



SolarAnywhere®

Bankable solar data
and intelligence

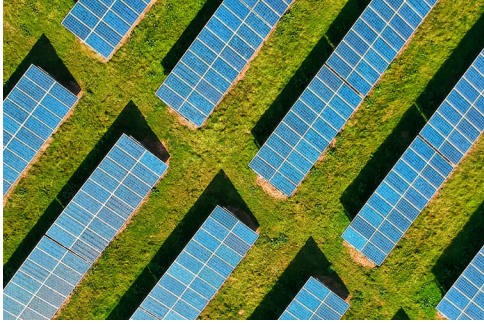
SolarAnywhere is trusted by leading solar enterprises around the world to deliver the most accurate solar resource data and site-specific intelligence such as PV losses and energy estimates. SolarAnywhere supports every stage of the solar lifecycle—from prospecting, engineering and financing projects, to monitoring, benchmarking and forecasting the performance of operational solar plants.



Clean Power Research®

www.cleanpower.com

SolarAnywhere Solutions Supporting the Entire Solar Lifecycle



SolarAnywhere® Data

Solar Project Development

Bankable, high-fidelity **typical-year and time-series irradiance data** for prospecting, designing and financing solar PV plants around the world

1998

SolarAnywhere® SystemCheck®

Solar Asset Operations & Management

Real-time solar data and power modeling solutions enabling reliable, scalable performance benchmarking of operational solar assets

Real-Time

SolarAnywhere® Forecast

Energy Market Participation

Accurate, reliable and securely delivered **solar irradiance and energy forecasts** for optimizing solar power plant operation and maximizing revenue generation

7 Days Ahead

SolarAnywhere Customers & Partners

Companies Using SolarAnywhere



Technology Partners



Member Organizations



University, Research and Non-profit Partnerships



Understanding SolarAnywhere Data and Intelligence Services

SolarAnywhere data and power calculations are available for historical, real-time and forecast time periods.

Table 1 lists the most common industry applications and users for each type of data.

Solar Data & Intelligence	Applications/Use Cases			Users
Historical	Project feasibility and pre-construction resource assessment Obtain an initial, high-level assessment of solar resource availability at a potential project site and run energy simulations with typical-year data .	Project engineering and financing Optimize project design and secure the best financing terms with global, full historical time-series data calculated specifically for solar PV applications and offering the industry's most extensive meteorological datasets.	Site-adapted Studies Optionally tune long-term solar resource data to ground-based measurements to reduce the uncertainty of solar resource assessments (although not required, as SolarAnywhere offers the lowest-uncertainty available).	<ul style="list-style-type: none"> • Independent owners/engineers • Solar project developers • Investors • Solar energy consultants • Grid planners
Real Time	Asset/portfolio management Benchmark the performance of residential and commercial PV fleets against original project financing expectations.	Increase investor confidence and track performance guarantees Weather-normalize system production and track PV performance metrics with independent data from SolarAnywhere SystemCheck® to ensure the project is meeting its performance guarantee.	O&M planning Reduce solar project downtime and unnecessary truck rolls by accurately identifying and diagnosing PV system issues.	<ul style="list-style-type: none"> • Asset owners and operators • O&M companies • Solar project financiers
Forecast	Meet PPA requirements Many utility-scale solar plants with traditional power purchase agreements (PPAs) are required to deliver day-ahead forecasts. Off-takers may use these forecasts to schedule generation resources.	Support distributed energy resource management systems (DERMS) and utility operations Operate distributed energy resources (DERs) more intelligently and improve visibility into grid operations with SolarAnywhere Basic Forecast.	Inform energy trading decisions and operate dispatchable PV and solar + storage plants Predict variable output and optimize battery utilization with temporal and spatial resolutions down to 1-minute and 1-kilometer, respectively.	<ul style="list-style-type: none"> • IPPs • Utilities • Hybrid PV+BESS market operators • Grid operators and planners

The Most Trusted, Accurate and Validated Solar Resource Dataset Available

- ✓ Reduce risk, optimize project design and secure the best financing terms with resource data calculated specifically for solar PV applications
- ✓ Access the right dataset for your project, including **typical year**, 20+ year historical **time-series** or **site-adapted** data
- ✓ Leverage the industry's most-extensive meteorological datasets—including site-specific **probability of exceedance**, **albedo**, **plane-of-array irradiance**, **soiling** and **snow loss** data and **bifacial PV modeling**—to optimize plant design, and better understand **extreme-weather risks** and inter-annual variability
- ✓ Download data from an easy-to-use web portal—including on-demand access for any number of users at your company—or streamline your workflows using the **SolarAnywhere API**

“SolarAnywhere® meteo data is bankable, user-friendly and able to scale with our business needs. SolarAnywhere solar resource information is widely trusted and forms a key part of our engineering process. Nexamp® has been very pleased with our partnership with Clean Power Research®.”

