EAST POINT ENERGY CENTER

Case No. 17-F-0599

1001.24 Exhibit 24

Visual Impacts

Contents

Tables

Appendices

Exhibit 24: Visual Impacts

24(a) Visual Impact Assessment

This Exhibit will track the requirements of proposed Stipulation 24, dated August 20, 2019, and therefore, the requirements of 16 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.

(1) Character and Visual Quality of the Existing Landscape

The visual study area ("VSA") for the Project is a 5-mile radius around the fence line of the Facility and includes portions of Schoharie and Montgomery counties. Towns that are within the VSA are Canajoharie, Carlisle, Cherry Valley, Cobleskill, Root, Roseboom, Seward, and Sharon.

The landscape within the VSA is primarily a rural mix of farmland consisting of cultivated crops and hay-pasture land with intermittent and isolated forest groups. The Project Area and VSA economy and land use is primarily that of an agricultural community. Nearly the entire VSA within Schoharie County lies in Agricultural District #3 while nearly all of the VSA in Montgomery County lies in Agricultural Districts #1 and #3. Larger tracts of forested areas become more predominant near the western boundary of the VSA in Cherry Valley and Roseboom. All of Schoharie and Montgomery Counties are included in the Mohawk Valley Heritage Area. The Project Area itself is largely open, undeveloped, and consistent in character with the neighboring agricultural parcels that immediately surround the property.

The Project Area, predominantly rural, is far from major metropolitan centers with few major transportation routes. Cobleskill is the nearest larger town with the general larger aggregation of residents located approximately 6.5 miles southeast of the Project. The estimated 2017 populations for Sharon and Seward are 2,047 and 1,644, respectively. Cobleskill population is approximately 6,484 while the Village of Cobleskill is 4,694. Scenic US Route 20 is a major east-

west travel corridor running through the middle of the VSA where there are proposed solar panels on the north side of the highway. Most other roads are local rural roads.

Towns have been developed in the pattern of small densely settled villages surrounded by large regions of farm and forest land. Residential development is generally of two types: rural residential along roadways and small village development. Rural residential housing consists of agricultural units and also non-farm units. Single-family is the most predominant residential land use within the vicinity of the Project Area. Commercial development is concentrated along Route 20 with the greatest concentration in the Sharon Hill area. There are also spots of commercial development within a mile and half to the west in the Village of Sharon Springs. There is commercial development along US Route 20 within the immediate vicinity of the Project Area.

Few water resources are within the VSA. Most are small unnamed tributary streams that drain into the larger Mohawk River six miles to the north or ultimately to the Susquehanna River 17 miles to the southwest. Three of the more substantial named streams in the VSA include Flat Creek to the northeast, West Creek to the west, and Brimstone Creek to the north. There are no DEC Fishing Areas within the VSA. Few water bodies exist as well. Within two miles, Claussen Pond and Bowmakers Pond lie to the west near State Highway 10. Each are between 10-14 acres. At 3.25 miles, Engleville Pond, a 28-acre water body along Mill Pond Road lies to the west.

Landscape Similarity Zones

To help define the quality and character of the visual landscape, Landscape Similarity Zones (LSZ) were defined as required per 16 NYCRR § 1000.24(b)(1). LSZs are areas of similar landscape/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. The USGS 2016 land cover classification (NLCD) dataset is available for 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 three final LSZs within the full five-mile VSA. LSZs with respective visual impacts are described in greater detail in the VIA and include the following:

- Zone 1 - Agricultural/Open Field

Agricultural and open field consists of cultivated crops, hay, or pasture or general open land that may include small ponds. Views from this zone are typically from larger open areas along roadsides. Frequently there are hedgerows or small tree groups at field edges or riparian zones that provide intermittent screening.

- Zone 2 - Forested

Views of the Project from inside the Forest Zone are highly limited since it is assumed that tree canopy precludes outward views unless there are intermittent gaps in trees. Forested areas may include roadway segments where there are permanent residents.

- Zone 3 - Developed

Generally, in the VSA residential housing consists of single-family dwellings or a larger farm complex. Within the VSA the Developed Zone also includes the small villages or local roadways where residential development is intermittently established along the existing road network as well as accounting for roadway travelers. Adjacent buildings in this zone can be visual impediments for views as well as roadside vegetation. Table 24-1 summarizes the percentage of LSZs in the VSA.

Table 24-1. Percentage of Landscape Similarity Zones within Five Mile VSA

	Distance Zone 1 0-0.5 Miles		Distance Zone 2 0.5-2 Miles		Distance Zone 3 2.0-5.0 Miles			
LSZ	**Square Miles**	**% of Five-Mile Distance Zone**	**Square Miles**	**% of Five-Mile Distance Zone**	**Square Miles**	**% of Five-Mile Distance Zone**	**Total Square Miles**	**Total % of Five-Mile Distance Zone**
LSZ 1 Agriculture/ Open Land	4.2	3.65%	14.6	12.72%	52.8	45.98%	71.5	**62.34%**
LSZ 2 Forested	1.5	1.31%	7.4	6.49%	32.7	28.52%	41.7	**36.32%**
LSZ 3 Developed	0.1	0.08%	0.5	0.41%	1.0	0.85%	1.5	**1.34%**
Totals	**5.8**	**5.03%**	**22.5**	**19.62%**	**86.5**	**75.35%**	**114.8**	**100.00%**

Zone 1 Agricultural/Open is the dominant LSZ found within the 5-mile VSA, comprising 62.3 percent of the land area and is the dominant LSZ within all Distance Zones as well. Zone 2 Forested accounts for 36.3 percent of the total VSA land area. As noted in Section 3.2, most forest groups are smaller isolated sections within Zone 1 lands. Larger tracts of forested areas become more predominant near the western boundary of the VSA in Cherry Valley and Roseboom. Zone 3 Developed areas consist of 1.34 percent of the VSA.

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 US 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 US 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 and are of a different character with a low vertical height profile (13 feet) 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 abundant 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, one 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.

(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.

Table 24-2. Percent Visibility of the Five Mile VSA

Distance Zone	Total Area Comprising Distance Zone Acres	Total Area Comprising Distance Zone Square Miles	Visibility Within Distance Zone Square Miles	% Visibility Within Distance Zone	% Visibility Within Full VSA
Zone 1 0-0.5 Miles	3,695.1	5.8	0.8	**14.7%**	**0.74%**
Zone 2 0.5-2.0 Miles	14,409.1	22.5	0.2	**0.8%**	**0.15%**
Zone 3 2.0-5.0 Miles	55,345.7	86.5	1.0	**1.2%**	**0.89%**
Total VSA	**73,449.9**	**114.8**	**2.0**	**1.78%**	**1.78%**

Table 24-2 parses out predicted visibility within Distance Zones as well as within the entire VSA (114.8 square miles). GIS viewshed analysis results in Table 24-2 shows that based on the land area of each Distance Zone, the highest amount of visibility occurs within Zone 1 at 14.7%. This makes sense because there is a concentrated amount of visibility in proximity to the Project within the half mile acreage. There is an abrupt difference once one travels outside of a half mile where

visibility drastically trends downward to less than 1.3% as distance increases into the larger acreages of Zones 2 and 3. There is approximately two square miles of total visibility within the entire 114.8 square miles that comprises the VSA, or rather, 1.8% of the VSA may experience views of the Project, including partial and distant views.

