# TRELINA SOLAR ENERGY CENTER

## Case No. 19-F-0366

## 1001.24 Exhibit 24

## Visual Impacts

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## Appendices

# Exhibit 24: Visual Impacts

## 24(a) Visual Impact Assessment

This Exhibit will track the requirements of proposed Stipulation 24, June 19, 2020, and therefore, the requirements of 16 New York Codes, Rules and Regulations (NYCRR) §1001.24.

In order to determine the extent and assess the significance of the visibility of the Project, a Visual Impact Assessment (VIA) has been conducted (see Appendix 24-1). The VIA includes both quantitative and qualitative identification of visually sensitive resources, viewshed mapping, confirmatory visual assessment fieldwork, visual simulations (photographic overlays), and proposed visual impact mitigation. Exhibit 24 provides an abbreviated version of the VIA and addresses the issues presented herein. Please refer to the full VIA in Appendix 24-1 of the Article 10 Application for greater detail.

The Trelina Solar Energy Center (Project) will have a generating capacity of 79.5 to 80 MW and will be located on land leased from owners of private property in the Town of Waterloo, Seneca County, New York. Proposed Project components include commercial-scale solar arrays, access roads, inverters, fencing, buried electric collection lines, and electrical interconnection facilities. The Project also includes a proposed collection substation and interconnection facilities to be located on land within the Project Area, that will tap into New York State Electric and Gas's (NYSEG's) existing Border City – Station 122 115-kilovolt (kV) transmission line. The proposed interconnection facilities will include a 115-kV switchyard, which will be transferred to NYSEG to own and operate. Figure C.200 in Attachment 1 to Appendix 24-1 shows the site plan.

**Solar Arrays:** The Project proposes to install fixed or tracker racking systems. As the technology is rapidly evolving for solar panel technology, market conditions at the time procurement and decisions that need to be made are unknown. The tracking or fixed array racking systems to be employed would be similar to the Gamechange Solar Genius Tracker™ and the Gamechange Maxspan™ Pile Driven System, respectively, specification sheets of which have been included in Exhibit 2. Regardless of the type of array racking system ultimately selected for the Project, the Applicant intends to use a solar module similar to the Jinko Solar Eagle 72HM G2 380-400-Watt Mono Perc Diamond Cell. A specification sheet for this module has been included in Exhibit 2. Only select elements of the Project would change based upon the decision of which type of array racking system is ultimately used, but all changes would be within the component fence line and to the same land uses shown in the Proposed Layout. The location of interior access roads and

inverters, depending upon the final locations, could differ from that shown in the plans provided in Exhibit 11. There would be no additional significant, adverse environmental impacts choosing one racking system over the other.

Accordingly, the drawings, plan, and maps required by Exhibit 11 depict a tracker racking layout. As part of the alternative layout evaluation, Exhibit 9 presents a site plan depicting all fixed panels.

For the purposes of assessing visual impacts, the VIA analyses and discussion focuses on the tracker layout which is the highest above-ground heights of the two and evaluates the worse-case scenario. The tracker system in all analyses are set at 13 feet above ground surface (its height at maximum tilt). In the case of photo simulations, trackers are depicted as the main focus of discussion; however, simulations also include the fixed solar arrays for comparison. The fixed arrays are set at 8 feet above ground surface.

**Project Collection Substation:** The 34.5-kV collection lines within the Project Area will gather power from the solar arrays and transport it to a new collection substation that will increase the voltage to 115 kV. The construction of the collection substation is anticipated to occupy approximately 0.3 acres of agricultural land. This acreage does not include the adjacent switchyard.

### *(1) Character and Visual Quality of the Existing Landscape*

The Project is in the Town of Waterloo and is located in the northwestern part of Seneca County. It is in the Ontario-Erie Plain and Finger Lakes Region Major Land Resource Area. The northern half of the visual study area (VSA) is within the Erie-Ontario Lowlands Physiographic Province while the southern half lies within the Allegheny Plateau.

Solar panels are proposed in the Town of Waterloo, New York. The VSA is a 5-mile radius around the fence line of the solar arrays and includes Seneca and Ontario Counties. As a result of the larger Study Area under consideration, a number of additional towns are included over that of the Project location in Waterloo.

*Towns that fall within One Half Mile Distance Zone:* City of Geneva, Fayette, Town of Geneva, Phelps, Waterloo.

*Towns that fall between One Half and Two Mile Distance Zone:* City of Geneva, Fayette, Town of Geneva, Phelps, Waterloo.

*Additional Towns that fall between Two and Five Mile Distance Zone:* Junius, Seneca, and Seneca Falls.

Landform in the study area consists of mostly level with low rolling topography with no significant high elevation summits in the VSA. Ground elevations within the VSA range from 442 to 750 feet mean sea level (msl) while elevations at the site are generally level not varying more than 40 feet and generally range between 458 to 490 feet msl. Terrain within the VSA trends higher from east to west where elevation at Bauer Road in the Village of Waterloo to the east is 460 feet msl while Melvin Hill Road in Seneca to the west is 705 feet msl. Elevations also rise from the site to the southwest beyond the City of Geneva. Elevations between the site and the heart of the city are fairly consistent and range from 460 to 485 feet msl. Elevations begin to increase beyond the densely populated region and southwestern city limits, rising near 485 feet at the southwest city boundary and reaching 750 feet at the extent of the VSA near Hastings Road in the Town of Geneva. Elevations to the north near New Miller Road in Junius are approximately 485 feet msl and trend down to approximately 452 feet msl at Seneca Lake.

Gem Lake is a 34-acre waterbody in the Project vicinity located on private property between Pre-Emption Street and Servin Road and south of Packwood Road. Seneca Lake is located 0.5 miles to the south and the Cayuga-Seneca branch (Seneca River) of the Erie Canal System crosses through the VSA to the southeast with the closest point at 0.2 miles. The New York State Thruway is 3.5 miles north of the site. The landscape in the VSA and in the central portion where the Project is located is primarily a rural mix of open farmland that is mostly active field crop production with several small intermittent blocks of forest groups. The majority of the VSA lies within Agricultural Districts #6 and #8. Rural residential development is scattered throughout the towns with areas of denser developed hamlets. Waterloo has a population of approximately 7,500 people. The Village of Waterloo is located 2.6 miles east with a population of approximately 5,000. Approximately 0.47 miles to the southwest is the City of Geneva with a population of around 12,800 people.

The Town of Waterloo is in a central location and serves as a crossroad. The north-south corridor of Route 96 intersects with Routes 5 and 20, a well-traveled east-west connector. Several other routes serve the town near or at its borders. To the west, Route 96A terminates its northern reach just inside the town. To the east, Route 414 is another well-traveled route and commercial corridor providing access to the Thruway.

***Landscape Similarity Zones***

Landscape Similarity Zones (LSZ) are areas of similar landscape and aesthetic character based on patterns of landform, vegetation, water resources, land use, and user activity. These zones provide additional context for evaluating viewer circumstances and visual experiences. Land cover classification datasets from the 2016 United States Geological Survey (USGS) National Land Cover Dataset (NLCD) is available for Geographic Information System (GIS) analysis and was used for an initial establishment of LSZs as they provide distinct and usable landscape categories. These NLCD land cover groupings were then refined based on aerial photo interpretation and general field review. This effort resulted in the definition of five final LSZs within the VSA as depicted in Table 24-1, below, and within Appendix 24-1 (Attachment 2 - Figure 4), and include the following:

Zone 1: Agricultural – This zone includes cultivated land and that which is used for row crops, hay, or pasture.

Zone 2: Forested – This zone includes mature deciduous and coniferous tree groups.

Zone 3: Developed – This zone includes the Village of Waterloo, the City of Geneva, residential groupings within the towns, rural residential abutting roadways, and transportation corridors.

Zone 4: Open – This zone includes miscellaneous other open parcels that may have minor development with less visually obstructive features as well as other open lands with few visual obstructions such as minor expanses of barren land, land with short scrub shrub vegetation, and emergent wetlands.

Zone 5: Open Water – This zone is essentially restricted to Seneca Lake, the Cayuga-Seneca Canal, and Gem Lake.

Table 24-1 shows the distribution of LSZs at various distances within the VSA: Distance Zone 1 (0-0.5 miles), Distance Zone 2 (0.5-2.0 miles), and Distance Zone 3 (2.0-5.0 miles).

**Table 24-1. Percentage of LSZs within Five Mile VSA**

| LSZ | Distance Zone 1 0.5 Miles | | Distance Zone 2 0.5-2.0 Miles | | Distance Zone 3 2.0-5.0 Miles | | | |
|---|---|---|---|---|---|---|---|---|
| | Square Miles | % of LSZ w/in VSA | Square Miles | % of LSZ w/in VSA | Square Miles | % of LSZ w/in VSA | Total Square Miles of LSZ | Total Percent of LSZ in VSA |
| Zone 1 Agricultural | 2.41 | 2.23% | 6.72 | 6.20% | 48.45 | 44.68% | 57.59 | **53.11%** |
| Zone 2 Forested | 1.83 | 1.69% | 7.60 | 7.00% | 16.92 | 15.61% | 26.35 | **24.30%** |
| Zone 3 Developed | 0.41 | 0.37% | 1.72 | 1.59% | 3.70 | 3.41% | 5.82 | **5.37%** |
| Zone 4 Open | 0.64 | 0.59% | 1.76 | 1.62% | 8.09 | 7.46% | 10.49 | **9.67%** |
| Zone 5 Open Water | 0.05 | 0.04% | 2.53 | 2.33% | 5.62 | 5.18% | 8.19 | **7.56%** |
| **Totals** | **5.34** | **4.93%** | **20.33** | **18.74%** | **82.78** | **76.33%** | **108.45** | **100.00%** |

LSZ 1 Agricultural is the dominant LSZ found within the 5-mile VSA comprising 53.11% of the land area and appears the most in Distance Zones 2 and 3. Zone 2 Forest accounts for the next highest acreage resulting 24.3% of the land area and is most abundant in Distance Zone 3 between 2.0 and 5.0 miles due to the greater square mileage inherent in that Zone. Zone 3 Developed occurs the least overall in the VSA at 5.37% and is the highest in Distance Zone 3. Zone 4 Open is land with few visual obstructions such as minor expanses of barren land, land with short scrub shrub vegetation, and emergent wetlands and comprises 9.67% of the VSA. Zone 5 Open Water assigned to Seneca Lake, the Cayuga-Seneca Canal, and Gem Lake is the fourth highest of the 5 groups occurring in 7.56% of the VSA land area. It is minimal in Distance Zone 1 within 0.5 miles and most abundant in Distance Zone 3 as that is where a portion of Seneca Lake falls.

