



HOME OWNERS' GUIDE TO INVESTING IN A SOLAR PHOTOVOLTAIC (PV) SYSTEM



A Joint Effort Between
Sustainable Energy Development Authority (SEDA) Malaysia
and
Malaysian Photovoltaic Industry Association (MPIA)



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Table of Contents

Background on Solar PV	2
1. Getting started	3
2. Credibility of Registered PV Service Providers	3
3. Get 2 to 3 quotations from the Registered PV Service Providers	4
4. Beware of misleading information	4
5. Contract and Payment	4
6. Monitor the progress of the Installation Work	5
7. Final Payment Inspection	5
8. Keep All Paperwork Related To Your PV Installation	5
Appendix 1: Recommended Sales Contract for Residential PV Systems	7
FIRST SCHEDULE	15
SECOND SCHEDULE	16
Appendix 2 : Sample Letter of FiT Commencement Date (FiTCD)	17



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Important:

- Always choose Registered PV Service Provider from SEDA's Registered PV Service Provider Directory.
- Deposit should not exceed RM1,000; always pay to Registered PV Service Provider only and no cash transaction (except for deposit).

Background on Solar PV

What is a solar PV system?

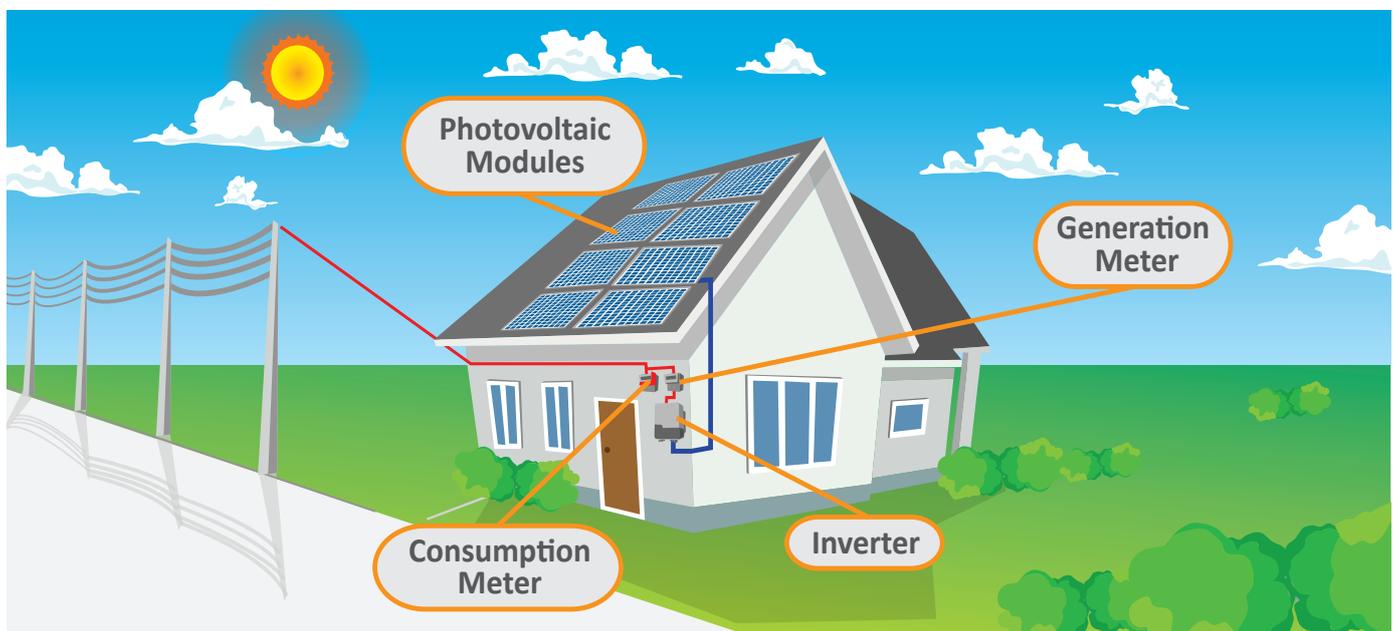
Solar PV systems are devices that convert light energy directly into electricity. Under the feed-in tariff (FiT) scheme managed by SEDA, owners of solar PV systems can sell electricity to their distribution licensees (e.g. TNB, SESB) at a premium price for a fixed duration of time (21 years).