As expected, the presence of trees in the landscape offers the most visual impediment against solar panels that are well lower than the surrounding mature vegetation. Visibility is most expected in the proposed open farmland site parcels themselves. In proximity to the Project, due to an existing berm that parallels the roadway, there are very limited and partial views to the tops of the first few rows of northern panels along a relatively short section of Route 20 (see VP3). This limited, partial view to the solar arrays located north of Route 20 will, nonetheless, be mitigated with landscape plantings. There will be no other views of panels from Route 20 proceeding west. There may be a fairly distant, small area of limited visibility to panels that are 1.9 miles away from the nearest visible array, however, siting the array in this area with limited distance views resulted in not requiring the siting of arrays to the immediate south of Route 20 where visibility would be more prevalent.

There will be limited partial views to the solar arrays located on Beech Road that are very minimal due to vegetation that surrounds the field. There is visibility along the open farmland at the northern end of Empie Road where there are several array groups proposed, and along the segment of Gilberts Corners Road between Sharon Hill Road and Staleyville Road.

Careful siting of the arrays avoided the usage of all available participating parcels where there could have been more open views along Route 20 if all were used. Current siting therefore was optimized such that visual impacts to Route 20 were minimized by compacting the alignment to within fewer parcels.

Project visibility is minimized as well, by choosing parcels that are framed by mature trees on two to three sides of an array grouping. Because of a 13-foot panel maximum height in relation to a mature forest group, far reaching views in public areas outside of the general array locations do not exist or are very limited. Those views that occur farther out to the eastern extent of the VSA such as Crosby Road, South Crosby Road, Bear Swamp Road, and Carlisle Road are generally restricted to open field where the public is not expected to be. Due to an open valley view with little topographic obstructions, there may be a few intermittent, short duration and partial views of panels from vehicles driving the roadway along South Crosby and Bear Swamp Roads at

approximately four miles from the Project. Similarly, three miles to the southeast there are isolated areas of predicted visibility from open fields in the vicinity of Thor Hill Lane, Lane Cross Road, Burr Lane, and Rosenberg Road. These areas have little views from public roads but are mostly from private land.

Several roads cross through the Project Area. Much of the proposed arrays are placed on farmland surrounded by trees where there is little exposure to “the next road over”. Generally, prevalent views of the Project occur on roads that cross directly through array groupings as opposed to those roads and road segments that are beyond the perimeter of the Project.

(3) Visibility of Above-Ground Interconnections and Roadways

The proposed collector station and switchyard has been sited approximately 1100 feet north of Route 20- and 900-feet northeast of the existing substation location off of Route 20.

Views of the collector station site components are not expected from Route 20 because of its position from the road and the existing berm that will impede views (refer to Exhibit 24(a)(6)). There will likely be partial views of the upper parts of some lightning masts. However, these masts will be similar in appearance to the numerous existing transmission poles that are located within this area. In addition to landscape mitigation in front of nearby solar arrays, vegetative screening is also proposed at the substation itself. The proposed plantings will screen views of the lower components of the station site to those residents who live on the north side of Route 20 and adjacent to the Project.

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 16 feet (4.88 meters) wide. The total length of access roads is approximately 20,871 linear feet.

(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 GPS. These reference locations were later used to refine the placement of the facility within the simulation photographs.

To create visual simulations, Autodesk 3DS MAX software was used to correctly dimension the 3d model into the digital photographic image from each viewpoint location. The 3d model of the

solar layout was created by TRC using engineering specifications. 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, trees, gate posts or utility poles were obtained by GPS to assist with refined placement of the proposed Project within the photograph. In some instances, GIS terrain modeling and analysis helped in locking in the 3D facility model within the photograph. Ground point elevations of the camera location and other referenced objects were obtained from available Light Detection and Ranging (LiDAR) data for Schoharie-Montgomery counties dated 2014 and provided by the New York State GIS Program Office.

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.

The photographic simulations of the Project upon completion are provided in the VIA along with a description of the visual impacts and appearance for each of the viewpoints. Because of limited Project visibility, the majority of simulations show clear line of sight views illustrating the look of the solar panels at close range.

(5) Lighting

Lighting is only proposed for security, safety, and maintenance purposes and is not proposed for the solar arrays. Manually-operated security lighting is proposed at the collection substation and switchyard. To reduce potential impacts to the surrounding areas, lighting will be installed facing downward and will not be illuminated during unoccupied periods. Additionally, all lighting proposed for the Project will be full cut off fixtures with no drop-down optical elements. The Project 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.

Two solar array alignments were evaluated. The proposed layout is discussed in this exhibit. The second is the alternate layout., discussed as required in Exhibit 9. The alternate layout is not discussed here but additional simulations showing some locations depicting this option can be found in the VIA.

The following is a summary of the visual impacts to viewers at simulation locations under the proposed layout. The complete visual simulations for the Project are provided in Appendix 24-1.

VP3 Route 20, Sharon, View North

Route 20 is the major travel corridor which runs east west through the entire VSA and is also designated as a New York State scenic byway. VP3 photo was taken as a representative viewpoint in a location along the scenic byway. Solar arrays are proposed approximately 1315 feet away near VP3 on the north side of the road. There also is an elevated berm paralleling along the north side of the roadway which according to the viewshed analysis results and site visits, has the potential to preclude many views to those northern panels. The view faces north to an open field where evidence of former row crops can be seen. Other land use in the area visible in the photo consists of utility (existing Sharon-Marshville 69 kV transmission line and Sharon substation). The VP3 simulation shows the berm as a visual obstruction to views of the Project where partial views of the upper portions of panels are barely discernible. Visual contrast and change are minimal as the Project appears subordinate in the view.

VP6 Beech Road, Sharon

The location of this viewpoint is on a local road that is perpendicular to and joins up with Route 20. Beech Road is a rural cross road between Routes 10 and 20 and has seasonal access restrictions. As the road travels west from the Project it becomes more isolated and remote running through wooded areas, open field, and large farm parcels. As noted by the viewshed maps in Attachment 2 of the VIA there will be few perimeter roads that will have views of the arrays south of Route 20. Beech Road has vegetation that lines the side of the road that the arrays are located on. There may be few intermittent views from the road through gaps in the vegetation and/or fragmented views during leaf off conditions. VP6 represents such a location and was chosen to show views of this southern array section from the closest point possible. From this location, the sight lines show partial views of some solar panels through gaps in the vegetation as well as fragmented views through bare-branched trees. Color contrasts are weak to moderate as color values are similar to that of the wood line. The panels fall well under the horizon line and

the arrays hold a shape and pattern similar to the horizontal sweep of the foreground as well as background vegetation.

VP9 Sharon Springs

Sharon Springs is significant to the community. Within the Village of Sharon Springs is the Sharon Springs Historic District with numerous sites listed as NHRP and many eligible sites as well. The District is approximately 2.2 miles west of the Project. VP9 shows the nature of the visual obstructions to the Project and is located on Main Street at the southern end of the District. Due to the significance of the historic district, VP9 was chosen to fully demonstrate that there clearly will be no views of the Project.

VP10a Gilberts Corners Road, West, Sharon

Gilberts Corners Road is designated as a local scenic road in the Town of Sharon Comprehensive Plan. This viewpoint along Gilberts Corners Road is at the northwest portion of the Project, north of Route 20. The vantage point was chosen to show a close proximity as well as a somewhat level sweeping view of the open agricultural land at this section of the Project. Since this is a roadside vantage point it also represents an intermittent short duration view of what motorists would see when traveling along the local road. Generally, the existing view shows large homogeneous uninterrupted simple shapes of horizontal field or forest. Empie Road can be seen running through the middle-ground as well as one residence.

