

Solar Services

Jacobs' lateral integration within the PV electricity generation industry provides clients with capability throughout the project life cycle as follows.

Pre-Feasibility

- **Solar resource analysis:** analysis of solar resource data from site specific sources and others such as SolarGIS and Meteonorm.
- **Energy yield assessment:** development of site layouts and undertaking probabilistic estimates of generation using PVSyst.
- **Network connection:** assessment of potential network constraints and technical due diligence.
- **Site selection:** using GIS data, PV sites are determined based on a range of factors including land availability, geography, geology and proximity to electrical network.
- **Fatal flaw analysis:** desktop evaluation of the environmental and technical factors that affect the site.
- **Connection review:** evaluation of the method and associated costs of connecting the PV plant to the transmission or distribution network.
- **Glint & glare assessments:** desktop evaluation of the potential for glare and its impact on surrounding properties, road users and aviation

Key Capabilities:

Jacobs has a broad range of global experience in the solar photovoltaic (PV) industry with 15 years of direct involvement. This includes:

-  Solar PV Systems (rooftop, ground mounted, and floating)
-  Battery Energy Storage Systems
-  Power Transmission Systems and Grid Connection Studies
-  Concept Designs, Feasibility and Site Selection Studies
-  Environmental Assessment, Permitting and Consenting
-  Development, Design, Specification, Tendering, Contract Negotiation
-  Construction, Performance Testing, Commissioning
-  Owner's Engineer
-  Lenders Technical Advisor
-  Market Analysis and Entry Studies
-  Financial Modelling
-  O&M Support



Solar Services

Feasibility

- **Data collection:** support to establish data logging facilities on site and provide long term data collection via remote communication facilities. Data can then be used in the updated yield analysis to provide a solid base for the long term feasibility of the site.
- **Survey:** ground based and aerial survey services to provide contours of the selected site.
- **Environmental assessments:** full environmental impact statement for the site as part of the submission for the planning permit or development application.
- **Hydrological studies:** site analysis to ensure PV modules and associated infrastructure can be designed and built to mitigate flood or inundation damage.
- **Geotechnical studies:** core sampling or trenching to determine the type, level and depth of soil and rock so designers can develop the most cost effective support structures.
- **Connection studies:** provide a simulation of the electrical performance of the PV plant and energy storage systems at the specific grid connection point. This study can then be used as evidence of performance for the grid connection process.
- **Financial modelling:** development of financial models for the generator's business incorporating relevant technical parameters, factors, costs, revenues and time of sale including arbitrage. Financial models can assess viability (NPV, IRR etc) or can be used to calculate levelised costs or LRMC for comparison against other options.
- **Energy assessments:** simulations to assess potential energy production. Modelling of electricity and renewable energy certificate markets to assess issues relevant to renewable electricity supply. Support for the negotiation of power purchase agreements (PPA).

Pre-Construction

- **Technical specification:** specifications developed for EPC contracts including general works, site works, and temporary works in accordance with the requirements for electrical, civil, structural and services. Specifications can be developed as standalone documents or as part of a tendering procedure.
- **Concept designs:** layouts, arrangements, single line drawings, block diagrams and sections to formalise the main aspects of the PV plant including electrical, protection, SCADA, civil, structural and communication works.
- **Tender support:** support during technical discussions, tender response reviews and negotiations with the grid connection authority.

Solar Services

Construction

- **Design review:** Review of contractor's detailed designs before start of construction.
- **Construction inspection:** regular site inspections, construction supervision as Owner's Engineer incl. HSE, verification of milestones, commissioning and acceptance tests.
- **Project management support:** project management services for the construction of the plant.

Operations & Maintenance

- O&M Contract Development
- Preliminary Business Modelling
- Technical Studies
- Field Inspections
- Root Cause Analysis
- Decommissioning Cost Estimate

Strategic Advisory

- **Due Diligence:** independent technical, environmental, red flag and economic reviews of proposed, under construction or operating solar projects.
- **Market Studies:** assessment of wholesale electricity supply and demand, ancillary services, carbon emission policies, impacts and costs