***Distance Zones***

Distance Zones are based on Project distances to an observer. Three distance zones are applied to the Project: foreground, middleground, and background. Each of these areas will determine the level of detail and acuity of objects. Distance Zones are often identified by the definitions in The United States Forest Service Landscape Aesthetics – A Handbook for Scenery Management (1995). The effects of distance are highly dependent on the characteristics of the landscape however size, level of visibility perceived for this particular type of project (solar panels) and panel position in the landscape should also be considered in determining zones. Distance Zones for this Project have been reasonably modified from the United States Forest Service Handbook to accommodate the VSA radius, limitations of human vision and perceptible detail of the low profile of the Project components, and how much of the Project can actually be seen. Solar panels are not wind turbines or tall buildings. They are of a different character with a low vertical height profile (13 feet high for tracker arrays) in comparison to other larger objects found in the landscape such as houses, barns, and trees in addition to the rolling topography in the area that could easily act as a visual obstruction for locations farther out. Solar projects typically have lateral breadth but as such, visibility of solar projects in the northeast, because of frequent and highly vegetated narrow ridge and valleys and dense forest areas surrounding agricultural lands, often do not offer substantial far reaching vistas of many miles. Distance Zones for this project are as follows:

- Distance Zone 1: Foreground (up to 0.5 miles from the viewer). This is the closest distance at which details of the landscape and the solar panels can be seen. Individual landscape forms are typically dominant and individual panel strings and racking system detail may be seen. The concentration of predicted visible areas lies within this zone.
- Distance Zone 2: Middleground (0.5 to 2 miles from the viewer). At this distance individual tree forms and building detail can still be distinguished at for example, 1 mile. The outer boundary of this distance zone however is defined as the point where the texture and form of individual plants are no longer as visibly acute in the landscape. In some areas, atmospheric conditions can reduce visibility and shorten the distance normally covered by each zone. Solar panels lose level of detail and are seen as a continuous mass of form and/or color.
- Distance Zone 3: Background (2 to 5 miles from the viewer to the horizon). At the extent of background distances, texture disappears, and color flattens but large light and dark patterns of vegetation or open land due to shape or color is distinguishable and ridgelines and horizon lines are the dominant visual characteristics. Landscapes are simplified and

are viewed in groups or patterns. Solar panels can be detected as a distant form and color change but are not as discernible.

Further discussion on the percentages of visibility for each Distance Zone can be found in Appendix 24-1 and in Exhibit 24(a)(2) below.

### *(2) Visibility of the Project*

To understand the locations from which the Project may be visible, viewshed maps were developed (see description of methodology in Exhibit 24(b)(2)). From the results of the viewshed analysis, the percent visibility of the land area located in the 5-mile VSA is shown in Table 24-2 and discussed below.

**Table 24-2. Percent Visibility of the Five 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<br>0-0.5 Miles | 5.34 | 1.93 | 36.10% | **1.78%** |
| Zone 2<br>0.5-2.0 Miles | 20.33 | 0.18 | 0.89% | **0.17%** |
| Zone 3<br>2.0-5.0 Miles | 82.78 | 0.76 | 0.92% | **0.70%** |
| **Total VSA** | **108.45** | **2.87** | **2.65%** | **2.65%** |

Table 24-2 shows that when considering visibility between Distance Zones, the highest amount of visibility occurs within Zone 1 comprising 36.1% of the land area. This makes sense because there is a concentrated amount of visibility in proximity to the Project within the half mile acreage, much of it within the solar array parcels themselves. There is an abrupt difference once one travels outside of a half mile where visibility for respective Distance Zones trends downward to less than 1.0% as distance increases into the larger acreages of Zones 2 and 3. There is approximately 2.9 square miles of total visibility within the entire 108.45 square miles that comprises the VSA, or

rather, 2.7% of the VSA is predicted to experience partial, close, intermittent, or distant views of the Project.

The majority of visibility that is expected occurs mostly in a focused location inside the 0.5-mile Distance Zone 1 within the Project parcels themselves and in nearby open farm fields. Although the panels are sited in open farmland, the low-profile panels set against existing tree buffers, hedgerows, and tree groups that frame the panel locations is enough to obscure many views. Because of a 13-foot panel maximum height in relation to the mature vegetation, there are minimal far reaching views outside of the general array locations. Outside Distance Zone 1, there are no views predicted to the north, east, and south of the Project.

Predicted views that are in outer Distance Zones 2 and 3 occur primarily to the west. As noted in Exhibit 24(a)(1), topographic elevations are somewhat higher in the western section. However, many of these far views are in farm fields and open land where the public is not expected to be while short segments of a few of the roadways may have transient and distant intermittent views. In the western quadrant, several Project photos were acquired in potential areas of visibility in the section along Johnson and Prospect Hill Roads and are represented by VPs 16, 17, and 18 (Appendix 24-1, Attachment 5). These photo VPs are in open areas each near a residence and are approximately 3.3 miles to the west with several fields and tree rows existing between the Project and the camera location. VP17 was investigated further as a representative simulation in this area to understand the nature of any visibility and resulted in no views from this location. Views in the City of Geneva and respective historic or recreational areas are also not expected. The New York State Thruway lies 3.5 miles north and will not experience views of the Project. As noted by the results, the most visibility is expected along the perimeter Project roads including Packwood Road, Pre-Emption Street, and Border City Road, the interior Project roads namely, Serven and Welch Roads, and small discrete areas on a few exterior roads such as Manley Road, County Road 6, Johnson Road, and Prospect Hill Road.

Refer to Appendix 24-1 (Sections 10.1, 10.1.2 and 10.1.3) for tables and more detailed discussion of the visibility analysis results and percentages of land area that may experience visual change as a result of the viewshed visibility analysis. In summary however as noted in these Sections, the viewshed analysis results show that 2.7% of the land area within the 5-mile VSA will have either a full or partial view of the Project.

### *(3) Visibility of Above-Ground Interconnections and Roadways*

The proposed collection substation and switchyard have been sited in an open field within the solar arrays approximately 0.3 miles east of Pre-Emption Street.

With respect to anticipated visibility of the collection substation site, as a result of line-of-sight viewpoint L1 (Attachment 4 of Appendix 24-1) it is expected that there will be minimal to no views of the substation and switchyard from Pre-Emption Street, owing to the screening effects of vegetative mitigation plantings proposed along the northwest fence line of the arrays between the road and residence and the station. The proposed mitigation is expected to reach 5-15 feet in height by 5 years after construction and the year-round coniferous species could reach 20 to 40 feet in height when fully mature. As the profile indicates, at 5 years there may be possible views of the upper 15-17 feet or so of the tallest lightning mast or surge arresters. Some station Components such as electrical equipment may be visible in the early years from locations on Pre-Emption Street prior to the growth of landscape mitigation. Line-of-sight viewpoint L2 shows that mature roadside and residential vegetation in its vicinity of Pre-Emption Street will serve to block views of the Project and interconnection facilities. Please refer to Section 10.2.2 of Appendix 24-1 for further discussion of predicted visibility of the Project interconnection facilities.

Roads used to access solar arrays will follow existing farm roads and trails where practicable in order to minimize the need for new roads. The same access roads used during construction will be used during operation of the Facility and will be gravel surfaced and approximately 14 feet wide. The total length of access roads is approximately 9.8 linear miles.

### *(4) Appearance of the Facility Upon Completion*

Coordinates of camera locations intended for simulations as well as other reference points within the view were collected via Global Positioning System (GPS) as well as other reference points within the view. These reference locations were later used to refine the placement of the facility within the simulation photographs.

To create visual simulations, Autodesk 3DS MAX visualization software was used to correctly dimension the 3d models into the digital photographic image from each viewpoint location. The 3d model of the solar layout was created by TRC using engineering specifications. As noted in Exhibit 24(a) the Project proposes to install fixed or tracker racking systems but it is yet unknown which system at this time.For simulations, trackers are depicted as the main focus of discussion; however, the visual simulation suites also include the fixed solar arrays for comparison. Tracker

panel positions change as they follow the sun and therefore angles vary throughout the day. Panel angles in their most extreme position with heights of 13 feet above ground surface are represented in all tracker array simulations. In the case of fixed array simulations, a maximum height of 8 feet was used. The simulation model was further developed to position the viewer at the selected vantage point. For a 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 effort, the documented camera coordinate (x, y, z) positions were entered into the model. Reference locations, which are existing visible objects in the photograph such as light posts, building corners, placed stakes, gate posts or utility poles were used to assist with refined placement of the proposed Project within the photograph. GIS terrain modeling and analysis helped in accurately locking the 3d facility model within the photograph. Ground point elevations of the camera location and other referenced objects were obtained from the elevation data.

The day and time of the photographs were also recorded and typically exist as electronic information embedded in the respective digital photograph files. This information was used to adjust for sun angle in the simulation software in order to represent lighting conditions for the time of day and year.

### *(5) Lighting*

Lighting is only proposed at the Project interconnection facilities and is only for security, safety, and maintenance purposes; no lighting is proposed within the solar arrays. The Project's Lighting Plan includes the type, number, and location of exterior lighting fixtures and indicates measures to be taken to prevent or mitigate, to the maximum extent practicable, unnecessary light trespass beyond the Project property line. Manually operated security lighting is proposed at the collection substation and switchyard. The lighting plan for the collection substation and switchyard is included with the Exhibit 11 drawings. This plan was developed to minimize fugitive light while meeting lighting standards established by the National Electric Safety Code (NESC). The collection substation and switchyard will normally be unoccupied. All lighting will be activated manually turned on by a switch. Lighting will be installed facing downward to minimize potential impacts to the surrounding public. Lighting has been designed to provide a 3.4 foot-candle maximum, to eliminate unnecessary light trespass beyond the collection substation and switchyard and will be equipment or pole structure mounted. During unoccupied periods, lighting will not be illuminated. The collection substation and switchyard will use full cut-off fixtures, no drop-down optics, and task lighting wherever feasible, specified in the Lighting Plan.

The Lighting Plan is included in Appendix 11-1 Preliminary Design Drawings.

### *(6) Photographic Overlays and Lines of Sight*

In order to simulate the visual changes that are anticipated from introducing the built facilities into the Project Area, high-resolution computer-enhanced render processing was used to create realistic photographic simulations of the proposed Components from selected viewpoints.

