TONGA Independent Power Producers (IPP) & Power Purchase Agreement (PPA)

6 June 2017

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Summary

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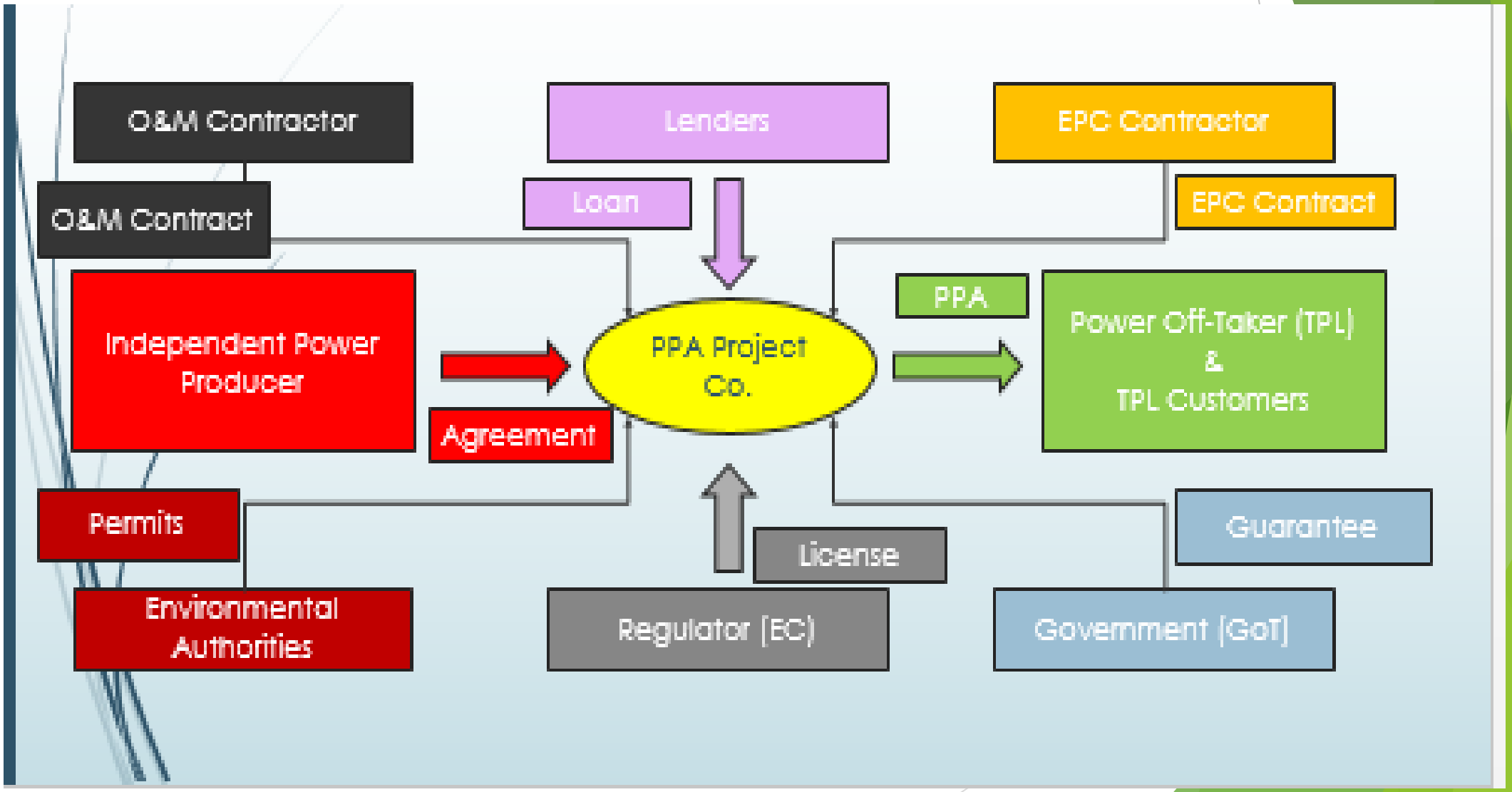
OVERVIEW

- Tonga currently has two main solar facilities of 1.0 MW and 1.3 MW which are both operated and maintained by TPL. Other minor plants (Vv 420kw, Hp 550 kw, 200kw).
- TERM 50% RE target - the Introduction of **IPP/PPA** will assist to expedite moving Tonga towards achieving this target.
- Biggest Solar farm in Tonga.
- TPL conducted a Request for Price (RFP) for interested IPP participants for installation of up to 6 MW of additional solar PV under a Power Purchase Agreement in February 2016. Singyes was selected after an exhaustive and detailed selection process. (First 2MW only).
- An MOU was executed with Singyes on 1 April 2016.
- AECOM have completed a detailed Engineering report on the installation and interconnection of 6 MW including battery storage.
- Negotiations with Singyes on the PPA and the technical and engineering aspects of their proposal has been conducted in detail since 1 April 2016.
- The PPA document is now well advanced, executed last year and construction has commenced.

