Suruhanjaya Tenaga
Energy Commission

MAKLUMAT PRESTASI & STATISTIK INDUSTRI PEMBEKALAN ELEKTRIK MALAYSIA

PERFORMANCE & STATISTICAL INFORMATION ON THE MALAYSIAN ELECTRICITY SUPPLY INDUSTRY

2020

Be Energy smart

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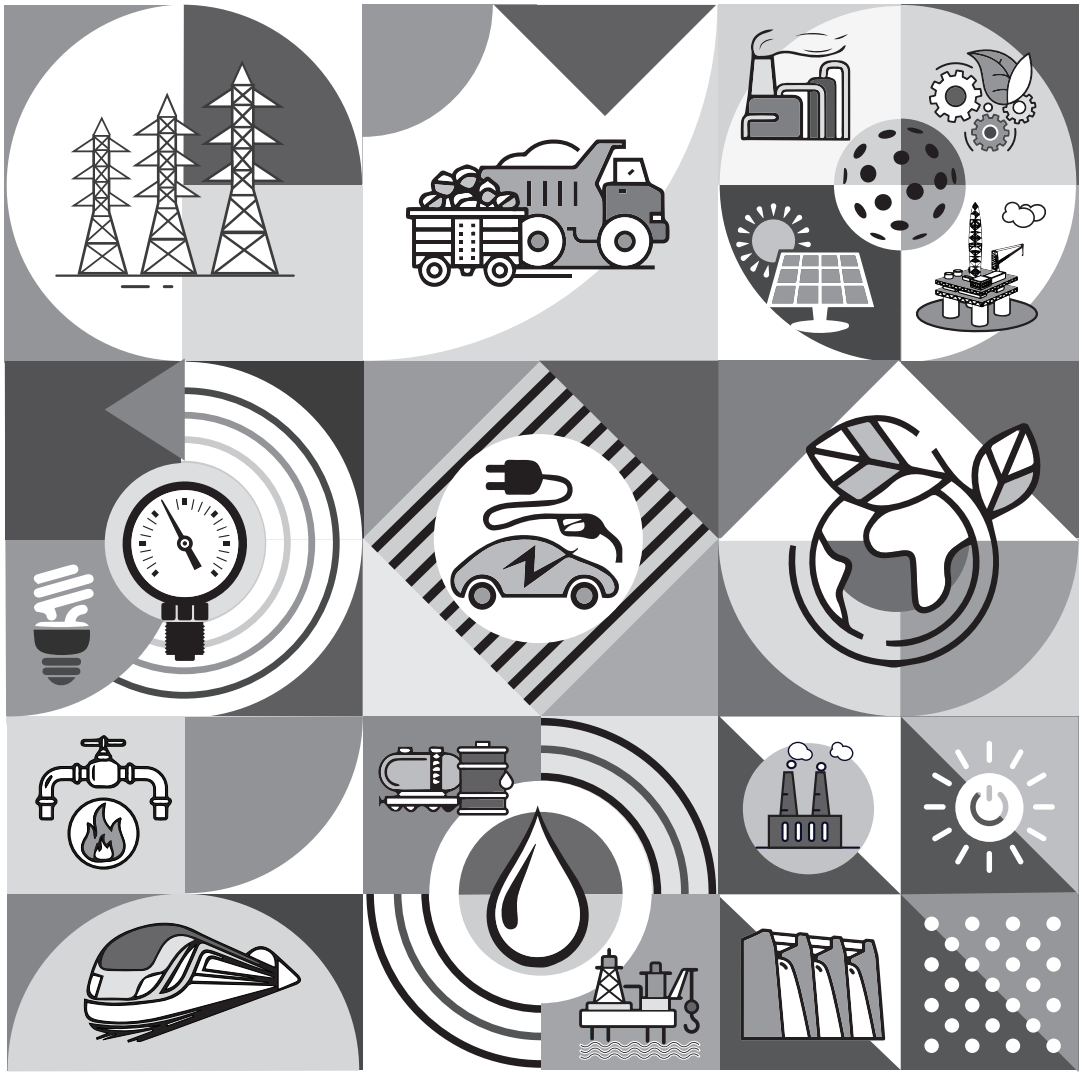

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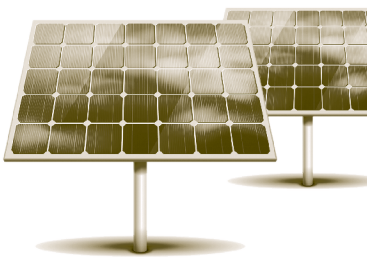
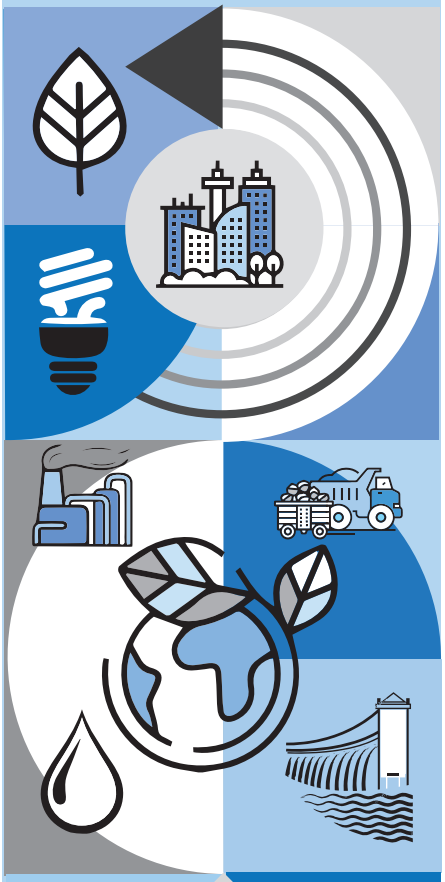


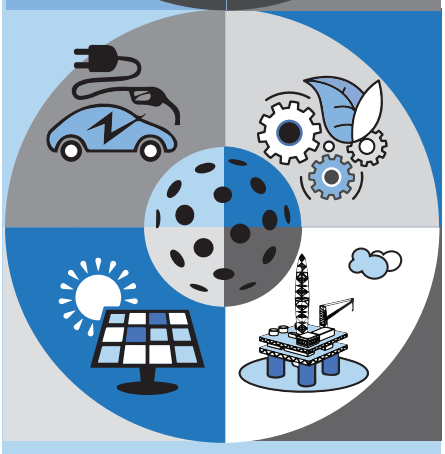
Unit dan Akronim | Units and Acronyms

Unit I Units	
cct-km	kilometer litar I circuit kilometer
GWj I GWh	Gigawatt jam I Gigawatt hour
km	kilometer
kV	kilovolt
MVA	Megavolt Ampere
MW	Megawatt
MWj I MWh	Megawatt jam I Megawatt hour
Akronim I Acronyms	
CAIDI	Customer Average Interruption Duration Index
CCGT	Turbin Gas Kitar Padu I Combined Cycle Gas Turbine
Cogen	*Cogeneration*
DE	Enjin Diesel I Diesel Engine
DePUI	*Delivery Point Unreliability Index*
DOSM	Jabatan Perangkaan Malaysia I Department of Statistics Malaysia
EAF	Purata Faktor Kesediaan Setara Average Equivalent Availability Factor
EFB	Tandan Sawit Kosong I Empty Fruit Bunch
EUOF	Purata Faktor Hentitugas Tidak Berjadual Setara Average Equivalent Unplanned Outage Factor
FiT	*Feed-In Tariff*
GE	Enjin Gas I Gas Engine
IPP	Penjana Bebas I Independent Power Producer
KDNK I GDP	Keluaran Dalam Negara Kasar I Gross Domestic Products
MUT	Kementerian Utiliti dan Telekomunikasi Sarawak I Ministry of Utility and Telecommunication Sarawak
LSS	Solar Berskala Besar I Large Scale Solar
MFO	*Medium Fuel Oil*
NEM	*Net Energy Metering*
NUR	N.U.R. Power Sdn. Bhd
OCGT	Turbin Gas Kitar Terbuka I Open Cycle Gas Turbine
OHL	Kabel Talian Atas I Overhead Cable
POME	Efluen Kilang Kelapa Sawit I Palm Oil Mill Effluent
PV	Fotovoltaik I Photovoltaic
SAIDI	*System Average Interruption Duration Index*
SAIFI	*System Average Interruption Frequency Index*
SARFI	*System Average RMS Frequency Index*
SEB	Sarawak Energy Berhad
SEDA	Sustainable Energy Development Authority
SELCO	Menjana Elektrik Untuk Kegunaan Sendiri I Generates Electricity For Self-Consumption
SESB	Sabah Electricity Sdn. Bhd.
SJ	Stesen Jana Kuasa I Power Station
TBB I RE	Tenaga Boleh Diperbaharui I Renewable Energy
TNB	Tenaga Nasional Berhad
WP	Wilayah Persekutuan I Federal Territory

Ringkasan Eksekutif

Executive Summary





RINGKASAN EKSEKUTIF 2020

Penerbitan mengenai industri pembekalan elektrik Malaysia ini mengandungi dua bahagian utama iaitu pertama, maklumat prestasi dan kedua, statistik. Setiap bahagian disusun mengikut tiga kawasan utama iaitu Semenanjung Malaysia, Sabah dan Sarawak di mana data yang dipaparkan merangkumi sistem penjanaan, sistem penghantaran dan sistem pengagihan elektrik negara. Turut dimuatkan ialah peta lokasi stesen-stesen jana kuasa utama, laporan prestasi tahunan, jadual tarif, harga jualan purata dan kos penjanaan syarikat-syarikat utiliti utama di Malaysia.

STATISTIK INDUSTRI PEMBEKALAN ELEKTRIK MALAYSIA

Pada tahun 2020, jumlah kapasiti penjanaan elektrik di Malaysia ialah 35,037 MW, merangkumi semua stesen jana kuasa utama yang bersambung kepada sistem Grid Nasional dan secara *off-grid*. Dari segi geografi, kapasiti penjanaan elektrik negara terletak di dua (2) kawasan utama iaitu 78% (27,370 MW) di Semenanjung Malaysia dan selebihnya iaitu sebanyak 22% di sebelah Timur Malaysia yang menempatkan sebanyak 1,948 MW di negeri Sabah dan sebanyak 5,720 MW di negeri Sarawak. Negeri Sabah dan Sarawak terletak di Kepulauan Borneo yang dipisahkan dengan Semenanjung Malaysia oleh Laut China Selatan. Syarikat utiliti utama bagi Semenanjung Malaysia ialah Tenaga Nasional Berhad (TNB), manakala bagi negeri Sabah ialah Sabah Electricity Sdn. Bhd. (SESB) dan bagi negeri Sarawak ialah Sarawak Energy Berhad (SEB). Kehendak maksimum yang dicatatkan pada tahun 2020 pula ialah 18,808 MW di Semenanjung Malaysia pada 10 Mac 2020, 987 MW di Sabah pada 25 Ogos 2020 dan 3,664 MW pada suku tahun pertama di Sarawak.

Daripada 35,037 MW kapasiti penjanaan tersebut, 61% daripadanya adalah daripada penjana-penjana bebas (IPP), 29% syarikat-syarikat utiliti utama (TNB, SESB, SEB), 4% *cogenerator*, 2% Solar Berskala Besar (LSS), 2% *Feed-in Tarif* (FiT) dan *Net Energy Metering* (NEM) serta 2% penjana-penjana persendirian.

Dari segi campuran sumber tenaga pula, secara keseluruhan, 37.3% daripada kapasiti penjanaan di Malaysia adalah berasaskan gas asli, 37.9% berasaskan arang batu, 23.2% berasaskan tenaga boleh baharu (TBB), 1.5% berasaskan diesel dan 0.1% lain-lain. 76% daripada TBB ialah hidroelektrik, diikuti oleh 17% solar dan 7% biojisim/biogas.

Tahun 2020 juga menyaksikan penamatan operasi tiga (3) stesen jana kuasa di Semenanjung Malaysia yang melibatkan dua (2) Stesen Jana Kuasa Turbin Gas Kitar Terbuka (OCGT) iaitu Powertek Berhad berkapasiti 434 MW yang telah tamat pada 31 Disember 2019 dan Stesen Jana Kuasa Pahlawan Power Sdn. Bhd. berkapasiti 332 MW yang telah tamat pada

EXECUTIVE SUMMARY 2020

This publication on Malaysia's electricity supply industry contains two main sections, first, performance information and second, statistics. Each section is organised according to three main regions, namely Peninsular Malaysia, Sabah and Sarawak where the data displayed includes the country's electricity generation system, transmission system and distribution system. Also included are the location maps of main power stations, annual performance reports, tariff schedules, average selling prices and generation costs of the main utility companies in Malaysia.

MALAYSIAN ELECTRICITY SUPPLY INDUSTRY STATISTICS

In the year 2020, the total installed capacity for electricity generation in Malaysia was 35,037 MW, which include all main power generating stations connected to the National Grid system and by off-grid. Geographically, the installed capacity for electricity generation are divided into two (2) main regions in which 78% (27,370 MW) in Peninsular Malaysia and the remaining of 22% in Eastern Malaysia, which consists of 1,948 MW in the state of Sabah and 5,720 MW in the state of Sarawak. The state of Sabah and Sarawak are in the island of Borneo which are separated from the Peninsular Malaysia by the South China Sea. The main utility company for Peninsular Malaysia is Tenaga Nasional Berhad (TNB), while Sabah is Sabah Electricity Sdn. Bhd. (SESB) and in Sarawak is Sarawak Energy Berhad (SEB). The maximum demand recorded in 2020 was 18,808 MW in Peninsular Malaysia on 10 March 2020, 987 MW in Sabah on 25 August 2020, and 3,664 MW on the first quarter of the year in Sarawak.

From 35,037 MW generation capacity, 61% was from the independent power producers (IPP), 29% from the major utility companies (TNB, SESB, SEB), 4% from the co-generators, 2% from Large Scale Solar (LSS), 2% from Feed-in Tarif (FiT) and Net Energy Metering (NEM), as well as 2% from the self-generators.

In terms of mix energy sources, in overall, 37.3% of the generation capacity in Malaysia were based on natural gas, 37.9% coal, 23.2% renewable energy (RE), 1.5% diesel and others 0.1%. 76% of the RE were from hydroelectric, followed by 17% of solar and 7% of biomass/biogas.

The year 2020 also witnessed the termination of operation for three (3) power stations in Peninsular Malaysia which include two (2) Open Cycle Gas Turbine (OCGT); Powertek Berhad with 434 MW capacity on 31 December 2019 and Pahlawan Power Sdn Bhd power plant with 332 MW capacity which ended on 5 August 2020. Another station which ended its operation on 31 December 2019 was Combined Cycle Gas Turbine (CCGT) Sultan Ismail with capacity of 257 MW. This station located

5 Ogos 2020. Satu (1) lagi stesen yang telah menamatkan operasi pada 31 Disember 2019 ialah Stesen Jana Kuasa Turbin Gas Kitar Padu (CCGT) Sultan Ismail berkapasiti 257 MW. Stesen ini terletak di Paka, Terengganu telah dibina pada tahun 1987 dan merupakan stesen jana kuasa kitar padu pertama di Asia Tenggara yang bersambung dengan Grid Nasional. Stesen ini telah beroperasi selama 33 tahun selepas dibuka secara rasmi pada 1988 oleh Sultan Terengganu ketika itu, Almarhum Sultan Mahmud Al-Muktafi Billah Shah. Pada ketika itu, stesen ini merupakan stesen jana kuasa kitar padu terbesar di dunia. Penamatan operasi stesen itu adalah bagi menggantikan stesen jana kuasa lama yang kurang cekap kepada yang lebih canggih dan mesra alam.

Sementara di Sabah pula, kapasiti boleh harap pada tahun 2020 adalah sebanyak 1,259 MW berbanding sebanyak 1,277 MW pada tahun 2019. Penurunan ini adalah berkait rapat dengan semakan semula keboleharapan yang dijalankan oleh pihak Grid System Operator (GSO) kepada Stesen Jana Kuasa Hidro Tenom Pangi, Stesen Jana Kuasa Tawau (Caterpillar Genset) dan Stesen Jana Kuasa SESB. Di Sarawak, terdapat peningkatan pada kapasiti terpasang berbanding tahun sebelumnya daripada 5,243 MW kepada 5,720 MW, berikutan peningkatan stesen jana kuasa dari sumber diesel, hidro mini dan hidro mikro.

Jumlah penjanaan elektrik pada tahun 2020 ialah 171,484 GWj, iaitu pengurangan sebanyak 2.3% berbanding tahun 2019 (2019: 175,502 GWj). Pengurangan ini dilihat sejajar dengan pengurangan jualan elektrik sebanyak 3.5% pada tahun 2020 (2019: 149,291.29 GWj, 2020: 144,007.25 GWj) berbanding jualan elektrik pada tahun 2019.

Bagi penggunaan elektrik dalam negara, terdapat peningkatan dalam sektor domestik sebanyak 9.8% diikuti dengan sektor pertanian yang mencatatkan kenaikan sebanyak 3.7%. Sementara itu, terdapat sektor yang mencatatkan pengurangan iaitu sektor perlombongan (23.1%) diikuti dengan sektor komersial (11.1%), lampu awam (5.9%) dan sektor industri (4.5%). Dari segi eksport, terdapat pengurangan sebanyak 6.6% berbanding pada tahun 2019 (2019: 1,679.26 GWj, 2020: 1,586 GWj). Jika dibandingkan mengikut negeri-negeri di Malaysia pula, rata-ratanya mencatatkan pengurangan penggunaan elektrik pada tahun 2020 kecuali negeri Sarawak yang mencatatkan peningkatan sebanyak 9% berbanding tahun sebelumnya (2020: 27,779 GWj, 2019: 25,492 GWj). Pengurangan ini disebabkan oleh pandemik COVID-19 yang melanda seluruh negara pada ketika itu. Ini dikuatkan lagi dengan arahan berfasa Perintah Kawalan Pergerakan (PKP) yang dikeluarkan oleh Kerajaan Malaysia di bawah Akta Pencegahan dan Pengawalan Penyakit Berjangkit 1988 dari 18 Mac 2020 sehingga 31 Disember 2021. PKP dijalankan dengan matlamat untuk mengasing dan mengekang sumber wabak koronavirus dari terus merebak di seluruh negara. Antara langkah pencegahan yang dilakukan adalah penutupan premis kerajaan dan swasta kecuali yang terlibat dengan perkhidmatan penting negara. Begitu juga dengan rumah-rumah ibadat serta semua institusi pendidikan yang

in Paka, Terengganu was built in the year 1987 was the first of its kind in South East Asia connected to the National Grid. This station has been operating for 33 years after its official opening in 1988 by the late Sultan of the Terengganu state during that time, Almarhum Sultan Mahmud Al-Muktafi Billah Shah. This power station was the biggest of its kind in the world. The closure of the power station is to replace the old and inefficient power station with a more advanced and environmentally friendly type.

Meanwhile in Sabah, the dependable capacity in 2020 was 1,259 MW compared to 1,277 MW in 2019. The decrease is largely due to the reliability review conducted by the Grid System Operator (GSO) on the Tenom Pangi Hydro Power Station, the Tawau Power Station (Caterpillar Genset) dan the SESB Power Station. In Sarawak, there was an increase in installed capacity compared to the previous year from 5,243 MW to 5,720 MW, resulted from the increase of diesel, mini and micro hydroelectric fuel-based power station.

The total electricity generated in 2020 was 171,484 GWh, which was 2.3% lower than in 2019 (2019: 175,502 GWh). This decrease was due to the 3.5% drop of electricity sales in 2020 (2020: 144,007.25 GWh) compared to electricity sales in 2019 (2019: 149,291.29 GWh).

For domestic electricity consumption, there was an increase of 9.8% in residential sector followed by agricultural sector which recorded an increase of 3.7%. Whereas some sectors recorded a reduction like the mining sectors (23.1%) followed by commercial sector (11.1%), public lighting (5.9%) and industrial sector (4.5%). In terms of exports, there was a drop of 6.6% recorded in 2020 compared in 2019 (2019: 1,679.26 GWh, 2020: 1,586 GWh).

In comparison to the states in Malaysia, most of the states recorded a reduction in electricty consumption in 2020 except for the state of Sarawak which recorded an increase of 9% compared to the previous year (2020: 27,779 GWh, 2019: 25,492 GWh). This reduction is due to the outbreak of COVID-19 pandemic during that time. This is supported with the Movement Control Order (MCO) via phase implemented by the Government of Malaysia under the Prevention and Control of Infectious Diseases Act 1988 from 18 March 2020 to 31 December 2021. MCO was implemented with the intention to isolate and eradicate the outbreak of the coronavirus within the country. The measures implemented are the closure of all government and private premises except for those involved in essential services. This include all houses of worship and all education institutions which are also required for closure. In addition, the government also imposed travel restrictions on Malaysians within and outside the country as well as entry restrictions on tourists and foreign visitors to Malaysia.

In terms of the number of electricity consumers, a different trend was recorded in which most of the sectors shows an increament of 2.1% compared to the previous year (2019: 10,560,723, 2020: 10,782,968). The agricultural sector

telah diarahkan tutup. Selain itu, kerajaan juga melakukan sekatan perjalanan rakyat Malaysia di dalam dan ke luar negara serta sekatan masuk ke atas pelancong dan pelawat asing ke Malaysia.

Dari segi bilangan pengguna elektrik pula, trend yang berbeza telah direkodkan di mana rata-ratanya mencatatkan peningkatan jika berbanding tahun sebelumnya iaitu kenaikan sebanyak 2.1% dicatatkan (2019: 10,560,723, 2020: 10,782,968). Sektor pertanian mencatatkan peningkatan tertinggi iaitu sebanyak 4.5% diikuti dengan pengguna bagi sektor industri dan lampu awam yang masing-masing merekodkan peningkatan sebanyak 3.4% dan 3.3%. Sektor perlombongan pula kekal dengan bilangan pengguna sebanyak 53.

PRESTASI INDUSTRI PEMBEKALAN ELEKTRIK MALAYSIA

Untuk memastikan keberterusan bekalan tenaga elektrik kepada pengguna, beberapa indikator telah digunakan untuk mengukur prestasi sistem penjanaan, penghantaran dan pengagihan tenaga elektrik di Malaysia.

Di Semenanjung Malaysia, purata kecekapan thermal merekodkan peningkatan sebanyak 2% hingga 31% pada stesen-stesen jana kuasa CCGT TNB dan OCGT TNB begitu juga dengan stesen-stesen jana kuasa arang batu IPP dan thermal konvensional IPP yang menunjukkan peningkatan sebanyak 1% hingga 34%. Purata Faktor Ketersediaan Setara (EAF) juga rata-ratanya menunjukkan peningkatan di antara 3% ke 8% kecuali stesen-stesen jana kuasa OCGT TNB yang menunjukkan penurunan sebanyak 2% berbanding tahun sebelumnya. Purata tahap hentitugas akibat *forced and maintenance outages* dan *forced and maintenance deratings* yang diukur menggunakan Faktor Hentitugas Tidak Berjadual Setara (EUOF) telah meningkat sebanyak 6% pada stesen jana kuasa CCGT IPP, 71% pada stesen jana kuasa OCGT TNB dan 91% kenaikan pada stesen jana kuasa hidro TNB. Manakala stesen janakuasa thermal konvensional TNB menunjukkan penurunan EUOF tertinggi sebanyak 95% diikuti dengan stesen jana kuasa CCGT TNB sebanyak 60% dan stesen arang batu IPP yang juga menunjukkan penurunan kepada 24% pada tahun 2020.

Bagi sistem penghantaran, minit sistem berada pada 0.08 minit iaitu 70% lebih baik berbanding tahun sebelumnya. Dalam tempoh lima (5) tahun ke belakang, minit sistem pada tahun 2020 ini adalah yang terendah pernah dicatatkan. *System Average Interruption Duration Index* (SAIDI) bagi sistem pengagihan juga mencatatkan bacaan di bawah sasaran 50 minit iaitu 44.95 minit/pelanggan/tahun. Petunjuk prestasi ini menunjukkan peningkatan pada sekuriti sistem pembekalan elektrik di Semenanjung Malaysia.

Di Sabah, kecekapan thermal bagi stesen-stesen jana kuasa SESB dan IPP hanya mencatatkan perubahan dalam lingkungan 0.1% hingga 9%. Tahap kesediaan iaitu EAF bagi stesen jana

recorded the highest increase of 4.5% followed by the industrial and public lighting consumers which shown 3.4% to 3.3% increament. Meanwhile, the mining sector remains with 53 number of consumers.

THE PERFORMANCE OF THE MALAYSIAN ELECTRICITY SUPLY INDUSTRY

To ensure the continuity of electricity supply to consumers, several indicators have been used to measure the performance of the electricity generation, transmission, and distribution system in Malaysia.

In Peninsular Malaysia, the average thermal efficiency recorded an increase of 2% to 31% for TNB'S CCGT and TNB's OCGT power stations and also for IPP's coal and IPP's thermal conventional power stations which showed an increased between 1% to 34%. The Average Equivalent Availability Factor (EAF) mostly showed an increase between 3% to 8% except for OCGT TNB which showed a decrease of 2% compared to the previous year. The average level of outages due to forced and maintenance outages and forced and maintenance deratings measured using the Equivalent Unscheduled Outage Factor (EUOF) has increased in 6% for IPP's CCGT power stations, 71% for TNB's OCGT power stations and increased in 91% for hydro power stations. Meanwhile, TNB thermal conventional power stations showed the most EUOF decrease of 95% followed by TNB's CCGT power stations of 60% and IPP's coal power stations also showed a drop to 24% in 2020.

For the transmission system, system minutes was at 0.08 minutes, which is 70% better than the previous year. In the past five (5) years, system minutes in 2020 were the lowest ever recorded. SAIDI for the distribution system also recorded a reading of below the target of 50 minutes which is 44.95 minutes/customer/year. This performance indicator shows an improvement in the security of the electricity supply system in Peninsular Malaysia.

In Sabah, the thermal efficiency of SESB and IPP power stations only recorded changes between 0.1%-9%. The level of availability (EAF) of SESB's CCGT power stations, IPP's CCGT power stations and SESB's diesel power stations declined by around 4% to 14%, while SESB hydro power stations recorded an increase of 6% in 2020. The outage rate for SESB's diesel power stations has shown the most increase of 70% followed by IPP's CCGT power stations of 42%. Hydro power stations have recorded a decrease of 66% followed by SESB's CCGT power stations of 30% compared to the previous year.

The performance of the Sabah transmission system decreased by 4%, where the system minutes recorded was 13.96 minutes, compared to 13.71 minutes in 2019. SAIDI in Sabah was 189.43 minutes/customer/year, slightly lower compared to 205.31 minutes/customer/year in 2019. SAIDI in 2020 was also the lowest in the 2015-2020 period and

kuasa CCGT SESB, CCGT IPP dan diesel SESB merosot sekitar 4% ke 14%, manakala stesen jana kuasa hidroelektrik SESB mencatatkan peningkatan EAF sebanyak 6% pada tahun 2020. Kadar hentitugas bagi stesen jana kuasa diesel SESB mencatatkan peningkatan terbanyak iaitu 70% diikuti dengan stesen jana kuasa CCGT IPP sebanyak 42%. Manakala, penurunan EUOF dicatatkan pada stesen jana kuasa hidro sebanyak 66% diikuti stesen jana kuasa CCGT SESB sebanyak 30% berbanding pada tahun sebelumnya.

Prestasi sistem penghantaran di Sabah menurun 4%, di mana sistem minit yang dicatatkan ialah 13.96 minit, berbanding 13.71 minit pada tahun 2019. SAIDI di Sabah ialah 189.43 minit/pelanggan/tahun, berbanding 205.31 minit/pelanggan/tahun pada tahun 2019. SAIDI pada tahun 2020 juga adalah yang paling rendah dalam tempoh 2015-2020 dan ini menunjukkan inisiatif SESB dalam memberikan perkhidmatan terbaik kepada para pelanggannya. Perkhidmatan yang lebih baik juga dapat dilihat daripada rekod *Customer Average Interruption Duration Index* (CAIDI) tahun 2020, di mana tempoh gangguan bagi setiap pelanggan telah berkurang kepada 15.26 minit/pelanggan terlibat/tahun, berbanding 29.26 minit/pelanggan terlibat/tahun pada tahun sebelumnya.

Di Sarawak, kecekapan thermal bagi tahun 2020 menunjukkan penurunan sebanyak 19% bagi stesen jana kuasa diesel diikuti dengan 4% bagi stesen jana kuasa CCGT dan 2% stesen jana kuasa arang batu. Walaupun demikian, stesen jana kuasa diesel mencatatkan tahap EAF terbaik di kalangan kategori teknologi penjanaan lain, iaitu 98.79% pada tahun 2020 diikuti dengan 93.7% bagi stesen jana kuasa hidro. Kadar hentitugas mencatatkan penurunan sebanyak 65% pada stesen jana kuasa arang batu diikuti oleh penurunan sebanyak 61% bagi stesen jana kuasa hidro. Akan tetapi, stesen jana kuasa OCGT mencatatkan peningkatan tertinggi sebanyak 559% pada tahun 2020. Minit sistem penghantaran di Sarawak mencatatkan bacaan 0.45 minit, iaitu yang terendah dalam tempoh 2015 hingga 2020. Jika dibandingkan rekod tahun 2020, minit sistem pada tahun tersebut adalah 79% lebih rendah (2019: 2.11 minit). Sama seperti prestasi di Semenanjung Malaysia dan Sabah, sistem pengagihan elektrik negeri Sarawak turut mencatatkan SAIDI yang lebih baik iaitu 77.68 minit/pelanggan/tahun (2019: 83.42 minit/pelanggan/tahun). Selain itu, *System Average Interruption Frequency Index* (SAIFI) dan CAIDInya juga berkurangan 5% dan 3% masing-masing.

this shows SESB's initiatives in providing the best service to its customers. Better service can also be seen from Customer Average Interruption Duration Index (CAIDI)'s 2020 record, where the duration of disruption per customer has reduced to 15.26 minutes/interrupted customer/year, compared to 29.26 minutes/interrupted customer/year.

In Sarawak, thermal efficiency in 2020 has shown a decrease of 19% for diesel power stations, followed by 4% decrease for CCGT power stations and coal power stations. Despite, diesel power stations recorded the best level of availability (EAF) among other generation technology categories which stands at 98.79% in 2020 followed by 93.7% for hydro power stations. The force outage rate (FOR) recorded a decrease of 61% for hydro power stations. Where OCGT power stations recorded the highest increase of 559% in 2020. The transmission system minutes in Sarawak recorded a reading of 0.45 minutes, which is the lowest in the period from 2015 to 2020. If compared to the record of 2019, the system minutes in 2020 were 79% lower (2019: 2.11 minutes). The performance in the Sarawak state electricity distribution is similar to the Peninsular Malaysia and Sabah region, where the system also recorded a better SAIDI of 83.42 minutes/customer/year (2019: 83.42 minutes/customer/year). In addition, its System Average Interruption Frequency Index (SAIFI) and CAIDI also decreased by 5% and 3% respectively.

	2017	2018	2019	2020
Keluasan (km²)* **Area (km2)***	330,621	330,525	330,241	330,241
Penduduk (juta) **Population (million)**				
Jumlah **Total**	**32.02**	**32.38**	**32.52**	**32.58**
Lelaki Male	16.54	16.72	16.76	16.76
Perempuan Female	15.48	15.66	15.76	15.82
Purata kadar Pertumbuhan Penduduk Tahunan (%) **Average Annual Population Growth Rate (%)**	1.2	1.1	0.4	0.2
Kelahiran dan Kematian (per 1,000 penduduk) **Birth and Death (per 1,000 population)**				
Kadar Kelahiran Kasar Crude Birth Rate	15.9	15.5	15.0	14.4
Kadar Kematian Kasar Crude Death Rate	5.3	5.3	5.3	5.1
Jangkaan hayat ketika lahir (tahun) **Life expectancy at birth (years)**				
Lelaki Male	72.1	72.3	72.5	72.8 [p]
Perempuan Female	77.1	77.2	77.4	77.8 [p]
Keluaran Dalam Negeri Kasar (KDNK) **Gross Domestic Product (GDP)**				
Keluaran Dalam Negeri Kasar (KDNK) GDP at current prices (RM million)	1,372,310	1,447,760	1,513,157 [e]	1,416,605 [p]
KDNK pada harga malar 2015 (RM juta) GDP at constant 2015 prices (RM million)	1,300,769	1,363,766	1,424,310 [e]	1,343,880 [p]
Pertumbuhan KDNK (%) GDP Growth (%)	5.8	4.8	4.4 [e]	-5.6 [p]
KDNK per kapita pada harga semasa (RM) GDP per capita at current prices (RM)	42,854	44,708	46,526 [e]	43,475 [p]
Guna Tenaga² **Employment²**				
Tenaga Buruh ('000) Labour Force ('000)	14,980.1	15,280.3	15,581.6	15,667.7
Penduduk bekerja ('000) Employed ('000)	14,476.8	14,776.0	15,073.4	14,956.7
Penganggur ('000) Unemployment ('000)	503.3	504.3	508.2	556.8
Kadar Penyertaan Tenaga Buruh, KPTB (%) Labour Force Participation Rates, LFPR (%)	68.0	68.3	68.7	68.4
Jumlah Total	68.0	68.3	68.7	68.4
Lelaki Male	80.1	80.4	80.8	80.6
Perempuan Female	54.7	55.2	55.6	55.3
Kadar Pengangguran (%) Unemployment Rate (%)	3.4	3.3	3.3	4.5

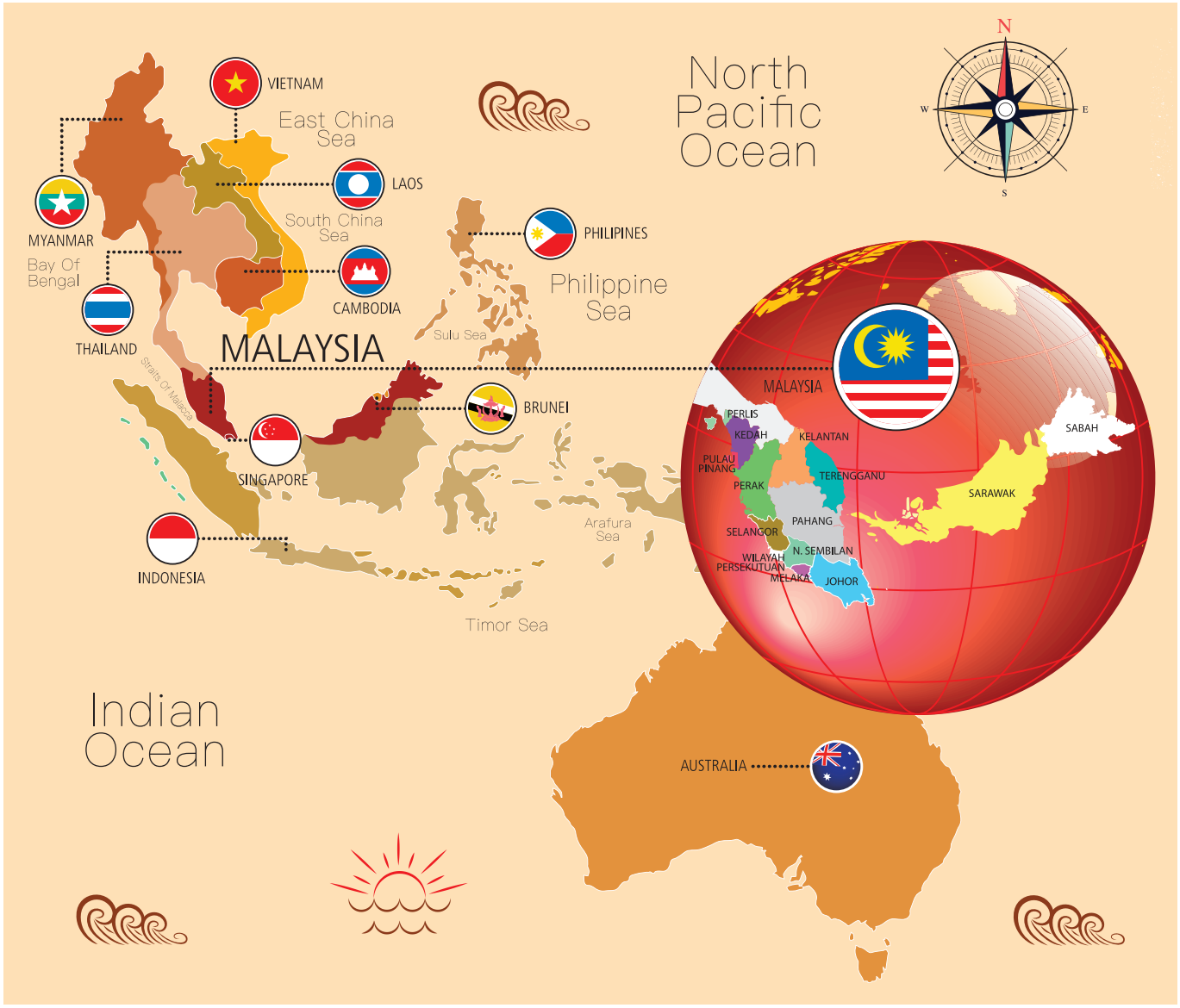
Nota:
1. 2016 - 2019: Anggaran Penduduk berasaskan data Banci Penduduk dan Perumahan Malaysia 2010 yang disesuaikan.
2. [p] Permulaan.
3. [e] Anggaran.
4. Hasil tambah mungkin berbeza kerana pembundaran.
5. * Sumber: Jabatan Ukur dan Pemetaan Malaysia (JUPEM).

