VDB Solar Solutions

Photovoltaic resource nrel

Overview

What is version 6 of NREL's online photovoltaic system calculator?

This is Version 6 of NREL's popular online photovoltaic system calculator. PVWatts ® Version 6 uses the newest data from the NREL National Solar Radiation Database (NSRDB).

What does NREL do?

NREL works to advance the state of the art across the full spectrum of photovoltaic (PV) research and development for diverse applications. Our cutting-edge research focuses on boosting solar cell conversion efficiencies; lowering the cost of solar cells, modules, and systems; and improving the reliability of PV components and systems.

Who supports NREL's photovoltaic research?

NREL's photovoltaic research is supported by the National Center for Photovoltaics. Visit the NREL news section for a complete list of NREL's PV-related press releases and feature stories. Email SAM support or PVWatts support for help with these tools.

What is NREL PVWatts ®?

We hope you enjoy using PVWatts ®! The NREL PVWatts ® Team. Estimates the energy production and cost of energy of grid-connected photovoltaic (PV) energy systems throughout the world. It allows homeowners, small building owners, installers and manufacturers to easily develop estimates of the performance of potential PV installations.

What is NREL's research-cell efficiency chart?

NREL maintains a chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. Learn how NREL can help your team with certified efficiency measurements. Access our research-cell efficiency data. Or download the full

data file or data guide.

Can I still use solar resource data in PVWatts ®?

You can still use solar resource data available in the older version of PVWatts ® by choosing a legacy data option, but we recommend using the new data because of its higher quality, better spatial resolution so you can use data for the exact location of your project, and because it covers a larger part of the world.

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Photovoltaic Research News , Photovoltaic Research , NREL

Photovoltaic Research News Visit the NREL news section for a complete list of NREL press releases and feature stories related to PV. Dec. 18, 2023 NREL Research Finds Rain Not Enough To Wash Pollen From Solar Panels Scientists, headed by a found the

Photovoltaic Applications , Photovoltaic Research , NREL

» Photovoltaic Research » Photovoltaic Applications Photovoltaic Applications At NREL, we see potential for photovoltaics (PV) everywhere. As we pursue advanced materials and next-generation technologies, we are enabling PV across a Solar Farms

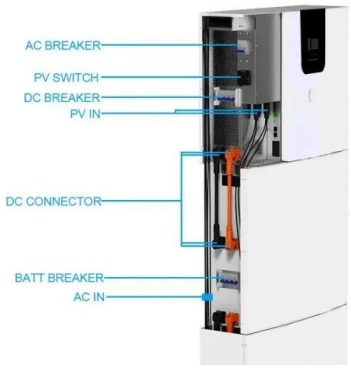
Materials Discovery , Photovoltaic Research , NREL

The Center for Next Generation of Materials by Design (CNGMD) is an Energy Frontier Research Center of the U.S. Department of Energy Office of Science. The CNGMD dramatically transforms the discovery of functional energy materials through multiple-property searching, incorporating metastable materials into predictive design and developing theory to guide materials synthesis.

Photovoltaics in the Circular Economy , Photovoltaic Research , NREL

Through its circular economy modeling and analysis capabilities, NREL has led numerous

path-breaking studies. For instance, it has systematically reviewed all PV circular economy literature, identified prioritized future R& D strategies for PV recycling, and analyzed circular economy outcomes of aggressive solar deployment scenarios for its Solar Futures Study.

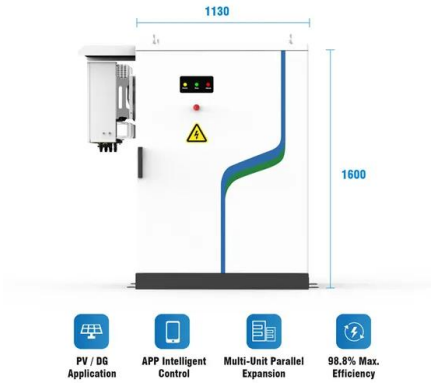


U.S. Solar Photovoltaic System and Energy Storage Cost

NREL has been modeling U.S. solar photovoltaic (PV) system costs since 2009. This year, our report benchmarks costs of U.S. PV for residential, commercial, and utility-scale systems, with ...

