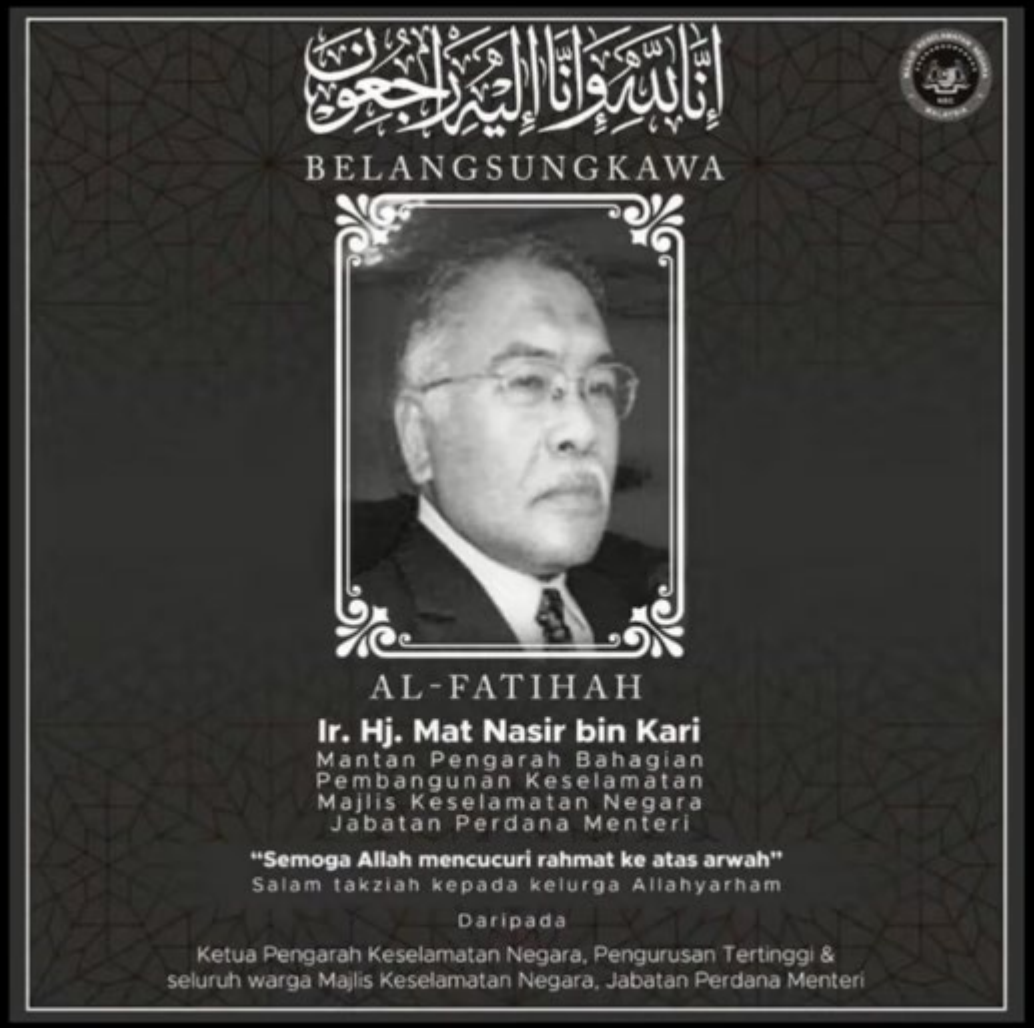
THE RACE INTO SOLAR POWERED OFFICE : ARE WE READY?

ARE YOU READY ?



13/6/1960 - 14/6/2021

Sepanjang perkhidmatan Allahyarham,
pelbagai cetusan idea inovasi telah direalisasikan.
Ilmu & pengalaman yang Allahyarham miliki,
tidak lokek dikongsi bersama generasi baru.

Terima Kasih Ya Allah kerana beri kami kesempatan
bekerja bersama insan hebat ini.

Rasulullah S.A.W. bersabda :

" Sebaik-baik manusia adalah
yang paling bermanfaat bagi orang lain "

Hadith Riwayat:
Ahmad, ath-Thabrani, ad-Daruqutni

UNIT PERUNDING KECEKAPAN TENAGA ELEKTRIK (UPKTE)

UNIT PERUNDING TENAGA LESTARI (UPTL)

Alamat Pejabat:

Tingkat 16, Cawangan Kejuruteraan Elektrik,

Ibu Pejabat JKR Malaysia, Blok G, Jalan Sultan

Salahuddin, 50480 Kuala Lumpur

- Pengurusan Projek/Program
- Perkhidmatan Perundingan Teknikal
- Pengurusan Fasiliti Aset

ISI KANDUNGAN

- PENGENALAN KEPADA KELESTARIAN TENAGA
- INISIATIF TENAGA LESTARI JKR
- PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU JKR
- PERJANJIAN TENAGA HIJAU : SARE

Objektif :

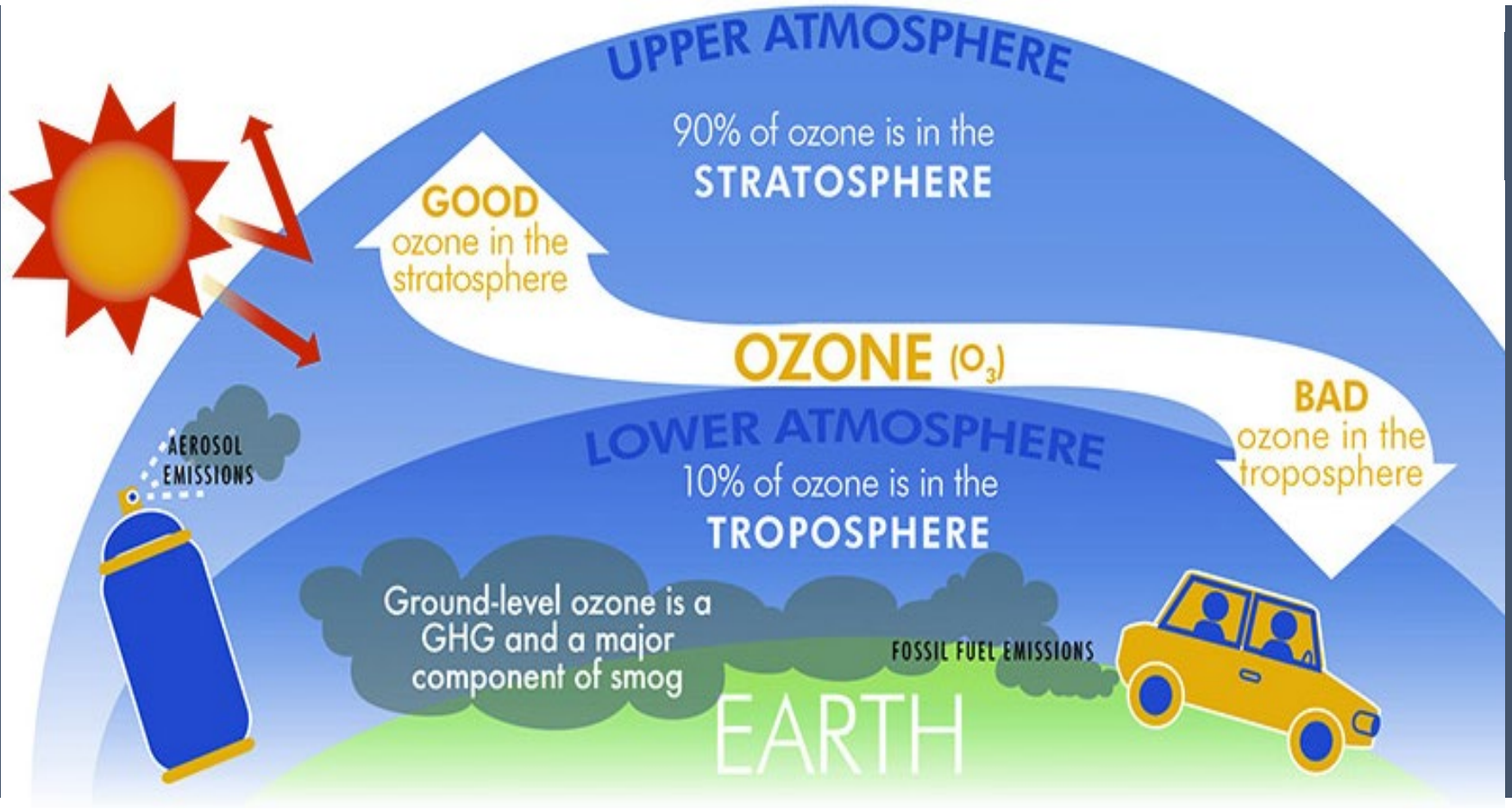
- Meningkatkan pemahaman berkenaan dasar dan polisi yang dilaksanakan dalam mencapai pengurusan tenaga lestari
- Memahami akan kepentingan Pengurusan Tenaga dari sudut pandangan Organisasi dan Jabatan
- Meneroka teknologi dan Model Bisnes Tenaga Boleh Baharu
- Meningkatkan pengetahuan dalam Program Solar Energy Purchase (SEP) yang dijalankan oleh jabatan
- Menjelaskan elemen dan syarat kontrak perjanjian yang terkandung di dalam Perjanjian Pembekalan Tenaga Boleh Baharu – SARE

PENGENALAN KEPADA KELESTARIAN TENAGA

SUSTAINABLE DEVELOPMENT

Persetujuan negara-negara perindustrian untuk mengurangkan pelepasan gas rumah hijau

PENGENALAN KEPADA KELESTARIAN TENAGA

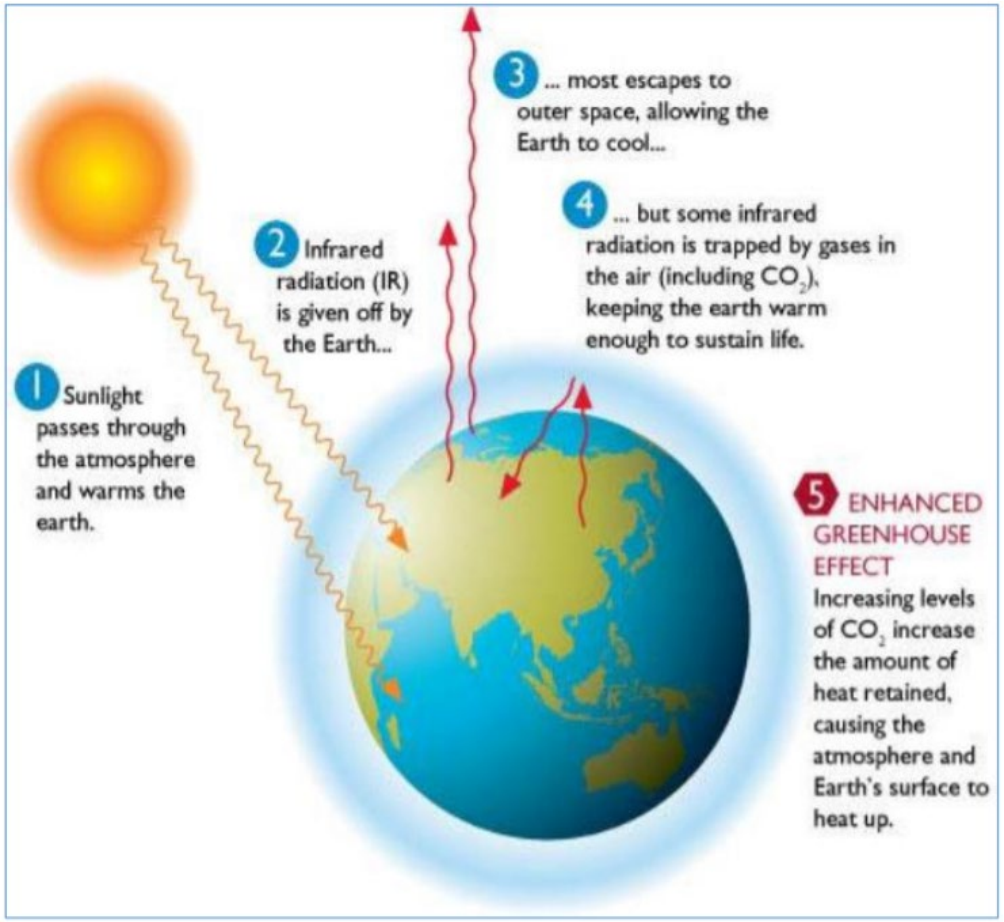


Greenhouse Effect

Carbon dioxide (CO2), Methane (CH4), Nitrous oxide (N2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride (SF6), Nitrogen trifluoride (NF3), F-GASSES (Coolant, Estinguisher Agent)

PENGENALAN KEPADA KELESTARIAN TENAGA

Pelepasan gas rumah hijau oleh aktiviti-aktiviti manusia di mukabumi adalah ANCAMAN besar kepada ekologi dan biodiversity alam



Purata pelepasan CO_2 ke udara oleh manusia adalah

30 billion tonne/year

Source: Le Quéré, C. et al. (2013). The global carbon budget 1959-2011

PENGENALAN KEPADA KELESTARIAN TENAGA

Pelepasan gas rumah hijau oleh aktiviti-aktiviti manusia di mukabumi adalah ANCAMAN besar kepada ekologi dan biodiversity alam???

Paris Agreement

Memastikan peningkatan suhu global tidak akan meningkat lebih daripada 2 degree Celcius .

PENGENALAN KEPADA KELESTARIAN TENAGA

Copenhagen COP 15

Disember 2009

COP15
COPENHAGEN
UNITED NATIONS CLIMATE CHANGE CONFERENCE 2009

Malaysia Commitment

……..”Malaysia is adopting an indicator of a voluntary reduction of up to 40% in term of emission intensity of GDP by the year 2020 compared to 2005 levels” …..

PENGENALAN KEPADA KELESTARIAN TENAGA

PARIS COP 21

Disember 2015

Pengurangan GHG sebanyak 45% sehingga 2030

- 35% pengurangan terus

- 10% bergantung kepada penerimaan peruntukan kewangan, pemindahan teknologi dan kapasiti pembangunan dari negara maju

PENGENALAN KEPADA KELESTARIAN TENAGA

25 Sept 2015 :

193 negara berikrar untuk menggunapakai Agenda Pembangunan 2030 – "Transfroming our World: The 2030 Agenda for SDG"

PENGENALAN KEPADA KELESTARIAN TENAGA

7 AFFORDABLE AND CLEAN ENERGY

GOAL & TARGETS

BY 2030

- Ensure universal access to affordable, reliable and modern energy services
- Increase substantially the share of renewable energy in the global energy mix
- Double the global rate of improvement in energy efficiency
- Enhance international cooperation to facilitate access to clean energy research and technology and advanced cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
- Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particularly least developed countries, small island developing States, and land–locked developing countries, in accordance with their respective programs support

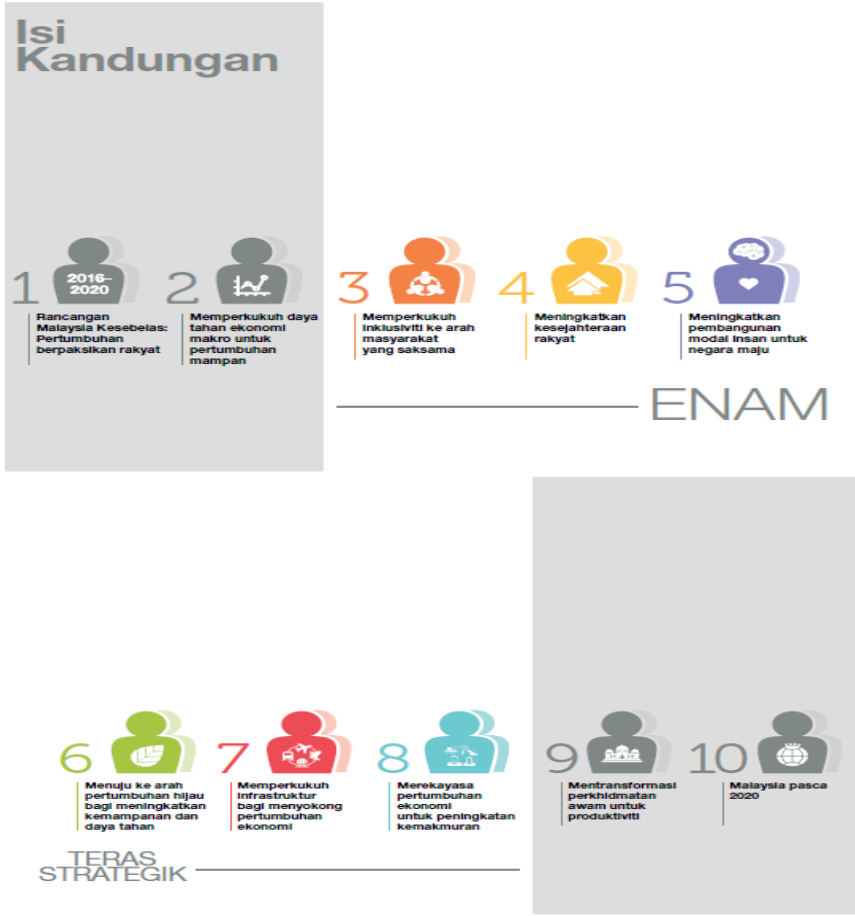
PENGENALAN KEPADA KELESTARIAN TENAGA

SDG SUMMIT 2019
24 - 25 September 2019, NEW YORK

"Malaysia will try its best to achieve the sustainable goals, ...we will try our very best to achieve the goals,"
~ Tun Dr Mahathir Mohamad

PENGENALAN KEPADA KELESTARIAN TENAGA

Menuju ke arah pertumbuhan hijau bagi meningkatkan kemampanan dan daya tahan



Bidang fokus A:
Memperkukuh persekitaran yang menyokong pertumbuhan hijau

Bidang fokus B:
Menggunapakai konsep penggunaan dan pengeluaran mampan

Bidang fokus C:
Memulihara sumber asli untuk generasi masa kini dan masa hadapan

Bidang fokus D:
Memperkukuh daya tahan terhadap perubahan iklim dan bencana alam

PENGENALAN KEPADA KELESTARIAN TENAGA

RANCANGAN MALAYSIA KE 12 ??