Basic Components of a PV System

The key components of a PV system are (Figure 1):

- PV modules – form the PV array and generate direct current (DC),
- Inverter – converts the DC to alternating current (AC)
- Balance of system (BoS) – e.g. mounting structure to hold the PV array, PV meter, combiner box for DC/AC, connecting cables, etc.
- PV/generation meter

Figure 1: Components of Residential PV Rooftop System





3. Get 2 to 3 quotations from the Registered PV Service Providers

Do not base your decision on the choice of Registered PV Service Provider on the lowest price offer. Here are some tips on what to ask for:

- Check out the Registered PV Service Provider's office and business address. The Registered PV Service Provider must have a brick-and-mortar business and not operated from home.
- Look at the quality of materials especially the main components i.e. PV modules and inverter. PV modules and inverter must have IEC or TUV certification.
- What is the warranty period of the main components? For PV modules, manufacturing defect warranty is typically 10 years. For PV modules, performance warranty is typically 25 years and no more than 20% degradation performance at the end of 25 years. For inverter manufacturing defect warranty is typically between 5 to 10 years.
- What is the overall system warranty period? Minimum of 12 months is preferred and often this is subjected to further negotiation with the appointed Registered PV Service Provider.
- How long does the does the installation of the PV system take? Upon arrival of materials, the installation should be completed within 1 week, subjected to weather condition.
- Ask for the expected energy generation from your PV system on monthly and yearly basis. Energy generation is measured in kWh (1 MWh = 1,000 kWh).
- Estimate monthly payment that you should receive from the utility (e.g. TNB, SESB).

4. Beware of misleading information

Some sales people may provide misleading information, e.g.

- Overpromise high returns from PV systems [indication of energy yield can be seen in the Second Schedule of the sample sales contract in Appendix 1].
- Guaranteeing the securing of quota from SEDA; always check with SEDA's website, www.seda.gov.my, on the availability of solar PV quota for the individuals.
- PV system does not need any maintenance service at all – PV systems do require minimum maintenance service. It is recommended to check the overall cabling and cleaning of PV modules on yearly basis as performance of a PV system is affected by dirt and shading. So check no surrounding trees have overgrown and shaded the PV modules.

5. Contract and Payment

- Always ask for a customer's draft contract, the Registered PV Service Provider is recommended to use the standard contract prepared by SEDA-MPIA (Appendix 1).
- Project time line – be mindful of degression rate which typically kicks in on 1st January of each year or a date gazetted by SEDA. Any solar PV quota secured intended for projects achieving commercial operation within the stipulated year must strictly observe this rule, failing which the feed-in approval holder will suffer a reduced feed-in tariff (FiT) rate if the commercial operation falls after the stipulated year.
- Upon achieving commercial operation, the feed-in holder shall be issued a letter of FiT Commencement Date (FiTCD) by SEDA (see Appendix 2).
- Contract should only be signed with Registered PV Service Provider and not any marketing agent or individuals.
- Be sure you understand the contract before you sign it. Any changes should be agreed and informed by both parties.



6. Monitor the progress of the Installation Work

- Check regularly on the progress of the installation work. Necessary permits like CIDB green card should be displayed by the Registered PV Service Provider while the work is being carried out.
- Ensure your PV system is labelled accordingly, what to do and what not to do/touch, the single line diagram, and Operation and Maintenance (O&M) manual should be handed over to you at the end of the work.

7. Final Payment Inspection

- Before issuing the final payment, make sure that you are satisfied with the completed work.
- Inspect the installations based on your basic knowledge. (Tip: What you need to do for maintenance and who to contact should your system is not performing as expected and what if payment from utility is delayed, etc).

