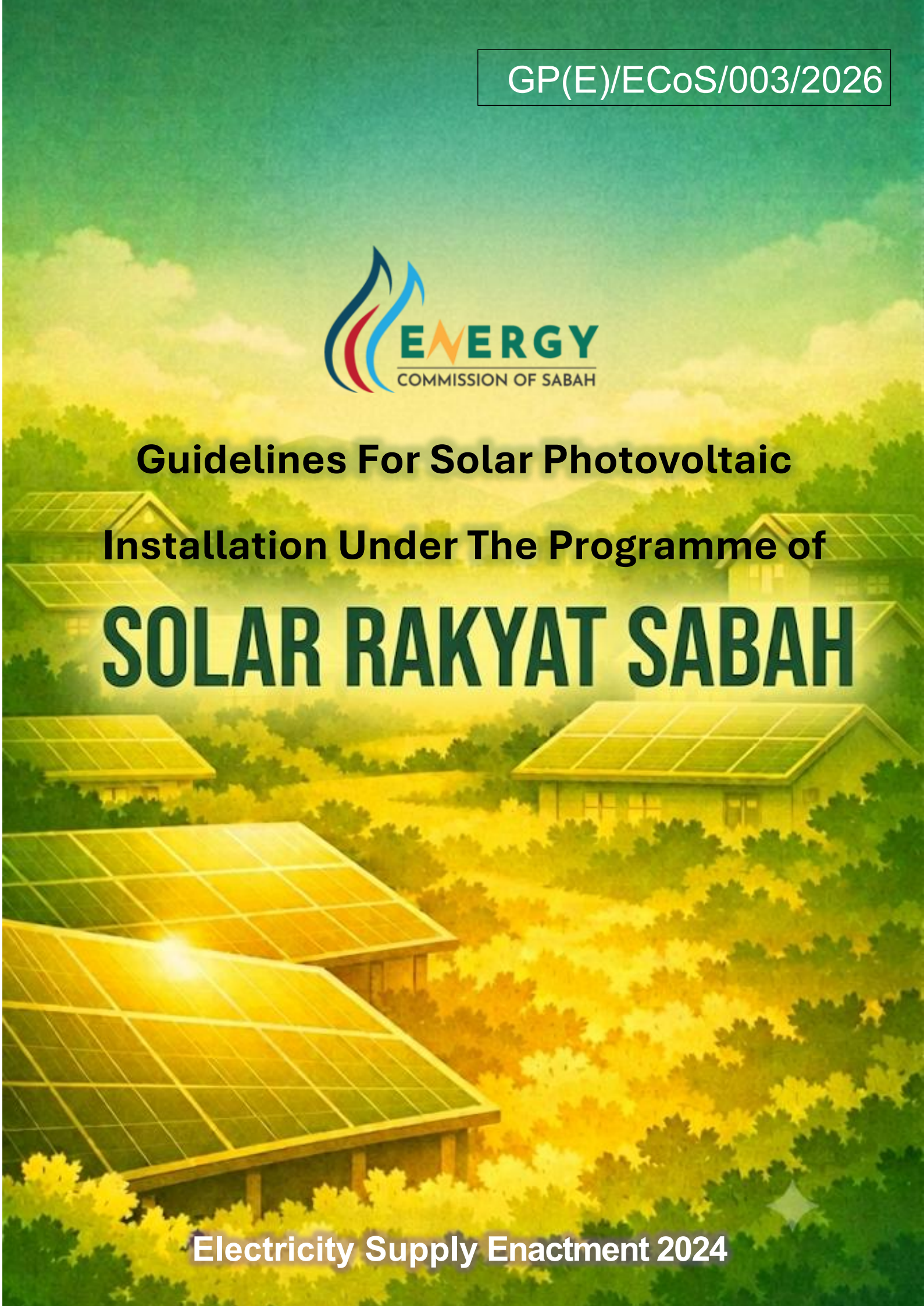
GP(E)/ECoS/003/2026

ENERGY
COMMISSION OF SABAH

Guidelines For Solar Photovoltaic Installation Under The Programme of

SOLAR RAKYAT SABAH



Electricity Supply Enactment 2024

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ELECTRICITY SUPPLY ENACTMENT 2024

FOR SOLAR PHOTOVOLTAIC INSTALLATION UNDER THE PROGRAMME OF SOLAR RAKYAT SABAH

GP(E)/ECoS/003/2026

In exercise of the power conferred by Section 101 of the Electricity Supply Enactment 2024, the Commission issues the following Guidelines:

Purpose

1. The purpose of these Guidelines is to promote renewable energy through installation of solar PV system on residential premises primarily for self-consumption and any excess energy to be exported under the SOLAR RAKYAT SABAH Programme.

Title and Commencement

1. These Guidelines may be cited as the Guidelines for Solar Photovoltaic Installation under the Programme of SOLAR RAKYAT SABAH.

2. These Guidelines shall come into effect on the date of issuance by the Commission.

Date: 30th June 2026

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DATUK IR. ABDUL NASSER BIN ABDUL WAHID
CHIEF EXECUTIVE OFFICER
ENERGY COMMISSION OF SABAH

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1. OBJECTIVES

1.1 These Guidelines are developed by the Commission for the following objectives:

(a) to prescribe the principles of initiatives under the SOLAR RAKYAT SABAH

(b) to set out roles and responsibilities of the Distribution Licensee and SOLAR RAKYAT SABAH programme; and

(c) to regulate matters relating to the implementation and operation of the SOLAR RAKYAT SABAH.

2. APPLICATION

2.1. These Guidelines shall apply to:

(a) any Consumer in Sabah complying with these Guidelines in participating in the SOLAR RAKYAT SABAH;

(b) the relevant Distribution Licensee, whose Distribution System is connected to the SOLAR RAKYAT SABAH Consumer; and

(c) any Electrical Contractor of Class PV (Grid-Connected) [ECCPV (GC)].

2.2. These Guidelines are not intended in any way to circumvent the application of and obligations or requirements under any other written law or standards. Parties relying on these Guidelines are advised to obtain independent advice on the applicability of the same to their Installations.

3. DEFINITIONS AND INTERPRETATION

3.1. In these Guidelines, the following terms shall bear the following meanings:

"Applicant"	means a person applying to be a SOLAR RAKYAT SABAH Consumer of a Distribution Licensee;
"Billing Period"	means the period for which electricity bills shall be prepared for the SOLAR RAKYAT SABAH Consumers by the Distribution Licensee;

"Commencement Date"	means the start of the operation of solar PV Installations for SOLAR RAKYAT SABAH Programme;
"Commission"	means the Energy Commission of Sabah (ECoS) established under the Energy Commission of Sabah Enactment 2023;
"Consumer"	means an owner or occupier of a premise who is supplied or required to be supplied with electricity by the Distribution Licensee;
"Distribution Licensee"	means Sabah Electricity or KKIP Power Sdn Bhd, who is the holder of a licence to distribute electricity issued by the Commission under Section 8 of the Enactment, for the purpose of these Guidelines;
"Distribution System"	means an electricity system of electric lines, cables, switchgear and associated equipment at nominal voltage of less than 66kV that is used, worked or operated by the Distribution Licensee;
"Domestic Consumer"	means a Consumer occupying a private dwelling premise which is not used as a hotel, boarding house or used for the purpose of carrying out any form of business, trade, professional activities or services;
"EEISy"	means the ECoS Energy Information System, a digital platform established by the Energy Commission of Sabah (ECoS) serving as the portal for energy programme information, application, reporting, and data submission.

"Electricity Supply Agreement"	means the agreement entered into between Distribution Licensee and SOLAR RAKYAT SABAH Consumer;
"Enactment"	means the Electricity Supply Enactment 2024, as amended, modified or supplemented from time to time;
"Energy"	means electrical Energy, measured in the units of kWh or MWh;
"ICPT"	means Imbalanced Cost Pass Through;
"Indirect Connection"	means the connection of a solar Solar PV installation to a supply line indirectly through the internal distribution board of the SOLAR RAKYAT SABAH Consumer where the solar Solar PV installation is connected to an electrical point within the Premise of the SOLAR RAKYAT SABAH Consumer instead of the Point of Interconnection;
"Installation"	means the whole of any plant or equipment under one ownership or, where a management is prescribed, the person in charge of the management, designed for the supply or use, or both, as the case may be, of electricity; including generating unit, if any, with all necessary plant, buildings and land in connection therewith, pipeline, supply line, electricity supply infrastructure, domestic and non-domestic electrical installation and consuming apparatus, if any;
"kV"	means kilovolt or 1,000 volt;
"kWac"	means kilowatt in ac rating;
"kWp"	means kilowatt peak. Rated kWp in relation to

	a Solar PV installation means the maximum direct current power such Installation can produce under standard test conditions of 1000 watts per square meter of solar irradiation and 25 degrees Celsius ambient temperature;
"KWTBB"	means the Renewable Energy Fund;
"Low Voltage"	means a voltage normally not exceeding 1,000 volts alternating current or 1,500 volts direct current between conductors, or 600 volts alternating current or 900 volts direct current between conductor and earth;
"SOLAR RAKYAT SABAH"	means the programme that enables domestic Consumers to install solar PV systems, consume the electricity they generate, and channel any excess to the grid through the Net Energy Metering mechanism;
"SOLAR RAKYAT SABAH Programme"	means the mechanism where a SOLAR RAKYAT SABAH Consumer installed a solar Solar PV installation on the roof-top of his Premise primarily for his own use. During the first twelve (12) years of operation, any excess Energy which is not consumed due to operational constraints or monthly or seasonal variation in load demands at the said Premise may be exported to the Distribution System. The credit to be received for such excess Energy may be used to offset part of the electricity bill for Energy provided by the Distribution Licensee during the applicable Billing Period, all in compliance with these Guidelines;

"SOLAR RAKYAT SABAH Consumer"	means a Consumer with solar Solar PV installation under the SOLAR RAKYAT SABAH.
"SOLAR RAKYAT SABAH Contract"	means the agreement entered into between a SOLAR RAKYAT SABAH Consumer and a Distribution Licensee under the SOLAR RAKYAT SABAH Programme;
"Point of Interconnection"	means the point where the electrical Installation of the SOLAR RAKYAT SABAH Consumer is physically connected to the Distribution System operated by the Distribution Licensee, where supplies at nominal voltage of 230 or 400 volts, the point is at the cut-off fuse; and at the Premise of the SOLAR RAKYAT SABAH Consumer;
"Premise"	means a building together with its land, outbuildings and any structures within the same compound occupied or used by the SOLAR RAKYAT SABAH Consumer;
"PV"	means photovoltaic;
"SE"	means Sabah Electricity Sdn. Bhd. (Company No: 199801006745 (462872-W))
"Settlement Period"	means the period starting from 1st January of a year and ending on 31st December of the same year, except for the first year on the Commencement Date of the SOLAR RAKYAT SABAH Programme. The first year may not be a full twelve (12) months settlement period. For example, if the

	Commencement Date for a SOLAR RAKYAT SABAH Consumer fall on July 2026, then the end of the settlement period will be on December 2026 which is only a six (6) months' period; and
"SST"	means Sale and Service Tax

3.2. Subject to paragraph 3.1, unless expressly indicated to the contrary or unless the context otherwise requires, terms adopted and used in these Guidelines shall bear the same meaning as they are defined in the Enactment.

3.3. If there are any conflict between the provisions of these Guidelines and of those contained in the Enactment, the provisions in the Enactment shall prevail.

4. ELIGIBILITY CAPACITY AND PERIOD OF APPLICATION

4.1. The total capacities under the SOLAR RAKYAT SABAH Programme in Sabah shall be subject to any decision made or capacity as determined by the Commission.

4.2. The opening or cessation of SOLAR RAKYAT SABAH Programme shall be based on a first-come-first-served basis and subjected to any date or period determined by the Commission.

5. ELIGIBILITY CRITERIA

5.1 Any person eligible to apply is as follows:

(a) a person applying to be Consumer of the Distribution Licensee under Domestic Category;
(b) Consumer under Domestic Category who has not participated in any previous solar PV programme; or
(c) existing Net Energy Metering 1.0 Consumer.

5.2 Any application made by the existing SOLAR RAKYAT SABAH Consumer under

paragraph 5.1 shall not amount to an extension to the period of existing contract.

5.3 Any person referred to in paragraph 5.1 shall be subject to the provisions of these Guidelines.

6. TYPES OF INSTALLATION ALLOWED

6.1 The solar Solar PV installation shall be of PV panels mounted on the rooftop or porch of the building within the same premise. Ground – mounted installation is not allowed.

7. CAPACITY LIMIT

7.1 The maximum capacity of the Solar PV installation shall be as follows:

(a) for single phase SOLAR RAKYAT SABAH Consumer, not more than 5kWac; and

(b) for three (3) phase SOLAR RAKYAT SABAH Consumer, not more than 10 kWac.

7.2 Notwithstanding the above, existing Net Energy Metering (NEM) 1.0 Consumers who wish to participate in the SOLAR RAKYAT SABAH Programme shall ensure that their solar Solar PV installation complies with the capacity limits stated in Section 7.1 above. Where the existing solar Solar PV installation exceeds the applicable capacity limit as stated in Section 7.1 above, the NEM Consumer shall reduce or reconfigure the solar Solar PV installation to conform to the applicable limit respectively prior to obtaining approval from the Commission to participate in the SOLAR RAKYAT SABAH programme. Any modification, reconfiguration or reduction required to achieve compliance shall be undertaken at the sole costs and expense on the NEM Consumer.

8. CONNECTION OF SOLAR SOLAR PV INSTALLATION

8.1 Connection to the Distribution System shall be through Indirect Connection. **Figure 1** shows the diagram of the connection between the SOLAR RAKYAT SABAH Consumer's solar Solar PV installation and the Distribution Licensee's Distribution System.

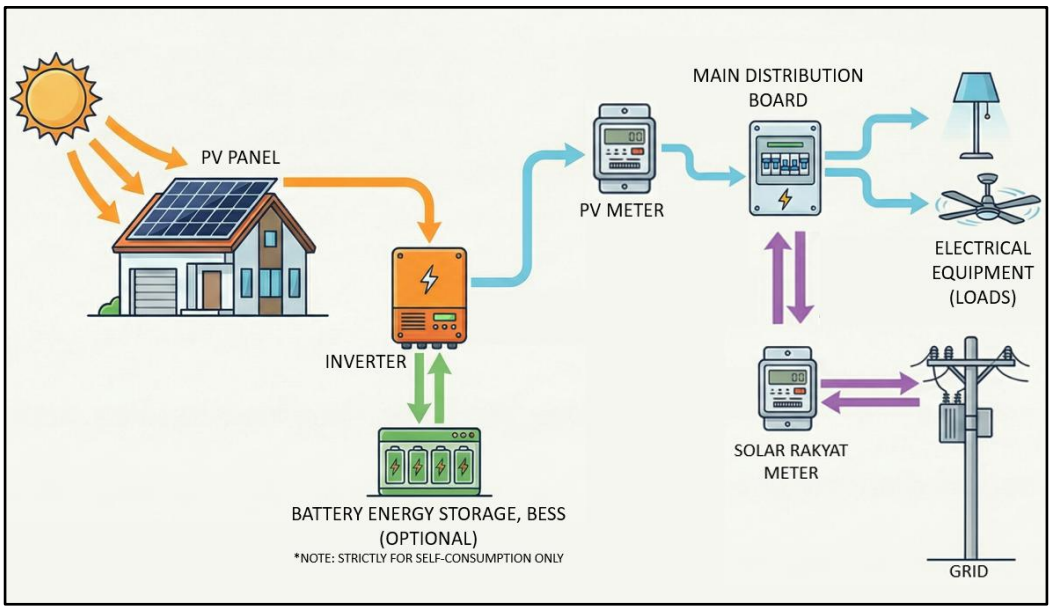

Figure 1: The connection of a solar Solar PV installation to the Consumer electrical Installation

9. TECHNICAL REQUIREMENTS

9.1 The equipment, design, installation, testing and commissioning, and the operation and maintenance of the solar Solar PV installation shall be in accordance with the relevant provisions under the Enactment and any relevant requirements under the subsidiary legislations made under it any other authorities having jurisdiction over the installation works and operation of the solar Solar PV installation.

