Visual Impacts Minimization and Mitigation Plan

South Ripley Solar

Town of Ripley
Chautauqua County, New York

Case No. 21-00750

ConnectGen Chautauqua County LLC
A subsidiary of ConnectGen LLC
Phone: (800) 338-8905
Project email: info@southripleysolar.com

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1.0 Introduction

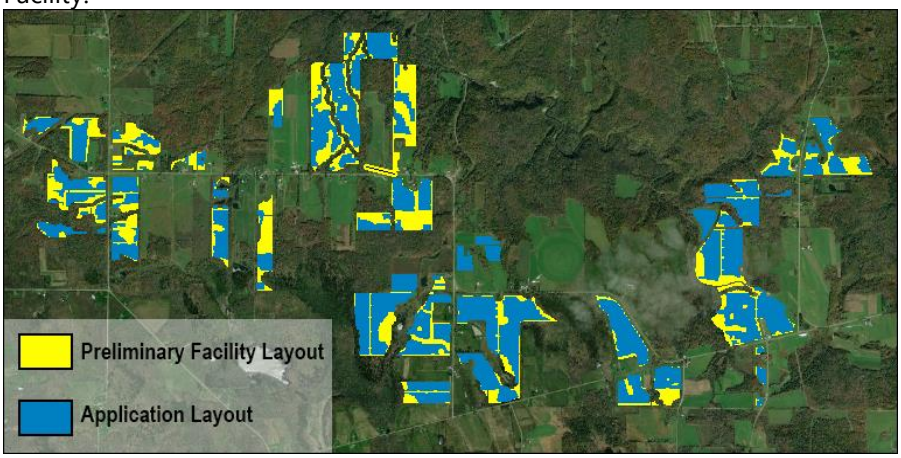
The following Visual Impact Minimization and Mitigation Plan (VIMMP) outlines the various measures proposed by the Applicant to avoid, minimize, and mitigate potential adverse visual impacts associated with the South Ripley Solar Project. The mitigation measures required for consideration by Subsection 900-2.9(d) of the Section 94-c regulations are listed in tabular format, along with an indication of whether they are being proposed, and a brief discussion regarding each proposed measure. Studies and plans that provide more detail, including those required for inclusion by the 94-c regulations, are appended as attachments. These include a Landscape Mitigation Planting Plan (Attachment 1), a Lighting Plan (Attachment 2), and a Solar Glare Analysis (Attachment 3).

2.0 Visual Impact Minimization and Mitigation Plan Table

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
Screening/Landscaping	Y	The Applicant is proposing a variety of perimeter plantings intended to screen or soften views of the Facility. The Landscape Mitigation Planting Plan (Attachment 1) developed for this Project is based on the idea that 100% opaque screening would not appear natural and is not practicable. Introduction of native vegetation in selected perimeter locations will create visual buffers that fit into the context of the existing landscape, mimicking the hedgerows, woodlots and roadside vegetation currently present on and around the Facility Site. As illustrated in the visual simulations and confirmed through the visual contrast rating (See Section 4.2.3 and Attachment D of the Visual Impact Assessment [Appendix 8-A of the Section 94-c Application]) the conceptual planting plans provide effective screening and/or integration of the Facility into the surrounding landscape. The Applicant has developed a comprehensive Landscape Mitigation Planting Plan that uses four different planting schemes (modules) that can be applied along the perimeter of the Facility as appropriate to minimize the Facility's visual effect on the surrounding landscape. In addition, a custom planting plan is proposed to minimize visual impacts resulting from the proposed collection substation, point of interconnection (POI) switchyard, and Battery Energy Storage System (BESS). The Landscape Mitigation Planting Plan was developed as a site-specific solution appropriate to the scale of the Facility, the sensitivity and proximity of surrounding receptors, and the degree of natural screening vegetation already present.
Architectural Design	N	The only proposed buildings are the O&M building within the collection substation (which also acts as the control building) and the control building within the POI switchyard. The proposed control houses will use standard design and materials for a structure of this type. Modest height and neutral colors will minimize visibility and visual contrast.

[1] As listed in 19 NYCRR Subsection 900-2.9 Exhibit 8: Visual Impacts (d).