Dikemaskini: 20 Ogos 2021

Notes:
1. 2016 - 2019: Population Estimates based on the adjusted Population and Housing Census of Malaysia 2010.
2. [p] Preliminary.
3. [e] Estimate.
4. The added total may differ due to rounding.
5. * Source: Department of Survey and Mapping Malaysia

Updated: 20 August 2021

Peta Malaysia | Map of Malaysia



Negeri-negeri di Malaysia:
States in Malaysia:

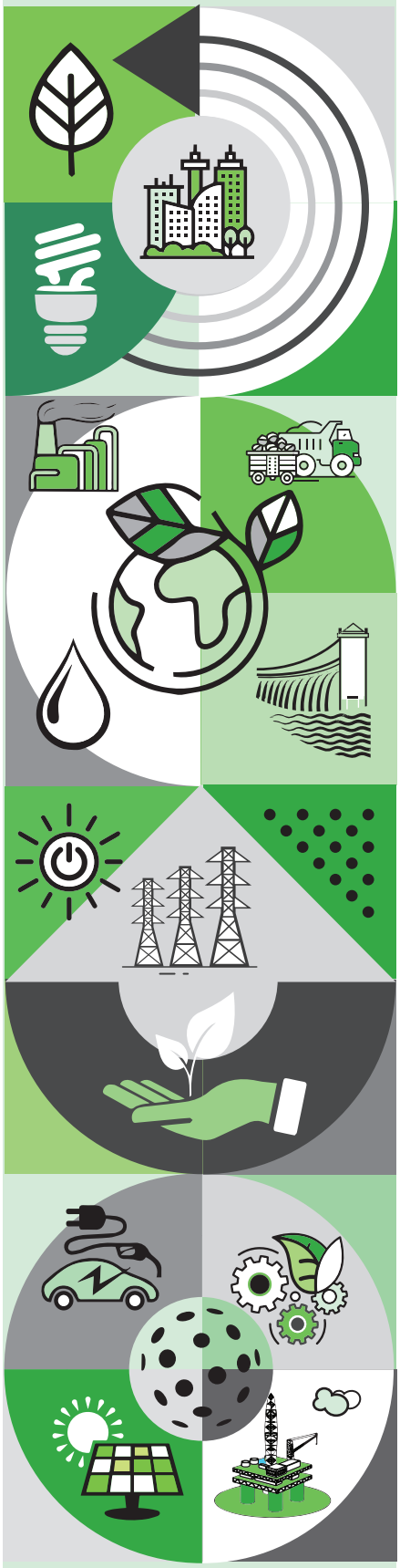
1. Kedah
2. Perlis
3. Pulau Pinang
4. Perak
5. Kelantan
6. Terengganu
7. Pahang
8. Selangor
9. Negeri Sembilan
10. Wilayah Persekutuan Kuala Lumpur**
11. Wilayah Persekutuan Putrajaya**
12. Melaka
13. Johor
14. Sarawak
15. Sabah
16. Wilayah Persekutuan Labuan**

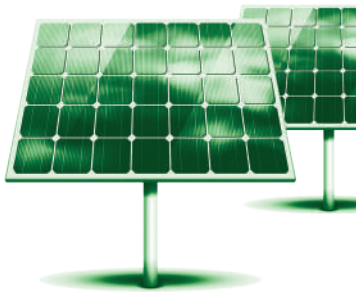
Keluasan | Area:
330,241 km²

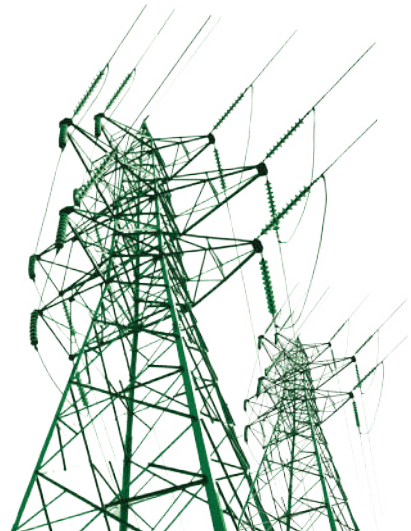
Rujukan | Reference:
Buku Maklumat Perangkaan Malaysia 2019, Jabatan Perangkaan Malaysia
Malaysia Statistical Handbook 2019, Department of Statistics Malaysia

Nota | Notes:
* Wilayah Persekutuan
* Federal Territory

Ringkasan
Summary

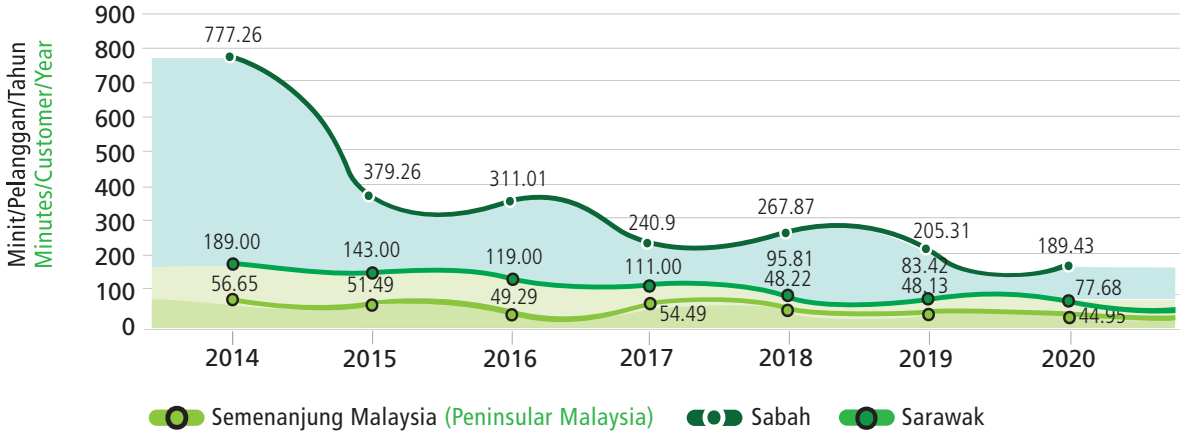




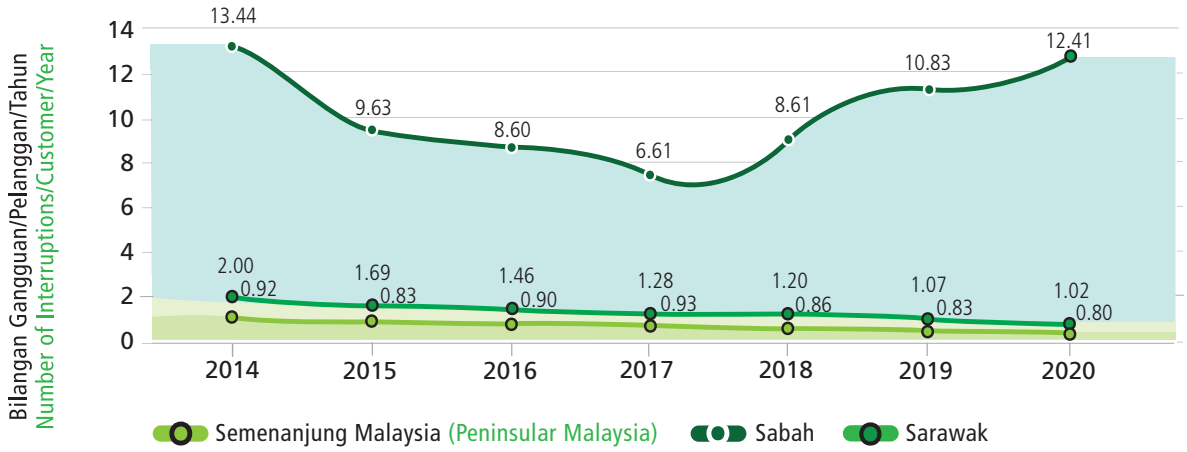


SAIDI, SAIFI & CAIDI

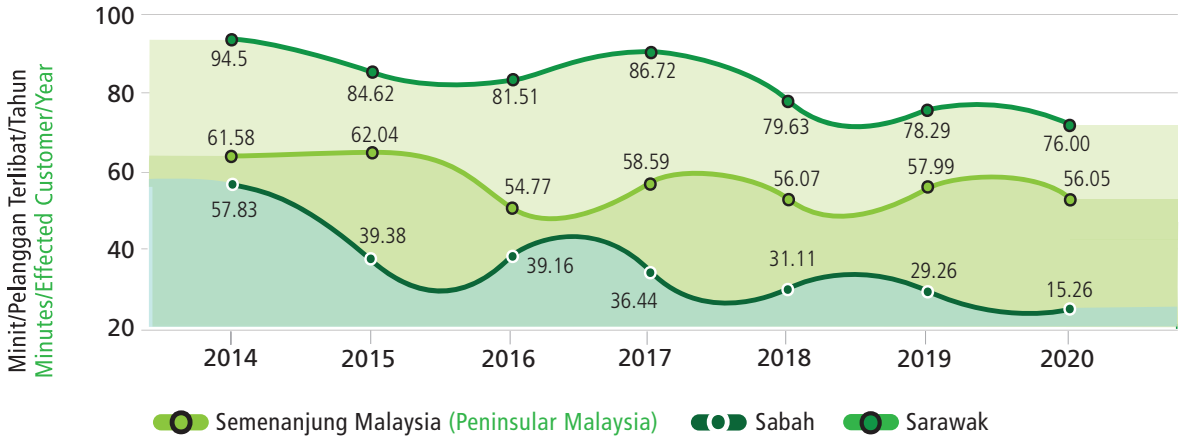
SAIDI, 2014-2020



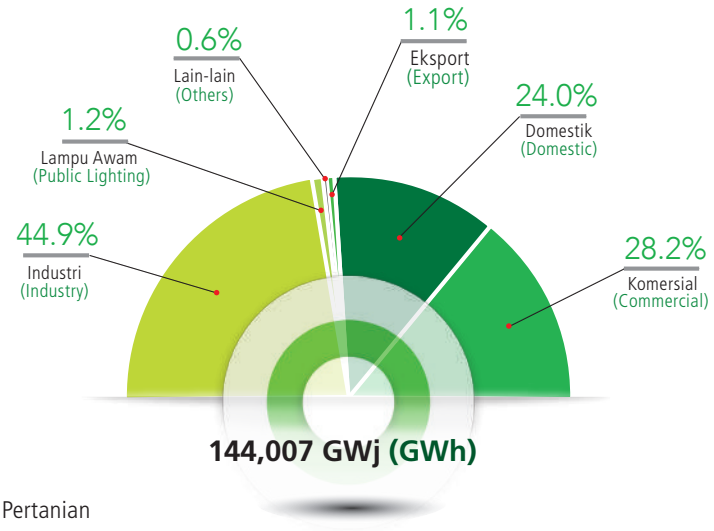
SAIFI, 2014-2020



CAIDI, 2014-2020

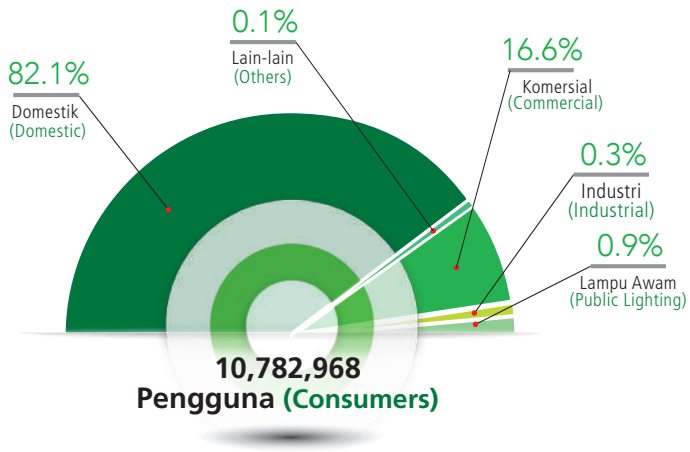


Penggunaan Elektrik Mengikut Sektor (GWj)
Electricity Consumption by Sector (GWh)



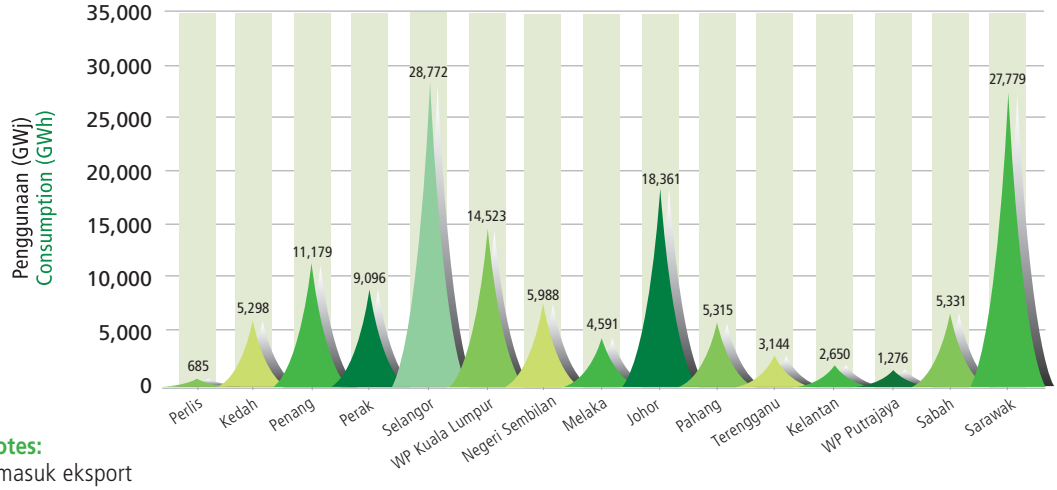
Nota | Notes:
Lain-lain: Perlombongan dan Pertanian
Others: Mining and Agriculture

Bilangan Pengguna Mengikut Sektor, 2020
Number of Consumers by Sector, 2020



Nota | Notes:
Lain-lain: Perlombongan, Pertanian, Eksport dan Unit Percuma.
Others: Mining, Agriculture, Export and Free Units.

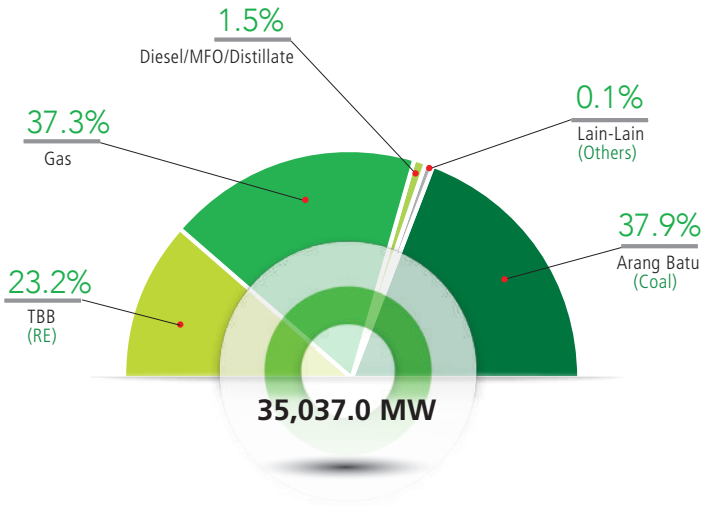
Penggunaan Elektrik Mengikut Negeri
Electricity Consumption by State



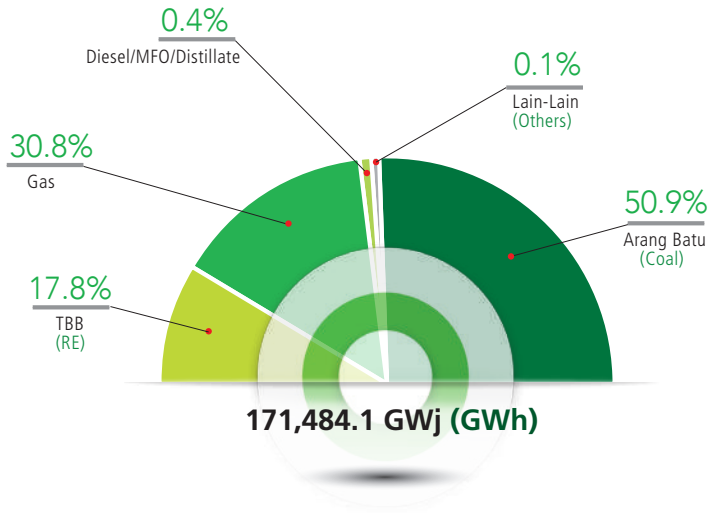
Nota | Notes:
Tidak termasuk eksport
Excluding export

Kapasiti Terpasang Mengikut Sumber Tenaga
Installed Capacity by Energy Source

Kapasiti Terpasang Mengikut Sumber Tenaga
Installed Capacity By Energy Source



Penjanaan Elektrik Mengikut Sumber Tenaga
Electricity Generation by Energy Source

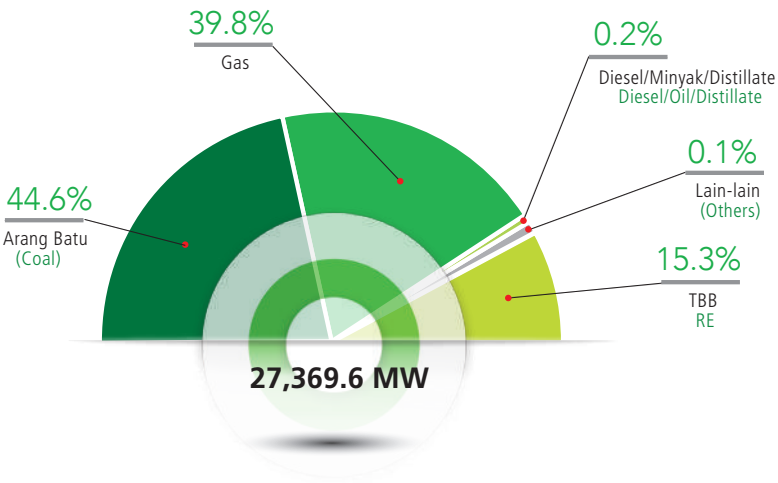


Nota I **Notes:**

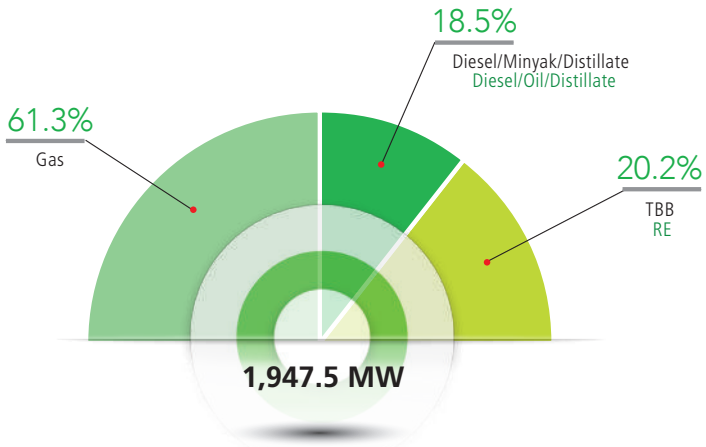
1. Termasuk kapasiti daripada stesen jana kuasa yang bersambung di peringkat pengagihan dan *off-grid*.
   Including the capacity from distribution level and off-grid power plants.
2. Lain-lain adalah terdiri daripada haba sisa proses perindustrian dan sumber tenaga bukan TBB.
   Others consist of industrial process waste heat and other non-RE resources.

Kapasiti Terpasang Mengikut Kawasan dan Sumber Tenaga
Installed Capacity by Region and Energy Source

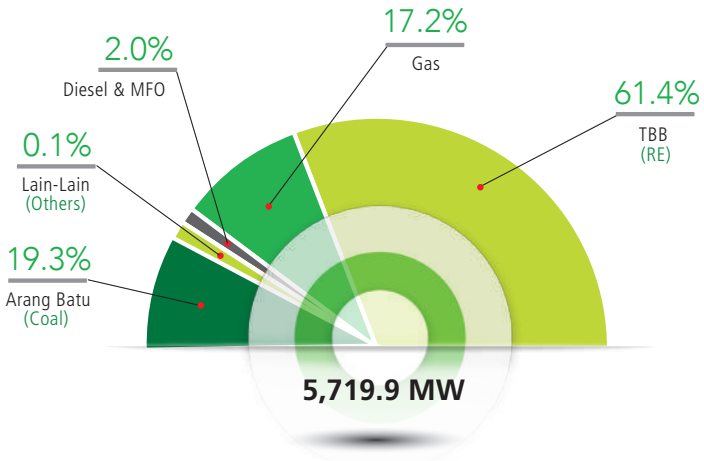
Semenanjung Malaysia
Peninsular Malaysia



Sabah

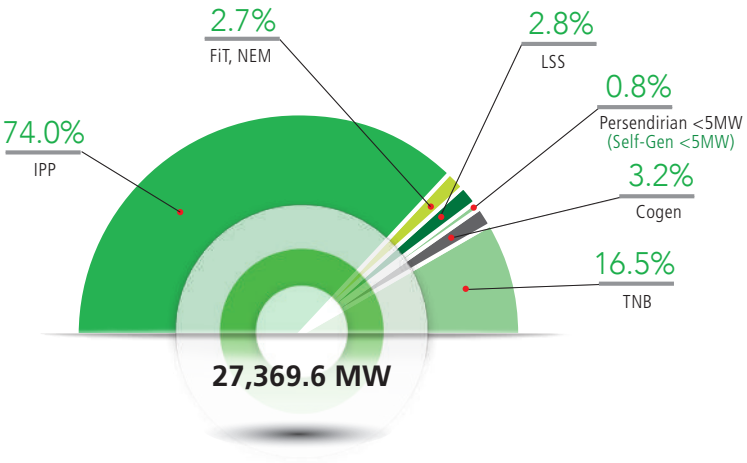


Sarawak

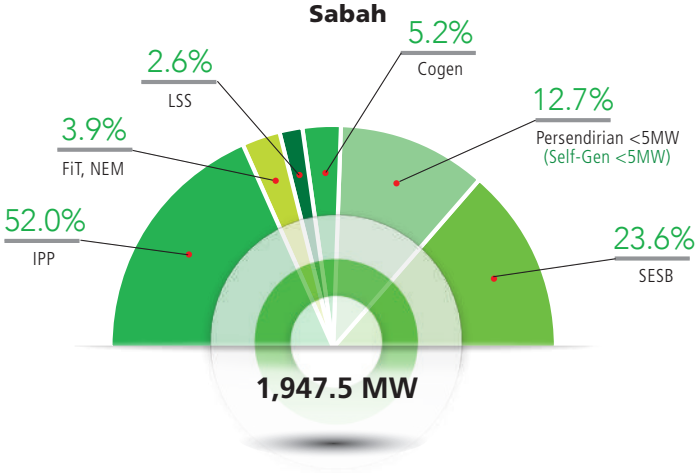


Kapasiti Terpasang Mengikut Kawasan dan Kategori Penjana
Installed Capacity by Region and Producers

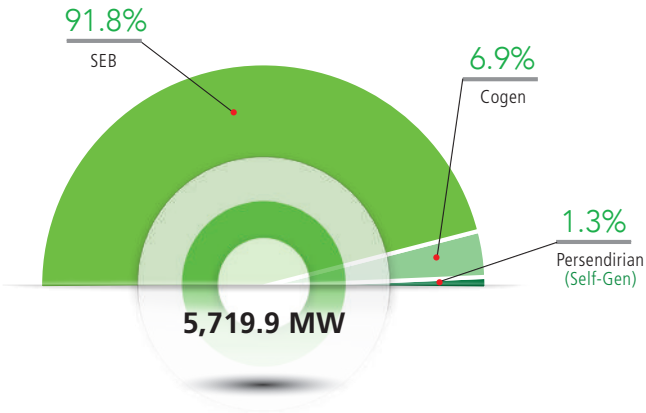
Semenanjung Malaysia
Peninsular Malaysia



Sabah

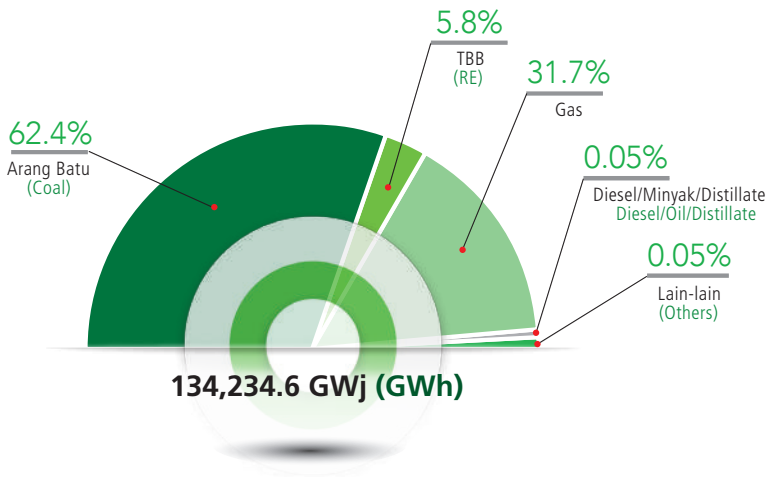


Sarawak



Penjanaan Mengikut Kawasan dan Jenis Sumber Tenaga
Generation by Region and Energy Source

Semenanjung Malaysia
Peninsular Malaysia



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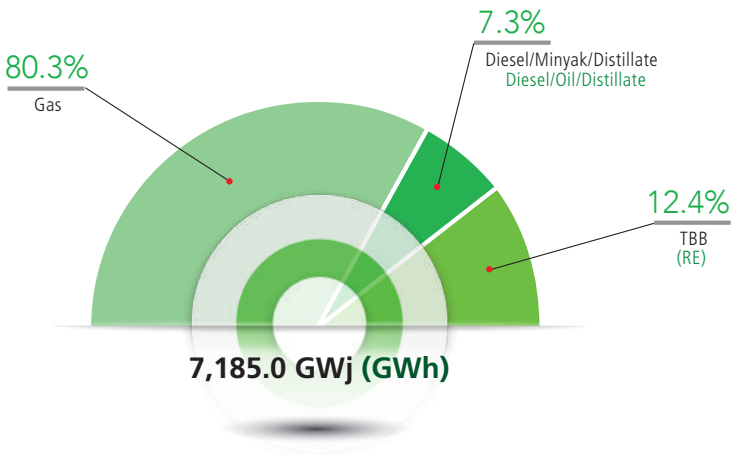
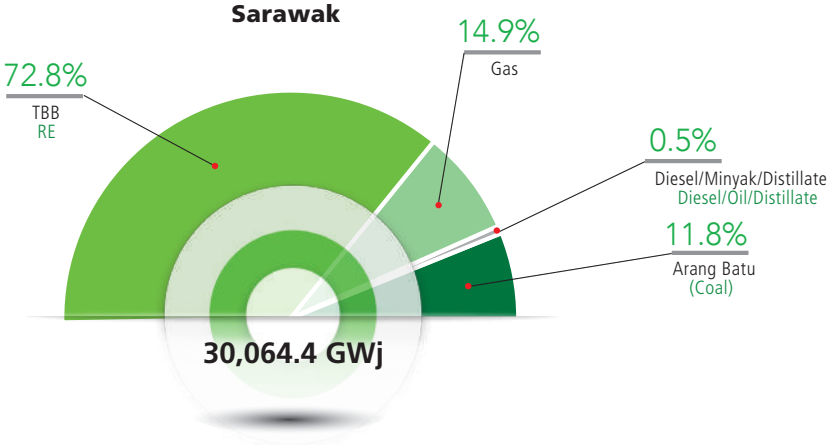
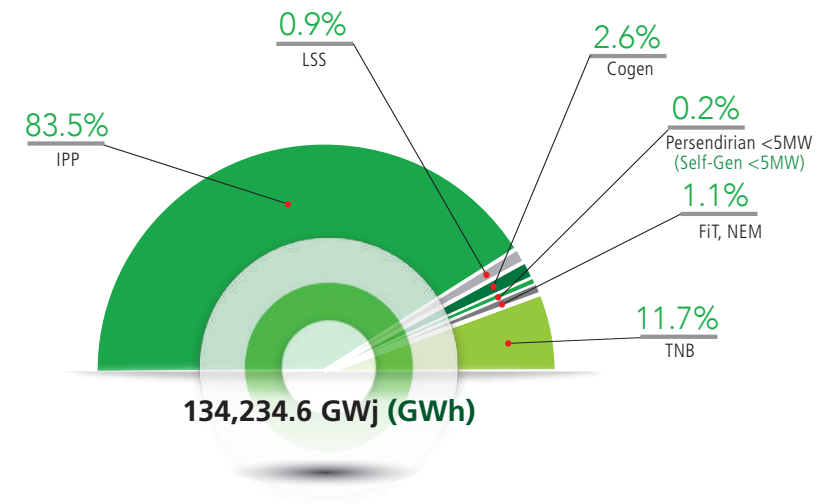


Sarawak

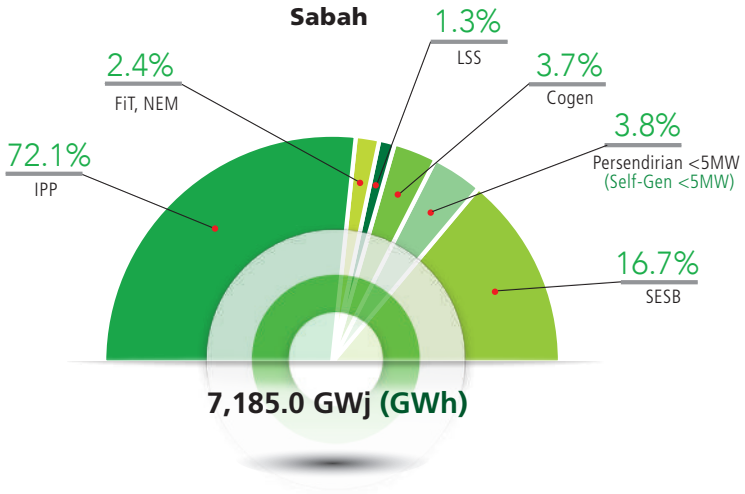


Penjanaan Mengikut Kawasan dan Kategori Penjana
Generation by Region and Producer

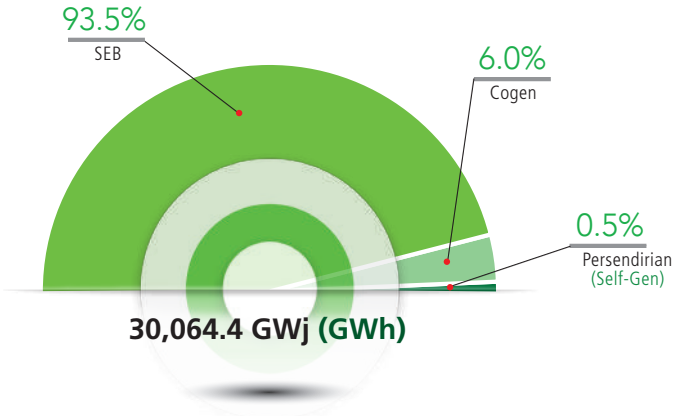
Semenanjung Malaysia
Peninsular Malaysia



Sabah

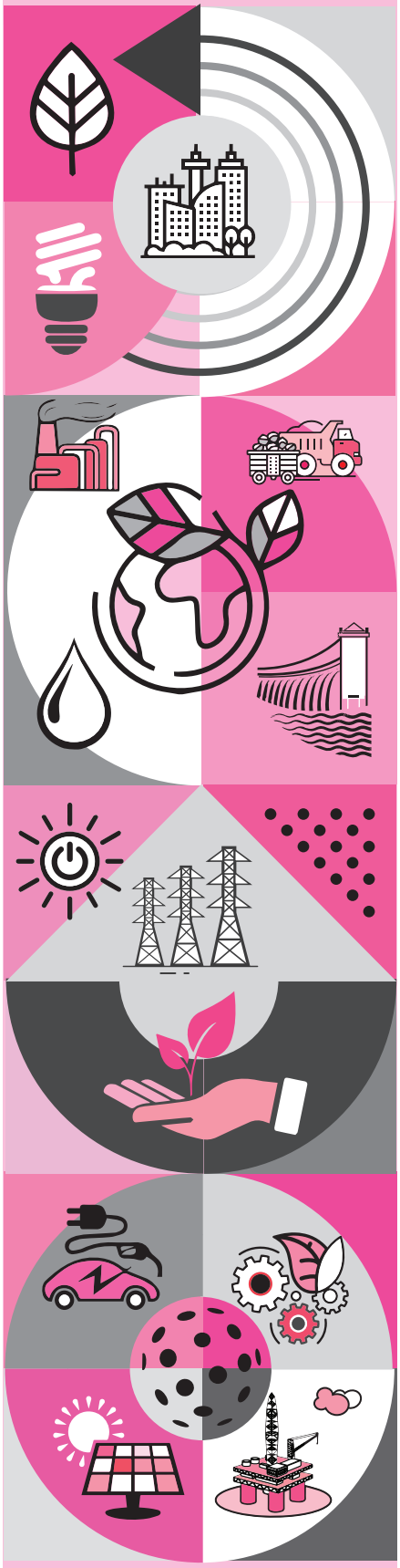


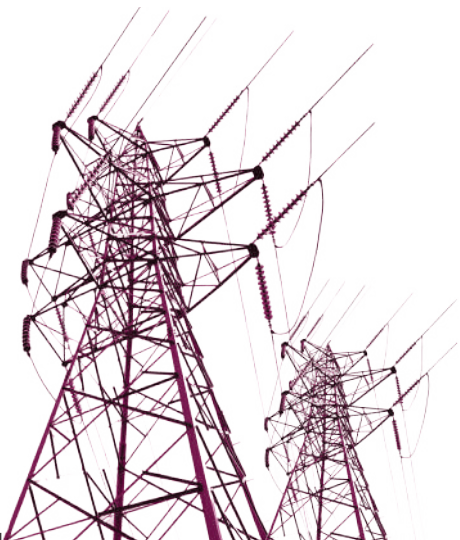
Sarawak



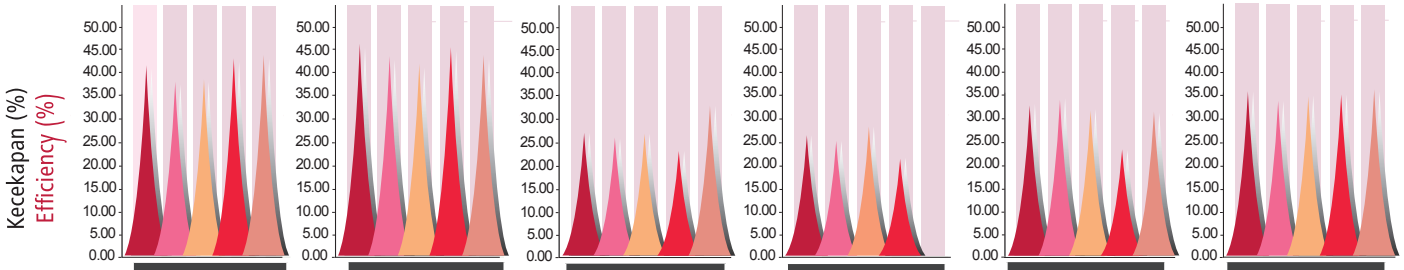
Prestasi Pembekalan Elektrik di Semenanjung Malaysia

Electricity Supply Performance in Peninsular Malaysia



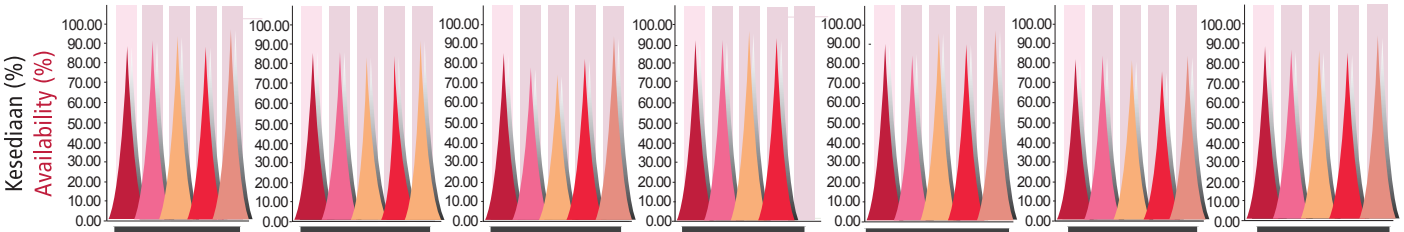


Carta 1: Purata Kecekapan Termal Stesen Jana Kuasa TNB dan IPP
Chart 1: Average Thermal Efficiency of TNB and IPP Power Plants



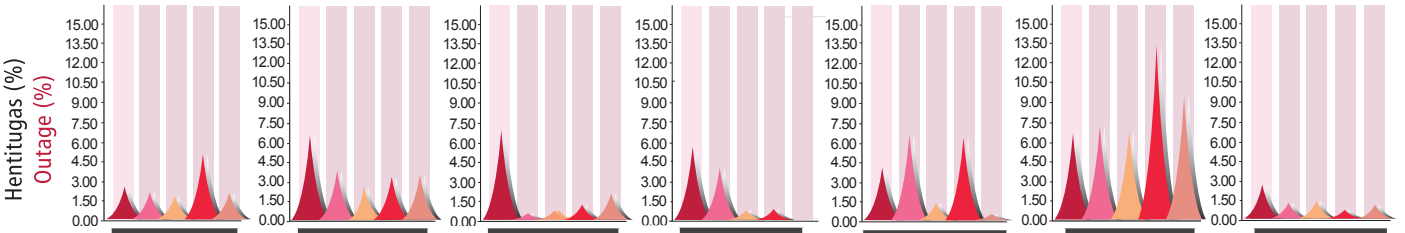
	CCGT TNB	CCGT IPP	OCGT TNB	OCGT IPP	Thermal Conventional IPP	Arang Batu *(Coal)* IPP
2016	41.49	45.65	26.55	26.82	32.83	36.21
2017	39.34	44.74	25.88	26.50	34.52	34.51
2018	39.67	43.42	26.19	28.75	32.56	35.45
2019	42.86	45.47	24.66	22.80	24.05	35.62
2020	43.76	44.08	32.24	0.00	32.24	35.85

Carta 2: EAF Stesen Jana Kuasa TNB dan IPP
Chart 2: EAF of TNB and IPP Power Plants



	CCGT TNB	CCGT IPP	OCGT TNB	OCGT IPP	Thermal Conventional IPP	Arang Batu *(Coal)* TNB	Hidro *(Hydro)* TNB
2016	89.85	88.05	92.36	91.07	90.68	82.28	89.95
2017	91.41	88.21	95.09	91.21	86.37	82.64	89.29
2018	93.82	87.64	96.09	96.78	93.95	82.05	89.27
2019	87.49	87.94	96.97	94.98	90.82	77.90	89.47
2020	94.52	90.65	94.64	0.00	94.64	83.37	93.14

Carta 3: EUOF Stesen Jana Kuasa TNB dan IPP
Chart 3: EUOF of TNB and IPP Power Plants



	CCGT TNB	CCGT IPP	OCGT TNB	OCGT IPP	Thermal Conventional IPP	Arang Batu *(Coal)* TNB	Hidro *(Hydro)* TNB
2016	2.85	6.50	7.09	5.95	4.26	6.85	2.98
2017	2.27	3.78	0.15	3.39	6.63	7.13	1.20
2018	1.52	2.55	0.55	0.29	1.41	6.95	1.33
2019	4.63	3.32	1.07	0.24	6.41	13.00	0.59
2020	1.84	3.50	1.84	0.00	0.31	9.85	1.13

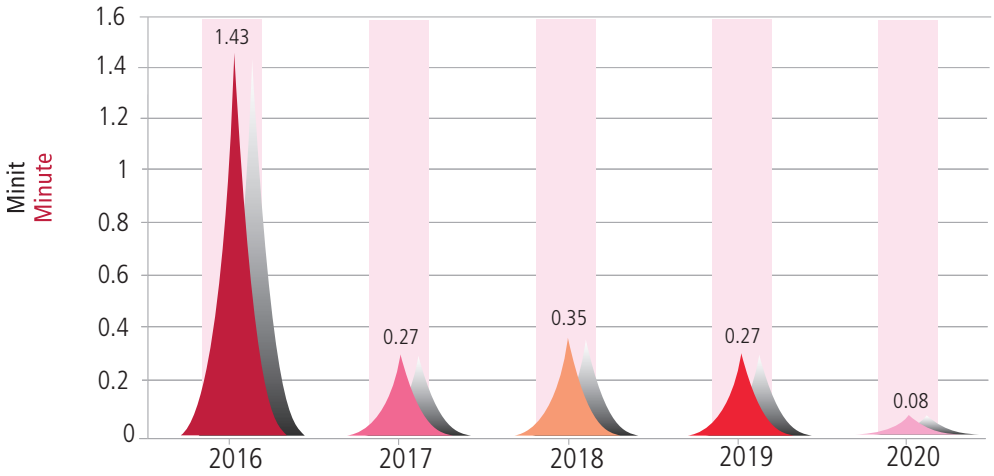
Jadual 1: Pelantikan Sistem Penghantaran TNB dengan Kehilangan Beban Sebanyak 50 MW dan ke Atas
Table 1: TNB Transmission System Trippings with Load Loss of 50 MW and Above

Petunjuk Indicator	2016	2017	2018	2019	2020
Bilangan Pelantikan Tanpa Lucutan Beban Number of Trippings Without Load Shedding	3	1	5	2	1
Tenaga yang Tidak Dibekalkan Semasa Pelantikan (MWj) Unsupplied Energy During Trippings (MWh)	344.85	40.30	35.05	45.78	0.95
Bilangan Pelantikan dengan Lucutan Beban Number of Trippings with Load Shedding	1	-	-	-	-
Tenaga yang Tidak Dibekalkan Semasa Lucutan Beban (MWj) Unsupplied Energy During Load Shedding (MWh)	425	-	-	-	-

Jadual 2: Pelantikan Bulanan Sistem Penghantaran TNB dengan Kehilangan Beban 50 MW dan ke Atas
Table 2: TNB Monthly Transmission System Trippings with Load Loss of 50 MW and Above

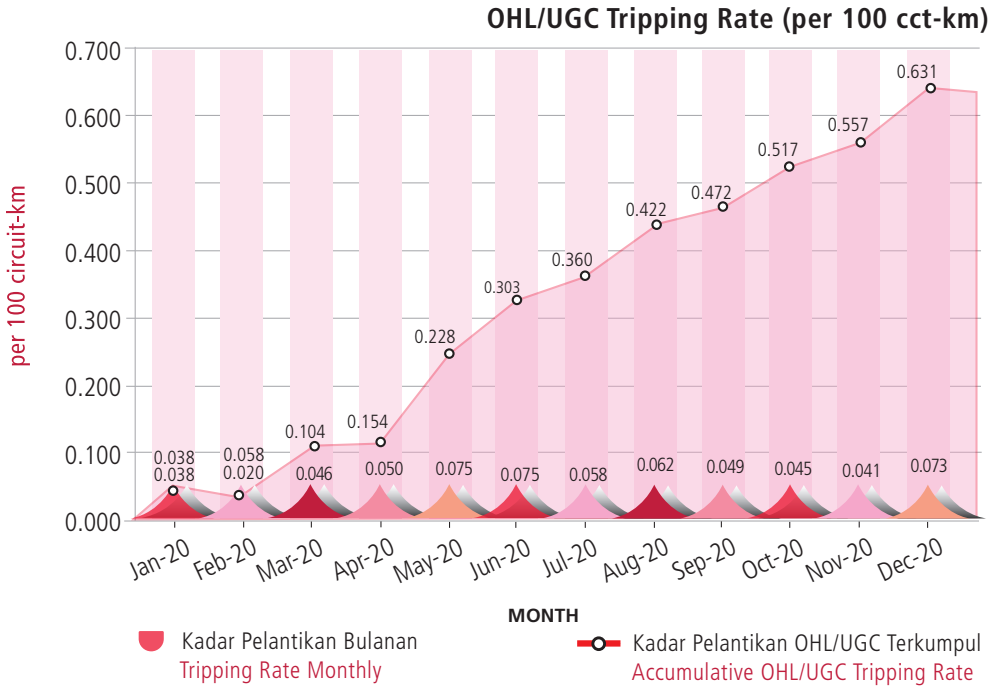
	2020											
Petunjuk Indicator	Jan Jan	Feb Feb	Mac Mar	Apr Apr	Mei May	Jun June	Jul July	Ogo Aug	Sep Sept	Okt Oct	Nov Nov	Dis Dec
Bilangan Pelantikan Tanpa Lucutan Beban Number of Trippings Without Load Shedding	0	0	0	0	0	1	0	0	0	0	0	0
Bilangan Pelantikan dengan Lucutan Beban Number of Trippings with Load Shedding	0	0	0	0	0	0	0	0	0	0	0	0
Kehilangan Beban Maksimum (MW) Maximum Load Losses (MW)	0	0	0	0	0	57	0	0	0	0	0	0
Tenaga yang Tidak Dibekalkan Semasa Pelantikan (MWj) Unsupplied Energy During Trippings (MWh)	0	0	0	0	0	0.95	0	0	0	0	0	0
Purata Tenaga Tidak Dibekalkan Setiap Pelantikan (MWj) Average Unsupplied Energy During Trippings (MWh)	0	0	0	0	0	0.95	0	0	0	0	0	0
Purata Tempoh Setiap Pelantikan (Minit) Average Duration Per Tripping (Minutes)	0	0	0	0	0	1	0	0	0	0	0	0
Tenaga Tidak Dibekalkan Semasa Lucutan Beban (MWj) Unsupplied Energy During Load Shedding (MWh)	0	0	0	0	0	0	0	0	0	0	0	0

Carta 4: DePUI - Minit Sistem TNB
Chart 4: DePUI – TNB System Minutes



Nota I Notes:
2015-2017: Tahun Kewangan / Financial Year
2018-2020: Tahun Kalendar / Calendar Year

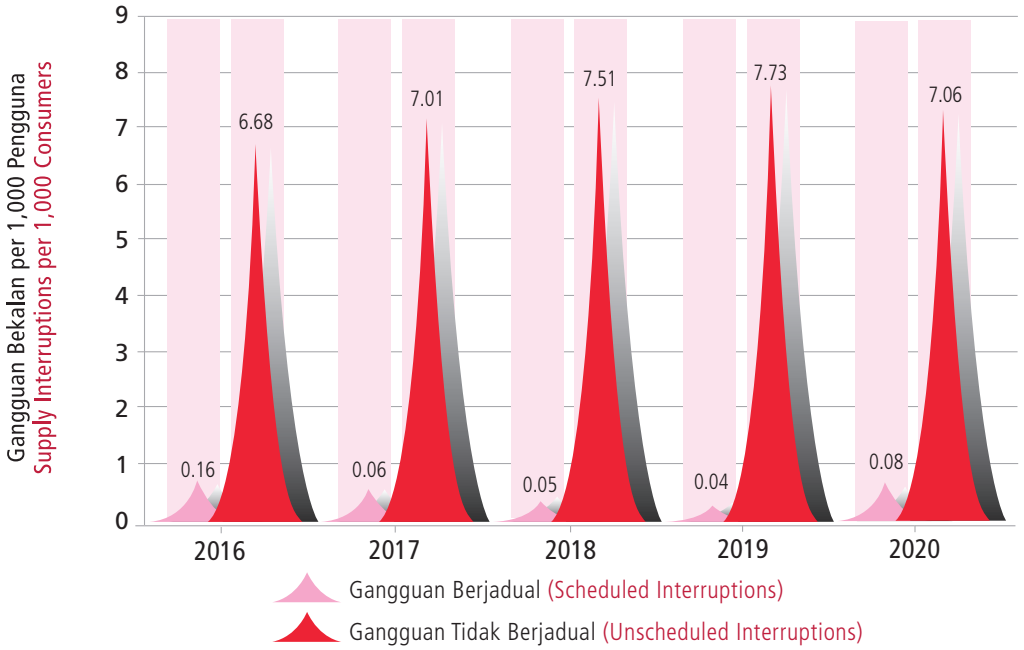
Carta 5: Insiden Pelantikan Bulanan TNB Bagi Talian/Kabel Per 100 cct-km di Semenanjung Malaysia
Chart 5: TNB Monthly Tripping Incidents for Lines/Cables Per 100 cct-km in Peninsular Malaysia



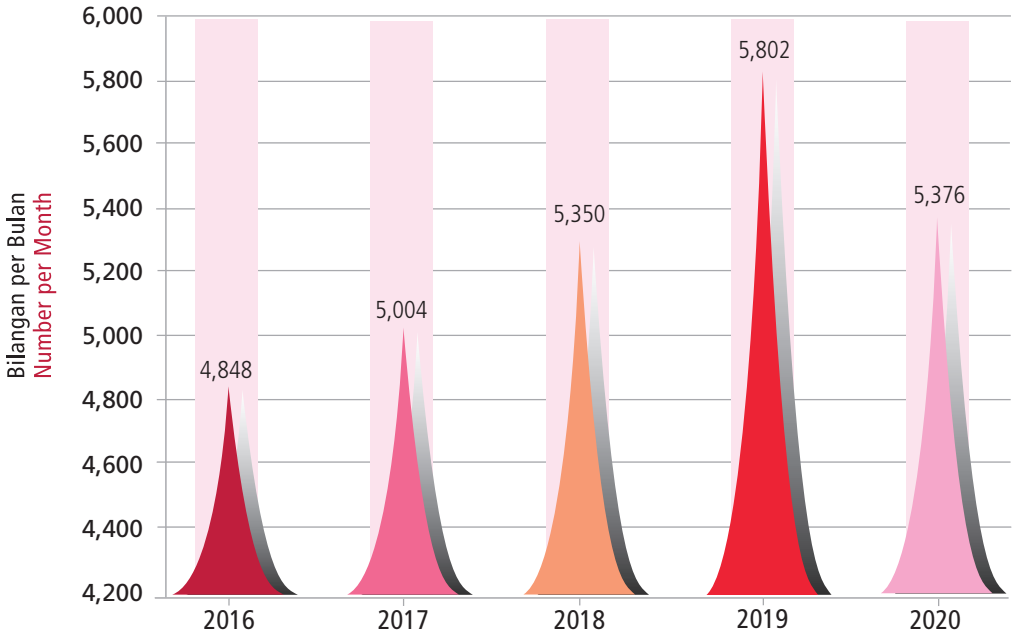
Nota I Notes:
Data tahun kewangan yang diperolehi daripada Laporan Syarat Lesen 25 (4) TNB *(Transmission Reliability Standard)* FY2020.
Financial year data obtained from License Condition 25(4) TNB (Transmission Reliability Standard) FY2020.

