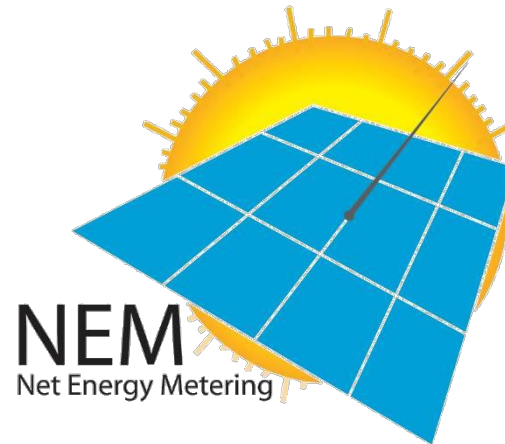




Sustainable Energy Development Authority
(SEDA) Malaysia



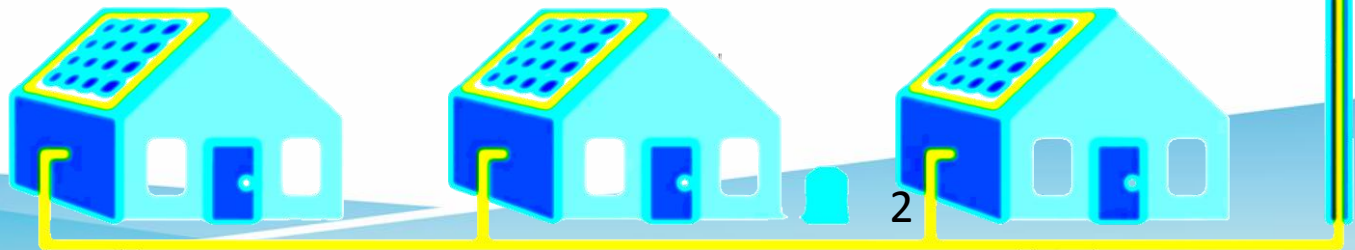
Briefing on Net Energy Metering (NEM) Scheme

18th April 2017
Eastin Hotel, Penang

What is Net Energy Metering (NEM)?

A mechanism where an eligible consumer installs a solar PV system primarily for his own use and the excess energy to be exported to the grid for which credit to be received that may be used to offset part of the electricity bill for energy provided by the Distribution Licensee (TNB/SESB) to the electricity consumer during the applicable billing period.

- For example, if a residential consumer has a PV system on the rooftop, it may generate more electricity than the home uses. The extra electricity produced will provide a credit against electricity that is consumed.





Implementation of NEM

Suruhanjaya Tenaga
(Issuer of NEM Guidelines)

SEDA
(Implementing Agency)

DL
(Customer Contract)

Domestic
Customer

Commercial
Customer

Industrial
Customer



NEM Quota (2016-2020)

Quota Allocation (proposed)

Location		Peninsular					Sabah				
		2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Category of Consumers	Domestic/Residential, MWp	20	20	20	20	20	4	4	4	4	4
	Commercial, MWp	35	35	35	35	35	4	4	4	4	4
	Industrial, MWp	35	35	35	35	35	2	2	2	2	2
Sum, MWp		90	90	90	90	90	10	10	10	10	10
Total, MWp (as at 1 st Nov 2016)		450					50				

Note: Quota allocation will be based on first-come first-served basis.



NEM Quota (Live at SEDA's Website: "e-NEM")

Quota Balance

Region	Peninsular Malaysia					Sabah				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Domestic (MW)	0.0000	39.7991	0.0000	0.0000	0.0000	0.0000	8.0000	0.0000	0.0000	0.0000
Commercial (MW)	0.0000	69.2865	0.0000	0.0000	0.0000	0.0000	8.0000	0.0000	0.0000	0.0000
Industrial (MW)	0.0000	69.1742	0.0000	0.0000	0.0000	0.0000	4.0000	0.0000	0.0000	0.0000
Total (MW)	0.0000	178.2598	0.0000	0.0000	0.0000	0.0000	20.0000	0.0000	0.0000	0.0000

Quota Taken

Region	Peninsular Malaysia					Sabah				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Domestic (MW)	0.0210	0.1799	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Commercial (MW)	0.0064	0.7071	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industrial (MW)	0.0000	0.8258	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total (MW)	0.0274	1.7128	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

**As of 16th April 2017*



Eligibility

- ✓ Registered consumers of Distribution Licensees (DL) only – in Peninsular Malaysia (TNB), and Sabah & Labuan (SESB)
Delinquent consumers who **have not paid their bills** (blacklisted) **and have records of meter tempering** are not eligible to apply for NEM scheme
- ✓ Open to all categories of TNB/SESB consumers under the following tariff*:
 - i. Domestic/Residential (*Kediaman*)
 - ii. Commercial (*Perdagangan*) [inclusive of government buildings]
 - iii. Industrial (*Perindustrian*)

***Refer to TNB/SESB consumers electricity tariff**
- ✓ The resource for producing electricity shall be from Solar Photovoltaic only





Installation Types and Capacity Limits

✓ Installation types:

- i. on the rooftop of buildings
- ii. on the garage, car park or similar buildings

Note: For ground-mounted system, it may be allowed on case-by-case basis and the installation shall be within the compound of applicant's premises and approved by the Energy Commission.