8. Keep All Paperwork Related To Your PV Installation

Be sure to keep a file of all papers and documents/contract pertaining to your project. This includes the contract, any written changes, all bills and invoices, receipts of payments and all correspondence with your Registered PV Service Provider. This should also include photos of the installation work in progress.

**** ALWAYS ENGAGE ONLY REGISTERED PV SERVICE PROVIDER ****



Appendix 1: Recommended Sales Contract for Residential PV Systems

AGREEMENT FOR RESIDENTIAL ROOFTOP PV SYSTEM

(For the Feed-in Tariff (FiT) System administered by SEDA)

A Joint Effort between SEDA and MPIA



This Agreement is made on _____ (date) between _____/ (ROC registration number) having a registered office at _____ (hereinafter called “**the Service Provider**”) and _____ I/C no: _____. Address: _____ (hereinafter referred to as “**the Customer**”). The Customer has agreed to purchase ____ kWp PV system amounting _____ (Ringgit Malaysia)

Whereas:-

- 1.1 The Service Provider is involved in the business of supply and installation of PV systems which includes the supply and installation of PV systems in residential premises.
- 1.2 The Customer is desirous of installing a rooftop Photovoltaic System (hereinafter referred to as “the PV System”) at the residential address of _____.
- 1.3 The Service Provider is registered with the Sustainable Energy Development Authority Malaysia (hereinafter referred to as “SEDA”) and is listed under the Directory of the Registered PV Service Providers in SEDA’s website, www.seda.gov.my.
- 2.1 In this Agreement and the schedules to it the following words or expression shall have the following meanings:

“Distribution licensee”	means the holder of a license to distribute electricity issued by the Energy Commission under section 9 of the Electricity Supply Act 1990, examples include Tenaga Nasional Berhad, Sabah Electricity Sdn Bhd and NUR Distribution Sdn Bhd;
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“FiT”	Feed in Tariff;
“FiTCD”	Feed in Tariff Commencement Date;
“PV”	Photovoltaic;
“quota”	Feed in Tariff quota for PV for individuals in Malaysia;
“REPPA”	Renewable Energy Power Purchase Agreement;
“SEDA”	Sustainable Energy Development Authority Malaysia.

Whereby It Is Agreed as follows: -

- 3.1 The Customer hereby appoints the Service Provider to Supply and Install the PV System at the Residential Address as stated in Clause 1.2.
- 3.2 The Products and Components required for the PV System are as set out in the First Schedule.
- 3.3 Any changes to the brand of the products set out in the First Schedule have to be mutually agreed by both the Customer and the Service Provider.
- 3.4 The Service Provider hereby agrees to provide the Customer the PV system performance expectancy as set out in the Second Schedule.
- 3.5 The Customer hereby agrees to pay the Service Provider for the products (including components) and installation charges as set out in the First Schedule.



- 3.6 The Customer shall pay to the Service Provider all charges that are required to be paid to the relevant authorities which will be substantiated with the relevant invoices and receipts.
- 3.7 The Service Provider **MAY** collect a deposit from the Customer at the time of signing of the Agreement for the sum of Malaysian Ringgit (RM) only which deposit shall not exceed the sum of RM 1,000.00. A non-refundable processing fee of Malaysian Ringgit (RM) only may be imposed by the Service Provider which sum shall not exceed RM 500.00. In the event if the quota is not secured, the Service Provider shall refund the deposit after deducting all-payments made to the authorities and the non-refundable processing fee. The deposit shall be forfeited if the Customer decides to withdraw from the FiT scheme in the event of a successful quota application.
- 3.8 All payments by the Customer to the Service Provider shall be in the form of cheque, bank draft (cashier's order) or electronic transfer. No payment in CASH, except for the deposit stated in clause 3.7, shall be made by the Customer to the Service Provider. All payments must be acknowledged by official receipts issued by the Service Provider.
- 3.9 The Customer and Service Provider hereby agree to abide and comply with all rules, regulations, directives and any written requirement as set out by SEDA and any other relevant authority.
- 3.10 If there are any errors in the FiT application due to the negligence of the Service Provider, the Service Provider shall be responsible to bear any fees imposed by SEDA in connection-with the correction of the errors.