The nearest fence line is approximately 180 feet away and the closest panels are approximately 218 feet from the viewer. New line, shape, and form are introduced into the environment. There is moderate to strong color contrast against the darker bare earth and background trees. Due to proximity the panels are dominant in the view. The profile of the panels is nearly even with and slightly exceeds the horizon line of the distant treetops. The proximity, scale, and discernible detail of the hard-edged panels and metallic fencing provides the biggest visual contrasts in the view.

The VP10a suite of simulations also shows a representative example of proposed landscape mitigation for the Project. The mitigation simulations show the effects of the proposed landscaping at the time of planting, and at two and five years into the future.

VP12 Gilberts Corners Road, East, Sharon

As Gilberts Corners Road is a designated local scenic road adjacent to fields where solar arrays are proposed, a second simulation viewpoint was chosen to represent the roadway at a more

easterly location from VP10a. At VP12 the viewer is approximately 453 feet to the fence line. Here, the viewer has full on views of the panels located at the northern part of the Project. Existing conditions show several bands of horizontal shapes sweeping across the view consisting of the plowed field, foreground green unplowed ground as well as the distant background trees. The arrays in general are somewhat consistent with this pattern providing similar narrow horizontal shapes in relation to the view. As the view looks towards the right (west), the panels follow the downward slope of the topography maintaining the flow of the land. The closest panels show detail that is discernible at this range and the solar panels closer to the viewer break the horizon line in some areas. Color contrast decreases with distance and the farther panels appear to blend in with the leaf-off hills in the background.

VP14 Parsons Road, Sharon

Significant amounts of farmland lie just outside of the Project Area in Distance Zone 2. This photo was taken to represent a view from the west in an area where there is abundant open land. VP14, at a little over one mile from the Project, will not have a view but demonstrates some of the terrain influences that occur outside of Distance Zone 1. The lands surrounding the Project provide a mosaicked pattern with geometric agricultural land parcels interspersed with small or linear tree groups. The viewpoint also shows the landscape pattern and nature of the tree rows that typically line the edges of fields.

Lines of Sight

Line of sight 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 impeded 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 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 - Route 20, Sharon, View North towards Collector Station

The proposed collector station and switchyard have been sited approximately 1100 feet north of Route 20- and 900-feet northeast of the existing substation location. Views of the collector station site components are not expected. Six 60-foot lightning masts are proposed within the fence line

that will be 32 inches in diameter at the base tapering to 18 inches in diameter at the top. An existing berm, approximately 14 feet higher than the road on the north side assists in impeding views. Terrain then slopes down northerly on the opposing side of the berm to the collector station location. The highest switchyard component will be 26 feet high. Additionally, the following components are proposed for the Project: one switchyard control house (17.5 feet), and one collector control house (14.0 feet).

Line of Sight L1 in Appendix 24-1 shows that because of the berm and drop in slope, Route 20 is not expected to receive views of the buildings and switchyard components from the L1 location. There will be partials views of some lightning masts. Approximately 20 feet of the upper part of the closest ones are expected to be visible. However, these masts will be similar in appearance to the numerous existing transmission poles that are located within this area.

L2 – Bear Swamp Road, Carlisle

There are few areas beyond the two-mile Distance Zone where there may be views of the Project in public locations. Visibility analysis indicates many views beyond two miles may be obtained but in open private land and farm fields away from houses and not where the public is expected to be. There is a travel corridor to the east (Bear Swamp Road) in the town of Carlisle that may have views of the Project.

Line of Sight L2 is a line of sight location on Bear Swamp Road that is approximately four miles from panels that are proposed north of Route 20. The viewpoint is at an elevation location looking across lower elevation topography across to the Project. Partial views of the Project may be obtained while there is some vegetation surrounding the arrays that will block views.

L3 – Route 20, Sharon Springs, View Southeast

Line of Sight L3 is along Route 20 with a sightline looking southeast towards the southernmost arrays off of Beech Road. This location is across from a Walmart Distribution Center and Dollar General approximately 0.9 miles east of the junction with Main Street in Sharon Springs. The road and vicinity is open but there is a field that rises in elevation south of the highway and precludes most distant views to the southeast. However, there is approximately five feet of vertical viewing space above the crest of the hill where partial views of the arrays sited on higher elevation may be obtained as the land rises closer to the Project as noted in Line of Sight L3. L3 is approximately 1.9 miles to the nearest panels.

(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., collector station, fences) and installing power-conducting cables (typically buried). Additional construction activities may also be necessary at very remote locations or for very large projects; they may include constructing temporary offices or sanitary facilities. 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 visual impacts 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. The viewshed analysis in the VIA makes it clear that there is minimal expected visibility (1.8%) 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. 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 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 at distance which consists of a new horizontal pattern similar 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

contours. Color differences between the Project and the landscape may provide some contrast but will vary throughout the day as the panels rotate to track the sun from east to west. Color contrasts will be different between seasons as well. 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 ultimately provide nearby residences with screened views towards the facility. Landscaping will consist of a variety of evergreen trees and shrubs. Visual Project contrast from solar panels is anticipated to be reduced in areas where landscaping is proposed. Strong to moderate contrast may also occur for travelers.

With respect to anticipated visual impacts from the collector station site it is expected that the upper portions of some lightning masts may be visible in the near vicinity as well as from isolated areas along Route 20 as the roadway passes through the Project. Other station components such as buildings and electrical equipment may be minimally visible or not visible at all even prior to landscape mitigation that is proposed at the fence line Additionally, the collector station is 900 feet northeast from existing Sharon substation and could be considered as in-kind development within the view that is compatible with and offering low contrast against existing land use in the near vicinity.

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:

- 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 region. Farming practices will continue and in fact, participating landowners will continue to receive consistent income throughout the economic useful life of the Project. Farming practices will continue in portions of the Project Area not consisting of Project components.
- State Route 20 Scenic Byway is recognized as an important visual receptor in the VSA. The Byway runs east-west where approximately 12.1 miles of the roadway passes through the VSA. Based on GIS viewshed analysis using the best accurate and available LiDAR data, it is expected that only 0.75 total miles of intermittent (not contiguous) roadway may experience partial and transient views of the Project.
- A stretch of Gilberts Corners Road, a local scenic road, will experience views of the Project. Arrays facing the road will be mitigated with vegetative landscaping.

- Nearby Sharon Springs Historic District will not have views of the Project.
- 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 landscape characteristics.
- The Project does not always appear as a dominant feature in a view and due to limited 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 solar arrays do not overwhelm such physical 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 following the grade as opposed to randomly scattered objects.
- Aside from normal road traffic the public areas in the 5-mile VSA 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 adversely affect scenic resources or degrade the existing visual character or quality of the area.
- 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.

(9) Operational Effects of the Facility

The Facility 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. The Gamechange Solar Genius Tracker system will rotate the

panels, so they are aimed at the sun throughout most of the day, and any reflected sunlight will be aimed directly back at the sun. In general, solar panels are less reflective than window glass or water surfaces (NYSERDA, 2019).