GANGGUAN BEKALAN ELEKTRIK
ELECTRICITY SUPPLY INTERRUPTION

Carta 6: Gangguan Bekalan Elektrik per 1,000 Pengguna
Chart 6: Electricity Supply Interruptions per 1,000 Consumers

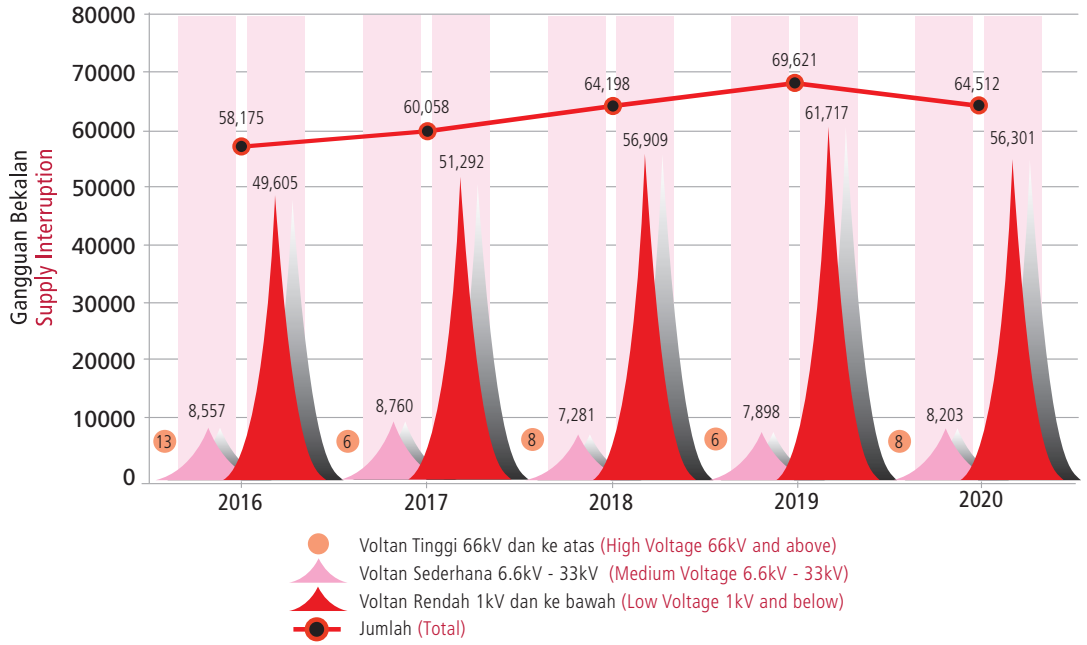


Carta 7: Purata Gangguan Bekalan Elektrik Bulanan
Chart 7: Monthly Average Electricity Supply Interruptions



GANGGUAN BEKALAN ELEKTRIK
ELECTRICITY SUPPLY INTERRUPTION

Carta 8: Gangguan Bekalan Elektrik Mengikut Tahap Voltan
Chart 8: Electricity Supply Interruptions by Voltage Level



Jadual 3: Gangguan Bekalan Elektrik Mengikut Negeri
Table 3: Electricity Supply Interruptions by States

Negeri State	2016	2017	2018	2019	2020
Johor	7,649	6,509	4,839	4,793	4,910
Kedah	3,999	4,715	3,751	4,249	3,482
Kelantan	3,832	4,135	4,401	5,602	4,933
WP Kuala Lumpur	8,779	6,685	8,713	9,335	7,589
Melaka	1,458	717	917	654	971
Negeri Sembilan	4,784	4,078	2,750	2,604	1,420
Pulau Pinang	3,348	3,221	2,899	4,327	3,958
Pahang	5,874	9,761	9,016	7,298	6,969
Perak	5,538	7,458	7,608	9,560	10,527
Perlis	343	513	699	1,088	475
WP Putrajaya & Cyberjaya	13	16	14	4	18
Selangor	11,332	10,163	15,132	15,993	15,592
Terengganu	1,226	2,087	3,459	4,114	3,668
Jumlah Total	**58,175**	**60,058**	**64,198**	**69,621**	**64,512**

Jadual 4: Bilangan Gangguan Bekalan Elektrik
Table 4: Number of Electricity Supply Interruptions

Bilangan Number	2016	2017	2018	2019	2020
Gangguan Tidak Berjadual Unscheduled Interruptions	56,775	59,560	63,784	69,251	63,809
Gangguan Berjadual Scheduled Interruptions	1,400	498	414	370	703
Jumlah Total	**58,175**	**60,058**	**64,198**	**69,621**	**64,512**

Jadual 5: Gangguan Bekalan Elektrik Tidak Berjadual Mengikut Jenis Gangguan (Tidak Termasuk Gangguan Voltan Tinggi)
Table 5: Number of Unscheduled Electricity Supply Interruptions by Type of Interruptions (Excluding High Voltage Interruptions)

Kategori Category	2016	2017	2018	2019	2020
Alat Ubah Transformer	61	30	37	42	17
Auto Reclose	4	211	1	0	0
Banjir Flood	28	68	23	422	2
Feeder pillar	3,139	1,970	2,382	3,049	2,404
Fius Fuse	4,103	2,109	2,737	4,045	2,390
Haiwan Animal	905	537	409	641	756
Insulating Piercing Connectors (IPC)	16,292	14,976	24,808	24,124	17,441
Jumper	18	7	6	3	1
Kabel Cable	3,205	2,819	2,703	3,590	4,037
Konduktor Conductor	7,140	7,710	9,362	11,646	13,520
Kotak Fius Fuse Box	5,420	3,975	4,164	4,522	8,383
Lain-lain Others	49	6163	33	199	13
Null	205	885	0	50	236
Pautan Link	26	28	67	109	33
Penamatan Termination	262	93	108	509	206
Penebat Insulator	14	4	6	11	1
Peralatan Suis Switchgear	93	65	39	26	10
Pihak Ketiga Third Party	3,375	3,323	3,463	3,530	2,741
Pokok Tree	6,240	7,215	6,391	6,348	5,612
Relay	9	7	4	13	1
Ribut Storm	174	98	78	161	78
Sambungan Joint	4,099	4,650	4,279	3,603	4,209
Tiang Pole	1,427	1,722	2,414	2,225	1,511
Ubahtika Transient	76	43	78	40	6
Vandalisme Vandalism	399	846	184	337	193
Jumlah Total	**56,763**	**59,554**	**63,776**	**69,245**	**63,801**

SAIDI, SAIFI & CAIDI

Jadual 6: SAIDI Mengikut Tahap Voltan
Table 6: SAIDI by Voltage Level

Tahap Voltan Voltage Level	Minit/Pelanggan/Tahun Minutes/Customer/Year				
	2016	2017	2018	2019	2020
Voltan Tinggi (66 kV dan ke atas) High Voltage (66 Kv and Above)	0.38	0.36	0.03	0.00	0.01
Voltan Sederhana (6.6 kV – 33 kV) Medium Voltage (6.6 kV – 33 kV)	46.46	51.78	46.02	45.51	41.97
Voltan Rendah (1 kV dan ke bawah) Low Voltage (1 kV and below)	2.45	2.35	2.17	2.62	2.97
Jumlah Total	**49.29**	**54.49**	**48.22**	**48.13**	**44.95**

Jadual 7: SAIDI Mengikut Negeri
Table 7: SAIDI by State

Negeri State	Minit/Pelanggan/Tahun Minutes/Customer/Year				
	2016	2017	2018	2019	2020
Johor	49.39	56.04	41.73	41.91	42.98
Kedah	60.82	82.51	73.30	65.76	64.98
Kelantan	67.90	59.34	49.91	39.33	42.69
WP Kuala Lumpur	32.39	41.01	28.59	26.68	28.19
Melaka	38.04	42.62	18.59	21.99	27.28
Negeri Sembilan	51.03	35.56	57.37	37.58	43.96
Pulau Pinang	57.22	51.30	46.01	60.84	45.80
Pahang	46.23	52.83	43.89	43.26	43.20
Perak	35.98	144.10	56.67	61.72	41.45
Perlis	51.05	58.12	78.66	89.34	51.74
WP Putrajaya & Cyberjaya	0.13	0.55	0.73	0.04	0.08
Selangor	54.67	52.34	64.77	61.55	58.52
Terengganu	39.65	42.82	36.67	30.70	33.62
Semenanjung Malaysia Peninsular Malaysia	**49.29**	**54.49**	**48.22**	**48.13**	**44.95**

Jadual 8: SAIFI Mengikut Tahap Voltan
Table 8: SAIFI by Voltage Level

Tahap Voltan Voltage Level	Bilangan Gangguan/Pelanggan/Tahun Number of Interruptions/Customer/Year				
	2016	2017	2018	2019	2020
Voltan Tinggi (66 kV dan ke atas) High Voltage (66 kV and above)	0.02	0	0	0	0
Voltan Sederhana (6.6 kV – 33 kV) Medium Voltage (6.6 kV – 33 kV)	0.87	0.93	0.86	0.83	0.79
Voltan Rendah (1 kV dan ke bawah) Low Voltage (1 kV and below)	0.01	0	0	0	0.01
Jumlah Total	**0.90**	**0.93**	**0.86**	**0.83**	**0.80**

Jadual 9: SAIFI Mengikut Negeri
Table 9: SAIFI by State

Negeri State	Bilangan Gangguan/Pelanggan/Tahun Number of Interruptions/Customer/Year				
	2016	2017	2018	2019	2020
Johor	0.70	0.55	0.63	0.75	0.90
Kedah	1.40	1.19	1.26	1.22	1.24
Kelantan	1.45	1.53	1.47	1.02	1.12
WP Kuala Lumpur	0.57	0.61	0.46	0.43	0.50
Melaka	0.64	0.55	0.28	0.44	0.48
Negeri Sembilan	0.78	0.44	0.77	0.51	0.70
Pulau Pinang	1.56	1.39	0.65	0.82	0.66
Pahang	0.94	0.71	1.41	1.48	1.37
Perak	0.57	2.32	0.79	1.02	0.60
Perlis	0.82	0.69	1.68	1.37	1.64
WP Putrajaya & Cyberjaya	0.15	0	0.09	0	0.02
Selangor	0.84	0.60	0.94	0.76	0.75
Terengganu	1.01	1.10	1.00	0.93	0.76
Semenanjung Malaysia Peninsular Malaysia	**0.90**	**0.93**	**0.86**	**0.83**	**0.80**

Jadual 10: CAIDI Mengikut Tahap Voltan
Table 10: CAIDI by Voltage Level

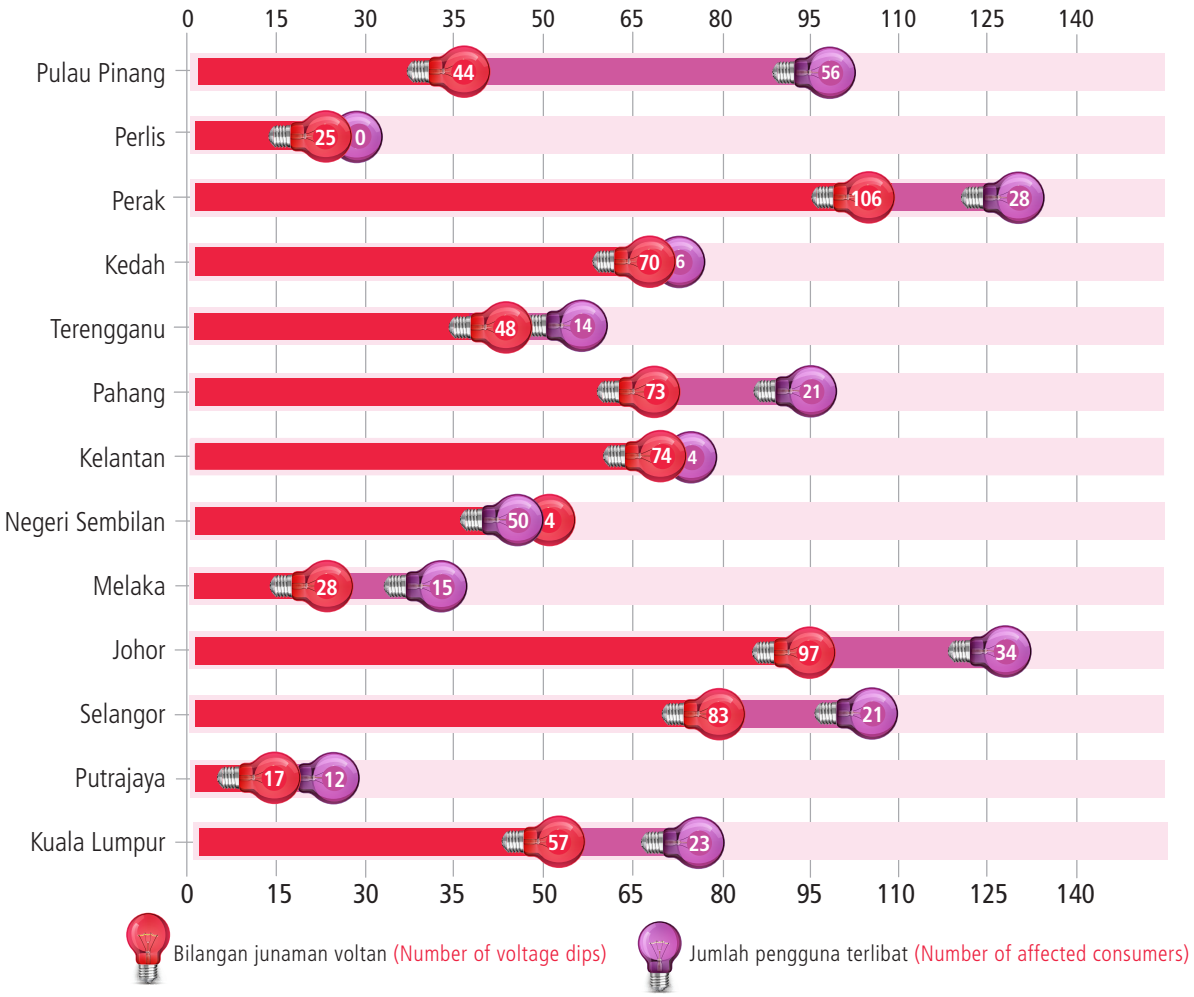
Tahap Voltan Voltage Level	Bilangan Gangguan/Pelanggan/Tahun Number of Interruptions/Customer/Year				
	2016	2017	2018	2019	2020
Voltan Tinggi (66 kV dan ke atas) High Voltage (66 kV and above)	19.00	0	0	0	0
Voltan Sederhana (6.6 kV – 33 kV) Medium Voltage (6.6 kV – 33 kV)	53.40	55.68	53.51	54.83	53.27
Voltan Rendah (1 kV dan ke bawah) Low Voltage (1 kV and below)	245.00	0	0	0	0
Jumlah/Total	**54.77**	**58.59**	**56.07**	**57.99**	**56.05**

Jadual 11: CAIDI Mengikut Negeri
Table 11: CAIDI by State

Negeri State	Bilangan Gangguan/Pelanggan/Tahun Number of Interruptions/Customer/Year				
	2016	2017	2018	2019	2020
Johor	70.56	101.89	66.24	55.88	48.02
Kedah	43.44	69.33	58.17	53.9	52.57
Kelantan	46.83	38.78	33.95	38.56	38.04
WP Kuala Lumpur	56.82	67.23	62.15	62.05	56.05
Melaka	59.44	77.50	66.39	49.98	57.07
Negeri Sembilan	65.42	80.81	74.51	73.69	62.80
Pulau Pinang	36.68	36.97	31.13	74.2	69.08
Pahang	49.18	74.41	71.73	29.23	31.53
Perak	63.12	62.11	46.82	60.51	68.73
Perlis	62.26	84.23	70.78	65.21	31.53
WP Putrajaya & Cyberjaya	0.87	0.00	8.11	0.00	3.71
Selangor	65.08	87.23	68.9	80.99	78.45
Terengganu	39.26	42.39	36.67	33.01	44.24
Semenanjung Malaysia Peninsular Malaysia	**54.77**	**58.59**	**56.07**	**57.99**	**56.05**

KUALITI PEMBEKALAN ELEKTRIK
ELECTRICITY SUPPLY QUALITY

Carta 9: Kejadian Junaman Voltan Mengikut Negeri dan Bilangan Pengguna yang Terlibat
Chart 9: Voltage Dip Incidents by State and Number of Consumers Involved



Nota I Notes:
Jumlah bilangan kejadian junaman voltan bukan hasil tambah bilangan jumlah junaman voltan bagi setiap negeri kerana terdapat kejadian yang sama dirakamkan di beberapa negeri.
The total number of occurrences of voltage dips is not summarised by the number of voltage dips in each state as there are similar events recorded in some states.

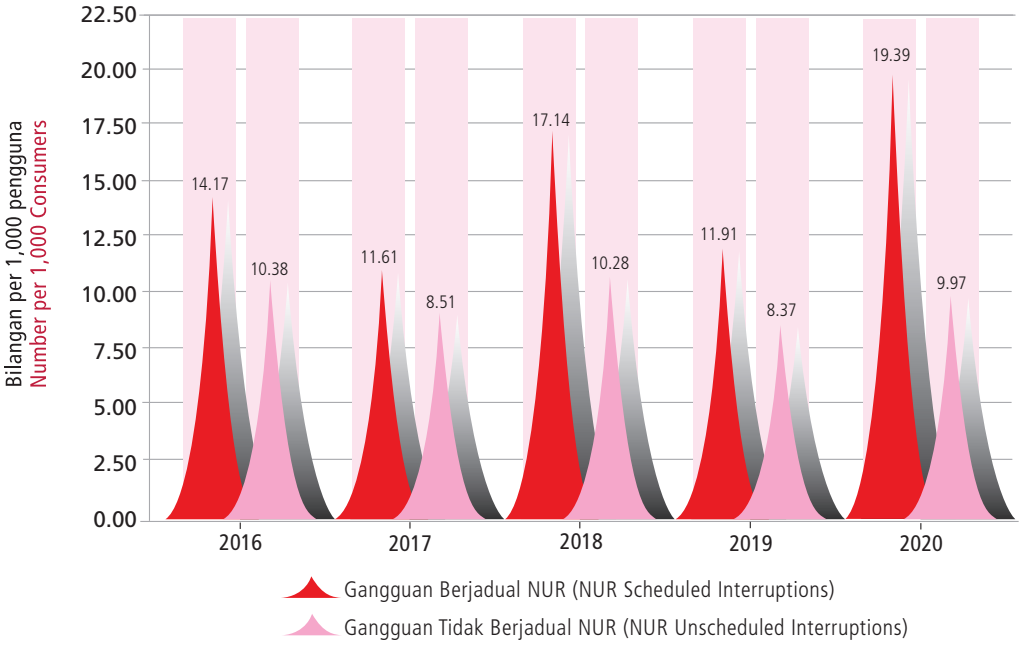
Jadual 12: Bilangan Pengguna Terlibat dengan Insiden Junaman Voltan Mengikut Negeri
Table 12: Number of Consumers Involved in Voltage Dip Incidents by State

Negeri State	2016	2017	2018	2019	2020
Johor	12	35	59	45	34
Kedah	7	2	5	6	6
Kelantan	0	2	0	0	4
Melaka	5	17	21	25	15
Negeri Sembilan	23	10	26	4	4
Pahang	5	11	25	26	21
Perak	14	20	23	16	28
Perlis	0	0	0	0	0
Pulau Pinang	51	57	74	59	56
Selangor	34	28	67	50	21
Terengganu	0	7	14	13	14
WP Kuala Lumpur	22	25	40	38	23
WP Putrajaya & Cyberjaya	4	2	11	10	12
Semenanjung Malaysia Peninsular Malaysia	**177**	**216**	**365**	**292**	**238**

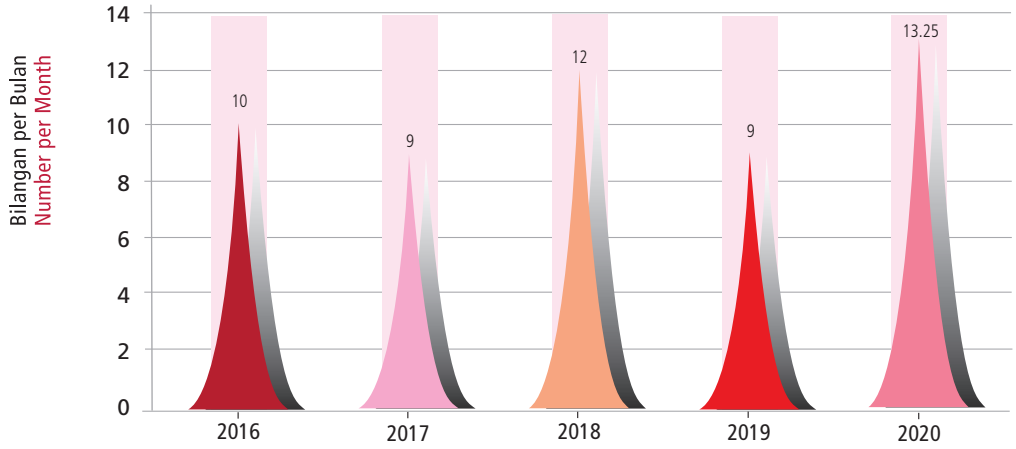
Jadual 13: SARFI
Table 13: SARFI

Sistem TNB TNB System	2016			2017			2018			2019			2020		
	SARFI 90	SARFI 80	SARFI 70	SARFI 90	SARFI 80	SARFI 70	SARFI 90	SARFI 80	SARFI 70	SARFI 90	SARFI 80	SARFI 70	SARFI 90	SARFI 80	SARFI 70
11 kV	6.05	3.48	2.03	5.54	3.15	2.03	13.40	4.46	2.01	13.60	3.67	1.73	10.32	3.35	1.46
22 kV	6.00	3.86	3.43	6.71	3.00	2.43	18.93	5.71	1.93	12.87	4.80	1.73	10.47	4.53	2.40
33 kV	6.86	2.80	1.36	5.30	2.29	1.08	16.34	4.35	1.31	14.04	3.28	0.89	9.87	2.36	0.69
Sistem Keseluruhan Overall System	**5.84**	**2.97**	**1.80**	**4.99**	**2.50**	**1.52**	**1.34**	**0.36**	**0.16**	**13.73**	**3.60**	**1.38**	**10.13**	**3.02**	**1.21**

Carta 10: Gangguan Bekalan Elektrik per 1,000 Pengguna
Chart 10: Electricity Supply Interruptions per 1,000 Consumers



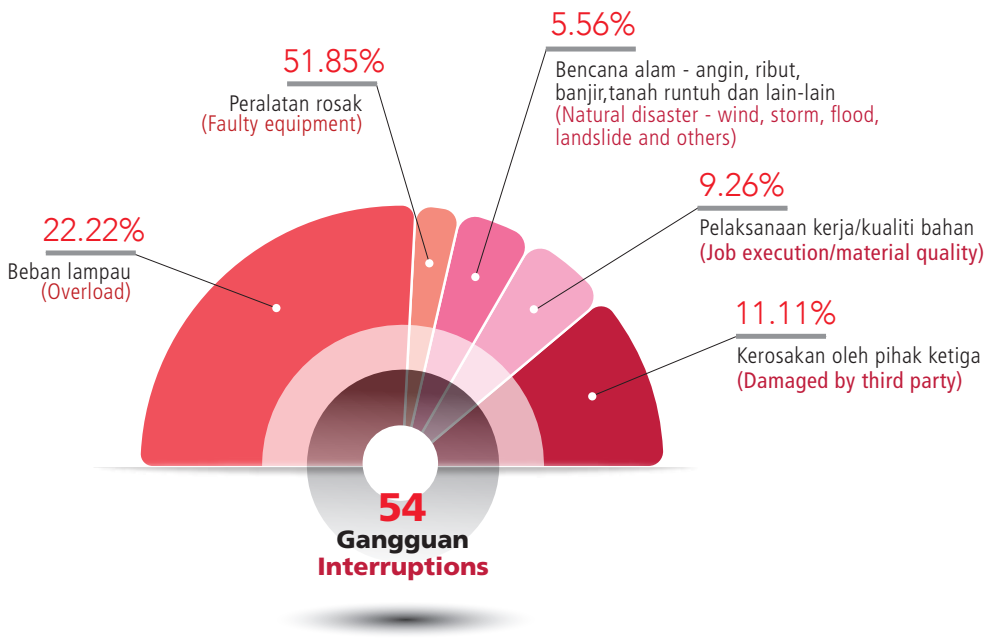
Carta 11: Purata Gangguan Bekalan Elektrik Bulanan
Chart 11: Monthly Average of Electricity Supply Interruptions



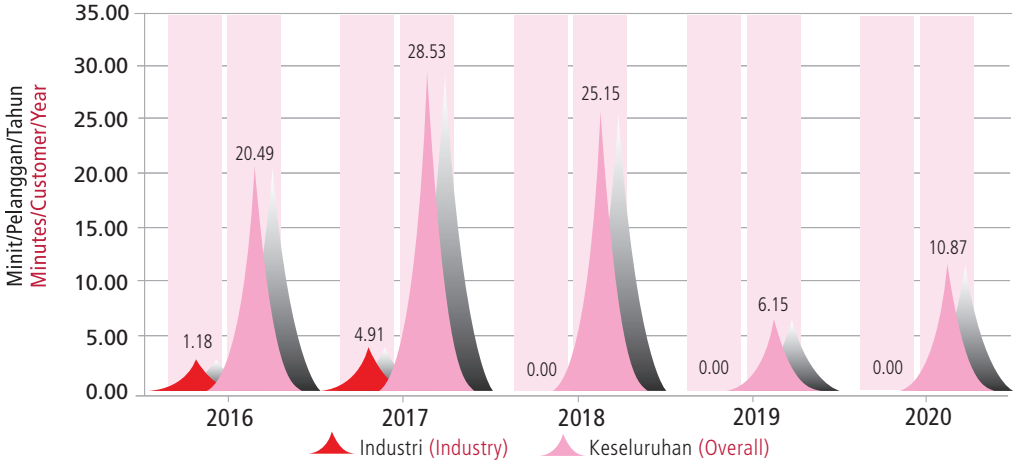
Jadual 14: Bilangan Gangguan Bekalan Elektrik
Table 14: Number of Electricity Supply Interruptions

Bilangan Number	2016	2017	2018	2019	2020
Gangguan Tidak Berjadual Unscheduled Interruptions	52	44	54	45	54
Gangguan Berjadual Scheduled Interruptions	71	60	90	64	105
Jumlah Total	**123**	**104**	**144**	**109**	**159**

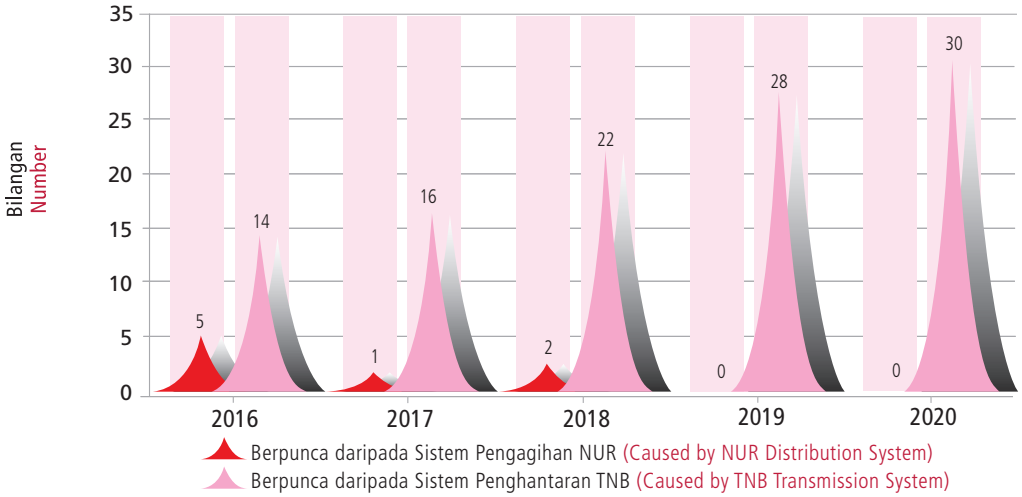
Carta 12: Gangguan Bekalan Elektrik Tidak Berjadual mengikut Jenis Gangguan
Chart 12: Unscheduled Supply Interruption by Type of Interruptions



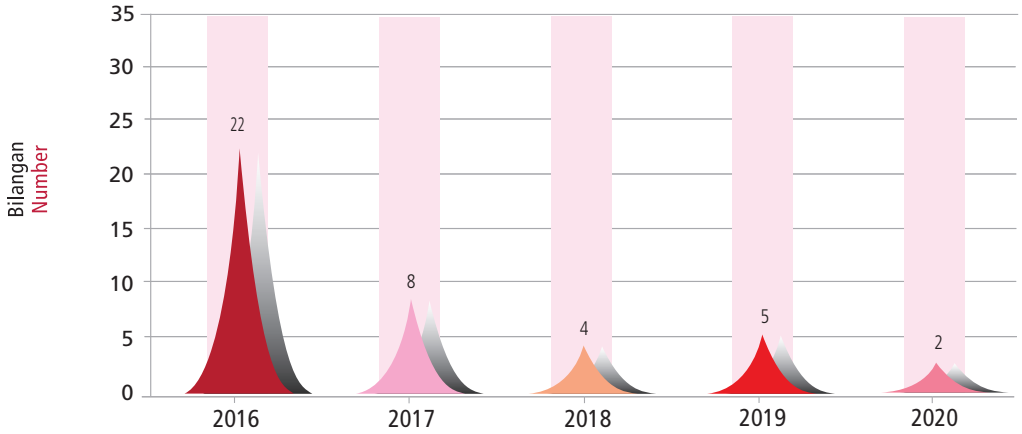
Carta 13: SAIDI
Chart 13: SAIDI



Carta 14: Kejadian Junaman Voltan yang Dilaporkan di Kulim Hi-Tech Park (KHTP)
Chart 14: Voltage Dips Incidents Reported in Kulim Hi-Tech Park (KHTP)

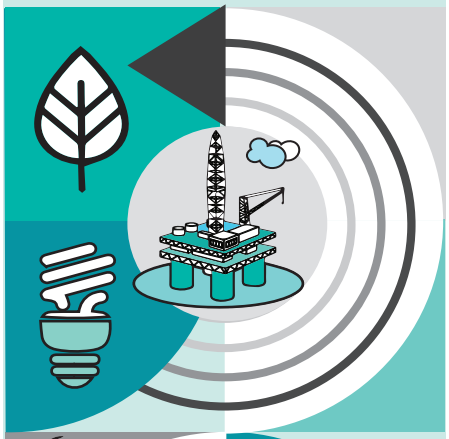


Carta 15: Bilangan Pengguna Terlibat dengan Insiden Junaman Voltan
Chart 15: Number of Consumers Involved in Voltage Dip Incidents

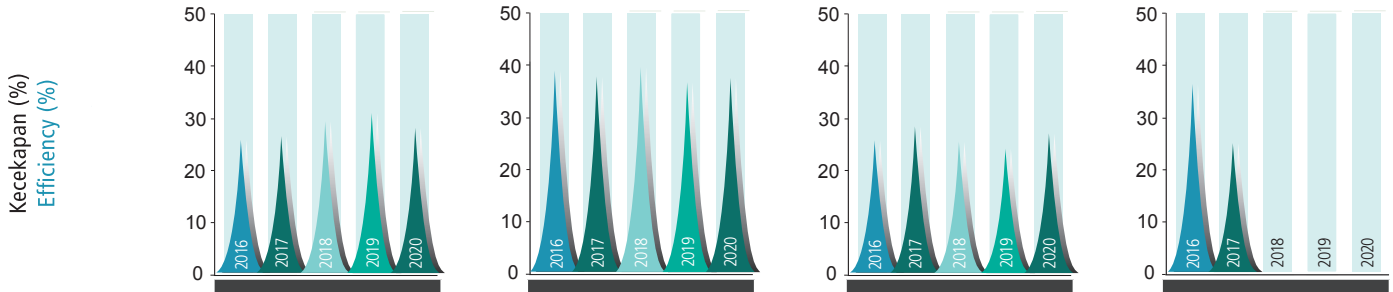


Prestasi Pembekalan Elektrik di Sabah

Electricity Supply Performance in Sabah

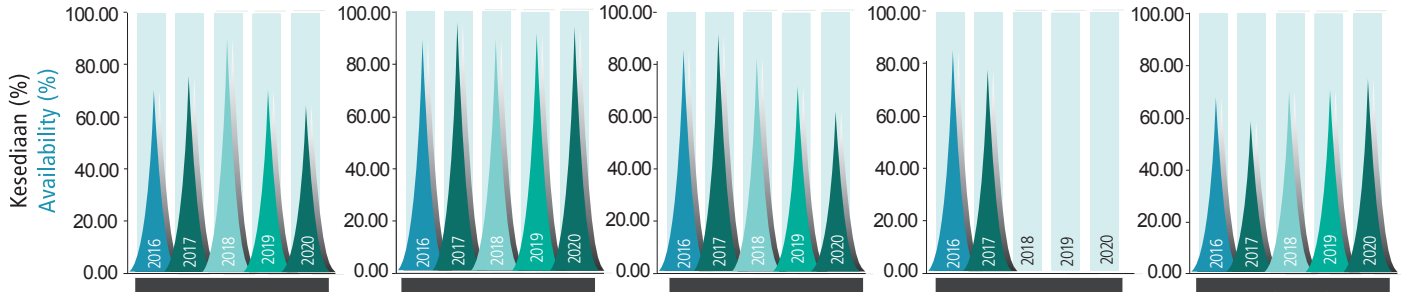


Carta 16: Purata Kecekapan Termal Stesen Jana Kuasa SESB dan IPP
Chart 16: Average Thermal Efficiency of SESB and IPP Power Plants



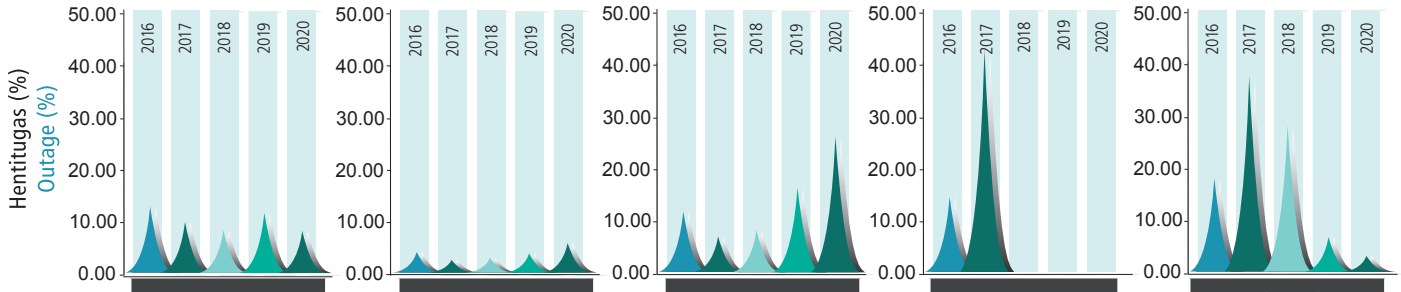
	CCGT SESB	CCGT IPP	Diesel SESB	Diesel IPP
2016	25.75	39.22	26.97	36.66
2017	26.27	38.98	28.01	24.35
2018	29.06	39.46	26.75	0.00
2019	30.10	38.72	25.20	0.00
2020	27.90	38.75	27.53	0.00

Carta 17: EAF Stesen Jana Kuasa SESB dan IPP
Chart 17: EAF of SESB and IPP Power Plants



	CCGT SESB	CCGT IPP	Diesel SESB	Diesel IPP	Hidro (Hydro) SESB
2016	71.70	92.55	83.14	84.08	67.05
2017	75.52	95.71	88.79	79.56	59.98
2018	88.00	93.43	81.11	0.00	68.46
2019	68.99	95.20	72.11	0.00	69.93
2020	61.28	91.61	61.71	0.00	74.06

Carta 18: EUOF Stesen Jana Kuasa SESB dan IPP
Chart 18: EUOF of SESB and IPP Power Plants



	CCGT SESB	CCGT IPP	Diesel SESB	Diesel IPP	Hidro (Hydro) SESB
2016	12.27	2.74	11.31	14.79	19.23
2017	10.00	1.55	7.62	45.16	37.16
2018	8.82	1.89	8.66	0.00	29.16
2019	11.79	2.73	16.08	0.00	6.51
2020	8.28	3.87	27.35	0.00	2.24

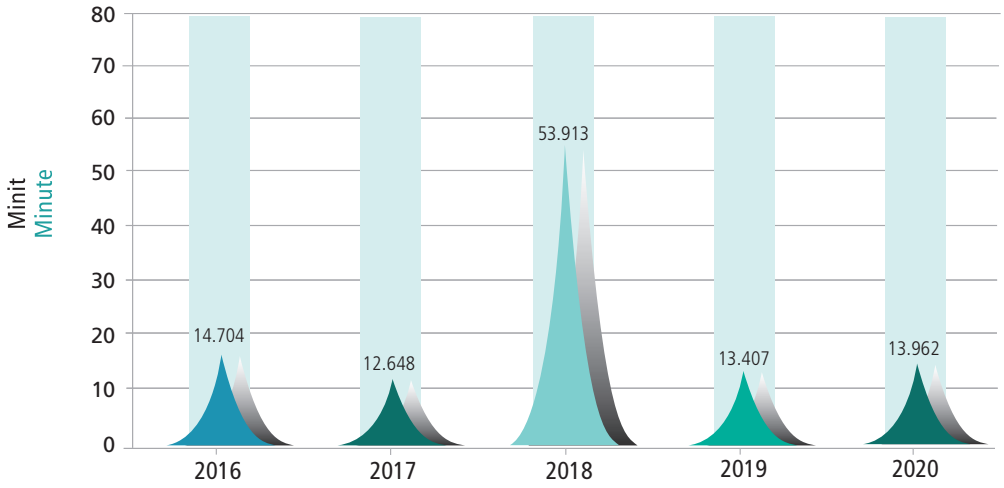
Nota untuk semua carta di atas I Notes for all charts above:

1. Sehingga 2019, satu-satunya stesen jana kuasa diesel IPP di bawah tempoh lesen adalah Stratavest, tetapi ia tidak beroperasi sepanjang tahun disebabkan oleh *forced outage*.
   As of 2019, the only licensed IPP diesel power plant was Stratavest, but it was not in operation throughout the year due to forced outrage.
2. Stesen jana kuasa diesel Serudong telah tamat operasi pada Disember 2017.
   Serudong diesel power station ended operation in December 2017.

Jadual 15: Pelantikan Sistem Penghantaran dengan Kehilangan Beban Sebanyak 50 MW dan ke Atas
Table 15: Transmission System Trippings with Load Loss of 50 MW and Above

2020												
Petunjuk Indicator	**Jan Jan**	**Feb Feb**	**Mac Mar**	**Apr Apr**	**Mei May**	**Jun June**	**Jul July**	**Ogos Aug**	**Sept Sept**	**Okt Oct**	**Nov Nov**	**Dis Dec**
Bilangan Pelantikan Tanpa Lucutan Beban Number of Trippings Without Load Shedding	6	3	4	3	5	4	2	3	12	2	3	2
Bilangan Pelantikan dengan Lucutan Beban Number of Trippings with Load Shedding	0	0	0	0	0	0	3	0	1	0	0	0
Kehilangan Beban Maksimum (MW) Maximum Load Losses (MW)	0	0	0	0	0	0	261.76	0	50.89	0	0	0
Tenaga yang Tidak Dibekalkan Semasa Pelantikan (MWj) Unsupplied Energy During Trippings (MWh)	0	0	0	0	0	0	6651.70	0	559.81	0	0	0
Purata Tenaga yang Tidak Dibekalkan Semasa Pelantikan (MWj) Average Unsupplied Energy During Trippings (MWh)	0	0	0	0	0	0	2217.23	0	559.81	0	0	0
Purata Tempoh Setiap Pelantikan (Minit) Average Duration Per Tripping (Minutes)	0	0	0	0	0	0	0.40	0	0.11	0	0	0
Tenaga Tidak Dibekalkan Semasa Lucutan Beban (MWj) Unsupplied Energy During Load Shedding (MWh)	0	0	0	0	0	0	6651.70	0	559.81	0	0	0

Carta 19: DePUI - Minit Sistem
Chart 19: DePUI - System Minutes



Jadual 16: Insiden Pelantikan bagi Talian/Kabel Per 100 cct-km Mengikut Tahap Voltan (Dengan Kehilangan Beban)
Table 16: Tripping Incidents for Lines/Cables per 100 cct-km by Voltage Level (With Load Loss)

Kategori Category	Voltan Voltage	2016	2017	2018	2019	2020
Dengan Kehilangan Beban With Load Loss	275 kV	0.000	0.000	0.669	0.000	0.000
	132 kV	0.154	0.618	0.551	0.480	0.625
	66 kV	3.175	3.175	3.175	3.501	0.000
Tanpa Kehilangan Beban Without Load Loss	275 kV	1.373	1.338	0.502	1.337	0.334
	132 kV	1.367	1.081	1.302	0.480	0.759
	66 kV	10.582	1.058	6.659	9.335	0.973

Nota | Notes:

1) Pengiraan untuk tahun 2020 adalah berdasarkan kepada data Bahagian Penghantaran yang telah diluluskan oleh Pengurus Besar Penghantaran pada 20 Disember 2019 (data ditandatangani oleh Ketua Jurutera Perlindungan Penghantaran bagi pihak Pengurus Besar Penghantaran).
The calculations for 2020 were based on the Transmission Division data which was approved by the Shipping General Manager on 20 December 2019 (data signed by the Chief Transmission Protection Engineer on behalf of the General Manager of Transmission).

2) Untuk senarai lengkap sila rujuk lampiran '*Transformer Database at SESB Transmission Network CY2020*' dan '*Transmission Division Transmission Line Database CY2020*'.
For a complete list, please refer the appendix on 'Transformer Database at SESB Transmission Network CY2020' and 'Transmission Division Transmission Line Database CY2020'.

