Suruhanjaya Tenaga
Energy Commission

MAKLUMAT PRESTASI & STATISTIK INDUSTRI PEMBEKALAN ELEKTRIK MALAYSIA

PERFORMANCE & STATISTICAL INFORMATION ON THE MALAYSIAN ELECTRICITY SUPPLY INDUSTRY

2018

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The data and information in this report represent a fair and reasonable overview of the whole electricity supply industry. Every effort has been made to verify, validate and accurately represents the information in this report, based on the daily, monthly and yearly reports which were submitted by licensees pursuant to their licence conditions. As for Sarawak, information on the performance and statistics of utility in the state were submitted by Sarawak Energy Berhad (SEB) and the Ministry of Utility Sarawak (KUS) based on request by the Energy Commission.

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EXECUTIVE SUMMARY

Pada tahun 2018, margin simpanan sistem atau margin rizab di Semenanjung Malaysia berada dalam lingkungan 31.6% berbanding 35.7% pada tahun 2017. Walaupun margin rizab telah berkurangan, namun begitu bekalan elektrik masih berada dalam tahap yang selesa dengan kapasiti penjanaan yang sedia ada mencukupi untuk memenuhi permintaan tenaga yang meningkat pada tahun 2018. Kehendak maksimum sistem grid di Semenanjung Malaysia menunjukkan peningkatan sebanyak 3% berbanding tahun 2017 di mana pada tahun 2018 kehendak maksimum tertinggi yang direkod adalah 18,338MW iaitu pada 15 Ogos 2018.

In 2018, the reserve margin in Peninsular Malaysia stood at around 31.6% compared with 35.7% in 2017. Even though the reserve margin decreased, the total generation was more than sufficient to meet the increasing demand of energy in 2018. The maximum demand of the grid system in Peninsular Malaysia showed an increase of 3% compared to the year 2017 where in 2018 the highest maximum demand recorded was 18,338MW on 15 August 2018.

Sehingga 31 Disember 2018, keseluruhan kapasiti terpasang di Semenanjung Malaysia adalah 26,989.77MW. Ini termasuk kapasiti yang bersambung kepada sistem Grid Nasional, sistem pengagihan Tenaga Nasional Berhad (TNB) dan sistem pepasangan persendirian. Kapasiti terpasang yang bersambung kepada sistem penghantaran adalah sama seperti tahun sebelumnya iaitu sekitar 24,139MW dan kapasiti selebihnya adalah dari stesen-stesen jana kuasa Tenaga Boleh Baharu (TBB) termasuk hidro mini, *cogeneration* awam yang bersambung ke sistem pengagihan TNB dan kapasiti *off-grid* sistem yang terdiri daripada pepasangan *cogeneration* persendirian dan jana kuasa persendirian di bawah 5MW.

As of 31 December 2018, the overall installed capacity in Peninsular Malaysia is 26,989.77MW. This includes capacity connected to the National Grid system, TNB's distribution system and private installation system. The installed capacity connected to the transmission system remains the same as the previous year, which is about 24,139MW and the remaining capacity comes from Renewable Energy (RE) power plants including mini hydro, public cogeneration which are connected to TNB's distribution system and off-grid system comprising of private cogeneration installations and private licensees below 5MW.

Keseluruhannya pada 2018, 47% loji jana kuasa di Semenanjung Malaysia terdiri daripada loji jana kuasa gas, 38% loji jana kuasa arang batu, 9% loji jana kuasa hidroelektrik, diikuti oleh 1% loji jana kuasa diesel. Selebihnya 5% adalah TBB dan haba sisa perindustrian. TBB juga adalah termasuk Solar Berskala Besar (Large Scale Solar - LSS) dan hidro mini.

Overall in 2018, 47% of the power plants in Peninsular Malaysia consist of gas power plants, 38% coal power plants, 9% hydroelectric power plants, followed by 1% diesel power plants. The remaining 5% are RE and industrial waste heat. RE also includes Large Scale Solar (LSS) and mini hydro .

Daripada kapasiti penjanaan yang dinyatakan, jumlah elektrik yang dijana pada 2018 di Semenanjung Malaysia adalah sebanyak 133,446.84 Gigawatt-jam (GWj) iaitu 4.8% lebih dari tahun sebelumnya. Campuran penjanaannya ialah 52.8% arang batu, 42.4% gas asli, 3.7% hidro, 0.9% TBB, 0.1% diesel dan 0.1% haba sisa perindustrian.

From the stated generation capacity, the total electricity generated in 2018 in Peninsular Malaysia was 133,446.84 Gigawatt-hour (GWh), which is an increase of 4.8% from the previous year. The generation mix was 52.8% coal, 42.4% natural gas, 3.7% hydro, 0.9% RE, 0.1% diesel and 0.1% industrial waste heat.

Pada tahun 2018, prestasi bekalan elektrik di Semenanjung Malaysia bertambah baik jika dibandingkan dengan tahun sebelumnya dengan bacaan SAIDI 48.22 minit/pelanggan/tahun di mana ianya telah memenuhi sasaran 2018 yang ditetapkan iaitu 55 minit/pelanggan/tahun. Di samping itu, pengurangan SAIDI dalam sistem voltan tinggi dan sederhana telah menyumbang kepada pencapaian ini.

In 2018, the electricity supply performance in Peninsular Malaysia has improved as compared to the previous year with a SAIDI reading of 48.22 minutes/customer/year where it remained within the target set for 2018 at 55 minutes/customer/year. In addition, the reduction of SAIDI in the high and medium voltage systems contributed to this achievement.

Bagi negeri Sabah pula, kapasiti boleh harap untuk tahun 2018 ialah 1,227.76MW (mengambilkira stesen jana kuasa utama sahaja). Jumlah kapasiti terpasang termasuk kapasiti *off-grid* ialah 1,918.54MW. Kehendak maksimum di Sabah pada 2018 juga meningkat sebanyak 1.8% dari 938MW pada tahun 2017 kepada 955MW.

For Sabah, the dependable capacity for 2018 was 1,227.76MW (taking into account the major power stations only). The total installed capacity including the off-grid capacity is 1,918.54MW. In 2018, the maximum demand in Sabah increased by 1.8% from 938MW in 2017 to 955MW.

Di Sabah, 64% daripada loji jana kuasanya menggunakan gas asli, diikuti oleh diesel sebanyak 15%, TBB dan lain-lain sebanyak 17% dan 4% hidro.

In Sabah, 64% of the power plants used natural gas, followed by diesel at 15%, RE and others at 17% and hydro at 4%.

Di Sarawak, 67.9% daripada jumlah kapasiti terpasang adalah daripada punca hidro, 19.4% daripada gas asli, 9.4% daripada arang batu, 2.4% daripada diesel/MFO, 0.8% adalah daripada TBB dan selebihnya merangkumi bahan api lain di dalam kadar peratusan yang kecil.

In Sarawak, 67.9% of the total installed capacity was from hydro, 19.4% from natural gas, 9.4% from coal, 2.4% from diesel/MFO, 0.8% from RE and the remaining consisted of a small percentage of other fuels.

Walaupun bilangan gangguan bekalan elektrik di Sabah berkurangan sebanyak 8.6% pada tahun 2018, namun kualiti bekalan elektrik di Sabah kekal sama di mana pelanggan masih mengalami tempoh gangguan yang melepasi sasaran yang ditetapkan bagi tahun 2018 iaitu 200 minit/pelanggan/tahun. Pada tahun 2018, bacaan SAIDI keseluruhan Sabah adalah 267.87 minit/pelanggan/tahun, setelah merosot 10% dari tahun 2017. SAIDI sistem pengagihan adalah penyumbang terbesar kepada SAIDI keseluruhan Sabah iaitu sebanyak 258.54 minit/pelanggan/tahun (96.5%) diikuti oleh SAIDI sistem penjanaan sebanyak 6.46 minit/pelanggan/tahun dan penghantaran sebanyak 2.88 minit/pelanggan/tahun. Bagi memperkukuhkan landskap daya harap bekalan di Sabah, inisiatif di peringkat pengagihan perlu diperbanyakkan lagi.

Although the number of electricity supply interruption in Sabah decreased by 8.6% in 2018, the quality of electricity supply in Sabah has remained the same where customers were still experiencing interruptions that exceeded the target set for 2018 which was 200 minutes/customer/year. In 2018, Sabah's overall SAIDI reading was 267.87 minutes/customer/ year, having deteriorated by 10% from 2017. SAIDI of the distribution system was the largest contributor to Sabah's overall SAIDI at 258.54 minutes/customer/year (96.5%) followed by SAIDI of generation system at 6.46 minutes/customer/year and transmission at 2.88 minutes/customer/year. Efforts in enhancing more initiatives at the distribution level are needed to further strengthen the electricity supply landscape in Sabah.

Terdapat tiga insiden besar melibatkan *total blackout* pada tahun 2018 iaitu dua di kawasan Pantai Timur Sabah yang disebabkan oleh gangguan pada 9 Januari di LINE1 Kolupis-Segaliud 275kV dan kejadian pelantikan 132kV Kunak-Kalumpang pada 14 September. Satu lagi insiden ialah di kawasan Pantai Barat Sabah iaitu di talian penghantaran 132kV Beaufort - Tenom Pangi pada 22 November.

There were three major incidents involving total blackouts in 2018, namely two in the East Coast of Sabah area caused by disruption on 9 January at LINE1 Kolupis-Segaliud 275kV and the tripping of 132kV Kunak-Kalumpang on 14 September. Another incident was in the West Coast area of Sabah at the 132kV Beaufort - Tenom Pangi transmission line on 22 November.

Sementara itu, di Sarawak, prestasi bekalan elektriknya bertambah baik dengan bacaan SAIDI berkurangan dari 111 minit/pelanggan/tahun pada tahun 2017 kepada 95.81 minit/pelanggan/tahun pada tahun 2018.

Meanwhile, in Sarawak, the electricity supply performance showed an improvement with the SAIDI reading recording a reduction from 111 minutes/customer/year in 2017 to 95.81 minutes/customer/year in 2018.

Industri bekalan elektrik juga mengukur Indeks Kekerapan Gangguan Purata Sistem (SAIFI), yang mewakili kekerapan gangguan yang dialami oleh pelanggan. Pada tahun 2018, kekerapan gangguan yang dialami oleh pelanggan di Semenanjung Malaysia berkurang sebanyak 8% manakala di Sarawak pula ianya telah berkurang sebanyak 6.3%. Di Sabah, kekerapannya lebih tinggi sebanyak 30% berbanding 2017.

The electricity supply industry also measures the System Average Interruption Frequency Index (SAIFI), which represents the frequency of interruption experienced by customers. In 2018, customers in Peninsular Malaysia and Sarawak experienced less frequent interruption by 8% and 6.3% respectively. In Sabah, the frequency was much higher at approximately 30% compared to 2017.

Negeri yang mencatatkan penggunaan elektrik tertinggi di Malaysia ialah Selangor iaitu sebanyak 29,613GWj diikuti dengan Sarawak (25,825GWj) dan Johor (18,546GWj). Manakala, Perlis telah mencatatkan penggunaan elektrik terendah iaitu sebanyak 749GWj.

The state that recorded the highest electricity consumption in Malaysia was Selangor at 29,613GWh, followed by Sarawak (25,825GWh) and Johor (18,546GWh). Meanwhile, Perlis recorded the lowest electricity consumption at 749GWh.

Sektor industri terus menjadi pengguna elektrik terbesar, di mana hampir 50% penggunaan elektrik dicatatkan oleh sektor ini. Pengguna kedua terbesar ialah sektor komersial diikuti dengan sektor kediaman. Sektor lain adalah lampu awam, perlombongan dan pertanian.

The industry sector continued to be the largest electricity consumer, which consumed up to nearly 50% of electricity nationwide. The second largest consumer was the commercial sector followed by the residential sector. Other sectors were public lighting, mining, and agriculture.

MALAYSIA SEPINTAS LALU
MALAYSIA AT A GLANCE

Tahun *Year*	2015	2016	2017	2018
Keluasan (km^2) *Area (km^2)*	330,345	330,345	330,622	330,524
Penduduk (Juta) *Population (Million)*				
Jumlah *Total*	31.2	31.6	32.0	32.4
Lelaki *Male*	16.1	16.3	16.5	16.7
Perempuan *Female*	15.1	15.3	15.5	15.7
Keluaran Dalam Negeri Kasar (KDNK) *Gross Domestic Product (GDP)*				
KDNK pada harga semasa (RM juta) *GDP at current prices (RM million)*	1,176,941	1,249,698	1,372,310	1,447,451
KDNK pada harga malar 2015 (RM juta) *GDP at constant 2015 prices (RM million)*	1,176,941	1,229,312	1,300,769	1,362,815
Perubahan tahunan (%) *Annual change (%)*		4.5	5.7	4.7
Guna Tenaga[2] *Employment[2]*				
Tenaga buruh ('000 orang) *Labour force ('000 person)*	14,518	14,667.8	14,980.1	15,280.3
Kadar pengangguran (%) *Unemployment rate (%)*	3.1	3.4	3.4	3.3

Rujukan:
Reference:

1. Jabatan Perangkaan Malaysia *(Department of Statistics Malaysia)*
2. Bank Negara Malaysia *(Central Bank of Malaysia)*
3. *The Malaysian Economy in Figures 2018 (Revised as at July 2018)* Unit Perancang Ekonomi *(Economic Planning Unit),* Jabatan Perdana Menteri *(Prime Minister's Office)*

Peta Malaysia
Map of Malaysia

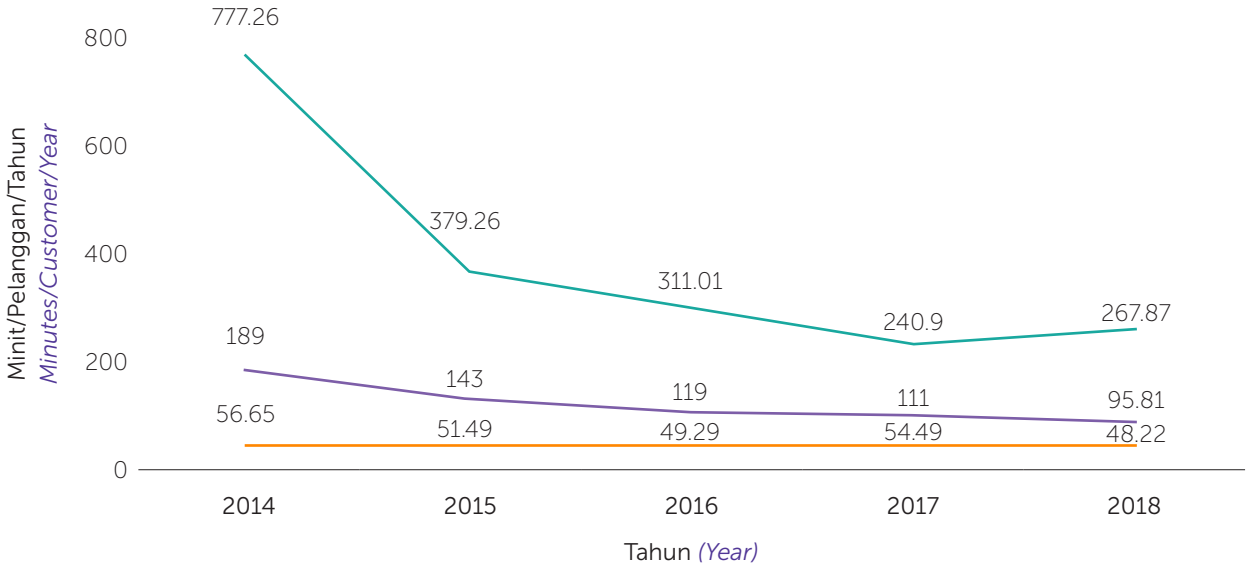
Negeri-negeri di Malaysia:
States in Malaysia:

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

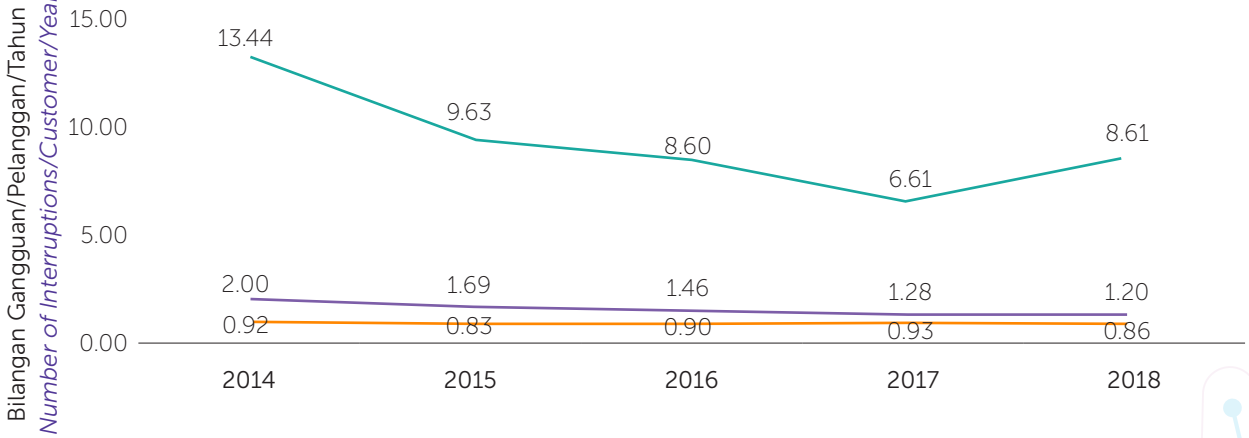
Nota:
Notes:
* Wilayah Persekutuan *Federal Territory*

RINGKASAN
SUMMARY

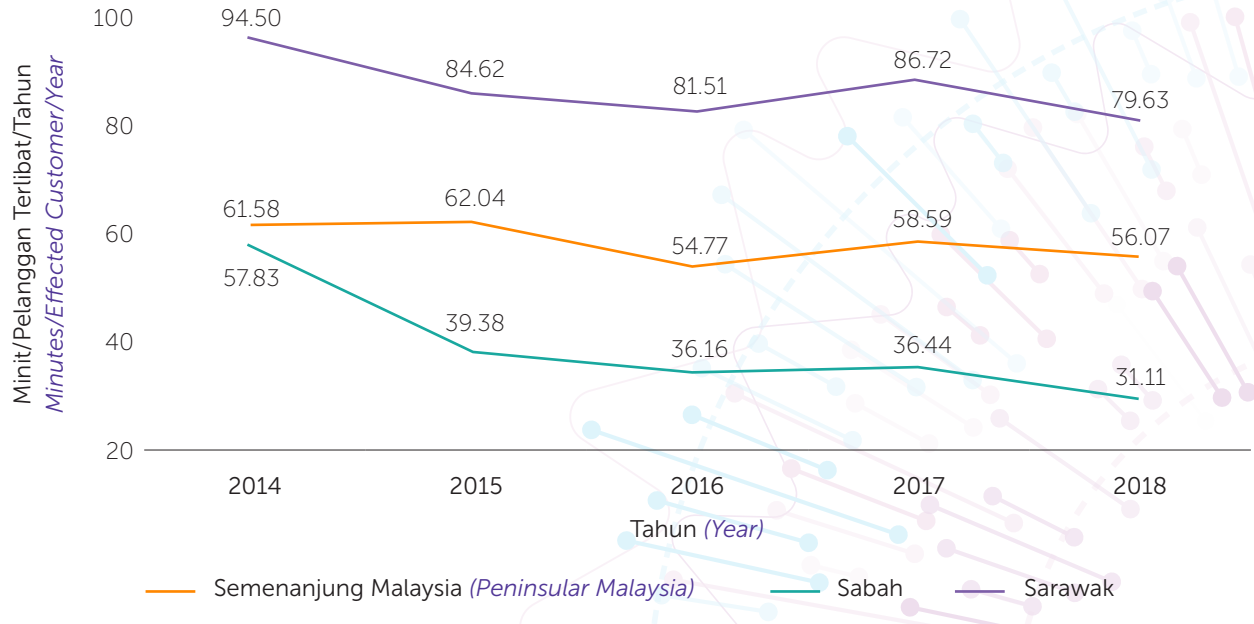
SAIDI 2014-2018



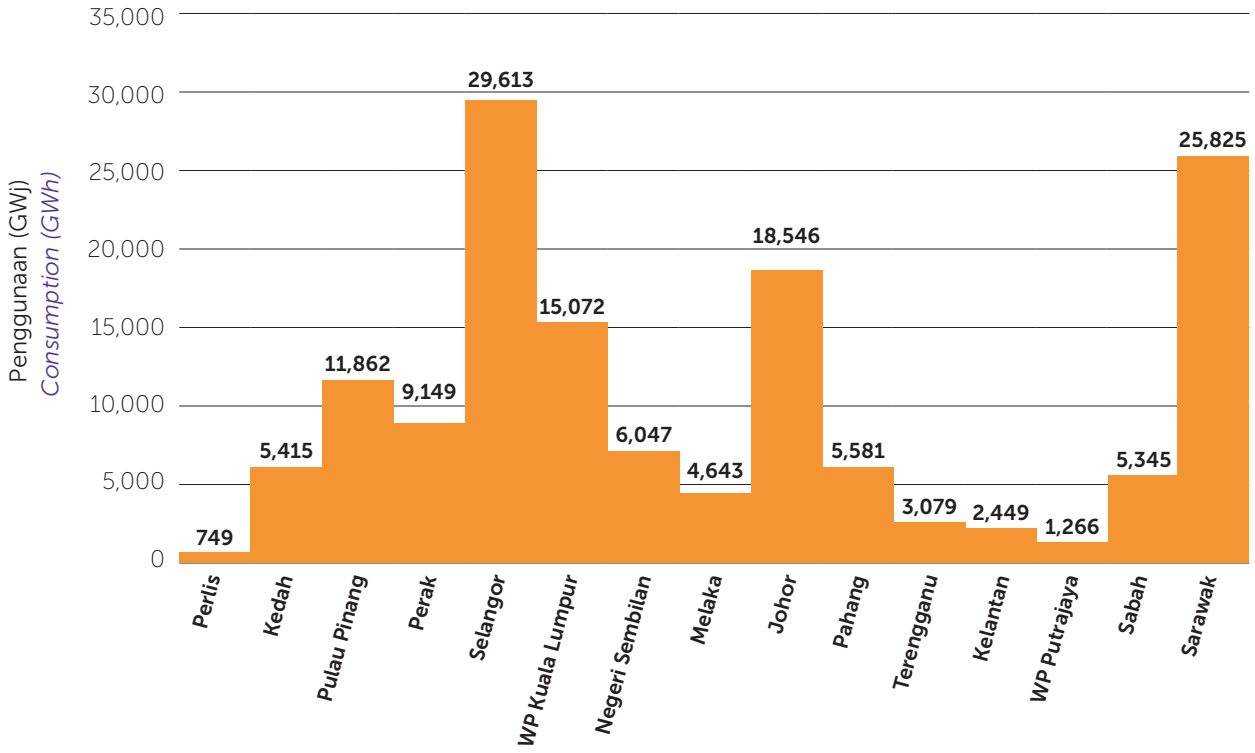
SAIFI 2014-2018



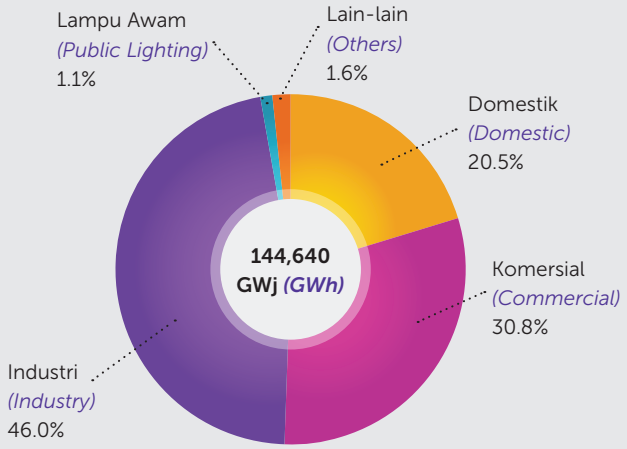
CAIDI 2014-2018



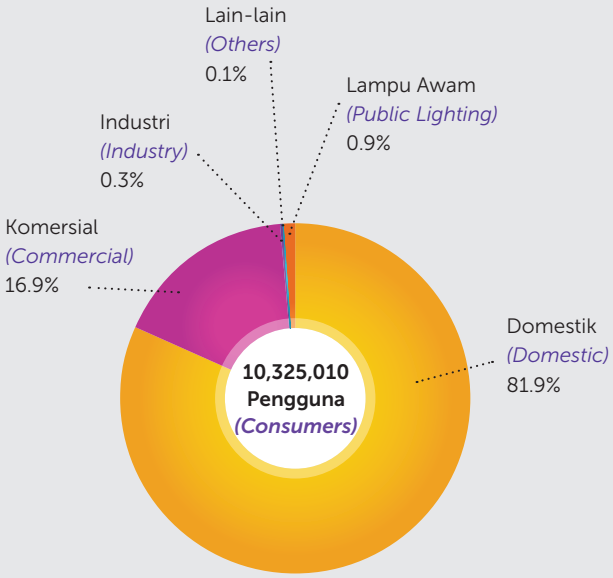
PENGGUNAAN ELEKTRIK DI MALAYSIA PADA 2018
ELECTRICITY CONSUMPTION IN MALAYSIA IN 2018



Penggunaan Elektrik Mengikut Sektor, GWj
Electricity Consumption by Sector, GWh



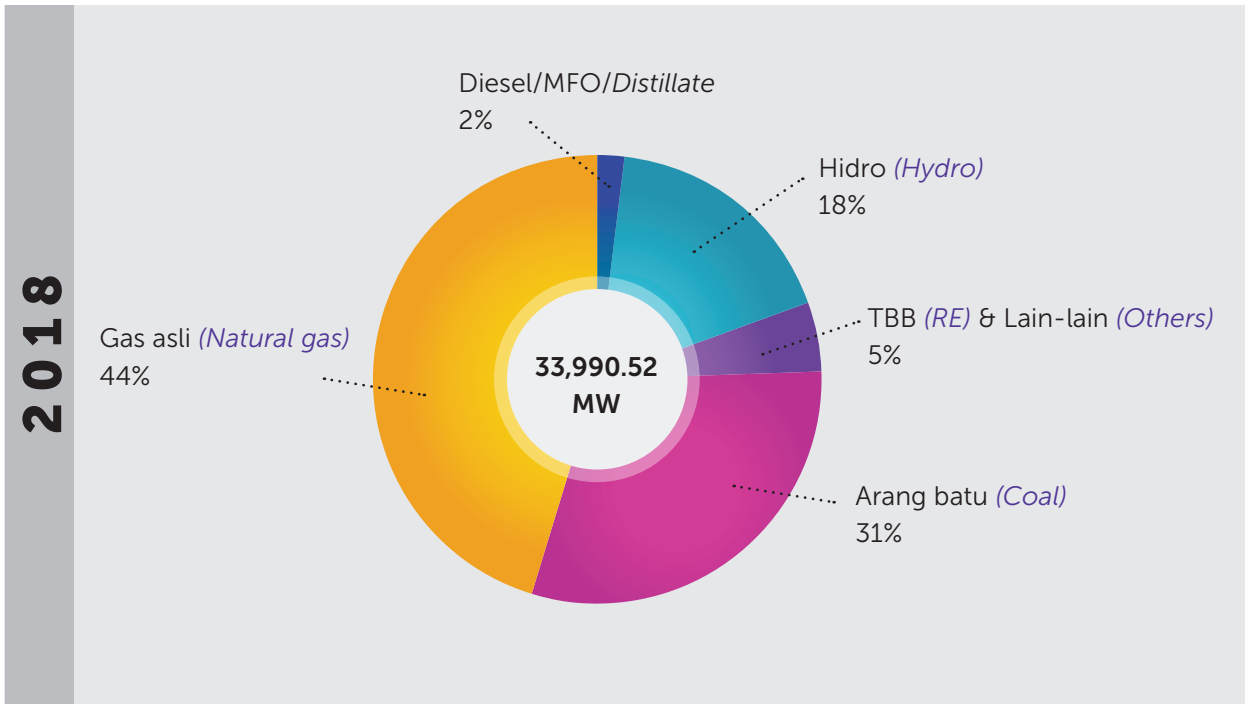
Jumlah Pengguna Mengikut Sektor
Number of Consumers by Sector



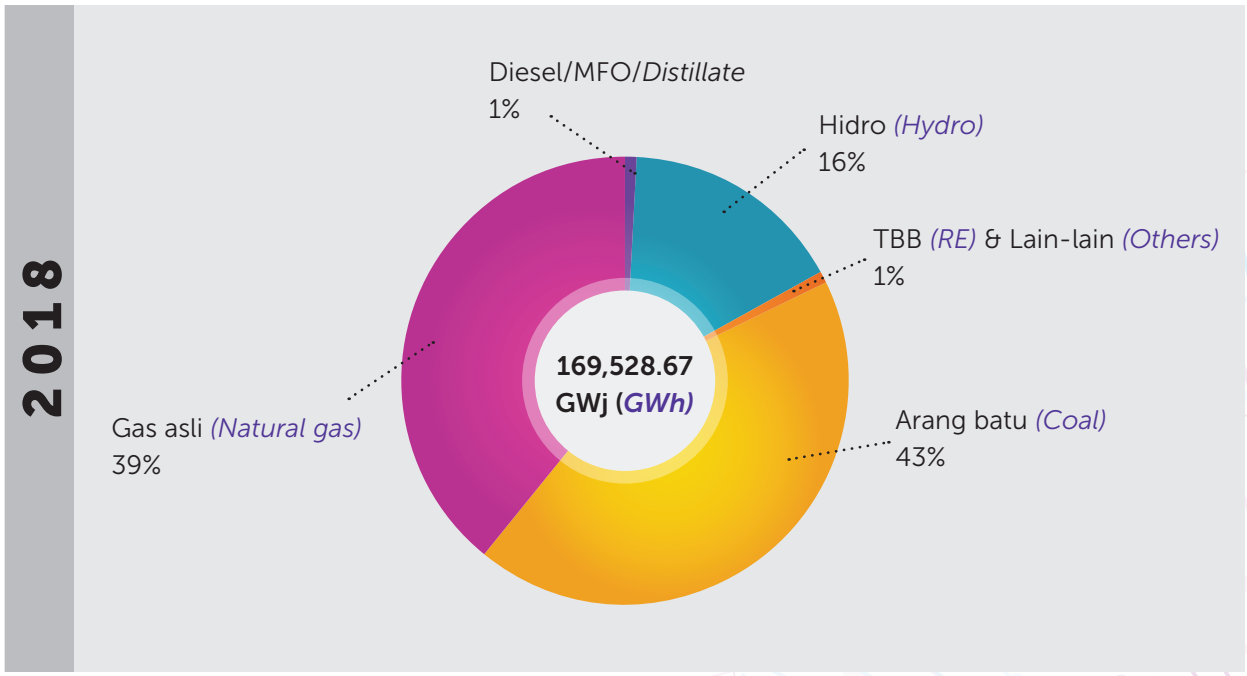
Lain-lain *(Others):* Perlombongan *(Mining)*, Pertanian *(Agriculture)* & Eksport *(Export)*

Lain-lain *(Others):* Perlombongan *(Mining)*, Pertanian *(Agriculture)*, Eksport *(Export)* & Unit Percuma *(Free Units)*

KAPASITI TERPASANG MENGIKUT JENIS BAHAN API DI MALAYSIA (MW)
INSTALLED CAPACITY BY FUEL TYPE IN MALAYSIA (MW)

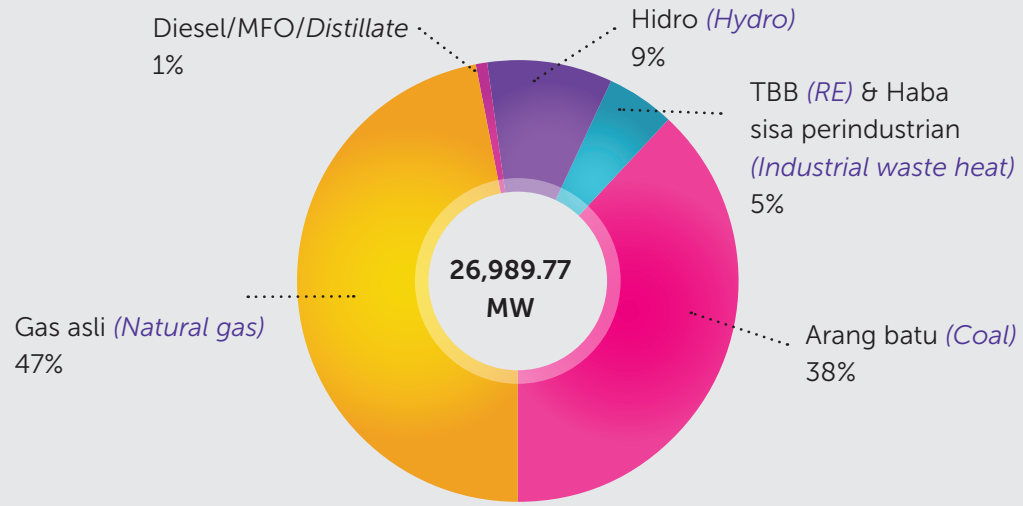


PENJANAAN ELEKTRIK MENGIKUT JENIS BAHAN API DI MALAYSIA (GWj)
ELECTRICITY GENERATION BY FUEL TYPE IN MALAYSIA (GWh)



KAPASITI TERPASANG MENGIKUT KAWASAN DAN JENIS BAHAN API (MW)
INSTALLED CAPACITY BY REGION AND FUEL TYPE (MW)

SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*



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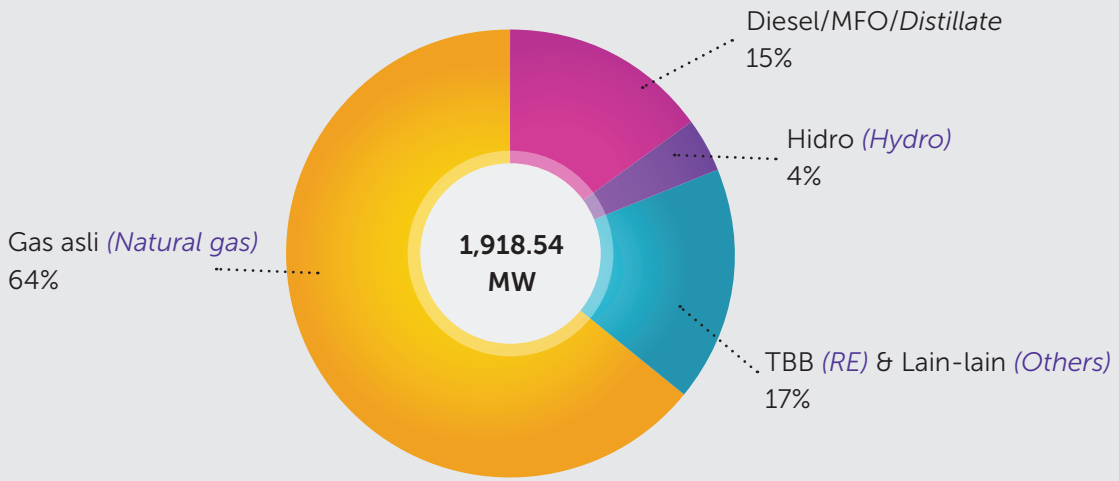