PENGENALAN KEPADA KELESTARIAN TENAGA

PUTRAJAYA - Dasar dan strategi Rancangan Malaysia Ke-12 (RMK-12) akan digubal berasaskan kepada tiga dimensi, iaitu pemerkasaan ekonomi, kelestarian alam sekitar dan kejuruteraan semula sosial.

Menteri Hal Ehwal Ekonomi Datuk Seri Mohamed Azmin Ali berkata RMK-12 adalah kesinambungan kepada pelan-pelan pembangunan yang lepas yang akan digubal berasaskan 'Kemakmuran Bersama' yang akan menjadi garis panduan kepada pembangunan jangka panjang.

Beliau berkata dimensi-dimensi itu akan saling melengkapi antara satu sama lain ke arah mencapai model pembangunan baharu berasaskan kemakmuran bersama, sejajar dengan usaha kerajaan untuk mencapai matlamat pembangunan lestari menjelang 2030.

Kelima, perubahan iklim, infrastruktur hijau dan pekerjaan hijau

Saya berharap RMK12 memberi komitmen yang sangat jelas terhadap Matlamat Pembangunan Lestari serta sasaran iklim dan bagaimana mencapainya. Isu Hijau bukan hanya pertimbangan soal alam sekitar. Prasarana hijau dilengkapi dengan pekerjaan yang baik bagi ramai orang.

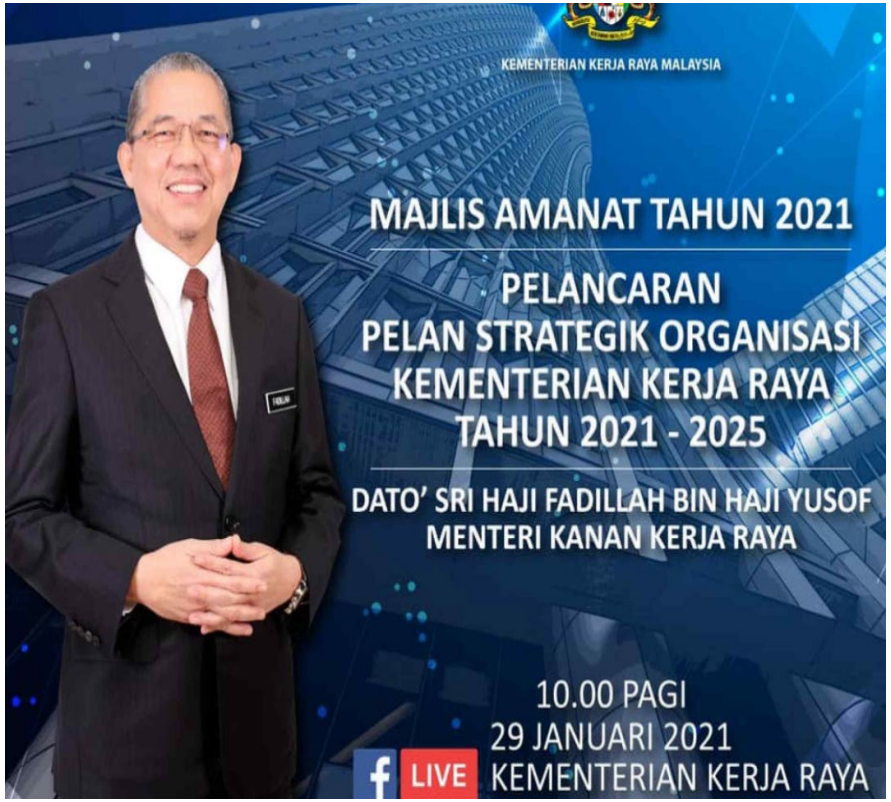
Harapnya kerajaan bersedia membincangkan beberapa perkara di atas dengan lebih mendalam dalam RMK12. Pada dasarnya, Rancangan ini harus menyedarkan pembacanya dan khalayak Malaysia yang lebih luas mengenai letak duduk Malaysia pada tahun 2025 (akhir RMK12), 2030 (akhir kerangka Dasar Kemakmuran Bersama) dan tahun 2035.

PENGENALAN KEPADA KELESTARIAN TENAGA

TEKNOLOGI HIJAU NEGARA

INISIATIF TENAGA LESTARI JKR

PELAN STRATEGIK OPERASI (PSO) KKR 2021-2025



INISIATIF TENAGA LESTARI JKR

PELAN STRATEGIK OPERASI (PSO) KKR 2021-2025

INISIATIF TENAGA LESTARI JKR

PSO – TERAS 1 – STRATEGI 3

Mempertingkat Penggunaan Teknologi Hijau dalam Industri Pembinaan

PELAN TINDAKAN

1 Projek Kerajaan (jalan) yang menggunakan sumber Tenaga Boleh Baharu (TBB) atau Lampu Kecekapan Tenaga seperti Lampu Pancaran Diod (Light Emitting Diode - LED).

2 Penilaian Semula Indeks Lebuhraya Hijau (Green Highway Index Recertification) setiap tahun bagi setiap lebuh raya pada pelbagai peringkat pelaksanaan lebuh raya.

INISIATIF TENAGA LESTARI JKR

- Skim Penarafan Hijau JKR (pH JKR)
- Malaysian Carbon Reduction & Enviromental Sustainability Tool (MyCREST)
- Green Product Scoring System (GPSS)
- ISO 14001–Sistem Pengurusan Alam Sekitar
- ISO 50001-Energy Management System
- Polisi Pembangunan Lestari JKR (2016-2020)
- Garis Panduan Sistem Pengurusan Tenaga (SPT) Bagi Bangunan-Bangunan Kerajaan
- Energy Efficiency Need Statement
- Sistem Binaan Berindustri (IBS)
- Arahan Teknik Jalan (ATJ) 16/03 on Environment
- Energy Efficiency and Conservation Guildelines for Malaysia
- Handbook On Passive Design Strategies For Energy Efficient Building
- Energy Efficiency Guidelines For CKE Design
- Garis Panduan Kos Kitaran Hayat (KKH) / Life Cycle Cost (LCC)
- Spesifikasi Piawai Bangunan 2014

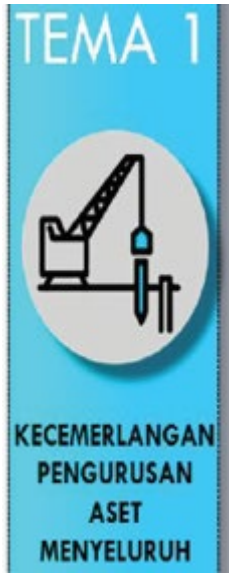


INISIATIF TENAGA LESTARI JKR

PELAN STRATEGIK : JKR 2021 - 2025

INISIATIF TENAGA LESTARI JKR

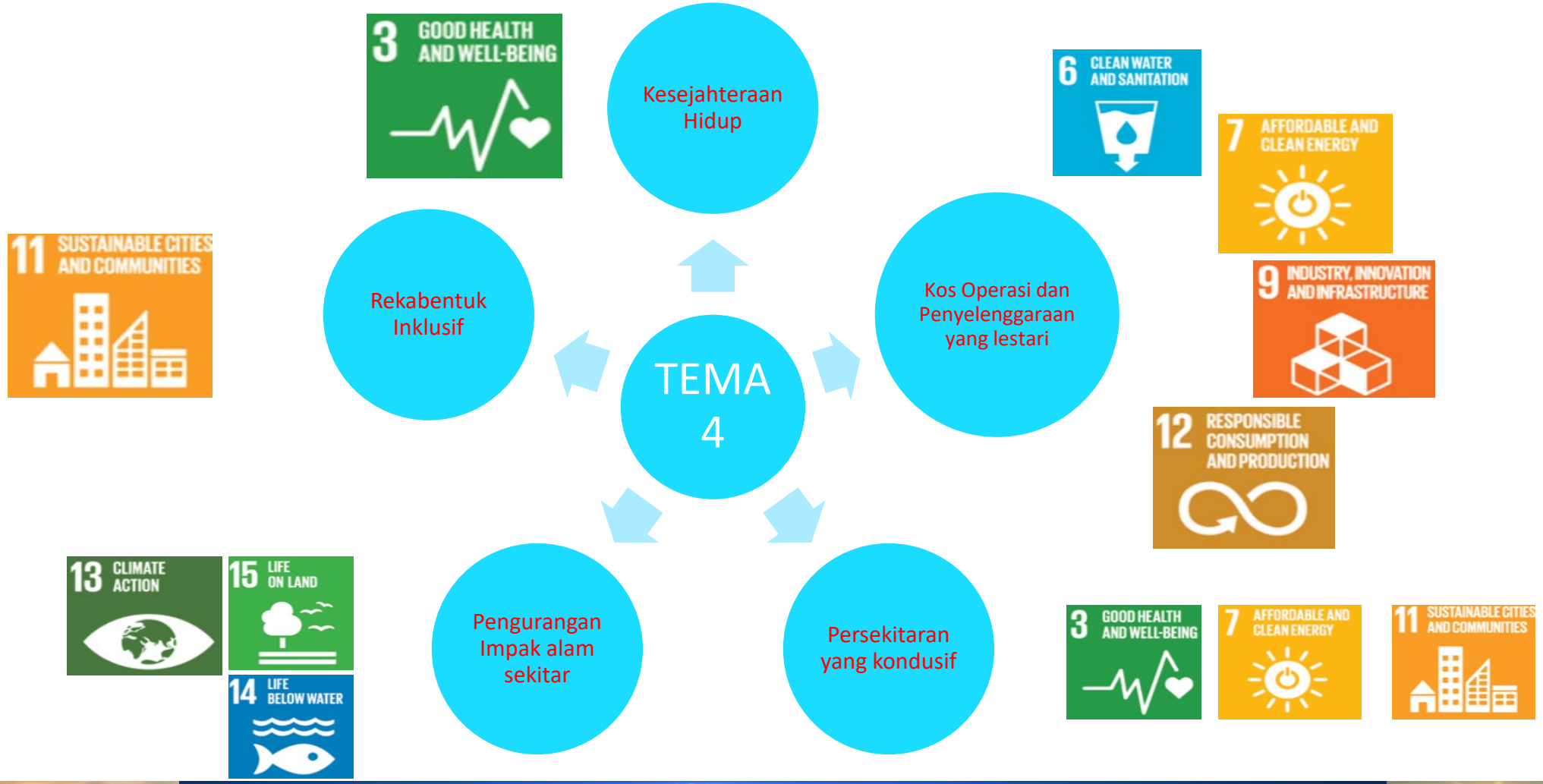
TEMA 1 : PAM & MATLAMAT SDG



Sumber: *Sustainable Development Goals (SDG), The United Nations*

INISIATIF TENAGA LESTARI JKR

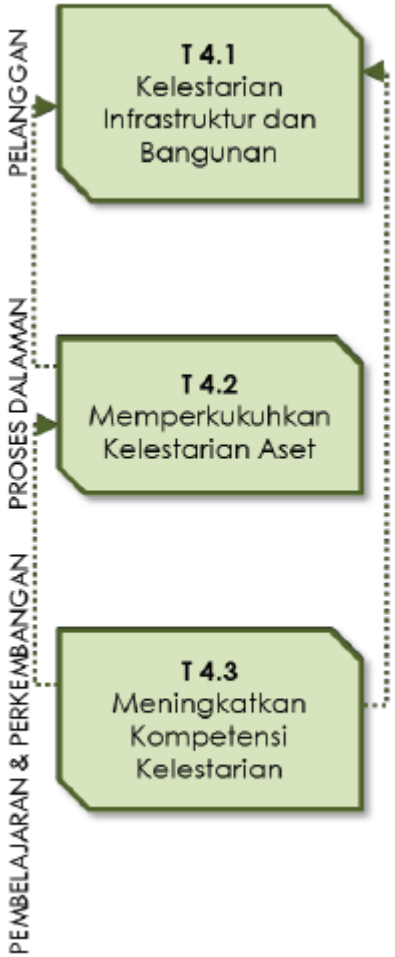
TEMA 4 : MEMACU KELESTARIAN



INISIATIF TENAGA LESTARI JKR

TEMA 4 : MEMACU KELESTARIAN

T 4.1 Kelestarian Infrastruktur dan Bangunan	Pembangunan infrastruktur dan bangunan yang seimbang dari aspek ekonomi, sosial dan alam sekitar bagi mencapai Matlamat Pembangunan Lestari (*Sustainable Development Goals, SDG*)
T 4.2 Memperkukuh-kan Kelestarian Aset	Memperkukuhkan proses pewujudan aset baharu dan pengurusan aset sedia ada yang lestari melalui pematuhan dasar dan polisi semasa seperti Polisi Pembangunan Lestari. Menambahbaik tadbir urus dengan menyepadukan penglibatan semua pihak (Pelanggan/HOPT/HODT/JKR Negeri/Daerah) dalam pengurusan aset. Menyatukan pengurusan data lestari secara *Internet of Things (IoT)* sejajar dengan *IR4.0*.



T 4.3 Meningkatkan Kompetensi Kelestarian	Meningkatkan kompetensi lestari melalui: • Memanfaatkan kepakaran *champion* lestari sedia ada. • Kolaborasi menyeluruh daripada semua bidang. • Meningkatkan kemahiran komunikasi, pengajaran dan promosi. Inovasi, penyelidikan dan pembangunan (*R&D*) yang menangani isu pembangunan lestari melalui aplikasi teknologi terkini (aplikasi digital) secara *Internet of Things (IoT)* sejajar dengan *IR4.0*. Promosi yang agresif – pencapaian dan anugerah, dokumen standard, pakar kejuruteraan teknikal.