3) Bilangan pelantikan bagi setiap 100 litar km

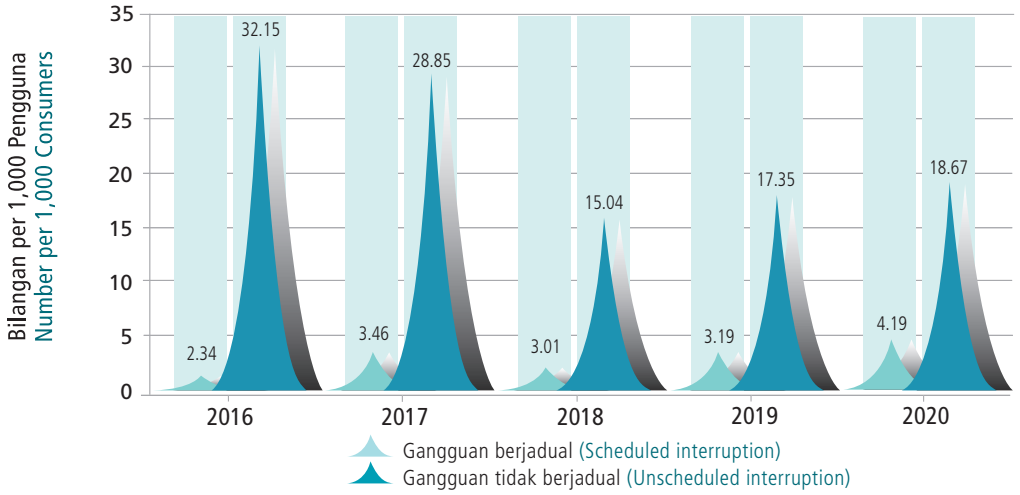
$$= \frac{\text{Jumlah bilangan pelantikan talian penghantaran mengikut voltan X 100 km}}{\text{Jumlah litar km bagi setiap kategori}}$$

Number of tripping per 100 km circuit

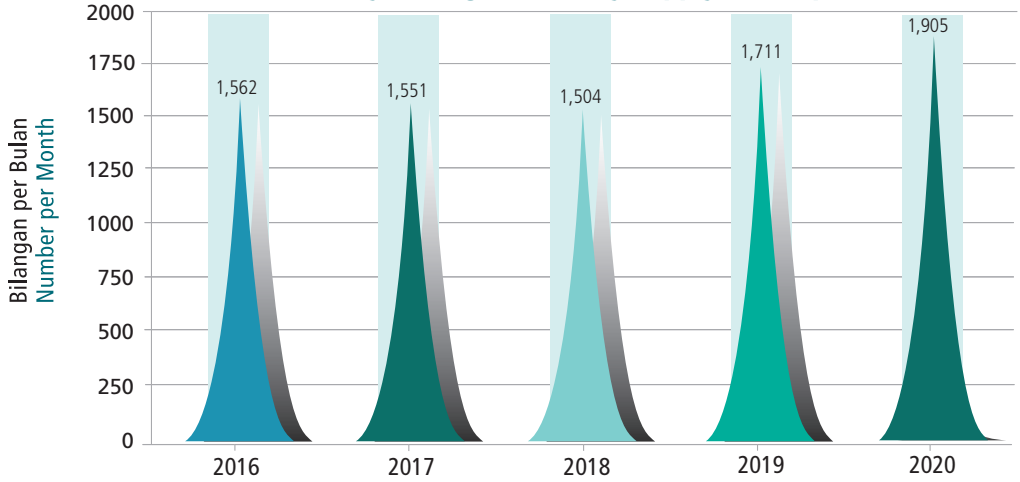
$$= \frac{\text{Total number of transmission line tripping by voltage) X 100 km}}{\text{Number of km circuits for each category}}$$

GANGGUAN BEKALAN ELEKTRIK
ELECTRICITY SUPPLY INTERRUPTION

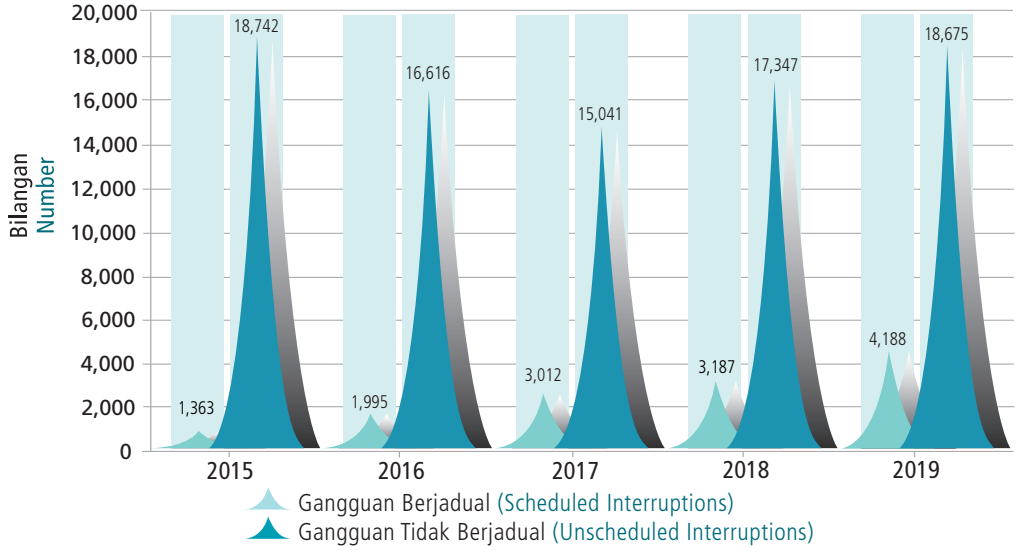
Carta 20: Gangguan Bekalan Elektrik per 1,000 Pengguna
Chart 20: Electricity Supply Interruptions per 1,000 Consumers



Carta 21: Purata Gangguan Bekalan Elektrik Bulanan
Chart 21: Monthly Average Electricity Supply Interruptions



Carta 22: Bilangan Gangguan Bekalan Elektrik
Chart 22: Number of Electricity Supply Interruptions

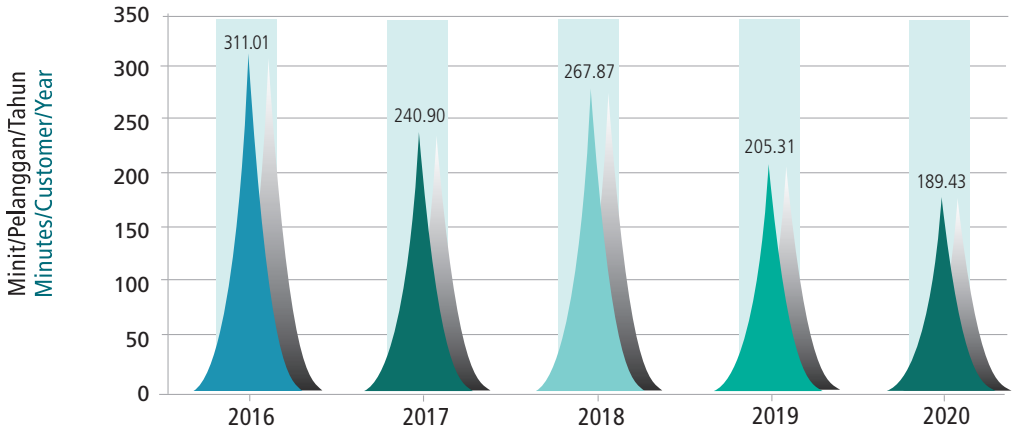


Jadual 17: Gangguan Bekalan Elektrik Tidak Berjadual
Table 17: Unscheduled Electricity Supply Interruptions

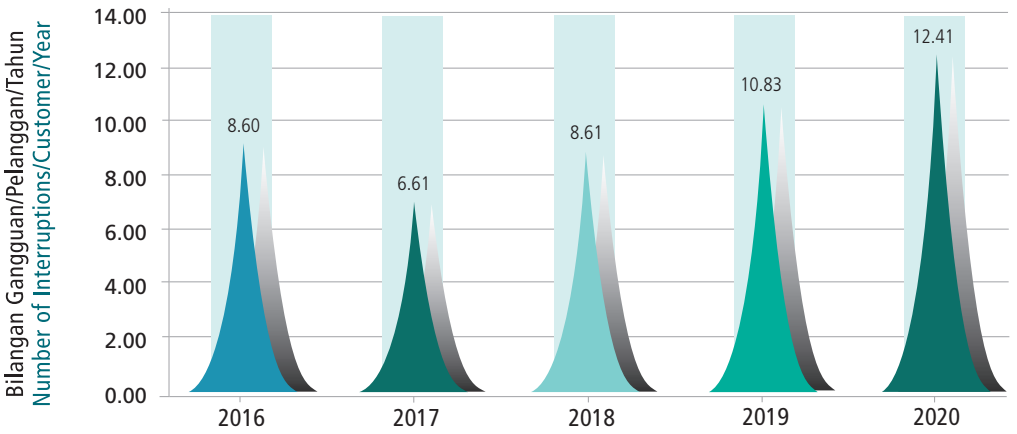
Jenis Gangguan Type of Interruptions	2016	2017	2018	2019	2020
Banjir Flood	3	163	0	0	0
Beban Lampau Overload	2,929	3,018	3,050	2,272	1,918
Binatang Animal	977	1,017	1,445	1,960	2,372
Hubungan Tidak Baik Poor Contact	2,959	2,182	2,033	2,727	2,383
Cuaca Buruk (Angin, Ribut, Petir) Bad Weather (Wind, Storm, Lightning)	1,191	1,048	428	1,168	2,028
Disebabkan oleh Pihak Lain (Kena Langgar, Khianat, Kena Curidan Penyambungan Haram) Caused by Other Parties (Hit, Treachery, Theft and Illegal Connection)	2,195	1,394	246	1,217	2,052
Kabel Cable	474	462	796	884	962
Kebakaran Fire	64	24	44	60	58
Kena Guard Wire/ Kendur Touched with Guard Wire/Sagging	792	499	708	1,011	0
Kerosakan Peralatan Faulty Equipment	82	43	0	0	0
Kualiti Barang Quality of Material	83	63	152	298	311
Lain-Lain (Tiada Data, Tiada Operasi, Tiada Bekalan) Others (Unavailable Data, Shut Down, No Supply)	2,968	1,652	1,452	627	1,333
Lanjut Usia / Reput Old/Decayed	595	490	675	802	1,214
Pencawang Substation	441	426	0	0	0
Pokok Tree	2,370	3,038	3,246	3,694	4,044
Tanah Runtuh Landslide	22	34	0	0	0
Tidak Diketahui Unknown	0	0	0	0	0
Ubahtika Transient	597	1,063	1,948	627	0
Jumlah Total	**18,742**	**16,616**	**16,223**	**17,347**	**18,675**

SAIDI, SAIFI & CAIDI

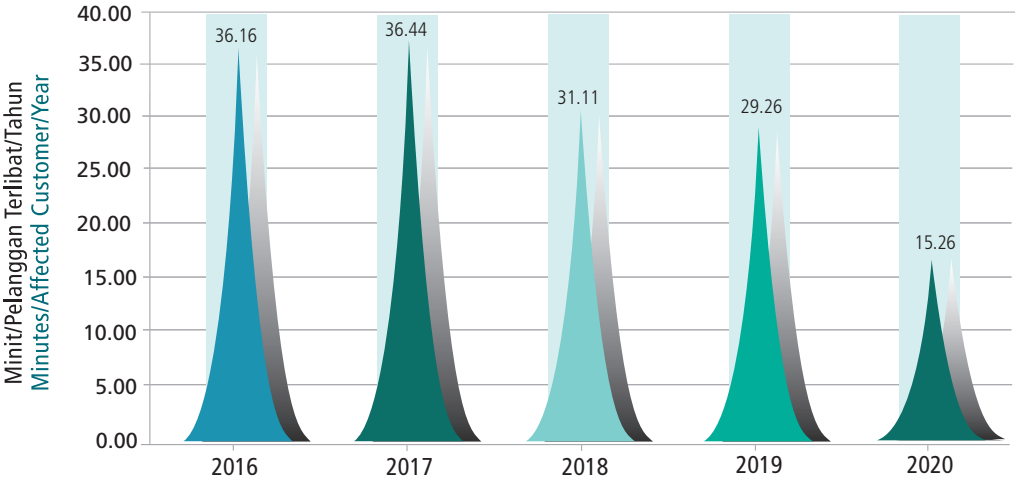
Carta 23: SAIDI
Chart 23: SAIDI



Carta 24: SAIFI
Chart 24: SAIFI

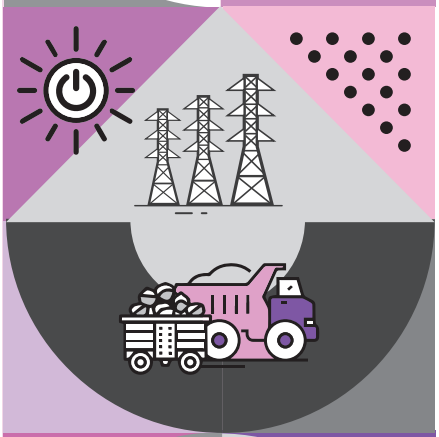


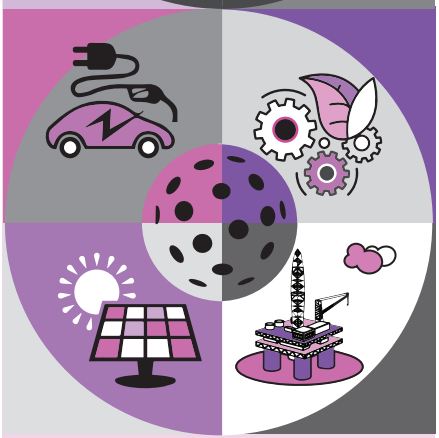
Carta 25: CAIDI
Chart 25: CAIDI



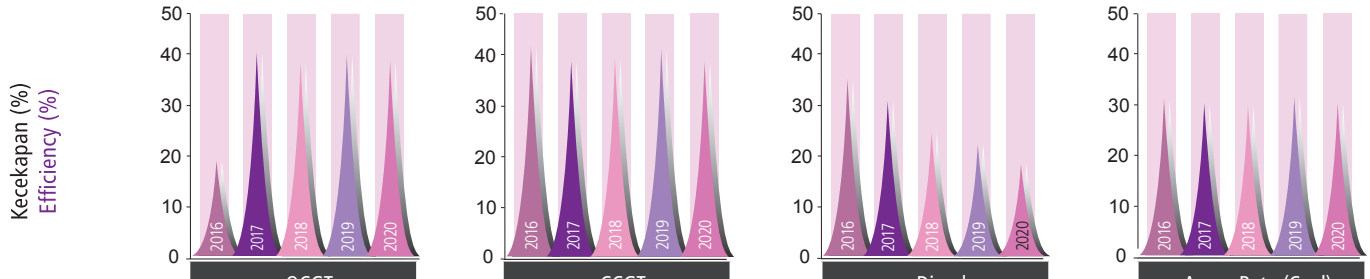
Prestasi Pembekalan Elektrik di Sarawak

Electricity Supply Performance in Sarawak



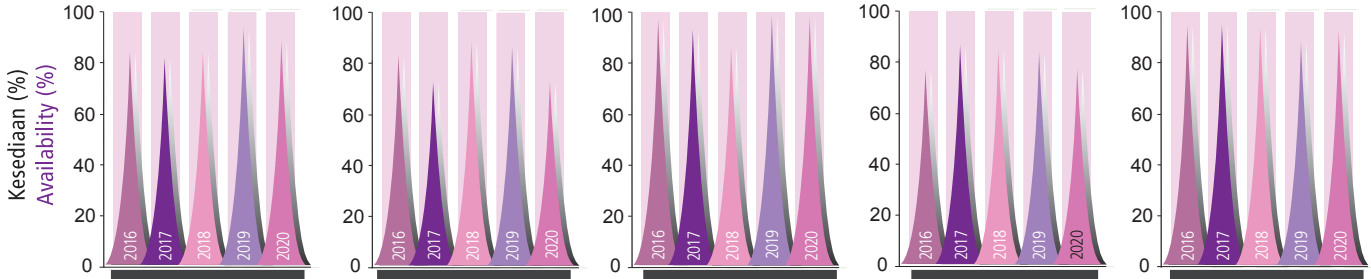


Carta 26: Purata Kecekapan Termal Stesen Jana Kuasa SEB
Carta 26: Average Thermal Efficiency of SEB Power Plants



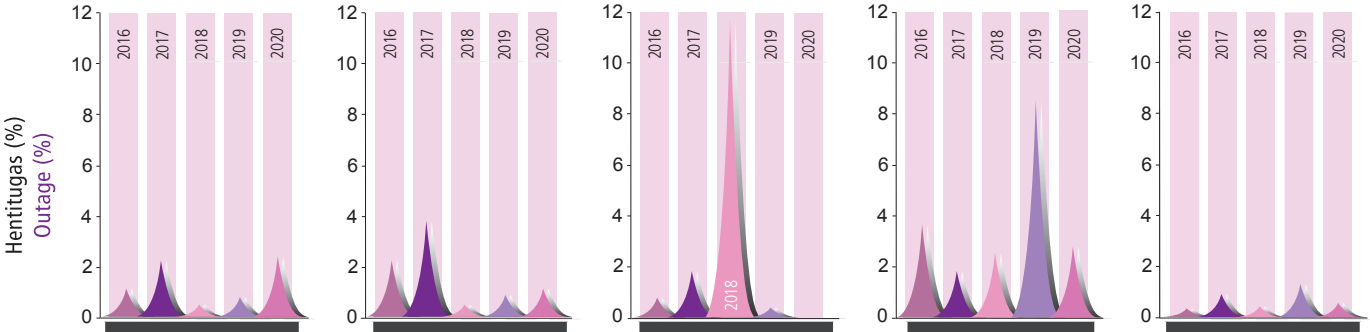
	OCGT		CCGT		Diesel		Arang Batu (Coal)
2016	19.11	2016	40.90	2016	35.12	2016	31.46
2017	20.92	2017	38.22	2017	31.19	2017	30.87
2018	21.80	2018	38.59	2018	24.05	2018	30.30
2019	21.25	2019	40.25	2019	22.14	2019	31.36
2020	21.23	2020	38.68	2020	17.86*	2020	30.65

Carta 27: EAF Stesen Jana Kuasa SEB
Chart 27: EAF of SEB Power Plants



	OCGT		CCGT		Diesel		Arang Batu (Coal)		Hidro (Hydro)
2016	83.50	2016	82.53	2016	98.05	2016	78.07	2016	94.44
2017	81.53	2017	71.88	2017	92.24	2017	85.64	2017	94.52
2018	84.57	2018	88.61	2018	87.12	2018	85.47	2018	93.47
2019	92.29	2019	88.25	2019	99.06	2019	84.46	2019	88.68
2020	87.93	2020	72.04	2020	98.79	2020	78.53*	2020	93.70

Carta 28: Purata Kadar Hentitugas Tidak Berjadual (FOR) Stesen Jana Kuasa SEB
Chart 28: Forced Outage Rate (FOR) of SEB Power Plants



	OCGT		CCGT		Diesel		Arang Batu (Coal)		Hidro (Hydro)
2016	1.11	2016	2.58	2016	0.45	2016	3.51	2016	0.21
2017	2.16	2017	3.98	2017	1.93	2017	1.87	2017	0.88
2018	0.23	2018	0.33	2018	11.85	2018	2.52	2018	0.25
2019	0.34	2019	0.97	2019	0.18	2019	8.15	2019	1.26
2020	2.24	2020	1.08	2020	0.00	2020	2.82	2020	0.49

Nota I Notes:

*Loji Jana Kuasa Sg Biawak/TAR di dalam mod sedia. Kecekapan tidak diwakili.

*Sg Biawak/TAR Plant on standby mode. Efficiency not represented.

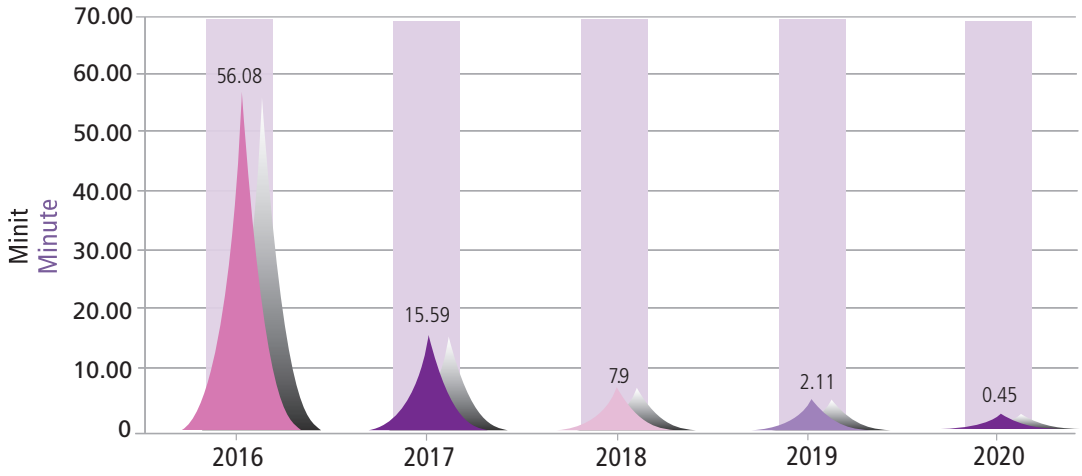
*Satu daripada loji arang batu mengalami penutupan penyenggaraan jangka panjang (MPG Unit #1).

*One of the coal fired power plant experience prolong maintenance shutdown (MPG Unit #1).

Jadual 18: Petunjuk Prestasi Sistem Penghantaran SEB
Table 18: Transmission System Performance Indicators SEB

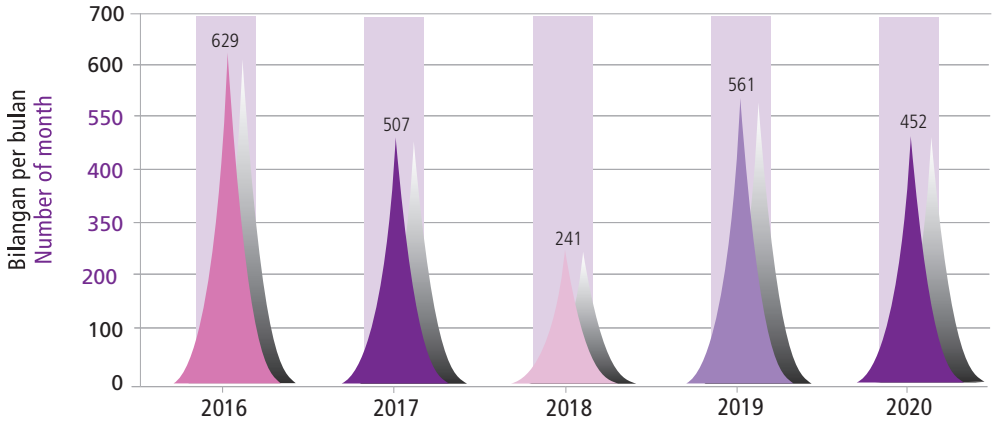
Petunjuk Indicator	2020											
	Jan Jan	Feb Feb	Mac Mar	Apr Apr	Mei May	Jun June	Jul July	Ogos Aug	Sept Sept	Okt Oct	Nov Nov	Dis Dec
Bilangan Pelantikan Number of Trippings	-	-	1	2	1	1	1	-	-	-	1	-
Kehilangan Beban Maksimum (MW) Maximum Load Losses (MW)	-	-	3	9.2	8.5	7.3	3.8	-	-	-	47	-
Tenaga yang Tidak Dibekalkan Semasa Pelantikan (MWj) Unsupplied Energy During Trippings (MWh)	-	-	2	8.2	1.8	2.1	1.7	-	-	-	12.7	-
Purata Tenaga Tidak Dibekalkan Setiap Pelantikan (MWj) Average Unsupplied Energy During Trippings (MWh)	-	-	2	4.1	1.8	2.1	1.7	-	-	-	12.7	-
Purata Tempoh Setiap Pelantikan (Minit) Average Duration per Tripping (Minutes)	-	-	40	50	12.9	17.6	26.1	-	-	-	16.2	-
Bilangan Lucutan Beban Number of Load Shedding	-	-	-	-	-	-	-	-	-	-	-	-
Tenaga yang Tidak Dibekalkan Semasa Lucutan Beban (MWj) Unsupplied Energy During Load Shedding (MWh)	-	-	-	-	-	-	-	-	-	-	-	-

Carta 29: DePUI – Minit Sistem SEB (Tahun Kewangan)
Chart 29: DePUI – System Minutes of SEB (Financial Year)

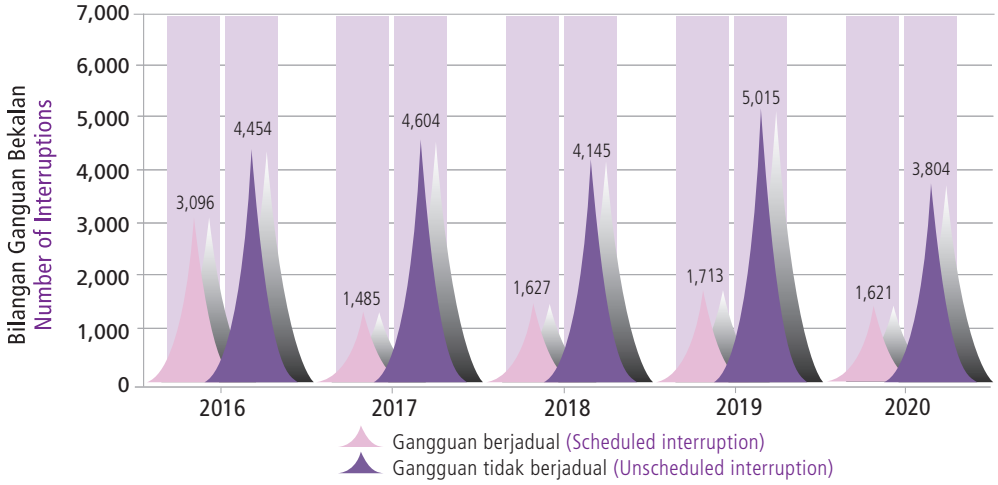


GANGGUAN BEKALAN ELEKTRIK
ELECTRICITY SUPPLY INTERRUPTIONS

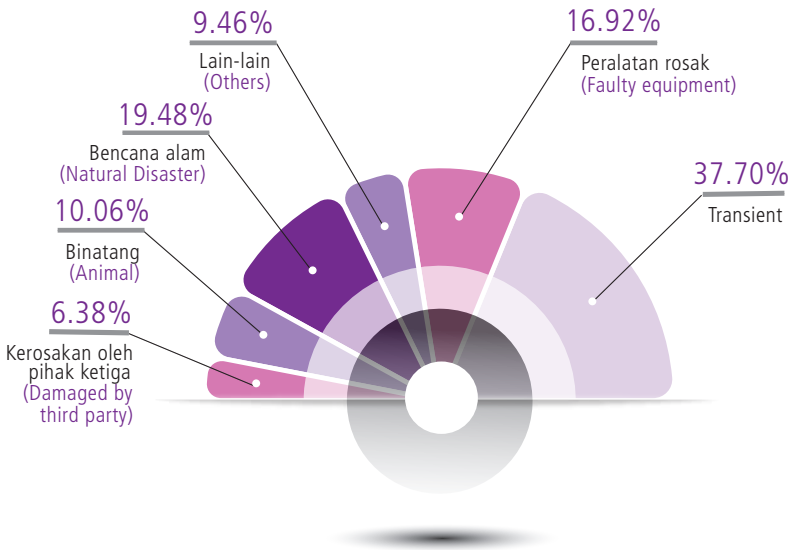
Carta 30: Purata Gangguan Bekalan Elektrik Bulanan
Chart 30: Monthly Average Electricity Supply Interruptions



Carta 31: Bilangan Gangguan Bekalan Elektrik
Chart 31: Number of Electricity Supply Interruptions

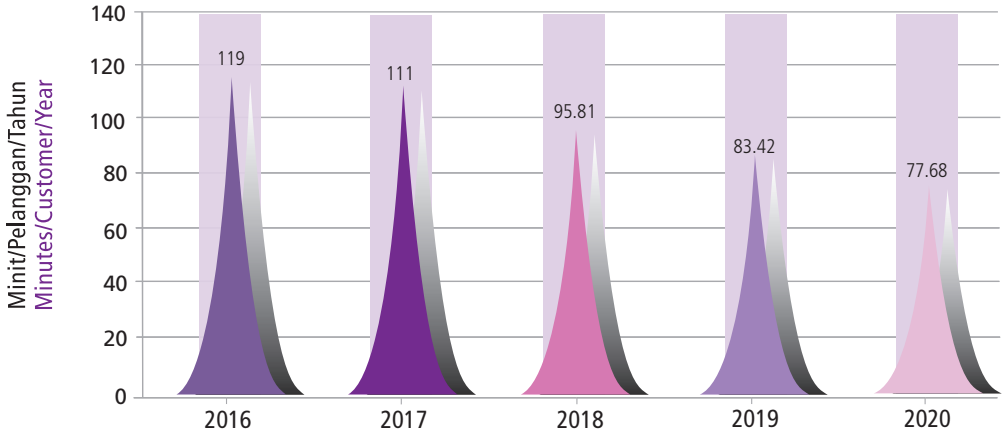


Carta 32: Punca-punca Gangguan Bekalan Elektrik
Chart 32: Causes of Power Outages

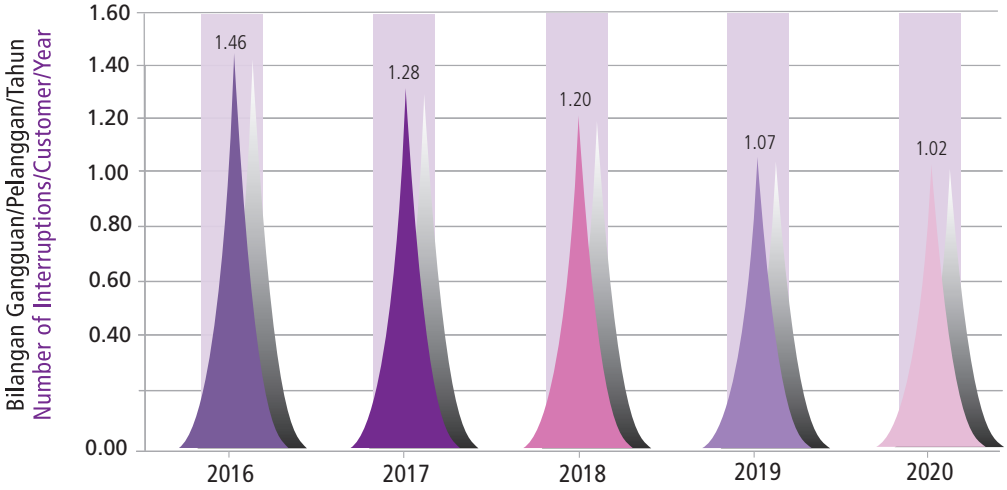


SAIDI, SAIFI & CAIDI SEB

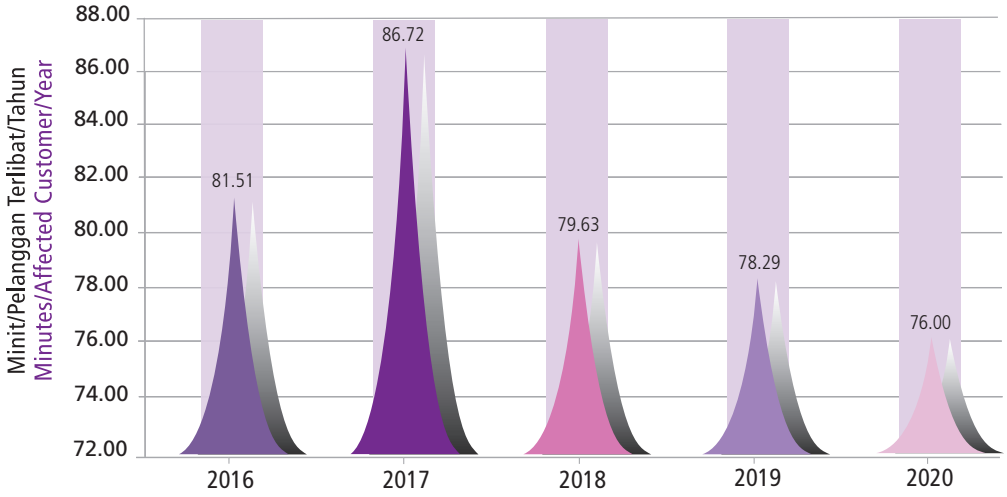
Carta 33: SAIDI
Chart 33: SAIDI



Carta 34: SAIFI
Chart 34: SAIFI

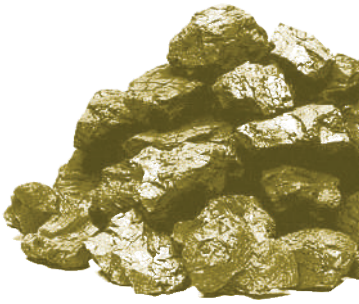


Carta 35: CAIDI
Chart 35: CAIDI



Maklumat Industri Pembekalan Elekrik di Semenanjung Malaysia

Information on the Electricity Supply Industry in Peninsular Malaysia



Maklumat Industri Pembekalan Elektrik Di Semenanjung Malaysia
Information On The Electricity Supply Industry In Peninsular Malaysia

Petunjuk Indicator	Unit	2016	2017	2018	2019	2020
Kehendak Maksimum Maximum Demand	MW	17,788	17,790	18,338	18,566	18,808[1]
Jumlah Unit Penjanaan[2] Total Units Generated[2]	GWj GWh	24,046	22,239	17,827	16,735	15,730
Jumlah Unit Jualan[3] Total Units Sold[3]	GWj GWh	110,199	110,567	113,469	116,525	110,879
Hasil Jualan Elektrik Sales Revenue of Electricity	RM Juta RM Million	43,583	43,703	45,029	46,487	44,435
Kapasiti Terpasang[4] Installed Capacity[4]	MW	6,107	5,066	5,066	4,766	4,528
Jumlah Kakitangan[5] Number of Employees[5]	Orang Person	28,807	27,990	28,371	28,825	27,957
Hasil Jualan Elektrik Per Kakitangan Sales Revenue of Electricity Per Employee	RM Juta/Kakitangan RM Million/Employee	1.51	1.56	1.59	1.61	1.59
Unit Jualan Per Kakitangan Units Sold Per Employee	GWj/Kakitangan GWh/Employee	3.83	3.95	4.00	4.04	3.96
Kapasiti Terpasang Per Kakitangan Installed Capacity Per Employee	MW/Kakitangan MW/Employee	0.21	0.18	0.18	0.17	0.16
Jumlah Unit Pembelian[6] Total Purchased Units[6]	GWj GWh	97,839	99,899	108,912	112,899	110,059
Jumlah Unit yang Dieksport Total Exported Units	GWj GWh	0.74	4.81	0.08	0.26	3
Jumlah Unit yang Diimport Total Imported Units	GWj GWh	30	7.41	19.98	40.58	18

Nota | Notes:

1. [1]10 Mac 2020
   [1]10 Mac 2020
2. [2]Penjanaan oleh stesen jana kuasa TNB yang bersambung di talian penghantaran, tidak termasuk IPP.
   [2]Units generated by TNB power plants connected at transmission level, excluding IPP.
3. [3]Tidak termasuk eksport.
   [3]Excluding export.
4. [4]Kapasiti terpasang bagi stesen jana kuasa TNB yang bersambung di talian penghantaran, tidak termasuk IPP.
   [4]Installed capacity of TNB power plants connected at transmission level, excluding IPP.
5. [5]Tidak termasuk anak syarikat milik penuh TNB dan anak syarikat dengan pemilikan majoriti.
   [5]Excuding TNB wholly-owned subsidiaries and TNB majority-owned subsidiaries.
6. [6]Unit yang dibeli daripada IPP.
   [6]Units purchased from IPP.

Jadual 20: Kapasiti Terpasang (MW) & Kebolehdapatan Keseluruhan TNB
Table 20: TNB Installed Capacity (MW) & Overall Availability

Sumber Tenaga Energy Source	2016	2017	2018	2019	2020
Hidro Hydro	2,529	2,536	2,536	2,536	2,555
Gas Asli Natural Gas	3,578	2,530	2,530	2,230	1,973
Jumlah Total	**6,107**	**5,066**	**5,066**	**4,766**	**4,528**
Kebolehdapatan Keseluruhan Overall Availability	94.78%	91.37%	91.77%	91.31%	94.10%

Nota | Notes:
Kapasiti terpasang bagi stesen jana kuasa TNB yang bersambung di talian penghantaran, tidak termasuk IPP.
Installed capacity of TNB power plants connected at transmission level, excluding IPP.

Jadual 21: Campuran Penjanaan TNB (GWj)
Table 21: TNB Generation Mix (GWh)

Sumber Tenaga Energy Source	2016	2017	2018	2019	2020
Hidro Hydro	3,838	7,089	4,915	3,919	4,692
Gas Asli Natural Gas	20,208	15,149	12,911	12,816	11,038
MFO/Diesel/Distillate	1	2	-	0.43	-
Jumlah Total	**24,046**	**22,239**	**17,827**	**16,735**	**15,730**

Nota | Notes:
Penjanaan oleh stesen jana kuasa TNB yang bersambung di talian penghantaran, tidak termasuk IPP.
Units generated by TNB power plants connected at transmission level, excluding IPP.

Jadual 22: Bilangan Pengguna TNB
Table 22: Number of TNB Consumers

Tahun Year	2016	2017	2018	2019	2020
Domestik Domestic	6,984,368	7,181,846	7,378,425	7,553,229	7,728,383
Komersial Commercial	1,453,804	1,510,341	1,553,607	1,575,198	1,590,434
Industri Industry	28,320	28,867	29,749	30,520	31,637
Lampu Awam Public Lighting	67,944	70,402	72,554	75,463	77,982
Perlombongan Mining	34	38	45	53	53
Pertanian Agriculture	1,850	2,112	2,228	2,326	2,431
Unit Percuma Free Units	2,530	2,559	2,589	2,622	2,641
Jumlah Total	**8,538,850**	**8,796,165**	**9,039,197**	**9,239,411**	**9,433,561**

Nota | Notes:
Unit Percuma merupakan bekalan elektrik yang tidak dikenakan bayaran bil bulanan. Premis yang layak merupakan premis-premis TNB termasuk bangunan pejabat, rumah kelab, kuarters, pencawang masuk utama, pencawang pembahagian utama dan pencawang elektrik.
Free Units refer to electricity provided for free without being charged for monthly bill payments. Eligible premises are TNB premises including office buildings, clubhouse, quarters, main substations, transmission substations and distribution substations.

Jadual 23: Jualan Tenaga Elektrik TNB (GWj)
Table 23: TNB Electricity Sales (GWh)

Tahun Year	2016	2017	2018	2019	2020
Domestik Domestic	25,745	24,828	25,522	27,267	29,961
Komersial Commercial	39,447	39,086	39,265	40,428	35,831
Industri Industry	42,977	44,457	46,440	46,403	42,790
Lampu Awam Public Lighting	1,374	1,482	1,476	1,590	1,475
Perlombongan Mining	113	131	149	175	134
Pertanian Agriculture	543	583	617	663	688
Eksport Export	0.74	4.81	0.08	0.26	3
Jumlah Total	**8,538,850**	**110,572**	**113,469**	**116,526**	**110,882**

Nota | Notes:
Unit Percuma adalah termasuk dalam sektor komersial
Free Units are included in the commercial sector

Jadual 24: Penggunaan Tenaga Elektrik (GWj) Mengikut Negeri di Semenanjung Malaysia
Table 24: Electricity Consumption (GWh) by States in Peninsular Malaysia

Negeri State	2016	2017	2018	2019	2020
Perlis	790	750	749	716	685
Kedah	5,040	5,235	5,415	5,489	5,298
Pulau Pinang	11,375	11,425	11,862	11,922	11,179
Perak	9,057	8,936	9,149	9,443	9,096
Selangor	29,269	28,853	29,613	30,111	28,772
WP Kuala Lumpur	15,196	15,186	15,072	15,440	14,523
Negeri Sembilan	5,938	5,979	6,047	6,205	5,988
Melaka	4,486	4,625	4,643	4,860	4,591
Johor	17,527	17,807	18,546	19,343	18,361
Pahang	5,052	5,187	5,581	5,737	5,315
Terengganu	2,763	2,953	3,079	3,350	3,144
Kelantan	2,352	2,375	2,449	2,589	2,650
WP Putrajaya	1,353	1,258	1,266	1,319	1,276
Jumlah Total	**110,198**	**110,567**	**113,469**	**116,524**	**110,878**

Nota | Notes:
Tidak termasuk eksport
Excluding exports

Jadual 25: Sistem Penghantaran TNB
Table 25: TNB Transmission System

Tahun Year	2016	2017	2018	2019	2020
Talian & Kabel Sistem Penghantaran **Transmission System Lines & Cables**					
500 kV (cct-km)	784	784	1,628	1,886	2,176
275 kV (cct-km)	9,518	9,637	9,047	9,597	9,406
132 kV (cct-km)	12,175	12,420	12,407	12,482	12,697
Pencawang Penghantaran **Transmission Substations**					
Bilangan Number	427	439	443	457	462
Keupayaan (MVA) Capacity (MVA)	104,780	109,210	115,120	121,590	125,490

Jadual 26: Sistem Pengagihan TNB
Table 26: TNB Distribution system

Tahun Year	2016	2017	2018	2019	2020
Talian & Kabel Sistem Pengagihan[1] **Distribution System Lines & Cables[1]**					
Talian Atas (km) Overhead Lines (km)	532,403	339,793	352,565	366,568	379,468
Kabel Bawah Tanah (km) Underground Cables (km)	697,159	305,464	307,474	316,439	323,844
Pencawang Pengagihan **Distribution Substations**					
Bilangan Number	74,417	79,450	81,327	83,467	85,127
Keupayaan (MVA) Capacity (MVA)	131,465	111,842	114,089	117,436	120,301

Nota I Notes:
Data tahun 2017 dan ke atas ialah data selepas data cleansing dijalankan.
Data for 2017 and above is data after data cleansing exercise.