The Project proposes to install fixed or tracker racking systems as noted in Section 24(a). As the technology is rapidly evolving for solar panel technology. Market conditions at the time procurement decisions that need to be made are unknown at this time. The VIA focuses on the tracker layout, which is the highest above-ground heights of the two and evaluates worse-case scenario. However, in the case of photo simulations, tracker and fixed arrays are presented for comparison. The tracker system in all analyses are set at 13 feet above ground surface (it's height at maximum tilt). The fixed arrays are set at 8 feet above ground surface.

The following is a summary of the potential visibility to viewers at simulation locations. The complete visual simulations for the Project are provided and discussed in detail in Appendix 24-1.

***VP3 Packwood Road, View Southeast – Waterloo (LSZ 1; Distance 683 feet)***

VP3 is on Packwood Road near the junction of Maney Road. The viewer is approximately 683 feet from the fence line looking towards the southeast. This photo was taken as it is representative of arrays at the northeastern end of the Project along a local perimeter road where there are residences in the vicinity.

Existing conditions show several bands of horizontal shapes sweeping across the view consisting of a large yellow ochre shape that is a field against another large shape that is sky. A thin horizontal band of trees is seen in the background splitting these two large shapes. From this location, the sight lines show clear views of solar panels. The overall shape that the arrays form as seen in the proposed view is consistent with the horizontal landscape patterns and provides a similar narrow band, both is size and shape, as the existing tree line in view. The arrays appear compatible in the view due to size, height and distance against these trees. Color contrasts are weak to moderate as color values are similar to that of the wood line. The panels do not appear higher than the background vegetation and do not break the horizon line. Due to proximity, the

Project is apparent. However, Project contrast is weak to moderate as contrasts are absorbed by the background wood line.

The Applicant, nevertheless, is proposing vegetative screening in this area as depicted on the Landscape Plan drawings included in Appendix 11-1. Accordingly, it is expected there will be limited to no views of the arrays from this location when the proposed landscaping reaches maturity as demonstrated in the simulation with mitigation at 5 years. With the inclusion of vegetative mitigation, views are softened and moderated as the trees and shrubs are more congruous with the existing environment. Project color and value contrasts are reduced even further as they blend in with the background trees. There are likely a low number of viewers because of the rural location and few residences. Views of the mitigation for motorists will be intermittent and of short duration while longer duration views of the vegetative buffer will be obtained by residences.

***VP11 Packwood Road – Waterloo (LSZ 1; Distance 298 feet)***

VP11 is on Packwood road approximately 960 feet east of Pre-Emption Street and 298 feet from the Project. This photo was taken as it is representative of views from the northwestern portion of the Project along a local perimeter road near a residence. Existing conditions are similar to VP3 where large horizontal shapes consisting of field and sky occur in the view with a narrow band of tree line. The solar arrays are similar in color and value to that of the background trees at this time of year. The size and scale of the Project has a low-profile appearance. The lateral extent of the Project occupies the view due to proximity and wide angle of view and shows a moderate to strong visual change in color and pattern.

The Applicant is proposing vegetative screening in this area as depicted on the Landscape Plan drawings included in Appendix 11-1. Accordingly, it is expected there will be limited to no views of the arrays from this location when the proposed landscaping matures as demonstrated in the simulation with mitigation at 5 years. With the inclusion of vegetative mitigation, views are softened and moderated as the trees and shrubs are more congruous with the existing environment. Project color and value contrasts are reduced even further as they blend in with the background trees. There are likely a low number of viewers because of the rural nature of the roadway and very few residences in the vicinity. Views of the mitigation for motorists will be intermittent and of short duration while longer duration views of the vegetative buffer will be obtained by residences.

***VP17 Johnson Road, Seneca (LSZ 1 (2); Distance 3.4 miles)***

VP17 is 3.4 miles to the west on Johnson Road and is presented herein as this location lands in an area of predicted visibility farther out from the Project as seen in the viewshed visibility maps in Attachment 2 (Figure 5). There are several VP locations where there is predicted visibility in this area. This VP is shown as a representative example to illustrate that there will be no visibility of the Project from this location despite what the viewshed analysis predicted.

***VP19 Border City Road – Waterloo (LSZ 3; Distance 1,004 feet)***

VP19 on Border City Road is located in the very outskirts of the City of Geneva to the northwest just beyond the high density of urban buildings. This photo was taken as it is representative of that particular area at the southwestern most extent of predicted visibility that is proximal to the Project. It is in a semi-urban location as it transitions from more rural land use but is not yet within the full City of Geneva limits. As noted in the simulation, this VP and photo vantage point is located such that it is positioned with a view through a narrowly defined region of visibility where there are views between a small gap of vegetation and a building (church). The viewer is approximately 1,004 feet from the Project. Partial views are obtained of a small portion of arrays. Other urban development occupies the view such as the church to the left, commercial buildings to the right, and transmission lines as well as street distribution lines. The low profile of the panels places the Project well below the horizon line where there are no vertical objects interrupting the skyline. Color contrasts are not strong due to similar color value to that of the background trees. Overall the Project contrast is weak and is subordinate in the view.

The Applicant is proposing vegetative screening in this area as depicted on the Landscape Plan drawings included in Appendix 11-1. Accordingly, it is expected there will be limited to no views of the arrays from this location when the proposed landscaping reaches maturity as demonstrated in the simulation with mitigation at 5 years. With the inclusion of vegetative mitigation, views are softened and moderated as the trees and shrubs are more congruous with the existing environment. Project color and value contrasts are reduced even further as they blend in with the background trees. Views of the mitigation for motorists will be intermittent and of short duration while longer duration views of the vegetative buffer might be obtained by people from the building property.

***VP20 Pre-Emption Street – Geneva/Waterloo (LSZ 1; Distance 198 feet)***

VP20 is located on Pre-Emption Street approximately 198 feet west of the Project. This photo was taken as it is representative of the first local roadway encountered westerly at an open area along the road. Few residences are in this area. One resident just to the south has views blocked by existing trees and one resident to the north has more open views. The existing conditions view shows a large field with a narrow line of trees in the background at the far opposing side of the field. Large horizontal shapes of yellow ochre field and sky are present. Proposed conditions show the Project at close proximity that stretches across the view. The Project is apparent due to proximity and discernible detail while some of the arrays are seen to interrupt the horizon line. Color and contrasts are moderate to strong.

The Applicant is proposing vegetative screening along this area as depicted on the Landscape Plan drawings included in Appendix 11-1. As seen in the simulation with mitigation at 5 years, the proposed trees and shrubs block a substantial amount of the Project. With the inclusion of the proposed vegetative buffer, views are softened and moderated as the trees and shrubs are more congruous with the existing environment. Project color and value contrasts are reduced with the mitigation. There are no residences in the immediate area, so views are restricted to roadway travel. Views of the mitigation for motorists will be intermittent at a gap in the roadside trees, and of short duration.

***VP22 Serven Road, North – Waterloo (LSZ 1; Distance 888 feet)***

VP22 is located on Serven Road which is an interior road (as opposed to a perimeter road) that runs through the middle of the Project between proposed array locations. The view is looking at arrays on the east side of the road. This photo was taken to represent a view taken in the middle of the Project with nearby residences. Existing conditions shows a clear sight line of an agricultural field along with other agriculturally related structures and features. A wood line is present at the opposing end of the field from the viewer. As this location shows, there is no existing roadside vegetation that would block views and the simulation shows views of the solar panels. Although the Project is approximately 888 feet from the viewer on the road, here one can observe the effectiveness of road offsets/setbacks in moderating views combined with placement against existing tree rows at field edges which helps to visually absorb the Project. In the view, the arrays appear as a distant narrow horizontal band of color set against the forest at the edge of field. The horizontal band, shape, and look of the panels mimics that of horizontal existing forest interface.

The low profile of the Project does not provide a vertical interruption of the skyline. Color changes are apparent but contrasts moderately against the background vegetation. Overall contrasts are weak to moderate and the Project is subordinate in the view.

The Applicant is proposing vegetative screening along this area as depicted on the Landscape Plan drawings included in Appendix 11-1. Accordingly, it is expected there will be limited to no views of the arrays from this location when the proposed landscaping reaches maturity as demonstrated in the simulation with mitigation at 5 years. With the inclusion of vegetative mitigation, views are softened and moderated as the trees and shrubs are more congruous with the existing environment. Project color and value contrasts are reduced even further as they blend in with the background trees. There are a low number of viewers because of the rural nature of the roadway and few residences in the vicinity. Views of the mitigation for motorists will be intermittent and of short duration while longer duration views of the vegetative buffer will be obtained by residences.

***VP23a Serven Road, South – Waterloo (LSZ 1,3; Distance 414 feet)***

VP23a is located on Serven Road which is an interior road that runs north-south through the middle of the Project between proposed array locations. There are arrays proposed on both sides of the road at this location. VP23a is looking east. Existing conditions show a residential house just out of view to the right of the photo with a small red utility shed in view. The remaining area to the left (north) of the residence is open field and occupies the majority of the view. Proposed conditions in the simulation shows a partial view of a portion of the arrays behind the house in the back field approximately 414 feet from the viewer. The low-profile panels show the Project below the horizon line and color contrasts are weak as they are moderated by the dark colors of the tree line in the background. Due to a proximal distance and partial views, the Project remains apparent but is co-dominant in the view from the road location. The Project is likely dominant in the view in areas from within the residential property.

The Applicant is proposing vegetative screening along this area as depicted on the Landscape Plan drawings included in Appendix 11-1. Accordingly, it is expected there will be limited to no views of the arrays from this location when the proposed landscaping reaches maturity as demonstrated in the simulation with mitigation at 5 years. With the inclusion of vegetative mitigation, views are softened and moderated as the trees and shrubs are more congruous with the existing environment. Project color and value contrasts are reduced even further as they blend

in with the background trees. There are a low number of viewers because of the rural nature of the local roadway and few residences in the vicinity. Views of the mitigation for motorists will be intermittent and of short duration while longer duration views of the vegetative buffer will be obtained by residences.

