

**Tonga Power Limited**

**TONGA POWER LIMITED**

**REQUEST FOR PROPOSALS**

**INDEPENDENT POWER PRODUCERS**

**for**

**SOLAR PHOTOVOLTAIC GENERATION**

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5 APRIL, 2018

**RFP - TPL SOLAR IPP**

**Tonga Power Limited**

**NOTICE TO OFFEROR**

**REQUEST FOR PROPOSALS**

Issuance Date: 5 APRIL, 2018  
PROJECT: INDEPENDENT POWER PRODUCERS FOR SOLAR  
PHOTOVOLTAIC GENERATION  
CLOSING DATE 28 APRIL, 2018

Tonga Power Limited (TPL) requests proposals from qualified Independent Power Producers (IPPs) of Solar Photovoltaic Generation. For more information about this RFP, please contact the following person(s):

Mrs. Fekita Imuli Mataele  
Business Development Analyst  
fmataele@tongapower.to

Mrs. Andrea T. Tora  
Strategic Development Manager  
ataliauli@tongapower.to

Qualified Offeror must submit proposals BY EMAIL to the above contacts.

Tonga Power Limited reserves the right to:

1. Reject all proposals and/or reissue a new or amended RFP or addenda as deemed necessary by TPL;
2. Request additional information from any Offeror;
3. Select a firm for award based on other than “least cost” (e.g. capability to complete work in a timely fashion or proven technical capabilities);
4. Negotiate a contract with the Offeror that is selected for award; and/or
5. Waive any non-material violations of rules set up in this RFP at its sole discretion.

**PROPOSAL INVITATION**  
**TONGA POWER LIMITED**

**ISSUANCE DATE:** 5 April, 2018

**INSTRUCTIONS:**

This Request for Proposals (RFP) shall require an email submission by 28 April, 2018

**NOTE TO OFFEROR:**

This Request for Proposals (RFP) is subject to the attached Terms and Conditions of **the RFP from Independent Power Producers of Solar Photovoltaic Generation.**

The Offeror may include additional information, including company and product brochures.

**Technical Proposal** - The Successful Offeror shall be required, **at a later date**, to submit a Technical Proposal comprising;

- (i) **Technical System Design and Specifications** – Technical description of the proposed system. Technical drawings at a minimum shall include the following
  - (a) Layout of the proposed facility at the site – General Arrangement
  - (b) Electrical One-Line Diagram
- (ii) **Technical System Monitoring** – The Technical description shall include type of monitoring information of the Solar PV system through SCADA.
- (iii) **Solar PV System Capacity, Energy and Energy Storage** – The Technical description shall include the Proposed Solar PV system generating capacity (MW), capacity factor and energy (MWh) performance benchmarks. Proposed energy storage system (MWh) for grid stability. The Offeror shall submit tables and forms outlining matrixes of the Solar PV system on capacity, energy and energy storage for each site.
- (iv) **Offeror’s Professional and Installation Team** – The Offeror shall describe the individuals and qualifications of the project team with assigned tasks.

**GENERAL TERMS AND CONDITIONS Request for Proposals (RFP) From Independent Power Producers of Solar Photovoltaic Generation**

**1. Overview**

The Tonga Power Limited is soliciting proposals from qualified Offerors to design, fabricate, deliver, install, operate and maintain ground mounted grid interconnected solar photovoltaic systems under a Power Purchase Agreement (“PPA”) with TPL.

Offeror must demonstrate the ability to perform the work described in the Scope of Services set forth in this Solicitation and have significant experience successfully performing comparable work.

This solicitation seeks responses from suitably qualified developers, manufacturers and IPPs from which TPL intends to select one, or more, Offeror(s) to negotiate Power Purchase Agreements (PPA) and to install generation PV facilities that best fit TPL’s needs.

**TPL is seeking installation of up to 6 MW (AC) of Solar PV systems.**

Selected IPPs will be responsible for operating and maintaining all facets of the solar PV systems and for generating the agreed contracted energy production.

The successful Offeror will be responsible for financing, designing, engineering, constructing, installing, operating, and maintaining the solar PV system(s) at the solar development Site(s).

The scope of services requested in this RFP shall include, but not be limited to and providing all labour, services and equipment necessary to design, procure, install, construct, test, commission, monitor, operate, and maintain fully operational solar PV systems.

The successful Offeror will, **at a later date**, provide a detailed explanation of the complete project and a delineation of all work tasks to be performed by the awarded Contractor.

TPL will provide the land suitable for PV installation and secure all sites, permits and approvals from governing agencies.

This Request for Proposal (RFP) does not commit TPL to the award of a contract or contracts, nor to pay any cost incurred in the preparation and submission of proposals in anticipation of a contract.

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### **2. Background**

Tonga in the South Pacific Ocean, depends on imported diesel fuel and other fossil fuel products for power generation. These relatively small isolated power systems with no interconnections have high electricity tariffs. Increasing concerns about environmental impacts, growth in electricity demand, and oil price volatility create urgent needs for providing a path toward less oil dependence, lower cost, lower environmental impact and sustainable energy future for Tonga.

