Visual Impact Minimization and Mitigation Plan – Revision 1

North Seneca Solar Project

Towns of Junius and Waterloo, Seneca County, New York

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Revision 1

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1.0 Introduction

The following Visual Impact Minimization and Mitigation Plan (VIMMP) outlines the measures proposed or considered by North Seneca Solar Project, LLC (the Applicant) to avoid, minimize, and mitigate potential adverse visual impacts associated with the proposed North Seneca Solar Project (the Facility), a utility-scale solar energy project with a generating capacity of up to 90 megawatts (MW) located in the Towns of Junius and Waterloo, Seneca County, New York. This report was prepared in support of the Facility's review under Chapter XVIII, Title 16 of New York Codes, Rules, and Regulations (NYCRR) Part 1100, Section 1100-2.9 and Article VIII of the New York State Public Service Law (hereafter referred to as Article VIII). This document is supported by the Visual Impact Assessment – Revision 1 (VIA; Appendix 8-A), which assesses the potential visual effects associated with the Facility including the mitigation measures incorporated into the Facility's design. The mitigation measures required for consideration by 19 NYCRR Section 1100-2.9(d) are listed and discussed in tabular format below, along with an indication of whether they are being proposed. Studies and plans that provide more detail are appended as attachments. These include a Conceptual Landscape Mitigation Planting Plan – Revision 1 (Attachment A), Light Fixture Cut Sheets (Attachment B), and a Solar Glare Analysis – Revision 1 (Attachment C).

2.0 Visual Impact Minimization and Mitigation Plan Table

Potential Visual Mitigation Measure[1]	Proposed (Y/N)	Notes/Discussion
Screening/Landscaping	Y	EDR has developed a Conceptual Landscape Mitigation Planting Plan (see Attachment A) that uses four distinct planting schemes (modules) that are applied along the perimeter of the Facility to screen and/or soften the appearance of the Facility in views from the surrounding area. The four planting modules proposed include the following: Module 1 - Intermittent Screening, Module 2 - Intermittent Screening/Medium Density, Module 3 - Comprehensive Screening, and Module 4 - Sensitive Area. This plan includes information on the planting modules that were developed for various locations, site constraints, and viewing conditions; an overall plant list; a map illustrating the proposed planting module locations; and plant installation requirements. All of supported the Facility's compliance with the Town of Waterloo's screening provision at §134.6.B(4)(k). Locations of the planting modules are also included in the Site Layout Plan (see the Appendix 5-A – Revision 1 of the Article VIII Application). Proposed mitigation plantings are depicted at installation and after five to seven years of growth under leaf-on and leaf-off conditions in all photosimulations where such plantings are proposed (see Attachment D and H of the VIA – Revision 1). To evaluate anticipated visual contrast associated with the proposed Facility, the photosimulations were compared to photographs of existing conditions by a rating panel of visual professionals. For additional

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

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		information on the rating panel evaluation process and results, see Section 4.2.3 and 5.2.1 of the VIA. The rating panel results suggest that the proposed mitigation was most effective in reducing visual contrast when the plant material provided effective screening of large portions of the Facility without screening/blocking distant landscape features, or when they introduced a new aesthetic feature into the view that provided additional interest. The plantings were least effective in locations with environmental constraints and in long distance views where only a small portion of the PV arrays are screened. However, it is likely that the benefits of these plantings will increase over time as plant height and density increases. Based on the results of the VIA and rating panel evaluation, the planting plan has been updated to improve the effectiveness of the plantings in screening/softening views of Facility from sensitive locations and lessening potential visual impact on local residents and tourists/recreational users. These changes include shifting the locations of the proposed plantings closer to the perimeter fence line along Ninefoot Road to increase the effectiveness of the mitigation plantings in views from the roadway and from Quaker Cemetery (VSR ID # 39). To illustrate these proposed changes, an updated photosimulation for Viewpoint 41 was prepared and is included in Attachment H of the revised VIA (see sheets 25-36 of Attachment H). Additional plantings are also proposed along the perimeter of the Farmstead at 1067 Route 96 (VSR ID # 33). Module 4 is proposed in this location to maintain the agricultural context of the resource, while screening/softening the view of the Facility. These plantings would not be visible from Viewpoint 13 and therefore updated photosimulations from this viewpoint were not prepared. However, it is expected that these additional plantings would provide some increased softening of the views of the Facility that are available from ground-level vantage points within this resource and along State Route 96.
Architectural Design	N	The proposed buildings associated with the Facility are the control enclosures within the point of interconnection (POI) substation and collection substation (collectively referred to as the interconnection facility in the VIA) and the storage trailer located off Ninefoot Road in the Town of Waterloo. As indicated in sheets 601-01 to 701-06 of Appendix 5-B, two control buildings, each approximately 14 feet 6 inches in height and clad in