A Glint and Glare Analysis was performed in order to identify any potential impacts on Sharon Airport operations and also considered impacts on vehicles and residences on nearby roads. The full report, which can be found in Appendix 24-2, was prepared by Capitol Airspace Group utilizing the Solar Glare Hazard Analysis Tool (SGHAT). 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, vegetation and geographic obstructions; and,
- 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.

In summary, the results indicate that no unacceptable glare is predicted from the Project arrays for the approaches to Runways 13/31 at Sharon Airport. Although not applicable to the Project, the Project is compliant with the FAA interim policy for Solar Energy System Projects on Federally Obligated Airports. Additionally, the report indicates that there will be no predicted glint and glare from the solar arrays along highways or local roadways for cars or large trucks.

Based on the results of the viewshed analysis, all residential receptors near the Project Area identified as having visibility of the Project were assessed for glint and glare in the 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.

As explained below, the Applicant is proposing the Project such that there will be no unacceptable glint or glare impacts to residences. The report findings indicate that there is some predicted yellow level glare for three residences that could be observed between May and August. Yellow level glare is defined as glare which is expected to cause a temporary after-image. One house (OP 1; Lat 42.770112, Long -74.560245) is predicted to observe less than 10 minutes of glare a day from May to August while the remaining two houses (OP 3 and OP 4; Lat 42.769604, Long -74.555642 and Lat 42.769619, Long -74.554698, respectively) may observe a predicted 2

minutes of glare a year on the second floor, which will be observed in June. No glare was predicted for the remainder of residences analyzed.

Residence OP 1 is located over 685 feet from the nearest proposed array and only has the potential to see very limited portions of the array due to existing vegetation and obstructions (see inset 1 below). In order to mitigate any potential glint or glare impacts, the Applicant is proposing a landscape buffer to obstruct views of the Project from this residence. Accordingly, no glint or glare impacts to Residence OP 1 are proposed as a result of the Project.

Residence OP 3 is a single-story structure and yellow glare was only predicted for 2 minutes per year only at the second floor. Accordingly, no unacceptable glare impacts are proposed as a result of the Project. Residence OP 4, located approximately 265 feet from the nearest proposed array, is a two-story structure and is predicted to observe 2 minutes of glare per year only at the second floor. OP 4 will only have partial views of the Project due to existing vegetative screening. Additionally, a landscape buffer is proposed between the Project and OP 4 to further reduce the visibility of the Project. Due to the limited duration of the potential for glare in a given year (2 minutes) and the restricted views of the Project, no unacceptable glint or glare impacts are proposed as a result of the Project.

Inset 1. View from Residence OP 1 looking northeast toward Project Area. The proposed solar arrays will be behind the red structure and existing vegetation in the background of the photograph.

Exhibit 15 discusses the absence of any governmental limits for glare from solar projects. There are no applicable quantitative standards for glare, but scientific literature suggests that doubling the annual 30-hour shadow flicker standard (adopted by the Siting Board applicable to wind

facilities) could be used as benchmark. The glare analysis indicates that the potential duration is significantly below even the 30-hour shadow flicker standard as only 0.8 hours and 2.4 hours of yellow glare was predicted annually by the model and the proposed landscape buffer will mitigate this potential for glare.

(10) Measures to Mitigate for Visual Impacts

Mitigation includes siting and design and vegetative plantings to help moderate visual impacts. 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—provided the facility is properly operated, maintained and removed can be a way to preserve land for potential future agricultural use. It is also possible that during the term of operation, soils can rest and rebuild if certain plants that help to add organic matter and topsoil are grown in and among the panels. This restoration opportunity would not be afforded if a developer acquired the land and sought to have another development built on the land, such as a subdivision of homes.

Large-scale solar projects can be made less visible from roads or other public vantage points. Several techniques for minimizing and mitigating visual impacts from large-scale solar projects can be made by keeping facility components at low profile and designing the site to take advantage of natural topographic and vegetative screening and setbacks, such as vegetation and berms along a roadway; siting against tree lines; and avoid use of overhead interconnection lines.

Siting and Design

For EPEC, siting considerations held a high priority. Carefully optimized and compacted siting downsized the use of all available participating parcels in the Project Area and thereby reduced areas where there could be more open views along Route 20. Current siting is optimized such that visual impacts and those to Route 20 are made minimal by compacting the alignment to as few available parcels as possible and those that are not spread out over various non-contiguous acreage. Initially, the Alternate Layout with solar arrays directly south of Route 20 and along Beech Road was considered as a primary option but has now been included as the Alternate

Layout. The Proposed Layout now has the arrays removed from south of Route 20 and re-located 3700 feet westerly farther down Beech Road in a more secluded field surrounded by tree rows.

In addition, engineering choices opted for stacking solar panels two in portrait thereby increasing the Project MW output while maintaining the same area coverage and still maintaining a low Project vertical profile. The proposed overall extent of Project visibility is minimized as well, by having chosen many parcels that are framed by mature trees on two to three sides of an array grouping. Because of a maximum 13-foot panel (tilt) in relation to a mature forest group, there are minimal far reaching views outside of the general array locations. Much of the views that occur farther out to the eastern extent of the VSA such as Crosby Road, Bear Swamp Road, Carlisle and Helmire Road are generally restricted to open land where the public is not expected to be. Similarly, to the southwest, near the VSA, extents areas near Lane Cross Road and Thor Hill Lane may experience views mostly in the open private farm field. There are few travel corridors that immediately surround the arrays. Much of the proposed arrays are placed on “interior” farmland surrounded by trees where there is less exposure to local roads and therefore, population centers.

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

- Reduction of footprint by carefully optimized and compacted siting. This decreases the amount of land required for the Project and the potential for community character impacts.
- Use of surrounding woodlands, hedgerows, and topography as existing visual barriers.
- Setbacks and offsets: panels proposed on interior fields as opposed to adjacent roadways to further the distance from travel corridors or those areas that may experience glare.
- Solar photovoltaic panels are designed to absorb light, not reflect light, and therefore produce minimal glare
- Use of antireflective coatings on solar panels.
- Tracker technology keeps panel at a 90-degree angle from sun reflecting any glare back towards the sky
- Reduce strong regular geometry by providing an overall organic shape that follows the edges of natural forested areas.
- 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 impacts.
- Collector station located proximal to existing National Grid substation.
- Vegetative buffers: plantings of native pollinator species included in proposed buffer.

- Additionally, collection lines have been placed underground to the extent practicable to decrease additional aboveground impacts. This configuration allows continued use of the land within the Project Site and will not impede the land uses that have created the rural character of the VSA.
- Minimized vegetation clearing outside of the arrays.

Vegetative Mitigation

. 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 can be found in Exhibit 11 Appendix 11-2. The following items and concepts were applied to the plan:

- The Town of Sharon Land Use Code and Zoning Law was reviewed to understand how and where to apply visual screening. The screening proposed herein complies with any applicable substantive requirements of that Code.
- Native evergreen and deciduous shrubs and trees were chosen for the vegetative barriers. Species chosen needed 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. Pollinator species were also considered. Deciduous and evergreen tree species include: Balsam Fir (*Abies balsamea*), Eastern Red Cedar (*Juniperus virginiana*), White Spruce (*Picea glauca*), Northern White Cedar (*Thuja occidentalis*), 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*), Common Snowberry (*Symphoricarpos*), and Highbush Blueberry (*Vaccinium corymbosum*).
- Two types of planting “templates” are proposed. Type 1 is a robust planting scheme that will provide a maximum buffer screening of the Project. A second planting, Type 2, proposes a reduced buffer screening effort and is primarily used to supplement visual mitigation in areas with existing vegetation (i.e. existing wooded hedgerows consisting primarily of deciduous vegetation) or to provide screening where limited residential receptors are located.