Hands-On Photovoltaic Experience , Photovoltaic Research , NREL

HOPE is aimed at doctoral students pursuing PV-related research in the U.S. who would like to learn more about fabrication, measurement, and study of photovoltaic materials and devices, while connecting with NREL's staff and other



Regional Test Centers , Photovoltaic Research , NREL

Regional Test Centers Four regional test centers, established by the Department of Energy, are located in New Mexico, Colorado, Florida, and Nevada to demonstrate the bankability of new photovoltaic (PV) technologies. The regional test centers

Computational Modeling , Photovoltaic Research , NREL

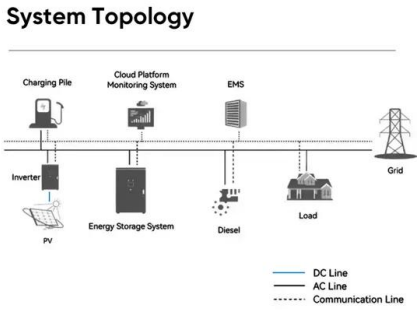
Computational Modeling NREL is making advances in computational modeling. Previous technology was limited to one-dimensional solar cell models and focused on current-voltage curves and quantum-efficiency spectra. NREL has advanced this

Cadmium Telluride Solar Cells , Photovoltaic Research , NREL

The United States is the leader in cadmium telluride (CdTe) photovoltaic (PV) manufacturing, and NREL has been at the forefront of research and development in this area. PV solar cells based on CdTe represent the largest segment of commercial thin-film module production worldwide.

Photovoltaic Performance , Photovoltaic Research , NREL

NREL scientists study the long-term performance, reliability, and failures of photovoltaic (PV) components and systems in-house and via external collaborations. Through analysis, they quantify long-term degradation and share the results with the PV community.



Organic Photovoltaic Solar Cells , Photovoltaic Research , NREL

NREL has strong complementary research capabilities in organic photovoltaic (OPV) cells, transparent conducting oxides, combinatorial methods, molecular simulation methods, and atmospheric processing.

Perovskite and Organic Photovoltaics , Photovoltaic Research , NREL

NREL researchers are developing new approaches and advancing the research behind perovskite photovoltaics and organic photovoltaics. Perovskite Photovoltaics We seek to make perovskite solar cells a viable technology by focusing on efficiency, stability, and scaling.

Data and Tools , Photovoltaic Research , NREL

NREL develops data and tools for modeling and analyzing photovoltaic (PV) technologies. View all of NREL's solar-related data and tools, including more PV-related resources, or a selected ...

Cadmium Telluride Accelerator Consortium , Photovoltaic Research , NREL

Cadmium Telluride Accelerator Consortium NREL administers the Cadmium Telluride Accelerator Consortium (CTAC), a 3-year consortium intended to accelerate the development of cheaper, more efficient cadmium telluride (CdTe) solar cells. Sign Up to Receive

Best Research-Cell Efficiency Chart , Photovoltaic Research , NREL

85 ?· NREL maintains a chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. Learn how NREL ...

Photovoltaic Module Soiling Map , Photovoltaic Research , NREL

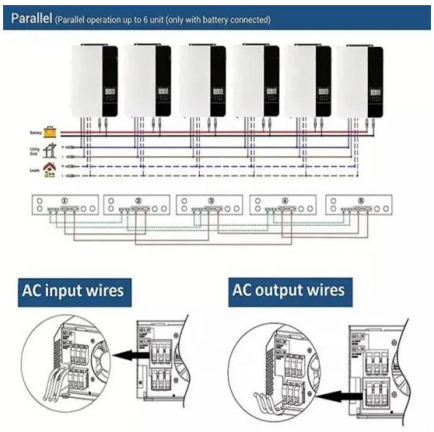
Photovoltaic Module Soiling Map NREL scientists and engineers have generated a map that highlights soiling parameters of fielded photovoltaic panels at 255 locations--either soiling stations or photovoltaic sites--across the United States.

