

VISUAL IMPACT STATEMENT

ELLIS TRACT SOLAR PROJECTS

Location of Proposed Activity:

Turkey Hill, Dodge Road and Stevenson Road areas,
Town of Dryden, NY

Prepared for:
SUN8 PDC LLC
c/o Distributed Sun LLC
601 13th Street NW
Suite 450 South
Washington, DC 20005

Labella Number: 2170026

April 12, 2017

LABELLA
Associates, P.C.

105 North Tioga Street,
Suite 200
Ithaca, NY 14850
(607) 319-4136
www.labellapc.com

Project Name and Location:

Ellis Tract Solar Projects - Multiple 2MW Solar PV Arrays
Town of Dryden, NY

Tax Map reference numbers:

38.-1-3.1
56.-5-31
57.0-1-6
57.0-1-7.1
67.0-1-3
67.0-1-4
67.0-1-7.2
67.-1-27.2

Developer Name and Address:

SUN8 PDC LLC
c/o Distributed Sun LLC
601 13th Street NW
Suite 450 South
Washington, DC 20005

Contact:

Bharath Srinivasan,
Senior Vice President of Operations
Bharath@distributedsun.com

Introduction

SUN8 PDC LLC has proposed to construct and operate solar photovoltaic arrays in the Town of Dryden in Tompkins County, New York as part of New York State’s Community Distributed Generation program. As part of this proposal, SUN8 has proposed solar arrays in the areas north of Stevenson Road, west of Turkey Hill Road, and east of Dodge Road owned by Cornell University, and referred to collectively as the Ellis Tract. SUN8 is also proposing a separate solar project at 2150 Dryden Road on property owned by Scott Pinney.

Labella Associates, D.P.C. has been engaged by SUN8 to perform engineering services, including a visual impact assessment, for the Special Use Permit application in the Town of Dryden. This report provides supplemental information to the Special Use Permit application, specifically on visual impact.

Guidelines

The New York State Department of Environmental Conservation published the Program Policy document titled Assessing and Mitigating Visual Impacts (DEP-00-2) on July 31, 2000. The document provides guidance on methodology to assess visual impacts. The DEC describes the procedure to verify the inventory of aesthetic resources, verify the visual assessment using graphic and line-of-sight analyses, determine the significance of the impact, and confirm reasonability or propose mitigation. This impact statement follows above-mentioned guidelines.

Description of Proposed Solar Arrays

The proposed solar arrays use PV panels. A typical PV panels measures 77” by 39”. The panels are made of silicon cells, enclosed by glass on the top and an off-white polymer back sheet. Several PV panels are mounted on to a metal rack. The rack is made of galvanized steel and aluminum components. The modules are securely fastened to the racks using bolted clips. The entire structure is designed to meet all applicable safety and code requirements. The components are expected to have a 30+ year operational lifetime. Wiring within the array fence is secured underneath the PV panels, or buried in a trench. After construction, a carefully chosen seed mix is used to ensure good ground cover. The lower edge of the rack will be 24 inches off the grade and the higher end will be 8 ft off the grade. No significant grading is proposed.

A fence is required by the national electric code for safety and security. The components within the array are valuable both for secondary use and for scrap value. The arrays operate at 1000V and are required to be fenced to allow access only to qualified personnel. SUN8 also proposes to use sheep for grazing and maintaining the vegetative cover on the ground – these sheep need to be contained and protected from predators. The proposed fence is a 7-foot high (6-ft fence with string wire on top) woven wire fence on wood posts (also called an agricultural fence). No barbed wire or razor wire is being proposed.

The low profile of the solar arrays (8ft) does not impose a significant impact on the view shed. The view of the horizon is not affected because of the low profile.



Photo showing a neighbor’s view shed from a recently installed solar array in Ledyard, NY.

Ellis Tract Project Locations

Labella reviewed the tax parcels 56.-5-31, 57.0-1-6, 57.0-1-7.1, 67.0-1-3, 67.0-1-4, 67.0-1-7.2 and 67.-1-27.2 to verify whether they were on the listed DEC databases for visual inventory. No registered, public view sheds were listed on the DEC inventory for these properties.

Views from road-side vantage points

Locations of existing view/vantage points are provided below.

