



Glare Analysis Report

**ASD Shutesbury MA Solar LLC
Shutesbury Road, Amherst, MA**

Submitted to:

Town of Amherst
4 Boltwood Avenue
Amherst, MA 01002

Prepared for:



ASD Shutesbury MA Solar LLC
c/o AMP Solar Development Inc.
518 17th Street, Suite 950
Denver, CO 80202

Prepared by:



Verdanterra
601 Technology Drive, Suite 200
Canonsburg, PA 15317

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Prepared by:

*Stephen M. Loss, P.E.
Massachusetts P.E. No. 53021*

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1.0 INTRODUCTION

This Glare Analysis Report was prepared using ForgeSolar software on behalf of ASD Shutesbury MA Solar LLC (ASD). This report provides the potential and intensity of glare at specific user selected observation points and routes located near the proposed Solar Generation Facility (SGF).

The ForgeSolar software provides a quantified assessment of when and where glare will occur throughout the year for a prescribed SGF and potential effects on the human eye at locations where glare occurs. The software uses georeferenced data to determine sun position in relation to the proposed SGF and calculates potential for glare at one-minute intervals over the course of a year. Additional information regarding the orientation and tilt of the PV panels, reflectance, environment, and ocular factors are entered by the user. The output includes potential “green glare” (lower intensity and low potential for after image) and “yellow glare” (potential for after image). **Note that output from the ForgeSolar does not account for obstructions between solar panel and receptors and assumes clear, sunny conditions year-round. As such, it can be considered a conservative estimate of potential glare.**

2.0 PROJECT INFORMATION

The proposed SGF consists of a proposed single-axis tracker ground mounted photovoltaic solar facility on portions of parcels (DB 1213. Pg. 346 Parcel 9B-12; Parcel 9D-27; and Parcel 9B-11) totaling 102.48 acres in size and located along Shutesbury Road in the Town of Amherst, Hampshire County, Massachusetts.

The proposed SGF is sized as an approximately 9.35-megawatt (MWdc) ground-mounted solar array system. The SGF area will be accessed by constructing a gravel road that extends from the proposed array area to Shutesbury Road.

3.0 PROJECT INPUTS

The ForgeSolar software allows for modeling of glare at discrete locations including observation points and routes.

3.1 Observation Points

Locations of several observation points were chosen for this study. Observation points OP1 – OP12 represent neighboring residences to the west and northwest of the proposed SGF that are relatively close to the project boundary. The elevation at each point was set as five (5) feet above the ground which is typical eye level.

3.2 Routes

The route along Shutesbury Road was modeled as it is the closest two-way roadway to the project. The elevation of the receptors along this route were set at three and a half (3.5) feet which is the typical eye level of a passenger vehicle. The view angle along this route was set at 50 degrees. FAA research suggests glare outside of 50 degrees has no impact on the receptor.

3.3 Glare Analysis Model Inputs

Model parameters and corresponding site-specific values are included in Table 1.

Table 1 – Model Parameters

Parameter	Unit	Value	Notes
PV System		Single-axis tracker	
Tracking Axis Orientation	Degrees	180	North / south orientation
PV Axis Tilt	Degrees	0	Typical value for single-axis tracker
PV System Maximum Tracking Angle	Degrees	60+/-	Provided by PV Designer
Resting Angle	Degrees	0 (Snow – 40)	Provided by PV Designer
Panel Surface Material		Smooth glass with anti-reflective coating	
PV System Height Above Ground	Feet	8.4	Provided by PV Designer
Height of Observation Points	Feet	5	Eye level of an observer in the first story of each dwelling.
Height of Route Receptor	Feet	3.5	Eye level in a passenger vehicle
Route Receptor Field of View	Degrees	50	Field of view left and right along the chosen “route”

4.0 CONCLUSION

The full results of this analysis are included in Appendix A.

With the rest angle set at 40 degrees, the analysis has concluded that no glare is predicted at any of the observation points at residences or along the chosen section of Shutesbury Road at any time throughout the study period.

With the rest angle set at 0 degrees, the analysis has concluded that glare is predicted (geometrically possible) for brief periods of time at observation points 1,7 and 9-12 and for 0.1

hours along Shutesbury Road. **However, the glare analysis performed by the ForgeSolar software does not consider obstacles (either man-made or natural) between reflectors and receptors. This includes buildings, tree cover and geographic obstructions. The areas between the SGF and the observation points and route contain topography and thick stands of mature trees (a minimum of 212' from the perimeter security fence to the rear property lines of all residences) that eliminate the potential for glare in all the potential instances noted in the results. No further mitigation is required.**

APPENDIX A

FORGESOLAR SOFTWARE OUTPUT