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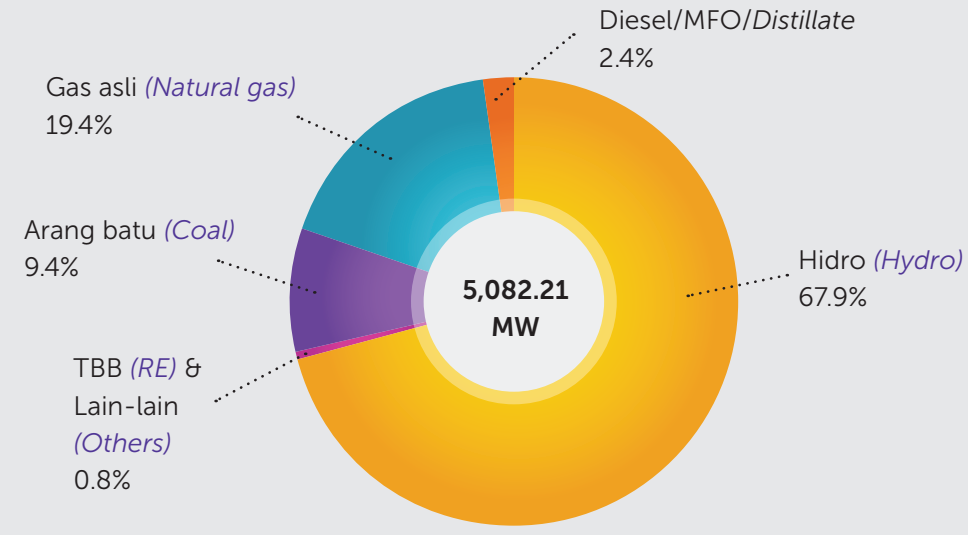
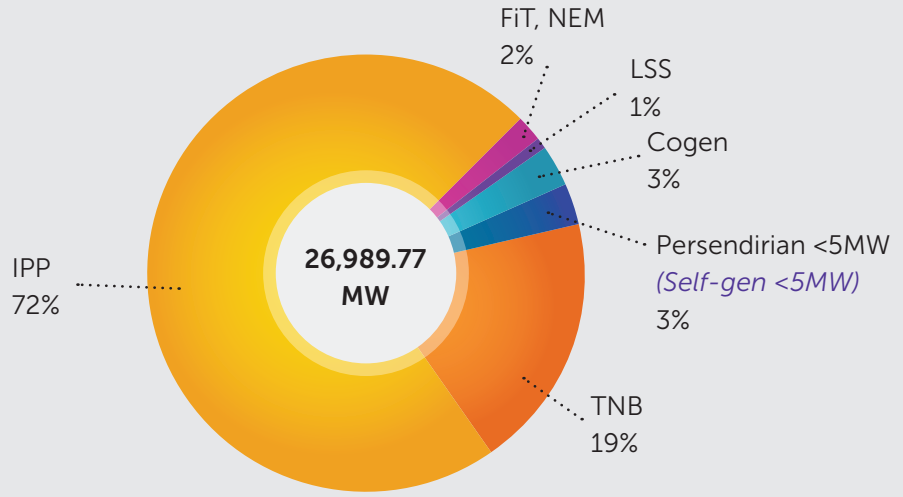
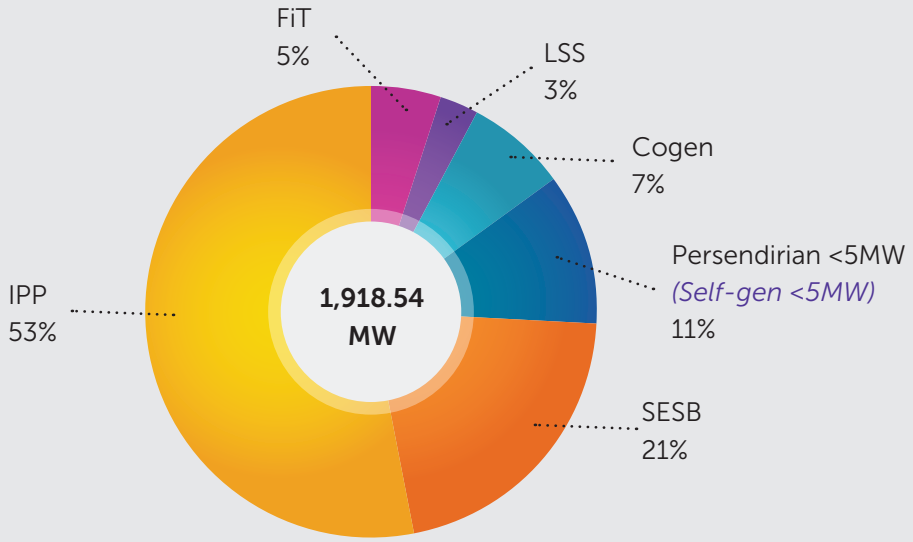


KAPASITI TERPASANG MENGIKUT KATEGORI PENJANA DAN KAWASAN (MW)
INSTALLED CAPACITY BY PRODUCER CATEGORY AND REGION (MW)

SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*



SABAH



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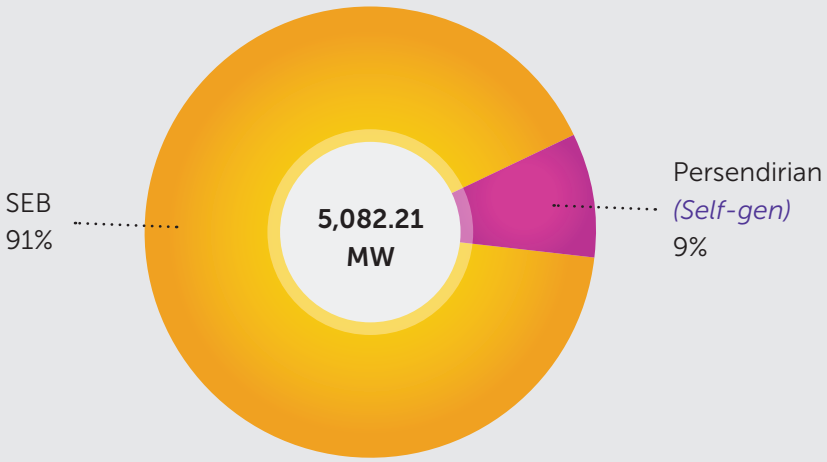
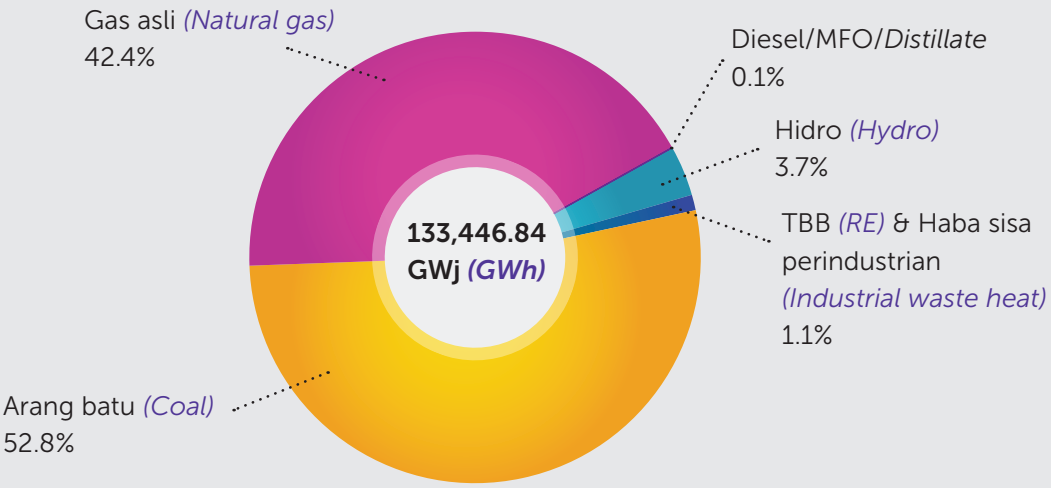


PENJANAAN ELEKTRIK MENGIKUT KAWASAN DAN JENIS BAHAN API (GWj)
ELECTRICITY GENERATION BY REGION AND FUEL TYPE (GWh)

SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*



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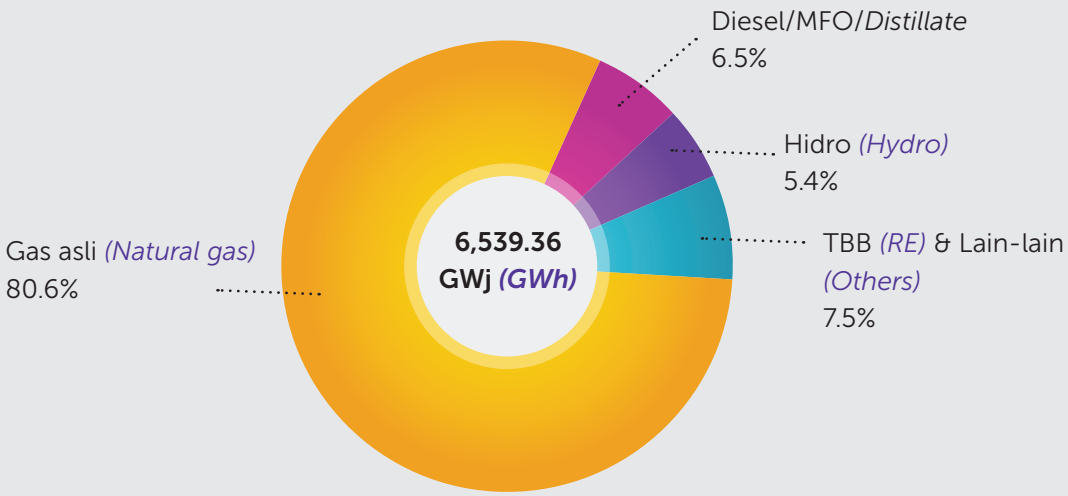

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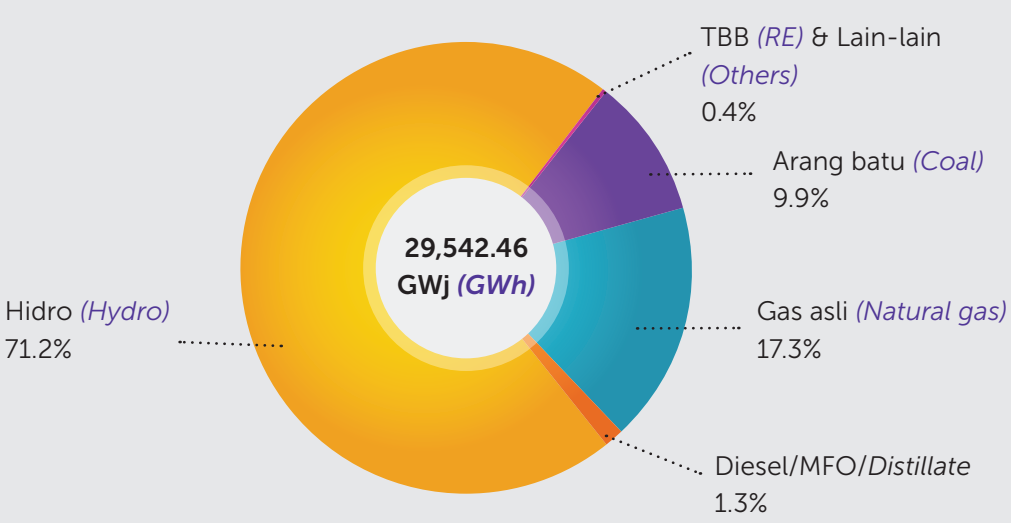
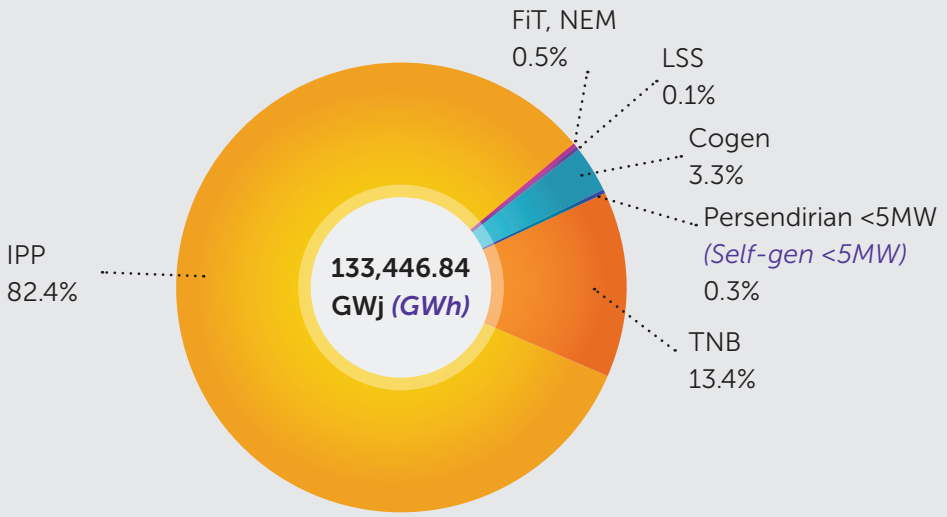


PENJANAAN ELEKTRIK MENGIKUT KATEGORI PENJANA DAN KAWASAN (GWj)
ELECTRICITY GENERATION BY PRODUCER CATEGORY AND REGION (GWh)

SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*



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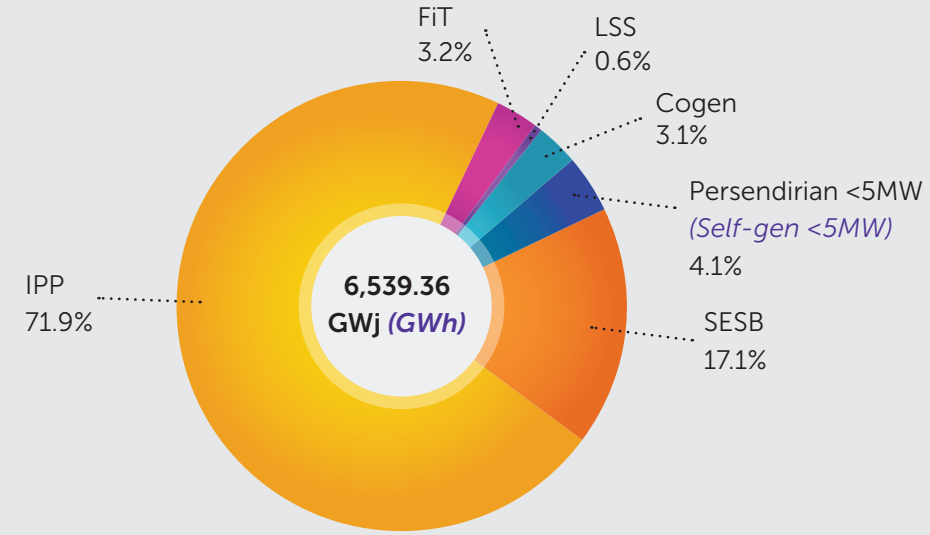

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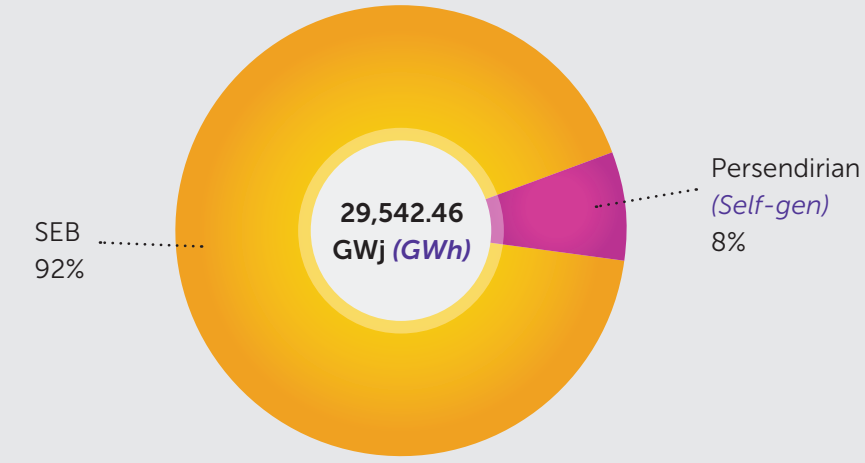


SEMENANJUNG MALAYSIA

PRESTASI PEMBEKALAN ELEKTRIK

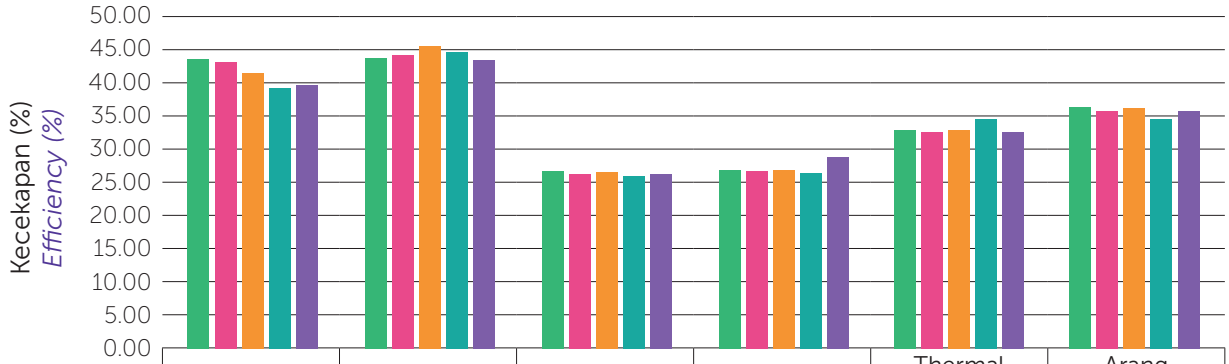
ELECTRICITY SUPPLY PERFORMANCE

PENINSULAR MALAYSIA

PRESTASI SISTEM PENJANAAN TNB DAN PENJANA-PENJANA BEBAS (IPP)
PERFORMANCE OF TNB AND INDEPENDENT POWER PRODUCER (IPP) GENERATION SYSTEM

Purata Kecekapan *Thermal* Mengikut Jenis Loji Jana Kuasa di Semenanjung Malaysia

Average Thermal Efficiency by Type of Power Plants in Peninsular Malaysia

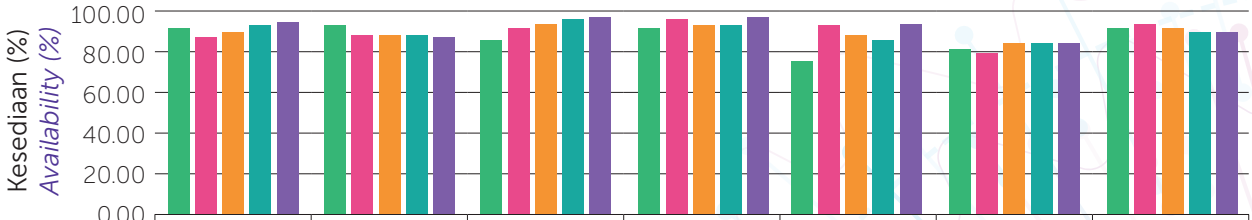


	CCGT TNB	CCGT IPP	OCGT TNB	OCGT IPP	Thermal Conventional IPP	Arang batu*(Coal)* IPP
2014	43.63	43.66	26.70	26.93	32.81	36.30
2015	43.14	44.24	26.23	26.61	32.52	35.65
2016	41.49	45.65	26.55	26.82	32.83	36.21
2017	39.34	44.74	25.88	26.50	34.52	34.51
2018	39.67	43.42	26.19	28.75	32.56	35.45

Note: ***Notes:*** CCGT: Turbin gas kitar padu *Combined cycle gas turbine* OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*

Purata Faktor Kesediaan Setara (EAF) Mengikut Jenis Loji Jana Kuasa di Semenanjung Malaysia

Average Equivalent Availability Factor (EAF) by Type of Power Plants in Peninsular Malaysia

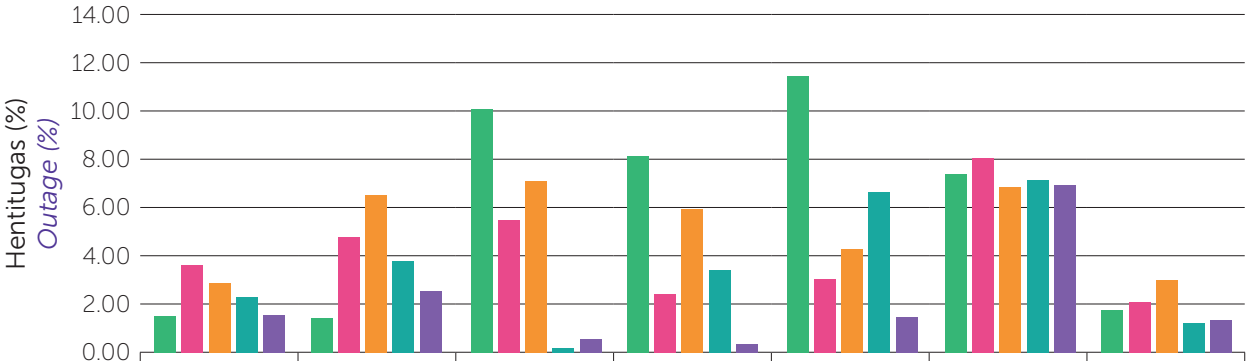


	CCGT TNB	CCGT IPP	OCGT TNB	OCGT IPP	Thermal Conventional IPP	Arang batu*(Coal)* IPP	Hidro *(Hydro)* TNB
2014	90.17	91.19	84.44	90.14	75.62	81.31	91.38
2015	86.15	88.41	91.11	96.45	94.43	79.92	92.52
2016	89.85	88.05	92.36	91.07	90.68	82.28	89.95
2017	91.41	88.21	95.09	91.21	86.37	82.64	89.29
2018	93.82	87.64	96.09	96.78	93.95	82.05	89.27

Note: ***Notes:*** CCGT: Turbin gas kitar padu *Combined cycle gas turbine* OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*

Purata Faktor Hentitugas Tidak Berjadual Setara (EUOF) Mengikut Jenis Loji Jana Kuasa di Semenanjung Malaysia

Average Equivalent Unplanned Outage Factor (EUOF) by Type of Power Plants in Peninsular Malaysia



	CCGT TNB	CCGT IPP	OCGT TNB	OCGT IPP	Thermal Conventional IPP	Arang batu *(Coal)* IPP	Hidro *(Hydro)* TNB
2014	1.49	1.38	10.07	8.23	11.48	7.40	1.74
2015	3.60	4.79	5.47	2.42	3.02	8.04	2.09
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

Note: ***Notes:*** CCGT: Turbin gas kitar padu *Combined cycle gas turbine* OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*

PRESTASI SISTEM PENGHANTARAN TNB
PERFORMANCE OF TNB TRANSMISSION SYSTEM

Jadual 1: Pelantikan Sistem Penghantaran TNB dengan Kehilangan Beban Sebanyak 50 MW dan ke Atas di Semenanjung Malaysia

Table 1: TNB Transmission System Trippings with Load Loss of 50 MW and Above in Peninsular Malaysia

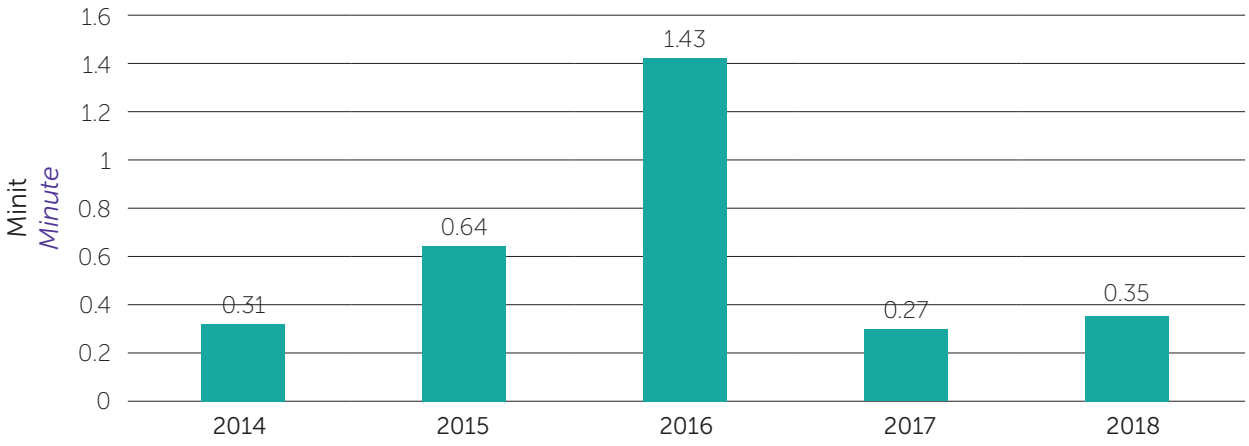
PETUNJUK *INDICATOR*	2014	2015	2016	2017	2018
Bilangan pelantikan tanpa lucutan beban *Number of trippings without load shedding*	1	1	3	1	5
Tenaga yang tidak dibekalkan semasa pelantikan (MWj) *Unsupplied energy during trippings (MWh)*	1.20	-	344.85	40.30	35.05
Bilangan pelantikan dengan lucutan beban *Number of trippings with load shedding*	1	1	1	-	-
Tenaga yang tidak dibekalkan semasa lucutan beban (MWj) *Unsupplied energy during load shedding (MWh)*	-	67.60	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

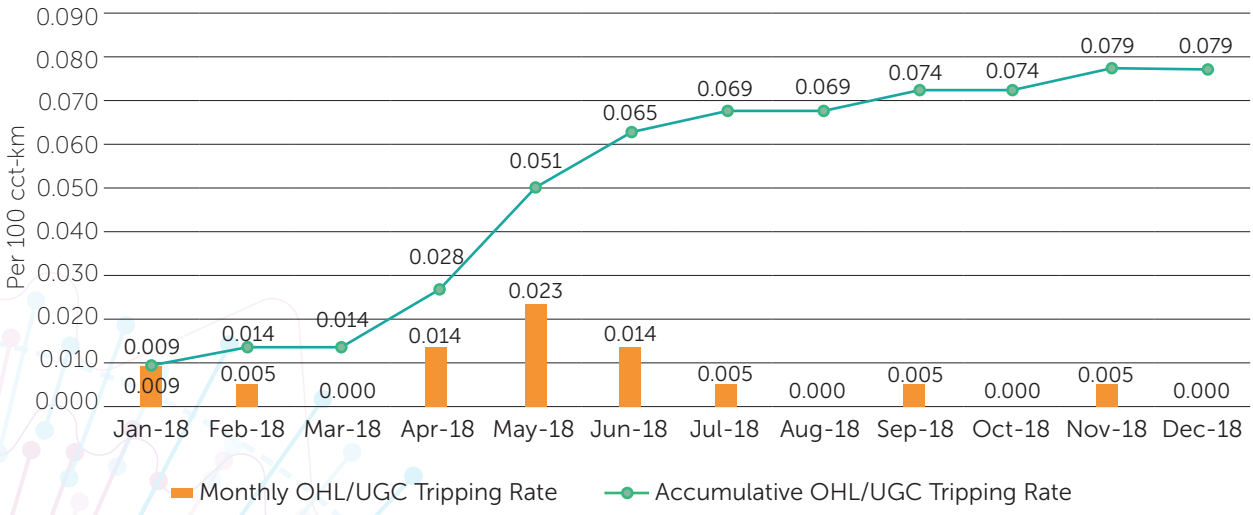
	TAHUN 2018 *YEAR 2018*											
PETUNJUK *INDICATOR*	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Bilangan pelantikan tanpa lucutan beban *Number of trippings without load shedding*	0	0	0	1	0	0	2	0	1	0	0	1
Bilangan pelantikan dengan lucutan beban *Number of trippings with load shedding*	0	0	0	0	0	0	0	0	0	0	0	0
Kehilangan beban maksimum (MW) *Maximum load losses (MW)*	0	0	0	74	0	0	162.8	0	56	0	0	71
Tenaga yang tidak dibekalkan semasa pelantikan (MWj) *Unsupplied energy during trippings (MWh)*	0	0	0	11.1	0	0	13.51	0	8.07	0	0	2.37
Purata tenaga tidak dibekalkan setiap pelantikan (MWj) *Average unsupplied energy during trippings (MWh)*	0	0	0	11.1	0	0	6.76	0	8.07	0	0	2.37
Purata tempoh setiap pelantikan (minit) *Average duration per tripping (minutes)*	0	0	0	9	0	0	5	0	10	0	0	2
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

***Delivery Point Unreliability Index (DePUI)* - Sistem Minit TNB di Semenanjung Malaysia**
Delivery Point Unreliability Index (DePUI) – TNB System Minutes in Peninsular Malaysia



Nota: ***Notes***: 2014-2017:Tahun Kewangan *Financial Year* 2018: Tahun Kalendar *Calendar Year*

Insiden Pelantikan Bulanan TNB bagi Talian/Kabel per 100 cct-km di Semenanjung Malaysia
TNB Monthly Tripping Incidents for Lines/Cables per 100 cct-km in Peninsular Malaysia

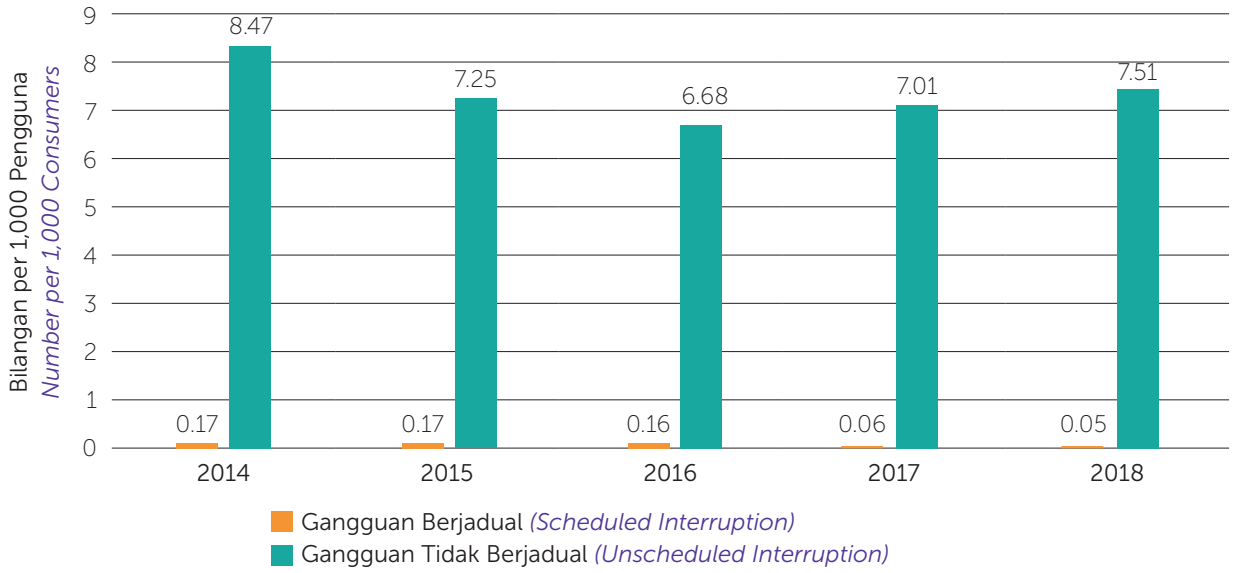


Nota: ***Notes:***
Data tahun kewangan yang diperolehi daripada Laporan Syarat Lesen 25 (4) TNB *(Transmission Reliability Standard)* TNB November 2018
Financial year data obtained from License Condition 25(4) TNB (Transmission Reliability Standard) TNB November 2018

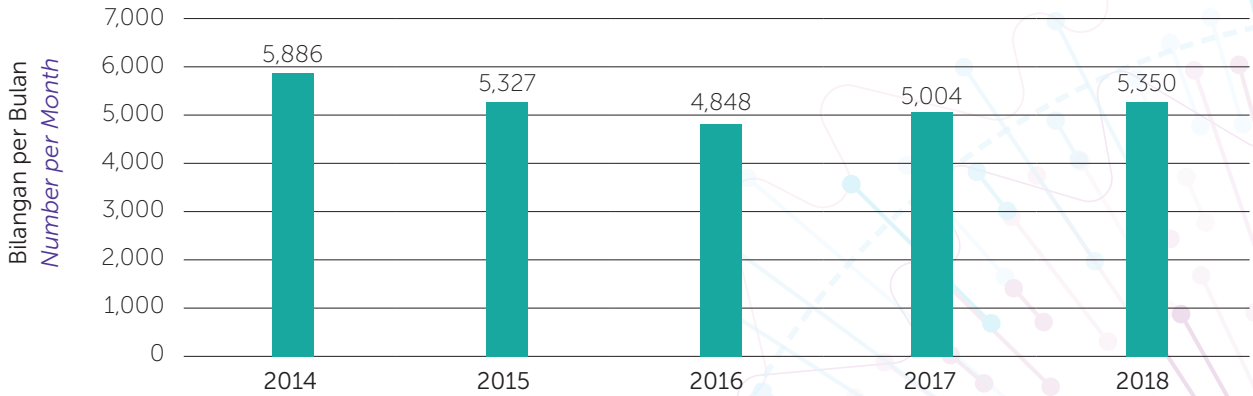
PRESTASI SISTEM PENGAGIHAN TNB
PERFORMANCE OF TNB DISTRIBUTION SYSTEM

GANGGUAN BEKALAN ELEKTRIK
ELECTRICITY SUPPLY INTERRUPTIONS

Gangguan Bekalan Elektrik TNB per 1,000 Pengguna di Semenanjung Malaysia
TNB Electricity Supply Interruptions per 1,000 Consumers in Peninsular Malaysia



Purata Gangguan Bekalan Elektrik Bulanan TNB di Semenanjung Malaysia
TNB Monthly Average Electricity Supply Interruptions in Peninsular Malaysia



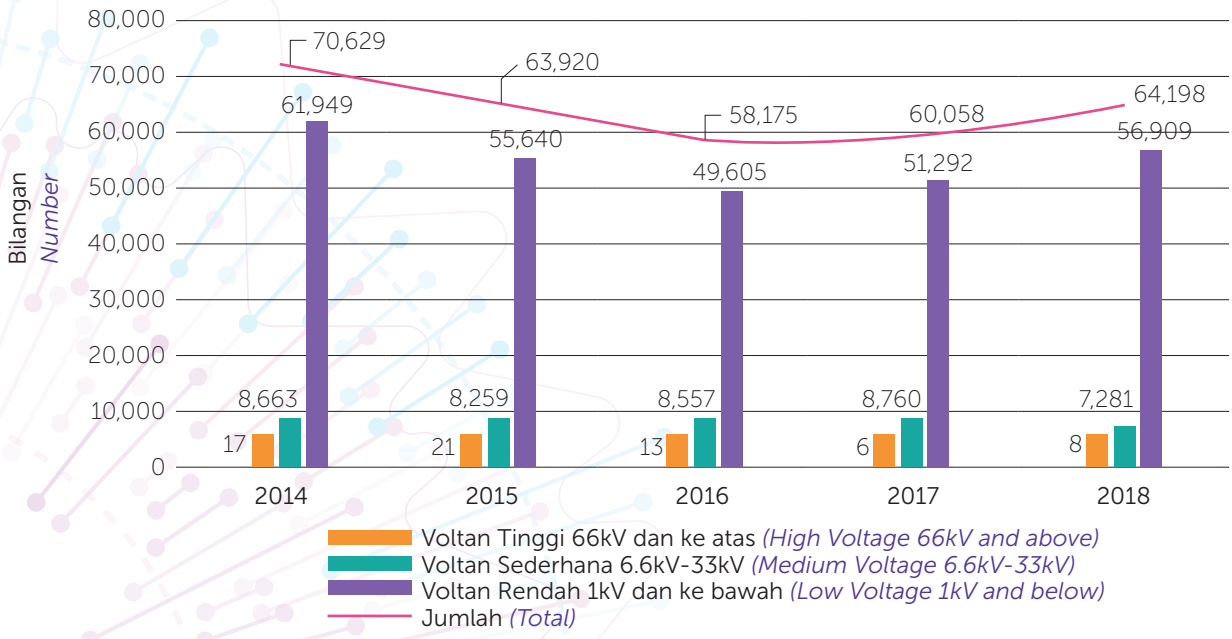
Jadual 3: Gangguan Bekalan Elektrik Mengikut Negeri di Semenanjung Malaysia