- 3.11 If the Customer wishes to change any details in the FiT application, the Customer shall be responsible to bear any fees imposed by SEDA associated with the changes of details.
- 3.12 In the event if the Customer finds that the Service Provider has not submitted a completed application to SEDA, the Service Provider shall pay the Customer a penalty sum of not less than the deposit as stated in clause 3.7 this payment shall be over and above refunding the original deposit sum.
- 3.13 The Customer hereby agrees and acknowledges that the Customer will have to sign a REPPA upon receipt of the Feed-in Approval with _____ (Distribution Licensee) and the Service Provider shall facilitate the signing of this REPPA with the relevant Distribution Licensee.
- 3.14 All documents in respect of SEDA and REPPA for the PV System shall be executed by the Customer.
- 3.15 The Customer hereby agrees and covenants to allow the Service Provider, its employees and person/persons authorized by the Service Provider to enter the residential address of the Customer for the purpose of carrying out site survey prior to commencement of works, the supply and installation of the PV System and any other related services and maintenance.
- 3.16 The Service Provider agrees to provide a warranty period of ___ months (Minimum 12 Months from the date of FiTCD) to the Customer for the installed PV System, including workmanship.
- 3.17 The inverter manufacturing defect warranty shall be _____ years (Minimum 5 years).



- 3.18 The PV module manufacturing defect warranty shall be _____ years (Minimum 10 years)
- 3.19 The Service Provider shall assist the Customer on any warranty claims on components stated in clause 3.17 and 3.18, subject to the Customer paying the Service Provider service charges for any such attendance required.
- 3.20 Both the Customer and the Service Provider hereby agree and covenant that they shall not, for the duration of this Agreement executed between them, terminate this Agreement without the written consent of the other party. Provided that written consent shall only be granted when the party that intends to terminate the agreement has met all its obligations under this Agreement. The Customer may terminate the agreement if the Service Provider fails to secure the quota within 6 months from the signing of this Agreement.
- 3.21 The duration mentioned in clause 3.20 shall start from the date of signing this Agreement and will continue for the period mentioned in 3.16 above.
- 3.22 The Schedules attached to this Agreement shall form part and parcel of this Agreement and shall be read as part of this Agreement.
- 3.23 Any date or period mentioned in this Agreement may with the written consent of the parties be extended failing which time shall be of the essence of this Agreement.
- 3.24 The provisions of this Agreement shall be binding upon the personal representatives of each of the parties being an individual.
- 3.25 Each party confirms that this Agreement sets out the entire agreement and understanding between the parties and that it supersedes all prior agreement, arrangement and understanding between them and that they are not entering into this



Agreement or any arrangement contemplated or in reliance upon any representation or warranty not expressly set out in this Agreement.

- 3.26 No failure or delay by any party in exercise of any right, power or privilege under this Agreement shall operate as a waiver of it nor shall any single or partial exercise by such party of any right, power or privilege preclude any further exercise of it or the exercise of any other right or privilege.
- 3.27 No party shall have the right to assign any of the rights, liabilities or benefits set out in this Agreement without the prior written consent of the other party having been first obtained.
- 3.28 Each party shall bear its own costs, legal fees and other expenses. The stamp duty for this Agreement, if any, shall be borne by the Customer.
- 3.29 No provision of this Agreement shall be amended, modified, varied, waived or discharged otherwise than by the express written agreement of the parties to it nor may any breach of any provision of this Agreement be waived or discharged except by the written consent the other party.
- 3.30 In the event of any conflict as between the provisions of this Agreement and any other document the provision of this Agreement shall prevail.
- 3.31 All notices required to be given under this Agreement shall be in writing and shall be given or sent to the party concerned by hand or by A.R. Registered Post at the address set out in this Agreement or at such other address as the parties may so inform the other in writing.
- 3.32 This Agreement shall be deemed to be a contract made in Malaysia and shall be interpreted in all respect in accordance with Malaysian Law.