– Patrick C., Vice President, Engineering, Nexamp

Features

Accurate

The most accurate and **up-to-date** satellite-derived solar resource data

Data on Demand

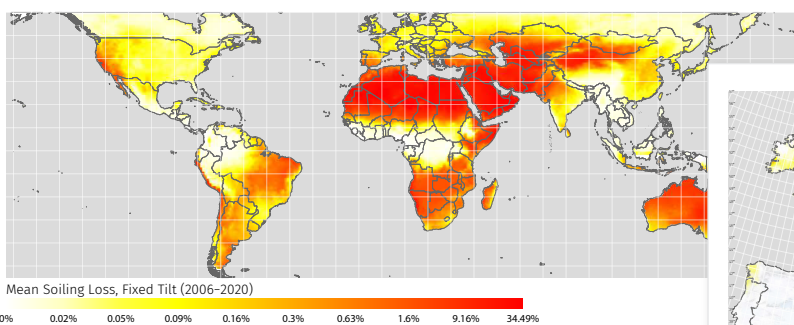
Flexible delivery options include **on-demand data** and **API access**, with full records available from as far back as 1998 through today

Validated and Trusted

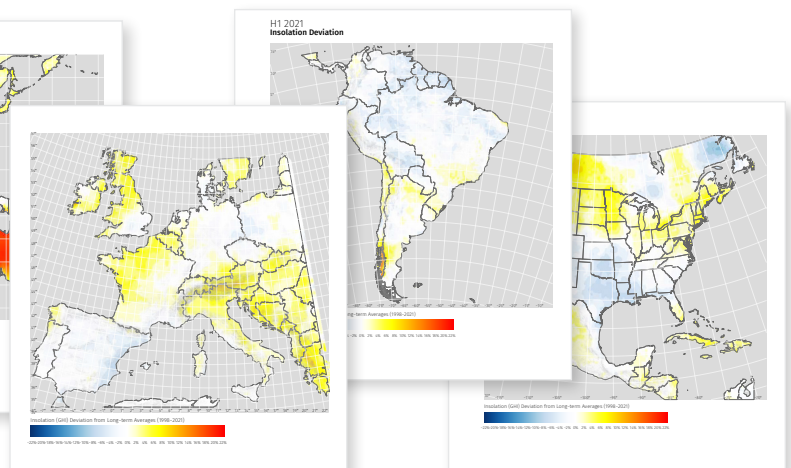
Extensively validated with 1,074 site-years of reference data using independent ground measurements of the highest-available quality, and trusted by hundreds of enterprise-class customers

Bankability

SolarAnywhere exceeds the standards for **project development and financing**, from prospecting to final debt-service coverage ratios



September: Mean Soiling Loss
Fixed Tilt, 2006-2020



January-June 2021: Insolation Deviation from
Long-term Averages (1998-2021)

License Types

Typical Year (TMY Data)

Typical Year data is ideal for obtaining an initial, high-level assessment of solar resource availability at a potential project site, and running energy simulations

- ✓ On-demand access to long-term average and typical year files from the most trusted source in the industry, ideal for prospecting through project engineering and financing
- ✓ **Average-year summary files** include average monthly (12x1) snow and soiling losses, albedo, and more to make PV performance estimates more site-specific and data-driven
- ✓ **Around-the-world coverage** of standard resolution (10 km, hourly) data
- ✓ **Annual updates** include latest reference year, improved accuracy and fully documented uncertainty

Sites (Times-series Data)

SolarAnywhere Sites offers accurate, high-fidelity and comprehensive time-series weather data to optimize project design and secure PV project financing

- ✓ **Global**, full historical time-series data for resource assessment and performance analysis
- ✓ Data through current hour is available for one year to keep your analysis up to date
- ✓ **Greater spatial and temporal precision** (1-km, 15-min) improves accuracy in complex terrain and microclimates
- ✓ **Probability-of-exceedance** (PXX) data enables characterization of interannual variability
- ✓ Site-specific **precipitation** and **particulate matter** data help refine loss estimates
- ✓ **Hindcast** data enables evaluation of how solar forecasts can improve dispatch algorithms to optimize solar-plus-storage hybrid plant design
- ✓ **High-resolution data with True Dynamics™** (500 meter, 5 minute) improves clipping loss and battery ramp rate assessment (available as an on-demand upgrade in the Continental U.S.)