Table 3: Electricity Supply Interruptions by State in Peninsular Malaysia

NEGERI *STATE*	2014	2015	2016	2017	2018
Johor	7,719	8,354	7,649	6,509	4,839
Kedah	5,538	3,799	3,999	4,715	3,751
Kelantan	5,901	5,781	3,832	4,135	4,401
WP Kuala Lumpur	9,391	9,470	8,779	6,685	8,713
Melaka	3,939	1,694	1,458	717	917
Negeri Sembilan	4,966	5,226	4,784	4,078	2,750
Pahang	5,399	4,971	5,874	9,761	2,899
Perak	8,050	6,601	5,538	7,458	9,016
Perlis	1,086	465	343	513	7,608
Pulau Pinang	5,021	3,815	3,348	3,221	699
WP Putrajaya (termasuk *including* Cyberjaya)	4	25	13	16	14
Selangor	9,768	12,268	11,332	10,163	15,132
Terengganu	3,847	1,451	1,226	2,087	3,459
JUMLAH *TOTAL*	**70,629**	**63,920**	**58,175**	**60,058**	**64,198**

Gangguan Bekalan Elektrik Mengikut Tahap Voltan di Semenanjung Malaysia

Electricity Supply Interruptions by Voltage Level in Peninsular Malaysia



Jadual 4: Bilangan Gangguan Bekalan Elektrik di Semenanjung Malaysia
Table 4: Number of Electricity Supply Interruptions in Peninsular Malaysia

BILANGAN *NUMBER*	2014	2015	2016	2017	2018
Gangguan tidak berjadual *Unscheduled interruptions*	69,260	62,420	56,775	59,560	63,784
Gangguan berjadual *Scheduled interruptions*	1,369	1,500	1,400	498	414
JUMLAH *TOTAL*	**70,629**	**63,920**	**58,175**	**60,058**	**64,198**

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

KATEGORI *CATEGORY*	JUMLAH *TOTAL*
Alat ubah *Transformer*	37
Auto reclose	1
Banjir *Flood*	23
Feeder pillar	2,382
Fius *Fuse*	2,737
Haiwan *Animal*	409
Insulating piercing connectors (IPC)	24,808
Jumper	6
Kabel *Cable*	2,703
Konduktor *Conductor*	9,362
Kotak fius *Fuse box*	4,164
Lain-lain *Others*	33
Null	0
Pautan *Link*	67
Penamatan *Termination*	108
Penebat *Insulator*	6
Peralatan suis *Switchgear*	39
Pihak ketiga *Third party*	3,463
Pokok *Tree*	6,391
Relay	4
Ribut *Storm*	78
Sambungan *Joint*	4,279
Tiang *Pole*	2,414
Ubahtika *Transient*	78
Vandalisme *Vandalism*	184
JUMLAH *TOTAL*	**63,776**

SAIDI, SAIFI & CAIDI TNB

System Average Interruption Duration Index (SAIDI)

Jadual 6: SAIDI Mengikut Tahap Voltan di Semenanjung Malaysia
Table 6: SAIDI by Voltage Level in Peninsular Malaysia

TAHAP VOLTAN *VOLTAGE LEVEL*	Minit/Pelanggan/Tahun *Minutes/Customer/Year*				
	2014	2015	2016	2017	2018
Voltan tinggi (66 kV dan ke atas) *High voltage (66 kV and above)*	2.64	1.05	0.38	0.36	0.03
Voltan sederhana (6.6 kV – 33 kV) *Medium voltage (6.6 kV – 33 kV)*	50.84	47.78	46.46	51.78	46.02
Voltan rendah (1 kV dan ke bawah) *Low voltage (1 kV and below)*	3.16	2.66	2.45	2.35	2.17
JUMLAH *TOTAL*	**56.65**	**51.49**	**49.29**	**54.49**	**48.22**

Jadual 7: SAIDI Mengikut Negeri di Semenanjung Malaysia
Table 7: SAIDI by State in Peninsular Malaysia

NEGERI *STATE*	Minit/Pelanggan/Tahun *Minutes/Customer/Year*				
	2014	2015	2016	2017	2018
Johor	57.98	58.98	49.39	56.04	41.73
Kedah	84.34	57.42	60.82	82.51	73.3
Kelantan	56.23	56.18	67.90	59.34	49.91
WP Kuala Lumpur	32.96	32.36	32.39	41.01	28.59
Melaka	45.27	42.48	38.04	42.62	18.59
Negeri Sembilan	53.79	56.86	51.03	35.56	57.37
Pahang	68.94	62.61	57.22	51.3	46.01
Perak	69.04	51.64	46.23	52.83	43.89
Perlis	38.94	34.09	35.98	144.1	56.67
Pulau Pinang	50.4	54.49	51.05	58.12	78.66
WP Putrajaya (termasuk *including* Cyberjaya)	0.17	0.63	0.13	0.55	0.73
Selangor	55.84	50.74	54.67	52.34	64.77
Terengganu	43.33	41.46	39.65	42.82	36.67
SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*	**56.65**	**51.49**	**49.29**	**54.49**	**48.22**

System Average Interruption Frequency Index (SAIFI)

Jadual 8: SAIFI Mengikut Tahap Voltan di Semenanjung Malaysia
Table 8: SAIFI by Voltage Level in Peninsular Malaysia

TAHAP VOLTAN *VOLTAGE LEVEL*	Bilangan Gangguan/Pelanggan/Tahun *Number of Interruptions/Customer/Year*				
	2014	2015	2016	2017	2018
Voltan tinggi (66 kV dan ke atas) *High voltage (66 kV and above)*	0.00	0.02	0.02	0.00	0.00
Voltan sederhana (6.6 kV – 33 kV) *Medium voltage (6.6 kV – 33 kV)*	0.92	0.79	0.87	0.93	0.86
Voltan rendah (1 kV dan ke bawah) *Low voltage (1 kV and below)*	0.00	0.02	0.01	0.00	0.00
JUMLAH *TOTAL*	**0.92**	**0.83**	**0.90**	**0.93**	**0.86**

Jadual 9: SAIFI Mengikut Negeri di Semenanjung Malaysia
Table 9: SAIFI by State in Peninsular Malaysia

NEGERI *STATE*	Bilangan Gangguan/Pelanggan/Tahun *Number of Interruptions/Customer/Year*				
	2014	2015	2016	2017	2018
Johor	0.83	0.70	0.70	0.55	0.63
Kedah	1.65	1.20	1.40	1.19	1.26
Kelantan	1.21	1.25	1.45	1.53	1.47
WP Kuala Lumpur	0.67	0.48	0.57	0.61	0.46
Melaka	0.71	0.58	0.64	0.55	0.28
Negeri Sembilan	0.78	0.77	0.78	0.44	0.77
Pahang	1.49	1.44	1.56	1.39	0.65
Perak	1.08	0.80	0.94	0.71	1.41
Perlis	0.43	0.46	0.57	2.32	0.79
Pulau Pinang	0.81	0.83	0.82	0.69	1.68
WP Putrajaya (termasuk *including* Cyberjaya)	0.08	0.01	0.15	0.00	0.09
Selangor	0.74	0.74	0.84	0.60	0.94
Terengganu	1.05	0.87	1.01	1.10	1.00
SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*	**0.92**	**0.83**	**0.90**	**0.93**	**0.86**

Customer Average Interruption Duration Index (CAIDI)

Jadual 10: CAIDI Mengikut Tahap Voltan di Semenanjung Malaysia
Table 10: CAIDI by Voltage Level in Peninsular Malaysia

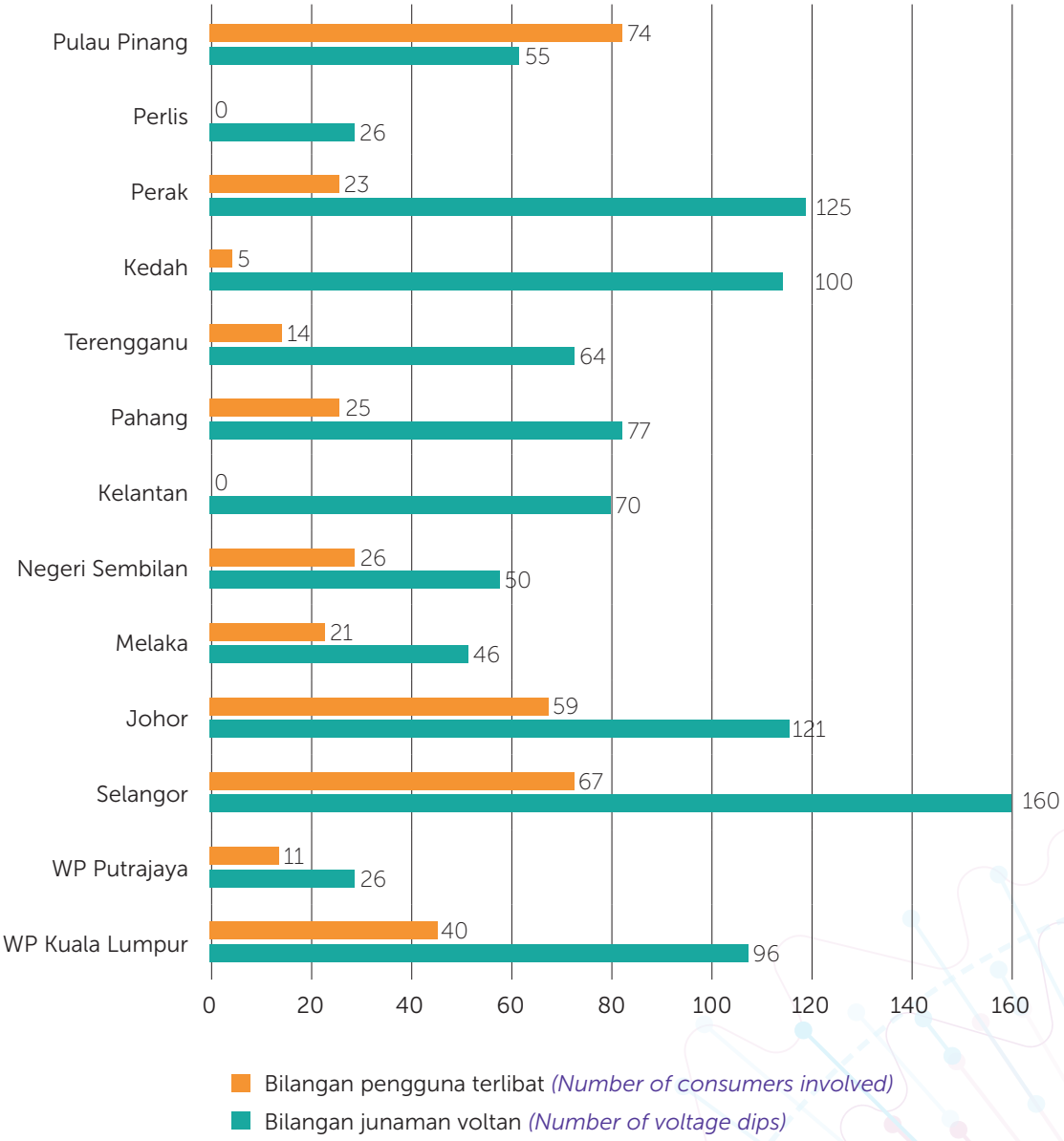
TAHAP VOLTAN *VOLTAGE LEVEL*	Minit/Pelanggan Terlibat/Tahun *Minutes/Affected Customer/Year*				
	2014	2015	2016	2017	2018
Voltan tinggi (66 kV dan ke atas) *High voltage (66 kV and above)*	0.00	52.50	19.00	0.00	0.00
Voltan sederhana (6.6 kV – 33 kV) *Medium voltage (6.6 kV – 33 kV)*	55.26	60.48	53.40	55.68	53.51
Voltan rendah (1 kV dan ke bawah) *Low voltage (1 kV and below)*	316.00	133.00	245.00	0.00	0.00
JUMLAH *TOTAL*	**61.58**	**62.04**	**54.77**	**58.59**	**56.07**

Jadual 11: CAIDI Mengikut Negeri di Semenanjung Malaysia
Table 11: CAIDI by State in Peninsular Malaysia

NEGERI *STATE*	Minit/Pelanggan Terlibat/Tahun *Minutes/Affected Customer/Year*				
	2014	2015	2016	2017	2018
Johor	69.86	84.26	70.56	101.89	66.24
Kedah	51.12	47.85	43.44	69.33	58.17
Kelantan	46.47	44.94	46.83	38.78	33.95
WP Kuala Lumpur	49.19	67.42	56.82	67.23	62.15
Melaka	63.76	73.24	59.44	77.50	66.39
Negeri Sembilan	68.96	73.84	65.42	80.81	74.51
Pahang	46.27	43.48	36.68	36.91	31.13
Perak	63.93	64.55	49.18	74.41	71.73
Perlis	90.56	74.11	63.12	62.11	46.82
Pulau Pinang	62.22	65.65	62.26	84.23	70.78
WP Putrajaya (termasuk *including* Cyberjaya)	2.13	63.00	0.87	0.00	8.11
Selangor	75.46	68.57	65.08	87.23	68.9
Terengganu	41.27	47.66	39.26	42.39	36.67
SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*	**61.58**	**62.04**	**54.77**	**58.59**	**56.07**

KUALITI PEMBEKALAN ELEKTRIK TNB
TNB ELECTRICITY SUPPLY QUALITY

Kejadian Junaman Voltan Mengikut Negeri dan Bilangan Pengguna yang Terlibat di Semenanjung Malaysia
Voltage Dip Incidents by State and Number of Consumers Involved in Peninsular Malaysia



Nota: ***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 TNB yang Terlibat dengan Insiden Junaman Voltan Mengikut Negeri di Semenanjung Malaysia

Table 12: Number of TNB Consumers Involved in Voltage Dip Incidents by State in Peninsular Malaysia

NEGERI *STATE*	2014	2015	2016	2017	2018
Johor	20	17	12	35	59
Kedah	5	11	7	2	5
Kelantan	3	0	0	2	0
Melaka	3	9	5	17	21
Negeri Sembilan	17	16	23	10	26
Pahang	4	4	5	11	25
Perak	7	20	14	20	23
Perlis	0	0	0	0	0
Pulau Pinang	29	64	51	57	74
Selangor	33	36	34	28	67
Terengganu	2	1	0	7	14
WP Kuala Lumpur	10	26	22	25	40
WP Putrajaya (termasuk *including* Cyberjaya)	19	5	4	2	11
SEMENANJUNG MALAYSIA *PENINSULAR MALAYSIA*	**152**	**209**	**177**	**216**	**365**

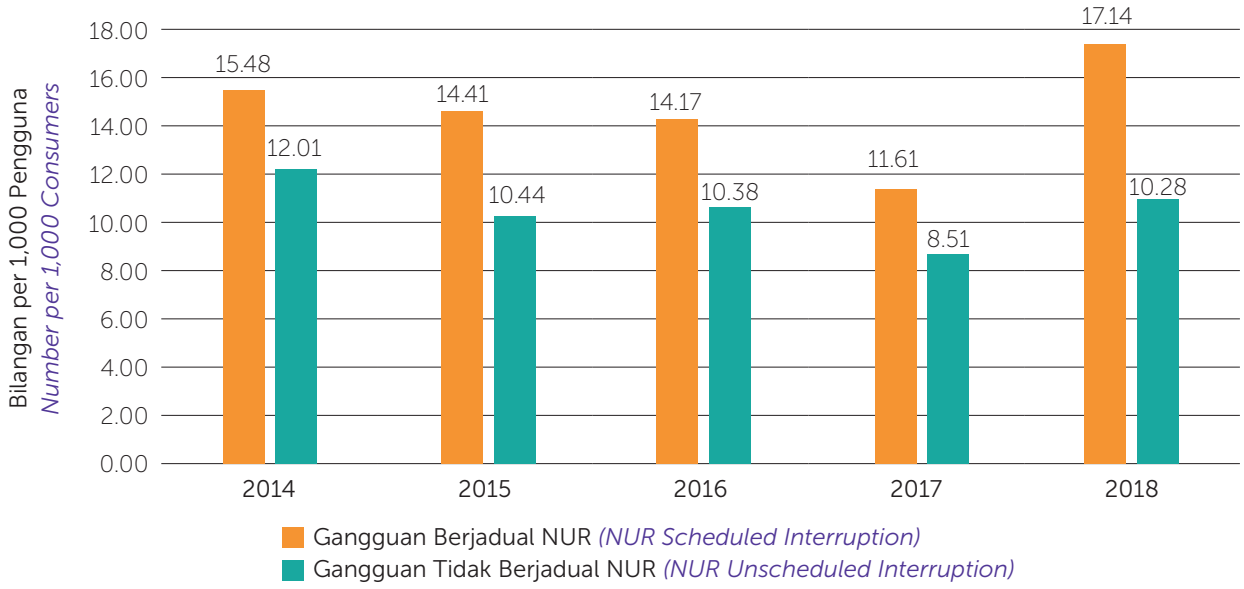
Jadual 13: *System Average RMS Frequency Index (SARFI)* di Semenanjung Malaysia

Table 13: System Average RMS Frequency Index (SARFI) in Peninsular Malaysia

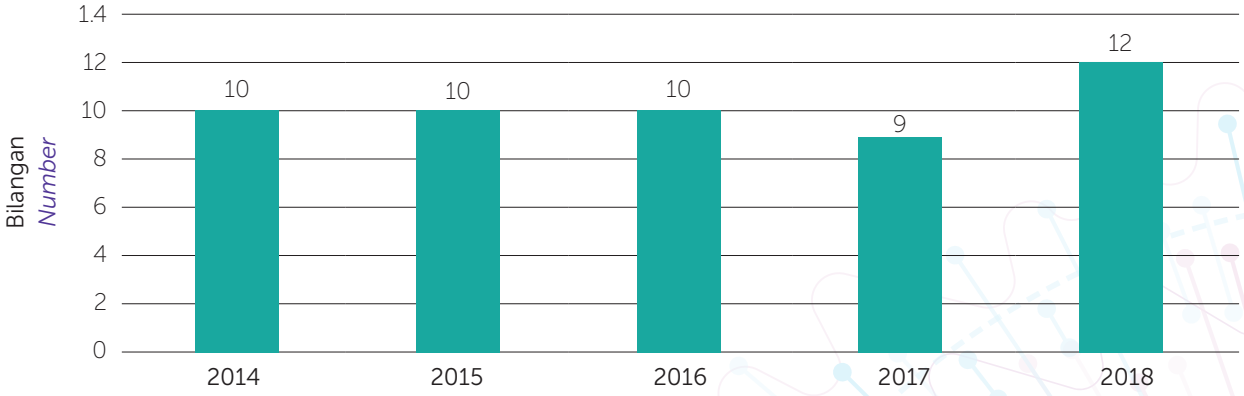
SISTEM TNB *TNB SYSTEM*	2018		
	$SARFI_{90}$	$SARFI_{80}$	$SARFI_{70}$
11 kV	13.40	4.46	2.01
22 kV	18.93	5.71	1.93
33 kV	16.34	4.35	1.31
SISTEM KESELURUHAN *OVERALL SYSTEM*	**15.10**	**4.52**	**1.71**

PRESTASI SISTEM PENGAGIHAN NUR DISTRIBUTION SDN. BHD. (NUR)
PERFORMANCE OF NUR DISTRIBUTION SYSTEM

Gangguan Bekalan Elektrik per 1,000 Pengguna NUR
NUR Electricity Supply Interruptions per 1,000 Consumers



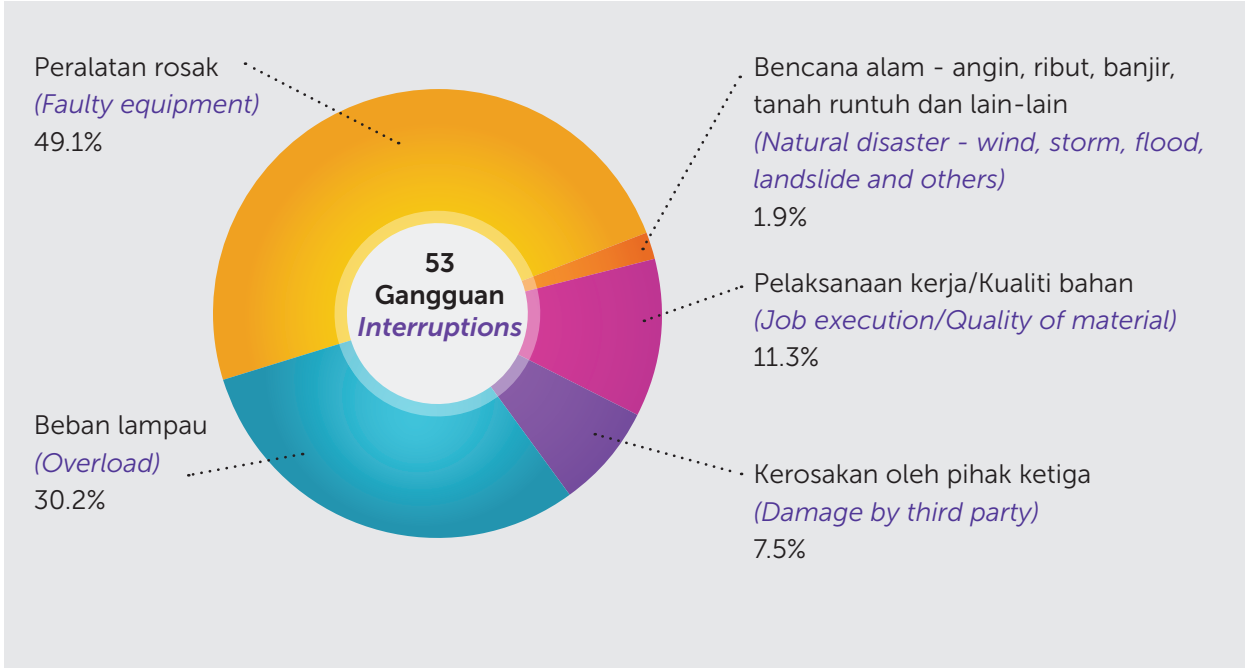
Purata Gangguan Bekalan Elektrik Bulanan NUR
NUR Monthly Average Electricity Supply Interruptions



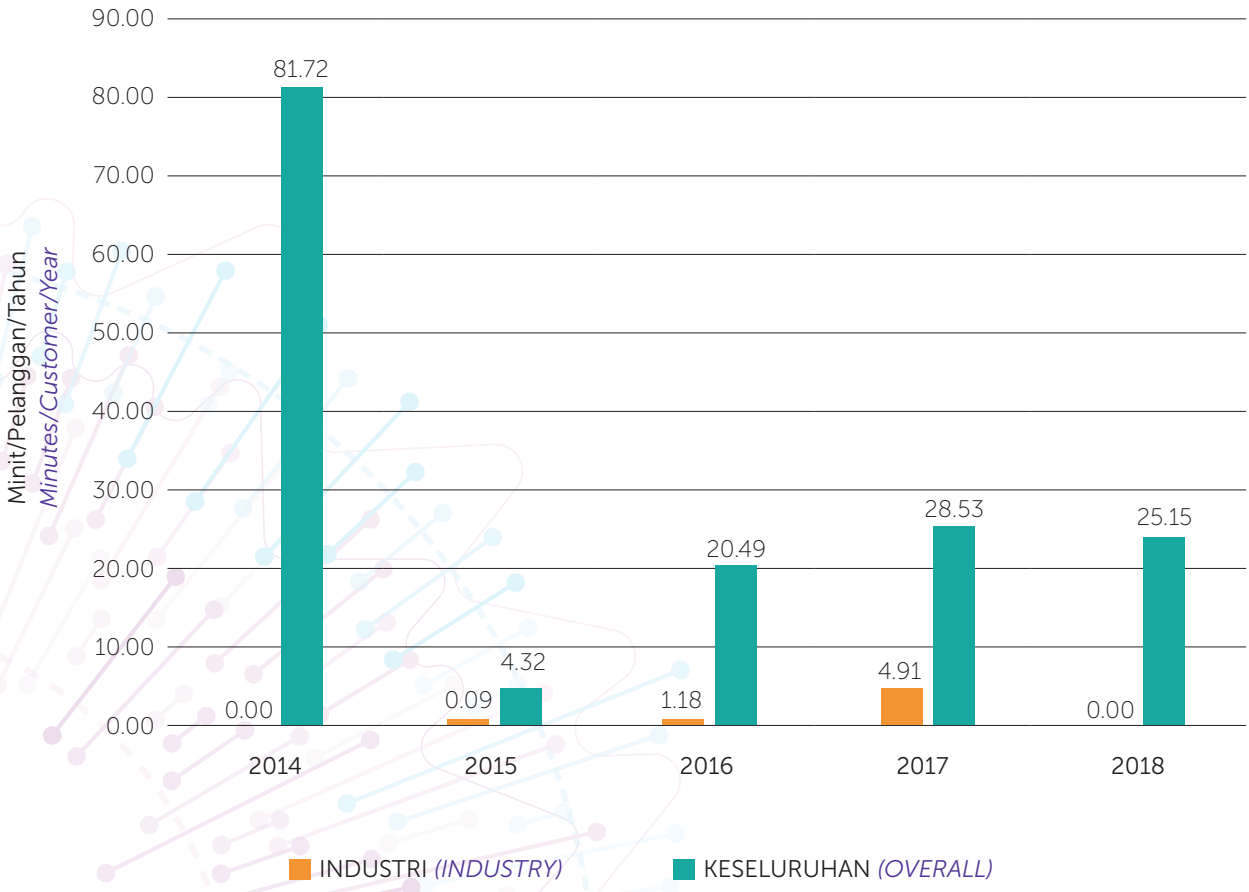
Jadual 14: Bilangan Gangguan Bekalan Elektrik NUR
Table 14: Number of NUR Electricity Supply Interruptions

BILANGAN *NUMBER*	2014	2015	2016	2017	2018
Gangguan tidak berjadual *Unscheduled interruptions*	52	50	52	44	54
Gangguan berjadual *Scheduled interruptions*	67	69	71	60	90
JUMLAH *TOTAL*	**119**	**119**	**123**	**104**	**144**

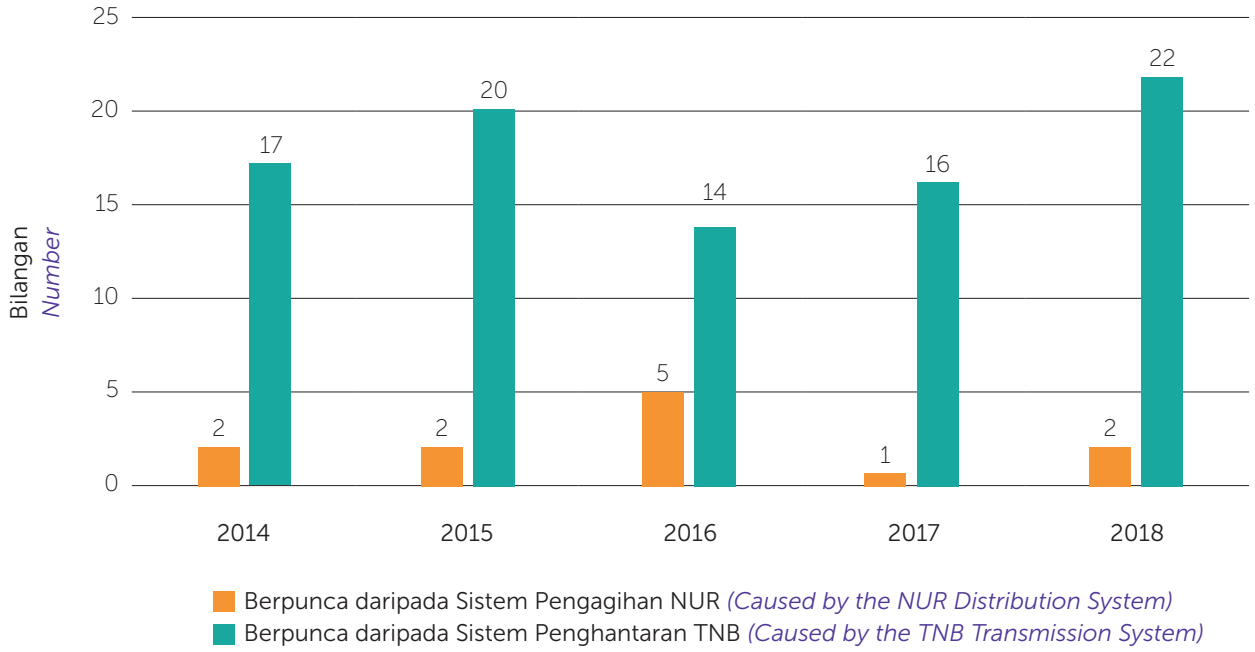
Gangguan Bekalan Elektrik Tidak Berjadual NUR Mengikut Jenis Gangguan
NUR Unscheduled Supply Interruption by Type of Interruptions



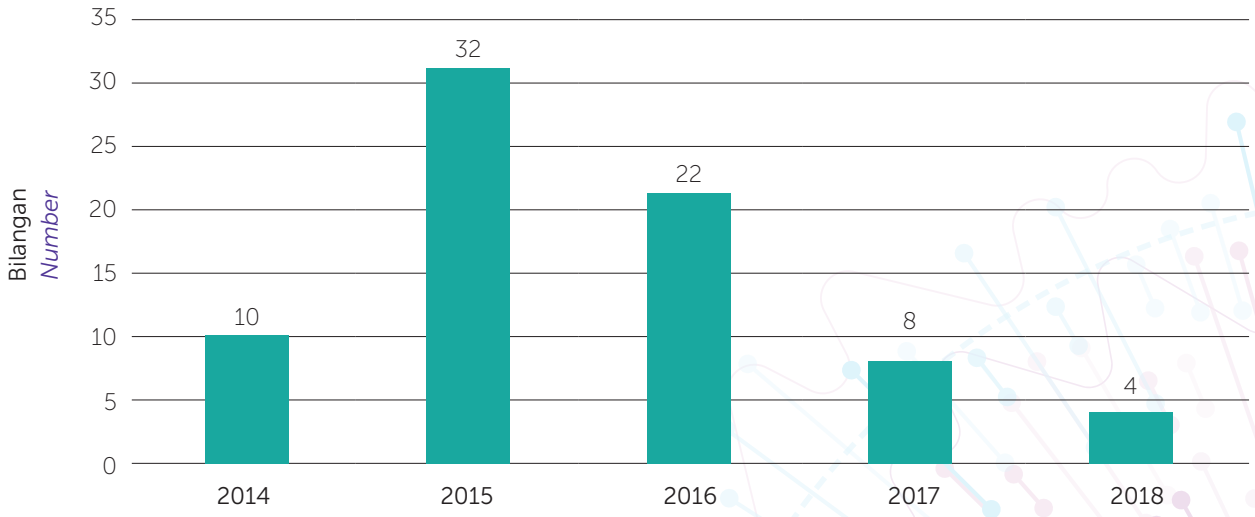
SAIDI NUR
NUR SAIDI



Kejadian Junaman Voltan yang Dilaporkan di Kulim Hi-Tech Park (KHTP)
Voltage Dip Incidents Reported in Kulim Hi-Tech Park (KHTP)



Bilangan Pengguna NUR yang Terlibat dengan Insiden Junaman Voltan
Number of NUR Consumers Involved in Voltage Dip Incidents



SABAH

PRESTASI PEMBEKALAN ELEKTRIK
ELECTRICITY SUPPLY PERFORMANCE

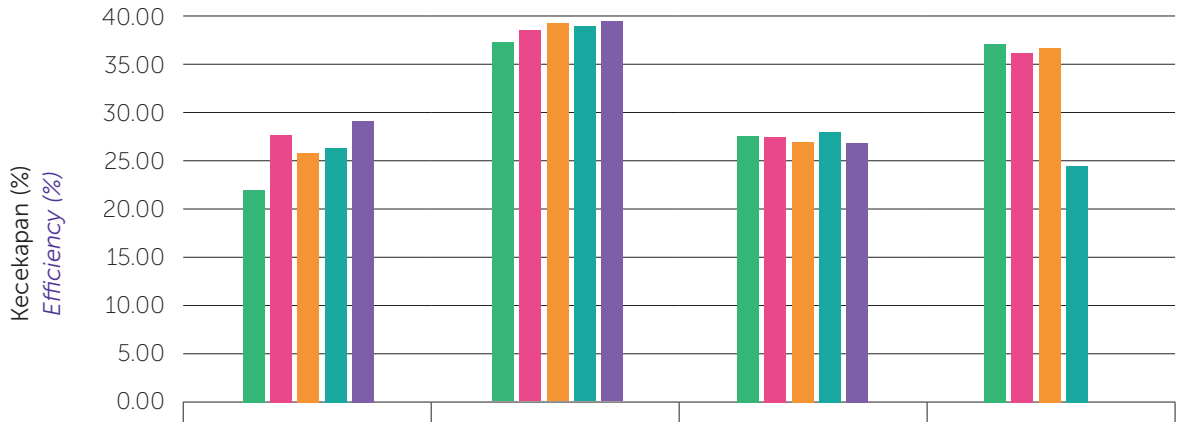
SABAH

PRESTASI SISTEM PENJANAAN SABAH ELECTRICITY SDN BHD (SESB) DAN PENJANA-PENJANA BEBAS (IPP)

PERFORMANCE OF SESB AND INDEPENDENT POWER PRODUCER (IPP) GENERATION SYSTEM

Purata Kecekapan *Thermal* Mengikut Jenis Loji Jana Kuasa di Sabah

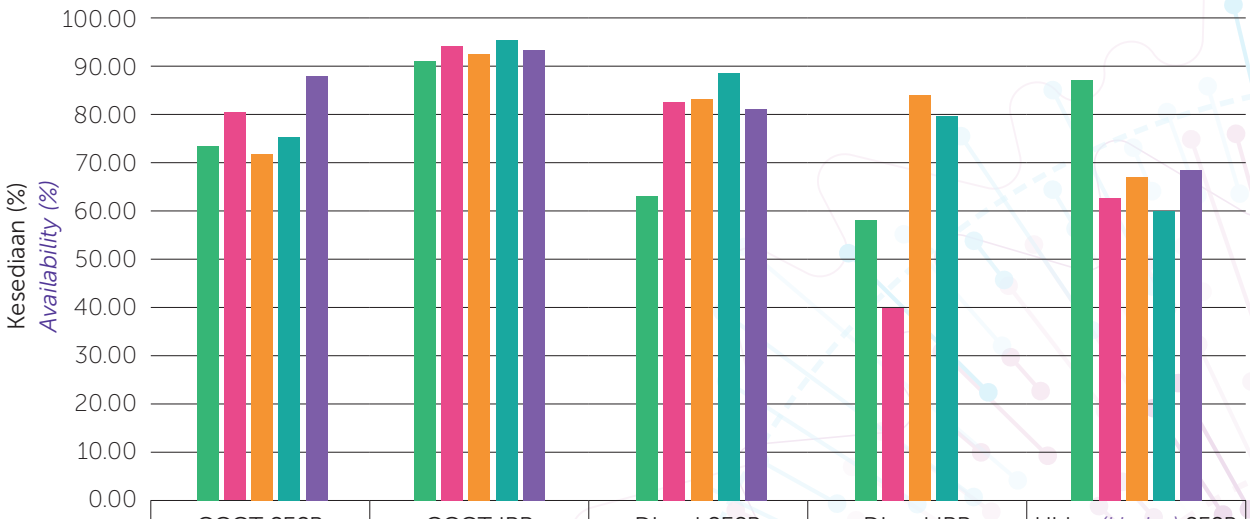
Average Thermal Efficiency by Type of Power Plants in Sabah