Tonga Power Limited (TPL) is the sole electricity utility operating in Tonga and is an entity of the GoT.

A total of 5.74 MW of ground mounted solar PV is already connected to the TPL grid.

### **3. Basis for Selection**

Each Proposal will be subject to an evaluation by TPL management and Board and subject to GoT approval.

### **4. Power Purchase Agreement**

Selected Offeror(s) will be invited to negotiate a Power Purchase Agreement (PPA) for 25 year term for a facility up to 6 MW.

The successful Offerors will also sign an Interconnection Agreement.

### **6. Evaluation Criteria**

The preferred, but not mandatory, tariff proposal requested by TPL is for a PPA tariff for a solar facility up to 6 MW as follows:

- Fixed price per kWh AC for 25 years paid monthly.
- Denominated in TOP (Tongan pa'anga).
- Ownership of the facility reverts to TPL for nil Residual Payment at the expiry of 25 years.
- No energy storage component included.
- No micro-grid controller included.
- No cost for land or the obtaining of all approvals and regulatory requirements.
- The Offeror performs entire EPC.
- No corporate tax paid in Tonga by the SPV.

Offerors are at liberty to provide tariff proposals based upon variations or additions to the above criteria.

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TPL will also consider the following characteristics, not necessarily listed in the order of importance:

- Experience.
- Financial Capacity.
- Strength of Development & Construction Plan.
- Strength of Operations & Maintenance Plan.
- Financial Strength of Offeror & Other Project Participants.

### 7. **Term of the PPA**

Offerors shall enter into PPA agreements with TPL for a term of twenty-five years (25).

Under the PPA, projects will be required to achieve the Commercial Operation Date by the sixth month or sooner after execution of the PPA.

### 8. **Scope of Work**

The scope of work provided, **at a later date**, by the successful Offeror shall include all tasks required to design, fabricate, deliver, install, operate, and maintain up to 6 MW (AC) solar photovoltaic electric generating system for TPL under a power purchasing agreement.

TPL will secure all permits and approvals from governing agencies, all labour, taxes, services, and equipment necessary to produce the fully operational solar PV system.

#### A. Technical Information

The technical information/specification applicable for the proposed project must comply with all relevant NZ and/or Australian Standards.

The successful Offeror will be required, **at a later date**, to provide the following information prior to concluding are listed below.

- Technical information for the facility including solar technology type, model, make, configuration, plant layout diagrams, nameplate capacity rating, net plant capacity, annual net output, forecast capacity factor, commercial operation date, service/design life, etc.
- DC and AC PV capacity rating and expected energy production in kWh/MWh by month and by year, annual production throughout the PPA term based on expected de-rated values of PV system, production output due to maintenance etc
- For Grid Stability the range of sizes and flexibility of energy storage solutions; both MW charge/discharge capability and MWh storage capability should be clearly explained, including any special modularity and scalability features
- The proposed PPA rate should include the levelized cost of system for both storage and the PV system in \$/kWh; initial capital and ongoing O&M costs including lease costs as well as proven round-trip efficiency should be clearly explained

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- Technical information on the type and capacity of the battery storage system. Dispatch strategy to stabilize grid due to loss of PV capacity needs to be addressed
- Due to environmental/disposal reasons lead acid battery storage systems are not preferred
- Proposals shall demonstrate a proven, comprehensive data acquisition system with current and historical data available remotely through a real-time internet site capable of tracking, but not be limited, to the following:
  - Site-specific actual kWh/MWh production (average and cumulative totals)
  - Site-specific instantaneous kW/MW capacity output
  - Expected annual hourly output profile
- Performance specifications and curves, including expected degradation, for PV panels and inverters
- A comprehensive timeline indicating the ability to achieve commercial operation within required timeline
- TPL Interconnection point and metering point, including any expected equipment upgrade requirements, if known
- Construction warranties, including balance of plant warranties
- Decommissioning of the Project and restoration of the Sites upon the expiration of the PPA, including Offeror's program for recycling of the PV panels, if any
- Proposals shall provide evidence that the proposed technology and equipment would meet or exceed all currently applicable and proposed safety and interconnection standards. All equipment components must be listed or recognized by an appropriate safety laboratory (e.g., Underwriter's Laboratory [UL]), and meet existing facility structural and fire safety requirements.
- Electrical interconnection to TPL grid and metering requirements
- Facility limitations that may constrain operation

Awarded Contractor shall secure from governing agencies, all required rights, permits, approvals, etc at no additional cost to TPL.

### **Electrical Interconnections**

Offeror to build to security fence. TPL will supply and install all equipment required to interconnect the solar PV systems to the TPL distribution system. The awarded Contractor will fulfil all application, studies, and testing procedures to complete the interconnection process. All costs associated with utility interconnection shall be borne by the awarded Contractor.