INISIATIF TENAGA LESTARI JKR

KAMUS STRATEGIK : TEMA 4 – MEMACU KELESTARIAN
2021-2025

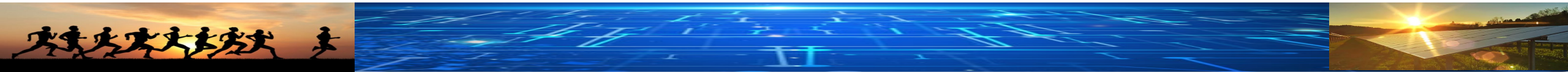
T4.1 Kelestarian Infrastruktur dan Bangunan (KPKR / TKPKR / PK)

4.1.1a Pengukuran adalah berdasarkan purata peratus pengurangan pelepasan karbon (kg CO2 equiv.) bagi **projek bangunan yang melaksanakan penarafan hijau** VP (Verifikasi Pemarkahan) dalam tahun semasa

4.1.1b Pengukuran adalah berdasarkan purata peratus pengurangan pelepasan karbon (kg CO2 equiv.) bagi **bangunan yang dihuni dan dikawalselia JKR**

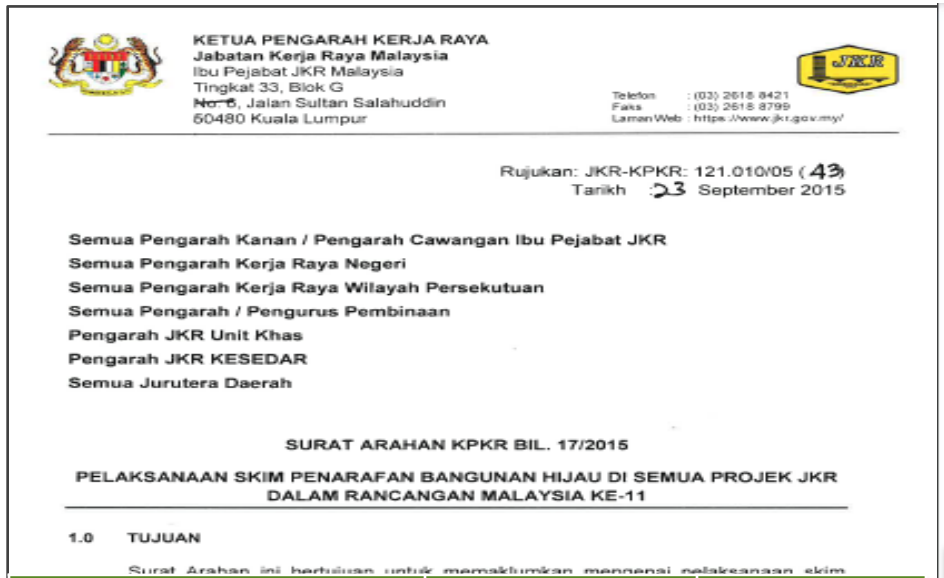
4.1.2a Pengurangan pelepasan karbon bagi **bangunan kerajaan yang menggunakan sumber Tenaga Boleh Baharu (TBB)**

4.1.2b Pengurangan pelepasan karbon bagi **projek jalan yang menggunakan TBB**



INISIATIF TENAGA LESTARI JKR

SURAT ARAHAN KPKR



KETUA PENGARAH KERJA RAYA
Jabatan Kerja Raya Malaysia
Ibu Pejabat JKR Malaysia
Tingkat 33, Blok G
~~No. 5~~, Jalan Sultan Salahuddin
50480 Kuala Lumpur

Telefon : (03) 2618 8421
Faks : (03) 2618 8799
Laman Web : https://www.jkr.gov.my/

Rujukan: JKR-KPKR: 121.010/05 (43)
Tarikh : 23 September 2015

Semua Pengarah Kanan / Pengarah Cawangan Ibu Pejabat JKR
Semua Pengarah Kerja Raya Negeri
Semua Pengarah Kerja Raya Wilayah Persekutuan
Semua Pengarah / Pengurus Pembinaan
Pengarah JKR Unit Khas
Pengarah JKR KESEDAR
Semua Jurutera Daerah

SURAT ARAHAN KPKR BIL. 17/2015

PELAKSANAAN SKIM PENARAFAN BANGUNAN HIJAU DI SEMUA PROJEK JKR DALAM RANCANGAN MALAYSIA KE-11

1.0 TUJUAN

Surat Arahan ini bertujuan untuk memaklumkan mengenai pelaksanaan skim

Project Cost	Green Rating Tools	Buildings Category
< RM 20 Juta	pH JKR / MyCREST	All
> RM20 juta < RM50 juta	pH JKR	Office
> RM50 juta	MyCREST	All

KETUA PENGARAH KERJA RAYA
DIRECTOR-GENERAL OF PUBLIC WORKS

Rujukan : JKR.KPKR:121.010/05 Jld. 18 (9)
Tarikh : 17 Januari 2020

Semua Pengarah Kanan / Pengarah Cawangan Ibu Pejabat JKR
Semua Pengarah Kerja Raya Negeri
Semua Pengarah Kerja Raya Wilayah Persekutuan
Semua Pengarah / Pengurus Pembinaan
Pengarah JKR KESEDAR
Pengarah JKR KETENGAH
Semua Jurutera Daerah

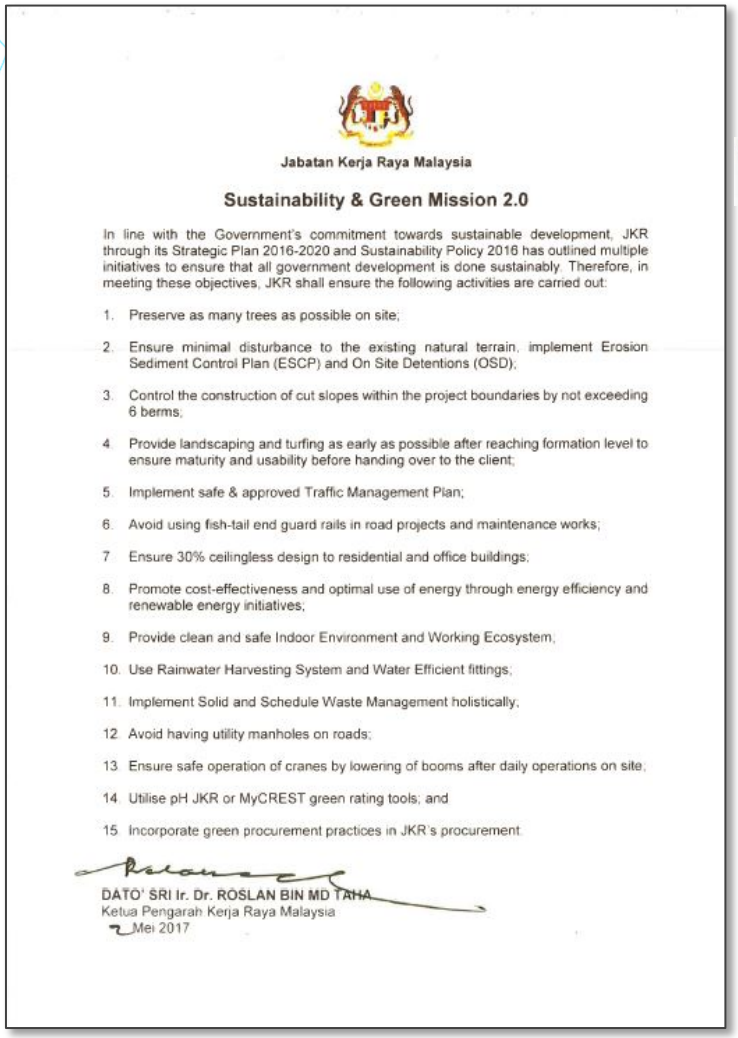
SURAT ARAHAN KPKR BIL. 02 / 2020

PELAKSANAAN PENARAFAN HIJAU BAGI PROJEK JABATAN KERJA RAYA MALAYSIA (JKR)

1.0 TUJUAN

Project Cost	Green Rating Tools	Buildings Category
> RM 20 Juta	JKR Standard/ MyCREST	Office
> RM50 juta	pH JKR	Road
> RM100 juta	Sustainable INFRASTAR	Infra

INISIATIF TENAGA LESTARI JKR



Jabatan Kerja Raya Malaysia

Sustainability & Green Mission 2.0

In line with the Government's commitment towards sustainable development, JKR through its Strategic Plan 2016-2020 and Sustainability Policy 2016 has outlined multiple initiatives to ensure that all government development is done sustainably. Therefore, in meeting these objectives, JKR shall ensure the following activities are carried out:

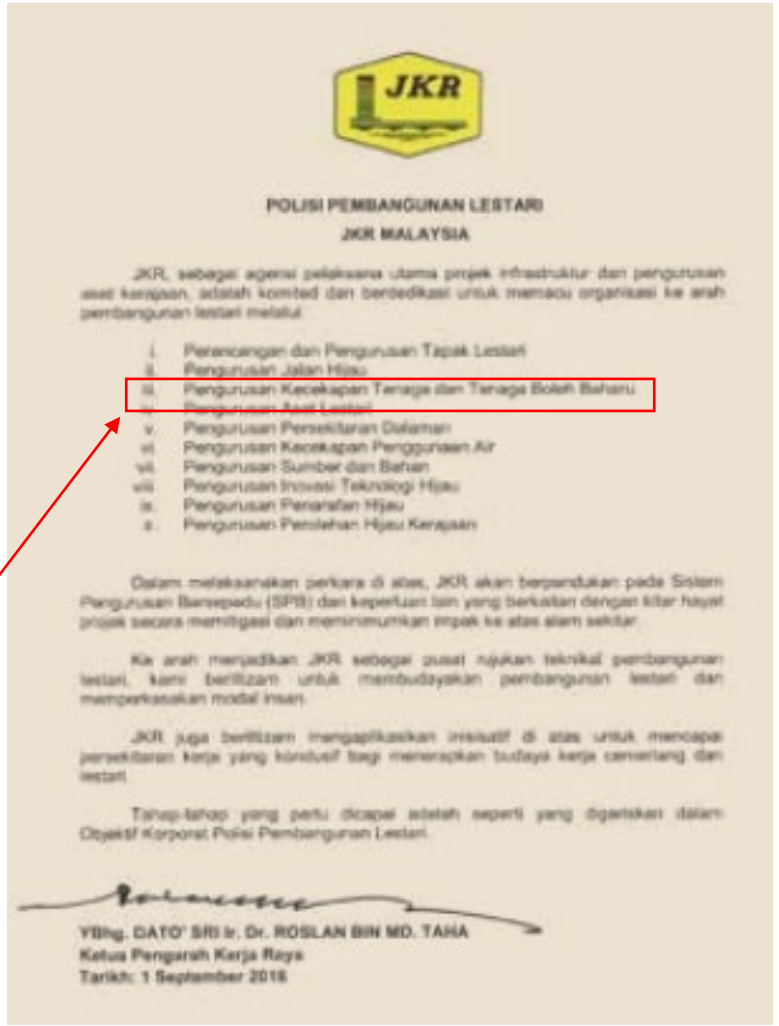
1. Preserve as many trees as possible on site;
2. Ensure minimal disturbance to the existing natural terrain, implement Erosion Sediment Control Plan (ESCP) and On Site Detentions (OSD);
3. Control the construction of cut slopes within the project boundaries by not exceeding 6 berms;
4. Provide landscaping and turfing as early as possible after reaching formation level to ensure maturity and usability before handing over to the client;
5. Implement safe & approved Traffic Management Plan;
6. Avoid using fish-tail end guard rails in road projects and maintenance works;
7. Ensure 30% ceilingless design to residential and office buildings;
8. Promote cost-effectiveness and optimal use of energy through energy efficiency and renewable energy initiatives;
9. Provide clean and safe Indoor Environment and Working Ecosystem;
10. Use Rainwater Harvesting System and Water Efficient fittings;
11. Implement Solid and Schedule Waste Management holistically;
12. Avoid having utility manholes on roads;
13. Ensure safe operation of cranes by lowering of booms after daily operations on site;
14. Utilise pH JKR or MyCREST green rating tools; and
15. Incorporate green procurement practices in JKR's procurement.

DATO' SRI Ir. Dr. ROSLAN BIN MD TAHA
Ketua Pengarah Kerja Raya Malaysia
Mei 2017

SUSTAINABLE & GREEN MISSION 2.0

POLISI PEMBANGUNAN LESTARI

Pengurusan Kecekapan Tenaga dan Tenaga Boleh Baharu



JKR

POLISI PEMBANGUNAN LESTARI

JKR MALAYSIA

JKR, sebagai agensi pelaksana utama projek infrastruktur dan pengurusan aset kerajaan, adalah komited dan berdedikasi untuk memacu organisasi ke arah pembangunan lestari melalui:

i. Perancangan dan Pengurusan Tapak Lestari
ii. Pengurusan Jalan Hijau
iii. Pengurusan Kecekapan Tenaga dan Tenaga Boleh Baharu
iv. Pengurusan Aset Lestari
v. Pengurusan Persekitaran Dalaman
vi. Pengurusan Kecekapan Penggunaan Air
vii. Pengurusan Sumber dan Bahan
viii. Pengurusan Inovasi Teknologi Hijau
ix. Pengurusan Penarafan Hijau
x. Pengurusan Penilaian Hijau Kerajaan

Dalam melaksanakan perkara di atas, JKR akan berpandukan pada Sistem Pengurusan Bersepadu (SPB) dan kepelbagaian lain yang berkaitan dengan kitar hayat projek secara meminimakan impak ke atas alam sekitar.

Ke arah menjadikan JKR sebagai pusat rujukan teknikal pembangunan lestari, kami berlitizam untuk membudayakan pembangunan lestari dan memperkasakan modal insan.

JKR juga berlitizam mengaplikasikan inisiatif di atas untuk mencapai persekitaran kerja yang kondusif bagi menerapkan budaya kerja cemerlang dan lestari.

Tahap-tahap yang perlu dicapai adalah seperti yang digariskan dalam Objektif Korporat Polisi Pembangunan Lestari.

YBhg. DATO' SRI Ir. Dr. ROSLAN BIN MD. TAHA
Ketua Pengarah Kerja Raya
Tarikh: 1 September 2018

INISIATIF TENAGA LESTARI JKR

Jawatankuasa Induk Pembangunan Lestari (JKiPL)

Pengerusi : KPKR

Penyelaras Cawangan Alam Sekitar & Kecekapan Tenaga **(CASKT)**

CKAS — **JKK Perancangan & Pengurusan Tapak Lestari**
- Pengerusi : Pengarah Kanan Cawangan Kejuruteraan Awam & Struktur

CKE — **JKK Kecekapan Tenaga & Tenaga Diperbaharui**
- Pengerusi : Pengarah Kanan Cawangan Kejuruteraan Elektrik

CKM — **JKK Kualiti Persekitaran Dalaman**
- Pengerusi : Pengarah Kanan Cawangan Kejuruteraan Mekanikal

CA — **JKK Sumber dan Bahan & Kesejahteraan Sosial (Bangunan)**
- Pengerusi : Pengarah Kanan Cawangan Arkitek

CKM — **JKK Kecekapan Air**
- Pengerusi : Pengarah Kanan Cawangan Kejuruteraan Mekanikal

CPAB — **JKK Pengurusan Aset Lestari**
- Pengerusi : Pengarah Kanan Cawangan Perancangan Aset Bersepadu

C J — **JKK Jalan Hijau & Kesejahteraan Sosial (Jalan)**
- Pengerusi : Pengarah Kanan Cawangan Jalan

CAST — **JKK Penarafan Hijau**
- Pengerusi : Pengarah Cawangan Alam Sekitar & Kecekapan Tenaga

CLI — **JKK Innovasi & Teknologi Hijau**
- Pengerusi : Pengarah Cawangan Latihan & Inovasi

CKUB — **JKK Perolehan Hijau Kerajaan**
- Pengerusi : Pengarah Cawangan Kontrak & Ukur Bahan

INISIATIF TENAGA LESTARI JKR

ENVIRONMENTAL MANAGEMENT SYSTEM ISO EMS 14001

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and SIRIM QAS International hereby certify that

JABATAN KERJA RAYA (JKR) MALAYSIA
SITE 2
CAWANGAN ALAM SEKITAR DAN TENAGA
IBU PEJABAT JKR MALAYSIA
TINGKAT 23, MENARA PJD
NO. 50, JALAN TUN RAZAK
50400 KUALA LUMPUR
WILAYAH PERSEKUTUAN
MALAYSIA

has implemented and maintains an

ENVIRONMENTAL MANAGEMENT SYSTEM

which fulfils the requirements of the following standard

ISO 14001 : 2004

for the following activities

PROJECT MANAGEMENT FOR FEDERAL PROJECTS IN ENVIRONMENTAL SENSITIVE AREA (ESA) INCLUDING SABAH AND SARAWAK AND PROJECTS WITH ENVIRONMENTAL IMPACT ASSESSMENT (EIA).

Issued on : **09 July 2014**
Validity date : **27 October 2017**
Certification Number : **MY-ER 0281**

Michael Drechsel
President of IQNet

Khalidah Mustafa
Managing Director
SIRIM QAS International Sdn Bhd

IQNet Partners*:
AENOR *Spain* AFNOR Certification *France* AIB-Vincotte International *Belgium* ANCE *Mexico* APCER *Portugal* CCC *Cyprus* CISQ *Italy* CQC *China* CQM *China* CQS *Czech Republic* Cro Cert *Croatia* DQS Holding GmbH *Germany* DS *Denmark* FCAV *Brazil* FONDONORMA *Venezuela* ICONTEC *Colombia* IMNC *Mexico* INNORPI *Tunisia* Inspecta Certification *Finland* IRAM *Argentina* JQA *Japan* KFQ *Korea* MSZT *Hungary* Nemko AS *Norway* NSAI *Ireland* PCBC *Poland* Quality Austria *Austria* RR *Russia* SII *Israel* SIQ *Slovenia* SIRIM QAS International *Malaysia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* TSE *Turkey* YUQS *Serbia*
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.
* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

SIRIM QAS INTERNATIONAL

CERTIFICATE

ENVIRONMENTAL SYSTEM
SIRIM

STANDARDS MALAYSIA

UKAS MANAGEMENT SYSTEMS
074

IQNet

SIRIM QAS International hereby certifies that

JABATAN KERJA RAYA (JKR) MALAYSIA
SITE 2
CAWANGAN ALAM SEKITAR DAN TENAGA
IBU PEJABAT JKR MALAYSIA
TINGKAT 23, MENARA PJD
NO. 50, JALAN TUN RAZAK
50400 KUALA LUMPUR
WILAYAH PERSEKUTUAN
MALAYSIA

has implemented an Environmental Management System complying with

ISO 14001 : 2004

Environmental Management System - Requirements with Guidance for Use

Scope of Certification

PROJECT MANAGEMENT FOR FEDERAL PROJECTS IN ENVIRONMENTAL SENSITIVE AREA (ESA) INCLUDING SABAH AND SARAWAK AND PROJECTS WITH ENVIRONMENTAL IMPACT ASSESSMENT (EIA).

Issue date : **09 July 2014**
Validity period : **28 October 2014 - 27 October 2017**
Certification No. : **ER 0281**

SIRIM QAS International Sdn. Bhd.
(Company No. 410334-X)
1, Persiaran Dato' Menteri
Section 2, P.O. Box 7035
40700 Shah Alam
Selangor Darul Ehsan
MALAYSIA
Tel : 60-3-5544 6400
Fax : 60-3-5544 6787
http://www.sirim-qas.com.my
http://www.malaysiancertified.com.my

Khalidah Mustafa
Managing Director
SIRIM QAS International Sdn. Bhd.