	CCGT SESB	CCGT IPP	Diesel SESB	Diesel IPP
2014	21.93	37.27	27.53	37.14
2015	27.70	38.54	27.47	36.13
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	-

Purata Faktor Kesediaan Setara (EAF) Mengikut Jenis Loji Jana Kuasa di Sabah

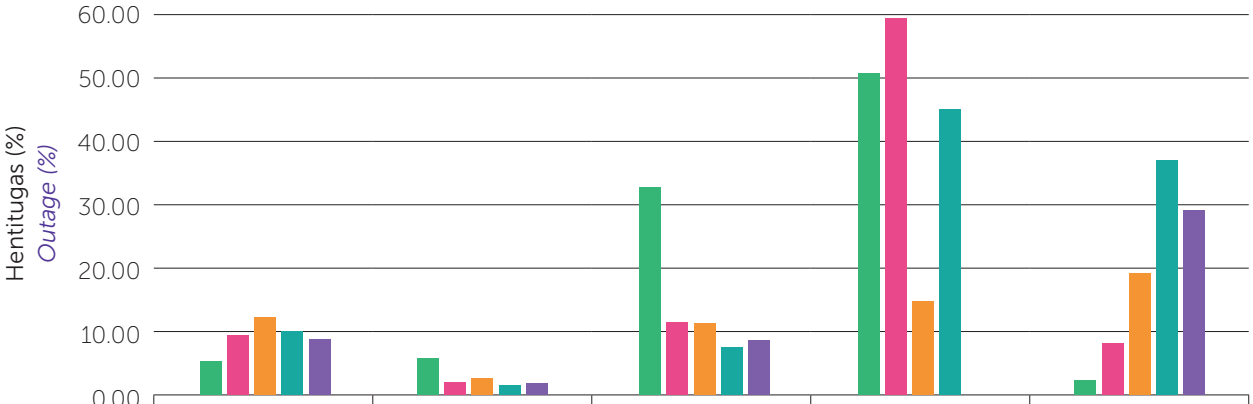
Average Equivalent Availability Factor (EAF) by Type of Power Plants in Sabah



	CCGT SESB	CCGT IPP	Diesel SESB	Diesel IPP	Hidro *(Hydro)* SESB
2014	73.50	91.17	62.85	57.96	87.30
2015	80.36	94.10	82.37	39.46	62.69
2016	71.70	92.55	83.14	84.08	67.05
2017	75.25	95.71	88.79	79.56	59.98
2018	88.00	93.43	81.11	-	68.46

Purata Faktor Hentitugas Tidak Berjadual (EUOF) Mengikut Jenis Loji Jana Kuasa di Sabah

Equivalent Unplanned Outage Factor (EUOF) by Type of Power Plants in Sabah



	CCGT SESB	CCGT IPP	Diesel SESB	Diesel IPP	Hidro *(Hydro)* SESB
2014	5.37	5.77	32.75	50.72	2.38
2015	9.42	2.05	11.55	59.56	8.17
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	-	29.16

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

CCGT: Turbin gas kitar padu *Combined cycle gas turbine*
OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*

1. Sehingga 2018, satu-satunya loji jana kuasa diesel di bawah tempoh lesen adalah Stratavest, tetapi ia tidak beroperasi sepanjang tahun disebabkan oleh *forced outage*. *As of 2018, the only diesel power plant under the licensed period was Stratavest, which was not operating throughout the year due to forced outage.*

2. Stesen jana kuasa diesel Serudong telah tamat operasi pada Disember 2017. *Serudong diesel power station ended its operation in December 2017.*

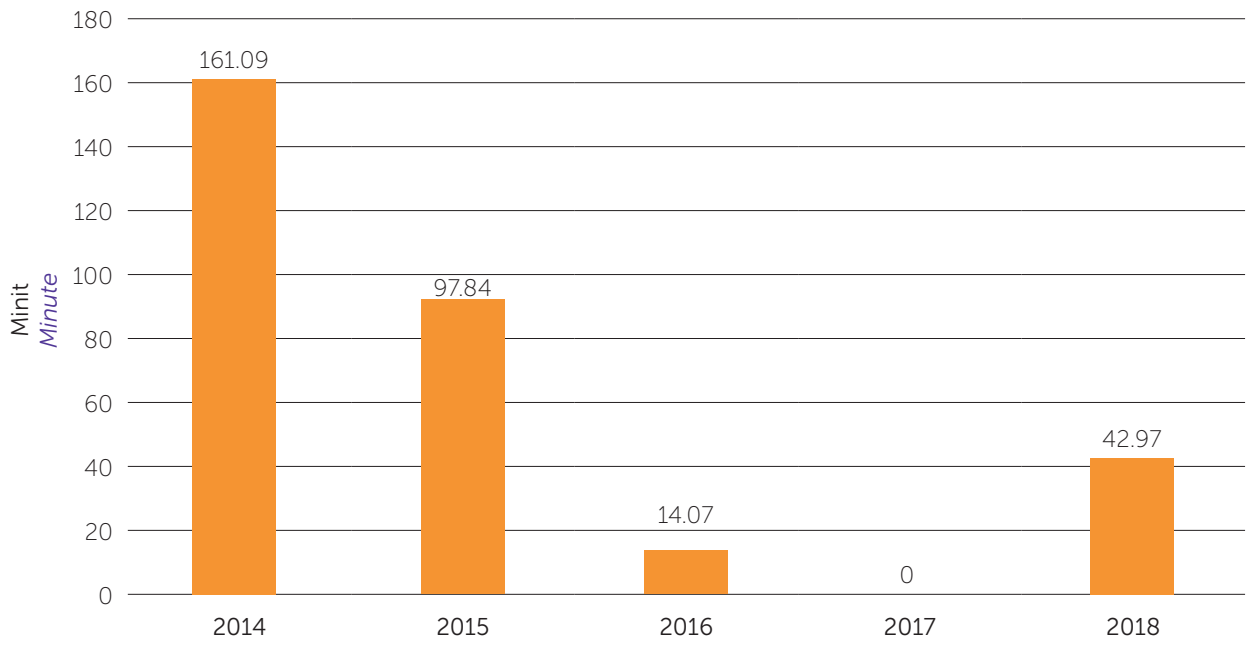
PRESTASI SISTEM PENGHANTARAN SESB
PERFORMANCE OF SESB TRANSMISSION SYSTEM

Jadual 15: Pelantikan Sistem Penghantaran dengan Kehilangan Beban Sebanyak 50 MW dan ke Atas di Sabah

Table 15: Transmission System Trippings with Load Loss of 50 MW and Above in Sabah

PETUNJUK *INDICATOR*	TAHUN 2018 *YEAR 2018*											
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
Bilangan pelantikan tanpa lucutan beban *Number of trippings without load shedding*	2	2	3	9	9	6	4	5	6	3	5	3
Bilangan pelantikan dengan lucutan beban *Number of trippings with load shedding*	1	0	0	0	0	0	0	0	1	0	1	0
Kehilangan beban maksimum (MW) *Maximum load losses (MW)*	218.06	-	-	-	-	-	-	-	70.72	-	69.32	-
Tenaga yang tidak dibekalkan semasa pelantikan (MWj) *Unsupplied energy during trippings (MWh)*	6,759.9	-	-	-	-	-	-	-	9,476.54	-	4,159.37	-
Purata tenaga yang tidak dibekalkan semasa pelantikan (MWj) *Average unsupplied energy during trippings (MWh)*	-	-	-	-	-	-	-	-	-	-	-	-
Purata tempoh setiap pelantikan (minit) *Average duration per tripping (minutes)*	96	-	-	-	-	-	-	-	134	-	60	-
Tenaga tidak dibekalkan semasa lucutan beban (MWj) *Unsupplied energy during load shedding (MWh)*	-	-	-	-	-	-	-	-	-	-	-	-

***Delivery Point Unreliability Index (DePUI)* - Sistem Minit di Sabah**
Delivery Point Unreliability Index (DePUI) - System Minutes in Sabah



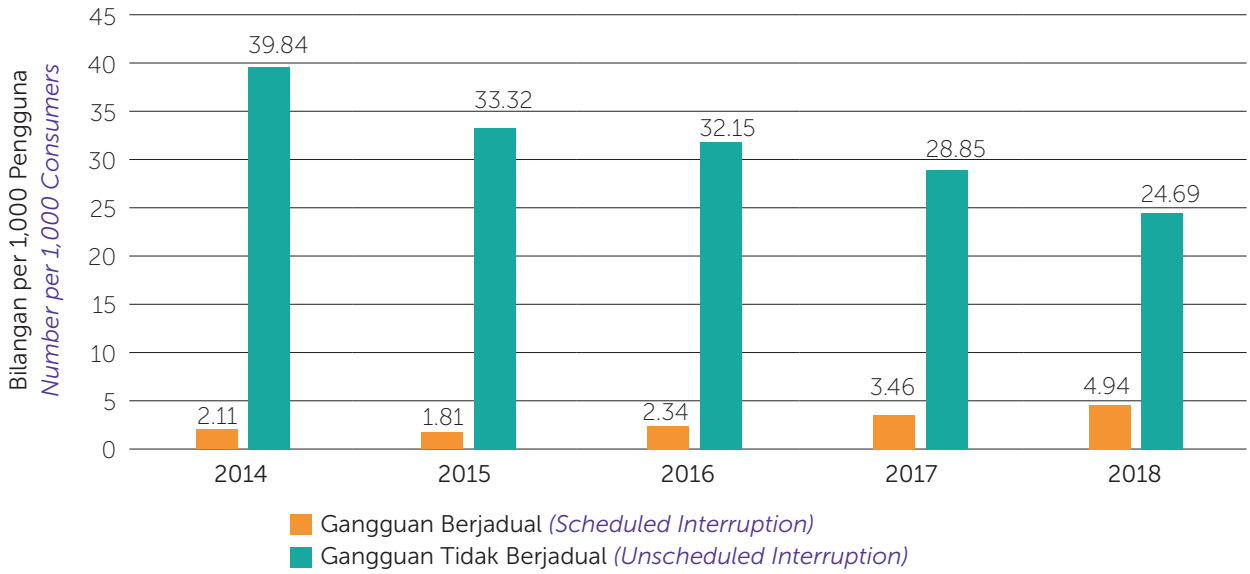
Nota: ***Note:*** Data Tahun Kewangan *Financial Year Data*

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

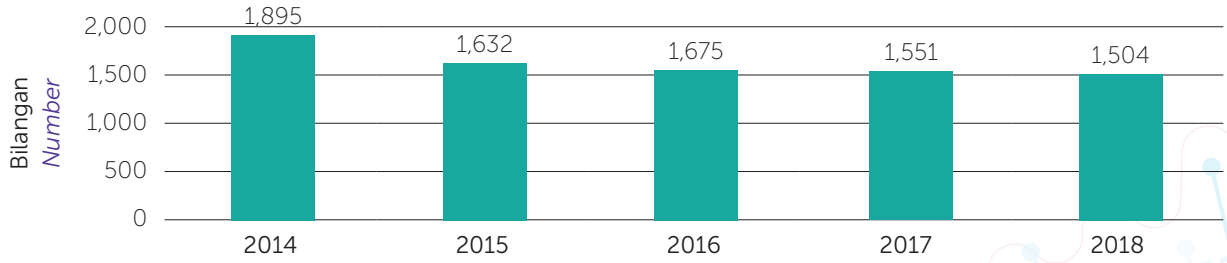
TAHAP VOLTAN *VOLTAGE LEVEL*	2014	2015	2016	2017	2018
275 kV	0.00	0.00	0.00	0.00	0.67
132 kV	0.58	0.99	0.31	0.62	0.55
66 kV	0.00	5.89	4.21	3.17	3.18

PRESTASI SISTEM PENGAGIHAN SESB
PERFORMANCE OF SESB DISTRIBUTION SYSTEM

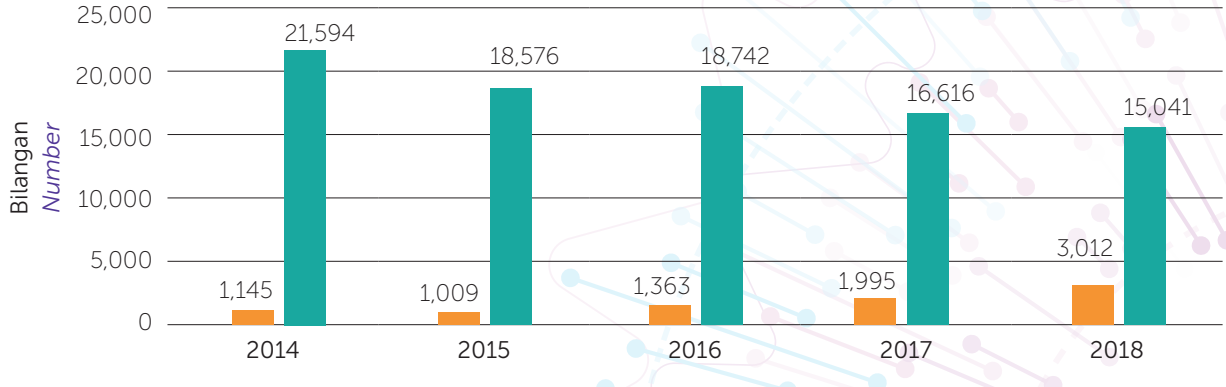
Gangguan Bekalan Elektrik per 1,000 Pengguna di Sabah
Electricity Supply Interruptions per 1,000 Consumers in Sabah



Purata Gangguan Bekalan Elektrik Bulanan di Sabah
Monthly Average Electricity Supply Interruptions in Sabah



Bilangan Gangguan Bekalan Elektrik di Sabah
Number of Electricity Supply Interruptions in Sabah



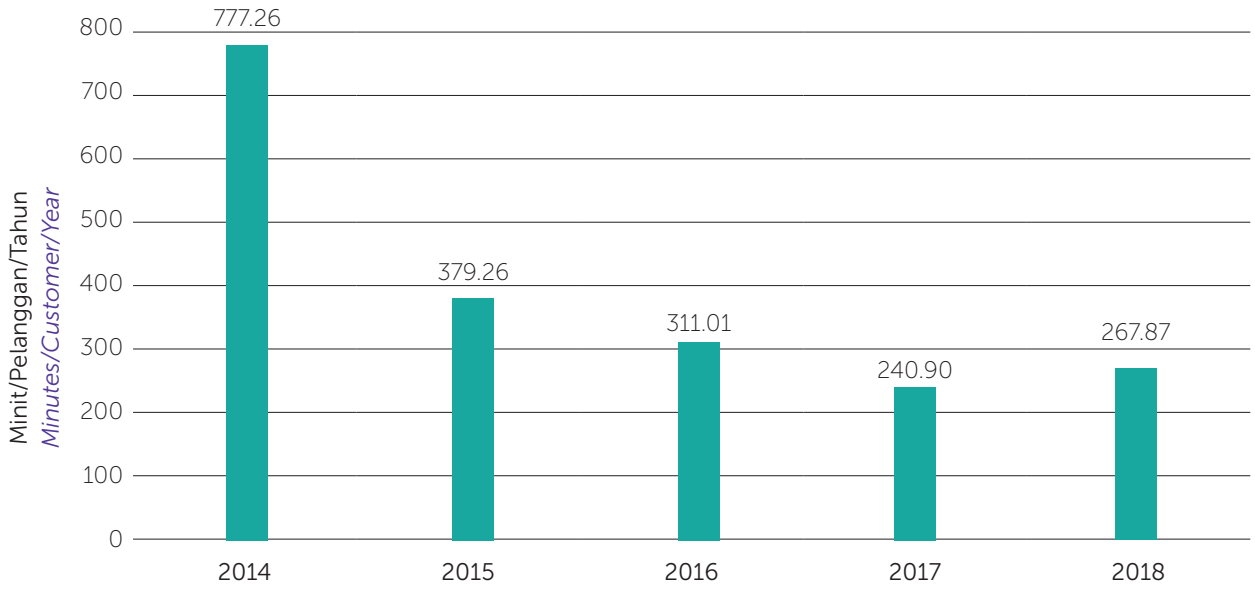
Jadual 17: Gangguan Bekalan Elektrik Tidak Berjadual Mengikut Jenis di Sabah

Table 17: Number of Unscheduled Electricity Supply Interruptions by Type in Sabah

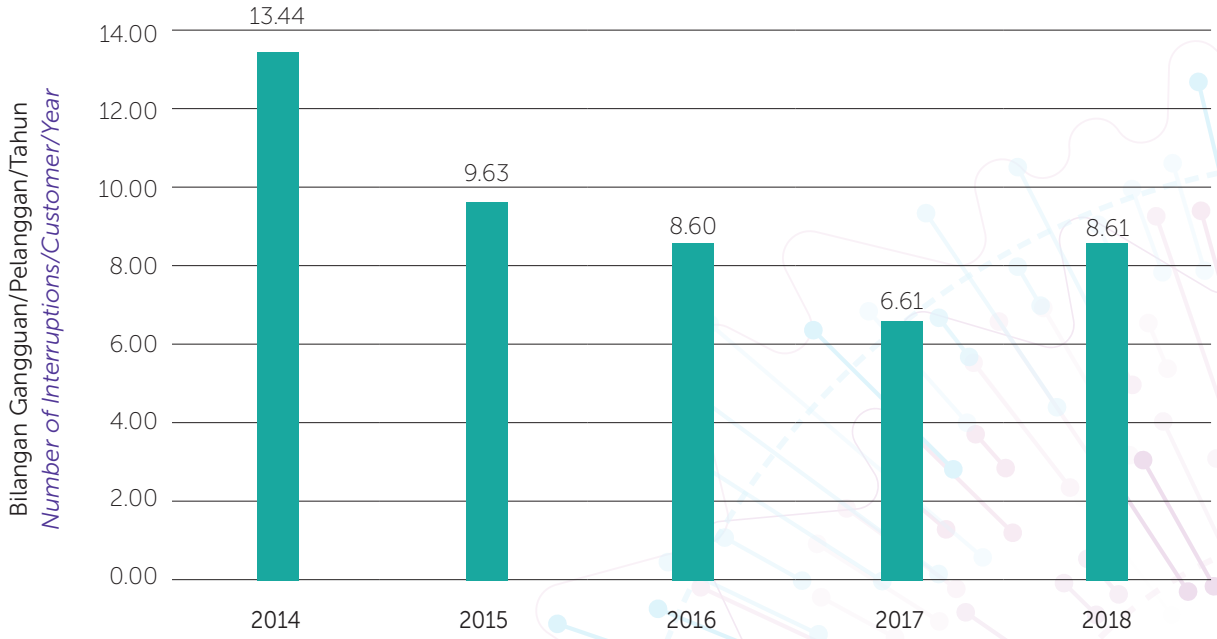
JENIS GANGGUAN *TYPE OF INTERRUPTIONS*	2014	2015	2016	2017	2018
Banjir *Flood*	16	7	3	163	0
Beban lampau *Overload*	3,317	2,209	2,929	3,018	3,050
Binatang *Animal*	1,445	1,171	977	1,017	1,445
Hubungan tidak baik *Poor contact*	2,977	3,168	2,959	2,182	2,033
Cuaca buruk (angin, ribut, petir) *Bad weather (wind, storm, lightning)*	2,185	1,415	1,191	1,048	0
Disebabkan oleh pihak lain (kena langgar, khianat, kena curi dan penyambungan haram) *Caused by other parties (hit, treachery, theft and illegal connection)*	2,071	1,742	2,195	1,394	0
Kabel *Cable*	604	483	474	462	796
Kebakaran *Fire*	33	25	64	24	0
Kena *guard wire*/kendur *Touched with guard wire/sagging*	1,283	837	792	499	708
Kerosakan peralatan *Faulty equipment*	255	71	82	43	0
Kualiti bahan *Quality of material*	176	94	83	63	152
Lain-lain (tiada data, tiada operasi, tiada bekalan) *Others (unavailable data, shut down, no supply)*	1,368	2,275	2,968	1,652	912
Lanjut usia/reput *Old/decayed*	726	1,111	595	490	675
Pencawang *Substation*	547	495	441	426	76
Pokok *Tree*	4,126	3,185	2,370	3,038	3,246
Tanah runtuh *Landslide*	104	33	22	34	0
Tidak diketahui *Unknown*	0	0	0	0	0
Ubahtika *Transient*	361	255	597	1,063	1,948
JUMLAH ***TOTAL***	**21,594**	**18,576**	**18,742**	**16,616**	**15,041**

SAIDI, SAIFI & CAIDI SESB

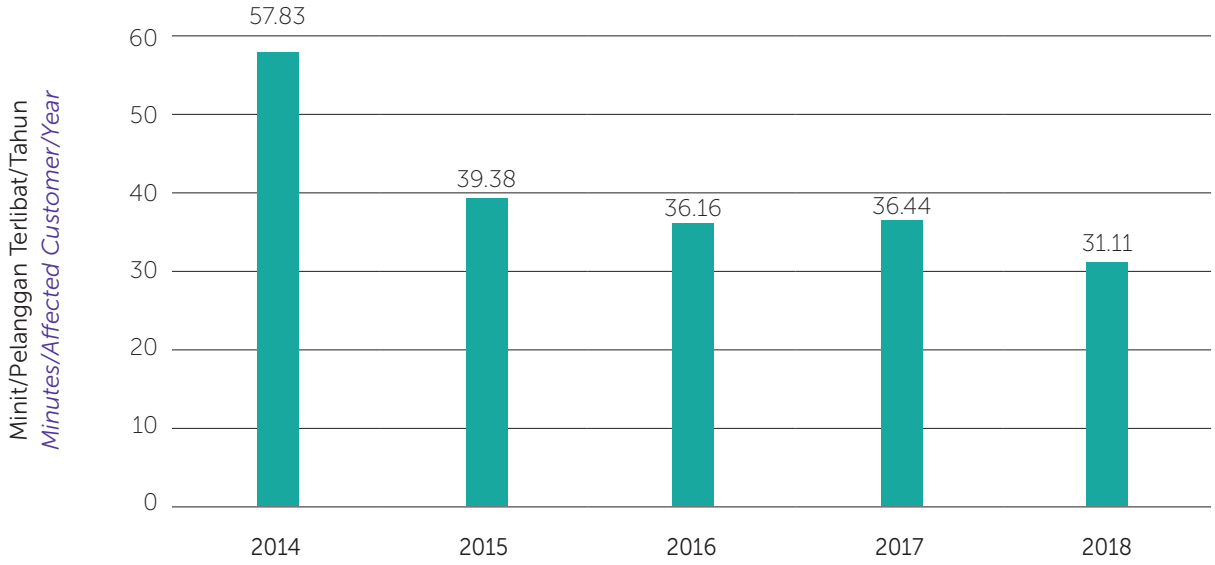
***SAIDI* di Sabah**
SAIDI in Sabah



***SAIFI* di Sabah**
SAIFI in Sabah



CAIDI di Sabah
CAIDI in Sabah



SARAWAK

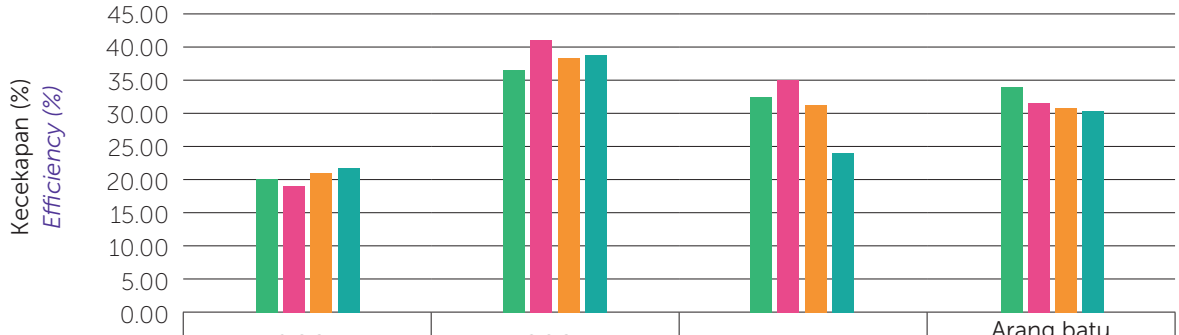
PRESTASI PEMBEKALAN ELEKTRIK

ELECTRICITY SUPPLY PERFORMANCE

SARAWAK

PRESTASI SISTEM PENJANAAN SARAWAK ENERGY BERHAD (SEB)
PERFORMANCE OF SEB GENERATION SYSTEM

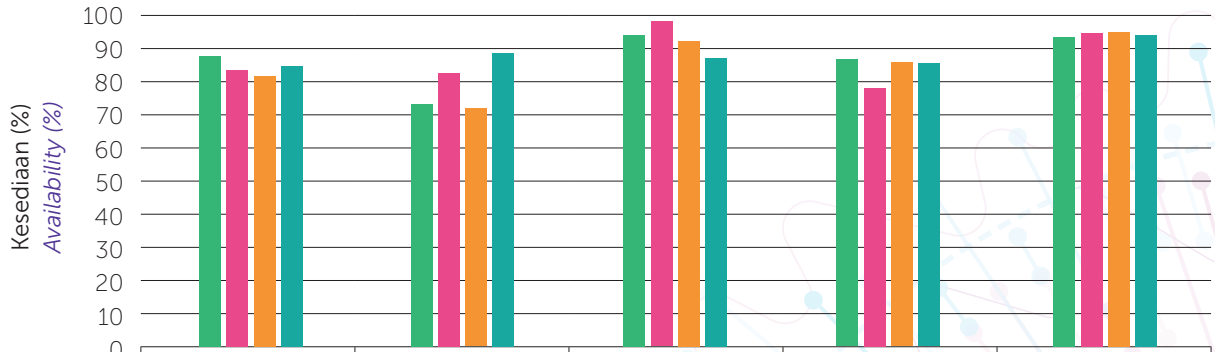
Purata Kecekapan *Thermal* Mengikut Jenis Loji Jana Kuasa di Sarawak
Average Thermal Efficiency by Type of Power Plants in Sarawak



	OCGT	CCGT	Diesel	Arang batu *(Coal)*
2015	19.92	36.54	32.36	33.93
2016	19.11	40.90	35.12	31.46
2017	20.92	38.22	31.19	30.87
2018	21.80	38.59	24.05	30.30

Note: ***Notes:***
CCGT: Turbin gas kitar padu *Combined cycle gas turbine*
OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*

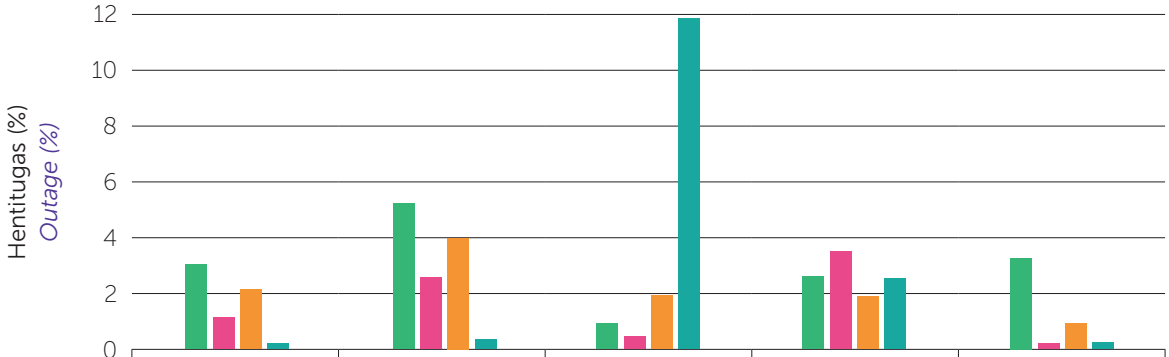
Purata Faktor Kesediaan Setara (EAF) Mengikut Jenis Loji Jana Kuasa di Sarawak
Average Equivalent Availability Factor (EAF) by Type of Power Plants in Sarawak



	OCGT	CCGT	Diesel	Arang batu *(Coal)*	Hidro *(Hydro)*
2015	87.64	73.25	94.00	86.67	93.37
2016	83.50	82.53	98.05	78.07	94.44
2017	81.53	71.88	92.24	85.64	94.52
2018	84.57	88.61	87.12	85.47	93.47

Note: ***Notes:***
CCGT: Turbin gas kitar padu *Combined cycle gas turbine*
OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*
Operasi stesen jana kuasa hidro SEB menggunakan Availability Factor (AF)
SEB hydropower stations' operations are using the Availability Factor (AF)

Kadar Hentitugas Tidak Berjadual (FOR) Mengikut Jenis Loji Jana Kuasa di Sarawak
Forced Outage Rate (FOR) by Type of Power Plants in Sarawak



	OCGT	CCGT	Diesel	Arang batu *(Coal)*	Hidro *(Hydro)*
2015	3.06	5.22	0.92	2.61	3.21
2016	1.11	2.58	0.45	3.51	0.21
2017	2.16	3.98	1.93	1.87	0.88
2018	0.23	0.33	11.85	2.52	0.25

Note: ***Notes:***
CCGT: Turbin gas kitar padu *Combined cycle gas turbine*
OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*
Operasi stesen jana kuasa hidro SEB menggunakan Availability Factor (AF)
SEB hydropower stations'operations are using the Availability Factor (AF)

PRESTASI SISTEM PENGHANTARAN SEB
PERFORMANCE OF SEB TRANSMISSION SYSTEM

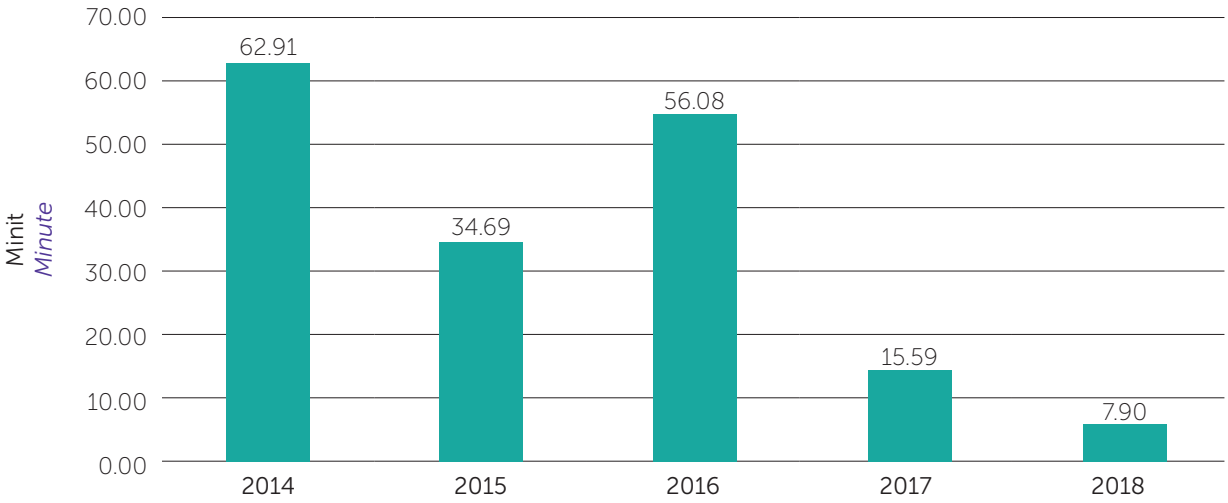
Jadual 18: Petunjuk Prestasi Penghantaran di Sarawak

Table 18: Transmission System Performance Indicators in Sarawak

PETUNJUK *INDICATOR*	2018											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Bilangan pelantikan *Number of trippings*	1	1	1	-	2	-	-	1	1	1	-	2
Kehilangan beban maksimum (MW) *Maximum load losses (MW)*	5.65	1.7	43	-	15.15	-	-	158.7	31.95	231.3	-	7.58
Tenaga yang tidak dibekalkan semasa pelantikan (MWj) *Unsupplied energy during trippings (MWh)*	4.9	2.66	30.1	-	3.78	-	-	15.87	56.45	61.68	-	8.67
Purata tenaga tidak dibekalkan setiap pelantikan (MWj) *Average unsupplied energy during trippings (MWh)*	4.9	2.66	30.1	-	1.89	-	-	15.87	56.45	61.68	-	4.34
Purata tempoh setiap pelantikan (Minit) *Average duration per tripping (Minutes)*	52	94	42	-	15	-	-	6	106	16	-	87
Bilangan lucutan beban *Number of load shedding*	-	-	-	-	-	-	-	-	-	-	-	-
Tenaga tidak dibekalkan semasa lucutan beban (MWj) *Unsupplied energy during load shedding (MWh)*	-	-	-	-	-	-	-	-	-	-	-	-

***Delivery Point Unreliability Index (DePUI)* - Sistem Minit di Sarawak**

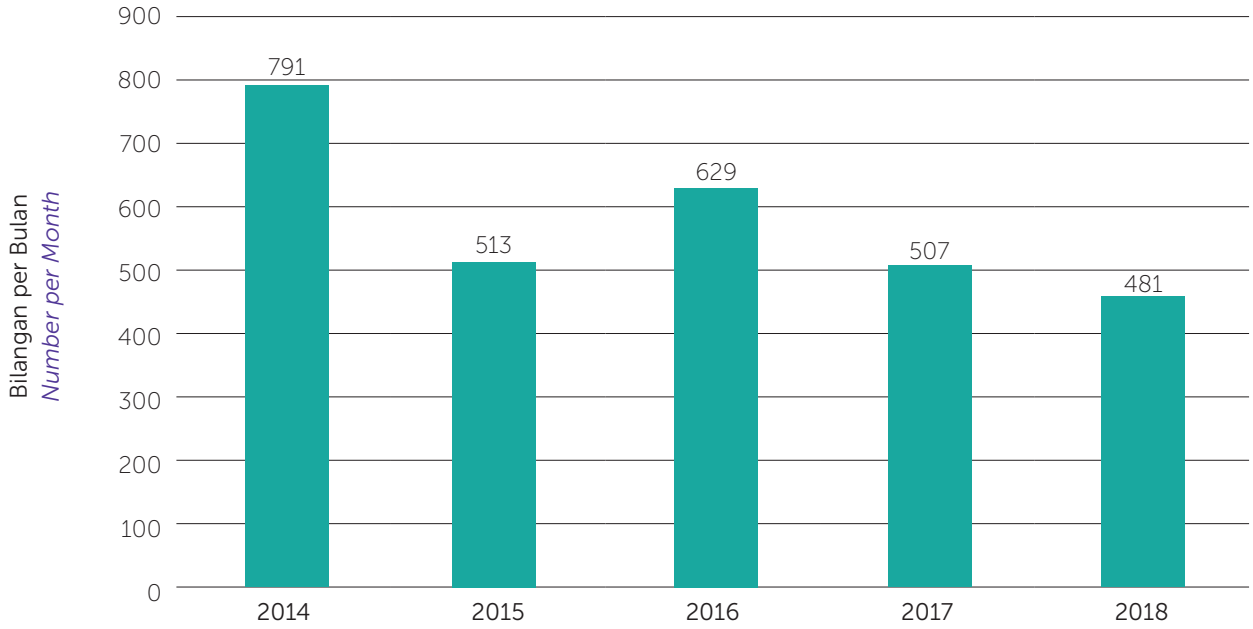
Delivery Point Unreliability Index (DePUI) - System Minutes in Sarawak



