



Exhibit 8: Visual Impacts

Cider Solar Farm
Towns of Oakfield and Elba
Genesee County, New York

Matter No. 21-1108

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

Table of Contents

Abbreviations iii

Glossary of Terms..... iv

a) Visual Impact Assessment..... 1

- 1) Character and Visual Quality of the Existing Landscape 1
- 2) Visibility of the Project..... 3
- 3) Visibility of Above-ground Components..... 3
- 4) Project Appearance Upon Completion 3
- 5) Proposed Lighting 4
- 6) Representative Views 4
- 7) Visual Change from Construction 6
- 8) Visual Change from Operation 6
- 9) Operational Effects 8
- 10) Visual Resources Affected by the Project 8

b) Viewshed Analysis..... 10

- 1) Viewshed Maps..... 10
- 2) Viewshed Methodology..... 10
- 3) Potential Viewpoints 10
- 4) Key Observation Points 11

c) Visual Contrast Evaluation 12

- 1) Photographic Simulations 12
- 2) Revised Photographic Simulations 12
- 3) Simulation Comparison and Visual Impacts 12

d) Visual Impacts Minimization and Mitigation Plan..... 16

- 1) Advertisements, Conspicuous Lettering, and Logos 16
- 2) Electrical Collection System 16
- 3) Above-ground Transmission Facilities..... 17
- 4) Non-reflective Conductors 17
- 5) Wind Turbine Color Requirements 17
- 6) Shadow Flicker for Wind Facilities..... 17
- 7) Glint and Glare Analysis 17
- 8) Landscape Plan 17
- 9) Lighting Plan 18

References 20

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

LIST OF TABLES

Table 8-1: Landscape Similarity Zones in Study Area 2
Table 8-2: Viewpoints Selected for Visual Simulations..... 5
Table 8-3: Comparison of Visual Quality with and without Project by KOP..... 13

LIST OF APPENDICES

- Appendix 8-A: Visual Impact Analysis
- Appendix 8-B: Glint and Glare Assessment

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

Abbreviations

KOP	Key Observation Point
LSZ	Landscape Similarity Zone
NYCRR	New York Codes, Rules, and Regulations
NYPA	New York Power Authority
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
POI	point of interconnection
VIA	Visual Impact Assessment
VP	Viewpoint
WMA	Wildlife Management Area

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

Glossary of Terms

Applicant	Hecate Energy Cider Solar LLC
Project	Refers to the proposed Cider Solar Farm, an up to 500-megawatt utility scale solar project that will be comprised of photovoltaic panels, inverters, access driveways, electrical collection lines, point of interconnection/substation, construction staging areas, fencing and plantings, located on private land in the towns of Elba and Oakfield, Genesee County, New York.
Project Area	Refers to the Project Site and surrounding/adjacent land totaling approximately 7,518 acres.
Project Footprint	Refers to the limit of temporary and permanent disturbance within the Project Site caused by the construction and operation of all components of the Project totaling approximately 2,452 acres.
Project Site	Refers to those privately owned parcels under option to lease, purchase, easement or other real property interests with the Applicant in which all Project components will be sited totaling approximately 4,650 acres.
Study Area	Refers to the area evaluated for specific resource identification and/or resource impact assessment. The size of this area is appropriate for the target resource and takes into account the project setting, the significance of resource or impact being identified or evaluated, and the specific survey distances included in Chapter XVIII, Title 19 of NYCRR Part 900. As appropriate, the Study Area for each type of survey or resource impact assessment is provided in the respective sections within the Application.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

The content of Exhibit 8 is provided in conformance with Chapter XVIII, Title 19 of the New York Codes, Rules, and Regulations (NYCRR) § 900-2.9, as follows.

a) Visual Impact Assessment

1) Character and Visual Quality of the Existing Landscape

Appendix 8-A: *Visual Impact Analysis* contains the full Visual Impact Assessment (VIA) produced for the Project. Applicable passages from the VIA are summarized or reproduced here and elsewhere in Exhibit 8. References to figures, tables, and appendices included in the VIA will include notation.

The Project is located in the towns of Oakfield and Elba, New York, in the northern part of Genesee County. The Study Area for this VIA is a 2-mile area around the Project Site. The 2-mile Study Area occupies portions of Genesee and Orleans County that include four towns (Genesee County: Elba, Oakfield, and Alabama; Orleans County: Barre) and two villages (Genesee County: Elba and Oakfield).

The Project setting is the Ontario Lowlands ecoregion of New York, which is defined by the extent of Glacial Lake Iroquois (Bryce et al., 2010). The relative proximity of the Ontario Lowlands ecoregion to Lake Ontario allows for a temperate climate in summer and winter. This lake effect contributes to cloudy, frequent fog, and significant amounts of snow in the late fall and winter months. Historically, forests in the area were dominated by beech and sugar maple with a small number of white oaks, basswood, elms, and white ash. Woodlands once entirely covered this ecoregion; however, only scattered forests remain today due to the region's high agricultural capability. The loamy soils of the area are derived from limestone and calcareous shale. Generally, these soils are deep and finely textured. Although dairy and livestock farming is common in Genesee County, the soils and climate are also highly suitable for growing fruit, vegetables, and other specialty crops.

The landscape character of the Study Area is defined by a widespread, visible contrast between forested lands and managed agricultural fields. Throughout the Study Area, mature vegetation appears to compartmentalize relatively small tracts of agricultural land such that, in many views, farmland appears framed on one or more sides by forests or hedgerows of trees and shrubs. Though there are slight variations in topography, most of the Project Site is relatively flat. The depth of the area visible in views is generally limited more by vegetation than terrain, with some exceptions.

Farms in the area mostly raise row crops; corn, in various stages of harvest, was the predominant crop observed during site photography. There is, therefore, a linear uniformity to much of the farmland for a portion of each year. Existing high-voltage transmission lines that transect the Study Area add a strong linear element to views where they are visible. They also contribute an industrial character in views, as do some of the larger farms in the area, where sheds, processing facilities, machinery, and other mechanized components are visible.

