

Global Solar PV Market in Times of COVID-19

Michael Schmela
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TaiyangNews

TaiyangNews – The Solar Technology News Platform

Selected Publications Until 2019

Market Surveys on Production Equipment & Processing Materials



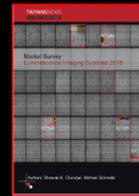
Backsheets and Encapsulation



Screen Printers



Metallization



Luminescence Imaging Systems



Wet-Etching



AlOx Deposition

TaiyangNews Technology Reports



PERC Technology
(English / Chinese)



Bifacial Technology
(English / Chinese)



HJT Technology
(English / Chinese)



Advanced Module Technology
(English / Chinese)

TaiyangNews Market Surveys provide overviews on production equipment and materials, including product descriptions and specs of leading suppliers

TaiyangNews Reports provide in-depth overviews on R&D, manufacturing, demand and trends for promising solar technologies and products

TAIYANGNEWS

ALL ABOUT SOLAR POWER

Supply is no issue in solar sector today after world's largest supplier China has overcome COVID-19

Utilization rate of PV Supply Chain		February	March
Sector	Company	Tier-1	Tier-1
Polysilicon	China	78%	71%
	Overseas	61%	46%
Multi-Si Wafer	Vertically-Intergrated	36%	30%
	China	30%	39%
Mono-Si Wafer	Vertically-Intergrated	100%	100%
	China	97%	100%
	Overseas	80%	80%
Multi-Si Cell	Vertically-Intergrated	42%	61%
	China	35%	64%
	Overseas	9%	9%
Mono-Si Cell	Vertically-Intergrated	72%	84%
	China	68%	79%
	Overseas	42%	42%
Module	TOP10	64%	84%
	China	36%	59%
	Overseas	76%	80%

PV InfoLink

[JinkoSolar Exits 2019 With RMB 898.7 Million Net Income](#)

Coronavirus Pandemic Notwithstanding, JinkoSolar Sees 18 GW To 20 GW Solar Module Shipments In 2020 With Mono Products Comprising Almost 100% Share As Company Sails Through 2019

07:45 AM (Beijing Time) - 14. March 2020

Source: TaiyangNews 2020

Demand: All leading solar analysts have **slashed 2020 growth forecasts**

[COVID-19: BNEF Cuts Down 2020 Global Solar Demand Forecast](#)

BloombergNEF Slashes Global Solar Demand Forecast For 2020 To Between 108 GW To 143 GW As Coronavirus Pandemic Triggers Worldwide Economic Slowdown

05:05 AM (Beijing Time) - 13. March 2020

[IHS Markit Slashes 2020 New PV Forecast](#)

Under COVID-19 Impact, IHS Markit Lowers Global Solar PV Capacity Installation Forecast For 2020 From 142 GW Previously To 105 GW Now

11:09 PM (Beijing Time) - 02. April 2020

[Wood Mackenzie Lowers 2020 PV Forecast](#)

COVID-19 Market Disruption Leads Wood Mackenzie Power & Renewables To Slash 2020 Solar PV Deployment Forecast To 106.4 GW

05:13 AM (Beijing Time) - 12. April 2020

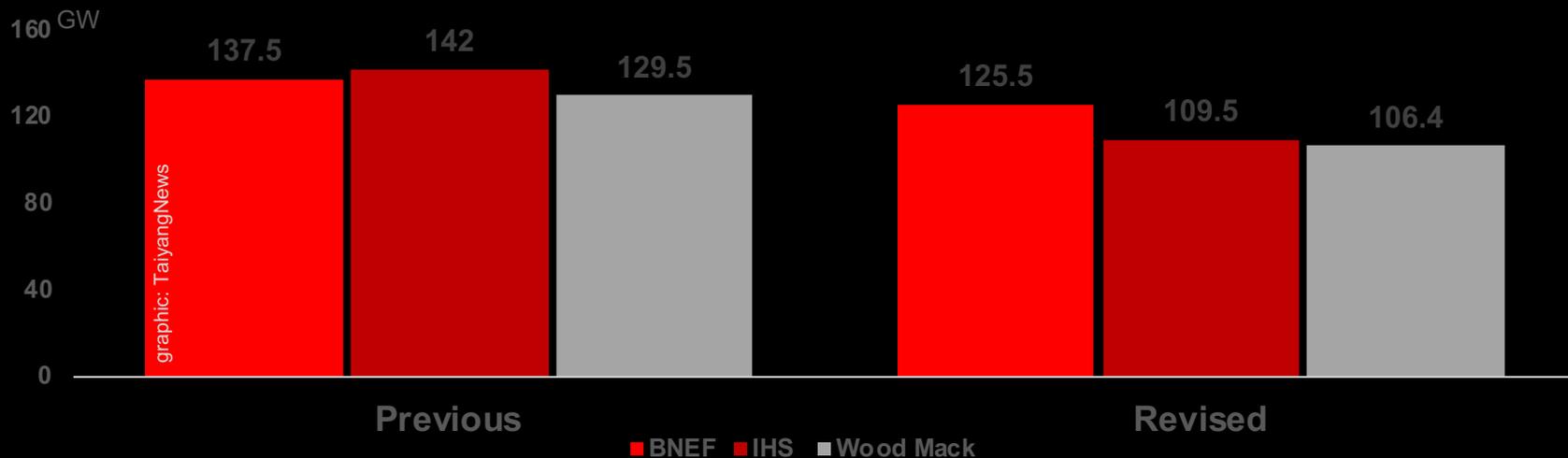
Source: TaiyangNews 2020

TAIYANGNEWS

ALL ABOUT SOLAR POWER

Demand: All leading solar analysts have slashed 2020 growth forecasts

Revised 2020 Market Forecasts from Leading Solar Analysts



Source: TaiyangNews 2020

TAIYANGNEWS

ALL ABOUT SOLAR POWER

Oversupply looming. Market leaders continue expansion. Over 280 GW of production capacity involved w/ investment of RMB130bn (Roth Capital)

[LONGi Improved 2019 Revenues By Close To 50%](#)

Growing Net Profit & Revenues For 2019 On Annual Basis, LONGi Green Energy Expects Over 75 GW Monocrystalline Silicon Wafer Production Capacity By 2020-End

07:12 AM (Beijing Time) - 24. April 2020

[Tongwei To Invest In 7.5 GW M12 Cell Fab](#)

Tongwei Moves Ahead With 7.5 GW PERC Monocrystalline Silicon Solar Cell Production; After Successful 2019, Company Suffered In Q1/2020 Due To COVID-19

05:51 AM (Beijing Time) - 23. April 2020

[JA Solar To Expand Module Capacity To 16 GW](#)

JA Solar Improved Annual Net Profit In 2019 By 74.09% Shipping 10.26 GW Modules; Company To Aim For Over 16 GW Solar Module Production Capacity By 2020-End

08:47 AM (Beijing Time) - 01. April 2020

[Tongwei To Expand Polysilicon Production By 40,000 MT](#)

Tongwei To Invest RMB 4bn To Add Further 40,000 MT Polysilicon Which Will Bring Its Total Capacity To World Leading 155,000 Tons

05:36 AM (Beijing Time) - 22. March 2020

[GCL System Announces 60 GW Solar Panel Factory In China](#)

GCL System Integration Planning Mother Of All Solar Module Factories In Hefei, China With 60 GW Annual Production Capacity For RMB 18 Billion Investment

10:18 AM (Beijing Time) - 31. March 2020

[Tongwei Targets Up To 100 GW Cell Capacity](#)

Tongwei Group To Invest RMB 20 Billion To Bring Online 30 GW New High Efficiency Solar Cell Production Capacity In Chengdu, China; Aims For Between 80 GW To 100 GW Aggregate Capacity By 2023

10:18 PM (Beijing Time) - 12. February 2020

Source: TaiyangNews 2020

Prices: The way is down across the value chain



PV InfoLink @PvInfolink · Apr 22

Spot Price: As mono-Si wafer prices continue to decline, supply chain prices see record low. infolink-group.com/en/solar/spot-...

PV InfoLink	Price (High / Low / Avg.)			Change (%)	Change (\$)	Next Week Forecast
Polysilicon (unit: kg)						
Polysilicon Price - Prime for Multi (USD)	6.8	6.2	6.5	-3.0	-0.200	📉
Polysilicon Price - Prime for Mono (USD)	8.3	8.0	8.1	-2.4	-0.200	📉
Polysilicon Price - Prime for Multi (RMB)	42	40	41	-4.7	-2.000	📉
Polysilicon Price - Prime for Mono (RMB)	73	70	71	-2.7	-2.000	📉
Wafer (unit: pc)						
Multi Wafer - Diamond Wire (USD)	0.194	0.190	0.192	--	--	📉
Multi Wafer - Diamond Wire (RMB)	1.380	1.250	1.350	-3.6	-0.050	📉
Mono Wafer - 156.75mm (USD)	0.387	0.364	0.385	--	--	📉
Mono Wafer - 156.75mm (RMB)	3.030	2.800	3.010	--	--	📉
Mono Wafer - 158.75mm (USD)	0.416	0.391	0.397	-4.6	-0.019	📉
Mono Wafer - 158.75mm (RMB)	3.260	3.070	3.110	-4.6	-0.150	📉
Cell (unit: W)						
Multi Cell - DW - 18.7% (USD)	0.100	0.073	0.075	--	--	📉
Multi Cell - DW - 18.7% (RMB)	0.576	0.554	0.565	-1.9	-0.011	📉
Mono PERC Cell - 21.7%+ (USD)	0.160	0.105	0.109	-2.7	-0.003	📉
Mono PERC Cell - 21.7%+ (RMB)	0.850	0.800	0.840	-1.2	-0.010	📉
Mono PERC Cell - 21.7%+ Bi-facial (USD)	0.160	0.105	0.109	-2.7	-0.003	📉
Mono PERC Cell - 21.7%+ Bi-facial (RMB)	0.850	0.800	0.840	-1.2	-0.010	📉
Mono PERC Cell- 21.7%+ 158.75mm (USD)	0.160	0.110	0.110	-4.3	-0.005	📉
Mono PERC Cell- 21.7%+ 158.75mm (RMB)	0.920	0.820	0.860	-2.3	-0.020	📉
Module (unit: W)						
275-280 / 330-335W Multi Module (USD)	0.320	0.190	0.196	-1.0	-0.002	📉
275-280 / 330-335W Multi Module (RMB)	0.155	1.400	1.480	-0.7	-0.010	📉
320-330 / 385-400W Mono PERC Module (USD)	0.410	0.210	0.214	-0.9	-0.002	📉
320-330 / 385-400W Mono PERC Module (RMB)	1.680	1.620	1.650	-0.6	-0.010	📉



PV InfoLink @PvInfolink · Apr 15

Spot Price: Prices of M2-sized products plunge amid flagging demand. infolink-group.com/en/solar/spot-...



PV InfoLink @PvInfolink · Apr 9

Chinese module makers are grabbing their shares in the domestic market amid weak overseas demand. Consequently, prices for mono PERC modules have decreased to RMB 1.62–1.66/W and will decline further for the short term.



PV InfoLink @PvInfolink · Apr 8

Spot Price: With mono-Si wafer manufacturer giants revising prices downwardly, supply chain prices dropped further. infolink-group.com/en/solar/spot-...



PV InfoLink @PvInfolink · Apr 1

Spot Price: Downward pressure from downstream segment drove down mono-Si cell prices. infolink-group.com/en/solar/spot-...

Module by Region (unit:W)						
275-280 / 330-335W Multi Module-EU (USD)	0.199	0.190	0.196	-0.5	-0.001	📉
275-280 / 330-335W Multi Module-India (USD)	0.240	0.215	0.226	--	--	📉
275-280 / 330-335W Multi Module-Australia (USD)	0.199	0.190	0.195	-0.5	-0.001	📉
320-330 / 385-400W Mono PERC-US(USD)	0.420	0.375	0.403	-0.5	-0.002	📉
320-330 / 385-400W Mono PERC-EU(USD)	0.230	0.210	0.215	-0.9	-0.002	📉
320-330 / 385-400W Mono PERC-Australia(USD)	0.230	0.210	0.214	-0.9	-0.002	📉

Module BOM Materials (m²)						
3.2mm Coating PV Glass(RMB)	28.0	26.00	26.0	-7.1	-2.0	📉

📈 > 3%
 📊 0-3%
 📉 0%
 📉 0-3%
 📉 > -3%

COVID-19 short-term **key issues:**

- >> **Financing:** Access is more difficult, with financing institutions delaying project financing deals or retracting from previous financing conditions , also due to falling power prices.
- >> **Demand:** The construction of large and small projects has slowed, though level depending on country (e.g. total stop in Spain, construction has continued in Germany in all solar segments)
- >> As public **solar tenders** are increasingly shelved (e.g. Portugal solar auction), project pipelines of companies have been negatively impacted.

COVID-19 Help? Not so much so far: Only few countries have included solar in economic recovery packages as of now

[Japan: Corporate RE PPAs In COVID-19 Stimulus Package](#)

Renewables Find Mention in COVID-19 Economic Stimulus Package Of Japanese Government; Up To \$1 Billion To Support Corporate Renewable PPAs Under Commitment To RE100

12:13 PM (Beijing Time) - 17. April 2020

[Swiss Govt Comes To Solar's Rescue Under COVID-19 Scare](#)

Swiss Federal Office Of Energy To Disburse An Additional CHF 46 Million As Subsidies To Support Solar Power Expansion In View Of COVID-19

10:57 PM (Beijing Time) - 23. April 2020

Source: TaiyangNews 2020

TAIYANGNEWS

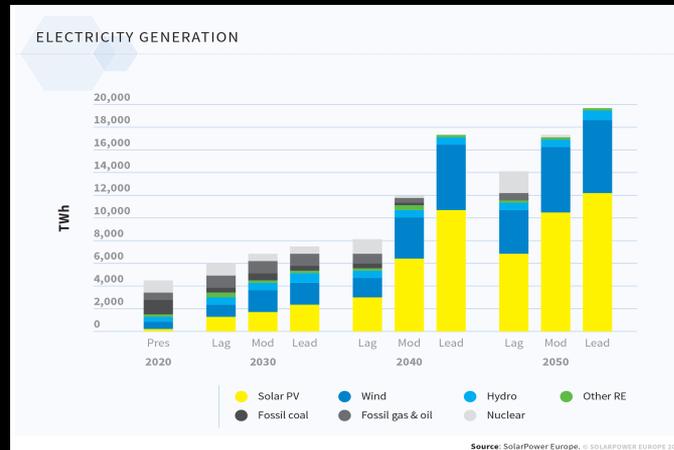
ALL ABOUT SOLAR POWER

COVID-19 mid to long term impacts:

>> Projects or sales to be delayed but should come **back to normal as of 2021/22** (depending on economic recovery, stimulus packages)

>> Mid- to long term **solar growth story still fully intact**

New SolarPower Europe report shows modelling that after 2030 solar will be the dominant source of electricity generation in Europe, reaching up to 63% in 100% Renewable Leadership Scenario



Questions?

Michael Schmela

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Malaysia: Net Energy Metering

Dr Wei-nee Chen
Chief Strategic Officer of SEDA
28th April 2020

Overview of SEDA

SEDA was established on 1st September 2011 under the **SEDA Act 2011 [Act 726]** with some of the following functions:

01

To advise the Minister & Government Entities on all matters relating to sustainable energy

02

To promote & implement national policy objectives for renewable energy

03

To promote, stimulate, facilitate and develop sustainable energy

04

To implement, manage, monitor & review the Feed-in Tariff (FiT) system

05

To implement sustainable energy laws and recommend reforms to such laws to the Federal Government

06

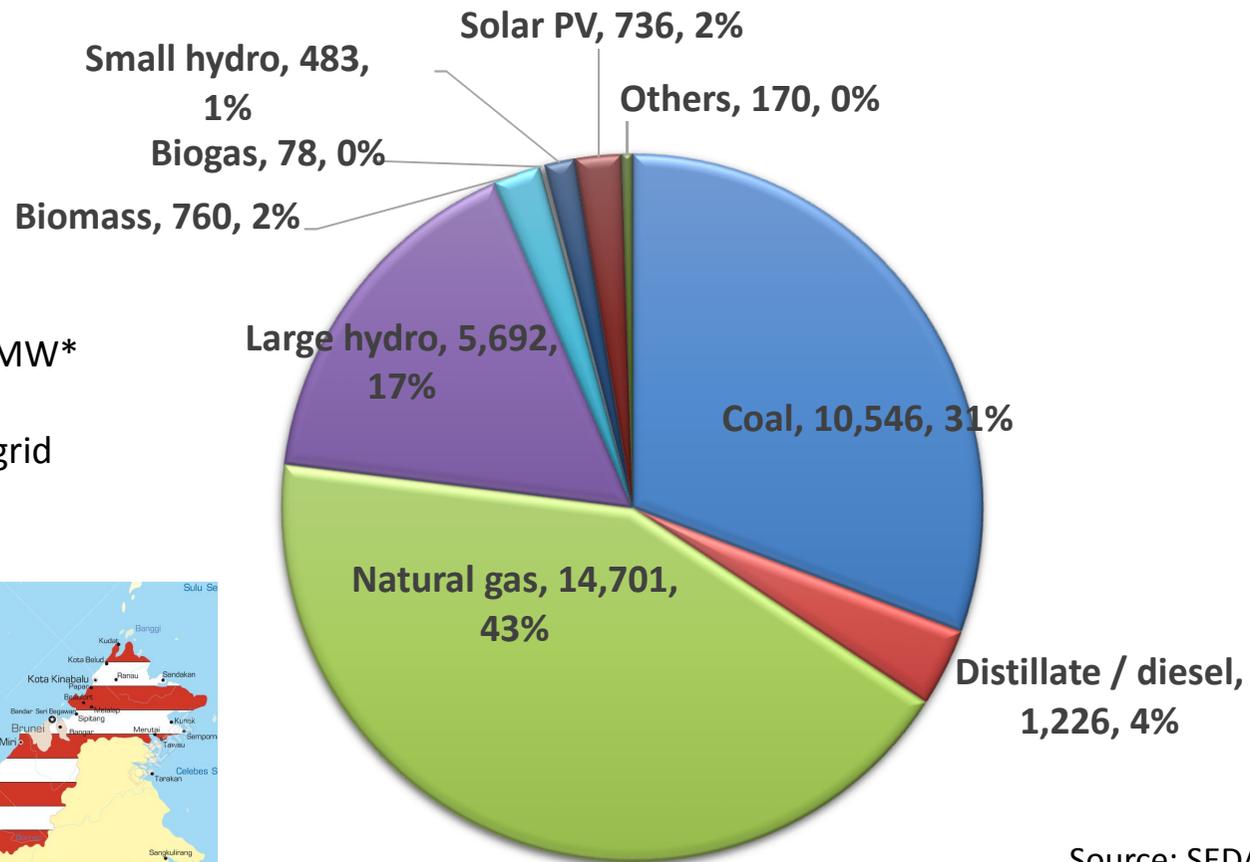
To promote private sector investment in sustainable energy sector

07

To act as focal point on matters relating to sustainable energy & climate change matters relating to energy



National Installed Capacity Mix (Dec 2018)

