields around the complex. Line-of-sights C-C', D-D', and E-E' were prepared to address potential visibility of the PV panel array to the south. As illustrated in Figure 5.2-2, these three line-of-sight cross sections represent a relatively narrow corridor where an open view of limited portions of the PV panel array will be possible. From elsewhere on the property the majority of the PV panel array will be screened by intervening vegetation and topography. Where visibility does occur, it appears to be limited to the uppermost portions of the PV panels. In addition, proposed landscape mitigation will provide additional screening and softening of the PV panels where visibility may occur. The three wooden structures associated with the overhead collection line located approximately 0.7 mile to the west of the farmstead would not be discernable when viewed from this distance due to their narrow profile, limited height, and the neutral earth-tone color of the poles. Visibility of the PV array located approximately 0.4 mile to the west will be significantly or completely screened from view by topography alone. This condition is illustrated in line-of-sight cross sections A-A' and B-B'.

Figure 5.2-1: Farm Complex Line-of-Sight Analysis Cross Section Locations

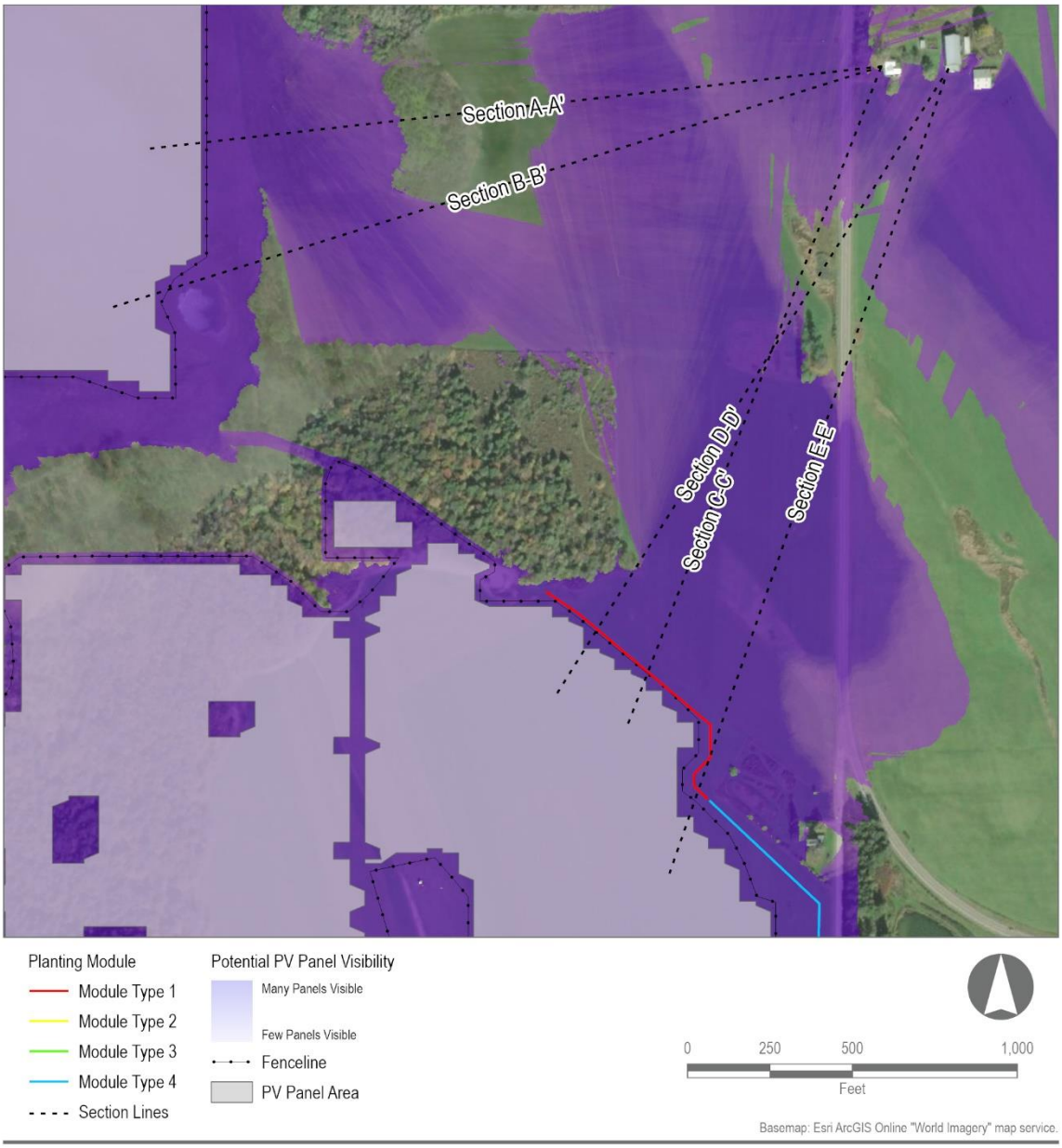
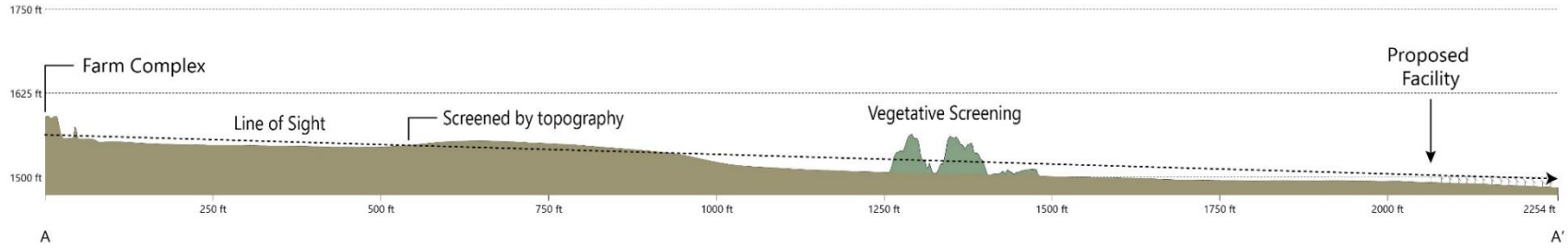
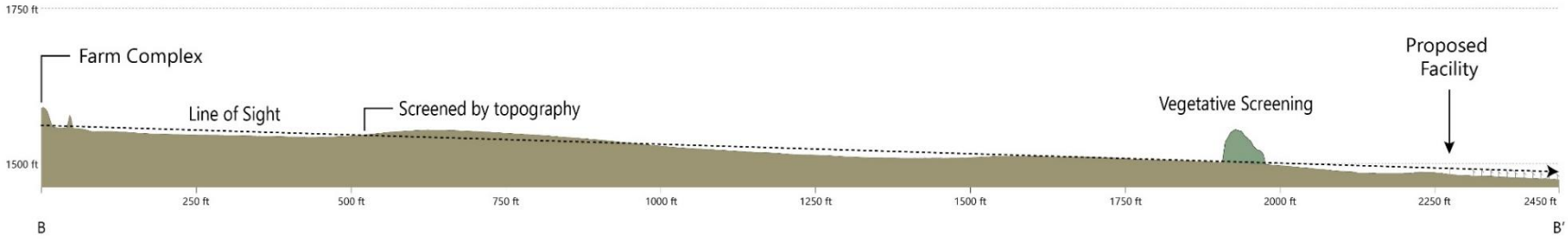