The Study Area is located within a network of local, regional, and state roadways, which provide the majority of the publicly accessible viewing locations from which the Project would be visible. There are also intermittent views along snowmobile trails. Roads and trails are not primary components of any view; most roads are narrow and two-laned and none in the Study Area have scenic designation. Rather, these linear components are subordinate to the landscape and afford locations from which viewers can observe

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

the dominant components of existing visual character. Farms are visible in close-in views, as are residences, which, outside of established villages, are concentrated along roads. Single-family homes are observable in clusters or as lone residences associated with farms, where they are often backdropped in views by a tree-formed horizon. The predominant visual character of the Study Area is a natural-appearing combination of forest and agriculture with development generally limited to villages and corridors.

Views throughout the broader Study Area are limited in distance by forests and vegetative stands. Within the villages of Oakfield and Elba, as well as within other areas of clustered development, structures, landscaping, or other elements of the built environment partially to fully obstruct views and limit visible areas to the viewpoint's immediate surroundings.

Landscape Similarity Zones

Three Landscape Similarity Zones (LSZs), each of which possesses common landscape characteristics and visual character, were identified within the 2-mile Study Area. Identification of such areas is intended to broadly categorize primary uses and activities within the visual Study Area.

Agriculture: Lands predominantly dedicated to agricultural production. Landscape indicators include managed or irrigated fields or crops, pasturelands, fallowed fields, and structures such as barns, siloes, or other outbuildings. These are landscapes of production. Within the visual Study Area, the Agriculture LSZ includes some variation in topography, with boundaries often signified by stands of vegetation. Rural residences, which often appear associated with or adjacent to agricultural uses, vary in density within the Agriculture LSZ. Some areas include sparsely placed residences while others include residential clusters. Roads and highways that pass through the Agricultural LSZ are considered part of the LSZ.

Forest: State forests and private forest lands. Landscape indicators include dense, wooded vegetation and formal or informal signage indicating land ownership/management and recreational facilities, including hiking and snowmobile trails.

Community Crossroads / Corridor: Established communities with concentrated populations, services, and some degree of incorporation, as well as areas of concentrated rural residences. Crossroads in this report are defined as intersections between two county roads or a county road and a state route. Residences are often clustered at crossroads areas, which also serve as landmarks within the local landscape.

Table 8-1: Landscape Similarity Zones in Study Area

Landscape Similarity Zone	Area of LSZ within 2-mile Study Area (square miles)	Percentage of Total Area
Agriculture	35.6	62.0
Community / Crossroad / Corridor	3.1	5.4
Forest	18.7	32.6
Total:	57.5	100

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

2) Visibility of the Project

Topographic and vegetated viewshed maps were created to identify potential visibility of the Project's solar array and electric-distribution components. The methodology for conducting these analyses is described in detail in Section 3.2 of the VIA.

The Project's theoretical visibility is indicated by the visibility assessment shown in VIA Figure 5, which shows the results of the viewshed analysis based on topography and forest lands. Areas where there would be "more visibility" or "less visibility" within the viewshed are indicated by color shade in VIA Figure 5.

The viewshed occupies 13.75 square miles of the total 57.5 square miles within the 2-mile Study Area. The viewshed analysis indicates that in nearly 70% of the area where there would potentially be visibility of the Project (the solar panels), no more than 5% of the Project would be visible from any single location (see VIA Table 3). Further, no more than 10% of the Project would be visible from throughout 90% of the Project viewshed (12.3 square miles). Less than 0.1% of the Project viewshed (0.01 square miles, or approximately 6 acres) would theoretically have visibility of more than 25% of the solar arrays, though because viewshed analyses calculate total points visible via lines of sight in all directions, fewer arrays are likely visible in any single, fixed view. And in no area would more than 32% of the Project site be theoretically visible from a single location.

A glare hazard analysis is attached as a part of Appendix 8-B: *Glare Hazard Analysis*. The Project would not be a significant source of glare. The site-specific glare hazard analysis concluded, based on the solar array parameters and the site design, that glare is not predicted from the Project for pilots landing at two airports (Pine Hill Airport and Genesee County Airport) and one heliport (Troop A Headquarters) located in the vicinity of the Project. Further glare from the Project is not predicted to occur for drivers of vehicles on roadways or for residences in and adjacent to the Project.

3) Visibility of Above-ground Components

The Project includes no new above-ground conductor or transmission lines aside from those between the substation and the switchyard (424 feet) and the adjacent point of interconnection (POI; 223 feet). This area would be generally shielded in publicly accessible views by existing vegetation. Roads used to access solar arrays will follow existing farm roads and trails where practicable 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.

4) Project Appearance Upon Completion

The Project would appear in most views as segments of solar panel arrays set within or in front of mostly agricultural lands and separated from other portions of the Project by mature vegetation. VIA Attachment E includes the photographic simulations that were created to show the anticipated appearance of the Project upon completion from a series of representative viewpoints. Along with the solar module arrays, the location and appearance of proposed inverters, access roads, and substation facilities were incorporated into the model and are present in the simulations where they would be visible.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

5) Proposed Lighting

Proposed lighting associated with the Project includes manually activated emergency and security service lighting located at the on-site collection substation. The service lighting will only be activated in the event of an outage or other repair-related event at the substation during nighttime hours. Within the substation a total of approximately four service lights will be installed. The lighting will be mounted at a height of 30 feet near all major equipment such as circuit breakers, transformers, disconnect switches (two lights will be mounted on the structures near such equipment) and will be directed downward toward equipment. In these locations, Lithonia HLF1 fixtures with a lumen output of 30,646 (or similar) will be used. The service lights will only be turned on when Project personnel are performing maintenance; lights will be turned off after repairs are completed. Security lights will also be installed above the door of the control building at the substation and will be manually switched on at night. At the control building, RAB Slim26 fixtures (or similar) with a lumen output of 3,536 will be used. The security lights on the control building will be activated during nighttime hours. Security lighting at the control building will be directed downward and shielded to avoid light trespass and nighttime light pollution impacts. Manually activated security lighting will also be located on 30-foot poles at the entrance gate to the on-site substation (along Graham Road). No nighttime lighting is proposed in the solar array fields. The amount and character of light generated by the Project proposed security lighting will be consistent with other industrial and commercial facilities that may employ similar lighting within the Study Area, including some commercial agricultural facilities and uses within the villages of Elba and Oakfield.