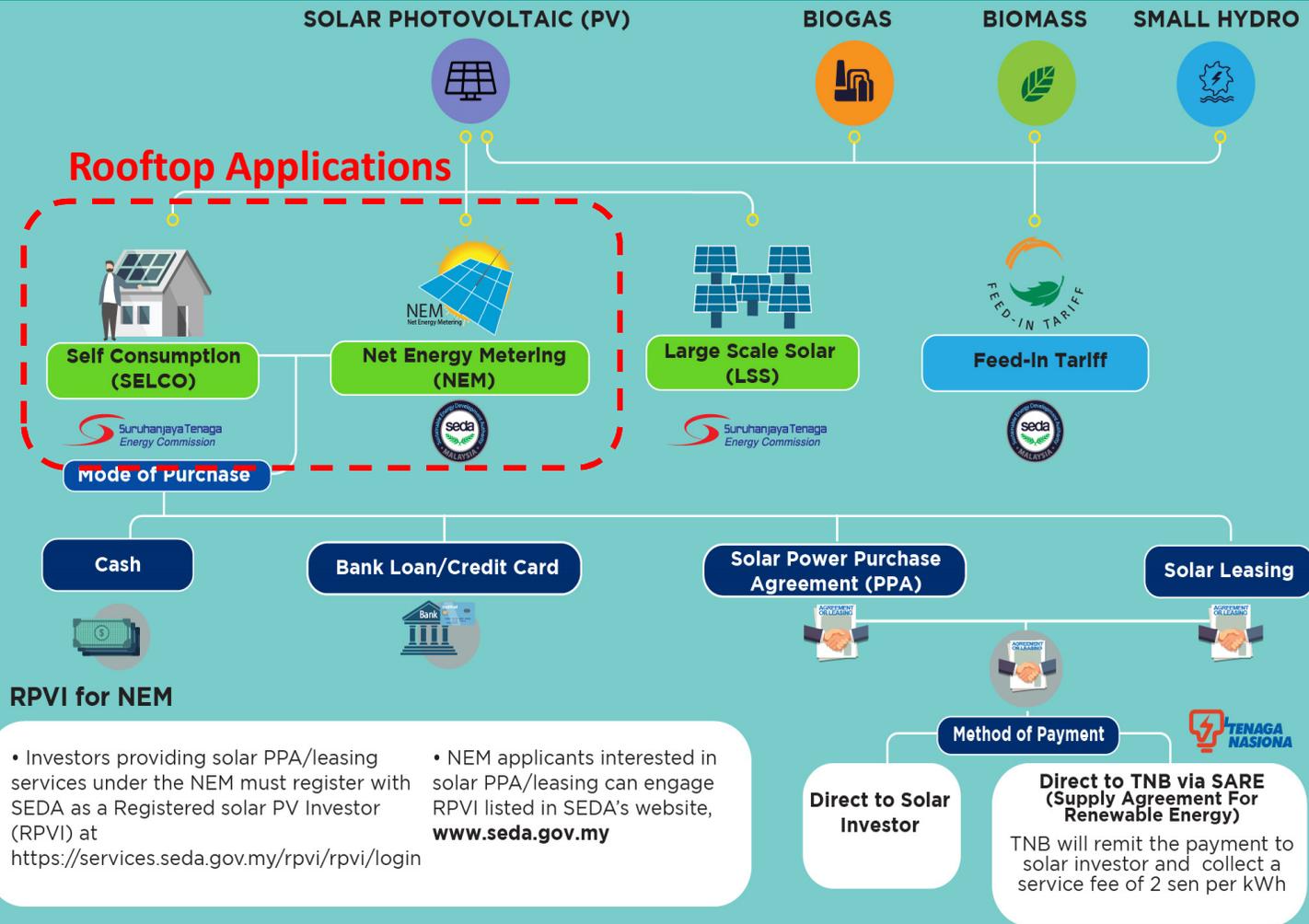


Total : 34,392 MW*
RE: 22.5%
 * Includes off-grid

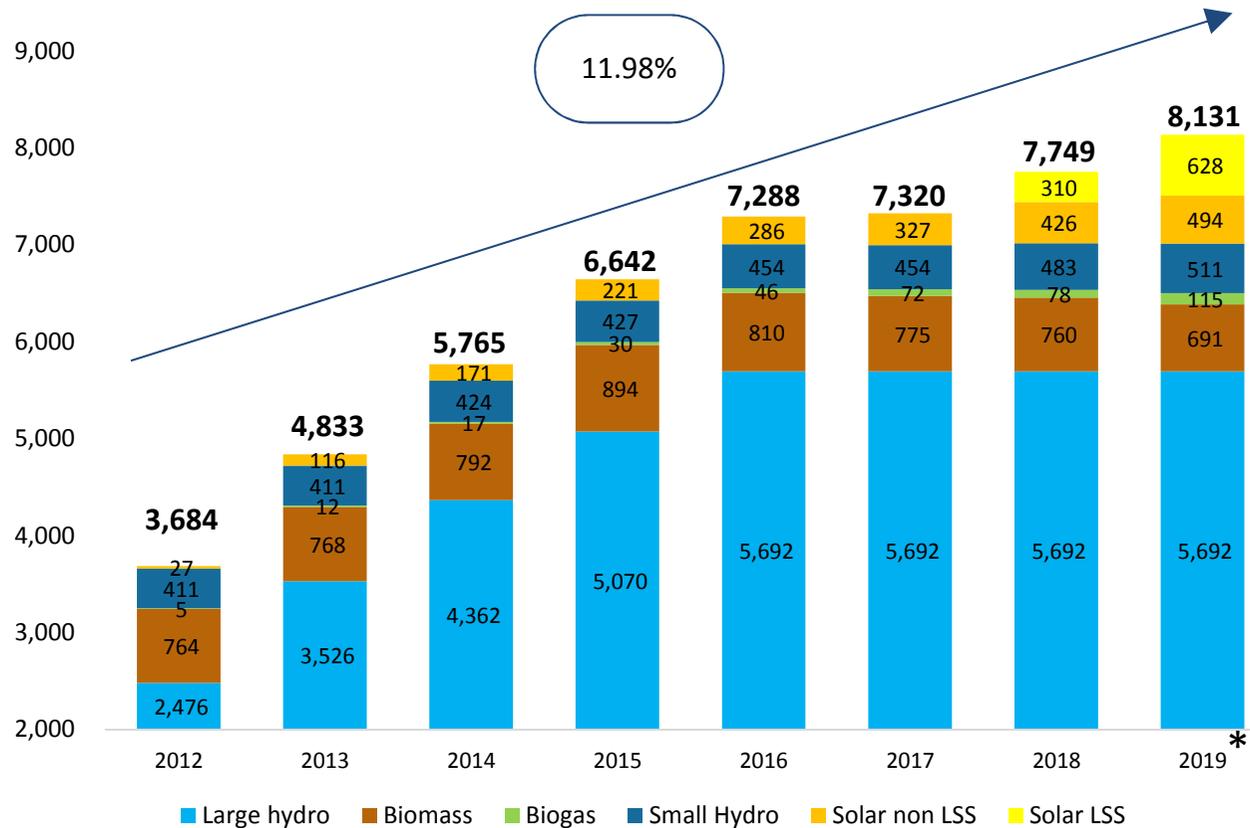


Source: SEDA, ST, MoU

Renewable Energy Programmes In Malaysia



Cumulative RE Capacity in Malaysia



CAGR 2012-2019 [%]

Solar LSS 102.38%
(2018-2019)

Solar non-LSS 51.27%

Small hydro 3.17%

Biogas 55.79%

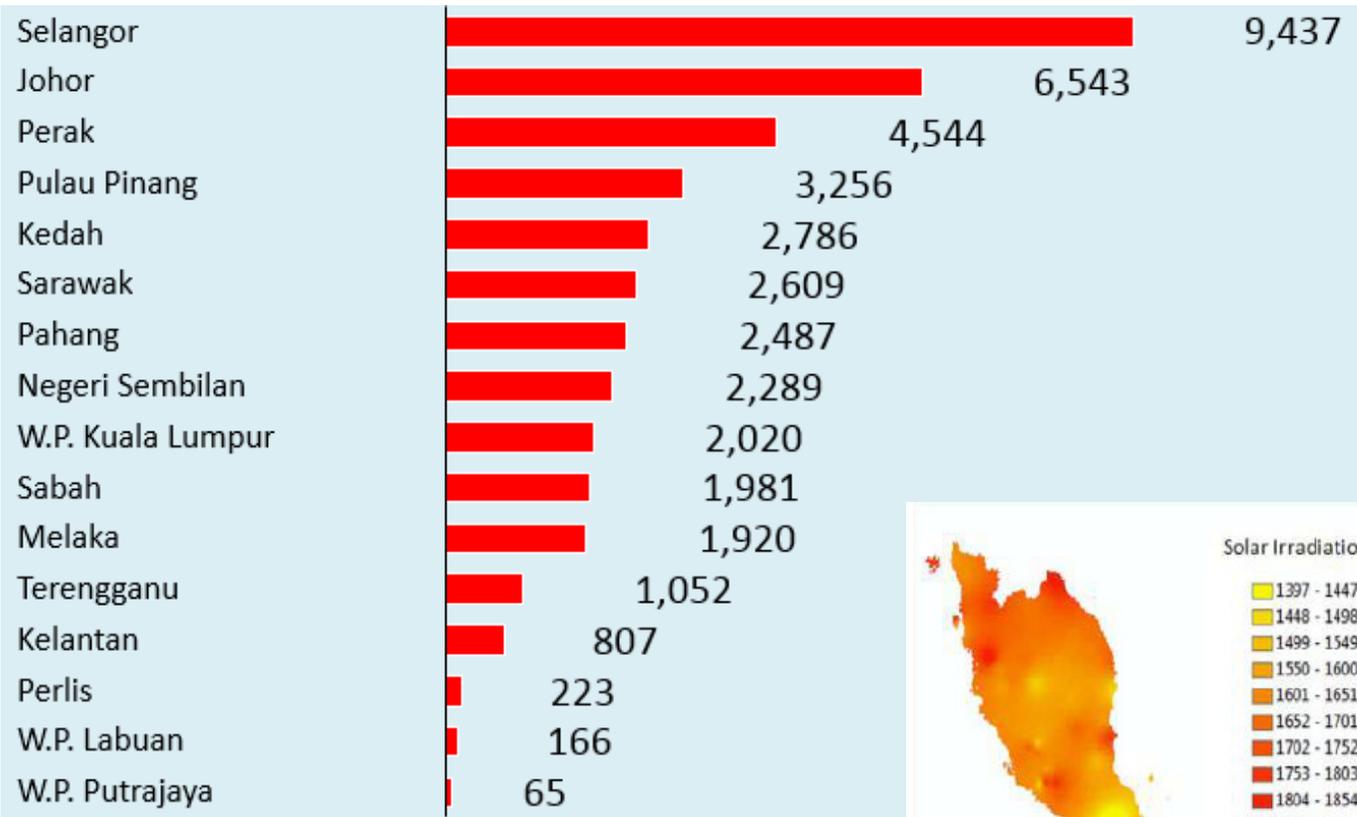
Biomass -1.44%

Large Hydro 12.63%

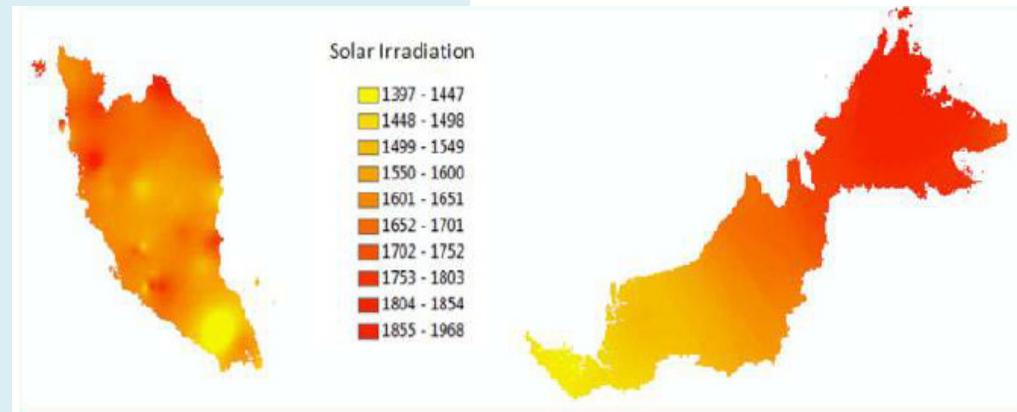
* Estimate

Includes large hydro (> 100 MW)
includes off-grid RE

Rooftop Solar potential by State & F.T. (MW)



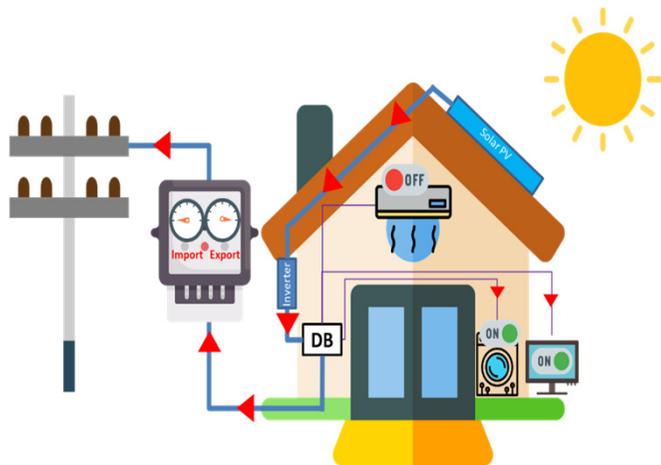
Total – 42,185 MW



Net Energy Metering – NEM Concept

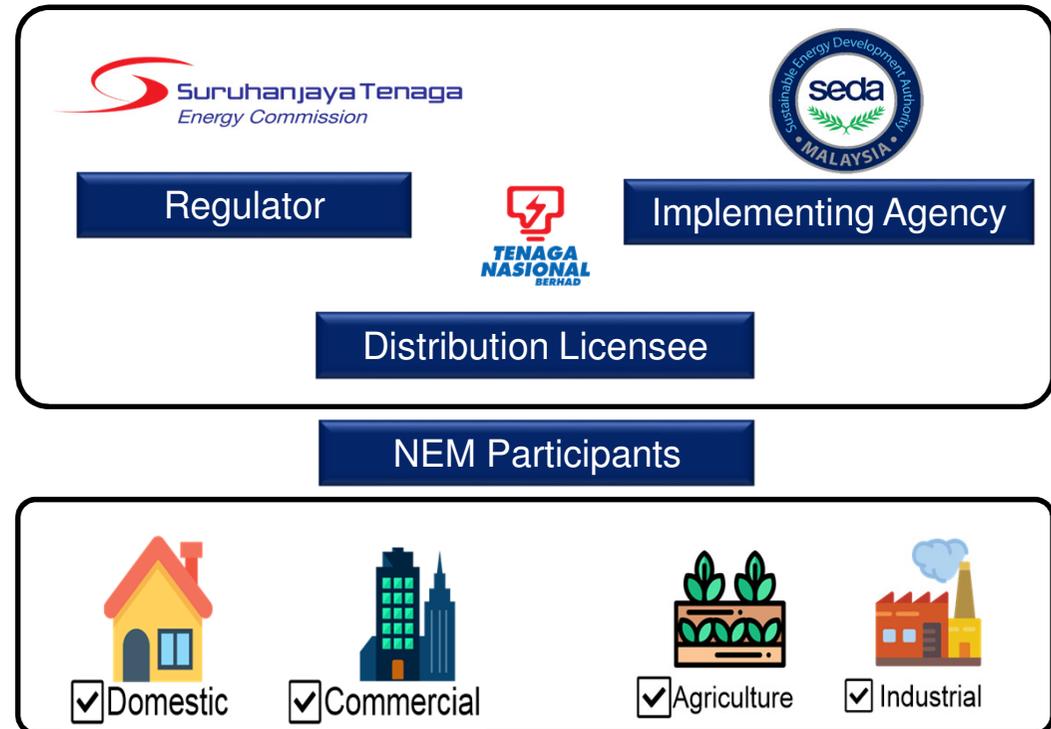


The NEM scheme was launched on **1st November 2016** *limited to 500MW*.

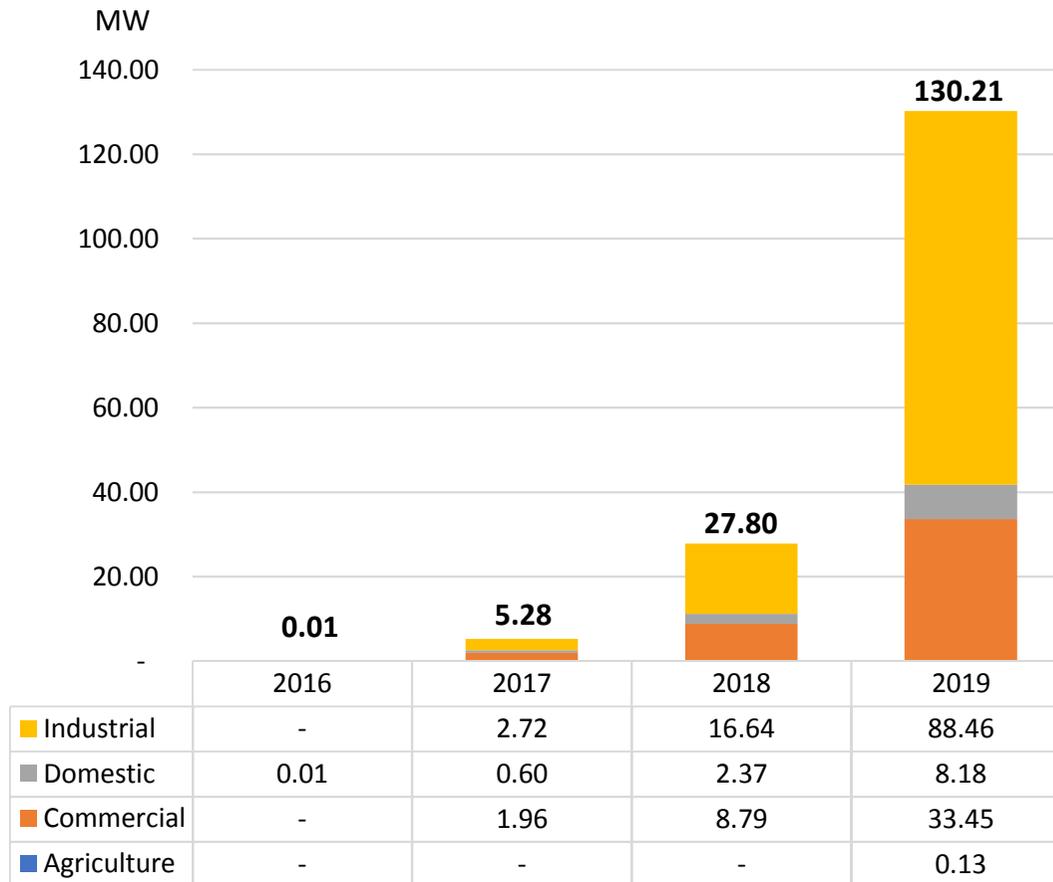


*Note: DB = Distribution Board

The concept of NEM 2.0 (w.e.f 1st Jan 2019) is that the energy produced from the installed solar PV system will be consumed first, and any excess will be exported to TNB on a “one-on-one” offset basis. Opportunity to save your electricity bill.



Cumulative approved NEM applications (end of 2019)



NEM 1.0: Displaced Cost Mechanism (2016 – 2018)
Total approved: 27.8MW

NEM 2.0: 1-to-1 Offset Mechanism (2019)
Total approved: 102.41MW

3.68 times increase in take-up rate

*Exclude surrendered

Online NEM Calculator



<https://services.seda.gov.my/nemcalculator/#/>

NEM Calculator



Tariff Group

Tariff A - Domestic
Tariff

Building Type

Bungalow

Average
Electricity Bill
Monthly (RM) ?