Jadual 27: Kapasiti Terpasang di Semenanjung Malaysia, 2020
Table 27: Peninsular Malaysia Installed Capacity, 2020

	Stesyen Jana Kuasa Power Station	Sumber Tenaga Energy Source	Kapasiti Terpasang (MW) Installed Capacity (MW)	TAAC (MW)
TNB	SJ Temenggor	Hidro Hydro	348.00	345.68
	SJ Bersia (SKIM SUNGAI PERAK SUNGAI PERAK SCHEME)	Hidro Hydro	72.00	72.00
	SJ Kenering (SKIM SUNGAI PERAK SUNGAI PERAK SCHEME)	Hidro Hydro	120.00	119.62
	SJ Chenderoh (SKIM SUNGAI PERAK SUNGAI PERAK SCHEME)	Hidro Hydro	40.50	39.49
	SJ Sg Piah Upper	Hidro Hydro	68.60	68.60
	SJ Sg Piah Lower	Hidro Hydro	0.00	0.00
	SJ Pergau	Hidro Hydro	600.00	600.00
	SJ Sultan Mahmud, Kenyir-Hydro	Hidro Hydro	400.00	400.00
	SJ Sultan Yussuf (Jor)	Hidro Hydro	100.00	100.00
	SJ Sultan Idris (Woh)	Hidro Hydro	150.00	150.00
	SJ Hulu Terengganu-Hydro	Hidro Hydro	265.00	265.00
	SJ Tembat -Hydro	Hidro Hydro	0.00	0.00
	SJ Ulu Jelai -Hydro	Hidro Hydro	372.00	372.00
	SJ Hidro Mini[d] Mini hydro power stations[d]	Hidro mini Mini hydro	18.99	0.00
	SJ Putrajaya	Gas asli Natural gas-OCGT	252.00	249.00
	SJ Sultan Ismail, Paka	Gas asli Natural gas-CCGT	0.00	0.00
	SJ Gelugor	Gas asli Natural gas-CCGT	310.00	310.00
	SJ Tuanku Jaafar, Port Dickson	Gas asli Natural gas-CCGT	1,411.00	1,411.00
	SJ Jambatan Connaught	Gas asli Natural gas-CCGT	0.00	0.00
	SJ Hidro Mini[d] Mini hydro power stations[d]	Gas asli Natural gas-CCGT	18.99	0.00
		Jumlah TNB TNB Total	**4,528.09**	**4,502.38**

Jadual 27: Kapasiti Terpasang di Semenanjung Malaysia, 2020
Table 27: Peninsular Malaysia Installed Capacity, 2020

	Stesen Jana Kuasa Power Station	Sumber Tenaga Energy Source	Kapasiti Terpasang (MW) Installed Capacity (MW)	TAAC (MW)
IPP	GB3 Sdn. Bhd., Lumut	Gas asli Natural gas-CCGT	640.00	640.00
	Kuala Langat Power Plant Sdn. Bhd., Kuala Langat	Gas asli Natural gas-CCGT	675.00	675.00
	Pahlawan Power Berhad, Telok Gong	Gas asli Natural gas-CCGT	0.00	0.00
	Panglima Power Berhad, Telok Gong	Gas asli Natural gas-CCGT	720.00	720.00
	Prai Power Sdn. Bhd., Prai	Gas asli Natural gas-CCGT	350.00	350.00
	Segari Energy Ventures Sdn. Bhd., Lumut	Gas asli Natural gas-CCGT	1,303.00	1,303.00
	Teknologi Tenaga Perlis Consortium Sdn. Bhd., Perlis	Gas asli Natural gas-CCGT	650.00	650.00
	YTL Paka	Gas asli Natural gas-CCGT	585.00	585.00
	Kapar Energy Ventures Sdn. Bhd. (GF4)	Gas asli Natural gas-CCGT	0.00	0.00
	Pengerang Power Sdn. Bhd.	Gas asli Natural gas-Cogen	600.00	600.00
	Port Dickson Power Berhad, Port Dickson	Gas asli Natural gas-OCGT	-	-
	Powertek Berhad, Telok Gong	Gas asli Natural gas-OCGT	-	-
	Kapar Energy Ventures Sdn. Bhd. (GF1)	Gas asli Natural gas-Conventional Thermal	600.00	578.00
	TNB Pasir Gudang Energy Sdn. Bhd.	Gas asli Natural gas-CCGT	275.00	275.00
	TNB Connaught Bridge Sdn. Bhd.	Gas asli Natural gas-CCGT	375.00	375.00
	TNB Prai Sdn. Bhd.	Gas asli Natural gas-CCGT	1,071.43	1,071.43
	Southern Power Generation Sdn. Bhd.	Gas asli Natural gas-CCGT	-	-
	Edra Energy Sdn Bhd	Gas asli Natural gas-CCGT	-	-
	Jimah Energy Ventures Sdn. Bhd.	Arang batu Coal- Thermal	1,400.00	1,400.00
	Kapar Energy Ventures Sdn. Bhd. (GF2)	Arang batu Coal- Thermal	600.00	566.50
	Kapar Energy Ventures Sdn. Bhd. (GF3)	Arang batu Coal- Thermal	1,000.00	907.50
	Tanjung Bin Power Sdn. Bhd.	Arang batu Coal- Thermal	2,100.00	2,100.00
	Tanjung Bin Energy Sdn. Bhd.	Arang batu Coal- Thermal	1,000.00	1,000.00
	TNB Janamanjung (1,2,3) Sdn. Bhd.	Arang batu Coal- Thermal	2,070.00	2,070.00
	TNB Manjung (4) Sdn. Bhd.	Arang batu Coal- Thermal	1,010.00	1,010.00
	TNB Manjung Five Sdn. Bhd.	Arang batu Coal- Thermal	1,000.00	1,000.00
	Jimah East Power Sdn. Bhd.	Arang batu Coal- Thermal	2,000.00	2,000.00
	Musteq Hydro Sdn. Bhd.[d]	Hidro mini Mini hydro	20.00	-
	NUR Generation Sdn. Bhd.[d]	Gas asli Natural gas-CCGT	220.00	-
		Jumlah IPP **IPP Total**	**20,264.43**	**19,876.43**
		Jumlah Besar (TNB + IPP) **Grand Total (TNB + IPP)**	**24,792.52**	**24,378.81**

Jadual 27: Kapasiti Terpasang di Semenanjung Malaysia pada 2020
Table 27: Peninsular Malaysia Installed Capacity in 2020

	Kategori Category	Sumber Tenaga Energy Source	Kapasiti Terpasang (MW) Installed Capacity (MW)
LAIN-LAIN (OTHERS)	FiT & MySuria[d]	Biogas	101.00
		Biojisim Biomass	44.85
		Hidro Mini Mini Hydro	63.80
		Solar	288.32
		Jumlah Total	**497.96**
	Solar (Lesen TBB bukan FiT)[d] Solar (RE License non FiT)[d]	Solar	0.14
		Jumlah Total	**0.14**
	Cogeneration Awam[d] Public Cogen[d]	Gas Asli Natural Gas	468.23
		Biogas	8.87
		Jumlah Total	**477.10**
	Cogen Persendirian ** Private Cogen **	Gas Asli Natural Gas	368.29
		Haba Sisa Proses Perindustrian Industrial Process Waste Heat	12.00
		Biojisim Biomass	5.56
		Jumlah Total	**385.85**
	LSS	>30 MW	548.92
		< 30 MW	227.94
		Jumlah Total	**776.85**
	NEM[d]	Solar	227.47
		Jumlah Total	**227.47**
	Self-gen <5 MW[s]	Gas Asli Natural Gas	9.11
		Diesel	55.06
		Biojisim Biomass	1.04
		Biogas	133.53
		Solar	11.88
		Hidro Mini Mini Hydro	2.13
		Jumlah Total	**211.71**
		Jumlah Lain-lain Total Others	**2,577.08**
		Jumlah Besar Grand Total	**27,369.60**

Nota | Notes:
1. [d] Bersambung di peringkat pengagihan
   [d] Connected at the distribution level
2. [s] SELCO
3. * Termasuk 100 MW yang bersambung di peringkat penghantaran
   *Including 100 MW connected at the transmission level
4. **Cogen persendirian menjana elektrik untuk kegunaan sendiri
   **Private cogens generate electricity for their own consumption

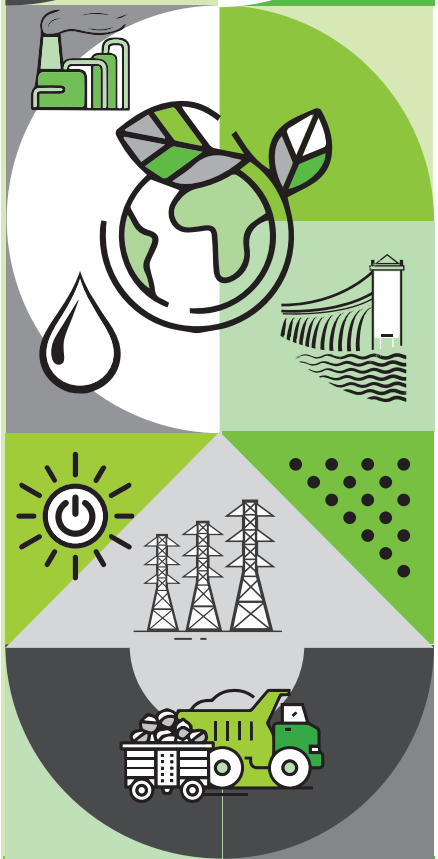
Jadual 28: Penjanaan Elektrik Mengikut Sumber Tenaga di Semenanjung Malaysia pada 2020 (GWj)
Table 28: Peninsular Malaysia Electricity Generation by Energy Source in 2020 (GWh)

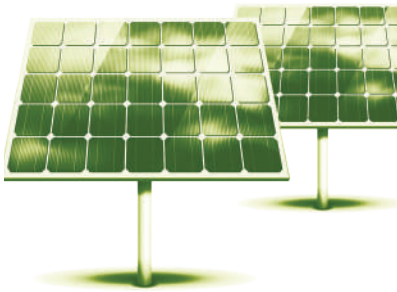
Penjana Generator	Sumber Tenaga Energy Source									
	Arang Batu Coal	Gas Asli Natural Gas	Diesel/ MFO/ Distillate	Hidro Hydro	Hidro Mini Mini Hydro	Biojisim Biomass	Biogas	Solar	Haba Sisa & Sisa Industri Waste Heat & Industrial Waste	Jumlah Total
TNB	-	11,038.09	-	4,635.78	56.44	-	-	-	-	**15,730.32**
IPP	83,745.87	28,170.51	32.98	-	121.57	-	-	-	-	**112,070.93**
Cogen Awam Public Cogen	-	2,210.48	-	-	-	-	-	-	3.84	**2,214.32**
Cogen Persendirian Private Cogen	-	1,168.79	0.22	-	-	8.22	-	-	57.36	**1,234.59**
FiT & MySuria	-	-	-	-	280.68	90.82	388.47	404.16	-	**1,164.12**
Solar (Lesen TBB bukan FiT) Solar (Non-FiT RE License)	-	-	-	-	-	-	-	0.14	-	**0.14**
LSS >30 MW	-	-	-	-	-	-	-	890.39	-	**890.39**
LSS <30 MW	-	-	-	-	-	-	-	326.94	-	**326.94**
NEM	-	-	-	-	-	-	-	278.97	-	**278.97**
Self-Gen<5 MW[2]	-	18.44	32.68	-	4.12	253.68	-	14.94	-	**323.86**
Jumlah Total	**83,745.87**	**42,606.31**	**65.94**	**4,635.78**	**462.81**	**352.72**	**388.47**	**1,915.54**	**61.20**	**134,234.65**
	62.4%	**31.7%**	**0.1%**	**3.5%**	**0.3%**	**0.2%**	**0.3%**	**1.4%**	**0.1%**	**100.00%**

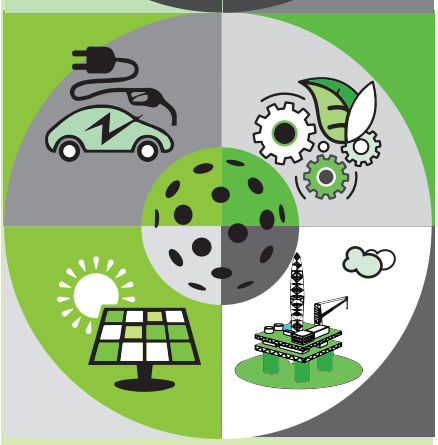
Nota | Notes:
Data ini adalah termasuk penjanaan oleh stesen jana kuasa yang bersambung di talian pengagihan dan off-grid.
These data include generation by power plants connected at the distribution level and off-grid.

Maklumat Industri Pembekalan Elektrik di Sabah

Information on the Electricity Supply Industry in Sabah







Jadual 29: Maklumat Utama Prestasi SESB
Table 29: Key Information on SESB Performance

Petunjuk Indicator	Unit	2016	2017	2018	2019	2020
Kehendak Maksimum Maximum Demand	MW	945	938	955	1,001	987[1]
Jumlah Unit Penjanaan Total Units Generated	GWj GWh	875	919	1,033	1,124	1,198
Jumlah Unit Jualan Total Units Sold	GWj GWh	5,188	5,173	5,345	5,576	5,331
Hasil Jualan Elektrik Sales Revenue of Electricity	RM Juta RM Million	1,734	1,723	1,830	1,913	1,828
Kapasiti Penjanaan Boleh Harap Dependable Generation Capacity	MW	331	319	328	328	329
Jumlah Kakitangan Number of Employees	Orang Person	3,282	3,260	3,179	3,180	3,134
Hasil Jualan Elektrik per Kakitangan Sales Revenue of Electricity per Employee	RM Juta/Kakitangan RM Million/Employee	0.53	0.53	0.58	0.60	0.58
Unit Jualan per Kakitangan Units Sold per Employee	GWj/Kakitangan GWh/Employee	1.58	1.59	1.68	1.75	1.70
Kapasiti Boleh Harap per Kakitangan Dependable Capacity per Employee	MW/Kakitangan MW/Employee	0.10	0.10	0.10	0.10	0.10
Jumlah Unit Pembelian[2] Total Purchased Units[2]	GWj GWh	5,152	5,063	5,382	5,597	5,072
Jumlah Unit yang Dieksport Total Exported Units	GWj GWh	-	-	-	-	-
Jumlah Unit yang Diimport Total Imported Units	GWj GWh	-	-	-	-	-

Nota | Notes:
1. [1] 25 Ogos 2020
2. [2] Unit yang dibeli daripada IPP.
   [2] Units purchased from the IPPs.

Jadual 29: Kapasiti Penjanaan Boleh Harap (MW) & Ketersediaan Keseluruhan SESB
Table 29: SESB Dependable Capacity (MW) & Overall Availability

Sumber Tenaga Energy Source	2016	2017	2018	2019	2020
Hidro & Hidro Mini Hydro & Mini Hydro	78.2	74.6	74.6	79.9	69.3
Gas Asli Natural Gas	104.5	103.4	103.4	103.4	101.2
Diesel/MFO	147.9	141.1	150.1	149.7	158.0
Jumlah Total	**330.6**	**319.1**	**328.1**	**328.0**	**328.5**
Kebolehdapatan Keseluruhan Overall Availability	**73.96%**	**83.81%**	**79.19%**	**69.51%**	**65.7%**

Nota | Notes:
Kapasiti boleh harap bagi stesen jana kuasa SESB yang bersambung di talian penghantaran, kecuali Melawa Mobile Gen Set yang hanya diguna pakai semasa kerja penutupan berjadual atau tidak berjadual.
Dependable capacity of SESB power plants connected at transmission level, except Melawa Mobile Gen Set which is used for planned or emergency shutdown.

Jadual 30: Penjanaan SESB (GWj)
Table 30: SESB Generation (GWh)

Sumber Tenaga Energy Source	2016	2017	2018	2019	2020
Hidro & Hidro Mini Hydro & Mini Hydro	255.7	309.8	354.6	337.8	421.7
Gas Asli Natural Gas	389.6	409.9	417.4	384.8	381.8
Diesel	229.9	199.5	260.7	311.3	374.09
Jumlah Total	**875.2**	**919.2**	**1,032.6**	**1,033.9**	**1,177.6**

Nota | Notes:
Penjanaan oleh stesen jana kuasa SESB yang bersambung di talian penghantaran, termasuk Melawa Mobile Gen Set.
Units generated of SESB power plants connected at transmission level, including Melawa Mobile Gen Set.

Jadual 31: Bilangan Pengguna SESB
Table 31: Number of SESB Consumers

Sektor Sector	2016	2017	2018	2019	2020
Domestik Domestic	478,049	491,809	505,239	519,308	529,185
Komersial Commercial	90,510	93,738	96,167	98,479	99,974
Industri Industry	1,545	1,550	1,589	1,598	1,603
Lampu Awam Public Lighting	5,906	6,061	6,129	6,335	6,535
Jumlah Total	**576,010**	**593,158**	**609,124**	**625,720**	**637,297**

Jadual 32: Jualan Tenaga Elektrik SESB (GWj)
Table 32: SESB Electricity Sales (GWh)

Sektor Sector	2016	2017	2018	2019	2020
Domestik Domestic	1,761	1,721	1,774	1,863	2,035
Komersial Commercial	2,352	2,324	2,377	2,490	2,171
Industri Industry	1,101	1,055	1,118	1,147	1,043
Lampu Awam Public Lighting	70	72	77	76	82
Jumlah Total	**8,354**	**5,173**	**5,345**	**5,576**	**5,331**

Jadual 33: Sistem Penghantaran SESB
Table 33: SESB Transmission System

Tahun Year	2016	2017	2018	2019	2020
Talian & Kabel Sistem Penghantaran **Transmission System Lines & Cables**					
275 kV (km)	598	598	598.1	598.1	598
132 kV (km)	2,076	2,075	2,180	2,217	2,240
66 kV (km)	119	119	110	103	103
Pencawang Penghantaran **Transmission Substations**					
Bilangan Number	42	44	45	46	48
Keupayaan (MVA) Capacity (MVA)	4,995	4,984	5,049	5,489	5,399

Jadual 34: Sistem Pengagihan SESB
Table 34: SESB Distribution System

Tahun Year	2016	2017	2018	2019	2020
Talian & Kabel Sistem Pengagihan **Distribution System Lines & Cables**					
Talian Atas (km)[1] Overhead Lines (km)[1]	9,394	9,848	9,465	10,048	9,840
Kabel Bawah Tanah (km)[1],[2] Underground Cables (km)[1],[2]	2,272	662	1,109	1,616	1,612
Pencawang Pengagihan **Distribution Substations**					
Bilangan Number	7,382	7,382	7,957	8,597	8,610
Keupayaan (MVA) Capacity (MVA)	5,969	5,969	5,440.58	6,091	6,114

Nota | Notes:
1. [1] Sistem 11 kV dan 33 kV sahaja
   [1] 11 kV and 33 kV only
2. [2] Data Tahun Kewangan SESB
   [2] SESB Financial Year Data

Jadual 35: Kapasiti Terpasang dan Kapasiti Boleh Harap di Sabah pada Tahun 2020
Table 36: Sabah Installed and Dependable Capacity in 2020

	Stesen Jana Kuasa Power Station	Sumber Tenaga Energy Source	Kapasiti Terpasang (MW) Installed Capacity (MW)	Kapasiti Boleh Harap (MW) Dependable Capacity (MW)
SESB	SJ Tenom Pangi	Hidro Hydro	75.00	67.00
	Hidro mini Mini hydro Merotai	Hidro mini Mini hydro	0.50	0.50
	Hidro mini Mini hydro Bombalai	Hidro mini Mini hydro	0.80	0.80
	Hidro mini Mini hydro Melangkap	Hidro mini Mini hydro	0.00	0.00
	Hidro mini Mini hydro Sayap	Hidro mini Mini hydro	1.00	1.00
	Hidro mini Mini hydro Kiau[d]	Hidro mini Mini hydro	0.00	0.00
	Hidro mini Mini hydro Carabau[d]	Hidro mini Mini hydro	2.00	1.80
	Hidro mini Mini hydro Naradau[d]	Hidro mini Mini hydro	1.76	1.20
	SJ Melawa	Diesel/MFO - DE	0.00	0.00
	SJ Tawau	Diesel/MFO - DE	44.00	21.68
	SJ Patau-Patau	Gas - CCGT	112.00	101.16
	SJ Kubota	Diesel/MFO - DE	64.00	55.73
	SJ Batu Sapi, Sandakan	Diesel/MFO - DE	0.00	0.00
	SJ Sandakan	Diesel/MFO - DE	58.00	55.44
	SJ Labuk Canopy	Diesel/MFO - DE	0.00	0.00
	Ranau - Minor Station[o]	Diesel/MFO - DE	22.80	16.55
	Telupid - Minor Station[o]	Diesel/MFO - DE	11.62	8.05
	Tawau Canopy - Minor Station	Diesel/MFO - DE	15.75	12.22
	Melawa Mobile Genset	Diesel/MFO - DE	15.30	12.93
	Stesen-stesen Pedalaman Rural Stations	Diesel/MFO - DE[d,o]	4.92	4.68
		Solar - Solar Hybrid[o]	29.88	28.03
		Jumlah SESB SESB Total	**459.32**	**388.78**
IPP	**Stesen Jana Kuasa Power Station**	**Sumber Tenaga Energy Source**	**Kapasiti Terpasang (MW) Installed Capacity (MW)**	**Kapasiti Boleh Harap (MW) Dependable Capacity (MW)**
	Ranhill Powertron Sdn Bhd (Teluk Salut)	Gas - CCGT	208.64	190.00
	Sepanggar Bay Power Corporation	Gas - CCGT	113.80	100.00
	Powertron II (Rugading)	Gas - CCGT	214.80	195.00
	Kimanis Power Sdn Bhd	Gas - CCGT	367.20	285.00
	SPR Energy (M) Sdn Bhd	Gas - CCGT	108.20	100.00
	Staratavest Sdn Bhd (Libaran)	Diesel/MFO - DE	-	-
		Jumlah IPP IPP Total	**1,012.64**	**870.00**
		SESB+IPP	**1,471.96**	**1,258.78**

Jadual 35: Kapasiti Terpasang dan Kapasiti Boleh Harap di Sabah pada Tahun 2020
Table 35: Sabah Installed and Dependable Capacity in 2020

	Stesen Jana Kuasa Power Station[d]	Sumber Tenaga Energy Source	Kapasiti Terpasang (MW) Installed Capacity (MW)	Kapasiti Boleh Harap (MW) Dependable Capacity (MW)
LAIN-LAIN (OTHERS)	Cogen Awam Public Cogen	Biojisim Biomass	29.20	29.20
		Jumlah Total	**29.20**	**29.20**
	Cogen Persendirian** Private Cogen**	Gas	65.00	65.00
		Biojisim Biomass	7.50	7.50
		Jumlah Total	**72.50**	**72.50**
	FiT[d]	Biojisim Biomass	25.80	25.80
		Biogas	9.60	9.60
		Hidro mini Mini hydro	6.50	6.50
		Solar	34.38	34.38
		Jumlah Total	**76.28**	**76.28**
	LSS	LSS<30 MW	2.00	2.00
		LSS>30 MW	48.00	48.00
		Jumlah Total	**50.00**	**50.00**
	NEM	Solar	0.03	0.03
		Jumlah Total	**0.03**	**0.03**
	Self-gen <5 MW[S]	Gas	4.41	4.41
		Diesel	99.20	99.20
		Distillate	25.36	25.36
		Biojisim Biomass	113.92	113.92
		Biogas	4.64	4.64
		Jumlah Total	**247.53**	**247.53**
		Jumlah Lain-lain Total Others	**475.54**	**475.54**
		Jumlah Besar Grand Total	**1,947.50**	**1,734.32**

Nota | Notes:
1. [d]Bersambung di peringkat pengagihan
   [d]Connected at the distribution level
2. SELCO
3. [o]Off-grid
4. **Cogen persendirian menjana elektrik untuk kegunaan sendiri
   **Private cogens generate electricity for their own consumption

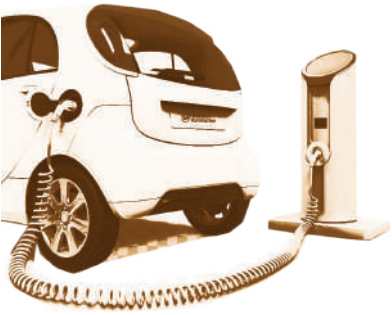
Jadual 36: Penjanaan Elektrik Mengikut Sumber Tenaga di Sabah pada Tahun 2020 (GWj)
Table 36: Sabah Electricity Generation by Energy Source in 2020 (GWh)

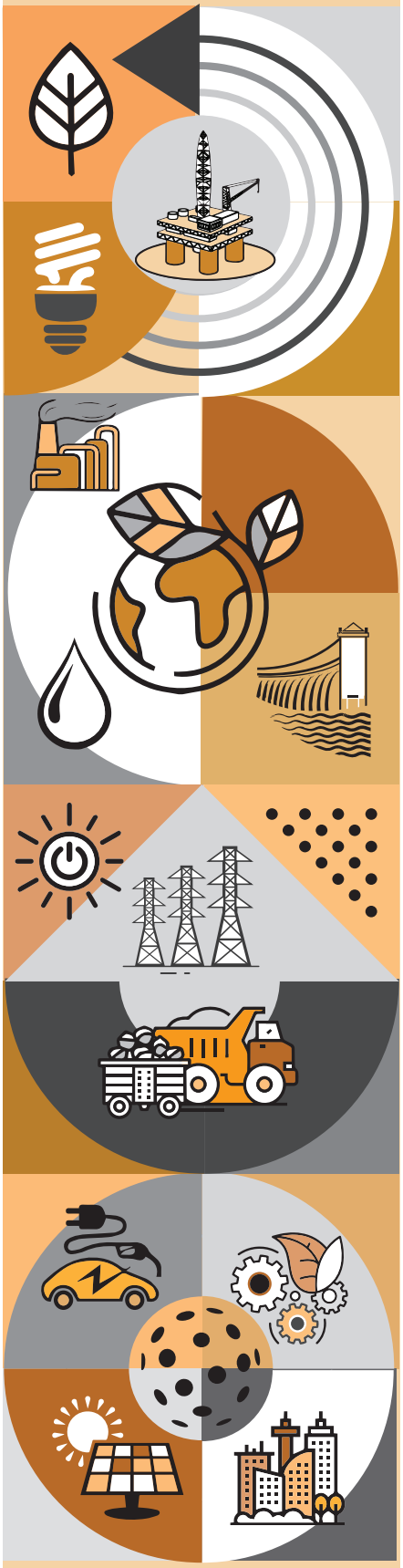
Penjana Generator	Sumber Tenaga Energy Source									
	Gas Asli Natural Gas	Diesel/ MFO/ Distillate	Sisa Industri Industrial Waste	TBB RE					Lain-lain Others	Jumlah Total
				Hidro Hydro	Hidro Mini Mini Hydro	Biojisim Biomass	Biogas	Solar		
SESB	381.81	374.09	-	411.45	10.27	-	-	20.73	-	**1,198.35**
IPP	5,169.47	10.26	-	-	-	-	-	-	-	**5,179.73**
Cogen Awam Public Cogen	-	6.62	-	-	-	32.41	-	-	-	**39.04**
Cogen Persendirian Private Cogen	209.53	3.18	-	-	-	11.22	-	-	-	**223.93**
FiT & MySuria[1]	-	-	-	-	8.01	77.90	38.69	52.51	-	**177.11**
LSS > 30 MW	-	-	-	-	-	-	-	87.25	-	**87.25**
LSS < 30 MW	-	-	-	-	-	-	-	3.66	-	**3.66**
NEM	-	-	-	-	-	-	-	0.04	-	**0.04**
Self Gen < 5 MW	9.65	127.08	-	-	-	125.70	13.47	-	-	**275.91**
Jumlah Total	**5,770.46**	**521.24**	**0.00**	**411.45**	**18.28**	**247.24**	**52.16**	**164.19**	**0.00**	**7,185.02**
	80.3%	**7.3%**	**0.0%**	**5.7%**	**0.3%**	**3.4%**	**0.7%**	**2.3%**	**0.0%**	**100.00%**

Nota | Notes:
Data ini adalah termasuk penjanaan oleh stesen jana kuasa yang bersambung di talian pengagihan dan *off-grid.*
These data include generation by power plants connected at distribution level dan off-grid.

Maklumat Industri Pembekalan Elektrik di Sarawak

Information on the Electricity Supply Industry in Sarawak





Jadual 36: Maklumat Utama Prestasi SEB
Table 36: Key Information on SEB Performance

Petunjuk Indicator	Unit	2016	2017	2018	2019	2020
Kehendak Maksimum Maximum Demand	MW	3,040	3,302	3,504	3,777	3,664
Jumlah Unit Penjanaan Total Units Generated	GWj GWh	10,144	25,580[1]	27,177	29,457	28,088
Jumlah Unit Jualan Total Units Sold	GWj GWh	19,943	22,557	24,316	25,492	26,211
Hasil Jualan Elektrik Sales Revenue of Electricity	RM Juta RM Million	4,140	4,707	5,266	5,585	5,460
Kapasiti Terpasang Installed Capacity	MW	2,262	4,641[1]	4,641	5,204	5,242
Jumlah Kakitangan Number of Employees	orang person	4,468	4,713	4,841	5,207	5,380
Hasil Jualan Elektrik per Kakitangan Sales Revenue of Electricity per Employee	RM Juta/Kakitangan RM Million/Employee	0.93	0.999	1.088	1.073	1.01
Unit Jualan per Kakitangan Units Sold per Employee	GWj/Kakitangan GWh/Employee	4.77	4.79	5.33	5.2	4.9
Kapasiti Terpasang per Kakitangan Installed Capacity per Employee	MW/Kakitangan MW/Employee	0.51	0.48[2]	0.96	1.00	0.97
Jumlah Unit Pembelian Total Purchased Units	GWj GWh	12,158	-	-	-	-
Jumlah Unit Eksport Total Exported Units	GWj GWh	684	1,119	1,509	1,697	1,568
Jumlah Unit Import Total Imported Units	GWj GWh	-	-	-	-	-

Nota | Notes:
1. [1]Pemilikan Bakun Hydro mulai suku ke-3 2017.
   [1]Acquisition of Bakun Hydro in Q3 2017.
2. [2]Dikira berdasarkan kapasiti terpasang SEB sebanyak 2,241 MW.
   [2]Calculated based on 2,241 MW installed capacity of SEB.

Jadual 37: Kapasiti Terpasang SEB (MW)
Table 37: SEB's Installed Capacity (MW)

Sumber Tenaga Energy Source	2016	2017	2018	2019	2020
Hidro Hydro	1,054	3,452[1]	3,452[2]	3,452[2]	3,452[2]
Gas Asli Natural Gas	615	595	595	584	584
Arang Batu Coal	480	480	480	1,104	1,104
Diesel	114	114	114	64[3]	103
Jumlah Total	**2,262**	**4,641**	**4,641**	**5,204**	**5,204**

Nota | Notes:
1. [1] Pemilikan Bakun Hidro pada suku ke-3 2017.
   [1] Acquisition of Bakun Hydro in Q3 2017.
2. [2] Termasuk stesen jana kuasa Batang Ai, Murum dan Bakun.
   [2] Inclusive of Batang Ai, Murum and Bakun power stations.
3. [3] Data diesel tidak termasuk stesen jana kuasa Limbang & Lawas.
   [3] Diesel figure does not include Limbang & Lawas Power Station.

Jadual 38: Jualan Tenaga Elektrik SEB (GWj)
Table 38: SEB Electricity Sales (GWh)

Sektor Sector	2016	2017	2018	2019	2020
Domestik Domestic	2,102	2,149	2,368	2,401	2,620
Komersial Commercial	2,512	2,562	2,857	2,753	2,584
Industri Industry	15,252	17,758	18,981	20,234	20,898
Lampu Awam Public Lighting	77	88	110	104	109
Eksport Export	684	1,119	1,509	1,697	1,568
Jumlah Total	**20,627**	**23,675**	**25,825**	**27,189**	**27,779**

Jadual 39: Bilangan Pengguna SEB
Table 39: Number of SEB Consumers

Sektor Sector	2016	2017	2018	2019	2020
Domestik Domestic	536,466	554,467	568,712	583,613	598,106
Komersial Commercial	91,454	93,627	96,416	99,774	101,453
Industri Industry	1,022	1,051	1,066	1,059	1,067
Lampu Awam Public Lighting	9,457	10,040	10,491	11,146	11,484
Eksport Export	4	4	4	4	4
Jumlah Total	**638,403**	**659,189**	**676,689**	**695,596**	**712,114**

Jadual 40: Sistem Penghantaran SEB
Table 40: SEB Transmission system

Tahun Year	2016	2017	2018	2019	2020
Talian & Kabel Sistem Penghantaran **Transmission System Lines & Cables**					
500 kV (km)	-	754	753	753	377
275 kV (km)	1,331.0	2,761.5	2,810.3	3,068.4	1,559
132 kV (km)	388	826.34	840.44	916.24	454
66 kV (km)	-	-	-	-	-
Pencawang Penghantaran **Transmission Substations**					
Bilangan Number	30	33	37	42	43
Keupayaan (MVA) Capacity (MVA)	7,239.6	8,809.1	10,246.0	10,726.0	11,936

Jadual 41: Sistem Pengagihan SEB
Table 41: SEB Distribution System

Tahun Year	2016	2017	2018	2019	2020
Talian & Kabel Sistem Pengagihan **Distribution System Lines & Cables**					
Talian Atas (km) Overhead Lines (km)	24,681	11,998	26,236	26,850	27,634
Kabel Bawah Tanah (km) Underground Cables (km)	8,122	5,175	8,769	9,098	9,540
Pencawang Pengagihan **Distribution Substations**					
Bilangan Number	12,522	13,076	13,824	13,544	14,395
Keupayaan (MVA) Capacity (MVA)	8,735	9,061	9,600	5,940	9,845

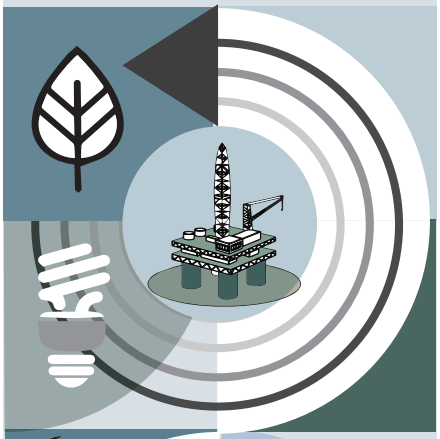
Jadual 42: Kapasiti dan Penjanaan Elektrik di Sarawak pada 2020
Table 42: Sarawak Capacity and Electricity Generation in 2020

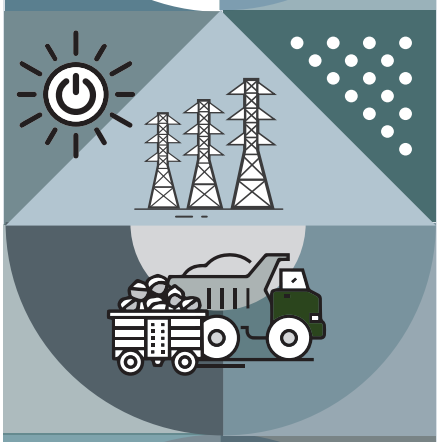
Penjana Generator	Sumber Tenaga Energy Source	Kapasiti Terpasang (MW) Installed Capacity (MW)	Kapasiti Tersedia Available Capacity (MW)	Penjanaan (GWj) Generation (GWh)
SEB	Arang Batu Coal	1,104.0	1,001.0	3,536.4
	Diesel	102.5	98.5	144.8
	Gas Asli Natural Gas	584.0	566.0	2,660.8
	Hidro Hydro	3,452.00	3,438.0	21,746.0
	Solar	0.1	0.1	0.0
	Hidro Mini Mini Hydro	7.2	7.2	23.6
	Hidro Mikro Micro Hydro	0.6	0.6	2.8
	Jumlah Total	**5,250.4**	**5,111.4**	**28,114.5**
Cogen	Gas Asli Natural Gas	397.0	397.0	1,812.0
	Jumlah Total	**397.0**	**397.0**	**1,812.0**
Self-gen	Diesel/MFO	14.7	14.7	6.3
	Biojisim Biomass	52.2	52.2	123.9
	Biogas	0.5	0.5	1.3
	Lain-lain bukan TBB Others non-RE	5.1	5.1	6.4
	Jumlah Self-gen Self-gen Total	**72.5**	**72.5**	**137.9**
	Jumlah Besar Grand Total	**5,719.9**	**5,580.9**	**30,064.4**

Nota | Notes:
1. Termasuk semua penjana kuasa yang bersambung di peringkat penghantaran, pengagihan dan *off-grid*.
   Includes all power generators connected at the transmission, distribution, and off-grid levels.
2. [P]Data awalan
   [P]Preliminary data

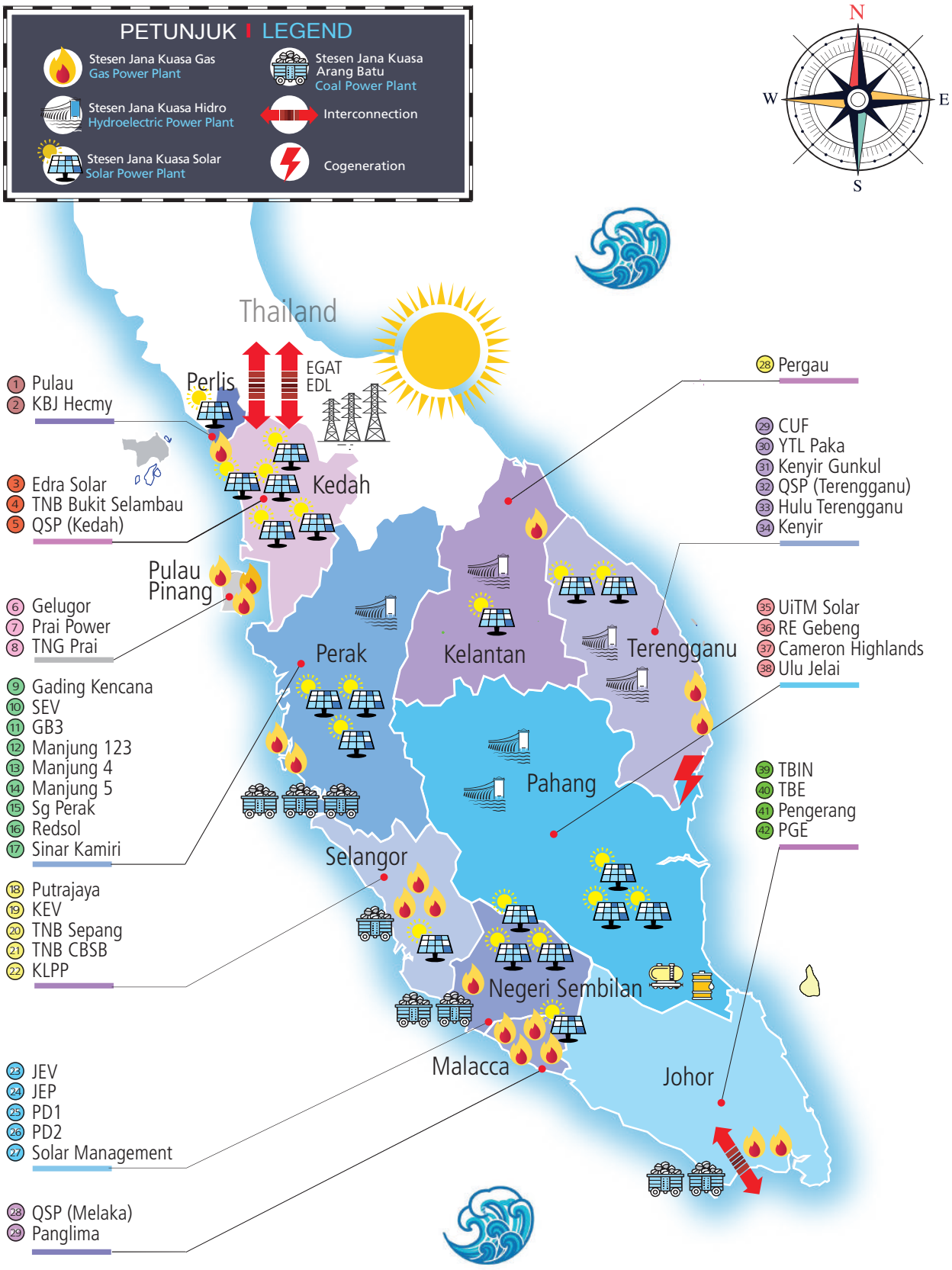
Peta Lokasi Stesen Jana Kuasa Utama dan Sistem Grid

Location Maps of Major Power Stations and Grid Systems





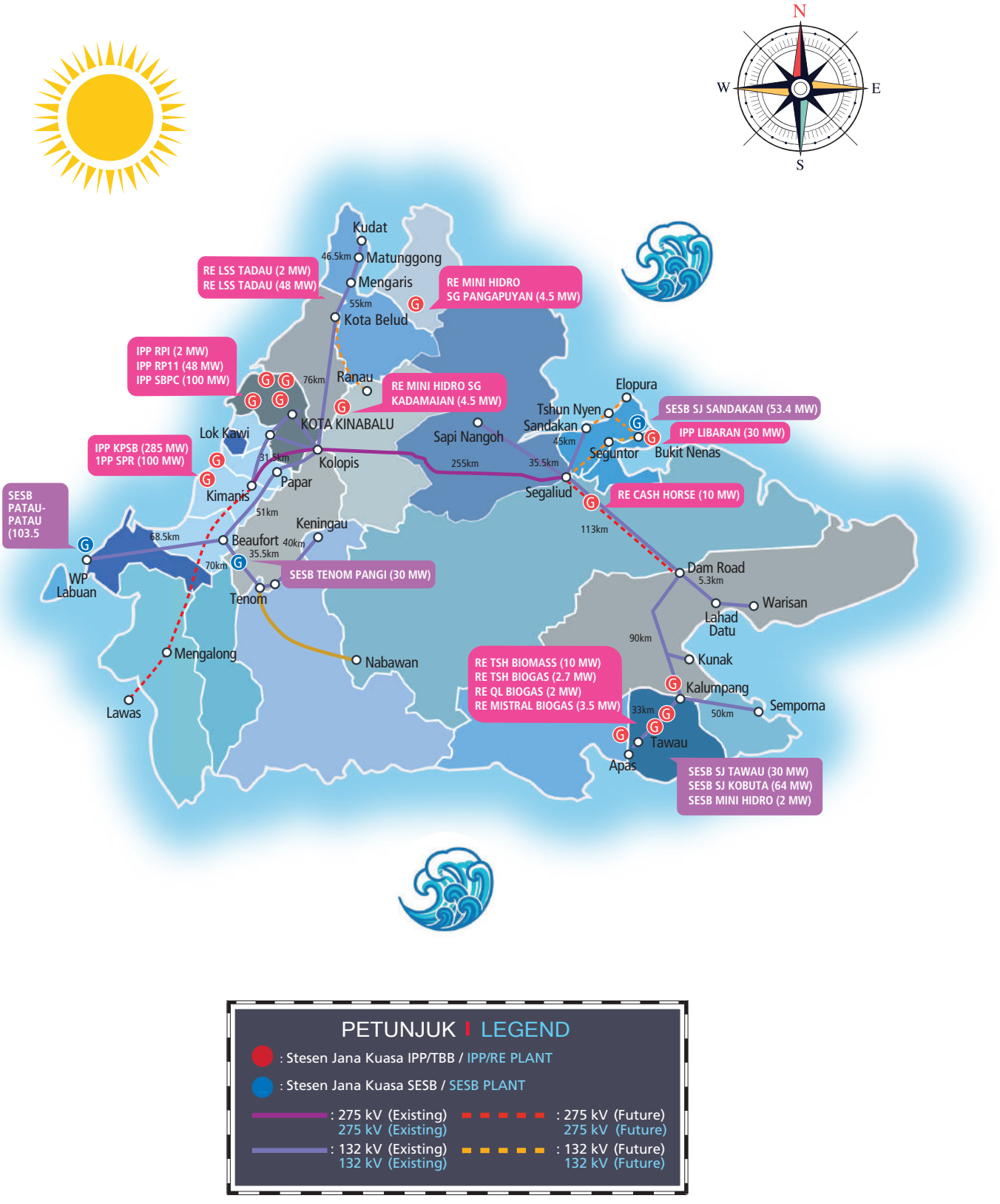
Peta 1: Lokasi Stesen Jana Kuasa Utama di Semenanjung Malaysia
Map 1: Location of Peninsular Malaysia Major Power Stations



Sumber I Source:
Tenaga Nasional Berhad (TNB)

Diolah daripada sumber I Adapted from source:
Regulatory Economics Department, TNB

Peta 2: Lokasi Stesen Jana Kuasa Utama dan Sistem Grid di Sabah
Map 2: Location of Sabah Major Power Stations and Grid System



PETUNJUK I LEGEND

: Stesen Jana Kuasa IPP/TBB / IPP/RE PLANT

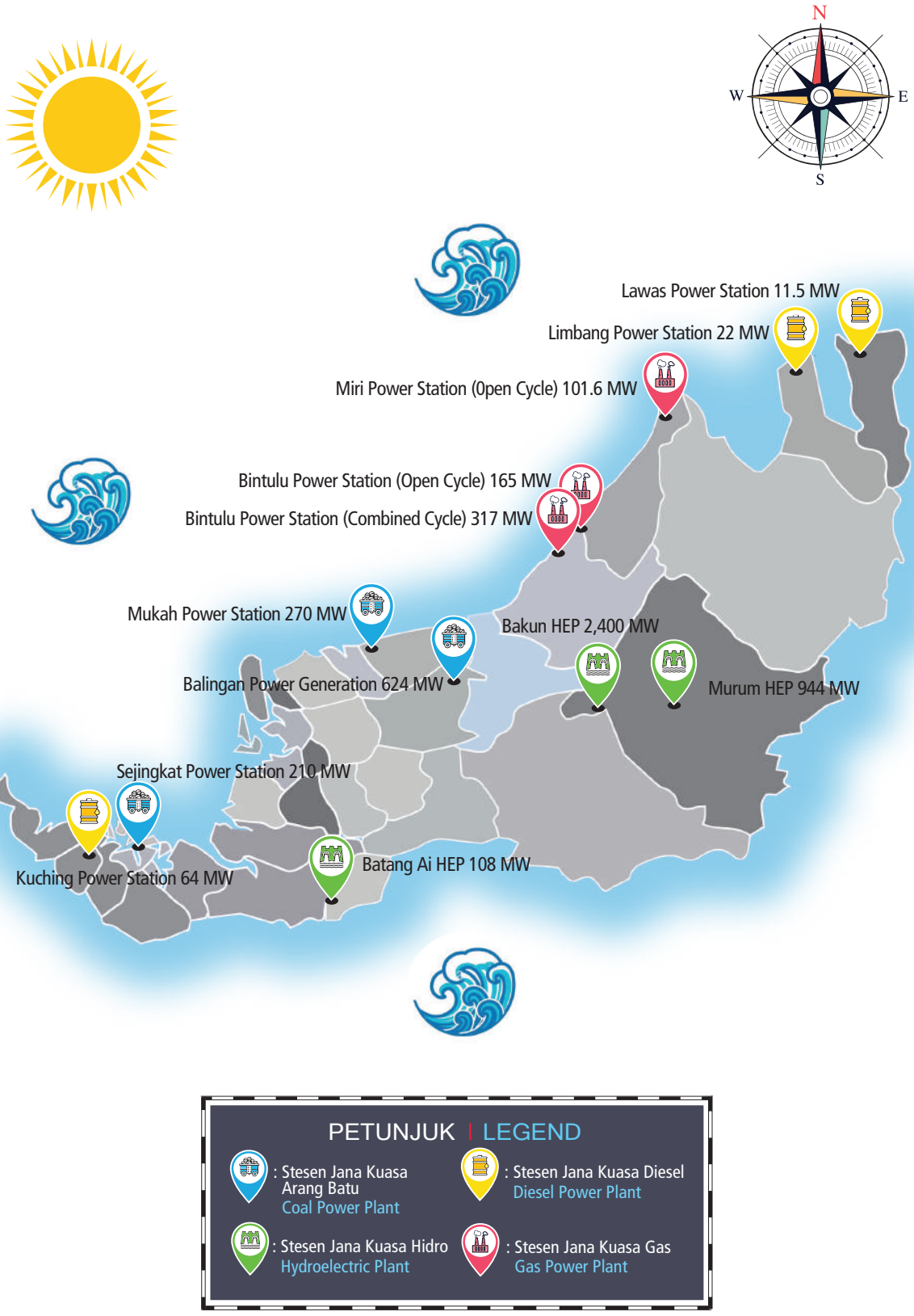
: Stesen Jana Kuasa SESB / SESB PLANT

: 275 kV (Existing) — : 275 kV (Future)
275 kV (Existing) — 275 kV (Future)

