Visual Impact Assessment

Permit Application No. 23-03027

June 2025

SUGAR MAPLE SOLAR PROJECT

Towns of Croghan and Wilna, New York

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** An abbreviated version of this plan has been provided. Information not critical to the assessment of visual impacts has been removed. Complete plans are provided in the Article VIII application in the following locations:*

- *Site Plan – Revised Exhibit 5, Revised Appendix 5-1*
- *Landscape Plan – Revised Exhibit 5, Revised Appendix 5-1*
- *Collector Substation, POI Switchyard, and POI Transmission Structures: Plan & Profile Drawings and Lighting Plan – Revised Exhibit 5, Revised Appendix 5-1*

ACRONYM LIST

Acronym	Definition
3D	Three-dimensional
AADT	Annual Average Daily Traffic
ACS	American Community Survey
AMSL	Above Mean Sea Level
ASL	Above Sea Level
BESS	Battery Energy Storage System
BLM	Bureau of Land Management
CAD	Computer-aided Design
CDP	Census Designated Place
DOE	Department of Energy
FAA	Federal Aviation Administration
GIS	Geographic Information Systems
HDD	Horizontal Directional Drilling
LOS	Line of Sight
LSZ	Landscape Similarity Zones
NESC	National Electrical Safety Code
NLCD	National Land Cover Dataset
NPS	National Park Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSERDA	NYS Energy Research and Development Authority
NYSOPRHP	New York State Office of Parks, Recreations, and Historic
OPRHP	Office of Parks, Recreation and Historic Preservation
ORES	Office of Renewable Energy Siting and Electric Transmission
ORV	Outstandingly Remarkable Value

Acronym	Definition
OSHA	Occupational Safety and Health Administration
PEJA	Potential Environmental Justice Areas
PEP	Population Estimates Program
POI	Point of Interconnection
SGHAT	Solar Glare Hazard Analysis Tool
SHPO	State Historic Preservation Office
SRHP	State Register of Historic Places
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USGS	United States Geological Survey
VIA	Visual Impact Assessment
VIMMP	Visual Impact Minimization and Mitigation Plan
VSA	Visual Study Area

1.0 INTRODUCTION

Sugar Maple Solar, LLC (the Applicant) is proposing to develop and construct the Sugar Maple Solar Project (the Facility), a proposed 125-megawatt (MW) photovoltaic (PV) utility-scale solar project located in the Towns of Croghan in Lewis County and Wilna in Jefferson County, New York (see Attachment 1, Site Plan, and Attachment 2, Figure 1, Site Location Map). The Applicant is submitting an application to the Office of Renewable Energy Siting and Electric Transmission (ORES) for a permit pursuant to Chapter XI Title 16 of New York Codes, Rules and Regulations (NYCRR) Part 1101- (Subparts 1101-1 – 1101-15) (Article VIII). In accordance with the regulatory standards of *Revised* Exhibit 8 in Article VIII, TRC has prepared and presented herein a Visual Impact Assessment (VIA) of the Facility. The VIA provides a comprehensive review concerning the potential extent and significance of visual change associated with the proposed Facility.

1.1 Regulatory Requirement and Methodology

As mentioned, the VIA herein was produced in accordance with the requirements of *Revised* Exhibit 8 of 16 NYCRR Section 1101-2.8 to assess the extent and significance of Facility visibility. The established framework for developing the VIA includes, but is not limited to, the identification of visually sensitive resources, visibility viewshed mapping, photographic simulations (also known as "visual simulations", "photographic overlaps", or "simulated views"; referred to herein as "photo-simulations" or "simulations") and proposed visual mitigation. Within the context of the *Revised* Exhibit 8 requirements, this VIA shall address the following criteria:

- The character and visual quality of the existing landscape,
- Consistency review of viewpoint selection for representative photographic overlays (photo-simulations) per the requirements of adopted local laws or ordinances (see Section 7.3.2),
- Identification of aesthetic resources, as well as those anticipated to experience Facility visibility,
- The visibility of the Facility (aboveground elements),
- The appearance of the Facility (photo-simulations) from key locations,
- The nature and degree of visual change resulting from construction and operation of the Facility, and
- Assessment of the related operational effects of the Facility.

By addressing the above requirements, the VIA provides both a quantitative and qualitative assessment to determine the extent and significance of Facility visibility. The VIA's visual analyses, methodologies, and conclusions collectively provide useful information used to inform agencies and the public of potential visual effects and the relative significance or insignificance thereof. To conduct the VIA, a Visual Study Area (VSA) was established as a two-mile radius

around the fence perimeter of the proposed Facility in accordance with 16 NYCRR Section 1101-2.8.

1.2 Requirements of Local Laws

The Facility has been designed to comply with the Town of Croghan and Town of Wilna local laws to the maximum extent practicable. The prescribed Article VIII regulations exceed the visual requirements of the local laws, however, the Town of Croghan and Town of Wilna local laws applicable to the analysis of visual impact have been furth elaborated on as follows.

Article X. Section 1050. C. 7. Screening. All Large-Scale Solar Energy Systems shall have the least visual effect practical, as determined by the Planning Board. Based on site specific conditions. Including topography, adjacent structures, and roadways, reasonable efforts shall be made to minimize visual Impacts by preserving natural vegetation, and providing landscape screening to abutting residential properties, public roads, and from public sites known to include important views or vistas, but screening should minimize the shading of solar collectors. Appurtenant Structures such as inverters, batteries, equipment shelters, storage facilities, transformers, shall be screened.

Response: The conclusions furnished in Section 14.0 provide evidence that the Facility has been designed to have the least visual effect to sensitive resources, large population centers, and non-participating residential properties. Efforts are made to minimize Facility visual impacts by utilizing existing vegetation and proposed landscaping (see Section 11.11 for the discussion of the proposed planting plan). No important views or vistas were identified within the VSA. No important views or vistas were explicitly listed in local planning documents, or state, or federal resource databases. Further, as discussed in Section 10.3, a rating panel evaluated the scenic quality of the existing landscape from seven locations throughout the VSA, the results of this assessment suggest that views facing the direction of the Facility have weakly moderate to moderate ratings of scenic quality, meaning the views are not significantly scenic in nature. Appurtenant Structures such as inverters, batteries, equipment shelters, storage facilities, transformers are partially screened by existing vegetation, and in some instances, inverters are obstructed by the solar arrays. The BESS, collector substation, and switchyard are covered by existing vegetation on the western, eastern, and northern fronts, and are setback at a moderate distance of 0.39 miles from the nearest public road (Wrape Road).

§250-49. E. 3. G Screening. All large-scale solar energy systems shall have the least visual effect practical, as determined by the Planning Board. Based on site specific conditions, including topography, adjacent structures, and roadways, reasonable efforts shall be made to minimize visual impacts by preserving natural vegetation, and providing landscape screening to abutting residential properties, public roads, and from public sites known to include important views or vistas, but screening should minimize the shading of solar collectors. No more than 15% of the total existing brush, trees, and other perimeter screening vegetation on a parcel of property may be removed in order to accommodate a solar farm. Appurtenant structures such as inverters, batteries, equipment shelters, storage facilities, and transformers shall be screened.

Response: The conclusions furnished in Section 14.0 provide evidence that the Facility has been designed to have the least visual effect to sensitive resources, large population centers, and non-participating residential properties. Efforts are made to minimize Facility visual impacts by utilizing existing vegetation and proposed landscaping (see Section 11.11 for the discussion of the proposed planting plan). No important views or vistas were identified within the VSA. No important views or vistas were explicitly listed in local planning documents, or state, or federal resource databases. Further, as discussed in Section 10.3, a rating panel evaluated the scenic quality of the existing landscape from seven locations throughout the VSA, the results of this assessment suggest that views facing the direction of the Facility have weakly moderate to moderate, meaning the views are not significantly scenic in nature. The Facility will be designed to comply with these requirements to the extent practicable. One parcel exceeds the Town's 15% clearing threshold (Parcel 86.00-2-32.21) at 32% because the parcel is small (0.038 square mile) but has vegetation that will be removed for the Facility; therefore, the Applicant is seeking a waiver with respect to this parcel.

Article III. Section 330. Landscaping and Screening. That the proposed development, all parking, storage, loading, and service areas are reasonably *screened* during *all seasons* of the year from the view of adjacent residential areas and that the general landscaping and method of construction on the site is in character with the surrounding areas. Consideration of aesthetics in the project design and compatibility of signs with neighboring uses should be given.

Response: The Facility is employing a planting plan in order to reasonably screen the solar arrays. The planting plan is comprised of an arrangement of two templates: Template Type A contains the most comprehensive screening with a predominant arrangement of native evergreen trees, smaller native ornamental-type deciduous trees, and native deciduous shrubs that are wildlife and pollinator-friendly in nature. Template Type A is utilized in places where existing vegetation is absent. Template Type B contains native evergreens and is utilized in a location where availability of planting space is limited due to pre-existing and proposed conditions that include but is not limited to utilities, roadway rights-of-way, and drainage elements. Deciduous and evergreen species will provide reasonable screening of the Facility during all seasons in accordance with the bylaw. Other than warning and safety signs, no advertisements, conspicuous lettering, or logos will be permitted on Facility components.

§250-68. C. 4. Lighting. Lighting of the battery energy storage systems shall be limited to that minimally required for safety and operational purposes and shall be reasonably shielded and downcast from abutting properties.

Response: Section 11.13 discusses the lighting plan for the Facility. According to the lighting plan (see Attachment 7 for the plan). A minimum range of one to nine foot candelas occurs at the extents of the switchyard, and a minimum range of one to six foot candelas occurs at the extents of the collector substation. One foot candela is equivalent to one lit candle. Because rural undeveloped lands encompass the substations, the predicted minimal light creep is not expected to result in a negative effect to the larger environment. The lighting plan was developed for the collector substation and switchyard in compliance with 1101-2.8 (9) for security, safety, and

maintenance purposes and will remain off during regular operation. Lighting will be manually engaged for intermittent operations, maintenance, or emergencies.

§250-68. C. 9. D. Screening and Visibility. Tier 2 Battery Energy Storage Systems shall have views minimized from adjacent properties to the extent reasonably practicable using architectural features, earth berms, landscaping, or other screening methods that will harmonize with the character of the property and surrounding area and not interfering with ventilation or exhaust ports.

Response: The BESS utilizes screening methods consisting of existing vegetation and setback distance. As depicted on Figure 1, several large woodlands surround the BESS on the east, west and northern fronts. This dense forested vegetation, along with setback distance from residences provides a natural screening to the extent reasonably practicable, and will retain the existing character of the property and surrounding area.

2.0 FACILITY CHARACTERISTICS AND DEFINITIONS

The Facility will be sited on rural-agricultural land characterized by relatively flat terrain with land use predominantly consisting of agriculture land. In these lands, other landscape components are prevalent and include tree hedgerows, forests, and lesser amounts of farmstead and rural-residential development. In total, the Facility will have a generating capacity of 125 MW alternating current (AC). The Facility Site includes 735 acres of land within the Towns of Croghan and Wilna, Jefferson and Lewis County, New York. The Facility limits of disturbance is limited to approximately 735 acres and will include components such as solar PV arrays, inverters, security fencing, haul roads, temporary laydown yards, underground electric collector system, a collector substation, a switchyard, a Battery Energy Storage System (BESS), and a medium voltage overhead collection line. The final Point of Interconnection (POI) will be facilitated with ten separate POI transmission structures (see below for a description).

The following definitions will be used to describe various areas or boundaries of the Facility throughout the VIA:

Facility: is defined as the proposed components to be constructed for the collection and distribution of energy for the Sugar Maple Solar Project, which includes solar arrays, security fencing, access roads, inverters, buried electric collector lines, aboveground medium voltage collector line, a collector substation, a switchyard, and a Battery Energy Storage System (BESS).

Facility Site: The parcels encompassing Facility components which totals 735 acres in the Towns of Croghan and Wilna. (Figure 1 of Attachment 2).

Visual Study Area (VSA): A 2-mile radius is assigned around the proposed fence perimeter of the Facility for the assessment of visual impacts.

Component: A single part, piece of equipment, or improvement of the Facility. For example, a component can be described as the solar arrays, electrical collector system (transformers, inverters, collector lines), substations, access roads, laydown/staging areas, fencing, or any single item or group of items attributed to the Facility.

The VIA provided herein evaluates the proposed changes in the existing visual environment as it relates to aboveground components of the Facility. The following definitions are provided for all aboveground Facility components evaluated in this VIA:

Solar Arrays: For the purposes of collecting solar energy, the Applicant intends to use a solar module comparable to the Eagle 72 G6B N-Type Bifacial solar module. This module's appearance can be described as a rectangular form that resembles a dark blue checkered texture. The module will be affixed to a tracker racking system similar to the NX Horizon Single Axis Tracker. This racking system is comprised of non-reflective grey metallic components such mounting piles, metal framing, and rails. A specification sheet for the module and racking system is included as Revised Appendix 5-1 in Revised Exhibit 5. The maximum height of the solar array panels used in the VIA is set at 10 feet and 7.5 inches (10.65 feet) from finished grade, inclusive of the racking system. This conservative solar panel height specification is intentionally set to account for future unknown manufacturer changes that may result in changes to the solar array's maximum height.

Solar Array Inverters: The Applicant intends to use SMA Sunny Central UP, or similar inverter for the solar arrays. These inverters will be strategically placed throughout the central areas of the solar arrays to minimize their visual impact. Inverters convert Direct Current (DC) electricity generated by the solar modules into AC electricity. Cables from the solar modules are run to the inverters using an aboveground cabling system or underground lines from the inverters, underground collector lines and an aboveground medium voltage connection line will transport the electricity to the Facility's collector substation and POI switchyard, eventually integrating it into the existing electric transmission system. A specification sheet for these inverters is included in Revised Appendix 5-1 of Revised Exhibit 5. The inverter will employ a 7.6-foot maximum height, a 5.2-foot width, and a 9.2-foot length. As shown in the inverter specification cover, the enclosed components are organized within a metal frame, and the inverter's exterior colors will predominantly feature gray material colors.

Collector Substation: The collector substation will be located 0.38 miles west of Wrape Road and 0.61 miles north of Strickland Road adjacent to the existing National Grid Black River-Taylorville Line 2 and North Carthage-Taylorville Line 8. Within the substation, a step-up transformer will increase the voltage from 34.5 kilovolts (kV) to 115 kV for interconnection. The substation utilizes 0.90-acre of rural/open land and will be located adjacent to solar panels northern end of the Facility. Access to the substation will be available via a new access road from Wrape Road. A single termination structure at the collector substation will facilitate an underground cable connection to the switchyard. Four 55-foot standalone lighting masts will be centrally positioned within the substation. A

variety of equipment with lesser heights (ranging approximately 19.5 to 24.5 feet) will support the collector substation and include, but is not limited to switches, breakers, bus work, transformers, and a control house. In general, the color of the substation will be gray, and the control building facade will consist of grey Mega Rib panels. Section drawings and profiles of the collector substation can be found in Plan 7B of Attachment 7 (Collector Substation, Switchyard, and BESS: Plan & Profile Drawings and Lighting Plan). The compete set of plans and sections of the substation are available in Revised Appendix 5-1 of Revised Exhibit 5.

Switchyard: The switchyard is located approximately 220 feet south of the collector substation, 0.43 miles west of Wrape Road, and 0.57 miles north of Strickland Road. The electricity from the collector substation will be routed northeast to the switchyard using underground electric cabling. A single access road will be available from Wrape Road to facilitate access in the event maintenance is required. As shown in the switchyard plans of Attachment 7, the tallest switchyard structures constitute five 75-foot a-frame structures (approximately 59-foot structures with a 16-foot static mast mounted on top). These structures serve a dual purpose of protecting equipment from lightning as well as transporting electrical cabling from the switchyard substation to the existing National Grid Black River-Taylorville Line 2 and North Carthage-Taylorville Line 8 to complete the interconnection. Several other lower profile switchyard components are between 12 and 29 feet and are identified as breakers, switches, bus work, control building, etc. The total area of the switchyard is approximately 2 acres; sectional drawings and plans of this switchyard can be reviewed in Plan 7B of Attachment 7 as well as in Revised Exhibit 5. The appearance of the switchyard will be gray (galvanized steel), and the control building's facade will be comprised of grey interlocking wall panels.

BESS (Battery Energy Storage System): Electricity from the collector substation will be diverted immediately west to the BESS during high peak production hours when excess energy production exceeds energy demand. In this way, electricity stored within the BESS can reenter the electrical grid as appropriate. The BESS is anticipated to store a total of 20 MW of electricity and will furnish several rows of iso containers in succession with dimensions of 40 feet in length, 8 feet in width, and 9.5 feet in height. Each enclosure will be surfaced in a grey color. Plans and sections of the BESS are available in Attachment 7 and Revised Exhibit 5.

POI Transmission Structures: Ten POI transmission structures are proposed to facilitate interconnection from the Facility to the existing National Grid Black River-Taylorville Line 2 and North Carthage-Taylorville Line 8. The new transmission structures will be surfaced in galvanized steel, configured as double-circuit monopole structures (85 feet in height), H-frame structures (65 feet in height), and three-pole structures (60 feet in height). The POI transmission line circuits will initiate at four switchyard takeoff structures within the switchyard's footprint: two positioned to the southeast and two to the northwest. A series of two transmission structures per circuit will then route four 115 kV transmission line

circuits to two new double-circuit interconnection structures that will bridge newly generated electricity to the existing National Grid Black River-Taylorville Line 2 and North Carthage-Taylorville Line 8. Plans and sections of the transmission structures and associated transmission lines are available in the Plan & Profile Drawings and Lighting Plan (Plan 7B of Attachment 7 and Revised Exhibit 5).

Access Roads: New permanent access roads are proposed within the Facility Site. These access roads are predominantly 16-feet wide and gravel-surfaced with a geotextile base which provides for a pervious surface. Additionally, one 20-foot access road is proposed to accommodate worker access to the collector substation, switchyard, and BESS. When construction is completed, the access roads will provide a point of access for maintenance workers and authorized personnel.

Fencing: Security fencing for the collector substation and POI switchyard will consist of a 7-foot, galvanized, chain-link fence with a one-foot-long extension arm for attachment of barbed wire, resulting in a total fence height of 8 feet (see Revised Appendix 5-1).

The BESS will employ a 7-foot galvanized chain link self-locking security fence used to enclose the perimeter.

Surrounding all other Facility components, 7-foot height fencing will consist of pressure-treated or pine posts, horizontal and diagonal wood bracing (where necessary), and high tensile steel 6” x 6” fixed-knot wire. This Facility fencing solution will be used to portray an agricultural-like fence for mimicking existing cultural elements in the landscape.

Medium Voltage Overhead Collection Line: Due to underground bedrock constraints, a medium voltage overhead collection line is proposed in three locations to carry 34.5 kV to an area in vicinity to the collector substation. The overhead structures (made of weathering steel) will vary in height from approximately 65 feet to 95 feet above ground level. The first overhead location is positioned in the southeast portion of the VSA, north of Second Road. The pole structures will travel approximately 1.1 miles to the intersection of Second Road and Old State Road where a riser pole will terminate the overhead line section into the underground electric collection system. The second overhead location occurs immediately north of the arrays found west of Branagan Road and travels approximately 1.7 miles to arrays south of the intersection of Strickland and Wrape Road. The third overhead location is positioned at the arrays east of South James Street/State Route 126 and terminates at the arrays south of the intersection of Strickland and Wrape Road. From thereon, the underground electric cabling will facilitate the remainder of the electrical collection system. The overhead structures will contain a dark brown or green weathered steel appearance and will support several overhead cables (conductors and shield wire) for collecting and transporting electricity.

Underground Electric Collector System: The 34.5 kV collector lines will connect the solar arrays with the Facility substation for delivery to the electric grid. These medium

voltage collector lines will be installed underground. Specific installation methods, as well as collector line arrangement, are shown on the Design Drawings (Revised Exhibit 5, Revised Appendix 5-1).

3.0 CHARACTER OF THE EXISTING LANDSCAPE

As mentioned, the Facility is to be sited within the Towns of Croghan in Lewis County and Wilna in Jefferson County, New York. Geographically, the Facility site is situated between the Tug Hill Plateau and the Adirondack Foothills within the Black River Valley. The subsections below describe and define the visual character of the existing landscape within the VSA with topics such as communities and residential, physiography and land uses, water resources, transportation and energy infrastructure, and publicly known proposed land uses (other than the Facility described herein). To investigate the visual characteristics within the VSA, numerous information sources were referenced and consulted, including but not limited to aerial imagery; field assessments; publicly accessible tabular and geospatial data from local, state, and federal agencies; local and regional tourism websites; and public search engines, such as Google.

Separately, as described in Section 6.0, an aesthetic resource inventory was completed in the VSA to identify visual amenities within the existing landscape. These resources are typically designated at the local, state, and federal level and can be reviewed in Tables 4A and 4B of Section 6.1. Methodology used to complete the resource investigation is documented in Section 6.0.

3.1 Community/Residential

In the VSA, development is generally concentrated to communities in vicinity to the Black River, such as the Villages of Castorland, Carthage and West Carthage. Less populated communities are defined by the U.S Census Bureau as Census Designated Place (CDP) are also found near the Black River and are identified as the communities of Deer River and Naumburg. Scattered rural-residential dwellings and farmsteads exist in spacious intervals along local roads and highways throughout the VSA. These dwellings are frequently positioned with ample space between each neighboring property. Conversely, the Villages of Carthage and West Carthage contain a higher accumulation of development within a small, confined area, where congregated observers are expected to be more prevalent. However, viewers in these developed places often experience short and confined viewing experiences due to the massing of multi-story buildings, dwellings, tree vegetation and other infrastructure. The character of these communities is documented as viewpoint (VP) photographs found in the Facility Photolog in Attachment 3. Overall, the amount of population in the VSA is less compared to other more populous regions of New York State.

To convey information pertaining to population densities in the VSA, population data were derived from the U.S. Census Bureau (2020 Decennial Census) and is provided below in Table 1 Population of Communities within the 2-mile VSA. This population data does not account for interstate travelers nor national travelers that may visit the region or travel through to reach other

distant destinations; information pertaining to transportation is available in Section 3.4. To provide further context and scale of the VSA population data in Table 1, the City of Watertown is approximately 14 miles west of the VSA and accounts for a total estimated population of 24,685, or nearly five times the total estimated population within the 2-mile VSA (5,835). Not all townships are completely within the VSA, for example, the Towns of Croghan, Wilna, and Denmark are partially intersected by the VSA, and the Towns of Champion and New Bremen are slightly within the VSA. As shown in Table 1, below, population data is presented for each town, village, and CDP within the VSA.

Table 1. Population of Communities within the 2-Mile VSA

Town/Village	Total Population (2020 Census Estimates)
Town of Wilna[2]	**5,732[1]**
Village of Carthage[2]	**3,236**
Town of Champion[2]	**4,562[1]**
Village of West Carthage[2]	1,780
Town of Croghan[2]	**3,197[1]**
Naumburg (Census Designated Place)	271
Texas (Census Designated Place)[2]	181
Town of New Bremen[2]	**2,785[1]**
Town of Denmark[2]	**2,626[1]**
Village of Castorland[2]	334
Deer River (Census Designated Place)[2]	355
Estimated Population in 2-Mile VSA	**5,835**

[1]This metric accounts for total population within a town jurisdictional boundary.

[2]Jurisdictional boundaries are intersected by the VSA, therefore population estimates of the communities/municipalities are less within the VSA.

As illustrated in Table 1, villages within the VSA typically contain a higher concentration of potential viewers. For example, the Village of Carthage contains a smaller footprint than the Town of Wilna and comprises 56% of the Town of Wilna's estimated population. The remaining percentages of population within the VSA are typically found in CDPs, and a lesser extent of population is described as rural- residential where dwellings may be found punctuated between large expanses of agricultural land.