✓ Capacity limit:

- For domestic or residential consumers, the allowable maximum capacity of the PV system installed is 12 kWp for single phase system or 72 kWp for 3 phase system
- For commercial and industrial consumers, the allowable maximum capacity of the PV system installed is 1 MWp or 75% of maximum demand (whichever is lower) or 60% of fuse rating or 60% of current transformer rating



Rooftop Solar PV - Residential





Rooftop Solar PV



Rooftop Solar PV

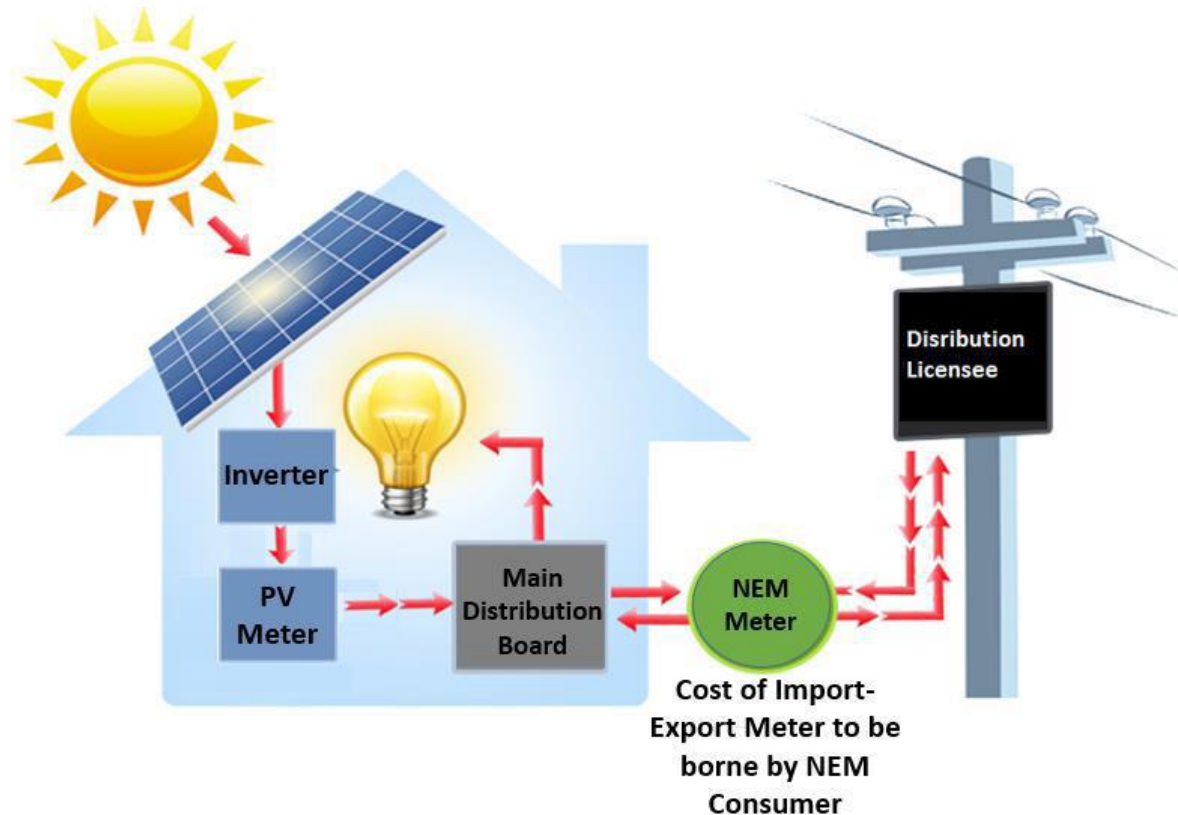


Rooftop Solar PV



Connection Type

- ✓ The connection to the DL's (TNB/SESB) network shall be done only through indirect connection, i.e. within the owner's internal distribution board only





Excess Energy

The credit (excess energy) to NEM consumer will be based on prevailing Displaced Cost for the relevant supply voltage level at the Point of Common Coupling. The calculation for the net billing of electricity will be based on the following calculation:

- ✓ Net billing = **[Energy Consumed from DL (kWh) x Gazetted Tariff] – [Energy Exported to DL (kWh) x Displaced Cost]**

Connection Point	Prevailing Displaced Cost (RM/kWh)	
	Peninsular Malaysia	Sabah & Labuan
Medium Voltage (from 1 kV to 50 kV)	0.2380	0.2200
Low Voltage (less than 1 kV)	0.3100	0.3000

- ✓ The net billing or credit shall be allowed to roll over for a maximum period of 24 months. Thereafter, the credit will be forfeited.

