Call for Expressions of Interest

Tonga Power Limited - Independent Power Producer for Renewable Energy Generation (34GWh+ per annum)

1 July 2021

Contents

Project Overview

Tonga Power Limited (**TPL**), a corporation owned by the Government of the Kingdom of Tonga (**GKOT**), is responsible for electricity generation, transmission, and distribution throughout the islands of the Kingdom.

The current installed and operating capacity of TPL's generating fleet on the main island of Tongatapu, which is the subject of this Expression of Interest (**EOI**), is approximately 14MW of diesel generation and 5.6MW of renewable energy (solar PV and wind).

As part of its second Nationally Determined Contribution (**NDC**) under the Paris Climate Agreement (submitted December 2020), GKOT committed to reaching 50% of electricity generated from renewable sources by 2020, increasing to 70% by 2030. Renewable energy generation (currently in operation and/or commissioning) accounts for approximately 24% of total gross generation, with additional projects in the pipeline to bring the renewables share to approximately 55% by 2023 without further project development.[1]

In an effort to achieve the renewable energy targets of the GKOT, TPL seeks to implement one or more Renewable Energy Generation Facilities (**REGF**) under a single procurement, allowing for the retirement of older diesel gensets in its portfolio. TPL is now required to purchase a further 34GWh to 50GWh per annum of renewable energy generation for the island of Tongatapu to meets its commitments under its NDC.

To this end, TPL is now soliciting EOIs from suitably qualified Independent Power Producers (**Respondents**) to design, finance, procure, fabricate, deliver, construct, test, commission, monitor, operate and maintain one or more REGFs under a 20+ year[2] Power Purchase Agreement (**PPA**) with TPL.

This project is intended to:

- provide an environmentally responsible alternative to the predominantly fossil fuel-based electricity generation in the Kingdom of Tonga;
- provide a renewable energy source that supplies reliable electricity to the Tongatapu grid at a competitive rate; and
- enhance reliability and cost-efficiency of the electrical network by including storage and dispatchability.

The intent of this EOI is to:

- identify interested Respondents who wish to participate in the subsequent Request for Tender (**RFT**) process;
- facilitate early market engagement with potential Respondents for their involvement in future renewable energy and storage projects on Tongatapu;
- incorporate Respondent feedback from this EOI response into the RFT package where applicable.

[1] A copy of the NDC can be found here:
https://www4.unfccc.int/sites/NDCStaging/Pages/Party.aspx?party=TON&prototype=1

[2] Exact duration of the PPA to be negotiated.

Project Requirements

Quantum of Annual Energy required under this EOI

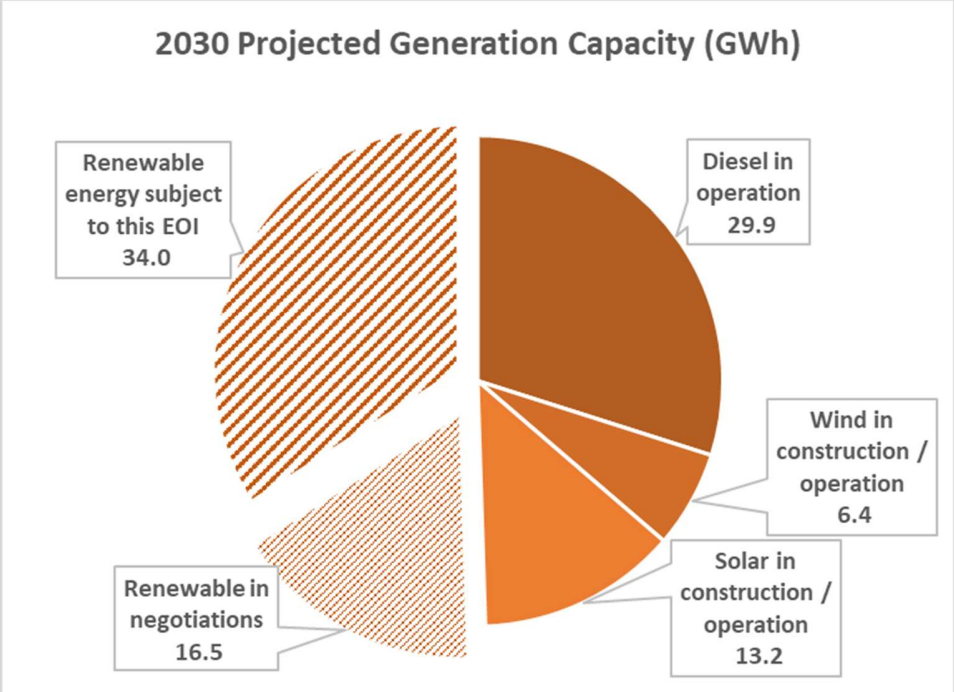
TPL has existing generation installed which in 2030 shall provide 29.9GWh (diesel), 6.4GWh (wind) and 13.2GWh (solar).