: 132 kV (Existing) — : 132 kV (Future)
132 kV (Existing) — 132 kV (Future)

Sumber I Source:
Sabah Electricity Sdn. Bhd. (SESB)

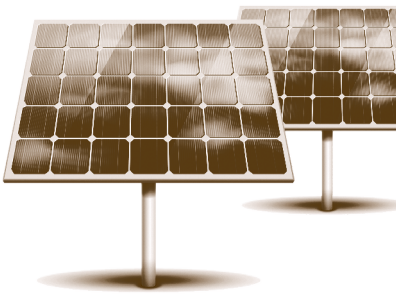
Peta 3: Lokasi Stesen Jana Kuasa Utama di Sarawak
Map 3: Location of Sarawak Major Power Stations

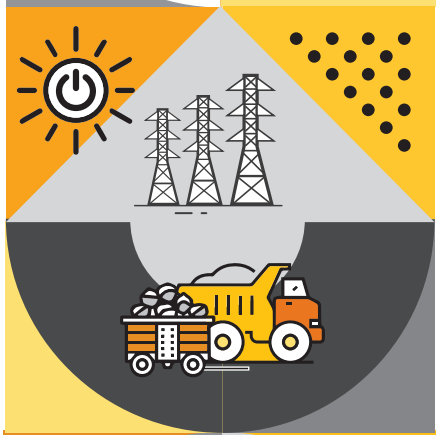


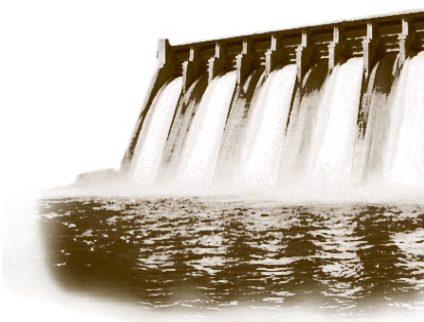
Sumber | Source:
Strategy & Corporate Development, Sarawak Energy Berhad (SEB)

Apendiks

Appendix







Item	Item Details	Service Ind	Service Defination	Service Standard	Service Details	Putrajaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	Kuala Lumpur	Negeri Sembilan	Johor	Kelantan	Total Case/Total Penalty %
GSL 1 (Note: Jan - Sept)	Availability of Supply	Number of unplanned interruptions experienced by a consumer within the administration of Bandaraya Kuala Lumpur, Putrajaya and Other Areas	Total Service connection	4-5 per year		4	94	558	552	958	1,751	212	700	296	787	359	1,378	391	8,040
			Total Service connection not comply		RM 50/not comply	0	0	0	0	0	0	0	0	0	0	0	0	0	-
			Total Penalty (RM)			0	0	0	0	0	0	0	0	0	0	0	0	0	-
					Compliance	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
GSL 2 (Note: Jan - Dec19)	Availability of Supply	Time taken to restore electricity supply following outage caused by minor distribution network fault	Total Service connection	4 hour - MV with feedback		4	96	540	540	930	1761	198	706	292	778	353	1390	392	7,980
			Total Service connection not comply		RM 50/not comply	0	0	20	16	41	81	3	25	1	32	14	77	10	320
			Total Penalty (RM)			0	0	221,800	452,130	452,570	1,816,530	41,190	517,700	4,000	484,350	282,196	1,148,700	146,100	5,567,266
					Compliance	100.00%	100.00%	96.30%	97.04%	95.59%	95.40%	98.48%	96.46%	99.66%	95.89%	96.03%	94.46%	97.45%	95.99%
GSL 3 (Note: Jan - Dec19)	Providing Supply	Time taken to implement service connection (OVERHEAD LINE) requiring low voltage cable installation work	Total service connection	5 working days		3	963	5,383	1,937	5,819	6,179	1,700	3,640	4,477	1,525	1,733	6,593	6,718	46,670
			Total service connection not completed in 5 working days		RM 50/not comply	0	2	144	0	79	0	10	224	61	44	9	312	61	946
			Total Penalty (RM)			0	100	7,200	0	3,960	0	500	11,200	3,050	2,200	450	15,600	3,050	47,300
					Compliance	100.00%	99.79%	100.00%	100.00%	98.64%	100.00%	100.00%	99.41%	93.85%	98.64%	97.11%	94.48%	95.27%	97.97%

Item	Item Details	Service Ind	Service Defination	Service Standard	Service Details	Putrajaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	Kuala Lumpur	Negeri Sembilan	Johor	Kelantan	Total Case/Total Penalty %
		Time taken to implement service connection (Underground line) requiring low voltage cable installation work	Total Service connection	14 working days		31	23	127	145	182	799	109	151	148	746	100	501	233	3,265
			Total Service connection not comply		RM 50/not comply	0	5	26	1	11	0	2	16	1	21	3	32	1	119
			Total Penalty (RM)			0	250	1,300	50	550	-	100	800	50	1,050	150	1,600	50	5,950
					Compliance	100.00%	78.26%	79.53%	99.31%	93.96%	100.00%	98.17%	89.40%	99.32%	97.18%	97.00%	93.61%	99.55%	96.36%
GSL 4 (Jan - Dec 19)	Providing Supply	Time taken to connect new electricity supply for individual domestic low voltage consumer	Total Service connection	3 working days		2,108	1,383	7,678	6,510	9,212	16,889	2,938	5,676	60,286	8,930	4,495	10,185	7,985	89,917
			Total Service connection not comply		RM 50/not comply	35	1	77	298	121	264	11	98	5	66	27	36	355	1,394
			Total Penalty (RM)			1,750	50	3,850	14,900	6,050	13,200	550	4,900	250	3,300	1,350	1,800	17,750	69,700
					Compliance	98.34%	99.93%	99.00%	95.42%	98.69%	98.44%	99.61%	98.27%	99.92%	99.26%	99.40%	99.65%	95.55%	98.45%
GSL 5 (Jan - Dec 19)	Cuctomer Contract	Disconnection of supply according to the applicable legislation or disconnection procedures	Total disconnection	No complaint		573	724	7,097	4,019	4,335	16,398	2,053	3,365	2,734	8,528	5,113	5,896	9,455	70,290
			Total service connection not completed in 5 working days		RM 100/ not comply						2	236			4				242
			Total Penalty (RM)			-	-	-	-	-	200	23,600	-	-	-	-	-	-	24,200
					Compliance	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%	88.50%	100.00%	100.00%	99.95%	100.00%	100.00%		98.66%
Total Potential Penalty in RM for GSL 1,2,3,4,5 according to states						1,750	400	234,150	467,080	463,120	1,829.930	65,950	534,600	7,350	491,300	284,146	1,167,700	166,950	5,714,416

Penambahbaikan yang telah diambil tindakan dalam pelaporan Q4
a. Pelaporan daripada TOMS dan LGBnet (as it sehingga sistem baharu yang sesuai bagi perlaksanaan auto-rebat dibangunkan)
b. GSL 3 dan GSL 4 dalam proses pemuktamadan pembangunan sistem dan memuat-turun CPA Dashboard (sebagai makluman)
c. Pelaporan daripada WEBI (pada Q4, digunakan *summary report* bagi mendapatkan jumlah rebat berbayar melibatkan GSL 5 sepanjang tahun 2019)
d.Sampling untuk GSL 5

Apendiks 2: Laporan Prestasi TNB – Minimum Service Level (MSL)
Appendix 2: Performance Report of TNB - Minimum Service Level (MSL)

Item	Item Details	Service Ind.	Service Defination	Service Standard	Service Details	Putrajaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	Kuala Lumpur	Negeri Sembilan	Johor	Kelantan	Total/ Avg %
1	Availability of Supply	1a	Minimum duration of notice for planned/schedule interruption of electricity supply	> 2 days	Total notices served	84	31	1,459	773	2,691	6,277	1,515	2,424	858	1,726	1,040	3,602	434	22,914
					Total notices served more than 2 days before planned/schedule interruption	82	28	1,440	754	2,593	6,218	1,489	2,337	845	1,702	1,032	3,519	405	22,444
					% Compliance	97.62%	90.32%	98.70%	97.54%	96.36%	99.06%	98.28%	96.41%	98.48%	98.61%	99.23%	97.70%	93.32%	97.95%
2	Quality of Supply	1b	Upon request, time taken to provide initial information to consumer who report on electricity interruption	< 1 hour	Total requests from consumers	305	305	305	305	305	305	305	305	305	305	305	305	305	3,965
					RM 50/not comply	304	304	304	304	304	304	304	304	304	304	304	304	304	3,952
					% Compliance	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%	99.67%
	Cuctomer Contract	2a	Time taken to rectify voltage complaint or limit violation and to correct voltage complaint which requires network reinforcement	< 180 days	Total complaints received	2	7	43	43	73	171	36	23	20	64	36	104	31	653
					Total complaints solved less than 180 days	2	7	42	42	70	164	30	22	20	62	35	103	28	627
					% Compliance	100.00%	100.00%	97.67%	97.67%	95.89%	95.91%	83.33%	95.65%	100.00%	96.88%	97.22%	99.04%	90.32%	96.02%
		2b	Time taken to complete investigation of overvoltage incident from complaint receipt date (data availability for Q3 dan Q4)	< 30 working days	Total complaints received	6	5	384	222	285	713	53	184	123	230	51	295	144	2,695
					Total complaints solved less than 30 working days	2	5	77	170	50	194	39	173	121	177	15	89	138	1,250
					% Compliance	33.33%	100.00%	20.05%	76.58%	17.54%	27.21%	73.58%	94.02%	98.37%	76.96%	29.41%	30.17%	95.83%	46.38%

Item	Item Details	Service Ind.	Service Defination	Service Standard	Service Details	Putrajaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	Kuala Lumpur	Negeri Sembilan	Johor	Kelantan	Total/ Avg %
		2c	Time taken to provide a complete report of voltage sag incident from complaints received date	< 14 days	Total complaints received	37	N/A	16	114	28	129	88	26	51	100	4	113	N/A	706
					Total complaints solved less than 14 days	14	N/A	4	65	11	57	71	24	8	28	1	39	N/A	322
					% Compliance	37.84%	N/A	25.00%	57.02%	39.29%	44.19%	80.68%	92.31%	15.69%	28.00%	25.00%	34.51%	N/A	45.61%
3	Providing Supply	3a	Time taken to inform the developer of the connection charges to be paid upon receipt of complete application	For supply up to 22kV :not more than 30 days | For supply of 33kV : not more than 60 days	Total	31	15	133	189	201	636	86	112	59	205	140	491	60	2,358
					Total Non Comply	0	0	0	0	1	2	0	3	0	1	0	1	0	8
					% Compliance	100.00%	100.00%	100.00%	100.00%	99.50%	99.69%	100.00%	97.32%	100.00%	99.51%	100.00%	99.80%	100.00%	99.66%
		3b	Time taken to implement electrification scheme requiring new substation after connection charges paid, way leave obtained and successful taking over of substation building by TNB	For supply up to 22kV : not more than 60 days | For supply of 33kV with cable installation of not more than 5km | For KL, Putrajaya area :not more than 180 days | other areas : not more than 120 days	Total no. of projects given supply	23	2	29	87	78	465	70	46	5	122	79	261	42	1,309
					Total no. of projects given supply less than 120 days	23	2	28	81	75	455	70	40	5	119	78	254	41	1,271
					% Compliance	100.00%	100.00%	95.65%	98.08%	94.12%	95.80%	100.00%	94.74%	50.00%	98.63%	95.92%	96.18%	93.33%	97.10%
		3c	Waiting time at site for appointment to connect electricity supply (Unavoidable occurrence must be followed up by returning call in not less than 1 hour before the appointment time)	< 1 hour	Total appointments made	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Item	Item Details	Service Ind.	Service Defination	Service Standard	Service Details	Putrajaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Tereng-ganu	Kuala Lumpur	Negeri Sembilan	Johor	Kelantan	Total/ Avg %
					Total appointments met in not less than 1 hour of appointement date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
					% Compliance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	Customer Contact	4a	Time taken to reply to written complaint	< 7 working days	Total written enquiries/ complaints received	222	168	1,466	2,733	2,423	13,421	2,542	1,408	503	10,019	1,902	7,208	1,285	45,300
					Total written enquiries/com-plaints replied less than 7 working days	204	148	1,411	2,375	2,266	12,066	2,040	1,262	480	8,860	1,625	6,736	1,239	40,712
					% Compliance	91.89%	88.10%	96.25%	86.90%	93.52%	89.90%	80.25%	89.63%	95.43%	88.43%	85.44%	93.45%	96.42%	89.87%
		4b	Actual perfor-mance queing time at customer service counter	< 15 minutes	Total customers served	12,110	8,658	70,596	113,137	108,703	272,735	80,013	92,045	40,065	229,351	70,878	199,700	43,823	1,341,814
					Total customers served less than 20 minutes	10,464	8,471	69,709	112,784	106,374	265,455	75,382	88,887	38,247	221,479	70,573	175,555	43,004	1,286,384
					% Compliance	86.41%	97.84%	98.74%	99.69%	97.86%	97.33%	94.21%	96.57%	95.46%	96.57%	99.57%	87.91%	98.13%	95.87%
		4c	Time taken by customer service officer at CMC 15454 to pick up ringing telephone	90% calls answered within 30 seconds	Total incoming calls received	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	2,437,806	31,691,478
					Total incoming calls answered less than 30 seconds	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	1,944,493	25,278,409
					% Compliance	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%	79.76%
5	Metering Services	5a	problem upon official notification /request by the customer (appointment, visit, testing,etc)	< 2 working days	No. of appointments, visit, testing completed	24	6	24	42	36	525	13	23	3	209	53	173	26	1,157
					No. of appointments, visit, testing completed less than 2 working days	6	5	17	19	22	200	7	11	2	115	24	128	8	564
					% Compliance	25.00%	83.33%	70.83%	45.24%	61.11%	38.10%	53.85%	47.83%	66.67%	55.02%	45.28%	73.99%	30.77%	48.75%

Item	Item Details	Service Ind.	Service Defination	Service Standard	Service Details	Putrajaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	Kuala Lumpur	Negeri Sembilan	Johor	Kelantan	Total/Avg %
		5b	Time taken to respond to metering problem or dispute upon official notification/ request by customer (replace, relocate, etc)	< 3 working days	No. of meter replacement/ relocation completed	59	9	50	44	62	248	23	21	8	56	27	163	17	787
					No. of meter replacement/ relocation completed less than 3 working days	58	9	50	42	62	244	23	21	8	55	27	161	17	777
					% Compliance	98.31%	100.00%	100.00%	95.45%	100.00%	98.39%	100.00%	100.00%	100.00%	98.21%	100.00%	98.77%	100.00%	98.73%
		5c	Time interval between successive rendering of bill(s)	1 month	Total no. of customers (OPC)	748,186	1,039,311	8,258,410	8,234,241	11,132,238	23,544,377	4,166,986	6,295,302	4,461,499	14,738,467	5,509,262	16,691,454	5,832,024	110,651,757
					Total no. of billed customers	733,122	1,016,729	8,110,129	8,095,502	11,006,009	23,013,399	4,124,830	6,220,308	4,416,368	14,516,581	5,391,362	16,503,496	5,692,931	108,840,766
					% Compliance	97.99%	97.83%	98.20%	98.32%	98.87%	97.74%	98.99%	98.81%	98.99%	98.49%	97.86%	98.87%	97.62%	98.36%
					Average% Compliance	80.60%	94.74%	83.12%	87.07%	82.58%	81.75%	87.89%	90.98%	84.50%	85.75%	81.11%	83.83%	89.60%	94.24%
																		89.60%	89.60%

Apendiks 3: Laporan Prestasi NUR Distribution Sdn. Bhd. (NUR)
Appendix 3: Performance Report of NUR Distribution Sdn. Bhd. (NUR)

Item	Criteria	Details	Agreed Targets	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total in 2020	No. meeting target in 2020	% meeting target in 2020
1	**Connection of Supply**	Applied for 1a & 1b	Not less than 1 day Only after all condition meet such as contribution paid, form complete, G & H, etc)															
1a		Change of tenant	Not more than 1 working day	8	3	4	0	0	10	30	1	17	6	1	8	88	88	100.00
1b		New Connection Low Voltage Individual Application -	Not more than 1 working day	9	4	2	0	1	3	4	3	1	1	2	6	36	36	100.00
1c (i)		New connection - Low Voltage Bulk application and housing schemes. Refers to a large number of houses or building in a single development. EC do not agree to reduce the target.	Not more than 1 week (Meter only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
1c (ii)		LV commercial industrial supply (Meter only - CT Type)	Connection within 2 weeks	0	0	0	0	0	0	0	0	0	0	0	0	1	1	100.00
1c (iii)		LV supply - LV cable and meter	Contribution charge and Security deposit: Within 2 months from receipt and payment of.	0	0	1	0	0	1	0	1	0	0	1	0	4	4	100.00
1c (iv)		LV supply requiring new substation	Contribution Charge: Within 120 days from receipt and payment of Security deposit: Within 45 days of substation building handover.	0	0	0	0	0	0	0	0	0	0	0	0	00	0	NA
1c (v)		11kV or 33kV supply	Within 10 months of submission and contribution payment / or sooner as agreed. Also Within 45 days of substation building handover.	1	0	0	0	0	0	0	0	1	0	1	0	3	3	100.00
1c (vi)		132kV supply	Within 18 months of submission and customer contribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N/A
2	**Restoration of supply after interruption**	Calls to be answered within 30 seconds. Follow up with return call is required only when NUR unable to inform customers that action is taken.																
2a		Complaint through telephone: At normal hours will be attended within 30 seconds Re - contact consumer within 10 minutes if cannot provide info immediately.	30 seconds to answer the telephone. A technician will be sent immediately. When this is not possible, the customer will be called back with information. Note : In NUR's case, the response is always by stating a technician will be sent immediately.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
2b		Supply interruption complaint: Consumer who launch a complain, will be given a report number.	Consumer will be given a number. No. of customers is small and No. of interruption is very small and easily managed. To assume as complying. Note :TCS - Trouble Call System is required to implement this accordingly.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
2c		Time to restore *Minor fault which results in interruption of Electricity supply that can be quickly restored *Minor - such as due to the operation of fuse or the tripping of a circuit breaker resulting from overload	Within 90 minutes	3	0	0	3	1	1	5	0	0	0	0	0	16	13	81.25

Item	Criteria	Details	Agreed Targets	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total in 2020	No. meeting target in 2020	% meeting target in 2020
2d		Time to restore *Major fault which results in interruption of Electricity supply that requires substantial time to restore *Major such as due to switchgear failure or cable fault	Within 12 hours	2	3	3	1	2	2	3	3	6	7	4	3	39	37	94.87
3	**Supply re-connection after disconnection for non-payment**	Consumer who paid the bill, supply to be re-connect on the same day.	Payment before 14:00 hour the re-connection will be done on the same day.	80	104	0	0	0	0	18	0	0	0	0	0	202	202	100.00
4	**Supply interruptions, which are planned / schedule.**	Applied for 4a & 4b																
4a		Interruption scheduled for Industrial consumers	Notice of 7 days will be given before schedule of interruptions	3	17	18	1	4	7	6	6	6	12	9	8	97	93	95.88
4b		Interruption scheduled for Industrial consumers	Discussion with individual consumer on their manufacturing plans and the shut down is scheduled to meet their requirements. Note: In exceptional cases, where essential work is planned ,minimum one month notice will be given.	2	2	0	2	5	2	0	3	0	3	1	4	24	22	91.67
5	**Meter reading**		Estimated reading for domestic consumers : 1.Must not exceed 3 consecutive months 2.The estimated reading must also be based on the prorated / average consumable of the 3 previuos months. Note: Notice will be given to the domestic consumers to inform if the estimated reading is exceeding 3 consecutive months.	0	0	1	1	0	0	0	0	0	0	0	0	2	2	100.00
6	**Enquiries from consumers**	Respond time for queries	i) Written - 5 days from receipt of written complaint ii) Telephone - 30 seconds and 24 hours. (for follow up) iii) Cash counter - 30 seconds and 24 hours.	4	12	4	2	5	64	31	12	5	10	4	5	158	158	100.00
7	**Service Counter**	Waiting Time	Waiting time should not exceed 10 minutes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
8	**Appointment for meter accuracy determination**	Upon request, days taken to do meter testing	2 working days	0	1	21	0	13	1	0	0	0	0	0	0	36	36	100.00
9	**Meter replacement**	Applied for 9a & 9b	Upon request and if found necessary (days taken to replace the meter)															
9a		Domestic consumers	2 working days	1	2	1	0	3	1	2	0	0	2	0	1	13	13	100.00
9b		LV commercial /LV Industrial/ 11kV / 33kV / 132kV	5 working days - To confirma the defect. Note: subject to agreement on shut down of supply.	0	4	0	0	0	0	2	1	0	2	0	0	9	9	100.00
10	**Appointment with consumers**	Meeting with Customers	Meeting the appointment time. Note: If meeting is cancelled , a follow up appointment will be scheduled immediately within 1 working day from the earlier date in order to notify consumer as soon as posible .	2	5	4	5	5	7	6	1	1	2	5	8	51	51	100.00

Item	Criteria	Details	Agreed Targets	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total in 2020	No. meeting target in 2020	% meeting target in 2020
11	**Security Deposits**	NUR explanation that minimum deposit is required forsmall supplies is accepted by EC. EC proposal is acceptable for cash deposit. BG's will be reduced upon renewal.	Deposit will be returned to consumers after 6 months. Note : Only return when the prorated average consumption is exceeded 2 months and not less than the minimum amount.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
11a		Interest on Deposits	2.5% to be rebated at the end of the year.	5237	0	0	0	0	0	0	0	0	0	0	0	5237	5237	100.00
12	**Refund of consumer deposits**	Refund the deposit to consumers upon receiving complete documentations.	Within 1 month	17	7	11	0	2	13	15	27	27	10	7	13	149	149	100.00
13	**Collection**	Upon Proof of payment received Note : NUR would request longer date line to allow any cheque payment to be cleared by the bank to comply with bank procedure	Upon Proof of payment received Note : NUR would request longer date line to allow any cheque payment to be cleared by the bank to comply with bank procedure	3522	3282	3095	2797	3719	3445	3566	3372	3165	1811	2131	2518	36423	36423	100.00
14	**Disconnection of supply (safety, theft etc)**	Applied to 14a, 14b & 14c																
14a		Disconnection due to installation which are considered very dangerous and disconnection could not be delayed.	No notice will given (immediate disconnection)	0	0	0	0	0	0	0	26	26	26	26	26	26	0	NA
14b		In any unsafe particular situation and likely source of danger to consumers, disconnection will be an immediate. Any other situation besides this, NUR will advise consumers that disconnection would be carried out in the specific time.	Immediate disconnection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
14c		1. Disconnections due to other reasons than 14a &14b above, which are allowed.. 2. Duration and timing , which are NOT allow to proceed with disconnection work: i) Before weekend or Public Holidays ii) On Weekend or Public Holidays. iii) After 12 noon on working days.	7 working days notice	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
15	**Special consumers who face problems in paying bills**	This criterion applies to disabled or elderly consumers. Note : A register of disable or immobile consumers will be needed.	NUR will make special arrangement or collect fromconsumers premises.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
16	**Voltage outside standard**	Applied for 16a, 16b & 16c																
16a		Where no capital work on network is required	1 day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
16b		Where supply interruption is required but no network enhancement work needed	8 days (Notify interruption 7 days)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
16c		Where network enhancement work is required	3 months	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
17	**New / Increase of supply application reply**	Applied for 17a, 17b, 17c & 17d.	Written reply of application including date supply will be available and connection charges will be forwarded to consumers															
17a		No substation required	1 week	0	0	1	0	0	1	0	1	0	0	2	0	5	5	100.00
17b		New upgrade substation required Note : This is to allow time for design work and obtaining of prices from contractors.	1 month	0	0	0	0	0	0	0	0	0	0	0	1	1	1	100.00

Item	Criteria	Details	Agreed Targets	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total in 2020	No. meeting target in 2020	% meeting target in 2020
17c		LV commercial /LV Industrial/ 11kV / 33kV Note : This to allow time for design work and obtaining of prices from contractors.	1 month	0	0	0	0	1	0	0	1	1	1	0	0	4	4	100.00
17d		132kV	Within 3 months	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NA
18	**Transferring of meter location upon consumer re-quest / Meter transfer**	Depends on new location and work required	3 working days	1	0	1	1	0	0	4	1	3	3	1	1	16	16	100.00
19	**Education of Energy Efficiency**	Any form of media and medium	1. Will be available at NUR Customer Service Centre at Kulim Hi-Tech Park. 2. Seminars will also be conducted through Consumer Committees in line with the license.	0	0	1	0	0	1	1	0	0	0	0	1	4	4	100.00
20	**Power Quality improvement**	Applicable for 20a and 20b																
20b		LV commercial /LV Industrial/ 11kV / 33kV / 132kV	Power Quality meeting with all major customers on Quarterly basis.	2	5	4	5	5	6	5	1	0	2	5	8	48	48	100.00

Apendiks 4: Laporan Prestasi Sabah Electricity Sdn. Bhd. (SESB) bagi Tahun Kewangan 2020 (Jan 2020 - Dis 2020)

Appendix 4: Performance Report of Sabah Electricity Sdn. Bhd. (SESB) for Financial Year 2020 (Jan 2020 - Dec 2020)

		2020
1	**Penyambungan Bekalan Elektrik**	
	Selepas Kontrak Ditandatangani	
1.1	PENUKARAN PENGGUNA	
1.1.1	Bilangan permohonan	7,843
1.1.2	Bilangan permohonan yang disambung dalam dalam tempoh tidak lebih daripada 1 hari bekerja dari tarikh temujanji pengujian pemasangan	7,843
1.1.3	Peratus permohonan yang disambung dalam tempoh tidak lebih daripada 1 hari bekerja dari tarikh temujanji pengujian pemasangan	100.00%
1.2	BEKALAN BARU VOLTAN RENDAH (PERMOHONAN INDIVIDU)	
1.2.1	Bilangan permohonan	6,903
1.2.2	Bilangan permohonan yang disambung dalam tempoh tidak lebih daripada 2 hari bekerja dari tarikh temujanji pengujian pemasangan	6,609
1.2.3	Peratus permohonan yang disambung dalam tempoh tidak lebih daripada 2 hari bekerja dari tarikh temujanji pengujian pemasangan	95.74%
1.3	BEKALAN BARU VOLTAN RENDAH (PERMOHONAN PUKAL DAN SKIM PERUMAHAN)	
1.3.1	Bilangan permohonan	1,997
1.3.2	Bilangan permohonan yang disambung dalam tempoh tidak lebih daripada 2 minggu dari tarikh temujanji pengujian pemasangan	1,981
1.3.3	Peratus permohonan yang disambung dalam tempoh tidak lebih daripada 2 minggu dari tarikh temujanji pengujian pemasangan	99.20%
2	**Pemulihan Semua Bekalan Selepas Gangguan**	
2.1	Bilangan pengguna yang melapor kepada SESB	294,077
2.2	Bilangan pengguna yang mana maklumat tidak dapat diberikan pada masa itu dihubungi semula dalam tempoh 15 minit	291,136
2.3	Bilangan pengguna yang diberi nombor aduan	294,077
2.4	Bilangan kerosakan kecil	28,539
2.5	Bilangan kerosakan kecil yang dipulihkan dalam tempoh 2 jam	26,861
2.6	Bilangan kerosakan besar	2,138
2.7	Bilangan kerosakan besar yang dipulihkan dalam tempoh 12 jam	2,114
2.8	Peratus bilangan pengguna yang mana maklumat tidak dapat diberikan pada masa itu dihubungi semula dalam tempoh 15 minit	99.00%
2.9	Peratus bilangan pengguna yang diberi nombor aduan	100.00%
2.10	Peratus kerosakan kecil yang dipulihkan dalam tempoh 2 jam	94.12%
2.11	Peratus kerosakan besar yang dipulihkan dalam tempoh 12 jam	98.88%

		2020
3	**Penyambungan Bekalan Elektrik Yang Di Potong**	
3.1	Bilangan pemotongan bekalan	56,852
3.2	Bilangan pengguna yang mana bekalannya dipotong menjelaskan semua bayaran sebelum 1.00 tengahari pada hari yang sama	36,880
3.3	Bilangan pengguna yang mana telah menjelaskan semua bayaran sebelum pukul 1.00 tengahari mendapat bekalansemula pada hari yang sama	36,667
3.4	Peratus pengguna yang mana telah menjelaskan semua bayaran sebelum pukul 1.00 tengahari mendapat bekalan semula pada hari yang sama	99.42%
4	**Ganguan Bekalan Yang Dirancang/Berjadual**	
4.1	GANGGUAN BERJADUAL	
4.1.1	Bilangan gangguan berjadual	697
4.1.2	Bilangan pengguna terlibat	96,817
4.1.3	Bilangan pengguna terlibat yang diberikan notis atau cara-cara yang sesuai sekurang-kurangnya 7 hari sebelum gangguan	96,817
4.1.4	Peratus bilangan pengguna terlibat yang diberikan notis atau cara-cara yang sesuai sekurang-kurangnya 7 hari sebelum gangguan	100.00%
4.2	RANCANGAN GANGGUAN BERJADUAL	
4.2.1	Bilangan rancangan gangguan berjadual tahunan/bulanan	426
4.2.2	Bilangan pengguna besar yang dijangka terlibat	41,829
4.2.3	Bilangan pengguna besar yang dijangka terlibat yang dimaklunkan mengenai rancangan gangguan berjadual tahunan/bulanan	41,826
4.2.4	Peratus bilangan pengguna besar yang dijangka terlibat yang dimaklumkan mengenai rancangan gangguan berjadual tersebut	99.99%
5	**Bacaan Meter**	
5.1	Bilangan pengguna domestik yang mana bacaan meter dibuat secara anggaran melebihi 3 bulan berturut-turut	97,063
5.2	Bilangan pengguna domestik yang mana bacaan meter dibuat secara anggaran melebihi 3 bulan berturut-turut dberi notis	96,541
5.3	Peratus bilangan pengguna domestik yang mana bacaan meter dibuat secara anggaran melebihi 3 bulan berturut-turut diberi notis	99.46%
6	**Pertanyaan Daripada Pengguna**	
6.1	PERTANYAAN BERTULIS	
6.1.1	Bilangan pertanyaan bertulis yang diterima daripada pelanggan	491
6.1.2	Bilangan pertanyaan bertulis yang diterima daripada pelanggan yang dijawab dalam tempoh 5 hari bekerja dari tarikh penerimaan	490
6.1.3	Peratus bilangan pertanyaan bertulis yang diterima daripada pelanggan yang dijawab dalam tempoh 5 hari bekerja dari tarikh penerimaan	99.80%
6.2	PERTANYAAN MELALUI TELEFON	
6.2.1	Bilangan pertanyaan melalui telefon yang diterima daripada pelanggan	48,485
6.2.2	Bilangan pelanggan yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga dihubungi semula dalam tempoh 24 jam	47,982
6.2.3	Peratus bilangan pelanggan yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga dihubungi semula dalam tempoh 24 jam	98.96%
6.3	PERTANYAAN DI KAUNTER	
6.3.1	Bilangan pengguna yang membuat pertanyaan di kaunter	115,748
6.3.2	Bilangan pengguna yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga dapat dihubungi semula dalam tempoh 24 jam	109,169

		2020
6.3.3	Bilangan pengguna yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga tidak dapat dihubungi semula dalam tempoh 24 jam	14,597
6.3.4	Peratus bilangan pengguna yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga dapat dihubungi semula dalam tempoh 24 jam	94.32%
7	**Perkhidmatan Kaunter**	
7.1	Bilangan pengguna yang mendapatkan sebarang perkhidmatan di kaunter	277,840
7.2	Bilangan pengguna yang mana masa menunggu tidak melebihi 15 minit	268,630
7.3	Peratus bilangan pengguna yang mana masa menunggu tidak melebihi 15 minit	96.69%
8	**Temujanji Untuk Pengujian Meter**	
8.1	Bilangan temujanji untuk ujian kejituan meter	901
8.2	Bilangan pengujian meter yang dibuat dalam tempoh 2 hari bekerja	826
8.3	Peratus bilangan pengujian meter yang dibuat dalam tempoh 2 hari bekerja	91.68%
9	**Penukaran Meter**	
9.1	Bilangan permohonan yang didapati perlu membuat penukaran meter	2,185
9.2	Bilangan penukaran yang dibuat dalam tempoh 2 hari bekerja dari tarikh permohonan dibuat	2,184
9.3	Peratus bilangan penukaran yang dibuat dalam tempoh 2 hari bekerja dari tarikh permohonan dibuat	99.95%
10	**Temujanji Denggan Pengguna**	
10.1	Bilangan temujanji dengan pengguna yang dibuat di luar SESB	1,135
10.2	Bilangan temujanji dengan pengguna yang mana pihak SESB sampai tidak lewat dari masa yang dijanjikan	1,084
10.3	Peratus bilangan temujanji dengan pengguna yang mana pihak SESB sampai tidak lewat dari masa yang dijanjikan	95.51%
10.4	Bilangan temujanji yang perlu ditangguhkan	29
10.5	Bilangan temujanji susulan yang mana dibuat dalam tempoh 1 hari bekerja dari tarikh tangguhan dibuat	29
10.6	Peratus bilangan temujanji susulan yang mana dibuat dalam tempoh 1 hari bekerja dari tarikh tangguhan dibuat	100.00%
11	**Cagaran**	
11.1	Bilangan pengguna yang mana selepas 6 bulan didapati cagaran melebihi 2 bulan purata penggunaan	5,789,136
11.2	Bilangan pengguna yang mana dipulangkan lebihan cagarannya	1,013
11.3	Peratus bilangan pengguna yang mana dipulangkan lebihan cagarannya	0.02%
12	**Pemulangan Wang Cagaran Pengguna**	
12.1	Bilangan pengguna yang memajukan segala dokumen yang diperlukan bagi tujuan pemulangan wang cagaran	12,565
12.2	Bilangan pengguna yang mana wang cagarannya telah dipulangkan dalam tempoh 1 bulan selepas penyerahan segala dokumen yang diperlukan	12,565
12.3	Peratus bilangan pengguna yang mana wang cagarannya telah dipulangkan dalam tempoh 1 bulan selepas penyerahan segala dokumen yang diperlukan	100.00%
13	**Pungutan**	
13.1	Bilangan pengguna yang membayar melalui pos	717,598
13.2	Bilangan pengguna yang diberi pengesahan pembayaran dalam tempoh 2 hari selepas pembayaran dibuat	717,598
13.3	Peratus bilangan pengguna yang diberi pengesahan pembayaran dalam tempoh 2 hari selepas pembayaran dibuat	100.00%

		2020
14	**Pemotongan Bekalan**	
14.1	DENGAN NOTIS 24 JAM	
14.1. 1	Bilangan pemotongan akibat pepasangan membahayakan	4
14.1.2	Bilangan pemotongan akibat disyaki berlaku kecurian elektrik	64
14.1.3	Bilangan pemotongan akibat meter elektrik dirosakkan	0
14.2		
14.2.1	Bilangan pemotongan akibat kegagalan membayar bil selepas 30 hari dari tarikh bil dan 7 hari bekerja notis pemotongan	56,171
14.2.2	Bilangan pemotongan akibat kegagalan membayar cagaran tambahan selepas 7 hari tuntutan dibuat	0
14.2.3	Bilangan pemotongan tanpa notis akibat pepasangan yang amat membahayakan dan tidak boleh dilengahkan	316
15	**Pengguna Khas Yang Menghadapi Masalah Membayar Bil Elektrik**	
15.1	Bilangan pengguna cacat yang merayu mengelakkan pemotongan	2
15.2	Bilangan pengguna lanjut usia yang merayu mengelakkan pemotongan	69
15.3	Bilangan pengguna cacat yang dibantu dalam urusan pembayaran bil	105
15.4	Bilangan pengguna lanjut usia yang dibantu dalam urusan pembayaran bil	228
16	**Masalah Voltan Diluar Tahap Diisytiharkan**	
16.1	TIDAK MEMERLUKAN PENGUKUHAN SISTEM	
16.1.1	Bilangan aduan	349
16.1.2	Bilangan aduan yang diselesaikan dalam tempoh 2 hari dari tarikh aduan dibuat	340
16.1.3	Peratus bilangan aduan yang diselesaikan dalam tempoh 2 hari dari tarikh aduan dibuat	97.42%
16.2	MEMERLUKAN PENGUKUHAN SISTEM	
16.2.1	Bilangan aduan	17
16.2.2	Bilangan aduan yang diselesaikan dalam tempoh 3 bulani dari tarikh aduan dibuat	13
16.2.3	Peratus bilangan aduan yang diselesaikan dalam tempoh 3 bulan dari tarikh aduan dibuat	76.47%
17	**Jawapan Kepada Pemohonan Bekalan Baru/Peningkatan Bekalan**	
	Jawapan kepada pemohonan bekalan termasuk tarikh bekalan akan diberi dan anggaran caj sambungan akan dikemukakan kepada pelanggan secara bertulis	
17.1	TIDAK MEMERLUKAN PENCAWANG BARU	
17.1.1	Bilangan permohonan	304
17.1.2	Bilangan permohonan yang dijawap dalam masa 1 minggu dari tarikh permohonan dibuat	304
17.1.3	Peratus bilangan permohonan yang dijawap dalam masa 1 minggu dari tarikh permohonan dibuat	100.00%
17.2	MEMERLUKAN PENCAWANG BARU	
17.2.1	Bilangan permohonan	18
17.2.2	Bilangan permohonan yang dijawap dalam masa 2 minggu dari permohonan yang dibuat	7
17.2.3	Peratus bilangan permohonan yang dijawap dalam masa 2 minggu dari permohonan yang dibuat	38.89%

		2020
18	**Permohonan Memindahkan Lokasi Meter Oleh Pengguna**	
18.1	Bilangan permohonan memindahkan lokasi meter oleh pengguna	16
18.2	Bilangan permohonan memindahkan lokasi meter oleh pengguna yang dirasakan perlu dan sesuai	16
18.3	Bilangan permohonan yang perlu dan dirasakan sesuai yang diselesaikan dalam tempoh 3 hari bekerja	13
18.4	Peratus bilangan permohonan yang perlu dan dirasakan sesuai yang diselesaikan dalam tempoh 3 hari bekerja	81.25%
19	**Pendidikan Pengguna Mengenai Cara Penggunaan Elektrik Dengan Cekap Dan Selamat**	
19.1	Bilangan program pendidikan pengguna mengenai cara penggunaan elektrik dengan cekap dan selamat dan cara untuk mengelakkan kemalangan elektrik, termasuk aktiviti berdekatan pepasangan dan talian elektrik yang dijalankan	6
20	**Peningkatan Kualiti Bekalan**	
20.1	Bilangan aktiviti-aktiviti berkaitan peningkatan kualiti bekalan elektrik.	26
Purata		**91%**

Apendiks 5: Tarif-tarif Elektrik TNB Berkuatkuasa 1 Januari 2014
Appendix 5: TNB Electricity Tariffs Effective from 1 January 2014

Bil. No.	Kategori Tarif Tariff Category	Unit	Kadar Semasa Current Rate
1	**Tarif A - Tarif Kediaman** Tariff A - Domestic Tariff		
	200 kWj pertama (1-200 kWj) sebulan For the first 200 kWh (1-200 kWh) per month	sen/kWj sen/kWh	21.80
	100 kWj berikutnya (201-300 kWj) sebulan For the next 100 kWh (201-300 kWh) per month	sen/kWj sen/kWh	33.40
	300 kWj berikutnya (301-600 kWj) sebulan For the next 300 kWh (301-600 kWh) per month	sen/kWj sen/kWh	51.60
	300 kWj berikutnya (601-900 kWj) sebulan For the next 300 kWh (601-900 kWh) per month	sen/kWj sen/kWh	54.60
	Setiap kWj berikutnya (901 kWj ke atas) sebulan For the next kWh (901 and above) per month	sen/kWj sen/kWh	57.10
	Caj minimum bulanan Minimum monthly charge	RM	3.00
2	**Tarif B – Tarif Perdagangan Voltan Rendah** Tariff B – Low Voltage Commercial Tariff		
	200 kWj pertama (1-200 kWj) sebulan For the first 200 kWh (1-200 kWh) per month	sen/kWj sen/kWh	43.50
	Setiap kWj berikutnya (201 kWj ke atas) sebulan For the next kWh (201 kWh and above) per month	sen/kWj sen/kWh	50.90
	Caj minimum bulanan Minimum monthly charge	RM	7.20
3	**Tarif C1 – Tarif Perdagangan Am Voltan Sederhana** Tariff C1 – Medium Voltage General Commercial Tariff		
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	30.30
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	21.80
	Caj minimum bulanan Minimum monthly charge	RM	600.00
4	**Tarif C2 – Tarif Perdagangan Puncak/Luar Puncak Voltan Sederhana** Tariff C2 – Medium Voltage Peak/Off-Peak Commercial Tariff		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kWj	45.10
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	36.50
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off-peak period	sen/kWj sen/kWh	22.40
	Caj minimum bulanan Minimum monthly charge	RM	600.00
5	**Tarif D – Tarif Perindustrian Voltan Rendah** Tariff D – Low Voltage Industrial Tariff		
	200 kWj pertama (1-200 kWj) sebulan For the first 200 kWh (1-200 kWh) per month	sen/kWj sen/kWh	38.00
	Setiap kWj berikutnya (201 kWj ke atas) sebulan For the next (201 and above) per month	sen/kWj sen/kWh	44.10
	Caj minimum bulanan Minimum monthly charge	RM	7.20
	Tarif Ds – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) Tariff Ds– Special Industrial Tariff (only for qualified consumers)		
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	42.70
	Caj minimum bulanan Minimum monthly charge	RM	7.20

Bil. No.	Kategori Tarif Tariff Category	Unit	Kadar Semasa Current Rate
6	**Tarif E1 – Tarif Perindustrian Am Voltan Sederhana** **Tariff E1 – Medium Voltage General Industrial Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	29.60
	Bagi semua kWj For each kilowatt of maximum demand per month	sen/kWj sen/kWh	33.70
	Caj minimum bulanan Minimum monthly charge	RM	600.00
	Tarif E1s – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) **Tariff E1s – Special Industrial Tariff (for qualified consumers only)**		
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	23.70
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	33.60
	Caj minimum bulanan Minimum monthly charge	RM	600.00
7	**Tarif E2 – Tarif Perindustrian Puncak/Luar Puncak Voltan Sederhana** **Tariff E2 – Medium Voltage Peak/Off-Peak Industrial Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	sen/kWj sen/kWh	37.00
	Bagi semua kWj dalam tempoh puncak puncak For all kWh during the peak period	sen/kWj sen/kWh	35.50
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	21.90
	Caj minimum bulanan Minimum monthly charge	RM	600.00
	Tarif E2s – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) **Tariff E2s – Special Industrial Tariff (for qualified consumers only)**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	32.90
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	33.60
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	19.10
	Caj minimum bulanan Minimum monthly charge	RM	600.00
8	**Tarif E3 – Tarif Perindustrian Puncak/Luar Puncak Voltan Tinggi** **Tariff E3 – High Voltage Peak/Off-Peak Industrial Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	35.50
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	33.70
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	20.20
	Caj minimum bulanan Minimum monthly charge	RM	600.00
	Tarif E3s – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) **Tariff E3s – Special Industrial Tariff (for qualified consumers only)**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	29.00
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	31.70
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	17.50
	Caj minimum bulanan Minimum monthly charge	RM	600.00