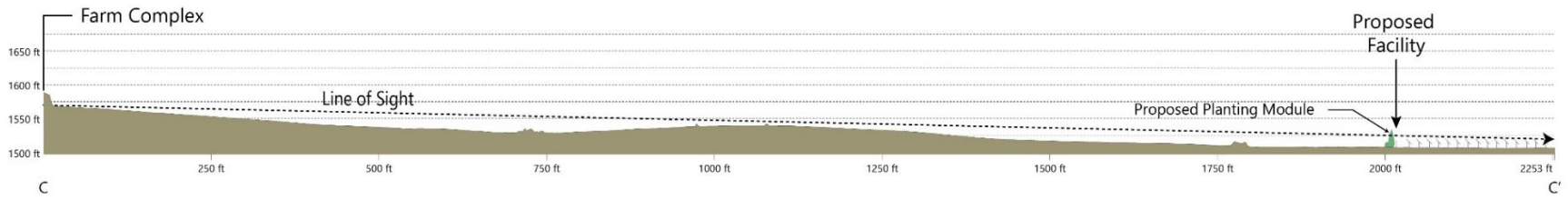
Figure 5.2-2 Line of Sight Cross Sections from Nineteenth Century Farmstead



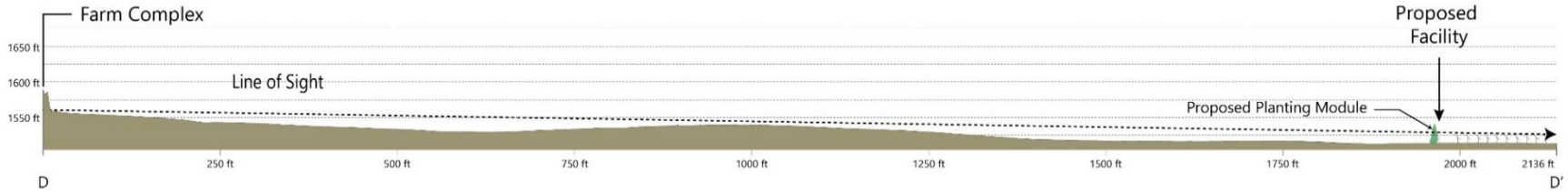
Section A-A' – Line of sight cross section illustrating a lack of visibility of the PV array to the west from the nineteenth century farmstead



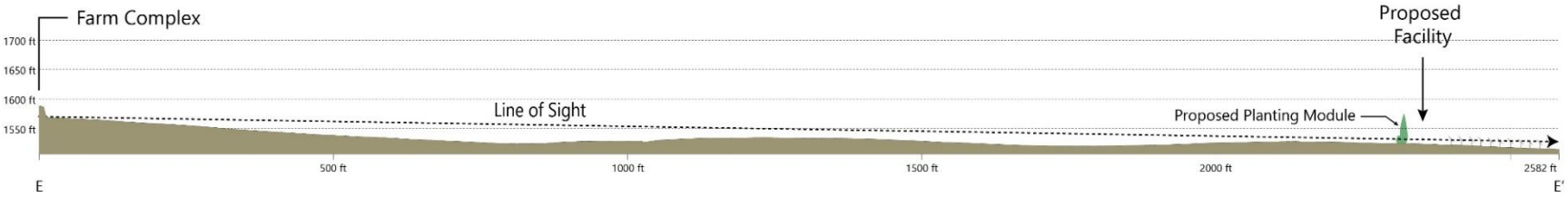
Section B-B' – Line of sight cross section illustrating a lack of visibility of the PV array to the west from the nineteenth century farmstead



Section C-C' – Line of sight cross section illustrating potential visibility of the PV array to the south from the nineteenth century farmstead



Section D-D' – Line of sight cross section illustrating potential visibility of the PV array to the south from the nineteenth century farmstead



Section E-E' – Line of sight cross section illustrating potential visibility of the PV array to the south from the nineteenth century farmstead

The second resource, South Ripley Cemetery, is located adjacent to the PV panel arrays and will have visibility of the Facility. To evaluate the potential visual impacts associated with this resource, two visual simulations are included in the assessment. The Facility visibility is illustrated in Attachment D (Viewpoints 15 and 69) and the results of the impact assessment are presented in Section 5.3.2.

In addition to the analyses included in the VIA, the Historic Resources Survey included as Appendix 9-D to the Section 94-c Application provides additional assessment of the Facility's potential visual effect on these NRHP-eligible properties.

5.2.2 Public Lands and Recreational Resources

The Project's VSA includes two resources identified as public lands and recreational resources, including one heritage area and one snowmobile trail. Viewshed analysis indicates that both these resources occur within the Facility's APE. The Concord Grape Belt State Heritage Area occupies the northern two thirds of the VSA, including the majority of the Facility Site. The New York State Heritage Area System (formerly known as the Urban Cultural Park System) was first established in 1977 and is administered by the NYSOPRHP. This program is a state and local partnership whose goal is to "*…preserve these resources through their identification, interpretation, development and use in a system made up of state designated heritage areas*" (NYS Senate, 2020). The Concord Grape Belt State Heritage Area was established by the New York State Legislature in 2006 and a Management Plan was adopted in 2010 (Peter J. Smith & Company, 2010). This heritage area covers the northern portion of Chautauqua County along Lake Erie and is meant to highlight the grape growing history of the area. While the Management Plan identifies specific resources within the Concord Grape Belt State Heritage Area, these resources are situated north of the Allegany Plateau Escarpment, and outside the VSA. Additionally, identified scenic vistas are oriented toward Lake Erie, and generally focus on vineyards and other signature features of the grape belt. Given the expanse of this Heritage Area, Facility visibility within this VSR is as described in the overall viewshed analysis results discussion in Sections 5.1.1 and 5.3. As indicated in these sections potential visibility is limited to 28.7% of the Rural Residential/Agricultural LSZ within the VSA and is almost nonexistent in the Forest and River Gorge LSZs.

The overhead collection line viewshed analysis suggested potential Facility visibility from a discrete portion of the Chautauqua Lake Snowmobile Trail at a distance of 2.8 miles. However, at this distance it would not be possible to discern the structures associated with this component of the Facility. Therefore, the Facility will not result in visual impacts to this resource.

5.2.3 High Use Public Areas

Major Transportation Corridors:

The VSA includes two state highways and one interstate highway which have potential views of the Facility and could be considered visually sensitive due to the number of vehicles that travel these roads on a daily basis. Table 5.2-2 indicates NYSDOT 2015 traffic counts for these roadways, as well as percent visibility from each of these roadways within the APE.