RM 815

Calculate →

Category: **Tariff A - Domestic Tariff** [View Tariff](#)

Building Type: **Bungalow**

NEM Calculator

Your Current Monthly Bill

RM815

Your Monthly Bill after NEM

RM172

Your Monthly Saving

RM643

Proposed Installed Capacity (adjustable)

11.50kWp

Simple Payback Period

6.4Years

* Estimated Minimum Upfront Cost

RM49,450

Space Required



Rooftop Area

69.0m²

1 kWp approximately 6m²

Environmental Impact **



Carbon Dioxide (CO₂)

Avoidance

239 tonne CO₂

=



Distance travel avoidance by car (petrol)

0.9 million km

=



No. of tree seedlings grown for 10 years to absorb the CO₂

3,795 trees

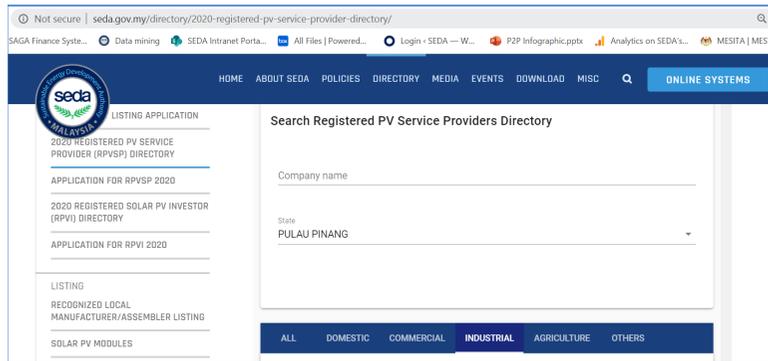
Print Result →

Outright Purchase →

Leasing →

New Calculation →

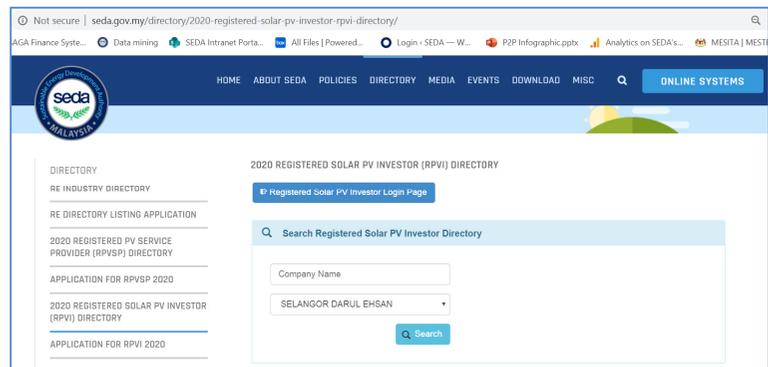
PV Industry Directories



Registered PV Service Providers (RPVSP) – since 2014

- Companies with qualified persons passed in PV training.
- Qualified for Green Income Tax Exemption (GITE) incentives (MIDA)
- Annual renewal, currently 135 Registered PV service providers

<http://www.seda.gov.my/directory/2020-registered-pv-service-provider-directory/>



Registered PV Investors (RPVI) - since 2019

- Provides 0 upfront capex business models to interested parties.
- Requirements for local and foreign companies
- Qualified for Green Income Tax Exemption (GITE) for solar leasing (MIDA)
- Annual renewal, currently 80 Registered PV Investors

<http://www.seda.gov.my/directory/2020-registered-solar-pv-investor-rpvi-directory/>

TNB Billing Tariff: Tariff A – Domestic

Building Type: Bungalow, 11.13 kWp



BEFORE

BIL ELEKTRIK DAN INVOIS CUKAI					
No. Akaun	:				
No. Kontrak	:				
Deposit	:	RM1,600.00			
No. Invois Cukai	:				
TERIMA KASIH Kerana Membayar Dalam Tempoh 30 Hari TNB Careline 1-300-88-5454					
Jumlah Perlu Dibayar RM 814.85		Tarikh Bil : 03.02.2018			
Bil : OPC					
Tunggakan	RM	Amaun	0.00		
Caj Semasa	RM	814.84			
Penggenapan	RM	0.01			
Jumlah Bil	RM	814.85			
Bil Terdahulu	RM	46.95	05.03.2018		
Bayaran Akhir (14.01.2018)		RM	46.95		
Jenis Bacaan : Bacaan Sebenar					
Tempoh Bil : 04.01.2018 - 03.02.2018 (31 Hari)		Faktor Prorata			
Tariff : A:Kediaman		1.00000			
Blok Tarif (kWh/kW)	Kegunaan (kWh/kW)	Kadar (RM)	Amaun (RM)		
200	200.00	0.2180	43.60		
100	100.00	0.3340	33.40		
300	300.00	0.5160	154.80		
300	300.00	0.5460	163.80		
>900	682.00	0.5710	389.42		
Jumlah	1,582.00		785.02		
Subsidi 1.80 sen/kWh dibiayai Kerajaan Persekutuan RM 28.48					
Bayaran melalui cek sah setelah penjelasan cek oleh bank					
Service Tax (ST) 6% bagi penggunaan Domestik melebihi 600 kWh. Service Tax Coses/Sept 18 akan dipro-Yata.					
Tunggakan sehingga 2018: 814.85					
Untuk maklumat bil dan bayaran terdahulu, sila layari: http://www.mytnb.com.my atau hubungi Hotline TNB 1 300 88 5454					
Untuk gangguan bekalan atau kerosakan lampu jalan TNB sila hubungi melalui telefon/SMS: 15454					
Untuk pertanyaan, sila hubungi: TNB KUALA LUMPUR - BARAT WISMA TNB, JLN KEPONG, F.O BOX 11051 60732 KUALA LUMPUR W/P KUALA LUMPUR Tel: 03-62545100 Fax: 03-62506302					
Subsidi Bahan Api Dibiayai Kerajaan Persekutuan RM 15.01					
KWTTB - Kumpulan Wang Tenaga Boleh Baharu					
ICPT - Pelepasan Imbangan Kos Penajaan					
Maklumat Tambahan: Angkadar Kuasa : 0.99					
Bayaran melalui cek sah setelah penjelasan cek oleh bank					
Baki NEM: 0 kWh Baki NEM: RM0.00					
Tarikh lupus Baki NEM: 31/12/2019					
Service Tax (ST) 6% bagi penggunaan Domestik melebihi 600 kWh.					
No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
M 8700732	1.00000	Dahulu	Semasa	45,394.00	46,976.00
				1,582.00	kWh

TNB Bill: RM814.84 (1,582 kWh)

AFTER

BIL ELEKTRIK DAN INVOIS CUKAI					
No. Kontrak	:				
Deposit	:	RM1,640.00			
No. Sijil NEM	:				
Jenis Bacaan	:	Bacaan Sebenar			
Tempoh Bil : 07.03.2019 - 03.04.2019 (28 Hari)					
Tariff : A:Kediaman					
Blok Tarif (kWh)	Blok Prorata (kWh)	Kadar (RM)	Amaun (RM)		
200	200.00	0.2180	43.60		
100	100.00	0.3340	33.40		
300	300.00	0.5160	154.80		
300	300.00	0.5460	163.80		
>900	212.00	0.5710	121.05		
Jumlah Import (kWh)	1,112.00	Jumlah Import (RM)	516.65		
Blok Tarif (kWh)	Blok Prorata (kWh)	Kadar (RM)	Amaun (RM)		
200	0.00	0.2180	0.00		
100	0.00	0.3340	0.00		
300	299.00	0.5160	154.28		
300	300.00	0.5460	163.80		
>900	212.00	0.5710	121.05		
Jumlah Eksport (kWh)	811.00	Jumlah Eksport (RM)	439.13		
Keterangan					
Kegunaan (kWh Import)	kWh	Tidak Kena ST	Kena ST		
		600.00	512.00		
			1,112.00		
Kegunaan RM	RM	231.80	284.85		
Kegunaan Bulan Semasa	RM	231.80	284.85		
Service Tax (6%)	RM		17.09		
KWTTB (1.6%)	RM		8.27		
Surcaj Lewat Bayar	RM		1.27		
Caj Semasa (Import)	RM		543.28		
kWh Eksport: 811.00	RM	439.13-	439.13-		
Caj Semasa (Eksport)	RM		439.13-		
Jumlah Caj Bersih	RM		104.15		
No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
M 217415100	1.00000	Dahulu	Semasa	12,360.00	13,472.00
M 217415100	1.00000			77.00	20.00
M 217415100	1.00000			2,545.00	2,727.00
				811.00	kWh (E)
				1,112.00	kWh (I)
				0.00	kWh
				182.00	kVARh

TNB Bill after NEM: RM104.15 (301 kWh)

Savings RM710.69 (1,281 kWh)

TNB Billing Tariff: Tariff B – Commercial

Building Type: Office building, 32 kWp



BEFORE

BIL ELEKTRIK DAN INVOIS CUKAI																																			
No. Akaun	[REDACTED]																																		
No. Kontrak	[REDACTED]																																		
Deposit	: RM57,154.00																																		
No. Invois Cukai	[REDACTED]																																		
[REDACTED]																																			
Jumlah Perlu Dibayar		RM 5,972.30																																	
SALINAN		Tarikh Bil : 01.03.2018	Bil : LPC																																
Tunggakan	RM	Amaun	Bayar.Sebelum																																
Caj Semasa	RM	3,186.30	Segera																																
Penggenapan	RM	2,785.99	31.03.2018																																
Jumlah Bil	RM	0.01																																	
Bil Terdahulu	RM	5,972.30																																	
(01.02.2018)	RM	6,305.05	Bayaran Akhir																																
Jenis Bacaan	: Bacaan Sebenar																																		
Tempoh Bil	: 01.02.2018 - 28.02.2018 (28 Hari)																																		
Tarif	: B:Perdagangan																																		
Blok Tarif (kWh/kW)	Kegunaan (kWh/kW)	Kadar(RM)	Amaun(RM)																																
200	200.00	0.4350	87.00																																
>200	5,071.00	0.5090	2,581.14																																
Jumlah	5,271.00		2,668.14																																
<table border="1"> <thead> <tr> <th>Keterangan</th> <th>Tidak Kena GST</th> <th>Kena GST</th> <th>Jumlah</th> </tr> </thead> <tbody> <tr> <td>Kegunaan kWh</td> <td>kWh</td> <td>0.00</td> <td>5,271.00</td> </tr> <tr> <td>Kegunaan RM</td> <td>RM</td> <td>0.00</td> <td>2,668.14</td> </tr> <tr> <td>ICPT (RM0.0152-)</td> <td>RM</td> <td>0.00</td> <td>80.12-</td> </tr> <tr> <td>Kegunaan Bulan Semasa</td> <td>RM</td> <td>0.00</td> <td>2,588.02</td> </tr> <tr> <td>6% GST (6% X RM2,588.02)</td> <td>RM</td> <td></td> <td>155.28</td> </tr> <tr> <td>KWTBB (1.6%)</td> <td>RM</td> <td></td> <td>42.69</td> </tr> <tr> <td>Caj Semasa</td> <td>RM</td> <td></td> <td>2,785.99</td> </tr> </tbody> </table>				Keterangan	Tidak Kena GST	Kena GST	Jumlah	Kegunaan kWh	kWh	0.00	5,271.00	Kegunaan RM	RM	0.00	2,668.14	ICPT (RM0.0152-)	RM	0.00	80.12-	Kegunaan Bulan Semasa	RM	0.00	2,588.02	6% GST (6% X RM2,588.02)	RM		155.28	KWTBB (1.6%)	RM		42.69	Caj Semasa	RM		2,785.99
Keterangan	Tidak Kena GST	Kena GST	Jumlah																																
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Muatan Tertinggi Dicatat 360.00 kW																																			
No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit																														
		Dahulu	Semasa																																
M 716502999	1.00000	87,487.00	92,758.00	5,271.00	kWh																														
M 716502999	1.00000	224.00	240.00	16.00	kWh																														
M 716502999	1.00000	24,474.00	26,060.00	1,586.00	kVArh																														



TERIMA KASIH
 Kerana
 Membayar Dalam
 Tempoh 30 Hari
 TNB Careline
 1-300-88-5454

TNB Bill: RM2,785.99 (5,271 kWh)

AFTER

BIL ELEKTRIK DAN INVOIS CUKAI																																																																											
No. Kontrak	: [REDACTED]																																																																										
Deposit	: RM58,582.85																																																																										
No. Sijil NEM	: [REDACTED]																																																																										
Jenis Bacaan	: Bacaan Sebenar																																																																										
[REDACTED]																																																																											
Jumlah Perlu Dibayar		RM 7,191.50																																																																									
SALINAN		Tarikh Bil : 01.03.2019	Bil : LPC NEM																																																																								
<p>Bayaran Tertunggak NOTIS PEMOTONGAN Di Bawah TNB Careline 1-300-88-5454</p>																																																																											
Tempoh Bil	: 01.03.2019 - 31.03.2019 (31 Hari)																																																																										
Tarif	: B:Perdagangan																																																																										
Blok Tarif (kWh)	Blok Prorata (kWh)	Kadar (RM)	Amaun (RM)																																																																								
200	200.00	0.4350	87.00																																																																								
>200	2,997.00	0.5090	1,423.67																																																																								
Jumlah Import (kWh)	2,997.00	Jumlah Import (RM)	1,510.67																																																																								
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>200	1,752.00	0.5090	891.76																																																																								
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		Dahulu	Semasa																																																																								
M 718502893	1.00000	9,199.00	10,951.00	1,752.00	kWh (E)																																																																						
M 718502893	1.00000	20,997.00	23,994.00	2,997.00	kWh (I)																																																																						
M 718502893	1.00000	84.00	96.00	12.00	kWh																																																																						
M 718502893	1.00000	10,000.00	11,369.00	1,369.00	kVArh																																																																						



TNB Bill after NEM: RM719.50 (1,245kWh)

Savings RM2,066.49 (4,026 kWh)

NEM Eligibility & Installation Types



- ✓ Registered consumers of TNB in Peninsular Malaysia.
 - ❑ No outstanding bill & meter tampering
- ✓ The resources for producing electricity shall be from Solar PV only. Other renewable energy resources such as biogas, biomass or micro hydro may be allowed on case to case basis at the sole discretion of the Commission.
- ✓ Installation types:
 - ❖ on the rooftop of buildings
 - ❖ on the garage, car park or similar buildings



NEM QUOTA RESERVATION FOR PROPERTY DEVELOPERS

for more information

www.seda.gov.my/reportal/nem



NEM for Property Developers



- Developer must be incorporated in Malaysia;
- The NEM application shall be carried out by Registered PV Service Provider (RPVSP)/Electrical Contractor;
- NEM Quota will be allocated based on Developer project status – House and Commercial/Industrial (SME building);
- Possible Joint-Venture project between Developer and Registered PV Investor (RPVI);
- NEM approval holder is under Developer's name.

Other Incentives



➤ **Budget 2020: Green Investment Tax Allowance (GITA) & Green Income Tax Exemption (GITE) until 2023**



➤ **GTFS 2.0 (Green Tech Financing Scheme)**

✓ The Govt will bear up to 2% of the total interest rate of the profit charges by private financial institutions, limited to the first 7 years only.

✓ Financing size up to RM100 mil (US 24mil) per company, financing tenure up to 15 years. <https://www.gtfs.my/>



THANK YOU



Enquiry/Feedback



Live Webinar

INVEST IN THE SUN: WHAT COVID-19 HAS TAUGHT US



MALAYSIAN INVESTMENT DEVELOPMENT AUTHORITY



TAX INCENTIVES FOR GREEN TECHNOLOGY

by:

Zulina Mohamed

**Senior Deputy Director
Green Technology Division**

**28 April 2020
(14.00 ~ 15.30)**

Presentation Outline



MIDA's Role

Investment Policies

Approved Investments

Green Technology Tax Incentive

Promoted Industries

Criteria for Green Technology Tax Incentive

Application Procedure

Criteria for verification by Malaysian Green Technology and Climate Change Centre (MGTC)

Contact us

Core Functions

FIRST POINT OF CONTACT



The principal Malaysian Government agency responsible for the promotion of investments and coordination of industrial development and selected services sectors in the country Established in 1967 under Act of Parliament, 1965.

- ### PROMOTION
- Foreign Direct Investment
 - Domestic Investment
 - Manufacturing & Selected Services

- ### EVALUATION
- Manufacturing Licenses
 - Tax Incentives
 - Expatriate Posts
 - Duty Exemption
 - Principal Hub & selected services

- ### PLANNING
- Planning for industrial development
 - Recommend policies & strategies on industrial promotion and development
 - Formulation of strategies, programmes and initiatives for international economic cooperation

- ### MONITORING
- Licensing & Incentive Compliance and Monitoring
 - Determination of effective date of incentives
 - Issuance of Pioneer Certificate

- ### POST INVESTMENT
- Assist companies in the implementation & operation of their projects
 - Facilitate exchange & coordination among institutions engage in or connected with industrial development
 - Advisory Services