NEM Assessment Study

- **NEM Assessment Study (NEMAS)** report is required prior to NEM application to SEDA Malaysia.
- Shall be conducted by the relevant distribution licensee (TNB or SESB). The requirement is based on kWp of installation as below:

Installed Capacity	Study Required	Fee of Study (RM)
1 – 12 kWp	No	-
> 12 kWp – 180 kWp	Yes	1,000.00
> 180 kWp – 425 kWp	Yes	5,000.00
> 425 kWp – 1 MWp	Yes	8,000.00

Note: Study period = 30 days





NEM Assessment Study

Please contact:

TENAGA NASIONAL BERHAD (TNB)

Mr. Sansubari Che Mud

03 - 7967 9346 / 019 - 959 7745 or email Sansubari@tnb.com.my

Sustainable Energy Development

Tenaga Nasional Berhad

No. 129, Jalan Bangsar

59200 Kuala Lumpur

SABAH ELECTRICITY SDN. BHD. (SESB)

Mr. Terrence John Kouju

088 - 282 478 or email terrencek@sesb.com.my

Chief Engineer

Sustainable Energy Development,

Asset Development,

6th Floor, Wisma SESB,

Jalan Tunku Abdul Rahman,

88673 Kota Kinabalu,

Sabah





Load Profile

- 12 kW, 4 days (Friday to Monday), together with application form.
- To be prepared & signed by Competent Person (Wireman/PE)

FORM LOAD PROFILE (FORM LP) - NEM Customer Load Profile

TNB Account Number _____

Customer Name _____

Installation address _____

Service Provider _____

FORECAST OF A TYPICAL DEMAND PROFILE

(Friday to Monday for capacity of >12kW)

Friday				Saturday				Sunday				Monday			
Time	Voltage	Amps	MW	Time	Voltage	Amps	MW	Time	Voltage	Amps	MW	Time	Voltage	Amps	MW
7:00				7:00				7:00				7:00			
8:00				8:00				8:00				8:00			
9:00				9:00				9:00				9:00			
10:00				10:00				10:00				10:00			
11:00				11:00				11:00				11:00			
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21:00				21:00				21:00				21:00			

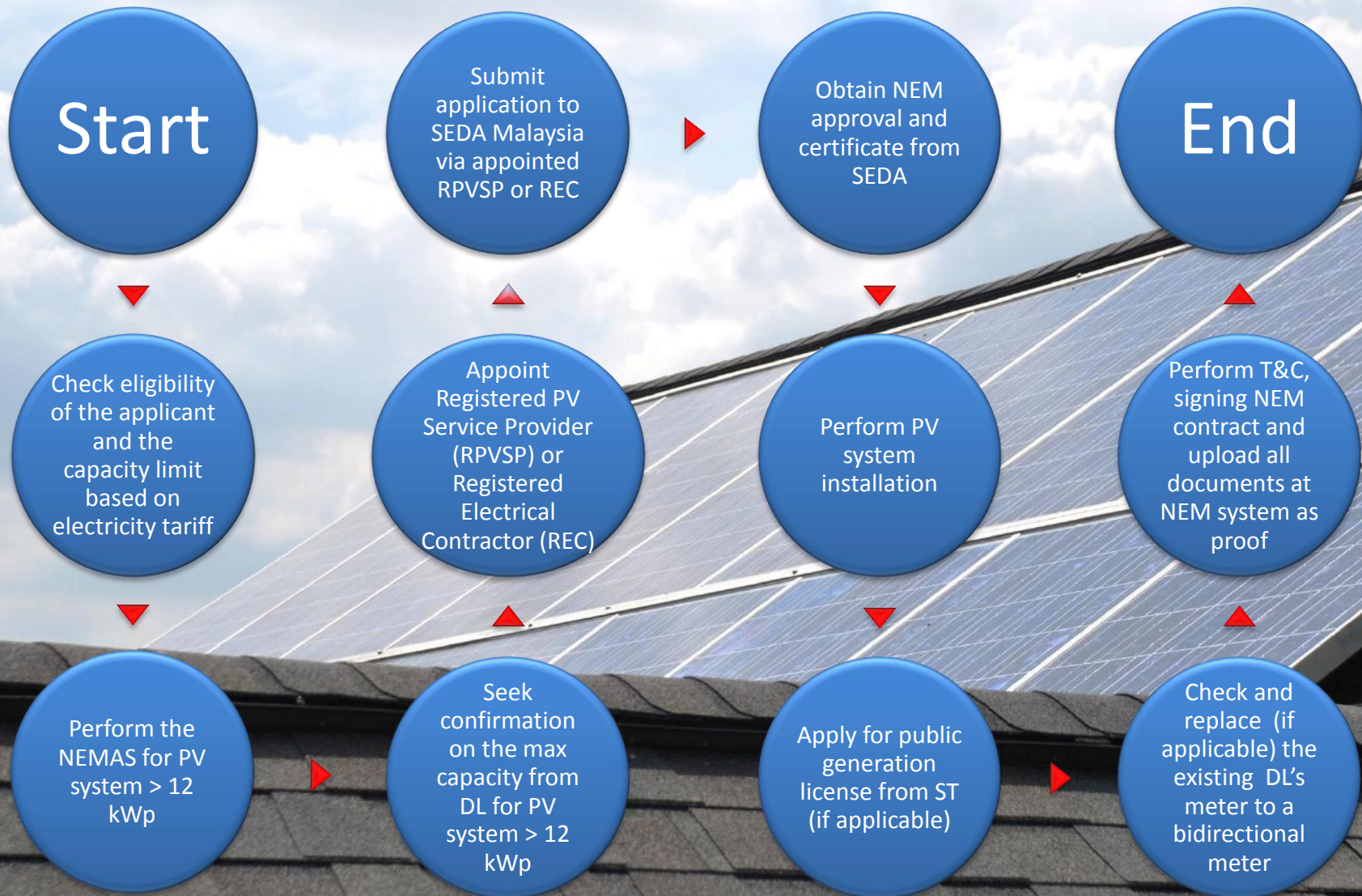
Note: Voltage (V) and Current (Amps) must be taken at customer incoming supply