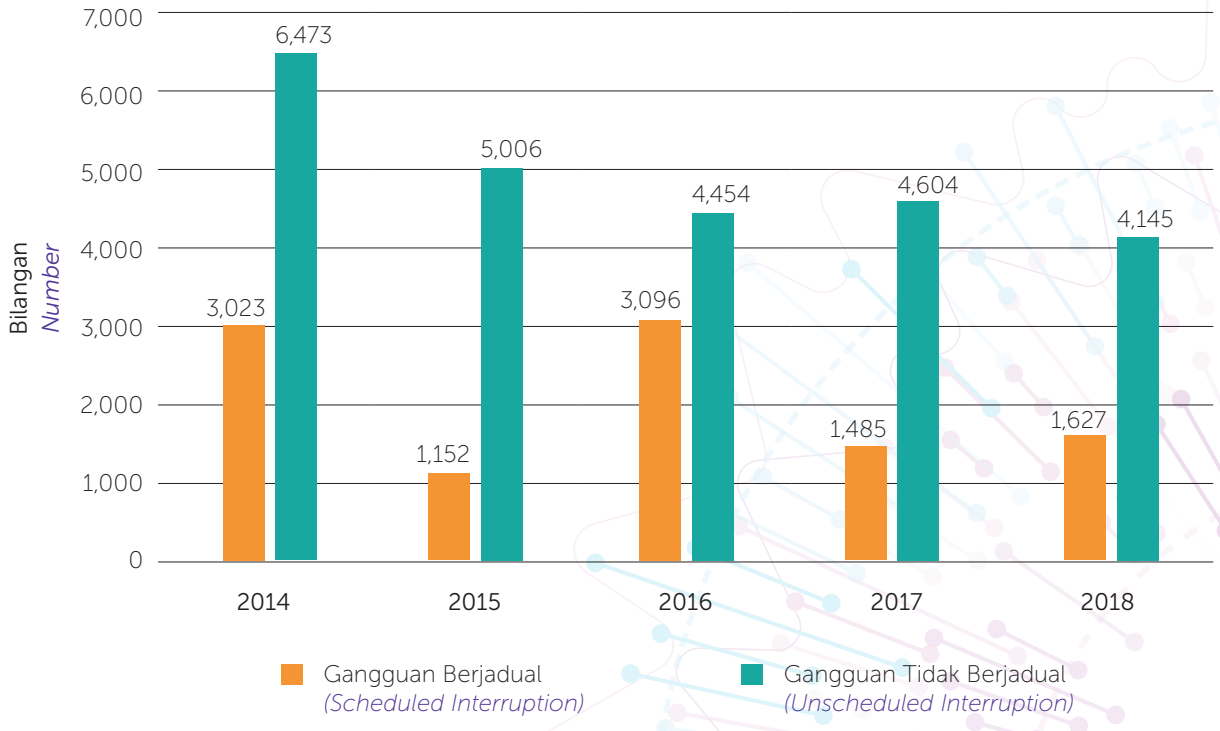
Nota: ***Notes***: Tahun Kewangan *Financial Year*

PRESTASI SISTEM PENGAGIHAN SEB
PERFORMANCE OF SEB DISTRIBUTION SYSTEM

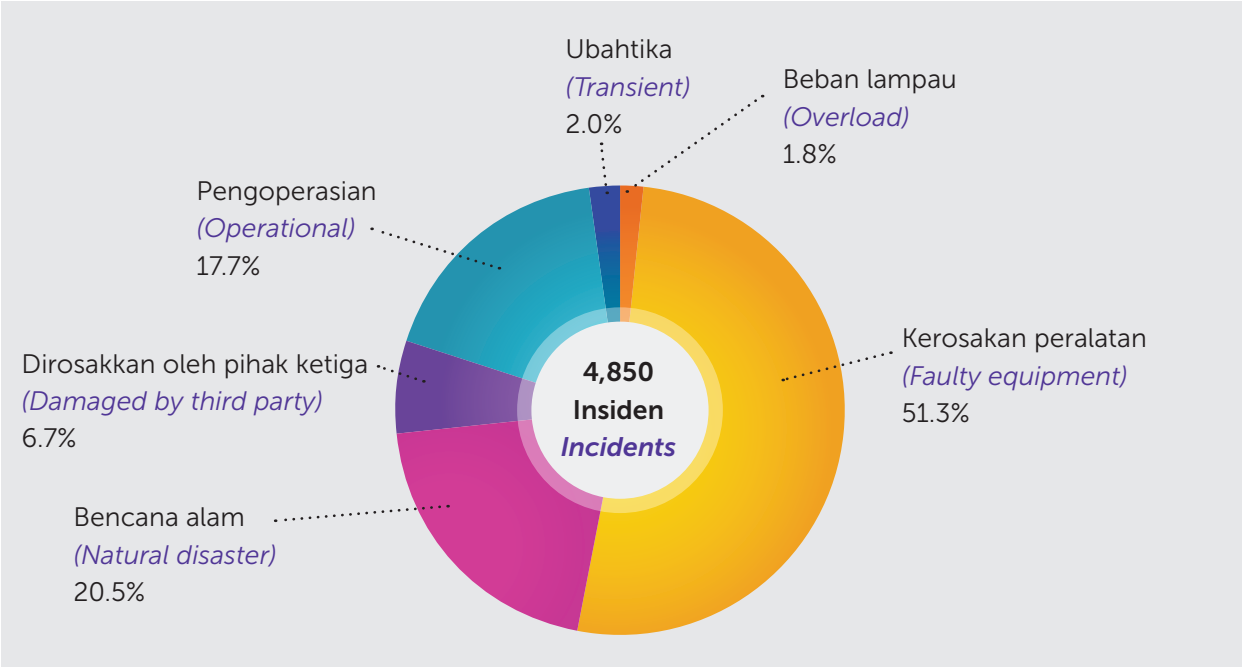
Purata Gangguan Bekalan Elektrik Bulanan di Sarawak
Monthly Average Electricity Supply Interruptions in Sarawak



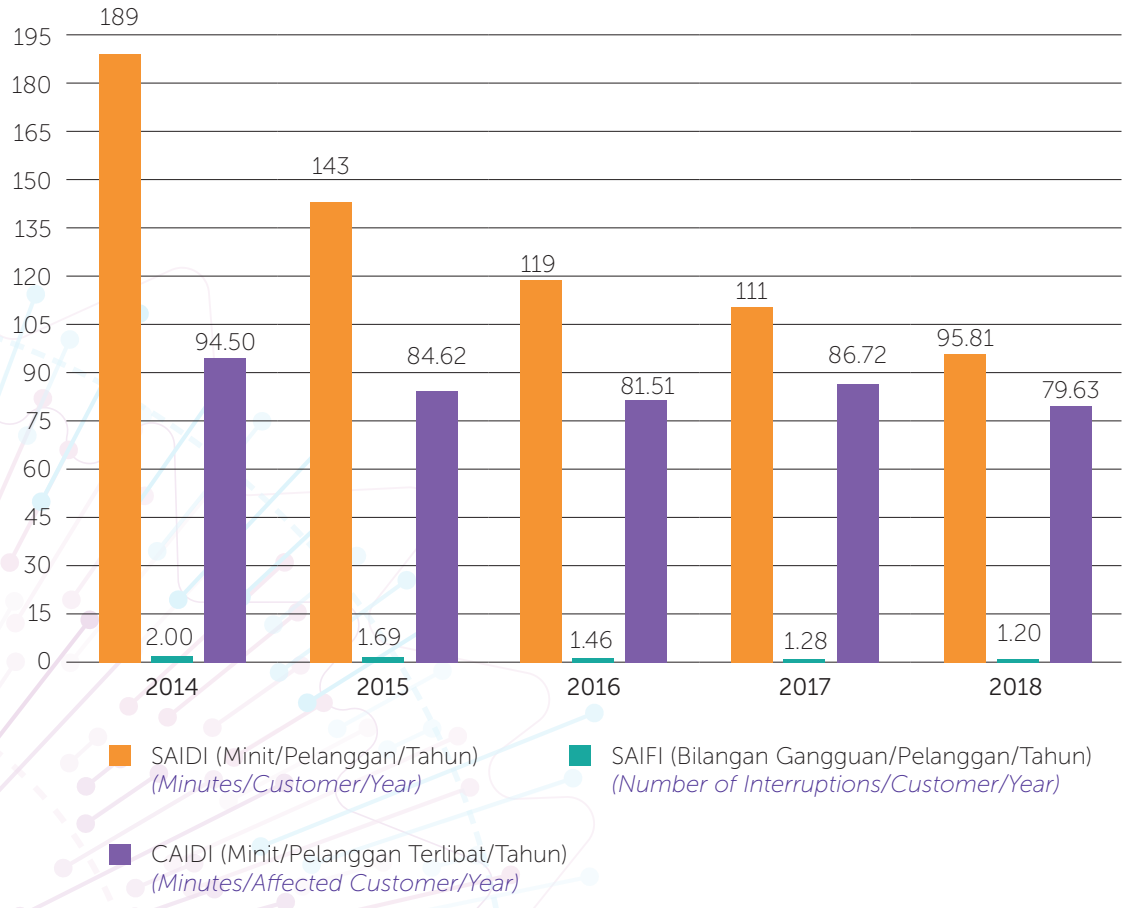
Bilangan Gangguan Bekalan Elektrik di Sarawak
Number of Electricity Supply Interruptions in Sarawak



Punca-punca Gangguan Bekalan Elektrik di Sarawak
Causes of Power Outages in Sarawak



SAIDI, SAIFI dan CAIDI di Sarawak
SAIDI, SAIFI and CAIDI in Sarawak



SEMENANJUNG MALAYSIA

MAKLUMAT INDUSTRI PEMBEKALAN ELEKTRIK

INFORMATION ON THE ELECTRICITY SUPPLY INDUSTRY

PENINSULAR MALAYSIA

Jadual 19: Maklumat Utama Prestasi TNB

Table 19: Key Information on the Performance of TNB

PETUNJUK *INDICATOR*	Unit	2014	2015	2016	2017	2018
Kehendak maksimum *Maximum demand*	MW	16,901	16,822	17,788	17,790	18,338[1]
Jumlah unit penjanaan[2] *Total units generated[2]*	GWj *GWh*	28,409	27,374	24,046	22,239	17,827
Jumlah unit jualan[3] *Total units sold[3]*	GWj *GWh*	103,448	105,562	110,199	110,567	113,469
Hasil jualan elektrik *Sales revenue of electricity*	RM Juta *RM Million*	40,202	41,646	43,583	43,703	45,029
Kapasiti terpasang[4] *Installed capacity[4]*	MW	6,373	6,299	6,107	5,066	5,066
Jumlah kakitangan[5] *Number of employees[5]*	Orang *Person*	30,065	29,602	28,807	27,990	28,371
Hasil jualan elektrik per kakitangan *Sales revenue of electricity per employee*	RM Juta/Kakitangan *RM Million/Employee*	1.34	1.41	1.51	1.56	1.59
Unit jualan per kakitangan *Units sold per employee*	GWj/Kakitangan *GWh/Employee*	3.44	3.57	3.83	3.95	4.00
Kapasiti terpasang per kakitangan *Installed capacity per employee*	MW/Kakitangan *MW/Employee*	0.21	0.21	0.21	0.18	0.18
Jumlah unit pembelian[6] *Total purchased units[6]*	GWj *GWh*	86,335	87,816	97,839	99,899	108,912
Jumlah unit eksport *Total exported units*	GWj *GWh*	17	3	0.74	4.81	0.08
Jumlah unit import *Total imported units*	GWj *GWh*	22	13	30	7.41	19.98

Nota: ***Notes:***

[1] 15 Ogos 2018.
15 August 2018.

[2] Penjanaan oleh stesen jana kuasa TNB yang bersambung di talian penghantaran, tidak termasuk penjana-penjana bebas (IPP).
Generation from TNB power plants connected at the transmission level, excluding independent power producers (IPP).

[3] Tidak termasuk eksport.
Excluding export.

[4] Kapasiti terpasang bagi stesen jana kuasa TNB yang bersambung di talian penghantaran, tidak termasuk IPP.
Installed capacity from TNB power plants connected at the transmission level, excluding IPP.

[5] Tidak termasuk anak syarikat milik penuh TNB dan anak syarikat dengan pemilikan majoriti.
Excluding TNB's wholly owned subsidiaries and majority owned subsidiaries.

[6] Unit yang dibeli daripada IPP.
Units purchased from IPP.

Jadual 20: Kapasiti Terpasang (MW) dan Kebolehdapatan Keseluruhan TNB
Table 20: TNB's Installed Capacity (MW) and Overall Availability

SUMBER TENAGA *ENERGY SOURCE*	2014	2015	2016	2017	2018
Hidro *Hydro*	1,899	2,149	2,529	2,536	2,536
Gas asli *Natural gas*	4,474	4,150	3,578	2,530	2,530
JUMLAH *TOTAL*	**6,373**	**6,299**	**6,107**	**5,066**	**5,066**
Kebolehdapatan keseluruhan *Overall availability*	**86.7%**	**89.9%**	**94.78%**	**91.37%**	**91.77%**

Nota: ***Notes:***
Kapasiti terpasang bagi stesen jana kuasa TNB yang bersambung di talian penghantaran.
Installed capacity of TNB power plants connected at transmission level.

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

SUMBER TENAGA *ENERGY SOURCE*	2014	2015	2016	2017	2018
Hidro *Hydro*	4,111	5,007	3,838	7,089	4,915
Gas asli *Natural gas*	24,298	22,367	20,208	15,149	12,911
Medium fuel oil / diesel / distillate	-	-	1	2	-
JUMLAH *TOTAL*	**28,409**	**27,374**	**24,046**	**22,239**	**17,827**

Nota: ***Notes:***
Penjanaan oleh stesen jana kuasa TNB yang bersambung di talian penghantaran, tidak termasuk penjana-penjana bebas (IPP).
Generation from TNB power plants connected at the transmission level, excluding independent power producers (IPP).

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

TAHUN *YEAR*	2014	2015	2016	2017	2018
Domestik *Domestic*	6,710,032	6,920,122	6,984,368	7,181,846	7,378,425
Komersial *Commercial*	1,404,501	1,475,306	1,453,804	1,510,341	1,553,607
Industri *Industry*	24,852	27,672	28,320	28,867	29,749
Lampu awam *Public lighting*	63,340	65,888	67,944	70,402	72,554
Perlombongan *Mining*	29	28	34	38	45
Pertanian *Agriculture*	1,574	1,627	1,850	2,112	2,228
Unit percuma *Free units*	2,385	2,414	2,530	2,559	2,589
JUMLAH *TOTAL*	**8,206,713**	**8,493,057**	**8,538,850**	**8,796,165**	**9,039,197**

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, club-house, quarters, main substations, transmission substations and distribution substations.*

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

TAHUN *YEAR*	2014	2015	2016	2017	2018
Domestik *Domestic*	22,350	23,231	25,745	24,828	25,522
Komersial *Commercial*	35,801	36,645	39,447	39,086	39,265
Industri *Industry*	43,380	43,754	42,977	44,457	46,440
Lampu awam *Public lighting*	1,370	1,357	1,374	1,482	1,476
Perlombongan *Mining*	133	105	113	131	149
Pertanian *Agriculture*	414	467	543	583	617
Eksport *Export*	17	3	0.74	4.81	0.08
JUMLAH *TOTAL*	**103,465**	**105,562**	**110,199**	**110,572**	**113,469**

Jadual 24: Penggunaan Tenaga Elektrik (GWj) Mengikut Negeri di Semenanjung Malaysia

Table 24: Electricity Consumption (GWh) by States in Peninsular Malaysia

NEGERI *STATE*	2014	2015	2016	2017	2018
Perlis	745	763	790	750	749
Kedah	4,881	5,002	5,040	5,235	5,415
Pulau Pinang	10,955	10,903	11,375	11,425	11,862
Perak	8,252	8,516	9,057	8,936	9,149
Selangor	27,931	28,152	29,269	28,853	29,613
WP Kuala Lumpur	14,267	14,470	15,196	15,186	15,072
Negeri Sembilan	5,653	5,762	5,938	5,979	6,047
Melaka	4,164	4,311	4,486	4,625	4,643
Johor	16,119	16,737	17,527	17,807	18,546
Pahang	4,724	4,776	5,052	5,187	5,581
Terengganu	2,555	2,876	2,763	2,953	3,079
Kelantan	2,068	2,099	2,352	2,375	2,449
WP Putrajaya	1,136	1,192	1,353	1,258	1,266
JUMLAH *TOTAL*	**103,449**	**105,560**	**110,198**	**110,567**	**113,469**

SISTEM PENGHANTARAN TNB
TNB TRANSMISSION SYSTEM

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

TAHUN *YEAR*	2014	2015	2016	2017	2018
TALIAN & KABEL SISTEM PENGHANTARAN *TRANSMISSION SYSTEM LINES & CABLES*					
500 kV (cct-km)	668	722	784	784	1,628
275 kV (cct-km)	8,714	9,517	9,518	9,637	9,047
132 kV (cct-km)	12,088	12,151	12,175	12,420	12,407
PENCAWANG PENGHANTARAN *TRANSMISSION SUBSTATIONS*					
Bilangan *Number*	414	419	427	439	443
Keupayaan (MVA) *Capacity (MVA)*	99,478	103,545	104,780	109,210	115,120

SISTEM PENGAGIHAN TNB
TNB DISTRIBUTION SYSTEM

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

TAHUN *YEAR*	2014	2015	2016	2017	2018
TALIAN & KABEL SISTEM PENGAGIHAN *DISTRIBUTION SYSTEM LINES & CABLES*					
Talian atas (km) *Overhead lines (km)*	516,780	532,403	532,403	339,793	352,565
Kabel bawah tanah (km) *Underground cables (km)*	678,026	697,159	697,159	305,464	307,474
PENCAWANG PENGAGIHAN *DISTRIBUTION SUBSTATIONS*					
Bilangan *Number*	70,286	74,417	74,417	79,450	81,327
Keupayaan (MVA) *Capacity (MVA)*	128,717	131,465	131,465	111,842	114,089

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

Jadual 27: Kapasiti Terpasang dan TAAC di Semenanjung Malaysia pada 2018

Table 27: Installed Capacity and TAAC in Peninsular Malaysia in 2018

	STESEN JANA KUASA *POWER STATION*		SUMBER TENAGA *ENERGY SOURCE*	KAPASITI TERPASANG (MW) *INSTALLED CAPACITY (MW)*	TAAC (MW)
TNB	SJ Temenggor	SKIM SUNGAI PERAK *SUNGAI PERAK SCHEME*	Hidro *Hydro*	348.00	340.18
	SJ Bersia		Hidro *Hydro*	72.00	72.00
	SJ Kenering		Hidro *Hydro*	120.00	115.99
	SJ Chenderoh		Hidro *Hydro*	40.50	37.15
	SJ Sg Piah *(Lower & Upper)*		Hidro *Hydro*	68.60	68.60
	SJ Pergau		Hidro *Hydro*	600.00	600.00
	SJ Kenyir		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		Hidro *Hydro*	250.00	264.80
	SJ Tembat		Hidro *Hydro*	15.00	
	SJ Ulu Jelai		Hidro *Hydro*	372.00	372.00
	SJ Putrajaya		Gas asli *Natural gas*- OCGT	252.00	249.00
	SJ Sultan Ismail		Gas asli *Natural gas* - CCGT	257.00	257.00
	SJ Gelugor		Gas asli *Natural gas* - CCGT	310.00	310.00
	SJ Tuanku Jaafar		Gas asli *Natural gas* - CCGT	1,411.00	1,411.00
	SJ Jambatan Connaught		Gas asli *Natural gas* - CCGT	300.00	300.00
	SJ Hidro mini[d] *Mini hydro stations*[d]		Hidro mini *Mini hydro*	21.61	0.00
			Jumlah *Total*	**5,087.71**	**5,047.72**

	STESEN JANA KUASA *POWER STATION*	SUMBER TENAGA *ENERGY SOURCE*	KAPASITI TERPASANG (MW) *INSTALLED CAPACITY (MW)*	TAAC (MW)
IPP	GB3 Sdn. Bhd.	Gas asli *Natural gas*- CCGT	640.00	640.00
	Kuala Langat Power Plant Sdn. Bhd.	Gas asli *Natural gas*- CCGT	675.00	675.00
	Pahlawan Power Berhad	Gas asli *Natural gas*- CCGT	322.00	322.00
	Panglima Power Berhad	Gas asli *Natural gas*- CCGT	720.00	720.00
	Prai Power Sdn. Bhd.	Gas asli *Natural gas*- CCGT	350.00	348.00
	Segari Energy Ventures Sdn. Bhd	Gas asli *Natural gas*- CCGT	1,303.00	1,303.00
	Teknologi Tenaga Perlis Consortium Sdn. Bhd.	Gas asli *Natural gas*- CCGT	650.00	650.00
	YTL Power Generation Sdn. Bhd. (Paka)	Gas asli *Natural gas*- CCGT	585.00	585.00
	Pengerang Power Sdn. Bhd.	Gas asli *Natural gas*- *Cogen*	400.00	400.00
	Port Dickson Power Berhad	Gas asli *Natural gas*- OCGT	436.00	436.00
	Powertek Berhad	Gas asli *Natural gas*- OCGT	434.00	434.00
	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
	Kapar Energy Ventures Sdn. Bhd.(KEV) – GF1	Gas asli *Natural gas*- OCGT	600.00	573.00
	KEV – GF4	Gas asli *Natural gas*- Thermal konvensional *Conventional thermal*	220.00	194.46
	KEV - GF2	Arang batu *Coal*- Thermal	600.00	1,496.90
	KEV – GF3	Arang batu *Coal*- Thermal	1,000.00	
	Jimah Energy Ventures Sdn. Bhd.	Arang batu *Coal*- Thermal	1,400.00	1,400.00
	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 Sdn. Bhd.	Arang batu *Coal*- Thermal	3,080.00	3,080.00
	TNB Manjung Five Sdn. Bhd.	Arang batu *Coal*- Thermal	1,000.00	1,000.00
	NUR Generation Sdn. Bhd[d]	Gas asli *Natural gas*- CCGT	220.00	0.00
	Musteq Hydro Sdn. Bhd[d]	Hidro mini *Mini hydro*	20.00	0.00
		Jumlah *Total*	**19,476.43**	**19,078.79**
		TNB + IPP	**24,564.14**	**24,126.51**

	KATEGORI *CATEGORY*	SUMBER TENAGA *ENERGY SOURCE*	KAPASITI TERPASANG (MW *INSTALLED CAPACITY (MW)*
LAIN-LAIN *OTHERS*	**Feed in tariff (FiT)**[d]	Biogas	60.34
		Biojisim *Biomass*	44.85
		Hidro mini *Mini hydro*	43.80
		Solar	344.03
		Jumlah *Total*	**493.02**
	Cogeneration* awam**[d] ***Public cogen[d]	Gas asli *Natural gas*	364.63*
		Haba sisa proses perindustrian *Industrial process waste heat*	42.00
		Jumlah *Total*	**406.63**
	Cogeneration* persendirian**° ***Private cogen°	Gas asli *Natural gas*	456.51
		Haba sisa proses perindustrian *Industrial process waste heat*	12.00
		Biojisim *Biomass*	12.41
		Jumlah *Total*	**480.92**
	Solar berskala besar ***Large scale solar (LSS)***	>30 MW	179.00
		< 30 MW[d]	81.50
		Jumlah *Total*	**260.50**
	Net Energy Metering (NEM)[d]	Solar	9.78
		Jumlah *Total*	**9.78**
	Penjanaan persendirian <5 MW° ***<5 MW Self generation***°	Gas asli *Natural gas*	7.44
		Diesel	399.04
		Biojisim *Biomass*	296.55
		Solar	71.76
		Jumlah *Total*	**774.79**
		TNB + IPP + LAIN-LAIN *OTHERS*	**26,989.77**

Nota: ***Notes:*** TAAC: *Tested Annual Available Capacity*
*Termasuk 100 MW yang bersambung di peringkat penghantaran *Including 100 MW connected at the transmission level*
[d] Bersambung di peringkat pengagihan *Connected at the distribution level*
° *Off-grid*

Jadual 28: Penjanaan Mengikut Sumber Tenaga di Semenanjung Malaysia pada 2018 (GWj)

Table 28: Generation by Energy Source in Peninsular Malaysia in 2018 (GWh)

	SUMBER TENAGA *ENERGY SOURCE*									
PENJANA *GENERATOR*	ARANG BATU *COAL*	GAS ASLI *NATURAL GAS*	DIESEL/ MFO/ *DISTILLATE*	HIDRO *HYDRO*	HIDRO MINI *MINI HYDRO*	BIOJISIM *BIOMASS*	BIOGAS	SOLAR	HABA SISA PROSES PERINDUSTRIAN *INDUSTRIAL PROCESS WASTE HEAT*	JUMLAH *TOTAL*
TNB		12,911.47		4,915.10	49.44					**17,876.01**
IPP	70,439.59	39,397.11	51.36		78.33					**109,966.39**
Cogen awam *Public cogen*		2,404.27							81.05	**2,485.32**
Cogen persendirian *Private cogen*		1,811.30				13.31			70.98	**1,895.59**
FiT[1]					49.93	94.19	182.52	379.00		**705.64**
LSS								98.84		**98.84**
NEM								6.86		**6.86**
Penjanaan persendirian <5 MW[2] *Self generation <5 MW[2]*		30.33	66.69			255.79		59.38		**412.19**
Jumlah *Total*	**70,439.59**	**56,554.48**	**118.05**	**4,915.10**	**177.70**	**363.29**	**182.52**	**544.08**	**152.03**	**133,446.84**

Nota: ***Notes:***
[1] Sumber *Source:* Sustainable Energy Development Authority (SEDA).
[2] Sumber *Source:* Pejabat-pejabat Kawasan ST *ST Regional Offices.*
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.

SABAH

MAKLUMAT INDUSTRI PEMBEKALAN ELEKTRIK

INFORMATION ON THE ELECTRICITY SUPPLY INDUSTRY

SABAH

Jadual 29: Maklumat Utama Prestasi SESB

Table 29: Key Information on the Performance of SESB

PETUNJUK *INDICATOR*	Unit	2014	2015	2016	2017	2018
Kehendak maksimum *Maximum demand*	MW	908	914	945	938	955[1]
Jumlah unit penjanaan *Total units generated*	GWj *GWh*	1,323	1,071	875	919	1,033
Jumlah unit jualan *Total units sold*	GWj *GWh*	4,776	5,109	5,188	5,173	5,345
Hasil jualan elektrik *Sales revenue of electricity*	RM Juta *RM Million*	1,636	1,668	1,734	1,723	1,830
Kapasiti penjanaan boleh harap *Dependable generation capacity*	MW	401	328	331	319	328
Jumlah kakitangan *Number of employees*	Orang *Person*	2,975	3,096	3,282	3,260	3,179
Hasil jualan elektrik per kakitangan *Sales revenue of electricity per employee*	RM Juta/Kakitangan *RM Million/Employee*	0.55	0.54	0.53	0.53	0.58
Unit jualan per kakitangan *Units sold per employee*	GWj/Kakitangan *GWh/Employee*	1.61	1.65	1.58	1.59	1.68
Kapasiti boleh harap per kakitangan *Dependable capacity per employee*	MW/Kakitangan *MW/Employee*	0.13	0.11	0.10	0.10	0.10
Jumlah unit pembelian[2] *Total purchased units[2]*	GWj *GWh*	4,479	4,881	5,152	5,063	5,382
Jumlah unit eksport *Total exported units*	GWj *GWh*	-	-	-	-	-
Jumlah unit import *Total imported units*	GWj *GWh*	-	-	-	-	-

Nota: ***Notes:***

[1] 10 Oktober 2018.
10 October 2018.

[2] Unit yang dibeli daripada IPP.
Units purchased from IPP.

Jadual 30: Kapasiti Penjanaan Boleh Harap (MW) dan Kebolehdapatan Keseluruhan SESB

Table 30: SESB's Dependable Capacity (MW) and Overall Availability

SUMBER TENAGA *ENERGY SOURCE*	2014	2015	2016	2017	2018
Hidro *Hydro*	69.6	72.2	78.2	74.6	74.6
Gas asli *Natural gas*	104.5	104.5	104.5	103.4	103.4
Diesel	226.6	150.9	147.9	141.1	150.1
JUMLAH *TOTAL*	**400.7**	**327.6**	**330.6**	**319.1**	**328.1**
Kebolehdapatan keseluruhan *Overall availability*	**76.80%**	**78.00%**	**73.96%**	**83.81%**	**79.19%**

Nota: ***Notes:***
Kapasiti boleh harap bagi stesen jana kuasa SESB yang bersambung di talian penghantaran, tidak termasuk penjana-penjana bebas (IPP).
Dependable capacity from SESB power plants connected at the transmission level, excluding independent power producers (IPP).

Jadual 31: Penjanaan SESB (GWj)

Table 31: SESB Generation (GWh)

SUMBER TENAGA *ENERGY SOURCE*	2014	2015	2016	2017	2018
Hidro *Hydro*	292.79	271.92	255.74	309.78	354.55
Gas asli *Natural gas*	472.44	417.62	389.62	409.93	417.37
Diesel	557.81	381.35	229.88	199.47	260.67
JUMLAH *TOTAL*	**1,323.04**	**1,070.89**	**875.24**	**919.18**	**1,032.60**

Nota: ***Notes:***
Penjanaan oleh stesen jana kuasa SESB yang bersambung di talian penghantaran, tidak termasuk IPP.
Units generated from SESB power plants connected at the transmission level, excluding IPP.

Jadual 32: Bilangan Pengguna SESB
Table 32: Number of SESB Consumers

SEKTOR *SECTOR*	2014	2015	2016	2017	2018
Domestik *Domestic*	442,516	460,321	478,049	491,809	505,239
Komersial *Commercial*	82,472	85,581	90,510	93,738	96,167
Industri *Industry*	2,906	2,756	1,545	1,550	1,589
Lampu awam *Public lighting*	5,349	5,596	5,906	6,061	6,129
JUMLAH *TOTAL*	**533,243**	**554,254**	**576,010**	**593,158**	**609,124**

Jadual 33: Jualan Tenaga Elektrik SESB (GWj)
Table 33: SESB Electricity Sales (GWh)

SEKTOR *SECTOR*	2014	2015	2016	2017	2018
Domestik *Domestic*	1,583	1,618	1,766	1,721	1,774
Komersial *Commercial*	2,043	2,256	2,286	2,324	2,377
Industri *Industry*	1,086	1,171	1,066	1,056	1,118
Lampu awam *Public lighting*	63	64	70	72	77
JUMLAH *TOTAL*	**4,776**	**5,109**	**5,188**	**5,173**	**5,345**

SISTEM PENGHANTARAN SESB
SESB TRANSMISSION SYSTEM

Jadual 34: Sistem Penghantaran SESB
Table 34: SESB Transmission System

TAHUN *YEAR*	2014	2015	2016	2017	2018
TALIAN & KABEL SISTEM PENGHANTARAN *TRANSMISSION SYSTEM LINES & CABLES*					
275 kV (km)	493	493	598	598	598.1
132 kV (km)	1,829	1,921	2,075.5	2,075	2,180.34
66 kV (km)	119	119	119	119	110.1
PENCAWANG PENGHANTARAN *TRANSMISSION SUBSTATIONS*					
Bilangan *Number*	36	41	42	44	45
Keupayaan (MVA) *Capacity (MVA)*	4,497	4,513	4,995	4,984	5,049

SISTEM PENGAGIHAN SESB
SESB DISTRIBUTION SYSTEM

Jadual 35: Sistem Pengagihan SESB
Table 35: SESB Distribution System

TAHUN *YEAR*	2014	2015	2016	2017	2018
TALIAN & KABEL SISTEM PENGAGIHAN *DISTRIBUTION SYSTEM LINES & CABLES*					
Talian atas (km)[1] *Overhead lines (km)[1]*	9,038	9,350	9,394	9,847.71	9,465.12
Kabel bawah tanah (km)[1,2] *Underground cables (km)[1,2]*	1,680	2,272	2,272	662.4	1,109.05
PENCAWANG PENGAGIHAN *DISTRIBUTION SUBSTATIONS*					
Bilangan *Number*	6,781	6,762	7,382	7,382	7,957
Keupayaan (MVA) *Capacity (MVA)*	5,865	4,294	5,969	5,969	5,440.58

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

Jadual 36: Kapasiti Terpasang dan Kapasiti Boleh Harap di Sabah pada 2018

Table 36: Installed Capacity and Dependable Capacity in Sabah in 2018

	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	72.55
	Hidro mini *Mini hydro* Merotai	Hidro mini *Mini hydro*	1.00	0.50
	Hidro mini *Mini hydro* Bombalai	Hidro mini *Mini hydro*	1.00	0.50
	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
	SJ Melawa	Diesel/MFO - DE	0.00	0.00
	SJ Tawau	Diesel/MFO -DE	21.75	21.75
	SJ Patau-Patau	Gas - CCGT	112.00	103.40
	SJ Kubota	Diesel/MFO - DE	64.00	64.00
	SJ Batu Sapi, Sandakan	Diesel/MFO - DE	17.40	17.40
	SJ Sandakan	Diesel/MFO - DE	36.00	36.00
	SJ Labuk Canopy	Diesel/MFO - DE	0.00	0.00
	Tawau Canopy - *Minor Station*	Diesel/MFO - DE	10.96	10.96
	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
	Ranau - *Minor Station*[o]	Diesel/MFO - DE	16.30	16.30
	Telupid - *Minor Station*[o]	Diesel/MFO - DE	7.83	7.83
	Stesen-stesen pedalaman[o] *Rural stations*[o]	Diesel/MFO - DE	4.68	4.68
		Solar - Solar Hybrid	21.50	21.50
		JUMLAH *TOTAL*	**394.18**	**381.37**

	STESEN JANA KUASA *POWER STATION*	SUMBER TENAGA *ENERGY SOURCE*	KAPASITI TERPASANG (MW) *INSTALLED CAPACITY (MW)*	KAPASITI BOLEH HARAP (MW) *DEPENDABLE CAPACITY (MW)*
IPP	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	190.00
	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 *TOTAL*	**1,012.64**	**865.00**

	KATEGORI *CATEGORY*	SUMBER TENAGA *ENERGY SOURCE*	KAPASITI TERPASANG (MW) *INSTALLED CAPACITY (MW)*	KAPASITI BOLEH HARAP (MW) *DEPENDABLE CAPACITY (MW)*
LAIN-LAIN *OTHERS*	Cogeneration awam[d] *Public cogeneration*[d]	Gas	41.80	41.80
		Biojisim *Biomass*	29.20	29.20
		Jumlah *Total*	**71.00**	**71.00**
	Cogeneration persendirian[o] *Private cogeneration*[o]	Gas	65.00	65.00
		Biojisim *Biomass*	7.50	7.50
		Jumlah *Total*	**72.50**	**72.50**
	Feed in Tariff (FiT)[d]	Biojisim *Biomass*	50.70	20.00
		Biogas	9.60	9.60
		Hidro mini *Mini hydro*	6.50	6.50
		Solar	38.94	0.00
		Jumlah *Total*	**105.74**	**36.10**
	Solar berskala besar *Large scale solar (LSS)*	LSS>30MW	48.00	48.00
		LSS<30MW[d]	2.00	0.00
		Jumlah *Total*	**50.00**	**48.00**
	Penjanaan persendirian kurang 5 MW[o] *Less-than-5 MW self generation*[o]	Gas	2.82	2.82
		Diesel	111.00	111.00
		Biojisim *Biomass*	79.86	79.86
		Biogas	10.13	10.13
		Lain-lain *Others*	8.67	8.67
		Jumlah *Total*	**212.48**	**212.48**
		JUMLAH *TOTAL*	**511.72**	**440.08**
		SESB + IPP +Lain-lain *Others:*	**1,918.54**	**1,686.45**