01

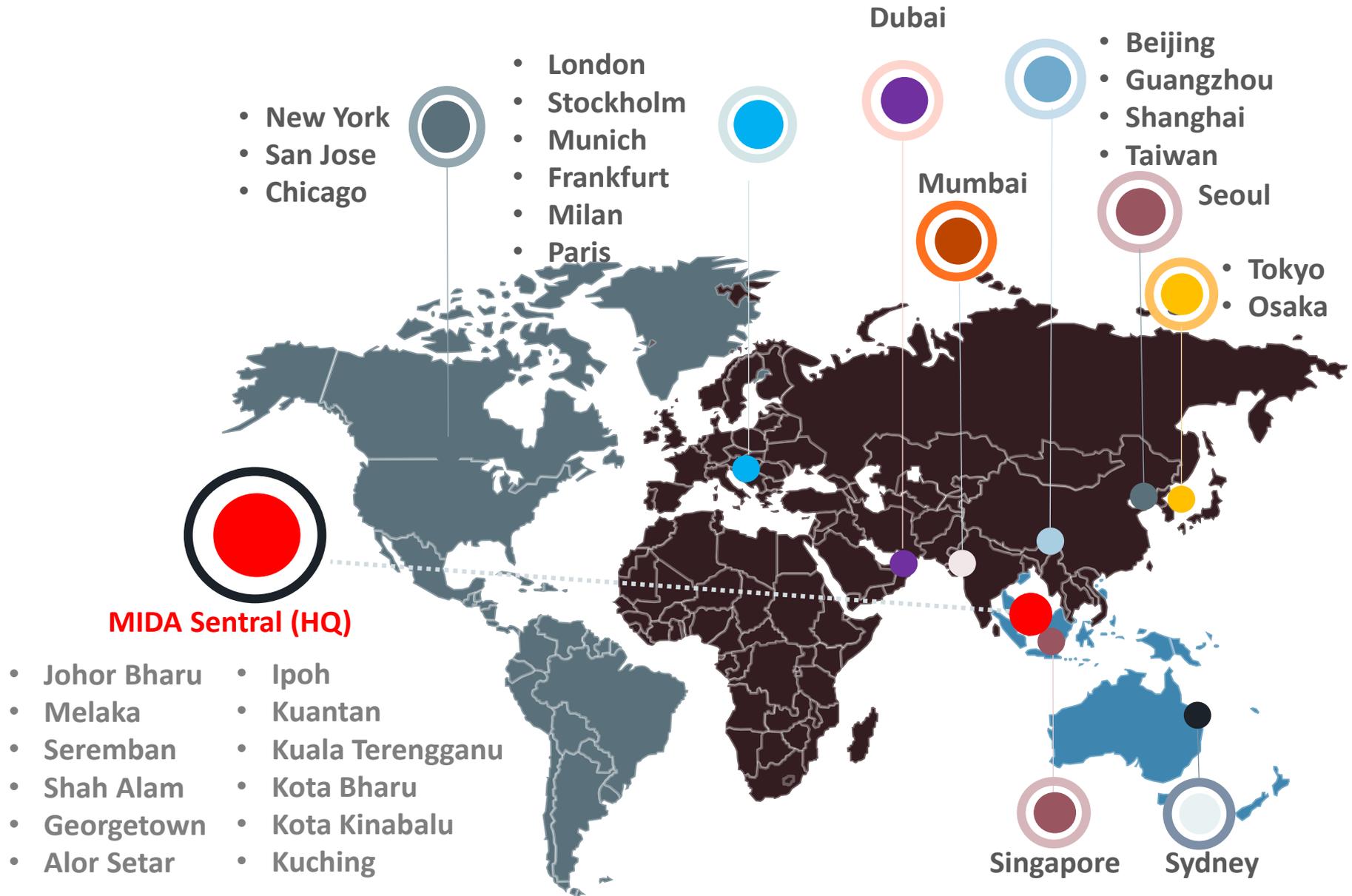
02

03

04

05

20 overseas offices and 12 state offices



MIDA as One Stop Centre

MITI & Agencies

Based in MIDA



Immigration Department



Royal Malaysian Customs



Labour Department



Telekom Malaysia Berhad



TENAGA NASIONAL



Based outside MIDA

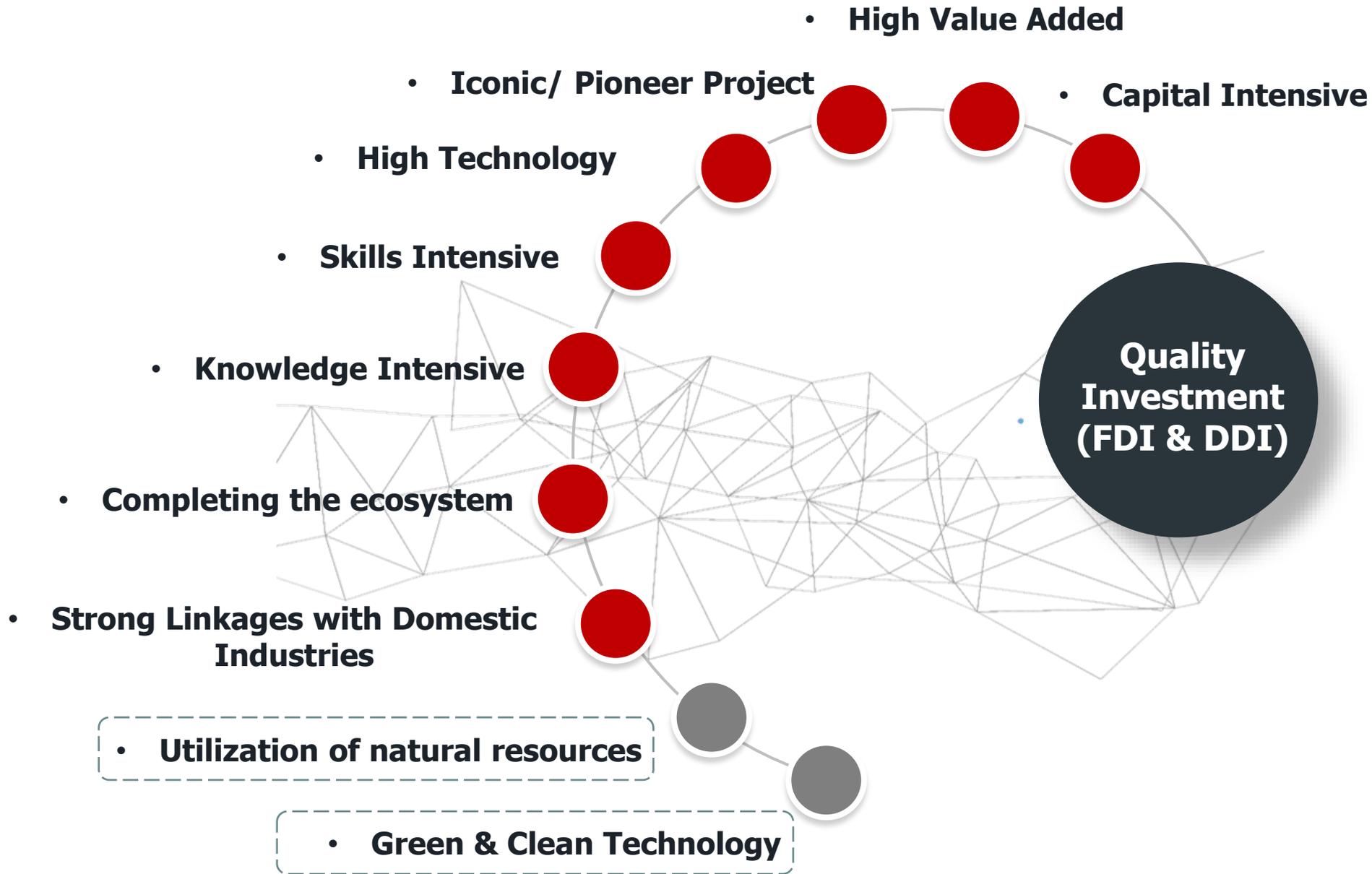


Department of Occupational Safety & Health





INVESTMENT STRATEGIES AND POLICIES



EE Projects Approved

Type of Services	No. of Projects	Total Investment (RM mill)
Own Consumption	246	3,511.2
ESCO	23	492.5
Total	269	4,003.7

RE Projects Approved

RE Projects Based on Sources	No. of Projects	Total Investment (RM mill)
Solar	837	8,153.2
Biomass	127	1,734.6
Biogas	104	4,814.9
Mini Hydro	34	3,736.4
Geothermal	1	506.3
Total	1,103	18,945.4

Source: MIDA

APPROVED INVESTMENTS

Waste Recycling Projects approved as at 31 December 2019 - Top 5

Industry	No of Projects	Total Investment (RM million)
Basic Metal Products	52	2,011.91
Chemical & Chemical Products	51	643.95
Electronics & Electrical Products	22	202.52
Fabricated Metal Products	7	269.37
Food Manufacturing	5	125.35

*Approved Incentives since year 1980 - 2019

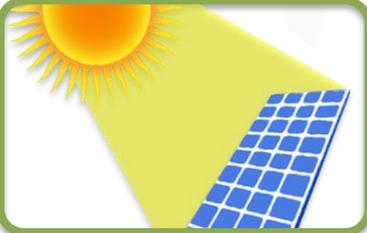
Source: MIDA



GREEN TECHNOLOGY TAX INCENTIVE

- **Introduced in Budget 2014 (Budget announcement on 25 Oct 2013)**
- **Objective - Encourage companies to utilize green technology/ invest green equipment for own use/benefit or business purposes**
- **Cover wider scope of industries : RE, EE, GB, Waste, Support Services**
- **Meet the criteria of Green Technology as defined in the National Green Technology Policy**
- **Application received by 31/12/2020**
- **Extended up to 31/12/2023 under the Budget 2020.**
- **Eligible for developers / owners of projects and service providers for green project**





Energy

- Renewable Energy
- Energy Efficiency



Building

- Green Building
- Green Data Centre



Integrated Waste Management

- Waste recycling
- Waste recovery
- Waste treatment
- Waste Eco Park



Supporting Services

- Certification & verification bodies
- Green Township
- Electric Vehicle Services

GREEN TECHNOLOGY INCENTIVE, INCOME TAX ACT, 1967



Applications received by 31 December 2020 are eligible for this incentive. During the announcement of Budget 2020 that GITA & GITE has been extended to 2023. New guideline yet to be finalised.

	PROJECT (GITA)	SERVICES (GITE)	ASSET
Definition	Investment in assets/ equipment / system to undertake a Green Technology project	Provision of services to Green Technology user / project	Purchase of green technology equipment which has been certified by recognised verification bodies and listed in MyHijau Directory .
Incentive	Investment Tax Allowance (ITA) of 100% of qualifying capital expenditure incurred from the date of application received by MIDA until the 31.12.2020 . (offset against 70% of statutory income)	Income Tax Exemption (ITE) of 100% of statutory income from the YA date of application received (not earlier than 25 October 2013) until the YA 2020 .	Investment Tax Allowance (ITA) of 100% of qualifying capital expenditure incurred from the YA 2013 until the YA 2020 . (offset against 70% of statutory income)
Evaluating Agency	MIDA	MIDA	MGTC

PROJECT

Criteria

- a) Company must be incorporated under the Companies Act, 1965**
- b) New or existing company undertaking green project which do not commence operation in green project earlier than 25 October 2013**
- c) Company must achieve the following green results:**
 - minimises the degradation of the environment or reduces greenhouse emission;**
 - promotes health and improves of environment;**
 - conserves the use of energy and/or other forms of natural resources or promotes the use of renewable energy or recycles waste material resources.**

Main Conditions

- a) Asset verified by MGTC (must be registered in Myhijau Directory or certified by recognised certification bodies by MGTC)**
- b) Annual verification on project by MGTC**

SERVICES

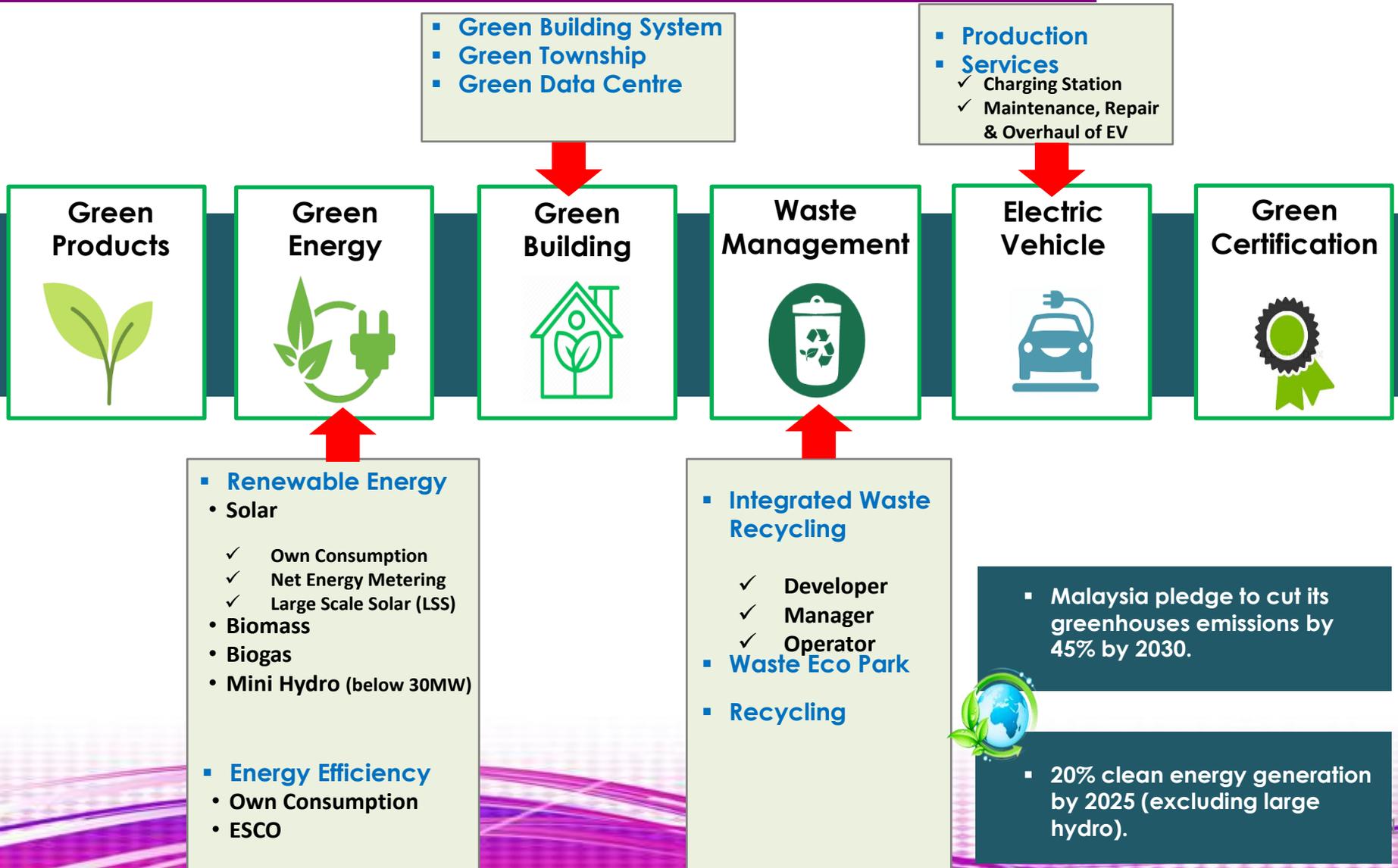
Criteria

- a) Company must be incorporated under the Companies Act, 1965**
- b) Eligible for new or existing co which do not commence operation in green services activities earlier than 25 October 2013**
- c) Company must meet the following green services:**
 - i) Employed at least five (5) full time employees including at least one competent / qualified personnel of company in green technology**
 - ii) Company must have a green policy related to environmental/sustainability; and**
 - iii) 100% of company's income must be derived from green technology services.**

Main Conditions

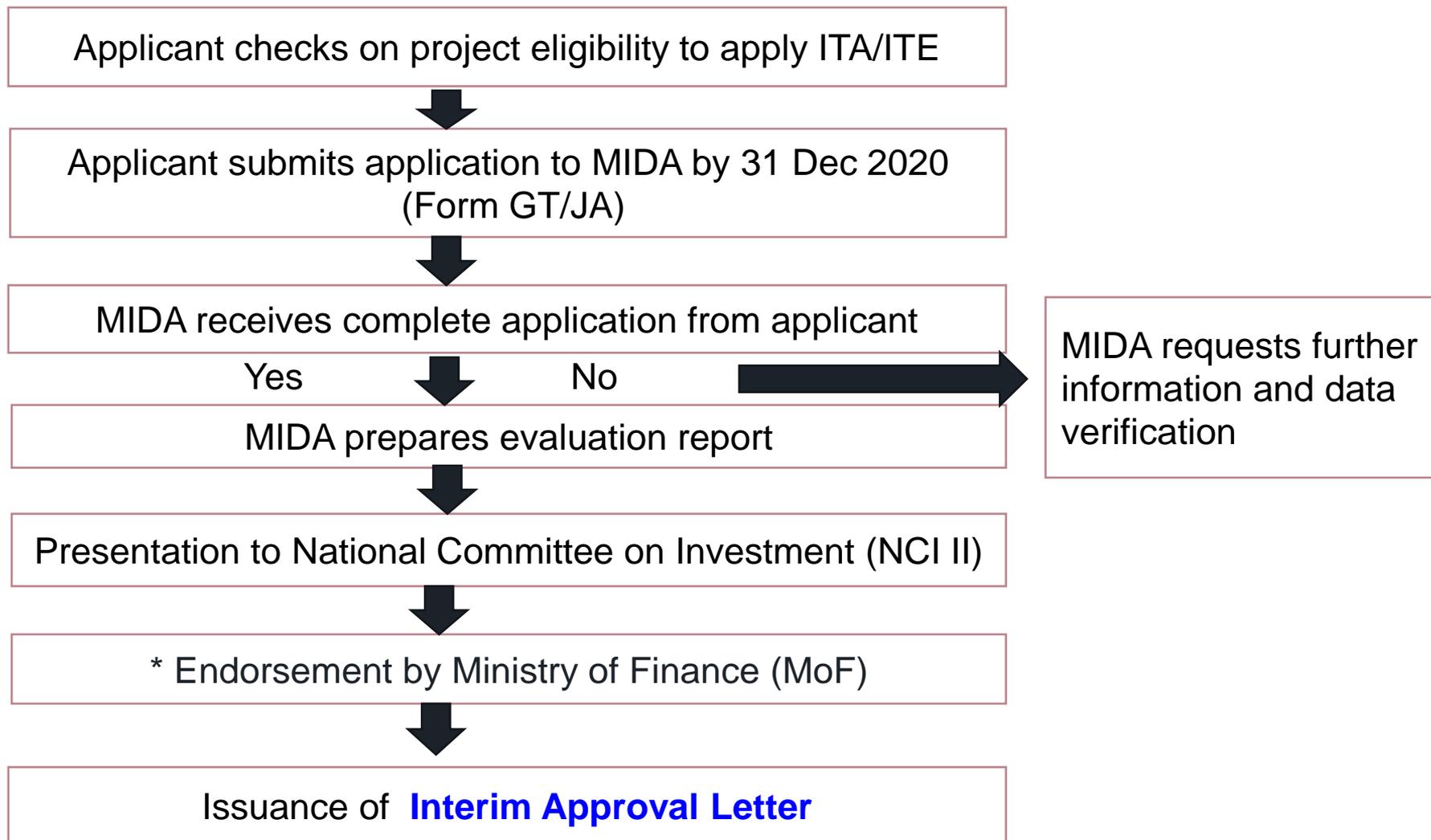
- a) Services registered in Myhijau Services**
- b) Annual verification on services by MGTC**

GREEN PRODUCTS/SERVICES



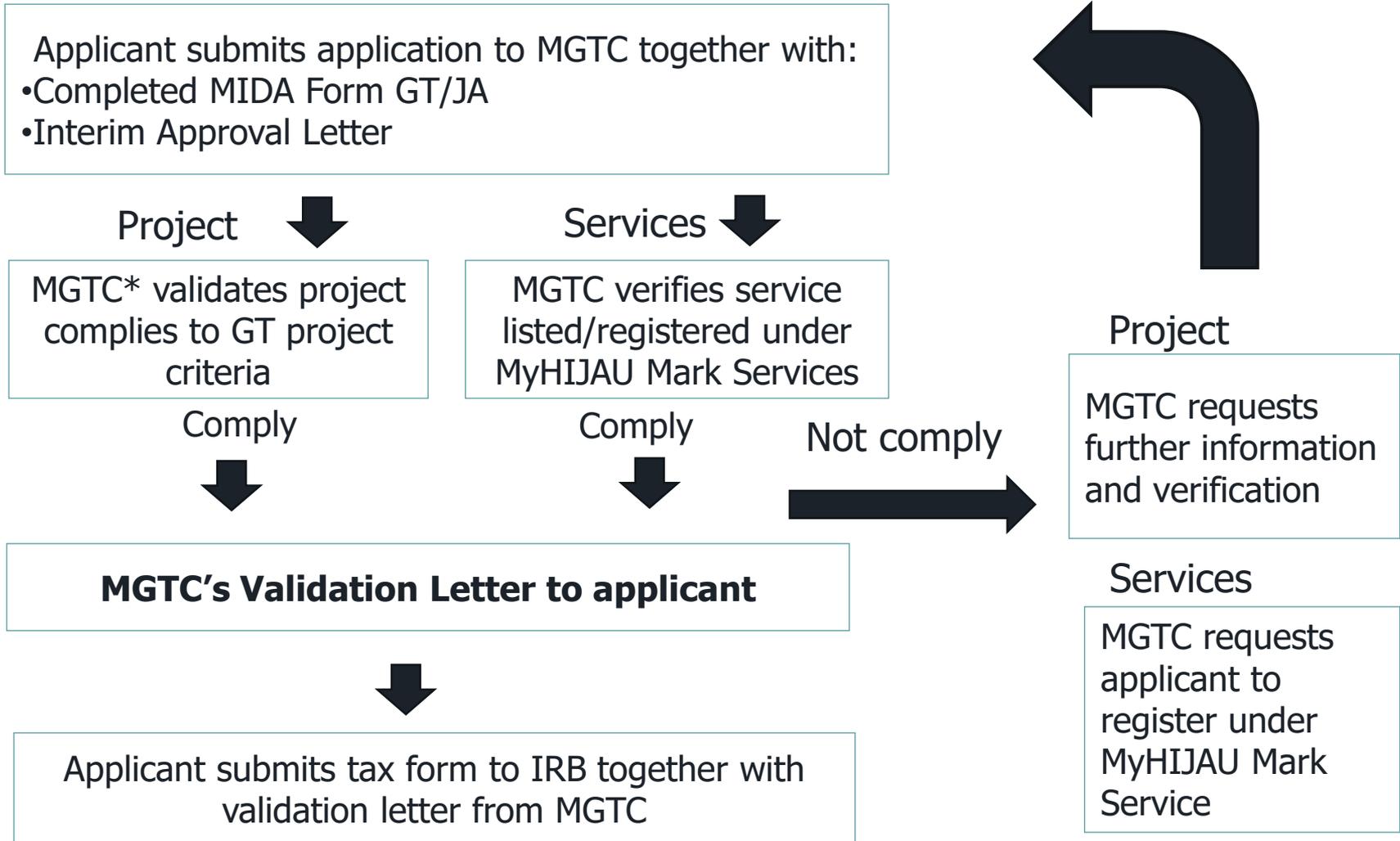
APPLICATION PROCEDURES

Application Procedure



* For GITA Application only

Application Procedure (Con't)