6) Representative Views

Photographs were collected from 60 viewpoints in the Study Area. Seven of these viewpoints were selected for visual simulation based on their collective representation of a range of viewer type, proximity to the Project Site, and orientation toward solar arrays (see VIA Figure 5). These KOPs, which are a subset of the VPs shown in VIA Figures 3, 4, and 5, reflect both the inventory of aesthetic resources and the basic viewshed analysis produced for the Project. Table 8-2: *Viewpoints Selected for Visual Simulations* lists the KOPs for which simulations are presented in the VIA. Visual quality with the Project was compared with existing conditions for all but KOP 3. While retained as a KOP, the substation location was not evaluated as part of the impact analysis because it will be screened by existing vegetation.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

Table 8-2: Viewpoints Selected for Visual Simulations

Key Observation Point	Approximate Distance to Nearest Solar Array	View Orientation	LSZ	Rationale for Selection of KOP / Aesthetic Resource(s) Represented by Viewpoint
1 – Lockport Road, east of Albion Road / Highway 9 (VP 39)	200 feet	SW	Community / Corridor / Crossroads	Residential view; populated portion of Lockport Road
2 – Fisher Road, north of Lockport Road (VP 35)	0.4 miles	E	Agriculture	More distant view; demonstrates Project visibility from ½-mile
3 – Graham Road, south of Ridge Road (VP 29)	0.25 miles	SW	Agriculture	View toward Project substation. <i>Not evaluated.</i>
4 – Snyder Road, north of Maltby Road (VP 27)	170 feet	W	Agriculture	Substantial vegetation removal
5 – Weatherwax Road, south of Maltby Road (VP 23)	0.1 miles (in view)	N	Agriculture	Project visible on both sides of road
6 – Quaker Hill Road, south of Lockport Road (VP 13)	175 feet	NE	Agriculture	First encounter of Project along highway
7 – Lockport Road, west of Oak Orchard Road (VP 7)	175 feet	S	Forest	Recreationists' view; snowmobile trail crossing

The rationale for selection of these views as KOPs is the type of Project effect potentially visible from each. While the precise combination of existing features in view, proximity to the Project, and viewer experience is unique to each KOP, these views represent other views from locations throughout the Study Area. Examples of such comparative views are included in the VIA.

- KOP 1 is located along Lockport Road, nearly 0.75 miles east of Albion Road / Highway 9 and 1 mile west of East Oakfield. The view to the southwest is toward active farmland (VIA Attachment E, Figure 1a). This viewpoint was selected to represent residential views from this stretch of Lockport Road where residential uses are concentrated and separate from agricultural uses compared with other parts of the Study Area.
- KOP 2 is located along Fisher Road, about 0.33 miles north of Lockport Road. The view to the east looks down the Dysinger – New Rochester 345-kilovolt transmission line (VIA Attachment E, Figure 2a). This viewpoint was selected to include a view in which the Project would appear at some distance from the KOP relative to other views.
- KOP 3 is located along Graham Road, about 0.5 miles south of Ridge Road. The view to the southwest is toward the location of the Project substation (VIA Attachment E, Figure 3a). The lack of views toward the proposed substation location from anywhere but this segment of Graham Road is the reason for inclusion of this view. As previously noted, because the substation would be placed beyond two rows of vegetation, it would be screened in views. Views are included in the VIA to demonstrate existing and proposed conditions, but this view was not evaluated for impacts.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

- KOP 4 is located along Snyder Road, about a 0.5 miles north of Maltby Road. The view to the west is toward a portion of the Project Site where multiple layers of vegetation would be removed (VIA Attachment E, Figure 4a).
- KOP 5 is located along Weatherwax Road, just north of West Avenue. The view to the north is toward a portion of the Project area in which solar panels would appear on both sides of the road, an effect that warranted its inclusion among KOPs (VIA Attachment E, Figure 5a).
- KOP 6 is located along Quaker Hill Road / Highway 98, about 0.25 miles south of Lockport Road. The view to the northeast is one in which a comparatively expansive segment of agricultural land is visible (VIA Attachment E, Figure 6a). The potential for the Project to alter a uniform visual character informed the selection of this view as a KOP.
- KOP 7 is located along Lockport Road, about 0.1 miles west of Oak Orchard Road. The view to the south from the point where a snowmobile trail emerges from a forested woodland is toward a farm on the south side of Lockport Road (VIA Attachment E, Figure 7a). This view was selected to represent recreationists' views toward the Project, as well as views from the edge of a forest, where the Project would be visible upon emerging from the wooded area.

7) Visual Change from Construction

Short-term visual effects that are typical of any major construction or industrial project will occur during the construction of the Project. These effects will primarily result from construction activities and the presence of construction equipment and work crews. Construction activities associated with the Project may include surveying, clearing, stockpiling topsoil, grading, trenching, installation of posts, delivery of Project components, installation or erection of Project components, and placement of perimeter fencing.

Visible activities would vary in frequency and duration throughout the course of construction. It is anticipated that visual contrast will be introduced during Project construction primarily for viewers associated with residences directly adjacent to the Project Area. Potential visual contrast during construction activities include that related to the presence and motion of equipment as well as the preparation of lands for installation of solar arrays and other components. Visual effects will be temporary because construction equipment and crews will move once construction at a given area is completed. Views of Project construction from areas that are not immediately adjacent to the Project Area will be minimal due to screening by landscape features, such as vegetation and/or topography. Visual effects to these viewers will be mostly limited to the presence of construction-related traffic on local roads.