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
Visual Offsets	N	Correction of an existing aesthetic problem within the viewshed is a viable mitigation strategy for power generation facilities that result in significant adverse visual impact. The South Ripley Facility has been sited in a sparsely populated area with relatively few visually sensitive resources or receptors. The Facility layout includes multiple PV panel arrays separated from one another by woodlots and hedgerows that limit the visibility and perceived size of the Facility. Dissected/rolling topography in the area also serves to limit the extent of Facility visibility (i.e., usually only small portions of the Facility are visible from any given location). The proposed collection substation, POI switchyard, and BESS are located adjacent to an existing transmission line and substation to minimize contrast with existing land use and visual setting. In addition, proposed perimeter plantings further reduce PV panel visibility and help integrate the Facility into the surrounding landscape. Siting and screening of the Facility in this manner serves to limit its visual impact. Consequently, the need for additional off-set mitigation is not anticipated for this Facility. Mitigation such as historic structure protection/restoration/maintenance activities may be undertaken to off-set potential visual impacts on cultural resources, if required by the State Historic Preservation Office (SHPO).
Component Relocation/Rearrangement	Y	The Facility has been sited to avoid or minimize visual impacts to population centers and visually sensitive resources. Due to the screening provided by vegetation and topography, and the relatively low profile of most Facility components, visibility is generally concentrated within 0.5 mile of the Facility. Where open views are available, proposed perimeter plantings will provide additional screening and help integrate the Facility into the existing landscape. Therefore, the current arrangement of components has limited visual impact. Due to the geographic extent of the Facility, the variety of viewpoints from which the Facility could potentially be seen within the Visual Study Area (VSA), and the screening provided by the proposed permitter plantings, relocation of individual PV arrays will generally not significantly alter the overall visual effect of the Facility. Moving individual solar arrays to different sites will not necessarily reduce impacts, but rather relocate them. Additionally, because the Facility layout is restricted to participating parcels and has been designed to accommodate various setbacks from roads and residences, options for relocation of individual Facility components are limited. A discussion of Project setback distances is provided in Section 2.2.1 of the Visual Impact Assessment and Exhibit 24 of the 94-c Application (Local Laws and Ordinances).

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
Reduced Number and Profile (Height) of Facility Components	N	Based on the environmental studies included in the 94-c application, the proposed area of PV array occupation has been reduced from 1,105 acres to 833 acres (see image, below). Generally, this reduction of 272 acres was implemented in response to landowner concerns, environmental restrictions, and visual impacts. In some cases, the setback from public roads was increased by over 1,000 feet. This reduction in the size of the Facility footprint also had the effect of separating larger contiguous PV arrays into smaller, discrete groupings. These smaller PV arrays, combined with the screening resulting from existing preserved woodlots and hedgerows, is effective in reducing the visibility and perceived scale of the Facility.  Further reduction in the number of solar arrays could reduce visual impact from certain viewpoints, but from most locations where the Facility is visible, its visual impact is already being mitigated by the proposed installation of robust plantings along the perimeter of the PV Panel arrays. Consequently, further reduction in the size of the Facility would have only a limited effect on its visibility and visual impact unless a substantial number of PV arrays were removed. The proposed PV modules will use a fixed-tilt mounting system and will have a maximum height of 12 to 13 feet above the ground at their highest point. This meets the requirements of the Town Zoning Law and State regulation and supports the energy generation goals of the project. Components within the collection substation, POI switchyard, and BESS are proposed at the heights necessary to maintain Facility reliability and safety, in accordance with applicable electrical codes and best practices. The equipment will generally not exceed 38 feet in height, with the exception of the four overhead gantry structures which will have a maximum height of 70 feet.

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
Alternative Technologies	N	Aside from the racking being either fixed-tilt or single axis trackers, PV module technology and equipment is fairly standard, and does not offer alternatives that will significantly decrease visual impact. For the Facility Site, single axis tracker would require additional land to meet required Facility capacity.
Facility Color/Design	Y	Facility components generally use standard designs and colors which offer few, if any, alternatives. The neutral off-white color of the inverters presents minimal visual contrast with the surrounding Facility components. The BESS, also off-white in color but larger in size, do present color contrast with the dark, muted color of the surrounding vegetation. However, the visual effects associated with this color contrast are substantially mitigated through the use of vegetative screening. Additionally, visibility of the BESS from the surrounding landscape is expected to be very limited (see Section 5.1.1 of the Visual Impact Assessment). The BESS and associated vegetative screening are illustrated in the simulation from Viewpoint 63s (see Appendix D of the Visual Impact Assessment). The collection substation sound barrier wall also presents visual contrast with the surrounding landscape. Sound barrier walls are generally pre-manufactured in order to meet performance and design standards and are available in a range of materials (such as PVC, acrylic resin, or concrete). As described in section 5.1.1 of the Visual Impact Assessment, visibility of the collection substation is anticipated to be very limited and concentrated in the area immediately adjacent to this component of the Facility. In order to reduce color contrast with the surrounding environment, a concrete wall with a neural color finish and a natural stone texture was selected. Additionally, the visual effects of the wall will be further reduced through the use of vegetative screening (as described in section 5.3.4 of the Visual Impact Assessment). A manufacturer's cut sheet for the sound barrier wall is included in Exhibit 7 of the 94-c Application (Noise and Vibration). The sound barrier wall and associated vegetative screening are illustrated in simulations from Viewpoints 63S and 63SE.
General Facility Lighting	Y	As stated within the Lighting Plan included as Attachment 2, the PV arrays, perimeter fences, and gates of the Facility will not be lit. Some temporary lighting will be installed at construction laydown areas and could be required at some work areas during construction or Facility maintenance. However, the only permanent exterior light sources anticipated at the Facility are safety/security lighting to be installed at the collection substation and associated O&M building, POI switchyard, BESS, and O&M yard. Lighting for the collection substation and POI switchyard will be provided by 263-Watt LED fixtures that are mounted on lighting poles or overhead gantry structures at a height of 30 feet. Lighting for the O&M Building (which will also act as the collection substation control building) will be