Lesser populated places in the VSA include the communities of Naumburg, Deer River, Texas and the Village of Castorland. At an approximate 1.74-mile distance, the community of Naumburg is the closest CDP to the Facility.

- *Communities that fall within 0.5 miles of Facility*: Towns of Denmark, Croghan, and Wilna, and Village of Carthage.
- *Communities that fall between 0.5 and 2.0 miles of Facility*: Towns of New Bremen and Champion, the Villages of Castorland and West Carthage, and CDPs of Naumburg, Deer River, and Texas.

For information about the characteristics and potential effects of viewing distances, please visit Section 4.0, Distance Zones.

Two Potential Environment Justice Area (PEJA) were identified within the VSA as PEJA - Census Tract 609, Block Group 5; 2010 Census (609.01, Block Group 3; 2023 Census) and PEJA - Census Tract 610, Block Group 3. PEJAs are administered by the New York State Department of Environmental Conservation (NYSDEC) Office of Environmental Justice for improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities. PEJAs are defined by 6 NYCRR Section 487.3 as areas with populations that meet one or more of the following thresholds:

- 52.42 percent or more of the population in an urban area reported themselves to be members of minority groups; or
- 26.28 percent or more of the population in a rural area reported themselves to be members of minority groups; or
- 22.82 percent or more of the population in an urban or rural area had household incomes below the federal poverty level.

Based on the review of the 2020 PEJAs available on the NYS GIS Clearinghouse indicates that Census Tract 609, Block Group 5 in Jefferson County meets PEJA criteria based on older (2018 vintage) American Community Survey (ACS) data (see Figure 19-1).

3.2 Physiography and Land Use

Physiography inherently influences the viewer's ability to view objects within a landscape in that higher elevations may furnish unobstructed vantage points to an object in the environment. In other instances, steep topography may have the propensity to preclude views to a targeted object (behind a hill). Within the VSA, the Upper St. Lawrence Valley physiographic region encompasses the Facility Site and larger surrounding area. This physiographic region is characterized as an elevated and rolling portion of the valley that slowly rises in elevation near the Western Adirondack Foothills (Bryce 2010). This region also includes the toe slopes of the Adirondack Foothills and the narrow Black River Valley between the Tug Hill Plateau and the Adirondacks. In the VSA, landform consists of lowland river valley around the Black River where elevations typically trend at approximately 740 to 765 feet Above Sea Level (ASL) with gently undulating terrain reaching elevations of 800 feet ASL in the community of Deer River and the Villages of Carthage and

Castorland. Terrain in the VSA steadily increases east toward the Adirondack Foothills where maximum elevations reach up to 1,000 feet ASL within the Beartown State Forest.

The Facility Site contains elevations ranging from approximately 740 feet ASL to 750 feet ASL. Figures 3 and 4 of Attachment 2 have been prepared with United States Geological Survey (USGS) topographic mapping and can be reviewed to understand the general character of existing topographic variability in and around the VSA. Land use in the VSA can also be conveyed through Landscape Similarity Zones (LSZ) which are delineated throughout the VSA and discussed in Section 5.0. A map outlining the various LSZs in the VSA is available in Figure 2 of Attachment 2.

3.3 Water

Water bodies can be an important aesthetic feature of a landscape and may also provide recreation and tourism opportunities. In the western section of the VSA, the Black River is a prominent water feature found meandering in lowlands in a northwest-to-southeast direction. To the northwest, the Black River separates the Village of West Carthage from the Village of Carthage. Part of the Black River segment that traverses in the VSA is incorporated in the Nationwide Rivers Inventory (NRI) for its geological, historic and recreational Outstandingly Remarkable Value (ORV) features. Rivers entered into the NRI are eligible for inclusion into the National Wild and Scenic River System. The Black River originates in the western Adirondacks and follows the divide between the Tug Hill Plateau and the Adirondack foothills to Carthage. For the lower 31 miles it follows a wide curve to Watertown and then a gorge that goes straight to Lake Ontario. (NYSDEC n.d.).

The Deer River is a smaller tributary to the Black River and is found undulating east-to-west in the western border of the VSA near the community of Deer River. Public access and fishing rights to Black River and Deer River are available at the NYSDEC boat launch near the exchange.

Several smaller tributary creeks within the VSA contribute to the Black River and are identified as Potash Creek, Swiss Creek, Stony Creek, and West Branch Creek. Many other unnamed perennial or intermittent streams can be found in the VSA.

3.4 Transportation

Transportation routes were investigated within the VSA as they are generally publicly accessible and provide an opportunity for viewers to observe their surrounding environment and landscape. Determining the characteristics of travel routes aids in the identification of potential viewer types, frequency of view, as well as overall traffic volume (number of viewers). Annual Average Daily Traffic (AADT) was utilized to estimate the average volume of daily travelers within the VSA. AADT data were used in conjunction with population data (see Table 1) to estimate potential number of viewers within the VSA. Traditionally, AADT is a planning metric used primarily in transportation planning and transportation engineering. AADT data are calculated by totaling the annual volume of vehicle traffic of a road and dividing by 365 days. AADT counts are provided by

the New York State Department of Transportation (NYSDOT) and are presented below in Table 2.

For example, State Street within the Village of Carthage supports several thousand daily drivers, thereby providing a high frequency for users to discern the local visual environment. Contrariwise, less traveled rural roads such as Wrape Road, Station Road, and Young Mills Road (less than 141 daily travelers in the VSA) do not accommodate many viewers and, therefore, views of the landscape would be infrequent.

Table 2. Available Traffic Data of Public Roads in the 2-Mile VSA

Route/ Road Name	Town/Village	AADT	NYSDOT Functional Class
State Street	Village of Carthage	6,304 to 9,322	Minor Arterial (Urban)
South Broad Street	Village of West Carthage	4,822 to 7,892	Principal Arterial – Other (Urban)
New York State Route 126 (NY126)	Towns of Croghan and Wilna	2,036 to 2,965	Major Collector (Urban/Rural)
New York State Route 3 (NY3)	Town of Wilna	1,828 to 2,472	Minor Arterial (Urban)
New York State Route 26 (NY26)	Town of Denmark	3,790	Principal Arterial – Other (Rural)
South Mechanic Street	Village of Carthage	2,544	Major Collector (Urban)
North School Street	Village of Carthage	1,704	Major Collector (Urban)
County Route 45 (CR45)	Village of West Carthage	1,686	Major Collector (Urban)
New York State Route 410 (NY410)	Towns of Croghan and Denmark	1,526	Major Collector (Rural)
County Route 42 (CR42)	Village of Carthage, Town of Wilna	1,344	Major Collector (Urban)
South Washington Street	Village of Carthage	670	Local (Urban)
Van Amber Road	Towns of Croghan and New Bremen	412	Local (Rural)
Second Road (2nd Road)	Town of Croghan	143 to 251	Local (Rural)
Old State Road	Town of Croghan	255	Local (Rural)
Cross Road	Town of Croghan	251	Local (Rural)
Texas Road	Towns of Croghan and Wilna	217	Local (Rural)
South Clinton Street	Village of Carthage	166	Local (Urban)
Wrape Road	Village of Carthage	141	Local (Rural)

Table 2. Available Traffic Data of Public Roads in the 2-Mile VSA

Route/ Road Name	Town/Village	AADT	NYSDOT Functional Class
Station Road	Town of Denmark	126	Local (Rural)
Young Mills Road	Town of Croghan	22	Local (Rural)

Aso provided in Table 2, above, are NYSDOT functional classifications which assist in understanding functional uses of traveled routes as well as the potential viewer types and frequency of use within the VSA. NYSDOT functional classifications are defined as follows.

- *Arterial Roads: Provides expedited travel for the public at higher uninterrupted speeds. Usually consisting of transportation corridors that accommodate a multitude of travelers.*
- *Collector Roads: Provides a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials.*
- *Local Roads: Consists of all roads not defined as arterials or collectors; primarily provides access to land with little or no through movement and accommodates travel over shorter distances.*

3.5 Existing Energy Infrastructure

Existing energy infrastructure was reviewed for within the VSA using publicly available resources indicated in the References section. The following existing energy facilities were identified:

- Tannery Island Power Project – This existing hydroelectric project has a total nameplate capacity of 1.5 MW and is located on Tannery Island within the Village of Carthage.

However, while not within the extents of the VSA, several existing contiguous wind turbine facilities are built approximately 5 to 16 miles south of the proposed Facility. These existing wind facilities are outlined below.

- Copenhagen Wind (40 wind turbines), Maple Ridge Wind (112 wind turbines), Lowville Wind (82 wind turbines), Number Three Wind (27 wind turbines), and Roaring Brook Wind (20 wind turbines).

3.6 Publicly Known Proposed Utility Land Uses

The Applicant has reviewed publicly available information, including town documents, public notices, and town board and planning board meeting minutes, and has determined that there are no known proposed land uses within the VSA.

4.0 DISTANCE ZONES

Section 1101-2.8 (b)(1) of the Article VIII Regulations necessitates that distance zones are established within the VSA which serves a purpose for assessing and determining the Facility's visual effects over discrete viewing distances. Distance zones also provide useful information for determining the relationship between levels of viewer sensitivity and distance. These zones have been defined in documents produced by the U.S. Forest Service or the Bureau of Land Management. However, certain procedures or guidelines may be inapplicable to the northeast and are more appropriate for western landscape applications. Therefore, discretion must be used when implementing distance zones as the effects of distance highly depend on the characteristics of the landscape. Further, the scale and magnitude of the proposed action must also be considered when applying distance zones. For example, solar panels exhibit a smaller profile and sit lower in the landscape as opposed to mature trees, two-story buildings, or transmission structures that assume taller heights. Therefore, distance zones for this Facility have been judiciously modified from the U.S. Forest Service Handbook to accommodate the extents of the required 2-mile VSA, the limitations of human vision, and the low-profile scale of the Facility components. Consequentially, two distance zones have been established for the VIA:

- Distance Zone 1: Foreground (up to 0.5 miles from the viewer to the Facility). This zone represents the closest perspectives to the Facility. Individual details, textures, and the full spectrum of colors are typically more discernable in this zone. Because of the limited height and larger lateral breadth of solar arrays, predicted areas of visibility are often more prevalent in this zone.

- Distance Zone 2: Middle ground to Background (0.5 to 2 miles from the viewer to the Facility). When in this zone, individual trees, buildings and structural forms can still be distinguishable up to approximately 1-mile, but textures become less apparent and less ornate. When nearing the outer extents of this zone at 2 miles, distant objects begin to converge into simple homogenous shapes and colors. Atmospheric haze may often affect color and contrast of distant landscape during certain weather conditions, resulting in the landscape inheriting a very light blue color. At this distance, the solar panels merge into a single form or geometric shape. Slimmer components such as the fencing may become imperceivable at this distance. The amount of what can be distinguished is usually less in this zone as screening effects of topography, trees, and buildings become more abundant in the viewing field.

Figures 2, 3, and 4 of Attachment 2 illustrate the locations of Distance Zones 1 and 2. A discussion of the percentage of Facility visibility in each Distance Zone can be found in Section 10.1.1.1 Viewshed Results of Solar Arrays within Distance Zones and LSZs.

5.0 LANDSCAPE SIMILARITY ZONES

Variations in the characteristics of the existing landscape can influence the ability to view the existing environment. In the VSA, discrete visual characteristics of the existing landscape that share common features are categorized and mapped into distinct zones or LSZs. Identified LSZs are typically categorized by landform, vegetation, open water, land use, and user activity zones. Further, LSZs provide additional context for evaluating the existing quality of the landscape, potential viewer types, viewer frequency, and duration of view. LSZs each contain variable environments that can encourage or discourage general landscape viewing. For example, forested landscapes with substantial foliage may confine or obstruct a perspective, whereas places comprised of open landscape, such as open water areas, may provide farther viewing opportunities.

The USGS provides useful land cover data for mapping land changes across the United States. To establish LSZs to categorize distinct landscape areas within the VSA, the 2023 USGS National Land Cover Dataset (NLCD) was obtained. These NLCD data were further enhanced by utilizing a combination of aerial photo interpretation and ground truthing to validate the accuracy of the NLCD data as needed. To view a map of the delineated LSZs within the VSA, please see Figure 2, of Attachment 2. Overall, this effort resulted in the definition of five LSZs within the VSA, presented as follows.

- Zone 1: Agricultural – The agricultural LSZ can be described as predominantly open land used solely for the purposes of cultivation and/or livestock, it may also contain pasture or be left fallow. This LSZ generally comprises low river valley terrain characterized as flat to gently rolling fields. In this LSZ, distant views of the environment are typically confined to the zone, however, in some instances there may be views to distant rising ridgelines beyond the extents of the VSA. The number of the viewing public (primarily local residents), as well as the frequency and duration of viewers in a rural agricultural setting is expected to be low. Typically, sparsely located farmsteads and single residential dwellings intermittently dot this open landscape. Minor forms of vegetation or tree hedgerows are often seen separating quadrangular shaped agricultural lands in mosaic-like patterns. Several photographic examples of the Zone 1 Agricultural LSZ have been documented within the VSA, such as VPs 6, 7, 11, 14, 17, 20, 21, 23, 24, 34, 38, 39, 42, 44, 48, 53, and 54 in the Facility Photolog of Attachment 3.

- Zone 2: Forested – In this zone, a large portion of the land is abundant with mature vegetation consisting of deciduous, coniferous, or mixed species. Forested areas within this LSZ can encompass large swaths of land or be an isolated grouping of trees. Typically, forested lands are owned by private entities, or they may be protected and stewarded by a government agency, such as the Beartown State Forest. Those forested lands owned by public entities or organizations (e.g., NYSDEC) offer the public recreational activities such as hunting, fishing, nature viewing, hiking, or

camping. The viewed environment is typically confined to the forest itself, however, under specific situations it may be possible to view longer distances from forested land (e.g., views from an observation tower/deck or from a forested edge abutting an open field). Several photographic examples of the Zone 2 Forested LSZ are available in the Facility Photolog as VPs 12, 13, 18, 27, 28, 29, 31, 33, and 37.

- Zone 3: Developed – This zone includes villages, towns, CDPs, and rural-residential abutting roadways. In rural settings, dwellings are characterized by a mix of single-family residences and farmsteads intermittently spaced along the vicinity of roads. Villages with concentrated development typically confine the public's view to foreground elements due to tightly spaced development, such as commercial buildings, residential dwellings, or street trees that may impede distant views. Rural-residential dwellings within the near vicinity of the Facility may experience visual change if visually obstructive steep-topography or dense vegetation is not present. Photographed viewpoints have been documented from Zone 3 Developed LSZ and are listed in the Facility Photolog; some examples include VPs 1, 2, 4, 30, and 35.

- Zone 4: Open – The Zone 4 Open LSZ includes other miscellaneous open land that may have minor development with less visually obstructive features such as minor expanses of barren land, land with short scrub-shrub vegetation, cemeteries, golf courses, paved lots, playgrounds, or small emergent wetlands. In this zone, optimal landscape viewing may be afforded due to the lessened height of vegetation or lack thereof. Photographs exemplifying the characteristics of Zone 4 Open LSZ are shown in the Facility Photolog as VPs 3, 4, 10, and 46.

- Zone 5: River Corridor – Zone 5 River Corridor LSZ predominantly represents the Black River, however, a small section of the Beaver River is included. This zone is described as an elongated body of water that is typically bounded by wooded riparian zones and a few brief intervals of concentrated development. Generally, observers in this zone have limited distant viewing opportunities when oriented perpendicular from the river where foreground vegetation and development often intervene. Contrariwise, distant landscape viewing opportunities are conducive when aligned with the corridor's lateral length, or when facing parallel with the river. Examples of the Zone 5 River Corridor LSZ are noted as VPs 1, 31, 32, 33, and 49 in the Facility Photolog of Attachment 3.

Table 3 is provided below to demonstrate the discrete percentages of LSZs within the 2-Mile VSA.

Table 3. Percentage of LSZs within the 2-Mile VSA

LSZ	Total LSZ Square Miles	Total LSZ Percent
Zone 1 Agricultural	15.6	34%
Zone 2 Forested	24.5	53.5%
Zone 3 Developed	2.6	5.6%
Zone 4 Open	2.3	5%
Zone 5 River Corridor	0.8	1.7%
Total	**45.79**	**100%**

As shown in Table 3, LSZ Zone 1 Agricultural constitutes 34% of total land use and therefore is a dominating form of landscape character within the VSA. LSZ Zone 2 Forested comprises 53.5% of land use within the VSA and typically acts as a visual obstruction to other landscape elements. The largest contributor of the Forested LSZ with the VSA is the Beartown State Forest. The remaining LSZs are small contributors of landscape character and include LSZ Zone 3 Developed (5.6% of the VSA), LSZ Zone 4 Open (5% of the VSA), and LSZ Zone 5 River Corridor (1.7%) of the VSA.

A discussion of the percentage of Facility visibility in each LSZ can be found in Section 10.1.1. A map of the delineated LSZs within the VSA is also provided as Figure 2 of Attachment 2.

6.0 SCENIC RESOURCE INVENTORY

Aesthetic resources were compiled within the VSA according to readily and publicly available information consisting of local, county, state, and federally recognized visual resources and/or sensitive sites within the full extents of the VSA. These data were inventoried according to 16 NYCRR Section 1101-2.8 (b)(4)(ii). Specific data sources consulted to assemble the inventory consisted of publicly available Geographic Information Systems (GIS) data; town, county, and agency reports; and websites (see Section 15.0, References, for a complete listing of cited sources). Visual resources were also identified during several field investigations for securing VP locations and associated photography. The complete inventory is provided below in Tables 4A and 4B of Section 6.1. Figures 3 and 4 of Attachment 2 depict the geographic location of the inventoried resources.

Per 16 NYCRR Section 1101-2.8 (b)(4)(ii) and Section 1101-2.8 (a), the following criteria were referenced for identification of visually sensitive resources within the VSA:

- Landmark landscapes;
- Wild, scenic, or recreational rivers administered by NYSDEC, Adirondack Park Agency, or Department of the Interior;
- Forest preserve lands;
- Scenic vistas specifically identified in the Adirondack Park State Land Master Plan;
- Conservation easement lands;
- Scenic byways designated by the federal or state governments;
- Scenic districts and scenic roads, designated by the Commissioner of Environmental Conservation;
- Scenic Areas of Statewide Significance;
- State parks;
- Historic sites listed or eligible on the National Register of Historic Places (NRHP) or State Register of Historic Places (SRHP);
- Areas covered by scenic easements, public parks, or recreation areas;
- Locally designated historic or scenic districts and scenic overlooks; and
- High-use public areas.

In accordance with 16 NYCRR Section 1101-2.8 (b)(4), a VIA Survey Request (Information Request) was distributed to stakeholders in September 2024. The details of this information request are further outlined below.

Information Request to Visual Stakeholders (September 2024)

An Information Request was sent to visual stakeholders comprising local municipalities, including local planning representatives, ORES, the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP), and Jefferson County. This engagement provided an opportunity for stakeholders to append additional visual resources to a preliminary inventory of aesthetic resources and/or choose viewpoint locations or add photographs for possible preparation of Facility photo-simulations. Cartographic mapping (see Attachment 2) and a Facility Photolog (see Attachment 3) were also accommodated within this request for the review of the extent and findings of visibility studies at that point in time. In this request, the Applicant extended an opportunity for stakeholders to discuss the proposed landscape plan (see Revised Appendix 5-1 of Revised Exhibit 5) prior to the submission of the Application.

On September 19, 2024, ORES responded to the letter with a recommendation for possibly preparing a photo-simulation of the collector substation, switchyard, and BESS using VPs 7, and or 9. Upon closer examination of the viewshed mapping (Figure 4), VPs 7 and 9 were determined to not obtain views of the collector substation, switchyard, and BESS. Therefore, in lieu of a photo-

simulation, the Applicant developed a line of sight (LOS) profile L2 to the switchyard as it demonstrates the tallest structure out of the proposed components in the area (five 75-foot a-frame structures). A discussion for the LOS L2 can be reviewed in Section 10.2.2., the completed LOS L2 is presented in Attachment 4.

Towns of Wilna, Croghan, and Denmark did not respond to the information request, neither did Jefferson County, the Village of Carthage, or the Jefferson and Lewis County Historical Society.

6.1 Aesthetic Resources Inventory

As noted above, an aesthetic resource inventory was completed within the VSA. As shown below, Tables 4A and 4 B contain the results of the investigatory findings for listed visual resources for each village, town, or agency in accordance with the above listed Article VIII aesthetic resource criteria. To view the mapped geographic location of each inventoried resource within the VSA, please see Figures 3, and 4 of Attachment 2. Further, the Facility Photolog in Attachment 3 documents photographs obtained within the VSA from various LSZs, distance zones, communities, roadways, and potential sensitive locations. Many of these photographs were documented from inventoried scenic and aesthetic resources that are identified below. Each photograph within the Facility Photolog depicts the perspective that matches the direction of the Facility.

The following point of interests were predicted to discern the Facility. A positive declaration of visibility does not always constitute visual impact. For example, a very small distinguishable percentage of a solar panel may result in a visual resource receiving “Facility visibility”. While the list outlined below identifies potentially visible resources, the results of the potential visual effects of the Facility at resource locations should also be reviewed in Section 10.1.1.

Table 4A. Inventory of Aesthetic Resources within the 2-Mile VSA

Map ID	Resource Name	Town/Village	Approximate Distance to Nearest Solar Array	LSZ[3]	Federal (F), State (S), County (C), or Local (L) Resource	Potential Visibility[1]
Recreation						
A1	Babcock Campgrounds	Denmark	1.89 miles	2,4	L	No
B1	Beartown State Forest	Croghan, Wilna	0.35 miles	2	S	Yes (Minor)
C1	Beaver River	New Bremen, Croghan	1.58 miles	2,5	L	No
D1	Carthage Elementary School	Wilna, Village of Carthage	1.15 miles	3,4	L	No
E1	Carthage Recreational Park	Wilna, Village of Carthage	1.35 miles	2,4	L	No
F1	Carthage Rod and Gun Club	Croghan	1.47 miles	2,4	L	No
G1	NYSDEC Black River Fishing Access & Boat Launch (Station Road)	Denmark	1.37 miles	2,4,5	S	No
H1	NYSDEC Black River Waterway Access (State Route 410)	Croghan	1.83 miles	2,5	S	No
I1	Deer River	Denmark	1.42 miles	2,5	L	No
J1	Long Falls Park	Village of Carthage	1.91 miles	2,3,4	L	No

Table 4A. Inventory of Aesthetic Resources within the 2-Mile VSA

Map ID	Resource Name	Town/Village	Approximate Distance to Nearest Solar Array	LSZ[3]	Federal (F), State (S), County (C), or Local (L) Resource	Potential Visibility[1]
K1	Monument Park	Village of Carthage	1.5 miles	2,3,4	L	No
L1	Riverbend Park	Village of West Carthage	1.83 miles	2,3,4	L	No
M1	Turning Point Park	Village of Carthage	1.83 miles	3,4	L	No
N1	Various Snowmobile Trails (C5, S52, S58)	Croghan, Wilna	Various Distances	1,2,3,4	S	Yes (C5)
Scenic Byways						
O1	Black River Trail[2]	Croghan, Denmark, Wilna	Various Distances	1,2,3,4	S	Yes
National River Inventory						
P1	Black River[2]	Multiple Municipalities	Various Distances	5	F	Yes (Minor)
Local Cemeteries						
Q1	Union Cemetery of Naumburg	Croghan	1.07 miles	2,4	L	No
R1	Sunnyside Cemetery	Croghan	1.1 miles	2	L	No
S1	Saint James Cemetery	Wilna	0.56 miles	4	L	No

Table 4A. Inventory of Aesthetic Resources within the 2-Mile VSA

Map ID	Resource Name	Town/Village	Approximate Distance to Nearest Solar Array	LSZ[3]	Federal (F), State (S), County (C), or Local (L) Resource	Potential Visibility[1]
T1	Fairview Cemetery	Village of Carthage	1.11 miles	4	L	No
U1	Naumburg Evangelical Baptist Church Cemetery	Croghan	0.77 miles	2,4	L	Yes
Potential Environmental Justice Area						
V1	PEJA - Census Tract 609, Block Group 5; 2010 Census (609.01, Block Group 3; 2023 Census)	Town of Wilna, Village of Carthage	Various Distances	1,2,3,4,5	S	Yes
W1	PEJA - Census Tract 610, Block Group 3	Village of West Carthage	1.81 miles	1,2,3,4,5	S	No

[1]Potential visibility is obtained from the viewshed analysis using topography, trees, and buildings only, per 11 NYCRR Section 1101-2.8(b)(1), simulations or by methods of onsite field verification.

