

REQUEST FOR PROPOSAL
in respect of the
LARGE SCALE SOLAR
PHOTOVOLTAIC PLANT PROGRAMME
2017 & 2018

ENERGY COMMISSION
Briefing Session on 26 May 2016
Cempaka Sari Auditorium
Kompleks Perbadanan Putrajaya
24, Persiaran Perdana
62695 Presint 3, Putrajaya

Presentation by TNB (Single Buyer Department) on

Head of Terms

Large Scale Solar

Power Purchase Agreement

for connection to the Transmission Network

Agenda

1. *Scope*
2. *Conditions Precedent*
3. *Commercial Structure*
4. *Delay Compensation*
5. *Facility, Interconnection Facilities and Metering*
6. *Despatching*
7. *Despatch Forecast*
8. *Default and Termination*
9. *Force Majeure Events / Change in Law*
10. *Walk Away Events*

1. SCOPE

- **Established Capacity:** ≥ 30 MW_{AC} , ≤ 50 MW at Interconnection Point
- **Connection:** 132 kV only
- **Facility Type and Output:** Purely Solar PV in MW_{AC}
- **Commercial Operation Date (COD):** 1 COD, no incremental allowed
- **Term of PPA:** 21 years from COD
- **Type of Concession:** Build, Own, and Operate (BOO) by the SPP

2. Conditions Precedent

Effectiveness of PPA

- *Letter of Award submitted to TNB and PPA executed*
- *Approved Stage 1 PSS Report*
- *Site Agreement submitted to TNB and ST*

Initial Operations

- *Financial and Project Documents, Performance Security*
- *IE Certificate on the Interconnection Facilities*
- *IPP Licence*
- *Approved Final Stage 2 PSS Report*
- *Commissioning and testing programs approved*

Commercial Operations

- *ST Commissioning Test Certificate*
- *IE Certificate on the testing and commissioning of the Facility*
- *Facility technical and operating requirements submitted to TNB and ST*

3. Commercial Structure

- **Test Energy:** *No test energy payment*

- **Energy Payment**

$$EP = (NEO_{T1i} \times ER) + (NEO_{T2i} \times EER)$$

- **Maximum Annual Allowable Quantity (MAAQ) in MWh**

[Established Capacity x (365/24) x Capacity Factor]

- **Energy Rate**

- *Up to MAAQ – As per award*
- *Beyond MAAQ – Excess Energy Rate @ 1 sen / kWh*

3. Commercial Structure

- **Exceptions to Obligation to Accept NEO**
 - *NEO exceeds MAAQ*
 - *energy delivered over any half hour period exceeds Established Capacity*
 - *energy delivered does not conform with PPA technical specification*
 - *energy delivered not solely driven by Solar PV technology*
 - *Grid System constrains*
 - *emergency condition of Grid System*
 - *maintenance of TNB Metering Equipment of Grid System up to 168 hours per annum*

3. Commercial Structure

- **TNB Payment for Non-Acceptance of NEO:** *Energy Rate x ENEO*

- **Consequences for Non-Delivery**
 - *NEO less than 70% of Declared Annual Quantity in MWh*
 - *$NDR \times [(0.7 \times DAQ \times 1000) - TNEO]$*

- **TNB Back-Up Electricity Supply:** *At tariff determined by TNB*

- **Carbon Credits:** *Pass through for the benefit of TNB*

4. Delay Compensation

- **Delay in achieving SCOD:**
 - *RM2,000 x Established Capacity per day*
 - *Up to 180 days*

- **Abandonment of Project:**
 - *RM2,000 x Established Capacity x 180 days*

- **Performance Security:**
 - *Equivalent to RM2,000 x Established Capacity x 180 days*
 - *Delivery within 7 days after Financial Closing Date or 210 days after Effective Date*