In addition, TPL has several renewable energy projects under negotiation which are planned to deliver a total of 16.5GWh per annum by 2030 (solar, wind and battery).

The operational generators and the renewable projects in negotiation are further described in the section titled, "Co-ordination with Other Generation Facilities", below.

Under the RFT to which this EOI relates, TPL would require to procure a minimum of 34GWh. However, this amount could increase by up to a further 16.5GWh (the quantity under negotiation) depending on the eventual outcome of each of the projects in this category.

Of the 34GWh stated above, TPL requires at least one REGF to be brought online by the end of 2023.



Technology Agnostic

TPL does not have a preference for the renewable energy technology employed to meet the quantum of annual energy required under this EOI.

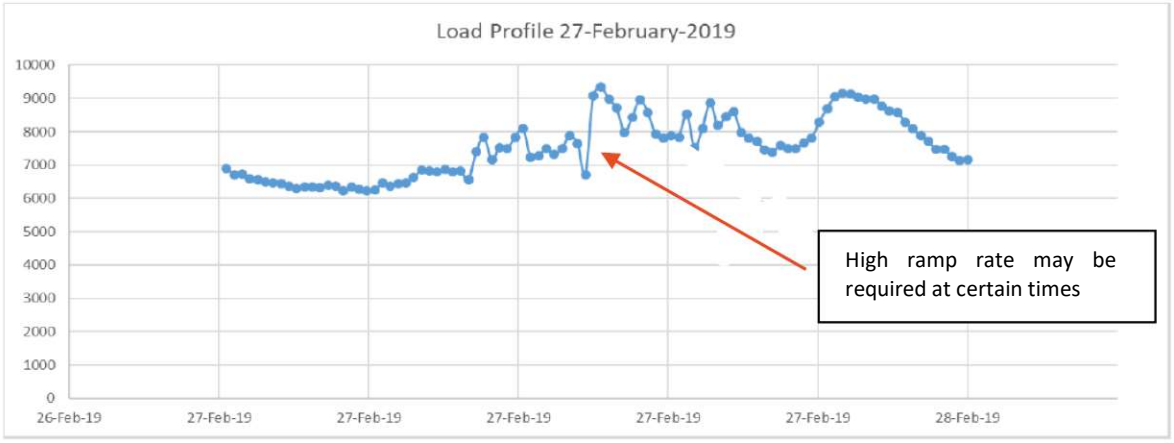
Dispatchability Requirement

The REGF(s) will be required to have some or all of its capacity to be fully dispatchable.

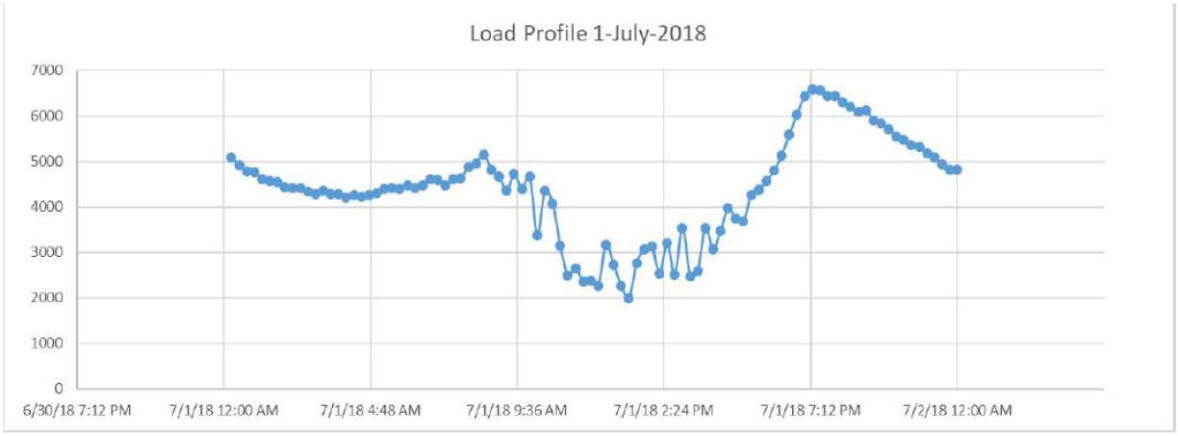
It is currently not envisaged to operate the Tongatapu network without at least one of the currently installed diesel generators running at all times to provide necessary network stability and support.