Data taken by:

Signature

Name

How to Apply? Process Flowchart



How to Apply?

Documents to be submitted by the Applicant:

- i. NEM Application Form (**Form A**) via online system
<https://services.seda.gov.my/nem>
- ii. Design of installation and Single Line Diagram (SLD) endorsed by relevant Competent Person under Electricity Regulations 1994
- iii. The latest three (3) months electricity bill
- iv. NEM Assessment Study (for application > 12 kW)
- v. Load profile (Friday-Monday) (for application > 12 kW)
- vi. Maximum Demand, fuse or CT rating (if applicable), endorsed by Professional Engineer or Wireman

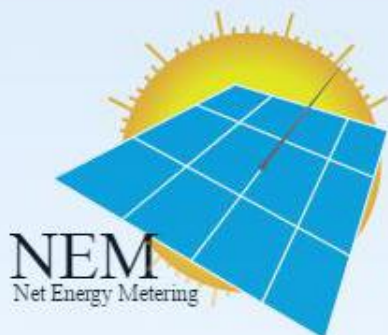


How to Apply?

The NEM Application Form shall be accompanied with information as stipulated in Form A:

- a) Applicant's Profile (Individual/Company/Other Entities)
- b) Information of project
- c) Technical information
- d) Proposed work plan





Welcome to Net Energy Metering System

Service Provider/Contractor Login

Please use your NEM Contractor credentials to login.

Login

[Forgot password?](#)

[Not a Service Provider/Contractor ?](#)

[NEM's Contractor Registration](#)

This system functions best with Google Chrome and Mozilla Firefox browsers.

Quota Balance

Region	Peninsular Malaysia				
Year	2016	2017	2018	2019	2020
Domestic (MW)	0.0000	39.8031	0.0000	0.0000	0.0000
Commercial (MW)	0.0000	69.2865	0.0000	0.0000	0.0000
Industrial (MW)	0.0000	69.1742	0.0000	0.0000	0.0000
Total (MW)	0.0000	178.2638	0.0000	0.0000	0.0000

Quota Taken

Region	Peninsular Malaysia				
Year	2016	2017	2018	2019	2020
Domestic (MW)	0.0210	0.1759	0.0000	0.0000	0.0000
Commercial (MW)	0.0064	0.7071	0.0000	0.0000	0.0000
Industrial (MW)	0.0000	0.8258	0.0000	0.0000	0.0000
Total (MW)	0.0274	1.7088	0.0000	0.0000	0.0000

Things You Need to Know

✓ **NEM Application and Installation**

Application can be made either by Registered PV Service Providers (RPVSPs) or ST's Registered Electrical Contractors (RECs) via online at SEDA's portal. Installation shall be done and endorsed by ST's Registered Electrical Contractor.

✓ **Verification and approval**

NEM application shall be processed by SEDA within 30 days from the date of complete submission. NEM certificate will be issued to the successful applicants.

✓ **Application fee**

The application fee for NEM scheme shall be at a rate of RM10/kWp during application. The fee paid is not refundable even if the application is unsuccessful or rejected.



Things You Need to Know (cont.)

✓ NEM meter

TNB/SESB's existing meter shall be bi-directional (with import-export feature). The replacement (if required) shall be borne by NEM consumer. Consumer may install check meter for export measurement – of the same type prescribed by TNB/SESB.



✓ Goods and Services Tax (GST)

Each energy exported to the grid under the NEM scheme is subjected to GST and if NEM consumer is a GST-registered person or company, he/she shall invoice the DL for the electricity exported to the grid. The calculation of tax involved for the exported energy will be based on the following calculation:

Invoice to DL = **Energy Exported to DL (kWh) x Displaced Cost x 6% GST**





FAQ's

Q: What is the maximum duration allowed from application to proposed NEMCD?

A: 12 months from the date of NEM application until the date of proposed NEM contract with TNB/SESB, failing which the quota allocated will be refused and offered back to other potential NEM applicants.

Q: What types of meter are required for NEM?

A: 2 types of meter are required as below:

- i. TNB/SESB's bi-directional meter** (with import-export feature) to record the amount of electricity consumed, produced or exported;
- ii. PV meter/data logger/inverter with monitoring feature** to record the total amount of electricity generated by the PV system.

Optional - May install check meter for measurement of the energy export (if applicable) and shall be of the same or equivalent to the standards of the consumer meter installed at the premises by TNB/SESB;



FAQ's

Q: Am I eligible to participate in NEM?