*Malaysian Green Technology and Climate Change Centre (MGTC)

**CRITERIA OF VERIFICATION
OF ASSETS / PROJECT
BY MALAYSIAN GREEN
TECHNOLOGY AND
CLIMATE CHANGE CENTRE
(MGTC)**

MGTC's role:

- To verify the technical requirement including the main equipment / assets as major components for the performance and green impact from the project

Documents required

- Application Form (GT/JA) which submitted to MIDA earlier
- Approval Letter from MIDA
- Completion and Verification Assessment Certificate
- Green Cost Certificate

Criteria

- 60% of main equipment/assets in the GITA Project must be recognised and registered under the MyHIJAU Mark or have product certification that is recognised and accepted by MGTC.
- Project's impacts to the environment i.e. GHG emission reduction, waste reduction, fuel savings, environmental improvement, energy
- consumption savings and water consumption savings

Application procedure – refer to Malaysian Green Technology and Climate Change Centre (MGTC) Website: <http://www.greentechmalaysia.my/>



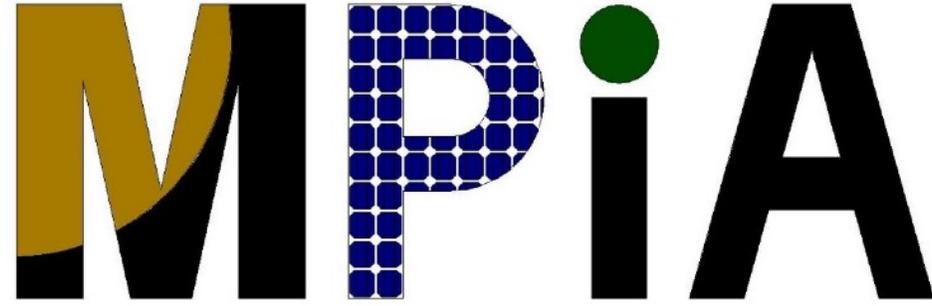
MALAYSIAN INVESTMENT DEVELOPMENT AUTHORITY

Thank You

WAN HASHIMAH WAN SALLEH
Director

Green Technology Division, MIDA
Level 25, MIDA Sentral, No. 5,
Jalan Stesen Sentral 5
KL Sentral, 50470 Kuala Lumpur
Tel: 03- 2267 3540 / 03 -2267 6648
Fax: 03- 2274 8470
Email: whashimah@mida.gov.my
<https://iservices.mida.gov.my/iservices/>
<https://incentives.mida.gov.my>





MALAYSIAN PHOTOVOLTAIC INDUSTRY ASSOCIATION

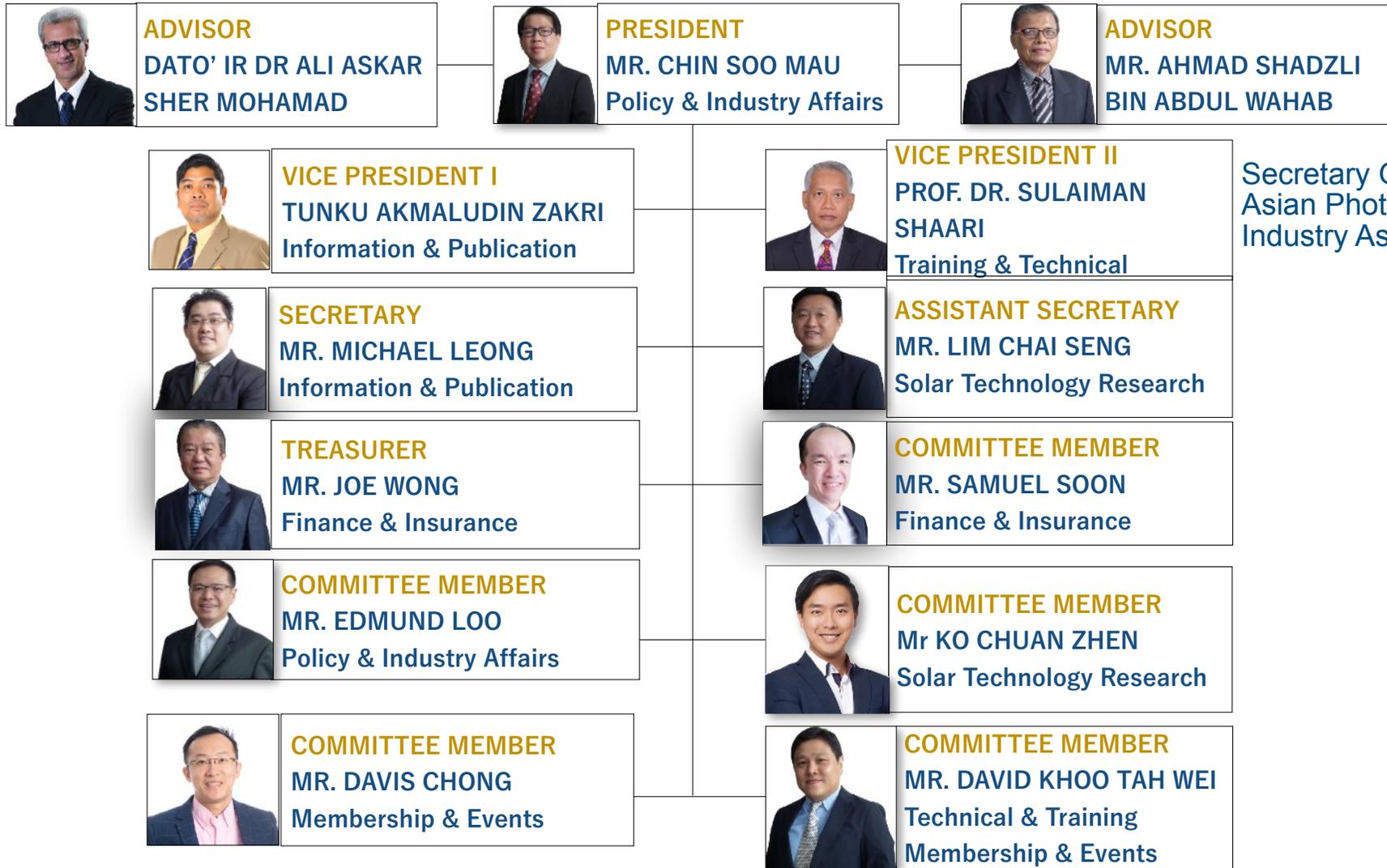
Malaysia Solar PV Rooftop Market

MR LIONEL YAP
HEAD OF SECRETARIAT MPIA

Malaysian Photovoltaic Industry Association (MPIA)
SW-03-08, Cova Square, Jalan Teknologi,
Kota Damansara, PJU 5,
47810 Petaling Jaya,
Selangor Darul Ehsan, Malaysia

Tel: +603 – 6151 7227
Email: secretary@mpia.org.my
Website: www.mpia.org.my

Committee Members 2019-2020





MPIA Members



MPIA Members

1. **FULL MEMBERSHIP :**

114

Representing nearly the **entire PV supply chain**

2. **HONORARY :**

3

Members of **Academia**

3. **INDIVIDUAL :**

1

Feed In Tariff Holder

TOTAL : 118 Members

Purpose : “PV for All”

1. **POLICY :**

20% by 2025

2. **PROGRAMME :**

Current - **NEM** / SELCO / LSS

Horizon - P2P / TPA / NEDA (ETOU)

3. **“POCKET” :**

REPPA / Leasing / Out Purchase

Government's RE direction

Increase Renewable Energy Capacity

- Biogas
- Biomass
- Biofuel
- Mini hydro
- Solar PV

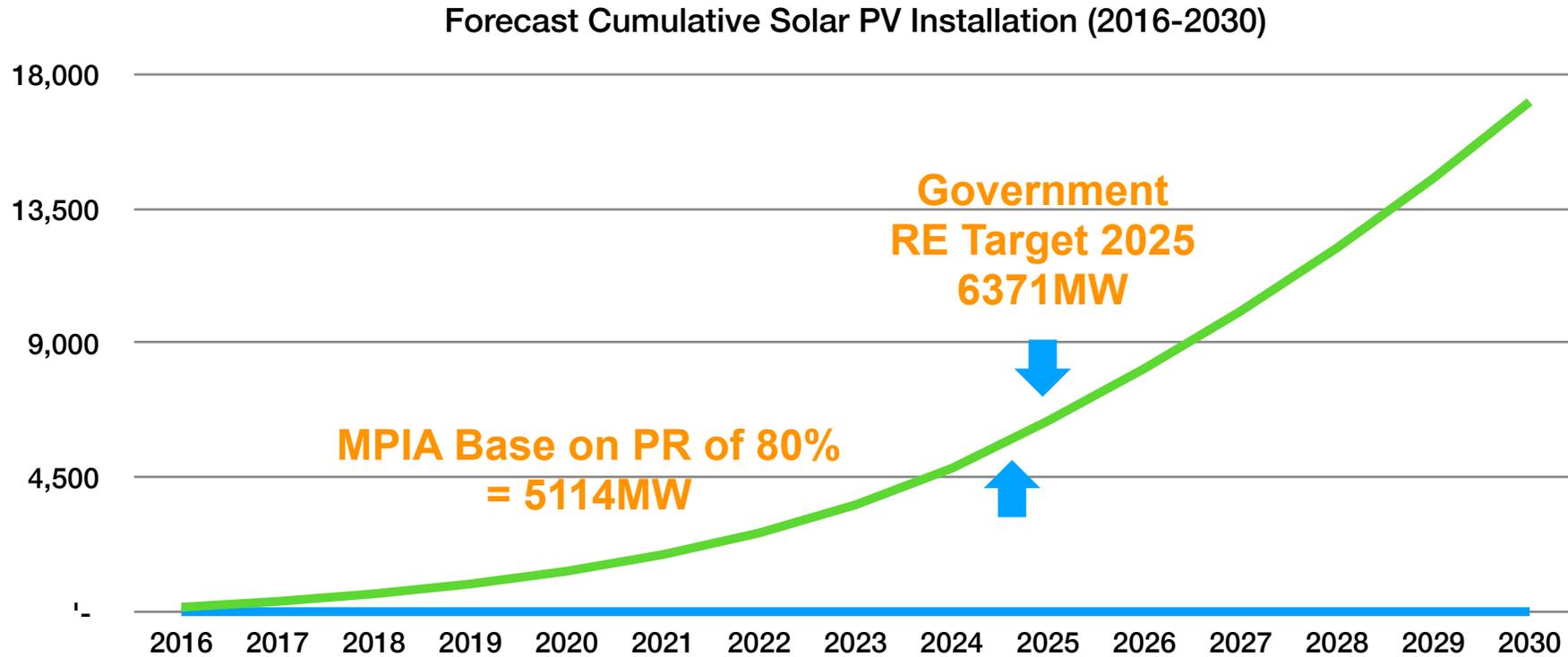
2%

BY 2025

20%

Malaysian PV Industry target

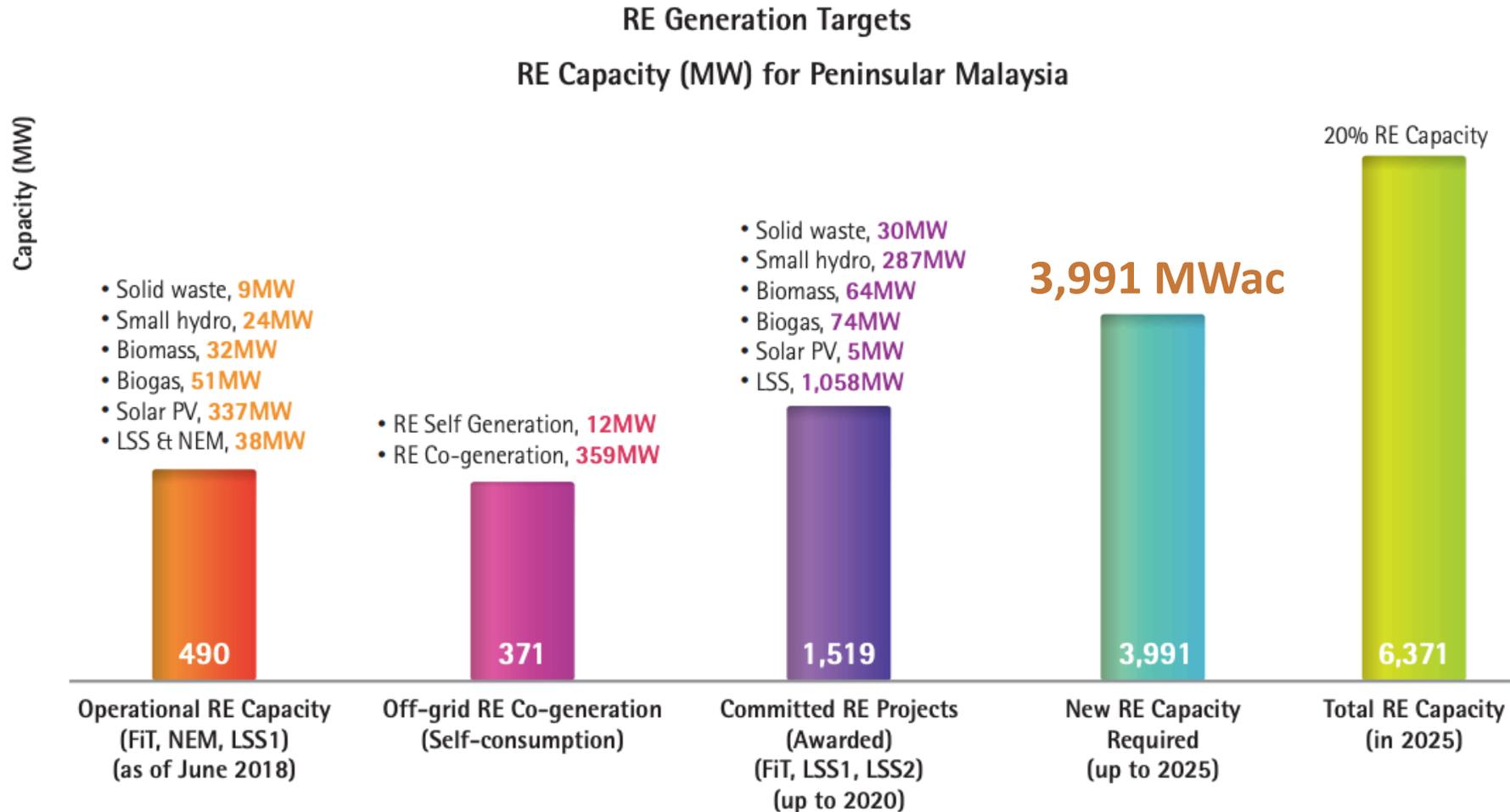
MPIA's PV Installation Target 2030 - (11.4% of Energy Mix)



Note : Projection by MPIA charted in 2016

Peninsula Malaysia Electricity Industry Outlook 2019

The 20% RE target by 2025 focuses on increasing solar energy generation capacity, and along the way create new business opportunities for big companies, SMEs, microbusinesses and households.



st.gov.my

Peninsula Malaysia Electricity Supply Industry Outlook 2019

Malaysian Rooftops

- 3,200,000 Residential houses
- **450,000 Shop houses**
- **91,000 Stand alone factories**
- **90,000 Terrace factories**
- **21,000 Stand-alone factories**
- **1,000 Shopping malls**
- **5,000 Government offices / buildings**

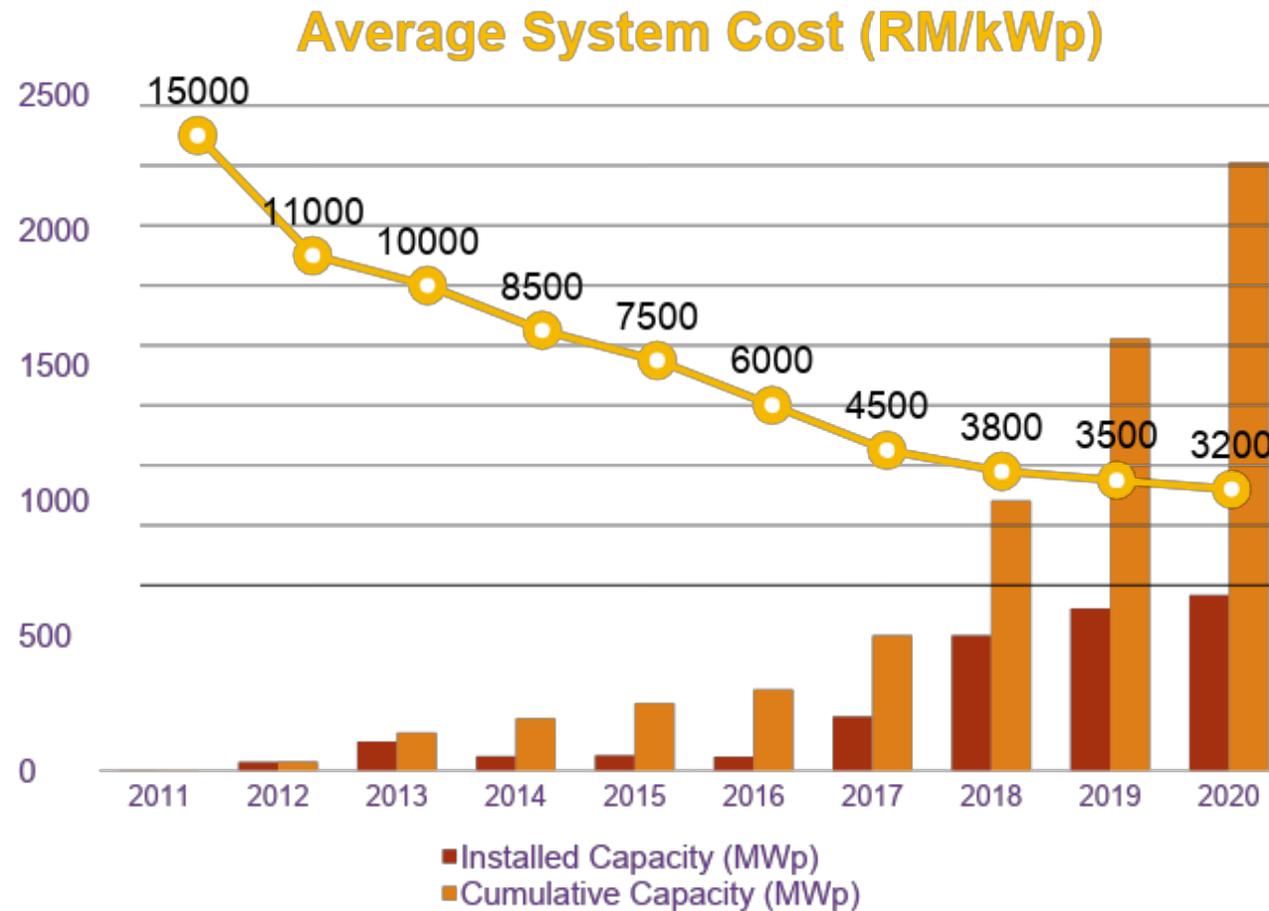
**Less than 1% is
with a Solar PV
Installation!**

GOVERNMENT TAX INCENTIVE

(Up to 48% Reduction in System Cost)