Bil. No.	Kategori Tarif Tariff Category	Unit	Kadar Semasa Current Rate
9	**Tarif F – Tarif Perlombongan Voltan Rendah** **Tariff F – Low Voltage Mining Tariff**		
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	38.10
	Caj minimum bulanan Minimum monthly charge	RM	120.00
10	**Tarif F1 – Tarif Perlombongan Am Voltan Sederhana** **Tariff F1 – Medium Voltage General Mining Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	21.10
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	31.30
	Caj minimum bulanan Minimum monthly charge	RM	120.00
11	**Tarif F2 – Tarif Perlombongan Puncak/Luar Puncak Voltan Sederhana** **Tariff F2– Medium Volatge Peak/Off-Peak Mining Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	29.80
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	31.30
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	17.20
	Caj minimum bulanan Minimum monthly charge	RM	120.00
12	**Tarif G – Tarif Lampu Jalanraya** **Tariff G – Street Lighting Tariff**		
	Bagi semua kWj (termasuk senggaraan) For all kWh (including maintenance)	sen/kWj sen/kWh	30.50
	Bagi semua kWj (tidak termasuk senggaraan) For all kWh (excluding maintenance)	sen/kWj sen/kWh	19.20
	Caj minimum bulanan Minimum monthly charge	RM	7.20
13	**Tarif G1 – Tarif Lampu Neon & Lampu Limpah** **Tariff G1 – Neon & Floodlight Tariff**		
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	20.80
	Caj minimum bulanan Minimum monthly charge	RM	7.20
14	**Tarif H - Tarif Pertanian Spesifik Voltan Rendah** **Tariff H – Low Voltage Specific Agriculture Tariff**		
	200 kWj pertama (1-200 kWj) sebulan For the first 200 kWh (1-200 kWh) per month	sen/kWj sen/kWh	39.00
	Setiap kWj berikutnya (201 kWj ke atas) sebulan For the next kWh (201 kWh and above) per month	sen/kWj sen/kWh	47.20
	Caj minimum bulanan Minimum monthly charge	RM	7.20
15	**Tarif H1 – Tarif Pertanian Spesifik Am Voltan Sederhana** **Tariff H1 – Medium Voltage General Specific Agriculture Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	30.30
	Bagi semua kWj For all kW	sen/kWj sen/kWh	35.10
	Caj minimum bulanan Minimum monthly charge	RM	600.00

Bil. No.	Kategori Tarif Tariff Category	Unit	Kadar Semasa Current Rate
16	**Tarif H2 – Tarif Pertanian Spesifik Puncak/Luar Puncak Voltan Sederhana** **Tariff H2 - Medium Voltage Peak/Off-peak Specific Agriculture Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	40.80
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	36.50
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	22.40
	Caj minimum bulanan Minimum monthly charge	RM	600.00

Apendiks 6: Tarif-tarif Elektrik TNB untuk Top-Up dan Standby (Cogenerator Sahaja)
Appendix 6: TNB Electricity Tariffs for Top-Up and Standby (Cogenerators Only)

Bil. No.	Kategori Tarif Tariff Category	Unit	Top-up	Standby
1	**Tarif C1 – Perdagangan Am Voltan Sederhana** **Tariff C1 – Medium Voltage General Commercial Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	30.30	14.00
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	36.50	
2	**Tarif C2 – Perdagangan Puncak/Luar Puncak Voltan Sederhana** **Tariff C2– Medium Voltage Peak/Off Peak Commercial Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	45.10	14.00
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	36.50	
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	22.40	
3	**Tarif E1 – Perindustrian Am Voltan Sederhana** **Tariff E1 – Medium Voltage General Industrial Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	29.60	14.00
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	33.70	
4	**Tarif E2 – Perindustrian Puncak/Luar Puncak Voltan Sederhana** **Tariff E2 – Medium Voltage Peak/Off-Peak Industrial Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	37.00	14.00
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	35.50	
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off- peak period	sen/kWj sen/kWh	21.90	
5	**Tarif E3 – Perindustrian Puncak/Luar Puncak Voltan Tinggi** **Tariff E3 – High Voltage Peak/Off-Peak Industrial Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	35.50	12.00
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	33.70	
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off-peak period	sen/kWj sen/kWh	20.20	

Apendiks 6: Tarif-tarif Elektrik TNB untuk Top-Up dan Standby (Cogenerator Sahaja)
Appendix 6: TNB Electricity Tariffs for Top-Up and Standby (Cogenerators Only)

Bil. No.	Kategori Tarif Tariff Category	Unit	Top-up	Standby
6	**Tarif F1 – Perlombongan Am Voltan Sederhana** **Tariff F1 - Medium Voltage General Mining Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	21.10	14.00
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	31.30	31.30
7	**Tarif F2 – Perlombongan Puncak/Luar Puncak Voltan Sederhana** **Tariff F2 – Medium Voltage Peak/Off-Peak Mining Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	29.80	14.00
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	31.30	
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off-peak period	sen/kWj sen/kWh	17.20	
8	**Tarif H1 – Tarif Pertanian Spesifik Am Voltan Sederhana** **Tariff H1 – Medium Voltage Specific General Agriculture Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	30.30	14.00
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	35.10	
9	**Tarif H2 – Tarif Pertanian Spesifik Am Puncak/Luar Puncak** **Tariff H1 – Medium Voltage Specific General Agriculture Tariff**			
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	40.80	14.00
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	36.50	
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off-peak period	sen/kWj sen/kWh	22.40	

a) Semua pengguna cogen baharu dan pengguna cogen sedia ada yang berhasrat untuk menukar kepada kadar Standby yang baru ini.
All new cogen customers and existing cogen customers who wish to migrate to this new Standby rate.

b) Bagi pengguna cogen sedia ada yang berhasrat untuk mengekalkan kadar Standby (Firm dan Non-Firm) yang lama, kadar Standby (Firm dan Non-Firm) yang lama bersama-sama kadar Top-up yang baru (bermula 1 Januari 2014) akan digunapakai.
For existing cogen customer who wishes to maintain previous Standby (Firm and Non-Firm) rates, the rate is applicable together with the new Top-Up rate (as of 1 January 2014)

c) Kutipan 1.6% FiT akan dikenakan ke atas bil elektrik bulanan pengguna (kecuali pengguna Domestik yang menggunakan sehingga 300 kWj sebulan) berkuatkuasa mulai 1 Januari 2014.
Effective starting from 1 January 2014, 1% FiT for Renewable Energy Resources Fund (RE) is imposed on consumers' monthly electric bill (except for domestic consumers with consumption not exceeding 300 kWh per month)

Apendiks 7: Tarif-tarif Elektrik Sabah Electricity Sdn. Bhd. (SESB) & WP Labuan (Berkuatkuasa 1 Januari 2014)

Appendix 7: Sabah Electricity Sdn. Bhd. (SESB) & Federal Teritory of Labuan Electricity Tariffs (Effective from 1 January 2014)

Bil. No.	Kategori Tarif Tariff Category	Unit	Kadar Semasa Current Rate
1	**Tarif DM – Tarif Kediaman** **Tariff DM – Domestic Tariff**		
	100 kWj pertama (1-100 kWj) sebulan For the first 100 kWh (1-100 kWh) per month	sen/kWj sen/kWh	17.50
	100 kWj berikutnya (101-200 kWj) sebulan For the next 100 kWh (101-200 kWh) per month	sen/kWj sen/kWh	18.50
	300 kWj berikutnya (201-300 kWj) sebulan For the next 300 kWh (201-300 kWh) per month	sen/kWj sen/kWh	33.00
	200 kWj berikutnya (301-500 kWj) sebulan For the next 200 kWh (301-500 kWh) per month	sen/kWj sen/kWh	44.50
	500 kWj berikutnya (501-1000 kWj) sebulan For the next 500 kWh (501-1000 kWh) per month	sen/kWj sen/kWh	45.00
	Setiap kWj berikutnya (1001 kWj ke atas) sebulan For the next kWh (1001 kWh and above) per month	sen/kWj sen/kWh	47.00
	Caj minimum bulanan Minimum monthly charge	RM	5.00
2	**Tarif CM1 – Tarif Perdagangan Voltan Rendah** **Tariff CM1 – Low Voltage Commercial Tariff**		
	200 kWj pertama (1-200 kWj) sebulan For the first 200 kWh (1-200 kWh) per month	sen/kWj sen/kWh	38.50
	Setiap kWj berikutnya (201 kWj ke atas) sebulan For the next kWh (201 kWh and above) per month	sen/kWj sen/kWh	39.50
	Caj minimum bulanan Minimum monthly charge	RM	15.00
3	**Tarif CM2 – Perdagangan Am Voltan Sederhana** **Tariff CM2 – Medium Voltage General Commercial Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM/kW	23.20
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	32.40
	Caj minimum bulanan Minimum monthly charge	RM	1,000.00
4	**Tarif CM3 – Tarif Perdagangan** **Tariff CM3 – Commercial Tariff**		
	Puncak/Luar Puncak Voltan Sederhana Medium Voltage Peak/Off Peak Commercial		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	32.60
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	32.40
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off-peak period	sen/kWj sen/kWh	19.50
	Caj minimum bulanan Minimum monthly charge	RM	1,000.00
5	**Tarif ID1 – Tarif Perindustrian Voltan Rendah** **Tariff ID1 – Low Voltage Industrial Tariff**		
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	37.60
	Caj minimum bulanan Minimum monthly charge	RM	15.00

Bil. No.	Kategori Tarif Tariff Category	Unit	Kadar Semasa Current Rate
6	**Tarif ID2 – Tarif Perindustrian Am Voltan Sederhana** **Tariff ID2 - Medium Voltage Industrial Tariff**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	21.75
	Bagi semua kWj For all kWh	sen/kWj sen/kWh	26.80
	Caj minimum bulanan Minimum monthly charge	RM	1,000.00
7	**Tarif ID3 – Tarif Perindustrian Puncak/Luar Puncak Voltan Sederhana** **Tariff ID3 – Medium Voltage Peak/Off Peak Industrial**		
	Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak For each kilowatt of maximum demand per month during the peak period	RM/kW	28.00
	Bagi semua kWj dalam tempoh puncak For all kWh during the peak period	sen/kWj sen/kWh	28.60
	Bagi semua kWj dalam tempoh luar puncak For all kWh during the off-peak period	sen/kWj sen/kWh	18.00
	Caj minimum bulanan Minimum monthly charge	RM	1,000.00
8	**Tarif PL – Tarif Lampu Jalanraya** **Tariff PL – Public Lighting**		
	Bagi semua kWj (tidak termasuk senggaraan) For all kWh (excluding maintenance)	sen/kWj sen/kWh	20.30
	Bagi semua kWj (termasuk senggaraan) For all kWh (including maintenance)	sen/kWj sen/kWh	36.30
	Caj minimum bulanan Minimum monthly charge	RM	15.00

Apendiks 8: Tarif-tarif Elektrik Sarawak Energy Berhad (SEB)
Appendix 8: Sarawak Energy Berhad (SEB) Electricity Tariffs

Kategori Tarif Tariff Category	Kadar per unit Rate per unit
Tarif C1 - Komersial **Tariff C1 - Commercial**	
1 - 100 unit	20.0 sen
1 - 200 unit	24.0 sen
1 - 300 unit	26.0 sen
1 - 400 unit	28.0 sen
1 - 500 unit	30.0 sen
1 – 3,000 unit	31.5 sen
1 – 10,000 unit	32.0 sen
1 – 20,000 unit	31.0 sen
1- Melebihi 20,000 unit 1 - Above 20,000 units	30.0 sen
Caj minimum bulanan Minimum monthly charge	RM10.00
Tarif C2 - Kehendak Perdagangan **Tariff C2 - Commercial Demand**	
Semua penggunaan All consumption	24.5 sen
Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM16.00
Caj minimum bulanan Minimum monthly charge	RM 16.00 per kilowatt x Kehendak Bil RM 16.00 per kilowatt x Billing Demand
Tarif C3 - Kehendak Waktu Puncak/Bukan Waktu Puncak Perdagangan **Tariff C3 - Commercial Peak/Off-Peak Demand**	
Bagi setiap unit waktu puncak For each unit during the peak period	24.5 sen
Bagi setiap unit bukan waktu puncak For each unit during the off-peak period	13.9 sen
Bagi setiap kilowatt kehendak maksimum sebulan semasa waktu puncak For each kilowatt of maximum demand per month during the peak period	RM20.00
Caj minimum bulanan Minimum monthly charge	RM 20.00 per kilowatt x Kehendak Bil RM 20.00 per kilowatt x Billing Demand
Tarif D - Domestik **Tariff D - Domestic**	
Bagi 1 hingga 100 unit sebulan 1 to 100 units per month	18 sen
Bagi 1 hingga 150 unit sebulan For 1 to 150 units per month	18 sen
Bagi 1 hingga 200 unit sebulan For 1 to 200 units per month	22 sen
Bagi 1 hingga 300 unit sebulan For 1 to 300 units per month	25 sen
Bagi 1 hingga 400 unit sebulan For 1 to 400 units per month	27 sen
Bagi 1 hingga 500 unit sebulan For 1 to 500 units per month	29.5 sen

Kategori Tarif Tariff Category	Kadar per unit Rate per unit
Tarif D - Domestik **Tariff D - Domestic**	
Bagi 1 hingga 700 unit sebulan For 1 to 700 units per month	30 sen
Bagi 1 hingga 800 unit sebulan For 1 to 800 units per month	30.5 sen
Bagi 1 hingga 1,300 unit sebulan For 1 to 1,300 units per month	31 sen
Bagi melebihi 1,300 unit sebulan For above 1,300 units per month	31.5 sen
Caj minimum bulanan Minimum monthly charge	RM5.00
TARIF I1 – Perindustrian **TARIFF I1 - Industrial**	
1-100	24.0 sen
1-3,000 For all kWh during the peak period	25.0 sen
1- melebihi 3,000 unit 1-above 3,000 units	26.0 sen
Caj minimum bulanan Minimum monthly charge	RM10.00
Tarif I2 – Kehendak Perindustrian **Tariff I2 - Industrial Demand**	
Semua penggunaan All consumption	21.7 sen
Bagi setiap kilowatt kehendak maksimum sebulan For each kilowatt of maximum demand per month	RM16.00
Caj minimum bulanan Minimum monthly charge	RM 16.00 per kilowatt x Kehendak Bil RM 16.00 per kilowatt x Billing Demand
Tarif I3 - Kehendak Waktu Puncak/Bukan Waktu Puncak Perindustrian **Tariff I3 - Industrial Peak/Off-Peak Demand**	
Bagi setiap unit waktu puncak For each unit during the peak period	22.9 sen
Bagi setiap unit bukan waktu puncak For each unit during the off-peak period	13.9 sen
Bagi setiap kilowatt kehendak maksimum sebulan semasa waktu puncak For each kilowatt of maximum demand per month during the peak period	RM20.00
Caj minimum bulanan Minimum monthly charge	RM 20.00 per kilowatt x Kehendak Bil RM 20.00 per kilowatt x Billing Demand
Tarif PL - Lampu Awam **Tariff PL - Public Lighting**	
Bagi setiap unit For each unit	47 sen
Caj minimum bulanan Minimum monthly charge	RM10.00

Apendiks 9: Harga Jualan Purata Syarikat Utiliti Kuasa Utama mengikut Sektor
Appendix 9: Average Selling Prices of Major Power Utility Companies by Sectors

Syarikat Company	Harga Jualan Purata (sen/kWj) Average Selling Prices (sen/kWh)						
	2014	2015	2016	2017	2018	2019	2020
TNB							
Domestik Domestic	32.28	32.67	33.21	32.87	33.09	33.74	34.91
Komersial Commercial	47.10	47.68	46.76	47.16	47.28	47.20	47.48
Industri Industrial	35.88	36.56	37.13	36.97	37.30	37.62	38.01
Perlombongan Mining	23.99	25.00	25.34	25.07	24.61	24.07	25.55
Lampu Awam Public Lighting	25.06	25.49	25.57	25.53	25.57	25.13	25.37
Pertanian Agriculture	45.29	45.86	45.78	45.54	45.69	45.98	45.77
Green Tariff						8.00	8.00
Purata Average	**38.86**	**39.45**	**39.55**	**39.53**	**39.68**	**39.89**	**40.07**
SESB							
Domestik Domestic	29.32	29.14	28.86	28.39	29.11	29.60	30.20
Komersial Commercial	39.25	37.63	38.21	38.26	39.19	39.38	39.61
Industri Industrial	32.90	30.80	31.36	31.09	31.36	31.58	31.87
Lampu Awam Public Lighting	23.31	22.54	23.09	23.27	24.61	25.14	25.47
Purata Average	**34.31**	**33.13**	**33.41**	**33.30**	**34.00**	**34.31**	**34.29**
SESB (Pelanggan Regulated Tariff Sahaja I Regulated Tariff Customers Only)							
Domestik Domestic	31.30	28.25	28.30	28.21	28.27	28.47	30.20
Komersial Commercial	32.00	31.72	30.53	30.54	30.50	30.65	39.61
Industri Industrial	25.10	24.48	24.15	23.86	23.69	24.16	31.87
Lampu Awam Public Lighting	47.10	n/a	47.12	47.18	47.17	47.20	25.47
Purata Average	**29.80**	**28.50**	**28.20**	**28.04**	**27.96**	**28.22**	**34.29**

Apendiks 10: Kos Penjanaan TNB
Appendix 10: TNB's Generation Costs

Kos Penjanaan (sen/kWj) Generation Costs (sen/kWh)	2016/2017	Sep-Dec 2017	2018	2019	2020
(a) Penjanaan Sendiri Own Generation	22.62	22.31	26.91	29.39	28..04
(b) Elektrik Dibeli Purchased Electricity	23.02	24.87	25.72	25.61	20.83
(c) Kos Keseluruhan (a) & (b) Overall Cost (a) & (b)	**22.95**	**24.43**	**25.89**	**26.09**	**21.66**

Nota: I Notes:
1. Data Tahun Kewangan I Financial Year data
2. Kos (kapasiti, tenaga) / Jumlah Penjanaan Tenaga (bagi IPP, menggunakan syarat yang termaktub dalam PPA/SLA).
   Cost (capacity, energy) / Total Units Generated (for IPP, based on condition stipulated in PPA/SLA).
3. Disebabkan perubahan dalam tahun laporan fiskal TNB kepada berakhir 31 Disember 2017 berbanding 31 Ogos 2017 sebelum ini, terdapat tahun kewangan yang singkat bermula dari 1 September 2017 hingga 31 Disember 2017, yang meliputi tempoh empat bulan. Selepas itu, tahun kewangan kumpulan itu telah kembali kepada dua belas bulan yang berakhir 31 Disember 2018.
   Due to the change in TNB's fiscal reporting year end to 31 December 2017 compared to 31 August 2017 before this, a short financial year commenced from 1 September 2017 to 31 December 2017, covering a period of four months. Thereafter, the financial year of the group has reverted to twelve months ending 31 December 2018.

Apendiks 11: Kos Penjanaan Sabah Electricity Sdn. Bhd. (SESB)
Appendix 11: Generation Cost of Sabah Electricity Sdn. Bhd. (SESB)

Kos Penjanaan (sen/kWj) Generation Costs (sen/kWh)	2016	2017	2018	2019	2020
(a) Penjanaan Sendiri Own Generation	35.32	37.03	39.17	41.66	17.83
(b) Elektrik Dibeli Purchased Electricity	21.23	20.73	19.36	19.90	17.90
(c) Kos Keseluruhan (a) & (b) Overall Cost (a) & (b)	**23.52**	**23.23**	**22.76**	**23.51**	17.88

Nota: I Notes:
Kos penjanaan di atas adalah berdasarkan harga pasaran bagi bahan api diesel & MFO, harga pembelian tenaga bagi LSS manakala TBB di bawah skim FiT adalah dengan subsidi daripada KWTBB (SEDA). Harga gas bagi Sabah & WP Labuan adalah pada RM6.40/mmbtu.
The above generation costs are based on market prices for diesel & MFO, energy purchase price for LSS, while RE under the FiT scheme is subsidised by KWTBB (SEDA). Gas prices for Sabah & Federal Territory of Labuan is at RM6.40/MMBtu.

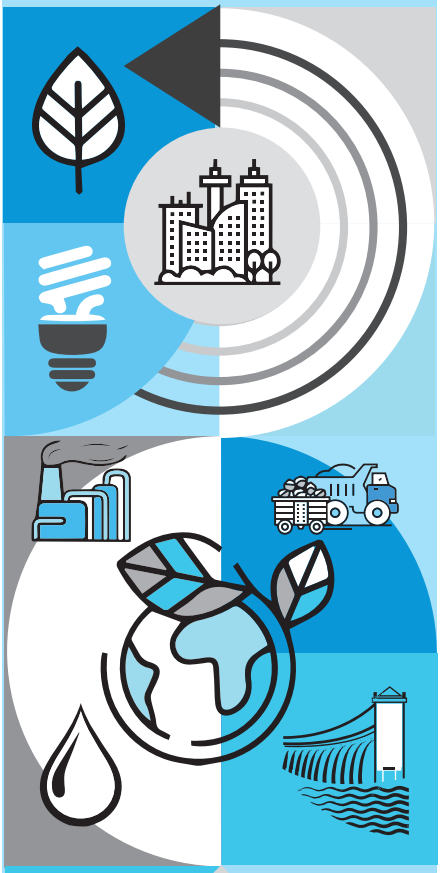
Apendiks 12: Kos Penjanaan Sarawak Energy Berhad (SEB)
Appendix 12: Generation Costs of Sarawak Energy Berhad (SEB)

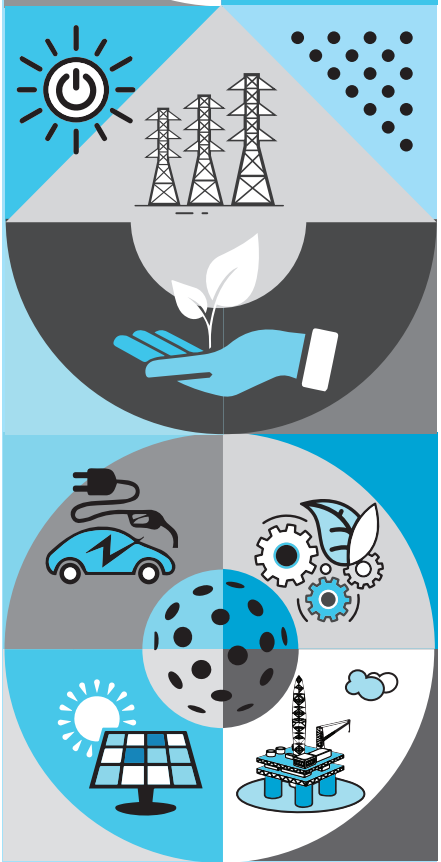
Kos Penjanaan (sen/kWj) Generation Costs (sen/kWh)	2016	2017	2018	2019	2020
(a) Penjanaan Sendiri Own Generation	5.99[1]	3.58	2.70	2.74	4.07
(b) Elektrik Dibeli Purchased Electricity	10.47[2]	7.83	0	0	0
(c) Kos Keseluruhan (a) & (b) Overall Cost (a) & (b)	**8.42[3]**	**4.83**	**2.70**	**2.74**	4.07

Nota: I Notes:
1. [1]Kos Sumber Tenaga SESCO I [1]Energy Source Cost of SESCO
2. [2]Kos Pembelian Tenaga I [2]Power Purchase Cost
3. [3]Purata Kos Sumber Tenaga I [3]Average Energy Source Cost
4. Kos penjanaan (sen/kWj) terdiri daripada kos bahan bakar daripada gas, arang batu dan diesel serta pembayaran royalti air untuk penjanaan hidro.
   Generation costs (sen/kWh) consists of fuel costs from gas, coal and diesel as well as the water royalty payment for hydro generation.
5. Berkuatkuasa 1 Ogos 2017, tiada lagi elektrik yang dibeli, oleh itu kos purata pembelian kuasa berkurangan kepada 7.8 sen/kWh pada tahun 2017.
   Effective 1 Aug 2017, there is no more purchased electricity, hence the average cost of power purchase reduced to 7.8 sen/kWh in year 2017.
6. Penjanaan yang tidak bersambung dengan grid dikecualikan daripada kos penjanaan untuk tahun 2017 dan berikutnya.
   Non-grid generation is excluded from the generation cost for year 2017 and onwards.

Pemegang Lesen

Licensees





Apendiks 13: Penjana-penjana Bebas (IPP)
Appendix 13: Independent Power Producers (IPP)

Bil. No	Nama Pelesen Licensee's Name	Lokasi Location	Kapasiti Dilesen (MW) Licensed Capacity (MW)
1	MUSTEQ HYDRO SDN. BHD.	Stesen Janakuasa Hidro Elektrik Sungai Kenerong, Kelantan	20
2	STRATAVEST SDN. BHD.	Stesen Janakuasa, Sandakan, Sabah	64.4
3	TNB JANAMANJUNG SDN. BHD.	Telok Penchalang, Lekir, Daerah Manjung, Perak	2,100
4	TEKNOLOGI TENAGA PERLIS CONSORTIUM SDN. BHD.	Kuala Sungai Baru, Perlis	650
5	NUR GENERATION SDN. BHD.	Kulim Hi Tech Industrial Park, Mukim of Padang China, Kedah.	220
6	PRAI POWER SDN. BHD.	LMS No: 00186 Daerah Seberang Perai Tengah 13700 Pulau Pinang	350
7	GB3 SDN. BHD.	Mukim Pengkalan Baharu, Daerah Manjung, Perak.	640
8	PANGLIMA POWER SDN. BHD.	Mukim Sungei Baru Ilir, Daerah Alor Gajah, Melaka.	720
9	TANJUNG BIN POWER SDN. BHD.	PTD 1769, 1770, 1771, 1772 Dan 1773 Mukim Serkat Daerah Pontian Johor	2,100
10	KAPAR ENERGY VENTURES SDN. BHD.	H.S.(D)27997, P.T 13310, H.S.(D)71648 P.T 39670 Dan H.S.(D)83937 P.T 42930, Mukim Kapar, Daerah Klang, Selangor.	2,200
11	JIMAH ENERGY VENTURES SDN. BHD.	PT 7308 Dan PT 7309, Mukim Jimah. Port Dickson, Negeri Sembilan.	1,400
12	SEPANGAR BAY POWER CORPORATION SDN. BHD.	Lot 18(IZ3), Kota Kinabalu Industrial Park, 88450 Kota Kinabalu, Sabah.	100
13	RANHILL POWERTRON SDN. BHD.	Lot 3, KKIP Selatan, IZ3 Kota Kinabalu Industrial Park, Kota Kinabalu, Sabah	190
14	RANHILL POWERTRON II SDN. BHD.	Lot 35 (IZ4), Kota Kinabalu Industrial Park Kota Kinabalu, Sabah.	190
15	TNB JANAMANJUNG SDN. BHD. (4)	No. Lot 43195, Sebahagian 43196 Dan Sebahagian 43197, Mukim Sitiawan, Daerah Manjung, Perak.	1,010
16	KIMANIS POWER SDN. BHD.	025341422, CL 025341413, NT 023176150 Dan Sebahagian Dari Lot 02200228, Km 48, Kg. Batu Pungit, Mukim Kimanis, Daerah Papar, 89607 Sabah.	285
17	SPR ENERGY (M) SDN. BHD.	No. Lot NT 11066, NT 11067, NT 11068, NT 11069 & 023159864 Kimanis, Daerah Papar Sabah.	100
18	TNB PRAI SDN. BHD.	PT 10, PT 11 dan PT 13 Bandar Prai Seberang Perai Tengah 13600, Pulau Pinang.	1,071.43
19	TNB PASIR GUDANG ENERGY SDN. BHD.	Lot PT 204356 Mukim Plentong, Daerah Pasir Gudang 81700 Johor.	275
20	TNB CONNAUGHT BRIDGE SDN. BHD.	Sebahagian Lot PT 20176 Mukim Klang, Daerah Klang 41990 Selangor.	375
21	TENAGA NASIONAL BERHAD (TNB)	Sebahagian Mukim Hulu Terengganu Daerah Hulu Terengganu, Terengganu.	265
22	KUALA LANGAT POWER PLANT SDN. BHD.	Lot 7090, Mukim Tanjung 12, Kuala Langat, 42700 Banting, Selangor	675
23	YTL POWER GENERATION SDN. BHD.	Lot PT 2467, Mukim Kuala Paka, Daerah Dungun, 23100 Terengganu.	585
24	TANJUNG BIN ENERGY SDN. BHD.	Lot 1770, 1771, 1773, 1851, 1858, 1859 Mukim Serkat, Daerah Pontian Johor.	1,000
25	TENAGA NASIONAL BERHAD (TNB)	Ulu Jelai, Sebahagian Mukim Hulu Telom, Daerah Cameron Highlands, Pahang.	372

Bil. No	Nama Pelesen Licensee's Name	Lokasi Location	Kapasiti Dilesen (MW) Licensed Capacity (MW)
26	PENGERANG POWER SDN. BHD.	Plot 46 Dan Di Dalam Persempadanan Pengerang Integrated Compex (PIC), Mukim Pengerang, Daerah Kota Tinggi, 81600 Johor.	1,729
27	SEGARI ENERGY VENTURES SDN. BHD.	Lot PT0006325, PT 0006356, PT0006327 PT0006328, PT0006329, Mukim Pengkalan Baru Daerah Manjung 34900 Perak.	1,303
28	TNB MANJUNG FIVE SDN. BHD.	Lot 43195, 43196 Dan 43197 Sitiawan Manjung 32040	1,000
29	JIMAH EAST POWER SDN. BHD.	PT8387, PT8388, PT8389, PT 8390 DAN PT 8392, Mukim Jimah, Daerah Port Dickson, 71960 Negeri Sembilan.	2,159
30	TNB POWER GENERATION SDN. BHD.	Stesen Janaelektrik Mini Hidro Di Stesen Janaelektrik Odak Di Sebahagian Lot 5188, Mukim Tapah, Daerah Batang Padang, 35009 Perak, Stesen Janaelektrik Kampung Raja Di Sebahagian Lot PT 91, Mukim Ulu Telom, Daerah Cameron Highlands, 39010 Pahang, Stesen Janaelektrik Kuala Terla Di Sebahagian Lot PT 287, Mukim Ulu Telom, Daerah Cameron Highlands, 39000 Pahang, Stesen Janaelektrik Robinson Falls Di Sebahagian Lot PT 558, Mukim Ringlet, Daerah Cameron Highlands, 39200 Pahang And Stesen Janaelektrik Habu Di Mukim Ringlet, Cameron Highlands, 39200 Pahang	11.9
31	TNB POWER GENERATION SDN. BHD.	Stesen Janaelektrik Hidro Sultan Mahmud Di Mukim Jenagor, Daerah Hulu Terengganu, 21700 Terengganu.	400
32	TNB POWER GENERATION SDN. BHD.	Stesen Janaelektrik Hidro Sultan Ismail Petra (Pergau) Di Lot Pt3551, Mukim Belimbing, Daerah Jeli, 17600 Kelantan.	600
33	TNB POWER GENERATION SDN. BHD.	Lot 790, Lot 791, Pt29, Pt30 Seksyen 4 Bandar Jelutong Timor Laut 11700 Pulau Pinang	310
34	TNB POWER GENERATION SDN. BHD.	Stesen Janaelektrik Temenggor Di Sebahagian Lot PT 11, 12, 13, 14, 15, 16, 17, 18, 19, Mukim Temenggor, Daerah Hulu Perak, 33300 Perak, Stesen Janaelektrik Bersia Di Sebahagian Lot 13215, Mukim Bersia, Daerah Hulu Perak, 33300 Perak, Stesen Janaelektrik Kenering Di Sebahagian Lot PT 1143, 1144, 1145, Mukim Kenering, Daerah Hulu Perak, 33300 Perak, Stesen Janaelektrik Sungai Piah Upper Scheme Di Mukim Lenggong, Daerah Hulu Perak, 33300 Perak, Stesen Janaelektrik Sungai Piah Lower Scheme Di Mukim Lenggong, Daerah Hulu Perak, 33300 Perak, Stesen Janaelektrik Chenderoh Di Sebahagian Lot 2981, 2982, 3301, 3302, Mukim Chegar Galah, Daerah Kuala Kangsar, 33300 Perak.	649.1
35	TNB POWER GENERATION SDN. BHD.	Stesen Janaelektrik Berasaskan Gas Putrajaya Di Lot PT 4839, Mukim Dengkil, Daerah Sepang, 43650 Selangor	270
36	TNB POWER GENERATION SDN. BHD.	Stesen Janaelektrik Sultan Yusuff, Jor Di Sebahagian Lot 4321,4322, 4323, 4333, Mukim Tapah, Daerah Batang Padang, Perak Dan Stesen Janaelektrik Sultan Idris II, Who Di Sebahagian Lot 1511, Mukim Tapah, Daerah Batang Padang, 35009 Perak.	250
37	EDRA ENERGY SDN. BHD.	(1)Lot 20263, (2)Lot 9323, (3)Lot 7001, (4)Lot 14803, (5) Lot 4695, (6)Lot 14770, (7)Lot 4640, (8)Lot 4702, (9)Lot 4703, (10)Lot 4605, And (11)PT1638 (1 To 3)Mukim Sungei Baru Ilir, And (4 To 11)Mukim Kuala Sungei Baru Alor Gajah 78200 Melaka	2,296

Apendiks 14: Lesen Tenaga Boleh Diperbaharui (TBB) yang Dikeluarkan pada 2020
Appendix 14: Renewable Energy (RE) Licences Issued in 2020

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Sumber Tenaga Energy Source	Kapasiti Dilesen(MW) Licensed Capacity (MW)
1	KEMA DEVELOPMENT SDN. BHD	Pahang	Biogas	0.635
2	JANA LANDFILL SDN. BHD.	Selangor	Biogas	3.6
3	MAJUNAKA ECO ENERGY SDN. BHD.	Kedah	Biogas	9.95
4	GLT GLOBAL RESOURCES SDN BHD	Pahang	Biogas	1.131
5	ONE RIVER POWER SDN BHD	Sabah	Hidro mini Mini Hydro	13.5
6	SUNWAY PFM SDN. BHD.	Selangor	Solar	0.553
7	SUNWAY PFM SDN. BHD.	Selangor	Solar	0.449
8	METROSPHERE HYDRO TERSAT SDN BHD	Terengganu	Hidro mini Mini Hydro	4.25
9	BION SDN BHD	Perak	Biogas	1.275
10	BION SDN BHD	Perak	Biogas	2.38
11	CENERGI SRI GANDA SDN BHD	Perak	Biogas	2

Apendiks 15: Lesen Cogen Awam yang Dikeluarkan pada 2020
Appendix 15: Public Cogen Licences Issued in 2020

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Sumber Tenaga Energy Source	Kapasiti Dilesen(MW) Licensed Capacity (MW)
1	HENGYUAN REFINING COMPANY BERHAD	Negeri Sembilan	Gas asli Natural Gas	35
2	GAS MALAYSIA SYNERGY DRIVE SDN. BHD.	Selangor	Gas asli Natural Gas	2.89
3	GAS DISTRICT COOLING (KLIA)	Putrajaya	Gas asli Natural Gas	40

Apendiks 16: Lesen Cogen Persendirian yang Dikeluarkan pada 2020
Appendix 16: Private Cogen Licenses Issued in 2020

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Sumber Tenaga Energy Source	Kapasiti Dilesen(MW) Licensed Capacity (MW)
1	DYNAMIC PLANTATIONS BERHAD	Johor	Gas asli Natural Gas	6.2
2	MSM SUGAR REFINERY (JOHOR) SDN BHD	Johor	Gas asli Natural Gas	16
3	MALAY-SINO CHEMICAL INDUSTRIES SDN. BHD	Terengganu	Gas asli Natural Gas	10.4
4	KUALA LUMPUR KEPONG BERHAD, KILANG KELAPA SAWIT KEKAYAAN	Johor	Gas asli Natural Gas	5.56
5	BEST ETERNITY RECYCLE TECHNOLOGY SDN BHD	Selangor	Gas asli Natural Gas	90
6	BASF PETRONAS CHEMICALS SDN BHD	Pahang	Gas asli Natural Gas	45.07
7	CCM CHEMICALS SDN BHD	Johor	Gas asli Natural Gas	7.8
8	GS PAPERBOARD & PACKAGING SDN BHD	Selangor	Gas asli Natural Gas	33.4

Apendiks 17: Lesen Solar Berskala Besar (LSS) yang Dikeluarkan pada 2020
Appendix 17: Large-Scale Solar (LSS) Licenses Issued in 2020

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti Dilesen(MW) Licensed Capacity (MW)
1	SOLUTION SOLAR 1 SDN. BHD.	Selangor	5.054
2	SOLUTION SOLAR 2 SDN. BHD.	Selangor	3.574
3	UITM SOLAR POWER DUA SDN BHD	Johor	31.57
4	SCOPE MARINE SDN BHD	Terengganu	5.914
5	I2 SOLARPARK ONE SDN. BHD.	Melaka	8.554
6	TNB BUKIT SELAMBAU SOLAR SDN. BHD.	Kedah	45.8
7	KBJ HECMY SDN BHD	Perlis	48
8	HALPRO ENGINEERING SDN BHD	Pahang	44
9	REDSOL SDN BHD	Perak	47.3
10	HONG SENG ASSEMBLY SDN. BHD.	Pulau Pinang	1.251

Apendiks 18: Lesen Net Energy Metering (NEM) yang Dikeluarkan pada 2020
Appendix 18: Net Energy Metering (NEM) Licences Issued in 2020

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti MW) Capacity (MW)
1	CLEANTECH SOLAR (MALAYSIA) SDN BHD	5827, Mukim Setul, Daerah Seremban, 71800, Negeri Sembilan	0.531
2	XINYI ENERGY SMART (MALAYSIA) SDN. BHD	No Lot 6625, Mukim Jasin, 77000 Daerah Jasin, Melaka	29.667
3	SYARIKAT KILANG BERAS CEGAR JAYA SDN. BHD.	No. Lot Pt 1222, Tempat Kuala Mawa, Mukim Padang Pusing, Daerah Pendang, Negeri Kedah	0.559
4	BOILERMECH SDN BHD	Pno. Pt 559, Pekan Subang Jaya, Mukim Damansara, Daerah Petaling, Negeri Selangor	0.461
5	KILANG BERAS MEGAT DEWA SDN BHD	Sebahagian Lot 1450, Mukim Gelung, Daerah Kubang Pasu, 06000 Negeri Kedah.	0.425
6	MENARA WIRA PROPERTY SDN BHD	Sebahagian No Lot 7159, Batu 8, Sijangkang, Mukim Teluk Panglima Garang, Daerah Kuala Langat, 42500 Selangor.	0.08
7	ROSEN INSPECTION ASIA PACIFIC SDN BHD	Sebahagian No. Lot 61749, Bandar Glenmarie, Daerah Petaling, 40150 Selangor Darul Ehsan	0.172
8	CHUN HOE TRADING SDN BHD	Sebahagian Ptd 47276, Mukim Simpang Kanan, Daerah Batu Pahat, 83300 Johor	0.292
9	DIALOG FABRICATORS SDN BHD	Lot 751, Mukim Pekan Nilai, Daerah Seremban, 71800 Negeri Sembilan	0.1
10	LIAN TECK SENG PROPERTIES SDN BHD	Sebahagian Lot Pt 1717, Selat Klang Utara, Mukim Kapar, Daerah Klang, Negeri Selangor.	0.104
11	M & S FOOD INDUSTRIES SDN BHD	Sebahagian No. Lot 128165, Mukim Hulu Kinta, Daerah Kinta, 30100 Perak Darul Ridzuan	0.143
12	PERINDUSTRIAN SHUNHON SDN BHD	No. Ptd 47269, Mukim Simpang Kanan, Daerah Batu Pahat, Negeri Johor	0.23
13	QL ENDAU MARINE PRODUCTS SDN BHD	Sebahagian No. Ptd 4967, Mukim Padang Endau, Daerah Mersing, 86900 Johor Darul Takzim	0.918
14	QL FOODS SDN BHD	Lot 9121, Mukim Hutan Melintang, 36400 Hilir Perak, Perak	0.804
15	QL FOODS SDN BHD	Sebahagian No. Lot Pt 7419, Mukim Hutan Melintang, Daerah Bagan Datuk, 36400 Negeri Perak.	1.588
16	TAIPANCO SDN BHD	Sebahagian No. Lot Pt 536, Mukim Bandar Sultan Sulaiman, Daerah Klang, 42000 Negeri Selangor.	0.234
17	BE PACKAGING & LOGISTIC SDN BHD	No. Lot 1352, Tempat Kluang, Mukim Kluang, Daerah Kluang, Negeri Johor	0.451
18	BE WOOD CRAFT SDN BHD	Sebahagian No. Lot 1350, Kluang, Mukim Kluang, Daerah Kluang, 86000 Johor Darul Takzim	0.49
19	BUKIT RAYA SDN BHD	Lot 2479, 2480 & 2481, Mukim Pekan Tokai, Daerah Pendang, 06550 Kedah	0.4
20	BUKIT RAYA SDN BHD	Sebahagian Lot 2479, 2480, Dan 2481, Perom, Pekan Tokai, Daerah Pendang, Negeri Kedah.	0.672
21	CHUAN HUAT BEE KAH SDN. BHD.	Sebahagian No. Lot 2216, Alur Kubang Siam, Mukim Sanglang, Daerah Kubang Pasu, 06100 Kedah Darul Aman	0.296
22	IOI CITY MALL SDN BHD	Sebahagian Lot Pt 83, Mukim Pekan Bukit Bisa, Daerah Sepang, 62502 Negeri Selangor.	3.564
23	KILANG BERAS KUALA MUDA SDN BHD	Sebahagian No Lot 1257, 1258 & 1259 Permatang Tengah, Mukim Bukit Meriam, Daerah Kuala Muda, 08500 Kedah	0.574
24	MAKNUZUL LITAMUIN SDN BHD	Lot 1585, Mukim Palekbang, Jajahan Tumpat, 16040 Kelantan	0.672
25	MAKNUZUL LITAMUIN SDN BHD	Sebahagian No. Lot 1585, Kg. Palekbang, Mukim Palekbang, Daerah Jajahan Tumpat, 16040 Kelantan Darul Naim	0.672

