



Iberica Solar
photovoltaic engineering

OFFERED SERVICES TO DEVELOPERS



PRIOR TO PPA OR IPP AGREEMENT

Energy Yield Assessment

- Mean annual system yield P50, P75, P90 and P99
- Calculation of the Performance Ratio
- Summary of losses occurring during system operation
- Bankable Reports

Solar Resource Assessment

- Site-specific time series solar resource
- Probabilistic computation

Electrical Studies for utilities and similar entities

The goal of these studies is providing the affected entity with enough information for the PV plant configuration final approval. In this sense, the PV plant shall be conceived following the Grid Code prescriptions. These studies are conducted with the latest software tools

- Grid Impact Study, focussing on the impact of the PV plant interconnection to the grid
- Interconnection Requirements Studies, assuring the interconnection requirements fulfillment as set forth in the grid code in force
- P/Q Assessment. This study deals with the analysis of P/Q curves at the Point of Common Coupling for the complete voltage range of operation in order find best cost-effective combination of reactive power sources, i.e. PV inverters, Fix Cap Banks, STATCOMs, SVC, etc.. which fulfils with the reactive power requirements as set forth in the Grid Code of application

Technical advisory during the negotiation with the utility and similar entities

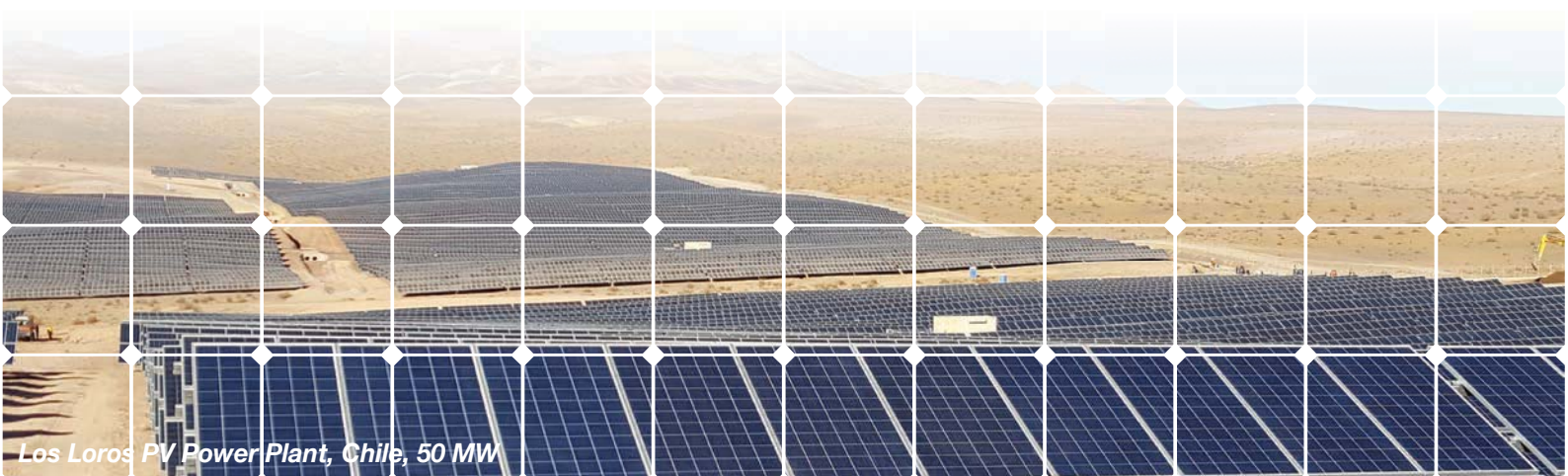
- Support during negotiations with the utility
- Revision of technical appendixes of either the PPA or IPP agreement
- Face-to-face meetings