A: Yes, as long as you are a customer of TNB/SESB. The basis is always your electricity bill. Please ensure you are a registered customer of TNB/SESB (your name/ company as appeared in the TNB/SESB bill), only then you are eligible to participate in NEM.

Q: If I plan or have installed Solar PV system for self-consumption (SELCO) and have taken the necessary steps to ensure no reverse flow or energy exported to the grid, do I need to apply for NEM?

A: No, but for PV system with capacity above 72 kWp, generation license (private) from ST is required and subject to complying with the relevant rules under the Electricity Supply Act (ESA).

Q: How long is the validity period of the NEM contract?

A: The NEM contract shall be effective on the day of NEM contract signing with both parties. The NEM contract shall remain in effect unless otherwise terminated by either party or cancellation of the main electricity contract.



FAQ's

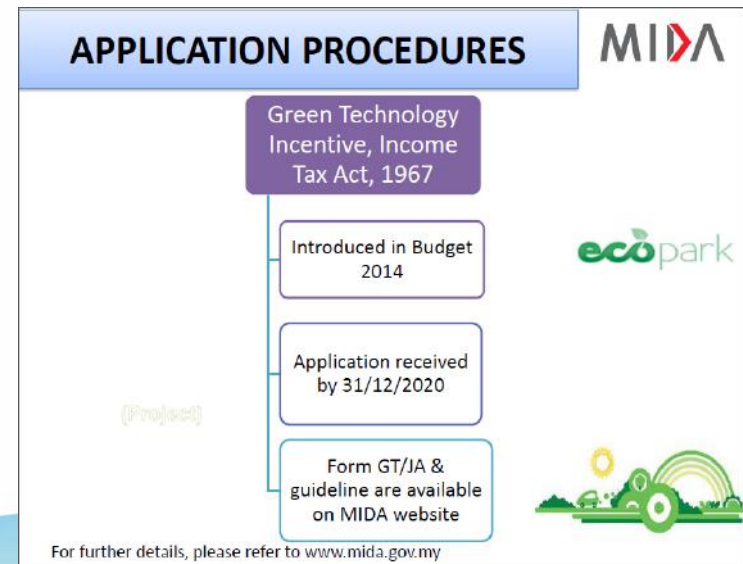
Q: Is a non-local / 100% foreign company eligible to participate in NEM?

A: Yes, as long as he/she/it is a customer of TNB/SESB.

Q: What types of incentives available for NEM consumers?

A: At the moment there is fiscal incentives offered to eligible companies in the form of Green Technology Incentive by Malaysia Investment Development Authority (MIDA), available until 2020.

<http://www.mida.gov.my/home/tax-incentives-for-green-industry/posts/>





NEM: Documents and Downloads

www.seda.gov.my → Net metering

- NEM guidelines
- Manual application form and e-NEM System (online application)
- NEM contract
 - Domestic/residential
 - Non-domestic (commercial & industrial)
- Technical guideline for connection of indirect solar PV under NEM scheme
- Procedure for NEM Meter application and signing NEM contract with TNB



No. Akaun : 1510 00129055 01
 No. Kontrak : 131429
 Deposit : RM500.00
 No. Invois Cukai : 206129820

NEM CUSTOMER
 12, JLN PING PONG
 SEKSYEN 20
 40100 SHAH ALAM SELANGOR

SAMPLE

TENAGA NASIONAL
Better. Brighter.
TNBCareLine
 1 300 88 5454 (Peranyaan Bil & akaun)
 15454 (Gangguan bekalan)
 tnbcareline@tnb.com.my
 www.tnb.com.my
 www.facebook.com/tnbcareline

Jumlah Perlu Dibayar RM 265.80

Tarikh Bil : 04.03.2016

	Amaun	Bayar Sebelum
Tunggakan	RM -	
Caj Semasa	RM 265.82	04.04.2016
Penggenapan	RM -0.02	
Jumlah Bil	RM 265.80	

Bil Terdahulu (02.02.2016)	RM 389.50	Bayaran Akhir (20.02.2016)	RM 389.50
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Jenis Bacaan **Bacaan Sebenar**

Tempoh Bil : 02.02.2016 - 04.03.2016 (31 Hari) Faktor Prorata 1.00000
 Tariff : A - 13 (Domestik)

Blok Tariff (kWh)	Blok Prorata (kWh)	Kadar (RM)	Amaun (RM)
200	200	0.218	43.60
100	100	0.334	33.40
300	300	0.516	154.80
300	274	0.546	149.60
Jumlah	874		381.40

Keterangan	Tidak Kena GST	Kena GST	Jumlah
Kegunaan (kWh Import)	kWh 300	574	874
Kegunaan ICPT (RM0.0152-)	RM 77.00	304.40	381.40
Kegunaan Bulan Semasa	RM -4.56	-8.72	-13.28
6% GST (6% x RM295.68)	RM 72.44	295.68	368.12
KWTBB (1.6%)	RM		17.74
	RM		6.10
Jumlah Caj Semasa Import	RM		391.96
kWh Eksport: 500 @ RM0.238	RM	119.00	119.00
6% GST (6% x RM119.00)	RM		7.14
Jumlah Caj Semasa Eksport	RM		126.14
Jumlah Caj Bersih	RM		265.82

No Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit	
		Dahulu	Semasa			
M98044931	1.0000	6719	7593	874	kWh	Import
M98044931	1.0000	4000	4500	500	kWh	Eksport



NEM CUSTOMER
 12, JLN PING PONG
 SEKSYEN 20
 40100 SHAH ALAM SELANGOR

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Bil OPC - NEM

Untuk maklumat bil dan bayaran terdahulu, sila layari - <https://e-services.tnb.com.my/eservices>

Untuk pertanyaan, sila hubungi:
 TNB Shah Alam
 xxxx
 xxxx
 Tel: 03-xxxxxxx
 Fax - 03-xxxxxxx

Subsidi Bahan Api Dibiayai Kerajaan Persekutuan RM62.15

GST bagi penggunaan domestik 300kWh dan ke bawah berkadat sifar.

KWTBB - Kumpulan Wang Tenaga Boleh Baharu

ICPT - Imbalance Cost Pass Through / Pelepasan Imbangan Kos Penjanaaan

TENAGA NASIONAL BERHAD (200966-W)

What are the benefits of NEM to the consumers?

- Encourage consumers to play an active role in renewable energy (RE) generation, which addresses climate agenda and national energy security
- Reduction in greenhouse gas emissions
- Hedge against any possibility of future electricity tariff increase
- Availability of power for consumer during grid failure (if energy storage system is incorporated)

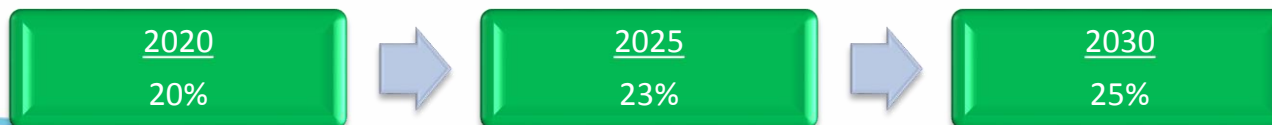


Malaysia's Commitments



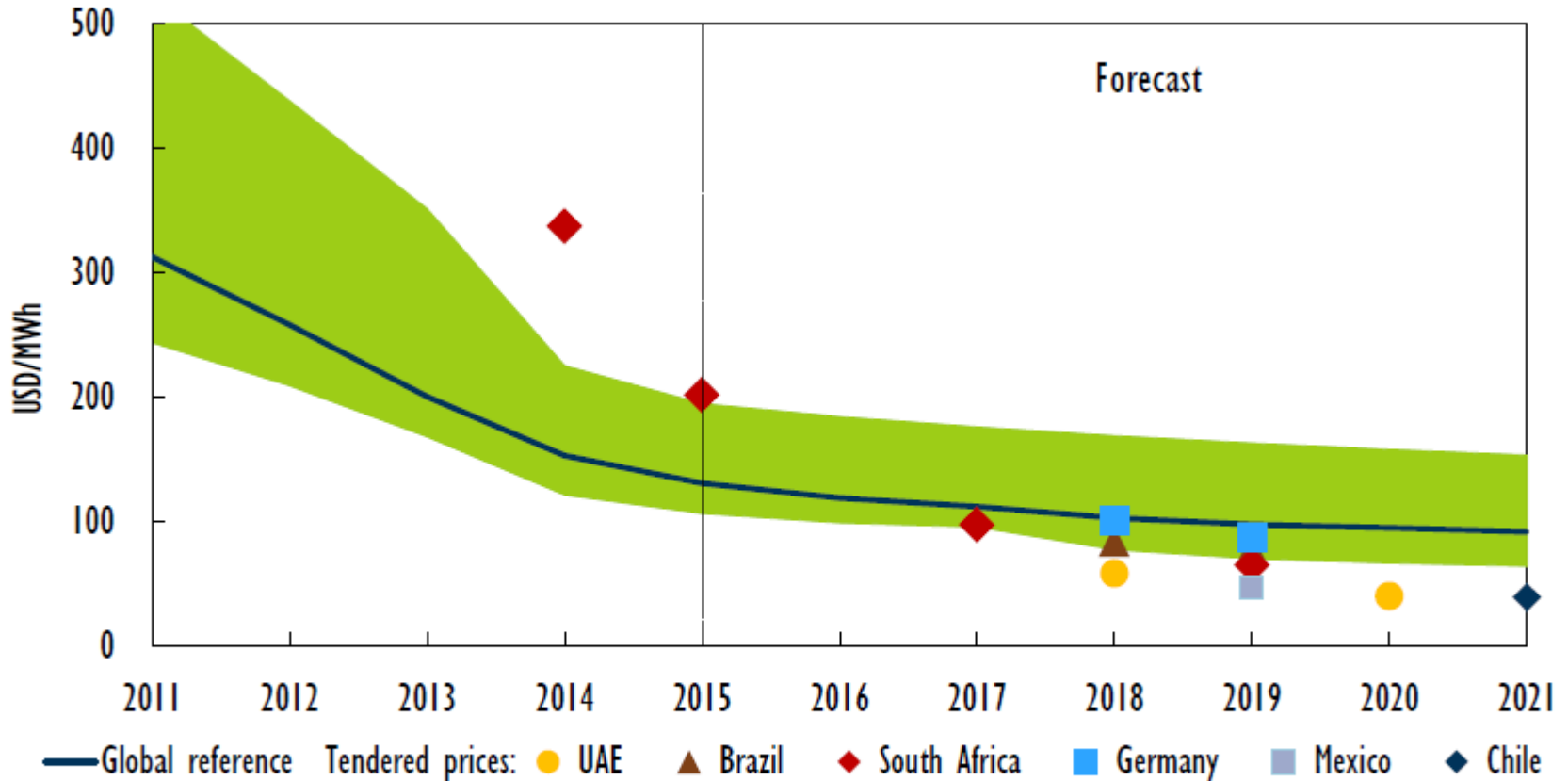
- Malaysia's NDC: reduce its GHG emissions intensity of GDP by **45% by 2030** relative to the emissions intensity of GDP in 2005

