



**ADDITIONAL INFORMATION**

COMPANY NAME

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## Table of Contents

1. INTRODUCTION.....	1
2. GENERAL DESCRIPTION OF THE PROJECT.....	3
4. SCOPE OF WORKS.....	4
5. QUALIFICATIONS OF ORIGINAL EQUIPMENT MANUFACTURER.....	6
6. PROPOSED FEE STRUCTURE.....	7
7. PROPOSAL.....	7- 8

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## REQUEST FOR PROPOSAL

### 1. INTRODUCTION

1.1 Tenaga Nasional Berhad (TNB) through GSPARX Sdn. Bhd. (GSPARX), wholly owned subsidiary of TNB Renewables Sdn. Bhd. (TRe) is aggressively developing Solar PV for self-consumption / self - generation projects in Malaysia.

In order to ensure GSPARX able to offer very attractive and competitive Solar PV package to the customers, GSPARX would like to form strategic partnerships with solar PV module manufacturers (Original Equipment Manufacturer) with the aim to get the best quality product at competitive pricing which will translate to the best package for customers in Malaysia.

1.2 GSPARX corporate structure is as follows: -



1.3 TNB, GSPARX parent company is the largest electricity utility in Malaysia. With the core business of providing electricity to the country's businesses, homes and industries, TNB is the key driver in building the nation. TNB activities represent the entire electricity production and supply value chain. In recent years, TNB has embarked on its sustainability agenda through efforts such as Renewable Energy and other environmental as well as social initiatives as we seek to add value to all our stakeholders. We believe these activities will not only take TNB into the future, but also continue to grow our business in the long term.

1.4 With 67 years of existence, we pride ourselves as Malaysia's leading electricity utility with a presence throughout Peninsular Malaysia, Sabah and Labuan. We have also established a name for ourselves in the region, making TNB one of the largest electricity companies in Asia as we transform ourselves into a Domestic and Regional Champion.

1.5 TNB customer base is 9.2 million in Peninsular Malaysia, Sabah and Labuan. TNB customers categories are mainly residential, commercial, industrial customers. TNB's Industrial customers engage in the manufacturing of goods and services. Although they make up the smallest segment of the customers in term of numbers, they

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account for the majority of TNB electricity sales.

Commercial customers are TNB's 2<sup>nd</sup> largest source of electricity sales. Businesses and commercial activities drive the retail market of Malaysia's economy.

Residential customers represent the majority of TNB's customers, with Malaysia's population of 31.7 million people. Residential customers spread across Malaysia, which poses the presence of TNB throughout the nation to serve them better. GSPARX is committed to deliver value our products and services that will help our customers in improving their quality of life.

1.6 In view of the above and leveraging TNB's huge customer base, GSPARX target for Solar PV for self-consumption / self-generation projects in Malaysia are as follow: -

- 2018 – 25MW
- 2019 – 100MW
- By 2025 – 1500MW

1.7 Accordingly, based on our target above, we kindly invite your firm to submit a comprehensive proposal with the good terms and condition to act as our strategic partner for Solar PV Module supplier in developing Solar PV for self-consumption / self-generation projects in Malaysia.

1.8 Submission should be made through Supplier Online Application.

1.9 Please refer to the following link on TNB Annual Report if further information required about TNB.

<https://www.tnb.com.my/suppliers-investors-media-relations/annual-reports>

## 2. GENERAL DESCRIPTION OF THE PROJECT

2.1 The Proposed Site will be throughout Peninsular Malaysia with various type of installation, which consist of residential houses rooftop, commercial building rooftop, factory rooftop, ground mounted, floating and any other possible types.

2.2 The focus of the Project is for self-consumption which is guided by the guidelines issued by the Malaysia's Energy Commission on the Connection of Solar Photovoltaic Installation for Self-Consumption and Electricity Supply Act 1990 (Act 447).