Basic Engineering

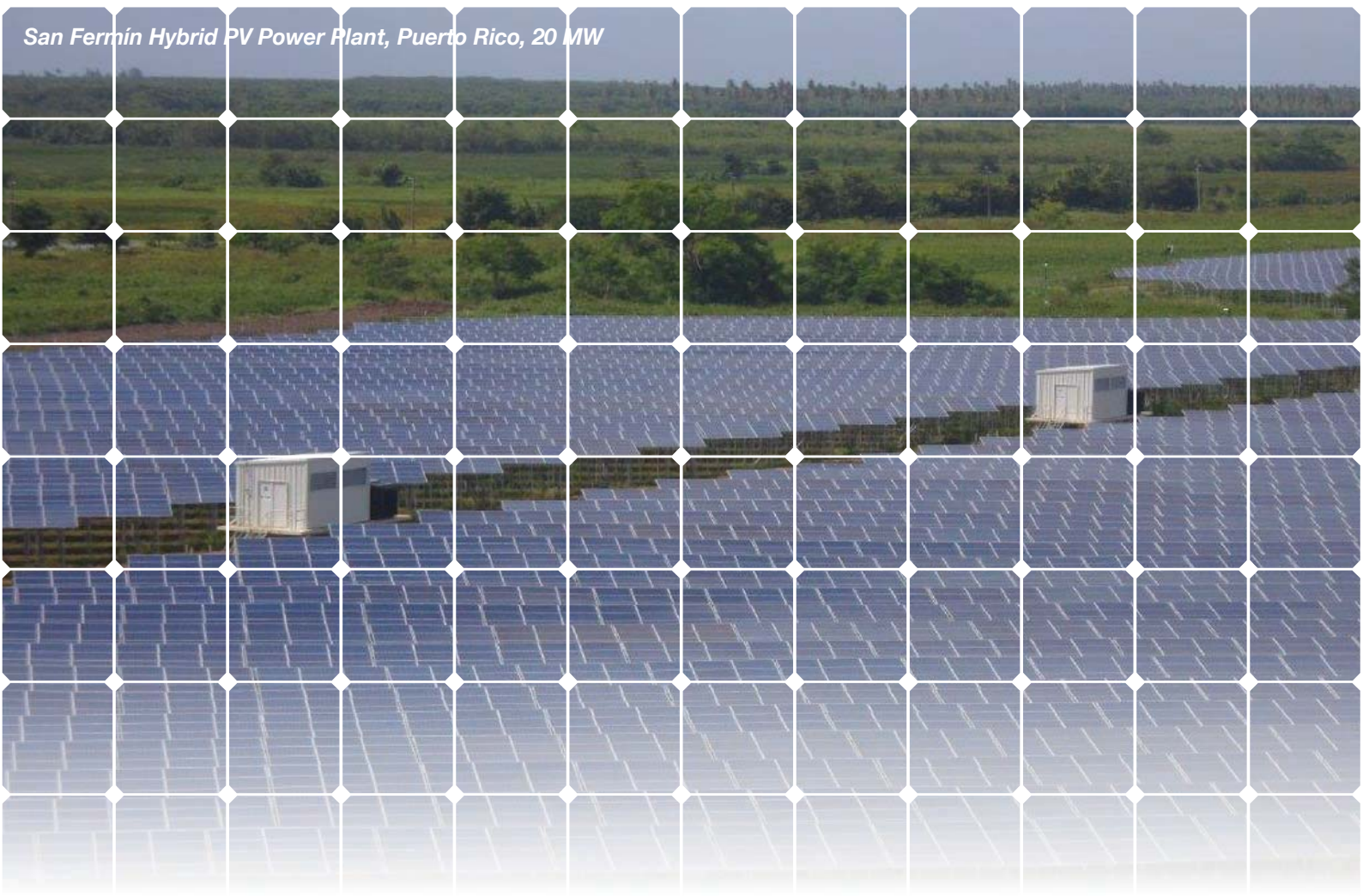
- Tendering Support. Preparation of documentation in alignment with tender's documentary structure
- Engineering associated to RFP to be submitted to EPC contractors. RFP drafting. Minimum technical specification drafting

Impact of network requirements on PR and Energy Yield

- Frequency Response. Grid frequency profile along a complete year is needed to assess the actual impact
- Ramp Rate Control. The annual volatility of irradiance is needed to assess the actual impact
- Reactive power / Power Factor / Voltage Regulation System requirements. Reactive power management instructions from utility are necessary to assess the actual impact of such requirement



Los Loros PV Power Plant, Chile, 50 MW



AFTER PPA or IPP AGREEMENT AND PRIOR TO FINANTIAL CLOSE

Preparation of technical documentation for Lender's Technical Advisors

PV Technology selection

These studies focus on the election of the best cost-effective PV arrangement stressing on minimizing the Levelized Cost of Energy (LCOE)

- Horizontal Single Axis Trackers vs Fixed Tilt racking system
- DC voltage level
- Optimum DC/AC ratio
- Ground Coverage Ratio (GCR) optimization
- Support for tendering tariff estimation based on LCOE

EPC contractor selection

- EPC Contract drafting support for the affected technical sections
- Technical comparison of received EPC offers by means of Comment Resolution Sheets (CRS)
- EPC contractor deviations from the RFP

Main Equipment election support

- Specification drafting according to standards and regulations in force
- Technical comparison of received offers by means of Comment Resolution Sheets (CRS)
- Total Ownership Cost for involved power transformers within the PV plant