As such, the REGF(s) will need to cover a considerable proportion of the nighttime electrical demand to achieve 70% renewable energy.

The examples below illustrate the variability of the Tongatapu network load.



Maximum Load Profile Example: Wednesday 27th February 2019



Minimum Load Profile Example: Sunday 1st July 2018

Co-ordination with Other Generation Facilities

TPL's existing generation assets are as follows:

- 2 X 2.78 MW 6CM32 Caterpillar MAC Diesel at Popua Power Station (operating)
- 6 X 1.4 MW 3516B Caterpillar Diesel at Popua Power Station (operating)
- 1.3 MW Maama Mai Solar Farm at Popua Power Station (operating)
- 1 MW Vaini Solar Farm (operating)
- 2 MW Villa Solar Farm (operating)
- 1.3 MW Wind Farm near Niutuoa (operating)
- 3 x 2MW solar farms at Matafouna, Fahefa, and Liukava (to be commissioned in Q3 2021)
- 5.1MW/2.5MWh grid stabilising battery energy storage system (BESS #1) (to be commissioned in Q3 2021)
- 5MW/17.4MWh battery energy storage system (BESS #2) (to be commissioned in Q3 2021)
- 2MW Wind Farm near Haveluliku (to be commissioned Q3 2022)

TPL is separately procuring and in negotiation with the following other relevant facilities:

- 2 x 3MW solar farm at Vaini and Pelehake to be commissioned in Q2 2023
- 1 x 4.5MW wind farm near Niutuoa to be commissioned in Q4 2023.

The control philosophy will be that all generation assets are centrally coordinated by TPL who will send specific dispatch commands from its common platform to the individual generation assets.

Therefore, it is critical that the SCADA and communications protocol is developed closely with TPL as part of the REGF development.

Information Provided / to be Provided by TPL

Available Electrical Demand (Load) Data

The data provided in Annex B detail the 15 minute load profiles for Tongatapu from 2019. It is important to note the following:

- This data set is net of the three operational solar farms (1.3 MW Maama Mai Solar Farm, 1MW Mata ‘oe La’a (Vaini) Solar Farm, 2 MW Matatoa Villa Solar Farm and the JICA wind farm.

- In other words, the meter for each transmission line is only showing what the diesel generators had to produce to meet the load, and not how much of the load was supplied by the 4 renewable generators listed in the bullet point above.

Grid Studies

TPL will conduct technical grid studies with inputs provided by the successful Respondent, and will provide all available grid information. TPL will act as the network operator for the REGF.

Land & Permitting

Respondents are to provide details of their land requirements for their specific REGF solution. For the purposes of this EOI, assume that the land requirements are available (within reason). TPL has considerable experience in sourcing and securing land on Tongatapu for power generation projects.

TPL will secure all development permits and approvals from governing agencies necessary for the installation of the REGF(s) by the successful Respondent. The Respondent will be responsible for securing the necessary construction permits for the project.

If Respondents wish to provide the land and associated development approvals, then this option may also be considered during the evaluation of the entire project.