2.3 Figure 1 below is a typical schematic drawing from MS 1837:2018 for the proposed system and installation.

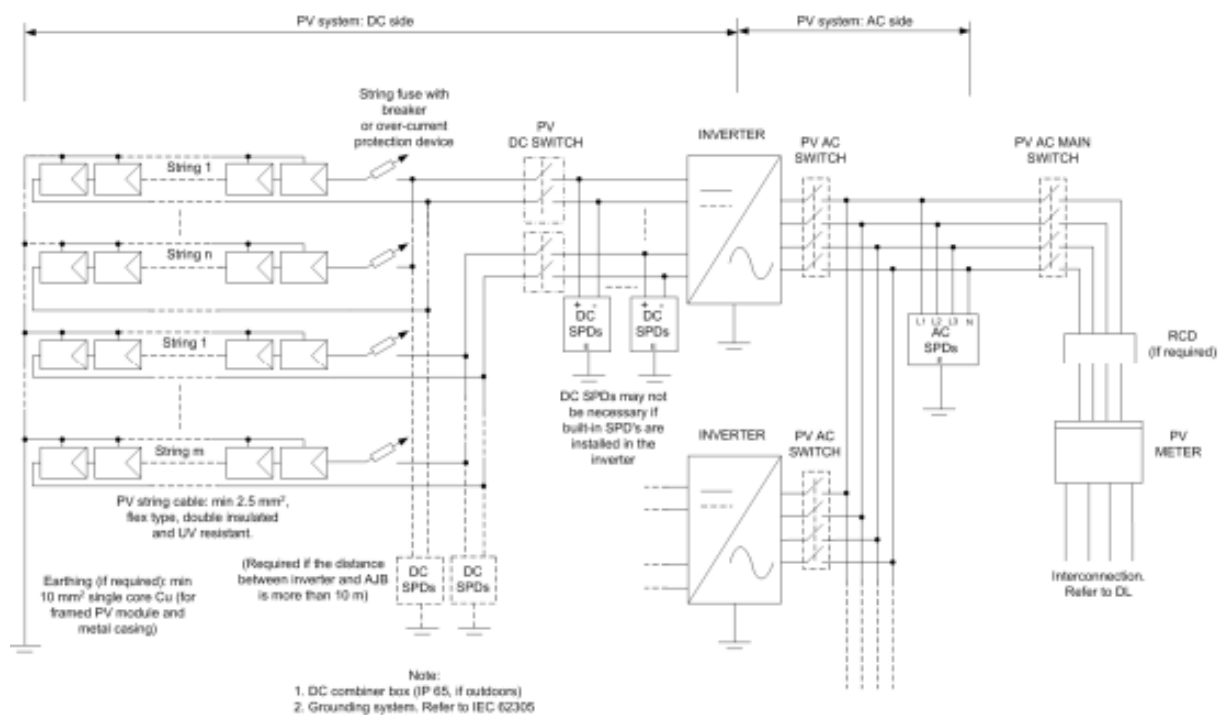


Figure 1: Typical Solar PV System (source: MS 1837:2018)

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### 3. SCOPE OF WORKS

3.1 The scope of works to be carried out by the Original Equipment Manufacturer of solar PV Module (the “Strategic Partner”) is to supply the solar PV Module with following requirements but not limited to:

#### 3.1.1 Compliance with Standards

The PV module specification shall comply with international standards for PV modules technology. The manufacturer and the module should at minimum comply with the following relevant certifications:

Subject of certifications	Certifications
Crystalline silicon PV modules	IEC 61215:2016 EN 61215:2016
Test for the electrical safety	EN 61730-2:2007 EN 61730-1:2007 IEC 61730-2:2004 IEC 61730-1:2004
Potential Induced Degradation (PID), applicable for crystalline silicon PV modules, or independent laboratory test report with equivalently stringent testing for thin-film modules	IEC TS 62804-1:2015
Quality management systems (for manufacturing facility)	ISO 9001
Environmental Management Systems (for manufacturing facility)	ISO 14001

#### 3.1.2 Additional Independent Testing

In addition, the following tests should be carried out for the selected type of module by an independent laboratory certified to recognised standards and the testing results shall be provided.

#### 3.1.3 Damp heat tests

Malaysia’s climate is highly humid. Damp heat testing shall therefore be carried out for the PV module type proposed of minimum of 2,000 hours to recognised standards by an independent third party to be mutually agreed and such independent third party is globally recognised and capable of certifying.

#### 3.1.4 Light Induced Degradation (LID)

The PV module type proposed should be tested for light induced degradation, through repeated flash testing during at least one year of outdoor light exposure to recognised standards by an independent third party to be mutually agreed and such independent third party is globally recognised and capable of certifying.

#### 3.1.5 Scope of Supply

The PV Module Supplier will supply, but not be limited to the following items:

- a. PV Modules and components as specified during the design stages;

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- b. Packaging;
  - c. Freight for delivery to Site (Incoterms 2010 – FOB / CIF)
  - d. Insurance as per the delivery term
  - e. Product documents, including flash test results for each module demonstrating compliance with the specification;
  - f. Export documents;
  - g. Shipping documents; and
  - h. O&M documents (O&M documents to be packed with the products).

### 3.1.6 Supply contract warranty term and condition

The PV Module Supplier shall provide warranties commencing from the date of installation of the PV module or ninety (90) days after delivery of the PV module at Site, whichever date is earlier.

The PV Module Supplier shall include the following minimum warranty terms under the Supply Contract.

#### a. PV module defect warranty

The PV Module Supplier shall propose a limited standard warranty on any latent damage or defect in materials or workmanship valid for a period of 10 years commencing from the date of installation of the PV module or ninety (90) days after delivery of the PV module at Site, whichever date is earlier and committing to replace any PV Module with a product defect, upon written request from GSPARX.

Product defects shall include, without limitation, one or more of the following criteria:

- glass fracture, crack, or break;
- glass scratches greater than 10 cm in length that are detectable with a straight edge;
- chips in the edge of glass that impairs structural stability or sealing or deeper than 2 mm;
- foreign material except tin/strip residues which larger than 10 mm inside the laminate, or conductor foreign material connect with live part;
- delamination of the laminate;
- cord plate (junction box) damages that impairs proper function or seal;
- lead wire or connector damage that impairs proper function;
- no serial number on the Module;
- damage to the Module frame that impairs structural stability or function;
- gaps or damage to the edge seal;
- initial failure of the bypass diode;
- improper or damaged cell connections;
- any cracks, pinholes, broken cells, discoloration, or edge “V” chips exceeding either 0.1 mm in length or 20% of wafer thickness;
- more than six instances of cells in a given module with edge breakages or cracks affecting 10% or more of a cell area; or any instances of dark cells.
- at electroluminescence test (“EL Test”) any instances of dark cells.