5. Facility, Interconnection Facility (IF) and Metering

- **Facility and IF**
 - *All costs associated with connection borne by SPP*
 - *SPP fully responsible for:*
 - *land acquisition (including permit etc.)*
 - *design, procurement, construction, commissioning, testing and completion of Facility, SPP IF, SPP Interconnector and SPP Works*
 - *any damage to existing installation caused by SPP during extension works within substation and/or relay retrofitting works within TNB IF*
 - *Operation and maintenance of Facility, SPP IF and SPP Interconnector up to Interconnection Point (IP)*
 - *SPP Works*
 - *Extension of existing TNB IF*
 - *TNB LILO Works*
 - *Modification works*

5. Facility, Interconnection Facility (IF) and Metering

- **Interconnection Point (IP) and TNB Metering Equipment**
 - *located at TNB's Substation*
 - *transferred to TNB upon successful installation and testing*

- **Meteorological Monitoring Facilities (MMF)**
 - *at least 1 set of pyranometer for every 2 MW*
 - *weather station for every 10 MW of plant size*
 - *independent and back-up power source)*
 - *real-time data to be transmitted to GSO Control Centre via telemetry facility*
 - *LSS to maintain all historical data*

6. Despatching

- **Ramping Rate**
 - *automatic and manual control*
 - *real power change within specified ramp rate (not exceeding 15% of rated capacity per minute)*
 - *regulated ramp rate for Despatch Instruction, normal load variation, Facility startup, and Facility shutdown*

- **Telemetry:**
 - *SCADA to NLDC,*
 - *Net Energy Meter to TNB*

7. Despatch Forecast

- **Annual Generation Profile / Declared Annual Quantity:**
 - *90 days prior to COD or 1st January of each Contract Year*

- **4 month-Ahead Declared Daily Quantity:**
 - *15 minutes intervals, by 25th of each month*

- **Week Ahead Declared Daily Quantity :**
 - *Saturday to next Sunday (9 days) DDQ in 15 minutes interval, every Wednesday before 12.30 pm*

- **Day Ahead Declared Daily Quantity:**
 - *15 minutes intervals, by 10 am the following day*

- **Half-Hourly Quantity (HHQ):**
 - *Half-hourly intervals for the following 24 hours*
 - *to be updated every half-hour on a rolling basis*

8. Default and Termination

Events of Default (EOD)

- *SPP's EOD:*
 - *Delivery of NEO not driven by Solar PV*
 - *Failure to meet COD within 180 days*
 - *Abandonment of Project*
 - *SPP fails to comply with PPA obligations*

- *TNB's EOD:*
 - *TNB fails to comply with PPA obligations*
 - *Liquidation of TNB*

Termination

- *Breach of PPA*
- *EOD not remedied within prescribed time*
- *FME not cured within 180 days*

8. Default and Termination

Consequences of Termination

- Termination due to default by TNB: SPP has option to sell Project to TNB

Pre-COD Purchase Price	Post-COD Purchase Price
Outstanding indebtedness + Sponsor Gross Equity Contribution + Interest on Sponsors Equity Contribution + Transfer Cost - Retained Sum	Outstanding indebtedness + Sponsor Gross Equity Contribution + B Purchase Price + Transfer Cost - Retained Sum

- Termination due to default by SPP - TNB has option to purchase Project

Outstanding indebtedness + A Purchase Price + Transfer Cost - Retained Sum

9. Force Majeure Events / Change in Law

- **Pre COD affecting TNB:** *TNB pays cost of servicing debt, capped to an amount based on (MAAQ / 365 days) / Energy Rate*
- **Pre COD affecting SPP:** *No payment*
- **Post COD affecting TNB:** *TNB pays Non-Acceptance Payment (to the extent solar energy is delivered)*
- **Post COD affecting SPP:** *TNB pays Energy Payment (to extent solar energy (excluding Test Energy) is delivered)*
- **Change in Law:** *Cost below RM500,000 / year borne by SPP*

10. Walk Away Events

- Critical steps to achieving COD by SCOD
 - *Occurrence of Financial Closing Date*
 - *Issuance of Notice to Proceed under the EPCC Contract*

THANK YOU

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