Nota: ***Notes:***
Melawa Mobile Gen Set (kapasiti terpasang: 16.23 MW, kapasiti boleh harap: 13.69 MW) tidak termasuk dalam perjumlahan kapasiti terpasang dan kapasiti boleh harap kerana hanya digunapakai semasa kerja penutupan berjadual atau tidak berjadual. *Melawa Mobile Gen Set (installed capacity: 16.23 MW, dependable capacity: 13.69 MW) are not installed in the system but used for planned or emergency shutdown work.*
SJ: Stesen jana kuasa *Power station*
CCGT : Turbin gas kitar padu *Combined cycle gas turbine*
DE: Enjin diesel *Diesel engine*
[d] Bersambung di peringkat pengagihan *Connected at the distribution level*
[o] *Off-grid*

Jadual 37: Penjanaan Mengikut Sumber Tenaga di Sabah pada 2018 (GWj)

Table 37: Generation by Energy Source in Sabah in 2018 (GWh)

PENJANA *GENERATOR*	SUMBER TENAGA *ENERGY SOURCE*								
	GAS ASLI *NATURAL GAS*	DIESEL/ MFO/ *DISTILLATE*	HIDRO *HYDRO*	HIDRO MINI *MINI HYDRO*	BIOJISIM *BIOMASS*	BIOGAS	SOLAR	*LAIN-LAIN OTHERS*	JUMLAH *TOTAL*
SESB	417.37	324.80	350.40	10.23			15.49		**1,118.29**
IPP	4,702.34								**4,702.34**
Cogen awam *Public cogen*	152.43	0.34			32.52				**185.29**
Cogen persendirian *Private cogen*	0.13				19.83				**19.96**
Feed in Tariff (FiT)[1]				9.02	103.6	41.91	51.51		**206.04**
Solar berskala besar *Large scale solar (LSS)*							37.87		**37.87**
Penjanaan persendirian <5MW[2] *Self generation <5 MW*[2]	0.90	98.62			136.61	18.02		15.42	**269.57**
JUMLAH *TOTAL*	**5,273.17**	**423.76**	**350.40**	**19.25**	**292.56**	**59.93**	**104.87**	**15.42**	**6,539.36**

Nota: ***Notes:***
[1] Sumber *Source:* Sustainable Energy Development Authority (SEDA)
[2] Sumber *Source:* Pejabat-pejabat Kawasan ST *ST Regional Offices*

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

SARAWAK

MAKLUMAT INDUSTRI PEMBEKALAN ELEKTRIK

INFORMATION ON THE ELECTRICITY SUPPLY INDUSTRY

SARAWAK

Jadual 38: Maklumat Utama Prestasi SEB

Table 38: Key Information on the Performance of SEB

PETUNJUK *INDICATOR*	Unit	2014	2015	2016	2017	2018
Kehendak maksimum *Maximum demand*	MW	2,036	2,288	3,040	3,302	3,504
Jumlah unit penjanaan *Total units generated*	GWj *GWh*	6,494	7,913	10,144	25,580[1]	27,177
Jumlah unit jualan *Total units sold*	GWj *GWh*	13,440	14,038	19,943	22,557	24,316
Hasil jualan elektrik *Sales revenue of electricity*	RM Juta *RM Million*	2,752	2,911	4,140	4,707	5,266
Kapasiti terpasang *Installed capacity*	MW	1,551	2,241	2,262	4,641[1]	4,641
Jumlah kakitangan *Number of employees*	orang *person*	4,174	4,307	4,468	4,713	4,841
Hasil jualan elektrik per kakitangan *Sales revenue of electricity per employee*	RM Juta/Kakitangan *RM Million/ Employee*	0.66	0.68	0.93	0.999	1.088
Unit jualan per kakitangan *Units sold per employee*	GWj/Kakitangan *GWh/Employee*	3.59	3.26	4.77	4.79	5.33
Kapasiti terpasang per kakitangan *Installed capacity per employee*	MW/Kakitangan *MW/Employee*	0.37	0.52	0.51	0.48[2]	0.96
Jumlah unit pembelian *Total purchased units*	GWj *GWh*	8,457	7,721	12,158	-	-
Jumlah unit eksport *Total exported units*	GWj *GWh*	-	-	684	1,119	1,509
Jumlah unit import *Total imported units*	GWj *GWh*	-	-	-	-	-

Nota: ***Note:***

[1] Pemilikan Bakun Hidro mulai suku ke-3 2017. *Acquisition of Bakun Hydro in Q3 2017.*

[2] Dikira berdasarkan kapasiti terpasang SEB sebanyak 2,241 MW. *Calculated based on SEB's installed capacity amounting to 2,241 MW.*

Jadual 39: Kapasiti Terpasang SEB (MW)
Table 39: SEB's Installed Capacity (MW)

SUMBER TENAGA *ENERGY SOURCE*	2014	2015	2016	2017	2018
Hidro *Hydro*	337	1,052	1,054	3,452[1]	3,452[2]
Gas asli *Natural gas*	576	595	615	595	595
Arang batu *Coal*	480	480	480	480	480
Diesel	158	114	114	114	114
JUMLAH *TOTAL*	**1,551**	**2,241**	**2,262**	**4,641**	**4,641**

Nota: ***Note:***
[1] Pemilikan Bakun Hidro mulai suku ke-3 2017 *Acquisition of Bakun Hydro in Q3 2017*
[2] Termasuk stesen jana kuasa Batang Ai, Murum dan Bakun dan mini hidro yang bersambung dengan grid. *Inclusive of Batang Ai, Murum and Bakun power stations and grid connected mini hydro.*

Jadual 40: Jualan Tenaga Elektrik SEB (GWj)
Table 40: SEB Electricity Sales (GWh)

SEKTOR *SECTOR*	2014	2015	2016	2017	2018
Domestik *Domestic*	1,817	1,940	2,102	2,149	2,368
Komersial *Commercial*	2,291	2,390	2,512	2,562	2,857
Industri *Industry*	9,254	9,619	15,252	17,758	18,981
Lampu awam *Public lighting*	78	89	77	88	110
Eksport *Export*	-	-	684	1,119	1,509
JUMLAH *TOTAL*	**13,440**	**14,038**	**20,627**	**23,675**	**25,825**

Jadual 41: Bilangan Pengguna SEB
Table 41: Number of SEB Consumers

SEKTOR *SECTOR*	2014	2015	2016	2017	2018
Domestik *Domestic*	498,601	533,153	536,466	554,467	568,712
Komersial *Commercial*	85,188	92,067	91,454	93,627	96,416
Industri *Industry*	984	1,025	1,022	1,051	1,066
Lampu awam *Public lighting*	8,152	11,185	9,457	10,040	10,491
Eksport *Export*	-	-	4	4	4
JUMLAH *TOTAL*	**592,925**	**637,430**	**638,403**	**659,189**	**676,689**

SISTEM PENGHANTARAN SEB
SEB TRANSMISSION SYSTEM

Jadual 42: Sistem Penghantaran SEB
Table 42: SEB Transmission System

TAHUN *YEAR*	2014	2015	2016	2017	2018
TALIAN & KABEL SISTEM PENGHANTARAN *TRANSMISSION SYSTEM LINES & CABLES*					
500 kV (km)	-	-	-	754	753
275 kV (km)	1,235	1,204	1,331	2,761.49	2,810.3
132 kV (km)	372	384	388	826.34	840.44[1]
66 kV (km)	-	-	-	-	-
PENCAWANG PENGHANTARAN *TRANSMISSION SUBSTATIONS*					
Bilangan *Number*	28	28	30	33	37
Keupayaan (MVA) *Capacity (MVA)*	6,440	6,359.6	7,239.6	8,809.10	10,246.00

Nota: ***Note:***
[1] 813.10 km talian dan 27.34 km kabel bawah tanah
813.10 km lines and 27.34 km underground cables

SISTEM PENGAGIHAN SEB
SEB DISTRIBUTION SYSTEM

Jadual 43: Sistem Pengagihan SEB
Table 43: SEB Distribution System

TAHUN *YEAR*	2014	2015	2016	2017	2018
TALIAN & KABEL SISTEM PENGAGIHAN *DISTRIBUTION SYSTEM LINES & CABLES*					
Talian atas (km) *Overhead lines (km)*	23,210	24,031	24,681	11,997.74	26,236
Kabel bawah tanah (km) *Underground cables (km)*	7,274	7,688	8,122	5,174.89	8,769
PENCAWANG PENGAGIHAN *DISTRIBUTION SUBSTATIONS*					
Bilangan *Number*	10,927	11,435	12,522	13,076	13,824
Keupayaan (MVA) *Capacity (MVA)*	4,174	4,339	8,735	9,061	9,600

Jadual 44: Kapasiti dan Penjanaan Elektrik di Sarawak pada 2018
Table 44: Capacity and Electricity Generation in Sarawak in 2018

PENJANA *GENERATOR*	SUMBER TENAGA *ENERGY SOURCE*	KAPASITI TERPASANG (MW) *INSTALLED CAPACITY (MW)*	KAPASITI TERSEDIA (MW) *AVAILABLE CAPACITY (MW)*	PENJANAAN (GWJ) *GENERATION (GWH)*
SEB	Arang batu *Coal*	480	423	2,922.49
	Diesel	113.8	94	1.04
	Gas asli *Natural gas*	594.6	465.5	3,223.70
	Hidro *Hydro*	3,452	3,438	21,029.94
	Solar	0.6	0.6	3.83
	Hidro mini *Mini hydro*	5.98	5.98	14.40
	Hidro mikro *Micro hydro*	0.16	0.16	
	Jumlah *Total*	**4,647.14**	**4,427.24**	**27,195.40**
Penjanaan persendirian *Self-generation*	Gas asli - Cogen *Natural gas - Cogen*	389	389	1,878
	Diesel/MFO	9.72	8.7	381.97
	Biojisim *Biomass*	31.30	16.6	79.49
	Lain-lain bukan TBB *Others non-RE*	5.05	1.05	7.60
	Jumlah *Total*	**435.07**	**415.35**	**2,347.06**
JUMLAH BESAR *GRAND TOTAL*		**5,082.21**	**4,842.59**	**29,542.46**

Nota: ***Notes:***
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.

MALAYSIA

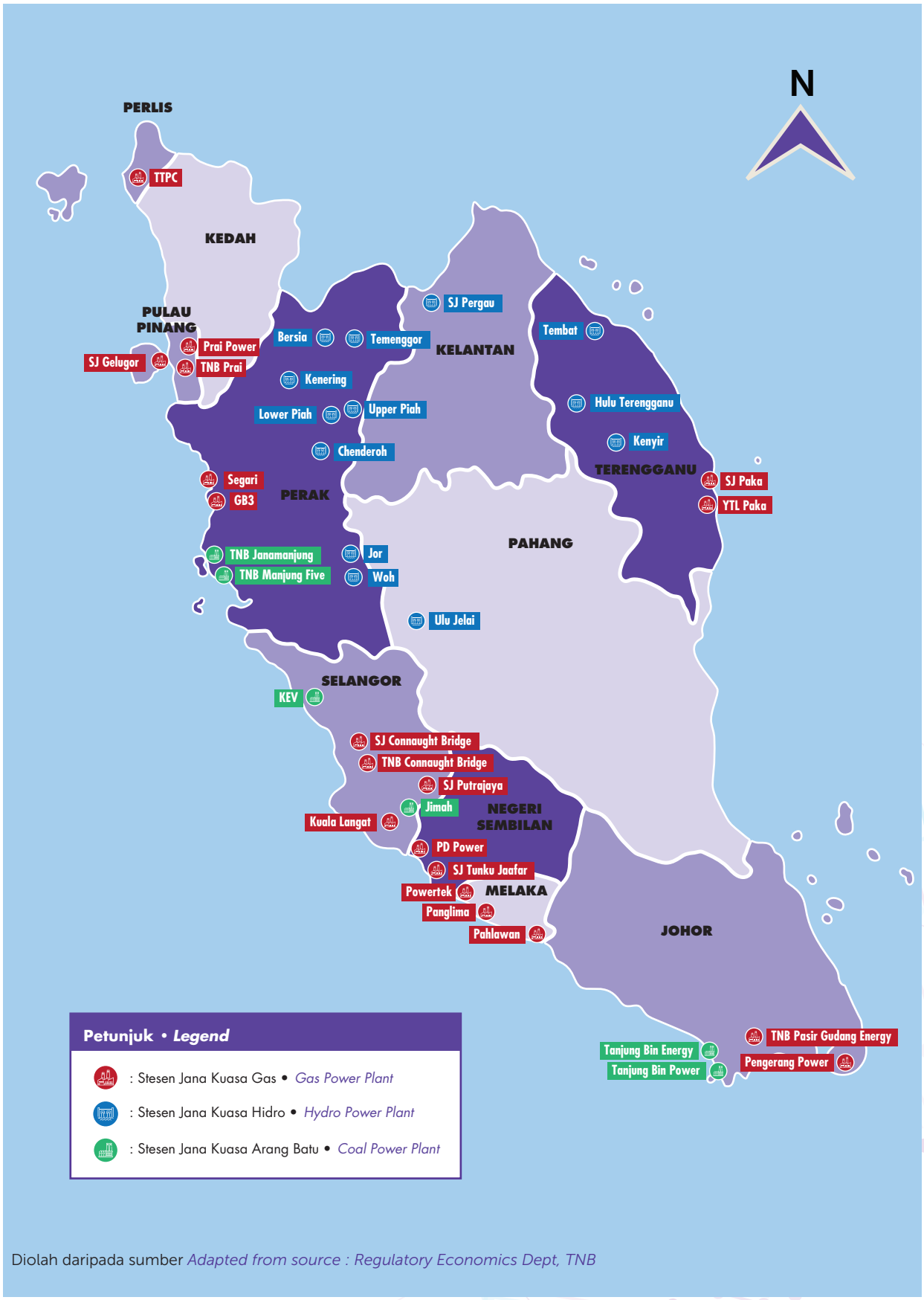
PETA LOKASI STESEN-STESEN JANA KUASA UTAMA DAN SISTEM GRID

LOCATION MAPS OF MAJOR POWER STATIONS AND GRID SYSTEMS

MALAYSIA

Peta 1: Lokasi Stesen-stesen Jana Kuasa Utama di Semenanjung Malaysia

Map 1: Location of Major Power Stations in Peninsular Malaysia



Diolah daripada sumber *Adapted from source : Regulatory Economics Dept, TNB*

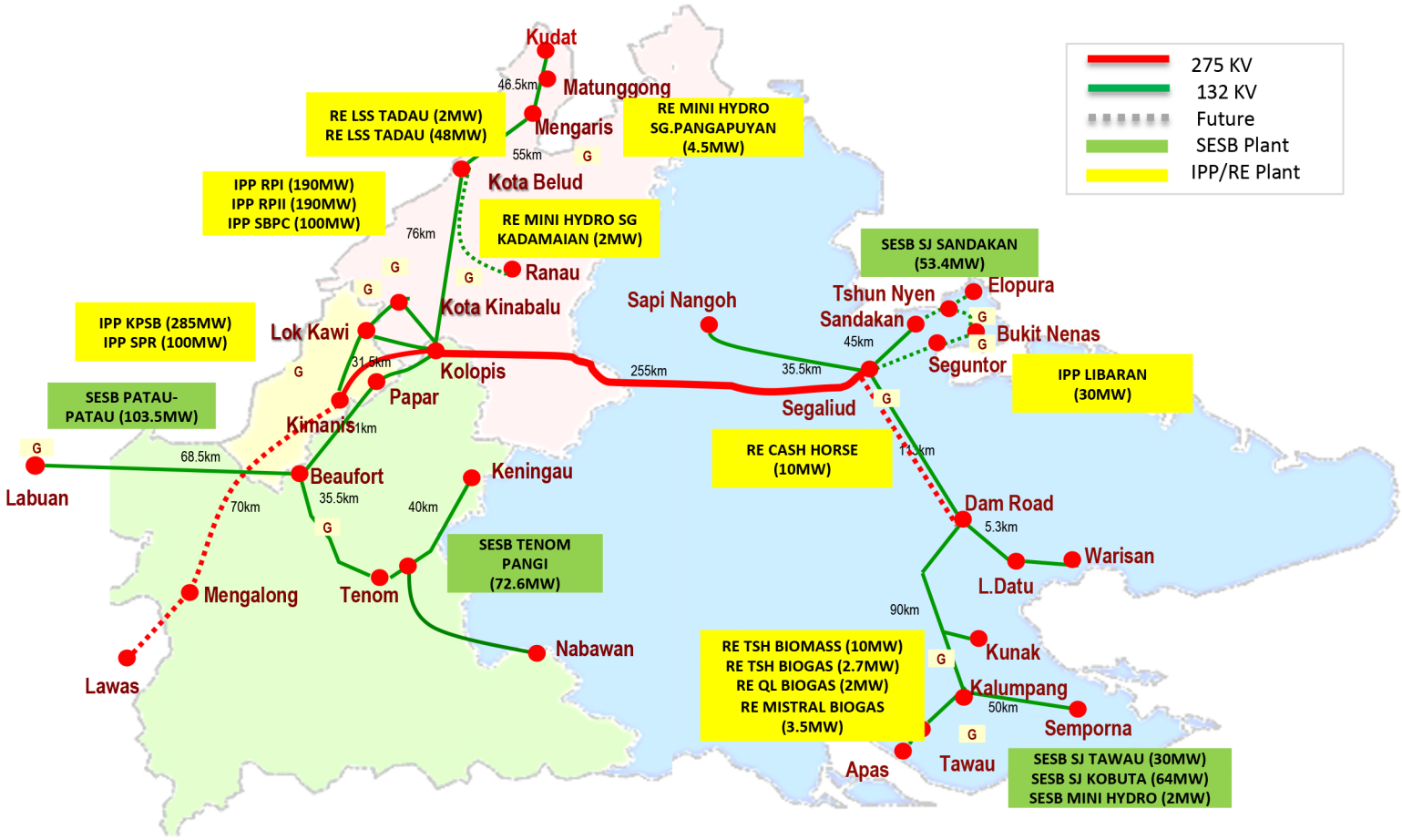
Peta 2: Sistem Penghantaran Elektrik di Semenanjung Malaysia

Map 2: Electricity Transmission System in Peninsular Malaysia

Sumber: *Source*: TNB

Peta 3: Lokasi Stesen-stesen Jana Kuasa Utama dan Sistem Grid di Sabah

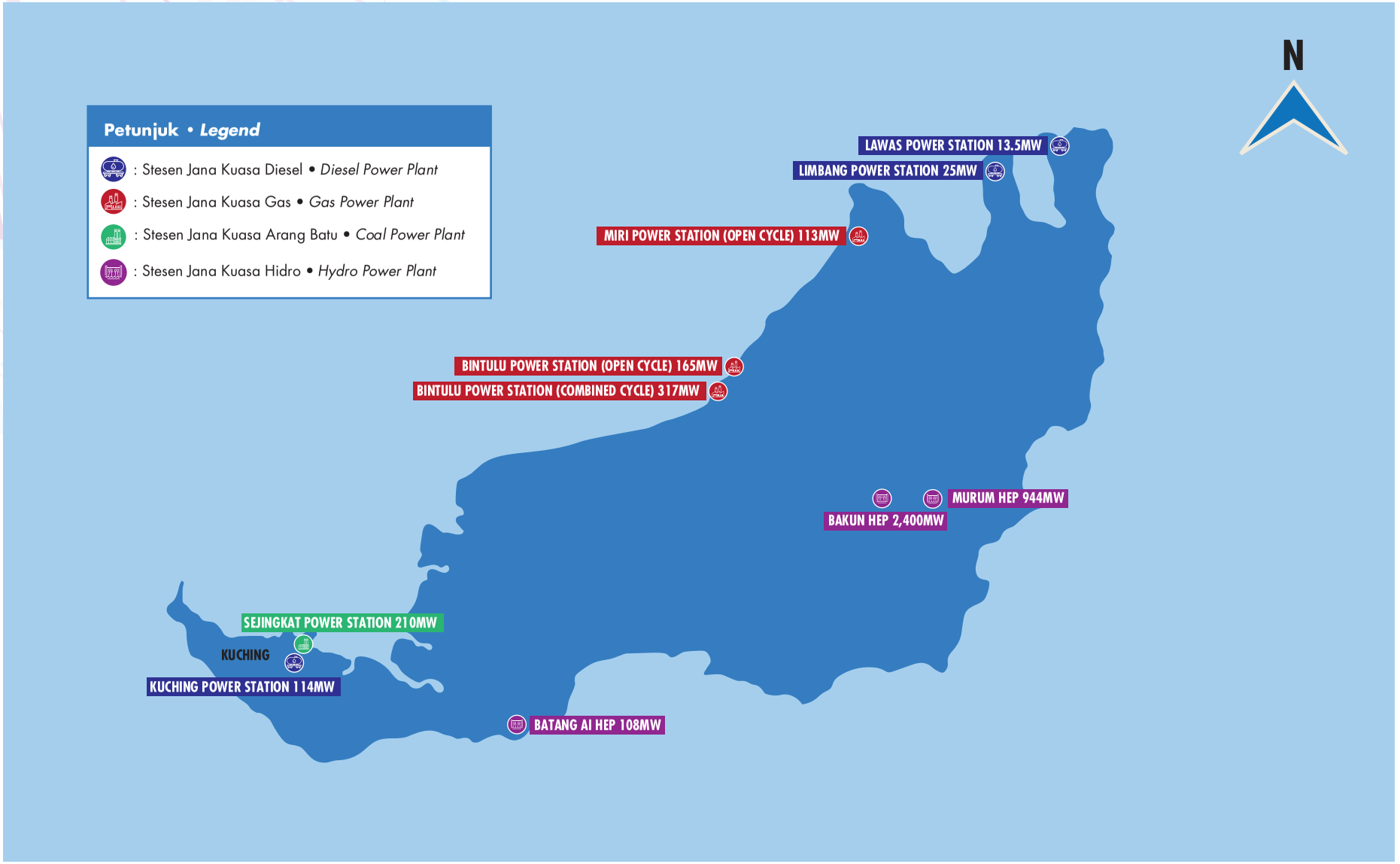
Map 3: Location of Major Power Stations and Grid System in Sabah



Sumber: *Source:* SESB

Peta 4: Lokasi Stesen-stesen Jana Kuasa Utama di Sarawak

Map 4: Location of Major Power Stations in Sarawak



Sumber: *Source:* SEB

APENDIKS
APPENDIX

Apendiks 1: Laporan Prestasi TNB – *Guaranteed Service Level (GSL)*

Appendix 1: TNB's Performance Report - Guaranteed Service Level (GSL)

Item	Item Details	Service Ind.	Service Definition	Service Standard	Putrajaya/ Cyberjaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	Kuala Lumpur	Negeri Sembilan	Johor	Kelantan	Total/Avg %
GSL 1	Availability of Supply - Frequency of Interruption	Number of unplanned interruptions	Total interruptions	4 per year (Bandaraya Kuala Lumpur & Putrajaya)	5	88	514	473	762	1,739	158	615	320	638	314	1,203	452	7,281
			Total incidents (not achieving target)	5 per year (Other areas)	0	0	0	0	0	0	0	0	0	0	0	0	0	-
				Penalty	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				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	Availability of Supply - Restoration Time	Time taken to restore electricity supply following outage	Total interruptions	3 hrs (Minor fault); 4 hrs (Major fault-MV-with feedback); 12 hrs (Major fault-MV-without feedback); 8 hrs (grid/transmission-partial blackout); 18 hrs (grid/transmission- total blackout)	5	88	514	473	762	1,739	158	615	320	638	314	1,203	452	7,281
			Total incidents (not achieving target)		0	0	34	6	52	306	0	124	5	16	57	369	151	1,120
				Penalty	0	0	58,280	70,080	159,290	1,866,020	0	594,820	8,240	28,470	78,940	620,660	1,251,010	4,735,810
				Compliance	100.00%	100.00%	93.39%	98.73%	93.18%	82.40%	100.00%	79.84%	98.44%	97.49%	81.85%	69.33%	66.59%	84.62%
GSL 3	Providing Supply	Time taken to implement service connection (OVERHEAD LINE) requiring low voltage cable installation work	Total service connection	5 working days	-	822	4,174	1,496	5,927	5,291	1,649	3,427	4,724	1,464	1,466	4,413	6,066	40,919
			Total service connection **not** completed in 5 working days		-	195	704	72	371	152	32	332	271	29	26	112	143	2,439
			50	Penalty	-	9,750	35,200	3,600	18,550	7,600	1,600	16,600	13,550	1,450	1,300	5,600	7,150	121,950
		Time taken to implement service connection (Underground line) requiring low voltage cable installation work	Total service connection	14 working days	55	32	156	123	231	596	100	196	151	417	129	453	165	2,804
			Total service connection **not** completed in 14 working days		-	10	55	9	27	26	1	26	3	2	10	38	7	214
			50	Penalty	-	500	2,750	450	1,350	1,300	50	1,300	150	100	500	1,900	350	10,700
				Compliance	100%	76%	82%	95%	94%	97%	98%	90%	94%	98%	98%	97%	98%	93.93%
GSL 4	Providing Supply	Time taken to connect new electricity supply for individual domestic low voltage consumer	Total supply connection	3 working days	3,654	628	4,397	10,077	2,893	16,108	3,304	2,945	1,484	7,205	3,440	8,561	847	65,543
			Total supply connection **not** completed in 3 working days		20	3	208	785	111	939	51	443	81	132	53	1,390	131	4,347
			50	Penalty	1,000	150	10,400	39,250	5,550	46,950	2,550	22,150	4,050	6,600	2,650	69,500	6,550	217,350
				Compliance	99.45%	99.52%	95.27%	92.21%	96.16%	94.17%	98.46%	84.96%	94.54%	98.17%	98.46%	83.76%	84.53%	93.37%
GSL 5	Cuctomer Contract	Disconnection of supply according to the applicable legislation or disconnection procedures	Total disconnection	No complaint	585	1,117	6,611	4,507	4,914	17,897	2,647	3,340	1,961	6,553	5,714	6,794	5,429	68,069
			Total disconnection **not** done with procedures		-	-	-	3	1	10	-	-	-	6	1	5	1	27
			100	Penalty	-	-	-	300	100	1,000	-	-	-	600	100	500	100	2,700
				Compliance	100.00%	100.00%	100.00%	99.93%	99.98%	99.94%	100.00%	100.00%	100.00%	99.91%	99.98%	99.93%	99.98%	99.96%
Total Penalty in RM for GSL 1,2,3,4,5					1,000	10,400	106,630	113,680	184,840	1,922,870	4,200	634,870	25,990	37,220	83,490	698,160	1,265,160	5,088,510
Overall Compliance					99.73%	95.10%	94.23%	97.17%	96.57%	94.70%	99.31%	90.98%	97.47%	98.78%	95.61%	89.99%	89.74%	94.38%
																	Total Penalty in RM for GSL 1, 2, 3, 4,	5,088,510

Apendiks 2: Laporan Prestasi TNB – Minimum *Service Level (MSL)*

Appendix 2: TNB's Performance Report - Minimum Service Level (MSL)

Item	Item Details	Service Ind.	Service Definition	Service Standard	Service Details	WP Putrajaya/ Cyberjaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	WP KL	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	0	6	840	879	2612	4698	0	2209	918	-	938	4064	740	17904
					Total notices served more than 2 days before planned/schedule interruption	0	6	829	850	2501	4538	0	2150	891	-	935	3701	692	17093
					Compliance	0.00%	100.00%	98.69%	96.70%	95.75%	96.59%	0.00%	97.33%	97.06%	-	99.68%	91.07%	93.51%	95.47%
		1b	Upon request, time taken to provide initial information to consumer who report on electricity interruption	< 1 hour	Total requests from consumers	424	424	424	424	424	424	424	424	424	424	424	424	424	5512
					Total requests replied less than 1 hour	420	420	420	420	420	420	420	420	420	420	420	420	420	5460
					Compliance	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%	99.06%
2	Quality of Supply	2a	Time taken to rectify voltage complaint or limit violation and to correct voltage complaint which requires network reinforcement	< 180 days	Total complaints received	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
					Total complaints solved less than 180 days	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
		2b	Time taken to complete investigation of overvoltage incident from complaint receipt dateTime taken to provide a complete report of voltage sag incident from complaints received date	< 30 working days	Total complaints received	2	N/A	1	N/A	1	10	25	1	N/A	1	N/A	5	N/A	46
					Total complaints solved less than 30 working days	1	N/A	1	N/A	1	5	16	1	N/A	0	N/A	1	N/A	26
					Compliance	50%	N/A	100%	N/A	100%	50%	64%	100%	N/A	0	N/A	20%	N/A	56.52%
		2c	Time taken to provide a complete report of voltage sag incident from complaints received date	< 14 days	Total complaints received	17	N/A	18	100	36	190	31	34	13	109	29	98	N/A	675
					Total complaints solved less than 14 days	14	N/A	14	78	12	163	28	32	6	84	21	86	N/A	538
					Compliance	82.35%		77.78%	78.00%	33.33%	85.79%	90.32%	94.12%	46.15%	77.06%	72.41%	87.76%	N/A	79.70%

Item	Item Details	Service Ind.	Service Definition	Service Standard	Service Details	WP Putrajaya/ Cyberjaya	Perlis	Kedah	Pulau Pinang	Perak	Selangor	Melaka	Pahang	Terengganu	WP KL	Negeri Sembilan	Johor	Kelantan	Total/Avg %
3	Providing Supply																		
		3a	Time taken to process electricity supply application and to reply to applicants	< 14 days	Total no. of contribution charge letters issued	20	13	53	72	88	209	54	50	29	71	61	149	43	912
					Total no. of contribution charge letters issued less than 14 days	20	13	52	71	87	203	54	48	29	66	60	146	43	892
					Compliance	100.00%	100.00%	98.11%	98.61%	98.86%	97.13%	100.00%	96.00%	100.00%	92.96%	98.36%	97.99%	100.00%	97.81%
		3b	Time taken to implement electrification scheme requiring new substation after connection charges paid, wayleave 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	3	1	19	49	45	158	23	16	1	69	30	145	27	586
					Total no. of projects given supply less than 120 days	3	1	18	49	37	151	22	16	1	64	29	142	24	557
					Compliance	100.00%	100.00%	94.74%	100.00%	82.22%	95.57%	95.65%	100.00%	100.00%	92.75%	96.67%	97.93%	88.89%	95.05%
		3c	Waiting time at site for appointment to connect electricity supply (Un-avoidable 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
					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

Apendiks 3: Laporan Prestasi NUR Distribution Sdn. Bhd. (NUR)

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

Item	Criteria	Jan	Feb	Mar	No. meeting target in Jan	No. meeting target in Feb	No. meeting target in Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	No. meeting target in Apr	No. meeting target in May	No. meeting target in Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	No. meeting target in Jul	No. meeting target in Aug	No. meeting target in Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	No. meeting target in Oct	No. meeting target in Nov	No. meeting target in Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
1	**CONNECTION OF SUPPLY - AFTER SUBMITTED COMPLETE ESA**																																							
	Details:																																							
	Applied for 1a & 1b - EC clarified that this performance target only came into effect when the customer had satisfied all condition (contribution, form G&H, etc) and the stated interval had elapsed. EC would not agree to the standard being less than 1 day																																							
1a	**Change of tenant**																																							
	Agreed targets																																							
	Not more than 1 working day	3	4	7	3	4	7	14	14	100.00	5	8	4	5	8	4	17	17	100.00	7	7	4	7	7	4	18	18	100.00	4	4	11	4	4	11	19	19	100.00	68	68	100.00
1b	**New Connection ow Voltage Individual Application**																																							
	Agreed targets																																							
	Not more than 1 working day	7	10	9	7	10	9	26	26	100.00	4	11	4	4	11	4	19	19	100.00	10	6	6	10	6	6	22	22	100.00	4	4	7	4	4	7	15	15	100.00	82	82	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.**																																							
	Agreed targets																																							
	Not more than 1 week (Meter only)	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
1c (ii)	**LV commercial industrial supply (Meter only - CT Type) *EC agree that NUR to proposed item (ii) - (vi)**																																							
	Agreed targets																																							
	Connection within 2 weeks	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	1	0	0	1	1	1	100.00	1	0	0	1	0	0	1	1	100.00	2	2	100.00
1c(iii)	**LV supply - LV cable and meter**																																							
	Agreed targets																																							
	Within 2 months from receipt and payment of contribution charge and security deposit.	0	2	0	0	2	0	2	2	100.00	1	1	0	1	1	0	2	2	100.00	0	0	0	0	0	0	0	0	NA	0	0	1	0	0	1	1	1	100.00	5	5	100.00
1c(iv)	**LV supply requiring new substation**																																							
	Agreed target																																							
	Within 120 days from receipt and payment of contribution charge and security deposit within 45 days of substation building handover	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA

Item	Criteria	Jan	Feb	Mar	No. meeting target in Jan	No. meeting target in Feb	No. meeting target in Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	No. meeting target in Apr	No. meeting target in May	No. meeting target in Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	No. meeting target in Jul	No. meeting target in Aug	No. meeting target in Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	No. meeting target in Oct	No. meeting target in Nov	No. meeting target in Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
1c (v)	**11kV or 33kV supply**																																							
	Agreed targets																																							
	Within 8 to 10 months of submission and contribution payment or sooner as agreed. Within 45 days of substation building handover.	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
1c (vi)	**132kV supply**																																							
	Agreed targets																																							
	Within 18 months of submission and customer contribution	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
2	**RESTORATION OF SUPPLY AFTER INTERRUPTION**																																							
	Agreed targets																																							
	EC clarified that calls should be answered within 30 seconds and to follow up with return call is required only if NUR could not inform consumers that action was been taken.																																							
2a	**Complaint through telephone at normal hours will be attended within 30 seconds. Re contacted consumer within 10 minutes if cannot produce info immediately. Note : In NUR's case, the response is always by stating a technician will be sent immediatel**																																							
	Agreed targets																																							
	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.	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
2b	**Consumer who launch a supply interruption report will be given a report number.**	**TCS - Trouble Call System is required to implement this accordingly.**																																						
	Agreed target																																							
	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.	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA

Item	Criteria	Jan	Feb	Mar	No. meeting target in Jan	No. meeting target in Feb	No. meeting target in Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	No. meeting target in Apr	No. meeting target in May	No. meeting target in Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	No. meeting target in Jul	No. meeting target in Aug	No. meeting target in Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	No. meeting target in Oct	No. meeting target in Nov	No. meeting target in Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
2c	**Time to restore *Minor fault which results in interruption of Electricity supply that can be quickly restored**																																							
	Agreed targets																																							
	Within 90 minutes	5	2	2	5	2	2	9	9	100.00	1	2	1	1	2	0	4	3	75.00	3	0	5	3	0	5	8	8	100.00	3	1	1	3	1	1	5	5	100.00	26	25	96.15
2d	**Time to restore *Major fault which results in interruption of Electricity supply that requires substantial time to restore**																																							
	Agreed targets																																							
	Within 12 hours	1	4	3	1	4	3	8	8	100.00	2	3	3	2	3	3	8	8	100.00	0	2	3	0	2	3	5	5	100.00	3	1	4	3	1	4	8	8	100.00	29	29	100.00
3	**SUPPLY RE CONNECTION AFTER DISCONNECTION FOR NON-PAYMENT**																																							
	Details																																							
	Consumer paying bills will be re connect at the same day.																																							
	Agreed targets																																							
	Payment before 14:00 hour the reconnect will be done on the same day.	0	0	0	0	0	0	0	0	NA	17	71	0	17	71	0	88	88	100.00	16	21	0	16	21	0	37	37	100.00	0	0	10	10	10	10	10	10	100.00	135	135	100.00
4	**SUPPLY INTERRUPTIONS, WHICH WERE PLANNED / SCHEDULE.**																																							
4a	**Interruption scheduled for Domestic / small commercial**																																							
	Agreed targets																																							
	Consumer will be given a notice 7 days before scheduled	8	4	9	8	4	9	21	21	100.00	7	1	2	7	1	2	10	10	100.00	2	5	5	2	5	5	12	12	100.00	7	6	5	7	5	5	18	17	94.44	61	60	98.36
4b	**Interruption scheduled for Major consumers**																																							
	Agreed targets																																							
	Discussion with individual consumer on their manufacturing plans and the shut down scheduled to meet their requirements. In exceptional cases, where essential work is planned at least one months notice will be given.	2	2	2	2	2	2	6	6	100.00	1	2	5	1	2	5	8	8	100.00	1	2	4	1	2	4	7	7	100.00	1	1	2	1	1	2	4	4	100.00	25	25	100.00

*Minor - such as due to the operation of fuse or the tripping of a circuit breaker resulting from overload

*Major such as due to switchgear failure or cable fault

Item	Criteria	Jan	Feb	Mar	Jan	Feb	Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	Apr	May	Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	Jul	Aug	Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	Oct	Nov	Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
5	**METER READING**																																							
	Details																																							
	Estimated reading for domestic consumers must not exceed 3 consecutive months and the estimated reading must also be base on the prorated / average consumable of the 3 previuos months. A notice will be given to the domestic consumers for reminder of the estimated reading is exceeding 3 consecutive months.	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
6	**ENQUIRIES FROM CONSUMERS**																																							
	Details																																							
	Respond time for query through:																																							
	Agreed targets																																							
	i) Written - 5 days from receipt of written complaint ii) Telephone - 30 seconds and 24 hours. iii) Cash counter - 30 seconds and 24 hours. It was agreed that the telephone response times can be reviewed by NUR, due to difficulty in measuring performance.	10	4	7	10	4	7	21	21	100.00	3	9	13	3	9	13	25	25	100.00	8	9	19	8	9	19	36	36	100.00	14	6	6	14	6	6	26	26	100.00	108	108	100.00
7	**SERVICE COUNTER**																																							
	Agreed targets																																							
	Waiting time should not exceed 10 minutes	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
8	**APPOINTMENT FOR METER ACCURACY DETERMINATION**																																							
	Details																																							
	Days to test meter following request																																							
	Agreed targets																																							
	2 working days	0	0	0	0	0	0	0	0	NA	2	4	5	2	4	5	11	11	100.00	1	0	1	1	0	1	2	2	100.00	0	0	0	0	0	0	0	0	NA	13	13	*100.00*
9	**METER REPLACEMENT**																																							
	Details																																							
	Following request and found necessary (Day to replace meter)																																							
9a	**Simple domestic consumers**																																							
	Agreed targets																																							
	2 working days	1	0	0	1	0	0	1	1	100.00	0	0	4	0	0	4	4	4	100.00	3	3	3	3	3	3	9	9	100.00	1	1	2	1	1	2	4	4	100.00	18	18	100.00

Item	Criteria	Jan	Feb	Mar	Jan	Feb	Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	Apr	May	Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	Jul	Aug	Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	Oct	Nov	Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
9b	**LV commercial / 11kV / 33kV / 132kV**																																							
	Agreed targets																																							
	5 working days for confirmation of defect, subject to agreement on shut down of supply.	1	0	0	1	0	0	1	1	100.00	0	0	0	0	0	0	0	0	NA	0	3	0	0	3	0	3	3	100.00	0	0	1	0	0	1	1	1	100.00	5	5	100.00
10	**APPOINTMENT WITH CONSUMERS**																																							
	Agreed targets																																							
	Arrived on time for all appointment. A follow up appointment will be scheduled immediately within 1 working day from the earlier date and notifying consumer as soon as posible if appointment is cancelled.	6	3	7	6	3	7	16	16	100.00	4	3	2	4	3	2	9	9	100.00	6	2	2	6	2	2	10	10	100.00	4	5	4	4	5	4	13	13	100.00	48	48	100.00
11	**SECURITY DEPOSITS**																																							
	Details																																							
	EC accepted NUR explanation that minimum deposit is required for small supplies. EC proposal is acceptable for cash deposit. BG's will be reduced when they come up for renewal																																							
	Agreed targets																																							
	Deposit will be returned to consumers after 6 months if it were found the prorated average consumption is exceeded 2 months, subject to not being less than the minimum amount.	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
11a	**Interest on Deposit**																																							
	Agreed targets																																							
	2.5% to be rebated at the end of the year.	5078	0	0	5078	0	0	5078	5078	100.00	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	5078	5078	100.00
12	**REFUND OF CONSUMER DEPOSITS**																																							
	Agreed targets																																							
	Within 1 month	12	11	16	12	11	16	39	39	100.00	11	36	13	11	36	13	60	60	100.00	3	14	13	3	14	13	30	30	100.00	5	13	14	5	13	14	32	32	100.00	161	161	100.00

Item	Criteria	Jan	Feb	Mar	Jan	Feb	Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	Apr	May	Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	Jul	Aug	Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
13	**COLLECTION**																																				
	Details																																				
	Proof of payment received : NUR would request longer date line due to allow any cheque payment to be cleared by the bank to comply with bank procedure																																				
	Agreed targets																																				
	5 working days	1749	1605	3064	1749	1605	3064	6418	6418	100.00	2716	3273	2778	2716	3273	2778	8767	8767	100.00	3088	2955	2484	3088	2955	2484	8527	8527	100.00	3558	2804	2921	9283	9283	100.00	32995	32995	100.00
14	**DISCONNECTION OF SUPPLY (SAFETY, THEFT ETC**																																				
14a	**Disconnection due to installation which were very dangerous and disconnection could not be delayed**																																				
	Agreed targets																																				
	No notice will given (immediate disconnection)	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	NA	0	0	NA
14b	**In any unsafe particular situation and likely source of danger to consumers, disconnection will be an immediate. Other situation will advise consumers that disconnection would be carried out in the specific time.**																																				
	Agreed targets																																				
	Immediate disconnection	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	NA	0	0	NA
14c	**Disconnections due to other reasons than 14a & 14b above, which was allowed to. Time, which are NOT allow to proceed with disconnection work:** **i) Before week end or Public Holidays** **ii) Week end or Public Holidays.** **iii) After 12 noon on working days.**																																				
	Agreed targets																																				
	7 working days notice	0	0	0	0	0	0	0	0	NA	21	71	0	21	71	0	92	92	100.00	18	30	0	18	30	0	48	48	100.00	0	0	10	10	10	100.00	150	150	100.00
15	**SPECIAL CONSUMERS WHO FACE PROBLEMS IN PAYING BILLS**																																				
	Details																																				
	This criterion applies to disabled or elderly consumers. A register of disable or immobile consumers will be needed																																				
	Agreed targets																																				
	NUR will make special arrangement or collect from consumers premises.	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	NA	0	0	NA
16	**VOLTAGE OUTSIDE STANDARD**																																				
16a	**Where no capital work on network is required**																																				
	Agreed targets																																				
	1 day	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	NA	0	0	NA

Item	Criteria	Jan	Feb	Mar	Jan	Feb	Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	Apr	May	Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	Jul	Aug	Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	Oct	Nov	Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
16b	**Where supply interruption is required but no network enhancement work needed**																																						
	Agreed targets																																							
	8 days (Notify interruption 7 days)	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
16c	**Where network enhancement work is required**																																						
	Agreed targets																																						
	3 months	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
17	**NEW / INCREASE OF SUPPLY APPLICATION REPLY**																																						
	Details																																						
	Written reply of application including date supply will be available and connection charges will be forwarded to consumers																																						
17a	**No substation required**																																						
	Agreed targets																																						
	1 week	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	2	0	0	2	2	2	100.00	2	2	100.00
17b	**New upgrade substation required - This to allow time for design work and obtaining of prices from contractors.**																																						
	Agreed targets																																						
	1 month	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	1	0	0	1	1	1	100.00	0	0	0	0	0	0	0	0	NA	1	1	100.00
17c	**LV commercial / 11kV / 33kV - This to allow time for design work and obtaining of prices from contractors.**																																						
	Agreed targets																																						
	1 month	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	2	1	0	2	1	3	3	100.00	0	0	1	0	0	1	1	1	100.00	4	4	100.00

Item	Criteria	Jan	Feb	Mar	Jan	Feb	Mar	Total in Q1	No. meeting target in Q1	% meeting target in Q1	Apr	May	Jun	Total in Q2	No. meeting target in Q2	% meeting target in Q2	Jul	Aug	Sep	Jul	Aug	Sep	Total in Q3	No. meeting target in Q3	% meeting target in Q3	Oct	Nov	Dec	Oct	Nov	Dec	Total in Q4	No. meeting target in Q4	% meeting target in Q4	Total in 2018	No. meeting target in 2018	% meeting target in 2018
17d	**132kV**																																			
	Agreed targets																																			
	Within 3 months	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
18	**TRANSFERRING OF METER LOCATION UPON CONSUMER REQUEST / METER TRANSFER**																																			
	Details																																			
	Depending on the new location and work required																																			
	Agreed targets																																			
	3 working days	3	2	3	3	2	3	8	8	100.00	0	1	1	2	2	100.00	2	5	4	2	5	11	11	100.00	3	0	1	3	0	1	4	4	100.00	25	25	100.00
19	**EDUCATION OF ENERGY EFFICIENCY**																																			
	Agreed targets																																			
	Will be available at NUR Customer Service Centre at Kulim Hi-Tech Park. Seminars will also be conducted through Consumer Committees in line with the license.	0	0	1	0	0	1	1	1	100.00	0	0	1	1	1	100.00	1	0	0	1	0	0	1	100.00	1	0	1	0	0	1	1	1	100.00	4	4	100.00
20	**POWER QUALITY IMPROVEMENT**																																			
20a	**Domestic consumers**																																			
	Agreed targets																																			
	NUR shall advise and guide consumers in the quality of supply and all power quality related issues.	0	0	0	0	1	0	0	0	NA	0	0	0	0	0	NA	0	0	0	0	0	0	0	NA	0	0	0	0	0	0	0	0	NA	0	0	NA
20b	**LV commercial / 11kV / 33kV / 132kV**																																			
	Agreed targets																																			
	Power Quality meeting with all major customers on Quarterly basis.	6	3	7	6	3	7	16	16	100.00	4	3	2	9	9	100.00	6	2	2	6	2	2	10	100.00	4	5	4	4	5	4	13	13	100.00	48	48	*99.995%*

Apendiks 4: Laporan Prestasi SESB bagi Tahun Kewangan 2018 (Jan 18 - Dis 18)

Appendix 4: SESB's Performance Report for Financial Year 2018 (Jan 18 - Dec 18)

Bil. *No.*	Penunjuk prestasi *Performance indicator*	FY 2018
1	**PENYAMBUNGAN BEKALAN ELEKTRIK - Selepas kontrak ditandatangan** ***ELECTRICITY SUPPLY CONNECTION*** *- After contract signed*	
1.1	**PENUKARAN PENGGUNA *CHANGE OF TENANCY***	
1.1.1	Bilangan Permohonan *Number of application*	8,041
1.1.2	Bilangan permohonan yang disambung dalam tempoh tidak lebih daripada 1 hari bekerja dari tarikh temujanji pengujian pemasangan *Number of application connected within not more than 1 working day from the date of installation test appointment*	8,012
1.1.3	Peratus permohonan yang disambung dalam tempoh tidak lebih daripada 1 hari bekerja dari tarikh temujanji pengujian pemasangan *Percentage of application connected within not more than 1 working day from the date of installation test appointment*	99.64%
1.2	**BEKALAN BARU VOLTAN RENDAH (PERMOHONAN INDIVIDU) *NEW LOW VOLTAGE SERVICE CONNECTION (INDIVIDUAL APPLICATION)***	
1.2.1	Bilangan Permohonan *Number of application*	17,860
1.2.2	Bilangan permohonan yang disambung dalam tempoh tidak lebih daripada 2 hari bekerja dari tarikh temujanji pengujian pemasangan *Number of application connected within not more than 2 working days from the date of installation test appointment*	17,370
1.2.3	Peratus permohonan yang disambung dalam tempoh tidak lebih daripada 2 hari bekerja dari tarikh temujanji pengujian pemasangan *Percentage of application connected within not more than 2 working days from the date of installation test appointment*	97.26%
1.3	**BEKALAN BARU VOLTAN RENDAH (PERMOHONAN PUKAL DAN SKIM PERUMAHAN) *NEW LOW VOLTAGE SERVICE CONNECTION (BULK AND HOUSING SCHEMES APPLICATION)***	
1.3.1	Bilangan Permohonan *Number of application*	4,172
1.3.2	Bilangan permohonan yang disambung dalam tempoh tidak lebih daripada 2 minggu bekerja dari tarikh temujanji pengujian pemasangan *Number of application connected within not more than 2 weeks from the date of installation test appointment*	4,171
1.3.3	Peratus permohonan yang disambung dalam tempoh tidak lebih daripada 2 minggu bekerja dari tarikh temujanji pengujian pemasangan *Percentage of application connected within not more than 2 weeks from the date of installation test appointment*	99.98%
2	**PEMULIHAN SEMULA BEKALAN SELEPAS GANGGUAN** ***RESTORATION OF ELECTRICITY SUPPLY AFTER INTERRUPTION***	
2.1	Bilangan pengguna yang melapor kepada SESB *Number of consumer reporting to SESB*	216,133
2.2	Bilangan pengguna yang mana maklumat tidak dapat diberikan pada masa itu dihubungi semula dalam tempoh 15 minit *Number of consumer which information cannot be given at the time who has been recalled within 15 minutes*	213,971
2.3	Bilangan pengguna yang diberi nombor aduan *Number of consumer who given a complaint reference number*	216,133
2.4	Bilangan kerosakan kecil *Number of minor outage*	58,531
2.5	Bilangan kerosakan kecil yang dipulihkan dalam tempoh 2 jam *Number of minor outage restored within 2 hours*	57,732
2.6	Bilangan kerosakan besar *Number of major outage*	5,303
2.7	Bilangan kerosakan besar yang dipulihkan dalam tempoh 12 jam *Number of major outage restored within 12 hours*	5,295
2.8	Peratus bilangan pengguna yang mana maklumat tidak dapat diberikan pada masa itu dihubungi semula dalam tempoh 15 minit *Percentage of consumer which information cannot be given at the time who has been recalled within 15 minutes*	99.00%
2.9	Peratus bilangan pengguna yang diberi nombor aduan *Percentage of consumer who given a complaint reference number*	100.00%
2.10	Peratus kerosakan kecil yang dipulihkan dalam tempoh 2 jam *Percentage of minor outage restored within 2 hours*	98.63%
2.11	Peratus kerosakan besar yang dipulihkan dalam tempoh 12 jam *Percentage of major outage restored within 12 hours*	99.85%
3	**PENYAMBUNGAN BEKALAN YANG DIPOTONG** ***RECONNECTION OF SUPPLY AFTER BEING DISCONNECTED***	
3.1	**Bilangan pemotongan bekalan *Number of supply disconnected***	211,511
3.2	Bilangan pengguna yang mana bekalannya dipotong menjelaskan semua bayaran sebelum 1.00 tengahari pada hari yang sama *Number of consumer whose supply being disconnected and settled all bills before 1:00 p.m. on the same day*	132,824
3.3	Bilangan pengguna yang mana telah menjelaskan semua bayaran sebelum pukul 1.00 tengahari mendapat bekalan semula pada hari yang sama *Number of consumer whose settled all bills before 1:00 p.m. and reconnected on the same day*	131,255
3.4	Peratus pengguna yang mana telah menjelaskan semua bayaran sebelum pukul 1.00 tengahari mendapat bekalan semula pada hari yang sama *Percentage of consumer whose settled all bills before 1:00 p.m. and reconnected on the same day*	98.82%
4	**GANGGUAN BEKALAN YANG DIRANCANG/BERJADUAL** ***PLANNED/SCHEDULE INTERRUPTION OF ELECTRICITY SUPPLY***	
4.1	**GANGGUAN BERJADUAL *SCHEDULED INTERRUPTIONS***	
4.1.1	Bilangan gangguan berjadual *Number of scheduled interruptions*	1,417
4.1.2	Bilangan pengguna terlibat *Number of consumer affected*	342,935
4.1.3	Bilangan pengguna terlibat yang diberikan notis atau cara-cara yang sesuai sekurang-kurangnya 7 hari sebelum gangguan *Number of consumer affected who has been notified by notice or in an appropriate way at least 7 days before interruptions*	342,935
4.1.4	Peratus pengguna terlibat yang diberikan notis atau cara-cara yang sesuai sekurang-kurangnya 7 hari sebelum gangguan *Percentage of consumer affected who has been notified by notice or in an appropriate way at least 7 days before interruptions*	100.00%
4.2	**RANCANGAN GANGGUAN BERJADUAL *PLANNED SCHEDULED INTERRUPTIONS***	
4.2.1	Bilangan rancangan gangguan berjadual tahunan/bulanan *Number of annually/monthly planned scheduled interruptions*	989
4.2.2	Bilangan pengguna besar yang dijangka terlibat *Number of large power consumer affected*	84,140
4.2.3	Bilangan pengguna besar yang dijangka terlibat yang dimaklumkan mengenai rancangan gangguan berjadual tahunan/bulanan *Number of large power consumer affected who has been notified about the annually/monthly planned scheduled interruptions*	84,130
4.2.4	Peratus bilangan pengguna besar yang dijangka terlibat yang dimaklumkan mengenai rancangan gangguan berjadual tersebut *Percentage of large power consumer affected who has been notified about the annually/monthly planned scheduled interruptions*	99.99%

Bil. *No.*	Penunjuk prestasi *Performance indicator*	FY 2018
5	**BACAAN METER *METER READING***	
5.1	Bilangan pengguna domestik yang mana bacaan meter dibuat secara anggaran melebihi 3 bulan berturut-turut *Number of domestic consumer who estimated meter reading has been carried out for more than 3 months consecutivelyNumber of domestic consumer who estimated meter reading has been carried out for more than 3 months consecutively*	40,727
5.2	Bilangan pengguna domestik yang mana bacaan meter dibuat secara anggaran melebihi 3 bulan berturut-turut diberi notis *Number of domestic consumer who estimated meter reading has been carried out for more than 3 months consecutively being given a notice*	40,727
5.3	Peratus pengguna domestik yang mana bacaan meter dibuat secara anggaran melebihi 3 bulan berturut-turut diberi notis *Percentage of domestic consumer who estimated meter reading has been carried out for more than 3 months consecutively being given a notice*	100.00%
6	**PERTANYAAN DARIPADA PENGGUNA *ENQUIRY FROM CONSUMER***	
6.1	**PERTANYAAN BERTULIS *WRITTEN ENQUIRY***	
6.1.1	Bilangan pertanyaan bertulis yang diterima daripada pelanggan *Number of written enquiry received from the consumer*	442
6.1.2	Bilangan pertanyaan bertulis yang diterima daripada pelanggan yang dijawab dalam tempoh 5 hari bekerja dari tarikh penerimaan *Number of written enquiry received from the consumer which replied within 5 working days from the date of receipt within 5 working days from the date of receipt*	442
6.1.3	Peratus bilangan pertanyaan bertulis yang diterima daripada pelanggan yang dijawab dalam tempoh 5 hari bekerja dari tarikh penerimaan *Percentage of written enquiry received from the consumer which replied within 5 working days from the date of receipt*	100.00%
6.2	**PERTANYAAN MELALUI TELEFON *ENQUIRY VIA TELEPHONE***	
6.2.1	Bilangan pertanyaan melalui telefon yang diterima daripada pelanggan *Number of enquiry via telephone received from the consumer*	91,005
6.2.2	Bilangan pelanggan yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga dihubungi semula dalam masa 24 jam *Number of consumer whose enquiry cannot be resolved at that time has been recalled within 24 hours*	90,822
6.2.3	Peratus bilangan pelanggan yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga dihubungi semula dalam masa 24 jam *Percentage of consumer whose enquiry cannot be resolved at that time has been recalled within 24 hours*	99.80%
6.3	**PERTANYAAN DI KAUNTER *ENQUIRY AT THE COUNTER***	
6.3.1	Bilangan pengguna yang membuat pertanyaan di kaunter *Number of consumer who made enquiry at the counter*	315,059
6.3.2	Bilangan pengguna yang mana pertanyaannya tidak dapat diselesaikan pada masa itu juga dihubungi semula dalam tempoh 24 jam *Number of consumer whose enquiry cannot be resolved at that time can be recalled within 24 hours*	312,450
6.3.3	Bilangan pengguna yang mana pertanyaannya tidak dapat diselesaikan pada masa itu tidak juga dapat dihubungi semula dalam tempoh 24 jam *Number of consumer whose enquiry cannot be resolved at that time cannot be recalled within 24 hours*	63,856
6.3.4	Peratus bilangan pengguna yang mana pertanyaannya tidak dapat diselesaikan pada masa tu juga dihubungi semula dalam tempoh 24 jam *Percentage of consumer whose enquiry cannot be resolved at that time has been recalled within 24 hours*	99.17%
7	**PERKHIDMATAN KAUNTER *COUNTER* SERVICE**	
7.1	Bilangan pengguna yang mendapatkan sebarang perkhidmatan di kaunter *Number of consumer who made transactions at the counter service*	734,872
7.2	Bilangan pengguna yang mana masa menunggu tidak melebihi 15 minit *Number of consumer who waiting time not more than 15 minutes*	726,070
7.3	Peratus bilangan pengguna yang mana masa menunggu tidak melebihi 15 minit *Percentage of consumer who waiting time not more than 15 minutes*	100.00%
8	**TEMUJANJI UNTUK PENGUJIAN METER *APPOINTMENT FOR METER ACCURACY TEST***	
8.1	Bilangan temujanji untuk ujian kejituan meter *Number of appointment for meter accuracy test*	1,204
8.2	Bilangan pengujian meter yang dibuat dalam tempoh 2 hari bekerja *Number of meter test carried out within 2 working days*	1,199
8.3	Peratus bilangan pengujian meter yang dibuat dalam tempoh 2 hari bekerja *Percentage of meter test carried out within 2 working days*	99.58%
9	**PENUKARAN METER *METER REPLACEMENT***	
9.1	Bilangan permohonan yang didapati perlu membuat penukaran meter *Number of application that need for meter replacement*	4,127
9.2	Bilangan penukaran yang dibuat dalam tempoh 2 hari bekerja dari tarikh permohonan dibuat *Number of replacement carried out within 2 working days from the date of application*	3,959
9.3	Peratus bilangan penukaran meter yang dibuat dalam tempoh 2 hari bekerja dari tarikh permohonan dibuat *Percentage of replacement carried out within 2 working days from the date of application*	100.00%
10	**TEMUJANJI DENGAN PENGGUNA *APPOINTMENT WITH CONSUMER***	
10.1	Bilangan temujanji dengan pengguna yang dibuat di luar SESB *Number of appointment with consumer outside SESB premise*	1,525
10.2	Bilangan temujanji dengan pengguna yang mana pihak SESB sampai tidak lewat dari masa yang dijanjikan *Number of appointment with consumer which SESB arrived no later than the promised time*	1,520
10.3	Peratus bilangan temujanji dengan pengguna yang mana pihak SESB sampai tidak lewat dari masa yang dijanjikan *Percentage of appointment with consumer which the SESB arrived no later than the promised time*	99.67%
10.4	Bilangan temujanji yang perlu ditangguhkan *Number of appointment has to be postponed*	57
10.5	Bilangan temujanji susulan yang mana dibuat dalam tempoh 1 hari bekerja dari tarikh tangguhan dibuat *Number of follow-up appointment made within 1 working day from the postponed date*	56
10.6	Peratus bilangan temujanji susulan yang mana dibuat dalam tempoh 1 hari bekerja dari tarikh tangguhan dibuat *Percentage of follow-up appointment made within 1 working day from the postponed date*	98.25%
11	**CAGARAN *DEPOSIT***	
11.1	Bilangan pengguna yang mana selepas 6 bulan didapati cagaran melebihi 2 bulan purata penggunaan *Number of consumer whose deposit held were more than 2 months average consumption after 6 months*	7,159
11.2	Bilangan pengguna yang mana dipulangkan lebihan cagarannya *Number of consumer who refunded the excess deposit*	1,220
11.3	Peratus bilangan pengguna yang mana dipulangkan lebihan cagarannya *Percentage of consumer who refunded the excess deposit*	17.04%
12	**PEMULANGAN WANG CAGARAN PENGGUNA *REFUND OF CONSUMER'S DEPOSIT***	
12.1	Bilangan pengguna yang telah memajukan segala dokumen yang diperlukan bagi tujuan pemulangan wang cagaran *Number of consumer who submitted all necessaries document for deposit refund puposes*	8,291
12.2	Bilangan pengguna yang mana wang cagarannya telah dipulangkan dalam tempoh 1 bulan selepas penyerahan segala dokumen yang diperlukan *Number of consumer who deposit has been refunded within 1 month after submission of all necessaries document*	8,144
12.3	Peratus bilangan pengguna yang mana wang cagarannya telah dipulangkan dalam tempoh 1 bulan selepas penyerahan segala dokumen yang diperlukan *Percentage of consumer who deposit has been refunded within 1 month after submission of all necessaries document*	98.23%
13	**PUNGUTAN *COLLECTION***	
13.1	Bilangan pengguna yang membayar melalui pos *Number of consumer paid via mail*	157,700
13.2	Bilangan pengguna yang diberi pengesahan pembayaran dalam tempoh 2 hari selepas pembayaran dibuat *Number of consumer who given payment confirmation within 2 days after the payment made*	157,700
13.3	Peratus bilangan pengguna yang diberi pengesahan pembayaran dalam tempoh 2 hari selepas pembayaran dibuat *Percentage of consumer who given payment confirmation within 2 days after the payment made*	100.00%

Bil. *No.*	Penunjuk prestasi *Performance indicator*	FY 2018
14	**PEMOTONGAN BEKALAN *DISCONNECTION OF ELECTRICITY SUPPLY***	
14.1	**DENGAN NOTIS 24 JAM *WITH 24 HOURS NOTICE***	
14.1.1	Bilangan pemotongan akibat pepasangan membahayakan *Number of disconnection due to dangerous installation*	36
14.1.2	Bilangan pemotongan akibat disyaki berlaku kecurian elektrik *Number of disconnection due to suspected theft of electrical*	35
14.1.3	Bilangan pemotongan akibat meter elektrik dirosakkan *Number of disconnection due to damaged electricity meter*	-
14.2		
14.2.1	Bilangan pemotongan akibat kegagalan membayar bil selepas 30 hari dari tarikh bil dan 7 hari bekerja notis pemotongan *Number of disconnection due to non payment of bills after 30 days from the billing date and 7 days working days of notice*	125,472
14.2.2	Bilangan pemotongan akibat kegagalan membayar cagaran tambahan selepas 7 hari tuntutan dibuat *Number of disconnection due to non payment of additional deposit after 7 days claims made*	7,943
14.2.3	Bilangan pemotongan tanpa notis akibat pepasangan yang amat membahayakan dan tidak boleh dilengahkan *Number of disconnection without notice due to dangerous installation and cannot be delayed*	811
15	**PENGGUNA KHAS YANG MENGHADAPI MASALAH MEMBAYAR BIL ELEKTRIK *SPECIAL NEEDS CONSUMER ENCOUNTERING PROBLEM TO PAY BILL***	
15.1	Bilangan pengguna cacat yang merayu mengelakkan pemotongan *Number of disability consumer who appeal for not to disconnect the supply*	6
15.2	Bilangan pengguna lanjut usia yang merayu mengelakkan pemotongan *Number of elderly consumer who appeal for not to disconnect the supply*	23
15.3	Bilangan pengguna cacat yang dibantu dalam urusan pembayaran bil *Number of disability consumer who assisted in the payment of bills*	307
15.4	Bilangan pengguna lanjut usia yang dibantu dalam urusan pembayaran bil *Number of elderly consumer who assisted in the payment of bills*	371
16	**MASALAH VOLTAN DI LUAR TAHAP DIISYTIHARKAN *VOLTAGE PROBLEM DUE TO OVER/UNDER VOLTAGE***	
16.1	**TIDAK MEMERLUKAN PENGUKUHAN SISTEM *DOES NOT REQUIRE SYSTEM IMPROVEMENT***	
16.1.1	Bilangan aduan *Number of complaint*	103
16.1.2	Bilangan aduan yang diselesaikan dalam tempoh 2 hari dari tarikh aduan dibuat *Number of complaint resolved within 2 days from the date of complaint received*	101
16.1.3	Peratus bilangan aduan yang diselesaikan dalam tempoh 2 hari dari tarikh aduan dibuat *Percentage of complaint resolved within 2 days from the date of complaint received*	98.06%
16.2	**MEMERLUKAN PENGUKUHAN SISTEM *REQUIRES SYSTEM IMPROVEMENT***	
16.2.1	Bilangan aduan *Number of complaint*	15
16.2.2	Bilangan aduan yang diselesaikan dalam tempoh 3 bulan dari tarikh aduan dibuat *Number of complaint resolved within 3 months from the date of complaint received*	15
16.2.3	Peratus bilangan aduan yang diselesaikan dalam tempoh 3 bulan dari tarikh aduan dibuat *Percentage of complaint resolved within 3 months from the date of complaint received*	100.00%
17	**JAWAPAN KEPADA PERMOHONAN BEKALAN BARU / PENINGKATAN BEKALAN *REPLY TO THE NEW SUPPLY APPLICATION/SUPPLY IMPROVEMENT***	
	Jawapan kepada permohonan bekalan termasuk tarikh bekalan akan diberi dan anggaran caj sambungan akan dikemukakan kepada pelanggan secara bertulis *Replies of application including the date of supply and the estimation of connection charges that will be submitted to consumer in written*	
17.1	**TIDAK MEMERLUKAN PENCAWANG BARU *DOES NOT REQUIRE NEW SUBSTATION***	
17.1.1	Bilangan permohonan *Number of application*	495
17.1.2	Bilangan permohonan yang dijawab dalam masa 1 minggu dari tarikh permohonan dibuat *Number of application replied within 1 weeks from the date of application*	494
17.1.3	Peratus bilangan permohonan yang dijawab dalam masa 1 minggu dari tarikh permohonan dibuat *Percentage of application replied within 1 weeks from the date of application*	1
17.2	**MEMERLUKAN PENCAWANG BARU *REQUIRE NEW SUBSTATION***	
17.2.1	Bilangan permohonan *Number of application*	22
17.2.2	Bilangan permohonan yang dijawab dalam masa 1 minggu dari tarikh permohonan dibuat *Number of application replied within 2 weeks from the date of application*	22
17.2.3	Peratus bilangan permohonan yang dijawab dalam masa 1 minggu dari tarikh permohonan dibuat *Percentage of application replied within 2 weeks from the date of application*	100.00%
18	**PERMOHONAN MEMINDAHKAN LOKASI METER OLEH PENGGUNA *METER RELOCATION REQUEST BY CONSUMER***	
18.1	Bilangan permohonan memindahkan lokasi meter oleh pengguna *Number of application of meter relocation by the consumer*	88
18.2	Bilangan permohonan memindahkan lokasi meter oleh pengguna yang dirasakan perlu dan sesuai *Number of application of meter relocation by the consumer which is necessary and appropriate*	88
18.3	Bilangan permohonan yang perlu dan dirasakan sesuai yang diselesaikan dalam tempoh 3 hari bekerja *Number of necessary and appropriate application that completed within 3 working days*	68
18.4	Peratus bilangan permohonan yang perlu dan dirasakan sesuai yang diselesaikan dalam tempoh 3 hari bekerja *Percentage of necessary and appropriate application that completed within 3 working days*	77.27%
19	**PENDIDIKAN PENGGUNA MENGENAI CARA PENGGUNAAN ELEKTRIK DENGAN CEKAP DAN SELAMAT *CONSUMER EDUCATION PROGRAMME***	
19.1	Bilangan program pendidikan pengguna mengenai cara penggunaan elektrik dengan cekap dan selamat dan cara mengelakkan kemalangan elektrik, termasuk aktiviti berdekatan pepasangan dan talian elektrik yang dijalankan *Number of consumer education programme on how to use electricity effectively and securely and how to avoid electricity accident including activities nearby installations and power lines that had been conducted*	20
20	**PENINGKATAN KUALITI BEKALAN *SUPPLY QUALITY IMPROVEMENT***	
20.1	Bilangan aktiviti-aktiviti berkaitan peningkatan kualiti bekalan elektrik *Number of activities related to improve the quality of electricity supply*	50
	PURATA *AVERAGE*	**96%**

Apendiks 5: Tarif-tarif Elektrik TNB Berkuatkuasa 1 Januari 2014

Appendix 5: TNB's Electricity Tariffs Effective From 1 January, 2014

Bil. *No.*	Kategori tarif *Tariff category*	Unit	Kadar *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 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/kW	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
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 all kWh*	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 (only for qualified consumers)*		
	Bagi setiap kilowatt kehendak maksimum sebulan *For each kilowatt of maximum demand per month*	sen/kWj *sen/kWh*	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 (only for qualified consumers)*		
	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

Bil. *No.*	Kategori tarif *Tariff category*	Unit	Kadar *Rate*
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 (only for qualified consumers)*		
	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
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
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* (*Cogenerators* sahaja)

Appendix 6: TNB's 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	
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	
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*	RM/kW	22.40	

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

b) Bagi pengguna *cogeneration* 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 cogeneration 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% *Feed-in Tariff* (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% Feed-in Tariff (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 SESB & Wilayah Persekutuan Labuan (Berkuatkuasa 1 Januari 2014)

Appendix 7: 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*	37.6
	Caj minimum bulanan *Minimum monthly charge*	RM	15.00
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	RM1,000.00
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 SEB
Appendix 8: SEB's Electricity Tariffs

Kategori tarif *Tariff category*	Kadar per unit *Rate per unit*
TARIF C1 - KOMERSIAL ***TARIFF C1 - COMMERCIAL***	
1 - 100 unit *units*	20.0 sen
1 - 200 unit *units*	24.0 sen
1 - 300 unit *units*	26.0 sen
1 - 400 unit *units*	28.0 sen
1 - 500 unit *units*	30.0 sen
1 – 3,000 unit units	31.5 sen
1 – 10,000 unit *units*	32.0 sen
1 – 20,000 unit *units*	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
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 1 hingga 100 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 unit *units*	24.0 sen
1 – 3,000 unit *units*	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)*					
	2013	2014	2015	2016	2017	2018
TNB						
Domestik *Domestic*	29.15	32.28	32.67	33.21	32.87	33.09
Komersial *Commercial*	40.76	47.10	47.68	46.76	47.16	47.28
Industri *Industrial*	31.00	35.88	36.56	37.13	36.97	37.30
Perlombongan *Mining*	20.55	23.99	25.00	25.34	25.07	24.61
Lampu awam *Public lighting*	21.55	25.06	25.49	25.57	25.53	25.57
Pertanian *Agriculture*	39.35	45.29	45.86	45.78	45.54	45.69
Purata *Average*	**33.87**	**38.86**	**39.45**	**39.55**	**39.53**	**39.68**
SESB						
Domestik *Domestic*	25.30	29.32	29.14	28.86	28.39	29.11
Komersial *Commercial*	33.59	39.25	37.63	38.21	38.26	39.19
Industri *Industrial*	28.81	32.90	30.80	31.36	31.09	31.36
Lampu awam *Public lighting*	18.75	23.31	22.54	23.09	23.27	24.61
Purata *Average*	**29.60**	**34.31**	**33.13**	**33.41**	**33.30**	**34.00**
SEB						
Domestik *Domestic*	31.30	31.30	28.25	28.30	28.21	28.27
Komersial *Commercial*	32.00	32.00	31.72	30.53	30.54	30.50
Industri *Industrial*	25.10	25.10	24.48	24.15	23.86	23.69
Lampu awam *Public lighting*	47.10	47.10	n/a	47.12	47.18	47.17
Purata *Average*	**29.90**	**29.80**	**28.50**	**28.20**	**28.04**	**27.96**