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		beige standing seam metal siding, are proposed with the POI substation and collection substation. The building in the collection substation is 28 feet long by 14 feet wide, and the building in the POI substation is 40 feet long by 20 feet wide. The storage trailer will be approximately 52 feet long by 8 feet wide by 8.5 feet tall and clad in metal siding that is painted a beige/earth tone color. These buildings utilize standard design and materials for structures of these types, and their neutral color will generally result in minimal color contrast when viewed against the surrounding vegetation. To evaluate potential visual effects associated with the interconnection facility and storage trailer, a photosimulation was produced from Vient 26. This viewpoint was selected because it represents the most open, unobstructed view that is anticipated to be available. As demonstrated in this photosimulation, the gantry structures and other components within the substations will be the primary visible components that contribute to the visual effects of the interconnection facility. The control buildings and storage trailer are a minor component of the interconnection facility and do not significantly contribute to the overall visual contrast of the Facility. Additionally, the landscape mitigation plantings proposed along the perimeter of the Facility would provide reasonably effective screening of the control buildings which reduces their visual contrast with the existing landscape. Due to the limited extent of visibility and visual effects associated with the control buildings, additional mitigation measures intended to further improve the architectural design of these buildings are not proposed.
Visual Offsets	N	A visual off-set measure is the correction of an existing aesthetic problem to compensate for a project's visual impact. An example of a visual offset measure is the removal of an existing abandoned structure or the protection/restoration of a recreational facility near a proposed project to offset its visual impact. This mitigation strategy is employed when significant residual impacts remain after other mitigation strategies (landscape mitigation, architectural design improvement, etc.) have been implemented. As described in this VIMMP, the Applicant is proposing several mitigation strategies to minimize or mitigate visual contrast associated with the Facility, including extensive landscape mitigation plantings. In addition, the New York State Office of Parks, Recreation, and Historic Preservation (NYSHPO) requires the identification of mitigation projects to offset potential visual effects to aboveground

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		historic resources for the Facility. Offset measures may include the improvement or restoration of historic structures, or nomination for listing properties eligible for the State/National Register of Historic Places (S/NRHP). As discussed in Exhibit 9, Section C, in accordance with Section 1100-10.2(g) of the Article VIII regulations, the Applicant will complete a Cultural Resources Avoidance Minimization and Mitigation Plan (CRAMMP) as part of the Pre-Construction Compliance Filings.
Component Relocation/Rearrangement	N	The Facility has been sited on lightly populated agricultural land, which minimizes visual impacts to population centers and visually sensitive resources in the region. As discussed in the VIA – Revision 1, limited visibility of the PV panels and interconnection facility from the surrounding area is anticipated due to its location on generally flat topography and the presence of abundant vegetation screening. Viewshed analysis indicates that the Facility will be entirely screened from high density residential areas within and near the Village of Waterloo and substantial visual effects will be limited to a small number of the 45 visually sensitive resources identified in the visual study area. The Facility layout is restricted to participating parcels and has been designed to comply with state and local setbacks from roads, residences, and sensitive environmental features, such as wetlands. Environmental and engineering constraints, such as steep slopes, wetlands, streams, archaeological sites and avian habitat avoidance areas, as well as landowner development restrictions, were significant factors in developing the Facility layout. These constraints are discussed in Exhibit 2 and presented in Figure 2-3 Revision 1. Therefore, options to relocate/rearrange individual Facility components within the participating parcel boundary are limited and are unlikely to significantly reduce the overall visual impacts of the Facility.
Reduced Number and Profile (Height) of Facility Components	N	The PV panel configuration proposed for the Facility and assessed in this VIA are in a "one-in-portrait" configuration, meaning that a single row of panels is fixed on the racking system in portrait orientation. This configuration is advantageous because it results in a low-profile and reduced visibility compared to other common configurations, such as two-in-portrait. Two-in-portrait configurations (and other configurations that result in greater heights than one-in-portrait) may allow for a significantly smaller footprint to achieve the same energy production as the currently proposed layout/configuration. However, these configurations would result in a larger Facility viewshed and could result in greater