	
<p>View looking west from Turkey Hill Rd towards arrays N5.</p>	<p>View looking NE from Stevenson Rd, towards Turkey Hill Road.</p>
	
<p>View looking north from Stevenson Rd towards proposed arrays N4 and N5</p>	<p>View looking north, and north east on Dodge Rd towards the western edge of proposed arrays S2 and S3</p>
	
<p>View from Dodge looking NE looking towards proposed array S3</p>	<p>View from Turkey Hill Rd looking SW towards proposed array S5</p>

The above photos capture the view points on Stevenson Road, Turkey Hill Road and Dodge Road. The low profile of the structures will not impact views from any viewpoints at a distance.

To minimize the view shed concern the following mitigation measures are proposed:

1. Native evergreen plantings (designated as non-invasive in NY), less than eight feet tall at planting, on the east side of Dodge Road and immediately west of the array fences of S1, S2, and S3. This

- recommendation is in accordance with 1.a of the DEC guidelines. The plantings are being chosen from species recommended by Cornell's Botanic Gardens.
2. Native evergreen plantings (designated as non-invasive in NY), less than eight feet tall at planting, on the west side of Turkey Hill Road and east of the array fence of N5. This recommendation is in accordance with 1.a of the DEC guidelines. The plantings are being chosen from species recommended by Cornell's Botanic Gardens.
 3. Maintaining an average height of 8ft, the top of the panels and 7ft high woven wire fence. This recommendation is in accordance with 1.d of the DEC guidelines.
 4. Alternative technologies. Labella notes that unlike cooling towers at thermal power stations or wind turbines, solar arrays do not pose a view shed concern from afar.
 5. Setbacks, buffers and offsets. (per Note 3 in the DEC workbook)
 - a. Array N5 is 250+ feet away from the centerline of Turkey Hill Road. A vegetative buffer is proposed 100 feet away from the centerline of Turkey Hill Road.
 - b. Per the request of Tim Ressler of the Ressler Living Trust, two hickory trees are not being cleared (within array N5); this is accommodated by removing trees in the Ressler's back yard and relocating the panels around the hickory trees. This needs to be memorialized in writing with the Ressler Living Trust.
 - c. Array S1 is being set back from the edge of Dodge Road by 65 feet.
 - d. Array S2 (in front of the Appel and Miller residences) are being set back to be 250 feet away from their respective homes. Per #1 above, a vegetative buffer is being proposed to shield array S2 from the homes and from the road. In addition, 5 evergreen trees of the Burki Juniper variety will be planted on the east side of Dodge Road, within 10 feet of the NYSEG easement, opposite to the neighboring homes.
 - e. Array S3 is set back to a minimum of 100 feet away from the Dodge Road. Per #1 above, a vegetative buffer is being proposed (outside the fence) between Dodge Road and the fence to shield array S3 from the homes and from the road. A vegetative buffer is also proposed outside the fence between the array and the gas line to the south to shield homes.
 - f. Array S5 is set back from the neighboring property by at least 100 feet. A vegetative buffer is proposed to screen the array from that property.

Solar Glare Hazard Analysis

A glare analysis was performed using SGHAT, a web application published by Sandia National Laboratories. Data was input into the SGHAT, including the fact that the specified modules have an anti-reflective coating, the 8ft top-elevation metric, the 20° tilt, and the site layout over a web-based mapping program. The program uses the input data of photovoltaic structural design and determines the effect on a human pupil based on a clear-sky sun. Several vantage points in the neighborhood of the array were analyzed, all at 6ft above ground surface elevation, approximating the height of an above-average person.

The results provided by the SGHAT are included in Table 1, below. SGHAT provides its output in three categories: low potential for temporary after-image, potential for temporary after-image and potential for Permanent Eye Damage – no vantage point was found to have objectionable glare from the solar arrays. It should also be note that the SGHAT performs analysis with publicly available topographic data, but it assumes no existing or proposed vegetation in between the array and the vantage point. The analysis was

performed for the northern arrays (N1-N5) as a group, S1-S3 as a group and S4-S5 as a group. The analysis does not distinguish between direct sunlight and reflected sunlight when the sun is visible through the space between the rows (east-west line in the space between a norther and southern row of panels)