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
26	NASTAH INDUSTRIES SDN BHD	Sebahagian No Pt 2868 & 3198, Mukim 1, Daerah Seberang Perai Tengah, 13600 Pulau Pinang	0.469
27	NG CHONG PUAN FURNITURE SDN BHD	No. Lot 11023 Dan Pt 10619, Mukim Port Dickson, Daerah Port Dickson, Negeri Sembilan	0.131
28	SWAN MALAYSIA SENDIRIAN BERHAD	Sebahagian No. Ptd 87657, Mukim Senai-Kulai, Daerah Johor Bahru, 81400 Johor Darul Takzim	0.561
29	POLY-MAX SDN. BHD.	No. Lot 771, Seksyen 2, Tempat Olak Lempit, Pekan Bukit Changgang, Daerah Kuala Langat, Negeri Selangor	0.32
30	NIRO CERAMIC (M) SDN BHD	Sebahagian No. Hsd 167412, Mukim Damansara, Daerah Petaling, 40200 Selangor Darul Ehsan	0.415
31	KILANG BERAS BAN SENG SDN. BHD.	Sebahagian Lot 958, Tepi Laut, Mukim Sala Kechik, Daerah Kota Setar, Negeri Kedah.	0.35
32	KILANG BERAS KUALA MUDA SDN. BHD.	Sebahagian No Lot 1257, 1258 & 1259 Permatang Tengah, Mukim Bukit Meriam, Daerah Kuala Muda, 08500 Kedah	0.574
33	XIAN LENG TRADING SDN. BHD.	Sebahagian Lot 7895, Tempat Parit Sabak, Mukim Sri Medan, Daerah Batu Pahat, Negeri Johor.	0.152
34	KILANG BERAS MEGAT DEWA SDN BHD	Sebahagian No Pt 1303, Padang Lorak, Mukim Gelong, Daerah Kubang Pasu, 06000 Kedah	0.208
35	SUNWAY VCP SDN BHD	Sebahagian Lot 6489 & 6490, Mukim Kapar, Daerah Klang, Negeri Selangor.	1
36	VOLCANO NAMEPLATE SDN BHD	No Lot Pt2, Mukim 01, Seberang Perai Tengah, 13600 Pulau Pinang	0.185
37	ARMADA SLIPWAY SDN BHD	Sebahagian Lot Pt 25632, Mukim Kuala Kuantan, Daerah Kuantan, Negeri Pahang.	0.236
38	JOREX SDN BHD	Sebahagian No Lot Pt 1370, Mukim Ulu Yam, Daerah Hulu Selangor, 44300 Negeri Selangor.	0.337
39	MAH SING PLASTICS INDUSTRIES SDN. BHD.	Sebahagian No. Lot 33996, Bandar Sultan Sulaiman, Daerah Klang, 42000 Selangor Darul Ehsan	0.57
40	MAH SING PLASTICS INDUSTRIES SDN. BHD.	Sebahagian No. Ptd 4967, Mukim Padang Endau, Daerah Mersing, 86900 Johor Darul Takzim	0.673
41	UWC HOLDINGS SDN. BHD.	Lot 9121, Mukim Hutan Melintang, 36400 Hilir Perak, Perak	0.96
42	JOHANN FREIGHT SDN. BHD.	Sebahagian No. Lot Pt 7419, Mukim Hutan Melintang, Daerah Bagan Datuk, 36400 Negeri Perak.	0.11
43	MATOMEK PRECISION DIE SDN.BHD.	Sebahagian No. Lot Pt 536, Mukim Bandar Sultan Sulaiman, Daerah Klang, 42000 Negeri Selangor.	0.685
44	DORMA HUEPPE ASIA SDN.BHD.	Sebahagian No Lot Pt 192, Mukim Telaga Mas, Daerah Kota Setar, 06200 Negeri Kedah.	0.089
45	CB INTERNATIONAL ENGINEERING SDN.BHD.	Sebahagian Lot 69222, Mukim Kapar, Daerah Klang, Negeri Selangor.	0.313
46	SINWENG WEEI FURNITURE SDN BHD	Sebahagian No Lot Pt 192, Mukim Telaga Mas, Daerah Kota Setar, 06200 Negeri Kedah.	0.162
47	GSPARX SDN. BHD	Sebahagian Lot Pt 59299, Mukim Dengkil, Daerah Sepang, 43000 Selangor	0.145
48	TEH AH YAU RUBBER FACTORY SDN. BERHAD	No. Lot 1135, 1136 Dan 1137, Tempat Tupa Baru, Mukim Bujang, Daerah Kuala Muda, Negeri Kedah	0.57
49	TEH AH YAU RUBBER FACTORY SDN. BERHAD	No. Lot 1135, 1136 Dan 1137, Tempat Tupa Baru, Mukim Bujang, Daerah Kuala Muda, Negeri Kedah	0.188
50	TEH AH YAU RUBBER FACTORY SDN. BERHAD	No. Lot 1135, 1136 Dan 1137, Tempat Tupa Baru, Mukim Bujang, Daerah Kuala Muda, Negeri Kedah	0.243

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
51	PS POLY PACK SDN. BHD.	Sebahagian No Lot 2208, Bt 6 Jalan Sg Binjai, Mukim Kapar, 42200 Daerah Klang, Selangor	0.503
52	CYBERVIEW SDN BHD	Sebahagian No. Pt 59299, Mukim Dengkil, Daerah Sepang, 63000 Selangor Darul Ehsan	0.52
53	GSPARX SDN BHD	Sebahagian Pt 17653 (Plot 6492), Ladang PKNK, Bandar Sungai Petani, 08000 Daerah Kuala Muda, Kedah.	0.101
54	GSPARX SDN BHD	Part Of No Lot Pt 17654 Mukim Sungai Petani Daerah Kuala Muda 08000 Negeri Kedah	0.101
55	GSPARX SDN BHD	Sebahagian No Lot P.t. 36795, Mukim Klang, Daerah Klang, 41200 Negeri Selangor.	0.21
56	GSPARX SDN BHD	Sebahagian Pt 17653(Plot 6490), Ladang PKNK, Bandar Sungai Petani, 08000 Daerah Kuala Muda, Kedah.	0.101
57	PUSAT BORONG MATAHARI (SHAH ALAM) SDN. BHD.	H.S.(D) 63598 Mukim Damansara Petaling 40000 Selangor	0.103
58	DITROLIC ENERGY SOLUTION SDN. BHD.	Pt5697, Mukim Setapak, Kuala Lumpur, 53300, Wilayah Persekutuan Kuala Lumpur.	1.134
59	GSPARX SDN BHD	Sebahagian Lot Ptd 166506, Mukim Plentong, Daerah Pasir Gudang, 81700 Johor.	1
60	GUPPY PLASTIC INDUSTRIES SDN BHD	17 Cheras Hulu Langat 43200 Selangor	0.568
61	LEONG BEE & SOO BEE SND BHD	Sebahagian Lot 5300, Mukim 01, Daerah Seberang Perai Tengah, 13600 Negeri Pulau Pinang.	0.55
62	PETRONAS CARIGALI SDN BHD	Sebahagian No Lot 2334, Mukim Kertih, Daerah Kemaman, 24300	0.148
63	GSPARX SDN. BHD.	Sebahagian Lot Pt 2149, Mukim Dengkil, Daerah Sepang, 43000 Selangor.	0.176
64	KELANG BERAS SIN TONG SENG SENDIRIAN BERHAD	Sebahagian Lot 806, 1405, Dan 2064, Mukim Tunjang, Daerah Kubang Pasu, Negeri Kedah.	1.347
65	KILANG BERAS HAJI SENAWI SDN. BHD.	Sebahagian No. Lot 920, Simpang Empat Kuar, Mukim Padang Lalang, Daerah Kota Setar, 06250 Kedah Darul Aman.	0.516
66	KILANG BERAS HAJI SENAWI SDN. BHD.	Sebahagian No. Lot 920, Simpang Empat Kuar, Mukim Padang Lalang, Daerah Kota Setar, 06250 Kedah Darul Aman	0.201
67	SERBA WANGI (PG) SDN BHD	Sebahagian No. Ptd 4967, Mukim Padang Endau, Daerah Mersing, 86900 Johor Darul Takzim	0.574
68	SUNWAY PFM SDN. BHD.	Lot 9121, Mukim Hutan Melintang, 36400 Hilir Perak, Perak	1.415
69	SUNWAY PFM SDN. BHD.	Sebahagian No. Lot Pt 7419, Mukim Hutan Melintang, Daerah Bagan Datuk, 36400 Negeri Perak.	1.587
70	SYARIKAT KILANG PADI MAJU SDN. BHD.	Sebahagian No. Lot Pt 536, Mukim Bandar Sultan Sulaiman, Daerah Klang, 42000 Negeri Selangor.	0.444
71	SYARIKAT KILANG PADI MAJU SDN. BHD.	Sebahagian No Lot Pt 192, Mukim Telaga Mas, Daerah Kota Setar, 06200 Negeri Kedah.	0.556
72	TWENTY-TWENTY FOOD INDUSTRY SDN. BHD.	Sebahagian Lot 69222, Mukim Kapar, Daerah Klang, Negeri Selangor.	0.636
73	TWENTY-TWENTY FOOD INDUSTRY SDN. BHD.	Sebahagian No Lot Pt 192, Mukim Telaga Mas, Daerah Kota Setar, 06200 Negeri Kedah.	0.63
74	CHOO BEE METAL INDUSTRIES BERHAD	Sebahagian Lot Pt 59299, Mukim Dengkil, Daerah Sepang, 43000 Selangor	1.896
75	TEO SENG FARMING SDN BHD	No. Lot 1135, 1136 Dan 1137, Tempat Tupa Baru, Mukim Bujang, Daerah Kuala Muda, Negeri Kedah	0.182

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
76	VIT MAKANAN (KUALA LUMPUR) SDN BHD	Sebahagian No Pt 24234, Mukim Rawang, 48000 Daerah Gombak, Selangor	0.33
77	FULIAN (M) SDN BHD	Sebahagian Lot Pt 474, Mukim 13, Daerah Seberang Perai Tengah, Negeri Pulau Pinang	0.137
78	HAYATMAJU SDN BHD	No. Lot 209, Tempat Kampong Kalipah, Mukim Sungai Panjang, Daerah Sabak Bernam, Negeri Selangor	0.533
79	SIN GUAN HUP OIL & RICE MILL SDN. BHD.	Sebahagian Lot 5036, Kg. Kuyong, Mukim 09, Daerah Seberang Perai Selatan, Negeri Pulau Pinang.	0.4
80	TIONG HUAT RUBBER FACTORY SDN BHD	Sebahagian Lot 3652 Dan Sebahagian Lot 3653, Mukim Sungai Petani, Daerah Kuala Muda, 08000 Kedah	2.133
81	TIONG HUAT RUBBER FACTORY SDN BHD	Sebahagian Lot 3313, Sebahagian Lot 3315, Sebahagian Lot 3651 Dan Sebahagian Lot 3652 Mukim Sungai Petani, Daerah Kuala Muda, 08000 Kedah	2.56
82	TIONG HUAT RUBBER FACTORY SDN BHD	Sebahagian Lot 3651, Lot 3652 Dan Lot 3653, Mukim Sungai Petani, Daerah Kuala Muda, 08000 Kedah	1.722
83	BLE MALAYSIA 101 SDN. BHD.	Sebahagian Lot 14650, Sebahagian Lot 14657, Sebahagian Lot 8139, Sebahagian Lot 1802, Sebahagian Lot 1998, Mukim 12, Daerah Barat Daya, 11900, Pulau Pinang	3.023
84	CENTRAL LABEL (JOHOR) SDN BHD	No. Ptd 111386, Mukim Plentong, Daerah Johor Bahru, Negeri Johor Darul Takzim	0.102
85	KILANG BERAS BAN SENG SDN. BHD.	Sebahagian No Lot 706 & 2546, Mukim 05, Daerah Seberang Perai Selatan, 14200 Negeri Pulau Pinang.	0.216
86	KILANG BERAS RAKYAT SEKINCHAN	Sebahagian No Lot 9990, Mukim Pasir Panjang, Daerah Sabak Bernam, 45400 Negeri Selangor.	0.562
87	TEO SENG FARMING SDN BHD	Sebahagian No Lot 1356 & 1357, Mukim Caah Bahru, Daerah Batu Pahat, 83700 Negeri Johor.	0.224
88	GSPARX SDN BHD	Sebahagian Lot Pt 145341, Mukim Hulu Kinta, Daerah Chemor, 31200 Perak.	0.132
89	GSPARX SDN BHD	Sebahagian Lot Ptd 153794, Mukim Plentong, Daerah Johor Bahru, 81800 Johor	0.104
90	GSPARX SDN BHD	Sebahagian Lot Pt 11472, Mukim Kajang, Daerah Ulu Langat, 43650 Bangi, Selangor	0.09
91	GSPARX SDN BHD	Sebahagian No P.t. 11474 (No 6, Jalan P/8, Kawasan Miel), Mukim Kajang, Daerah Bandar Baru Bangi, 43650 Negeri Selangor.	0.09
92	GSPARX SDN BHD	Sebahagian Lot Pt 12653, Mukim Bandar Sri Sendayan, Daerah Seremban, 71950 Negeri Sembilan	0.466
93	GSPARX SDN BHD.	Sebahagian No Lot Pt 240778, Mukim Hulu Kinta, Daerah Kinta, 30020 Negeri Perak.	0.34
94	GSPARX SDN BHD	Sebahagian Lot 1040, Mukim Sedenak, Daerah Kulaijaya, 81850 Johor	0.41
95	KHAI SENG PACKAGING INDUSTRIES SDN BHD	No. Lot Pt 138862, Mukim Hulu Kinta, Daerah Kinta, Negeri Perak	0.601
96	CENTURY CHEMICAL WORKS SENDIRIAN BERHAD	Sebahagian No. Lot Plot 102 & Pt 3203, Mukim 01, Daerah Seberang Perai Tengah, Negeri Pulau Pinang	0.572
97	EVERSAFE RUBBER WORKS SDN BHD	Sebahagian No Pt 17828, Lot 70070, Lot 70074 & Lot 69531, Mukim Ulu Kinta, Daerah Ulu Kinta, 31400 Perak	0.444
98	EVERSAFE RUBBER WORKS SDN BHD	Sebahagian No Pt 17828, Lot 70070, Lot 70074 & Lot 69531, Mukim Ulu Kinta, Daerah Ulu Kinta, 31400	0.458
99	PERMATA MAKMUR INDUSTRIES SDN BHD	Plot 53 Bandar Sungai Petani Kuala Muda 08000 Kedah	0.3
100	PERMATA MAKMUR SDN BHD	Sebahagian No Lot 1451, Mukim Padang Meha, Daerah Kulim, 09400 Kedah	0.3

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
101	MI VENTURES SDN BHD	Sebahagian Lot 1669, Mukim Juasseh, Daerah Kuala Pilah, 72000 Negeri Sembilan Darul Khusus.	0.135
102	AFP COMPOSITE SDN BHD	Sebahagian No. Lot 30227, Mukim 14, Daerah Seberang Perai Tengah, Negeri Pulau Pinang	0.959
103	KILANG BERAS KEDAH GHEE SENG (1981) SDN. BHD.	Sebahagian No Lot 3605, Mukim Sala Besar, Daerah Yan, 06800 Negeri Kedah.	0.537
104	SEONG HENNG ENGINEERING WORKS (M) SDN BHD	Sebahagian No. Lot 19009, Seksyen 20, Bandar Rawang, Daerah Gombak, 48000 Selangor Darul Ehsan	0.449
105	GSPARX SDN. BHD.	Sebahagian Lot 14753, Mukim 13, Daerah Seberang Perai Tengah, 14000 Pulau Pinang	0.171
106	LY FURNITURE SDN BHD	Sebahagian No. Ptd 35116, Mukim Simpang Kanan, Daerah Batu Pahat, 83300 Johor Darul Takzim	0.095
107	GSPARX SDN. BHD.	Sebahagian No Lot Pt 2149, Asrama Melor Ilsas, Jalan Ikram Uniten, Mukim Dengkil, Daerah Sepang, 43000 Kajang Negeri Selangor.	0.125
108	GSPARX SDN. BHD.	Sebahagian No Lot Pt 2149, 3, Pencawang Ilsas, Jalan Ikram-Uniten, Mukim Dengkil, Daerah Sepang, 43000 Kajang Negeri Selangor.	0.318
109	P & P TEXTILES SDN. BHD.	Sebahagian Lot Pt 65659, Mukim Kapar, Daerah Klang, Negeri Selangor.	0.1
110	BENITHEM SDN. BHD.	Sebahagian Lot 15345, Batu 27, Mukim Jeram Batu, Daerah Pontian, Negeri Johor.	0.286
111	JERTEH TIMBER ENTERPRISE SDN BHD	No. Lot 52502, Mukim Bukit Payung, Daerah Marang, 21040 Terengganu	0.449
112	JERTEH TIMBER ENTERPRISE SDN BHD	Sebahagian No. Lot 3628, Mukim Tembila, Daerah Besut, 22200 Terengganu Darul Iman	0.3
113	GUAN CHONG COCOA MANUFACTURER SDN BHD	Sebahagian No. Lot Ptd 196240, Mukim Plentong, Daerah Johor Bahru, Negeri Johor.	0.913
114	PREMIER TECH PRECISION SDN BHD	Sebahagian Lot 4682, Mukim Bukit Rambai, Daerah Melaka Tengah, Negeri Melaka.	0.104
115	TEO SENG FARMING SDN BHD	Sebahagian Lot Mlo 9351, Mlo 9352 & Mlo 9354, Batu 62 Jalan Ayer Hitam, Mukim Tanjong Sembrong, Daerah Batu Pahat, Negeri Johor	0.167
116	TEO SENG FARMING SDN BHD	Sebahagian Lot 10911, Batu 3 Jalan Ayer Hitam-Yong Peng, Mukim Tanjong Sembrong, Daerah Batu Pahat, 86100 Negeri Johor Darul Takzim.	0.167
117	TEO SENG FARMING SDN BHD	No. Lot 4221, Tempat Batu 4, Jalan Labis, Mukim Chaah Bahru, Daerah Batu Pahat, Negeri Johor	0.26
118	ASIA ROOFING INDUSTRIES SDN BHD	Di Lot 139279, Mukim Klang, 40460 Selangor	0.181
119	TH ASSEMBLIES OF GOD OF MALAYSIA	Sebahagian No Pt 9485, Mukim Damansara, 47500 Daerah Petaling, Selangor	0.859
120	M SMELT (C) SDN BHD	Sebahagian Lot Pt 64536, 87704 & 87705, Mukim Klang, Daerah Klang, Negeri Selangor.	0.265
121	TDK ELECTRONICS (MALAYSIA) SDN. BHD,	Lot Ptd 76057, Mukim Tebrau, Daerah Johor Bahru, 81100 Johor	0.512
122	DENSO (MALAYSIA) SDN. BHD.	Di Sebahagian No Pt 11431, Mukim Kajang, Daerah Ulu Langat, 43650 Selangor	1
123	AHIMSA VEGE HEALTH FOOD INDUSTRIES SDN BHD	Sebahagian No. Lot 11291, Mukim Beranang, Daerah Ulu Langat, 43700 Selangor Darul Ehsan	0.291
124	DARCO WATER SYSTEMS SDN. BHD.	Sdi Sebahagian No Lot 10645, Mukim Setul, Daerah Seremban 71800, Negeri Sembilan	0.15

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
125	JAYA NETS SDN BHD	Di Lot 720, Mukim Kapar, Daerah Klang, 41400 Selangor	0.445
126	JIN LEE (OIL MILLS) SDN. BHD	Sebahagian No. Ptd 17795, Mukim Plentong, Daerah Johor Bahru, 81700 Johor Darul Takzim	0.805
127	RENOSUN SDN.BHD.	Di Sebahagian Lot Pt 536, Bandar Alor Setar, Daerah Kota Setar, Negeri Kedah	0.17
128	OCEANCASH NONWOVEN SDN BHD	Di Sebahagian No Pt 41067, Bandar Baru Bangi, Daerah Ulu Langat, 43650 Selangor	0.924
129	LINTEC INDUSTRIES (MALAYSIA) SDN. BHD.	Di Sebahagian No. Pt 403, Mukim 13, Daerah Seberang Perai Tengah, Negeri Pulau Pinang	0.46
130	TATAWA INDUSTRIES (M) SDN BHD	Di Lot Ptd 1503, Mukim Sungai Terap, Daerah Muar, 84300 Johor.	0.255
131	PESTECH SDN. BHD.	Sebahagian Lot 69874, Mukim Sungai Buloh, Daerah Petaling, Negeri Selangor.	0.114
132	MUDA PAPER MILLS SDN BHD	Sebahagian No Lot 123, 153, 162, 163, 164, 165 Dan 166, Jalan Tasek, Mukim 02, Daerah Seberang Perai Selatan 14120, Pulau Pinang	13.5
133	NEFIN ENERGY (MALAYSIA) SDN. BHD.	Di Sebahagian No Lot 63479, Mukim Batu, Daerah Kuala Lumpur, 52000	0.254
134	SPRING FRESH MANUFACTURING SDN. BHD.	Sebahagian Lot 919, Sungei Tenang, Mukim Batang Kali, Daerah Hulu Selangor, Negeri Selangor	0.424
135	MUNCHY FOOD INDUSTRIES SDN BHD	No. Lot 9364, Mukim Sri Medan, Daerah Batu Pahat, 83500 Negeri Johor	1.739
136	CLEANTECH SOLAR (MALAYSIA) SDN. BHD.	Ptd2423 & Ptd2426 Mukim Tanjung Kupang Johor Bahru 81560 Johor	3.534
137	CAHAYA SERIJAYA SDN BHD	Sebahagian Lot Pt 50874, Mukim Dengkil, Daerah Sepang, Negeri Selangor	0.478
138	CAHAYA SERIJAYA SDN BHD	Sebahagian Lot Pt 50874, Mukim Dengkil, Daerah Sepang, Negeri Selangor	0.479
139	NE SURIA SATU SDN. BHD.	Lot 312623 Mukim Kampar Kinta 31900 Perak	0.574
140	NE SURIA SATU SDN. BHD.	Pt 80259 Mukim Petaling Petaling 47120 Selangor	0.54
141	NE SURIA SATU SDN. BHD.	Lot 368 Seksyen 55 Bandar Sungai Petani Kuala Muda 08000 Kedah	0.574
142	NE SURIA SATU SDN. BHD.	Pt 80259 Mukim Petaling Petaling 47120 Selangor	0.132
143	NE SURIA SATU SDN. BHD.	Pt 940 Bandar Alor Setar Kota Setar 06250 Kedah	1.046
144	NE SURIA SATU SDN. BHD.	Pt 79 Pekan Seremban Jaya Seremban 70450 Negeri Sembilan	0.574
145	NE SURIA SATU SDN. BHD.	Lot 521656 Mukim Hulu Kinta Kinta 31400 Perak	0.574
146	NE SURIA SATU SDN. BHD.	Lot 30190 Mukim 14 Seberang Perai Tengah 14000 Pulau Pinang	0.83
147	NE SURIA SATU SDN. BHD.	Pt 749 Bandar Kulim Kulim 09000 Kedah	0.574
148	NE SURIA SATU SDN. BHD.	Lot 2890 Bandar Prai Seberang Perai Tengah 13700 Pulau Pinang	0.574
149	NE SURIA SATU SDN. BHD.	Lot 83595 Pekan Pandamaran Klang 41200 Selangor	1.198
150	NE SURIA SATU SDN. BHD.	Pt 2364 Bandar Alor Setar Kota Setar 05400 Kedah	0.386
151	NE SURIA SATU SDN. BHD.	Pt 1068 Bandar Jitra Kubang Pasu 06000 Kedah	0.44
152	ZHULIAN INDUSTRIES SDN. BHD.	No. Lot 12367, Mukim 12, Daerah Barat Daya, Negeri Pulau Pinang	0.251
153	UNITED PLANTATIONS BERHAD	Lot 13474, Mukim Hutan Melintang, Daerah Hilir Perak, Negeri Perak	0.177

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
154	GIESECKE & DEVRIENT MALAYSIA SDN BHD	Pt30, Mukim Pekan Country Height, Daerah Petaling, 40150 Selangor.	1.7
155	HAYATMAJU SDN BHD	Lot 209, Mukim Sungai Panjang, Daerah Sabak Bernam, 45300 Selangor.	0.552
156	MEWAH DAIRIES SDN BHD	Sebahagian No. Pt 142183, Mukim Klang, Daerah Klang, Negeri Selangor	0.573
157	EPE SWITCHGEAR (M) SDN BHD	Sebahagian No. Lot 8252, Mukim Setul, Daerah Seremban, Negeri Sembilan	0.5
158	SHIMADZU MANUFACTURING ASIA SDN.BHD.	Sebahagian No Pt 12685, Pt 12686 Dan Pt13130, Bandar Sri Sendayan, 71900 Daerah Seremban, Negeri Sembilan	0.252
159	SYNTURN (M) SDN BHD	Sebahagian No. Lot 111755, Mukim Plentong, Daerah Johor Bahru, Negeri Johor Darul Takzim	0.572
160	SMC COMPOSITE SDN. BHD	No. Lot 10110, Mukim Bentong, Daerah Bentong, Negeri Pahang	0.281
161	JEBSEN & JESSEN PACKAGING SDN BHD	Lot 8249, Mukim Setul, Daerah Seremban, 71800 Negeri Sembilan.	0.562
162	GSPARX SDN. BHD.	Sebahagian No. Lot 6144, No. Pt 7217 Dan No. Lot 3384, Mukim Teluk Kalung, Daerah Kemaman, 24000 Negeri Terengganu	0.899
163	HENGWOOD INDUSTRIES SDN BHD	Sebahagian No 11341, Mukim Ijok, 42300 Daerah Kuala Selangor	0.098
164	HENGWOOD INDUSTRIES SDN BHD	Sebahagian No 11341, Mukim Ijok, 42300 Daerah Kuala Selangor	0.135
165	QL ENDAU FISHMEAL SDN BHD	Sebahagian No. Lot 4202, Mukim Padang Endau, Daerah Mersing, Negeri Johor Darul Takzim	0.454
166	HAYATMAJU SDN BHD	Sebahagian No. Lot 208, Kampong Khalipah, Mukim Sungai Panjang, Daerah Sabak Bernam, 45300 Selangor Darul Ehsan	0.56
167	SAKSAMA OTOMOBIL SDN BHD	Sebahagian No Lot 115165, Mukim Tebrau, 81200 Daerah Johor Bahru	0.156
168	SYNTURN (M) SDN BHD	Sebahagian No Lot 111756, Mukim Plentong, 80400 Daerah Johor Bahru, Johor	0.336
169	AMALGAMATED METAL CORPORATION (M) SDN BHD	Pt 7494 Sungai Karang Kuantan 26080 Pahang	0.143
170	REAL POINT SDN BHD	Sebahagian No. Pt 1224, Bandar Nilai Utama, Daerah Seremban, Negeri Sembilan	0.201
171	ADVANCECON SOLAR SDN BHD	Sebahagian No Lot Pt 1370, Mukim Ulu Yam, Daerah Hulu Selangor, 44300 Negeri Selangor.	0.373
172	ADVANCECON SOLAR SDN BHD	Sebahagian No Pt 164 (Plot 59), Kawasan Perusahaan Senawang, Mukim Ampangan, 70450 Daerah Seremban, Negeri Sembilan	0.229
173	AJIYA SAFETY GLASS SDN BHD	Sebahagian Blok D, No. Ptd 10397, Mukim Buloh Kasap, Daerah Segamat, Negeri Johor Darul Takzim	0.574
174	AJIYA SAFETY GLASS SDN BHD	Sebahagian Blok A & B, No. Ptd 10397, Mukim Buloh Kasap, Daerah Segamat, Negeri Johor Darul Takzim	0.574
175	QL POULTRY FARM SDN BHD	Kasap, Daerah Segamat, Negeri Johor Darul Takzim	0.561
176	KILANG PAPAN SIM LEAN HUAT SDN. BHD.	Sebahagian No Pt 7193, Mukim Mentakab, 28400 Daerah Temerloh, Pahang	0.153
177	PERBADANAN PENGURUSAN TAMAN HARBOUR TRADE CENTRE	Sebahagian No. Lot 313, Bandar Georgetown, Daerah Timor Laut, Negeri Pulau Pinang	0.115

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
178	PERNIAGAAN TAN & TAN (TEMERLOH) SDN. BHD.	Lot 6567, Mukim Mentakab, Daerah Temerloh, Negeri Pahang.	0.104
179	ETHEOS IMPRINT TECHNOLOGY SDN BHD	Sebahagian No. Lot 2970, Mukim 16, Daerah Seberang Perai Utara, 13800 Pulau Pinang	0.29
180	HPMT INDUSTRIES SDN BHD	Sebahagian No. Lot 75150, Mukim Klang, Daerah Klang, Negeri Selangor	0.995
181	POWER METAL TECHNOLOGIES (M) SDN. BHD.	Lot 37830, Mukim Klang, Daerah Klang, 40460 Selangor.	0.288
182	QL ENDAU DEEP SEA FISHING SDN BHD	Sebahagian No. Lot 275, Tempat Endau, Mukim Padang Endau, Daerah Mersing, Negeri Johor Darul Takzim	0.424
183	CLEANTECH SOLAR (MALAYSIA) SDN. BHD.	Pt 20104 Seksyen 33 Mukim Kajang Hulu Langat 43650 Selangor	1.3
184	FONTERRA BRANDS (M) SDN BHD	Sebahagian Lot 38552, Pekan Country Heights, 40000 Daerah Petaling, Selangor	0.559
185	GSPARX SDN. BHD.	Sebahagian Lot Pt 50, Mukim Bandar Kulim, Daerah Kulim, 09000 Kedah	0.599
186	KULAI FARM SDN BHD	Sebahagian No Lot 11775, Mukim Senai, Daerah Kulaijaya, 81000 Negeri Johor	0.1
187	SIRAGA IEM SDN BHD	Sebahagian No. Lot 7040, Mukim Tebrau, Daerah Johor Bahru, 81300 Johor	0.274
188	KAMI FARMING SDN BHD	Sebahagian No. Pt 973, Mukim 13, Daerah Seberang Perai Tengah, Negeri Pulau Pinang	0.951
189	PWF FEEDS SDN BHD	Pt 67, Mukim 13, Daerah Seberang Perai Tengah, 14100 Pualu Pinang	0.637
190	ZUELLIG PHARMA SDN BHD	Sebahagian No. Lot 78706, Mukim Damansara, Daerah Petaling, Negeri Selangor	1.114
191	KILANG BERAS KEDAH GHEE SENG (1981) SDN. BHD.	Sebahagian Lot 3605, Mukim Sala Besar, Daerah Yan, Negeri Kedah	0.505
192	KILANG BERAS KEDAH GHEE SENG (1981) SDN. BHD.	Sebahagian Lot 3605, Mukim Sala Besar, Daerah Yan, Negeri Kedah.	0.673
193	SERBA WANGI (KL) SDN BHD	Sebahagian No Pt 24228, Mukim Rawang, 48000 Daerah Gombak, Selangor	0.573
194	RUBBER LEISURE PRODUCTS SDN BHD	Sebahagian No. Lot 5977 (Lot Lama Pt 2148) Dan No. Lot 5978 (Lot Lama Pt 2149), Mukim Serkam, Daerah Jasin, 77300 Negeri Melaka	0.63
195	TANAH SUTERA DEVELOPMENT SDN BHD	Sebahagian No. Lot 114247, Mukim Pulai, Daerah Johor Bahru, 81200 Negeri Johor	2.43
196	PANASONIC MANUFACTURING MALAYSIA BERHAD	Pt 72 Seksyen 23, Bandar Shah Alam, 40200 Daerah Petaling, Selangor	1.583
197	A&O FOOD INDUSTRIES (M) SDN BHD	Sebahagian No. Lot 72513, Mukim Plentong, Daerah Johor Bahru, 81750 Johor	0.419
198	ALLIANCE CONTRACT MANUFACTURING SDN BHD	Sebahagian No. Lot Pt 2815, Mukim 01, Daerah Seberang Perai Tengah, 13700 Negeri Pulau Pinang	0.922
199	CE TECHNOLOGY BERHAD	Sebahagian No. Lot 20803, Mukim Asam Kumbang, Daerah Larut & Matang, Negeri Perak	0.502
200	DYC METAL WORLD ENTERPRISE SDN. BHD.	Sebahagian No. Lot 182947, Mukim Plentong, Daerah Johor Bahru, 81750 Negeri Johor	0.223
201	EAGLE & PAGODA BRAND TECK AUN MEDICAL FACTORY SDN. BHD.	Sebahagian Lot 686, Mukim Bukit Minyak, Daerah Bukit Mertajam, 14100 Negeri Pulau Pinang	0.165

Bil. No	Nama Pelesen Licensee's Name	Negeri State	Kapasiti (MW) Capacity (MW)
202	GSPARX SDN. BHD.	Mertajam, 14100 Negeri Pulau Pinang	0.606
203	GSPARX SDN. BHD.	Sebahagian No. Ptd 7382, Mukim Jelutong, Daerah Johor Bahru, 79200 Johor	0.311
204	KILANG BERAS BUKIT PINANG SDN BHD	Sebahagian No. Lot 3564 Seksyen 6, Mukim Bandar Gurun, Daerah Kuala Muda, 08300 Negeri Kedah	0.3
205	EMPEROR MARINE MARKETING SDN. BHD.	Lot 15591, Mukim Lumut, Daerah Manjung, 32000 Perak.	0.25
206	GESING GROUP SDN. BHD	Ptd 18986, Belakang Simpang Rengam, Mukim Ulu Benut, Daerah Kluang, 86200 Johor.	0.075
207	KILANG BERAS MIHODA SDN BHD	Sebahagian No. Lot 1561, Tempat Kg Bukit Bt 19 3/4, Mukim Bukit Lada, Daerah Pokok Sena, Negeri Kedah	0.51

Apendiks 19: Lesen Pengagihan Elektrik yang Dikeluarkan pada 2020
Appendix 19: Electricity Distribution Licences Issued in 2020

Bil. No	Nama Pelesen Licensee's Name	Alamat Pepasangan Address of Installation	Kapasiti Dilesen (MW) Licensed Capacity (MW)
1	JOHOR LAND BERHAD	Sebahagian PTD 84134 Tebrau Johor Bharu 81100 Johor	2.55
2	IE UTILITIES SDN BHD	Sebahagian Lot 54325, Mukim Kuala Lumpur, Daerah Kuala Lumpur, Negeri Wilayah Persekutuan Kuala Lumpur	88.57
3	PERMODALAN NASIONAL BERHAD	Lot 229 Seksyen 43, Mukim Bandar Kuala Lumpur, Daerah Kuala Lumpur, Negeri Wilayah Persekutuan Kuala Lumpur	1.912
4	MRCB SENTRAL PROPERTIES SDN BHD	Plaza Alam Sentral At No. Lot PT 44 Seksyen 14 Mukim Bandar Shah Alam Daerah Petaling, 40000 Shah Alam Selangor	11.9
5	MFBBCC RETAIL MALL SDN.BHD.	Mfbbcc Retail Mall, Lot 20025, Seksyen 26, Bandar Kuala Lumpur, Daerah Kuala Lumpur, Negeri Wilayah Persekutuan Kuala Lumpur	23.8
6	GCH RETAIL (MALAYSIA) SDN BHD	Kompleks Beli-Belah Giant Hypermarket Senawang, No. Lot 33897, Mukim Pekan Senawang, Daerah Seremban, 70450 Negeri Sembilan	2.72
7	MCL LAND (MALAYSIA) SDN. BHD.	No PT 8282, Mukim Setapak, Daerah Kuala Lumpur, 53300 Wilaya Persekutuan Kuala Lumpur	7.82
8	TA FIRST CREDIT SDN. BHD.	No. Lot 20005, Seksyen 58, Bandar Kuala Lumpur, Daerah Kuala Lumpur, 50250 Wilayah Persekutuan Kuala Lumpur	14.4
9	ELSOFT SYSTEMS SDN. BHD.	Lot 14841, Mukim 12, Daerah Barat Daya, Negeri Pulau Pinang	1.275
10	IKANO JOHOR JAYA SDN BHD	No. Lot 102078, Mukim Tebrau, Daerah Johor Bahru, 81100 Johor Darul Takzim	32.3
11	TONG AH COMPANY SDN BERHAD	Lot 20004, Seksyen 63, Bandar Kuala Lumpur, Daerah Kuala Lumpur, Negeri Wilayah Persekutuan Kuala Lumpur	5.525
12	PIONEER HAVEN SDN BHD	No. Lot 101899 (Lot Lama 15290) Mukim Petaling Daerah Kuala Lumpur 57000 Kuala Lumpur	95.2
13	SERBA DINAMIK DEVELOPMENT SDN BHD	Lot PTD 5314, PTD 5315, PTD 5316, PTD 5317, Dan PTD 9112, Mukim Pengerang, Daerah Kota Tinggi, Negeri Johor	39.1
14	TECHNOLOGY PARK MALAYSIA CORPORATION SDN BHD	No. Lot PT 13798, PT 13799, PT 13801 Dan PT 13802, Mukim Petaling, Daerah Kuala Lumpur, 57000 Wilayah Persekutuan	9.138
15	CHEMPAKA LOGISTIK SDN BHD	No. Lot Ptb 20126 Mukim Bandar Johor Bahru Daerah Johor Bahru 80250 Johor	4.25
16	SUNWAY MALL PARKING SDN BHD	Pusat Beli Belah Sunway Big Box Village, Di No. PT 204060 & 204061, Mukim Pulai, Daerah Johor Bahru, 80100 Johor	18.863
17	JOHOR LAND BERHAD	Lot PTD 198652, Mukim Tebrau, 81200 Daerah Johor Bahru, Negeri Johor Darul Takzim	2.55
18	MTRUSTEE BERHAD	Mahkota Parade, No. Lot 1337 Mukim Kawasan Bandar Xlii Daerah Melaka Tengah 75000 Melaka	10.8
19	MALAYSIA AIRLINES BERHAD	Kompleks Kampus Mas, No PT 19, Bandar Lapangan Terbang Antarabangsa Sepang, 64000 Daerah Sepang, Selangor	42.925
20	MALAYSIA AIRPORTS SDN BHD	Lapangan Terbang Sultan Ahmad Shah, Di No PT 86418, Mukim Kuala Kuantan, Daerah Kuantan, 25150 Pahang	1.062
21	HSBC BANK MALAYSIA BERHAD	PT 170 Seksyen 67 Kuala Lumpur Kuala Lumpur 50100 Wilayah Persekutuan	15.3
22	COUTURE HOMES SDN BHD	Empire Subang Di No. Lot 6 Dan No. Lot 20912 Mukim Bandar Subang Jaya Daerah Petaling 46200 Selangor	15.3

Bil. No	Nama Pelesen Licensee's Name	Alamat Pepasangan Address of Installation	Kapasiti Dilesen (MW) Licensed Capacity (MW)
24	SEMANGKUK 2 BERHAD	Pusat Hub Logistik Maple Tree Shah Alam, Di Lot 10003 Seksyen 22 (Pn 89971), Mukim Bandar Shah Alam, Daerah Petaling, 40000 Selangor	6.8
25	MYDIN MOHAMED HOLDINGS BERHAD	Mydin Wholesale Hypermarket Usj Subang, No. Lot PT 343, Mukim Damansara, Daerah Petaling Jaya, 47500 Selangor	4.25
26	MYDIN MOHAMED HOLDINGS BERHAD	Mydin Wholesale Hypermarket Mitc Melaka, No. Lot PT 23556, PT 23557 Dan PT 23558, Mukim Bukit Katil, Daerah Melaka Tengah, 75450 Melaka	3.4
27	SEH POWER SDN BHD	Lot 01 - 25 Mukim Sungai Batang Sandakan 90000 Sabah	10
28	DAMANSARA ASSETS SDN BHD	Sebahagian Lot PTD 78588, Mukim Tebrau,Daerah Johor Bahru, 81200 Johor.	0.085
29	IPOH TOWER SDN BHD	Kompleks Ipoh Tower, Di Lot 10933n, Bandar Ipoh (U), 30450 Daerah Kinta, Perak	4.25
30	TANAH SUTERA DEVELOPMENT SDN BHD	PTD67962 Pulai Jalan Sutera Tanjung 8/4, Taman Sutera Utama, Skudai 81300 Johor	9.988
31	GCH RETAIL (M) SDN BHD	Giant Superstore Kuantan Di Lot 27 Seksyen 30 Mukim Bandar Kuantan Daerah Kuantan 25100 Pahang	2.72
32	TESCO STORES (M) SDN BHD	PT 217003 Hulu Kinta Kinta 31400 Perak	3.4
33	TESCO STORES (M) SDN BHD	No.1 PT 1053, No.2 Pt1111, No.3 Pt2, No,4 Pt70 Town Area Xxxiii Melaka Tengah 75400 Melaka	3.4
34	TESCO STORES (M) SDN BHD	PT 128421 Hulu Kinta Kinta 31400 Perak	2.763
35	TESCO STORES (M) SDN BHD	PT 111515 Plentong Johor Bharu 81750 Johor	3.4
36	TESCO STORES (M) SDN BHD	10252 13 Timur Laut, Jalan Sungai Dua 11700 Pulau Pinang	1.7
37	I HOMES PROPERTIES SDN. BHD.	386 Seksyen17 Georgetown 10300 Pulau Pinang	13.175
38	JMB OF PENANG TIMES SQUARE	Pusat Komersil Penang Times Square, Di Lot 10024, Seksyen 10, Bandar Georgetown, Daerah Timor Laut, 10150 Pulau Pinang	25.5
39	FLORAL E-JOY SDN BHD	Square 1, Lot PTD 48031, Simpang Kanan, Batu Pahat, 83000 Johor	2.55
40	SALAK PARK SDN BHD	46196 Petaling Kuala Lumpur 57100 Wilayah Persekutuan	2.55
41	PERBADANAN PENGURUSAN PRIMERA SUITE	Pusat Komersil Primera Avenue, Di No Lot 43970, Mukim Dengkil, Daerah Sepang, 63000 Selangor	1.198
42	KUANTAN PORT CONSORTIUM SDN BHD	Di Kuantan Port, No. Lot 1863, Mukim Sungai Karang, Daerah Kuantan, 25720 Pahang	7.225
43	MERDEKA UTILITIES SDN BHD	795, 796, 797, 799, 800 & Sebahagian Lot 743, 746, 802, 803 Bandar Kuala Lumpur Kuala Lumpur 50400 Wilayah Persekutuan	90.1
44	IKANO HANDEL SDN BHD	Link Building Di Ikea Batu Kawan Di No. Lot PT 5910 Mukim 13 Daerah Seberang Perai Selatan 14110 Pulau Pinang	6.8
45	LEGEND ADVANCE SDN BHD	Ioi Mart, Di Lot PTD 96851, Mukim Kulai, Daerah Kulaijaya, 81000 Johor	0.916
46	MALAYSIA AIRPORTS SDN BHD	PT 250 Mukim Bohor Padang Matsirat Langkawi 07100 Kedah	3.4
47	MALAYSIA AIRPORTS SDN. BHD.	Lapangan Terbang Sultan Ismail Petra Kota Bharu Panchor Kota Bharu 16100 Kelantan	2.72
48	MYDIN MOHAMED HOLDINGS BERHAD	Mydin Hypermarket Sejati Ujana, Di No. Pl.076144020 Lot 3a Sejati Commercial Batu 7, Mukim Sandakan, Daerah Sandakan, 90000 Sabah	3.4

Bil. No	Nama Pelesen Licensee's Name	Alamat Pepasangan Address of Installation	Kapasiti Dilesen (MW) Licensed Capacity (MW)
49	AFFIN BANK BERHAD	Menara Affin, Di No. Lot PT 169 Seksyen 67, Mukim Bandar Kuala Lumpur, Daerah Kuala Lumpur, 55188 Wilayah Persekutuan	9.35
50	KUMPULAN WANG SIMPANAN PEKERJA	Bangunan Pejabat Kwsp Georgetown, Di Lot 842 Seksyen 14, Mukim Bandar Georgetow, 10050 Daerah Timor Laut, Pulau Pinang	3.4
51	KUMPULAN WANG SIMPANAN PEKERJA	Bangunan Pejabat Kwsp Ipoh, Di Lot 144258, Bandar Ipoh, 30450 Daerah Kinta, Perak	2.443
52	KARAMBUNAI RESORTS SDN.BHD	Precinct Dillenia Residences Karambunai Resorts, Di No. Lot Cl 015618461 Dan Cl 015618470, Mukim Menggatal, Daerah Kota Kinabalu, 88450 Sabah	15.172
53	PEDOMAN CEKAP SDN BHD	Lot 402,490,507,1215,Pt146,Pt149,Pt150,Pt200 Jalan Kemuning Kuala Lumpur 55100 Wilayah Persekutuan	6.8
54	SIME DARBY PROPERTY (SUNGAI KAPAR) SDN BHD	Pusat Beli Belah KL East, Lot 200694, Mukim Setapak, 53100 Daerah Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur	7.14
55	MALAYSIA AIRPORTS SDN. BHD.	Bangunan Pejabat Kwsp Georgetown, Di Lot 842 Seksyen 14, Mukim Bandar Georgetow, 10050 Daerah Timor Laut, Pulau Pinang	34
56	WESTPORTS MALAYSIA SDN BHD	PT 65746 Mukim Klang Klang 42000 Selangor	102
57	DUA SENTRAL BADAN PENGURU-SAN BERSAMA	No Lot 582, Seksyen 55, Mukim Jalan Tun Sambathan, Daerah Kuala Lumpur, 50200 Wilayah Persekutuan Kuala Lumpur	9.775
58	GCH RETAIL (MALAYSIA) SDN. BHD.	Giant Hypermarket Southern City, No PTD 20274, Jalan Suria 19, Taman Suria, 81100 Bandar Johor Bahru, Johor	2.125

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