8) Visual Change from Operation

Viewers of the operational Project would predominantly be those who live, work, and travel or commute through or adjacent to the Project Site. No National or State Register of Historic Places resources—which in this area are primarily buildings, churches, and cemeteries—are within the 2-mile Study Area evaluated in this analysis. Other scenic resources within the Study Area are concentrated within the villages of Elba and Oakfield and would have little to no visibility of the Project. Only three of the Scenic Resources identified in this analysis are located within the proposed Project Site:

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

- The snowmobile trails that cross the eastern half of the Project Site would have views of the Project that would be intermittently obstructed by vegetation and would vary in duration, depending on whether they are being used by snowmobilers or hikers;
- East Oakfield Cemetery and Gardner Cemetery, located near one another along Lockport Road near the center of the Project Site, afford little visibility of the site; intervening vegetation and topography generally shelter these two areas from their surroundings.

The Project's viewshed—the area within which solar arrays would theoretically be visible based on their height, topography, and intervening forested areas—would occupy 13.75 square miles, or 24%, of the 57.5 square mile Study Area. In the majority of the Project viewshed (70%), no more than 5% of the Project's solar arrays would be visible from a single location. Less than 0.1% of the area within the Project viewshed would have visibility of more than 25% of the solar arrays from a single location. In no area would more than 32% of the Project site be theoretically visible from a single location. Each of these measurements likely reflects potential visibility in multiple directions meaning that fewer solar arrays would be visible in a single, fixed view.

The panel that reviewed and compared existing and simulated images of the Project from six representative viewpoints observed substantial contrast in visual character between current and proposed conditions. In many views, the Project would be visible at a proximity and / or scale that would alter the composition of the landscape, which appears in most existing views as an area that is widely agricultural in character.

In summary, the visual quality of views compared with existing conditions would also be altered. Assessments of natural harmony were reduced for every view with the Project, with the greatest difference observed for KOPs 1 and 4. These are two of the views where the Project would appear less than 200 feet away. Substantial reduction in cultural order was observed for KOPs 4 and 6. KOP 6 is another view from a location less than 200 feet from the proposed Project Site. Less pronounced reduction in cultural order was noted for all other views save KOP 2. Similarly, the overall coherence of the view from all but the longer distance one evaluated (KOP 2, from 0.4 miles away) was reduced, with the greatest difference noted for KOPs 1, 4 and 6. In each of these three views the Project would eliminate – through visual obstruction or removal to accommodate the Project – natural or built elements that contribute to existing visual character or quality in some way: stands of mature trees that define the backdrop of the view; shorter vegetation that serves to limit the visibility of the land beyond; or farm structures that leave no doubt as to the areas predominant land use in the area and its associated landscape character.

See Section (c)(3) of this Exhibit for additional description of the panel's evaluation and ratings.

Such effects are not likely to be as visible, or visible at all, in longer views. The Project's viewshed is relatively compact. The existing, mature vegetation that bounds most agricultural parcels in the Study Area limits the distance and breadth of views, which means that the Project would likely not be visible in any broad, vista view. As noted above, the viewshed analysis indicates that no more than 32% of the Project would be visible from a single location.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

The proposed Project substation would be almost entirely screened in local views by existing vegetation. Viewers may, depending on their course of travel along publicly accessible roads, experience relatively extended exposure to the Project. Proposed landscaping would screen portions of the Project with a variety of solid or intermittent rows of vegetation placed between solar arrays and viewers.

9) Operational Effects

The Project would not be a significant source of glare. In general, solar PV panels absorb sunlight rather than reflect it. They have layers of glass and anti-reflective coating that both allow sunlight to pass through to solar cells with little reflection and also reduce reflectivity. Panels rotating along a single-axis would be calibrated to remain oriented toward the sun; thus, any unabsorbed light would be reflected back toward the source.

Beyond these general principles of current solar PV technology, a site-specific glare hazard analysis concluded, based on the solar array parameters and the site design, that glare is not predicted from the Project for pilots landing at two airports (Pine Hill Airport and Genesee County Airport) and one heliport (Troop A Headquarters) located in the vicinity of the Project. Further glare from the Project is not predicted to occur for drivers of vehicles on roadways or for residences in and adjacent to the Project. The full glare hazard analysis is attached as Appendix 8-B.

No visible plumes, shading, shadow flicker, or other visual impacts are anticipated during operation of the Project

10) Visual Resources Affected by the Project

Resources of statewide significance were identified within a 5-mile radius of the Project and locally significant visually sensitive resources were identified for the area within 2 miles of the Project. Historically significant resources within 2 miles of the Project are based upon the architectural resources survey produced for the Project (Panamerican Consultants, Inc. 2021).

Aesthetic resources were inventoried in accordance with the New York State Department of Environmental Conservation (NYSDEC) Program Policy DEP-00-2 Assessing and Mitigating Visual Impacts (NYSDEC, 2019), which defines 16 specific types of properties as scenic and aesthetic resources of statewide significance. Visual resources identified by NYSDEC in Program Policy DEP-00-2 are consistent with the types of resources identified in 19 NYCRR Part 900. All sources of data that were used to identify scenic resources within the Study Area are identified in VIA Appendix A. The types of resources inventoried include:

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

Resources of Statewide Significance¹

- A historic resource listed or eligible for inclusion in the State or National registers of historic places
- State Parks
- NYS Heritage Areas (formerly Urban Cultural Parks)
- The State Forest Preserve
- National Wildlife Refuges and State Game Refuges
- National Natural Landmarks
- The National Park System, Recreation Areas, Seashores, and Forests
- Rivers designated as National or State Wild, Scenic, or Recreational
- A site, area, lake, reservoir, or highway designated or eligible for designation as scenic, including NYS Scenic Byways or NYS Department of Transportation equivalent
- Scenic Areas of Statewide Significance
- A State or federally designated trail, or one proposed for designation
- Adirondack Park Scenic Vistas
- State Nature and Historic Preserve Areas
- Palisades Park
- Bond Act Properties purchased under Exceptional Scenic Beauty or Open Space category
- National Heritage Areas

Resources of Local Interest

- Recreation areas, including playgrounds, athletic fields, boat launches, fishing access, campgrounds, picnic areas, ski centers, and other recreational facilities/attractions
- Areas devoted to the conservation or the preservation of natural environmental features (e.g., reforestation areas/forest preserves, wildlife management areas [WMAs], open space preserves)
- Designated bicycling, hiking, ski touring, or snowmobiling trails
- Designated parkways, highways, or scenic overlooks and vistas
- An interstate highway or other high volume (relative to local conditions) road of regional importance

Based upon the inventory, scenic and aesthetic resources of statewide significance in the following categories were identified within the Study Area:

- State WMAs
- State or federally designated trails
- Aesthetic resources of local interest

The results of the desktop inventory of aesthetic resources are presented in Attachment B. Their locations are shown in Figure 5. Visibility Assessment, Visually Sensitive Resources, and Key Observation Points.