[2]Resource is also considered to be recreational.

[3]Please refer to Section 5.0 Landscape Similarity Zones for definitions of each LSZ.

Table 4B. Inventory of Historic Resources within the 2-Mile VSA

Map ID	USN	Resource Name	Approximate Distance to Nearest Solar Array	Address	Town/Village	Federal (F), State (S), County (C), or Local (L) Resource	Potential Visibility[1]
NRHP Listed Historic District							
HR1	90NR01157	State Street Historic District (Contains 18 NRHP-Listed Sites)	1.74 miles	N/A	Village of Carthage	F	No
NRHP Listed Historic Site							
HR2	90NR01158	United States Post Office Building	1.77 miles	521 State Street	Village of Carthage	F	No
HR3	04NR05358	First Baptist Church and Cook Memorial Building	1.62 miles	511 State Street	Village of Carthage	F	No
NRHP Eligible Historic District							
HR4	04541.000305	State Street Residential Historic District (Contains 19 NRHP-Eligible Sites)	1.44 miles	N/A	Village of Carthage	F	No
NRHP Eligible Historic Site							
HR5	04560.000017	House	1.97 miles	6 South Main Street	Village of West Carthage	F	No
HR6	04541.000068	Carthage Railroad Depot	1.82 miles	215 North Mechanic Street	Village of Carthage	F	No

Table 4B. Inventory of Historic Resources within the 2-Mile VSA

Map ID	USN	Resource Name	Approximate Distance to Nearest Solar Array	Address	Town/Village	Federal (F), State (S), County (C), or Local (L) Resource	Potential Visibility[1]
HR7	04560.000017	Carthage Free Library	1.71 miles	412 Budd Street	Village of Carthage	F	No
HR8	04541.000055	Saint James Church and Rectory	1.63 miles	327 West Street	Village of Carthage	F	No
HR9	04541.000246	House	1.64 miles	427 State Street	Village of Carthage	F	No
HR10	04541.000029	United Methodist Church	1.62 miles	510 State Street	Village of Carthage	F	No
HR11	04913.000081	Steel Truss Bridge (BIN 3339920)	1.58 miles	Van Amber Road	Croghan	F	No
HR12	04901.000132	House	831 feet	10449 Second Road	Croghan	F	No

[1] Potential visibility is obtained from the viewshed analysis using topography, trees, and buildings only, per 11 NYCRR Section 1101-2.8(b)(1), simulations or by methods of onsite field verification.

Federal Resources

- Black River

State Resources

- Black River Trail Scenic Byway
- Snowmobile Trail (C5)
- Beartown State Forest
- PEJA - Census Tract 609.01, Block Group 3

Local Resources

- Naumburg Evangelical Baptist Church Cemetery

7.0 VISUAL ANALYSIS METHODOLOGY

7.1 Viewshed Analysis

A viewshed analysis calculates and predicts potential visibility of an object within a landscape. provides useful information planimetric maps. A viewshed uses GIS based computerized software and specialized techniques to quantify visibility. The results can be overlain on planimetric map to determine if and where an object, such as a solar array, can geographically be seen within a larger regional area. The viewshed model uses the most current, publicly available LiDAR data, which accounts for visual impediments such as existing topography, vegetation, structures, buildings, in relationship to the height of the solar panels. The results of the viewshed analysis are displayed over a USGS topographic map or aerial image and are combined with other sensitive location information such as historic places, national forests, or state parks, etc. Incorporating GIS-integrated data along with a viewshed analysis assists in understanding the potential for Facility visibility at sensitive receptors.

7.1.1 Methodology

To accurately assess visual impacts of the Facility, three discrete viewshed analyses were completed: one to assess predicted visibility of the solar arrays, one to assess predicted visibility of the collector substation, switchyard, and BESS, and one to assess the Medium Voltage Overhead Collection Line. The viewshed analyses were developed to evaluate the potential visibility of the Facility infrastructure within the VSA and are further defined as follows.

1. Solar Array Viewshed: This analysis accounted for the tallest possible configuration of the solar arrays. The VIA herein evaluated a tracker racking system with solar array panel height conservatively set to a value of 10.625 feet above finished grade at maximum tilt. Additional Facility components including inverters and perimeter fencing are represented

in this viewshed model. The final resulting output identifies geographic areas from which viewers would potentially see all or some part of the proposed solar panels, fencing, and inverters.

2. Collector Substation, Switchyard, and BESS Viewshed: This analysis collectively evaluated visibility from the collector substation, switchyard, and BESS, which are herein referred to as "POI Components". As mentioned in Section 2.0, the collector substation will gather and transfer electricity to the adjacently-located switchyard. Four 55-foot standalone lighting masts will be centrally positioned within the collector substation. Five 75-foot a-frame structures are proposed for the switchyard (approximately 59-foot structures with a 16-foot static mast mounted on top). These structures serve a dual purpose of protecting equipment from lightning as well as transporting electrical cabling within the collector substation. A variety of equipment with lesser heights (ranging approximately 19.5 to 29 feet) will support the collector substation and switchyard (i.e., switches, breakers, bus work, transformers, and a control house), these components were also incorporated into the viewshed model. This viewshed analysis also accounted for the dimensions of the BESS, which will furnish several rows of iso containers in succession with dimensions of 40 feet in length, 8 feet in width, and 9.5 feet in height. Plans and sections of the POI Components are available in Attachment 7 and Revised Exhibit 5.

3. Medium Voltage Overhead Collection Line Viewshed: A viewshed analysis was prepared for the Medium Voltage Overhead Collection Line to understand the extent and significance of visibility. The overhead structures (made of weathering steel) will vary in height from approximately 65 feet to 95 feet above ground level. The first overhead location is positioned in the southeast portion of the VSA, north of Second Road. The pole structures will travel approximately 1.1 miles to the intersection of Second Road and Old State Road where a riser pole will terminate the overhead line section into the underground electric collection system. The second overhead location occurs immediately north of the arrays found west of Branagan Road and travels approximately 1.7 miles to the arrays south of the intersection of Strickland and Wrape Road. The third overhead location is positioned at the arrays east of South James Street/State Route 126 and terminates at the arrays south of the intersection of Strickland and Wrape Road. From thereon, the underground electric cabling will facilitate the remainder of the electrical collection system. A plan and profile drawing can be reviewed in Attachment 7 and Revised Exhibit 5.

Assumptions and Limitations of the Viewshed Model

The viewshed analysis identifies cells (image pixels) that contain elevation information and computes the differences along the terrain surface between an observer in the landscape and a target (e.g., a solar panel). This analysis assumes a viewer has telescopic vision, and that atmospheric effects do not exist (e.g., rain, haze, fog, snow, etc.). Therefore, certain factors in the interpretation of results need to be considered:

1. The computer model assumes the observer can visually differentiate objects at great distances. For example, the computer assumes the observer can identify any object, such as a mailbox, over several miles away. This would be unachievable for a human to identify without some form of magnification (e.g., binoculars or a telescope). Therefore, a certain amount of reasonable interpretation needs to be considered because of the limitations of human vision at greater distances or those atmospheric/meteorological conditions that may cause imperfect vision, such as haze or inclement weather.

2. Because an area may show visibility, it does not mean the entirety of the Facility will be visible from that area. The viewshed analysis depicts areas of predicted visibility over a regional area. The viewshed determines if an object may be discerned but is not specific enough to quantify the amount of object seen. It cannot determine if the entirety or small portion of the Facility is visible. Additionally, if visibility is occurring in an area, it may sometimes only be a result of glimpsing a portion of the Facility over emergent treetops, between tree gaps, or a minute fraction of visibility.

3. The model was developed with the assumption that a viewer would not see the panels if standing among trees in forested areas as it is assumed the tree canopy would preclude outward-looking views.

4. The viewshed models were conservatively developed without proposed landscaping to provide an understanding of visibility when the Facility is first constructed. This methodology was selected to provide a transparent evaluation of predicted visibility, therefore, predicted visibility is exaggerated and the overall visibility percentage of the solar arrays would be less with installed landscaping.

7.2 Line of Sight (LOS) Analysis

Line of sight (LOS) profiles provide the viewer with information that assists in the determination and verification of viewshed analysis visibility predictions. In performing a LOS analysis, the underlying topography and vegetative obstructions can be produced, as can an estimated amount of visibility of the upper portion of an object if it is visible. The completed LOS profile allows the examination of how topography, vegetation, and structures collectively influence the visibility results, and what degree of the Facility can be discerned from a particular location.

LOS profiles were completed to address state aesthetic resources, fulfilling 16 NYCRR Section 1101-2.8 (b)(1). This regulation states specifically that LOS be completed for statewide resources of concern. To develop the LOS profiles, elevation (Light Detection and Ranging [LiDAR]) data obtained for the Facility noted in Section 7.1.1 was used for the data source. ArcGIS Pro 3.0.2 and Global Mapper 23.0 were used to produce linear elevation profiles sampled across select sight lines for bare earth topography and for vegetation. The final LOS profiles were enhanced and embellished in Adobe Illustrator 2024. Section 10.2.2 provides a discussion of results and Attachment 4 contains the LOS profiles.

7.3 Photographic Simulations

Photo-simulations accurately illustrate the general post-construction appearance of the Facility within an existing photograph. A Facility Photolog showing the photos acquired during site visits in October 2020, April 2021, and April 2022, is presented in Attachment 3. Attachment 2 is accompanied by large-scale USGS topographic maps depicting each photographed VP location (see Figure 3 and 4 of Attachment 2). To the maximum extent practicable, the field photo effort provided the most unobstructed views possible from all cardinal directions (e.g., north, south, east, west) in areas where the viewshed maps predicted potential Facility visibility. A select number of representative VP locations were then chosen for simulation in conformance with 16 NYCRR Section 1101-2.8(b)(4), as described in Section 7.3.2 below. Simulations were developed using the methodology described in Section 7.3.1 below. Vegetative landscaping is proposed for the Facility and is presented within the simulations under the following conditions:

- Representative Simulation with 5 Year Landscaping (Leaf Off)
- Representative Simulation with 5 Year Landscaping (Leaf On)
- Representative Simulation with 0 to 2-Year Landscaping (Leaf Off)
- Representative Simulation with 0 to 2-Year Landscaping (Leaf On)

The developed photo-simulations are presented in Attachment 4.

7.3.1 Methodology

To develop the photo-simulations, Autodesk 3DS MAX visualization software was used to correctly dimension a three-dimensional (3D) model of the Facility into a digital photograph from a select VP location. Engineering specifications, drawings, and plans of the Facility were obtained from the design engineers to facilitate the preparation of a representative 3D model of the Facility. The terrain elevation data (z value) needed to place the panels correctly on the surface of the earth was derived from the LiDAR sources, as noted in Section 7.1.1. Proposed grading elevations were then incorporated into the 3D model. Using the engineering site plan and LiDAR terrain surface data in GIS, the x, y, z coordinate location of each proposed solar array was obtained and imported with the terrain surface into Autodesk 3DS MAX visualization software. A 3D model of individually proposed solar arrays was then physically constructed according to the proposed solar panel specifications, tilt angle, and proposed racking system. The proposed arrays were modeled as bifacial single-portrait trackers with a height of 10 feet and 7.5 inches (10.65 feet) above finished grade with the array axis oriented in a north-south manner. The simulation model was further developed to position the viewer at a selected vantage point. For example, at any given vantage point the visualization software is capable of providing and adjusting a camera view that matches that of the actual photograph. From the field photography effort, the documented camera coordinate (x, y, z) positions were entered into the model along with other pertinent camera information. The model was further refined to precisely match the existing photograph by referencing LiDAR point cloud data against the existing landscape features identified within the photograph.

Subsequently, simulations with landscaping were produced from a computer-aided design (CAD) version of the proposed Landscaping Plan. The Landscape Plan CAD files were produced in Autodesk Civil 3D and obtained directly from the Facility Landscape Architect, then imported into the Autodesk 3DS MAX modeling environment. Each proposed tree and shrub species was then translated and built into the 3D environment. Facility growth rates and heights of each species were then assigned using conservative values (see Table 11).

Autodesk 3DS MAX is capable of depicting physically accurate shadows and highlights on the model (Preetham et al. 1999). As such, during the field visits, each photograph recorded information such as geographic position, time, and date. These data typically exist as electronic information embedded in the respective digital photograph files. Subsequently, this information can be used to calculate the sun angle within the simulation software in order to represent accurate lighting conditions for the precise time of day and year that the photograph was captured.

7.3.2 Viewpoint Selection for Photo-Simulations

VP selection criteria are determined in 16 NYCRR Section 1101-2.8(b)(4) under (i), (ii), (iii), (iv), and (v). As mentioned, TRC conducted three site visits (in October 2020, April 2021, and April 2022) to capture representative VP locations compatible with the VP selection criteria set forth in the Article VIII regulations. Specialized field crew strategically obtained photographs from discrete locations in the VSA in accordance with following regulatory requirements:

- (i) Unobstructed views or direct line-of-sight. Prior to each conducted site visit, viewshed maps illustrating predicted Facility visibility within the VSA were prepared to facilitate the identification of vantage points containing direct line-of-sights to the Facility. To the maximum extent practicable, field staff also physically investigated unobstructed locations to photograph. This process involves identifying distinct and existing landmarks features (e.g., barn silos, buildings, clearing cuts, or transmission structures) on land within the Facility Site, to which is subsequently used as a visual reference to orient oneself to the Facility. Representative VP locations were judiciously selected for the preparation of photo-simulations from the most unobstructed views to the Facility. Examples of unobstructed views that were simulated include VPs 14, 21, 39, 41, 44, 45, 48, and 54 (see Attachment 4).

- (ii) Significance of viewpoints, designated scenic resources, areas or features. Sensitive resources were identified within the VSA and tabulated (see Tables 4 and 4B). This process involved a meticulous review of federal, state, and local places of interest that are accessible to the public, may experience high volume of public use, and exhibit aesthetic characteristics or qualities. Further, several municipal websites were consulted to review planning documents for potential locally designated resources that may occur in the VSA. The results of the resource inventory were cross referenced with the viewshed results to quantify VPs near resources that may experience predicted visibility of the Facility. This criterion was then applied to the VP selection process, resulting in photo-simulations from VPs 14, 39, 45, and 48 (see Attachment 4).

- (iii) Level of viewer exposure. To the extent the Facility is discernible from a location, VP locations were identified from populated places where viewers may congregate and/or travel routes that may experience an increased number of public travelers (viewers). Publicly available AADT data provisioned by the NYSDOT were consulted to identify roadways experiencing high volumes of daily traffic (refer to Section 3.4 Transportation and Table 2). The U.S. Census Bureau 2020 Decennial Census was also referenced to select VPs from populated places (see Table 1). Further information regarding population metrics within the VSA can be found in Section 3.1 Community/Residential. All seven photo-simulations demonstrate a varying levels of viewer exposure (see Attachment 4). Although not considered highly populated areas, simulations were also prepared from communities such as VP 48, or in vicinity to rural residential dwellings (VPs 21, 41, and 44), as well as the Black River Scenic Byway (VPs 14, 45, and 48).

- (iv) Proposed Land Uses. Proposed non-Facility development information was investigated and identified within the VSA. These data were extracted from municipal meeting minutes filed online from various town, village, and county websites. Information pertaining to proposed non-Facility land use can be found in Section 3.6, Publicly Known Proposed Land Uses, as well as in Revised Exhibit 3. An applicable cumulative view of the proposed Facility and development unrelated to the Facility is depicted in VP 21, 39, and 41 (see Attachment 4). Further discussions of cumulative effects are provided in Section 13.0.

- (v) Assessment of visual impacts pursuant to the requirements of adopted local laws or ordinances. As noted in Section 6.1, visual stakeholders consisting of local planning representatives and applicable state agencies were provided the opportunity to append additional VP locations and/or recommend existing VPs as candidates locations for developing photo-simulations. In summary, there are no visual impact assessment requirements for photo-simulation viewpoint selection pursuant to the Town of Wilna and Crogan local laws. Notwithstanding, the Applicant prepared simulations from the Towns of Croghan and Wilna according to the Article VIII viewpoint selection criteria discussed above.

8.0 VIEWER CHARACTERISTICS

The characteristics of potential viewers must be understood to determine the relative importance and effect of visual change. There are several factors that may influence an observer's visual attentiveness of the environment and is dependent on the viewers elevation, the types of activities pursued, the frequency of the viewing action, and the duration of view. The result of evaluating viewer characteristics provides useful information about the public's anticipated level of sensitivities to a proposed action.

Overall, higher degrees of visual sensitivity are correlated with areas where people live and with people who are engaged in outdoor recreation or participate in scenic driving. Conversely, areas

of industrial or commercial use are considered to have low to moderate visual sensitivity because the activities conducted are not significantly affected by the quality of the environment. Views and viewer groups are discussed throughout the VIA in the context of aesthetic resources, viewshed visibility results, and Facility simulations. In addition to viewer characteristics, distance zones are established within the VSA to estimate levels of viewer sensitivity as it relates to viewing distance, or the distance from a viewer to the Facility (see Section 4.0).

Collectively, these concepts are applied when evaluating the visual landscape and assessing the importance of a particular VP location. Consequentially, the identification of viewer groups is established and defined as follows.

Identification of Viewer Groups

Types of viewers will vary by geographic region, as well as by travel route, destination, or use areas. For example, local roads are often used by residents to reach an objective or to return to a place of residence, whereas recreational resource sites may contain mixed users consisting of local and visitor constituencies. The view types that were identified within the VSA are listed and described below as follows.

- **Local Resident Viewer Type:** This group represents residents inhabiting and expending a significant amount of time in the local area and/or surrounding communities. This group may include local residents and members of groups to which the local area is important in different ways. Also included are those who may occupy a camp or summer home in the area during the warmer seasons. When traveling, this viewer type typically experiences the environment in a transient, short-duration manner. However, these viewers may also have static or stationary views of the environment when immobile.

- **Commuter/Area Traveler Viewer Type:** This group represents individuals who primarily utilize travel corridors that are destination oriented toward places of employment and includes people strictly engaged in inter-regional or out of state travel for business, leisure, vacation, or other purposes. When traveling, this viewer type generally experiences the environment in a transient, short-duration manner.

- **Visitor or Recreational Viewer Type:** This group represents individuals who visit the area to experience its natural appearance, cultural landscape qualities, recreational opportunities, or for commercial/business activities. Visitors may be of local, regional, or of national origin. When traveling, this viewer type typically experiences the environment in a transient, short-duration manner. However, these viewers may also have static or stationary views of the environment when immobile.

The following additional viewer characteristics are applicable to each defined viewer type:

Viewer Sensitivity – Viewer sensitivity may be variable from individual to individual and is highly dependent on the observer's location, objectives, and expectations within the existing landscape.

Generally, viewer sensitivity is expected to be higher when in proximity to visual change, and less when distanced from the change. A reduction in viewer sensitivity can be achieved through the use of visual mitigatory strategies, please refer to Section 11.0 for more information regarding visual mitigation implemented for the Facility.

Number of viewers – The degree of sensitivity is typically correlated to the number of viewers affected by a change. Information about precise number of viewers is not always readily available, however it can be reasonably assumed based on presence of development, recreational space, accessibility to public spaces, and through other data sources as follows.

- Table 1. Population of Communities within the 2-Mile VSA (see Section 3.1)
- Table 2. Available Traffic Data of Public Roads in the 2-Mile VSA (see Section 3.4)

It is reasonable to estimate if a particular location is a high public use area or if it is a location that is less frequently visited, or more inaccessible where the public is not expected to be present (such as swamps or places absent in amenities). Generally, a village or city typically contains a higher concentration of viewers than suburban or rural places.

Duration of view – Duration of view is the amount of time a viewer would actually be looking at a particular landscape feature. Depending on the viewer activity (see below), the duration of view may be extended (static or stationary view), or it may be momentary (fleeting or transient view). Typically, a momentary duration of view involves mobilization of a viewer.

Viewer activities – Viewers within the VSA will experience different viewing times of the Facility depending on the priorities and objectives of an individual's activity. Distinct viewing durations of the Facility can be estimated by the types of viewer groups identified within a particular location. For example, fleeting views or those traveling by vehicle are expected to have views endured for a lesser amount of time whereas those who may be in a fixed position (e.g., fishing, camping, resting on a park bench) may experience a longer duration of view.

Context of Viewer – The scenic integrity of an observer's visual environment may influence or diminish the impression of a visual change. Typically, a visual change may not be as compelling if the change is harmonious with the character of the existing environment. Whereas existing human-made alterations within a landscape may have the propensity to absorb or visually distract a viewer's attention to visual change.

9.0 VISUAL IMPACT RATING METHODOLOGY

TRC has developed a visual impact rating form for evaluating the potential effects associated with the appearance of the built Facility as required by Article VIII. This form includes concepts and framework referenced in the following federal agency policies, procedures, and guidelines:

- U.S. Bureau of Land Management (BLM), Handbook H-8431: Visual Contrast Rating, January 1986 (United States Department of the Interior [USDOI], 1986).
- Visual Resources Assessment Procedure for U.S. Army Corps of Engineers, March 1988 (Smardon, et al., 1988).
- National Park Service Visual Resources Inventory: View Importance Rating Guide, 2016 (NPS, 2016C).
- United States Department of Agriculture (USDA) Forest Service, Landscape Aesthetics: A Handbook for Scenery Management. USDA Forest Service Agriculture Handbook No. 701, 1995 (USDA, 1995).

To date, Riverside Solar, Foothills Solar, Brookside Solar, and Rock District Solar applications have successfully used this rating system and received a notice of complete application determination letter. The visual impact rating form utilizes a numerical rating system to determine visual contrast ratings of a simulated condition against the conditions of the existing view from a representative VP location.

The rating effort involved the evaluation of eight VP locations that were developed as photo-simulations of the Facility with 0 to 2-year and 5-year proposed landscaping, post-construction. These timeframes allow for a reasonable assessment of the screening effectiveness of the proposed landscape plan when installed (0 to 2 years), and after a period of 5 years. Prior to the visual impact rating effort, all VIA framework was completed in accordance with state regulatory requirements or other visual policy and includes the visual resource inventory, terrain analyses, development of LSZs, distance zones, photo-simulations, and viewshed analyses.

To evaluate the potential effects and visual change of the Facility, a professional panel of raters was assembled, and instructions (see Attachment 6) were provided to complete four parts to the rating form:

- Part 1 – Visual Contrast Rating of the rating form compares the Facility with 0 to 2-year landscaping as it contrasts against compositional visual elements of the existing photograph. This includes compositional contrasts against the existing and natural environment such as vegetation, water, sky, landform, or structures. The higher the rating total, the higher the contrast.

- Part 2 – Viewpoint Sensitivity Rating of the rating form estimates the anticipated degree of viewer sensitivity by identifying the importance of the location (if it falls within a visual resource area), viewer groups, duration of view, use intensity, and presence of water. The higher the rating total, the more sensitive the VP is.

- Part 3 – Existing Scenic Quality of the rating form examines the existing environment and determines whether any qualities of scenic integrity are available. Part 3 is a qualitative

evaluation of strictly the existing conditions without the influence of the Facility. Part 3 ratings should not be confused with quantifying visual contrast (Part 1).