9.2 The SOLAR RAKYAT SABAH Consumer shall refer to the Technical Guideline for Connection of Indirect Solar PV Power Generation for SOLAR RAKYAT SABAH as in **Schedule 1** for relevant technical requirements and specifications of design, equipment, Installation works, testing, commission and operation of the solar Solar PV installation and the interconnection facility.

9.3 If there is any inconsistency between any requirement under these Guidelines with any requirement in the technical documents, the requirements under these Guidelines shall prevail.

9.4 All connections shall comply with the relevant requirements under the Distribution Code for Sabah, whichever is applicable.

9.5 The design, calculation, drawings, Installation, testing and commissioning of the Solar PV installation and the interconnection to the Distribution System shall be certified by qualified and competent persons, as required under relevant laws, which include but shall not be limited to the following:

(a) in accordance with the Enactment and its subsidiary legislations in relation to the electrical works; and

(b) in accordance with the Registration of Engineers Act 1967 or Architects Act 1967 for the structure of mounting the PV panels.

9.6 The Distribution Licensee shall have the right to disconnect supply at the Point of Interconnection in the event of any danger or risk to the safety, reliability or security of the Distribution System or the safety of the SOLAR RAKYAT SABAH Consumer's Installation which the solar Solar PV installation may cause.

(a) the solar Solar PV installation shall be reconnected to the Distribution System as soon as possible if such danger or risk has ceased or has been alleviated; and

(b) no supply to the Premise of the SOLAR RAKYAT SABAH Consumer shall be disconnected unless under circumstances provided for under the Enactment and its subsidiary legislations.

9.7 SOLAR RAKYAT SABAH Consumers may install Battery Energy Storage Systems (BESS) in grid-connected Solar PV installations provided the BESS is configured strictly for self-consumption, with battery discharge limited to serving local loads only and no Energy permitted to be exported to the grid; the inverter shall be capable of enforcing this self-consumption mode, and during testing and commissioning the ECCPV(GC) shall confirm and demonstrate compliance, certifying in writing and submitting documented evidence including screenshots, test logs, and a signed commissioning checklist as part of the commissioning report.

9.8 All installations and operations of the BESS shall comply with the applicable technical requirements and standards prescribed by the Distribution Licensee and the Commission as set out in the Technical Guideline for Connection of Indirect Solar PV Power Generation for SOLAR RAKYAT SABAH. In the event of any non-compliance with the provisions herein, including any unauthorized export or injection of energy from the BESS to the Grid, the Distribution Licensee shall have the right to suspend or

disconnect the SOLAR RAKYAT SABAH Consumer's connection. Any unauthorized export or injection of energy from the BESS to the Distribution System shall be deemed as free energy with no cost or payment obligation or credit set off by the Distribution Licensee.

9.9 The Solar PV installation shall be equipped with smart inverter features as described in Schedule 1.

9.10 The SOLAR RAKYAT SABAH Consumer shall be responsible for safe operation and maintenance of the solar PV and BESS installation in its Premise up to the Point of Interconnection of the Distribution Licensee's supply line.

9.11 The supply line and equipment beyond the Point of Interconnection and the metering facilities for measurement of Energy supplied by and exported to the Distribution System shall be the responsibility of the Distribution Licensee.

9.12 The Distribution licensee is responsible for ensuring seamless integration of the solar PV by maintaining local supply balance, deploying Voltage Regulating Distribution Transformers (VRDTs) and upgrading distribution infrastructure, and implementing smart community infrastructure for real-time monitoring and reliable power supply.

10. METER INSTALLATION, TESTING AND COMMISSIONING

10.1 The SOLAR RAKYAT SABAH meter shall be of the bi-directional type. It shall be capable of measuring and recording both the electricity supplied by the Distribution Licensee to the SOLAR RAKYAT SABAH Consumer, and the Energy exported by the SOLAR RAKYAT SABAH Consumer to the Supply System. The SOLAR RAKYAT SABAH Meter shall be supplied by the Distribution Licensee with the following charges:

SOLAR RAKYAT SABAH Meter Charge Schedule

No.	Meter Type	Price (RM)
1	Smart Meter Single Phase	400
2	Smart Meter Three Phase	450
3	Smart Meter LV CT (0.5S)	450

10.2 All costs and expenses relating to the procurement, installation, testing, energizing, commissioning and system integration of the Renewable Energy System, the SOLAR RAKYAT SABAH Meter and the PV meter together with the replacement of any future modification or relocation of the Renewable Energy System, the SOLAR RAKYAT SABAH Meter and the PV meter shall solely be borne by the Consumer.

10.3 Consumers shall, prior to submitting an application, verify with the Distribution Licensee that there are no outstanding bills, blacklist status, or other account-related issues, all of which must be fully resolved before submission; failing which, the Commission shall reject the application.

10.4 The reading of the SOLAR RAKYAT SABAH meter and the PV meter shall be *prima facie* evidence of the amount of electricity supplied by the Distribution Licensee, the Energy produced by the solar Solar PV installation and any Energy exported to the Supply System. The meter reading taken by the Distribution Licensee shall form the basis of any commercial settlement as provided for under Enactment and its Subsidiary legislations.

10.5 The Installation, usage, reading, checking, testing, recovery of charges and any other matters relating to the metering and billing arrangement shall be in accordance with the Enactment and its subsidiary legislations.

10.6 The testing and commissioning of the solar Solar PV installation shall be performed by Competent Person in accordance with the requirements under the Enactment and its subsidiary legislation.

10.7 The SOLAR RAKYAT SABAH Contract shall be deemed to commence upon installation of the SOLAR RAKYAT SABAH meter by the Distribution Licensee.

10.8 The appointed ECCPV(GC) shall upload, via the EEISy online platform, a copy of the testing and commissioning report and the certificate of completion of the solar Solar PV installation, duly signed by the Applicant, the Competent Person, and the Distribution Licensee. The Commission shall issue a SOLAR RAKYAT SABAH Approval to Operate (SRATO) upon completion of all required document submissions.

11. MATTERS RELATING TO PRICING AND TARIFF

11.1 Under the SOLAR RAKYAT SABAH Programme, the credit to the SOLAR RAKYAT SABAH Consumer shall be based on prevailing Energy rate in kWh in the gazetted tariff for the SOLAR RAKYAT SABAH Consumer. The calculation for the net charge amount of Energy shall be based on the following calculation and shall not be used to off-set the minimum monthly charge as stated in the tariff category of the Distribution Licensee:

Net charge amount (RM) = (Energy imported from Distribution Licensee* x prevailing gazetted Energy rate) – (Energy exported to Distribution Licensee x prevailing gazetted Energy rate)

*Energy imported is subjected to SST, KWTBB, ICPT, where applicable.

11.2 The SOLAR RAKYAT SABAH Programme is primarily for self-consumption of the SOLAR RAKYAT SABAH Consumer in the Premise. However, during the first twelve (12) years of operation under the SOLAR RAKYAT SABAH Contract, any excess Energy which is not consumed due to operational constraints or monthly or seasonal variation in load demands at the said Premise may be exported to the Distribution System. The credit to be received for such excess Energy may be used to offset part of the electricity bill for Energy provided by the Distribution Licensee during the applicable Billing Period. The net credit shall be allowed to roll over for a maximum of twelve (12) months within the Settlement Period. Any available Energy after the period shall be forfeited.

11.3 No roll over of credit for any excess Energy will be allowed after the twelve (12) year's period.

12. ENERGY ACCOUNTING AND SETTLEMENT

12.1 The Energy accounting and settlement procedure for the SOLAR RAKYAT SABAH Consumer shall be as per the following procedures:

(a) for each Billing Period, the Distribution Licensee shall show the quantum of Energy exported by the solar Solar PV installation in the Billing Period,

quantum of Energy supplied by the Distribution Licensee in the Billing Period, net billed Energy for payment by the SOLAR RAKYAT SABAH Consumer for that Billing Period and net carried over electricity to the next Billing Period;

(b) if the Energy exported exceeds the electricity consumed during the Billing Period, such excess exported electricity shall be carried forward to next Billing Period as electricity credit and may be utilized to net off electricity imported or consumed in future Billing Period but within the Settlement Period; and

(c) if the electricity supplied by the Distribution Licensee during any Billing Period exceeds the electricity exported by the SOLAR RAKYAT SABAH Consumer, the Distribution Licensee shall raise invoice for the net Energy consumption after taking into account any electricity credit balance remaining from previous Billing Period.

12.2 The Distribution Licensee shall provide the following details with the electricity bill for each Billing Period:

(a) the quantum of Energy exported to the Distribution System by the solar Solar PV installation;

(b) the quantum of Energy supplied by the Distribution Licensee to the SOLAR RAKYAT SABAH Consumer;

(c) the quantum of net Energy supply by the Distribution Licensee that is billed to the SOLAR RAKYAT SABAH Consumer for payment;

(d) the quantum of Energy credits available to the SOLAR RAKYAT SABAH Consumer which is carried over from the previous Billing Period;

(e) the quantum of Energy exported by the SOLAR RAKYAT SABAH Consumer to the Distribution System in excess of the electricity supplied by the Distribution Licensee (quantum of electricity credits) which shall be carried forward to the next Billing Period; and

(f) subject to any charges under the Electricity Supply Agreement between SOLAR RAKYAT SABAH Consumer and Distribution Licensee.

12.3 During any Billing Period, if the Energy exported exceeds the Energy imported, the surplus Energy shall be carried forward within the Settlement Period. At the end of the Settlement Period, any remaining carried-forward Energy shall automatically lapse without compensation and shall not be claimable by the SOLAR RAKYAT SABAH Consumer.

13. PROCEDURE FOR APPLICATION

13.1 Any application for the SOLAR RAKYAT SABAH Programme shall be on a first-come-first-served basis up to the allocated capacity up to 30 June 2028, whichever comes first. The application shall be submitted to the Commission with supporting documents. No fee will be charged for an application.

13.2 Any application under the SOLAR RAKYAT SABAH Programme shall be accompanied by a SOLAR RAKYAT SABAH Assessment Form issued by the relevant Distribution Licensee. The SOLAR RAKYAT SABAH Assessment Form must confirm that the Applicant has no outstanding issues, disputes, or arrears related to the currently registered electrical meter. Applications submitted without such SOLAR RAKYAT SABAH Assessment Form shall be deemed incomplete and will not be processed.

13.3 The detailed procedure and application form are provided in Schedule 2, and all applications shall be submitted through the online platform EEISy.

13.4 The Consumer who intends to install a solar PV system under the SOLAR RAKYAT SABAH Programme shall appoint an ECCPV (GC) to manage and submit the application to the Commission. The following documents shall be submitted:

a) SOLAR RAKYAT SABAH Assessment Form from Sabah Electricity;
b) SOLAR RAKYAT SABAH Online Application Form (Sample of form as in Schedule 2);
c) a clear copy of the Consumer's identification or registration document, such as MYKAD or Passport;
d) documents proving ownership or legal rights to the premises, such as land title, tenancy agreement, lease agreement, or option-to-rent/lease;
e) latest six (6) months of electricity bills for the premises;
f) certificate of ECCPV (GC) appointed to undertake the installation and manage the application;
g) The detailed engineering design of the solar Solar PV installation, with supporting technical calculations, drawings, plans, and specifications (including approved amendments), shall be endorsed by the Grid Connected PV System Designer and certified by a suitably qualified competent person;
h) Single Line Drawing (SLD) endorsed by a Wireman with Three-Phase Restriction;
i) SOLAR RAKYAT Assessment Form issued by the Distribution Licensee confirming that the Applicant has no outstanding issues related to the currently registered electrical meter.

13.5 The Commission shall process and verify the application, notify the Applicant whether its application is accepted and issue a SOLAR RAKYAT Approval to Install (SRATI) within fourteen (14) working days from the date of **complete submission** of application.

13.6 Upon being notified by the Commission on approval of the application, the Applicant shall commence to install the solar Solar PV installation within three (3) months from the date of the notification (date of notification inclusive), failing which, the application shall be deemed withdrawn and cancelled.

14. SOLAR RAKYAT SABAH CONTRACT

14.1 The SOLAR RAKYAT SABAH Consumer shall sign a SOLAR RAKYAT SABAH Contract with the Distribution Licensee before the commencement of operation of the SOLAR RAKYAT SABAH. A sample of the SOLAR RAKYAT SABAH Contract is attached in **Schedule 3**.

14.2 Any increase in the existing capacity of solar Solar PV installation under the SOLAR RAKYAT SABAH programme shall not amount to an extension to the period of existing contract.

15. CHANGE OF OWNERSHIP AND CHANGE OF PREMISE

15.1 In the event a SOLAR RAKYAT SABAH Consumer sells the Premise registered under the SOLAR RAKYAT SABAH programme, the new owner of the Premise may apply to continue with the programme for the remaining duration of the period of operation under the SOLAR RAKYAT SABAH programme.

15.2 The SOLAR RAKYAT SABAH programme may only be continued with the execution of a new SOLAR RAKYAT SABAH Contract between the Distribution Licensee and the new owner.

15.3 In the event the existing SOLAR RAKYAT SABAH Consumer has relocated to a new premise, such existing SOLAR RAKYAT SABAH Consumer may apply to the Commission to continue with the programme at the new premise for the residual duration of the period of operation under the SOLAR RAKYAT SABAH programme.

15.4 The programme shall only be continued with the execution of a new SOLAR RAKYAT SABAH Contract between the Distribution Licensee and the Solar Rakyat Consumer.

15.5 SOLAR RAKYAT SABAH Consumer(s) shall not be entitled to transfer any credit amount to any accounts of other SOLAR RAKYAT SABAH Consumer(s) or any third-party account(s). The new SOLAR RAKYAT SABAH Contract shall be signed between the Distribution Licensee and the SOLAR RAKYAT SABAH Consumer upon the transfer of the Solar PV installation.

15.6 All costs and expenses for the transfer of the solar Solar PV installation shall be borne solely by the SOLAR RAKYAT SABAH Consumer.

16. LICENSING REQUIREMENT

No licence is required, as stipulated in the Guidelines on Licensing under Section 8 of the Enactment, for generating capacities exempted from licensing in respect of solar PV systems installed at low voltage.

17. ENVIRONMENTAL ATTRIBUTES

Under these Guidelines, the SOLAR RAKYAT SABAH Consumer shall retain the first right of refusal over any environmental attributes or green credits arising from the generation and export of solar PV energy under this programme.

18. LIABILITIES

The Commission shall not be responsible for any liability in the event of any dispute or problem occurring in the implementation of the SOLAR RAKYAT SABAH programme

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SCHEDULE 1

Technical Guideline for Indirect Solar PV Power Generation for SOLAR RAKYAT SABAH

Sabah Electricity
Energising Our Future

Technical Guideline for Indirect Solar PV Power Generation for SOLAR RAKYAT SABAH

CONTENTS

1.0 OVERVIEW

1.1 Introduction

Connection of Solar PV generation system to the customers' internal system under the implementation of Net-Energy-Metering ('NEM') or SOLAR RAKYAT SABAH, requires a review of existing connection scheme and requirements.

The internal generation by the customers in aggregate would impact the Distribution system behaviour, especially when there is excess of generation from the customer. Due consideration of the impacts must be taken to mitigate the problem caused by the internal generation for example voltage rise, safety, power quality etc.

RE developers, service providers, operators and parties otherwise involved in the installation and commissioning of PV generation to the grid can utilise these guidelines for:

a) Reference to issues related to grid connection of PV;
b) Finding out the power quality requirements for PV interconnection with low voltage distribution networks;
c) Understanding the interconnecting requirements whether for small, intermediate or large PV systems; and
d) Understanding the practices to ensure the safety of the personnel and equipment involved in utility-connected PV operations.

1.2 Regulations

Paralleling indirect Solar PV power generation system to the grid shall be subjected to compliance to the prevailing electricity supply rules & regulations to ensure adherence to the standard practices, quality of supply and personal & public safety.

Regulating authority is Energy Commission of Sabah.