***VP23b Serven Road, South – Waterloo (LSZ 1,3; Distance 358 feet)***

VP23b is located on Serven Road which is an interior road that runs north-south through the middle of the Project between proposed array locations. There are arrays proposed on both sides of the road at this location. VP23b is looking west. Existing conditions show an agricultural field and farm development on the west side of the road with rural residential houses on the east side. For the most part, the left side of the view that is the field and sky are large horizontal expanses of shape while the right side of the view is more visually cluttered by the varying sizes of shapes and color presented by residential development. Proposed conditions show the arrays located at distance in the westerly field and appears as a narrow band of new color and form introduced into the environment. Discernible detail is not high, color contrast is moderated by the background trees, and the Project does not interrupt the horizon line. Overall Project contrast is moderate.

The Applicant is proposing vegetative screening along this area as depicted on the Landscape Plan drawings included in Appendix 11-1. Accordingly, it is expected there will be limited to no views of the arrays from this location when the proposed landscaping reaches maturity as demonstrated in the simulation with mitigation at 5 years. With the inclusion of vegetative mitigation, views are softened and moderated as the trees and shrubs are more congruous with the existing environment. Project color and value contrasts are reduced even further as they blend in with the background trees. There are a low number of viewers because of the rural nature of the roadway and few residences in the vicinity. Views of the mitigation for motorists will be intermittent and of short duration while longer duration views of the vegetative buffer will be obtained by residences.

**Lines of Sight**

Line-of-sight (LOS) profiles were performed for some viewpoints where there is limited or questionable visibility. Line-of-sight analyses are able to provide the viewer with information that assists in examining the reasons why objects such as solar arrays may have obstructed views or no views. The underlying topography of a sight line in addition to vegetative obstructions can be produced as well as an estimated amount of visibility of the upper portion of an object if it is visible.

LiDAR data obtained for the Project was used for an elevation source. ArcGIS Environmental System Research Institute (ESRI) 3D Analyst was used to produce elevation samples across select sight lines for bare earth topography and for vegetation. Please refer to the profiles in Attachment 4 of Appendix 24-1.

***L1 – Pre-Emption Street (North), Waterloo, to Collection Substation (LSZ 1, 3; Distance 0.4 miles)***

L1 LOS is located at an open area along Pre-Emption Street approximately 0.4 miles from the collection substation and switchyard. There is a resident approximately 300 feet south of the LOS location. The collection substation is adjacent to the existing Border City – Station 122 115-kV transmission line and is consistent and compatible with the existing transmission line infrastructure where highest vertical proposed heights of substation components are similar. The highest components at the collection substation include three 48-foot lightning masts within the fence line; one static mast that will be 32 inches in diameter at the base tapering to 18 inches in diameter at the top and two surge arresters associated with dead-end structures at the station. A control building is proposed that will be 12.5 feet high. The highest switchyard component will be a static lightning mast that is 50 feet high. The next highest switchyard component is the Take-Off structure which is 48 feet high. Vegetative mitigation is proposed along the northwest of the fence line of the arrays between the road, the residence and the station. Minimal to no views of the collection substation are expected from the L1 location. Tree and shrub plantings are predicted to reach heights from 5-15 feet by 5 years. Several of the coniferous tree species could reach 40 to 60 feet at full maturity thereby reducing the visibility even further.

Line-of-Sight L1 in Attachment 4 of Appendix 24-1 shows the various component profile heights as well as visibility of solar panels. and station components along the L1 profile. Generally, from the L1 location, the profile shows that most of the collection substation site will not be visible following the vegetative mitigation at 5 years. As the profile indicates, at 5 years there may be possible views of upper 15-17 feet of the lightning mast or surge arresters.

***L2 - Pre-Emption Street (South), Waterloo, to Collection Substation (LSZ 1, 3; Distance 0.3 miles)***

As noted above, the proposed collection substation and switchyard has been sited in an open field amongst the solar arrays approximately 0.4 miles east of Pre-Emption Street, with highest structures proposed at 48 to 50 feet high. Highest proposed station components are consistent

and compatible with the existing adjacent Border City – Station 122 115-kV transmission line. Much of Pre-Emption Street has mature roadside vegetation which will block views of arrays and the collector station. L2 LOS is located approximately 125 feet north of a residence. The resident is not expected to have views of the Project as the dwelling is surrounded by trees. As the L2 profile in Attachment 4 to Appendix 24-1 shows, there will be no expected views to the Project or collector station from this location as the roadside trees act as a visual obstruction. Furthermore, there is proposed vegetative mitigation also proposed just beyond the roadside trees at the Project fence line.

***L3 – Johnson Road, Seneca, to Project (VP18) (LSZ 1; Distance 3.3 miles)***

Line-of-Sight L3 is in an agricultural area along Johnson Road approximately 3.3. miles west of the Project in an area of predicted visibility according to viewshed mapping in Attachment 2 to Appendix 24-1. (L3 is actually VP18 according to the Project photolog in Appendix 24-1). L3 is in the vicinity of some residential houses located along this road. One house is approximately 250 feet north and one is 826 feet to the south. The L3 profile in Attachment 4 to Appendix 24-1 shows that the Project will not be visible at this location. Elevations increase as one travels westerly.Although the elevation of L3 is 170 feet higher than that of the Project, there are intervening trees that will block views to the arrays and collector substation.

***L4 – Route 20, Town of Seneca to Project (LSZ 3; Distance 4.2 miles)***

There are a few isolated areas of predicted visibility southwest of the Project and beyond the city limits of the City of Geneva as noted in the visibility maps in Attachment 5 to Appendix 24-1. L4 is in such a location and in the Town of Seneca near the extents of the study area and was chosen to understand to the contour of the land in this area. L4 is on highly traveled Route 20 in the vicinity of commercial development. L4 LOS profile in Attachment 4 to Appendix 24-1 shows the observer at an elevation 240 feet higher than that of the Project. As noted in the profile, there will be no expected views of the Project from this location due to the presence of intervening trees.

### *(7) Nature and Degree of Visual Change from Construction*

Visual impacts during construction are anticipated to be minor and temporary in nature and typical of a relatively large construction Project. Construction activities for a solar facility are site and project dependent; however, construction of a typical facility would normally involve the following major actions with potential visual impacts: building/upgrading roads; constructing laydown areas; potentially removing some vegetation from construction; transporting Components and other

materials and equipment related to the solar site; assembling the solar panels; constructing ancillary structures (e.g., collection substation, fences) and installing power-conducting cables (typically buried). Potential visual contrasts that could result from construction activities include contrasts in form, line, color, and texture resulting from; road upgrading; construction and use of staging and laydown areas; vehicular, equipment, and worker presence and activity; dust; and emissions.

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. Construction schedules are project dependent.

### *(8) Nature and Degree of Visual Change from Operation*

The information in the VIA (Appendix 24-1) can provide a more complete understanding of the particular issues involved in the visual relationship between the Project and its surrounding context. In-depth compilation of computerized analysis results and corresponding discussion is provided in Section 10.0 of Appendix 24-1. The viewshed analysis results show that there is minimal expected visibility (2.7%) within the overall VSA but there would be limited areas from which the Project would be visible and, in contrast, a multitude of areas from which it would not be seen. A majority of the overall visibility will occur within one-half mile of the arrays (1.8%) although there are several tree groups surrounding the Project that will block views. There are also attributes of the design of this solar project and its relationship to its particular surroundings that would minimize the Project's impacts as discussed in Exhibit 24(a)(10).

The arrays will be located on parcels of land currently used for agricultural purposes. The general visual appearance of the low-profile panels as a group contribute to a homogenous form with low discernible detail at distance which consists of a new horizontal pattern similar in color, shape, and size to the background forested areas and field edges found in many views. The horizontal shapes en masse in many instances provides a visual flow that is repeated or similar to what is in the landscape as the panels follow the existing ground contours. Color differences between the Project and the landscape may provide some contrast but will vary throughout the seasons. Overall Project contrast and the overall visual effect will vary depending on the extent of panel visibility (partial or full), distance of the arrays from the viewer, and if the panels are seen in the context of other existing noticeable modifications to the local natural landscape. The Applicant is proposing to install landscaping along portions of the Project to provide nearby residences with

screened views towards the Project. Landscaping will consist of a variety of evergreen trees and shrubs that will provide year-round screening. Visual Project contrast from solar panels is anticipated to be avoided or minimized in areas where landscaping is proposed.

It is expected that there will be extremely limited to no views of the collection substation site as demonstrated in Line-of-Sight viewpoints L1 and L2 (Appendix 24-1, Attachment 4) due to its placement east of Pre-Emption Street farther into the Project property within the arrays. The collection substation is surrounded by existing trees to the north, east, and south. Much of Pre-Emption Street to the west at points perpendicular to the substation is tree-lined. There is vegetative mitigation proposed at the fence line where views from open areas along Pre-Emption Street to the station will be obstructed. At the L1 location it is possible that the upper 15-17 feet of a lightning mast or surge arrester may be visible at 5 years while the remaining elements of the station will not be visible. Most station components such as electrical equipment will likely be visible in the early years from discrete locations from Pre-Emption Street prior to the growth of the landscape mitigation. Highest proposed station components are consistent and compatible with the existing adjacent Border City – Station 122 115-kV transmission line. The higher proposed small diameter lightning masts will be similar in look to other utility poles in the area.

Other factors assessing the degree of visual change other than percentages of visibility expected (Table 24-2) as a result of the Project can be considered:

- Except for the City of Geneva, the towns that fall within the 5-mile VSA are rural with an agricultural economy. Agricultural practices and revenue will not be degraded in the overall region. Farming practices may continue on portions of the Project Area not utilized for the Project Components and in fact, participating landowners will continue to receive consistent income throughout the economic useful life of the Project.
- Project Facilities are set back from property lines to both reduce visibility and to not disturb surrounding agricultural activities on adjacent parcels.
- Through the use of either tracker or fixed solar arrays where best suited due to existing topography, the Applicant is able to limit the ground cover required to achieve its objective of 80 MW generating capacity. Additionally, solar farms typically result in a minimal amount of ground disturbance for the installation of racking and mounting posts thereby preserving the ability to use the land for agricultural purposes in the future following decommissioning.