- With respect to the northern most arrays: Type 1 robust screening will occur along portions of the Project facing Gilberts Corners and Empie Roads west of a stream branch to Flat Creek, that which crosses Gilberts Corners Road. Type 2 plantings will occur along portions of the Project that face Gilberts Corners Road east of the Flat Creek stream branch.
- Plantings at the arrays located north of Route 20 will generally consist of Type 1 plantings along portions of the south side of the array group. Type 2 plantings will occur at the southwest and southeast corners of the same array group. This "southeast corner" also includes the collector station site such that mitigation is proposed at the fence line of the station that faces a couple of residences as well as Route 20. Type 1 plantings are proposed along Beech Road.

(11) 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.

(2) Methodology

A viewshed analysis out to the 5-mile VSA extents was performed. This analysis used point cloud LiDAR data for Schoharie-Montgomery counties dated 2014 and provided as las datasets by the New York State GIS Program Office. LiDAR data is the best available elevation data for this analysis as it includes high resolution ground elevations in addition to building heights and

individual tree heights that offer realistic physical visual impediments in the landscape. ESRI Spatial and 3D Analyst GIS software was used to develop the viewshed model.

For the analysis, data was controlled within the model to ensure that the vertical offsets of the solar panels were embedded properly against the LiDAR surface elevation and existing trees. The component height information was based on client specifications for the Jinko solar panel modules and Gamechange Solar Genius Tracker racking system. An assumed panel height of 13 feet was used.

The viewshed model was further developed by establishing an observer height of 5.5 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.

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

- The viewshed model assumes that any vegetation is opaque and therefore represents a leaf-on condition. By nature of the software model and available parameters, the trees are treated as an opaque object and therefore leaf on conditions are assumed. Transparency predictions through something similar to bare-branched trees under leaf off conditions cannot be made.
- 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 and are explained below. Locations of these visual resources can be found with the VIA in Attachment 2 of Appendix 24-1.

Local, state, and federal visual resources were investigated per 16 NYCRR §1001.24. For historic sites, listed National Register of Historic Places (NRHP) and eligible historic properties obtained from New York State 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.

According to 16 NYCRR §1001.24, the following were reviewed:

- *Landmark landscapes;*

  There are no landmark landscapes found within five miles of the Project.

- *Wild, scenic or recreational rivers administered respectively by either the NYSDEC or the APA pursuant to ECL Article 15 or Department of Interior pursuant to 16 USC Section 1271;*

  There are no NYSDEC or APA wild, scenic or recreational rivers found within five miles of the Project.

- *Forest preserve lands, conservation easement lands, scenic byways designated by the federal or state governments;*
  - There are no federal or state forest preserve lands in the 5-mile VSA.
  - Ten federal conservation easements are held by Natural Resources Conservation Service:
    - Canajoharie: two easements (Unique ID Numbers as recorded by the National Conservation Easement Database): 962654 and 966815: two parcels 4.1 and 4.6 miles north of site on Blain Road
    - Root: three easements
      956914: 3.5 miles north of site Conway Road,
      957705: 4.1 miles northeast of site on Full Tan Road,
      963382: 2.7 miles north on Mapletown Road.
    - Roseboom: two easements: Two adjacent parcels 963382 and 968078 are on State Highway 165, 5 miles southwest of the site.
    - Seward: two easements
      967843: 3.1miles southeast of site
      968796: along State Route 145 and Gardnersville Road two miles southeast of site.
    - Sharon: one easement: 965126: along Oderdunk Road 0.25 miles east of Project.

  - Approximately 12.1 miles of Route 20 that runs east west through the entire VSA is designated as a New York State Scenic Byway. An approximate 0.9-mile

segment lies adjacent to Project parcels in the town of Sharon that will be developed with solar panels.

- *Scenic districts and scenic roads, designated by the Commissioner of Environmental Conservation pursuant to ECL Article 49 scenic districts;*

There are no state designated scenic districts in the 5-mile VSA pursuant to ECL Article 49.

- *Scenic Areas of Statewide Significance*;

There are no Scenic Areas of Statewide Significance found within the 5-mile VSA.

- *State parks;*

  There are no State parks managed by the Office of Parks, Recreation and Historic Preservation (OPRHP).

- *Sites listed on National or State Registers of Historic Places*;

  - The historic sites in Table 24-3 and in Appendix 24-1, Attachment 6 reflect listed NRHP and eligible historic properties obtained from CRIS that occur within the 5-mile VSA.
    a. There is one historic district, Sharon Springs Historic District, with the outer boundary 1.8 miles from the Project. There are 88 properties in the district and are listed in Attachment 6.
    b. There are four listed NRHP sites not with the Sharon Springs Historic District; two are between 0.5 and 2 miles and two are outside of two miles.
    c. There are eight eligible historic sites; two are between 0.5 and two miles and the remaining six are outside of two miles.
  - A Historic Architecture Reconnaissance Survey for the Project was not determined necessary by the OPRHP.

- *Areas covered by scenic easements, public parks or recreation areas*;

  - There are several public parks and recreation areas within the 5-mile VSA:

a. Sharon Springs Recreation Center, 1.8 miles northwest of the site.
b. Bowmaker Pond in Sharon, two miles west of site along Highway 10
c. Honey Hill State Forest in Roseboom and Sharon on Edwards Road located 3.5 miles southwest of the site.
d. Various, unnamed snowmobile trails belonging to or maintained by Sharon Pathfinders or Cave Country Riders in the towns of Canajoharie, Carlisle, Cherry Valley, Cobleskill, Root, Roseboom, Seward, Sharon.
e. Two local conservation easements held by Schoharie County Land Trust are found in Sharon (Unique ID Numbers as recorded by the National Conservation Easement Database):

923781: 2.6 miles southwest of site on Rosenberg Road.
923787: 1.2 miles southwest of site on Slate Hill Road.

- *Locally designated historic or scenic districts and scenic overlooks;*

  - There are no locally known scenic districts or overlooks in the 5-mile VSA.
  - Several local historic sites are noted and include Sharon Battleground - 916 Route 20, Camp of Cedar Swamp - near 867 Route 20, and Sharon Airport - near 951 Route 20. These sites are within one mile of the Project.
  - Two categories of locally designated scenic roads are found in the Project VSA. There is:
    a. Local Scenic Excursions from Scenic Byway Route 20 consisting of Route 10 to the west and south and Route 145.
    b. Locally designated scenic roads according to Sharon Comprehensive Plan. These roads in the Town of Sharon include:

       1. Gilberts Corners Road: within 0.5 miles
       2. Kilts Road: within 0.5 miles
       3. Argusville Road: between 0.5 and two miles
       4. Goodrich Road: between 0.5 and two miles
       5. Hanson Crossing Road: between 0.5 and two miles
       6. Beechwood Road: between two and five miles
       7. Center Valley Road: between two and five miles

8. Chestnut Street: between two and five miles
9. Engleville Road: between two and five miles
10. Green Road: between two and five miles
11. Lynk Road: between two and five miles

- *High-use public areas;*

    - The Heritage Area System (formerly known as the Urban Cultural Park System) is a state-local partnership established to preserve and develop areas that have special significance to New York State. The entirety of Schoharie and Montgomery counties fall within the Mohawk Valley Heritage Area. This heritage area represents history that includes Iroquois encounters with fur-traders and missionaries, European settlement, colonial wars, the Erie Canal and industrialization.