The following document shall be referred in determining the compliance to operational conditions terms:

a) Electricity Supply Enactment 2024;
b) Sabah Distribution Code; and
c) Sabah Grid Code.

For customers connected to Distributor Licensee system, connecting indirect Solar PV power generation system internally requires compliance to requirements stated in this document. Power generated from indirect Solar PV power generation system is potentially able to disrupt the existing network quality, security & safety.

Without proper consideration, connecting indirect Solar PV power generation system could result in:

a) Voltage fluctuation;
b) Voltage rise;
c) Voltage unbalance;
d) Overloading of existing grid connecting feeder/cable;
e) Power Quality issues;

f) Islanding; and
g) Coordination with other on-site generations such as backup generator, co-gen and energy storage system.

1.3 Boundary of ownership and responsibilities

Boundary and responsibility limits of Distribution Licensee & SOLAR RAKYAT SABAH consumer must be clearly demarcated, agreed and documented.

Distribution Licensee responsibility is up to the metering point which is as the normal distributor customer boundary.

1.4 Approval & license to build & operate

The consumer shall acquire the appropriate approval from relevant authorities and employ competent personnel to design the installation which include:

a) Permit by local authority;
b) Permit by respective regulatory bodies;
c) Competent installer under regulation;
d) Competent operator; and
e) Repair & maintenance.

2.0 SCOPE

2.1 Scope

The main objective of this guideline is to provide guidance on the technical requirements for customers connected to the Distribution system who plan to install indirect Solar PV generation.

This guideline outlines technical requirements to ensure that connection of the indirect Solar PV power generation system would be standardised in terms of scheme, devices, operation & limits. The ultimate objective is to harmonise indirect Solar PV power generation system with the existing supply network, neighbouring customer and other Distributed Generators ('DG') within the same distribution network. Connection of indirect Solar PV power generation system should not cause breach of power quality, reliability and security of the network and safety of the operators and public.

This guide covers requirements for connection of indirect Solar PV power generation system to the customer internal system. Power generation include:

a) Indirect connection solar photovoltaic; and
b) Battery Energy Storage System (BESS).

2.2 Commercial matters

Commercial matters are not part of this guideline.

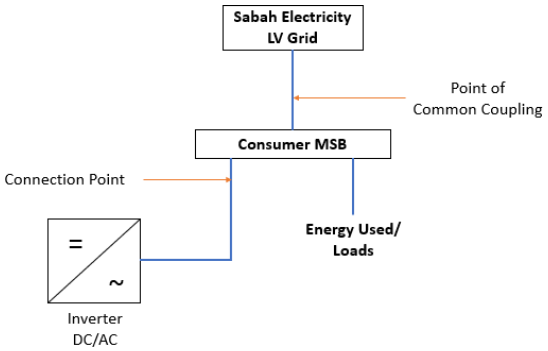
2.3 Application process

Customers that intend to install indirect Solar PV power generation system are required to register with the Energy Commission of Sabah ('ECoS'). Registration to Distributor Licensee is a statutory requirement as the consumer has altered the system registered during bi-directional meter.

The application process and procedures are described in the "Guidelines For Solar Photovoltaic Installation Under The Programme of SOLAR RAKYAT SABAH Sabah by ECoS".

3.0 GLOSSARY

Demand	:	The demand of MW or MVAr of electricity (i.e. both Active Power and Reactive Power respectively) unless otherwise stated.
Direct Connection	:	Connection of Solar PV power generation system directly to the distribution system.
Indirect Connection	:	Connection of Solar PV power generation system to the consumer owned internal network.
Distribution Licensee ('DL')	:	The holder of a license to distribute issued by Energy Commission of Sabah ('ECoS') under Section 8 of the Electricity Supply Enactment 2024.
Distribution System	:	The system of electric lines with voltage levels below 66 kV, within the Area of Supply owned or operated by the Distributor licensee/Embedded Distributor licensee, for distribution of electricity from Grid Supply Points or Generating Units or other entry points to the point of delivery to Customers or other Distributor licensees and includes any electrical plant and meters owned or operated by the Distributor licensee/Embedded Distributor licensee in connection with the distribution of electricity.
	:	A sinusoidal component of a periodic wave or quantity having a frequency that is an integral multiple of the fundamental frequency.
	:	A machine, device, or system that changes direct current ('DC') power to alternating current ('AC') power.
	:	A condition in which a portion of the utility system that contains both load and distributed resources remains energized while isolated from the remainder of the utility system.
	:	A voltage less than 1,000 volts or 1 kV.
Medium Voltage ('MV')	:	A voltage exceeding 1 kV but not exceeding 50 kV.
Connection point	:	The point where indirect Solar PV power generation system is connected to the network.
Point of Common Coupling ('PCC')/ Interconnection	:	The point of connection between utility system and consumer.



Total Harmonic Distortion ('THD')	:	Harmonic distortion is the departure of a waveform from sinusoidal shape that is caused by the addition of one or more harmonics to the fundamental. Total Harmonic Distortion is the square root of the sum of the squares of all harmonics expressed as a percentage of the magnitude of the fundamental.
Type Test	:	Test of one or more devices made to a certain design to demonstrate that the design meets certain specifications.
Power Factor	:	Power factor ('PF') is calculated by dividing the Real Power, P, in the W unit by the Apparent Power, S, in the VA unit. 24-hour, 4-day profile (consisting of Friday to Monday) of customer electricity demand profile which include voltage, kW, kVar for 60-minute sampling. Customers with own generation whose solar PV installed capacity is for self- consumption. In the event of excess of generation, the energy is allowed to be exported to the grid. Highest demand recorded in the load profile submitted during application for SOLAR RAKYAT SABAH. Lowest demand recorded in the load profile submitted during application for SOLAR RAKYAT SABAH.
Battery Energy Storage System ('BESS')	:	An energy storage system that employs battery technology for delayed applications. BESS described in this guide is used at the customer side, for the main purpose of enhanced electricity supply and integration with renewables
Customer With Own Generation ('CWOG')	:	Term used in the Maximum Demand Capacity to categorise customers that have in-house power generation facilities that operate in parallel with the Distributor Licensee distribution system.

Indirect Solar PV power generation	:	Power generation that utilize the solar photovoltaic technology to provide for the consumer's own demand. The indirect Solar PV power generation system is connected within the system and operate in parallel with the Distribution Licensee distribution system. Battery energy storage system could be used as part of the system.

4.0 DESCRIPTION OF INDIRECT SOLAR PV POWER GENERATION

4.1 Description

Consumers may decide to install indirect Solar PV power generation system to reduce their import from the Distribution Licensee. The indirect Solar PV power generation system is installed within its own system. The connection scheme is described in Chapter 5 of this guideline.

4.2 Battery Energy Storage System (BESS)

Use of BESS could enhance the energy utilization. BESS converter operates in bidirectional – charging and discharging.

The grid-connected inverter and BESS shall comply with connection requirements as stated in IEEE 1547.

4.3 Inverter requirements

Inverters to be paralleled to the Distribution Licensee's distribution system shall comply to the following standards and references, in term of design, operation and maintenance:

	Standard/ Guide	Scope
a)	MS 1873	Connection scheme of grid connected inverter.
b)	IEC 61727	Photovoltaic systems – characteristics of utility interface
c)	IEEE 1547	Standard for interconnecting Distributed Resources with Electric Power Systems: ▪ This standard describes the connection requirements of various Distributed Resources to the utility network.
d)	ECoS	Sabah Distribution Code.
e)	Sabah Electricity	Electricity Supply Application Handbook.
f)	Sabah Electricity	Technical Guideline for Indirect Solar PV Power Generation for Net-Energy-Metering @SOLAR RAKYAT SABAH for Sabah.
g)	TNB	Technical Guidelines for Interconnection of Distributed Generator to Distribution System, 2018.
h)	TNB	Technical Guidelines – Application of Inverters to Mitigate Fault Current Contribution of Inverter-based Distributed Generation in Distribution Systems.

Only inverters that comply with the standards above are allowed to be operating in parallel with Distribution Licensee distribution system. Type test certifications could be used as prove of compliance.

4.4 Power limiting capability

The demand from the Distribution system will reduce due to own generation by SOLAR RAKYAT SABAH consumer or export of excess energy to distribution network by SOLAR RAKYAT SABAH consumer.

This could disrupt the distribution system, resulting in voltage rise and reverse power flow.

During such event, the inverter shall reduce its generation upon receiving command from the detection device.

5.0 CONNECTION SCHEME

5.1 Introduction

The connection scheme clauses take into the following considerations:

a) Safety;
b) Connection with least alteration to existing network;
c) Cost; and
d) Compliance to regulatory requirements.

5.2 Connection types

The types of connection for indirect Solar PV power generation system is for LV customers.

5.3 Feedings method

The connection method of Solar PV power generation system can be categorised as Indirect Feed - Connection point at consumer.

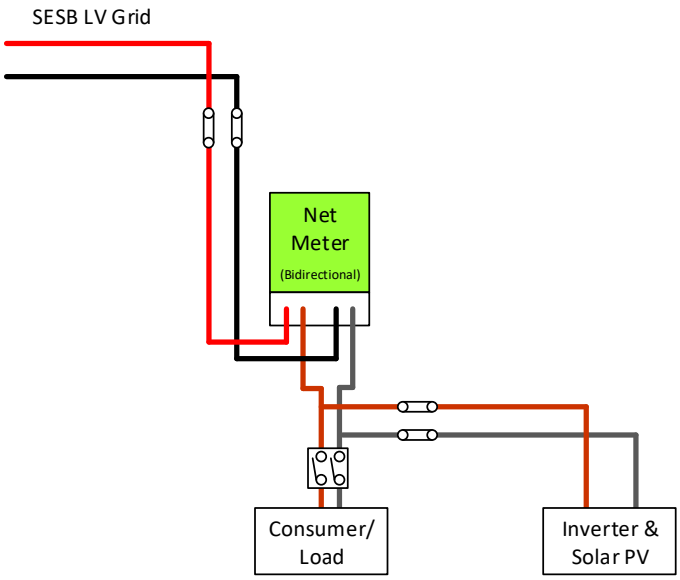


Fig. 5.1: Connection to Sabah Electricity grid

Connection point is within the consumer's network without direct connection to the Distribution Licensee's system. This method is adopted for SOLAR RAKYAT SABAH schemes. Power consumption and export are measured by Net Meter which shall have bi-directional capability to register the import and export units.

5.4 LV customer connections

This is applicable for Distribution Licensee's consumer with connection to LV network. PV connection point shall be done at the consumer's Distribution Board ('DB')/Main Switch Board ('MSB')

Use of a single-phase inverter shall not cause unbalance conditions to Distribution Licensee's system. If such a condition is violated, requirement of a three-phase inverter is automatically enforced.

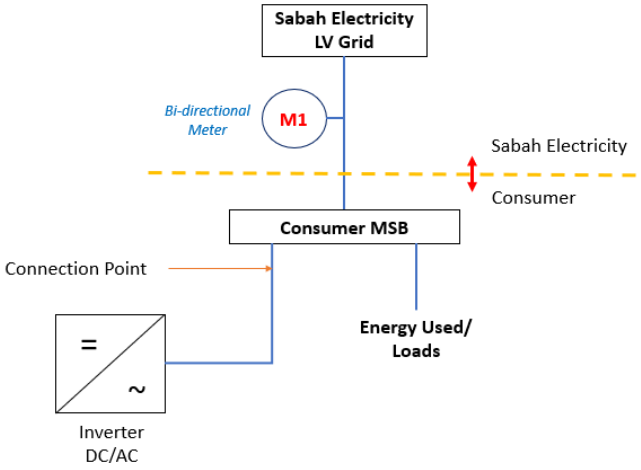


Fig. 5.2: LV connection

6.0 GENERAL REQUIREMENTS

6.1 Introduction

Connection of indirect Solar PV power generation system for SOLAR RAKYAT SABAH consumer shall be done internally which shall result in no requirement for upgrading of the existing utility supply infrastructure such as cable, fuse, switchgear, transformer and protection scheme.

6.2 Connection requirement

As a result of installation of indirect Solar PV power generation system, the quality of power at the point of connection shall not be made worse than the existing quality of supply. Quality of supply is measured as compliance to the standards on voltage, flicker, frequency, harmonics and power factor. To ensure that the addition of indirect Solar PV power generation system does not adversely impact the quality of supply, the following requirements shall be imposed and adhered by the SOLAR RAKYAT SABAH consumer.

Deviation from these standards represents out-of-bounds condition and may require the PV system to sense the deviation and properly disconnect from Distribution Licensee system.

Power quality parameters (harmonics and voltage) must be measured at the utility interface/point of common coupling unless stated otherwise. At PCC, the power quality requirements must comply with Sabah Distribution Code and this Technical Guidebook.

6.3 Selection of connection point

Although the connection of indirect Solar PV power generation system is within the consumer's premise, the following guides shall be satisfied to ensure that the connection does not interfere with the existing power supplied by the Distribution Licensee. The following items are to be considered during design.

a) Customer load during peak and trough;
b) Anti-islanding;
c) Protection system;
d) Interlocking;
e) Energy storage system (if applicable); and
f) Sensitive load.

During periods of low consumption (trough) and high generation from indirect Solar PV power generation system, SOLAR RAKYAT SABAH consumer is to ascertain that the internal network is capable of utilising all the generated energy and its protection system to use of external device or energy storage to mitigate the export of excess energy from consumer's solar PV system to the distribution system.

6.4 Connected voltage

As the connection is done internally, SOLAR RAKYAT SABAH consumer shall appoint a qualified consultant to design the interconnection between indirect Solar PV power generation system and his existing plant.

The interconnection shall comply with the standards as described in this guideline and other regulations issued by the Energy Commission of Sabah.

6.5 Installed capacity

Installed capacity of the system to be connected must be declared correctly during application. Restriction of export is to ensure that the system voltage does not fluctuate so much during high load, low generation and low load, high generation. The installed capacity is declared in term of summation of kWp.

The installed capacity of the indirect Solar PV power generation system shall be capped for domestic consumers as below:

a) Single phase : up to 5kWac; and
b) Three phase : up to 10kWac.

6.6 Export limiting

The export of excess energy from SOLAR RAKYAT SABAH consumer during its low demand and peak power generation could cause disruption to Distribution Licensee's network. Therefore, the amount of export is to be determined by the Distribution Licensee during the application process. For the capacity below 72kW, where there will be no analysis by the DL, the consumer shall ensure that the exported power shall be less than the existing capacity of the DL and consumer's equipment. Appropriate functionality within the inverter or use of external device to be provided to mitigate such a condition.

6.7 Boundary of ownership & operation

Boundary and operational limits of Distribution Licensee & SOLAR RAKYAT SABAH consumer must be clearly demarcated, agreed and documented. The Interconnection Operation Manual (IOM) shall be prepared and endorsed by both parties prior to the operation of the indirect Solar PV power generation system. Distribution Licensee's responsibility is up to the metering point which is as the ordinary Distribution Licensee's consumer boundary.

6.8 Equipment specifications

Major components of the indirect Solar PV power generation system shall comply to the following standard:

a) MS 1837
b) IEC 61727
c) IEEE 1547

6.9 Normal voltage operating range

The PV system injects current into utility and does not regulate voltage.

LV indirect Solar PV power generation system shall be capable of operating within the voltage range in **Table 6.1**.

Table 6.1: Normal operating condition at PCC (LV)

Normal Voltage (V)	Steady State Voltage Limits
230	-6% and +10%
400	-6% and +10%

6.10 Voltage fluctuation

Power generation from indirect Solar PV power generation system constantly varies due to the changing solar irradiation throughout the day. The varying power generation injected into the Distribution Licensee's network is bound to create voltage fluctuations at the interconnection point and other buses within the grid.

The maximum voltage fluctuation range allowed for LV due to varying solar radiation is 6%. Beyond this, there is a danger of utility and consumer equipment getting heated up.

An appropriate voltage control is to be undertaken to mitigate the voltage fluctuation when necessary.