¹ The Coastal Area Scenic Areas of Statewide Significance, Adirondack Park Scenic Vistas and Palisades Interstate Park will not be affected by any activities or development in the Project area.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

The majority of national or state Register of Historic Places resources are buildings, churches, and cemeteries. All registered resources are outside of the 2-mile Study Area. A NYS Heritage Area near the Study Area is the Western Erie Canal Heritage Corridor, which is a part of the larger National Heritage Area known as the Erie Canalway National Heritage Corridor. These corridors are very wide, encompassing much of the area surrounding the Erie Canal; however, the nearest part of the actual canalway is over 9 miles away from the Project Site. The Project will not be visible from this resource.

The nearest WMA is the Oak Orchard Wildlife Management Area in the towns of Alabama and Oakfield. This WMA falls within the Study Area and the Project Site boundaries and would be 0.52 miles away from the Project. Within the WMA and the surrounding area are several state designated hiking and snowmobile trails that pass through or near to the Project Site. Aesthetic resources of local interest surrounding the Project primarily include schools, local parks, churches, cemeteries, emergency service buildings.

b) Viewshed Analysis

1) Viewshed Maps

Viewshed maps depicting areas of Project visibility within 2 miles of the Project Site were created to illustrate potential areas of visibility of Project components. The viewshed maps were prepared and presented on a 1:24,000 scale recent edition topographic base map, with areas of “more” or “less visibility” indicated by color shade. Indication of theoretical visibility informed identification of viewpoints for site photography and selection of Key Observation Points used in analysis of Project effects. Methodology used to develop viewshed maps is described in Appendix 8-A, and viewshed maps are included in VIA Figure 5. These maps include landscape similarity zones and distance zones identifying foreground (up to 0.5 miles from the viewer) and middleground (between foreground and 3 miles away) views.

2) Viewshed Methodology

Topographic viewshed maps were prepared using United States Geological Survey Digital Elevation Model data, coordinates, and dimensions of the Project Site layout as proposed, an assumed viewer height of 1.7 meters (5.6 feet), and ESRI ArcGIS® software with the Spatial Analyst extension. The viewshed analysis assumes a maximum height for the Project of 12 feet, the highest point of the solar arrays. The solar arrays were represented in the viewshed model by a polygon consisting of 1,431 uniformly distributed points. In addition, a base vegetation layer was created using the most recent United States Geological Survey National Land Cover Dataset to identify the mapped location of forest land within the Study Area. The mapped locations of the forest land were assigned an assumed height of 40 feet and added to the Digital Elevation Model. The Project substation was under design at the time the viewshed analysis was conducted. Its potential effects are evaluated elsewhere in this VIA but it was not included in the viewshed analysis. The Project includes no new above-ground conductor or transmission lines aside from those between the switchyard and substation (424 feet) and the adjacent POI (223 feet).

3) Potential Viewpoints

Historic properties within the Study Area are identified in VIA Figure 5.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

The primary groups of potential viewers include the following, which are described based on the Federal Highway Administration definitions of neighbors and travelers (FHWA 2015).

Local Residents: Residential neighbors are viewers who live within viewing distance of the Project. Such viewers are located throughout the Study Area, concentrated along arterial and local roads. Their visual preferences tend toward a desire to maintain the existing landscape as it is. Depending on their location, residential viewers are often interested in cultural order and natural harmony, with less emphasis on project coherence unless it impacts their ability to appreciate the other two aspects of visual quality.

Agricultural Neighbors: Agricultural neighbors are farmers of crops or herd animals. They often work in fields and pastures such as those in the Study Area. Some are permanent; many are migratory but may return to the same area again and again over the years. Agricultural neighbors regard cultural order and natural harmony as critical components of the landscape. They are less interested in project coherence.

Recreationists / Tourists: Recreational viewers provide or participate in recreation within the project viewshed. Recreation includes organized sporting events, indoor and outdoor leisure activities, and cultural events. In areas within the Study Area, recreational activities mainly include wildlife watching and use of hiking and snowmobiling trails. The visual preferences of recreational viewers tend to be focused on and associated with their recreational activity. They tend to prefer the status quo and are leery of visual encroachments that may cause adverse effects on the setting of their activity. Depending on the type of recreation, recreational viewers are very interested in cultural order and natural harmony, with some emphasis on project coherence as it impacts their experience traveling to their recreational activity. Tourists travel on a highway, primarily for enjoyment, usually to a pre-determined destination. Tourist trips tend to be more adventuresome, cover longer distances, and take more time than commuting trips. Tourists frequently travel in groups with both a driver and passengers and are equally interested in project coherence, cultural order, and natural harmony. Because tourism in the Study Area is highly dependent on recreational activities, these two viewer types are addressed as a single group here.

Travelers / Commuters: Commuters are regular travelers of the same route and are present throughout the Study Area. The frequency of the travel may vary, but there tend to be peaks—such as morning and evening rush hours and holidays. Commuters, like all travelers, are particularly interested in project coherence. They are also interested in cultural order and natural harmony to the extent that it contributes to wayfinding.