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, Landscape Similarity Zones, and potential for visibility.

Table 24-3. Inventory of Visual Resources within VSA

Resource Name	Town	Distance Zone	LSZ	Expected Visibility*
Federal/State/Local Recreation Lands				
Bowmaker Pond	Sharon	2	1,2	No
Sharon Springs Recreation Center	Sharon Springs	2	1,2	No
Honey Hill State Forest	Roseboom, Sharon	3	2	No
Scenic Byways				
New York State Route 20 Scenic Byway	Carlisle, Cherry Valley, Sharon	1,2,3	1,2,3	Limited, Distant partial
Local Excursion from Scenic Byway 20: Route 10	Sharon	3	1,2,3	No
Local Excursion from Scenic Byway 20: Route 145	Sharon	2	1,3	No
Local Scenic Road: Argusville Rd	Sharon	1,2	1,2,3	No
Local Scenic Road: Beechwood Rd	Sharon	3	2,3	No

Resource Name		Town	Distance Zone	LSZ	Expected Visibility*
Local Scenic Road: Center Valley Rd		Sharon	3	1,2,3	No
Local Scenic Road: Chestnut St		Sharon	3	1,2,3	No
Local Scenic Road: Engleville Rd		Sharon	3	1,2,3	No
Local Scenic Road: Gilberts Corners Rd		Sharon	1,2	1,3	Yes
Local Scenic Road: Goodrich Rd		Sharon	3	1,2,3	No
Local Scenic Road: Green Rd		Sharon	3	1,3	No
Local Scenic Road: Hanson Crossing Rd		Sharon	3	1,3	Yes
Local Scenic Road: Kilts Rd		Sharon	1,2	1,3	No
Local Scenic Road: Lynk Rd		Sharon	3	1,3	No
Heritage Areas					
NYS Mohawk Valley Heritage Area		Schoharie and Montgomery Counties	1,2,3	1,2,3	Yes
Conservation Easements					
Federal Held by NRCS (10 parcels; refer to #3a-e under Section 6 for locations)		Canajoharie (2), Root (3), Roseboom (2), Seward (2), Sharon (1)	1,2,3	1,2	No
NGO Held by Schoharie Trust (2 parcels; refer to #8e under Section 6 for locations)		Sharon	2,3	1,2	No
Snowmobile Trails					
Various, unnamed trails (Clubs: Sharon Pathfinders, Cave Country Riders)		Canajoharie, Carlisle, Cherry Valley, Cobleskill, Root, Roseboom, Seward, Sharon	1,2,3	1,2,3	Yes
Historic NRHP					
5743.000011	Ames Academy (Ames Village Hall) - 611 Latimer Hill Road	Canajoharie	3	3	No
9514.000001	Hilton, Peter A., House (Pindar Farm) - 6605 Ny 10	Beekman Corners	3	1,3	No

Resource Name		Town	Distance Zone	LSZ	Expected Visibility*
9514.000023	St. John's Lutheran Church - 6569 Ny 10	Beekman Corners	2	1,3	No
9514.000025	John Lehman House - 407 Kilts Rd	Sharon	2	1,3	No
9545.0000050	The American Hotel - 192 Main Street**	Sharon Springs	3	2, 3	No
9545.000136	Sharon Springs Historic District ***	Sharon Springs	2,3	2, 3	No
Local Historic Importance to the Community					
N/A	Sharon Battleground - 916 Route 20	Sharon	2	1	No
N/A	Camp of Cedar Swamp - near 867 Route 20	Sharon	2	2	No
N/A	Sharon Airport - near 951 Route 20	Sharon	1	1	No
Historic Eligible					
5702.000052	Mapletown Cemetery - Mapletown Road & Blaine Road	Canajoharie	3	1,2	No
5702.000156	Old Baptist Church Cemetery - Old Sharon Rd	Canajoharie	3	1	No
9514.000002	Beekman Mansion - 6725 State Route 10	Sharon	3	1	No
9514.000024	BIN 2263190 Hanson Crossing Rd	Sharon	3	1,2	No
9514.000029	254 Buel Road	Sharon	3	1	No
9514.000030	130 Zeller Road	Sharon	3	1	No

Resource Name		Town	Distance Zone	LSZ	Expected Visibility*
9514.000031	375 Kilts Road	Sharon	2	1,2	No
9545.000133	Sharon Springs Center School 514 State Highway 20	Sharon	3	3	No

*Expected visibility determination is made from the results of the viewshed analysis (Appendix 24-1, Attachment 2)

**The American Hotel is located within the Sharon Springs Historic District but is listed as its own separate NRHP entry per request of the Town of Sharon.

***Please see full listing of historic sites for NRHP Sharon Springs Historic District in Appendix 24-1, Attachment 6.

(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 noted in Exhibit 24(b)(4), 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 noted in 24(b)(4) the visual resources inventory is intended to address locations that have been officially designated for their aesthetic or recreational qualities and that are accessible to the public at large as opposed to places that have individual or private importance only. Therefore, only publicly accessible locations are considered for simulation viewpoints.

Visibility as noted by the mapped viewshed results in Attachment 2 of Appendix 24-1, is not relatively extensive in all LSZs or Distance Zones, nor is visibility expected at most of the listed Table 24-3 visual receptors, save for snowmobile trails, a locally designated scenic road to the north and few but minor areas along NYS Scenic Route 20 that will have limited, short durational and /or distant views. This therefore limits the choice of numerous and diverse locations for photosimulations in publicly accessible locations that would have views of the Project. Attempts to have photo viewpoints from a representative forested area is often moot, since there are not expected to be outward views from within a forested area. Additionally, recreational and public forest parcels that are near the Project are not expected to have views. Nearly all remaining forested area is private land. Most viewpoints considered then, were in the remaining two but abundant LSZs which is agricultural open land and developed (roads/residences). The VPs that are expected to show the Project the most are along Empie Road, Gilberts Corners Road, a short

segment of Beech, and a minimal area along Route 20 and were focused as candidate locations for simulations.

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 June 5, 2019 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 visibility analysis and a photolog of photographed viewpoints for potential use in simulations. Opportunity was provided for municipalities 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 7 of Appendix 24-1.

In summary, viewpoints were selected based on optimal 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 and consideration of DPS comments and stakeholder and agency consultations.

Although the primary focus of visual impacts is directed towards the proposed layout there are some photosimulations, particularly along NYS Route 20 Scenic Byway, that have been included as a comparison against the alternate layout.

Table 24-4 provides a summary of this information considered in the adoption of the viewpoints. Three lines of sight analyses were performed and are noted in the table.