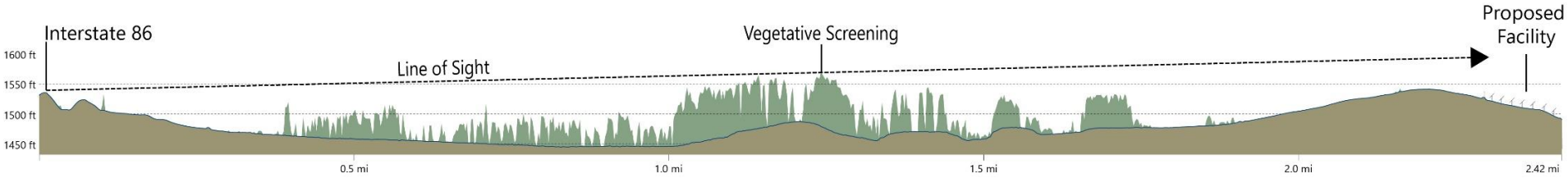
Table 5.2-2 Traffic Counts

Road	Total Length within the VSA (miles)	Average Vehicles/Day on Segments within the VSA	Percent Visibility of Road Segments within the VSA
State Route 76	3.9	249 – 1,148	34.5%
State Route 430	1.4	257 – 520	1.1%
Interstate 86	3.9	4,473 – 9,064	0.3%

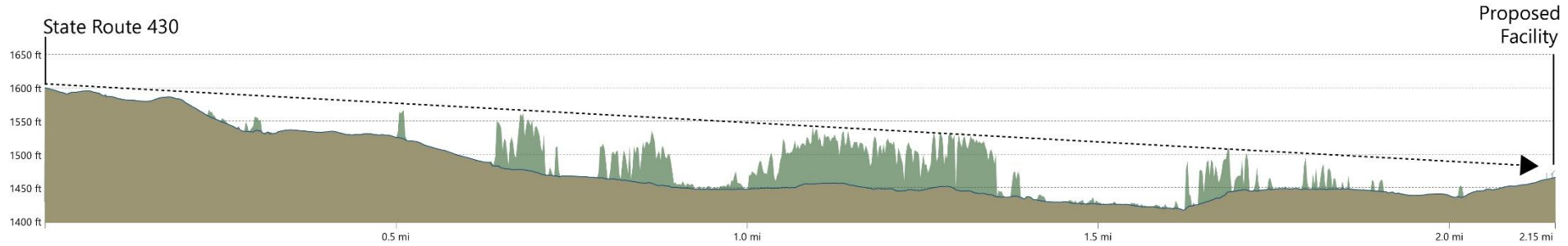
Source: NYSDOT, 2019

Views of the Facility from State Route 76 are represented in the visual simulations illustrated in Attachment D and described in Section 5.3.2. In order to illustrate the minimal visibility from State Route 430 and Interstate 86, two line of sight cross sections are provided below in Figure 5.2-1.

Figure 5.2-3 Line of Sight Cross Sections from Interstate 86 and State Route 430



Section A-A' – Line of sight cross section illustrating a lack of visibility of the PV array from Interstate 86



Section B-B' – Line of sight cross section illustrating minimal visibility of the PV array from State Route 430

As illustrated in the line-of-sight cross sections, the portions of the Facility that are potentially visible from these two state resources are greater than 2 miles from the PV arrays. Given the significant screening provided by topography and vegetation along with the significant distance from the Facility, it is very unlikely that viewers would actually see the Facility from these discrete locations on Interstate 86 and State Route 430.

5.2.4 VSRs Identified Through Stakeholder Outreach

As described in Section 3.6, a total of seven VSRs were identified through the visual stakeholder outreach process. Of these, viewshed analysis indicates that four occur within the Facility APE. Information regarding the identification and inclusion of these resources is described in detail in Attachment F. The resources with potential visibility of the Facility are described below.

- South Ripley Methodist Church – This resource is located adjacent to the Facility Site. A visual simulation was completed from this location and is included in Attachment D (Viewpoint 16). The results of the visual assessment from this resource are presented in Section 5.3.2 Attachment D.
- Ripley Volunteer Fire Department – The Ripley Volunteer Fire Department is approximately 0.2 mile from the nearest PV panel array. Potential visibility from this location is illustrated in Viewpoint 51 which was developed as a wireframe overlay (see Figure 5.1-3 in Section 5.1.2). As illustrated in the wireframe overlay, there will be minimal visibility of the Facility from the Ripley Volunteer Fire Department. As such, no adverse visual effects are anticipated.
- An Unnamed Pond – This VSR is located 0.2 mile south of the nearest Facility component (the overhead collection line). According to the viewshed analysis, the overhead collection line is the only Facility component potentially visible from this location. The narrow corridors of visibility that extend to the pond's southern shore suggest that visibility will be limited to the tops of the wooden structures (Figure 5.1-3). Given the narrow profile of these structures, it is unlikely that this portion of the Facility will be visible among the dense foreground vegetation surrounding the pond.
- The Ripley Rod & Gun Club – This site is located 0.4 mile from the Facility. The viewshed analysis suggests a small area of potential visibility occurs at the access road to the Rod & Gun Club. Based on field review and the presence of dense vegetation, it is unlikely that his resource will be adversely affected by the Facility.

5.3 Project Visual Impact

To evaluate anticipated visual change associated with installation of the proposed Facility, photographic simulations of the proposed Facility were compared to photos of existing conditions from each of the 13 selected viewpoints. Attachment D provides a description of the existing and proposed views from each viewpoint, along with a description of the efficacy of the proposed mitigation. A summary of those descriptions is presented below.

5.3.1 Comparison of Existing and Proposed Views

As illustrated in the simulations included in Attachment D, with the proposed Facility in place, new built features are added to a landscape currently characterized by rural residential and agricultural land uses. Based on review of the simulations by a rating panel of four landscape architects, it was noted that the PV modules generally follow the existing topography, and, in most places, there is little evidence of forest clearing to accommodate the Facility. In many

instances, significant portions of the Facility are blocked from view by existing hedgerows and woodlots that separate the existing open fields, thus limiting long-distance views. However, when close to the viewer, the PV arrays serve to enclose some formerly open views, screening visibility of more distant landscape features. The proposed PV arrays also present appreciable contrast with the existing landscape in line, color, texture, and form. This contrast is reduced in views that include existing utility infrastructure and other built features. However, in many near-foreground views presence of the proposed Facility changes the character of the landscape from rural residential and agricultural use to solar energy generation.

With proposed mitigation plantings in place around the perimeter of the PV arrays, and following five to seven years of growth, the visual contrast presented by the Facility would be reduced. In instances where denser plantings are proposed (see discussion of various planting modules in Appendix 8-B of the Section 94-c Application), the plantings largely screen the proposed fencing and PV arrays, and result in the establishment of foreground vegetation similar to that already present in nearby hedgerows and along field edges. In views where less dense plantings were used, (typically where adjacent sensitive resources were lacking) the plantings provide limited screening of the Facility but help visually integrate it into the surrounding landscape. In some instances, the effect of the plantings is to simply soften the hard edges of the built Facility. Although the effect is variable depending on the density of plantings, viewer elevation relative to the Facility, and the expansiveness of the view toward the Facility Site, in most cases the plantings help reduce the visual contrast presented by the Facility. See Attachment D for additional detail regarding the efficacy of the proposed mitigation. Additional information on the visual mitigation is provided in the VIMMP (Appendix 8-B of the Section 94-c Application).