Table - SGHAT Results of vantage points surrounding arrays at the Ellis Tract

Description of Vantage Point Location	Latitude (°N) Longitude (°W)	Result Type	Sensitive Time of Day	Sensitive Time of Year
House at 344 Turkey Hill	42.4354301178 76.4286983013	Low potential	Prior to sunset, 15 min. window	Apr. – Oct.
House at 78 Dodge Road	42.4379321976 76.442181766	Potential for temporary after image	5:45am to 6:45am	Mar. – Oct.
House at 74 Dodge Road	42.4371819467 76.4424231648	Potential for temporary after image	5:45am to 6:45am	Mar. – Oct.
House at 200 Stevenson Road	42.4450896885 76.4294654131	Low potential	5:45pm to 6:30pm	Apr. – Sep.
Standing on Stevenson Road (N4-N5)	42.4446146624 76.4341378212	Low potential	5:45am	Jun. – Jul.
Standing at on Turkey Hill Road (N4-N5)	42.4477497677 76.429245472	Potential for temporary after image	5:30pm to 6:00pm	Feb. – Oct.

For the houses on Dodge Road, the tool does not account for the existing vegetation to the east of the proposed solar arrays, or the new vegetation proposed on the west of the solar arrays. During the hours of 5:45 – 6:45 am (Mar – Oct), the elevation of the sun is at an angle lower than the height of the existing vegetation (east of the proposed arrays).

For the Turkey Hill Road vantage point, the elevation of the sun during the hours 5:30 – 6:30pm is likely to produce intense with or without the solar arrays – as the viewer would be looking directly at the sun. A new vegetative barrier is being proposed 100 ft. from the centerline of Turkey Hill Road to mitigate any impact from the N4-N5 solar arrays to viewers from Turkey Hill Road. A line of sight diagram from Turkey Hill Road is provided to further illustrate this.

Conclusion

Labella Associates, D.P.C. has performed an assessment of visual impact per the guidelines of the DEC’s Assessing and Mitigating Visual Impacts guidance document. Based on the proposed changes in the layout, setbacks, vegetative screens, the visual impact from the solar arrays can be effectively mitigated.

EXHIBIT TO VISUAL IMPACT STATEMENT ON ELLIS TRACT PROJECTS

PROFILE VIEWS SHOWING POTENTIAL LINES OF SIGHT

NOT FOR CONSTRUCTION

It is a violation of New York Education Law Article 145 Sec.7209, for any person, unless acting under the direction of a licensed architect, professional engineer, or land surveyor, to alter an item in any way. If an item bearing the seal of an architect, engineer, or land surveyor is altered; the altering architect, engineer, or land surveyor shall affix to the item their seal and notation "altered by" followed by their signature and date of such alteration, and a specific description of the alteration.

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SOLAR PHOTOVOLTAIC PLANTS



sun8 PDC LLC

DISTRIBUTED SUN

ELLIS TRACT PROJECT

DRYDEN, N.Y. 13053

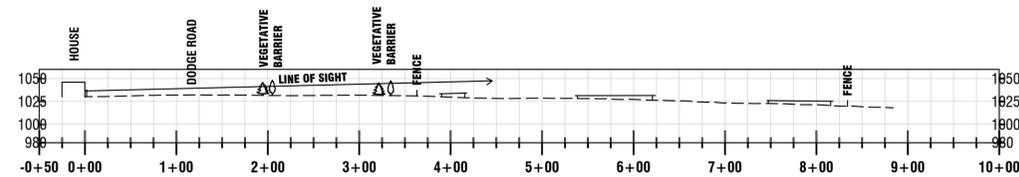
REVISIONS		
NO.	DATE	DESCRIPTION
PROJECT NUMBER: 2170026		
DRAWN BY: TAP		
REVIEWED BY:		
ISSUED FOR:		
DATE: 04/12/2017		
DRAWING NAME:		

GROUP "S" LINE OF SIGHT

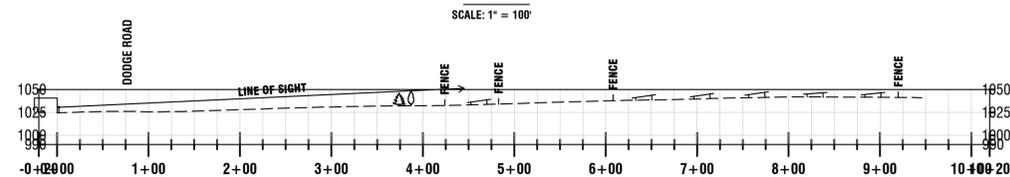
DRAWING NUMBER:



PLAN
SCALE: 1" = 100'



LINE OF SIGHT MILLER
SCALE: 1" = 100'



LINE OF SIGHT APPEL
SCALE: 1" = 100'