- Part 4 – Visual Contrast Rating of Facility With 5 Year Mitigation evaluates the Facility's contrast after suitable time (5 years) is allowed for the maturation of proposed landscaping (see Section 11.11 for more information about proposed landscaping for the Facility). In order to complete this comparison, raters were instructed to review simulations with 0 to 2-year landscaping against simulations with 5-year landscaping to identify changes in contrast ratings.

The rating process never combines the parts for a final value or result. Instead, each part is averaged amongst the raters and the results are scored and discussed. For example, Part 1 – Visual Contrast Rating of the Facility would need not be combined and averaged with Part 3 – Scenic Quality. Each part of the form includes several visual elements which are individually assessed with the following rating score format:

Table 5A. Visual Element Rating Scale

Rating Scale		Degree of Contrast Criteria
0	None	The element of contrast is not perceived or easily detected.
0.5	Very Weak	
1	Weak	The element of contrast can be seen but does not attract attention.
1.5	Weakly Moderate	
2	Moderate	The element of contrast begins to attract attention and begins to dominate the characteristic landscape.
2.5	Moderately Strong	
3	Strong	The element of contrast demands attention, will not be overlooked, and is dominant in the landscape.

The individual ratings for each visual element are then summed, providing the total rating for that part.

Under Part 1, there are nine elements (see Attachment 6) to rate, resulting in a total possible score ranging from 0 to 27. When the rating scale outlined in Table 5A is rescaled to account for the total possible rating across the nine categories, the scale is as follows:

Table 5B. Part 1 Visual Contrast Rating Scale

Visual Contrast Rating Scale	
0	None
0 to 4.5	Very Weak
4.5 to 9	Weak
9 to 13.5	Weakly Moderate
13.5 to 18	Moderate
18 to 22.5	Moderately Strong
22.5 to 27	Strong

Under Part 2, there are eight elements (see Attachment 6) to rate, resulting in a total possible rating ranging from 0 to 24. When the rating scale outlined in Table 5A is rescaled to account for the total possible rating across the eight categories, the scale is as follows:

Table 5C. Part 2 Viewpoint Sensitivity Rating Scale

Viewpoint Sensitivity Rating Scale	
0	None
0 to 4	Very Weak
4 to 8	Weak
8 to 12	Weakly Moderate
12 to 16	Moderate
16 to 20	Moderately Strong
20 to 24	Strong

Under Part 3, only one element (see Attachment 6) is rated, resulting in a total possible rating ranging from 0 to 3. Thus, the total possible rating for Part 3 is scaled as follows:

Table 5D. Part 3 Scenic Quality Rating Scale

Scenic Quality Rating Scale	
0	None
0 to 0.5	Very Weak
0.5 to 1	Weak

Table 5D. Part 3 Scenic Quality Rating Scale

Scenic Quality Rating Scale	
1 to 1.5	Weakly Moderate
1.5 to 2	Moderate
2 to 2.5	Moderately Strong
2.5 to 3	Strong

Under Part 4, there are nine elements (see Attachment 6) to rate, resulting in a total possible rating ranging from 0 to 27. When the rating scale outlined in Table 5A is rescaled to account for the total possible rating across the nine categories, the scale is as follows:

Table 5E. Part 4 Visual Contrast Rating Scale

Visual Contrast Rating Scale	
0	None
0 to 4.5	Very Weak
4.5 to 9	Weak
9 to 13.5	Weakly Moderate
13.5 to 18	Moderate
18 to 22.5	Moderately Strong
22.5 to 27	Strong

Three panelists were selected to evaluate and rate Facility simulations from seven VPs to facilitate the visual impact rating for the VIA. All three panelists have been trained in the field of landscape architecture. Each panelist's qualifications are documented in Attachment 6.

Initial training on how to use the visual impact rating form and the intention of each visual element rating was provided to each panelist. Facility location information, such as a Google Earth KMZ file, was provided to allow the panelist to better understand and visualize the environment around the VP that otherwise might not have been captured in the photo itself. Using the aerial imagery and terrain features of the Google Earth software simultaneously with "street view" capabilities, each reviewer was able to discern if there were other residences or vegetation around the viewer while also offering the panelist to view the camera location from different perspectives. The panelist then applied the ratings singularly and independently without consultation with any other party.

Attachment 6 provides more comprehensive guidelines on how the contrast ratings were assessed and applied within each category. It also includes a brief description of the methodology, and the instructions used for the rating process, as well as panelist qualifications and the completed evaluation forms for each simulated VP. Results of the Visual Impact Rating are discussed in Section 10.3.

10.0 VISUAL IMPACT ANALYSIS RESULTS

10.1 Viewshed Results and Discussion

As noted in Section 7.1.1 of the viewshed methodology, three discrete viewshed analyses were performed. One analysis was completed for solar arrays and supporting infrastructure, and a second viewshed was performed for the identification of potential areas where the collector substation, switchyard, and BESS may be distinguished. Finally, a third separate viewshed analysis was developed to investigate potential visibility associated with the Medium Voltage Overhead Collection Line. These analyses utilized the tallest configurations of the Facility as well as lower profile components. The viewshed models were conservatively developed without proposed landscaping to provide an understanding of visibility when the Facility is first constructed. This methodology was selected to provide a transparent evaluation of predicted visibility, therefore, predicted visibility within the VSA is exaggerated and the overall visibility percentage of the Facility would be less with installed landscaping.

A viewshed analysis identifies cells (image pixels) that contain elevation information and computes the differences along the terrain surface between an observer in the landscape and a target (e.g., a solar panel). This analysis assumes a viewer has telescopic vision, and that atmospheric effects that diminish visibility do not exist (e.g., rain, haze, fog, snow, etc.). Therefore, the mere presence of visibility should not be indicative of unwavering views to the Facility. Refer to Section 7.1.1 for additional information regarding viewshed methodology.

10.1.1 Viewshed Results for Solar Arrays

As indicated by the solar array viewshed results (see Figure 3 of Attachment 2), a total of 13.23% of limited predicted visibility is found within the VSA, in contrast, 86.77% of the VSA will not discern the solar arrays. In general, predicted visibility may constitute a view of a solar array at a proximal distance, or it may only be a small fragment of the top of a solar panel that is severely screened. The basic presence of predicted visibility should not always be indicative of adverse visual impact.

The following subsections examine the solar array viewshed results and provide an in-depth discussion of the quantified visibility results. The topics include a detailed discussion of the percentages of land area, LSZs and Distance Zones that may experience solar array visibility, a discussion of identified resources with visibility, and a discussion of predicted visibility at highly populated public roadways and populations as determined by the solar array viewshed analysis.

10.1.1.1 Viewshed Results of Solar Arrays within Distance Zones and LSZs

As mentioned in Section 4.0 and 5.0, distance zones and LSZs were identified within the VSA as provisioned in 16 NYCRR Section 1101-2.8(b)(1). These landscape classifications provide useful information when evaluating potential viewshed results, such as the type of landscape character that promotes potential visibility, or conversely, impedes visibility. As described in Landscape Aesthetics, A Handbook for Scenery Management (USDA Forest Service, December 1995),

distance zones provide an estimation of sensitivity levels based on distance to the proposed change. A discussion of the interconnected relationship between solar array visibility results, distance zones, and LSZs is provided as follows.

The identification of distance zones and LSZs within the VSA is crucial for evaluating potential viewshed results. These classifications help in understanding how different types of landscape characters can either promote or impede visibility. According to the guidelines provided in the "Landscape Aesthetics, A Handbook for Scenery Management" by the USDA Forest Service (December 1995), distance zones estimate sensitivity levels based on the proximity to the proposed change.

The interconnected relationship between solar array visibility results, distance zones, and LSZs can be summarized as follows:

1. **Distance Zones**: These zones categorize the landscape based on the distance from the observer to the proposed change. Typically, the closer the observer is to the change, the higher the sensitivity level. Distance zones help in predicting how visible a solar array might be from various vantage points.

2. **Landscape Sensitivity Zones (LSZs)**: LSZs classify the landscape based on its inherent visual characteristics and the potential for visibility. Different landscape types have varying capacities to either conceal or reveal changes, such as the installation of solar arrays.

3. **Visibility Results**: The potential visibility of an object is influenced by distance zones and the LSZs. For instance, a solar array might be more visible in an open, flat landscape (Zone 1 and 4 LSZ) compared to a densely forested area (Zone 2 LSZ), even if the distance to the observer is the same.

The following LSZs were identified and measured within the VSA (Refer to Table 3 for more information).

- Zone 1 Agricultural (comprises 34% of VSA)
- Zone 2 Forested (comprises 53.5% of VSA)
- Zone 3 Developed (comprises 5.6% of VSA)
- Zone 4 Open (comprises 5% of VSA)
- Zone 5 River Corridor (comprises 1.7% of VSA)

A total of 13.23% of solar array visibility is predicted to occur within the VSA. According to Table 6, LSZ Zone 2 Forested is the most prevalent within the VSA (approximately 53.5% of VSA), where 0.30% of a total of 13.23% of solar panel visibility is predicted to occur. While LSZ Zone 2 is abundant within the VSA, LSZ Zone 1 Agricultural comprises less land (approximately 34%) in the VSA where 11.9% of the total 13.23% solar array visibility was predicted.

The remaining LSZ Zone 3 Developed (5.6% of land in VSA), Zone 4 Open (5% of land in VSA), and Zone 5 River Corridor (1.7% of land in VSA) are smaller contributors to the landscape where a small amount of visibility was predicted as noted below:

- LSZ Zone 3 Developed (0.50% solar panel visibility in VSA)
- LSZ Zone 4 Open (0.35% solar panel visibility in VSA)
- LSZ Zone 5 River Corridor (0.04% solar panel visibility in VSA)

These data for Zones 3, 4, and 5 suggest that a very insignificant amount of predicted visibility (0.89%) may occur in sensitive locations, such as developed areas (villages, residential, commercial, etc.), open areas (parks, cemeteries, greenspace, etc.) and the Black River. Moreover, 6.49% of the 13.24% total visibility in the VSA occurs on lands belonging to participating landowners while 6.74% of total visibility in the VSA falls within land belonging to non-participating landowners. (see Figure 2 of Attachment 2 for a map depicting the LSZs within the VSA).

Solar array visibility was also quantified for distance zones within the VSA (see Table 7). As shown in Table 7, Distance Zone 1 and LSZ Zone 1 Agricultural contain the highest percentage of potential solar array visibility (10.26% and 11.9% of the VSA, respectively). Therefore, rural-residential viewers that are simultaneously within LSZ Zone 1 Agricultural and Distance Zone 1 have the highest potential to view the solar arrays, however, existing topography, forested vegetation (LSZ Zone 2 Forested) and proposed landscaping found in between these zones may moderate views to the Facility. Representative photo-simulations were developed from VPs 14, 21, 39, 41, and 45 (see Attachment 4) to demonstrate the potential effects of the Facility from Distance Zone 1 and LSZ Zone 1 Agricultural.

As shown in Table 7, 2.97% of solar panel visibility was predicted within Distance Zone 2. The viewshed analysis (see Figure 3 of Attachment 2) projects this visibility to portions of rural land north and northwest of State Route 126 near the community of Naumburg. The VP 48 photo-simulation is representative of this broad area and illustrates that only small forms and colors comprising the solar arrays are distinguished. This suggests that viewing conditions of solar arrays within Distance Zone 2 and LSZ Zone 1 Agricultural are expected to be relatively underwhelming.

Table 6. Percent Visibility of Arrays within LSZs in the 2-Mile VSA

LSZ	Total LSZ Square Miles	LSZ Square Miles of Visibility	% Visibility within LSZ	% Visibility within VSA
Zone 1 Agricultural	15.6	5.49	35.19%	**11.9%**
Zone 2 Forested	24.5	0.14	0.6%	**0.30%**

Zone 3 Developed	2.6	0.23	8.8%	**0.50%**
Zone 4 Open	2.3	0.16	6.9%	**0.35%**
Zone 5 River Corridor	0.8	0.02	2.5%	**0.04%**
Total	**45.79**	**6.06**	**-**	**13.23%[1]**
[1]6.49% of the 13.23% total visibility in the VSA occurs on lands belonging to participating landowners while 6.74% of total visibility in the VSA falls within land belonging to non-participating landowners.				

Table 7. Percent Visibility of Arrays within Distance Zones in the 2-Mile VSA

Distance Zone	Total Area Comprising Distance Zone Square Miles	Visibility Within Distance Zone Square Miles	% Visibility Within Distance Zone	% Visibility Within Full VSA
Zone 1 0-0.5 Miles	10.65	4.70	44.13%	**10.26%**
Zone 2 0.5-2.0 Miles	35.14	1.36	3.87%	**2.97%**
Total	**45.79**	**6.06**	**-**	**13.23%[1]**
[1]6.49% of the 13.23% total visibility in the VSA occurs on lands belonging to participating landowners while 6.74% of total visibility in the VSA falls within land belonging to non-participating landowners.				

10.1.1.2 Visibility of Solar Arrays at Federal and State Designated Resources

The viewshed visibility analysis presented in Figure 3 of Attachment 2 indicated that 6 out of 35 visual resources (see Tables 4A and 4B) received a potential sightline to the proposed solar arrays. The distinction of Project visibility at a select resource should not be confused with a declaration of visual impact, nor does it immediately constitute profound adverse impact. For example, if an inch of a solar panel is viewed above treetops, the computerized viewshed analysis defines this as positive visibility. Therefore, the collective results of visibility must be reviewed thoroughly before a conclusion is formed.

29 out of 35 visual resources listed in Table 4A in conjunction with Table 4B are not predicted to view the Facility. In accordance with 16 NYCRR Section 1101-2.8(a)(10), the visual resources with predicted visibility, as listed in Tables 4A and 4B, are further described below:

Federal Resources:

Black River

The Black River is entered within the National Rivers Inventory which encompasses a list of over 4,500 free-flowing river segments within the United States. River segments entered into this inventory have been identified as potentially eligible for inclusion in the National Wild and Scenic Rivers System. In the VSA, the Black River is encountered in between the communities of Naumburg and Castorland to the southeast, it is also where the Beaver River tributary converges with the Black River. From thereon, the Black River meanders a total of 8.5 miles northwest along the southern extents of the VSA. Prior to exiting the west portion of the VSA, the Black River parallels a small section of NY126 before bisecting the Villages of West Carthage and Carthage. According to the solar array visibility results of the viewshed, an isolated pocket of potential Facility sighting occurs on a 0.33-mile span of the total 8.5-mile span of the Black River between Secher Road and NY126. As indicated in the legend of Figure 3, the viewshed analysis determined that less solar panels would be potentially discerned. Recreationists and local resident viewer types who enter this limited section of river may briefly sight the solar arrays to the east, however, this is solely dependent on the height of the observer and the involved recreational activity. Such that when kayaking or paddling, the viewer is seated and inherently experiences a lower perspective. In these situations, NY126 (745 feet above mean sea level [AMSL]) may have the propensity to obstruct larger portions of the solar arrays (approximately 741 feet AMSL) from the river (727 feet AMSL). Moreover, proposed landscaping is located along the western perimeter fencing of the closest (eastern) solar arrays. Therefore, it is estimated that proposed landscaping will diminish views of the Facility from the limited 0.33-mile fragment of river, and because of the limited nature, scale, and effect of the Facility from this area, it is well expected that the recreational qualities of the river will remain intact.

State Resources:

Black River Trail Scenic Byway (NY126)

The Black River Trail Scenic Byway (also referred to as NY126) is a 94-mile travel and transportation corridor that begins in the City of Rome at the southern end and gently weaves travelers through quaint communities to the Village of Dexter and the Black River Bay on Lake Ontario (NYSDOT, 2024). In the VSA, NY126 originates in the southeastern extent and travels northwest through the Village of Carthage.

The solar array viewshed (see Figure 3 of Attachment 2) projects solar array visibility to occur in two distinct areas of the NY126: Near the non-contiguous solar array group to the northwest from the intersections of Jackson Lane and Strickland Road, and to the southeast from the intersections of Beach Ridge Road and Cross Road. VPs 45 and 14 were prepared as photo-simulations from Distance Zone 1 (the nearest zone to the Facility) to examine the potential visual effects of the Facility from these focused areas. As shown in both simulations, the solar arrays appear within open agricultural fields with a modest setback from the road which accommodates a reduction in the perceived scale. Landscaping along the perimeter fence of each solar array furnishes a reduction in contrast as the natural shapes and forms of plantings diminish the man-

made edges of the Facility. Further, NY126 is comprised of 9.57 miles within the VSA, of this amount, 3.67 miles of the route was predicted with solar array visibility, meaning approximately 38% of the route within the VSA may contain views. To draw contrast to extensive length of the 94-mile byway, only 3.9% of the route may experience views to the Facility. Given that the sighting of the solar arrays predominantly occurs within the second most abundant land-use within the VSA and region (Zone 1 Agricultural LSZ; 33.8%; see Table 3), it is then reasonable to conclude that the rural/agricultural scenic attributes of the Black River Trail Scenic Byway will remain available in many other locations for travelers (e.g., residents, commuters, area-travelers, recreationists) and the Facility will not impose a significant negative effect to the characteristics of the 94-mile scenic byway.

Snowmobile Trail C5

The C5 snowmobile trail is found north of the Facility and originates east of Wrape Road and heads west into the Villages of Carthage and West Carthage. Seasonal limitations affecting viewer accessibility to these trails should be considered when reviewing visibility results, such that snowmobiling activities are confined to the winter seasons when a reasonable snow accumulation is available. As shown in Figure 3 of Attachment 2, solar array visibility is limited to Distance Zone 1 in vicinity to the Facility. In this section of land, the C5 trail utilizes an existing utility right-of-way where existing transmission structures would be discerned in succession as a viewer travels east or west. While other Facility components will be viewed in conjunction with the solar arrays and existing transmission line, the overall characteristics of this section of the C5 trail will persist as a utility corridor and therefore will receive negligible visual effects.

Beartown State Forest

The Beartown State Forest comprises a 7,205-acre area and is generally positioned north and east of the Facility. The occurrence of solar array visibility generally lies on the exterior of the forest property along Young Mills Road. Further attention was provided with the production of the VP 39 photo-simulation for the purpose of examining the potential sightline to the Facility from the limited section of Young Mills Road. As shown in the VP 39 simulation (see Attachment 4), an unobstructed view to the solar arrays is feasible, however, Young Mills Road supports minimal daily traffic, or potential viewers (AADT of 22). Due to the remote location and character of the potential visibility from the Beartown State Forest, a view through dense vegetation to the Facility would be considered seldom seen, and therefore would have little effect on viewers since recreational activities partaken by potential visitors or residents would gravitate toward the center, or interior of the forest.

Potential Environmental Justice Area (PEJA) - PEJA - Census Tract 609, Block Group 5; 2010 Census (609.01, Block Group 3; 2023 Census)

The PEJA – Census Tract 609, Block Group 5 covers approximately 8.6% of total land in the Village of Carthage and Town of Wilna. According to the solar array viewshed results shown in Figure 3, predicted visibility is mostly confined to a section of Strickland Road where very few residents reside. LOS L2 traverses through Strickland Road and was prepared within the subject PEJA (see Attachment 4). As depicted in LOS L2, a view to a small portion of solar arrays and the switchyard a-frame is possible, however, as mentioned, Strickland Road is not heavily populated with residences (approximately nine dwellings). Further, proposed landscaping is incorporated along the solar arrays immediately adjacent to Strickland Road. Therefore, local residents residing on Strickland Road may have the ability to view solar arrays over a longer duration, however, as discussed, proposed landscaping will moderate views to the closest arrays. Other viewer groups such as local residents and commuters may be subject to transient views of screened solar arrays when driving on Strickland Road. The vast majority of public viewers (Village of Carthage) situated within this PEJA will not distinguish the Facility.

10.1.1.3 Visibility of Solar Arrays at Local Resources

While not classified by statute as officially listed scenic resources (see Table 4A in Section 6.0), local resources were also investigated for potential Facility visibility. As mentioned in Section 6.0 and 7.3.2, visual stakeholders were consulted and provided the opportunity to append additional resources of concern. While many local resources were identified in the VSA, one local resource with potential solar array visibility was identified and is described as follows.

Local Resources

Naumburg Evangelical Baptist Church Cemetery

Naumburg Evangelical Baptist Church Cemetery is a local resource that is located on NY126, northwest of the community of Naumburg. Predicted solar array visibility is concentrated to the eastern section of the cemetery where the LOS L1 was performed. As shown in the LOS L1 profile, a view to solar arrays at over a distance of 1.10 miles is available due to the abundance of open agricultural land between the viewer and Facility, and a small opening in the distant forested vegetation where the panels would be seen (see L1 profile map in Attachment 4). In this viewing circumstance, the Facility would only constitute a minor portion of the view in context to the sweeping view of the agricultural lands. Therefore, residents and visitors to the Naumburg Evangelical Baptist Church Cemetery are very unlikely discern any negative visual effects of the Facility.

10.1.1.4 Visibility of Solar Arrays from High-Use Public Areas

Although not classed specifically as officially listed agency scenic resources, it is recognized that local town residents and local roadway traffic will experience views of the Facility in varying locations. Please refer to Table 2 for a general understanding of the average volume of daily traffic from roadways within the VSA. A more in-depth assessment of potential visibility from high-use public areas within the VSA is provided as follows.

Highly Populated Communities

As shown in Figure 3 of Attachment 2, the proposed solar arrays will not be distinguishable from the population centers comprising the Villages Carthage, West Carthage, and Castorland, nor the communities of Texas and Deer River. While solar arrays were predicted in very limited sections of the community of Naumburg, the VP 48 photo-simulation demonstrates that residences in these locations will receive negligible impact (see Attachment 4).

High Trafficked Public Roads

Highly trafficked public roads were evaluated in the VSA for the assessment of potential Facility visibility. These heavily traveled roads with predicted visibility are further discussed below as they relate to the potential proposed viewing condition and associated effect.

NY126 – As discussed in Section 10.1.1.2, NY126 is also referred to as the Black River Trail Scenic Byway where two specific areas of solar array visibility were predicted: near the non-contiguous solar array group to the northwest from the intersections of Jackson Lane and Strickland Road, and to the southeast from the intersections of Beach Ridge Road and Cross Road. Photo-simulations from VPs 45 and 14 were created from Distance Zone 1 (the closest zone to the Facility) to assess the potential visual impacts of the solar panels from these areas. Both simulations show solar panels with landscaping situated within open agricultural fields. In each simulation, the solar arrays are set back modestly from the road, which helps reduce their perceived scale. Landscaping along the perimeter fence of each solar array helps reduce contrast by softening the man-made edges of the Facility with natural shapes and forms of plantings.

NY126 spans 9.57 miles within the VSA, and of this, 3.67 miles were predicted to have solar array visibility, meaning approximately 38% of the route within the VSA may have views of the Facility. In contrast, only 3.9% of the entire 94-mile byway may experience views of the Facility. Since the solar arrays are primarily located within the second most common land-use type in the VSA and region (Zone 1 Agricultural LSZ; 33.8%; see Table 3), it is reasonable to conclude that the rural and agricultural scenic qualities of the NY126 will remain intact in many other areas, and the Facility will not negatively impact the byway's characteristics.

NY410

In the VSA NY410 begins at the intersection of NY126 and heads south through the community of Naumburg prior to exiting the VSA boundary to the south. A focused area of potential solar array visibility was predicted on a 320-foot section of NY410 near the intersection with NY126. The VP 48 photo-simulation was prepared from this concentrated area. As illustrated by the simulation, a slight color change is barely discernible within the background environment. Therefore, commuter and residential travelers of NY410 are not anticipated to be affected by the Facility.