6.11 Harmonic

The harmonic of a wave is a component frequency of a wave that is an integer multiple of the fundamental frequency. In the presence of non-linear loads such as computer power supplies and other appliances, Alternating Current ('AC') can be distorted by introduction of various harmonic frequencies. Harmonics can be measured by percentage of the fundamental frequency or by calculating Total Harmonic Distortion ('THD'). When present at high levels; these harmonics are detrimental to the electrical system and its loads.

The PV system output should have low current-distortion levels to ensure that no adverse effects are caused to other equipment connected to the utility system.

Total harmonic current distortion shall be less than 5 % at rated inverter output at cable connected to PCC. Each individual harmonic shall be limited to the percentages listed in **Table 6.2**.

Even harmonics in these ranges shall be less than 25 % of the lower odd harmonic limits listed.

Table 6.2: Current distortion limits (IEC 61727-2004)

Odd harmonics	Distortion limit (%)
3 – 9	< 4.0
11 – 15	< 2.0
17 – 21	< 1.5
23 – 33	< 0.6

Even harmonics	Distortion limit (%)
2 – 8	< 1.0
10 – 32	< 0.5

Note:

- *The harmonic current injection should be exclusive of any harmonic currents due to harmonic voltage distortion present in the utility grid without the PV system connected.*
- *Type tested inverters meeting the above requirements should be deemed to comply without further testing.*

6.12 Inverter power factor

The power factor is defined as the ratio between the applied active power and the apparent power.

PV systems shall have a leading or lagging power factor greater than 0.9 and 0.85 respectively when the output is greater than 20 % of the rated inverter output power. The smart inverters used shall automatically make necessary adjustments to ensure that the power factor does not cause voltage rise beyond the permissible limit.

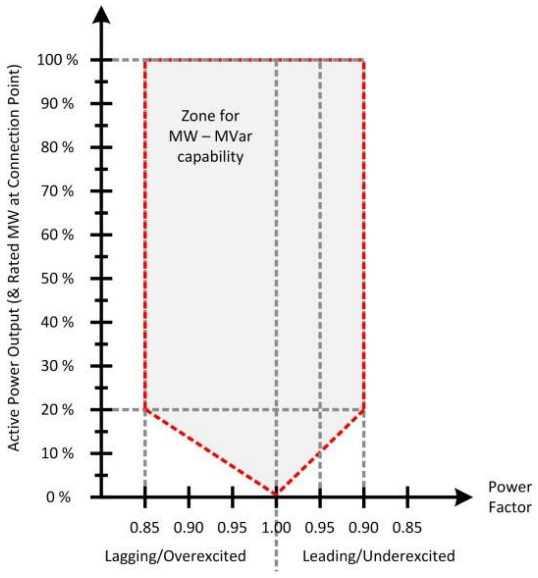


Fig. 6.1: Reactive power requirement at connection point.

6.13 Reactive power compensation

Consumer should be aware that if the installed indirect Solar PV power generation system is set to operate at unity power factor, reactive power for their load will be totally imported from Distribution Licensee and real power will be mixed of own generation and import from Distribution Licensee.

This will result in low power factor reading at Distribution Licensee tariff meter as the ratio of reactive power to active power is higher with own generation.
Therefore, customer is advised to consult their service provider to provide internal compensation to avoid from being penalised.

6.14 DC injection

The PV system shall not inject DC current greater than 1 % of the rated inverter output current into the utility interface under any operating condition.

6.15 Flicker

Flicker is due to rapidly changing loads that cause fluctuate in the customer's voltage. Even a small change in voltage can cause noticeable. Flicker is an irritation issue.

The operation of the PV system should not cause voltage flicker in excess of values stated in **Table 6.3**.

Table 6.3: Reference Sabah Grid Code

Distribution system voltage level which the fluctuating load is connected	Absolute short-term flicker severity (Pst)	Absolute long-term flicker severity (Plt)
LV Systems	1.0	0.8

6.16 Voltage unbalance

Voltage unbalance is defined as the ratio of the negative sequence voltage component to the positive sequence voltage component.

Negative Phase Sequence Voltage (%): 2% for 1-minute duration when multiple single-phase PV units are installed and it should be distributed evenly among the three phases of the power system.

Infrequent short duration peaks with a maximum value of 2% are permitted for Voltage Unbalance.

The unbalance voltage shall not exceed 1% for 5 occasions within any 30-minute time period at the terminals of a user's installation.

6.17 Short circuit level

By regulation, Distribution Licensee is required to ensure that short circuit level of the network is within the equipment ratings. The regulation specifies that network maximum sub-transient 3-phase symmetrical short circuit shall be within 90% of the equipment designed short-time make & break capacity. **Table 6.4** highlights the typical equipment ratings in Distribution Licensee's distribution network.

Table 6.4: Typical Equipment ratings in Sabah Electricity Distribution Network

Nominal Voltage (kV)	Rated Voltage (kV)	Fault Current (kA)
11.0	12.0	20.0
0.4	1.0	31.5

7.0 PENETRATION LIMIT

7.1 Introduction

SOLAR RAKYAT SABAH consumers are allowed to export any excess energy to Sabah Electricity, provided that the exported power is within the capacity of the existing equipment (Sabah Electricity and consumer) and the voltage levels are within the limit.

Generation power limiter is necessary to ensure that during periods of low load and high solar generation, the local voltage level would not rise beyond the limit and the exported power are still within the capacity of the existing equipment (Sabah Electricity and consumer).

7.2 Individual penetration

a) SOLAR RAKYAT SABAH

Applicable for Distribution Licensee registered consumer only. Consumer should decide on the installed capacity with consideration of their own daytime peak demand. Maximum installed capacity as shown in **Table 7.1**.

Table 7.1: Maximum installed capacity allowed for SOLAR RAKYAT SABAH consumer

Category	Maximum Capacity Installed	
Domestic	Single phase	5kWac
	Three phase	10kWac

However, periodically, during low household power consumption period and high solar PV generation, the excess power is to flow into the grid.

b) BESS

Installed capacity of BESS should not cause any export to Distribution Licensee's grid. Appropriate limiting device must be emplaced. BESS may be incorporated as part of the Solar PV during application (coupled with solar PV system).

The installation shall be in accordance with the Act and/or Enactment the subsidiary legislations made under it or any other documents issued by the relevant authorities in relation to BESS. With the capability of manual setpoint adjustments within a range 49.5 Hz and 50.5 Hz. Net-meter will cater the energy export timely from 06:00 am to 18:00 pm only.

8.0 PROTECTION GUIDELINES

8.1 Introduction

Protection system for indirect Solar PV power generation system is to be designed to isolate the faulty from the healthy sections of the system.

DG protection scheme is under SOLAR RAKYAT SABAH consumer responsibility and SOLAR RAKYAT SABAH consumer is to declare the protection scheme and settings to Distribution Licensee. SOLAR RAKYAT SABAH consumer shall design a protection system that fits his target degree of system security. Nonetheless, SOLAR RAKYAT SABAH consumer shall comply to Distribution Licensee's protection requirements to ensure that the fault would not spread beyond the plant.

SOLAR RAKYAT SABAH consumer is to perform protection coordination study to determine the suitable settings to protect the system during fault. Results of such study are to be furnished to Distribution Licensee for reference. Distribution Licensee shall advise SOLAR RAKYAT SABAH consumer on the appropriate settings at the point of common coupling.

For SOLAR RAKYAT SABAH consumer interconnection feeder protection scheme shall inhibit unsafe synchronization.

8.2 Smart inverter

Connection of power generation to distribution network could cause voltage rise during low load, high generation condition. Also, sudden loss of generation from DG could cause instability of the network, especially for system with high DG penetration.

Advanced inverters or known as smart inverters are capable of providing additional features in addition to the power conversion. Smart inverters are PV inverters that stay connected and provide additional functions to help actively support the grid - mainly voltage and frequency. Traditional inverters simply disconnected when the grid voltage or frequency went out of range. Broadly, smart inverters provide some additional benefit to the grid beyond simply converting DC electricity to AC from PV systems. The smart inverter functions is outlined in the **Attachment A**.

8.3 Frequency

Distribution Licensee shall maintain the system frequency and the PV system shall operate in synchronism with Distribution Licensee's frequency. Distribution Licensee shall operate with nominal 50 Hz system with ±1% range band.

8.4 Synchronisation

Synchronisation is an act of matching, within allowable limits, the required DG parameters with the Distribution Licensee's utility supply parameters as in **Table 8.1.**

Table 8.1: Parameters required for synchronisation

Parameters	Required Range
Frequency difference	<0.2 Hz
Voltage magnitude difference	< 10%
Voltage angle difference	< 10 deg
Interlocking logic are satisfied	-

Synchronisation is to be done at the inverter. Re-synchronising is only to proceed once Distribution Licensee's system is normalized and stabilized as in **Table 8.2.**

Table 8.2: Time taken for re-synchronising

Voltage	Time
LV	2 minutes

8.5 Anti-islanding inverter

Non-islanding inverters are unable to supply the load without the presence of the Distribution Licensee's system. For personnel safety reasons, PV plant is not allowed to be energized during outage of Distribution Licensee grid (loss of mains). The SOLAR RAKYAT SABAH consumer shall disconnect from the Distribution Licensee's system for loss of main within 2 second.

Inverters used by SOLAR RAKYAT SABAH consumer shall provide the following anti-islanding detection techniques:

a) Under Voltage;
b) Over Voltage;
c) Under Frequency;
d) Over Frequency; and
e) Additional anti-islanding technique

SOLAR RAKYAT SABAH consumer is to prove the anti-islanding capability of the plant during commissioning tests.

8.6 Inverter Fault Detection

PV system with inverter shall use abnormal voltage or frequency sensing for fault detection.

8.7 Inverter fault current contribution

The fault current contribution by the inverter will be limited usually by inverter control. Based on IEEE 1547, the typical range of short circuit current is between 100% and 200% of the rated inverter current. SOLAR RAKYAT SABAH consumer shall ensure that inverters used comply to the IEEE1547 requirement.

In areas where the network's Short Circuit Level has reached its threshold, as specified in Section 6.17, the inverter used must comply with Short Circuit Testing Certification ('SCTC') requirements. Applicants are advised to refer "Technical Guidelines –

Application of Inverters to Mitigate Fault Current Contribution of Inverter-based Distributed Generation in Distribution Systems" or contact the Distribution Licensee for further clarification on the SCTC process.

8.8 Protection schemes

The basic requirements for the design of the protection schemes shall be as follows:

a) For any internal fault in the indirect Solar PV power generation system, the indirect Solar PV power generation system must not cause problems to the Distributor licensee system and its customers.
b) For any distribution network fault outside the indirect Solar PV power generation system plant, the PV system must be protected from any damaging effect.

SOLAR RAKYAT SABAH consumer shall be required to provide other protection devices to complement existing special features.

8.9 Failure of indirect Solar PV power generation system protection or control equipment

Indirect Solar PV power generation plant must be disconnected from the distribution system during any of the system failure. Failure condition of indirect Solar PV power generation system equipment shall include:

a) Failure of protection equipment;
b) Failure of control equipment; and
c) Loss of control power.

8.10 Voltage disturbance

The inverter should sense abnormal voltage and respond according to the conditions in **Table 8.3**. Consideration shall be given to monitoring voltage in this clause in order to avoid problems due to voltage drop in various transformer, wiring or feeder circuit. When the inverter senses the voltage lies outside its operating limits, the recommended action shall be as in **Table 8.3** below.

Table 8.3: Voltage disturbance

Voltage (at PCC)	Maximum trip time (s)
V<50%	0.10
50%≤V<90%	2.00
110%<V<135%	Continuous operation
90%≤V≤110%	2.00

Inverters are expected to continuously operate during distribution network voltage fluctuation ±10% of its nominal.

During the time of voltage disturbances which could be the result of transmission network switching and distribution switching on nearby feeder, the voltage would be affected. Therefore, inverters must be able to ride thru the voltage disturbance bands

of 50% to 90% and 110% to 135%. This is to help stabilise the Distribution Licensee's system.

Loss-of-mains is indicated by voltage drop less than 50%.

Over voltage and under voltage detection shall be provided for all 3 phases.

8.11 Frequency disturbance

The under frequency and over frequency levels and the corresponding inverter trip time shall be as follows:

a) When the utility frequency is outside the nominal 50 Hz value by ±1 %;
b) Trip time shall be within 0.20s; and
c) Applicable for LV interconnection.

8.12 Utility interface disconnect switch

Indirect Solar PV power generation system interconnection must incorporate utility interface disconnect switch to allow disconnection of indirect Solar PV power generation system output from the interconnecting with Distribution Licensee for safe utility line works. The requirement of such switch could be referred to MS 1837. The switch shall be manual, lockable, load break disconnect switch that:

a) Provide clear indication of switch position;
b) Visible and accessible to maintenance and operational personnel; and
c) Provide visual verification of the switch contact position when the switch is in open position.

9.0 Metering Requirement

9.1 Introduction

Existing single phase and three phase whole current meter needs to be replaced to a bi-directional supply meter. The meter for large power consumer shall be replaced only if bi-directional register is required.

The existing meter board and its wiring (if required) to be re-located or to be replace by the registered wireman appointed by the consumer. The location of the meter shall be assessable to Sabah Electricity personnel, facing the main entrance and comply with the latest Electricity Supply Application Handbook.

The consumer shall bear all costs associated with the connection of indirect Solar PV power generation system including costs of meter replacement, supply upgrading, and system connection/modification (if applicable).

9.2 Energy Meters

Energy meters is required to measure the monthly Distribution Licensee-SOLAR RAKYAT SABAH consumer import & export (M1) for the purpose of net energy calculation. The (M1) meter will be installed by Sabah Electricity.

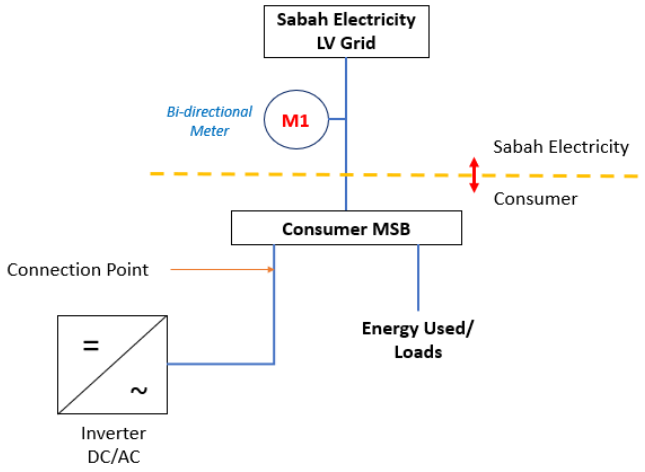


Fig. 9.1: Location of Energy Meters

9.3 Communication Signal

Distribution Licensee uses wireless mode of communication between energy meter and HQ. Location of the meter room shall have adequate reception of the wireless signal to enable data transmission. SOLAR RAKYAT SABAH consumer shall provide a signal booster device whenever the communication signal is weak.

10.0 SAFETY REQUIREMENT

10.1 Introduction

The installation of grid-connected indirect Solar PV power generation systems shall comply with the requirements of MS IEC 60364 or MS IEC 60364-7-712. The provisions of this section are aimed at ensuring that these requirements are met, considering a range of system topologies and earthing arrangements.

10.2 Operation

It is important that for the safety of operating staff and public, both the Distribution Licensee and the SOLAR RAKYAT SABAH consumer operator must coordinate, establish and maintain the necessary isolation and earthing when work and/or tests are to be carried out at the interface/connection point.

The safety coordination applies to when work and/or tests that are to be carried out involving the interface between the distribution network and the indirect Solar PV power generation system plant and it is the responsibility of the Distributor licensee and SOLAR RAKYAT SABAH consumer operator to comply with the requirements of statutory acts, regulations, sub–regulations, individual license conditions, Standardized Distributor licensee's Safety Rules and the Sabah Grid Code.

10.3 Labelling

Labels shall be clearly placed to remind the operator that the device should be access cautiously as there could be an energised part that comes from the indirect Solar PV power generation system.

Test before touch must be practiced.