Target for RE Mix in Electricity Generation



Solar PV Costs Continue to Decline Globally

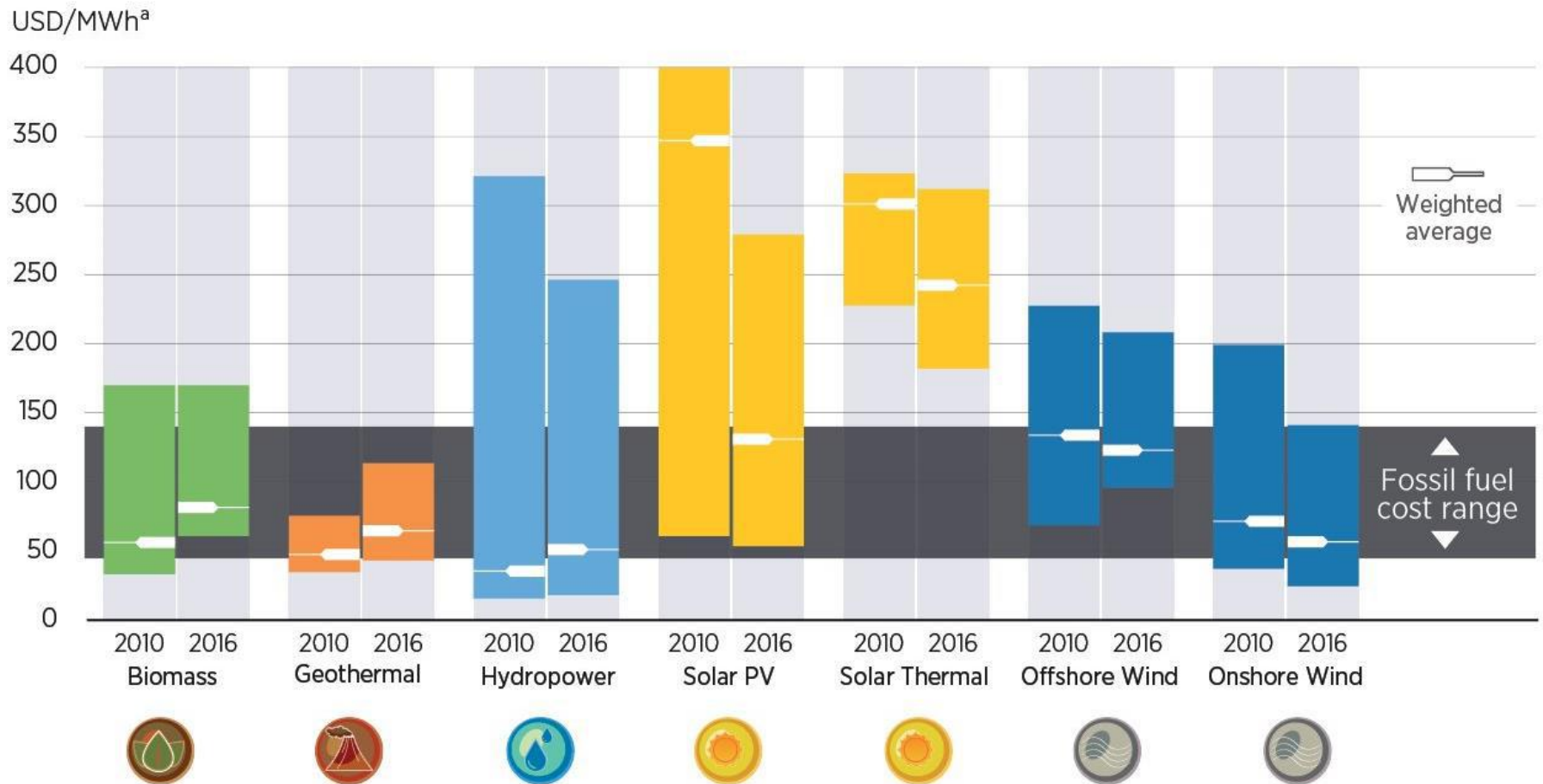
Utility-scale solar PV generation cost and contract prices