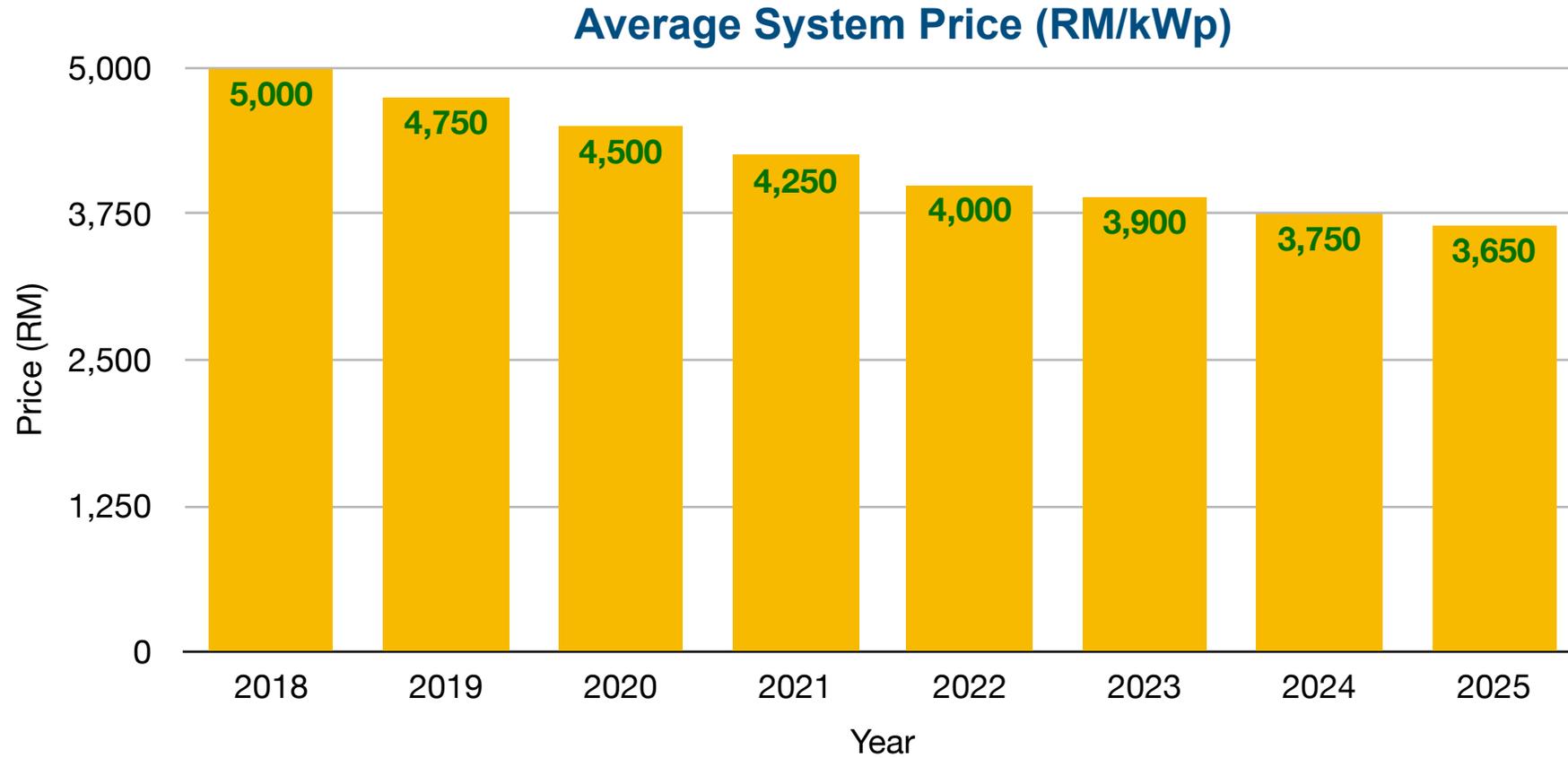


Solar PV Pricing Trend



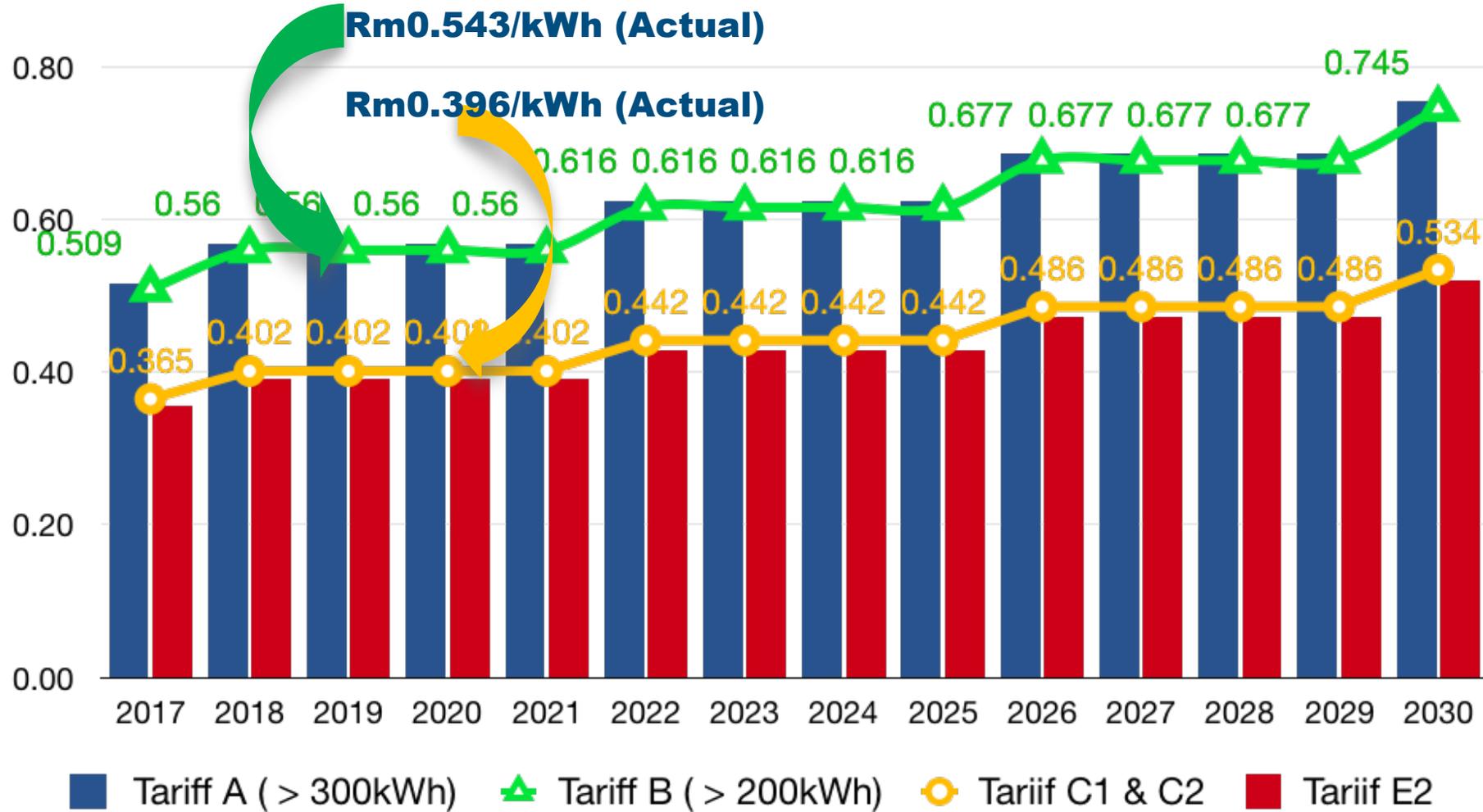
Forecast Rooftop Solar PV System Price for NEM/SELCO (2018 – 2025)

System Capacity : 10 – 30kWp (Residential & Small C&I)



**This is a generalised table to provide initial considerations for common rooftop installations. Please contact your nearest MPIA Service Provider for a more in depth discussion of your options.*

Forecast Tariff in Future (2017 - 2030)



Note : Projection by MPIA charted in 2016

TNB billing tariff: Tariff D – Industrial

Building type: Industrial building

BEFORE

Original Electricity cost :

RM55,651.59



TERIMA KASIH
 Kerana
 Membayar Dalam
 Tempoh 30 Hari
 TNB Careline
 1-300-88-5454

Jumlah Perlu Dibayar		Tarikh Bil : 03.09.2018		Bil : LPC NEM	
RM 55,651.59					
Tunggakan	RM 0.00	Amaun	Bayar Sebelum	Untuk maklumat bil dan bayaran terdahulu, sila layari- http://www.tnbn.com.my atau hubungi Hotline TNB 1 300 88 5454	
Caj Semasa	RM 55,651.57		Terima Kasih	Untuk gangguan bekalan atau kerosakan lampu jalan TNB sila hubungi melalui telefon/SMS: 15354	
Penggenapan	RM 0.02			Jenis Bacaan : Bacaan Sebenar	
Jumlah Bil	RM 55,651.59	03.10.2018		Tempoh Bil : 26.07.2018 - 31.08.2018 (37 Hari)	
Bil Terdahulu (28.07.2018)	RM 76,897.60	Bayaran Akhir (30.08.2018)	RM 37,244.85	Tarif : D:Perindustrian	
Blok Tarif (kWh/kW)		Kegunaan (kWh/kW)	Kadar(RM)	Amaun(RM)	Untuk pertanyaan, sila hubungi:
200		247.00	0.3800	93.86	TNB PELABUHAN KLANG ARAS BAWAH MENARA BBT 1, LBH BATU NILAM 1,BDR BUKIT TINGGI 41200 KLANG SELANGOR
>200		120,360.00	0.4410	53,078.76	Tel : 03-33253050 Fax : 03-33253051
Jumlah		120,607.00		53,172.62	KWTBB - Kumpulan Wang Tenaga Boleh Baharu
Keterangan		Tidak Kena GST	Kena GST	Jumlah	ICPT - Pelepasan Imbangan Kos Penajaan
Kegunaan kWh (kWh Import)	kWh	120,607.00	0.00	120,607.00	Maklumat Tambahan: Angkadar Kuasa : 0.92 Faktor Beban : 0.26
Kegunaan RM	RM	53,172.62	0.00	53,172.62	Bayaran melalui cek sah setelah penjelasan cek oleh bank
ICPT (RM0.0135)	RM	1,628.19	0.00	1,628.19	Baki NEM : RM0.00
Kegunaan Bulan Semasa	RM	54,800.81	0.00	54,800.81	
KWTBB (1.6%)	RM			850.76	
Caj Semasa (Import)	RM			55,651.57	
Muatan Tertinggi Dicatat		955.00 kW			
No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
		Dahulu	Semasa		
M 716513340	1.00000	0.00	9.00	9.00	kWh (E)
M 716513340	1.00000	0.00	120,607.00	120,607.00	kWh (I)
M 716513340	1.00000	0.00	524.00	524.00	kW
M 716513340	1.00000	0.00	30,520.00	30,520.00	kVArh

Savings
RM23,770.49/mth

AFTER

Reduced Electricity cost :

RM31,881.10



TERIMA KASIH
 Kerana
 Membayar Dalam
 Tempoh 30 Hari
 TNB Careline
 1-300-88-5454

Jumlah Perlu Dibayar		Tarikh Bil : 03.09.2018		Bil : LPC NEM	
RM 31,881.10					
Tunggakan	RM 0.00	Amaun	Bayar Sebelum	Untuk maklumat bil dan bayaran terdahulu, sila layari- http://www.tnbn.com.my atau hubungi Hotline TNB 1 300 88 5454	
Caj Semasa	RM 31,881.12		Terima Kasih	Untuk gangguan bekalan atau kerosakan lampu jalan TNB sila hubungi melalui telefon/SMS: 15354	
Penggenapan	RM 0.02			Jenis Bacaan : Bacaan Sebenar	
Jumlah Bil	RM 31,881.10	09.12.2018		Tempoh Bil : 01.10.2018 - 31.10.2018 (31 Hari)	
Bil Terdahulu (10.10.2018)	RM 41,353.66	Bayaran Akhir (31.10.2018)	RM 41,353.66	Tarif : D:Perindustrian	
Blok Tarif (kWh/kW)		Kegunaan (kWh/kW)	Kadar(RM)	Amaun(RM)	Untuk pertanyaan, sila hubungi:
200		200.00	0.3800	76.00	TNB PELABUHAN KLANG ARAS BAWAH MENARA BBT 1, LBH BATU NILAM 1,BDR BUKIT TINGGI 41200 KLANG SELANGOR
>200		68,900.00	0.4410	30,384.90	Tel : 03-33253050 Fax : 03-33253051
Jumlah		69,100.00		30,460.90	KWTBB - Kumpulan Wang Tenaga Boleh Baharu
Keterangan		Tidak Kena ST	Kena ST	Jumlah	ICPT - Pelepasan Imbangan Kos Penajaan
Kegunaan kWh (kWh Import)	kWh	69,100.00	0.00	69,100.00	Maklumat Tambahan: Angkadar Kuasa : 0.87 Faktor Beban : 0.36
Kegunaan RM	RM	30,460.90	0.00	30,460.90	Bayaran melalui cek sah setelah penjelasan cek oleh bank
ICPT (RM0.0135)	RM	932.85	0.00	932.85	Baki NEM : RM0.00
Kegunaan Bulan Semasa	RM	31,393.75	0.00	31,393.75	
KWTBB (1.6%)	RM			487.37	
Caj Semasa (Import)	RM			31,881.12	
kWh Eksport: 0.00 @ RM0.310	RM			0.00	
Caj Semasa (Eksport)	RM			0.00	
Jumlah Caj Bersih	RM			31,881.12	
Muatan Tertinggi Dicatat		955.00 kW			
No. Meter	Faktor Meter	Bacaan Meter		Kegunaan	Unit
		Dahulu	Semasa		
M 716513340	1.00000	418.00	418.00	0.00	kWh (E)
M 716513340	1.00000	210,457.90	279,557.00	69,100.00	kWh (I)
M 716513340	1.00000	802.00	1,058.00	256.00	kW
M 716513340	1.00000	89,260.00	129,150.00	39,890.00	kVArh

Solar Investment & Cash Flow (Tariff B) - Penang , Kedah & Perlis

Specifications & Rates		
System Peak Power	250.00	kWp
System Yield	1,500	kWH/kWp p.a
System Output	375,000	kWH p.a
Cost per kWp	RM3,500	/kWp
System Cost	RM875,000	
Derating - Year 1	3.0%	
Derating - Year 2 onwards	0.7%	
Tariff assumption (RM/kWh)	0.5090	
ICPT (RM/kWh)	0.0255	

Tax Incentives		
RE Fund	1.6%	Tariff Savings
Coporate Tax	24.0%	
Investment Tax Allow (ITA)	24.0%	
Cap Allow (CA) - Year 2	34.0%	
Cap Allow (CA) - Year 3 to	14.0%	
Cap Allow (CA) - Year 7	10.0%	

Tariff B
+VE CASHFLOW :
YEAR 3+

Yr	Savings Overview							
	System Output	Tariff Savings	RE Fund	Total Saving	ITA	CA	Total Saving	Cash Flow
	kWh'000	RM'000	RM'000	RM'000	RM'000	RM'000	RM'000	RM'000
0								(875)
1	364	194	3	198			198	(677)
2	361	193	3	196	210	71	478	(200)
3	359	192	3	195		29	224	24
4	356	190	3	193		29	223	247
5	354	189	3	192		29	221	469
6	351	188	3	191		29	220	689
7	349	186	3	189		21	210	899
8	346	185	3	188			188	1,087
9	344	184	3	187			187	1,274
10	341	183	3	185			185	1,459
11	339	181	3	184			184	1,643
12	337	180	3	183			183	1,826
13	334	179	3	182			182	2,008
14	332	177	3	180			180	2,188
15	330	176	3	179			179	2,367
16	327	175	3	178			178	2,545
17	325	174	3	177			177	2,721
18	323	173	3	175			175	2,897
19	321	171	3	174			174	3,071
20	318	170	3	173			173	3,244
21	316	169	3	172			172	3,415
22	314	168	3	170			170	3,586
23	312	167	3	169			169	3,755
24	309	165	3	168			168	3,923
25	307	164	3	167			167	4,090
Total		4,473	72	4,545	210	210	4,965	9,055

Solar Investment & Cash Flow (Tariff D) - Penang , Kedah & Perlis

Specifications & Rates		
System Peak Power	250.00	kWp
System Yield	1,500	kWh/kWp p.a
System Output	375,000	kWh p.a
Cost per kWp	RM3,500	/kWp
System Cost	RM875,000	
Derating - Year 1	3.0%	
Derating - Year 2 onwards	0.7%	
Tariff assumption (RM/kWh)	0.4410	
ICPT (RM/kWh)	0.0255	

Tax Incentives		
RE Fund	1.6%	Tariff Savings
Corporate Tax	24.0%	
Investment Tax Allow (ITA)	24.0%	
Cap Allow (CA) - Year 2	34.0%	
Cap Allow (CA) - Year 3 to	14.0%	
Cap Allow (CA) - Year 7	10.0%	

**Tariff D
+VE CASHFLOW :
YEAR 4+**

Yr	Savings Overview							
	System Output kWh'000	Tariff Savings RM'000	RE Fund RM'000	Total Saving RM'000	ITA RM'000	CA RM'000	Total Saving RM'000	Cash Flow RM'000
0								(875)
1	364	170	3	172			172	(703)
2	361	169	3	171	210	71	453	(250)
3	359	167	3	170		29	199	(51)
4	356	166	3	169		29	198	148
5	354	165	3	168		29	197	345
6	351	164	3	166		29	196	540
7	349	163	3	165		21	186	727
8	346	162	3	164			164	891
9	344	160	3	163			163	1,054
10	341	159	3	162			162	1,216
11	339	158	3	161			161	1,376
12	337	157	3	160			160	1,536
13	334	156	2	158			158	1,694
14	332	155	2	157			157	1,852
15	330	154	2	156			156	2,008
16	327	153	2	155			155	2,163
17	325	152	2	154			154	2,317
18	323	151	2	153			153	2,470
19	321	150	2	152			152	2,622
20	318	148	2	151			151	2,773
21	316	147	2	150			150	2,923
22	314	146	2	149			149	3,072
23	312	145	2	148			148	3,219
24	309	144	2	147			147	3,366
25	307	143	2	146			146	3,512
Total		3,904	62	3,967	210	210	4,387	7,899

Solar Investment & Cash Flow (Tariff C1& C2) - Penang , Kedah & Perlis

Specifications & Rates		
System Peak Power	700.00	kWp
System Yield	1,500	kWH/kWp p.a
System Output	1,050,000	kWH p.a
Cost per kWp	RM3,350	/kWp
System Cost	RM2,345,000	
Derating - Year 1	3.0%	
Derating - Year 2 onwards	0.7%	
Tariff assumption (RM/kWh)	0.3650	
ICPT (RM/kWh)	0.0255	

Tax Incentives		
RE Fund	1.6%	Tariff Savings
Corporate Tax	24.0%	
Investment Tax Allow (ITA)	24.0%	
Cap Allow (CA) - Year 2	34.0%	
Cap Allow (CA) - Year 3 to	14.0%	
Cap Allow (CA) - Year 7	10.0%	