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
		provided by 100-Watt LED fixtures that are mounted to the building façade. Lighting for the BESS will be provided 71-Watt LED fixtures mounted on lighting poles at a height of 30 feet. Illumination at the Facilities is designed to comply with applicable state, local, and Section 94-c standards. All proposed exterior lighting will be placed at the lowest practical height and will utilize shielded fixtures with no drop-down vertical elements to minimize light trespass and off-site spillage. Additionally, all lighting will utilize automatic activation dependent on light sensitive switches (with manual activation as a potential alternative) to minimize the duration of required lighting. As mentioned above, temporary lighting may be used during construction for safety and security at staging areas and active work areas. This lighting is designed to maximize visibility and maintain a sufficient level of illumination across large areas. As such, some off-site light spillage is anticipated. The impacts associated with this lighting will be short-term, intermittent, and localized to the construction period and location. FAA hazard lighting is not required for the Facility, due to the lack of structures tall enough to require such lighting, or proximity to airport/runway approaches. Plan and profile drawings of proposed lighting, manufacturer's cut sheets, and additional detail on levels of illumination and the potential for off-site light spillage is described in the Lighting Plan included as Attachment 2.
Minimize Glare	Y	The proposed PV modules will have anti-reflective coatings, but reflected glare is still a potential concern. To evaluate any potential glare impacts at non-participating residences, airports or public roads, a Solar Glare Analysis was conducted using the Sandia National Laboratories Solar Glare Hazard Analysis Tool (SGHAT) model. Potential solar glare exposure that could impede traffic movements or create safety hazards are not anticipated. However, some glare effects are predicted at a limited number of adjacent residences and based on the conservative model projections, may cause temporary annoyance at these locations at certain times. It is anticipated that the proposed vegetative screening will provide a reduction in the potential for glare. In addition, the Applicant will work with residents and stakeholders in responding to concerns should they occur. See Solar Glare Analysis, included as Attachment 3, for additional information.
Prohibit Advertising/Minimize Signage	Y	Other than warning and safety signs, the placement of any signage (including commercial advertising, conspicuous lettering, or logos identifying the Facility owner or PV panel manufacturer), on the Facility will not be used.

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
Underground Electrical Collection System	Y	The Applicant has designed the Project to utilize underground trenched or trenchless solutions for the construction and siting of the medium-voltage electric collection lines to minimize tree clearing and the potential visual impact of overhead lines to the surrounding area wherever technically feasible. Of the 26.2 miles of electric collection circuits, 82.4% are sited underground. See Exhibit 5 of the 94-c Application (Design Drawings) for additional detail on the Project's electric collection system.
Aboveground Electrical Collection System Pole Structure	Y	Approximately 4.6 miles of overhead collection lines are proposed in locations based upon landowner constraints and where underground burial is not feasible or would result in adverse environmental impacts that could be avoided or minimized by installing an overhead line. As described within Exhibit 14 of the 94-c Application (Wetlands) and Appendix 11-E (Iterative Revision Log), the proposed collection line route was identified as the only location in which electrical collection lines could connect the eastern and western halves of the Project while incorporating participating landowner constraints. The proposed collection lines crossed a number of major wetland features along this route where trenchless boring is not feasible because the cable bore lengths would begin to exceed 1,000 feet. Limiting the overhead collection to only these wetland areas and switching between underground and overhead collection was identified as not feasible by the Applicant due to electric losses and increased cost. Additionally, trenching installation of underground lines would require significant wetland impacts and tree clearing in excess of the potential impact due to overhead pole placement. An easement of approximately 150-200 feet would be required for the underground siting of the collection route, while the overhead siting only requires approximately 75 feet easement width at most locations. A smaller 665 ft overhead line was required over Twentymile Creek due to the complex grade surrounding the water feature, environmentally sensitive resources associated with the stream crossing, and the subsurface conditions of the creek bed. Overhead lines for the South Ripley Facility are proposed to be located in a sparsely populated area and will be seen by relatively few viewers. Potential visibility and visual impacts associated with the overhead collection line are described in sections 5.1.1 and 5.3.4 of the Visual Impact Assessment, respectively. Additionally, the overhead collection line is illustrated in Viewpoint 44 (see Attachment D). Where visible, the overhead lines will be similar in appearance to existing roadside utility lines, using wood poles or steel pole structures that are either self-weathering or have a dark brown, green, or other neutral earth tone color with a non-glare finish.

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
Non-specular Conductor and Non-reflective Finishes	Y	Solar panels are specifically designed to absorb as much direct light as possible, which is achieved using a non-reflective coating on each panel. Metallic surfaces (e.g., PV racking system and non-intrusive substation equipment) may be reflective at first but are expected to dull quickly with exposure to the elements. All overhead electrical lines will use non-specular conductors.

Attachment 1

Landscape Mitigation Planting Plan

Attachment 2

Lighting Plan

Attachment 3

Solar Glare Analysis