This certificate is granted subject to the terms and conditions as stated in the Certification Agreement.

INISIATIF TENAGA LESTARI JKR

ENERGY MANAGEMENT SYSTEM
ISO EnMS 50001

JABATAN KERJA RAYA MALAYSIA
DASAR
KUALITI, ALAM SEKITAR, KESELAMATAN DAN KESIHATAN PEKERJAAN SERTA PENGURUSAN TENAGA
(SISTEM PENGURUSAN BERSEPADU)

JKR komited untuk menghasilkan produk dan memberi perkhidmatan berkualiti yang memenuhi kepuasan pelanggan, mematuhi keperluan alam sekitar, memastikan keselamatan dan kesihatan pekerjaan pada tahap yang terbaik dan melaksanakan pengurusan tenaga yang cekap.

JKR komited ke arah:-

- Memuaskan hati pelanggan dalam aspek rekabentuk, kos projek, pembinaan dan penyerahan bagi pengurusan projek;
- Menepati kehendak pelanggan dalam aspek penerimaan aset, operasi dan penyenggaraan, penilaian keadaan / prestasi, naik taraf dan pelupusan aset bagi pengurusan penyenggaraan;
- Menyediakan pembangunan lestari mesra alam dan selamat;
- Mematuhi semua peraturan dan perundangan yang diperuntukkan di dalam pelaksanaan projek dan penyenggaraan;
- Memastikan sistem pengurusan tenaga elektrik dapat meningkatkan kecekapan penggunaan tenaga secara berterusan dalam rekabentuk, operasi dan penyenggaraan aset;
- Menyokong perolehan bekalan dan perkhidmatan serta rekabentuk cekap tenaga bagi meningkatkan prestasi penggunaan tenaga berdasarkan spesifikasi piawai JKR semasa;
- Menyedia kerangka kerja bagi penetapan dan penilaian objektif sasaran penggunaan tenaga;
- Memastikan informasi dan sumber sentiasa disediakan bagi mencapai objektif dan sasaran penggunaan tenaga; dan
- Memastikan penambahbaikan yang berterusan dilaksanakan ke atas prestasi Sistem Pengurusan Bersepadu.

Datuk Ir. Hj. Adanan B. Mohamed Hussain
Ketua Pengarah Kerja Raya
Tarikh: 1 Disember 2015

SIRIM QAS

CERTIFICATE

SIRIM QAS International hereby certifies that

JABATAN KERJA RAYA
JKR MALAYSIA HEADQUARTERS,
JALAN SULTAN SALAHUDDIN,
50582 KUALA LUMPUR
MALAYSIA

has implemented an Energy Management System complying with

ISO 50001:2011

ENERGY MANAGEMENT SYSTEM – Requirements with Guidance for Use

Scope of Certification:

OPERATION AND MAINTENANCE OF BUILDINGS (BLOCKS A, B, C, D, E, AND F) AT JKR'S HEADQUARTERS IN JALAN SULTAN SALAHUDDIN, KUALA LUMPUR.

Issue date : 12th June 2015
Validity period : 12th June 2015 – 11th June 2018
Certification No : EnR 0013

Khalidah Mustafa
Managing Director
SIRIM QAS International Sdn. Bhd.

INISIATIF TENAGA LESTARI JKR

PELAN STRATEGIK : JKR 2021 - 2025

Objektif Strategik	Inisiatif	Peneraju
T4.1 Kelestarian Infrastruktur dan Bangunan	Pengurangan pelepasan karbon bagi bangunan kerajaan yang menggunakan sumber Tenaga Boleh Baharu (TBB) (141,043 kg CO2) tahunan;	CKE
T4.1 Kelestarian Infrastruktur dan Bangunan	Pengurangan pelepasan karbon: Bangunan yang dihuni dan di kawal selia JKR sebanyak 1.4 juta kg CO2 equiv. / tahun;	CSFB
	Perlaksanaan Audit Tenaga di Pepasangan Kerajaan	CSFB
	Pengurangan pelepasan karbon : Projek bangunan yang melaksanakan penarafan hijau sebanyak 15% (kg CO2 equiv.)	CASKT
T4.3 Meningkatkan Kompetensi Kelestarian	Menambah bilangan pegawai yang mempunyai kompetensi di dalam bidang Kecekapan Tenaga & Tenaga Boleh Baharu	CASKT/CREaTE

PELAKSANAAN
PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

LATARBELAKANG

- Unit Perunding Tenaga Lestari (UPTL) ditubuhkan untuk memberi khidmat pakar dalam bidang Tenaga Boleh Baharu (TBB) & Kecekapan Tenaga
- 17 tahun pengalaman & kepakaran dalam bidang teknologi solar

KHIDMAT PAKAR UPTL

Pengkhususan kepada bidang Tenaga Boleh Baharu (TBB) & Kecekapan Tenaga

- Rekabentuk, pengurusan projek & penyelenggaran sistem TBB
- Audit Tenaga bangunan
- Audit Prestasi system TBB
- Khidmat nasihat teknikal
- Penyediaan garis panduan & spesifikasi

ANTARA PENGLIBATAN UPTL DALAM BIDANG TEKNOLOGI SOLAR

- Sistem Solar Hibrid untuk sekolah luar bandar Semenanjung, Sabah & Sarawak dengan jumlah kapasiti 10 MW (316 buah sekolah)
- Program Solar Energy Purchasing (SEP) untuk Bangunan Kerajaan
- Penyelenggaraan Sistem Solar Hibrid
- Menaiktaraf Stesen Solar Hibrid Pulau Kapas, Marang
- Sistem Solar untuk kawasan pelancongan Tasik Kenyir
- Sistem Solar Hibrid untuk Klinik Kesihatan luar bandar

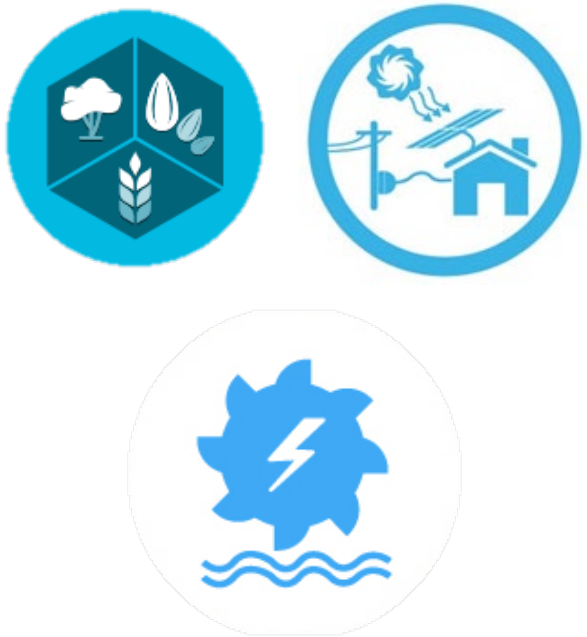
PENCAPAIAN & MANFAAT PENGLIBATAN UPKTE

- ASEAN ENERGY AWARD 2016 – 2nd Runners Up (Best Practice Off-Grid Solar PV System)
- Mewujudkan pasukan pakar - #teamsolarJKR
- Penyelidikan & Pembentangan kertas kerja – dalam & luar negara

PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

LATAR BELAKANG

POLISI TEKNOLOGI HIJAU NEGARA



2011 — Feed In Tariff

- Tarif untuk solar PV
  2013 – RM0.68 – RM1.1316/kWh
  ** Degression rate 8% setahun*

2016 — Net Energy Metering (NEM)

- Konsep *Net billing*
- *Self consumed*, lebihan penjanaan tenaga dijual ke pihak utiliti pada kadar tarif belian tenaga
- Contoh:
  Tarif B = RM0.509/kWh
  ** Rate telah disemak semula tahun 2018*

2018 — Supply Agreement for Renewable Energy (SARE)

- *Self consumed*, tiada kos CAPEX & OPEX
- Tarif penjanaan tenaga daripada solar PV rendah daripada tarif grid utiliti
- Contoh:
  Grid = RM0.509/kWh
  Solar = RM0.43/kWh

PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

LATAR BELAKANG

PROGRAM SOLAR ENERGY PURCHASING (SEP)

1 Januari 2019	Net Energy Metering (NEM)	- Program Solar Energy Purchasing (SEP) - Perjanjian Supply Agreement for Renewable Energy (SARE) - Konsep *Net billing* - *Self consumed*, lebihan penjanaan tenaga dijual ke pihak utiliti pada kadar tarif belian tenaga - Konsep penjimatan bil elektrik bangunan/premis berbanding penggunaan tenaga daripada Grid
10 Mac 2019	MoU antara JKR & TNB	- Perjanjian Persefahaman bagi perlaksanaan Program Solar Energy Purchasing (SEP)
1 Disember 2020	Pembentangan kepada KSU KKR	- Persetujuan perlaksanaan Program SEP di bangunan KKR & JKR - Persetujuan perlantikan Jawatankuasa Penilaian Tenaga Lestari (JKPTL)
29 Disember 2020	NEM 3.0 : NEM GoMEN	- Kesinambungan Program NEM 2.0 - 100 MW kuota untuk bangunan-bangunan Kerajaan

PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

PROGRAM SOLAR ENERGY PURCHASING (SEP)

TNB, JKR buat kajian pasang bumbung solar

Jabatan Kerja Raya bakal nikmati faedah bersih elektrik kos sifar modal

Oleh Nora Mahpar
noramahpar@bh.com.my

Tenaga Nasional Bhd (TNB), menerusi anak syarikatnya, TNBX Sdn Bhd (TNBX) dan Jabatan Kerja Raya Malaysia (JKR) sedang melaksanakan kajian daya maju untuk memasang bumbung solar di bangunan JKR di bawah Program Pembelian Tenaga Solar TNB.

menerusi memorandum persefahaman (MoU) yang dimeterai antara kedua-dua pihak

TNB pasang PV

MoU itu dimeterai oleh Pengarah Urusan TNBX, Ir Nirinder Singh Johl, manakala JKR diwakili oleh Timbalan Ketua Pengarah (Sektor Pakar), Ir Kamaluddin Abdul Rashid.

Menerusi MoU itu, TNB akan melabur, mereka bentuk, memasang, mengendalikan dan menyelenggara sistem bumbung PV di bangunan JKR sepanjang tempoh kontrak selama 20 hingga 25 tahun.

Dengan pemasangan sistem bumbung PV dengan TNBX, JKR akan menikmati faedah bersih elektrik pada kos sifar modal terdahulu.

JKR juga akan dibilkan bagi elektrik yang dijana daripada sistem PV solar pada kadar yang lebih rendah daripada tarif elektrik biasa TNB.

Di samping itu, JKR boleh menjual sebarang tenaga berlebihan

Tenaga Bersih (NEM).

Justeru, menerusi Program Pembelian Tenaga Solar TNB ini, JKR akan memperoleh manfaat daripada elektrik bersih untuk memenuhi sasaran pengurangan karbon tanpa membabitkan sebarang modal dan meraih keuntungan daripada penjimatan kos elektrik secara keseluruhan dengan minimum risiko.

Tangani isu tenaga.

sama ini sebagai kerja berpasukan dua entiti yang berminat untuk menangani isu pengurusan tenaga.

"Diharapkan, inisiatif ini akan meningkatkan kesedaran untuk keperluan yang lebih besar bagi pengurusan tenaga di Malaysia, katanya dalam kenyataan, semalam.

Kedua-dua pihak juga bekerja sama dalam empat bidang lain iaitu Promosi Teknologi Hijau; Ne

Kuota 100 MW kapasiti sistem solar untuk Bangunan Kerajaan

Konsep penjimatan bil elektrik bangunan/premis berbanding penggunaan tenaga daripada Grid (TNB)

Zero up-front cost.
Kos (CAPEX & OPEX) ditanggung sepenuhnya oleh penyedia perkhidmatan

MoU antara JKR & TNB

- *Perjanjian Persefahaman bagi kolaborasi perlaksanaan Program Solar Energy Purchasing (SEP)*

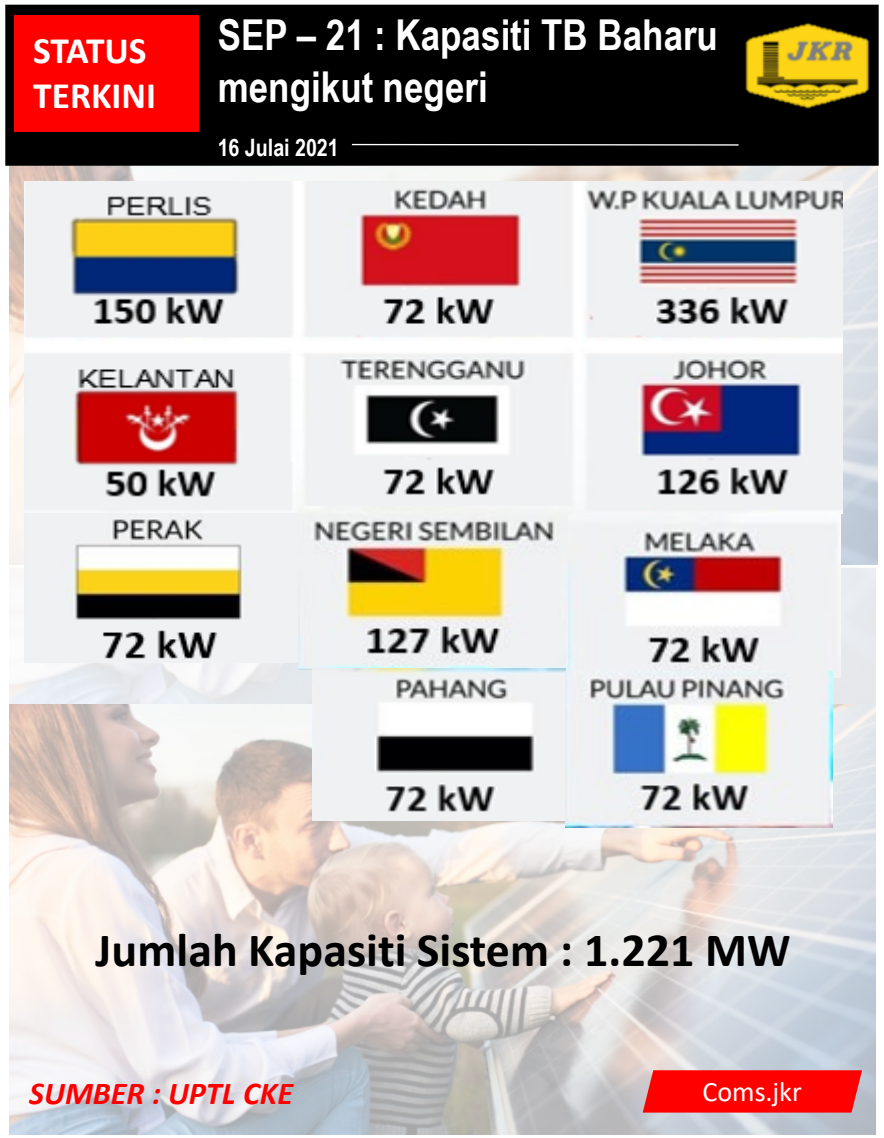
PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

PERLAKSANAAN PROGRAM SOLAR ENERGY PURCHASING – *PROGRAM RINTIS*

Kementerian & Agensi Kerajaan Persekutuan pertama melalui Program SEP akan hasilkan kapasiti sistem solar melebihi

1 MegaWatt (MW)

PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR



Bil	Bangunan	Kapasiti (kWp)
1	Kompleks KKR	193
2	Kompleks JKR	143
3	CKE Kedah	72
4	CKE Pulau Pinang	72
5	CKE Perak	72
6	CKE Melaka	72
7	CKE Negeri Sembilan	127
8	CKE Johor	126
9	CKE Pahang	72
10	CKE Terengganu	72
11	CKE Kelantan	50
12	CKE Perlis	150
Jumlah Kapasiti		**1,221**

PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

PROGRAM RINTIS

Jumlah keseluruhan kapasiti Solar PV

1.2 MW

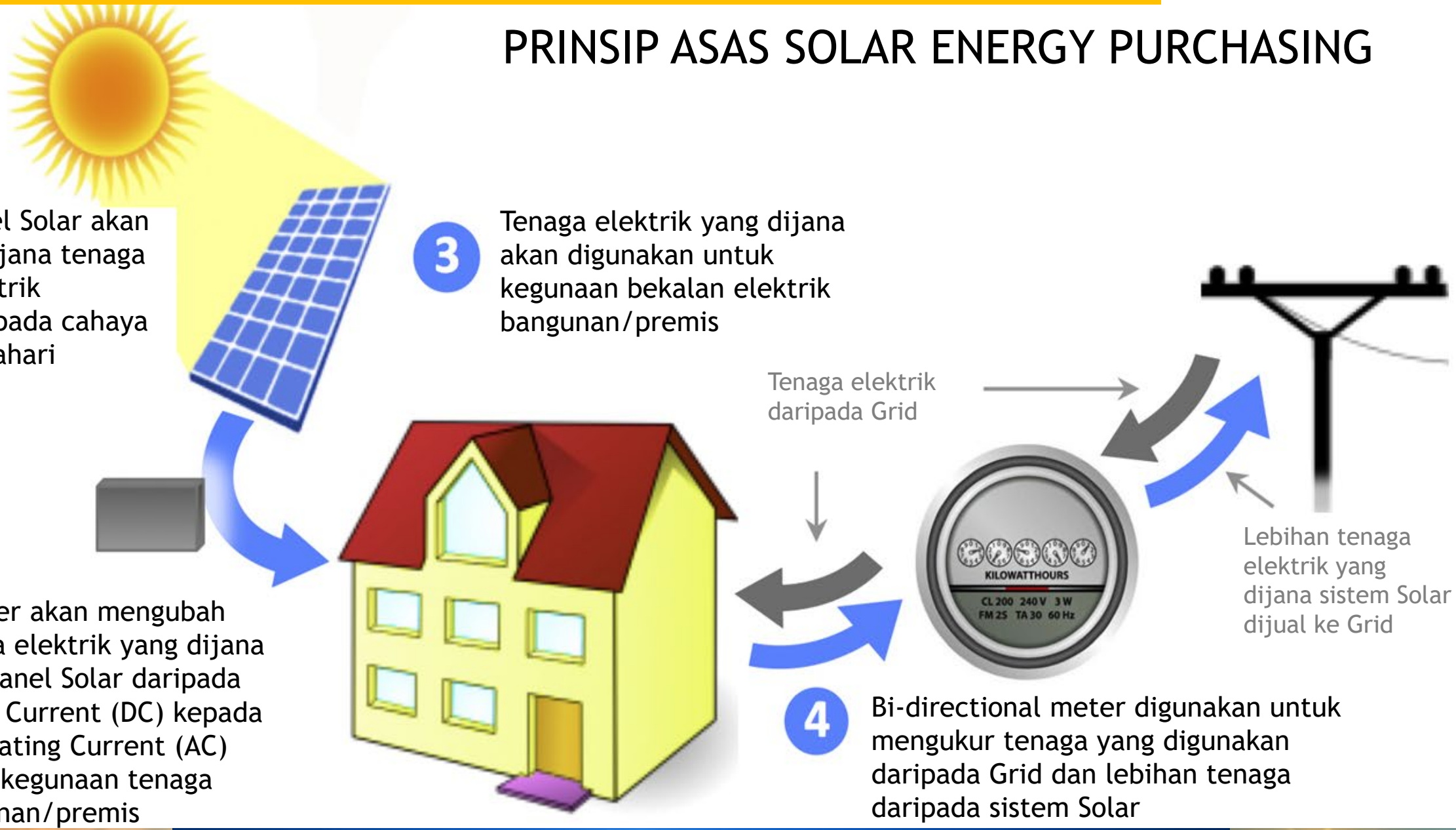
Jumlah keseluruhan penjimatan

RM9.27 juta

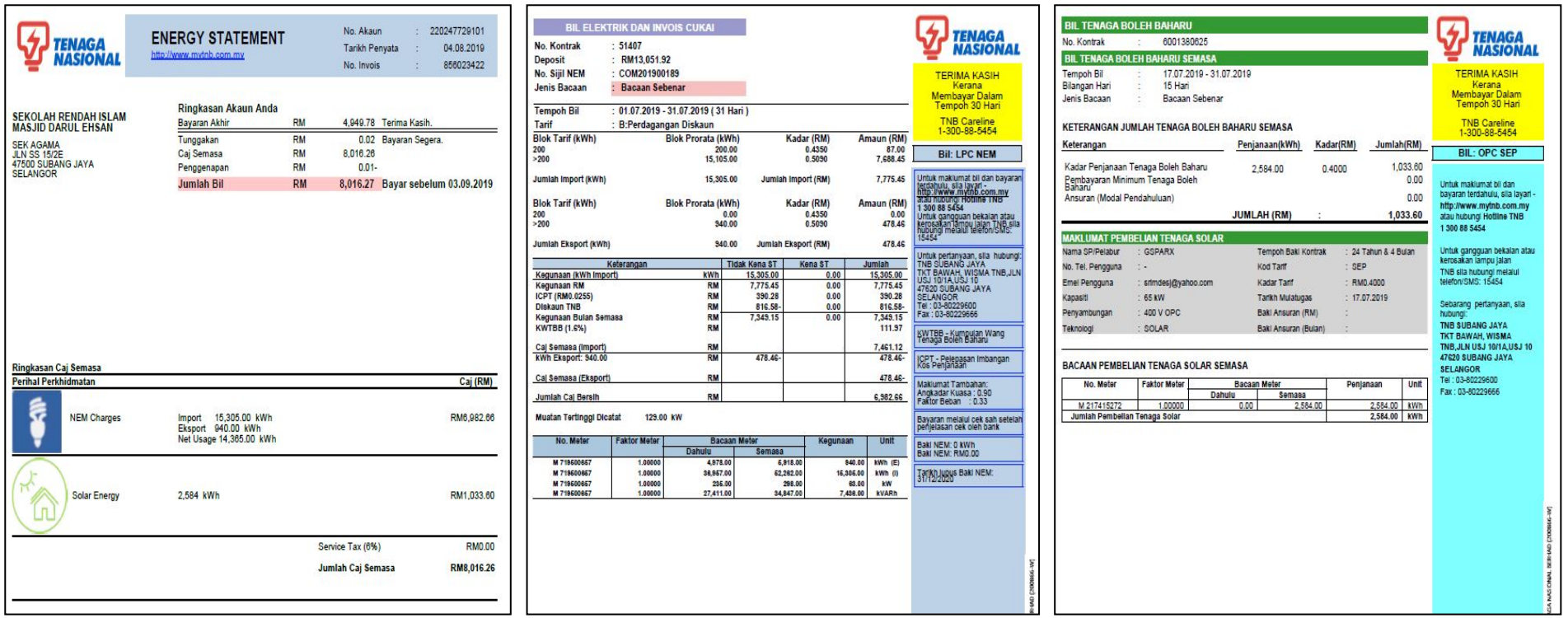
1,400 MWh / setahun tenaga elektrik dijana daripada sumber tenaga **HIJAU**

819 tonnes CO_2 akan dikurangkan setiap tahun

PRINSIP ASAS SOLAR ENERGY PURCHASING



Bil Elektrik Bulanan disatukan dalam Satu Bil yang sama



TENAGA NASIONAL

ENERGY STATEMENT
http://www.mytnb.com.my

No. Akaun : 220247729101
Tarikh Penyata : 04.08.2019
No. Invois : 856023422

SEKOLAH RENDAH ISLAM MASJID DARUL EHSAN
SEK AGAMA
JLN SS 15/2E
47500 SUBANG JAYA
SELANGOR

Ringkasan Akaun Anda

Bayaran Akhir	RM	4,949.78	Terima Kasih.
Tunggakan	RM	0.02	Bayaran Segera.
Caj Semasa	RM	8,016.26	
Penggenapan	RM	0.01-	
Jumlah Bil	**RM**	**8,016.27**	**Bayar sebelum 03.09.2019**

Ringkasan Caj Semasa

Perihal Perkhidmatan		Caj (RM)
NEM Charges	Import 15,305.00 kWh Eksport 940.00 kWh Net Usage 14,365.00 kWh	RM6,982.66
Solar Energy	2,584 kWh	RM1,033.60
	Service Tax (6%)	RM0.00
	Jumlah Caj Semasa	**RM8,016.26**

BIL ELEKTRIK DAN INVOIS CUKAI

No. Kontrak : 51407
Deposit : RM13,051.92
No. Sijil NEM : COM201900189
Jenis Bacaan : Bacaan Sebenar

Tempoh Bil : 01.07.2019 - 31.07.2019 (31 Hari)
Tarif : B:Perdagangan Diskaun

Blok Tarif (kWh)	Blok Prorata (kWh)	Kadar (RM)	Amaun (RM)
200	200.00	0.4350	87.00
>200	15,105.00	0.5090	7,688.45
Jumlah Import (kWh)	15,305.00	Jumlah Import (RM)	7,775.45

Blok Tarif (kWh)	Blok Prorata (kWh)	Kadar (RM)	Amaun (RM)
200	0.00	0.4350	0.00
>200	940.00	0.5090	478.46
Jumlah Eksport (kWh)	940.00	Jumlah Eksport (RM)	478.46

Keterangan		Tidak Kena ST	Kena ST	Jumlah
Kegunaan (kWh Import)	kWh	15,305.00	0.00	15,305.00
Kegunaan RM	RM	7,775.45	0.00	7,775.45
ICPT (RM0.0255)	RM	390.28	0.00	390.28
Diskaun TNB	RM	816.58-	0.00	816.58-
Kegunaan Bulan Semasa	RM	7,349.15	0.00	7,349.15
KWTBB (1.6%)	RM			111.97
Caj Semasa (Import)	RM			7,461.12
kWh Eksport: 940.00	RM	478.46-		478.46-
Caj Semasa (Eksport)	RM			478.46-
Jumlah Caj Bersih	RM			6,982.66

Muatan Tertinggi Dicatat 129.00 kW

No. Meter	Faktor Meter	Bacaan Meter Dahulu	Bacaan Meter Semasa	Kegunaan	Unit
M 719600867	1.00000	4,978.00	5,918.00	940.00	kWh (E)
M 719600867	1.00000	38,867.00	62,282.00	16,305.00	kWh (I)
M 719600867	1.00000	255.00	298.00	60.00	kW
M 719600867	1.00000	27,411.00	34,847.00	7,436.00	kVARh

TENAGA NASIONAL

TERIMA KASIH
Kerana
Membayar Dalam
Tempoh 30 Hari

TNB Careline
1-300-88-5454

Bil: LPC NEM

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 SUBANG JAYA
TKT BAWAH, WISMA TNB,JLN USJ 10/1A,USJ 10
47620 SUBANG JAYA
SELANGOR
Tel : 03-80229600
Fax : 03-80229666

kWTBB - Kumpulan Wang Tenaga Boleh Baharu

ICPT - Pelepasan Imbangan Kos Penjanaan

Maklumat Tambahan:
Angkadar Kuasa : 0.90
Faktor Beban : 0.33

Bayaran melalui cek sah setelah penjelasan cek oleh bank

Baki NEM: 0 kWh
Baki NEM: RM0.00

Tarikh Tutup Baki NEM: 31/12/2020

BIL TENAGA BOLEH BAHARU

No. Kontrak : 6001380625

BIL TENAGA BOLEH BAHARU SEMASA

Tempoh Bil : 17.07.2019 - 31.07.2019
Bilangan Hari : 15 Hari
Jenis Bacaan : Bacaan Sebenar

KETERANGAN JUMLAH TENAGA BOLEH BAHARU SEMASA

Keterangan	Penjanaan(kWh)	Kadar(RM)	Jumlah(RM)
Kadar Penjanaan Tenaga Boleh Baharu	2,584.00	0.4000	1,033.60
Pembayaran Minimum Tenaga Boleh Baharu			0.00
Ansuran (Modal Pendahuluan)			0.00
		JUMLAH (RM) :	1,033.60

MAKLUMAT PEMBELIAN TENAGA SOLAR

Nama SP/Pelabur	: GSPARX	Tempoh Baki Kontrak	: 24 Tahun & 4 Bulan
No. Tel. Pengguna	: -	Kod Tarif	: SEP
Emel Pengguna	: srlmdesj@yahoo.com	Kadar Tarif	: RM0.4000
Kapasiti	: 65 kW	Tarikh Mulatugas	: 17.07.2019
Penyambungan	: 400 V OPC	Baki Ansuran (RM)	:
Teknologi	: SOLAR	Baki Ansuran (Bulan)	:

BACAAN PEMBELIAN TENAGA SOLAR SEMASA

No. Meter	Faktor Meter	Bacaan Meter Dahulu	Bacaan Meter Semasa	Penjanaan	Unit
M 217415272	1.00000	0.00	2,584.00	2,584.00	kWh
Jumlah Pembelian Tenaga Solar				2,584.00	kWh

TENAGA NASIONAL

TERIMA KASIH
Kerana
Membayar Dalam
Tempoh 30 Hari

TNB Careline
1-300-88-5454

Bil: OPC SEP

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

Sebarang pertanyaan, sila hubungi:
TNB SUBANG JAYA
TKT BAWAH, WISMA TNB,JLN USJ 10/1A,USJ 10
47620 SUBANG JAYA
SELANGOR
Tel : 03-80229600
Fax : 03-80229666

PELAKSANAAN PROGRAM TENAGA BOLEH BAHARU (TBB) JKR

CARTA ALIR PERLAKSANAAN PROGRAM

PERMOHONAN	KAJIAN & CADANGAN	TATACARA & PERUNDANGAN	TAWARAN	PEMASANGAN	OPERASI
Terima Permohonan Penyedia Perkhidmatan	Kajian Kesesuaian Pemasangan Terima Cadangan Penyedia Perkhidmatan	Muktamad Dokumen Perjanjian *26 November 2020* Jawatankuasa Penilaian *2 Disember 2020*	Surat Tawaran *Mac 2021*	Pemasangan Sistem *Jun 2021*	Operasi Sistem & Bill bermula *September 2021*
	JKR, TNB/GSPARX	JKR, PUU KKR, Ahli J/K Penilaian	KKR & JKR	TNB/GSPARX	

LAPORAN JAWATANKUASA PENILAIAN TENAGA LESTARI (JKPTL)

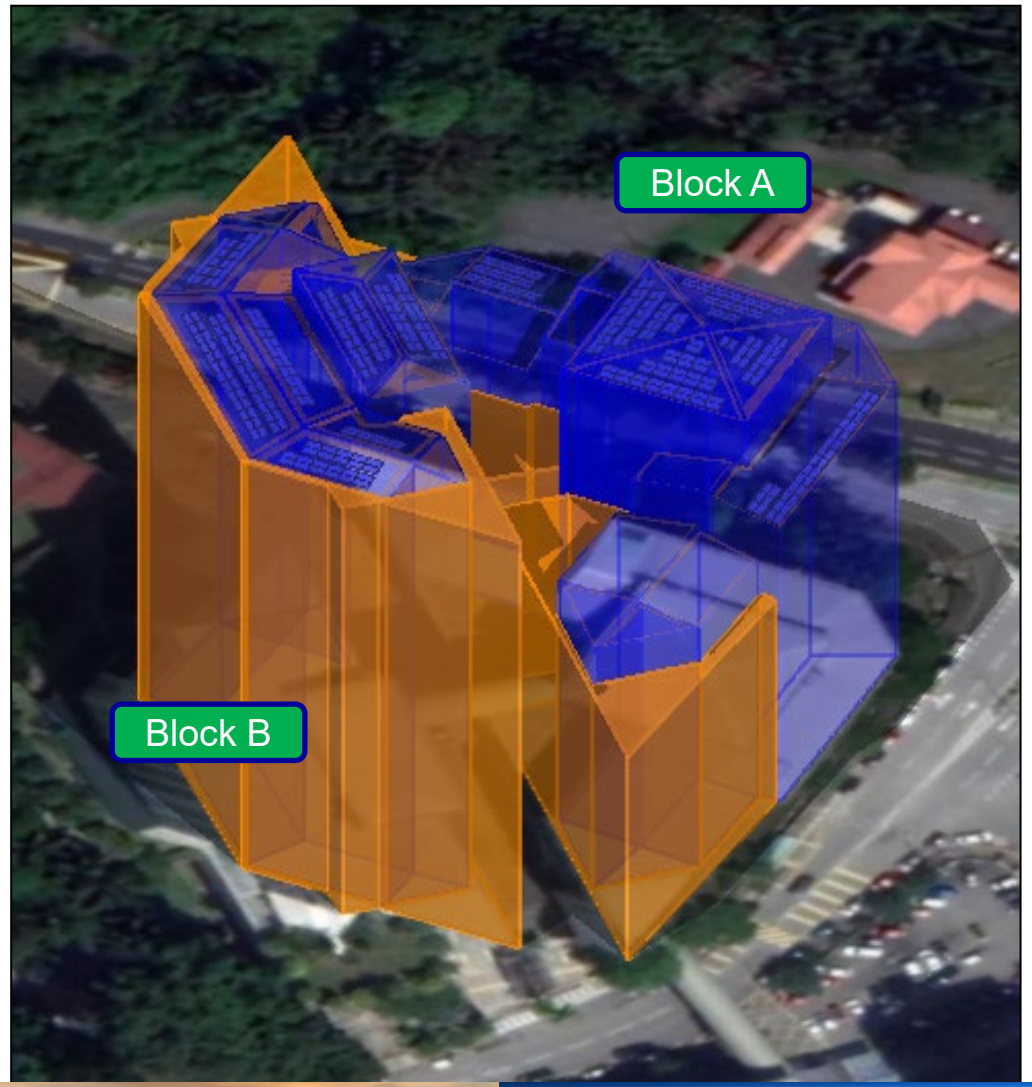
- Penilaian Tawaran Tarif dan Tempoh Perjanjian