Have ground data?

Reduce the uncertainty of your solar resource assessments with a **SolarAnywhere Tuning Study**. Your ground-based measurements will be used to tune SolarAnywhere irradiance data at a particular location. You'll receive a bankable solar resource assessment report that includes uncertainty for your project and solar data files that are compatible with all major PV simulation programs.

Learn more at: www.solaranywhere.com/products/solaranywhere-data/



Comprehensive, On-demand Data for Distributed Solar Performance Evaluation

SolarAnywhere® SystemCheck® independently estimates energy production of operational PV projects in **real time**, giving owners and operators a critical tool for benchmarking system performance. Evaluate performance of individual PV systems or a fleet of systems to make better asset management and O&M decisions—all at a fraction of the cost of lost energy production, high operational risk or unnecessary truck rolls. Owners and operators can easily integrate the **SystemCheck API** into existing software and tools to scale real-time satellite-based monitoring across the portfolio.

ASSET MANAGEMENT

Increase Portfolio Profitability

Asset managers rely on SystemCheck to benchmark solar performance against original project financing expectations. SystemCheck puts project performance into context by providing accurate resource data that can be used to weather-normalize actual production. SystemCheck also provides independent, bankable resource data to benchmark a project’s performance ratio to ensure it meets its performance guarantee.

OPERATIONS & MAINTENANCE

Efficiently Diagnose and Manage System Performance

With SystemCheck, O&M teams can scale real-time monitoring of individual PV systems or entire fleets by benchmarking expected to actual power output—all at a lower cost, with high spatial precision and without the need for expensive, high-maintenance ground-measurements. SystemCheck can be easily integrated into monitoring software to help identify and diagnose PV system issues in real-time, and reduce downtime and unnecessary truck rolls.

Distributed Solar Performance Evaluation

■ **Over 55 million API calls annually**

Features

Consistent, Accurate Data

Enable accurate performance benchmarking with satellite-derived, highly validated SolarAnywhere data. Site-specific intelligence such as **snow** and **soiling loss** estimates is generated using transparent, **open-source pvlib models**, and can be used to easily diagnose PV system underperformance from environmental factors.

Extensibility and Scalability

Leverage the **SolarAnywhere API** to directly integrate SolarAnywhere data and power production estimates into your PV monitoring solutions. Ease-of-integration and cost-effectiveness relative to installing and maintaining ground sensors means you can easily scale performance benchmarking across your entire portfolio of geographically diverse PV systems.

Enterprise-level Reliability & Security

Ensure time-critical decisions are based on the most up-to-date information with our reliable service that offers up to 99.99% uptime and **SOC 2 security standards**.

SystemCheck Product Specifications

Use SystemCheck to evaluate performance of individual PV systems or a fleet of systems to make better asset management and O&M decisions

Access	Access Point	Resolution	Data Fields	Options
Real-time weather data and PV power simulations with 1-month lookback	API	Standard (10 km, 60 min), Enhanced (1 km, 30 or 15 min) or High (500 meter, 5 minute; Continental U.S. only)	PV Power, PV Energy / Plane of Array Irradiance / GHI, DNI, DIF / Temperature / Precipitation / Wind Speed / Relative Humidity / Clear Sky Irradiance / Snow Depth / Surface Albedo / Particulate Matter (PM2.5, PM10) / Average Snow & Soiling Losses	Get any data needed for your application through our seamless API. Options include longer lookbacks, full historical data and forecasts

Learn more at: www.solaranywhere.com/products/solaranywhere-systemcheck/

SolarAnywhere® Forecast

Solar Forecasting Services for the Diverse Needs of the Solar Power Industry and Utilities

To avoid energy imbalances and decrease operational risk, independent power producers (IPPs), fleet operators and other solar stakeholders need to be able to predict solar energy output. Reliable and accurate **solar irradiance and power forecasting** can help solar stakeholders avoid using costly, short-term power sources to handle imbalances, and avoid financial losses that erode project profitability.