4) Key Observation Points

From the set of viewpoints photographed, Stantec identified seven Key Observation Points (KOPs) that represent the general ranges of viewer sensitivities, landscapes, and land uses in the Project area. These KOPs are viewpoints that:

- Are informed by viewshed mapping;
- Provide open views toward the Project Site from different directions throughout the visual Study Area;
- Represent inventoried aesthetic resources within the visual Study Area;

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

- Illustrate open, representative views from the various LSZs within the visual Study Area;
- Illustrate open views of the Project that may be available to representative viewer/user groups within the visual Study Area; and
- Illustrate the range of visual effects that could result from the Project, including vegetation removal, view obstruction from Project components, and extent of Project in view.

Once potential KOPs were identified, Hecate Energy Cider Solar LLC sent a request to Office of Renewable Energy Siting, the Town of Elba, and the Town of Oakfield, seeking feedback regarding the identification of important aesthetic resources and/or representative viewpoints in the Project vicinity to inform the selection of candidate viewpoints for the development of visual simulations. Hecate Energy Cider Solar LLC provided a memorandum related to recommendations for visual simulations to the visual stakeholders and solicited comments on the viewpoints selected from municipal planning representatives and visual stakeholders that were identified on the master stakeholder list for the Facility. Stakeholder correspondence is presented in VIA Appendix D.

c) Visual Contrast Evaluation

1) Photographic Simulations

Photographic simulations of the Project were prepared from representative viewpoints to demonstrate the post-construction appearance of the Project. Simulations are included in VIA Attachment E.

2) Revised Photographic Simulations

As described in Section (b)(4) of this Exhibit, six representative viewpoints were selected and used for simulations. Vegetative screening is shown where proposed.

3) Simulation Comparison and Visual Impacts

The Project's potential effects on visual resources were assessed by a panel consisting of landscape architects and a community planning professional. The panel was provided contrast rating forms for each of the six KOPs that included general data about the viewpoint location and its vicinity and showed the existing view along with the view with the Project simulated. Panelists assessed existing visual character for the view by describing in terms of form, line, color, and texture the landscape elements that are part of the natural environment (land, water, vegetation, and animals) and the cultural environment (buildings, infrastructure, structures, and artifacts and art). They assessed existing visual quality based on the view's natural harmony, cultural order, and overall coherence, assigning a rating ranging from "very low" to "very high". This assessment of visual quality was replicated for the simulated images showing the Project as it would be seen from each viewpoint. The difference in visual quality rating for each view between existing and proposed conditions established the degree of contrast in visual quality from the Project. In addition, for landscape elements present in views, panelists rated the change in visual character from "none" to "strong."

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

The assessment of effects on visual resources in the VIA summarizes and aggregates panelists’ assessments of changes to visual character and quality to the existing environment with the Project in place. Contrast in visual character is reported where observed by panelists. Contrast in visual quality is reported comparatively, with existing and proposed conditions as assessed for each KOP presented side-by-side. Finally, upon completion of the Landscape Plan, developed to screen portions of the Project in views toward the Project site, panelists qualitatively assessed the extent to which proposed mitigation would minimize identified effects.

The panel’s assessment of visual change when comparing images of existing conditions to those with the Project simulated in views from the six KOPs indicated noticeable contrast. Table 8-3: *Comparison of Visual Quality with and without Project by KOP* summarizes the change in assessed visual quality for each view with the Project included. A summary of the evaluations follows, with assessments of contrast in visual character between existing and proposed conditions reported where observed by panelists. Full analysis is included in the VIA.

Table 8-3: Comparison of Visual Quality with and without Project by KOP

Key Observation Point	Natural Harmony	Cultural Order	Overall Coherence of View
1 – Lockport Road, east of Albion Road / Hwy 9	Moderately High	Moderately High	Moderately High
1 – with Project	Low	Moderately Low	Low
2 – Fisher Road, north of Lockport Road	Moderate	Moderately Low	Moderately Low
2 – with Project	Moderately Low	Moderately Low	Moderately Low
4 – Snyder Road, north of Maltby Road	Moderately High	High	Moderately High
4 – with Project	Very Low	Low	Low
5 – Weatherwax Road, south of Maltby Road	Moderately High	Moderately High	Moderately High
5 – with Project	Moderately Low	Moderately Low	Moderately Low
6 – Quaker Hill Road, south of Lockport Road	Moderately High	High	Moderately High
6 – with Project	Moderately Low	Low	Low
7 – Lockport Road, west of Oak Orchard Road	Moderate	Moderately High	Moderately High
7 – with Project	Low	Low	Moderately Low

Where visible in foreground views, the Project would appear to sharply contrast with its environmental setting in both visual character and visual quality. Reviewers of Project effects identified reductions in visual quality in simulated views from all representative viewpoints within 0.25 miles of the Project. Implementation of a landscape screening plan was observed to reduce contrast somewhat, but not fully mitigate the impacts identified.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

KOP 1 – Lockport Road

With the Project, visual quality in views from KOP 1 would be reduced from moderately high to a range of low – moderately low (VIA Attachment E, Figure 1b). The nearest arrays would appear as close as 170 feet from the viewpoint. Project panels would appear to extend across most of the view and would obstruct views of anything beyond the Project Site all but the right-most portion of the view. The repeating rows of solar panel arrays would become the view's dominant feature.

Reviewers identified strong contrast in visual character related to land, vegetation, and structures. Solar panels would replace the entire agrarian area visible from KOP 1. They would also block views of the natural features that serve to enclose the view along the horizon. The introduction of the solar array structures would introduce a mechanized character that does not currently exist to a view in which no other element appears at such scale or with such uniformity.

With landscape screening installed (VIA Attachment E, Figures 1c and 1d) reviewers noted a reduction, or softening, in the contrast between the natural-appearing existing landscape and the mechanized character of the proposed Project. From this location, vegetation would add vertical, multi-colored elements that intermittently screen solar arrays and relate to the broader visual setting. While not reverting to existing conditions, reviewers observed an improved degree of visual quality compared with conditions with just the Project.