5.3.2 Simulation Rating and Assessment of Visual Impact

As described in Section 4.2.3, the rating panel evaluated the contrast and compatibility of the Facility with various components of the landscape (landform, vegetation, land use, water, sky, land use and viewer activity) and assigned quantitative visual contrast ratings on a scale of 0 (insignificant) to 4 (strong). The average contrast score assigned by each rating panel member was calculated for each viewpoint, and a composite average score for each viewpoint was determined. Attachment D provides a detailed review of the rating panel results and existing and proposed view descriptions for each of the visual simulations. Copies of the completed rating forms are included in Attachment E, and the results of this evaluation process are summarized in Table 5.3-1 and the discussion that follows.

Table 5.3-1 Summary of Rating Panel Results

Viewpoint Number	Viewing Distance[1]	Distance Zone	Landscape Similarity Zone	Viewer Groups			Contrast Rating Scores[2]					
				Local Residents	Through Travelers	Tourists/ Recreation	#1	#2	#3	#4	Average	Contrast Rating Result
Visual Simulations That Depict Facility Components (No Mitigation)												
5	167 ft	Near-Foreground	Rural Residential/Agricultural	•	•		1.9	2.8	3.8	2.7	2.8	Appreciable
15	170 ft	Near-Foreground	Rural Residential/Agricultural	•	•		0.9	1.4	0.9	0.5	0.9	Minimal
16	179 ft	Near-Foreground	Rural Residential/Agricultural	•	•		1.8	2.5	3.2	2.2	2.4	Moderate/ Appreciable
20	84 ft	Near-Foreground	Rural Residential/Agricultural	•	•		2.4	2.8	3.4	2.7	2.8	Appreciable
24	654 ft	Near-Foreground	Rural Residential/Agricultural	•	•		0.9	1.9	1.5	1.0	1.3	Minimal/ Moderate
40	118 ft	Near-Foreground	Rural Residential/Agricultural	•	•		2.2	3.3	3.6	2.8	3.0	Appreciable
44	344 ft	Near-Foreground	Rural Residential/Agricultural	•			3.3	3.5	3.2	2.2	2.9	Appreciable
56	139 ft	Near-Foreground	Forest	•	•		2.9	2.9	3.3	3.0	3.0	Appreciable
59	177 ft	Near-Foreground	Rural Residential/Agricultural	•	•		2.9	3.8	3.8	2.6	3.3	Appreciable/ Strong
63S	225 ft	Near-Foreground	Rural Residential/Agricultural	•	•		2.7	3.0	2.2	1.8	2.4	Moderate/ Appreciable
63SE	240 ft	Near-Foreground	Rural Residential/Agricultural	•	•		3.0	3.3	2.8	2.3	2.9	Appreciable
69	417 ft	Near-Foreground	Rural Residential/Agricultural	•		•	3.2	3.0	2.8	2.5	2.9	Appreciable
75	4,450 ft	Foreground	Rural Residential/Agricultural	•	•		0.7	0.3	0.2	0.8	0.4	Insignificant/ Minimal
Total average rating for the visual simulations that depict Facility components (No Mitigation)											2.4	Moderate/ Appreciable

Viewpoint Number	Viewing Distance[1]	Distance Zone	Landscape Similarity Zone	Viewer Groups			Contrast Rating Scores[2]					
				Local Residents	Through Travelers	Tourists/ Recreation	#1	#2	#3	#4	Average	Contrast Rating Result
Visual Simulations That Depict the Facility with Mitigation Plantings (5-7 years post-installation)												
5	167 ft	Near-Foreground	Rural Residential/Agricultural	•	•		1.4	1.5	2.7	2.6	2.1	Moderate
15	170 ft	Near-Foreground	Rural Residential/Agricultural	•	•		0.4	1.1	0.3	0.6	0.6	Insignificant/Minimal
16	179 ft	Near-Foreground	Rural Residential/Agricultural	•	•		1.6	1.4	2.9	2.4	2.1	Moderate
20	84 ft	Near-Foreground	Rural Residential/Agricultural	•	•		1.3	1.6	1.9	2.7	1.9	Moderate
24	654 ft	Near-Foreground	Rural Residential/Agricultural	•	•		0.9	1.8	1.3	1.0	1.3	Minimal/ Moderate
40	118 ft	Near-Foreground	Rural Residential/Agricultural	•	•		1.9	2.5	3.6	2.8	2.7	Moderate/ Appreciable
44	344 ft	Near-Foreground	Rural Residential/Agricultural	•			2.1	2.3	1.6	2.0	2.0	Moderate
56	139 ft	Near-Foreground	Forest	•	•		2.2	2.1	3.2	3.3	2.7	Moderate/ Appreciable
59	177 ft	Near-Foreground	Rural Residential/Agricultural	•	•		2.4	3.3	3.3	2.7	2.9	Appreciable
63S	225 ft	Near-Foreground	Rural Residential/Agricultural	•	•		2.2	1.8	1.7	1.9	1.9	Moderate
63SE	240 ft	Near-Foreground	Rural Residential/Agricultural	•	•		2.5	2.8	2.5	2.3	2.5	Moderate/ Appreciable
69	417 ft	Near-Foreground	Rural Residential/Agricultural	•		•	2.5	2.6	2.6	2.4	2.5	Moderate/ Appreciable
Total average rating for the simulations that depict plantings at 5-7 years post-installation											2.1	Moderate

[1] As measured to the nearest visible PV Panel Array, POI switchyard component, collection substation component, or battery energy storage container unit.

[2] Contrast Rating Scale: 0.0 - 0.2 (Insignificant), 0.3 – 0.7 (Insignificant/Minimal), 0.8 – 1.2 (Minimal), 1.3 – 1.7 (Minimal/Moderate), 1.8 - 2.2 (Moderate), 2.3 – 2.7 (Moderate/Appreciable), 2.8 – 3.2 (Appreciable) 3.3 – 3.7 Appreciable/Strong), 3.8 – 4.0 (Strong).

As Table 5.3-1 indicates, the average composite contrast ratings for the 13 visual simulations ranged from 0.4 to 3.3 without the mitigation plantings in place, and 0.6 to 2.9 with plantings in place after five to seven years of growth. The results of this evaluation are summarized below.

Rating panel results suggest that immediately following installation, the Facility will result in moderate/appreciable visual contrast with the existing landscape, as indicated by the overall average contrast score of 2.4. With established mitigation plantings in place, the total average contrast score across all viewpoints dropped to 2.1, indicating moderate visual contrast. This suggests that the proposed mitigation, although useful in screening/softening views of the Facility will not substantially reduce the overall visual contrast presented by the Facility. However, from specific affected viewpoint locations, the effectiveness of the mitigation plantings was quite variable.