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Responsibility of costs for removal of suspected defective modules and return shipment of replacement modules will be borne by the PV Module Supplier in case of a valid claim.

b. PV module efficiency warranty

The PV Module Supplier shall propose a twenty-five (25) year warranty for STC performance of each individual PV module, guaranteeing minimum module performance in each year over twenty-five (25) years (often referred to as a linear performance warranty), commencing from the date of installation of the PV module or ninety (90) days after delivery of the PV module at Site, whichever date is earlier.

The PV Module Supplier shall establish with GSPARX a method for on-site performance measurement, to compare with the guaranteed minimum annual module linear performance. Such on site measurements may be combined with laboratory testing of up to 20 modules in the event of a claim. The PV Module Supplier should confirm that this will be a valid approach towards warranty claims.

If a PV module fails to exhibit such guaranteed power output in any given warranty year, the PV Module Supplier will deliver additional PV module(s) to replace the loss of power output with no change in module dimensions.

Responsibility of costs for removal of suspected defective modules, laboratory testing in support of a claim, PV Module Supplier personnel and transportation costs, and shipment of additional modules will be borne by the PV Module Supplier in case of a valid claim.

3.1.7 Standards, specifications and procedures used for the design, manufacture and testing of the solar PV Module shall incorporate the latest revisions and amendments published prior to the execution of the strategic partner agreement.

#### **4. QUALIFICATIONS OF ORIGINAL EQUIPMENT MANUFACTURER**

4.1 The PV Module supplier shall have its own brand and manufacturing facility, which entitled to be the Original Equipment Manufacturer (OEM).

4.2 The PV Module Supplier shall have no conflict of interest, blacklisted and litigation case with TNB or any its subsidiaries.

4.3 The PV Module Supplier shall be a Tier 1 PV Module Suppliers as identified by the latest Bloomberg New Energy Finance (BNEF) publication.

4.4 The proposal shall be evaluated among others based on

- a. Timeliness and the validity of the proposals;
- b. Technical compliance in terms of performance warranty, warranty, track record, support service, equipment efficiency, local content and support;
- c. Suppliers experience and track records;
- d. Suppliers financial position;
- e. Commercial proposal.



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4.5 The supplier shall have the necessary qualifications, experiences and capabilities required which shall having at least 5 years of experience involve in the supply, testing, commissioning and service the solar PV Module for self-consumption / self-generation projects of a similar type and size (range between 1.5kWp to 10,000kWp).

## 5. PROPOSED FEE STRUCTURE

5.1 Original Equipment Manufacturer is required to propose the fee arrangement for this Request for Proposal in detail as per scope of services in Section 4 above. The Proposal Price shall be in **Ringgit Malaysia (MYR)**.

5.2 If any of the quoted price, fees, expenses or other sum payable is not denominated in MYR, the foreign exchange rates to be used for the purpose of determining the Malaysian Ringgit equivalent shall be the selling rate quoted by Bank Negara Malaysia at the date of payment.

## 6. PROPOSAL

### 6.1 Proposal Preparation

Your proposal should be structured into two separate and distinct portions as follows:

- Section A –Experience, Team and Work Plan
  - a. The OEM's relevant experience as solar PV supplier for self-consumption / self-generation project
  - b. OEM to declare the total generation output in MWh to date.
  - c. OEM's organisation chart including names of Key Personnel expected to be point of communication, their curricula vitae, and a general description of the role of each Key Personnel proposed, his/her location.
  - d. Proposed scope of works which shall be comprehensive and generally guided by the scope of services in Section 4.
  - e. OEM to declare the local support and service provider (if any) that will be providing the local support necessary during the project and throughout the operation period.
  - f. Completing the summary forms and documentation checklist in Appendix A. All supporting documentation and **evidence** as per the checklist shall be provided.
- Section B – Proposed Fee Arrangement

GSPARX is interested in receiving cost effective proposals. In Section B of your

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proposal, please include the following:

- a. The estimate for the fixed lump sum fee for each service and the milestone payment estimates
- b. Estimate of reimbursable expenses items identified by the OEM.
- c. Completing the Price Schedule in Appendix B

## 6.2 Cost of Preparation and Submission of Proposal

The OEM shall bear all costs and expenses associated with the preparation and submission of its proposal, and GSPARX shall under no circumstances be responsible or liable for any such costs, regardless of, without limitation, the conduct or outcome of the evaluation and selection process.

## 6.3 GSPARX Not Bound to Accept Any Proposal

- a) GSPARX does not bind himself to accept the proposal of the lowest price, or any proposal, nor to assign any reason for the rejection of any proposal.
- b) No proposal shall be deemed to have been accepted unless such acceptance has been notified to the OEM by a notice in writing from GSPARX in the form of Letter of Acceptance.