KOP 2 – Fisher Road

With the Project, visual quality in views from KOP 2 would be reduced from a range of moderately low – moderate to moderately low (VIA Attachment E, Figure 2b). The nearest arrays would appear no closer than 0.4 miles away. Project panels would appear from this distance as polygons occupying three separate areas in the distant foreground and extending into the view's middleground, and they would be partially obscured by existing, intervening vegetation.

Reviewers identified moderate contrast related to land, vegetation, and structures. The portion of the Project set atop the slight rise in the landscape in the right of the view appears to alter the existing horizon. While appearing parallel to the natural terrain, the arrays stand out as a structural alteration to the landform in profile. Further, the panel arrays are a new structural element that introduce a new use to the view.

No landscape screening is proposed for this location given the distance between the Project and publicly accessible viewpoints.

KOP 4 – Snyder Road

With the Project, visual quality in views from KOP 4 would be reduced from a range of moderately high – high to a range of very low – low (VIA Attachment E, Figure 4b). The nearest arrays would appear as close as 170 feet from the viewpoint. Except for where a Project access road is proposed, Project panels would appear to extend across most of the view. Their placement here would require the removal of most of the vegetation visible under current conditions and the Project would, except for trees visible in the

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

terminus of the view down the access road and in a stand of vegetation that would be retained along the right edge of the view, become the sole element visible.

Reviewers noted strong contrast related to land, vegetation, and structures. While no landforms would be substantially altered with the Project, nearly all landcover would appear to be replaced by the solar arrays. The varied color and forms, as well as the skyline-defining tree line, would be removed from view, and the uniform, repeating rows of solar array structures would appear across the view. As in other views, the linear pattern of the solar arrays would relate in character to the seasonal row crops that they would replace in views but would be recognizable as permanent structures.

Reviewers observed little improvement in visual quality over proposed conditions with landscape screening installed, despite the re-introduction of natural forms, textures, and colors to the view (VIA Attachment E, Figures 4c and 5d). Project massing would remain dominant even after 15 years of vegetation growth, in part because the gate and road cannot functionally be screened by planting.

KOP 5 – Weatherwax Road

With the Project, visual quality in views from KOP 5 would be reduced from moderately high to moderately low (VIA Attachment E, Figure 5b). The Project would be visible on either side of the road within 0.1 miles of the viewpoint. Panels would appear set back from the roadway but would extend to the left and right edges of the view, suggesting broader development beyond the frame visible. From this slightly elevated viewpoint, the Project would not obstruct visibility of elements visible beyond the Project Site in existing views.

Moderate to strong contrast related to vegetation was observed by reviewers, who cited the replacement of crops with the Project's solar arrays.

Landscape screening visible in the view from KOP 5 would be mainly on the far side of the Project, where it would serve to screen views from residences concentrated along the south side of Maltby Road (VIA Attachment E, Figures 5c and 5d). Reviewers noted the minimal effects from screening along this segment of Weatherwax Road and did not identify any adjustment to levels of visual quality assessed for the view showing just the proposed Project installed.

KOP 6 – Quaker Hill Road

With the Project, visual quality in views from KOP 6 would be reduced from a range of moderately high – high to a range of low – moderately low (VIA Attachment E, Figure 6b). The nearest arrays would appear as close as 175 feet from the viewpoint and extend to tree line along the back of the view. The height of the panels from this proximity and view angle would obscure all buildings visible on the far side of the agricultural fields. The articulated rows of solar panel arrays would recede into a single shape across the landscape toward the back of the view. Collectively, the solar arrays would become the view's dominant feature.

Reviewers noted strong contrast related to land, vegetation, buildings, and structures. In addition to the covering of a detectable landform with a layer of solar array structures and removal of vegetation

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

observed in many other views, the obstruction of the vivid red barn and other farm structures evocative of a rural, agricultural setting.

In this portion of the Project Site, the Landscape Plan emphasizes screening views from residences along Lockport Road. It also includes vegetation to break up the relatively expansive area that would be occupied by the Project (VIA Attachment E, Figures 6c and 6d). Reviewers observed that landscaping produced a negligible change to the degree of visual quality assessed with the Project in place as viewed from this location.

KOP 7 – Lockport Road

With the Project, visual quality in views from KOP 7 would be reduced from a range of moderate – moderately high to a range of low to moderately low (VIA Attachment E, Figure 7b). The nearest arrays would appear as close as 175 feet from the viewpoint, this perpendicular view making the rows of the arrays individually distinguishable and repeating in a row crop pattern represented throughout the broader landscape. A nearby barn would be partially obstructed by the Project, and portions of the tree line that frames the back of the view would be almost entirely removed from view by the arrays that would extend across the view and be its dominant feature.

Reviewers also noted strong contrast related to land, vegetation, buildings, and structures, with a general consensus that the solar array structures appeared inconsistent with the existing buildings and resulted in alteration of the visual character observable under current conditions.

With landscape screening installed (VIA Attachment E, Figures 7c and 7d) reviewers noted a partial mitigation of visual impacts. The trees and plants, which would not completely obstruct views of the Project, would break up the repetitive pattern of the solar arrays that would be dominant in views such close proximity. They would also, in certain areas, obscure existing vegetation visible beyond the Project Site. In general, landscaping in this location would help reduce the contrast between the Project and its more natural-appearing surroundings.

d) Visual Impacts Minimization and Mitigation Plan

The Visual Impacts Minimization and Mitigation Plan is provided as part of Appendix 8-A, Visual Impact Analysis.

1) Advertisements, Conspicuous Lettering, and Logos

No advertisements, conspicuous lettering, nor logos will be included in Project design.

2) Electrical Collection System

Electrical collection lines will be located underground.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

3) Above-ground Transmission Facilities

Above ground structures will be limited to the point of interconnection facilities located west of Graham Road in the Town of Elba. The only overhead facilities will be largely screened from public view by intervening forested vegetation. The overhead facilities include those related to the following actions:

- Existing NYPA's Dysinger to New Rochester 345-kilovolt transmission line will be looped in and out of the proposed switchyard. The loop in and loop out section of new line will be approximately 223 feet.
- A new gen-tie line will be installed to connect the proposed substation with the proposed switchyard. This section of the gen-tie line will be approximately 424 feet.