Bil	Bangunan	Tarif TNB	Kadar tarif TNB/kWh	Kadar tarif bekalan elektrik solar / kWh	Kadar Penjimatan (%)	Tempoh Perjanjian
Tawaran Pertama (22 September 2020):						
1	Kompleks KKR/JKR	C1	0.365	0.34	6.85	21 tahun
2	CKE Negeri	B	0.509	0.40	21.41	21 tahun
Tawaran Kedua (22 Januari 2021):						
1	Kompleks KKR/JKR	C1	0.365	0.30	17.8	21 tahun
2	CKE Negeri	B	0.509	0.35	31.24	21 tahun

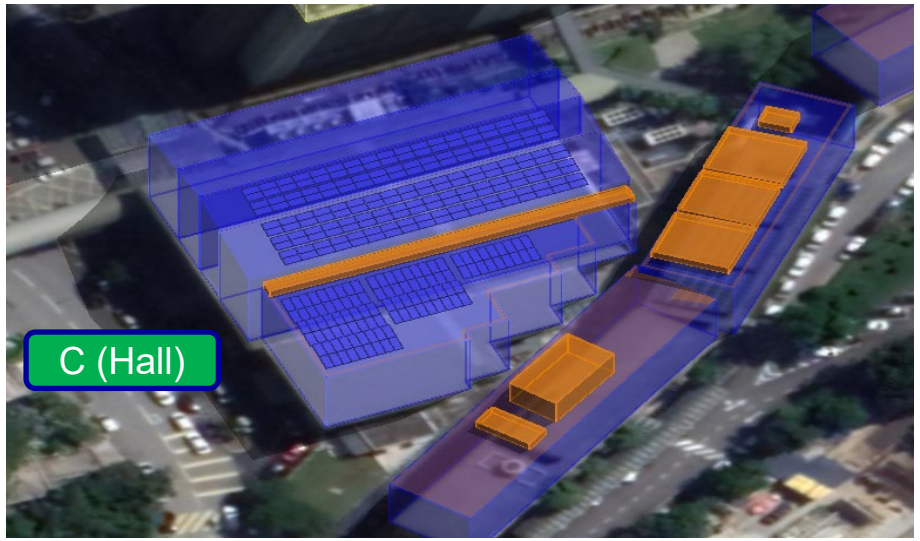
Jumlah anggaran penjimatan sebanyak RM9.27 juta untuk tempoh 21 tahun

- Program Solar Energy Purchasing (SEP) untuk bangunan KKR dan JKR Malaysia telah dilancarkan oleh **YB Dato' Sri Haji Fadillah bin Haji Yusof, Menteri Kanan Kerja Raya** pada 16hb Mac 2021.
- Program SEP berkonsep *zero upfront cost dan zero capex* ini mensasarkan pemasangan sistem solar di 12 buah bangunan KKR & JKR Malaysia dengan **kapasiti 1.2 MW**, penjimatan bil elektrik sebanyak **RM9.3 juta** untuk tempoh 21 tahun dan pengurangan pelepasan karbon sebanyak **819 tan CO_2 setahun**.
- KKR dan JKR Malaysia akan menjadi **peneraju untuk perlaksanaan program SEP yang lebih menyeluruh** untuk bangunan-bangunan Kerajaan yang lain ke arah penggunaan tenaga yang lebih cekap dengan penerapan elemen lestari dalam aspek pembinaan.

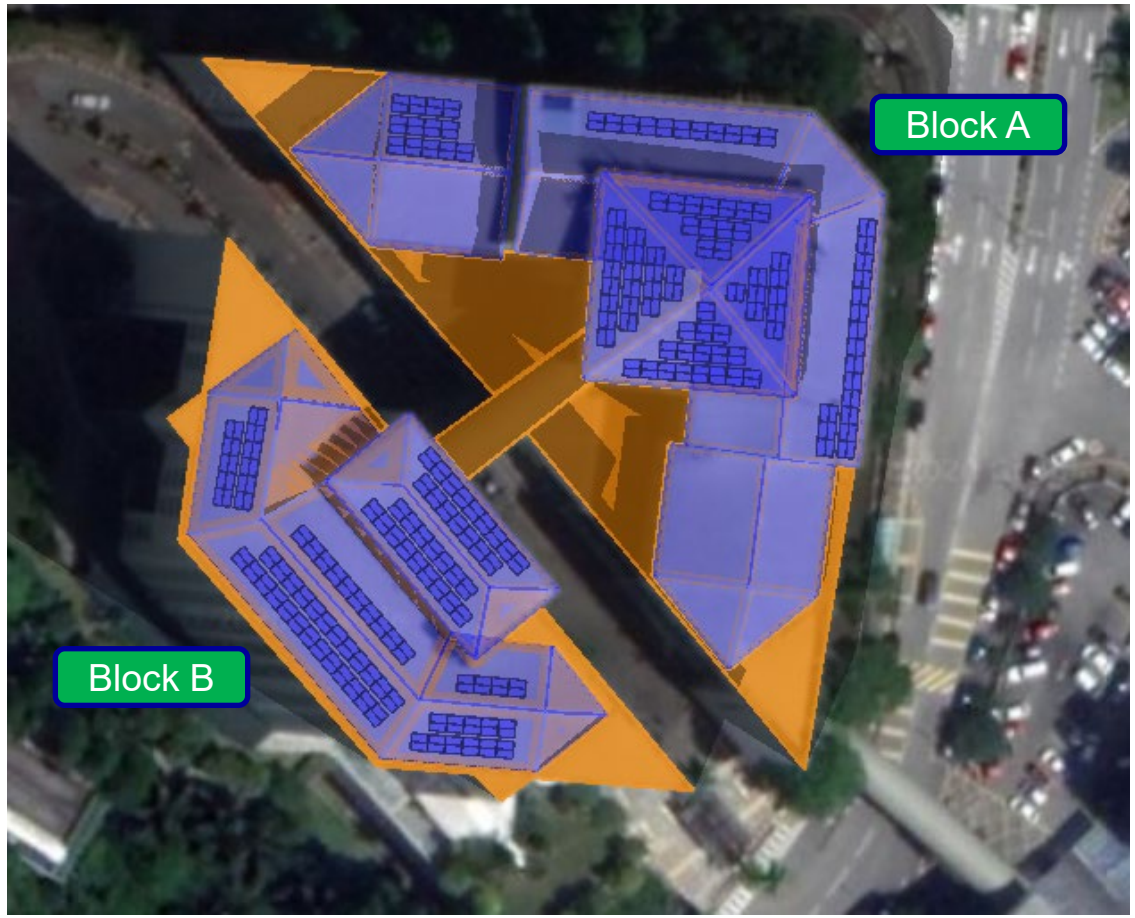
Bangunan KKR A, B and C (Dewan)



Technical Detail		
Proposed Installation Capacity	Block A	100 kWp
	Block B	93 kWp
	Block C (Hall)	144 kWp
Inverter Details	Sungrow/Huawei or equivalent Tier 1 supplier	
Interconnection	At Building MSB location	
Distance from solar MSB to interconnection point	Inside Building MSB	

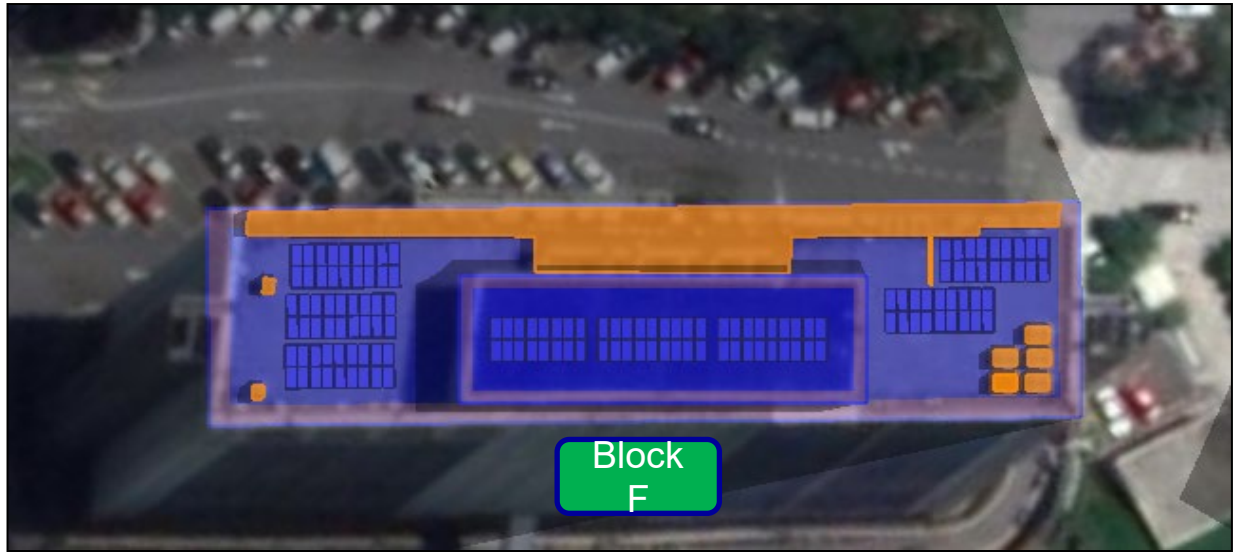


Bangunan KKR A, B and C (Dewan) – 2D Perspectives



Bangunan JKR : Block F

Technical Detail		
Proposed Installation Capacity	Block F	91 kWp
Inverter Details	Sungrow/Huawei or equivalent Tier 1 supplier	
Interconnection	At Building MSB location (DB rating 600A)	
Distance from solar MSB to interconnection point	Approx 10m	



Bangunan JKR : Block A, B, C, D,

Technical Detail		
Proposed Installation Capacity	Block A,B	36 kWp
	Block C	18 kWp
	Block D	18 kWp
Inverter Details	Sungrow/Huawei or equivalent Tier 1 supplier	
Interconnection	At Building MSB location	
Distance from solar MSB to interconnection point	Inside Building MSB	

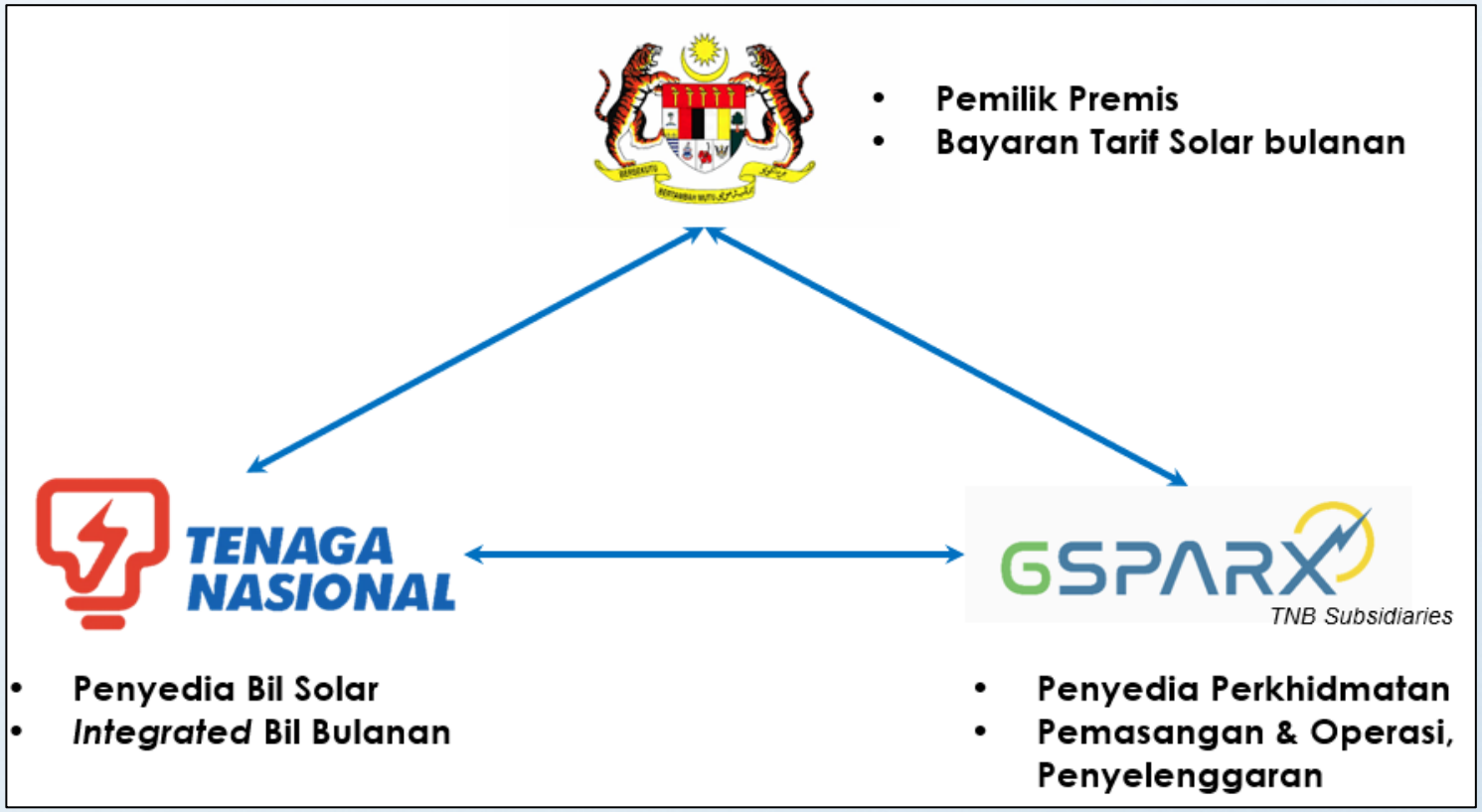
CONTOH PEMASANGAN SOLAR PV DI ATAS BUMBUNG

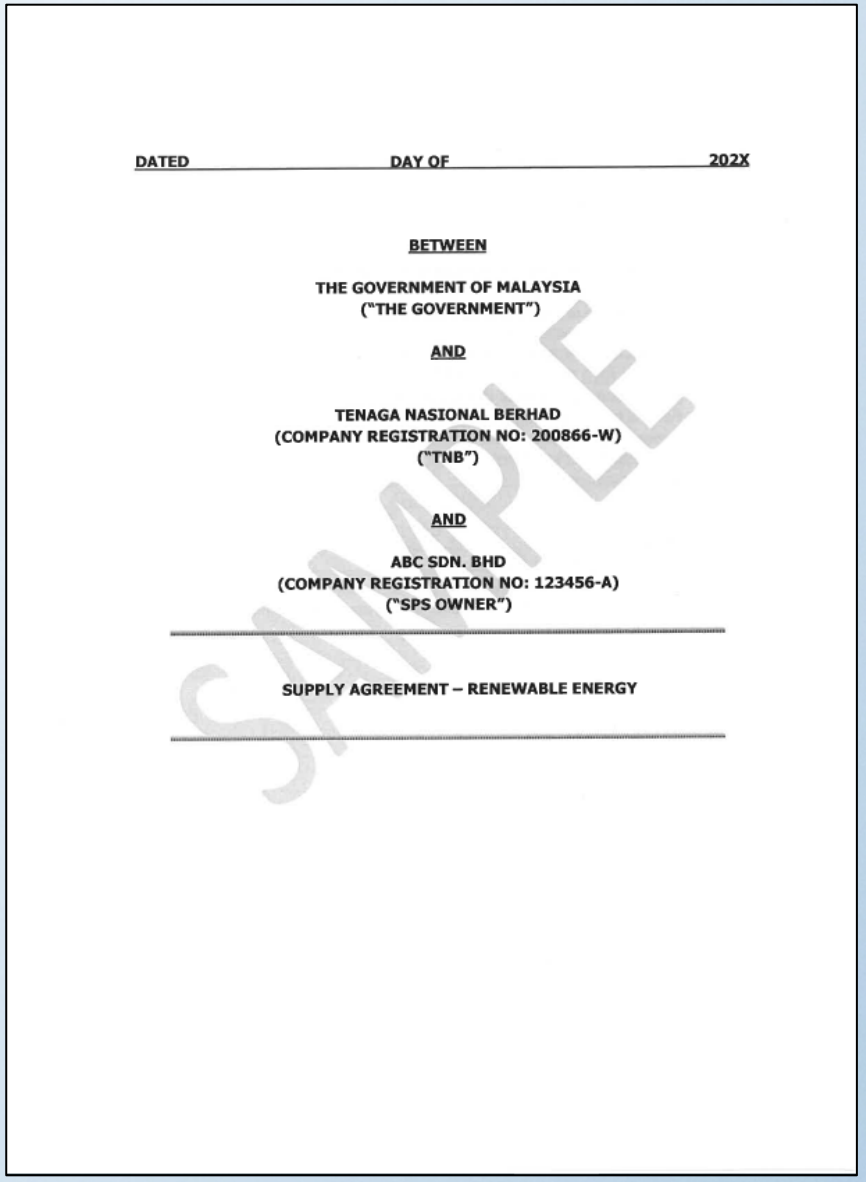
SARE

SUPPLY AGGREEMENT RENEWABLE ENERGY

SARE

Konsep Perjanjian SARE
- ***Tri-parte antara KKR/JKR – TNB – GSPARX***
- ***Tertakluk kepada Electricity Supply Act***