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		scale contrast when viewed from nearby vantage points due to the increased panel height. The resulting increase in visual impacts to the surrounding area would offset any advantage provided by a smaller footprint.
Alternative Technologies	N	Solar energy generation technology and equipment are fairly standard and do not offer variations in colors, material or panel design that would significantly decrease visual impacts. Alternative technologies for power generation, such as wind power or gas-fired generation facilities, would have different, and possibly more significant, visual impacts than solar. The Applicant is committed to utilizing the most efficient solar technology practicable. Agricultural fencing is proposed for the Facility, which will result in lower visual contrast and is more appropriate/less obtrusive in agricultural settings than galvanized steel post and chain link fencing.
Facility Color/Design	N	The PV system racking and PV panels, which are the major visible component of the Facility and result in the greatest extent of visibility and visual impacts, have specific engineering requirements related to their design and materials that must be adhered to in order to meet the performance standards of their intended use. Alternate panel colors do not exist, and there is minimal flexibility in the use of alternative design and materials for the racking system. Other more minor components of the Facility, such as the inverters, are also fairly standardized in their design and/or materials with few alternatives. Weathering steel or chemically dulled galvanized steel are often proposed as an alternative to specular galvanized steel to reduce visual contrast. This is a fairly common practice for certain substation components and transmission or collection line pole structures. Chemical dulling of galvanized substation equipment is considered unnecessary because this equipment has a low profile which limits its visibility within the VSA. In addition, natural oxidation and weathering will reduce the specular profile of the galvanized steel materials over time. As indicated Appendix 5-A, sheets 902-01 and 903-01, self-weathering steel or wood is proposed for the six transmission structures as required by Article VIII regulations. However, weathering steel is not an appropriate alternative for a solar panel tracking system due to the movement required for steel members that comprise this system and for other electrical components of the collection substation and POI substation that consist primarily of galvanized steel.

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		Beige standing seam siding is proposed for the control houses within the POI substation and collection substation and the storage trailer. The control houses and trailer utilize standard design and materials for structures of these types, and their neutral color will generally result in minimal color contrast when viewed against the surrounding vegetation.
General Facility Lighting	Y	Some temporary lighting (i.e., task lighting) will be utilized in the construction laydown area and could be required at some work areas during construction. This lighting is designed to maintain a sufficient level of illumination to safely conduct construction activities. As such, some off-site light trespass is anticipated during the construction period. The impacts associated with this lighting will be short-term, intermittent, and localized to the construction location. Task lighting will not exceed the maximum total outdoor lighting output based on Occupation Safety and Health Administration (OSHA) Limits. The permanent light sources proposed at the Facility are safety/security lighting to be installed at the site of the collection substation and POI substation. These Facility components will utilize full cut-off light fixtures with no drop-down optical elements. In these areas, lighting will be kept to the minimum intensity required to assure safety and security. Additionally, all lighting will be operated manually or placed on an auto-off switch to further minimize the impacts of off-site light trespass. The lighting system has been designed to meet applicable state and local standards. A photometric plan that shows the proposed light fixture locations and a luminaire schedule is provided in sheets 710-01 of Appendix 8-B – Revision 1, and elevation drawings with the light positions are provided in sheets 701-02 to 701-06 of Appendix 8-B. As indicated in the plan and profile drawings included in this appendix, light fixtures will be mounted to the static mast poles and gantry structures at an elevation of 28 feet, and wall-pack light fixtures will be mounted to the control building exterior at an elevation of 10 feet. No light fixture is proposed to be mounted to the storage trailer. Light fixture manufacturer cut sheets are included in the appendix and Attachment B of this appendix.
Minimize Glare	Y	To assess the potential of reflected glare and glint from the proposed PV panels at sensitive observation points (such as residences and commercial buildings, airports, and roadways) surrounding the Facility, a glare analysis was conducted by the Applicant (see Attachment C – Revision 1). This analysis was conducted using Sandia

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		National Laboratories Solar Glare Hazard Analysis Tool (SGHAT) methodology. This analysis addressed the entire two-mile radius VSA and considered glare received at ground level as well as first and second story windows of residences. The results of this analysis indicate that none of the potentially sensitive receptors will receive glare associated with the PV panels. Because the Facility is not anticipated to result in any glare impacts to identified receptors, no impact avoidance or mitigation measures are necessary.
Prohibit Advertising/Minimize Signage	Y	The placement of any signage (including commercial advertising, conspicuous lettering, or logos identifying the Facility owner, PV module manufacturer, or any other supplier entity), other than those required for public safety and security, will be prohibited at the Facility.
Underground Electrical Collection System	Y	No overhead collection lines are currently proposed within the Facility Site. The only overhead conductors will include a short length of overhead transmission (gen-tie) line that will connect the Facility to the existing National Grid 115-kilovolt (kV) transmission line transmission line.
Non-specular Conductor and Non-reflective Finishes	Y	It is anticipated that the overhead transmission line will utilize non-specular conductors. The PV modules are designed to absorb as much of the solar spectrum as possible to maximize efficiency. The proposed PV modules will have at least one anti-reflective coating to minimize reflection and maximize absorption. Metallic surfaces (e.g., PV racking system and collection substation equipment) may be reflective at first but are expected to dull over time with exposure to the elements. In addition, because the racking system is beneath the PV panels, it will typically be shaded and have limited opportunity to reflect sunlight.