Site Irradiance Analysis

January 25, 2026

Phoenix, AZ | Solar Resource Assessment

AVG DAILY GHI

5.75 kWh/m²

PEAK SUN HOURS

5.7 hrs/day

PERFORMANCE RATIO

88.1%

SITE RATING

Excellent

Irradiance Statistics

Metric	Value	Unit	Interpretation
Average GHI	**5.75**	kWh/m²/day	Excellent solar resource
Maximum GHI	9.04	kWh/m²/day	Peak summer day
Minimum GHI	0.70	kWh/m²/day	Worst recorded day
Clear Sky GHI	6.53	kWh/m²/day	Theoretical maximum
GHI Variability	35.3	% CV	Moderate variability
Avg Temperature	23.6	°C	Favorable temperature

Monthly Irradiance Pattern

Month	Avg GHI (kWh/m²/day)	Visual
Jan 2025	3.90	

Feb 2025	4.63	
Mar 2025	5.62	
Apr 2025	7.19	
May 2025	7.65	
Jun 2025	8.40	
Jul 2025	7.72	
Aug 2025	7.10	
Sep 2025	5.69	
Oct 2025	4.88	
Nov 2025	3.47	
Dec 2025	3.09	
Jan 2026	3.14	

Site Assessment:

- Location: Phoenix, AZ (33.4484°N, -112.0740°W)
- Annual GHI: ~2098 kWh/m²/year
- Estimated capacity factor for fixed-tilt system: 19.2%
- This site ranks in the top tier of US solar resources

Methodology: Irradiance data from NASA POWER API (CERES/MERRA-2). GHI = Global Horizontal Irradiance (total solar energy on horizontal surface). Performance Ratio = Actual GHI / Clear Sky GHI. Variability measured as coefficient of variation. Temperature affects panel efficiency (~0.4% loss per °C above 25°C).

Report prepared by **Mboya Jeffers** | January 25, 2026
Data Source: NASA POWER API (CERES/MERRA-2)