11.0 APPLICATION PROCESS

11.1 Introduction

SOLAR RAKYAT SABAH applicant is required to submit the clearance application form as **Appendix B** to Sabah Electricity via email solar.rakyatsabah@sesb.com.my. The purposes of the assessment are for the evaluation of the following criteria of the consumer:

a) Malaysian citizen;
b) Domestic tariff;
c) Existing registered consumer;
d) Outstanding other account/bad debt;
e) Blacklist;

12.0 TESTING & COMMISSIONING

12.1 Introduction

There are 2 types of testing required:

a) Inverter compliance tests; and
b) Interconnection compliance tests.

Inverter compliance test

SOLAR RAKYAT SABAH consumer is responsible to ensure that the inverter unit(s) are complying to the requirements of this guideline.

Certified results of tests must be submitted for verification.

Interconnection compliance tests

Prior to commissioning, the interconnection must be tested to ensure that the performance is up to the required standard, installations are according to the approved scheme, settings are done as approved, etc.

Connection of indirect Solar PV power generation system plant should not have detrimental impact to the operation of Distribution Licensee's grid.

Tests to prove the following items shall be carried out in the commissioning process:

a) Anti-islanding on loss of mains;
b) Interlocking scheme (if any);
c) Equipment functional tests; and
d) Power Quality measurement.

12.2 Commissioning tests

Commissioning tests of the installation shall be carried out by the competent person appointed by SOLAR RAKYAT SABAH consumer.

All tests must be carried out by qualified testers.

Test equipment must have valid calibration certificate.

12.3 Commissioning of LV connection

For connections that are situated on a long feeder, special attention to the voltage level during peak and low load is to be made. Such a condition could result in excessive voltage rise during low load period.

13.0 OPERATION AND MAINTENANCE

13.1 Introduction

SOLAR RAKYAT SABAH solar PV installation is owned and maintained by the Consumer.

13.2 Boundary

Any failure of supply from Sabah Electricity grid including the bi-directional meter shall be rectified and normalized by Sabah Electricity.

Any failure of the consumer's electrical installation (after Sabah Electricity meter) and solar PV system shall be rectified and normalized by the Consumer.

In the event of Sabah Electricity supply failure, the Consumer has to ensure that there shall not be any reverse power/back feed from any internal source of generation (example solar PV, battery, generator) to Sabah Electricity grid.

The Consumer is solely responsible for any accident/incident to human beings and equipment that may occur due to reverse power/back feed from any internal source of generation when the Sabah Electricity grid supply is off.

Sabah Electricity reserves the right to disconnect Sabah Electricity supply to Consumer at any time in the event of default as specified in the contract, damage to its grid, meter, etc, or to prevent accident or damage.

14.0 OTHER REQUIREMENTS

14.1 Introduction

In addition to the technical requirements described in the previous sections, the following administrative requirements must be fulfilled.

Local authorities

a) Kebenaran Merancang from the local authorities for overall plant (if applicable);
b) Building plan approval (if applicable);
c) Site suitability.

Regulator

a) Registration with authority for less than 72kW.

Land owner

a) For tenants, written approval by the land owner shall be obtained.

The above list is not exhaustive.

ATTACHMENT A: Smart Inverter Functions

- Continued growth of PV generation puts more challenges on grid infrastructure designed for distribution from centralized energy sources. Advanced or smart inverter functions can help address the grid stability problems posed by high levels of variable distributed generation.

- Smart inverters are PV inverters that stay connected and provide additional functions to help actively support the grid - mainly voltage and frequency. Smart Inverters able to receive commands from grid operators and report information. Traditional inverters simply disconnected when the grid voltage or frequency went out of range.

- Broadly, smart inverters provide some additional benefit to the grid beyond simply converting DC electricity to AC from PV systems. They typically support overall grid reliability by offering the following functions.

No.	Functions	Description	Setting	Reference
1.	Anti-islanding Protection	Automatically disconnect during grid failure within certain duration. The duration is adjustable. Anti-islanding protection is to ensure inverter doesn't back-feed a disabled grid.	LV: • Disconnect 2sec • Reconnect 2min	Distribution Code: 7.8.3.5 - Protection and Control Requirements
2.	Voltage and Frequency Ride-through Capability	Inverter must meet the mandatory and permissive operation requirements as well as the must trip limits when the AC grid voltage and frequency high or low limits are exceeded. Inverters support the grid during brief voltage or frequency excursions. This function will help the grid to self-heal from a disturbance. During periods of (sometimes extreme) deviations in grid voltage and/or frequency, smart inverters are designed to remain connected to the grid and adjust their output to act as a counterbalance to frequency or voltage changes.	LVRT: Refer graph (Distribution Code) LFRT: uninterrupted range 47Hz to 50.5Hz	Distribution Code: 6.5.5.1 - Low Voltage Ride Through (LVRT) & 6.5.5.2 - Frequency disturbance
3.	Reactive Power Control Functions	Inverter is able to supply or absorb reactive power to/from the grid to maintain stable grid voltage when fluctuations are prevalent.	Voltage range: (LV: 230V & 400V) -6% +10%	Distribution Code: 5.4.4.1 - Voltage range,

		Variable Power Factor provides active voltage stabilization: • Grid voltage nominal, purely active power. • Grid voltage high, add 'inductive' reactive power. • Grid voltage low, add 'capacitive' reactive power. Adjusting VARs keeps grid voltage from oscillating; acts like a shock absorber. The reactive power control can be achieved using 3 main controls: a) Dynamic Volt/VAr Mode (voltage control). b) Fixed power factor (pf control). c) Fixed reactive power (eg: using switched reactor or capacitor).	Power Factor range: 0.85 lagging to 0.9 leading.	6.5.5.5 - Reactive power, 7.8.3.8 - Power factor.
4.	Active Power Control Functions Frequency-Watt (Droop Curve) and Volt-Watt	Support grid frequency and voltage by changing inverter wattage output: Help to stable the grid during an under/over frequency and voltage event by controlling the real output of the solar system. • Grid frequency/voltage nominal, inverter at max output. • Grid frequency/voltage high, inverter curtails power. • Grid frequency/voltage low, inverter increases power.	Frequency range: 47Hz to 50.5Hz Voltage range: (LV: 230V & 400V) -6% +10%	Distribution Code: 6.5.5.4 - Droop curve, 5.4.41 - Voltage range & 6.5.5.3 - Power output management.

APPENDIX B: SOLAR RAKYAT SABAH CLEARANCE APPLICATION FORM

Sabah Electricity
Energising Our Future

- SOLAR RAKYAT PROGRAM -
Sabah Electricity Clearance Application Form

RETAI L/NEM/FO RM/Clearance v1.2

PART 1: INFORMATION

- We collect and use your personal data to process your application for clearance under the Solar Rakyat Program, provide related services, send you important updates, and comply with legal and regulatory requirements.
- Please make sure the information you provide is accurate and complete. If your personal data is incomplete or incorrect, we may not be able to process your application .
- You have the right to request to access to your personal data, ask for corrections, and request a copy of your data, subject to applicable laws.
- By submitting your personal data, you agree to its collection and use as described in this notice.

PART 2: CONSUMER INFORMATION – to be filled by the Registered Customer

APPLICANT NAME : _____

NRIC : | | | | | | | - | | | - | | | | |

SESB ACCOUNT NUMBER : | | | | | - | | | | | | | |

PHONE NUMBER : | | | | | - | | | | | | | |

EMAIL ADDRESS : _____

INSTALLATION ADDRESS : _____

_____

LOCATION (GPS) : _____

PART 3: DECLARATION. PLEASE TICK (√)

By signing this form, I confirm that:

☐ I am the owner of the premises, and the information provided above is true and accurate to the best of my knowledge and belief.

☐ I consent to Sabah Electricity using and disclosing my personal data for the purpose of processing the SOLAR RAKYAT SABAH Assessment.

☐ I have provided a copy of my MyKad as required.

Signature : _____

Name : _____

Date : _____

PART 4: SUBMISSION

- Kindly submit the completed form to Sabah Electricity at the following address or via email at: solar.rakyatsabah@sesb.com.my.

Sabah Electricity (Retail Division),
New Business & Development,
Block C, 1st Floor, Bangunan KWSP,
Jalan Karamunsing JT Bypass,
88598 Kota Kinabalu, Sabah.

PART 5: FOR OFFICE USE ONLY – TO BE COMPLETED BY SABAH ELECTRICITY (Preliminary Assessment)

A. Eligibility

Assessment Item	Status/Findings	Remarks
Malaysian Citizen	☐ Yes ☐ No	
Domestic Tariff	☐ Yes ☐ No	
Existing Registered Consumer	☐ Yes ☐ No	

B. Consumer Background Assessment

Assessment Item	Status/Findings	Remarks
Active Utility Account	☐ Yes ☐ No	
Outstanding Bills/Payments	☐ Clear ☐ Outstanding	
Credit History with Utility	☐ Satisfactory ☐ Need Review ☐ Unsatisfactory	
Previous Violations/Non-Compliance	☐ None ☐ Recorded	
Connection/Disconnection History	☐ Normal ☐ Issues Found	
Regulatory Compliance Status	☐ Compliant ☐ Pending	

C. Clearance Recommendation

Based on the assessment above:

☐ **Approved** – Consumer is eligible for SOLAR RAKYAT SABAH Program submission.

☐ **Pending** – Additional documentation/clarification required.

☐ **Rejected** – Consumer does not meet eligibility criteria.

Reason for Pending/Rejection:

_____

_____

_____

PART 6: SABAH ELECTRICITY'S AUTHORISED SIGNATURE

A. Assessed by (Agent MSC)	B. Verified by (Manager)
Signature : _____	Signature : _____
Name : _____	Name : _____
Designation : _____	Designation : _____
Date : _____	Date : _____

C. Endorsement by Senior Executive of New Business & Marketing

Signature : _____

Name : _____

Designation : _____

Date : _____

SCHEDULE 2

SOLAR RAKYAT SABAH
APPLICATION FORM

SOLAR RAKYAT SABAH PROGRAMME APPLICATION WORKFLOW

STEP 1

PIC: Consumer

Check Your Eligibility & Quota Availability

Interested consumers must be registered with the Distribution Licensee (DL) as a Domestic Tariff consumer, occupying a private dwelling with no business activity and no previous Solar PV installations.

Applicants required to check quota availability. Total quota is 20MW, first come first served basis until 2028, or quota finish, which ever comes first.

STEP 2

PIC: Consumer

Appoint Electrical Contractor Class PV (Grid Connected) ECCPV (GC)

Appoint an ECCPV (GC) to manage all related to the application, design, installation, T&C and maintenance of the Solar PV System.

STEP 3

PIC: ECCPV(GC)

System Sizing

ECCPV(GC) shall conduct site survey, design of Solar PV system and prepare quotation to consumers.

Systems must be ≤ 5 kWac for Single Phase installations or ≤10 kWac for Three Phase systems.

STEP 4

PIC: Distribution Licensee

Distribution Licensee Pre-Assessment

The DL shall verify there is no existing meter or account issues with the consumer before they apply for Solar Rakyat quota. All issues shall be resolved before SOLAR RAKYAT SABAH application is done.

PIC: Distribution Licensee

STEP 5

PIC: ECCPV(GC) / Consumer

PIC: ECCPV(GC) /Consumer

SOLAR RAKYAT SABAH Application

The SOLAR RAKYAT SABAH application must be formally submitted through the EEISy online system by the ECCPV(GC), subject to quota availability.

Documents required:

- IC Card
- Proof of premise ownership
- 6 months electricity bilis
- Pre-Assessment form from Distribution Licensee
- Relevant Technical design documents

Applications queried due to incomplete documents must be rectified. Approved applications will be issued within 14 working days upon complete submission.

STEP 6

PIC: ECCPV(GC)

Solar Rakyat Approval to Install (SRATI)

The Solar Rakyat Approval to Install (SRATI) is issued, authorizing the commencement of installation. Installation must begin within three months of receiving the SRATI; otherwise, the application will be revoked.

SOLAR RAKYAT SABAH PROGRAMME

STEP-BY-STEP INSTALLATION WORKFLOW

1 Installation Works Begin

Installation works shall only begin after the **Solar Rakyat Approval to Install (SRATI)** has been issued

PIC: ECCPV(GC)

2 Progress Report on Installation Works

The ECCPV(GC) shall within 3 months of approval, **upload a progress report** with **photographs** into the **EEISy Online System** to **prove installation has started**

PIC: ECCPV(GC)

3 SOLAR RAKYAT SABAH Contract Signing

SOLAR RAKYAT SABAH Contract to be signed between **Consumer** and **Distribution Licensee**

PIC: Consumer & Distribution Licensee

4 Smart Meter Installation Request

Request the installation of **SOLAR RAKYAT SABAH Smart Meter** from the **Distribution Licensee**

PIC: ECCPV(GC)

5 Testing & Commissioning

The ECCPV(GC) shall perform the **Testing & Commissioning (T&C) after the SOLAR RAKYAT SABAH Meter has been installed to ensure system safety and compliance**

PIC: ECCPV(GC)

6 Digital Documentation Upload

Upload the **T&C Form**, signed **SOLAR RAKYAT SABAH Contract, Form G,** photographs of completed installation etc in the **EEISy** online portal

PIC: ECCPV(GC)

7 Final Authorisation & Billing

ECoS shall issue the **Solar Rakyat Approval to Operate (SRATO)** upon complete submission. Issuance of **SRATO** shall trigger the commencement of billing with solar reduction.

BORANG PERMOHONAN PROGRAM SOLAR RAKYAT SABAH
SOLAR RAKYAT SABAH PROGRAMME APPLICATION FORM

Sila kemukakan borang permohonan anda ke /
Please submit your application form to:
Energy Commission of Sabah
Tingkat 10, Plaza Shell, 29,
Jln Tunku Abdul Rahman,
Pusat Bandar Kota Kinabalu,
88000 Kota Kinabalu,
Sabah.

Untuk kegunaan pejabat sahaja /
For office use only:
Reference No. : .....
Serial No. : .....
Date Received : ...../...../.....
Time received : .....
Receiving Officer : .....