- The AC collection lines will be placed underground for the entirety of their length and installed primarily via direct burial or trenching with some portions to be proposed via horizontal directional drill (HDD) in order to avoid wetland resources and roadways.
- While the Project Area consists of many pastoral views, landscape features are similar to each other and landscape characteristics are typical of what you would find in a rural area in this part of New York. The Project will not impair these regional landscape characteristics.
- The Project does not always appear as a dominant feature in a view and due to limited and/or long-range visibility, it should not interfere with the general enjoyment of recreational resources in the area.
- The Applicant has employed reasonable mitigation measures in the overall design and layout of the proposed Project so that it fits reasonably well into the available parcels and landscape.
- Vertical scale is typically not an issue in relation to surrounding features such as trees, hills, and barns. Lateral extent may be an issue if the arrays appear to overwhelm a ridgeline, scenic water body, or cultural feature that appears diminished in prominence. The Project solar arrays, considering their layout, spacing and the topography and resources in the area, do not overwhelm such physical geographic areas.
- Visual clutter often is adversely perceived and commonly results from the combination of human-made elements in close association that are of differing shapes, colors, forms, patterns, or scales. Generally, solar farms offer simple and uniform or geometrically patterned arrays or groupings that may be more visually appealing than mixed types and sizes of objects. At distance the arrays usually appear as a continuous nearly homogenous shape or color following the grade as opposed to randomly scattered objects.
- Aside from normal road traffic (see also AADTs in Table 1 of Appendix 24-1), the public areas in proximity to the Facility are not exceedingly high-use destination areas.
- The Project does not have an adverse effect on a known listed scenic vista.
- The Project does not damage or degrade existing scenic resources.
- The Project will not impede the use of recreational activities including Seneca Lake.

The Project does not create a new source of substantial light which would adversely affect nighttime views in the area. Glare from the solar modules and associated equipment would be negligible as they would consist of a non-reflective coating and would be at least partially screened

by the proposed fencing and perimeter landscaping. In the case of tracker arrays, the face of the solar panel surface is programmed to follow the movement of the sun.

The Project is not predicted to emit significant glare into the existing environment. Panels are designed to absorb sunlight and will be treated with anti-reflective coatings that will absorb and transmit light rather than reflect it. In general, solar panels are less reflective than window glass or water surfaces (NYSERDA, 2019) and any reflected light from solar panels will have a significantly lower intensity than glare from direct sunlight (Mass. Department of Energy Resources, 2015).

The Applicant prepared a Glint and Glare Analysis, included as Appendix 24-2, to identify any potential glint/glare impacts on nearby residences and roads and the need for any necessary mitigation. The analysis was prepared by Capitol Airspace Group utilizing the Solar Glare Hazard Analysis Tool (SGHAT). The results of the analysis conform to, and are in accordance with, the FAA's interim policy for Solar Energy System Projects on Federally Obligated Airports (78 FR 63271, October 2013), although this policy is only applicable for projects proposing to install solar panels at federally funded airports. SGHAT is a very conservative tool in that:

- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover, and geographic obstructions;
- The glare analysis assumes clear, sunny skies for 365 days of the year and does not take into account meteorological conditions that would nullify predicted glare such as clouds, rain or snow; and
- Although only a portion of a modeled array may have the potential to produce glare, the results are provided as if the receptor has visibility of the entire array.

The results of the analysis indicate there is no predicted glare for the proposed tracker arrays. For fixed arrays, no arrays have potential for glare greater than 60 hours annually. Furthermore, 18 of the 24 arrays assessed have either no potential for glare or the potential for glare less than 30 hours (1,800 minutes) annually. The SGHAT model assumes, amongst other conservative factors noted above, clear, sunny skies for 365 days of the year and therefore the results are overestimated. As a conservative measure, the Applicant has proposed visual mitigation in the form of landscape buffers.

Based on the results of the analysis and the proposed mitigation measures, no significant impacts from glare are expected as a result of the Project. Predicted impacts have been minimized to the maximum extent practicable.

Refer to the VIA and Appendix 24-2 for full details on the glint and glare analysis.

### *(9) Measures to Mitigate for Visual Impacts*

Mitigation includes siting and design and vegetative plantings to help moderate visibility. To maximize the benefits of siting renewable energy facilities on agricultural lands, solar installations can also be co-located with ongoing agricultural operations for the parcel owner. Solar facilities can be designed to be compatible with continued farming practices in order to limit the amount of land taken out of agricultural production.

When a solar farm is decommissioned and removed, the land can be returned to other productive use, including farming. In this way, a solar lease can be a way to preserve land for potential future agricultural use. Large-scale solar projects can be made less visible from roads or other public vantage points. Several techniques for minimizing and mitigating visibility from large-scale solar projects can be made; keeping facility components at low profile and site and designing the site to take advantage of natural topographic and vegetative screening; road setbacks; siting against tree lines; and avoiding use of overhead interconnection lines.

***Siting and Design***

Current siting is optimized such that attempts to minimize visibility have been created by the placement of the arrays in certain ways. Siting against tree lines as well as setback distances of several hundred feet are effective in reducing visibility.

Siting layout and design considerations that offer mitigation are summarized as follows:

- Use of surrounding woodlands and hedgerows as existing visual barriers.
- Panels proposed against trees to reduce visual contrasts, as color contrasts are absorbed and moderated by the background trees.
- Setbacks and offsets: panels proposed on the far end of fields as opposed to directly adjacent to roadways to further the distance from travel corridors. Additionally, minimum

setbacks of 200 feet from roadways and 300 feet from non-participating residences have been proposed.

- Use of antireflective coatings on solar panels. Solar photovoltaic panels are also designed to absorb light, not reflect light, and therefore produce minimal glare.
- When employed, tracker technology keeps panels at a 90-degree angle from sun reflecting any glare back towards the sky.
- Project overall shape that follows the edges of natural forested areas or create patterns that mimic existing landscape patters at distance.
- General site location placed far from sensitive recognized and listed visual receptors.
- The Project has been sited away from the population centers in order to minimize potential visibility by a relatively larger number of viewers.
- Collection substation located proximal to existing transmission right-of-way for minimally distant interconnect to electric grid.
- Vegetative buffers: plantings of native pollinator species included in proposed buffer.
- Collection lines have been placed underground to decrease additional aboveground impacts. This configuration allows continued use of the land within the Project Site.
- Minimized vegetation clearing outside the arrays.
- There is the possibility of existing agricultural practices to resume in agricultural fields adjacent to arrays, such as the planting of row crops, where plantings such as corn could provide screening during a portion of the year.

***Vegetative Mitigation***

Both the solar array themselves and their ancillary components can affect the character of a landscape. From a scenery point of view, methods and techniques of hiding/screening solar farms can be quite effective. Typically, selected landscaping is chosen to provide year-round screening, provide a long-lived, resilient and dense bank of vegetation, and be a native and/or pollinator species readily available in the area.

The Landscaping Plan for vegetative mitigation can be found in Exhibit 11 Attachment 11-1. The following items and concepts were applied to the plan:

- The Town of Waterloo Land Use Code and Zoning Law was reviewed to understand how and where to apply visual screening. The screening proposed herein complies with any substantive requirements of that Code.

- Native evergreen and deciduous shrubs and trees were chosen for the vegetative barriers. Species chosen need to reach an adequate height and width to provide visual screening yet not be too high at maturity that could ultimately produce shade over the Project in later years. Deciduous and evergreen tree species include: eastern red cedar (*Juniperus virginiana*), white spruce *(Picea glauca),* Black Hills spruce *(Picea glauca 'densata'),* **black cherry** *(Prunus serotina),* and **downy shadbush** *(Amelanchier arborea)*. Shrub species include: **red chokeberry** *(Aronia arbutifolia)*, red twig dogwood (*Cornus sericea*), **common witch hazel** *(Hamamelis virginiana),* cranberry viburnum (*Viburnam trilocum*), and **highbush blueberry** *(Vaccinium corymbosum)*. Pollinator species were also considered. Pollinator species are shown in bold font within the above listing.

- The planting scheme is generally proposed along the fence line at locations where the Project faces residential locations that do not have existing vegetative screening. Expected growth heights depending on tree or shrub is expected to be between 5 to 15 feet at 5 years. However, fully mature heights of the year-round coniferous species may reach between 40-60 feet high.

#### *(10) Description of Visual Resources to be Affected*

Exhibit 24(b)(4) discusses the visual resources in the 5-mile VSA in detail and includes Table 24-3 that indicates the distance zones and the extent the Project is visible from these visual resources. Mapped locations of the resources can be found in Attachment 2 of Appendix 24-1.

### 24(b) Viewshed Analysis

#### *(1) Viewshed Maps*

A viewshed analysis is a computerized GIS analytical technique that illustrates the predicted visibility that may potentially be expected for a project. It allows one to determine if and where objects, such as a solar array, can geographically be seen within a larger regional area. The viewshed model accounts for topography, vegetation, and the height of the solar panels. The

results of the viewshed analysis, typically displayed over a USGS topographic map or aerial photo, are combined with other Article 10 listed visual receptors 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 Project visibility at sensitive resource locations. Refer to Attachment 2 of Appendix 24-1 for maps depicting the result of the viewshed analysis.

### *(2) Methodology*

Viewshed analysis out to the 5-mile VSA extents was performed. A viewshed analysis is a computerized GIS analytical technique that illustrates the predicted visibility that may potentially be expected for a project. It allows one to determine if and where an object, such as a solar project, can geographically be seen within a larger regional area. The viewshed model accounts for topography, vegetation, and the height of the solar panels. The results of the viewshed analysis, typically displayed over a USGS topographic map or aerial photo, 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 project visibility at sensitive receptors.

Two viewshed analyses have been produced to illustrate predicted visibility within the VSA:

- Topography-Only: A topography-only analysis illustrates the effects of the surrounding terrain and determines if landform is responsible for obscuring some of the views. Trees and buildings are not incorporated in this analysis.
- Incorporated Trees: A second viewshed analysis that accounts for the heights of existing trees with minor coverage of larger buildings. This contributes to a more realistic representation of landscape conditions over the topography-only analysis and is the analysis that is emphasized in this report.

In areas where available, the analysis used Light Detection and Ranging (LiDAR) data for the Federal Emergency Management Agency (FEMA) Seneca Watershed (2012), provided by the New York State (NYS) GIS Program Office as point cloud .las datasets. LiDAR data is the best available elevation data for this analysis as it includes high resolution ground elevations in addition to building and individual tree heights that offer realistic physical visual impediments in the landscape. However, LiDAR data was not available for Ontario County which represents the western quadrant of the VSA. For the non-LiDAR areas, a 10-meter USGS digital elevation model (DEM) was used to obtain ground elevations. The USGS DEMs do not have tree coverage

incorporated. In order to obtain tree information for the non-LiDAR areas, supervised image classification using training pixels was performed on aerial photos to create a well-refined layer representing narrow tree rows and larger forested areas. As height data is not included with the data extraction, this tree layer was set at a height of 50 feet. Conservatively, most buildings were not accounted for and could very well block Project visibility that the model would otherwise predict.