**Tariff C1&C2
+VE CASHFLOW :
YEAR 4+**

Yr	Savings Overview							
	System Output	Tariff Savings	RE Fund	Total Saving	ITA	CA	Total Saving	Cash Flow
	kWh'000	RM'000	RM'000	RM'000	RM'000	RM'000	RM'000	RM'000
0								(2,345)
1	1,019	398	6	404			404	(1,941)
2	1,011	395	6	401	563	191	1,155	(786)
3	1,004	392	6	398		79	477	(308)
4	997	389	6	396		79	474	166
5	990	387	6	393		79	472	638
6	983	384	6	390		79	469	1,107
7	976	381	6	387		56	444	1,551
8	970	379	6	385			385	1,935
9	963	376	6	382			382	2,317
10	956	373	6	379			379	2,697
11	949	371	6	377			377	3,073
12	943	368	6	374			374	3,447
13	936	366	6	371			371	3,819
14	930	363	6	369			369	4,187
15	923	360	6	366			366	4,554
16	917	358	6	364			364	4,917
17	910	355	6	361			361	5,279
18	904	353	6	359			359	5,637
19	898	350	6	356			356	5,993
20	891	348	6	354			354	6,347
21	885	346	6	351			351	6,698
22	879	343	5	349			349	7,047
23	873	341	5	346			346	7,393
24	867	338	5	344			344	7,737
25	860	336	5	341			341	8,078
Total		9,151	146	9,297	563	563	10,423	18,501

Solar Investment & Cash Flow (Tariff E2) - Penang , Kedah & Perlis

Specifications & Rates		
System Peak Power	1,000.00	kWp
System Yield	1,500	kWH/kWp p.a
System Output	1,500,000	kWH p.a
Cost per kWp	RM3,300	/kWp
System Cost	RM3,300,000	
Derating - Year 1	3.0%	
Derating - Year 2 onwards	0.7%	
Tariff assumption (RM/kWh)	0.3550	
ICPT (RM/kWh)	0.0255	

Tax Incentives		
RE Fund	1.6%	Tariff Savings
Corporate Tax	24.0%	
Investment Tax Allow (ITA)	24.0%	
Cap Allow (CA) - Year 2	34.0%	
Cap Allow (CA) - Year 3 to	14.0%	
Cap Allow (CA) - Year 7	10.0%	

**Tariff E2
+VE CASHFLOW :
YEAR 4+**

Yr	Savings Overview							
	System Output kWh'000	Tariff Savings RM'000	RE Fund RM'000	Total Saving RM'000	ITA RM'000	CA RM'000	Total Saving RM'000	Cash Flow RM'000
0								(3,300)
1	1,455	554	9	562			562	(2,738)
2	1,445	550	9	559	792	269	1,620	(1,118)
3	1,435	546	9	555		111	666	(452)
4	1,425	542	9	551		111	662	209
5	1,415	538	9	547		111	658	867
6	1,405	535	9	543		111	654	1,521
7	1,395	531	8	539		79	618	2,140
8	1,385	527	8	535			535	2,675
9	1,375	523	8	532			532	3,207
10	1,366	520	8	528			528	3,735
11	1,356	516	8	524			524	4,259
12	1,347	512	8	521			521	4,780
13	1,337	509	8	517			517	5,297
14	1,328	505	8	513			513	5,810
15	1,319	502	8	510			510	6,320
16	1,309	498	8	506			506	6,826
17	1,300	495	8	503			503	7,329
18	1,291	491	8	499			499	7,828
19	1,282	488	8	496			496	8,324
20	1,273	484	8	492			492	8,816
21	1,264	481	8	489			489	9,305
22	1,255	478	8	485			485	9,790
23	1,247	474	8	482			482	10,272
24	1,238	471	8	479			479	10,751
25	1,229	468	7	475			475	11,226
Total		12,738	204	12,942	792	792	14,526	25,752

Estimated return of investment (ROI)

- Klang Valley, Taiping, Perlis,
Kedah & Penang areas

Category	Capacity (KWp)	Years with GITA
Tariff B	250	3-4+
Tariff C1 & C2	700	4-5+
Tariff D	250	4-5+
Tariff E2	1,000	4-5+

**This is a generalised table to provide initial considerations for common rooftop installations. Please contact your nearest MPIA Service Provider for a more in depth discussion of your options.*

Current Solar PV Project Business Model

- **Outright Purchase**
 - > Client pays the system by project progress
 - > Best choice for Value and R.O.I.
- **Solar Leasing**
 - > 0% - XX% of Capital Outlay, Balance on Lease basis
 - > Fixed Monthly Payment for XX months
- **Solar Power Purchase Agreement (SPPA)**
 - > Client buys back Solar Energy at lower rate
 - > Discounted Tariff Type
 - > Fixed Tariff Type
 - > Commonly 20 – 25 years Contract/Commitment basis

- **Continuing Tax Incentives**
- **Competitive System Prices**
- **Proven Record of Success**
- **Positive Company Image**

KEY TAKE AWAYS

- NEM quota **311.92 MW ONLY** as of April 2020
- **ONE to ONE** tariff offset, now up to 31 December 2020
- **MIDA ITA** up to 31 December 2023



THANK YOU!

Introduction to

***SUPPLY AGREEMENT WITH
RENEWABLE ENERGY***

(SARE)

Webinar Session

28 th April 2020

Information for Registered PV Investor, Bankers and Prosumers

V 1.2
28TH April 2020

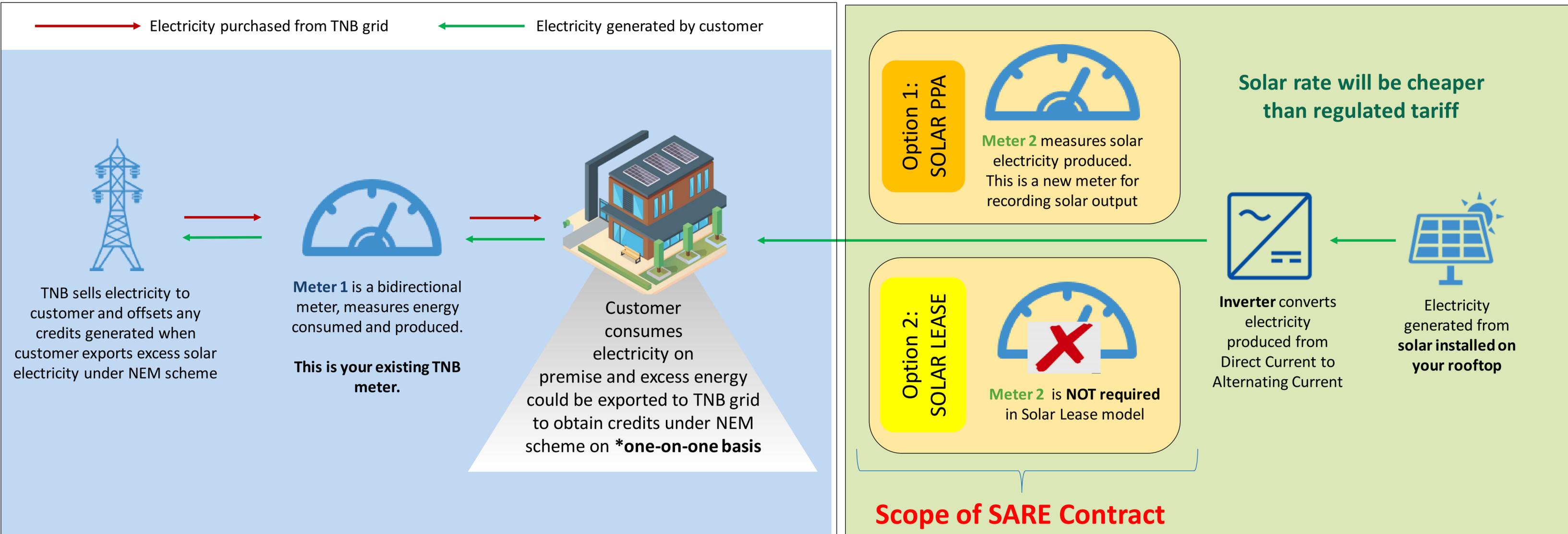


***We have a
brighter idea!!***

Why don't we generate clean
electricity by installing solar PV right
on your rooftops at **ZERO CAPEX**?

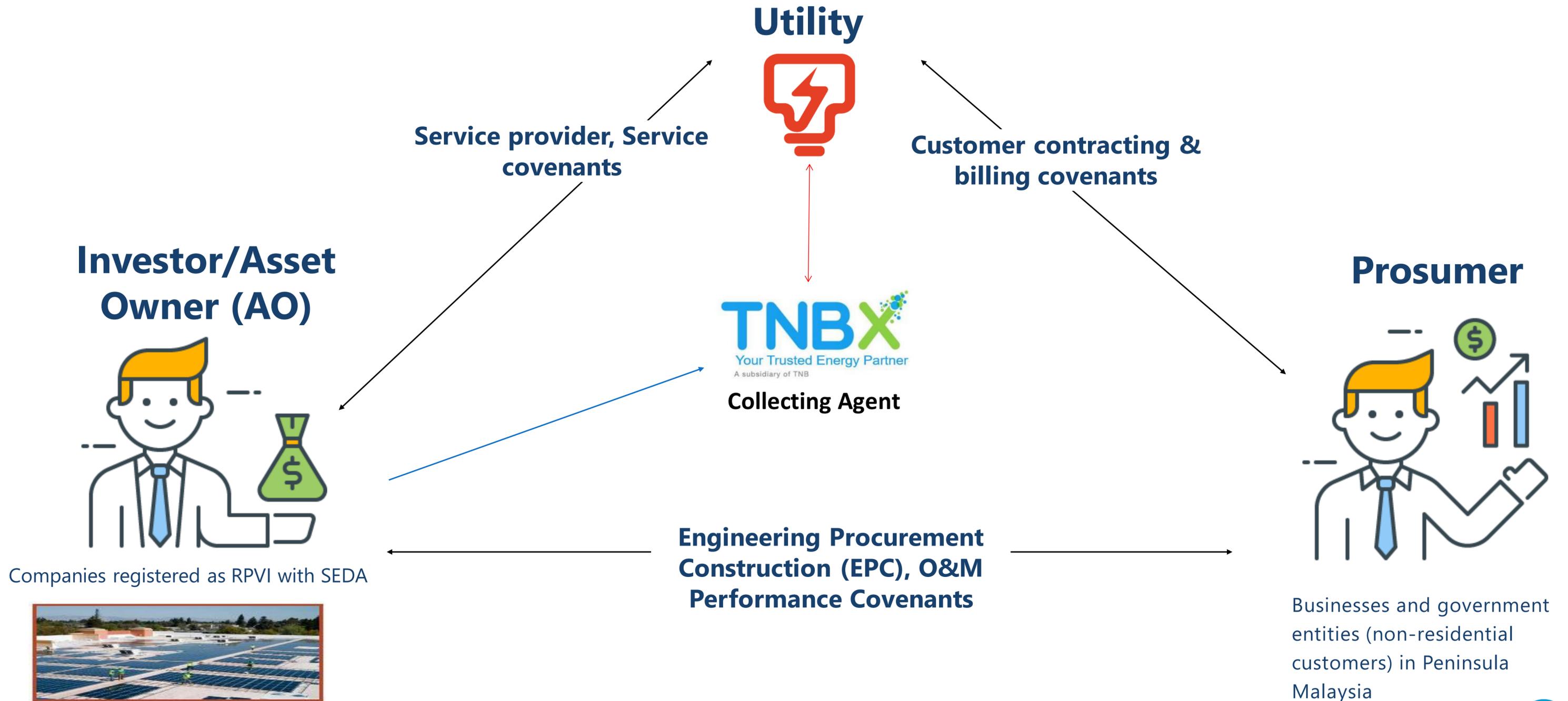
Here is how *it* works..

Here is how you can have **Solar Solution** with **ZERO CAPEX** through Solar PPA (Option 1&2) or Solar Lease (Option 3&4)..



- Your **solar solution** will be funded by **Investor/Asset Owner/ Banker** . Solar energy will be generated and sold to prosumer at an agreed **solar rate per kWh generated** (Option 1& 2) or via a **fixed lease payment** (Option 3 & 4) throughout the **Supply Agreement with Renewable Energy (SARE)** contract period. Prosumer can then sell excess energy to TNB under the Net Energy Metering (NEM) scheme. Through **SARE**, both solar billing and electricity billing will be under 1 bill from TNB.

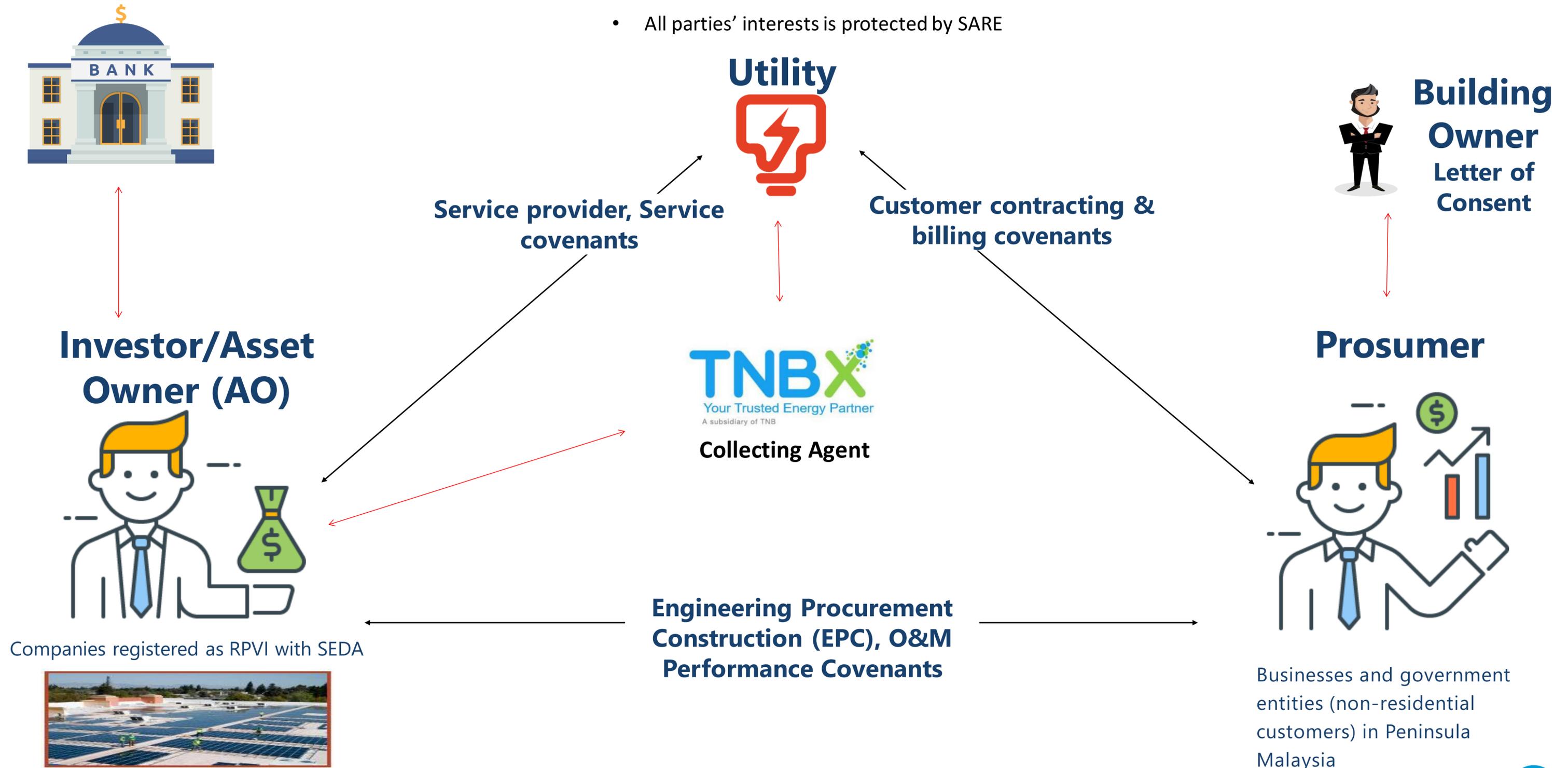
- All parties' interests is protected by SARE



Business Proposal

Note : TNB in all models acts only as a billing and collection agent (with approval from ST under the Electricity Supply Act 1990)