10.1.2 Viewshed Results of the Collector Substation, Switchyard, and BESS

A collector substation and switchyard (collectively referred to as “POI components”) will be required to interconnect the Facility to the existing National Grid Black River-Taylorville Line 2 and North Carthage-Taylorville Line 8 for purposes of distributing generated renewable energy. In addition to the POI components, a BESS is proposed for the retention and distribution of electricity during appropriate times. The BESS and POI components are all in near vicinity to one another and are in rural agricultural land west of Wrape Road and North of Strickland Road.

A second viewshed analysis (see Figure 4 of Attachment 2) was prepared to evaluate potential visibility of the POI components and BESS. Due to the noncontiguous form of the solar array layout and the magnitude of the VSA, the delineated solar array distance zones are inapplicable to the POI components and if used, would provide unreliable visibility results. Therefore, a discrete set of distance zones were applied to the POI components using Distance Zone 1 and 2

parameters. The designated distance zones are mapped and illustrated in Figure 4 of Attachment 2. Associated methodology used to prepare the viewshed is further elaborated in Section 7.1.

The viewshed results of the POI components and BESS viewshed indicated that 9.84% of potential visibility may occur within the VSA. As shown in Table 8, Distance Zone 1 comprises a small amount of visibility of the POI components and BESS (3.77%). The viewshed analysis also indicates that predicted views are concentrated to a section of Strickland Road and agricultural fields. Provided that Strickland Road is a terminal road facilitating residential access to a small number of residences, it is reasonable to assume that very few residential viewers would be subject to Distance Zone 1 views to the POI components and BESS when also weighing the fleeting nature of travelers when passing the Facility at higher sustained speeds, as well as the viewing distance (0.60-mile to POI components and BESS). Of the areas comprised of agricultural fields where visibility is anticipated, an insignificant amount of property owners would likely be present on the remote portion of the properties that are solely used for cultivation purposes. The viewshed analysis also concludes that foreground views, which typically contain the most visual contrast, are unavailable from public vantage points to the POI components and BESS.

As indicated by Figure 4 viewshed visibility mapping, Distance Zone 2 is predicted to encounter 6.07% of POI component and BESS visibility in the VSA. In general, the focus of Distance Zone 2 visibility is scattered within southern agricultural fields and a small section of NY126 where a LOS was prepared (see LOS L2 in Attachment 4). The LOS L2 traverses over a 1.36-mile distance to the proposed switchyard. The LOS specifies that approximately 50 feet of the 75 a-frame structures would be discerned due to the visual preclusion of the foreground solar arrays. While the a-frame structures are the tallest component out of the switchyard, collector substation, and BESS, they are comprised of a thin vertical profile, meaning the structures would be challenging to identify over a 1.36-mile viewing distance. For these reasons, residential travelers, area-travelers, and recreational travelers are unlikely to sight the a-frame structures from NY126.

A small, isolated band of visibility also occurs on Old State Road near the intersection with NY126. Due to the substantial distance from Old State Road to the POI components and BESS (1.6 miles) and the general isolated character of the predicted visibility, the view will likely constitute a partial sighting to the taller a-frame structures. A limited number of residents or commuters (255 AADT) driving on Old State Road may be able to glimpse part of the POI components or BESS, but it would be very infrequent due to motion of view. No residential dwellings are predicted to discern the POI components or BESS.

Table 8. Percent Visibility of the POI Components and BESS within the VSA

Distance Zone	Total Area Comprising Distance Zone (Square Miles)	Visibility Within Distance Zone (Square Miles)	% Visibility Within Distance Zone	% Visibility Within Full VSA
Zone 1 0-0.5 Miles	1.03	0.51	49.51%	**3.77%**
Zone 2 0.5-2.0 Miles	12.48	0.82	6.57%	**6.07%**
Total	**13.51**	**1.33**	**-**	**9.84%**[1]

[1] *7.32% of the 9.84% total visibility in the VSA occurs on lands belonging to participating landowners while 2.52% of total visibility in the VSA falls within land belonging to non-participating landowners.*

10.1.3 Viewshed Results of the Medium Voltage Overhead Collection Line

As described in Section 2.0, a medium voltage overhead collection line is proposed in three locations to carry 34.5 kV to an area in vicinity to the collector substation. Underground electric cabling was identified as impractical in certain locations due to underground bedrock constraints. The overhead transmission structures (made of weathering steel) vary in height from approximately 65 feet to 95 feet above ground level. The first overhead location is positioned in the southeast portion of the VSA, north of Second Road. The pole structures will travel approximately 1.1 miles to the intersection of Second Road and Old State Road where a riser pole will terminate the overhead line section into the underground electric collection system. The second overhead location occurs immediately north of the arrays found west of Branagan Road and travels approximately 1.7 miles to the arrays south of the intersection of Strickland and Wrape Road. The third overhead location is positioned at the arrays east of South James Street/State Route 126 and terminates at the arrays south of the intersection of Strickland and Wrape Road. From there, the underground electric cabling will facilitate the remainder of the electrical collection system where there is an absence of bedrock.

A viewshed analysis was performed from within a 1-mile VSA around the medium voltage overhead collection line (see Figure 6 of Attachment 2). As elaborated below, the extents of the 1-mile VSA are defined as the visual threshold where narrow profiles of the collection line structures would not be visually competitive with the larger view of the landscape, such as where viewers would unlikely notice the structures.

According to the Figure 6 viewshed map, the medium voltage overhead collection line comprises 11.3 square miles of land in the VSA. The viewshed analysis for the overhead collection line determined that 8.41 of 11.3 square miles of land would receive predicted visibility of the proposed

structures. These values indicate that approximately 74% of the VSA may be subject to visibility of the structures. However, as indicated by the LSZ map shown in Figure 2 of Attachment 2, approximately 65 of the 85 proposed collection line structures are sited entirely within the forested LSZ, meaning a large amount of existing vegetative screening will encompass the structures. Approximately 20 structures are found in the agricultural LSZ located south of Strickland Road and north of 2nd road. These structures are anticipated to be visible as the agricultural LSZ does not typically contain any intervening vegetation.

Overall, the occurrence of estimated visibility associated with the medium voltage overhead collection line is within three discrete areas of the VSA. The first area is limited to Strickland Road and the Black River Trail Scenic Byway (see description below). Local residents and commuters traveling on or residing on Strickland Road may view the collection line structures when facing south but will also be met with close solar arrays that will likely detract views of the subject structures.

The second area of occurrence is located by a section of Old State Road and Branagan Road, with less amounts of visibility landing on small parts of 2nd Road (also referred throughout the VIA as “Second Road”) and Zecher Road. The closest view to the proposed medium voltage overhead collection line would be available are the intersection of Branagan and 2nd Road. A majority of visibility is predicted within private and leased fields where very few, if at all any viewers would discern the structures. As shown in the Figure 6 viewshed analysis of the overhead collection line, structures 037 through 042 would be the most distinguishable as they contain a direct line of sight from Old State Road due to the siting of the structures in open fields. However, many of the proposed structures are positioned within a forested right-of-way and therefore are mostly obstructed and may only be perceived as a small section of the pole emerging above the existing tree canopies. Further, several solar arrays sited within fields adjacent to Branagan and Old State Road will likely attract attention over the collection line structures, thereby reducing the attention of the collection line structures.

The third area of occurrence is very limited to a small, approximately 1,000-foot section of 2nd Road. A large amount of predicted visibility is limited to private agricultural fields where solar arrays are sited and where viewers will not be expected. In general, viewers subject to potential visibility of the medium voltage overhead collection line would be those traveling by, and the character of view would consist as a brief view down the right-of-way to several proposed structures as one travels by.

Consequentially, the most sensitive viewing opportunities of the medium voltage overhead collection line are limited to sections of lightly traveled public roads and/or rural residential dwellings, however, the following conditions will result in the lessening of the collection line’s visual effect.

- Proposed solar arrays are sited in fields where medium voltage overhead collection line visibility was predicted, thereby resulting in the propensity to distract viewers from viewing the collection line structures due to the solar arrays and associated landscaping proposed along some of the array’s perimeter fencing.
- As indicated by the LSZ map shown in Figure 2 of Attachment 2, approximately 65 of the 85 proposed collection line structures are sited entirely within the forested

LSZ, meaning a large amount of existing vegetative screening will encompass the structures.

- There are very few rural residential dwellings in immediate vicinity of the medium voltage overhead collection line.
- Green or brown surface material will be utilized for the overhead collection line for the purpose of reducing visual contrast as these colors will promote the absorption of colors against colors of earth tones in the visible environment.

Visual Resources with Predicted Visibility

As shown in the Figure 6 viewshed map, a total of three visual resources obtained predicted visibility of the medium voltage overhead collection line within the 1-mile VSA. These resources are identified below and are accompanied by a description of the potential visual effects due to the overhead line.

Black River Trail Scenic Byway (NY126)

Scattered visibility of the medium voltage overhead collection line is predicted to occur within a 1.82-mile section of the Black River Trail Scenic Byway, between Strickland Road to the point at which the scenic byway exits the 1-mile VSA to the southeast. Since the transmission structures are sited 0.38 to 1.15 miles away, visual contrast would not be substantial. The transmission structures will utilize a green or a brown color and therefore will likely be subsumed by existing vegetation (approximately 65 of the 85 proposed transmission structures are sited entirely within the forested LSZ). In general, those traveling by vehicle may glimpse at the overhead line, but the character of view would be experienced briefly as existing dwellings and hedgerows punctuate each open area with predicted visibility. Some residences along the scenic byway may have a longer viewing opportunity of the overhead line, but due to the closer position of the proposed solar arrays and landscaping, the transmission structures would not be as apparent in the landscape.

Beartown State Forest

Two small seldom seen areas of predicted visibility are found within the exterior of the Beartown State Forest. These small pockets of visibility are located adjacent to the medium voltage overhead collection line, within reaching distance of Steam Hill Road. Due to the nature of predicted visibility found on the border of the state forest, in addition to the location of the more prominent National Grid Black River-Taylorville Line 2 and North Carthage-Taylorville Line 8 existing transmission line traversing through the state forest, it is expected that the potential impacts to viewers would be very infrequent as most recreationists would be interested in locations, trails, or amenities within the interior of the forest that are located away from this particular area.

Snowmobile Trail C5

The C5 snowmobile trail received predicted visibility of the medium voltage overhead collection line near the northwest border of the 1-mile VSA, within a section of the trail that abuts the BESS, switchyard, and collector substation. From this 0.36-mile section of the trail, the overhead line

would be possibly distinguished over a mile away, however, due to the foreground location of the proposed POI infrastructure, as well as the mobile nature of viewing, recreational snow mobilists are very unlikely to sight the overhead line.

10.2 Photo-Simulation and LOS Results and Discussion

Photo-simulations and LOS profiles are analytical tools that are integral to evaluation of potential visual effects of the proposed Facility (post-construction). Each analysis can be developed from key and important locations where Facility visibility was predicted to occur. Photo-simulations and LOS profiles may also provide a representative illustration from discrete landscape features (LSZs'), distance zones, sensitive resources, or places of high-use activities. Visual analyses are strategically produced based on the significance of a given location and they typically represent a publicly-shared view or location. These analyses are not intended for private places where limited users are permitted, nor should they be used to evaluate every minor fraction of the VSA. In most instances, photo-simulations representative of a distance zone and LSZ can be cross referenced and reviewed for vantage points that share similar zones. In doing so, the representative simulation within these zones can provide enough visual information to make informed decisions about the appearance of the Facility from other identical zones within the VSA.

As mentioned, photo-simulations and LOS profiles were prepared to supplement the evaluation of visibility from significant or representative viewing locations. To achieve this, seven VP photo-simulations have been developed from representative vantage points at varying distances and cardinal directions around the Facility. Per 19 NYCRR Section 1101-2.8 (b)(4)(i), simulation locations are based on representative or typical views showing proposed site conditions from areas predicted to have direct line of sight visibility to the Facility. Each photo-simulation underwent a rigorous selection process to conform with the regulations. The Article VIII VP selection criteria and the prepared photo-simulations that conform to these criteria are discussed in Section 7.3.2.

Table 9 summarizes information for each simulation VP and LOS profile. Please refer to Attachment 4 to view the simulations and LOS profiles.

Table 9. Summary Table of Simulation and LOS Viewpoints

Viewpoint ID	Location	Town	Approximate Distance to Facility	LSZ	Cardinal Direction	Reason for Selecting
14	NY126	Croghan	490 Feet	1,3,5	NE	Viewpoint is representative of Black River Trail Scenic Byway (2,036 to 2,965 AADT) from Distance Zone 1. View is near a farmstead and represents viewer types consisting of local residents, commuters,

Table 9. Summary Table of Simulation and LOS Viewpoints

Viewpoint ID	Location	Town	Approximate Distance to Facility	LSZ	Cardinal Direction	Reason for Selecting
						area travelers, visitors, and recreationalist.
21	Branagan Road	Croghan	571 Feet	1,2,3	W	Viewpoint demonstrates Distance Zone 1 view from local residences on Branagan Road. The viewpoint represents the local resident viewer type.
39	Youngs Mill Road	Croghan	292 Feet	1,2	SW	Viewpoint is representative of Young Mills Road (22 AADT) near the Beartown State Forest from within Distance Zone 1. The viewpoint represents the local resident viewer type.
41	2nd Road	Croghan	258 Feet	1,3	SSW	Viewpoint illustrates a vantage point from 2nd Road (143 to 251 AADT) in vicinity to rural residences within Distance Zone 1. The viewpoint represents viewer types consisting of local residents and commuters.
44	Beech Ridge Road	Croghan	0.70 Mile	1,3	SE	Viewpoint is representative of Beech Ridge Road and Distance Zone 2, in vicinity to a few residential dwellings. The viewpoint represents viewer types consisting of local residents and commuters.
45	NY126	Croghan	541 Feet	1,3	NNE	Viewpoint illustrates perspective from Distance Zone 1 and Black River Trail Scenic Byway (2,036 to 2,965

Table 9. Summary Table of Simulation and LOS Viewpoints

Viewpoint ID	Location	Town	Approximate Distance to Facility	LSZ	Cardinal Direction	Reason for Selecting
						AADT) near a few local residences. The viewpoint represents viewer types consisting of local residents, commuters, area travelers, visitors, and recreationalist.
48	NY126	Croghan	1.31 Miles	1,3,4	N	Viewpoint illustrates Distance Zone 2 view from the community of Naumburg and the Black River Trail Scenic Byway (2,036 to 2,965 AADT). The viewpoint represents viewer types consisting of local residents, commuters, area travelers, visitors, and recreationalist.
54	Strickland Road	Wilna	0.60 Miles	1	NNE	Conveys the closest vantage point to the collector substation, switchyard, BESS, and POI structures from Strickland Road, a rural-local road. The Viewpoint represents viewer types of local residents who reside and travel on Strickland Road.
L1*	Naumburg Evangelical Baptist Church Cemetery & Black River Trail Scenic Byway	Croghan	1.10 Miles	1,3,4	NE	LOS from local cemetery and scenic byway to proposed solar arrays.

Table 9. Summary Table of Simulation and LOS Viewpoints

Viewpoint ID	Location	Town	Approximate Distance to Facility	LSZ	Cardinal Direction	Reason for Selecting
L2*	Black River Trail Scenic Byway	Wilna	1.36 Miles	1,3	NE	LOS from scenic byway and snowmobile trail (C5) to proposed solar arrays and switchyard (POI).
*LOS profile analysis						

10.2.1 Discussion of Simulations

The following subsections describe the results of each photo-simulation which consist of discussions associated with potential changes to the character of the view, the identification of discernible Facility components, categorization of viewer constituency, and frequency of use. Simulations are presented as sets of existing and proposed conditions based on VP number and can be found in Attachment 4. Also included in Attachment 4 is the illustration of proposed landscaping mitigation at approximately 0 to 2-years and 5 years subsequent of construction. Each photo-simulation depicts the proposed position of each planting according to the proposed Landscape Plan (see Revised Appendix 5-1 of Revised Exhibit 5 Design Drawings and Plan 7A of Attachment 7). To depict the seasonal changes of vegetation that affect viewer perception of the Facility, both leaf-on and leaf-off representations are captured in each photo-simulation VP location. The methodology used to develop and select photographs for the simulations is described in Section 7.3

10.2.1.1 VP 14, NY126 (Black River Trail Scenic Byway), View Northeast – Croghan (LSZ 1,3,5; Distance Zone 1)

VP 14 was selected as a photo-simulation to evaluate potential visibility from the Black River Trail Scenic Byway. VP 14 also demonstrates a representative view from Distance Zone 1 and is adjacent to the Black River. VP 14 provides information about the potential view of the Facility for viewer types encompassing commuters, area travelers, visitors, recreationalists, and local residents along NY126. VP 14 does not rely on the presence of existing vegetation to screen the Facility.

Existing Condition

VP 14 faces northeast from NY126 toward the proposed Facility. When viewing the existing condition photo, the foreground is conveyed by the presence of the paved roadway and overhead electrical cabling. The middle ground is shown as an expansive agricultural field consisting of harvested corn row crops. The background is identified by a wall of forested vegetation with

intermittently placed transmissions structures and a single residential building on the right side of the photograph. Overall, the existing terrain within the view is relatively flat and static.

Proposed Conditions

In the proposed condition with 5-year landscaping, the solar arrays are sited within the middle ground and background agricultural fields. The massing of solar arrays is partly mitigated by the moderate setback distance from the viewer, in addition to the presence of deciduous and coniferous trees as proposed within the Type A landscaping template (see Section 11.11). A small interval in landscaping coverage occurs on the right side of the simulation and is due to the siting of an access road. The proposed landscaping in conjunction with the background forested vegetation collectively provide visual softening to the solar arrays. An elevated number of viewers (AADT of 2,036 to 2,965) consisting of recreationalists, commuters, area-travelers, visitors and local residents traveling along NY126 will likely view broken forms of the solar arrays within the fields, but the experience would be fleeting in nature. A few local residents residing on this segment of NY126 will obtain longer timed views of the partially screening solar arrays; however, this is dependent on the goals and objectives of each residential viewer as they move through their respective properties.

10.2.1.2 VP 21, Branagan Road, View West – Croghan (LSZ 1,2,3; Distance Zone 1)

VP 21 was selected to demonstrate a view from rural-residential dwellings on Branagan Road, a local rural road. This vantage point illustrates the appearance of the Facility from a foreground position within Distance Zone 1. VP 21 provides an understanding of potential visibility that may be experienced by the local resident viewer type. VP 21 does not rely on the presence of existing vegetation to screen the Facility.

Existing Condition

In the existing condition photograph, the view is mostly comprised of an open agricultural landscape where a large field of cleared corn row crops are seen within the foreground and middle ground. A mature deciduous forest forms the background and encompasses several residential buildings. In the far distant background, a minor view to existing wind turbines is partially available above emergent tree canopies within the left side of the photo. Topography within the foreground and midground is level and lacks any rising and falling characteristics.

Proposed Conditions

In the proposed condition with 5-year landscaping, a single row of solar panels is positioned within the midground field. As shown in the simulation, a large setback distance visually moderates the perceived scale of the solar array. The siting of the Type A landscaping template around the solar arrays accommodates a diminishment in line and form contrast, however, some small portions of the arrays can still be discerned. From this vantage point, very few viewers would experience the view to the Facility as approximately four local residential dwellings reside on the road. (Branagan

Road terminates after diverging from Old State Road). Of the few dwellings on Branagan Road that may discern small gaps of the solar arrays between proposed landscaping, the view would likely occur over a long period of time, depending on the viewer.

10.2.1.3 VP 39, Youngs Mill Road, View Southwest – Croghan (LSZ 1,2; Distance Zone 1)

VP 39 was prepared as a photo-simulation to portray potential Facility visibility from Young Mills Road in vicinity to the Beartown State Forest (located behind the observer). The VP provides a visual representation of the Facility from a limited portion of Young Mills Road. Viewer types on this road have been identified as commuters and local residents. VP 39 does not rely on the presence of existing vegetation to screen the Facility.

Existing Condition

The existing condition photograph depicts a predominantly rural-agricultural landscape. The entire foreground of the photo is comprised of harvested hayfields. From the midground, tree forests frame an agricultural field used for cultivating corn crop. A large horizontal band of forest is discernible in the background where a single farmstead is centered. Due to the viewing distance of the far background, a light blue color (atmospheric haze) and solid shape constitutes the appearance of the ridgeline where wind turbines intermittently dot the background. Visible land terrain is mostly flat within the view to the exception of the distant ridge.

Proposed Conditions

With the Facility in view, the far foreground field now consists of a codominant view of solar arrays, field grasses, and a background ridgeline and sky. No landscaping is proposed to screen the Facility from this location. Along this portion of Young Mills Road, there are no residential dwellings that would experience this view of the Facility. The number of local residents traversing on Young Mills Road is underwhelming (AADT of 22), therefore, while the solar arrays are unobstructed and in full sight, very few local residents that pass this section of road would even be affected. Overall, the visual effect seen by few viewers would be ephemeral in nature, and the remainder of potential views on the road would be mostly precluded by punctuated groupings of existing woodlands as seen along the road.

10.2.1.4 VP 41, Second Road, View South Southwest – Croghan (LSZ 1,3; Distance Zone 1)

VP 41 was prepared as a photo-simulation to convey Facility visibility from a local road in the VSA. This vantage point also illustrates foreground viewing characteristics of the Facility from Distance Zone 1. This perspective represents viewer types comprising local residents and commuters. It is also representative of the closest perspectives to the Facility from Second Road. VP 41 does not rely on the presence of existing vegetation to screen the Facility.

Existing Condition

As indicated by the VP 41 existing photograph, much of the foreground and background is comprised of agricultural fields with relatively flat topography. The background of the photo introduces subtleties of development which are seen as rectangular patterns of white intermixed with dark patterns of forested vegetation. The far background depicts lighter colors of blue and brown as the topography forms a ridgeline. Several existing wind turbines (white) are partially distinguishable above the ridgeline but fade in contrast due to the white cloudy conditions of the sky. Landform is steady and level within the view and increases in the background where ridges are formed.

Proposed Conditions

As shown in the photo-simulation, solar panels appear within the foreground of the once open field. The linear form of the solar panels partially interferes with the view to the background ridgeline. In five years, post-construction, Type A landscaping will soften and sectionalize the hard lateral edges of the solar panels, but openings between the proposed vegetation to the solar panels will still be available. A low to moderate number of travelers (143 to 251 AADT) on Second Road consisting of residents and commuters will experience fleeting views of the Facility. These momentary views will vary in contrast due to the variable setback distances of the solar array from the road. A select number of residences along this portion of Second Road will experience some level of sustained views to the Facility when around their respective properties. Proposed landscaping will provide some relief to views of the solar array.

10.2.1.5 VP 44, Beech Ridge Road, View Southeast – Croghan (LSZ 1,3; Distance Zone 2)

VP 44 was obtained from Beech Ridge Road and is oriented southeast to the Facility. VP 44 was selected as a photo-simulation to illustrate Facility characteristics from Distance Zone 2 and is proximal to a few residential dwellings. This vantage point provides a representation of what may be discerned by commuter travelers and local residents on Beech Ridge Road. VP 44 does not rely on the presence of existing vegetation to screen the Facility.

Existing Condition

In the existing condition photograph, the foreground and midground are abundant with agricultural fields with little to no vegetative obstructions. The foreground topography slightly increases on the left side of the photograph. The background is identified by light and dark blue hues consisting of staggered and overlapping forest groups intermixed with distant light green fields. The background also contains small, isolated areas of residential and/or farmstead development. Topography within the midground to background remains generally level and lacks any undulating features.

Proposed Conditions

In the proposed condition simulation, due to the changes in the Facility layout and the variation in topography in the middle ground, there would be no views of the Facility in the background fields. While several residences reside near this perspective, it is expected that they will have no visibility of the Facility due to the large viewing distance or landscape obstructions from changes in topography.