DATED DAY OF 202X

BETWEEN

THE GOVERNMENT OF MALAYSIA
("THE GOVERNMENT")

AND

TENAGA NASIONAL BERHAD
(COMPANY REGISTRATION NO: 200866-W)
("TNB")

AND

ABC SDN. BHD
(COMPANY REGISTRATION NO: 123456-A)
("SPS OWNER")

SUPPLY AGREEMENT – RENEWABLE ENERGY

SARE

TABLE OF CONTENTS

SARE

SUPPLY AGREEMENT - RENEWABLE ENERGY

THIS SUPPLY AGREEMENT - RENEWABLE ENERGY is made on the ..... day of ....., 20.....;

BETWEEN:

(1) **THE GOVERNMENT OF MALAYSIA** who for the purpose of this Agreement is represented by **JABATAN KERJA RAYA** and having its registered address at ---------- (hereinafter referred to as "**the Government**") of the first part;

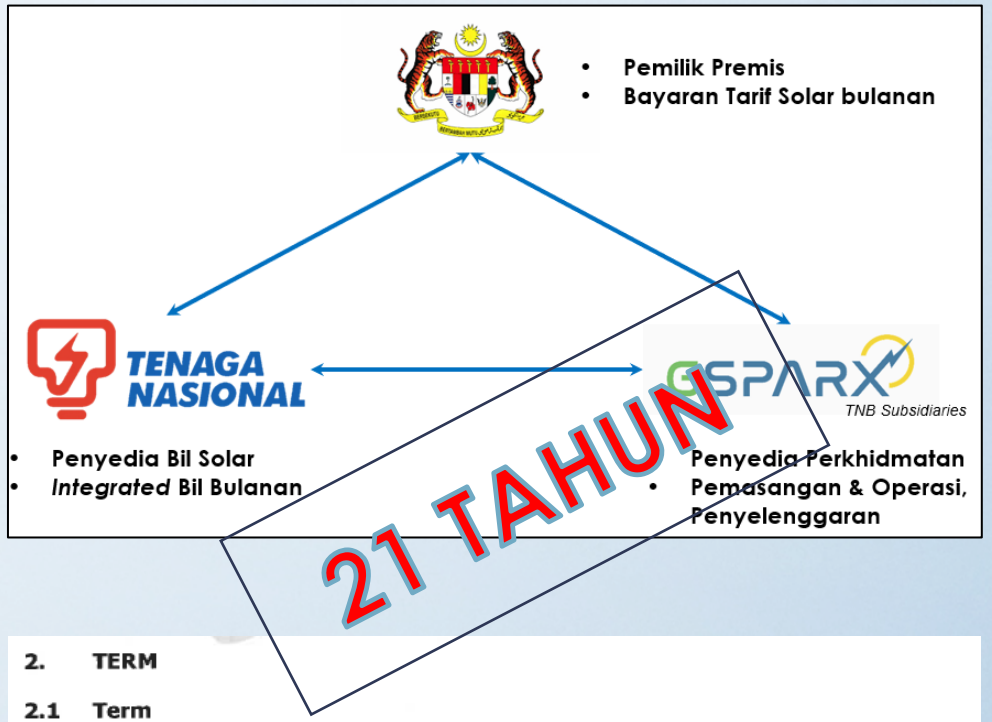
AND

(2) **TENAGA NASIONAL BERHAD (Company Registration No. 200866-W)**, a public limited liability company incorporated in Malaysia under the Companies Act 2016 [*Act 777*] and having its registered office at Pejabat Setiausaha Syarikat, Tingkat 2, Ibu Pejabat Tenaga Nasional Berhad, No. 129, Jalan Bangsar, 59200 Kuala Lumpur, Wilayah Persekutuan (hereinafter referred to as "**TNB**") of the second part;

AND

(3) **ABC SDN. BHD. (Company Registration No. 123456-A)**, a private limited liability company incorporated in Malaysia under the Companies Act 2016 [*Act 777*] and having its registered office at .....(insert address) (hereinafter referred to as the "**SPS Owner**") of the third and final part;

(*The Government, TNB and SPS Owner may individually be referred to as "the Party" and collectively as "the Parties"*).



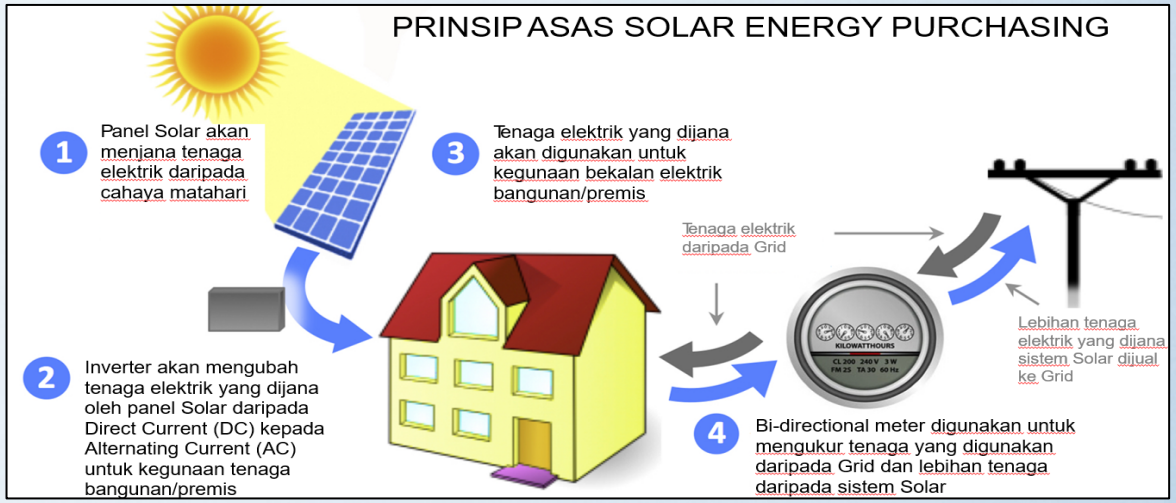
2. TERM

2.1 Term

This Agreement shall be for a period of .... months (hereinafter referred to as the "Term") commencing from .....[*insert date of commencement*] (hereinafter referred to as the "Commencement Date") and shall expire on .....[*insert date of expiry*] (hereinafter referred to as the "Expiry Date") unless terminated in accordance with the terms and conditions provided in this Contract.

SARE

Solar PV System means the solar photovoltaic energy generating system located on the Site at the Premises with a DC capacity of ..... **kWp** and ancillary equipment and facilities as illustrated in the diagram as attached **Appendix A;**

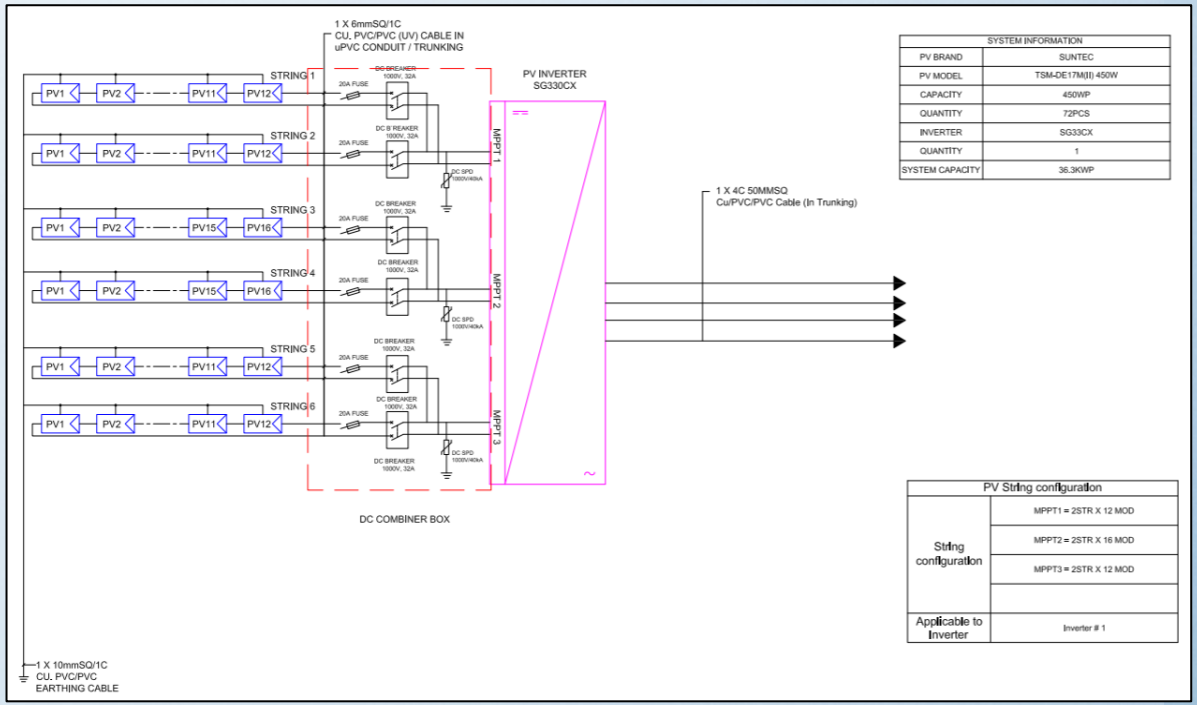


APPENDIX A

Technical Requirements of Solar PV System

A1. GENERAL DESCRIPTION

The solar PV system is a .....kWac photovoltaic (PV) System with the installed capacity of ..... kWdc. The solar PV system is located at the carpark roof of ..... The PV modules are roof mounted with fixed tilt and are connected in series to form strings. The strings are subsequently feed into inverters. The direct current (DC) power produced by the PV modules is converted into Alternating Current (AC) by the inverters.



SARE

A2.1 Photovoltaic Modules

Photovoltaic modules with the following specification, or equivalent, shall be installed in the Solar PV System:

Item	PV Module
Manufacturer	
Model Type	
Certifications and Standards	Refer to item A.3.1(A).
Power Tolerance (W)	≥ +0 W
System Voltage	1000 V or 1500 V
Module Efficiency (%)	≥ 16%
Min Nominal Power at STC (PMPP) per module	
Type of photovoltaic module mounting (fixed or with tracking)	Fixed roof mounted

A2.2 Inverter

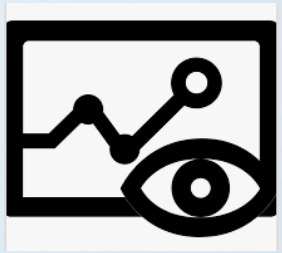
Inverter with the following specification, or equivalent, shall be installed in the Solar PV System:

Item	Inverter
Manufacturer	
Model Type	
Rated frequency	50 Hz
Rated Power	230 V / 400 V
Connection Phases	3 phase
Certifications and standards	Refer to item A.3.1 (A).
Protection Rating	IP 65
Efficiency (%)	≥ 97.5%
Anti – islanding Protection	Yes

TIER 1 PRODUCT IS A MUST !!!!!

SARE

(c) The SPS Owner may inspect and test the Solar PV System at its own cost and expenses. The SPS Owner shall provide the Government with reasonable advance written notice of any inspection and tests to be conducted. SPS Owner shall permit a representative of the Government to witness and verify all inspections and tests.



Attachment A of Appendix A

General Chargeman Responsibility – For Rooftop Solar Installation.

1. To monitor daily/weekly/monthly and ensure safe operation of the whole solar pv installation system on site.
2. Able to execute safe switching procedure to fully/partially turn on or turn off the system as required.
3. In case of emergency, able to immediately and safely shut down and isolate the system.
4. In case of emergency, able to advice the local authority, enforcers, fire brigade, rescuer or any other parties on site about the whereabout, condition and hazard of the operating/malfunctioning solar pv system.
5. To ensure that the solar pv system is not being tempered without the authorisation by ABC
6. To follow existing and future guideline with regards to solar rooftop and LV installation set forth by Suruhanjaya Tenaga, other regulating authorities and ABC.

SARE

2.2 Transfer of the Solar PV System and Solar Energy Meter

Upon the expiry of the Term, the SPS Owner and TNB shall transfer to the Government and take all actions necessary to effect the transfer of all rights, title and interest to the Solar PV System and the Solar Energy Meter respectively so that the Government shall become the owner thereof. Upon such transfer, all property and title in the Solar PV System and the Solar Energy Meter shall pass to the Government –

(a) in the event that the Government requests for TNB to remove the Solar Energy Meter from the Premises, the Parties hereby agrees that the cost for removing the Solar Energy Meter shall be borne by the SPS Owner; and

(b) the SPS Owner and TNB shall take all actions necessary to hand over to the Government all installation including all plans, designs, specifications and other relevant documents relating to the Solar PV System and Solar Energy Meter, that are still available and significantly relevant at the point of expiry of the Term and for the operations of the Solar PV System and Solar Energy Meter.

APA BERLAKU SELEPAS 21 TAHUN

SARE

5. SUPPLY AND PURCHASE OBLIGATIONS

5.1 Supply and Purchase of Net Electrical Output

Throughout the Term:

(a) the SPS Owner shall deliver and supply to the Government and the Government shall accept and purchase the Net Electrical Output which is generated by the Solar PV System; and

(b) the Government shall make Solar Energy Payments in full to TNB for such Net Electrical Output at the times stipulated in Clause 6 and in amounts calculated in accordance with **Appendix C.**

C1.2 Energy Payment

(A) Subject to paragraph C1.2(B) below, the Solar Energy Payment for Net Electrical Output delivered in each Billing Period shall be calculated as follows:

SOLAR ENERGY PAYMENT	**SEP = NEO x SER**

where:

SEP = the Solar Energy Payment (in RM) in such Billing Period; SER = the Solar Energy Rate (at RM 0.46/kWh); and
NEO = the Net Electrical Output (in kWh) delivered in such Billing Period.

(B) If the Solar Energy Payment relates to a Billing Period which does not comprise a full calendar month, the Government agrees that the Solar Energy Payment for such Billing Period shall be determined in accordance with C1.2(A) above.

(C) The Minimum Solar Energy Payment = RM 0

KEWAJIPAN KERAJAAN UNTUK MEMBAYAR TENAGA YANG DIJANA MELALUI SISTEM SOLAR

MINIMUM PAYMENT = RM 0.00

SARE

❑ **Penilaian Tawaran Tarif dan Tempoh Perjanjian**

Bil	Bangunan	Tarif TNB	Kadar tarif TNB/kWh	Kadar tarif bekalan elektrik solar / kWh	Kadar Penjimatan (%)	Tempoh Perjanjian
Tawaran Pertama (22 September 2020):						
1	Kompleks KKR/JKR	C1	0.365	0.34	6.85	21 tahun
2	CKE Negeri	B	0.509	0.40	21.41	21 tahun
Tawaran Kedua (22 Januari 2021):						
1	Kompleks KKR/JKR	C1	0.365	0.30	17.8	21 tahun
2	CKE Negeri	B	0.509	0.35	31.24	21 tahun

- **Jumlah anggaran penjimatan sebanyak RM9.27 juta untuk tempoh 21 tahun**

FINAL NEGOTIATION

Kompleks KKR/JKR = RM 0.29 sen

CKE Negeri = RM 0.34 sen

NEM SCHEME (JUAL KE GRID TNB)

Kompleks KKR/JKR = RM 0.365 sen

CKE Negeri = RM 0.509 sen

SARE

E2. Purchase Price of Solar PV System

(a) If the Government gives a Purchase Notice pursuant to Clause 15.7(a) of this Agreement to purchase the Solar PV System, the Government shall pay an amount equal to:

(i) The Purchase Price as determined in accordance with Attachment A of this **Appendix E**; **minus**

(ii) the Transfer Costs.

(b) If the SPS Owner gives a Purchase Notice pursuant to Clause 15.7(b) of this Agreement to require the Government to purchase the Solar PV System, the Government shall pay an amount equal to:

(i) the Purchase Price as determined in accordance with Attachment A of this **Appendix E**; **plus**

(ii) the Transfer Costs.

(c) Upon payment in full by the Government of the amount set out in paragraph E.2(a) and E.2(b), all rights, title and interest of the SPS Owner in the Solar PV System shall simultaneously be transferred by the SPS Owner to the Government (or its nominees) free from any encumbrance whatsoever.