BAHAGIAN 1 : MAKLUMAT PEMOHON / *SECTION 1 : APPLICANT INFORMATION*
(BORANG INI HENDAKLAH DIISI DENGAN HURUF BESAR) / *(THIS FORM TO BE COMPLETED IN CAPITAL LETTERS):*

1A UNTUK PEMOHON INDIVIDU / *FOR INDIVIDUAL APPLICANT*

BUTIRAN PEMOHON / *APPLICANT DETAIL*

Gelaran/Salutation (Encik/Puan/Cik/Gelaran Lain_____)
(Mr./Mrs./Miss/Other Salutation)

Nama / *Name*

Kewarganegaraan / *Citizenship*

E-mel / *E-mail:*

No. Mykad: | | | | | | | - | | | - | | | | |
Identity Card No. **atau / *or***

No. Pasport (bagi bukan warganegara Malaysia) /
Passport No. (For non-Malaysian)

No. Tel / *Tel. No.:* -
No. Tel. Bimbit / *Mobile No.* : -

ORANG LAIN YANG BOLEH DIHUBUNGI / *ALTERNATE CONTACT PERSON*

Gelaran/Salutation (Encik/Puan/Cik/Gelaran Lain_____)
(Mr./Mrs./Miss/Other Salutation)

Nama / *Name*

Hubungan / *Relationship:*

Kewarganegaraan / *Citizenship*

No. Mykad: | | | | | | | - | | | - | | | | |
Identity Card No. **atau / *or***

No. Pasport (bagi bukan warganegara Malaysia) /
Passport No. (For non-Malaysian)

No. Tel / *Tel. No.:* -
No. Tel. Bimbit / *Mobile No.* : -
E-mel / *E-mail:*

BAHAGIAN 2 : MAKLUMAT PROJEK / SECTION 2 : *PROJECT INFORMATION*

2.1. ALAMAT PEPASANGAN/ *INSTALLATION ADDRESS*

Alamat Tapak Pepasangan */ Site Installation address*

Poskod / *Post Code* | | | | | | Bandar / *Town* _____ Negeri / *State* _____

Pemilikan Tapak / *Site Ownership :* ☐ Dimiliki Sepenuhnya / Fully Owned ☐ Sendiri (Pajakan kepada bank) / *Owned (Charged to bank)* ☐ Sewa/ *Leased*

Lokasi GPS Tapak Pepasangan / *GPS Location of Site Installation:*

Latitud / *Latitude* : ____ ° ____ ' ____ " Longitud / *Longitude* : ____ ° ____ ' ____

2.2 MAKLUMAT PEPASANGAN / *INFORMATION OF INSTALLATION*

Nama Pemegang Lesen Pengagihan / *Distribution Licensee:*	**SABAH ELECTRICITY SDN. BHD.(SE)**
Kategori Tarif / *Tariff Category* :	**Tarif DM - Domestik Tarif/*Tariff DM - Domestic Tariff***
Maklumat Bil (No. Akaun) / Billing Information (Account No.):	
No. Kontrak/ *Contract No. :*	
Sumber Tenaga Boleh Baharu / *Renewable Energy Resources:*	**SOLAR PV**
Kapasiti Terpasang Yang Diisytiharkan / *Declared Installed Capacity*	kWac
Kapasiti Terpasang / *Installed Capacity* :	kWp

Adakah pemohon pernah menyertai mana-mana program fotovolta suria sebelum ini? *Jika **Ya,** sila* isi maklumat yang diperlukan di bawah/ *Have the applicant participated in any of the prior solar PV programmes? if **Yes**, please* fill in *the required information below:*

No.		Program/ Mekanisme *Programme/ Mechanism*	Kapasiti Terpasang *Installed Capacity*	Alamat pepasangan/ *Installation address*

2.3 MAKLUMAT PEMBEKALAN DAN PEPASANGAN / *SUPPLY AND INSTALLATION INFORMATION*

Tahap Voltan Pada Titik Sambungan Meter SE / Voltage level at SE Meter Connection Point: ☐ **Voltan Rendah** (*Satu Fasa)* ☐ ***Low Voltage*** *(Three Phase)*

Voltan pada Titik Gandingan Sepunya / *Voltage at Point of Common Coupling :* ☐ Voltan / *Voltage*

Status Projek/*Project Status:* ☐ Projek Baru/*New Project* ☐ Projek Telah Siap/*Completed Project* ☐ Penambahan kapasiti/*increase capacity*

Jenis Bangunan / *Types of Building:*

Penggunaan Bateri Simpanan / *Use of Battery Storage* : ☐ Ya / *Yes* ☐ Tidak / *No*

*Jika **Ya**, sila kemukakan reka bentuk terperinci / *If Yes, please provide detail design.*

Kapasiti Bateri / *Battery Capacity* : ☐ Jenama dan Model / *Brand and Model:*

Anggaran Penjanaan Tenaga Tahunan */ Estimated Annual Energy Generation:* ☐ *MWh/year*

Anggaran Kemerosotan Pepasangan */ Expected Plant Deterioration:* ☐ *%/year*

2.4 MAKLUMAT TEKNIKAL / *TECHNICAL INFORMATION:*

Peralatan / *Equipments*	Jenama / *Brand*	Model	/ *Quantity*
a) Modul/ *Module jenis / type (monocrystalline/ polycrystalline/ thin film/others)*			
b) Penyongsang pintar / *Smart Inverter*			
c) Datalogger (Optional) *For capacity more than 72kWac will be required for T&C purpose			

2.5 PEMBEKAL PERKHIDMATAN SABAH REGISTERED PV INVESTOR (SaRSI)

Nama Syarikat / *Company's Name:*

No. Pendaftaran Syarikat / No. Perniagaan:
Company Registration No. / Business Registration No.

Syarikat RPVSP berdaftar ECoS / *ECoS RPVSP company* ☐ Ya / *Yes* ☐ Tidak / *No*

Jika Ya, No. Sijil Pendaftaran */ If yes, Certificate Registration No.*

Kontraktor Elektrik Berdaftar ECoS / *ECoS's Registered Electrical Contractor* ☐ Ya / *Yes* ☐ Tidak / *No*

Jika Ya, No. Sijil Pendaftaran */ If yes, Certificate Registration No.*

Alamat Pejabat / Office *Address* :

Poskod / *Post Code* Bandar / *Town* Negeri / *State*

No. Telefon/*Telephone No.* - No. Faks / F*ax No.* -

E-mel Syarikat / *Company E-mail* :

Orang Yang Boleh Dihubungi / *Contact Person* :

Jawatan / *Position* :

No. Tel. Bimbit / *Mo bile No.* : -

E-mel / *E-mail:*

2.6 PENDAWAI (≤72kWac) / WIREMAN (≤72kWac)

Nama / *Name*

No. Mykad: - -
Identity Card No.

No. Tel. Bimbit /*Mobile No:*

Nama Syarikat

E-mel / *E-mail*

No. Sijil Pendaftaran ECoS / *ECoS's Certificate Registration No.*

BAHAGIAN 3 : MAKLUMAT PEMBIAYAAN / *SECTION 3 : FINANCING INFORMATION*

Capital Expandature

1 Equipment Cost:

i.	PV module	RM
ii.	PV Inverter	RM
iii.	Balance of system	RM
iv.	Other Equipment cost (please state):	RM
	Total Equipment Cost	**RM**

2 Installation Cost

i.	Consultancy and Design Cost	RM
ii.	Interconnection Cost	RM
iii.	Preliminary Cost	RM
iv.	Other Installation Cost (please state):	RM
	Total Installation Cost	**RM**

3 Annual Operational Expenditure

i.	Insurance Premium	RM
ii.	Operation and Maintenance Cost	RM
iii.	Other operation Cost (Please state):	RM
	Total Operating Cost	**RM**

Financial Model, please tick (/) whichever applicable:

a. Outright/Direct Purchase ☐
b. Bank Loan ☐
c. Solar Leasing/Hire Purchase ☐
d. Solar Power Purchase Agreement (PPA) ☐
e. Hybrid of Solar Leasing and Solar PPA ☐

For"Solar Leasing/Hire Purchase or Solar Power Purchase Agreement (PPA) or Hybrid of Solar Leasing and Solar PPA" system, please provide the information below:

i. Registered Solar PV Investor: _____
ii. Contract Period: _____ Year
iii. Repayment Method: i. Repayment Amount (RM/kWh) _____
ii. Repayment Amount (RM/month) _____

BAHAGIAN 4 : JADUAL KERJA YANG DICADANGKAN / *SECTION 4 : PROPOSED WORK PLAN*

No.	Pencapaian / *Milestones*	Anggaran Tarikh Akhir / *Estimated Due date*
1	Tarikh Permohonan SOLAR RAKYAT SABAH dikemukakan / *SOLAR RAKYAT SABAH application submission date*	
2	Cadangan tarikh permulaan bagi kerja-kerja pemasangan sistem fotovoltaik suria (dalam tempoh 3 bulan dari tarikh kelulusan SOLAR RAKYAT SABAH)/ *Proposed date for commencement of solar PV system installation work (within 3 months from the date of SOLAR RAKYAT SABAH approval)*	
3	Tarikh cadangan T&C bersama Pemegang Lesen Pengagihan bagi penukaran/menaiktaraf meter utiliti *[jika perlu]* / *T&C Proposal Date with Distribution Licensee for Changing/Upgrade Utility Meter [if required]*	
4	Tarikh Pentauliahan SOLAR RAKYAT SABAH (Cadangan tarikh menandatangani kontrak SOLAR RAKYAT SABAH) / *SOLAR RAKYAT SABAH Commencement Date (Proposed date for signing of SOLAR RAKYAT SABAH contract)*	

BAHAGIAN 5 : SENARAI SEMAK DOKUMEN SOKONGAN / *SECTION 4 : SUPPORTING DOCUMENTS CHECKLIST*

Salinan bagi dokumen-dokumen berikut hendaklah dikemukakan bagi menyokong permohonan ini, yang mana berkenaan /
The following documents are to be submitted in support of this application, where applicable:

No.	Dokumen Yang Diperlukan / *Documents Required*		Sila [/] / *Please [/]*
1.0	*Applicant Information:*		
	1.1	*Applicant's MyKad (front and back) / Passport (if foreign person).*	
2.0	*Site Information:*		
	2.1	Documents proving the Applicant's ownership of the site, or other conditional or unconditional *rights (e.g. letter or agreement) that the Applicant has to utilise/lease the site for a minimum period equivalent to the effective period*	
3.0	*Technical Information:*		
	3.1	*The detailed engineering design of the renewable energy installation, including all relevant calculations to justify the installed capacity and claimed efficiencies, proposed plant layout and AC/DC single line diagram certified by relevant Competent Person under Electricty Supply Enactment 2024 and the regulations thereunder; and ECoS Qualified Person (ECoS GCPV System Design Certificate Holder)*	
	3.2	*Product data sheet / technical parameter for all electrical components. Please provide rating of each electrical components (SPD, fuses, switches, PV modules, Inverters)*	
	3.3	*If use battery storage, please provide detail design;*	
4.0	*Billing information:*		
	Documentary evidence showing that applicant has applied to be a consumer of SESE or a copy of three (3) months electricity bill (latest);		
5.0	*Competency Certificates:*		
	5.1	Competent Person certificates:	
		i) A certificate of registration as an Electrical Contractor issued by ECoS;	
		ii) A certificate(s) of Competency as a Wireman issued by the ST for each Competent Person's	
	5.2	Qualified Person certificates:	
		i) A certificate of Competency in GCPV System Design issued by ECoS or Others for each Competent Person's	
		ii) A certificate of Competency as a Wiremen in GCPV System issued by ECoS for each Competent Person's	

BAHAGIAN 6 : PENGISYTIHARAN BAGI PERMOHONAN NEM / *SECTION 6 : DECLARATION FOR NEM APPLICATION*

6.1 PENGISYTIHARAN PEMOHON (DIISI OLEH PEMOHON) / *APPLICANT DECLARATION (TO BE FIILED BY APPLICANT)*

****TO BE FIILED BY APPLICANT (INDIVIDUAL)***

I, [Name] ....., [Mykad No./ Passport No. ..... of[Address]..... .... hereby -

i) *appoint and authorize [Name of the Competent Person].....[MyKad*

ii) *No./Pasport No.] ..... as a Competent Person for this Application;*

iii) *confirm that the Competent Person appointed for this Application is a Competent Person according to section 2 of the Electricity Supply Enactment 2024;*

iv) *confirm that I have not committed any offences under the Electricity Supply Enactment 2024] and/or any other relevant laws and regulations pertaining to the supply and licensing of electricity;*

v) *declare that I have never participated in any existing mechanism or program relating to solar photovoltaic installation*

vi) *certify that all information given is true and correct to my knowledge and belief;*

vii) *understand and agree that, ECoS shall cancel the approval of the application and forfeit any application fees paid if the solar PV installation is not commence to install within three (3) months from the date of the notification of the approval;*

viii) *understand and agree that, ECoS shall forfeit any application fees paid if I withdraw the application;*

ix) *understand and agree that ECoS shall have the right to take any action if any of the information given is false;*

x) *agree that ECoS shall not be held liable for any loss, damage and inconvenience suffered by me after my application has been approved by ECoS;*

xi) *agree, understand and will comply with all the relevant laws and guidelines applicable to this application.*

……
……..
Name:
Mykad No. / *Passport No. :*
Date:

6.2 PENGISYTIHARAN KONTRAKTOR ELEKTRIK / *ELECTRICAL CONTRACTOR DECLARATION*

Untuk diisi oleh Orang Yang Kompeten / *To be completed by Competent Person.*

Company's Name:
……
…… Company Registration No. or Business Registration No. :
……..

By signing this form, I (Name) ..... (MyKad No. /Passport No.).....declare that:

i. *I am representing the owner of the premise and the information furnished above is true to my knowledge and belief;*
ii. *I confirm that the solar PV system design comply to the standards IEEE 1547, MS 1837 and other relevant requirements as per prudent utility practices;*
iii. *I also verify that the site condition is fit for installation of the solar PV system as per applicable regulations;*
iv. *I hereby acknowledge that all information given are true and the ECoS shall have the right to take any action if the above information are false;*

……
Name of Competent Person:
MyKad No./Passport No.:
Date:
Signature & Stamp Competent

SCHEDULE 3

SOLAR RAKYAT SABAH CONTRACT

CONTRACT FOR SOLAR RAKYAT SABAH

DEFINITIONS

(a) **ENACTMENT**
means the Electricity Supply Enactment 2024 and/or any regulations made thereunder and/or any amendment, revision, modification or Enactment made thereto or thereof from time to time for the time being in force.

(b) **BILLING CYCLE PERIOD**
means (i) the period beginning on the Commissioning Date and ending on the last day of the calendar year in which the Commissioning Date occurs; and (ii) each twelve (12) months' period thereafter during the term of this Contract, or such other period as may be approved by the State Government of Sabah from time to time.

(c) **BILLING MONTH**
means the period between two (2) successive meter readings. The SOLAR RAKYAT SABAH Meter is normally read at intervals of approximately thirty (30) days.

(d) **CHANGE OF TENANCY**
means a change of the registered consumer who is responsible to make payment of electricity bill of an existing SE's account.

(e) **COMMISSIONING DATE**
means the date on which the SOLAR RAKYAT SABAH Meter is commissioned as notified by Sabah Electricity Sdn. Bhd. (SE).

(f) **COMPETENT PERSON**
means a person who holds a Certificate of Registration as an Electrical Contractor issued under the Electricity Supply Regulations 2024.

(g) **CONSUMER**
means any domestic consumer who:
(i) is a registered consumer of SE who has entered into the Electricity Supply Contract;
(ii) is or will be supplied with electricity whereby the Premises are at the material time is connected or will be connected; and
(iii) is operating the Renewable Energy System on the rooftop and/ or porch of the Premises.

(h) **CONTRACT**
means the contract comprising of terms and conditions hereunder and SOLAR RAKYAT SABAH application form.

(i) **ELECTRICITY SUPPLY CONTRACT**
means the existing electricity supply contract entered into between the Consumer and SE for the supply of electricity in accordance with the Enactment.

(j) **EXPORT ENERGY**
means the renewable energy generated and delivered by the Renewable Energy System to SE's system, as measured in kWh by the SOLAR RAKYAT SABAH Meter.

(k) **GENERATED AMOUNT**
means an amount (in RM) equal to the Export Energy multiplied by the Tariff.

(l) **IMPORT ENERGY**
means the electricity supplied by SE and consumed by the Consumer, as measured in kWh by the SOLAR RAKYAT SABAH Meter.

(m) **kW**
means kilowatt.

(n) **kWh**
means kilowatt-hour.

(o) **SOLAR RAKYAT SABAH METER**
means the metering equipment and devices supplied by SE and installed by Electrical Contractor of Class PV (Grid-Connected) for the measurement of the Import Energy and the Export Energy.

(p) **PREMISES**
means the residential dwelling unit of the Consumer on which the Renewable Energy System is installed.

(q) **RENEWABLE ENERGY SYSTEM**
means the renewable energy system located on the rooftop and/or porch of the Premises which fully complies with the Technical Guidelines and the guidelines as may be issued by the Energy Commission of Sabah, grid-connected inverter, the associated protection and control devices, alternating current and direct current cables and other related devices up to the Consumer's termination point.

(r) **PV METER**
means the meter to be procured and installed at the Premises for the purpose of capturing the gross renewable energy generated from the Renewable Energy System.

(s) **SUPPLIED AMOUNT**
means an amount (in RM) equal to the Import Energy multiplied by the Tariff.

(t) **ENERGY COMMISSION OF SABAH**
Means the established Energy Commission of Sabah under the Energy Commission Enactment 2023 and any successor thereof.

(u) **TARIFF**
means the prevailing tariff, as provided by the Enactment and approved by the State Government of Sabah.

(v) **TECHNICAL GUIDELINES**
means SE's technical guidelines as may be amended, revised, modified or supplemented from time to time, which provide the minimum technical, operation and safety requirements in ensuring that the features of the Renewable Energy System and the SOLAR RAKYAT SABAH Meter are compatible with SE's requirements.