Scenario Analysis

A major objective of this EOI is to understand how different assumptions around energy quantity, technologies, timing, and commercial terms may impact the power price to better inform the RFT. To this end, Respondents are asked to provide responses to the following scenarios:

- **Scenario 1:** Your preferred technology(ies) to meet TPL's requirements of 34GWh p.a. (Base Case), with at least one REGF in operation by the end of 2023
- **Scenario 2:** Different combinations of technologies to drive down the PPA price
- **Scenario 3:** Different timing of implementation (beyond the 2023 requirement) to further drive down the PPA price
- **Scenario 4:** Different commercial assumptions to drive down the PPA price
- **Scenario 5:** Increased capacity to take the generation from 34GWh per annum up to 50GWh per annum in incremental steps
- **Scenario 6:** Ability to supply the network load without a diesel generator constantly running (Optional).

For the Base Case (Scenario 1), Respondents are requested to provide the following information (**Deliverable 1**):

- Technical
    - Choice of technologies
    - Capacities of technologies
    - List of major equipment
    - Annual quantum of energy to be generated
    - Energy generation profile
    - Land requirements
    - Warranties (equipment and performance).

- Commercial[3]
    - Project structure and development, including delivery models
    - Potential commercial and financing solutions, structures and approach
    - Wishlist of key PPA terms (though a 20-year PPA should be assumed as a base case for comparison across responses).

- Indicative PPA pricing (in USD/MWh)
- Project timeline
- Potential project risks.

Respondents are then required to complete the table in Annex A2 to describe the changes to assumptions from the base case for each of the scenarios (2-6) (**Deliverable 2**).

[3] TPL will be seeking tax exemptions for the project from the Government of Tonga. Consequently, in submitting your bid, you may assume that the project company will be exempt from all corporate income tax, withholding tax, sales and/or value added tax, import duties and tariffs arising from or connected with the project.

Respondents will also need to provide the following information (**Deliverable 3**):

- Details of organization
- Contact name and information
- Respondent track record for at least 3 similar projects including:
    - project details
    - customer/off taker details and contact information for references
    - financing details
- Parent company financials
- Project team leadership and member details and curriculum vitae.

Respondents are encouraged to provide any other relevant information to help contribute to the RFT process to achieve a balanced outcome between the Respondent and TPL and to identify areas where the PPA price can be minimized (**Deliverable 4**, optional).

EOI, RFT and Project Implementation Timetable

TPL is working towards the following schedule for this EOI, subsequent RFT, tender completion and project implementation:

Item	Timing
EOI Responses Due	30 July 2021
Completion of EOI Evaluation and shortlisting of Respondents	31 August 2021
Release of Tender	01 October 2021
Tender Submission	15 December 2021
Tender Evaluation, Award, and PPA signing	29 April 2022
Financial close	29 September 2022
Engineer, Procure, Construct & Commission (first REGF)	October 2022 – November 2023
First REGF in operation	December 2023

How to Prepare your EOI

- Carefully read all parts of this EOI package and ensure you understand the requirements

- Complete all deliverables as follows:
    - Deliverable 1: Description of Base Case (Annex A1)
    - Deliverable 2: Scenario Summary (Annex A2)
    - Deliverable 3: General company information (Annex A3)
    - (Optional) Deliverable 4: Other relevant information/guidance to improve pricing (Annex A4)

Submitting your EOI

Complete EOIs must be submitted by email to TPL no later than 16:00 Tonga time **30 July 2021**.

Any questions and/or requests for clarifications must be addressed by email to TPL before 16:00 Tonga time on **16 July 2021**. TPL will endeavour to respond to all questions within 5 working days. TPL will make all questions and answers that it provides available to all Respondents.

TPL contact for EOI submission and questions/requests for clarifications is:

Finau Katoanga
Large Projects Manager
fkatoanga@tongapower.to

Evaluation Criteria

The following criteria (in no specific order or weighting) will be used to evaluate the EOI submissions:

- Quality of EOI response, level of engagement by Respondent and associated feedback received
- Quality of technical solution and compliance with EOI requirements
- Capability and experience with similar IPPs, preferably in the region
- Indicative PPA price range per MWh and other commercial terms

Shortlisted Respondents will be invited to respond to the RFT. Any contract award will be made in accordance with the terms of the RFT.

Important Notes

The information developed through this EOI will be used to evaluate the market interest for IPP-led development of renewable energy generation and storage for the Kingdom of Tonga, to be procured by TPL.

It is currently intended that Respondents will need to submit a response to this EOI in order to qualify for any subsequent RFT.