“Since 2017, we’ve used SolarAnywhere® data from Clean Power Research®. By leveraging the API, we’ve been able to develop internal site screening tools and automate many of our reporting and resource assessment processes.”

– **Michael M.**, Senior Director, Energy Assessment and Project Planning,
National Grid Renewables

Solar Forecast Services

Choose the depth of data you need—no more, no less

Level	Basic Low cost & quick to start	Standard High accuracy & availability	Advanced Specialized functionality for maximum profit
Service Description	Connect to the SolarAnywhere API in minutes and start getting power and weather forecasts built for solar. Operate DERs more intelligently, improve visibility into grid operation or support any application under the sun.	Access industry-leading forecast methodologies and enterprise-grade reliability that set the standard for solar forecasting. Independent power producers will benefit from guaranteed forecast delivery to offtakers and flexible delivery options.	Get an edge in the energy markets with the most accurate, site-specific forecast available. Predict variable output and optimize battery utilization with resolutions up to 1-minute with 1-kilometer precision.
Common Applications	Support DERMS, ADMS and utility operations	Meet utility PPA requirements	Operate dispatchable PV & inform energy trading
Forecast Methodology	Numerical weather prediction (NWP)	NWP + Satellite cloud motion + intelligent model blending	NWP + Satellite cloud motion + intelligent model blending + site data integration

Features

Industry Expertise

Industry-leading technology driven by an exclusive partnership with Dr. Richard Perez at SUNY-Albany

Data Accuracy

SolarAnywhere forecasts were top-ranked in an **EPRI study** comparing datasets from 12 vendors

Seamless Integration

Flexible delivery options—including the **SolarAnywhere API**, Secure File Transfer Protocol (SFTP) or automated email delivery—minimize integration costs

Enterprise-level Reliability & Security

Ensure time-critical decisions are based on the most up-to-date information with our reliable service that offers up to 99.99% uptime and **SOC 2 security standards**

Learn more at: www.solaranywhere.com/products/solaranywhere-forecast/



A Cloud Software Solution from Clean Power Research®

SolarAnywhere data and intelligence services are trusted by leading solar enterprises around the world to help site, finance and operate solar PV plants and distributed solar fleets. Built for solar, SolarAnywhere includes high-resolution historical, real-time and forecast solar resource and weather data that helps reduce risk and improve profitability across the entire solar lifecycle, from design to operation. SolarAnywhere offers the industry's most-complete meteo datasets—including site-specific probability of exceedance, albedo, plane-of-array irradiance, and soiling and snow loss data—to optimize plant design, and better understand extreme-weather risks and inter-annual variability.

Originally developed with renowned atmospheric science researcher **Dr. Richard Perez** and his team at the University at Albany (SUNY), SolarAnywhere continues to benefit from an exclusive partnership that drives industry-first innovations. SolarAnywhere intelligence services, including energy simulations for solar performance assessment, are generated using the latest open-source pvlib solar simulation models.

SolarAnywhere products are produced by **Clean Power Research, L.L.C.** For more than 20 years, leading solar companies and utilities have trusted Clean Power Research to help them successfully navigate the energy transformation. Our cloud software solutions, which include **SolarAnywhere**, **PowerClerk®** and **WattPlan®**, inform, streamline and quantify energy-related decisions and processes for the energy industry and their customers.

Investment-grade Solar Resource Data & Intelligence

Confidently site, engineer and finance your solar projects with SolarAnywhere—the industry's most accurate and validated solar resource data and intelligence.



Validated Accuracy

Depend on data that is thoroughly **validated** and **versioned** for comparability and repeatability, with published known and low uncertainty, and trusted industry-wide for its accuracy and reliability



Consistent Results

Confidently compare project sites, and reliably conduct performance analyses using data that is generated with **methodologies that are globally consistent and rigorously tested**



Precise Measurements

Accurately model solar project performance with **high-resolution, high-fidelity, gap-free data** that represents actual conditions at a project site—not just averages or data from nearby sites



Highly Available

Streamline workflows by accessing historical, real-time and forecast SolarAnywhere data when and where you need it, either **on-demand**, via **API**, or **directly from within industry-leading PV simulation tools**



Built for Solar

Leverage **built-for-solar data and energy intelligence** to meet the specific needs of solar resource assessment and operations—now and into the future

www.solaranywhere.com



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