Utility-scale solar PV generation costs to fall by another quarter over 2015-21; competitive tenders may result in even faster cost reductions



Comparison of LCOE of Various RE Sources

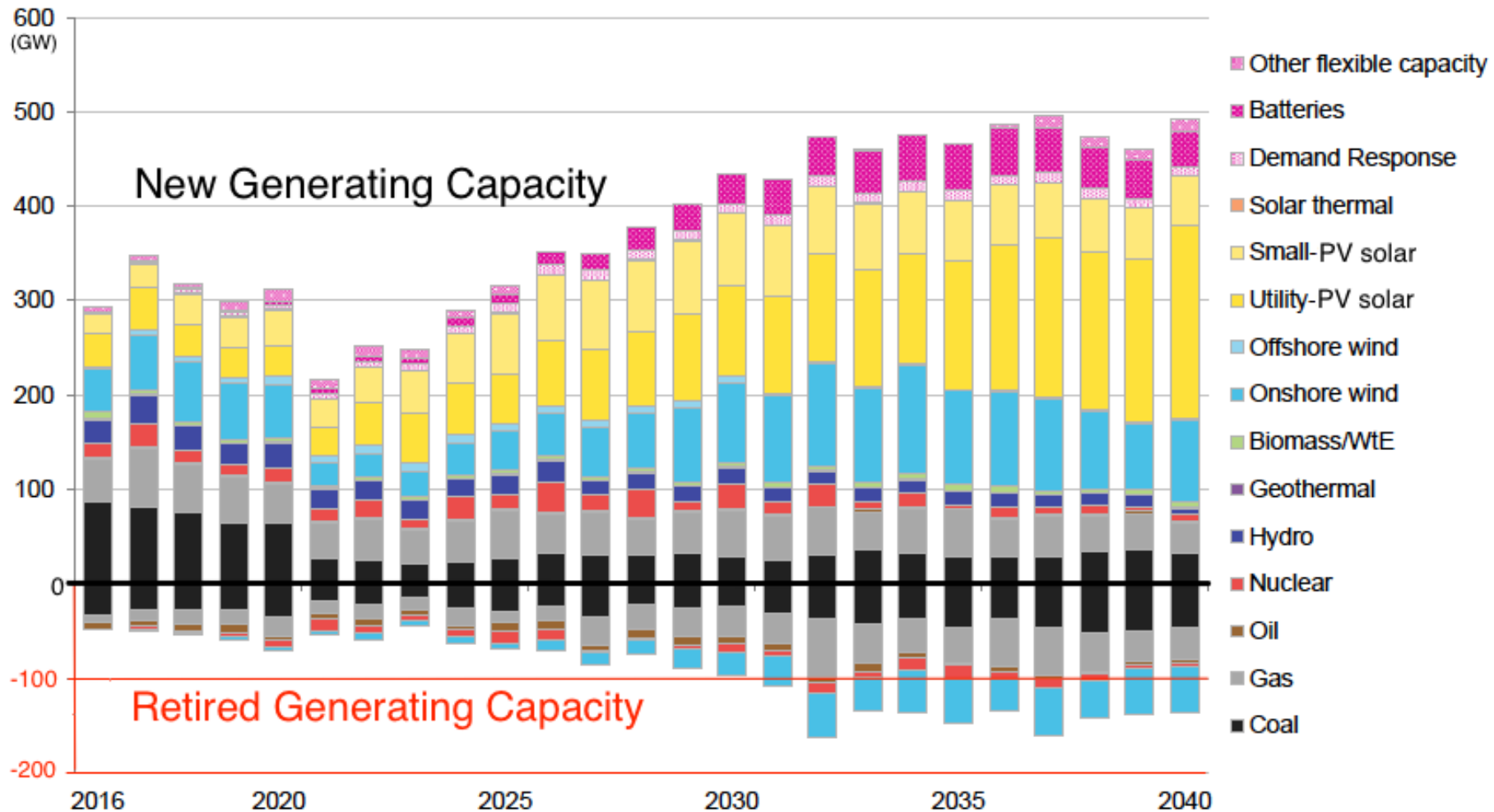


Levelised cost of electricity for utility-scale power (ranges and averages), 2010 and 2016



Solar Will Soon Dominate

Over the next 25 years, 68% of new electricity capacity will be renewable



Dare We Dream a 100% RE Scenario?

“The transition to a world that runs on 100% renewable resources is not a choice, but an inevitability.”

– Arash Aazami,
Founder of Kamangir – Beyond Boundaries



Source: IRENA

Already Running on 100% RE

- Costa Rica
- Iceland
- Lesotho
- Certain states and cities in various countries in North America & Europe

Targeting to Have 100% RE

- 47 developing countries pledged to go 100% RE during COP22
- Nordic countries
- RE100 companies
- Many other states and cities

For further enquiries, please contact:

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Jalan P4W, Persiaran Perdana,
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T: +603 – 8870 5832

Likas Square Commercial Centre
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Jalan Istiadat Likas,
88400 Kota Kinabalu, **Sabah**

Tel: +6088-252101/251462

E: NEM@seda.gov.my

W: www.seda.gov.my

Thank You