Review of individual viewpoint scores illustrates this variability. For example, Viewpoints 5, 20, and 44 were noted as having the greatest reduction in visual contrast as a result of the mitigation plantings. Viewpoint 5 received a contrast rating of 2.8 (appreciable visual contrast), but with the mitigation plantings in place the average contrast score was reduced to 2.1 (moderate visual contrast). Viewpoint 20 received an average contrast score of 2.9 (appreciable visual contrast) without mitigation and 1.9 (moderate visual contrast) with the mitigation in place. Viewpoint 44 decreased from a rating of 2.9 (appreciable visual contrast) to 2.0 (moderate visual contrast). In all three instances the plant material provided effective screening of the Facility, successfully integrated it into the existing landscape, and/or introduced a new aesthetic feature into the view that provided visual interest. However, the rating panel noted that the mitigation plantings also served to enclose the view, which in some instances further reduced the visibility of distant background features that were considered contributing elements to the scenic quality of the existing view. Beyond these notable decreases in visual contrast resulting from the mitigation plantings, the remaining views all received a reduction in contrast scores ranging from 0.0 to 0.7, suggesting more limited levels of effective mitigation. It should be noted that the contrast scores for Viewpoint 75 remained the same because views from this viewpoint did not include any landscape mitigation.

Simulations of the Facility from Viewpoints 56 and 59 received the highest composite contrast rating scores. Viewpoint 56 was distinguished by the expansive views of PV modules and their proximity to the roadway. In addition, screening of distant background views by the Facility is particularly noticeable from this location. The existing view from this viewpoint is of moderate to high scenic quality and was described as having rolling terrain with expansive views and varied textures creating strong linear or striated features that complement the horizon line. Based on its relatively high scenic quality, and expansive view of the Facility Site, the simulated view from this viewpoint with the Facility in place received a contrast rating score of 3.0 (appreciable). With the mitigation plantings in place, the contrast score was reduced by 0.3, to 2.7, which is in the moderate to appreciable range. The landscape mitigation was noted by the rating panel as effective, particularly on the right side of the view, however this was offset by the decrease in long distance visibility from this location. Viewpoint 59, which is distinguished by its proximity to the POI switchyard, is described in Section 5.3.4.

The lowest composite rating scores were received by simulations at Viewpoints 15 and 75. Although Viewpoint 15 is an elevated location with an expansive view of the landscape, the proposed Facility components in both the near-foreground and foreground are only minimally visible due to screening provided by existing vegetation. The simulated view from Viewpoint 15 received a contrast rating score of 0.9 indicating minimal visual contrast would result without landscape mitigation. With landscape mitigation in place the contrast score was reduced to 0.6 indicating an insignificant to minimal visual contrast. Viewpoint 75 is approximately 0.8 mile from the Facility and existing topography, vegetation, and structures serve to screen significant portions of the Facility resulting in visibility of only a small portion

of the Facility. Due to the limited visibility and greater distance from the viewer, the simulation from Viewpoint 75 received a contrast rating of 0.4 which indicates an insignificant to minimal visual contrast. Additional information on the individual contrast ratings is available in Attachments D and E.

5.3.3 Nighttime Impacts

It is anticipated that the only permanent lighting required for the Facility will include safety/security lighting associated with the collection substation and associated O&M building, POI switchyard, the BESS, and the O&M Yard. These Facility components will utilize shielded light fixtures with no drop-down vertical elements which will be directed toward the ground to minimize off-site light trespass and light spillage. In these areas lighting will be kept to the minimum intensity required to assure safety and security. Additionally, all lighting will utilize automatic activation dependent on light sensitive switches (with manual activation as a potential alternative) to minimize the duration of required lighting. Any potential visual impacts will be of short duration and intermittent in nature. Additional discussion of Facility lighting is included in the Lighting Plan included in the Visual Impact Minimization and Mitigation Plan (VIMMP) (see Appendix 8-B of the Section 94-c Application).

5.3.4 Visual Impact of Overhead Collection Line and Interconnection Facility

The majority of the on-site electrical collection lines will be buried and therefore will not contribute to the Facility's visual impacts. However, visual impact could result from construction of the interconnection facility and a section of overhead collection line. Viewpoint 59 illustrates the proposed POI switchyard from County Route 6 at a distance of 177 feet. This is the most open and unobstructed publicly-available view of the POI switchyard. The existing view from this location was noted by rating panel members as having low to moderate scenic quality, consisting of open pasture land with visible existing utility infrastructure and dense vegetation that limits expansive views. Due to the scale and complexity of the POI switchyard components, the simulation from this viewpoint received a contrast rating score of 3.3 (appreciable/strong). With the mitigation plantings in place, the contrast score was reduced by 0.4, to 2.9, which is in the appreciable range. The landscape mitigation was noted by the rating panel as effective in softening the view and the lower portion of the POI switchyard. However, the taller structures that were not screened from view were noted as presenting visual contrast with the existing landscape.

Viewpoint 63S illustrates the proposed collection substation and BESS from County Route 6 at distances of 225 and 433 feet, respectively. This viewpoint received a composite rating panel score of 2.4 (moderate/appreciable) due primarily to the proximity of the view and the size of the collection substation's sound barrier wall which presents appreciable contrast with the nature features of the landscape. Rating panel members noted that visual impact of the BESS was limited due to its low height and the presence of existing utility infrastructure. With the landscape mitigation in place, the contrast score was reduced by 0.5, to 1.9, which is in the moderate range. Rating panel members noted that the visual effects of the Facility were softened through the use of vegetative mitigation. However, the sound barrier wall is only partially screened due to the break in vegetation that is required to accommodate the access road, and the visible portion of the wall was noted as a source of visual contrast with the existing landscape. In time, the evergreen trees will grow in height and width and will further reduce visibility of the sound barrier wall.

Viewpoint 63SE illustrates the proposed collection substation and POI switchyard at distances of 240 and 600 feet, respectively. This view is from the same location as Viewpoint 63S, but the view is oriented to the southeast rather than to the south. This viewpoint received a visual composite rating panel score of 2.9 (appreciable) due to the proximity, size, and complexity of the substation components which present appreciable contrast with the existing

natural features of the landscape. With the landscape mitigation in place, the contrast score was reduced by 0.4, to 2.5, which is in the moderate range. Rating panel members noted that the landscape mitigation provides some screening and softening of the substation and POI switchyard, but the taller components that rise above the mitigation remain a source of visual contrast with the existing landscape.

The overhead collection line viewed alone is not likely to result in significant visual contrast due to its relatively low/narrow profile, distance from the viewer, and/or similarity to existing utility poles present along roadsides throughout the VSA. However, as discussed in Section 5.3.1, this component of the Facility has the effect of increasing potential visual clutter and contrast with the existing landscape when viewed amongst the Facility's PV panels, access roads, and fencing. These types of views typically only occur at elevated vantage points with minimal screening features, such as Viewpoint 44 on Sinden Road (see Attachment D for a full viewpoint description).