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

Viewpoint	Location	Significance	Landscape Similarity Zone	Distance Zone	Viewer Type
Proposed Layout					
3	Route 20	Proximal view from Scenic Route 20 looking N showing travel corridor, and agricultural land use	1,3	1	Local traveler, commuter, tourist

Viewpoint	Location	Significance	Landscape Similarity Zone	Distance Zone	Viewer Type
6	Beech Road	Proximal views through roadside vegetation looking N at southern section of Project.	1,(2),3	1	Local traveler, residence
9	Main St, Sharon Springs	View from historic Sharon Springs area.	2,3	3	Residence, local traveler, tourist
10a	Gilberts Corners Rd, West	Representative view of northern section of Project with view from local scenic road looking S in substantial open agricultural land. View shows forested LSZ interspersed with farmlands.	1, (2), 3	1	Residence, local traveler
12	Gilberts Corners Road, East	Proximal view of northern section of Project from local scenic road looking SW.	1, (2), 3	1	Residence, local traveler
14	Parsons Rd	Representative view from the west showing terrain influences and nature of tree groups.	1 (2),3	2	Local traveler
Alternate Layout – Shows alternative option if solar arrays are placed directly south and adjacent to Route 20					
1a	Beech Rd	Proximal views in farmland looking W at southern section of Project.	1, 3	1	Local traveler
4	Slate Hill Rd	Representative view across farmland from the east. View NW.	1,3	2	Residence, local traveler
17c	Route 20	Proximal view from Scenic Route 20 looking SW showing travel corridor,	1,3	1	Residence, Local traveler, commuter, tourist

Viewpoint	Location	Significance	Landscape Similarity Zone	Distance Zone	Viewer Type
		agricultural land, and residential.			
18	Route 20	Proximal view from Scenic Route 20 looking S showing open agricultural land, and residential.	1,3	1	Local traveler, commuter, tourist
Line of Sight					
L1	Route 20	Profile to north towards collector station	1,3	1	Local traveler, commuter, tourist
L2	Bear Swamp Road	Profile to west from road outside at 4 miles	1,3	3	Local traveler
L3	Route 20	Profile to southern portion of Project south of Route 20.	1,3	2	Local traveler, commuter, tourist

(6) Photographic Simulations

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 2 of Appendix 24-1.

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, except for snowmobile trails, segments of Scenic Route 20 and a locally designated scenic road to the north (Gilberts Corners Road). This limited the choice of diverse locations for photosimulations that showed direct line of sight views.

The photographic simulations 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 Visual Resources Inventory View Importance Rating Guide, 2016 (NPS, 2016c).
- 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 visual impact assessment (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 U.S. Forest Service or Bureau of Land Management. 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 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, as well as general scenic quality. The higher the rating total, the more sensitive the viewpoint is. Part 3 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 proposed layout simulations with views were rated. Three panelists evaluated and scored the simulations where there were views of the Project under the proposed layout. 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 the VIA. 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	MDev Part 1	Avg Part 2	MDev Part 2	Avg Part3	MDev Part 3
		Part 1	Part 2	Part 3	Part 1	Part 2	Part 3	Part 1	Part 2	Part 3						
3	Route 20	5.5	11.5	1.5	8	12	1	7	11.5	1.5	6.8	0.9	11.7	0.2	1.3	0.2
6	Beech Road	13.5	3	2	14	5.5	1.5	12	4	2	13.2	0.8	4.2	0.9	1.8	0.2
10a	Gilberts Corners Rd, W	18.5	11.5	2.5	14.5	11	1.5	17	12	2	16.7	1.4	11.5	0.3	2.0	0.3
12	Gilberts Corners Road,E	14	13.5	2	16	11	2	14	12	2	14.7	0.9	12.2	0.9	2.0	0.0

MDev = 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. The viewpoint with the highest Part 1 Contrast is VP10a on Gilberts Corners Road (west) with an average rating of 16.7. This simulation shows an open field with clear proximal unobstructed sightlines to the Project. At this location the viewer is about 180 feet to the fence line where project elements and scale are prominent in view.

VP3 along the Route 20 NY Scenic Byway has the lowest contrast rating with an average of 6.8 and the Project can be assumed to have the most capability of being visually absorbed into the environment. Here, applied siting considerations and use of the existing berm on the north side of the road greatly reduces visual contrast at this location.

VPs 6 and 12 lie in between with average contrasts that are rated 13.2 and 14.7

Mean deviations were calculated to observe the level of variance between the panelists within each simulation evaluation. Mean deviations ranged between 0.8 and 1.4. Most results show reasonable compatibility with each other however it appears the panelist opinion varied the most when assessing VP10a where there might be slight differences in opinion when it came to how much form, line, and color contrast the panels provided against existing conditions.

Part 2 Viewer Sensitivity

Viewpoints 3, 10a, and 12 had very similar high Part 2 Viewer Sensitivity rating averages at 12.2, 11.7, and 11.5, respectively. That is because these three VPs are listed in Table 3 as scenic receptors. VP3 is along NYS Route 20 Scenic Byway and VPs 10a and 12 are along Gilberts Corners Road, a local scenic road recognized by the Town of Sharon.

VP6 had the lowest viewer sensitivity rating as it is not listed as a scenic receptor and is located along a general local travel corridor with a low number of viewers where the view is typical of the area and/or lacks certain outstanding features such as a water view.

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. 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.

VPs 10a and 12 located along locally designated scenic Gilberts Corners Road were equally rated as having moderate scenic quality with a value of 2. VP6 at Beech Road, a local rural travel corridor was rated at 1.6 or as having a somewhat moderate scenic quality. VP3 a location that may have Project views along NYS Route 20 Scenic Byway was found to have the lowest scenic quality with a weak rating of 1.3. This is likely because within the view of the Project is the Sharon substation. As well. the viewer is looking at a roadside berm in addition to a typical cornfield. The view and the rating also suggest that not all parts of NYS Route 20 Scenic Byway has outstanding or scenic views.

Mean deviations for Part 3 are comparatively very low, ranging between 0 and 0.3. 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 per Article 10 requirements of Exhibit 24(a) and Exhibit 24(b). However please refer to Appendix 24-1 for the full detailed VIA.

The viewshed analysis concludes that 1.8% 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 Impacted Resources

Visibility is not relatively extensive nor is visibility expected in most of the listed Table 24-3 visual receptors, save for snowmobile trails and one locally designated scenic road to the north (Gilberts Corners Road). With respect to Route 20, existing scenic quality in the near view in proximity to solar arrays (VP3) was rated low (24(b)(8)). There will be short segments of very partial visibility (1600 feet or less) in a few areas where only the upper, limited portions of the solar arrays may potentially be seen for short durations by travellers in vehicles. Driving east on Route 20, there would be a distant view from 1.9 miles of short duration. No arrays are proposed in parcels adjacent to Route 20. Approximately 12.1 miles of Route 20 passes through the Study Area but only approximately 0.75 total non-contiguous miles of intermittent stretches of roadway may have short duration views. There are no listed recreational, local public open space parcels or conservation easements that are expected to have views. There is no expected visibility to state forests or local parks, federal, state, or local historic sites, or the historic district in the Village of Sharon Springs.

Federal Scenic Resources

Federal visual resources consist of NRCS owned conservation easements and 92 National Register of Historic Places sites (88 sites located in the Sharon Springs Historic District). None of these properties will have views of the Project due to distance and obstruction of topography and trees.

Eligible historic sites as obtained from CRIS resulted in 8 sites within the VSA. None of these sites will have views of the Project.

State Scenic Resources

State visual resource NYS Scenic Byway Route 20 will have short segments of visibility consisting of 1600 feet or less in varying areas. Approximately 12.1 miles of Route 20 passes through the study area but only approximately 0.75 miles of intermittent stretches of roadway will have short duration, partial views.