### **Commissioning and Acceptance Testing**

During the start-up, TPL, and/or its Contractor, shall observe and verify each system performance. Required commissioning and acceptance test services include:

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### **Monitoring**

Monitoring of system performance shall be integrated to the TPL SCADA system. Provide a turnkey data acquisition and display system that allows TPL to monitor, analyse, and display historical and live solar electricity generation data. The regularly collected data should reflect, but not be limited to, the following:

- System performance
- System availability
- Average and accumulated output
- Capacity factor
- Degradation

The data acquisition system shall be designed for turnkey, remote operation. Data shall be transmitted via Internet or telephone from the site to a server managed by the Contractor or service provider. Data storage, management, and display will be the responsibility of the Contractor.

### **Plan for Regulatory and Environmental Compliance**

The successful Offeror must comply with the Tonga building standard codes, utility requirements, wind uplift requirements as well as Occupational Health and Safety requirements.

TPL will assist in obtaining and maintaining all required permits, licenses, approvals and/or variances, current or future. Offerors are required to demonstrate that they are capable of meeting standards required by all permits and licenses.

### **Financial Proposal (no page limitation, in a separate envelop)**

The Offerors Financial Proposal must be submitted in a separate envelop Only Financial Proposals from these Offerors that meet the minimum experience requirements and provide complete and thorough responses to all information requested will be reviewed to determine which, if any, will provide the most beneficial impact to Tonga.

### **Codes, Standards, and Methodologies**

All products and components outlined herein must conform to the following codes, standards, and rating methodologies:

- A. Photovoltaic modules and inverters eligible for this proposal must comply with all AS/NZS Standards.
- B. The mathematical method for specifying PV system output in kWh/MWh must be typical system alternating current (AC) power rating of the proposed PV system using the National Renewable Energy Laboratories' (NREL) methodology (PV Watts Calculator) or equivalent. Specify annual degradation expected over 25 years (in percentage degradation per year).
- D. PV module efficiency
- E. Must comply with wind uplift requirements per NZ and Australian Standards.



# Tonga Power Limited

## Qualifications

### Company Overview

Please provide the following information:

- Status (private/publicly-held, Corporation, Joint Venture, LLC, etc.)
- Number of employees
- States and countries in which you do business
- Target customers (residential, commercial, industrial, GoT, etc.)

Project team profile, including:

- Resumes of personnel to be directly involved with the development of the proposed systems
- Team leader identification for the entire Proposal, including full contact information
- Identification of each entity, sub-contractor, person or firm involved in the Proposal and their role/responsibility, e.g. design, installation, permitting, equipment supply by component, operations and maintenance
- Identification of the lead person responsible for each of the entities or firms described in above Team organization chart

### EXPERIENCE AND REFERENCES

Offeror must provide comprehensive information for five (5) commercial grid-connected PV projects installed over the last five (5) years. Experience will not be considered unless all the reference data in the following table is provided completely, including at least one (1) customer reference for each project listed. TPL may solicit, from previous customers, relevant information concerning the Offeror's record of past performance. Also include project profiles for each listed project. In any of these projects can be reviewed on-line, please provide the URL for such project.

<b>Experience and Reference Information</b>	<b>Referenced Project #1 (Required)</b>	<b>Referenced Project #2 (Required)</b>	<b>Referenced Project #3 (Required)</b>	<b>Referenced Project #4 (Required)</b>	<b>Referenced Project #5 (Required)</b>
Exact role(s) your organization performed for the project					
Name of lead contractor					
Location					
Application description (Product name/type, PV module used)					
Date installed					
Project cost					
kW rating					

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Cumulative kWh produced since system installation					
Current operational status of system					
Customer Name					
Customer Title at time of Project					
Customer's Role in Project					
Customer's Address					
Customer's Telephone					
Customer's Email					

**12.0 FINANCIAL CAPABILITY**

The successful Offeror must demonstrate the financial viability of proposal to provide assurance that the Offeror, and any other party involved in the proposal, has adequate financial capability to execute the project. In narrative format, each Offeror must include the following information at a minimum:

- Description of any current credit issues raised by rating agencies, banks, or accounting firms
- Proposed financing structure for the project, including all sources, uses and timing
- Financial guarantees from affiliates or others, as appropriate

**13.0 LEGAL ACTIONS (no page limitation)**

Provide a listing and description of all legal actions of the past three (3) years in which the Offeror or any team member has been:

- A debtor in bankruptcy;
- A defendant in a lawsuit for deficient performance under a contract;
- A defendant in an administrative action for deficient performance on a project; and
- A defendant in any criminal action.

List all lawsuits, regulatory proceedings, or arbitration in which the Offeror or its affiliates or predecessors have been or are engaged in that could affect Offeror's performance of its bid; Identify the parties involved in such lawsuits, proceedings, or arbitration, and the final resolution or present status of such matters. TPL will take into consideration the nature and frequency of all legal actions in their selection process.