However, this EOI does not constitute a commitment, implied or otherwise, that TPL will take action in this matter, including issuing an RFT. Neither TPL, nor GKOT will be responsible for any costs incurred in furnishing responsive information.

All costs related to the preparation of EOIs are to be borne by the Respondents.

The Respondent acknowledges that the information provided is, to the best of its knowledge, complete and accurate.

Respondents are also encouraged to seek independent tax and legal advice in preparing their EOIs.

TPL evaluation criteria place significant weight on capabilities and experience of Respondents, and not solely on PPA price.

Respondents accept that information and analysis contained in the EOI response become the property of TPL upon submission.

Governance

The Asian Development Bank, through the Tonga Renewable Energy Program (**TREP**) is providing technical assistance to TPL for the preparation and execution of this EOI. The evaluation of EOIs will be conducted by TPL management, with support from TREP. TPL management will make a recommendation to the TPL Board, who will seek GKOT approval before further steps are taken in this process.

Annex A1: Base Case Detailed Description (Deliverable 1)

Scenario 1 (Base case)	Details
Indicative price range (USD/MWh or TOP/MWh)	
Energy per annum (GWh p.a.)	
Choice and Capacity of technologies	
List of major equipment	
Land requirements	
Timing	Attach Separate Gannt chart (or similar)
Project structure and development, including delivery models	

Scenario 1 (Base case)	Details
Potential financing provider, structure and approach	
List of "Wishlist" Commercial terms	
Key Risks & Mitigations	
Notes/other key assumptions	

Annex A2: Scenario Summary Table (Deliverable 2)

	Indicative price (range)	Energy per annum (GWh)	Technology	Timing	Commercial terms	Notes/other key assumptions
Scenario 1 (Base case)	*(USD or TOP/MWh) as detailed in Deliverable 1*	*34 GWh*	*Description of renewable technology (including storage) as detailed in Deliverable 1*	*#, size, and target commissioning dates to meet GWh requirement as detailed in Deliverable 1*	• *20-year PPA* • *Financing assumptions as detailed in Deliverable 1*	*As detailed in Deliverable 1*
Scenario 2 (Different technologies)	*[REVISED PRICE RANGE]*	*No change*	*[DIFFERENT TECHNOLOGIES]*	*No change*	*No change*	
Scenario 3 (Different timing)	*[REVISED PRICE RANGE]*	*No change*	*No change*	*[DIFFERENT TIMING]*	*No change*	
Scenario 4 (Commercial improvements)	*[REVISED PRICE RANGE]*	*No change*	*No change*	*No change*	*[DIFFERENT TERMS]*	
Scenario 5a (Increased capacity)	*[REVISED PRICE RANGE]*	*40 GWh*	*[DIFFERENT TECHNOLOGIES]*	*[DIFFERENT TIMING]*	*No change*	
Scenario 5b (Increased capacity)	*[REVISED PRICE RANGE]*	*45 GWh*	*[DIFFERENT TECHNOLOGIES]*	*[DIFFERENT TIMING]*	*No change*	
Scenario 5c (Increased capacity)	*[REVISED PRICE RANGE]*	*50 GWh*	*[DIFFERENT TECHNOLOGIES]*	*[DIFFERENT TIMING]*	*No change*	
Scenario 6 (No diesel backup)	*[REVISED PRICE RANGE]*	[HIGHER CAPACITY]	*[DIFFERENT TECHNOLOGIES]*	*[DIFFERENT TIMING]*	*No change*	

Annex A3: Organisational Information (Deliverable 3)

Details of organization	
Contact name and information	
Respondent track record for similar project #1 including: • **project details** • **customer details and contact information for references** • **financing details**	
Respondent track record for similar project #2 including: • **project details** • **customer details and contact information for references** • **financing details**	
Respondent track record for similar project #3 including: • **project details** • **customer details and contact information for references** • **financing details**	
Parent company financials	Provide separate financial records (3 years' audited financial statements preferred)
Project team member details and curriculum vitae	

Annex A4: Relevant information/guidance to improve pricing (Deliverable 4)

Relevant information/guidance to improve pricing	

Annex B: Tongatapu Load Data from 2019

Refer attached excel file.