- All parties' interests is protected by SARE



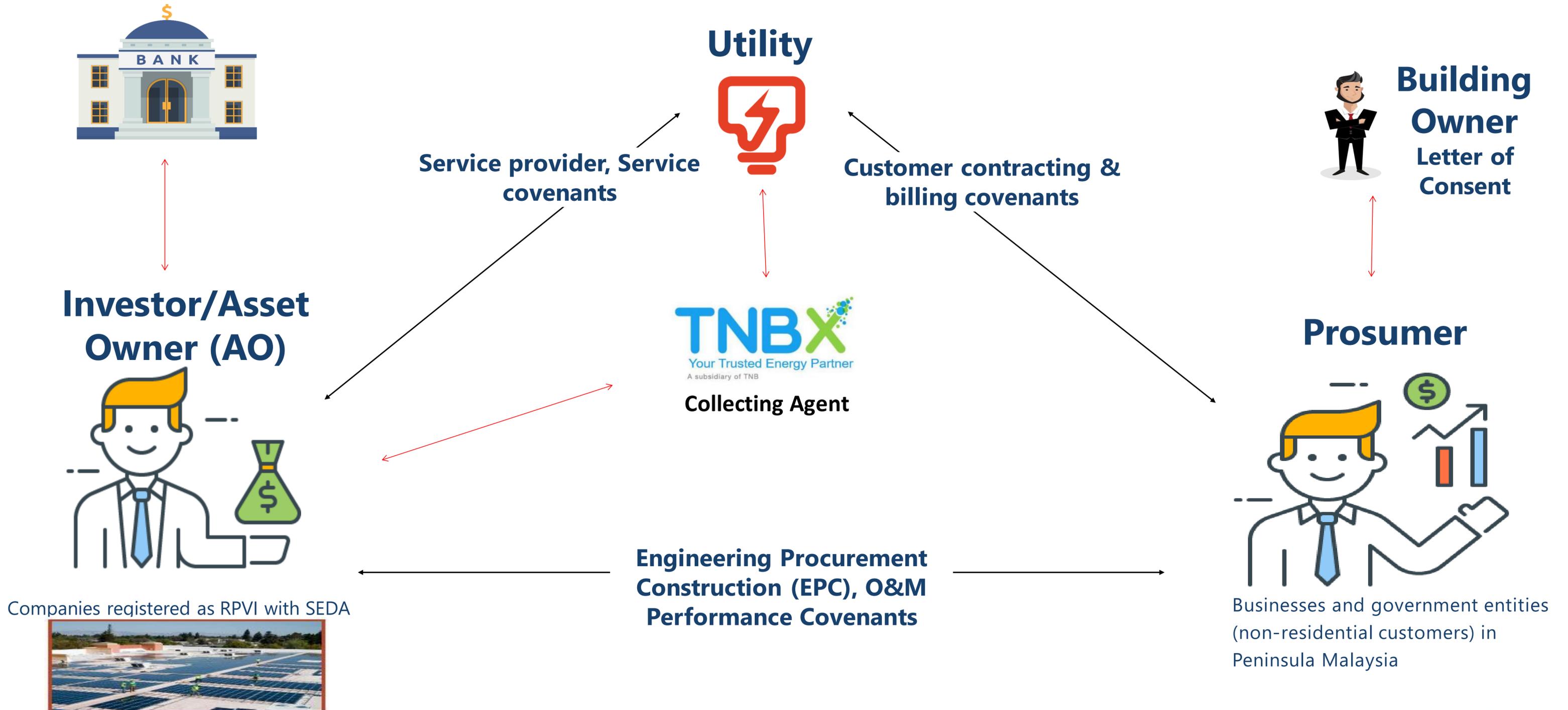
Companies registered as RPVI with SEDA



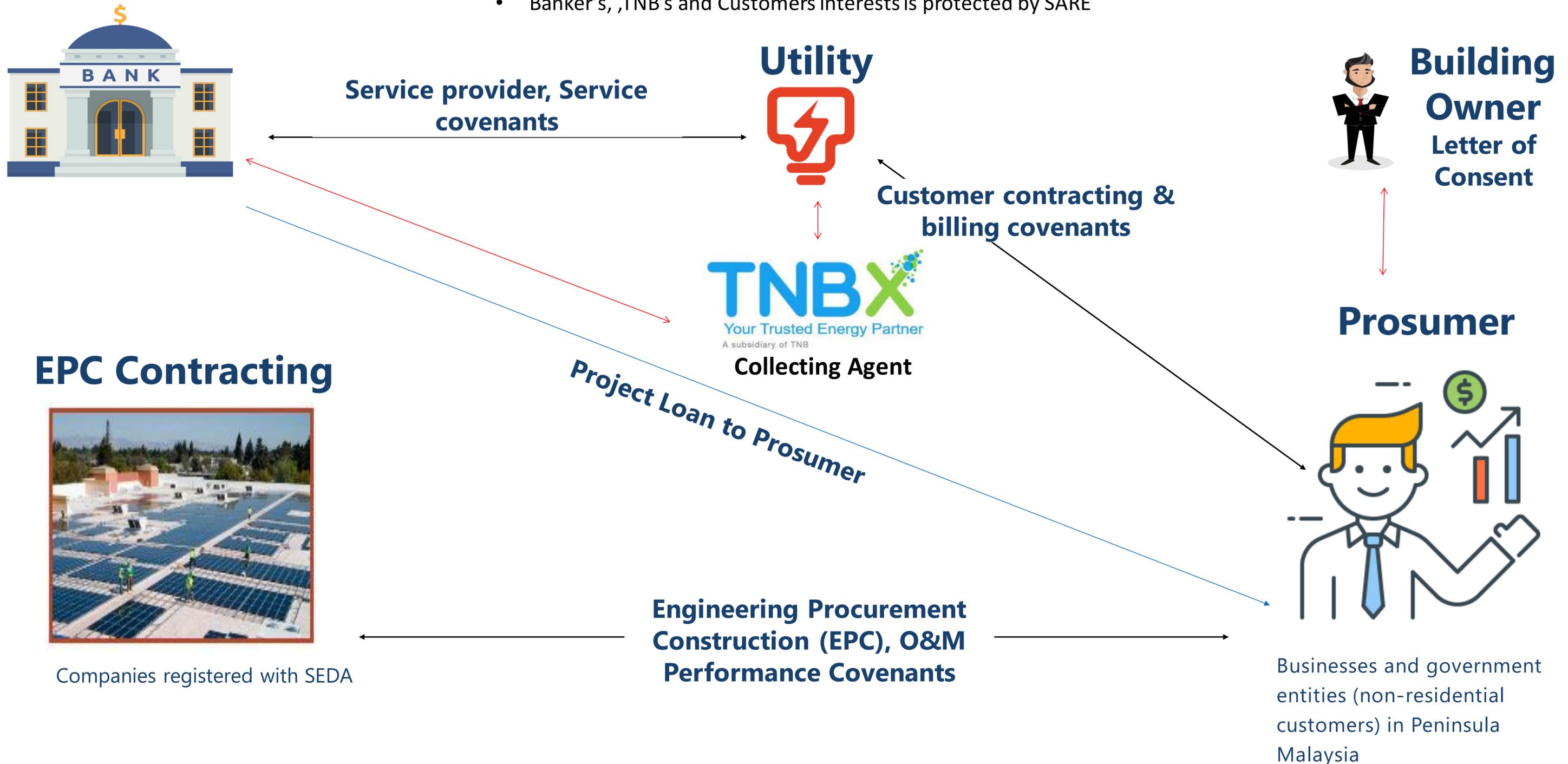
Business Proposal

Note : TNB in all models acts only as a billing and collection agent (with approval from ST under the Electricity Supply Act 1990)

- Only AO's, Customers and TNB interest is protected by SARE



- Banker's, TNB's and Customers interests is protected by SARE



- SARE works towards protecting interest of parties contracted under it.

Options	Type	Financing by	Asset Ownership	Consumer	GITA Benefactor (if Any)	Green Credits	EPC	Customer Category	SARE Contracting
1	PPA	Asset Owner	Asset Owner / RPVI (until PPA tenure)	Consumer	Asset Owner	Asset Owner / Consumer	Registered EPC with SEDA	Commercial / Industrial	TNBX (Solar PPA collection is in cents/ kWh and for Solar lease it is in RM/months)
2		Banker	Asset Owner / RPVI (charged to bank until loan tenure and thereafter till PPA tenure)						
3	Lease	Banker	Asset Owner / RPVI (charged to bank until loan tenure and thereafter till PPA tenure)						
4		Banker	Consumer (charged to bank until lease tenure ends)						

We provide competitive pricing for all Asset Owner/ bankers and RPVI's to enjoy the benefits of SARE designed to protect your solar investment

Solar PPA	Pricing type	Tier 1	Tier 2	Tier 3	Tier 4
		< 500 kWp per site	500 – 1,000 kWp per site	> 1,000 kWp per site	2,000 kWp to 10,000 kWp
	Tier pricing (cents/kWh)	maximum of 2 cents/kWh	1.5 cents/kWh	1 cent/kWh	0.5 to 1 cent/kWh

Solar Lease	Pricing type	Single Cascading Tier (for Non-Domestic customers)		Domestic customers
		20 kWp – 5,000 kWp	> 5,000 kWp	Flat rate
	Tier pricing	1% to 2%	1%	RM10 / month

Challenges for Solar PPA & Lease Models

1. Getting bankers 'buy-in' on the concept.
2. Getting necessary approval from ST, KETSA and SEDA
3. Getting MIDA to facilitate the understanding of GITA with respect to Solar Lease models.
4. Post MCO challenges of customer MD and Connected Solar Size
5. Market liquidity for RE Projects



Get in touch with us at:

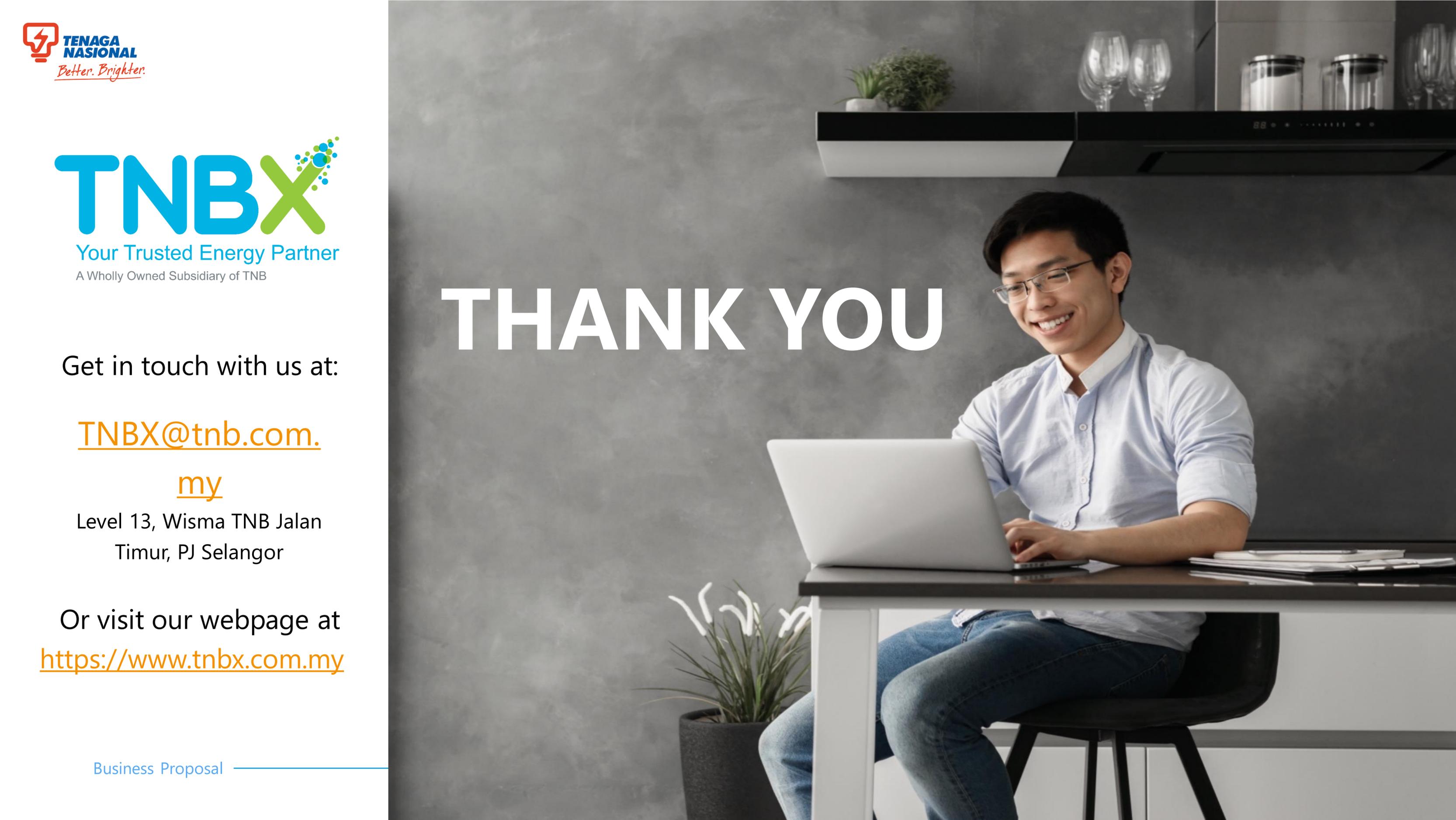
[TNBX@tnb.com.](mailto:TNBX@tnb.com)

[my](#)

Level 13, Wisma TNB Jalan
Timur, PJ Selangor

Or visit our webpage at

<https://www.tnbx.com.my>



THANK YOU

The Case for Solar Financing

Presented by

Hussam Sultan

Regional Head, Commercial Banking

CIMB Islamic Bank Bhd

FORWARD WITH SUSTAINABILITY

CIMB has always emphasized value creation which requires a delicate balancing of the long term interests of its people, planet and profitability.

**ENVIRONMENTAL,
ECONOMIC & SOCIAL**

THE SUSTAINABILITY REVOLUTION

2018 CIMB became a member of UNEP-FI and it is also a core member collaborating to develop the principles for responsible banking.

2019 CIMB held the two day Cooler Earth Sustainability Summit, first-ever regional platform to raise awareness on social and environmental risks and opportunities.



SME Renewable Energy Financing was launched at CIMB's The Cooler Earth Sustainability Summit

CLIMATE CHANGE
is affecting all of us.

Impact



Temperature Rise



Warming Oceans



Sea Level Rise



Extreme Events

Result



Health Issue



Physical Damage



Food Production

It is not just an environmental problem.



Risk

Physical damages
Operational risk



Cost

Resource scarcity
Transportation cost



Demand

Prioritize sustainability
Eco-friendly products



Regulation

ESG requirement
Carbon tax

Fighting climate change is difficult but it is not impossible.



Reduce Emission



Reuse & Recycle



Renewable Energy



Against Forest Loss

It's rewardable to go SOLAR.

TOP BENEFITS

Non-polluting
renewable energy

Save electricity bill

Hedge against rising
energy cost

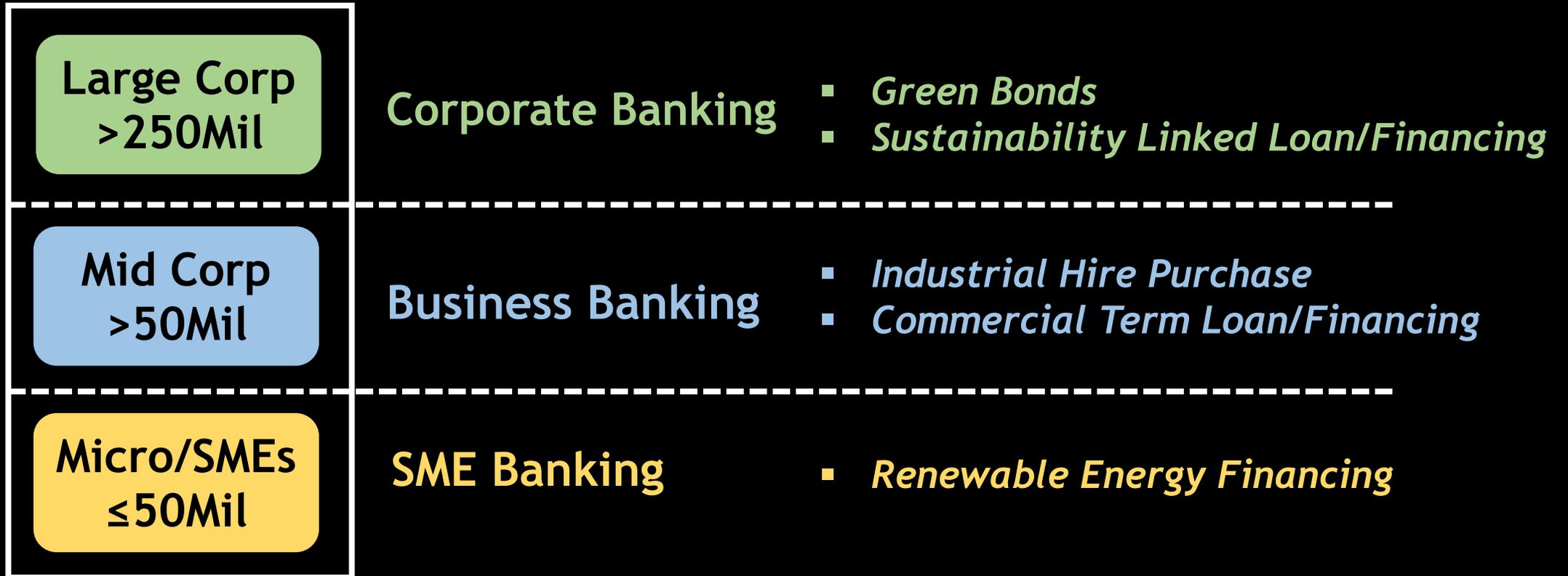


TOP REASONS

Decreased solar PV
system cost

Government's targets
makes solar energy
more acceptable

CIMB SUSTAINABLE BANKING



SME RENEWABLE ENERGY FINANCING

With our newly launched solar financing solution, SMEs can count on us to fulfil their financing needs to install rooftop solar PVs.

FEATURES

Purpose

To finance the purchase / installation of **solar PV system**

Facility Type

Term Loan / Term Financing-i with tenure **up to 10 years**

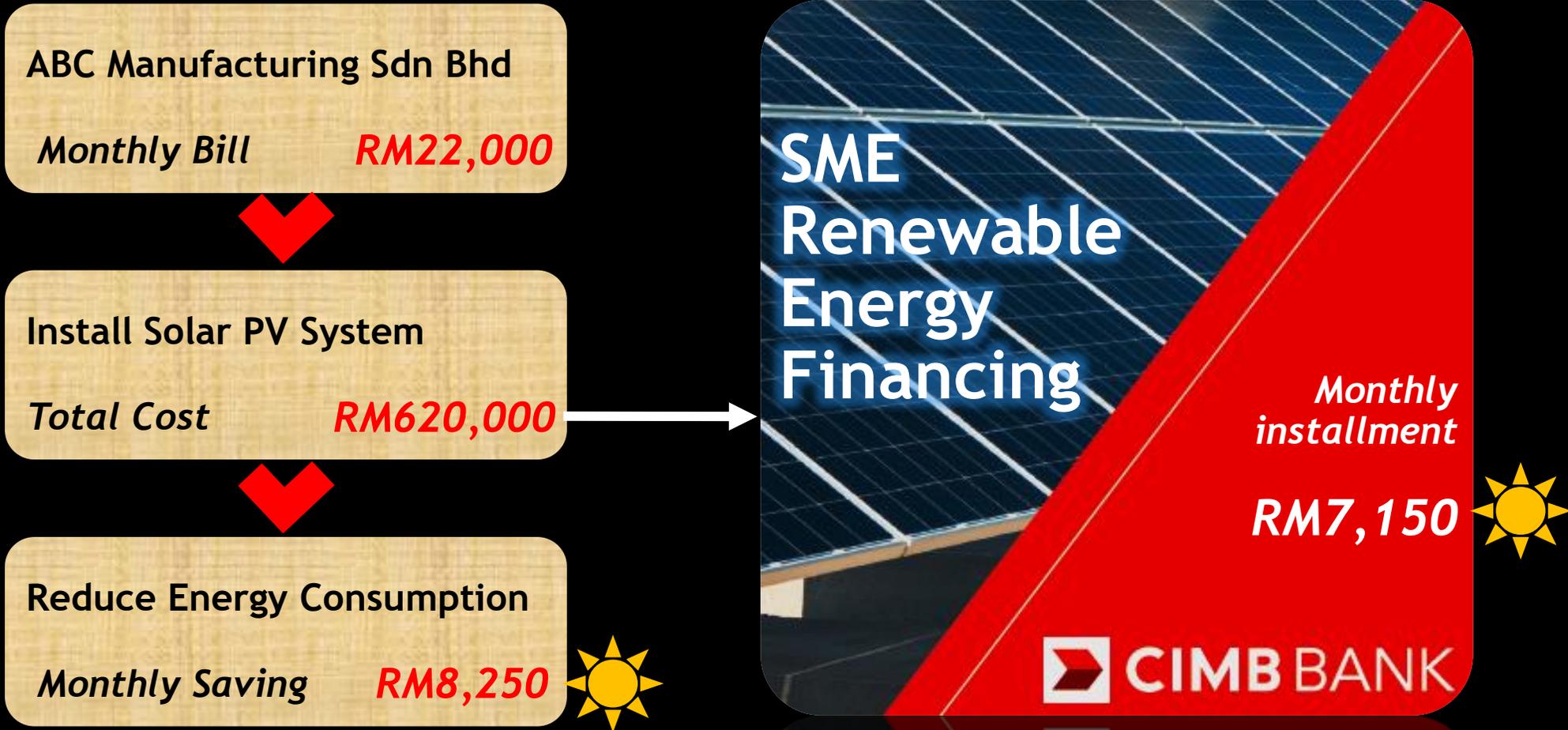
Financing Limit

Cover **up to 100%** of the solar PV system cost, **maximum RM1 Million**

Security

No collateral is required except joint and several guarantee

VALUE PROPOSITION



KEY ELEMENTS OF CREDIT EVALUATION



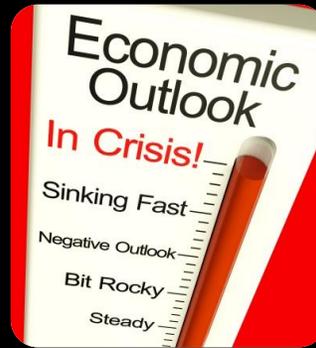
Character

Attitudes



Capacity

Ability to repay



Condition

Environment



Capital

Owner's equity



Collateral

Security

Steps to Apply SME Renewable Energy Financing

1. Talk to service provider

2. Consultation & site inspection

3. NEM application

4. Loan / financing application

5. Installation

6. Start consuming solar energy

Documents Required for Application

1. Audited / management accounts (3 years)
2. Bank statement (6 months)
3. Company documents (Form 24, 44, 49, M&A)
4. Identification documents
5. Project proposal / agreement
6. TNB bill (3 months)



Bonus Tips

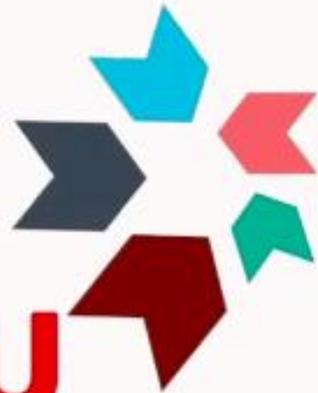
1. Justifiable financing purpose
2. Healthy financial position
3. Quality business management
4. Satisfactory conduct of accounts
5. Appropriate file keeping



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THANK YOU
FROM TOMORROW