A small portion of the Mohawk Valley Heritage Area consisting of all of Schoharie and Montgomery Counties will have comparatively few views that are only already restricted to locations within the VSA. Remaining state visual resources will not expect visual impacts from the Project. The one state forest recreation land (Honey Hill) is heavily wooded and located nearly five miles away and will not have views.

Local Scenic Resources

Local recreation areas such as Sharon Spring Recreation Center, Bowmaker Pond, and conservation easements held by Schoharie Trust will not have views of the Project. Several snowmobile trails that cross in the VSA will likely have short duration intermittent views as they pass through the proximity of the Project.

One locally designated scenic road (Gilberts Corners Road) will have views of the Project as this road runs adjacent to a portion of the Project in open land with direct line of sight views. There is proposed vegetative mitigation for arrays facing the road in order to screen views to the Project. Hanson Crossing Road, another locally designated scenic road shows that a short 570 foot stretch of road could possibly have partial views of solar panels. It appears that most of the views near this road segment is actually in elevated fields adjacent to the public roadway that are on private lands that are inaccessible to the public.

Remaining public resources include segments of local roads that run between or directly adjacent to solar array areas, such as Empie and Beech Roads, where there will be direct, short duration intermittent views from roadway vehicles or bicyclists.

Non-public community resources include private residences where there will be potential views. Landscaped vegetative screening is proposed near property owners in the immediate areas of the solar arrays (see Landscaping Plan in Appendix 11-2).

Locally important historic areas called out in Table 24-3 are not expected to have views of the Project.

Other related visual effects of facility operations including a glint and glare analysis was performed in a report entitled "*East Point Energy Center Glint and Glare Analysis*" which was conducted by Capital Airspace Group (see Appendix 24-2). Methodology and results of the glint and glare analysis, as well as graphical and mapping results, are presented in the report and discussed in detail in Section 24(a)(9) above

(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".* This requirement was fulfilled. On June 5, 2019 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 visibility analysis and a current photolog of candidate simulation viewpoints. Opportunity was provided for the town and agencies to suggest additional and reasonable locations for photosimulations or append additional visual resources of concern to the inventory. Correspondence can be found in Attachment 7 of Appendix 24-1.

References

Multi-Resolution Land Characteristics Consortium. USGS 2016 National Land Cover Database. Accessed August 2019. Available at: https://www.mrlc.gov/.

National Park Service (NPS). Find a Park in NY. Accessed March 2019. Available at: http://www.nps.gov/state/ny/index.htm.

National Recreation Trails (NRT). The National Recreation Trails Database. Accessed March 2019. Available at: http://www.americantrails.org/ee/index.php/nationalrecreationtrails

National Wild and Scenic Rivers. Explore Designated Rivers. Accessed March 2019. Available at: https://rivers.gov/map.php

New York State Department of Environmental Conservation (NYSDEC. New York's Forest Preserve. Accessed March 2019. Available at: http://www.dec.ny.gov/lands/4960.html

New York State Department of Transportation (NYSDOT) (2015). Annual Average Daily Traffic. Available at: https://www.dot.ny.gov/tdv

New York State GIS Program Office. (NYGISPO). Public Fishing Rights. Accessed May 2019. http://gis.ny.gov/gisdata/

New York Natural Heritage Program (NYNHP). New York Protected Areas Database. Accessed March 2019. Available at: http://www.nypad.org/

New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). State Parks. Accessed March 2019. Available at: https://parks.ny.gov/parks/default.aspx

NPS. National Natural Landmarks in New York. Accessed May 2019. Available at: https://www.nps.gov/subjects/nnlandmarks/state.htm?State=NY

NPS. National Register of Historic Places. Accessed October 2018. Available at: https://www.nps.gov/subjects/nationalregister/data-downloads.htm

NPS. Nationwide Rivers Inventory. Accessed December 2018 Available at: https://www.nps.gov/ncrc/programs/rtca/nri/states/ny.html

NYSDEC. List of State Forests by Region. Accessed March 2019. Available at: http://www.dec.ny.gov/lands/34531.html

NYSDEC. Critical Environmental Areas. Accessed March 2019. Available at: http://www.dec.ny.gov/permits/6184.html

NYSDEC. New York State Boat Launching Sites by County. Accessed March 2019. Available at:

https://www.dec.ny.gov/outdoor/7832.html

NYSDEC. State Lands Interactive Mapper. Accessed June 2019. Available at: https://www.dec.ny.gov/outdoor/45415.html

NYSDEC. Western New York Public Fishing Rights Maps. Accessed May 2019. Available at: https://www.dec.ny.gov/outdoor/9924.html

NYSDEC. Wild, Scenic and Recreational Rivers. Accessed March 2019. Available at: http://www.dec.ny.gov/permits/32739.html

NYSERDA. New York Solar Guidebook for Local Governments. January 2019. Available at: https://www.nyserda.ny.gov/All%20Programs/Programs/Clean%20Energy%20Siting/Solar%20Guidebook

NYSDOT. Bicycling in New York. Accessed June 2019. Available at: https://www.dot.ny.gov/bicycle

NYSDOT. New York State Scenic Byways. Accessed June 2019. Available at: https://www.dot.ny.gov/scenic-byways

NYSDOT. Route Twenty Scenic Byway (U.S. Route 20) Accessed June 2019. Available at:

https://www.dot.ny.gov/display/programs/scenic-byways/route-20

NYGISPO. Scenic Areas of Statewide Significance. Accessed December 2018. Available at http://gis.ny.gov/gisdata/

NYGISPO. NYDEC Lands. Accessed December 2018. Available at http://gis.ny.gov/gisdata/

NYSOPRHP. Cultural Resource Information System (CRIS). 2016. Available at: https://cris.parks.ny.gov/ Accessed July 2019.

NYSOPRHP. Heritage Areas. Accessed March 2019. Available at: http://nysparks.com/historic-preservation/heritage-areas.aspx

NYSOPRHP. Trails. Accessed June 2019. Available at: http://www.nysparks.com/recreation/trails

Smardon, R.C, Palmer, J.F, Knopf, A. and Girinde, K. 1988. Visual Resources Assessment Procedure for US Army Corps of Engineers. Department of the Army.

Sullivan, Robert and Jennifer Abplanalp. 2013. Utility-Scale Solar Energy Facility Visual Impact Characterization and Mitigation. U.S. Department of Energy's Argonne National Laboratory.

Town of Sharon Amendments to the 2009 Comprehensive Plan (2012). Town Board. Prepared by Community Planning and Environmental Associates and Schoharie County Planning and Development.

Town of Sharon Comprehensive Plan (2009). Comprehensive Plan Review Committee.

United Stated Department of Agriculture (USDA), National Forest Service (1995). Landscape Aesthetics, A Handbook for Scenery Management. Agricultural Handbook 701. Washington D.C.

United States Department of the Interior (USDOI) (2013). Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands. Bureau of Land Management. Cheyenne, Wyoming.

USDOI (1986). Bureau of Land Management. Handbook H-8431: Visual Contrast Rating.

USDOI (1980). Bureau of Land Management. Visual Resource Management Program. U.S. Government Printing Office. 1980. 0-302-993. Washington, D.C.

United States Department of Transportation (USDOT). America's Byways. Accessed March 2019. Available at: https://www.fhwa.dot.gov/byways/states/NY

United States Fish and Wildlife Service (USFWS) (2019). National Wildlife Refuge Locator. Available at: https://www.fws.gov/refuges/refugeLocatorMaps/NewYork.html Accessed March 2019