For the analysis, the top of the panels was set at a maximum 13 feet in height above ground surface representing tracker arrays and placed within the viewshed modeling environment. The viewshed model was further developed by establishing an observer height of 6 feet, and the assumption that the Project would not be visible to a viewer who is standing amongst trees in a forested area. The final resulting output identified those areas from which viewers would potentially see all or some part of the proposed solar panels. ESRI Spatial and 3D Analyst GIS software was used to develop the viewshed model.

***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. solar panel). The analysis is a clear line-of-sight and therefore certain factors in the interpretation of results need to be considered:

- The model, because of its computerized aspect, assumes the observer to have perfect vision at all distances. 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. Additionally, an object is naturally smaller and shows much less detail at distances and will have less visual impact. These aspects cannot be conveyed with this analysis.

- Because an area may show visibility, it does not mean the entirety of the Project will be seen. The viewshed analysis depicts areas of visibility over a regional area. It can only predict geographically on a map, areas where some part of the solar panels might be seen. It does not and cannot determine if it is seeing a full-on view or a partial view. Additionally, if visibility is occurring in an area, it may sometimes only be a result of glimpsing a portion of the Project over undulating treetops between gaps of trees, or

visibility of the tops of panels and not a full-on view. Likewise, there may be understory tree gaps where there may be visibility of the Project.

- The viewshed model when trees are incorporated, assumes that any vegetation is opaque and therefore represents a leaf-on condition. Transparency predictions through something similar to bare-branched trees under leaf off conditions cannot be made. A topography-only analysis has been included to help understand some of the visual environment in the absence of trees.

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

### *(3) Viewer Groups Overview*

Sensitivity levels are a measure of public concern for scenic quality. Visual sensitivity is dependent upon user or viewer attitudes, the amount of use and the types of activities in which people are engaged when viewing an object. Overall, higher degrees of visual sensitivity are correlated with areas where people live and with people who are engaged in recreational outdoor pursuits 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.

These concepts are applied when evaluating the visual landscape and assessing the importance of a viewpoint location if it falls in an area of visibility. Viewer groups and associated responses to visual changes are analyzed from a variety of factors including:

Viewer group – Types of viewers will vary by geographic region, as well as by travel route or use areas, such as a developed recreation site, urban area, or back yard. Viewer groups include:

- *local constituency*: - People living in the local area and/or surrounding communities who interpret the significance of where they live and interact with others; these people may include local residents and members of groups to which the local area is important in different ways.

- *commuter constituency*: - People who use or are generally restricted to travel corridors that are destination oriented towards places of employment. These people generally have transient short duration views.

- *visitor or recreational constituency*: Individuals who visit the area to experience its natural appearance, cultural landscape qualities or recreational opportunities. Visitors may be of local, regional, or national origin.

Context of viewer - The viewer group and associated viewer sensitivity is distinguished among viewers in residential, recreational/open space, tourist commercial establishments, and workplace areas, with the first two having relative high sensitivity.

Number of viewers - The number of viewers is established by the amount of people estimated to be exposed to the view. In comparing viewing locations to each other, one can consider if the area 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 marshes or swamps).

Duration of view - Duration of view is the amount of time a viewer would actually be looking at a particular site. Use areas are locations that receive concentrated public-use viewing with views of long duration such as residential back yards. Recreational long duration views include picnic areas, favorite fishing spots, campsites, or day use in smaller local parks. Comparatively, drivers, hikers, snowmobilers, or canoeists will likely encounter a shorter, more rapid transient experience as a person transitions from one linear segment to the next but will encounter more visually varied experiences.

Viewer activities - Activities can either encourage a viewer to observe the surrounding area more closely (hiking) or discourage close observation (commuting in traffic).

#### *(4) Scenic Resources Inventory*

An inventory of publicly available and accessible visual resources out to the 5-mile VSA was explored through the acquisition of GIS data, review of town, county, and agency reports, topographic data, and site visits along with photographic documentation. This inventory is intended to address locations that have been officially designated for their aesthetic, recreational, or historic qualities and that are accessible to the public at large as opposed to places that have individual or private importance only. Visual resources within the 5-mile VSA are listed in Table 24-3. Locations of these visual resources can be found in Attachment 2 of Appendix 24-1.

Local, state, and federal visual resources were compiled under the provision of 16 NYCRR §1001.24 (b)(4)(ii). 16 NYCRR §1001.24(b) requires, among other things, that the viewshed analysis component of the VIA shall be conducted as follows and has guided the resource inventory:

> *§1001.24(b) (4) The applicant shall confer with municipal planning representatives, DPS, DEC, OPRHP, and where appropriate, APA in its selection of important or representative viewpoints. Viewpoint selection is based upon the following criteria:*
>
> > *§1001.24(b)(4)(ii) significance of viewpoints, designated scenic resources, areas or features (which features typically include, but are not limited to: landmark landscapes; wild, scenic or recreational rivers administered respectively by either the DEC or the APA pursuant to ECL Article 15 or Department of Interior pursuant to 16 USC Section 1271; 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 pursuant to ECL Article 49 scenic districts; Scenic Areas of Statewide Significance; state parks or historic sites; sites listed on National or State Registers of Historic Places; areas covered by scenic easements, public parks or recreation areas; locally designated historic or scenic districts and scenic overlooks; and high-use public areas;*

The preceding paragraph has been parsed and assigned numerical Visual Resource Category (VRC) numbers in the order in which they appear in 16 NYCRR §1001.24 (b)(4)(ii). The following have been reviewed for their appearance within the VSA:

1) landmark landscapes;

2) wild, scenic or recreational rivers;

3) 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;

4) Scenic districts and scenic roads;

5) Scenic Areas of Statewide Significance;

6) state parks or historic sites;

7) sites listed on National or State Registers of Historic Places;

8) areas covered by scenic easements, public parks or recreation areas;

9) locally designated historic or scenic districts and scenic overlooks; and

10) high-use public areas;

For historic sites, listed National Register of Historic Places (NRHP) and eligible historic properties obtained from NYS Cultural Resource Information System (CRIS) are addressed in this report. Refer to Exhibit 20 of the Article 10 Application for greater detail on cultural resources investigations.

Table 24-3 provides the results of this investigation listing the resources found within the full 5-mile VSA with other information regarding location characteristics such as Distance Zones and potential for visibility.

**Table 24-3. Inventory of Visual Resources within VSA**

| VRC* | Resource Name | Town | Distance (miles) | Expected Visibility** |
|---|---|---|---|---|
| | **Federal, State, County, Municipal Recreation Lands** | | | |
| 8 | Brook Street Park | City of Geneva | 2.2 | No |
| 8 | Charters Playground | City of Geneva | 0.5 | No |
| 8 | Gulvin Park | City of Geneva | 1.2 | No |
| 8 | Genesee Park | City of Geneva | 1.6 | No |
| 8 | Geneva Little League Park | City of Geneva | 3.2 | No |
| 8 | Geneva Recreation Complex | City of Geneva | 1.8 | No |
| 8 | Lakefront Park | City of Geneva | 1.1 | No |
| 8 | McDonough Park (includes Geneva Ball Park) | City of Geneva | 2.5 | No |
| 8 | NYS Finger Lakes Welcome Center | City of Geneva | 1.4 | No |
| 8 | Ridgewood Park | City of Geneva | 2.6 | No |
| 6 | Seneca Lake State Park | City of Geneva, Waterloo | 0.4 | No |
| 3 | Bishop Nature Preserve | Fayette | 1.0 | No |

**Table 24-3. Inventory of Visual Resources within VSA**

| VRC* | Resource Name | Town | Distance (miles) | Expected Visibility** |
|---|---|---|---|---|
| 10 | Cornell University Food and Agriculture Technology Park | Geneva | 2.8 | No |
| 8 | Jefferson Park | Geneva | 2.4 | No |
| 10 | Lenox Park | Geneva | 3.6 | No |
| 8 | Nieder Park | Geneva | 1.4 | No |
| 8 | Richards Park | Geneva | 1.8 | No |
| 8 | Washington Street Park | Geneva | 2.7 | No |
| 8 | Junius Ponds Campground | Junius | 3.5 | No |
| 8 | Cheerful Valley Campground | Phelps | 4.4 | No |
| 8 | Oak Corners Community Park | Phelps | 3.6 | No |
| 8 | Lafayette Park | Waterloo | 3.0 | No |
| 8 | Main Street Playground | Waterloo | 2.9 | No |
| 8 | Oak Island | Waterloo | 3.0 | No |
| 8 | Seneca County Fairgrounds | Waterloo | 3.9 | No |
| 8 | Waterloo Harbor Campground | Waterloo | 2.3 | No |
| 8 | Waterloo Little League | Waterloo | 3.2 | No |
| 8 | Welcome Traveler Campground | Waterloo | 0.2 | Yes, minimal |
| | **Unique Areas** | | | |
| 8 | Junius Pond Unique Area | Junius | 3.4 | No |
| | **NYS Canal System** | | | |
| 8,10 | Seneca Lake | City of Geneva, Fayette, Seneca Falls, Waterloo | 0.5 | No |
| 8,10 | Cayuga-Seneca Canal System | Fayette, Waterloo, Seneca Falls | 0.2 | No |
| | **State Boat Launch** | | | |
| 8 | State Boat Launch | Fayette | 0.8 | No |
| | **Trails and Bikeways** | | | |
| 8 | State Bike Route 14 | City of Geneva, Geneva, Junius, Waterloo | 0.8 | Yes, minimal |
| 8,10 | Cayuga-Seneca Canal Trail | Waterloo | 0.3 | No |