10.2.1.6 VP 45, NY126 (Black River Trail Scenic Byway), View North Northeast – Croghan (LSZ 1,3; Distance Zone 1)

The VP 45 photograph was secured from NY126 and faces North Northeast to the Facility. VP 48 is representative of Distance Zone 1 and the Black River Trail Scenic Byway. This vantage point also represents viewer types from NY126 consisting of commuters, area travelers, visitors, recreationalists and residents that may have the opportunity discern the Facility. VP 45 does not rely on the presence of existing vegetation to screen the Facility.

Existing Condition

The existing condition photograph depicts cultivated land dominating within the foreground and midground. A small area of deciduous trees is centered within the midground field. The background is enclosed with forested vegetation and a few residential and agricultural buildings. The landform within the view is described as flat and regular and does not change significantly.

Proposed Conditions

As illustrated the VP 45 photo-simulation, a distant shadowing is introduced within the background fields. Due to the substantial viewing distance to the Facility, the overall linear form mirrors existing landscape elements in the view (e.g., shrubland and hedgerows) that enables the Facility to be visually absorbed. A raised number of viewer types (2,036 to 2,965 AADT) consisting of local residents, commuters, area travelers, visitors, and recreationalists may momentarily discern the Facility from this section of NY126; however, it is not expected due to the observer's motion along with the minimal scale of the Facility. A few residential dwellings around the vicinity of this vantage point are expected that their views of the Facility will go unnoticed due to the large viewing distance.

10.2.1.7 VP 48, NY126 (Black River Trail Scenic Byway), Community of Naumburg, View North – Croghan (LSZ 1,3,4; Distance Zone 2)

VP 48 was photographed from NY 126 to document a Distance Zone 2 view from the Black River Trail Scenic Byway and the community of Naumburg. The VP was prepared as a photo-simulation to evaluate Facility visibility that may be experienced by residents (community of Naumburg), commuters, area travelers, visitors, and recreationalists traveling on NY126. VP 48 does not rely on the presence of existing vegetation to screen the Facility.

Existing Conditions

From the VP 48 existing condition photograph, a predominantly agricultural landscape is viewed. The foreground of the photo depicts a paved road and hay field with minimal visual disruptions. The middle ground continues the open agricultural land-use to much of the background where two mixed-tree forests frame a more distant view to more forested land. Minor impressions of development are seen within the photograph. Throughout much of the view, topography generally remains steady from the foreground to the far background.

Proposed Conditions

In the proposed condition simulation, a nuanced color variation is introduced within the distant background field within the center of the photo. This color is described as a small, thin line that is difficult to perceive. Since the newly introduced line contains a comparable color palate to the distant blue colored woodlot, the actual discernment of the Facility becomes almost undetectable within the background. Therefore, motorist viewer types consisting of local residents, commuters, area travelers, visitors, and recreationalists on this portion of NY126 are unlikely to recognize the Facility due to factors comprising distance and vehicular speed. Those residing in the CDP of Naumburg are not expected to discern the Facility from their respective properties.

10.2.1.8 VP 54, Strickland Road, View North Northeast – Wilna (LSZ 1)

VP 54 was secured with photography from Strickland Road to convey the closest vantage point to the collector substation, switchyard, BESS, and POI structures that connect electrical power from the switchyard to the existing grid. This VP was prepared as a photo-simulation to illustrate what limited rural residences and associated local traffic may experience when facing the Facility to the North of Strickland Road. VP 54 does not rely on the presence of existing vegetation to screen the Facility.

Existing Conditions

As shown in the existing condition photograph for VP 54, a vast and open agricultural field comprises the foreground and middle ground areas. One small beige section of land as seen on the right side of the photograph consists of hay/haylage agricultural uses. Further, several existing h-frame wooden structures, lattice steel structures, and tangent steel structures run perpendicular to the viewer's position across the middle ground field. A dense wall of mixed forest vegetation constitutes the background of the photograph.

Proposed Conditions

In the proposed condition simulation, a distant shadowing from the arrays is introduced within the background fields. The proposed substation and BESS are subdued within the center of the view due to the neutral gray and brown colored materials used for the substation components and the substantial viewing distance to the Facility. Due to this distance from Strickland Road to the

Facility, there is no mitigation proposed for these components. The overall form mirrors existing landscape elements in the view (e.g., the existing transmission structures and distant stand of mixed forest vegetation) that enables the Facility to be visually absorbed. While there is a residence nearly 900 feet to the east of this viewpoint, it is expected that their views of the Facility will go unnoticed due to the large viewing distance. Of those residential and commuter travelers on Strickland Road, views to the Facility are not expected due an observer's motion in conjunction with the minimally perceived scale and effect of the Facility's components.

10.2.2 Discussion – Line of Sight Results

LOS profiles were completed to address state aesthetic resources, as required in 16 NYCRR Section 1101-2.8 (b)(1). This regulation necessitates that LOS profiles be completed for statewide resources of concern. As noted in Table 4A and 4B, a total of three state resources were predicted to experience solar panel visibility. LOS profiles prepared under this part may also traverse through additional state visual resources. The subject resources with predicted visibility are outlined below with information pertaining to the analyses performed.

- Beartown State Forest (See VP 39 of Attachment 4 for a line of sight to the Facility)
- Black River Trail Scenic Byway (See LOS profiles L1 and L2 and VPs 14, 45 and 48 of Attachment 4)
- PEJA - Census Tract 609.01, Block Group 3 (See LOS profiles L2 of Attachment 4)

Two LOS profiles were performed from discrete state aesthetic resources where Facility visibility was predicted. Each LOS profile may contain several pertinent sight lines from other state resources. The following paragraphs discuss the results of each LOS profile.

10.2.2.1 L1 – Naumburg Evangelical Baptist Church Cemetery & Black River Trail Scenic Byway, View Northeast (LSZ 1,3,4; Distance 1.10 miles, Distance Zone 2)

The LOS L1 profile was completed from predicted areas of solar array visibility within the Black River Trail Scenic Byway and Naumburg Evangelical Baptist Church Cemetery in the Town of Croghan. The LOS L1 faces a northeast direction and spans a total of 1.10 miles through predominantly agricultural land before ending at a solar array near Second Road.

As shown in the LOS L1 profile, both subject resources are capable of providing views to solar arrays at over a distance of 1.10 miles. This is primarily due to the abundance of open agricultural land between the viewer and Facility. To further examine the potential viewing conditions, a photograph representing these resources can be reviewed within the Facility Photolog as VP 46. As shown in the VP 46 photograph (see sheet 16 of 18 of Attachment 3), a small opening in the distant forested vegetation would reveal a small section of solar arrays (see LOS L1 profile map in Attachment 4). In this viewing circumstance, the Facility would consume a minor portion of the perspective in context to the sweeping view of the agricultural lands. Because of the visually

degrading effects of distance (1.10 miles from viewer to Facility), and the slim profile height of the solar arrays compared to the existing forested trees, local visitors to the Naumburg Evangelical Baptist Church Cemetery are unlikely be sensitive to such a change in the background landscape. While local residents, commuters, area travelers, workers, and recreationalist utilizing the Black River Trail Scenic Byway may potentially glimpse the distant solar array, the overall visual effect to viewers would be negligible due to distance and vehicular motion.

10.2.2.2 L2 – Black River Trail Scenic Byway, View Northeast (LSZ 1,3; Distance 1.36 miles; Distance Zone 2)

The LOS L2 profile was prepared from the Black River Trail Scenic Byway within the Town of Wilna. The LOS traverses through a few solar array areas before reaching the proposed switchyard. As shown in the LOS L2 profile, solar arrays are observed from within the foreground, while in the background half of the switchyard a-frame may be discernible, but lower sections of the a-frame would be precluded by the foreground solar arrays (see green arrow indicating the sightline in LOS L2 of Attachment 4). While landscaping is proposed in front of the closest solar array, it does not provide sufficient screening of the Facility due to the elevated position of the observer (approximately 746 feet AMSL) against the lower position of the landscaping (approximately 733 feet AMSL). As a result, local residents, commuters, area travelers, workers, and recreationalists trafficking along this part of the Black River Scenic Byway are expected to experience a transient view of mostly unobstructed foreground solar arrays.

10.3 Visual Impact Rating Results

As mentioned in Section 9.0, the rating effort involved the evaluation of seven VP locations that were developed as photo-simulations in a post-construction appearance. Section 9.0 describes the concepts and methodology applied to rating Facility contrast through the process of evaluating photo-simulations. Given that a landscape plan is proposed for the Facility (see Plan 7A Attachment 7 for the abbreviated landscape plan and Revised Appendix 5-1 for the full landscape plan), simulations illustrating representative views of the Facility with 0 to 2-year vegetative landscaping were rated against the existing condition photograph (see Table 10-A for the rating results of Part 1), as well as a comparative assessment of the effectiveness of landscaping which examined the 0 to 2-year landscaping against the 5-year landscaping (see Table 10-B for the rating results of Part 4). This is completed to examine the potential screening effects of proposed vegetation under a reasonable timeframe of 5 years post-construction when suitable time is provided for tree and plant maturation. For more information regarding the landscape plan, please refer to the Visual Impact Minimization and Mitigation Plan (VIMMP) (Section 11.11).

The ratings were completed by a professional rating panelist for evaluating the potential effects associated with the appearance of the built Facility, as required by Article VIII. Three professional panelists evaluated and rated the simulations against the existing condition photograph using the visual impact rating form and methodology described in Section 9.0. All three individuals are experienced evaluators and have completed ratings on previous solar project applications.

Instructions were provided to each panelist and the purpose of each rating category was explained to the panelists. Detailed information to facilitate the rating evaluation was supplied to each panelist, this included the Facility location information and the respective location of each simulated view. The terrain and street view features available on the Google Earth platform also provided panelists the ability to discern if other residences or vegetation are present or in the vicinity while also allowing them to view different angles. The panelists then applied the contrast ratings singularly and independently without consultation with or from any other party. A full description of the methodology and instructions used in the rating process is available in Attachment 6, as well as panelist qualifications, and the completed evaluation forms for each simulated VP.

Table 10-A below presents averages of the final rating scores completed by the rating panelists for Part 1 Visual Contrast, Part 2 Viewpoint Sensitivity, and Part 3 Existing Scenic Quality. For example, as illustrated in Table 10-A, VP 39 was identified as having a moderate visual contrast rating, a weak viewer sensitivity rating, and a weakly moderate scenic quality rating.

10.3.1 Summary of the Rating Results for Parts 1-3

In summary of the Part 1-3 visual impact rating results, VP 39 (Young Mills Road) received the highest Part 1 visual contrast rating with a mean rating score of 15.8 out of 27. This represents a moderate visual contrast as a result of a direct foreground view to the solar arrays with an absence in proposed landscaping. However, the average Part 2 average rating of viewpoint sensitivity was rated as weak, meaning viewers are unlikely to be sensitive to the view of the Facility. This is likely due to the limited nature of daily travelers (AADT 22) and rural residential development on the visible section of Young Mills Road. The panelists rated the Part 3 scenic quality of the existing conditions as weakly moderate, which indicates there are minor scenic landscape features in the view.

Table 10-A. Visual Impact Rating Results

VP	Location	Rating Panelist 1 A.B.			Rating Panelist 2 G.T.			Rating Panelist 3 S.D.			Average Ratings		
		Part 1[A]	Part 2[B]	Part 3[C]	Part 1[A]	Part 2[B]	Part 3[C]	Part 1[A]	Part 2[B]	Part 3[C]	Avg Part 1[A]	Avg Part 2[B]	Avg Part 3[C]
14	NY126 (Black River Trail Scenic Byway)	9	13	1	13.5	12.5	1.5	11	11.5	1	**11.2 WM**	**12.3 M**	**1.2 WM**
21	Branagan Road	9	5.5	1	13	5.5	1.5	10.5	2.5	1.5	**10.8 WM**	**4.5 W**	**1.3 WM**
39	Young Mills Road	16	7.5	1	17.5	7.5	1.5	14	6	1	**15.8 M**	**7 W**	**1.2 WM**
41	2nd Road	13	6	2	19	5.5	2	13	3	1.5	**15 M**	**4.8 W**	**1.8 M**
44	Beech Ridge Road	0	6	1	0	3.5	1.5	0	3	1	**0 None**	**4 W**	**1.2 WM**
45	NY126 (Black River Trail Scenic Byway)	6.5	15	2	5.5	12.5	1.5	5	11.5	2	**5.7 W**	**13 M**	**1.8 M**
48	NY126 (Black River Trail Scenic Byway)	2.5	16	1.5	2	12	2	3	10	2	**2.5 VW**	**12.7 M**	**1.8 M**
54	Strickland Road	8	5.5	1	9	5.5	0	6	1.5	1.5	**7.7 W**	**4.2 W**	**0.8 W**

VW=very weak, W=weak, WM= weakly moderate, M=moderate, MS=moderately strong, S=strong

[A]Part 1: Visual Contrast Rating (0 to 2-Years Post-Construction); [B]Part 2: Viewpoint Sensitivity Rating; [C]Part 3: Existing Scenic Quality Rating

VP 41 (Second Road) obtained the second highest Part 1 rating with a mean score of 15 out of 27, indicating moderate contrast. The VP 41 Part 2 Viewpoint Sensitivity obtained an average rating of weak concluding that viewers may not be overly sensitive to visual change on this part of Second Road. The Part 3 average scenic quality rating concludes that this perspective is moderate, meaning the existing view may furnish some scenic qualities.

VP 14 (NY126; Black River Trail Scenic Byway) obtained a Part 1 average visual contrast rating of 11.2 out of 27, meaning a weakly-moderate amount of visual contrast to the Facility's appearance with 0 to 2-year landscaping. The panelists rated the Part 2 viewer sensitivity with a mean score of 12.3 or moderate, however, the panelists rated the existing scenic quality of the view as weakly-moderate, due to the typical landscape features seen within the region. This rating implies that this section of the Black River Trail Scenic Byway may include less scenic features compared to VP 45 with a Part 3 average score of 1.8 or moderate.

The VP 21 (Branagan Road) was evaluated under Part 1 and received a contrast rating of 10.8 or weakly-moderate. This is generally contributed to the large setback distance of the Facility from the position of the viewer on Branagan Road. The Part 2 mean score for VP 21 is 4.5 or weak, concluding that viewers may not be as sensitive to the view of the Facility from this vantage point. The Part 3 scenic rating was entered as weakly-moderate, suggesting a small number of scenic qualities in the existing condition photograph.

Due to the Applicant's changes to the array layout, VP 45 (NY126; Black River Trail Scenic Byway) received a weak visual contrast Part 1 rating with a mean score of 5.7 out of 27. This weak contrast rating appears to be a result of the viewing distances to the solar arrays, which are now in Distance Zone 2 at 0.5 to 2-miles. The VP 45 Part 2 Viewpoint Sensitivity obtained an average rating of moderate implying that viewers may be sensitive this viewing condition from this section of NY126. The Part 3 average scenic quality rating had a mean average score of 1.8, or moderate scenic quality of the environment from this portion of NY126.

VP 54 (Strickland Road) received a Part 1 average visual contrast rating of 7.7 out of 27, signifying a weak visual contrast toward the Facility's substation, switchyard, and BESS. Even though mitigation is not proposed, panelists indicated that the combination of distant views to the Facility and the existing transmission infrastructure allows the Facility to be visibly absorbed into the landscape. The Part 2 viewer sensitivity and Part 3 scenic rating received a mean score of 4.2 and 0.8, respectively, both equate to a weak rating. This suggests that viewers along Strickland Road will have a low sensitivity to the visual change and the existing view would provide little scenic quality.

The remaining VPs 44 (Beech Ridge Road) and 48 (NY 126; Black River Trail Scenic Byway) were rated with the lowest contrast mean score of 0 and 2.5, respectively. This signifies that the Facility's contrast as seen from these perspectives is rated as very weak, or no impact. This is likely attributed to the effects of Distance Zone 2, where viewing distances to the Facility consisting of 0.5 to 2-miles results in the solar arrays becoming subordinate to the dominating elements of the existing landscape. The 0 rating for Part 1 at VP44 was due to the Applicant's

layout changes which led to the arrays, initially shown in the simulation, being removed from the view; therefore, there is no longer any visibility of the Facility.

10.3.2 Part 4 Visual Contrast Ratings With 5-Year Landscaping

Part 4 entails a second series of visual contrast ratings that were performed for the Facility to determine the effectiveness of the proposed 5-year landscaping in conjunction with minimizing and moderating Facility contrast. For Part 4 ratings, the panelists who rated Parts 1 through 3 were instructed to examine the photo-simulations with 0 to 2-year landscaping against photo-simulations with 5-year landscaping from each simulated viewpoint location. Panelists were then prompted to rate the change in visual contrast using the same nine rating elements as described in Part 1 (see Attachment 6 for the complete Part 1 rating methodology). As shown in Table 10-B below, the average rating results of Part 1 – Contrast Ratings With 0 to 2-Year Landscaping are juxtaposed with the average rating results of Part 4 – Contrast Ratings of Facility With 5-Year Landscaping.

According to Table 10-B, in 5 years post-construction, the proposed landscaping plan would reduce Facility contrast by a mean total of 1.5 points per simulation viewpoint. Given that the maximum contrast rating score of a single viewpoint is 27 points, the 1.5 points per viewpoint equates to a 5% reduction in visual contrast. Under one condition is no reduction in visual contrast realized, VP 39 located on Young Mills Road is not treated with proposed landscaping and therefore results in the highest contrast rating; however, the limited use of the road by travelers (AADT of 22) suggests that few viewers would be affected by a sighting of the Facility from a very limited section of this road. Overall, the Facility's proposed landscaping plan provides a partial reduction in visual contrast.

Table 10-B. Visual Impact Rating Results: 0 to 2-Year and 5-Year Landscaping

VP	Location	Avg Part 1 – Contrast Ratings With 0 to 2-Year Landscaping	Avg Part 4 – Contrast Ratings With 5-Year Landscaping
14	NY126 (Black River Trail Scenic Byway)	**11.2 WM**	**7.3 W**
21	Branagan Road	**10.8 WM**	**7.7 W**
39	Young Mills Road	**15.8 M**	**15.8 M**
41	Second Road	**15 M**	**11.2 WM**
44	Beech Ridge Road	**0 None**	**0 None**
45	NY126 (Black River Trail Scenic Byway)	**5.7 W**	**5.7 W**
48	NY126 (Black River Trail Scenic Byway)	**2.5 VW**	**2.5 VW**

Table 10-B. Visual Impact Rating Results: 0 to 2-Year and 5-Year Landscaping

VP	Location	Avg Part 1 – Contrast Ratings With 0 to 2-Year Landscaping	Avg Part 4 – Contrast Ratings With 5-Year Landscaping
54	Strickland Road	**7.7 W**	**NA**
VW-very weak, W=weak, WM= weakly moderate, M=moderate, MS=moderately strong, S=strong			

11.0 VISUAL IMPACT MINIMIZATION AND MITIGATION PLAN

16 NYCRR Section 1101-2.8 (d) requires a VIMMP that includes proposed minimization and mitigation alternatives to avoid and minimize visual impacts to the maximum extent practicable. Appropriate and practicable measures to reduce visibility of solar development include mitigatory practices such as vegetative screening (landscaping), architectural design, visual offsets, relocation or rearranging Facility components, the reduction of component profiles, alternative technologies, Facility color, and design lighting options for work areas and safety requirements. Please refer to Attachment 7 to review the VIMMP documents.

11.1 Siting and Design

The Applicant implemented several minimization and mitigation strategies associated with the Facility's siting and design, which is outlined below as follows:

- As conveyed by the Figure 2 LSZ map (see Attachment 2), Facility components are shielded by existing, dense, woodlands found predominantly on the northern side of the Facility. Further, some solar array areas were sited in open fields where woodlands nearly encompass all cardinal directions. The Facility viewshed results underline the screening effect of the forested areas as most predicted visibility is focused to areas immediately south of the solar arrays. For most locations where existing vegetation is unavailable, the Applicant has proposed landscaping to moderate views of the Facility. See Section 11.11 below for a thorough description of the Facility planting plan.

- The Facility components are sited to minimize potential visibility from significant federally listed visual resources and the most populated communities.

- To the extent practicable, collector lines will be placed underground to decrease additional aboveground Facility visibility and associated impacts. Due to underground bedrock constraints, a portion of the collection system will be installed as aboveground medium voltage structures.

- Inverters are proposed to be sited toward the centroid of solar arrays to camouflage and obstruct views to the components.

- The Facility has been designed to conform with the minimum property and building setback distance in accordance with Section 1101-2.6(d) of the ORES regulations (see Revised Exhibit 5 for more detail). The Applicant applied minimum setbacks of 250 feet from non-participating occupied residences, 100 feet from non-participating residential property lines, and 50 feet from the center line of public roads and non-residential, non-participating property lines.

- The Facility has been sited to circumvent and minimize vegetative clearing by utilizing open agricultural land. In addition to providing environmental protection, the minimization of tree clearing provides additional screening to Facility from public view.

- To avoid any new potential visual impacts pertaining to electrical overhead structures, the substation, switchyard, and POI transmission structures were sited adjacent to existing transmission right-of-way for immediate interconnection to the electrical grid.

- The Applicant proposes solar panels containing an antireflective coating. PV panels are designed to absorb light and minimize reflected light and glare. According to the Glare Analysis (see Section 11.10 as well as Plan 7C of Attachment 7), the Applicant sited the Facility to avoid potential glare. In addition, the proposed landscaping plan around the perimeter mitigates glare, if any were to be produced.

- Racking systems consist of non-reflective metallic materials to reduce the potential for increased visual contrast.

- The lighting plan for the collector substation and switchyard was created to ensure security, safety, and maintenance, following 1101-2.8 (9) regulations. The lights will remain off during regular operation but can be manually activated for maintenance or emergencies. The plan minimizes light creep and meets National Electrical Safety Code (NESC) standards, while also complying with Occupational Safety and Health Administration (OSHA) requirements for adequate illumination in work areas around electrical equipment. Specifications for lighting are presented in Attachment 7.

11.2 Downsizing and Low Profile

The breadth and lateral scale of the Facility is necessary to achieve the Facility's generating MW capacity to uphold the requirements of the Climate Leadership and Community Protection Act. However, throughout the Facility's iterative design process, reductions in Facility's footprint occurred to address environmental constraints, avoid sensitive resources, and for compliance with local laws to the maximum extent practicable. The Facility design was subject to several refinements of component siting that resulted in a reduced Facility layout, while still achieving the required MW capacity of the Facility. The proposed solar panels are anticipated to have a

maximum height of 10.625 feet from finished grade, which resembles a low-profile height (less than a one-story building). Further, the Facility design employs tracker and bi-facial panel technology that which accommodates an even lower panel height during most daytime hours. If needed, tracker systems allow for the ability to directly program and adjust panel tilt in select areas at certain times of day to mitigate glare, if necessary.

11.3 Alternate Technologies

Alternate technologies generally do not exist that would substantially reduce the visibility and visual impact of the proposed Facility. However, the Facility is leveraging bifacial solar panels that allow for light absorption on both sides of the panel, resulting in higher power generation. By employing bifacial technology, the solar arrays will need not conform to the full 10-foot height during the day. During midday, the solar modules will be positioned horizontally, and visibility will be lessened. Further, with bifacial solar panels, the Applicant can minimize the overall Facility footprint and still meet the required MW capacity.

11.4 Facility Color

The colors of the Facility are described in the material analysis of Section 2.0. The neutral gray colors comprising the racking system, substation, inverters, and blue color of the solar modules cannot be modified as specifications and materials are inherent and standardized by the manufacturer (fabricated by mass production, either by automation or assembly lines). Solar panels are manufactured with polycrystalline, which is naturally blue in color and is best suited to reflect the least possible sunlight. However, as available, the POI transmission structures will be surfaced in self-weathering steel, which resembles a brown material, to mimic earthy colors of the existing environment. The medium voltage overhead collection line will be comprised of weathered streel structures and will support several overhead cables. The overhead structures will contain a dark brown or green weathered steel appearance. Further, the Applicant has proposed woven wire fencing around the perimeter of the solar panels to reinforce existing cultural/agricultural features within the local landscape.