5.3.5 Visual Impacts During Construction

Visual impacts during construction are short-term and associated with vehicular activity and temporary Facility Site disturbance. These are anticipated to include the following:

- A temporary increase in truck traffic on area roadways. Construction vehicles for the Facility will include pickup trucks, dump trucks, and 18-wheeled delivery trucks.
- During construction, fenced, gravel-surfaced temporary laydown areas will be developed throughout the Facility Site. The temporary laydown yards will be occupied by vehicles, equipment, construction trailers, and/or stockpiled materials, for the duration of construction. At the end of construction, the gravel yards will be removed, and the sites restored to pre-construction conditions.
- Temporary erosion control measures will be installed during the construction process. These will consist of low black silt fencing, stone check dams, staked haybales, and other such measures. All erosion control materials will be removed once disturbed soils on site are revegetated.
- Construction equipment, including concrete trucks, excavators, pile driving equipment, and other construction vehicles will be actively operating on the Facility Site for the duration of construction.
- The underground collection lines are typically installed with the use of a cable plow to minimize soil disturbance, although open trenching may be used in places. Stripping and stockpiling of topsoil and subsoil during open trench installation of buried collection lines may be visible during construction, although such work will typically occur within and between PV arrays, relatively far from view. All areas disturbed in this manner will be restored and revegetated following installation.
- PV racking assembly will involve a series of steel piles (I-beams) or screw anchors being driven into the ground, without the need for concrete foundations. With the piles in place, the racking equipment used to mount the PV modules is installed on the piles, followed by attachment of the PV panels to each rack. This process is accomplished by the use of light equipment, and completed in sections, thus limiting the extent and duration of visual impact in any one location during the construction period.
- Restoration of all temporarily disturbed areas within and adjacent to solar arrays and other Facility components will be achieved by seeding with a native seed mix to reestablish vegetative cover in these areas. Restoration will eliminate visual impacts resulting from soil and vegetation disturbance during construction.

Representative photographs of the appearance of typical construction activities at solar facilities are included in Inset 5.3-1, below.

Inset 5.3-1 Representative Photographs of a solar facility during construction.

5.3.6 Glare Impacts

To address the potential for reflected sunlight from the proposed PV panels to create glare that could impact adjacent receptors, a glare assessment was prepared by EDR. This assessment evaluated the potential for glare produced by the Facility to impact non-participating residences and public roadways located adjacent to the facility. The solar glare assessment determined that solar glare exposure at non-participating residences, airports, and public roadways will largely be avoided or minimized, and is not anticipated to result in complaints, impede traffic movements, or create

safety hazards. A full discussion of the methodology and results of the glare analysis and proposed mitigation measures is presented in the Visual Impact Minimization and Mitigation Plan (VIMMP), included in Appendix 8-B to the Section 94-c Application.

5.3.7 Cumulative Visual Impacts

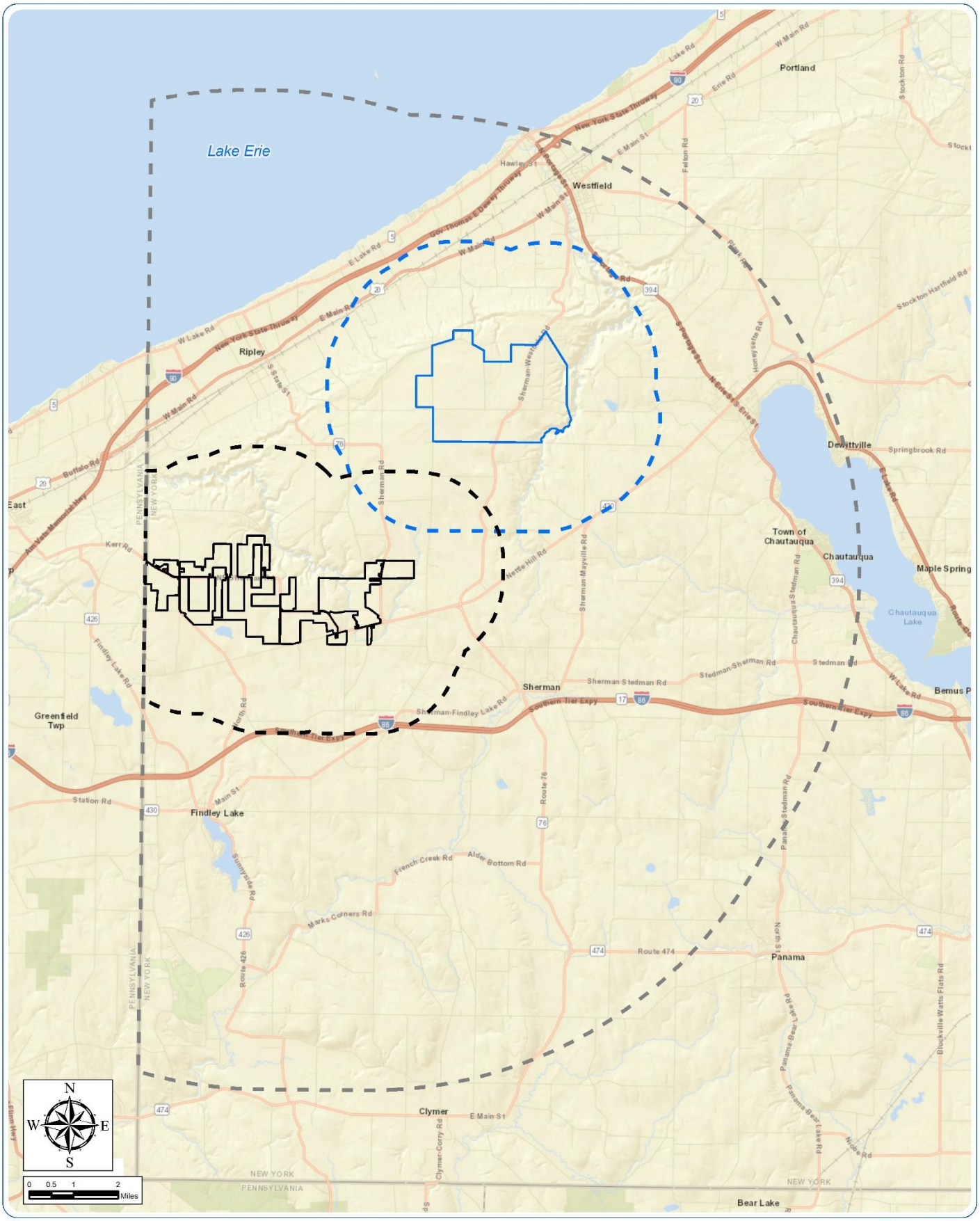
Per the requirements set forth in 94-C, the potential cumulative visual effect of renewable energy projects currently operating or proposed in the surrounding region must be considered. Cumulative impacts are two or more individual visual effects which, when taken together, are significant or that compound or increase visual effects. This section addresses the potential cumulative visual impacts that may occur as a result of the South Ripley Solar Project and other nearby renewable energy facilities. Existing and proposed renewable energy facilities were identified in the ORES Permit Applications database (ORES, 2021) which lists applications under review and permitted applications. In addition, any renewable energy facilities observed from the field visits and recent aerial imagery were considered. No operating renewable energy projects within 10 miles of the proposed South Ripley Facility were identified, and the only project under development within this distance is the proposed Empire Solar Project. The Empire Solar Project is a proposed 125 MW facility located in the Town of Westfield, approximately 2.7 miles from the South Ripley Facility (at its closest point). The Empire Solar Project is in the early stages of application development under 94-c and no facility design or equipment details are currently available. Therefore, a quantitative cumulative viewshed analysis (to identify areas of overlapping project visibility) could not be performed. However, the potential for cumulative impacts based on currently available project information is discussed below.

