

30th Annual Pacific Power Association Conference



Palau's first major step in the Transition to Renewable Energy, the Palau Hybrid IPP Project

September 2023, Saipan



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Renewable Energy Targets and Approach

RENEWABLE ENERGY TARGETS OF PALAU

- Palau has committed renewable energy targets (RETs), driven by the nation's reliance on high-cost diesel generation and strong environmental principles.
- The supply of affordable and clean renewable energy development is fundamental to achieve Palau's goals.
- Palau's RETs as defined in the
 - (i) Palau National Energy Policy (Y2010) and
 - (ii) Nationally Determined Contribution (Y2015)

These targets are:

- ✓ Renewable energy to provide a minimum of <u>20%</u> of electricity requirements by <u>the end of Y2020</u>.
 - ≒ 20 GWh-23 GWh per year
- ✓ Renewable energy to provide a minimum of <u>45%</u> of electricity requirements by the end of Y2025.
 - \approx 52 GWh-55 GWh per year





Project Timeline

Key Milestones	Achieved/[Target]
Issue of Original RFP by PPUC (13 bids)	Feb 2019
Prequalification of Respondents (10 bids)	Jun 2019
Full commencement of Transaction Advisory by Asian Development Bank	Sep 2019
Technical Evaluation of Original Proposals (4 bids)	Sep-Nov 2019
Respondents Conference in Koror	Dec 2019
Technical Clarification and Proposal Update by Respondents	Jan-Feb 2020
Final Evaluation and Announcement of Preferred Bidders (3 bids)	Mar-May 2020
Negotiation of Project Agreements (PPA/GCA)	May-Aug 2020
PPUC Board Approval of PPA and GCA	Oct 2020
PEA Approvals of PPA and GCA	Mar-May 2021
PPA and GCA signing	Apr-June2021
Satisfaction of Conditions Precedent (ROWA signing etc)	Mar 2022
Financial Close and Start of Construction	Apr 2022
Project Construction Completion	June 2023
Connection into the Palau Grid	July 2023
Commercial Operation Date	[December 2023]



Permits secured

- Critical Habitat Assessment & Biodiversity Action Plan 1 Sept 2020
- ✓ UXO Clearance from the Bureau of Public Works 10 Sept 2020
- Study on Specific Threats of Palau Land Snails and Ants 5 Dec 2020
- Land Lease Agreement signed 19 Jan 2021
- Historical Preservation Clearance issued 21 March 2021
- Topo Survey, Flood Study, Geotechnical Study Complete 20 April 2021
- Foreign Investment Board Waiver 3 May 2021
- EQPB permit issued 26 August 2021
- Right of Way Agreements signed 7 March 2022









Project Structure







Palau Solar PV + Battery Storage Project Summary



Powering islands, empowering communities





Australia's Foreign Minister Marise Payne flanked by Australia's resident ambassador, Richelle Turner, and President Surangel Whipps Jr posed for a group photo at the official opening of Australia's embassy in Koror.



Palau Solar PV + Battery Storage

Project Summary



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Project Owner	Solar Pacific Pristine Power Inc. (a subsidiary of Solar Pacific Energy Corporation, Philippines)
Project Financing	Australian Infrastructure Financing Facility for the Pacific (AIFFP) and Export Finance Australia (EFA)
Shareholders	Solar Pacific Energy Corporation, Alternergy and, Sant Foundation
Solar PV Capacity	15.3MWp / 13.2MWac
Battery Energy Storage Capacity	10.2MWac / 12.9MWh
Annual Energy Production	20,000 MWh to 23,000 MWh
Location	Ngatpang, Republic of Palau
Offtaker	Palau Public Utilities Corporation (PPUC)
PPA	Fixed price tariff for 20 years, with 5 year extension
Start of Construction	April 2022
Target Start of Operations	January 2024
EPC Contractor	Juwi Renewables Energies PTE LTD, Surangel & Sons Company Wespac



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Palau Solar PV + Battery Storage Water monitoring









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PROJECT: PALAU	
Site Coordinates	7.46° North, 134.54° East
Fence Area	16.00 ha
PV Area	15.00 ha
Control Bldg Area	300 sqm
Inverter Area	300 sqm
Battery Area	300 sqm
MODULE:	
Module	First Solar
Power	460 Wp
Dimension	2024 x 1245 mm
Qty of Modules	33,216
ARRAY LAYOUT:	
Module Orientation	Tilt: 7° South
Row to Row Clearance	1.25 m
Total DC Power	15.279 MWp
INVERTER:	
Inverter	SMA
No. of Station	3 X 4.4MVA
Total AC Power	13.2 MW
BATTERY:	
Battery	Saft Total
Cathode Material	Lithium Iron Phosphate (LFP)
No. of Unit	6 x 2.3 MWh
Total AC Power	10.2 MW
Total MWh Energy	12.9 MWh

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CHALLENGES & SOLUTIONS

Challenges	Solutions
First IPP development in Palau	 ✓ Establishment of an IPP Committee ✓ Dedicated Personnel ✓ Partnership with ADB ✓ Recruitment of Transaction Advisors (ADB Office of Public-Private Partnership) ✓ Well experienced sponsor and technology holder ✓ Training to personnel
Limited suitable public lands	 ✓ Opened project to private land ✓ Government support with negotiations
Covid = travel restrictions / increased costs	 ✓ Virtual meetings ✓ Flexible negotiations i.e option for extension ✓ Cooperation from IPP ✓ Cooperation from Lender
Grid limitations	 ✓ Incorporate grid limitations into PPA ✓ Include grid upgrades in contract

LESSONS LEARNED

Improvements for next IPP Project

- 1) Market soundings and robust technical due diligence
- 2) Secure stakeholders buy-in prior to tender
- 3) Secure project site prior to tender
- 4) Establish a realistic timeline
- 5) Standardize project documents
- 6) Acquire government guarantee

LESSONS LEARNED

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