(w) **Sabah Electricity (SE)**
means Sabah Electricity Sdn. Bhd. (Company No. 199801006745) (462872- W), a company incorporated in Malaysia under the Companies Act 2016 and having its registered address at Company Secretary Office, 6th Floor, Block E, EPF Building, 88598, Kota Kinabalu, Sabah and having branches in East Malaysia.

A. TERM OF CONTRACT

This Contract shall be effective on the Commissioning Date and shall remain in effect for a term of twelve (12) years which expires on the last day of the month in which the twelfth (12th) anniversary of the Commissioning Date occurs, unless otherwise terminated in accordance with the provisions of this Contract.

Upon the expiry of the term of this Contract, the Consumer agrees with SE that the Consumer shall be registered by SE as self-consumption and subject to the guidelines relating to self-consumption as issued by the Energy Commission of Sabah.

B. CONSUMER'S COVENANTS

1. CONSUMER DECLARATION

The Consumer shall abide at all times to the Consumer Declaration as stipulated in the SOLAR RAKYAT SABAH application form and the following terms:

(a) To ensure that the Renewable Energy System complies with the Technical Guidelines, all prevailing statutory requirements and best practices on safety, reliability and power quality of electrical installation as stipulated in the Sabah Distribution Code and any amendments made thereunder;

(b) The Renewable Energy System shall incorporate an anti-islanding function to ensure that the Renewable Energy System automatically disconnect from SE's system during power interruption to allow SE's personnel to work safely on the SE's system; and

(c) Any other obligations under the Enactment.

2. REPRESENTATIONS AND WARRANTIES OF THE CONSUMER

The Consumer represents and warrants to SE that:

(a) The Consumer is an individual domicile and having a residential address in Sabah.

(b) The Consumer has full control and possession of the Premises, including all necessary ownership rights, leases, title and/or interest of the Premises.

(c) The Consumer shall comply with the provisions of all statutes, ordinances, by-laws, regulations and rules for the time being in force affecting the Premises or any constructions, improvements, installations, additions or alterations thereon and forthwith to satisfy all requirements of the municipality or any other local authority with respect to the Premises.

(d) The Consumer is not a bankrupt and/or not involved in any pending or ongoing cases involving meter tampering and/or subject to any pending action or proceeding affecting the Consumer before any court, government entity or arbitrator that is likely to affect materially and adversely the financial condition or operations of the Consumer and the ability of the Consumer to perform its obligations hereunder, or that purports to affect the legality, validity or enforceability of this Contract.

(e) The Consumer shall remain a Consumer of record of SE for its own electricity consumption in good standing at all times, and shall not cause the Renewable Energy System, the PV Meter and the SOLAR RAKYAT SABAH Meter to be disconnected or removed from the Premises without the prior written consent of SE.

(f) The capacity of the Renewable Energy System shall not exceed:
   (i) 5kW for single phase wiring system; and
   (ii) 10kW for three phase wiring system.

(g) The specifications of the Renewable Energy System shall be as set in the SOLAR RAKYAT SABAH application form.

(h) The Consumer shall have procured the installation of the necessary GPRS broadband signal at the Premises which is required for the remote reading of the SOLAR RAKYAT SABAH Meter.

(i) The Consumer shall comply with the terms and conditions under this Contract and the provisions under the Enactment.

(j) The Consumer shall not install and operate virtual net meter

which enables the Consumer to allocate the net excess in kWh generated by the Renewable Energy System to other resident within the vicinity of the Premises.

(k) The Consumer shall immediately notify SE of any change in the Consumer's personal information as provided for the purpose of this Contract.

(l) The Consumer undertakes to operate and maintain the Renewable Energy System in accordance with the Technical Guidelines and the guidelines as may be issued by the Energy Commission of Sabah.

(m) The Consumer shall immediately notify the Energy Commission of Sabah of any change in the Consumer's tariff classification.

(n) This Contract constitutes a legal, valid and binding obligation of the Consumer.

3. DISCONNECTION FEE

In the event the Renewable Energy System is disconnected from SE's system and/or electricity supply is disconnected from the Premises, then appropriate fees shall be charged to the Consumer for such disconnection.

4. ACCESS

The Consumer consents with SE that the authorised employees, servants, agents and/or representatives of SE shall be permitted to have access to the Premises at reasonable time, manner and circumstances:

(a) To carry out their duties which include but not limited to the construction, installation, inspection, testing and/or reading of the SOLAR RAKYAT SABAH Meter, the PV Meter and/or the Renewable Energy System or other relevant things relevant to the supply of electricity to the Premises;

(b) To disconnect the Renewable Energy System from SE's system and/or the supply of electricity to the Premises upon the occurrence of any of the circumstances as set out in Clause 23; and

(c) For entry pursuant to Clause 5(a), SE shall make good any damage, if any, as a result of such entry.

5. COSTS AND EXPENSES FOR RENEWABLE ENERGY SYSTEM, SOLAR RAKYAT SABAH METER AND PV METER

(a) The SOLAR RAKYAT SABAH Meter shall be supplied by SE with the following charges;

Solar Rakyat Meter Charge Schedule

Meter Type	Price (RM)
Smart Meter Single Phase	400
Smart Meter Three Phase	450
Smart Meter LV CT (O.5S)	450

(b) All costs and expenses relating to the procurement, installation, testing, energizing, commissioning and system integration of the Renewable Energy System, the SOLAR RAKYAT SABAH meter and the PV Meter together with the replacement or any future modification, or relocation of the renewable Energy System, the SOLAR RAKYAT SABAH Meter and the PV meter shall solely be borne by the Consumer.

6. NO INTERFERENCE OF ELECTRICITY SUPPLY TO OTHER CONSUMERS

(a) To operate and maintain the Renewable Energy System and/or use electricity supply so as not to interfere with the supply of electricity to any other consumers or SE's electrical installation.

(b) In the occurrence of the circumstances in Clause 7(a), the Consumer shall make good any loss or damage to SE and/or made payment for the amount in the reasonable opinion of SE to be the costs making good for such loss or damage.

7. NO OBSTRUCTION TO SE'S INSTALLATION

(a) The Consumer shall not create any obstruction and/or undertake any activity in the vicinity of any SE's electrical installation and/or place any equipment which may endanger life or properties and/or to make any electrical wiring and/or installation to the existing installation without any written permission from the Energy Commission of Sabah and/or SE.

(b) (i) SE has the right to take any reasonable actions to remove any obstruction created by the Consumer or representative under Consumer's supervision/control.

(ii) SE shall not be liable to pay any compensation for any losses and/or damages to the Consumer due to the said removal.

8. RESPONSIBILITY TO MAKE GOOD ALL DAMAGES

The Consumer shall pay for all damages on SE's installation within the Premises due to negligence on the Consumer's part or any persons under the Consumer's control.

9. TERMINATION BY THE CONSUMER

(a) To give SE a notice in writing and shall be served by:
  (i) hand delivery; or
  (ii) way of prepaid registered post; or
  (iii) any applicable means which shall be determined by SE.

(b) Termination of this Contract shall be effective three (3) working days after SE's receipt of termination notice.

(c) Notwithstanding to the above, in the event the actual disconnection cannot be performed by SE due to inevitable causes, the Consumer shall be liable to pay all charges relating to the electricity consumed until the actual disconnection.

10. TO TAKE SUPPLY OF ELECTRICITY

To take supply of electricity at the Premises according to the Tariff rates pursuant to the provision of the Enactment.

11. EXCEPTIONS TO ACCEPT THE EXPORT ENERGY

Notwithstanding any other provision in this Contract, SE shall not be obligated to accept the Export Energy if any of the following circumstances occurs:

(a) for such periods and under such circumstances as SE thinks fit having regard to public safety and private safety;
(b) any emergency condition occurs;
(c) the Renewable Energy System delivers the Export Energy which does not conform to the electrical characteristics consistent with prudent utility practices;
(d) SE interrupts the acceptance of the Export Energy to conduct necessary maintenance of SE's system or the SOLAR RAKYAT SABAH Meter;
(e) any constraint in SE's system to which the Renewable Energy System relates;
(f) any dishonest consumption of the electricity by the Consumer or any third person;
(g) any of the force majeure event as set forth in Clause 25;
(h) the disconnection of the Renewable Energy System from SE's system due to the failure of the Consumer to pay the amount as stipulated under Clause 22; or
(i) the Consumer is in non-compliance with its obligations under Clause 2.

12. UPKEEP AND MAINTENANCE OF SE INSTALLATION

The Consumer agrees:

(a) to take steps to ensure that no damage or tampering is caused to the said installation; and
(b) to allow SE to maintain any electrical installation within the Premises at any time for safety purposes.

If there is any defect or abnormality on the installation, SE shall have the right to make good the defects without being liable for any damages provided always it is not due to the negligence or willful acts of SE, its employees or agents.

13. VACATED PREMISES

(a) If the Consumer vacates the Premises without giving any notice to SE as provided under Clause 10, the Consumer shall be liable to pay all charges of electricity consumed and any charges payable relating to the electricity consumed until the installation is disconnected or upon the termination of this Contract, whichever is the later.

(b) SE shall have the right not to provide electricity supply to any other premises in which the account is registered under the Consumer's name until the Consumer has made the full payment of the outstanding balance.

14. NON-TRANSFERABLE AND NO SETTING OFF OF CREDIT AMOUNT

(a) The Consumer shall not be entitled to transfer any credit amount as described in Clause 22(c) below to any other accounts of the Consumer or any third-party account. For the avoidance of doubt, any remaining credit amount which may be subsisting at the end of each Billing Cycle Period or upon the termination of this Contract, as the case may be, shall be adjusted to zero without any compensation to the Consumer.

(b) The Consumer shall not be entitled to set off any credit amount as described in Clause 22(c) below against any outstanding sums due and payable to SE under the Electricity Supply Contract.

15. CHANGE OF OWNERSHIP AND CHANGE OF PREMISE

15.1 In the event the Consumer sells the Premise registered under the SOLAR RAKYAT SABAH programme, the new owner of the Premise may apply to continue with the programme for the remaining duration of the period of operation under the SOLAR RAKYAT SABAH programme.

15.2 The SOLAR RAKYAT SABAH programmes may only be continued with the execution of a new SOLAR RAKYAT SABAH Contract between the SE and the new owner.

15.3 In the event the existing Consumer has relocated to a new premise, such existing Consumer may apply to the Energy Commission of Sabah to continue with the programme at the new premise for the residual duration of the period of operation under the SOLAR RAKYAT SABAH programme.

15.4 The programme shall only be continued with the execution of a new SOLAR RAKYAT SABAH Contract between SE and the Consumer.

15.5 The Consumer shall not be entitled to transfer any credit amount to any accounts of other Consumer or any third-party account(s). The new SOLAR RAKYAT SABAH Contract shall be signed between SE and the Consumer upon the transfer of the PV Installation.

15.6 All costs and expenses for the transfer of the solar PV Installation shall be borne solely by the Consumer.

16. CHANGE OF OWNERSHIP IN THE EVENT OF DEATH OF CONSUMER

16.1 In the event of the death of the Consumer, the lawful heir, beneficiary, executor, administrator, next of kin, or any person legally entitled to the Premise may apply to the Energy Commission of Sabah and SE to continue participation in the SOLAR RAKYAT SABAH Programme for the remaining duration of the applicable period of operation.

16.2 Any application under Clause 16.1 shall be accompanied by such documents and information as may be required by the Energy Commission of Sabah or SE, including evidence of the death of the Consumer and proof of the applicant’s legal entitlement to the Premise.

16.3 The continuation of the SOLAR RAKYAT SABAH Programme following the death of the Consumer shall be subject to the approval of the Energy Commission of Sabah and SE.

16.4 The approved successor shall execute a new SOLAR RAKYAT SABAH Contract with SE before continuing participation in the SOLAR RAKYAT SABAH Programme.

16.5 Upon execution of the new SOLAR RAKYAT SABAH Contract, the approved successor shall assume all rights, obligations, liabilities and responsibilities of the deceased Consumer in relation to the SOLAR RAKYAT SABAH Programme for the remainder of the applicable contract period.

16.6 Any Energy credits accrued under the deceased Consumer's account and remaining valid may be transferred to the successor's account for the same Premise, subject to verification and approval by SE.

C. SE'S COVENANTS

17. LOCATION OF SE'S INSTALLATIONS

(a) If any removal made to any SE's installation and equipment which is likely to cause danger as provided under the Enactment, SE shall have the right to disconnect electricity supply without notice.

(b) If any relocation made to any SE's installation and equipment without consent, SE shall have the right to disconnect the electricity supply without notice and relocate the said installation and equipment with costs borne by the Consumer.

18. INSPECTION BY SE

a. SE may need to inspect and test all installations before connection of the Renewable Energy System or electricity supply. However, it is the responsibility of the Competent Person appointed by the Consumer to ensure that the installations are safe.
b. The Consumer shall inform SE of any proposed extensions or alterations to the installations so that SE may make inspection and test of the extension or alteration if SE so desires.
c. SE does not accept any responsibility for any loss or damage caused by or occurs during or after test due to any defect in the installation and any test carried out by SE is for SE's purposes only and does not imply any warranty that the installation is suitable for the Consumer's purposes or that it fully complies with the Technical Guidelines and the Enactment or any subsequent amendments made thereunder.

19. TEMPORARY DISCONNECTION

SE may temporarily disconnect the supply of electricity to the Premises for the purpose of improvement works, testing, inspection, or for any purpose whatsoever relating to the efficiency of SE's electricity supply system. SE shall not be liable to provide any alternative supply to the Consumer after the disconnection.

20. USAGE OF INSTALLATION FOR OTHER CONSUMER

SE may use its part of the installation to supply electricity to other consumers in the area.

D. MUTUAL COVENANTS

21. EQUIPMENT AND INSTALLATIONS

Any installation comprising mains and service lines and other ancillary equipment up to and including the SOLAR RAKYAT SABAH Meter will be the property of SE.

22. BILLING AND PAYMENT

a. SE shall read the SOLAR RAKYAT SABAH Meter on a monthly basis and shall measure the Import Energy and the Export Energy to determine the Supplied Amount and the Generated Amount

respectively. The calculation of the Supplied Amount and the Generated Amount shall be based on the guidelines as may be issued by the Energy Commission of Sabah.

b. If, during any relevant Billing Month, the Import Energy exceeds the Export Energy, then the Consumer shall be billed for an amount (in RM) equal to the difference between (i) the sum of Supplied Amount and the appropriate charges and taxes and (ii) the Generated Amount and the appropriate taxes. The bills rendered by SE to the Consumer shall be paid by the Consumer within the stipulated period.

c. If, during any relevant Billing Month, the Export Energy exceeds the Import Energy, then the Consumer shall be credited for an amount (in kWh) equal to such difference in the following Billing Month. Notwithstanding the above, the Consumer shall pay any appropriate taxes and charges (if any).

d. At the end of each Billing Cycle Period or upon the termination of this Contract, as the case may be:

   i. any remaining amount as described in Clause 22(b) above shall be billed and paid by the Consumer in accordance with Clause 22(b); and
   ii. any credit amount as described in Clause 22(c) above which may be subsisting at the end of such Billing Cycle Period or upon the termination of this Contract shall be adjusted to zero without any compensation to the Consumer.

   For the avoidance of doubt, if this Contract is terminated prior to the end of a Billing Cycle Period, any credit amount as described in Clause 22(c) above which may be subsisting shall be adjusted to zero without any compensation to the Consumer.

e. In addition to the total payable amount as stated in any monthly bill for any Billing Month as described under Clause 22(b) and Clause 22(c), the Consumer may be imposed with a grid fixed charge and the appropriate taxes as provided in this Contract, if any.

f. SE shall have the right to impose or levy a surcharge at the rate as prescribed under the Enactment on the outstanding amount, calculated until the date of full payment.

g. The Consumer shall be liable for electricity bills issued by SE including any unpaid amount insofar as the account is registered under the Consumer's name regardless of any consumption of electricity by any third party.

h. The Consumer shall be responsible to repay the amount in the bills rendered by SE including any other relevant charges for any invalid payment made by the Consumer such as false credit card, bounced cheque and any other invalid payment.

i. In the event the Consumer fails to make payments as required under

this Clause 22 within the period which is stipulated in the payment notice, SE shall have the right to disconnect the Renewable Energy System from SE's system and/or the supply of electricity to the Premises or any other premises which is registered under the Consumer's name.

j. The Consumer shall be liable for any arrears of electricity bill and/or loss suffered by SE by reason of dishonest consumption of electricity supply in all circumstances in accordance with the provisions of the Enactment.

k. SE shall have the right to make adjustment and update of Consumer's account whenever necessary.

l. SE shall be entitled to set off any amount due to it under this Contract against any sums due and payable to the Consumer under the terms of this Contract.