| Table 24-3. Inventory of Visual Resources within VSA | | | | | |
|---|---|---|---|---|---|
| **ID** | **USN** | **Historic Site** | **Town** | **Distance** | **Expected Visibility**** |
| **VRC 7** | **Historic NRHP** | | | | |
| 1 | 06940.000064 | Ashcroft | Geneva | 2.6 | No |
| 2 | 06913.000013 | Barron, Thomas, House | Seneca | 4.2 | No |
| 3 | 06906.000007 | Belhurst Castle | Geneva | 3.2 | No |
| 4 | 09941.000081 | Burton, William H., House | Waterloo | 3.3 | No |
| 5 | 06940.000725 | First Baptist Church | Geneva | 1.8 | No |
| 6 | 09941.000104 | First Presbyterian Church | Waterloo | 3.3 | No |
| 7 | 06940.000268 | Geneva Armory | Geneva | 1.9 | No |
| 8 | 06940.000321 | Geneva Hall and Trinity Hall, Hobart & William Smith College | Geneva | 2.2 | No |
| 9 | 06911.000056 | Huffman, William, Cobblestone House | Phelps | 5.0 | No |
| 10 | 09941.000002 | Hunt House | Waterloo | 4.1 | No |
| 11 | 09941.000280 | M'Clintock House | Waterloo | 3.3 | No |
| 12 | 06940.000323 | Nester House | Geneva | 2.5 | No |
| 13 | 06940.000008 | Parrott Hall | Geneva | 2.6 | No |
| 14 | 06913.000011 | Rippey Cobblestone Farmhouse | Seneca | 5.1 | No |
| 15 | 06940.000064 | Rose Hill | Fayette | 1.7 | No |
| 16 | 09941.000236 | Saint Paul's Church | Waterloo | 3.4 | No |
| 17 | 06911.000002 | Swift, Philetus, House | Phelps | 4.3 | No |
| 18 | 09941.000234 | United Methodist Church | Waterloo | 3.3 | No |
| 19 | 06940.000275 | US Post Office--Geneva | Geneva | 1.8 | No |
| 20 | 09941.000094 | US Post Office--Waterloo | Waterloo | 3.3 | No |
| 21 | 06940.000726 | Washington Street Cemetery | Geneva | 2.3 | No |
| 22 | 09941.000005 | Waterloo Library | Waterloo | 3.4 | No |
| **VRC 7** | **NY CRIS Listed Historic Districts** | | | | |
| | 06940.000818 | Genesee Park Historic District | Geneva | 1.6 | No |
| | 06940.000819 | Geneva Commercial Historic District | Geneva | 1.7 | No |

**Table 24-3. Inventory of Visual Resources within VSA**

| ID | USN | Historic Site | Town | Distance | Expected Visibility** |
|---|---|---|---|---|---|
| | 06940.000817 | South Main Street Historic District | Geneva | 1.9 | No |
| **VRC 9** | **CRIS Listed Historic Eligible*** ** | | | | |

**Visual Resource Category*

*** Expected visibility is based on viewshed analysis results*

**** Please see Attachment 3 of Appendix 24-1 for full listing of eligible historic sites*

### *(5) Viewpoint Selection*

Integrating the results of the GIS resources inventory data along with the viewshed analysis results provided initial desktop reconnaissance for recognizing areas with potential visibility and identifying candidate locations for photosimulations. While focusing on inventoried locations as listed in Table 24-3, an additional objective in the viewpoint selection process is to also choose locations for simulations that represent the various LSZs as well as Distance Zones. As well, site field visits are necessary for ground-truthing and increasing the understanding of the visual environment. In March 2020, the Applicant began site visits to acquire on-the-ground information to support the VIA and the photosimulation site selection process.

Visibility as noted by the viewshed results in Attachment 2 maps of Appendix 24-1 shows the most prominent visibility is within 0.5 miles of the Project. Outside of 0.5 miles there are isolated areas that may have views of solar arrays that are generally within open agricultural areas where much of the public will not be. These isolated areas are mainly located west and southwest of the Project. Some of those areas are along public roadways having short duration views.

As noted in Table 24-3 Visual Resources Inventory, few of the listed visual receptors may experience views of the Project. Attempts to represent all LSZs are typically made; however, obtaining photo viewpoints from a representative forested area is often moot, since there are not expected to be outward views from within a forested area. Most viewpoints then are taken in the remaining two but abundant LSZs which is agricultural open land and developed roads closer to the Project where the focus on representative simulations was directed to what the immediate community would experience such as travelers on local roads and near residences and farmlands.

16 NYCRR §1000.24(b)(4) requires both general and specific consultations with affected agencies and municipalities. *"The applicant shall confer with municipal planning representatives, DPS, DEC, OPRHP, and where appropriate, APA in its selection of important or representative viewpoints that may be subject to project visibility"*. On April 20-21, 2020, an information request was sent out to stakeholders. In this request, a preliminary visual report was provided, indicating the extent and findings of visibility studies at that point in time which consisted of identified visual resources as well as the result of the trees-only viewshed analysis. Opportunity was provided for stakeholders, including local municipalities with predicted visibility of the Project, to suggest additional and reasonable candidate locations for photosimulations or append additional visual resources of concern to the inventory. Correspondence can be found in Attachment 6 to Appendix 24-1.

In summary, viewpoints were selected based on representations of the Project as well as the need to incorporate the LSZs, inventoried locations, different distance zones as best as Project views allowed, different viewer types, varying lighting conditions, views that offered a clear unobstructed sightline as possible and consideration of New York State Department of Public Service (NYSDPS) comments and stakeholder and agency consultations.

Table 24-4 provides a summary of this information considered in the adoption of the viewpoints. Line-of-Sight analysis was performed for additional and/or questionable areas. Eight simulation locations were chosen and four line-of-sight analyses were performed and are noted in the table.

**Table 24-4. Summary Table Simulation and Line-of-Sight Viewpoints**

| Viewpoint ID* | Location | Town | Distance | LSZ | Comment |
|---|---|---|---|---|---|
| VP3 | Packwood at Maney Rd | Waterloo | 683 ft | 1 | View towards Project near residence and along road |
| VP11 | Packwood Rd near Pre-Emption St | Waterloo | 298 ft | 1 | View towards Project near residence and along road |
| VP17 | Johnson Road | Seneca | 3.4 mi | 1,(2) | View towards Project from the west |

| Viewpoint ID* | Location | Town | Distance | LSZ | Comment |
|---|---|---|---|---|---|
| VP19 | Border City Road | Waterloo | 1,004 ft | 3 | View from outskirts of City of Geneva with most likely view |
| VP20 | Pre-Emption St | Geneva/Waterloo | 198 ft | 1 | View toward Project from the west adjacent to Project |
| VP22 | Serven Road | Waterloo | 888 ft | 1,3 | View toward Project on interior road |
| VP23a | Serven Road | Waterloo | 414 ft | 1,3 | View toward Project on interior road |
| VP23b | Serven Road | Waterloo | 358 ft | 1,3 | View toward Project on interior road |
| L1 | Pre-Emption St to Collection Substation | Waterloo | 0.4 miles | 1,3 | Local traveler, commuter, through-traveler |
| L2 | Pre-Emption St to Collection Substation | Waterloo | 0.3 miles | 1,3 | Local traveler, commuter, through-traveler |
| L3 | Johnson Road to Project | Seneca | 3.3 miles | 1 | Local traveler, nearby residence |
| L4 | Route 20 to Project | Seneca | 4.2 miles | 3 | Busy travel corridor, commercial area |

*VP= simulation viewpoint; L= line-of-sight location

### *(6) Photographic Simulations and Lines of Sight*

As described previously, photographic simulations were prepared using high-resolution photos with three-dimensional visualization software in order to realistically represent the built facilities from each of the selected viewpoints. The photographic simulations are presented in Attachment

4 of Appendix 24-1 and include locations representative of vantage points at varying distances and compass points.

Visibility is not relatively extensive in all LSZs or Distance Zones nor is visibility expected at most of the listed Table 24-3 visual receptors and as discussed in Exhibit 24(9)(b). Most simulations then are from locations that the community would experience which is within agricultural land and travel roadways, and near developed residential groupings.

Line-of-Sight analysis was performed for additional and/or questionable areas. Results are presented in Attachment 4 of Appendix 24-1.

### *(7) Mitigation Strategies*

Landscape mitigation for visual screening is proposed in numerous areas of the Project. See Exhibit 24(a)(10) for a discussion of mitigation strategies that include siting considerations and vegetative mitigation to reduce visual impacts from the Project.

### *(8) Visual Impact Rating of Project Photo Simulations*

TRC has developed a visual impact rating form for use in comparing Project photosimulations. This form is a simplified version of various federal agency visual impact rating systems. It includes concepts and applications sourced from:

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

Depending on the Project location, a variety of VIA guidance and established procedures exist as noted above that apply to management of federal lands that fall under a specific agency such as the USFS or BLM. These guidance documents vary in regard to agency-specific rating systems

or procedures and often begin with the evaluation of existing conditions such as scenic quality or presence of sensitive resource locations.

This form has been developed by TRC for efficient and streamlined use with projects that undergo state environmental permitting processes. It is assumed that visual resource inventories, terrain analyses, development of landscape similarity zones or viewshed analyses have already been performed in the Project VIA according to state regulatory requirements or other visual policy. This form was developed to be used as a numerical rating system for the comparison of Existing Conditions (Before) vs. With Project (After) photosimulations of final selected viewpoint locations and is meant to accompany the Project VIA.

For evaluating visual change there are two parts to the form. Part 1 is Visual Contrast Rating which rates the Project as it contrasts against compositional visual elements of the viewpoint scene. 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 is Viewpoint Sensitivity Rating. This section incorporates the ideas in Section 8.0. It rates the sensitivity of the viewpoint location which inherently considers the importance of the viewpoint (if it falls within a visual resource area), duration of view, if it is a high use area, or if there is the presence of water. The higher the rating total, the more sensitive the viewpoint is. Part 3 does not rate change but is an overall General Scenic Quality of the View which rates the view of existing conditions only, without the influence of the Project. A more in-depth discussion of how Parts 1-3 were rated can be found in the VIA in Appendix 24-1.

***Visual Contrast Ratings Results***

The VIA in Appendix 24-1 describes the concepts and methodology applied to rating visual change incurred by the proposed Project by evaluating the Project photosimulations. Only the simulations without mitigation were rated to understand contrasts under worse-case conditions. Three panelists evaluated and scored the simulations where there were views of the Project. Panelist 1 has been trained in the visual arts with a B.F.A. with a minor in art history as well as having an environmental background with an M.S. in Soil Science. Panelist 2 is a landscape architect. Panelist 3 has no visual arts study or landscape architecture experience but understands solar projects in addition to the Article 10 process. The raw evaluation forms for each viewpoint can be found in Attachment 7 to Appendix 24-1. However, Table 24-5 below summarizes the final scores and averages for Part 1 Visual Contrast, Part 2 Viewpoint Sensitivity

and Part 3 Existing Scenic Quality. Here trends of contrast ratings where those VP locations that are considered to have the highest or lowest visual change in relation to each other can be obtained. Mean deviations are also calculated to gauge the variation between each of the panelists.