4) Non-reflective Conductors

The Project includes no new above-ground conductor or transmission lines aside from those between the switchyard and substation (424 feet) and the adjacent POI (223 feet). In this location, conductors will not be visible from public vantage points, however, they will have a non-specular/non reflective surface finish.

5) Wind Turbine Color Requirements

The requirements of this section do not apply to the Project.

6) Shadow Flicker for Wind Facilities

The requirements of this section do not apply to the Project.

7) Glint and Glare Analysis

A glare hazard analysis is attached as Appendix 8-B. The Project would not be a significant source of glare. The site-specific glare hazard analysis concluded, based on the solar array parameters and the site design, that glare is not predicted from the Project for pilots landing at two airports (Pine Hill Airport and Genesee County Airport) and one heliport (Troop A Headquarters) located in the vicinity of the Project. Further glare from the Project is not predicted to occur for drivers of vehicles on roadways or for residences in and adjacent to the Project.

8) Landscape Plan

The proposed Project Landscape Plan is included in the design drawings as a part of Exhibit 5: *Design Drawings* of this Application, prepared for the Project. An overview is included in VIA Figure 6. The simulated views as part of the impact evaluation in Section (c) of this Exhibit reflect application of the Landscape Plan and growth of proposed plantings at 5 and 15 years.

The Landscape Plan includes approximately 38,000 linear feet of screening planting and applies one of two planting modules to selected areas along the periphery of solar arrays throughout the Project Site based on typical duration of views and viewer exposure to the Project. Solid screening, which would install uninterrupted vegetation along particular segments of the Project Site boundary just outside of the

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

fence line, is proposed in areas where viewers are likely to have static or long-duration views of the Project. These viewers are primarily residents who live within the Project Area. Intermittent screening, which would install vegetation intended to interrupt but not completely obstruct Project visibility, is proposed in areas where viewers are likely to be viewing the Project while in motion; primarily, these viewers would be traveling along the roadways adjacent to the Project Site. VIA Figure 6a shows species types and proposed locations of solid and intermittent screening throughout the Project. VIA Figure 6b shows modules for solid and intermittent screening, indicating spacing between plants for each one.

The species included in the Landscape Plan are native, naturalized, and non-invasive species selected for their compatibility with the vegetative character of the Project Area. They include three types of trees – Eastern Red Cedar (*Juniperus virginiana*), White Spruce (*Picea glauca*), and Eastern White Pine (*Pinus strobus*) – and four types of shrubs – Shadblow Serviceberry (*Amelanchier canadensis*), Gray Dogwood (*Cornus racemosa*), Common Ninebark (*Physocarpus opulifolius*), and American cranberrybush (*Viburnum opulus / trilobum*). After 15 years of growth, demonstrated in simulations, the trees would grow to heights between 20 and 30 feet. The shrubs would range from 8 to 27 feet with widths of up to 12 feet.

The intention of the Landscape Plan is to provide variation in views of the Project where it would be visible in high-duration views. Solid screening would serve to obstruct visibility of the most proximate portions of the Project Site but may not entirely block all views toward solar arrays or other components. Intermittent screening would help the Project blend in with its more natural-appearing surroundings, including areas of naturally occurring vegetation and of farmed croplands. The Landscape Plan does not propose screening of the Project substation, which is set beyond two separate rows of trees. This vegetation would screen it in publicly accessible views (see VIA Section 5.4.2.3).

9) Lighting Plan

Project lighting will only be required within or near the Project substation. As indicated in Appendix 5-A: *Civil Design Drawings* in Exhibit 5) and the Operations Site Security Plan prepared for the Project (Appendix 6-A), lighting associated with the Project includes manually activated emergency and security service lighting located at the on-site collection substation. The service lighting will only be activated in the event of an outage or other repair-related event at the substation during nighttime hours. Within the substation a total of approximately four service lights will be installed. The lighting will be mounted at a height of 30 feet near all major equipment such as circuit breakers, transformers, disconnect switches (two lights will be mounted on the structures near such equipment) and will be directed downward toward equipment. In these locations, Lithonia HLF1 fixtures with a lumen output of 30,646 (or similar) will be used. The service lights will only be turned on when Project personnel are performing maintenance; lights will be turned off after repairs are completed. Security lights will also be installed above the door of the control building at the substation and will be manually switched on at night. At the control building, RAB Slim26 fixtures (or similar) with a lumen output of 3,536 will be used. The security lights on the control building will be activated during nighttime hours. Security lighting at the control building will be directed downward and shielded to avoid light trespass and nighttime light pollution impacts. Manually activated security lighting will also be located on 30 foot poles at the entrance gate to the on-site substation (along Graham Road). No nighttime lighting is proposed in the solar array fields. The amount and character of light generated by the Project proposed security lighting will be consistent with other industrial and

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

commercial facilities that may employ similar lighting within the Study Area, including some commercial agricultural facilities and uses within the villages of Elba and Oakfield.

EXHIBIT 8: VISUAL IMPACTS

Matter No. 21-1108

References

Bryce, S.A., Griffith, G.E., Omernik, J.M., Edinger, G., Indrick, S., Vargas, O., and Carlson, D., 2010, Ecoregions of New York (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey, map scale 1:1,250,000.

FHWA. 2015. Guidelines for the Visual Impact Assessment of Highway Projects. (FHWA-HEP-15-029.)

New York State Department of Environmental Conservation (NYSDEC). 2019. Program Policy DEP-00-2: Assessing and Mitigating Visual Impacts. ECL Article 8, 49.

Panamerican Consultants, Inc. 2021. Historic Resources Survey: Two-Mile Zone of Visual Impact Study Area for Proposed Hecate Energy Cider Solar Farm, Towns of Oakfield and Elba, Genesee County, New York. New York State Historic Preservation Office #20PR3191. February.