11.5 Relocation and Rearranging Facility Components

The Applicant performed multiple iterations of Facility design due to constraints including, but not limited to, shifts in land control, federal, state, and local regulations such as setback requirements, local zoning, sensitive resources and environmental protections (avoidance of wetlands, cultural resources, and protected habitats, etc.), noise and visual impacts, community feedback, and stormwater design.

11.6 Advertisements, Conspicuous Lettering, or Logos

Other than warning and safety signs, no advertisements, conspicuous lettering, or logos will be permitted on Facility components.

11.7 Buried Electrical Collector System

As described above, the collector system is proposed underground by either trenching and/or horizontal directional drilling (HDD). Due to underground bedrock constraints, a medium voltage overhead collection line is proposed in three locations to carry 34.5 kV to an area in vicinity to the collector substation. Please refer to Section 2.0 for a full description of the medium voltage overhead collection line.

11.8 Transmission Lines

Transmission structures facilitating the POI and medium voltage overhead collection line shall have a non-glare finish. Use of a dark brown or green weathered steel dead-end structure shall be considered in the development of final engineered design.

The POI structures have been proposed adjacent to the switchyard, which is also next to the existing National Grid Black River-Taylorville Line 2 and North Carthage-Taylorville Line 8 transmission line. In doing so, this siting strategy minimizes the lateral extent of the POI structure's reach, and therefore circumvents Facility impacts to the local environment.

Due to underground bedrock constraints, the medium voltage overhead collection line is proposed in three locations to carry 34.5 kV to an area in vicinity to the collector substation.

11.9 Non-Specular Conductors

Non-specular conductors will be implemented for the transmission line, electric collector system, as well as the electrical substation equipment to reduce light reflectance.

11.10 Glare for Solar Facilities

The Facility was evaluated for potential glint and glare impacts to nearby residences (generally within 1,000 feet of the Facility) and public roadways using industry standard, ForgeSolar software. The software analyzes glint and glare effects associated with solar panel development with methodology that is established by Sandia National Laboratories for Solar Glare Hazard Analysis Tool (SGHAT). This technology was developed by the Federal Aviation Administration (FAA) in cooperation with the Department of Energy (DOE), subsequently, ForgeSolar was then developed to supplement glint and glare assessments outside of the aviation industry.

The SGHAT classifies solar glare into three distinct categories, denoted as "green," "yellow," or "red" glare.

- Green Glare is the mildest of the classifications and has low potential to cause after-image and no potential to cause retinal burn.
- Yellow Glare is a moderate level of glare and has some potential for temporary after-image and no potential to cause retinal burn.

- Red Glare is a serious and significant form of glare with potential to cause retinal burn and/or permanent eye damage. (Red Glare does not typically occur with solar projects)

The glint and glare analysis evaluated a total of 51 unique buildings and eight existing roadways that were found in proximity to the Facility. A height of 6 feet was used to represent an observer in the window of a single-story building, and 16 feet was used to represent an observer in the window on the second floor of a two-story building. The viewing angle for observers traveling along the roadways was presumed to be -50 to 50° field of view (total viewing angle of 100°). The height for observers traveling along the roadway was assumed to be 5 feet for passenger cars or 11 feet for commercial vehicles (as necessary). The roadways are identified as follows.

- Branagan Road
- Highway 126
- Old State Road
- Rohr Road
- Second Road
- Strickland Road
- Warpe Road
- Youngs Mill Road

As described below in more detail, the results of the glint and glare analysis for the Facility indicate that five to thirty minutes of green or yellow glare may occur at a limited number of receptors when panels are at a 0˚ resting angle; however, the proposed landscape plan would likely decrease the prevalence of glare as the vegetation matures and reaches heights that exceed the solar arrays (where glare may be emitted). Additionally, by adjusting the resting angle of the arrays in certain locations to 5˚ or 10˚, yellow glare has been eliminated. In the unlikely occurrence that glint or glare occurs, the Applicant will evaluate further mitigation tools through the use of additional landscaping or operational adjustments, such as adjusting the resting angle. Additional analyses with resting angles of 5° and 10° were conducted on select array groups. By adjusting the resting angles of certain arrays to 5° or 10°, yellow glare has been eliminated. The Facility will utilize glare reducing features such as backtracking for the solar arrays for minimizing impacts from shading during the morning and evening hours of the day. The solar arrays are also proposed to have a smooth-textured surface with anti-reflective coating to reduce any potential glint and glare effects. The following summary of predicted effects is referenced from the glint and glare report as provided in Attachment 7 of the VIMMP.

<u>Less than five minutes of predicted glare:</u>

- Minor glare is estimated to be observed from Arrays 9 and 10 along a portion of Strickland Road. The glare (green only for Array 9 and green/yellow for Array 10) was estimated to be observed for less than a maximum of 5 minutes per day in either the

evening (7:00-8:00 pm) from May to July or early morning (5:00-6:00 am) from late May to July. However, by adjusting the resting angle of the arrays in certain locations to 5˚ or 10˚, yellow glare has been eliminated. Landscaping is proposed along the southwestern and western boundary of Array 10 and was included in the 0˚ modeled analysis at an initial height of 7 feet. As the vegetation matures, it is anticipated that view of the array area from Strickland Road would continue to be minimized, reducing the potential impact of glare. Scattered existing vegetation is located along the western portion of Strickland Road which would assist in minimizing the view of the array areas. In addition, as noted in Tables 3-1 and 3-2, available sunlight during May through July is estimated between 53-60 percent and partly cloudy/cloudy conditions are still abundant, which would assist in minimizing the minor glare estimated.

- Array 15: Minor glare is estimated to be observed at the residential receptor OP17/OP18 from November to December in the early morning hours (7:00-8:00 am) for less than 2-3 minutes per day. Minor glare is also estimated to be observed along portions of Highway 126 intermittently from September to March in the early morning hours (6:00-8:00 am) for less than 5 minutes a day. Landscaping is proposed along the western boundary of Array 15 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.
- Array 16: Minor glare is estimated to be observed along Highway 126 for commercial drivers (i.e. semitruck drivers) intermittently from September to April in the early morning hours (5:30-8:00 am) for less than 5 minutes per day. Landscaping is proposed along the western boundary of Array 15 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.
- Array 20: Minor glare is estimated to be observed at the residential receptor OP24 during July in the early morning hours (4:00-5:00 am) for less than 2 minutes per day. Landscaping is proposed along the western boundary of Array 19 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.
- Array 20: As modeled with a 5˚ resting angle, minor green glare is estimated to be observed from Array 20 from vehicular receptors along Old State Road from June to July during the early morning hours (4:00-5:00 am) for less than 2 minutes per day. Early planting heights of proposed landscaping along the southern boundary of adjacent Array 22 was included in the 5˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area will decrease.
- Array 21: Minor glare is estimated to be observed at the residential receptor OP23/OP24 from February to July in the early morning hours (4:00-7:00 am) for less than 5 minutes per day. Glare is also estimated to be observed by commercial vehicles along portions of Highway 126 from October to February in the early morning hours (6:30-8:00 am) for less than 5 minutes per day. Landscaping is proposed along the western boundary of Array 21

and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.

- Array 26: Glare is also estimated to be observed along portions of Braegan Road, Old State Road, and Second Road from May to July in the early evening hours (6:30-8:00 pm) for less than 2-3 minutes per day. Landscaping is proposed along the western, southern, and eastern boundaries of Array 26 and was included in the modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.
- Array 37: Minor glare is estimated to be observed at the residential receptor OP66/OP67 from June to July in the early morning hours (4:00-5:00 am) for less than 5 minutes per day. Based on the provided glare spot graphs, the estimated glare spot is approximately 1,300 feet from the receptor location. At this distance, the impact of glare on an observer is estimated to be minimal.
- Array 38: Minor glare is estimated to be observed along portions of Youngs Mills Road in March and September in the early evening hours (6:00-7:00 pm) for less than 3 minutes per day.
- Array 41: Minor glare is estimated to be observed along portions of Youngs Mills Road from November to January in the early morning hours (7:00-8:00 am) for less than 3 minutes per day.

<u>Less than ten minutes of predicted glare:</u>

- Minor glare is estimated to be observed from Arrays 11, 12, and 13 along a portion of Strickland Road. The glare was estimated to be observed for less than a maximum of 5 minutes per day, except for Array 12 which was estimated for less than 10 minutes per day. Landscaping is proposed along the northern boundaries of these arrays and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from Strickland Road would continue to be minimized or generally eliminated.
- Array 14: Glare is estimated to be observed at the residential receptor OP17/OP18 from July through May during the early morning hours (5:00-9:00 am depending on the time of the year) for up to an estimated maximum 20-25 minutes per day.
- Array 14: As modeled with a 5˚ resting angle, green glare is estimated to be observed from Array 14 at the second-floor residential receptor OP18 from December to January during the early morning hours (8:00-8:30 am) for less than 10 minutes per day. Early planting heights of proposed landscaping along the western boundary of Array 14 was included in the 5˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area will decrease.

- Array 22: Minor glare is estimated to be observed at the residential receptor OP36 from May to July in the early evening hours (around 7:00 pm) for less than 10 minutes per day.
- Array 24: Minor glare is estimated to be observed along Braegan Road from May to August in the early evening hours (7:00-8:00 pm) for less than 10 minutes per day. Landscaping is proposed along the eastern boundary of Array 24 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease. In addition, existing vegetation is located between the array area and roadway, which further assists in minimizing the view of the array area.
- Array 26: Minor glare is estimated to be observed at the residential receptors OP38/OP39 and OP40 during June through August in the early morning hours (4:00-5:00 am) for less than 10 minutes per day.
- Array 26: As modeled with a 5˚ resting angle, minor green glare is estimated to be observed at the residential receptors OP38/OP39 and OP40 during June and July in the early morning hours (4:00-5:00 am) for less than 10 minutes per day. Early planting heights of proposed landscaping along the western, southern, and eastern boundaries of Array 26 was included in the 5˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property will decrease, therefore decreasing anticipated green glare. No yellow glare was observed for Array 26.
- Array 27: Minor glare is estimated to be observed at the residential receptor OP39 in March and September/October in the early morning hours (7:00-8:00 am) for less than 10 minutes per day. Landscaping is proposed along the western, northern and eastern boundaries of Array 27 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.
- Array 43: Minor glare is estimated to be observed intermittently at the residential receptors OP68/OP69 and OP71/OP72 from May to July in the early morning hours (4:00-5:00 am) for less than 10 minutes per day. Based on the provided glare spot graphs, the estimated glare spot is approximately 1,800 feet from the receptor location. At this distance, the impact of glare on an observer is estimated to be minimal.

<u>Less than 30 minutes of predicted glare:</u>

- Array 14: Glare is also estimated to be observed along portions of Highway 126 from August to April in the early morning hours (5:30-9:00 am, depending on time of year) for under a potential maximum of 30 minutes per day. Landscaping is proposed along the western boundary of Array 14 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.

- Array 19: Glare is estimated to be observed at the residential receptor OP20/OP21 intermittently from September to March in the early morning hours (5:30-9:00 am depending on the time of the year) for up to an estimated maximum of 20 minutes per day. Glare is also estimated to be observed by vehicles along portions of Highway 126 from September to March in the early morning hours (6:00-9:30 am, depending on time of year) for less than a potential maximum of 20 minutes per day. Landscaping is proposed along the western boundary of Array 19 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease.

- Array 22: Glare is also estimated to be observed along portions of Old State Road from April to August in the early evening hours (6:00-8:00 pm) for less than 20 minutes per day. Landscaping is proposed along the southern boundary of Array 22 and was included in the 0˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area from the residential property and roadway will continue to decrease. Additional tree lines that are located between Array 22 and OP36 may further obstruct view of the array area.
- Array 24: As modeled with a 5˚ resting angle, minor glare (green and yellow) is estimated to be observed along Braegan Road from May to August in the early evening hours (6:30-8:00 pm) for less than 15 minutes per day, likely due to the hilly nature of Braegan Road. Early planting heights of proposed landscaping along the eastern boundary of Array 24 was included in the 5˚ modeled analysis. As the vegetation matures, it is anticipated that view of the array area will decrease. When the resting angle is limited further to 10˚, the estimated yellow glare is eliminated.
- Array 37: As modeled with a 5˚ resting angle, minor green glare is estimated to be observed from Array 37 at the residential receptor OP66/OP67 sporadically from June through August in the early morning hours (4:00-5:30 am) for less than approximately 12 minutes per day. Based on the provided glare spot graphs, the estimated glare spot is over 1,000 feet from the receptor location. At this distance, the impact of glare on an observer is estimated to be minimal.
- Array 40: Glare is estimated to be intermittently observed along portions of Youngs Mills Road from March to October in the early evening hours (5:00-7:00 pm) for up to a maximum of 20 minutes per day.

11.11 Planting Plan

Landscaping, or vegetative screening, is the most advantageous mitigatory option for reducing visual change associated with solar development. Since solar arrays contain a low-profile (are smaller than a single-story home), they have the propensity to be visually absorbed or screened by vegetative screening. Therefore, the Applicant is proposing a landscaping plan to minimize and mitigate visual impact to the surrounding environment. The proposed vegetative landscaping has been employed to minimize visual impacts in conformance with 16 NYCRR Section 1101-2.8

(d). Further, the landscape plan has focused the allocation of evergreens to provide indefinite leaf-on foliage, regardless of the season or time of year.

In order to identify suitable locations for implementing the landscape plan, a landscape architect examined the entire perimeter of the Facility using information such as the Facility viewshed, adjacent receptors, area sensitivity, existing vegetation and topography, and observation angles, and then constructed the plan in a manner that would be beneficial in screening the Facility. However, not all locations may have been treated with landscaping if the location was considered a seldom seen area without the characteristics of scenic integrity, or where viewers are absent and/or the landscape is rarely viewed. In certain locations, the installation of landscaping may be prohibited such as at utility crossings (overhead or underground) or at driveway entrances due to safety or access concerns.

The landscape plan is featured with an arrangement of templates consisting of a scheme of plantings designated for a particular location around the Facility. There are two planting templates proposed for the Facility: Template Type A contains the most comprehensive screening with a predominant arrangement of native evergreen trees, smaller native ornamental-type deciduous trees, and native deciduous shrubs that are wildlife and pollinator-friendly in nature. Template Type A is utilized in places where existing vegetation is absent. Template Type B contains native evergreens and is utilized in locations where availability of planting space is limited due to pre-existing and proposed conditions that include but is not limited to utilities, roadway rights-of-way, and drainage elements (see below for more information about each template). Plant species will be procured from local suppliers where possible. For both templates, installation of young and native species (install heights range from 2 to 8 feet) is preferred to foster vitality, adaptability, and the minimization of potential die-off and replacement; however, in approximately 5-years post-construction, the plants may reach an average height of 7 to 15 feet (see Table 11). Overall, the site selection of plantings and associated templates were prioritized according to the degree of sensitivity at a given location. This was completed to ensure that open and unobstructed views to the Facility are moderated.

To naturalize the appearance of the installed landscaping, ornamental, pollinator-friendly, and small trees and shrubs have been incorporated into the plan. Two native pollinator seed mixes are proposed for the Facility: one seed mix is proposed for use within solar array areas and the other is proposed for designated areas within the fence perimeter. These seed mixes are intended to provide an excellent source of wildlife food and shelter and will attract a variety of pollinators and songbirds. The native wildflowers and grasses proposed in the landscape plan provide an attractive display of color from spring to fall. Pollinator seed mixes are intended to provide nectar and food sources for a variety of pollinators and larva. These mixes are comprised of an even mix of native and/or indigenous wildflowers and grasses. An abbreviated version of the landscaping plan can be found as Plan 7A in Attachment 7. The full plan can be obtained in Revised Appendix 5-1 of Revised Exhibit 5 Design Drawings. The following items and concepts were applied to the plan:

- Planted vegetation will need suitable time to establish a meaningful height and breadth to provide appropriate visual screening while also maintaining minimum mature heights that will not shade Facility components, reducing power generation. See Table 11 below for an outline of the planting schedule for the Landscape Plan.
- Planting templates are proposed to parallel the Facility's fence perimeter as noted on the Landscaping Plan. Landscape Templates Type A and B are proposed for an approximate total of 31,329 linear feet (approximately 5.93 miles comprising 914 deciduous trees, 2,819 evergreen trees, and 2,844 deciduous shrubs). The proposed planting templates are outlined below in more detail:
    - Landscape Module Template Type A - Typical Screening: Approximately 2,640 evergreen trees, 914 deciduous trees, and 2,844 deciduous shrubs will comprise the Type A landscape template and will be implemented along 30,464 linear feet of the Facility's fence perimeter, approximately 94% of the overall proposed installed landscaping length. Please refer to Attachment 7 Plan 7A for an illustrative representation of this planting template.
    - Landscape Module Template Type B – Supplemental Screening: A total of approximately 179 evergreen trees will comprise the Type B landscape template and will be implemented along 865 linear feet of the Facility's fence perimeter, approximately 6% of the overall proposed installed landscaping length. See Attachment 7 Plan 7A for an illustrative representation of this planting template.

As mentioned, the proposed plantings will sustain various growth rates (depending on the specific tree or shrub species) and are expected to realize heights between 7 to 15 feet in approximately 5 years after installation. Growth rates of plantings may continue unless a given plant has reached maturity. Table 11 provides further details regarding species installation height, average projected 5-year average height, and mature height potential.

Table 11. Plant Species Heights and Growth Rates of Proposed Landscape Plan

Plant Species Common Name (Scientific Name)	Install Height Post Construction	Average Projected 5-Year Height Post Construction*	Mature Height
Deciduous and Evergreen Trees			
Downy Shadbush (*Amelanchier Arborea*)	6 to 8 Feet	14 Feet	15 to 20 Feet
Allegheny Serviceberry (*Amelanchier Laevis*)	6 to 8 Feet	15 Feet	15 to 25 Feet
Thornless Cockspur Hawthorn (Crataegus Crus-Galli Var. Inermis)	5 to 6 Feet	10 Feet	20 to 30 Feet
Eastern Red Cedar (*Juniperus Virginiana*)	5 to 6 Feet	13 Feet	40 to 50 Feet

Table 11. Plant Species Heights and Growth Rates of Proposed Landscape Plan

Plant Species Common Name (Scientific Name)	Install Height Post Construction	Average Projected 5-Year Height Post Construction*	Mature Height
Northern White Cedar (*Thuja Occidentalis*)	5 to 6 Feet	8 Feet	40 to 50 Feet
White Spruce (*Picea Glauca*)	5 to 6 Feet	13 Feet	40 to 60 Feet
Shrubs			
Red Chokeberry (*Aronia Arbutifolia*)	24 to 30 Inches	7 Feet	7 to 10 Feet
Red Twig Dogwood (*Cornus Sericea*)	24 to 30 Inches	7 Feet	7 to 9 Feet
Common Witch Hazel (*Hamamelis Virginiana*)	3 to 4 Feet	11 Feet	15 to 25 Feet
Common Winterberry (*Ilex Verticillata*)	24 to 30 Inches	7 Feet	10 to 12 Feet
Highbush Blueberry (*Vaccinium Corymbosum*)	24 to 30 Inches	8 Feet	6 to 12 Feet
Nannyberry *(Viburnum Lentago)*	24 to 30 Inches	9.5 Feet	15 to 20 Feet
*Source: https://www.arborday.org/trees/			

It is important to note that an annual Operations and Maintenance (O&M) effort will be provided to ensure that proper care and attention is given to the proposed plantings once installed. Annual O&M efforts will include, but are not limited to, selective pruning, mowing, and monitoring of invasive species. Additionally, notes in the Landscaping Plan (Revised Appendix 5-1 of Revised Exhibit 5; see Abbreviated Landscaping Plan in Attachment 7, Plan 7A) provide further direction, recommendations, insight, and guidelines to ensure healthy, viable, and sustainable plantings throughout the life of the Facility.

11.12 Visual Offsets

Visual offsets are typically reserved for unique circumstances for when aesthetic impacts cannot be avoided. The New York Department of Environmental Conservation 2019 Assessing and Mitigating Visual and Aesthetic Impacts (Visual Policy) further elaborates that visual offsets should be employed where significant adverse impacts from a Facility are unavoidable, or mitigation of other types would be economically infeasible, or mitigation is only partially effective. The Visual Policy also describes that visual offsets should be considered as a last option when all mitigation or avoidance strategies have been exhausted to mitigate adverse visual impact from important sensitive locations.

As demonstrated throughout the VIMMP (Attachment 7) and Section 11.0, the Applicant has implemented several strategies to avoid, mitigate, and minimize visual impacts. The most

significant mitigation measure is the extensive use of vegetative landscaping, with approximately 31,329 linear feet (approximately 5.93 miles) of proposed plantings designed to screen and reduce visibility from sensitive areas. This effort is complemented by preserving existing vegetation to enhance natural screening, where appropriate. As mentioned in more detail throughout the VIMMP, mitigation measures proposed for the Facility include:

- Siting the Facility away from large population centers and sensitive receptors.
- Proposing underground collector lines to the maximum extent feasible.
- Locating the POI and substation components near existing transmission infrastructure to avoid new above-ground structures.
- Implementing visual contrast reduction strategies, such as setback distances, to decrease the Facility's visual scale from non-participating landowners and public roadways.
- Using woven wire fencing and maintaining greenspace or agricultural-use space within Facility setbacks to retain the rural-agricultural character of the landscape.

The Visual Policy emphasizes using all appropriate onsite measures before considering visual offsets. Therefore, no compensatory visual offsets, such as removing existing dilapidated structures, were employed. The Applicant has utilized suitable onsite measures to effectively avoid, mitigate, and minimize the Facility's visibility, as outlined in the VIMMP and this VIA.

11.13 Lighting Plan

Lighting plans were developed for the collector substation and switchyard in compliance with 1101-2.8 (9) for security, safety, and maintenance purposes and will remain off during regular operation. Lighting will be manually engaged for intermittent operations, maintenance, or emergencies. The Lighting Plan was developed to minimize light creep and runaway light while meeting lighting standards established by the NESC. The proposed plan also complies with OSHA requirements as proper illumination will be provided for all working spaces around the electrical equipment. All of which have been designed so that control points or people making repairs will not be endangered by electrical hazards or other equipment.

The substations' lighting plan is provided under Plan 7B of Attachment 7. As depicted in the lighting plan, foot candelas of each light fixture were mapped within each footprint according to each proposed light fixture location, height, orientation, tilt, and light output in conjunction with the manufacturer specifications.

Lighting design for the substation switches has been carefully planned at minimum heights of 30 feet at the collector substation (standalone light fixture structures) and a maximum height of 35 feet at the switchyard (a-frame structures) to meet the standards set by the NESC. This ensures that there is adequate illumination, specifically a minimum of 2 foot-candles, around the substation switches to enhance safety and visibility. Additionally, the design aims to manage and eliminate unnecessary light trespass beyond the switchyard and collector substation, which helps in

reducing light pollution and minimizing the impact on surrounding areas. One foot candela is equivalent to one lit candle. A minimum range of one-to-nine-foot candelas occurs at the extents of the switchyard, and a minimum range of one-to-six-foot candelas occurs at the extents of the collector substation. Due to the rural undeveloped lands surrounding the substations, minimal light creep is not expected to result in a negative effect to the larger environment. The lighting plan addresses the following, as applicable:

In order to promote a minimization and reduction of the potential lighting effects, the following measures were incorporated into the lighting plan design:

- Further, full cut-off shields are proposed for a few light fixtures, the Predator Medium LED fixtures, proposed for the switch yard, will utilize gray full visors, whilst the RSX Area fixtures, proposed for the substation and BESS, will have house-side shields pre-installed (see Plan 7B of Attachment 7).
- Light fixtures are capable of manual or auto-shut off switch activation.
- All light fixtures will be oriented downward using tilt angles of 0 to 45 degrees to minimize potential impacts to surrounding receptors.
- Should task lighting be implemented during the occurrence of nighttime maintenance, lights will be directed to the ground and/or work areas to confine the total maximum nighttime lighting output. Temporary work area lighting will be shut down at night, unless required for security purposes.