## Table 24-5. Visual Impact Rating Results Summary

| VP | Location | Contrast Rating Panelist 1 | | | Contrast Rating Panelist 2 | | | Contrast Rating Panelist 3 | | | Avg Part 1 | Mean Dev* Part 1 | Avg Part 2 | Mean Dev* Part 2 | Avg Part3 | Mean Dev* Part 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Part 1 | Part 2 | Part 3 | Part 1 | Part 2 | Part 3 | Part 1 | Part 2 | Part 3 | | | | | | |
| 3 | Packwood Rd | 12.6 | 6 | 2 | 14 | 5 | 1 | 16.5 | 6 | 0.5 | 14.4 | 1.4 | 5.7 | 0.4 | 1.2 | 0.6 |
| 11 | Packwood Rd | 15.5 | 5 | 1.5 | 15 | 5.5 | 1 | 17 | 4 | 0.5 | 15.8 | 0.8 | 4.8 | 0.6 | 1.0 | 0.3 |
| 19 | Border City Rd | 6.5 | 5 | 0.5 | 7.5 | 6.5 | 1 | 6.5 | 4.4 | 0 | 6.8 | 0.4 | 5.3 | 0.8 | 0.5 | 0.3 |
| 20 | Pre-Emption St | 19 | 4.5 | 1.5 | 19 | 6 | 1 | 23.5 | 5 | 0 | 20.5 | 2.0 | 5.2 | 0.6 | 0.8 | 0.6 |
| 22 | Serven Rd | 10 | 6.5 | 1.5 | 11 | 6 | 1 | 16 | 6 | 0.5 | 12.3 | 2.4 | 6.2 | 0.2 | 1.0 | 0.3 |
| 23a | Serven Rd | 7.5 | 5.5 | 0.5 | 11 | 6 | 1 | 13 | 6.5 | 0 | 10.5 | 2.0 | 6.0 | 0.3 | 0.5 | 0.3 |
| 23b | Serven Rd | 17.5 | 6.5 | 1.5 | 13.5 | 6 | 1 | 22 | 7 | 0 | 17.7 | 2.9 | 6.5 | 0.3 | 0.8 | 0.6 |

Mean Dev = Mean Deviation

Part 1 Contrast Rating

Part 1 Contrast rates proposed visual change with respect to compositional elements such as newly introduced line, shape, color, project scale, broken horizon lines, etc. Under Part 1 there are 9 categories to rate, where the total rating ranges from 0 to 27 with the rating scale as thus:

| **Contrast Rating Scale** | |
|---|---|
| 0 | None |
| 4.5 | |
| 9 | Weak |
| 13.5 | |
| 18 | Moderate |
| 22.5 | |
| 27 | Strong |

The viewpoint with the strongest Part 1 Contrast is VP20 on Pre-Emption Street with an average rating of 20.5. This simulation shows the viewer 198 feet from the viewer. The Project will not be seen in its entirety as only a portion of the Project is visible from this location. However, the proposed view results in a slightly higher than moderate contrast rating due to new form, color, line, and texture contrasts of discernible detail and proximity to the viewer, compared to what is currently there.

The next highest contrast groupings are VPs 23b, 11 and 3 with average ratings of 17.7, 15.8 and 14.4 respectively. These VPs drop to a weak to moderate contrast rating. All generally show a clear sight line however each have some level of offset from the road and some portions of the Project in view are seen against similarly colored background trees that help absorb and moderate views. However, form and line contrasts are apparent as is the level of discernible detail at this distance.

VPs 22 and 23a have similar weak average ratings of 12.3, and 10.5, respectively. Contributing to weak ratings is a road offset of approximately 888 feet at VP22 while VP23a shows only a portion of the arrays as they appear behind a residence. Each of these views has some level of moderated views as they have a similar color to the tree groups in the background.

VP19 has the weakest contrast with an average rating of 6.8. This location only shows a small portion of the arrays in a semi-urban area as viewed through a narrow gap between trees and a building. VP19 is also 1,004 feet away from the viewer. The Project appears smaller with distance and the level of discernible detail is low.

Mean deviations were calculated to observe the level of variance between the panelists within each simulation evaluation. Mean deviations ranged between 0.4 and 2.9. It appears panelist opinion varied the most regarding contrast changes when assessing VPs 23b, and 22. For VP23b two panelist rated contrasts similarly as weak to moderate while one panelist rated the visual change leaning towards strong. Again, for VP22 two panelists rated the contrast lower while the third panelist gave the contrast a higher rating. The closest agreement was for VP 19 where the assessment of visual change appeared more straightforward.

Part 2 Viewer Sensitivity

There are 8 categories to rate under Part 2, where the total rating ranges from 0 to 24 with a rating scale as thus:

| **Contrast Rating Scale** | |
|---|---|
| 0 | None |
| 4 | |
| 8 | Weak |
| 12 | |
| 16 | Moderate |
| 20 | |
| 24 | Strong |

Part 2 takes into account viewer sensitivity, in particular whether the VP falls within or has a view of an existing visual receptor, as well as the character of viewer groups such as number of viewers, duration of view, presence of existing development, etc. Since Table 24-3 indicates minimal views of the Project will occur at the listed visual receptors, most of the viewer sensitivity issues focus on viewer groups related to the community travelers or residents as opposed to recreational or tourists. All viewer sensitivity ratings for the Project simulations were rated as weak as there were no views that were considered to be recognized as being highly unique to the area nor do the simulations have the presence of water within the view. The highest Part 2 viewer sensitivity is at VP23b with a rating of 6.5. It is weak rating but is likely rated highest in the group because of Project proximity to a number of residences.

VPs 22 and 23a resulted in average ratings of 6.2 and 6.0.

VPs 3, 19, and 20 were somewhat similar with an average sensitivity rating from 5.2 to 5.7.

VP11 had an average sensitivity rating of 4.8.

Mean deviations for Part 2 Viewer Sensitivity do not show a lot of variance between panelist opinion, with simulation ratings ranging between 0.2 and 0.8. This can be somewhat expected as the Part 2 categories are less subjective than Part 1 and there were slight differences of opinion on how panelists rated their opinion on how the presence of development or view duration and numbers affected viewer sensitivity.

Part 3 Scenic Quality

Part 3 Scenic Quality is a standalone single rating that assesses the overall scenic quality of the VP's existing conditions (see also Attachment 7). Here there is no evaluation of visual change but a simple appraisal of the scenic quality of the view. A rating of 1 is weak; 2 is moderate; 3 is strong.

Scenic quality for the simulation VPs were generally rated as weak. Although there are restful pastoral views of open fields with little development, panelists felt the views were average and typical of the area and didn't offer a high degree of visual interest or offer outstanding views according to criteria in Attachment 7.

Mean deviations for Part 3 are comparatively very low, ranging between 0.3 and 0.6. This suggests the panelist's opinions on scenic quality regarding each viewpoint were very similar.

### *(9) Visible Effects Created by the Project*

As applicable to the proposed Project technology and as part of this Application, the comprehensive VIA examined the overall appearance, operational characteristics, and general visible effects of the Project by means of computerized GIS viewshed and terrain analysis and with the use of specialized 3d visualization software. Viewshed analyses results are mapped for illustrating geographic locations of predictive visibility as well as having used resultant data to quantify and compare amounts of visibility within varying parameters such as Distance Zones, LSZs, and sensitive receptors. More descriptive and qualitative assessments of the proposed Project was further provided with photo simulations that show comparisons between existing conditions and conditions with the Project.

Portions of the VIA have been discussed in previous sections; however, refer to Appendix 24-1 for the full detailed VIA.

The viewshed analysis concludes that 2.7% of the land area within the VSA expects some level of full or partial views of the Project where there would be some areas from which the Project would be in view and, in contrast, a multitude of areas from which it would not be seen. There is existing topography and many tree groups surrounding the Project that will block views. There are also significant attributes of the design of this solar project and its relationship to its particular surroundings that would minimize the Project's impacts as discussed in under 24(a)(10). Refer to 24(a)(8) for a discussion on the nature and degree of visual change during operation of the Project.

***Article 10 Resources***

Visibility is not relatively extensive nor is visibility expected in most of the listed Table 24-3 visual receptors. Those resources that may experience some level of visibility are noted in Table 24-3 and itemized out below.

***Federal Scenic Resources***

Federal visual resources consist of the Erie Canalway National Heritage Corridor that includes an upper portion of Seneca Lake as well as the Cayuga-Seneca Canal. There will be areas within the geographic demarcation of the Erie Canalway Heritage Corridor that will have views since portions of the Town Waterloo are within the Heritage Corridor boundaries. There are no expected views from Seneca Lake and the Cayuga-Seneca Canal. There are 22 NRHP sites and 3 historic districts. None of historic sites and districts will have views (listed in Table 24-3). Eligible historic sites as obtained from CRIS will also not have views of the Project, save for a possible limited and far-reaching view from Cobblestone Restaurant in the City of Geneva 3.4 miles from the Project. From this location and distance, however, there will be several urban features that will occupy the view that are proximal to the viewer.

***State and County Scenic Resources***

Of the state and county resources, State Bike Route 14 may have intermittent and partial views of solar arrays along a short segment. The bike route runs in a north-south direction and is located 0.8 miles west of the Project. Approximately 5.6 miles of the Route passes through the VSA in the Towns of Phelps and Geneva, and through the City of Geneva. However, expected visibility may occur along one 0.5-mile segment of the route in Geneva near the Geneva-Phelps town boundary.

***Local Scenic Resources***

One local resource may experience partial views of the Project. The Welcome Traveler Campground is located 0.2 miles to the east where partial views might be obtained in discrete locations where there are views between gaps in vegetation. The campground is not a governmentally classified scenic resource.

### *(10) Outreach to Visual Stakeholders*

16 NYCRR §1000.24(b)(4) requires both general and specific consultations with affected agencies and municipalities. “The applicant shall confer with municipal planning representatives, DPS, DEC, OPRHP, and where appropriate, APA in its selection of important or representative viewpoints that may be subject to project visibility.” On April 20-21, 2020, an information request was sent out to stakeholders. In this request, a preliminary visual report was provided, indicating the extent and findings of visibility studies at that point in time which consisted of identified visual resources as well as the result of the trees-only viewshed analysis. Opportunity was provided for stakeholders, including local municipalities with predicted visibility of the Project, to suggest additional and reasonable candidate locations for photosimulations or append additional visual resources of concern to the inventory. Correspondence can be found in Attachment 6 of Appendix 24-1.

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