As indicated in the VIMMP in Appendix 8-B of the Section 94-c Application, the South Ripley Facility has been sited in a sparsely populated area with relatively few visually sensitivity resources or receptors. The Facility layout includes multiple PV panel arrays separate from one another by woodlots and hedgerows that limit the visibility and perceived size of the Facility. Dissected/rolling topography in the area also serves to limit the extent of Facility visibility (i.e., usually only small portions of the Facility are visible from any given location). Siting the Facility in this manner serves to limit its visual impact and the potential for cumulative visual impacts.

Consistent with the findings of this study, and based on EDR's experience on other projects, the viewsheds of most large-scale solar projects in Western New York State rarely extend beyond 1 mile due to the relatively low height of the panels and effective screening provided by intervening vegetation, structures, and topography. Visibility beyond this distance is almost always extremely limited, and if views are available, they typically include only small portions of the Facility from limited geographic areas. This is demonstrated for the South Ripley Facility by the simulation from Viewpoint 75, which is approximately 1.4 miles from the nearest portion of the Facility. Given that the Empire Solar Project is almost 3 miles from the Facility Site (see Figure 5.3-1) the opportunity for cumulative visibility of these projects from any given viewpoint within the VSA will be minimal.

However, if both solar projects are ultimately approved and built in the area, the more likely cumulative impact will occur when viewers travel through the area and see portions of both projects in sequence. Depending on the specific travel route, this could result in foreground and near-foreground views of PV panel arrays from both solar projects as the viewer passes through or near each facility site. At any given location, visible PV panels are likely to be limited to the closest facility and therefore will not contribute to cumulative visual impacts. The overall effect of sequentially passing through multiple renewable energy projects while traveling through Chautauqua County will likely be the

perception of a transition from an agricultural landscape to one that now includes a mix of agriculture and energy generation uses. This perceived transition in land use/landscape character may be modified by proposed mitigation plantings at the solar projects. Over time, these perimeter plantings will serve to screen views of the PV panels from area roadways, which would presumably reduce their individual and cumulative visual impact. However, these plantings are also likely to add more woody vegetation to the landscape, which will serve to enclose available views and screen views of other more distant landscape features. This could also result in a perceived reduction in agricultural use/character, even if the PV panels themselves are largely screened. Thus, over the long term, the cumulative effect of multiple solar projects could be a perceived transition from open agricultural land to a more forested rural landscape.



South Ripley Solar Project

Town of Ripley, Chautauqua County, New York

Visual Impact Assessment

Figure 5.3-1: Sequential Cumulative Impact

Notes: 1. Basemap: ESRI ArcGIS Online "World Street Map" map service. **2.** This map was generated in ArcMap on November 29, 2021. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.

- South Ripley Solar Facility Site
- South Ripley Solar 2-Mile VSA
- Empire Solar Project Area
- Empire Solar 2-Mile VSA
- 10-Mile Cumulative Visual Impact Study Area

6.0 CONCLUSIONS

6.1 Summary of the VIA

The results of the VIA for the South Ripley Solar Facility are summarized as follows:

1. Viewshed analysis based on existing topography, vegetation and structures indicates that the proposed PV panel arrays will be screened from approximately 88.6% of the VSA (i.e., 11.4% of the VSA is indicated as having potential visibility of the arrays). This limited visibility from the surrounding area is primarily attributable to the low profile/height of the proposed PV panels combined with topographic variation and an abundance of hedgerows and woodlots that obstruct long distance views. The near-foreground zone has the highest level of Facility visibility (4.4 sq. mi. or 31.1%). However, 2.9 sq. mi. (64.8%) of this potentially visible area occurs within the Facility Site itself. Therefore, near-foreground visibility will occur within approximately 10% or 1.5 square miles of the off-site near foreground.

2. The greatest potential for visibility of the proposed PV panel arrays occurs within the Rural Residential/Agricultural LSZ. Viewshed analysis indicates that 3.8 sq. mi. (28.7%) of this LSZ could potentially have views of the arrays. Potential visibility within this LSZ is most heavily concentrated within the near-foreground (0-0.5 mile) distance zone.

3. Based on the viewshed analysis results and field review, the River Gorge and Transportation LSZs will not have any views of the proposed PV panels. The lack of visibility from within these LSZ is primarily attributable to the combined effect of screening provided by existing vegetation, steep topography, and distance from the Facility. According to the PV panel viewshed analysis the 4.2% of the area composing the Forest LSZ will have potential views of the Facility. However, 76 percent of the visible area within the Forest LSZ occurs in areas where clearing of forest vegetation is being proposed to accommodate PV panels within the Facility Site.

4. Viewshed analysis indicates that the Facility could be at least partially visible from 11 (79%) of the 14 identified VSRs that occur within the VSA. As described in Section 4.1.1, the viewshed analysis does not consider screening elements within 50 feet of roadways. Since a significant portion of the identified VSRs occur along these roadways, the viewshed analysis likely overstates potential visibility from these resources. This is particularly the case for resources occurring within the middle ground distance zone where even landscape trees and road signs can provide screening and compete for viewer attention.

5. Two VSRs that will have more direct views of the PV panel arrays based on the viewshed analysis (as well as field review and visual simulations) are the South Ripley Cemetery (Viewpoints 69) and the Concord Grape Belt State Heritage Area (Viewpoints 5, 15, 16, 20, 24, 40, 44, 51, 56, 59, 63, and 69). According to the rating panel, the Facility will present moderate visual contrast with the existing landscape at these locations. In all instances, the proposed mitigation plantings reduce potential visual contrast to some degree, and it is anticipated that over the lifespan of the Facility, continued growth of the plantings will further reduce the visual contrast experienced at these locations.

6. Viewshed analysis of the proposed collection substation, POI switchyard, and BESS (the Interconnection Facility) indicates that 0.4% of the VSA may have some visibility of these Facility components (i.e., 99.6% of

the VSA will be screened from view of the Interconnection Facility). Because the viewshed analysis considered the tallest structural components of these facilities, visibility is likely overstated since the overhead gantry structures at the collection substation and POI switchyard are at least 30 feet taller than the majority of the above-ground interconnection equipment and have a relatively narrow profile that will be difficult to discern at distances beyond 1 mile. Areas indicated as having potential Interconnection Facility visibility are largely restricted to County Route 6 and neighboring residential properties. To address potential visual impacts from these adjacent properties, substantial vegetative mitigation is being proposed adjacent to the roadway and along the perimeter of these facilities.

7. Viewshed analysis of the proposed overhead collection line suggests that 5.7% of the VSA could have potential visibility of this Facility component. Visual impacts will be limited by the fact that the overhead collection line traverses a lightly populated area and is similar in appearance to typical road-side utility poles. However, when viewed in the context of the other Facility components, the structures may contribute to increased visual contrast and clutter. In certain locations, such as Viewpoint 44, vegetative mitigation can effectively reduce these impacts.

8. Field review confirmed that the area with the greatest potential visibility of Facility components occurs within 0.5 mile of the proposed PV panel arrays, where open agricultural fields afford unobstructed views of the landscape. Longer distance views are largely limited to some open hilltops (e.g., Viewpoint 75) within the foreground and middle ground distance zones (0.5 – 2.0 miles). Field review also confirmed that forested areas and river valleys (River Gorge LSZ) generally offer the fewest open views of the Facility Site.