PRIMARY OBJECTIVES

- To assist in complying with the TERM target of 50% renewables by 2020.
- To utilize 3rd party private sector finance for renewable electricity generation.
- Reduce the reliance on imported diesel fuel for power generation.
- Achieve sustainable, affordable and reliable electricity for the nation.
- Maintain TPL financial viability.
- Support the strategic direction of lowering electricity tariffs for the nation.

TYPICAL IPP STRUCTURE



Offtaker & IPP relationship

- the IPP to accept the full financial risk on capex and performance and production the plant. Despite this The local power company and the regulator will adjust the design and operation of the network to accommodate the planned energy production and despatch to the grid. Hence if the planned production is interrupted even briefly, let alone for long periods, it will cause significant disruptions to the balance and performance of the network resulting brownouts or outages and perhaps ultimately customer tariff increases if alternative production needs to be implemented. Consequently the Offtaker and the regulator have a common vested interest in ensuring the construction, operation and performance of the IPPs power plant meets planned performance criteria.

- the commercial and operational aspirations of the Offtaker and the legal and operational and enforcement requirements of the Regulator overlap to a large degree.

- hence It is essential for the Regulator and the Offtaker of the energy produced eg the local power company such as TPL to work collaboratively to maximise the desired financial outcome for the host country.

- similarly the regulator and the host local power company to work together to ensure network benefits are maximised.

CONSTRUCTION

- tier one equipment.
- - ensure the capabilities and track of the IPP are researched and proven.
  - work is performed by Licenced and regulated contractors.
  - lease of land is for a period exceeding the term of the ppa.
- technical and engineering design is performed by tier 1 consultants and approved by the host power company and regulator to ensure it complies with all local standards and will be integrated seamlessly into into the local network.
- transformers and interconnection design to comply with all regulatory standards and local requirements.
- completion date is coordinated with the local power company and planned and managed to meet local requirements.
- interconnection to the grid is either conducted by the local power company or is closely managed by the local power company.
- construction progress is kept to schedule so grid instability does not occur if interconnection is late or early.

OPERATION

- planned output is strictly adhered to.
- outages and fluctuations are avoided.
- Maintenance schedules are complied with.
- O&M costs are met prior to repatriation of any dividends to IPP.

FINANCE

- required equity from the IPP is proven.
- ensure the level of debt is kept within reasonable commercial limits if not prevented altogether.
- availability to drawdown equity and debt is assured.
- Local power company or reg has ability to step-in and ensure all ppa requirements are adhered to.

PPA PROVISIONS

- The ppa is an extremely complicated document and requires experienced advisors and consultants.

- Local power company and/ or regulator retains the ultimate sanction to step in and takeover the power plant in the event of persistent or serious breaches.

-All approvals from local authorities are in place prior to commencement of construction.

- Commissioning is performed by reputable external consultants and ultimately approved by the local power company.

PRE AND POST PPA APPROVALS

The following matters were required prior to execution of the PPA

- GoT agreement
- TPL Board Approval
- Singyes Board Approval
- Agreement by the Electricity Regulator
- Sign off from chapman Tripp (TPL Lawyers)
- Satisfactory Due diligence on Singyes
- Proof of funds from Singyes.

The following matters are to be addressed on finalising PPA (Conditions Precedent)

- Approval of engineering, Design and Construction drawings
- Approval of all technical equipment (panels and inverters etc)
- Completion of all environmental permits and approvals.
- Singyes request and GoT determination for Taxation relief
- Land rental agreement
- Approval of construction contract and other matters

Other Projects to reach 50% RE

Priority Project to reach 50% RE Penetration	
2.3MW and 1.15MWh Battery Energy Storage System, Scada Control & Mini Grid Controller	$7,081,920
2 MW Solar PV Farm (Central West Tongatapu), including Energy Storage of 700kW and 350kWh Battery	$5,311,440
2MWSolar PV Farm (South West Tongatapu) including Energy Storage of 700kW and 350kWh Battery	$5,311,440
Long term Energy Storage of 2.3MW and 16MWh Battery in Tongatapu	$11,065,500
400kW Solar PV Farm and 500kWh battery storage	$2,500,000
500kW Solar PV Farm (Vavaú) and 1.1MW and 1.5MWh battery storage in Vava'u to achieve 50% RE penetration	$2,655,720
1.3 MW Wind Farm (Tongatapu, Niutoua village)	$5,311,440
2 MW Wind Farm (Extension for Niutoua Phase 3 towards Tongatapu, Lapaha village) including Energy Storage of 900kW and 450kWh Battery	$7,967,160
2 MW Wind Farm (Lapaha village) including Energy Storage of 900kW and 450kWh Battery	$7,967,160
TOTAL	**$55,171,780**

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QUESTIONS ??