JKR Cawangan Kejuruteraan Elektrik (CKE) – Johor

(126kWp)

Assumed Calculation Date	Value of the Said Purchase Price as at the Assumed Calculation Date (in RM)
Project Execution Date	373,526
Commencement Date	373,526
1st CD Anniversary Date	373,526
2nd CD Anniversary Date	366,976
3rd CD Anniversary Date	360,110
4th CD Anniversary Date	352,776
5th CD Anniversary Date	344,928
6th CD Anniversary Date	336,397
7th CD Anniversary Date	327,348
8th CD Anniversary Date	317,614
9th CD Anniversary Date	307,126
10th CD Anniversary Date	295,692
11th CD Anniversary Date	283,449
12th CD Anniversary Date	267,229
13th CD Anniversary Date	249,622
14th CD Anniversary Date	230,369
15th CD Anniversary Date	209,545
16th CD Anniversary Date	186,873
17th CD Anniversary Date	162,169
18th CD Anniversary Date	135,111
19th CD Anniversary Date	105,699
20th CD Anniversary Date	73,581
21st CD Anniversary Date	38,486

JKR Cawangan Kejuruteraan Elektrik (CKE) – Pulau Pinang

(72kWp)

Assumed Calculation Date	Value of the Said Purchase Price as at the Assumed Calculation Date (in RM)
Project Execution Date	213,443
Commencement Date	213,443
1st CD Anniversary Date	213,443
2nd CD Anniversary Date	209,701
3rd CD Anniversary Date	205,777
4th CD Anniversary Date	201,586
5th CD Anniversary Date	197,102
6th CD Anniversary Date	192,227
7th CD Anniversary Date	187,056
8th CD Anniversary Date	181,494
9th CD Anniversary Date	175,500
10th CD Anniversary Date	168,967
11th CD Anniversary Date	161,971
12th CD Anniversary Date	152,702
13th CD Anniversary Date	142,641
14th CD Anniversary Date	131,639
15th CD Anniversary Date	119,740
16th CD Anniversary Date	106,785
17th CD Anniversary Date	92,668
18th CD Anniversary Date	77,206
19th CD Anniversary Date	60,400
20th CD Anniversary Date	42,046
21st CD Anniversary Date	21,992

RM 2,964 / kwp

SARE

10.1 Obligation of the Government

10.1.1 Full Control and Possession of the Premises and the Site

(a) Throughout the Term, the Government shall have full control and possession of the Premises and the Site, including all necessary ownership rights, title and/or interest of the Premises and the Site.

(b) In the event that the Government wishes to sell or lease the Premises and the Site to any third party at any time during the Term, the Government may execute a novation agreement in a form required by TNB and the SPS Owner and procure such third party to execute such novation agreement so as to novate all of its rights and obligations under this Agreement to such third party.

(c) In the event that the Government wishes to pledge, mortgage, charge, encumber or create any lien on the Premises and the Site, in favour of commercial bank or such other financial institution, the Government shall, prior to effecting the same, provide TNB and the SPS Owner with at least one (1) month's written notice and procure to provide the SPS Owner and TNB with a written acknowledgement in a form required by the SPS Owner and TNB to expressly acknowledge that:

OBLIGASI KERAJAAN

- Berkuasa penuh kepada pemilikan bangunan
- Jual/sewakan bangunan kepada pihak Ketiga ??– Novasikan perjanjian SARE kepada pihak Ketiga tersebut

SARE

(i) the Solar PV System shall, at all times during the Term, be the property of the SPS Owner and the legal and beneficial ownership in and to the Solar PV System shall, at all times during the Term, remain vested in and with the SPS Owner; and

(ii) the Solar Energy Meter shall, at all times, be the property of TNB and the legal and beneficial ownership in and to the Solar Energy Meter shall, at all times, remain vested in and with TNB.

(d) Where there is existing pledge, mortgage, charge, encumbrance or lien already created on the Premises and the Site, the Government shall procure to provide the SPS Owner and TNB with the written acknowledgement as described in Clause 10.1.1(c) above not later than thirty (30) days from the Execution Date.

(e) The Government shall not create any obstruction and/or undertake any activity in the vicinity of the Premises which may interfere, hinder or impact the production of solar photovoltaic energy by the Solar PV System. TNB and/or the SPS Owner shall, at the cost and expense of the Government, be entitled to take any reasonable actions to remove any obstruction created by the Government in the vicinity of the Premises which may interfere, hinder or impact the production of solar photovoltaic energy by the Solar PV System. For the avoidance of doubt, TNB and/or the SPS Owner shall not be liable to pay any compensation for any losses and/or damages to the Government due to the aforesaid removal of obstruction created by the Government.

(f) The Government shall, prior to making any proposed extensions or alterations to the Premises and/or the Site, inform TNB and the SPS Owner in writing of any such proposed extensions or alterations to the Premises and/or the Site. TNB and/or the SPS Owner may recommend modifications or revisions to such proposed extensions or alterations to the Premises and/or the Site and the Government shall comply with the recommendations made by TNB and/or the SPS Owner if such recommendations relate to the safe operation of the Solar PV System and/or the Solar Energy Meter. For the avoidance of doubt, TNB and/or the SPS Owner shall be entitled to inspect the extension or alteration made the Premises and/or the Site if TNB and/or the SPS Owner so desires.

(g) Notwithstanding any provision in this Agreement to the contrary, in no

OBLIGASI KERAJAAN

- Tiada binaan atau aktiviti yang boleh memberikan impak kepada penjanaan tenaga system solar
- Sebelum kerja naiktaraf (extention) - Notify TNB/GSparx

SARE

10.1.4 Access to the Solar PV System and the Solar Energy Meter

(a) The Government shall, at all times during the Term, provide to TNB and the SPS Owner or their employees, agents or contractors all access rights to the Premises and the Site to the Solar PV System and the Solar Energy Meter for the purposes of carrying out the construction, installation, inspection, testing, operation, maintenance, replacement, removal and/or reading of the Solar PV System and/or the Solar Energy Meter or other relevant things relevant to the supply of solar photovoltaic energy to the Government.

(b) At all times during the Term, the Government agrees to keep the location associated with the Solar PV System and the Solar Energy Meter clean, clear and accessible to TNB and the SPS Owner or their employees, agents or contractors.

(c) The Government shall not create any obstruction and/or undertake any activity or place any equipment in the vicinity of the Solar PV System and the Solar Energy Meter which may endanger life or properties and/or to make any electrical wiring and/or installation to the Solar PV System and the Solar Energy Meter. TNB and/or the SPS Owner shall have the right to take any reasonable actions to remove any obstruction created by the Government at the cost and expense of the Government. For the avoidance of doubt, TNB and/or the SPS Owner shall not be liable to pay any compensation for any losses and/or damages to the Government due to the aforesaid removal of obstruction created by the Government.

10.1.5 Upkeep of the Solar PV System and the Solar Energy Meter

(a) The Government shall take all steps necessary to ensure that no damage or tampering is caused to the Solar PV System and the Solar Energy Meter. The Consumer shall be liable to TNB and the SPS Owner for any damage caused to the Solar PV System and the Solar Energy Meter due to the fault of the Government or any persons under the Government's control.

(b) The Government hereby agrees—

(i) to comply with the existing conditions imposed by Government Entities and Government Authorisation including the requirement to have a chargeman at

OBLIGASI KERAJAAN

- Memberikan kebenaran kepada pihak TNB/GSPARX untuk memasuki premis untuk tujuan kerja teknikal
- Mengambil langkah-langkah patut bagi melindungi system solar PV

SARE

10.2 Obligation of the SPS Owner

Subject to the terms and conditions of this Agreement, and limited to the scope of the SPS Owner's obligation under this Agreement, the SPS Owner shall –

(a) at its own risk, costs and expense, be responsible for obtaining all the finance, funding and pay for the installation of the Solar PV System in accordance with the terms and conditions of this Agreement without recourse to the Government;

(b) design, construct, install, own, operate and maintain the solar photovoltaic energy generating system in compliance and consistent with the requirements and regulations of the relevant authorities and in accordance with the specifications stated in this Agreement;

(c) carry out and complete its scope and obligation under this Agreement, at its own risk, costs and expense bearing and absorbing the entire cost for its scope as the SPS Owner and strict compliance with all applicable laws, rules, regulations and the directive of all the relevant authorities and in accordance with the terms and conditions of this Agreement;

(d) perform all its obligations under this Agreement with full responsibility, due diligence and efficiency;

(e) save as otherwise provided under this Agreement, shall hold the Government free from any liability arising under this Agreement due to any act of the SPS Owner and/or its contractors;

(f) immediately upon becoming aware of the same, give the Government notice in writing of all litigation or administrative or arbitration proceedings before or any court, judicial, administrative or governmental authority, arbitrator or other body affecting it or which is or are commenced, which will adversely affect its ability to perform its obligations under this Agreement;

(g) at its own costs and expenses, answer and defend, or cause to be answered and defended, all actions, suits, proceedings, claims and demands which may be taken against or made on it or its authorised agents or employees or any of them on account of or in respect of or arising out of any negligent act, willful misconduct or default, done or omitted to be done by the SPS Owner, its agents or employees or any of them in connection with the performance or non-performance of this Agreement or in the observance fulfilment, non-observance or non-fulfilment of any condition thereof or in any way relating thereto, and to promptly satisfy or comply with any order or judgment made against it;

(h) provide suitably qualified personnel for the implementation of this Agreement; and

(i) upon request by the Government and subject to further discussion of SPS Owner, to conduct training, seminars or workshop for the Government's personnel from time to time.

OBLIGASI GSPARX

- Pembiayaan program
- Rekabentuk, pembinaan, operasi dan penyelenggaraan system
- Penyediaan orang teknikal
- Melaksanakan aktiviti Latihan/Seminar/Worksyop kepada pihak kerajaan dari semasa ke semasa

SARE

OBLIGASI GSPARX

Insurance

Construction Phase

1. CEAR, DSU and TPL
   - Material Damage
   - Principal's Existing Property
   - Delay in Start Up
   - Third Party Liability

2. Workmen Compensation

Operational Phase

1. Property All Risk / Machinery Breakdown
2. Business Interruption
3. Comprehensive General Liability


AON

PLACEMENT SLIP

MASTER WORKMEN'S COMPENSATION / EMPLOYER'S LIABILITY INSURANCE

Period of Insurance — From 1st March 2021 until 28th February 2022 + 12 months Defect Liability Period

(The project period is including 2 months Testing & Commissioning Period for each and every project)

Insured (s)
A. GSPARX Sdn Bhd as Owner/ and/or
B. Appointed Contractors and/or all other Sub-Contractors including direct or nominated contractors of any tier and/or others engaged to provide goods or services in connection with the Project; and/or
C. The Consulting Engineer, Architects, Project Manager, and all other Professional Consultants, suppliers and manufacturers engaged by the Insured in connection with this Project, all in respect of their site activities only.
D. Lenders and Finance Parties, if applicable
E. Tenaga Nasional Berhad, its directors, officers and employees

All for their respective rights and interests.

The term Owner, Main Contractor, Sub-contractors shall also mean all their parent, affiliated, subsidiary and associated companies and corporations as now exist or may hereafter be constituted or acquired

Correspondence Address — GSPARX Sdn Bhd, Annexe Building, 129, Jalan Bangsar, 59200 Kuala Lumpur

Project/Contract Title — All work and activities in connection with the ownership, financing, development, design, engineering, procurement, supply, transportation, installation, construction, erection,


AON

PLACEMENT SLIP

COMPREHENSIVE GENERAL LIABILITY

Period Of Insurance — From 1st March 2021 until 28th February 2022

Insured
A. GSPARX Sdn Bhd as Owner and/or Operator
B. Lenders and Finance parties, if applicable
C. Tenaga Nasional Berhad, its directors, officers and employees

All for their respective rights and interest.

Address — GSPARX Sdn Bhd, Annexe Building, 129, Jalan Bangsar, 59200 Kuala Lumpur

Principal Coverage — Indemnity insured against all sums for which the Insured by reason of contractual liability assumed by him under a contract, shall become legally liable to pay damages in consequence upon:

- bodily injury to third party
- loss or damage to third party's property

including

All costs and expenses of litigations recovered by any claimant against the Insured and costs and expenses incurred with the written consent of the Insurer.

Limit of Liability — Public Liability RM10,000,000 anyone occurrence and unlimited during period of insurance.

Product Liability & Completed Operation RM1,000,000 anyone occurrence and in the aggregate.

Scope of Work
1. Consultation
   a. The GSPARX would provide brief advise to the interested consumer.
   b. Shared proposed tariff and calculated estimated savings.
2. Preliminary Study Presentation
3. Detail Study / Design


AON

PLACEMENT SLIP

COMPREHENSIVE MACHINERY INSURANCE

Period Of Insurance — From 1st March 2021 until 28th February 2022

Insured
A. GSPARX Sdn Bhd as Owner and/or Operator
B. Lenders and Finance parties, if applicable
C. Tenaga Nasional Berhad, its directors, officers and employees

All for their respective rights and interest.

Address — GSPARX Sdn Bhd, Annexe Building, 129, Jalan Bangsar, 59200 Kuala Lumpur

Business/Occupation — Investor/operator for Green Retail Generation system (Solar PV System)

Coverage

Section 1 All Risks Property Damage & Machinery Breakdown

The Insurers shall indemnify the Insured for any sudden physical loss or damage to the property insured which the Insured could not reasonably have foreseen and which occurs at the premises at any time during the period of insurance due to any cause not specifically excluded and which results in property insured needing to be repaired or replaced.

Section II Business Interruption

The Insurers shall indemnify the Insured for a loss of the interest insured unless specifically excluded if at any time during the period of insurance the property insured under the material damage section suffers loss or damage indemnifiable under the material damage section or which would have been indemnifiable under the material damage section but for the application of a deductible, thereby causing an interruption of or interference with the business insured.

The indemnity for the loss of interest insured shall be in respect of Gross Revenue consisting of Turnover less Uninsured Working Expenses.

The indemnity shall not exceed the sum insured for the maximum indemnity period of 5 months from the date of loss or occurrence.


AON

PLACEMENT SLIP

Type — MASTER CONSTRUCTION/ERECTION "ALL RISKS", DELAY IN START UP, THIRD PARTY LIABILITY

Policy Form — As per policy wording attached

Insured — Section 1 & 3 – Construction / Erection All Risks and Third Party Liability
A. GSPARX Sdn Bhd as Owner/ and/or
B. Appointed Contractors and/or all other Sub-Contractors including direct or nominated contractors of any tier and/or others engaged to provide goods or services in connection with the Project; and/or
C. The Consulting Engineer, Architects, Project Manager, and all other Professional Consultants, suppliers and manufacturers engaged by the Insured in connection with this Project, all in respect of their site activities only.
D. Lenders and Finance Parties, if applicable
E. Tenaga Nasional Berhad, its directors, officers and employees

All for their respective rights and interests.

The term Owner, Main Contractor, Sub-contractors shall also mean all their parent, affiliated, subsidiary and associated companies and corporations as now exist or may hereafter be constituted or acquired.

Section 2 – Delay in Start Up

GSPARX Sdn Bhd as Owner/ and/or

Tenaga Nasional Berhad, its directors, officers and employees as Sponsor

Lenders and Finance Parties

Correspondence Address — GSPARX Sdn Bhd, Annexe Building, 129, Jalan Bangsar, 59200 Kuala Lumpur

Project — All work and activities in connection with the ownership, financing, development, design, engineering, procurement, supply, transportation, installation, construction, erection, testing, commissioning, provision of services, start-up, performance tests, reliability run, project management, training of personnel for operations, preparatory work for the operating phase and defects liability rectification of the Roof Top Solar Project comprising of but not limited to PV modules, inverters,

GSPARX

A subsidiary of Tenaga Nasional

SARE

OBLIGASI GSPARX

O&M Scope

The operation plan for the Solar Plant is structured into the following:

(a) Online Performance Monitoring;

(b) Preventive (scheduled) maintenance;

(c) Corrective – as and when needed

(d) Reports, meetings, site inspections;

Description	Frequency
Solar PV Modules and mounting structure	
Visual Inspection of PV modules cleanliness	Annually
Visual inspection of supporting structure, such as rusting, soiling, inclination, galvanizations etc.	Annually
Visual inspection of connection bolts in mounting structures	Annually
Combiner Box	
Visual inspection of the enclosures and internal parts, such as breakages, ground debris, unusual smell, rusting	Annually
Visual inspection of cable terminals and fuses; verify DC disconnect operations	Annually
Inverters	
Visual inspection of inverters including cleanliness, display and functionality	Annually
Full inspection of inverters including thermal scanning, wiring connections, breakers, etc.	Annually
Inspection of inverter enclosures/building	Annually
Inspection per industry standard and per O&M manual provided by the manufacturer for each equipment	Annually
Visual inspection of all instruments in meteorological station, including module temperature sensors	Annually
Others	
PV modules cleaning	As needed based on Performance

WAY FORWARD

Bil	Bangunan	Kapasiti (kWp)
1	Kompleks KKR	193
2	Kompleks JKR	143
3	CKE Kedah	72
4	CKE Pulau Pinang	72
5	CKE Perak	72
6	CKE Melaka	72
7	CKE Negeri Sembilan	127
8	CKE Johor	126
9	CKE Pahang	72
10	CKE Terengganu	72
11	CKE Kelantan	50
12	CKE Perlis	150
Jumlah Kapasiti		**1,221**

UPTL
akan membantu, memantau dan melaksanakan program –program pepasangan di pejabat KKR HQ, JKR HQ dan CKE Negeri

THE RACE INTO SOLAR POWERED OFFICE :

ARE WE READY ?

YES WE ARE READY !!

LINDUNGI DIRI
LINDUNGI SEMUA
KEPADA SAUDARA SAUDARI
SALAM AIDIL ADHA