Solar Resource Data, Tools, and Maps , Geospatial Data Science , NREL

Find and download resource map images and data for North America, the contiguous United States, Canada, Mexico, and Central America. Solar Supply Curves View an interactive map or download geospatial data on solar photovoltaic supply curves.

Accelerated Testing and Analysis , Photovoltaic Research , NREL

We subject photovoltaic (PV) components and materials to accelerated testing conditions to provide early indications of potential failures. The results are coupled with an understanding of environmental conditions to predict field performance and lifetime.



System Performance , Photovoltaic Research , NREL

NREL evaluates system performance of photovoltaic (PV) products developed by companies under work sponsored by the U.S. Department of Energy. We also develop performance models for novel technologies and assess their impact and performance.

Sustainability for Photovoltaics , Photovoltaic Research , NREL

NREL conducts research to increase energy produced over the lifetime of photovoltaic (PV) systems, reduce energy and materials consumed in their manufacture and installation, and enable their reuse or recycling.

Solar Research , NREL

NREL's solar research strives to enable reliable, low-cost solar energy at scale--on the grid and beyond the grid. Postdocs Study Impact of Turbulent Winds on Concentrating Solar Power The study will help predict the ...

NREL

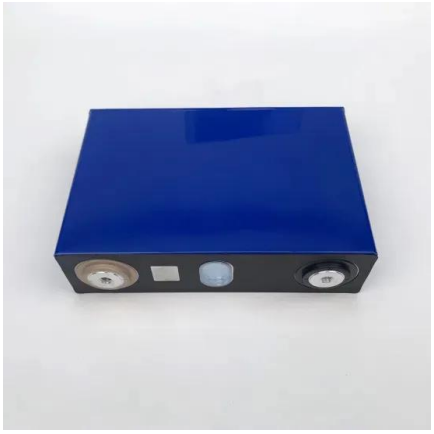
NREL's photovoltaic (PV) device performance services include high-precision performance testing, certification, and calibration of PV cells and modules, governed by rigorous global standards and decades of experience and expertise.

Research Staff , Photovoltaic Research , NREL

Learn about the expertise and technical skills of the photovoltaics team at NREL. Photovoltaics Research Staff See a complete list of our researchers on the National Renewable Energy Laboratory Research Hub .

Best Research-Cell Efficiency Chart , Photovoltaic Research , NREL

Best Research-Cell Efficiency Chart NREL maintains a chart of the highest confirmed conversion efficiencies for research cells for a range of photovoltaic technologies, plotted from 1976 to the present. Learn how NREL can help your team with certified efficiency measurements.



Solar Resource Data, Tools, and Maps , Geospatial Data Science ...

View an interactive map or download geospatial data on solar photovoltaic supply curves. These solar maps provide average daily total solar resource information on grid cells.

Reliability and System Performance , Photovoltaic Research , NREL

NREL's photovoltaic (PV) reliability and system performance research focuses on R& D to improve PV technologies and more accurately predict system performance over time. Our PV reliability research and development provides companies with the

Photovoltaic Research News , Photovoltaic Research , NREL

Photovoltaic Research News Visit the NREL news section for a complete list of NREL press releases and feature stories related to PV. Dec. 28, 2021 Top 20 NREL Stories of 2021 NREL researchers and staff reached countless goals and achieved

Photovoltaic Research , NREL

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Photovoltaic Research News , Photovoltaic Research , NREL

Photovoltaic Research News Visit the NREL news section for a complete list of NREL press releases and feature stories related to PV. Dec. 22, 2020 Top 20 NREL Stories of 2020 NREL researchers and staff reached countless goals and achieved

PVWatts Calculator

Utility-Scale PV. Units using capacity above represent kWAC. 2023 ATB data for utility-scale solar photovoltaics (PV) are shown above, with a Base Year of 2021. The Base Year estimates rely ...

Measurements , Photovoltaic Research , NREL

NREL has world-leading capabilities in the characterization of photovoltaic (PV) materials and devices. Device Performance We provide certification, testing, and calibration services for the entire range of PV technologies--with measurement uncertainties among the best in the world--and help define global standards and best practices for PV calibration.

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