AFTER FINANTIAL CLOSE

Owner's Engineering

- EPC Contract review prior to execution
- O&M Contract review prior to execution
- Review of the EPC Contractor engineering package in order to attest design adequacy and compliance with applicable laws and standards, constructability, completeness and good engineering practice
- Project time schedule monitoring and associated reporting with possible corrective actions
- Progress and design review meetings with the EPC Contractor
- EPC Control administrations invoice approval
- Workshop inspections. Supervision of main equipment. Assist to factory tests
- Site Supervision
- Assistance for technical inputs required for permitting purposes
- Review of commissioning and test procedures including witness and approval
- Presence on site up to the end of all warranty periods under EPC Contract
- Performance Ratio tests. Power losses allocation

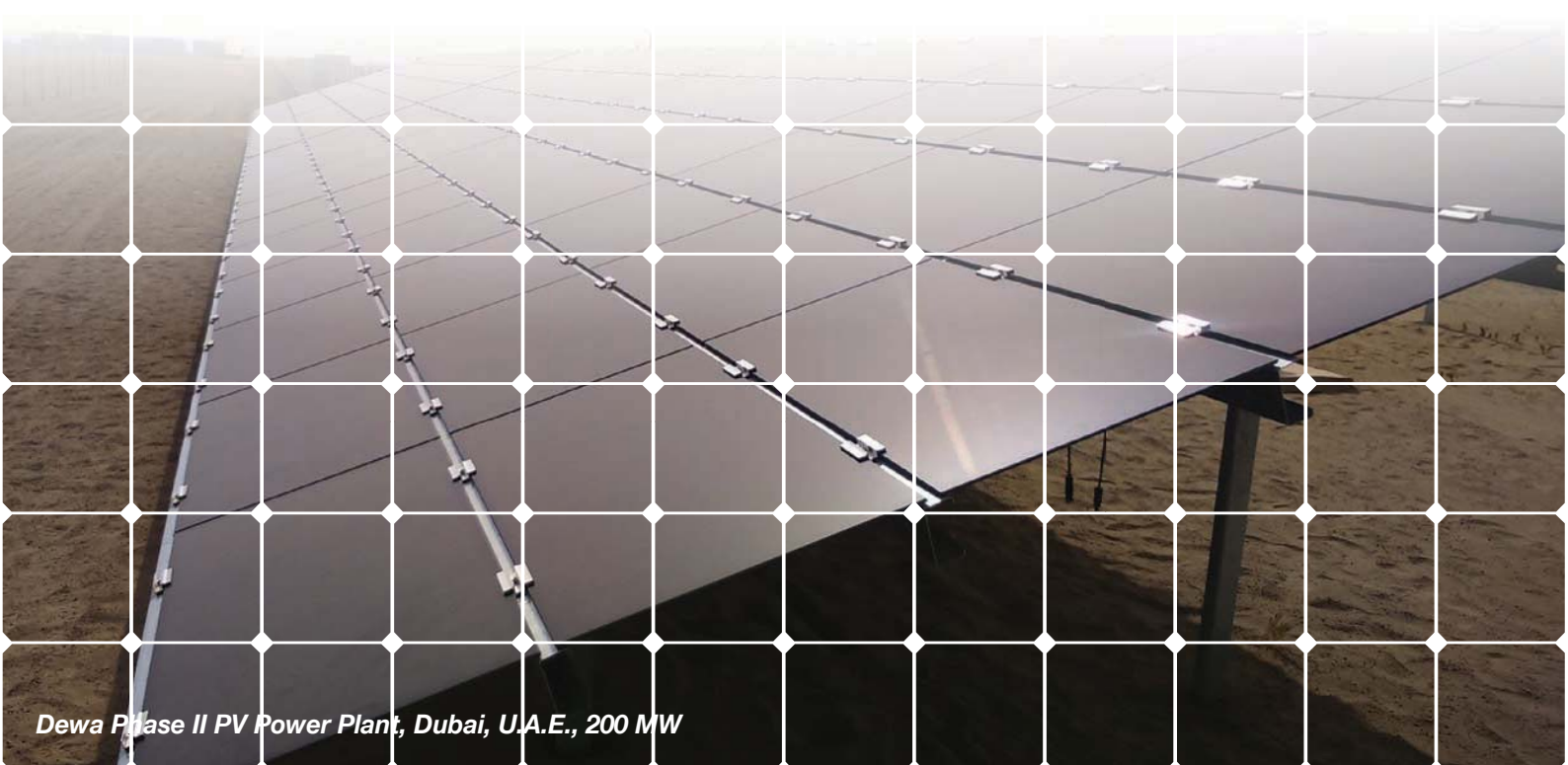
SOME OTHER PROVIDED SERVICES

Technical Due Diligence

- Technical evaluation of assets
- Repowering assessment

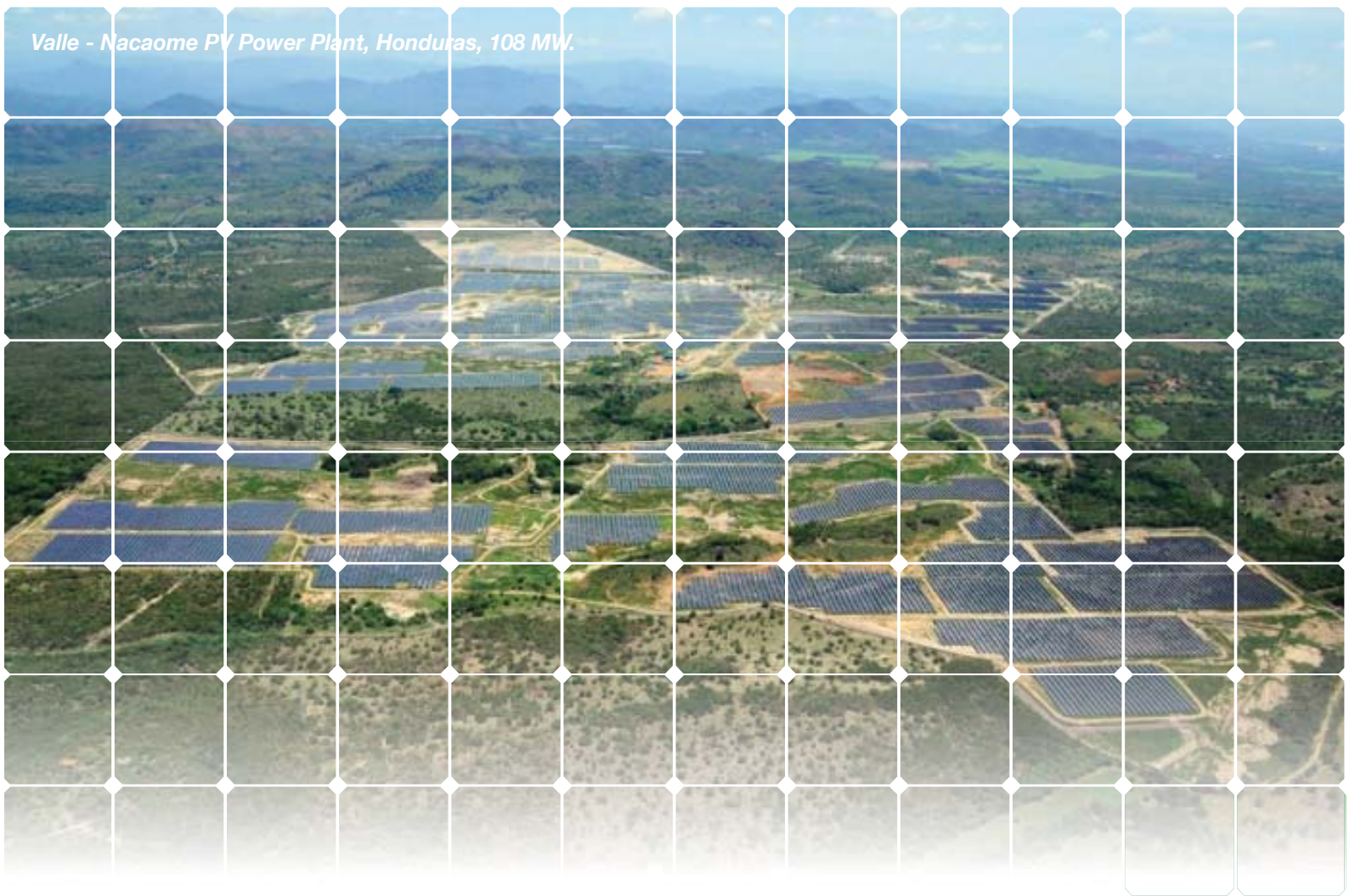
Hybrid Power Plants

- Battery Energy Storage System (BESS) optimum sizing
- BESS performance assessment for either, Frequency Response Control, Ramp Rate Control and Energy Storage derived from energy surplus
- Diesel Gensets performance assessment for Ramp Rate Control in conjunction with BESS
- Weather forecasting integration
- Power Plant Controller (PPC) development in compatible PLC programming language and replicas to attest a reliable and effective insertion of the PV plant within the grid



Dewa Phase II PV Power Plant, Dubai, U.A.E., 200 MW

Valle - Nacaome PV Power Plant, Honduras, 108 MW.



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