23. DISCONNECTION OF SUPPLY

a. Subject to the Enactment, SE shall have the right to disconnect the Renewable Energy System from SE's system and/or the supply of electricity to the Premises without giving prior notice in any situations mentioned below:
   i. any default by the Consumer under Clause 24 and such default are not remedied within the stipulated period if any;
   ii. by Court Order/Judgment;
   iii. Where SE reasonably determines that the continuation of the delivery of renewable energy by the Renewable Energy System to SE's system or the supply of electricity to the Premises will jeopardize the safety, reliability or security of SE's system or presents an imminent physical threat or endanger the safety, life or health of any person or property;
   iv. upon the termination of this Contract taking effect either SE or the Consumer;
   v. any removal made to any SE's installation and equipment as described in Clause 17(a);
   vi. the occurrence of the circumstances as described in Clause 11 (f) or Clause 11(h); or
   vii. any right to disconnect the Renewable Energy System from SE's system and/or the supply of electricity to the Premises without notice as provided under the Enactment.

b. For the avoidance of doubt, the Consumer hereby irrevocably and unconditionally agrees and acknowledges that:

   i. SE shall be excused from all its obligations under this Contract in the event SE exercises its rights to disconnect the Renewable Energy System from SE's system and/or the supply of electricity to the Premises in any situations as set out in this Clause 23; and
   ii. SE shall not be responsible for any loss or damage that may arise as a result of the disconnection of the Renewable Energy System from SE's system and/or the supply of electricity to the Premises notwithstanding any loss or damage arising from

SE's willful misconduct, gross negligence or unlawful acts.

24. EVENT OF DEFAULT

The occurrence of any of the following shall constitute an event of default under this Contract and it is not limited to:

a. Act or default of the Consumer affecting the efficiency and/or safety of SE's installation.

b. The Consumer has failed to comply and/or breach with any provision of this Contract and/or the Enactment and/or commit any offence under the Enactment.

c. The Consumer is declared a bankrupt by the Court.

d. Failure to pay the amount as stipulated under Clause 22 above.

e. Any warranty, representation or covenant made by the Consumer in this Contract is false or inaccurate in any material respect.

f. Consumption of electricity in any dishonest manner.

g. The Consumer fails to comply with any of the provisions stipulated under Clause 1 of this Contract.

h. The Electricity Supply Contract is terminated;

i. In the event the Consumer vacates the Premises pursuant to Clause 13(a).

25. FORCE MAJEURE

Neither party shall be liable to the other party for any breach of terms and conditions of this Contract due to any of this event which shall include but not limited to national emergency war, hostilities, riot, civil commotion, earthquake, flood, disposition or by compliance with any order of government, local or any other authorities.

26. INDEMNITY AND NO LIABILITY CLAIM

a. The Consumer agrees to indemnify and keep indemnified (indemnifying) SE from and against all and/or any claims, actions, compensations, suits, proceedings, demands and all legal costs incurred thereby, brought against SE, its servants or agents by a third party to which SE shall or may be or become liable in respect of or arising from the performance of this Contract provided always it is not due to the negligence or willful acts of SE, its employees or agents.

b. The Consumer shall at all times be fully liable to SE and remain responsible for all damages flowing from any breach or default of any term or obligation in this Contract regardless of whether the Renewable Energy System and the PV Meter are installed and owned by a third party or otherwise.

c. The Consumer hereby agrees that neither SE nor its employees, servants, agents, representatives shall be liable and/or make good the Consumer in respect of any damage, injury or loss to any of the

Consumer's property and/or life arising from any fault of the SE's system or the Consumer's installation at the Premises unless such damage, injury or loss have been proven as a result of any willful act, negligence, omission and/or failure to comply with any safety measures as provided under any written law.

d. The Consumer hereby agrees further that SE shall not be liable for any cost incurred, loss and/or damage of industrial goods, product, property or life of the Consumer as a result of any unavoidable accident, voltage fluctuation, interruption, reduction and/or cessation of the electricity supply, fire or accident that may occur in consequence of the supply of electricity or the use or misuse which is not due to the negligence or willful act of SE and/or its employees.

27. NOTICES

Unless and otherwise provided under the Enactment and any Clause stated under this Contract, any notice, demand or other communication which is required or allowed to be given or made under this Contract shall be in writing and shall be served by hand delivery or by way of prepaid registered post or ordinary post or any electronic means as mutually agreed by both parties to the address stated in this Contract. Proof of posting or service of any notice, demand or communication shall be deemed to be duly served:

a. if service is delivered by hand, at the time of such delivery and duly acknowledged;

b. if service is by way of post, on the third (3rd) working day after posting thereof; or

c. if service is delivered by electronic means, at the time of such delivery report.

Provided that the above Clause 26 shall not be applied to the termination of this Contract.

28. REMOVAL OF SE INSTALLATION

If the Consumer or the proprietor of the Premises requests SE to remove or relocate the supply line, pole, sub-station, pylon or any other SE's installation or equipment within or outside the Premises, subject to consent by SE, all costs of executing the removal or relocation shall be fully borne by the Consumer or the proprietor as the case may be.

29. SERVICES OF LEGAL PROCESS

The service of any legal process shall be by way of prepaid registered post sent to the address as stated in this Contract. Proof of posting shall be regarded as proof of acceptance and the said service shall be deemed to have been duly served and duly received upon the expiry of five (5) days from the date of posting.

30. TERMINATION OF CONTRACT BY SE

a. SE may terminate this Contract in circumstances as specified under Clause 24, at any time upon giving not less than fourteen (14) working days' notice in writing of its intention to do so.

b. SE may terminate this Contract under Clause 23(a) by giving fourteen (14) working days' notice from the date of expiry of the remedy period, except for the situations in Clause 23(a)(ii) and Clause 23(a)(iv).

c. If SE discovers that the information given is false and/or is disputed with the existence of prima facie proof relating to the delivery of renewable energy by the Renewable Energy System and the supply of electricity to the Premises and proven by any applicable laws or court order, SE shall have the right to terminate this Contract upon giving a written notice of not less than twenty-four (24) hours.

SE may terminate this Contract where required or permitted to do so under any applicable law or pursuant to any direction issued by ECoS or any competent authority.

31. CONSEQUENCES OF TERMINATION

On such effective date of termination under Clause 9 or Clause 30,

a. SE shall be discharged from any obligations and liabilities under this Contract including any claim for damages without prejudice to SE's rights to make such claim due to the disconnection of the Renewable Energy System from SE's system and/or the supply of electricity to the Premises and the termination of this Contract;

b. the terms and conditions as specified in the Electricity Supply Contract shall then be applicable.

32. TRANSFER OF OUTSTANDING AMOUNT AND BALANCE OF DEPOSIT

a. SE shall have the right to transfer any outstanding amount of electricity bills from any vacated account of the Consumer to any active account registered under the Consumer's name.

b. If there is a balance of deposit from the Consumer's vacated account, SE shall have the right to use the balance of the deposit to adjust for any outstanding amount from whichever active account registered under the Consumer's name.

33. ENVIRONMENT ATTRIBUTES

The SOLAR RAKYAT SABAH Consumer shall retain the first right of refusal over any environmental attributes or green credits arising from generation and export of Solar PV energy under this programme.

E. MISCELLANEOUS

34. AMENDMENT, MODIFICATION OR REPLACEMENT

SE reserves the right to amend, modify, revise or replace the terms and conditions stipulated under this Contract from time to time. SE may give notice of amendment to the Consumer in such a manner as SE reasonably deems appropriate.

35. CHANGE IN SOLAR RAKYAT SABAH SCHEME AND/OR THE ENACTMENT

In the event of any change in the SOLAR RAKYAT SABAH scheme and/or the Enactment including but not limited to the application of the Technical Guidelines or the discontinuation of the SOLAR RAKYAT SABAH scheme as decided by the State Government of Sabah, SE may by written notice to the Consumer unilaterally amend the terms and conditions of this Contract in any manner that it deems fit in order to ensure the compliance of the State Government of Sabah's decision, the Enactment and the Technical Guidelines.

36. ASSIGNMENT

The Consumer may assign any of the rights or obligations arising under this Contract to any third party provided that the assignment is made in accordance with Clause 15 of the Guidelines. SE shall be entitled to assign or transfer its interest, rights and obligations in whole or in part under this Contract without the Consumer's prior written consent and the Consumer hereby agrees to execute such agreement and do such things as may be required by SE to give effect to such assignment and/or transfer.

37. CONFIDENTIALITY

a. Except as it is or becomes a part of the public domain or as provided hereunder, all information provided by either party under this Contract shall be confidential at all times unless specified otherwise in writing.

b. The Consumer agrees that SE may disclose all information provided by the Consumer under this Contract (including but not limited to any data or information from the reading of the meters), without limitation to the relevant departments and subsidiaries of SE, including SE's agents, advisors and outsource service providers, inside or outside of Malaysia, as well as the Energy Commission of Sabah, any other government entity and court or if required by any laws and regulations made thereunder.

38. GOVERNING LAW

This Contract shall be governed by and construed in accordance with the laws of Sabah and Malaysia, including the Enactment and regulations made thereunder".

39. INSTALLATION OF EQUIPMENT TO GENERATE RENEWABLE ENERGY

The Consumer shall inform SE on any equipment installed at the Premises for the purpose of generating renewable energy.

40. PERSONAL DATA PROTECTION

(a) The Consumer acknowledges that SE ("SE") may collect, process, record, hold, store, use and disclose the Consumer's personal data (as defined under the Personal Data Protection Act 2010 ("PDPA")) provided by the Consumer or obtained in connection with this Agreement, for purposes relating to the implementation, administration and performance of the SOLAR RAKYAT SABAH and SE's services.

(b) SE shall process the Consumer's Personal Data in accordance with the PDPA and any applicable regulations, subsidiary legislation, guidelines, associated codes of practice, orders and any statutory amendments or re-enactments thereof from time to time.

(c) The Consumer agrees that SE may process the Personal Data for purposes including but not limited to:

(i) administering and performing SE's obligations under this Agreement and the SOLAR RAKYAT SABAH Metering programme;
(ii) verifying the Consumer's identity and eligibility for participation in the programme;
(iii) billing, credit management, settlement of exported energy and related financial transactions;
(iv) operational, technical and safety management of electricity supply and solar generation systems;
(v) compliance with any applicable laws, regulatory requirements or directions from governmental or regulatory authorities; and
(vi) such other purposes directly related to the foregoing.

(d) The Consumer acknowledges that SE may disclose the Personal Data to its employees, contractors, service providers, professional advisers, regulatory authorities and any other third parties where such disclosure is necessary for the purposes stated above or as required by law, subject always to compliance with the PDPA.

(e) SE shall take reasonable technical and organisational measures to protect the Consumer's Personal Data from loss, misuse, modification, unauthorised or accidental access or disclosure, alteration or destruction.

(f) In the event of any breach of security leading to the accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to the Consumer's Personal Data processed by SE in connection with this Agreement, SE shall notify the Consumer of such breach within a reasonable period and provide such information as may be reasonably necessary to inform the Consumer of the nature and potential impact of the breach, subject to applicable laws and regulatory requirements.

(g) The Consumer acknowledges that he/she has read and understood SE's Personal Data Protection Policy which is

available at: http://www.sesb.com.my and agrees to the processing of his/her Personal Data in accordance with the policy.

For the purposes of this clause, "process" or "processing" shall have the meaning assigned to it under the PDPA, including the collection, recording, holding, storage, use or disclosure of Personal Data.

41. SEVERABILITY

If any one or more of the provisions or part thereof contained in this Contract should be or become invalid or unenforceable due to whatsoever reasons this shall not in any way affect or impair the validity or enforceability of the remaining provision hereof.

42. STAMP DUTY

The stamp duty in respect of this Contract shall be borne and fully paid by the Consumer.

43. SUCCESSORS-IN-TITLE

This Contract shall be binding upon the successors-in-title and permitted assigns of the respective parties hereto.

44. TAXES

The Consumer shall be responsible for all present and future taxes, duties, levies and other similar charges including any related interest and penalties, however designated, arising out or in connection with the supply of any kind imposed by law.

45. TIME PERIOD

Time wherever mentioned shall be the essence of this Contract.

46. WAIVER

Knowledge or acquiescence by SE of or in breach of any of the conditions or covenants herein contained shall not operate as or be deemed to be waiver of such conditions or covenants or any of them and notwithstanding such acknowledge or acquiescence, SE shall be entitled to exercise its rights under this Contract.

47. APPLICABILITY OF THE ELECTRICITY SUPPLY CONTRACT

a. The terms and conditions as specified in the Electricity Supply Contract shall continue in full force and effect during the term of this Contract.

b. For the avoidance of doubt, in the event of any inconsistency between the terms and conditions of this Contract and the terms and conditions of the Electricity Supply Contract, the terms and conditions of this Contract shall prevail.

48. ANTI BRIBERY AND INTEGRITY

(a) The Consumer acknowledges and agrees that, in connection with this Agreement, the Consumer shall:

i. strictly comply with all applicable laws and regulations relating to anti-corruption, including but not limited to the Malaysian Anti-Corruption Commission Act 2009 ("MACCA");

ii. not engage in any act or omission which may constitute or result in a violation of any applicable anti-corruption laws, including but not limited to the MACCA, at any time during the term of this Agreement;

iii. refrain from offering, promising, giving, soliciting or accepting any gratification, bribe or other improper benefit in connection with this Agreement or SE's services; and

iv. take all reasonable measures to ensure that no corrupt practices, unfair means or illegal activities are carried out in relation to this Agreement.

(b) Without prejudice to any other rights available to SE under this Agreement or at law, SE shall be entitled to immediately terminate this Agreement by written notice to the Consumer if:

i. the Consumer is convicted by a court of competent jurisdiction for any offence relating to corrupt practices, unfair means or illegal activities in connection with this Agreement; or

ii. SE reasonably determines that the Consumer has engaged in any conduct which violates applicable anti-corruption laws.

(c) Upon termination of this Agreement under this clause:

i. the Consumer shall not be entitled to claim from SE any losses, damages, compensation or other claims arising from such termination; and

ii. SE reserves the right to claim from the Consumer any losses, costs, damages or expenses incurred by SE arising from the Consumer's breach of this clause.

49. CYBER SECURITY

(a) SE Sdn. Bhd. ("SE") shall comply with all applicable provisions of the Cyber Security Act 2024 ("CSA") and any applicable regulations, guidelines or directives issued by the relevant authorities, including obligations relating to the protection of national critical information infrastructure and the reporting of Cyber Security Incidents (as defined under the CSA).

(b) SE shall implement and maintain reasonable technical and organisational security measures to safeguard the confidentiality, integrity and availability of the Consumer's data and SE's systems used in connection with the

SOLAR RAKYAT SABAH / Net Energy Metering programme.

(c) In the event of a Cyber Security Incident affecting SE's systems or the Consumer's data in connection with this Agreement, SE shall:

i. take reasonable steps to contain, investigate and mitigate the impact of the incident;
ii. comply with any reporting obligations required under the CSA or other applicable laws; and
iii. where appropriate and subject to applicable laws and regulatory requirements, notify the Consumer of the incident and any relevant measures taken to address the incident.

(d) The Consumer agrees to reasonably cooperate with SE in relation to any investigation or response to a Cyber Security Incident where such cooperation is necessary for the protection of SE's systems, electricity infrastructure or the Consumer's participation in the SOLAR RAKYAT SABAH programme.