IN WITNESS WHEREOF the parties hereto have hereunto set their hands the day and year first above written.

SIGNED by _____]
for and on behalf of _____]
_____]

Registration No.: _____]
(as the Service Provider)]
in the presence of:-

(_____)
Witness

SIGNED by _____]
for and on behalf of _____]
_____]
(as the Customer)]
in the presence of:-

(_____)
Witness

**FIRST SCHEDULE**

(Products and Components to be supplied by the Service Provider for the PV System)

No.	Description	Brand	Remarks
1	PV modules		
2	Inverter		
3	Solar Cables		
4	AC breakers and Fuse links		
5	DC breakers and Fuse links		
6	AC Surge Protection Devices		
7	DC Surge Protection Devices		
8	PV meter (from Distribution Licensee)		

Payment Schedule

Upon signing of REPPA	30%;
Upon completion of installation	50%;
Upon testing and commissioning	10%;
Upon receipt of FiTCD letter from SEDA	10%.



SECOND SCHEDULE

(System Performance Expectancy)

Expected Annual Energy Yield : _____(kWp) x _____(specific yield)

= _____(kWh/year)

Northern Region	Pulau Pinang , Kedah Perlis, Kelantan	1350 kWh/kWp/year
Central Region	Perak, Selangor, Negeri Sembilan	1200kWh/kWp/year
Southern and Eastern Region	Melaka , Johor, Terengganu, Pahang	1250kWh/kWp/year
Sabah	West Coast	1350kWh/kWp/year
Sabah	East Coast	1250 kWh/kWp/year

Specific Yield guideline based on location (with + / - 10% tolerance) :



Appendix 2 : Sample Letter of FiT Commencement Date (FiTCD)

**Sustainable Energy Development Authority Malaysia (SEDA Malaysia)***Pihak Berkuasa Pembangunan Tenaga Lestari Malaysia*

Galeria PjH, Level 9, Jalan P4W, Persiaran Perdana, Presint 4, 62100 Putrajaya, Malaysia.

T : +603-8870 5800 F : +603-8870 5900 E : info@seda.gov.my

No. Ruj : _____
Tarikh : __________

Tuan/Puan,

Pengesahan Tarikh Permulaan Kuat Kuasa Tarif Galakan dan Butiran Berkaitan

Saya dengan hormatnya merujuk kepada perkara di atas dan Kelulusan Galakan bernombor _____ yang diluluskan kepada _____ ("**Pemegang Kelulusan Galakan**") bertarikh _____.

Saya juga merujuk kepada syarat-syarat permulaan operasi di Bahagian V Kaedah-Kaedah Tenaga Boleh Baharu (Kehendak Teknikal dan Pengendalian) 2011.

2. Berdasarkan dokumen-dokumen yang telah siap dimuatnaikkan di dalam sistem e-FiT, Pihak Berkuasa Pembangunan Tenaga Lestari Malaysia ("**Pihak Berkuasa**") telah mendapati bahawa pihak Tuan/Puan telah menepati syarat-syarat yang ditetapkan oleh Pihak Berkuasa untuk diluluskan tarikh permulaan kuatkuasa tarif galakan.

3. Pihak Berkuasa telah pun mengaktifkan tarikh permulaan kuat kuasa tarif galakan di dalam sistem e-FiT dan mengesahkan bahawa butiran baru Kelulusan Galakan berlandaskan kepada pencapaian sebenar adalah seperti di **Lampiran1**.

Sekian, terima kasih.

Yang benar,

.....

Pihak Berkuasa Pembangunan Tenaga Lestari Malaysia (SEDA Malaysia)



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Website : www.seda.gov.my

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