9. Field review confirmed that VSRs within the near-foreground distance zone will have the greatest potential for unscreened views of the Facility, include two sites eligible for listing on the NRHP (4704 State Route 76 and the South Ripley Cemetery), the Grape Belt State Heritage Area, three roads, and four resources identified through stakeholder outreach.

10. Simulations of the proposed Facility indicate that the visibility and visual impact will be variable. The greatest visual effect is anticipated in near foreground areas where a sizeable area of PV panels will be visible when immediately adjacent to the interconnection facility, where the solar arrays are unscreened, and/or where multiple Facility components are visible. Conversely, impact will be smallest when the Facility is viewed at greater distances, in a setting with existing utility infrastructure in place, and/or in locations where it is partially screened by existing vegetation.

11. As demonstrated by the visual simulations and visual impact assessment rating results, the proposed Landscape Mitigation Planting Plan can be effective in reducing the visual contrast presented by the proposed Facility. The intent of the planting plan is to both screen the Facility and minimize its potential visual effect by integrating the Facility into the surrounding landscape. The Landscape Mitigation Planting Plan will be most effective at mitigating the visual impact of the Facility in those instances where it screens substantial portions of the PV panels, breaks up the continuous horizontal and vertical lines of the arrays, and blends with forest vegetation in the surrounding landscape. Conversely, the plantings will be least effective in reducing visual impact where they are thin or viewed from more elevated viewpoints.

12. The PV panels, perimeter fencing, and gates will not be lit. The only permanent light sources anticipated at the Facility are safety/security lighting to be installed at the collection substation, POI switchyard, and BESS. Illumination at the interconnection facility is designed to comply with applicable state and local standards. All proposed exterior lighting will be placed at the lowest practical height and will utilize shielded fixtures with no drop-down vertical elements to minimize light trespass and off-site spillage. Additionally, all lighting will utilize automatic activation dependent on light sensitive switches (manual activation as potential alternative) to minimize the duration of required lighting.

13. Construction impacts are short term/temporary impacts that will last only for the duration of construction (anticipated to be approximately 18 months). Upon completion of construction, construction vehicles and equipment will depart, and disturbed portions of the Facility Site will be restored.

14. Cumulative visual impacts resulting from multiple solar projects are unlikely to occur when considering a single viewer position because the nearest proposed facility, the Empire Solar Project, is located approximately 2.7 miles away from the South Ripley Facility. However, a sequential cumulative visual effect could occur if a traveler is driving a specific route that includes views of both solar projects proposed in the area. Given the fact that frequently traveled connector or arterial roads do not provide direct connection between these projects, any cumulative visual effects are likely to be minor.

6.2 Mitigation of Visual Impacts

The minimization and mitigation of visual impacts is an important consideration when siting and designing solar facilities. The Section 94-c regulations require development of a Visual Impact Minimization and Mitigation Plan (VIMMP) that evaluates potential mitigation options such as relocation, camouflage/disguise, low profile, downsizing, use of alternative technology, non-specular material, lighting, and screening (see Appendix 8-B of the Section 94-c Application). Of these, the use of vegetation to help screen views of a solar facility and integrate the Facility into the surrounding landscape is widely viewed as the preferred method of mitigating the visual impacts of solar facilities (e.g., NYSERDA, 2019; Scenic Hudson, 2018; Sullivan and Abplanalp, 2013; Walston, et al. 2018). As described in Attachment A to the VIMMP, the proposed Landscape Mitigation Planting Plan calls for the use of different planting modules based on landscape setting and the proximity of sensitive receptors. In all of these modules, native species and planting arrangements are used to mimic the character of roadside vegetation, hedgerows, and woodlots in the VSA, thus minimizing and mitigating the Facility's visual contrast with the surrounding landscape. This conceptual planting plan was developed as a site-specific solution appropriate to the scale of the Facility and visual character of its setting.

Other mitigation measures proposed in the VIMMP are summarized below:

- Reduced Number and Profile (Height) of Facility Components – Facility size has been reduced to 3,382 acres from 3,764 acres to address a number of environmental constraints (coincidentally or purposely including visual resources). Further reduction would not significantly reduce visual impact unless a substantial number of PV arrays were removed. Significantly downsizing the Facility would result in decreased energy output and would not meet the goals of the Project or State climate legislation. The proposed PV panels are relatively low-profile units with a maximum height of 13 feet. At this height, the proposed mitigation plantings along with the existing topography, vegetation, and structures can provide effective screening of the PV arrays.

Components of the interconnection facility are proposed at the minimum heights necessary to reliably and safely operate the Facility.

- Alternate Technologies – While single axis tracker panels could potentially reduce the height of the PV panels during a portion of the day, at a height of 13 feet, the proposed fixed-tilt panels will be minimally visible throughout the VSA. Additionally, single axis tracker panels would require additional area for the Project to meet its capacity goals.
- Facility Color/Design – Where possible, the Facility will utilize neutral-colored materials that reduce the potential for significant color contrast with the surrounding environment. However, given the limitations on flexibility in materials and design, the color of the PV panels and racking system cannot be altered. Regarding the design of the Facility, minimal grading and earthwork is anticipated and therefore the PV arrays will generally follow the contour of the land, resulting in retention of the existing landform. In order to reduce color contrast of the collection substation sound barrier wall, a neutral earth tone color and stone texture was selected. Color contrast associated with the BESS was noted by the rating panel in review the visual simulations. Due to their white color, the BESS becomes a focal point of views from adjacent roads. A more neutral, earth tone color, if available, could minimize the color contrast of the BESS with its surroundings.
- General Facility Lighting – The only light sources anticipated at the Facility are safety/security lighting to be installed at the interconnection facility. Lighting will meet all of the requirements of state, local, and Section 94-c regulations.
- Minimize Glare – The proposed PV panels will have anti-reflective coating to minimize potential offsite glare. However, a glare analysis prepared by EDR indicated that a small number of nearby receptors located adjacent to PV panels could experience some glare. It is anticipated that the proposed vegetative screening will provide a reduction in the potential for glare. Additionally, the Applicant will work with residents and stakeholders in responding to concerns should they occur. Additional information on glare is included in the Appendix 8-B of the 94-c application.
- Prohibit Advertising/Minimize Signage – The placement of any signage at the Facility, beyond that required for safety and identification purposes, will be prohibited.
- Underground Electrical Collection System – The vast majority of the electrical collection system will be installed underground, with minimal tree clearing required. Overhead collection lines are proposed in locations based upon landowner constraints and where underground burial is not feasible or would result in adverse environmental impacts that could be avoided or minimized by installing an overhead line. Additionally, overhead lines are proposed to be located in sparsely populated area away from population centers, homes, and roads and will be seen by relatively few viewers.
- Non-specular Conductor and Non-reflective Finishes – Inverters will have a flat, neutral finish. Overhead conductors on the collection line will utilize non-specular materials.

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ATTACHMENTS

ATTACHMENT A

Composite Overlay Map

ATTACHMENT B

Viewpoint Photolog

ATTACHMENT C

Visually Sensitive Resources Visibility Analysis

ATTACHMENT D

Visual Simulations and Contrast Rating

ATTACHMENT E

Contrast Rating Forms and Panel Information

ATTACHMENT F

Stakeholder Outreach and Responses