12.0 VISIBILITY DURING CONSTRUCTION

Visibility of the Facility's construction operation will be momentary in nature and will vary per location; however, most temporary visibility of construction activities will be focused to areas in and around the vicinity of the Facility Site. Construction visual contrasts would vary in frequency and duration throughout the course of construction. There may be periods of intense activity followed by periods with less activity and associated visibility would vary in accordance with construction activity levels. According to Table 16-7 of Revised Exhibit 16, traffic increases are anticipated on NY126, Old State Road, Second Road, Wrape Road, and Young Mills Road. These roads will likely experience temporary increases in visual changes associated with an increased sighting of construction vehicles.

The summary of major construction undertakings includes the following actions:

- Building/upgrading/repairing haul roads and local roadways (as applicable),
- Constructing temporary laydown areas,
- Cut and fill grading and earthwork,
- Removing a limited amount of vegetation from areas of construction,
- Delivery and transportation of components, materials, and equipment,

- Installation of solar arrays (driving piles, installing solar racking and modules),
- Constructing other Facility components (e.g., retention basins, substation, overhead transmission facilities, security fences), and
- Construction of underground collector lines (trenching and/or HDD).

During construction, there will be an increase in vehicular traffic, equipment, and workers seen within the Facility Site and the immediate surrounding area. Construction of the Facility Site is expected to have a peak workforce of 250 workers, consisting of 250 daily trips assuming one motor vehicle per worker that may be arriving and/or departing the Facility Site. Further, construction equipment trips are anticipated to comprise 2,348 trips per piece of equipment (See Table 16-3 of Revised Exhibit 16).

Construction may result in the temporary increase of dust; however, dust control measures are proposed as referenced in the guidelines provisioned in the Civil Notes of General Environmental Restrictions, please review Revised Appendix 5-1 of Revised Exhibit 5, Design Drawings, of the Application for more information. The discussion on construction vehicle types, number of trips, and construction activities is outlined in greater detail in Revised Exhibit 16 Effect on Transportation.

Construction activities are proposed to be limited to 7 a.m. to 8 p.m. Monday through Saturday, and 8 a.m. to 8 p.m. on Sunday and national holidays, with the exception of construction and delivery activities, which may occur during extended hours beyond this schedule on an as-needed basis.

13.0 CUMULATIVE EFFECTS

A cumulative effects analysis must be performed according to 16 NYCRR Section 1101-2.8 (a). Cumulative effects are discussed in this section based on available data regarding large scale utility development within the VSA. An overview map is provided as Figure 5 of Attachment 2 to depict the approximate geographic locations of each development in relation to the Facility. Aside from the proposed Facility, there are no proposed utility developments within the VSA. As mentioned in Section 3.5, existing facilities were identified within the VSA and are described below and evaluated, as practicable, for cumulative effects in conjunction with the Facility.

Existing Tannery Island Power Project – The Tannery Island Power hydroelectric project is located on Tannery Island within the Village of Carthage. Upon review of the Facility viewshed visibility mapping, no predicted views of the proposed Facility will occur at the Tannery Island Power hydroelectric project. Consequentially, no cumulative effects will be realized for both the Tannery Island Power hydroelectric project and the proposed Facility.

Existing Wind Turbine Facilities – While not located within the VSA, it is acknowledged that several existing wind turbine facilities are located between 5 to 16 miles south of the Facility (U.S. Energy Information Administration, October 2020). These built wind facilities are identified as

Copenhagen Wind (40 wind turbines), Maple Ridge Wind (112 wind turbines), Lowville Wind (82 wind turbines), Roaring Brook Wind (20 wind turbines), with the closest being Number Three Wind (27 wind turbines). Several photographed locations throughout the VSA document distant views to the existing wind turbine facilities. A vast majority of these locations are found within LSZs Zone 1 – Agricultural and Zone 4 – Open, these LSZs typically offer distant landscape viewing conditions with very few visual obstructions. VPs 21, 39, 41, and 44 photo-simulations were developed to document the potential cumulative effect of the proposed Facility and existing wind turbine facilities. As shown in photo-simulation VPs 21, 39, and 41, while cumulative views are possible, the vast majority of the existing background wind turbines result in a minimal visual effect because of the reduced scale of the turbines and inherent conditions of viewing objects at a substantial distance (over 5 miles). With the foreground position of the Facility within agricultural fields, local residents dwelling or traveling on Young Mills Road (VP 39), Branagan Road (VP21), and Second Road (VP 41) are likely to be more attentive to the foreground visual change. However, as shown in VP 44, atmospheric haze due to uncontrollable weather conditions has the propensity to diminish the clear perception of the distant wind turbines. This condition demonstrates that at such far reaching distances, the effect of variable weather conditions has the potential to dictate whether the wind turbines will be obstructed, or discernible. Further, as shown in the photo-simulations with 5-year landscaping, foreground plantings nearly reach the tops of the background ridgelines where wind turbines are perceived, and that in more time, the wind turbines, and portions of the solar arrays, will be screened by the proposed landscape plantings.

14.0 SUMMARY CONCLUSIONS – VISUAL IMPACTS DURING OPERATION

The information in the VIA provides a comprehensive visual assessment of the extent and significance of potential impacts associated with the Facility. Section 14, Summary Conclusions - Visual Impacts During Operation provides an overview of the VIA findings with supportive computerized analyses of the Facility and existing landscape. Section 10 should be consulted to obtain more information about the in-depth discussions of computerized analysis results. The following provides a summary of findings and impacts related to the Facility.

1. As indicated by the solar array viewshed results (see Figure 3 of Attachment 2), a total of 13.23% of limited predicted visibility is found within the VSA, in contrast, 86.77% of the VSA will not discern the solar arrays. In general, predicted visibility may constitute a view of a solar array at a proximal distance, or it may only be a small fragment of the top of a solar panel that is severely screened. Therefore, the mere presence of predicted visibility should not always be indicative of adverse visual impact. No areas within the VSA are predicted to have full visibility of the Facility's solar arrays. Full visibility is defined as an unobstructed view to the full extent of the Facility. 6.49% of the total 13.23% of predicted solar array visibility falls on participating landowner property, whereas 6.74% occurs on non-participating landowner property.

2. Distance zones and LSZs were identified within the VSA as provisioned in 16 NYCRR Section 1101-2.8(b)(1). Several LSZs were identified and delineated within the VSA as Zone 1 Agricultural, Zone 2 Forested, Zone 3 Developed, Zone 4 Open, and Zone 5 River Corridor (see Figure 2 of Attachment 2 for a map depicting the LSZs and Distance Zones within the VSA). Distance Zone 1 and LSZ Zone 1 Agricultural contain the highest percentage of potential solar array visibility within the VSA (Distance Zone 1; 10.26%; LSZ Zone 1 Agricultural; 11.9%). This exemplifies that viewers simultaneously within LSZ Zone 1 Agricultural and Distance Zone 1 have the highest potential to view the solar arrays, however, existing topography, forested vegetation (LSZ Zone 2 Forested) and proposed landscaping will reduce this visibility to some extent. Representative photo-simulations were developed from VPs 14, 21, 39, 41, and 45 (see Attachment 4) to demonstrate the potential effects of the Facility from Distance Zone 1 and LSZ Zone 1 Agricultural. These simulations also demonstrate that foreground distances (less than 300 feet) will exhibit the most visual contrast of the Facility. However, proposed landscaping will provide moderation to the solar arrays from most public vantage points within this zone.

   The LSZ Zone 3 Developed (5.6% of land in VSA), Zone 4 Open (5% of land in VSA), and Zone 5 River Corridor (1.7% of land in VSA) are smaller contributors to the landscape where a small amount of visibility was predicted. This concludes that an insignificant amount of predicted visibility may occur in sensitive locations, such as developed areas (villages, residential, commercial, etc.), open areas (parks, cemeteries, greenspace, etc.) and the Black River.

   In Distance Zone 2, 2.97% of solar panel visibility was predicted according to the viewshed analysis (see Figure 3 of Attachment 2). This visibility occurs in portions of rural land north and northwest of State Route 126 near the community of Naumburg. Photo-simulation VPs 44 and 48 are representative of this broad area and illustrate that only small forms and colors comprising the solar arrays are distinguished. This exemplifies that viewing conditions of solar arrays within Distance Zone 2 and LSZ Zone 1 Agricultural are expected to be relatively underwhelming.

3. The proposed solar arrays will not be distinguishable from the population centers comprising the Villages Carthage, West Carthage, and Castorland, nor the communities of Texas and Deer River. While solar arrays were predicted in very limited sections of the community of Naumburg, the VP 48 photo-simulation demonstrates that residences in these locations will receive negligible impact.

4. The viewshed visibility analysis presented in Figure 3 of Attachment 2 indicated that 6 out of 35 visual resources identified within the VSA (see Tables 4A and 4B) may receive a view to the proposed solar arrays. Overall, 34 of the 35 visual resources with predicted visibility receive little, if at all, visual effect due to the Facility (see Section 10.1.1 for a thorough discussion of each resource). The remaining visual resource is in proximation to the Facility and may experience some degree of visual change and is identified as:

- **NY126 (Black River Trail Scenic Byway)**: The solar array viewshed (see Figure 3 of Attachment 2) projects solar array visibility to occur in two distinct areas of the NY126: Near the non-contiguous solar array group to the northwest from the intersections of Jackson Lane and Strickland Road, and to the southeast from the intersections of Beach Ridge Road and Cross Road. VP 14 was prepared as a photo-simulation from Distance Zone 1 (the nearest zone to the Facility) to examine the potential visual effects of the Facility from these focused areas. As shown in the simulation, the solar arrays appear within open agricultural fields with a modest setback from the road which accommodates a reduction in the perceived scale. Landscaping along the perimeter fence of each solar array furnishes a reduction in contrast as the natural shapes and forms of plantings diminish the man-made edges of the Facility. Further, NY126 is comprised of 9.57 miles within the VSA; of this amount, 3.67 miles of the route was predicted with solar array visibility, meaning approximately 38% of the route within the VSA may contain views. To draw contrast to the extensive length of the 94-mile byway, only 3.9% of the route may experience views to the Facility. Given that the sighting of the solar arrays predominantly occurs within the second most abundant land-use within the VSA and region (Zone 1 Agricultural LSZ; 34%; see Table 3), it is then reasonable to conclude that the rural/agricultural scenic attributes of the Black River Trail Scenic Byway will remain available in many other locations for travelers (e.g., residents, commuters, area-travelers, recreationists) and the Facility will not impose a significant negative effect to the characteristics of the 94-mile scenic byway.

5. A professional rating panel was assembled to evaluate Facility contrast, viewpoint sensitivity, and existing scenic quality for the photo-simulations. The following simulated viewpoints are discussed as they relate to the appearance of the Facility, 5 years post-construction.

   VP 39 (Young Mills Road) received the highest Part 1 visual contrast rating with a mean rating score of 15.8 out of 27. This represents a moderate visual contrast due to a direct foreground view to the solar arrays with an absence in proposed landscaping. However, the average Part 2 average rating of viewpoint sensitivity was rated as weak, meaning viewers are unlikely to be sensitive to the view of the Facility. This is likely due to the limited nature of daily travelers (AADT 22) and rural residential development on the visible section of Young Mills Road.

   VP 41 (Second Road) obtained the second highest Part 1 rating with a mean score of 15 out of 27, indicating moderate contrast. The VP 41 Part 2 Viewpoint Sensitivity obtained an average rating of weak concluding that viewers may not be overly sensitive to visual change on this part of Second Road. The Part 3 average scenic quality rating concludes that this perspective is moderate, meaning the existing view may furnish some scenic qualities.

   VP 14 (NY126; Black River Trail Scenic Byway) obtained a Part 1 average visual contrast rating of 11.2 out of 27, meaning a weakly-moderate amount of visual contrast the

Facility's appearance with 0 to 2-year landscaping. The panelists rated the Part 2 viewer sensitivity with a mean score of 12.3 or moderate; however, the panelists rated the existing scenic quality of the view as weakly-moderate, due to the typical landscape features seen within the region. This rating implies that this section of the Black River Trail Scenic Byway may include less scenic features compared to VP 45 with a Part 3 average score of 1.8 or moderate.

The VP 21 (Branagan Road) was evaluated under Part 1 and received a contrast rating of 10.8 or weakly-moderate. This is generally contributed to the large setback distance of the Facility from the position of the viewer on Branagan Road. The Part 2 mean score for VP 21 is 4.5 or weak, concluding that viewers may not be as sensitive to the view of the Facility from this vantage point. The Part 3 scenic rating was entered as weakly-moderate, suggesting a small number of scenic qualities in the existing condition photograph.

Due to the Applicant's changes to the array layout, VP 45 (NY126; Black River Trail Scenic Byway) received a weak visual contrast Part 1 rating with a mean score of 5.7 out of 27. This weak contrast rating appears to be a result of the viewing distances to the solar arrays, which are now in Distance Zone 2 at 0.5 to 2-miles. The VP 45 Part 2 Viewpoint Sensitivity obtained an average rating of moderate implying that viewers may be sensitive this viewing condition from this section of NY126. The Part 3 average scenic quality rating had a mean average score of 1.8, or moderate scenic quality of the environment from this portion of NY126.

VP 54 (Strickland Road) received a Part 1 average visual contrast rating of 7.7 out of 27, signifying a weak visual contrast toward the Facility's substation, switchyard, and BESS. Even though mitigation is not proposed, panelists indicated that the combination of distant views to the Facility and the existing transmission infrastructure allows the Facility to be visibly absorbed into the landscape. The Part 2 viewer sensitivity and Part 3 scenic rating received a mean score of 4.2 and 0.8, respectively, both equate to a weak rating. This suggests that viewers along Strickland Road will have a low sensitivity to the visual change and the existing view would provide little scenic quality.

The remaining VPs 44 (Beech Ridge Road) and 48 (NY 126; Black River Trail Scenic Byway) were rated with the lowest contrast mean score of 0 and 2.8, respectively. This signifies that the Facility's contrast as seen from these perspectives is rated as very weak, or no impact. This is likely attributed to the effects of Distance Zone 2, where viewing distances to the Facility consisting of 0.5 to 2-miles results in the solar arrays becoming subordinate to the dominating elements of the existing landscape. The 0 rating for Part 1 at VP44 was due to the Applicant's layout changes which led to the arrays, initially shown in the simulation, being removed from the view; therefore, there is no longer any visibility of the Facility.

6. Subsequent of the Part 1 – 3 rating effort, the panelists were asked to examine the photo-simulations with 0 to 2-year landscaping against the 5-year landscaping (see Table 10-B).

In doing so, the rating results would provide information pertaining to the potential screening effects of the proposed landscaping when suitable time is provided for the plantings to mature and establish.

As shown in Table 10-B, in 5 years post-construction, the proposed landscaping plan would reduce Facility contrast by a mean total of 1.5 points per simulation viewpoint. Given that the maximum contrast rating score of a single viewpoint is 27 points, the 1.5 points per viewpoint equates to a 5% reduction in visual contrast. Under one condition is no reduction in visual contrast realized, VP 39 located on Young Mills Road is not treated with proposed landscaping and therefore results in the highest contrast rating; however, the limited use of the road by travelers (AADT of 22) suggests that few viewers would be affected by a sighting of the Facility from a very limited section of this road. Overall, the Facility's proposed landscaping plan provides a partial reduction in visual contrast.

7. A second viewshed analysis (see Figure 4 of Attachment 2) was prepared to evaluate potential visibility of the POI components and BESS. Due to the noncontiguous form of the solar array layout and the magnitude of the VSA, the delineated solar array distance zones are inapplicable to the POI components and if used, would provide unreliable visibility results. Therefore, a discrete set of distance zones were applied to the POI components using Distance Zone 1 and 2 parameters. The designated distance zones are mapped and illustrated in Figure 4 of Attachment 2. Associated methodology used to prepare the viewshed is further elaborated in Section 7.1. In total, 7.32% of the 9.84% total POI component visibility in the VSA occurs on lands belonging to participating landowners, while 2.52% of total visibility in the VSA falls within land belonging to non-participating landowners.

8. The viewshed results of the POI components and BESS viewshed indicated that 9.84% of potential visibility may occur within the VSA. Of this amount, Distance Zone 1 comprises a small amount of visibility (3.77%), whereas Distance Zone 2 contains 6.07% of visibility. The viewshed analysis indicates that Distance Zone 1 visibility is concentrated in a section of Strickland Road and agricultural fields. The viewshed analysis also concludes that foreground views, which typically contain the most visual contrast, are unavailable from public vantage points to the POI components and BESS. Provided that Strickland Road is a terminal road facilitating residential access to a small number of residences, it is reasonable to assume that very few residential viewers would be subject to Distance Zone 1 views to the POI components and BESS when also weighing the fleeting nature of travelers when passing the Facility at higher sustained speeds, as well as the viewing distance (0.60-miles to POI components and BESS).

   Distance Zone 2 is predicted to encounter 6.07% of POI component and BESS visibility in the VSA. Distance Zone 2 visibility is scattered within southern agricultural fields and a small section of NY126 where LOS L2 was prepared. LOS L2 traverses over a 1.36-mile distance to the proposed switchyard. The LOS specifies that approximately 50 feet of the

75 a-frame structures would be discerned. While the a-frame structures are the tallest component out of the switchyard, collector substation, and BESS, they are comprised of a thin vertical profile, meaning the structures would be challenging to identify over a 1.36-mile viewing distance. For these reasons, residential travelers, area-travelers, and recreational travelers are unlikely to sight the a-frame structures from NY126.

9. A small, isolated band of visibility also occurs on Old State Road near the intersection with NY126. Due to the substantial distance from Old State Road to the POI components and BESS (1.6 miles) and the general isolated character of the predicted visibility, the view will likely constitute a partial sighting to the taller a-frame structures. A limited number of residents or commuters (255 AADT) driving on Old State Road may be able to glimpse part of the POI components or BESS, but it would be very infrequent due to motion of view. No residential dwellings are predicted to discern the POI components or BESS. Two LOS profiles were developed to address state aesthetic resources, as required in 16 NYCRR Section 1101-2.8 (b)(1). Each LOS profile may contain several pertinent sight lines from other resources. The LOS L1 concludes that views of solar arrays are possible from over 1.10 miles away due to open agricultural land. A photograph (VP 46) shows that this visible section of solar arrays might be visible through a small opening in distant forested vegetation. Therefore, the Facility would occupy a minor part of the view, and the visual impact is minimal due to the distance and the low profile of the solar arrays compared to the trees.

   As discussed above, the LOS L2 found that only part of the distant a-frame within the switchyard would be distinguished from the Black River Trail Scenic Byway due to the interference of the foreground solar arrays. However, the LOS also demonstrates that some sections of the proposed landscaping become less effective in screening the Facility due to lower grade changes where the landscaping is sited.

10. A third viewshed analysis was prepared for the proposed medium voltage overhead collection line. According to the Figure 6 viewshed map visibility results, 8.41 of 11.3 square miles of land would receive predicted visibility of the proposed structures. These values indicate that approximately 74% of the VSA may be subject to visibility of the structures. However, as indicated by the LSZ map shown in Figure 2 of Attachment 2, approximately 65 of the 85 proposed transmission structures are sited entirely within the forested LSZ, meaning a large amount of existing vegetative screening will encompass the structures. Approximately 20 structures are found in the agricultural LSZ located south of Strickland Road and north of 2nd road. These structures are anticipated to be visible as the agricultural LSZ does not typically contain any intervening vegetation.
11. As shown in the Figure 6 viewshed map, a total of three visual resources (Black River Trail Scenic Byway, Beartown State Forest, and Snowmobile Trail C5) obtained predicted visibility of the medium voltage overhead collection line within the VSA. As described in Section 10.1.3, the overhead collection line will not significantly disrupt or degrade the subject resources.

12. Consequentially, the most sensitive viewing opportunities of the medium voltage overhead collection line are limited to sections of lightly traveled public roads and/or rural residential dwellings, however, the following conditions will result in the lessening of the collection line's visual effect.

    a. Proposed solar arrays are sited in fields where medium voltage overhead collection line visibility was predicted, thereby resulting in the propensity to distract viewers from viewing the collection line structures due to the solar arrays and associated landscaping proposed along some of the array's perimeter fencing.

    b. As indicated by the LSZ map shown in Figure 2 of Attachment 2, approximately 65 of the 85 proposed transmission structures are sited entirely within the forested LSZ, meaning a large amount of existing vegetative screening will encompass the structures.

    c. There are very few rural residential dwellings in immediate vicinity of the medium voltage overhead collection line.

    d. Green or brown surface material will be utilized for the overhead collection line for the purpose of reducing visual contrast as these colors will promote the absorption of colors against colors of earth tones in the visible environment.

13. A cumulative effects analysis was performed for existing renewable power projects per 16 NYCRR Section 1101-2.8 (a). In summary, the Existing Tannery Island Power project will have no cumulative effect with the Facility. Several existing wind turbine facilities are located between 5 to 16 miles south of the Facility, including Copenhagen Wind, Maple Ridge Wind, Lowville Wind, Roaring Brook Wind, and Number Three Wind. While cumulative views of these turbines are possible, their visual impact is minimal due to their reduced scale and the substantial viewing distance. Local residents on Young Mills Road, Branagan Road, and Second Road may notice more pronounced visual changes in the foreground due to the Facility. Atmospheric haze can further obscure distant turbines, depending on weather conditions. Over time, proposed landscape plantings will grow to screen the turbines and portions of the solar arrays, reducing their collective visual impact.

14. The Facility has no adverse effect on a known listed scenic vista or overlook.

15. The Facility does not damage or degrade existing scenic resources.

16. In 5 years, post-construction of the Facility, the proposed landscape plantings are expected to maturate and further moderate the limited amount of predicted solar array visibility in the VSA (13.23%). The VIA herein conservatively evaluates the extent and significance of Facility visibility with the assumption that solar arrays will always assume a fixed maximum height, however the Facility leverages tracker and bi-facial panel technology for the solar arrays. The maximum height of a tracker system is sustained for only a short period during daylight hours as the racking makes continuous angle

adjustments to follow the sun. Therefore, the panels will not sustain a maximum height and will be less visible at certain times.

17. The Facility lighting plan has been designed with careful consideration of the minimization and reduction of the potential lighting effects at each substation. While a small amount of light creep may occur in limited locations beyond the substation footprints, light emitting to a very small portion the rural undeveloped lands surrounding the substations is not expected to result in a negative effect to the larger environment.
18. The results of the glint and glare analysis for the Facility indicate that five to thirty minutes of green or yellow glare may occur at a limited number of receptors when panels are at a 0˚ resting angle; however, the proposed landscape plan would likely decrease the prevalence of glare as the vegetation matures and reaches heights that exceed the solar arrays (where glare may be emitted). Additionally, by adjusting the resting angle of the arrays in certain locations to 5˚ or 10˚, yellow glare has been eliminated. In the unlikely occurrence that glint, or glare occurs, the Applicant will evaluate further mitigation tools through the use of additional landscaping or operational adjustments, such as adjusting the resting angle like previously discussed. Additional analyses with resting angles of 5° and 10° were conducted on select array groups. By adjusting the resting angles of certain arrays to 5° or 10°, yellow glare has been eliminated. The Facility will utilize glare reducing features such as backtracking for the solar arrays for minimizing impacts from shading during the morning and evening hours of the day. The solar arrays are also proposed to have a smooth-textured surface with anti-reflective coating to reduce any potential glint and glare effects. Please see Section 11.10 for a thorough summary of findings for the glint and glare analysis. Attachment 7 of the VIMMP can be accessed to review the full glint and glare report.

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