



Designing high-performance

Solar energy projects

Solar energy developers face significant challenges in planning and executing projects, from accurately assessing energy yield, to integrating the most up-to-date product offerings that maximize efficiency and cost-effectiveness, to developing viable strategies for energy storage.

WSP USA offers global reach and expertise in solar energy engineering design and technical advisory services to help clients meet these challenges. We support the industry's leading developers, lenders and constructors. We are involved in all aspects of solar photovoltaic (PV) power plants, providing owner's engineer and engineer of record services. We support clients at all stages of project development, from initial feasibility studies through design, construction and commissioning.

Our services include specification development, market research, due diligence, design review, energy yield assessment, engineering design, RFP preparation and site management. Our work on utility-scale arrays translates seamlessly into commercial and industrial projects and building-integrated photovoltaics (BIPV), both on and off the grid.

OUR SERVICES

- Electrical engineering design, project specifications, and supervisory control and data acquisition (SCADA) system specification at concept and preliminary design as well as Issued For Construction (IFC) phases
- Engineer of Record (EOR) services including IFC civil, structural, electrical medium and high voltage sheet sets
- Solar PV testing and commissioning specifications
- Solar resource assessment and energy yield analysis
- Electrical studies and Grid interconnection studies and approvals
- Commissioning plan review and oversight
- RFP process development and bidder evaluation
- Scheduling and cost estimating
- ALTA/topography surveys, geotechnical studies, transportation studies
- Project and construction management
- Hydrology and hydrologic studies
- Environmental studies including wetland, T&E species, and cultural
- Environmental planning and permitting

WSP provides support with all engineering activities, from development and pre-construction to commercial operation.

TRUSTED ENGINEERING EXPERTISE

Our specialists are fully versed in the most up-to-date PV technologies available for installation. They know where these technologies can be deployed to maximize efficiency and reduce costs.



Best-In-Class PV Power Plant Design

We manage and perform all aspects of the solar PV power plant design process. We provide preliminary design and engineer of record services that cover the PV array, electrical balance of system, substation and transmission line, civil and geotechnical engineering, and environmental permitting and approvals. Our staff includes solar specialists who have designed projects for some of the world's leading renewable energy project developers.

Owner's Engineer and Technical Support Services

As Owner's Engineer we have worked on many projects, providing specifications, tender adjudication and contract negotiation assistance to developers as they take their projects forward to financial close.

Lender's Advisor and Due Diligence Services

We have provided due diligence services for many solar PV developments across the globe. This work includes technical review of designs, analysis of expected production, and assessment of specifications, as well as reviews of key agreements, permits and approvals. For projects in construction or in the post-commissioning process, we provide review of project performance and operation and maintenance activities.

ENERGY YIELD ANALYSIS

Accurate assessment of the solar resource at a prospective site is critical to the successful development of a solar PV project at any scale. We have provided a high standard of energy yield analysis (EYA) to the PV industry for projects around the world. Our EYA includes an estimate of the annualized energy yield, the total predicted production throughout the lifetime of the project, the capacity factor, and the performance ratio, along with the relevant site-specific technical properties

for the project. As part of our commitment to industry best practices, our EYAs also provide comprehensive value-added details, such as the comparison of meteorological datasets including satellite-derived, modeled data, and on-site data. We also provide probability analysis, module layout optimization, and supporting technical data.

Our team provide solar EYAs for various types and sizes of PV projects, from integrated rooftop-mounted systems, to utility- scale ground-mounted projects. We have supported PV projects in the U.S., Canada, Latin America and the Caribbean, Africa, the Middle East and Europe.

Meteorological Data Management and Analysis

We have an in-depth understanding of the uncertainties related to the use of third-party meteorological data sets, including raw reference station data, satellite data, and model- derived data. It can be a challenge to mitigate the impact of these uncertainties on the results of the energy assessment. We work with various ranges of software and available databases, enabling us to cross-check the various data sets and validate results. Our EYA will typically include one or more of the following sources, with a number of additional databases available for purchase:

- PV GIS
- Meteonorm
- NASA-SSE
- NREL Solar Prospector
- National Solar Radiation Database (NSRD)
- RetScreen
- Solar Anywhere

ABOUT WSP

WSP USA is the U.S. operating company of WSP, one of the world's leading engineering, environment and professional services firms. Recognized on [Fast Company's Brands that Matter List for 2022](#) as a top Community-Minded Business, WSP USA brings together engineers, planners, technical experts, strategic advisors and construction management professionals who are dedicated to collaborate in the best interests of serving local communities. WSP USA designs lasting solutions in the buildings, transportation, energy, water and environment markets. With more than 15,500 employees in 300 offices across the U.S., WSP partners with its clients to help communities prosper.

CONTACT US

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