# SGHAT V. 4.0
# SOLAR GLARE HAZARD ANALYSIS TOOL


**Technology Readiness Level: 8**
*Actual technology is completed and qualified through test and demonstration*

Sandia's Solar Glare Hazard Analysis Tool (SGHAT) has been used across the country to evaluate solar energy installations for potential glint/glare hazards as well as optimize installation performance.

This validated tool provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts. The tool relies on analyses, test data, and an extensive database of different photovoltaic module surfaces (e.g., anti-reflective coating, texturing), and models developed over several years at Sandia. SGHAT provides automated design optimization (tilt and orientation) to evaluate alternative configurations, orientations, and locations of solar installations that not only mitigate the impacts of glint/glare, but also to optimize energy production. Other features include a built-in flight path tool that evaluates continuous flight paths rather than discrete points, and analysis of glare from vertical surfaces such as glass buildings.

SGHAT v. 4 adds additional functionality by including block space receptors and structure/building receptors for hazard analysis, and sun meridian expansion slope error calculation. SGHAT v. 4 is also integrated with the National Renewable Energy Lab's (NREL) PVWatts Calculator to determine potential system output.

SGHAT is completely interactive, allowing users to locate and draw their proposed array and observed points or paths on Google maps. Using this input, SGHAT presents results in a simple easy-to-interpret plot that specifies when glare will occur throughout the year, with color indicating the potential ocular hazard.

## TECHNICAL BENEFITS

- Quantifies when and where glare will occur throughout the year and the intensity and potential ocular impact
- Automated design optimization
- Integration with NREL's PVWatts Calculator to estimate potential system output

## INDUSTRIES & APPLICATIONS

- Glint and glare ocular hazard analyses for proposed/existing solar installations near airports, roads, workplaces, and communities
- Studies to ensure safe siting and expedited permitting
- Design optimization to maximize energy production while mitigating glare from solar installations

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