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

KOS PENJANAAN (sen/kWj) *GENERATION COSTS (sen/kWh)*	2014/2015	2015/2016	2016/2017	Sep-Dec 2017	2018
(a) Penjanaan sendiri *Own generation*	18.03	20.65	22.62	22.31	26.91
(b) Elektrik dibeli *Purchased electricity*	20.21	20.01	23.02	24.87	25.72
(c) Kos keseluruhan (a) & (b) *Overall cost (a) & (b)*	**22.03**	**20.15**	**22.95**	**24.43**	**25.89**

Nota: ***Note:***
1. Data Tahun Kewangan *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 SESB
Appendix 11: SESB's Generation Costs

KOS PENJANAAN (sen/kWj) *GENERATION COSTS (sen/kWh)*	2014	2015	2016	2017	2018
(a) Penjanaan sendiri *Own generation*	25.34	50.27	35.32	37.03	39.17
(b) Elektrik dibeli *Purchased electricity*	22.75	23.01	21.23	20.73	18.47
(c) Kos keseluruhan (a) & (b) *Overall cost (a) & (b)*	**20.47**	**28.09**	**23.52**	**23.23**	**20.28**

Nota: ***Note:***
Kos penjanaan di atas adalah berdasarkan harga pasaran bagi bahan api diesel & MFO, harga pembelian tenaga bagi Solar Skala Besar manakala Tenaga Boleh Baharu di bawah skim FiT adalah dengan subsidi daripada KWTBB (SEDA). Harga gas bagi Sabah & Wilayah Persekutuan Labuan adalah pada RM6.40/mmbtu. *The above generation costs are based on market prices for diesel & MFO, energy purchase price for Large Scale Solar, while Renewable Energy under the FiT scheme is subsidized by KWTBB (SEDA). Gas prices for Sabah & Federal Territory of Labuan is at RM6.40/mmbtu.*

Apendiks 12: Kos Penjanaan SEB
Appendix 12: SEB's Generation Costs

KOS PENJANAAN (sen/kWj) *GENERATION COSTS (sen/kWh)*	2014	2015	2016	2017	2018
(a) Penjanaan sendiri *Own generation*	15.62 [1]	13.10 [1]	5.99[1]	3.58	2.7
(b) Elektrik dibeli *Purchased electricity*	9.96 [2]	11.80 [2]	10.47[2]	7.83	0
(c) Kos keseluruhan (a) & (b) *Overall cost (a) & (b)*	**10.57 [3]**	**11.90 [3]**	**8.42[3]**	**4.83**	**2.7**

Nota: ***Note:***
1) [1] Kos Sumber Tenaga SESCO *SESCO Energy Source Cost*
2) [2] Kos Pembelian Tenaga *Power Purchase Cost*
3) [3] Purata Kos Sumber Tenaga *Average Energy Source Cost*
4) Berikutan penstrukturan semula SEB pada tahun 2011, kos penjanaan SEB turut mengambilkira kos penjanaan Sejingkat *Power Corporation, Sarawak Power Corporation, PPLS Power Generation dan Mukah Power Generation Due to restructuring of SEB in 2011, SEB's generation cost considers the generation cost of Sejingkat Power Corporation, Sarawak Power Corporation, PPLS Power Generation and Mukah Power Generation*
5) Pengurangan ketara dalam kos keseluruhan pada tahun 2016 adalah disebabkan kekurangan daripada Bakun dari tahun 2015 hingga 2016. Tenaga leketrik yang dibeli adalah di bawah tahap minimum. *The significant decrease in the overall cost in 2016 was due to inclusion of Bakun shortfall from 2015 to 2016. The power purchased was below the minimum threshold*
6) 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.*
7) Berkuatkuasa 1 Ogos 2017, tiada lagi elektrik yang dibeli, oleh itu kos purata pembelian kuasa berkurangan kepada 7.8 sen/kWj 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.*
8) Penjanan yang tidak bersambung dengan grid dikecualikan daripada kos penjanaan untuk tahun 2017 dan 2018. *Non-grid generation is excluded from the generation cost for year 2017 and 2018.*

SENARAI PEMEGANG-PEMEGANG LESEN
LIST OF LICENSEES

Apendiks 13: Penjana-penjana Bebas (IPP) di Semenanjung Malaysia

Appendix 13: Independent Power Producers (IPP) in Peninsular Malaysia

BIL. *NO.*	STESEN JANA KUASA *POWER STATION*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	JENIS *TYPE*	UNIT	KAPASITI (MW) *CAPACITY (MW)*		SUMBER TENAGA *ENERGY SOURCE*
1.	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.	Thermal konvensional (GF1) *Conventional thermal (GF1)*	U1	282	2,250.6	Gas asli *Natural gas*
				U2	282		
			Thermal (GF2)	U3	281		Arang batu *Coal*
				U4	281		
			Thermal (GF3)	U5	462		
				U6	462		
			OCGT (GF4)	GT8	100.1		Gas asli *Natural gas*
				GT9	100.5		
2.	YTL Power Generation Sdn. Bhd	Lot PT 2467, Mukim Kuala Paka, Daerah Dungun, 23100 Terengganu.	CCGT	GT11	130	585	Gas asli *Natural gas*
				GT12	130		
				ST10	130		
				GT21	130		
				GT22	130		
				GT22	130		
3.	Kuala Langat Power Plant Sdn. Bhd.	Lot 7090, Mukim Tanjung 12, Kuala Langat, 42700 Banting, Selangor.	CCGT	GT11	33	675	Gas asli *Natural gas*
				GT12	19		
				GT13	142		
				GT14	144		
				GT15	142		
				ST17	240		
4.	Port Dickson Power	Tanjung Gemok, Port Dickson, Negeri Sembilan	OCGT	GT1	109.1	436	Gas asli *Natural gas*
				GT2	109.1		
				GT3	109.1		
				GT4	109.1		
5.	Powertek Berhad	Lot 7001 Mukim Sungei Baru Ilir Daerah Alor Gajah 78200 Melaka.	OCGT	GT1A	108.5	434	Gas asli *Natural gas*
				GT1B	108.5		
				GT2A	108.5		
				GT2B	108.5		
6.	Pahlawan Power Sdn. Bhd.	Lot 2191, Mukim Tanjong Kling, Daerah Melaka Tengah, Melaka.	CCGT	GT1	103	322	Gas asli *Natural gas*
				GT2	103		
				ST1	116		

BIL. *NO.*	STESEN JANA KUASA *POWER STATION*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	JENIS *TYPE*	UNIT	KAPASITI (MW) *CAPACITY (MW)*		SUMBER TENAGA *ENERGY SOURCE*
7.	Segari Energy Ventures Sdn. Bhd.	Lot PT0006325, PT0006356, PT0006327, PT0006328, PT0006329, Mukim Pengkalan Baru Daerah Manjung, 34900 Perak.	CCGT	GT11	140	1,303	Gas asli *Natural gas*
				GT12	143		
				GT13	140		
				ST14	228.5		
				GT21	140		
				GT22	143		
				GT23	140		
				GT24	228.5		
8.	GB3 Sdn. Bhd.	Mukim Pengkalan Baharu, Daerah Manjung, Perak.	CCGT	GT31	143	640	Gas asli *Natural gas*
				GT32	143		
				GT33	143		
				ST34	211		
9.	Panglima Power Sdn. Bhd.	Mukim Sungei Baru Ilir, Daerah Alor Gajah, Melaka.	CCGT	GT11	230	720	Gas asli *Natural gas*
10.	Prai Power Sdn. Bhd.	LMS No: 00186 Daerah Seberang Perai Tengah 13700 Pulau Pinang	CCGT	CCGT	350	350	Gas asli *Natural gas*
11.	Teknologi Tenaga Perlis Consortium Sdn. Bhd.	Kuala Sungai Baru, Perlis	CCGT	GT11	143	650	Gas asli *Natural gas*
				GT12	143		
				GT13	143		
				ST18	221		
12.	TNB Janamanjung Sdn. Bhd.	Telok Penchalang, Lekir, Daerah Manjung, Perak	Turbin stim *Steam turbine*	U1	690	2,070	Arang batu *Coal*
				U2	690		Arang batu *Coal*
				U3	690		Arang batu *Coal*
13.	TNB Janamanjung Sdn. Bhd. (4)	No. Lot 43195, Sebahagian 43196 dan Sebahagian 43197, Mukim Sitiawan, Daerah Manjung, Perak	Turbin stim *Steam turbine*	M4	1,010	1,010	Arang batu *Coal*

BIL. *NO.*	STESEN JANA KUASA *POWER STATION*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	JENIS *TYPE*	UNIT	KAPASITI (MW) *CAPACITY (MW)*		SUMBER TENAGA *ENERGY SOURCE*
14.	TNB Manjung Five Sdn. Bhd.	Lot 43195, 43196 dan 43197 Sitiawan Manjung 32040	Thermal	M5	1,000	1,000	Arang batu *Coal*
15.	Tanjung Bin Power Sdn. Bhd.	PT D 1769, 1770, 1771, 1772 Dan 1773 Mukim Serkat Daerah Pontian Johor	Turbin stim *Steam turbine*	U1	700	2,100	Arang batu *Coal*
				U2	700		Arang batu *Coal*
				U1	700		Arang batu *Coal*
16.	Tanjung Bin Energy Sdn. Bhd.	Lot 1770, 1771, 1773, 1851, 1858, 1859 Mukim Serkat, Daerah Pontian, Johor	Turbin stim *Steam turbine*	T4	1,000	1,000	Arang batu *Coal*
17.	Jimah Energy Ventures Sdn. Bhd.	PT 7308 dan PT 7309, Mukim Jimah. Port Dickson, Negeri Sembilan.	Turbin stim *Steam turbine*	U1	700	1,400	Arang batu *Coal*
				U2	700		Arang batu *Coal*
18.	TNB Connaught Bridge Sdn. Bhd.	Sebahagian Lot PT 20176 Mukim Klang, Daerah Klang 41990 Selangor.	CCGT	375			Gas asli *Natural gas*
19.	TNB Prai Sdn. Bhd.	PT 10, PT 11 dan PT 13 Bandar Prai Seberang Perai Tengah 13600, Pulau Pinang	CCGT	1,071.43			Gas asli *Natural gas*
20.	TNB Pasir Gudang Energy Sdn. Bhd.	Lot PT 204356 Mukim Plentong, Daerah Pasir Gudang 81700 Johor.	CCGT	GT3A GT3B ST3C	275	275	Gas asli *Natural gas*
21.	Pengerang Power Sdn. Bhd.	Plot 46 dan di dalam Persempadanan Pengerang Integrated Complex (PIC), Mukim Pengerang, Daerah Kota Tinggi, 81600 Johor.	Cogen	GT3B	400	400	Gas asli *Natural gas*

Nota: ***Notes:***
CCGT: Turbin gas kitar padu *Combined cycle gas turbine*
OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*

Apendiks 14: Penjana-penjana Bebas (IPP) di Sabah

Appendix 14: Independent Power Producers (IPP) in Sabah

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
1.	Kimanis Power Sdn. Bhd.	Kimanis Power Plant, Office Building, KM 48, Kg. Batu Pungit, Papar, 89607 Kimanis, Sabah	285	CCGT	Gas asli *Natural gas*
2.	Ranhill Powertron II Sdn. Bhd.	Lot 35 (IZ4) IZ4 Kota Kinabalu Industrial Park (KKIP) 88460 Kota Kinabalu, Sabah	190	CCGT	Gas asli *Natural gas*
3.	Ranhill Powertron Sdn. Bhd.	Lot 3, KKIP Selatan IZ3 Kota Kinabalu Industrial Park (KKIP) 88460 Kota Kinabalu, Sabah	190	CCGT	Gas asli *Natural gas*
4.	Sepangar Bay Power Corporation Sdn. Bhd.	Suite 2A-12-1, Blok 2A, Level 12, Plaza Sentral, Jalan Stesen Sentral 5, 50470 Wilayah Persekutuan Kuala Lumpur	100	CCGT	Gas asli *Natural gas*
5.	SPR Energy (M) Sdn. Bhd.	No. 1.01, 1st Floor Wisma E&C, No. 2, Lorong Dungun Kiri, Damansara Heights, 50490 Wilayah Persekutuan Kuala Lumpur	100	CCGT	Gas asli *Natural gas*
6.	Stratavest Sdn. Bhd.	Tingkat 15, Amcorp Tower, Amcorp Trade Centre, No. 18, Jalan Persiaran Barat, 46050 Selangor	64.4	Enjin diesel *Diesel engine*	Diesel

Apendiks 15: Lesen Projek Tenaga Boleh Baharu (TBB) Yang Dikeluarkan pada 2018

Appendix 15: Renewable Energy (RE) Project Licenses Issued in 2018

BIL. *NO.*	PEMEGANG *LESEN LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH SAH LESEN *LICENSE VALIDITY*		KAPASITI (MW) *CAPACITY (MW)*	SUMBER TENAGA *ENERGY SOURCE*
				DARI *FROM*	HINGGA *UNTIL*		
1.	Alternative Powers Solutions Sdn. Bhd.	Lot 609, Mukim Kerubong, Daerah Melaka Tengah, 75250 Melaka	1-33A Glomac Centre, Jalan Teratai PJU 6A, Kampung Sungai Kayu Ara,47400 Petaling Jaya Selangor	23/1/2018	22/1/2039	0.18	Solar
2.	Biogas Sulpom Sdn Bhd	Sebahagian Lot13844, Batu 34, Jalan Dengkil/ Banting, Mukim Dengkil, Sepang 43800 Selangor	No.17 & 19, Jalan Puteri 5/20, Bandar Puteri, 47100 Puchong Selangor	21/12/2018	20/12/2034	2.4	Biogas
3.	Chiat Hin Envelope Manufacturer Sdn. Bhd.	Sebahagian PT 2831, Mukim 01, Daerah Seberang Perai Tengah, 13600 Pulau Pinang	Plot 233/234 Lrg Perusahaan 8 Kawasan Perusahaan 2, 13600 Perai, Pulau Pinang	23/1/2018	22/1/2039	0.1652	Solar

BIL. *NO.*	PEMEGANG *LESEN LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH SAH LESEN *LICENSE VALIDITY*		KAPASITI (MW) *CAPACITY (MW)*	SUMBER TENAGA *ENERGY SOURCE*
				DARI *FROM*	HINGGA *UNTIL*		
4.	Cleantech Solar (Malaysia) Sdn. Bhd.	Sebahagian Lot PT486, Mukim Bandar Baru Enstek, Daerah Seremban, 71760 Negeri Sembilan	2-37, PV 128 128, Jalan Genting Klang, 53300 Kuala Lumpur, Wilayah Persekutuan	26/7/2018	25/7/2039	4.862	Solar
5.	Concord Green Energy Sdn Bhd	Kilang Sawit Lok Heng, Sebahagian Rancangan Kemajuan Tanah Felda Lok Heng Timur, Mukim Kota Tinggi, Daerah Kota Tinggi, 81907 Johor	A-2-3 TTDI Plaza Jalan Wan Kadir 3, Taman Tun Dr Ismail 60000 Kuala Lumpur, Wilayah Persekutuan	28/9/2018	27/9/2034	1.501	Biogas
6.	Concord Green Energy Sdn Bhd	Kilang Sawit Keratong 2, Sebahagian Rancangan Kemajuan Tanah Felda Keratong 2, Mukim Keratong, Daerah Rompin, 26900 Pahang	A-2-3 TTDI Plaza Jalan Wan Kadir 3, Taman Tun Dr Ismail, 60000 Kuala Lumpur, Wilayah Persekutuan	28/9/2018	27/9/2034	1.501	Biogas
7.	Concord Green Energy Sdn Bhd	Kilang Sawit Adela, Sebahagian Rancangan Kemajuan Tanah Felda Adela, Mukim Kota Tingi, Daerah Kota Tinggi, 81907 Johor	A-2-3 TTDI Plaza Jalan Wan Kadir 3, Taman Tun Dr Ismail, 60000 Kuala Lumpur, Wilayah Persekutuan	28/9/2018	27/9/2034	1.8	Biogas
8.	Concord Green Energy Sdn Bhd	Kilang Sawit Lepar Hilir, Sebahagian No. Lot 1310, Mukim Ulu Lepar, Daerah Kuantan 26300 Pahang	A-2-3 TTDI Plaza Jalan Wan Kadir 3, Taman Tun Dr Ismail, 60000 Kuala Lumpur, Wilayah Persekutuan	28/9/2018	27/9/2034	1.8	Biogas
9.	CT Solar Solutions Sdn. Bhd.	Lot 2995, Bandar Alor Setar, Daerah Alor Setar, 05050 Kedah.	No. 38-B, Tingkat Satu, Susuran Tunku Haminah, Pusat Dagangan Tunku Haminah, Mukim Mergong, 05150 Alor Setar Kedah	12/3/2018	11/3/2039	0.4244	Solar

BIL. *NO.*	PEMEGANG *LESEN LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH SAH LESEN *LICENSE VALIDITY*		KAPASITI (MW) *CAPACITY (MW)*	SUMBER TENAGA *ENERGY SOURCE*
				DARI *FROM*	HINGGA *UNTIL*		
10.	Cypark Smart Technology Sdn Bhd	Lot PT 8303, Mukim Jimah, Daerah Port Dickson, 71000 Negeri Sembilan	Unit 308 Blok A, Phileo Damansara II, No 15 Jln 16/11, 46350 Petaling Jaya, Selangor	23/8/2018	22/8/2034	20	Biojisim *Biomass*
11.	Felda Palm Industries Sdn. Bhd.	Sebahagian Lot PT 7509, Mukim Bera, Daerah Bera, 28300 Pahang	Level 42, Menara Felda, Platinum Park, No.11, Persiaran KLCC Kuala Lumpur, 50088 Kuala Lumpur	15/8/2018	14/8/2034	2.4	Biogas
12.	GGS Corporation Sdn. Bhd.	Lot 10780 dan 10781, Mukim Belanja, Daerah Perak Tengah,	GGS Corporation Sdn. Bhd. G12B, Wisma Zelan, Jalan Tasik Permaisuri 2, Bandar Tun Razak 56000 Kuala Lumpur	3/7/2018	2/7/2034	2.338	Biogas
13.	GLT Bio Sdn Bhd	Sebahagian No. PT271, Mukim Padang Meha, Daerah Kulim 09400 Kedah	C-709 Metropolitan Square, Jalan PJU 8/1 Damansara Perdana 47820 Petaling Jaya Selangor	26/11/2018	25/11/2034	1.2	Biogas
14.	GLT Eco Sdn Bhd	Lot 714, 716, 717, 718, Mukim Padang Cina, Daerah Kulim, 09700 Kedah	C-709 Metropolitan Square Jalan PJU 8/1 Damansara Perdana 47820 Petaling Jaya Selangor	11/7/2018	10/7/2034	2.4	Biogas
15.	Green Leaf Energy Sdn Bhd	Lot 2691, Mukim Sermin, Daerah Segamat, 85010 Johor	I-01-05, 5th Floor, Block I, Setiawalk, Persiaran Wawasan, Pusat Bandar Puchong, 47160 Puchong Selangor	20/7/2018	19/7/2039	0.18	Solar
16.	Innotech Synergy Sdn Bhd	Sebahagian Lot 637, Mukim Kampong Buaya, Daerah Kuala Kangsar, 33700 Kuala Kangsar, Perak	No. 8A, Jalan Pauh Kijang 3/KU3 Batu Belah 41050 Klang Selangor	9/1/2018	8/1/2039	0.425	Solar
17.	Jana Landfill Sdn. Bhd.	Sebahagian No. Lot 2958, Mukim Jeram, Daerah Kuala Selangor, 42200 Selangor	No.9, Jalan USJ 16/3, Subang Jaya, 47600 Petaling Jaya 47600 Subang Jaya Selangor	12/9/2018	11/9/2034	1	Biogas

BIL. *NO.*	PEMEGANG *LESEN LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH SAH LESEN *LICENSE VALIDITY*		KAPASITI (MW) *CAPACITY (MW)*	SUMBER TENAGA *ENERGY SOURCE*
				DARI *FROM*	HINGGA *UNTIL*		
18.	Kerian Energy Sdn Bhd	Sungai Kerian & Sungai Bintang, Hutan Simpan Bintang Hijau Daerah Hutan Larut & Matang, Taiping 34140 Perak	No. 20 Jalan Astaka U8/83 Seksyen U8 Bukit Jelutong 40150 Shah Alam Selangor	12/9/2018	11/9/2039	14.232	Hidro *Hydro*
19.	Kilang Kelapa Sawit Lekir Sdn Bhd	Lot PT20A, Mukim Batu 10, Daerah Lekir, 32020 Ipoh, Perak.	Batu 11, Lekir 32020 Sitiawan Perak	19/1/2018	18/1/2034	1	Biogas
20.	KS Green Energy Sdn Bhd	Sebahagian Lot 2744 & 2745, Mukim Parit Jawa, Daerah Muar 84150 Johor	2-3 Jalan Segambut 51200 Kuala Lumpur Wilayah Persekutuan	10/12/2018	9/12/2034	3.606	Biogas
21.	Kualiti Alam Sdn Bhd	Sebahagian Lot 6638, Mukim Jimah, Daerah Port Dickson, 71000 Negeri Sembilan	13-1, Mercu UEM Jalan Stesen Sentral 5, Kuala Lumpur Sentral 50470 Kuala Lumpur, Wilayah Persekutuan	3/7/2018	2/7/2034	3.4	Biojisim *Biomass*
22.	Pantai Remis Cenergi Sdn Bhd	No Lot 4130, Mukim Lumut, Daerah Manjung, 32500 Perak	E10-07, Capital 5, No. 2 Jalan PJU 1A/7A, Oasis Square, Oasis Damansara 43701 Petaling Jaya Selangor	28/9/2018	27/9/2034	1.642	Biogas
23.	Tex Cycle (P2) Sdn. Bhd.	Lot PT 8942 & PT 8960, Mukim Klang, Daerah Klang, 42000 Selangor	No 8, Jalan TPK 2/3Taman Perindustrian Kinrara47100 Puchong Selangor	9/1/2018	8/1/2034	2.5	Biojisim *Biomass*
24.	Zeqna Corporation Sdn Bhd	Lot PT607, Mukim Slim, Daerah Batang Padang, 35800 Perak.	11th Floor, Menara Manulife RB, Jalan Gelenggang, Damansara Heights, 56490 Kuala Lumpur Wilayah Persekutuan	26/7/2018	25/7/2039	6.46	Hidro *Hydro*
25.	Techno Moments Sdn Bhd	Sebahagian Lot CL075492152, Mile 9, Jalan Labuk, 90000 Sandakan, Sabah	CL075492152, Mile 7, Jalan Labuk Sandakan ,90000 Sandakan Sabah	2/1/2018	1/1/2039	0.1898	Solar

Apendiks 16: Pemegang Lesen *Cogeneration* Awam di Semenanjung Malaysia

Appendix 16: Public Cogeneration Licensees in Peninsular Malaysia

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
1.	Gas Malaysia Energy Advance Sdn. Bhd. (Seberang Perai)	Kawasan Kompleks Perindustrian Toray, Di Lot PT 2812, Mukim 01, Daerah Seberang Perai Tengah, Pulau Pinang.	No. 5, Jalan Serendah 26/17 Seksyen 26, Peti Surat 7901 40732 Shah Alam Selangor	33.5	CCGT	Gas asli *Natural gas*
2.	Gas Malaysia Energy Advance Sdn. Bhd.(Shah Alam)	Panasonic Appliances Air-Conditioning Malaysia Sdn. Bhd., Lot PT 3, Seksyen 21, Mukim Bandar Shah Alam, Daerah Petaling, Selangor.	IPAC2, No. 42, Jalan Serendah 26/339, Seksyen 26, 40400 Shah Alam Selangor	2.055	Enjin gas *Gas engine*	Gas asli *Natural gas*
3.	Hengyuan Refining Company Berhad	Kompleks Hengyuan Refining Company Berhad, Port Dickson, 71000 Negeri Sembilan.	Batu 1, Jalan Pantai, 71000 Port Dickson Negeri Sembilan	35	Turbin stim *Steam turbine*	Haba sisa perindustrian *Industrial waste heat*
4.	Institute of Technology PETRONAS Sdn. Bhd.	Kampus Universiti Teknologi PETRONAS, Tronoh, Perak.	Bandar Seri Iskandar, 31750 Teronoh Perak	8.4	Enjin gas *Gas engine*	Gas asli *Natural gas*
5.	Optimistic Organic Sdn. Bhd.	Plot No. 4248, Telok Kalong Industrial Estate, 24007 Kemaman, Terengganu.	Lot 3351, Teluk Kalong Industrial Estate, 24007 Kemaman Terengganu	7	Enjin diesel *Diesel engine*	Haba sisa perindustrian *Industrial waste heat*
6.	Perstima Utility Sdn. Bhd.	No. Lot 00051694, Mukim Plentong, Daerah Johor Bahru, 81700 Johor	Plo 255 Jalan Timah Tiga Kawasan Perindustrian Pasir Gudang 81700 Pasir Gudang Johor	5.67	Enjin gas *Gas engine*	Gas asli *Natural gas*
7.	PETRONAS Gas Berhad (Kerteh)	Petrochemical Complex, Kerteh Industrial Area, Terengganu.	Gas Processing and Utility (Utility Kertih), Kertih Integrated Petrochemical Complex, KM 105, Jalan Kuantan / Kuala Terengganu, Kemaman 24300 Kerteh, Terengganu	210	CCGT	Gas asli *Natural gas*
8.	PETRONAS Gas Berhad (Gebeng)	Petrochemical Complex, Gebeng Industrial Area, Pahang.	Centralised Utility Facilities (CUF), Integrated Petrochemical Complex, Lot 139A, Gebeng Industrial Area, Phase III 26080 Kuantan, Pahang	105	CCGT	Gas asli *Natural gas*
9.	Gas District Cooling (KLIA) Sdn. Bhd.	Kuala Lumpur International Airport Daerah Sepang, Selangor.	Level 5, Menara Dayabumi, Jalan Sultan Hishamudin 50050 Kuala Lumpur Wilayah Persekutuan	40	Enjin gas *Gas engine*	Gas asli *Natural gas*

Apendiks 17: Pemegang Lesen *Cogeneration* Awam di Sabah

Appendix 17: Public Cogeneration Licensees in Sabah

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
1.	Eksons Biomass Energy Sdn. Bhd.	Rajang Plywood (Sabah) Sdn. Bhd. CLS 105486762, 105486771 dan PT2000100538, Sg. Umas, Umas, Mukim Merotai, 91000 Tawau, Sabah.	TB 4327, Block 31, 2nd Floor, Fajar Complex, Jalan Haji Karim, 91000 Tawau Sabah	3	Turbin stim *Steam turbine*	Sisa pertanian (Kayu atau habuk perkayuan) *Agricultural wastes (Wood or wood dust)*
2.	Evergreen Intermerge Sdn. Bhd.	Cacao Paramount Sdn. Bhd. Lot CL 105323797, KM 3, Tanjung Batu Laut, Tawau, Sabah.	Teck Guan Regency, 318 Jalan St. Patrick, Off Jalan Belunu, Peti Surat 33, 91007 Tawau Sabah	6	Enjin diesel *Diesel engine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
3.	IOI Bio-Energy Sdn. Bhd.	IOI Integrated Edible Oils Processing Complex, Mukim Sungai Mowtas, Daerah Sandakan, 90738 Sabah.	KM12, Sungai Mowtas, Jalan Jaya Chip, Off Jalan Batu Sapi, P.O. Box 5423, 90738 Sandakan Sabah	15	Enjin diesel *Diesel engine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
4.	Seo Energy Sdn. Bhd.	Lot No. 077533754, KM 8, Jalan Batu Sapi, Karamunting, Sandakan, Sabah	KM 8, Jalan Batu Sapi Karamunting, P.O. Box 2605 90729 Sandakan Sabah	1.2	Enjin diesel *Diesel engine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
5.	Untung Ria Sdn. Bhd.	No. Lot CL 135332179 dan CL 135335054, Mukim Ktg. Ulu Patikang, Daerah Keningau, 89009 Sabah.	12A, Jalan Teluk Likas 88450 Sabah	4	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Sisa Pertanian (Kayu atau habuk perkayuan) *Agricultural Wastes (Wood or wood dust)*

Apendiks 18: Pemegang Lesen *Cogeneration* Persendirian di Semenanjung Malaysia

Appendix 18: Private Cogeneration Licensees in Peninsular Malaysia

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
1.	Acidchem International Sdn. Bhd.	Lot 4698, 5000 & 6241, Mukim 01, Daerah Seberang Perai Tengah, 13600 Pulau Pinang.	2411, Lorong Perusahaan Satu, Prai Industrial Complex, 13600 Perai Pulau Pinang	6.51	OCGT	Gas asli *Natural gas*
2.	BASF PETRONAS Chemicals Sdn. Bhd. (Gebeng)	Lot 139, Kawasan Perindustrian Gebeng, 26080 Kuantan, Pahang.	Jalan Gebeng 2/1, Kawasan Perindustrian Gebeng, 26080 Kuantan Pahang	27.4	Turbin stim *Steam turbine*	Gas asli *Natural gas*
3.	Biovision & Greenergy Sdn. Bhd.	Sebahagian Lot 14205 dan PTD 5325, Mukim Pogoh, Daerah Segamat, 85000 Johor.	D-08-06, Block D, Level 8, Skypark @ One City, Jalan USJ 25/1A, 47650 Subang Jaya Selangor	6.88	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
4.	Central Sugars Refinery Sdn. Bhd.	13,16,17 dan 972, Mukim Damansara, Daerah Petaling, 40000 Selangor.	Batu Tiga, 40000 Shah Alam Selangor	14.23	Turbin stim *Steam turbine*	Gas asli *Natural gas*
5.	CJ Bio Malaysia Sdn. Bhd	Sebahagian Lot 51124, Mukim Kerteh Daerah Kemaman	Oasis Office, Capital 3 Unit C-05-01, No. 2, Jalan PJU 1A/7A Ara Damansara, 47301 Petaling Jaya Selangor	12	Enjin gas *Gas engine*	Gas asli *Natural gas*
6.	Gas District Cooling (Putrajaya) Sdn. Bhd.	Plot 2UI, Putrajaya Precint 2, Wilayah Persekutuan Putrajaya.	Level 5, Menara Dayabumi, Jalan Sultan Hishamudin 50050 Kuala Lumpur Wilayah Persekutuan	10.74	Enjin gas *Gas engine*	Gas asli *Natural gas*
7.	Gas District Cooling (Putrajaya) Sdn. Bhd.	Plot 12371 Precint 1, Wilayah Persekutuan Putrajaya Lebuh Perdana Timur, Pusat Pentadbiran Kerajaan Persekutuan Putrajaya, 62000 Putrajaya.	Level 5 Menara Dayabumi, Jalan Sultan Hishamuddin, 50050 Kuala Lumpur Wilayah Persekutuan	8	Enjin gas *Gas engine*	Gas asli *Natural gas*

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
8.	Gula Padang Terap Sdn. Bhd.	Lot 2143 dan 2042, Mukim Terap Kiri, Daerah Padang Terap, 06300 Kedah.	45 KM, Jalan Padang Sanai, 06300 Kuala Nerang Kedah	11.49	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Gas asli *Natural gas*
9.	KL-Kepong Oleomas Sdn. Bhd.	Sebahagian Lot 161987, Mukim Klang, Daerah Klang, 42920 Selangor.	No. 25, Jalan Sungai Pinang 5/18, Fasa 2D, Taman Perindustrian Pulau Indah, 42920 Klang Selangor	6.5	Enjin gas *Gas engine*	Gas asli *Natural gas*
10.	Kuala Lumpur Kepong Berhad	Kilang Kelapa Sawit Kekayaan, Lot PT, Block 5, Mukim Paloh, 86609 Kluang, Johor.	Kilang Kelapa Sawit Kekayaan, K/B No 110 86609 Paloh Johor	5.53	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Sisa pertanian (sisa kilang minyak sawit) *Agricultural waste (palm oil mill waste)*
11.	Lotte Chemical Titan (M) Sdn. Bhd.	PLO 257, 312, 425 dan 426, Jalan Tembaga 4, Pasir Gudang Industrial Estate, 81700 Pasir Gudang, Johor.	PLO 312, Jalan Tembaga 4, Pasir Gudang Industrial Estate, 81700 Pasir Gudang Johor	56	Turbin stim *Steam turbine*	Gas asli *Natural gas*
12.	Malayan Sugar Manufacturing Company Bhd.	No. Lot 287, Mukim 1, Daerah Seberang Perai Tengah, Pulau Pinang.	No. 798, Main Road, 13600 Perai Pulau Pinang	8.95	Turbin stim *Steam turbine*	Gas asli *Natural gas*
13.	Malaysian Refining Company Sdn. Bhd.	PETRONAS Penapisan Melaka Complex, No. Lot 2332, Mukim Sungei Udang, Melaka Tengah, 76300 Melaka.	Bangunan Pentadbiran, Persiaran Penapisan, 76300 Sungai Udang Melaka	152.3	OCGT	Gas asli *Natural gas*
14.	MSM Perlis Sdn. Bhd.	Kilang MSM Perlis, Sebahagian Lot 2039, Mukim Chuping, Daerah Perlis, 01700 Perlis.	P.O Box 42, 01700 Kangar Perlis	9.39	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Gas asli *Natural gas*

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
15.	Muda Paper Mills Sdn. Bhd.	Lot 11207, Mukim Kajang, Daerah Hulu Langat, Selangor	1 1/2 Miles, Off Jalan Sungai Chua, 43000 Kajang Selangor	14.4	Enjin gas *Gas engine*	Gas asli *Natural gas*
16.	Perak-Hanjoong Simen Sdn. Bhd.	No. Lot 1076, 4059, 417, 1419, 1328, 1420, 1421, 1329, 1122, 1327, 1123, 1418, 1330, 1333 dan 1417, Mukim Kampung Buaya, Daerah Kuala Kangsar, 33700 Perak.	11th Floor, Yeoh Tiong Lay Plaza,55, Jalan Bukit Bintang,55100 Kuala Lumpur Wilayah Persekutuan	12	Turbin stim *Steam turbine*	Haba sisa perindustrian *Industrial waste heat*
17.	PETRONAS Chemicals Fertiliser Kedah Sdn Bhd	10750 Gurun Kuala Muda 08300 Kedah	KM 3, Jalan Jeniang, P.O. Box 22, 08300 Gurun Kedah	18	CCGT	Gas asli *Natural gas*
18.	PETRONAS Gas Berhad (Kertih)	Gas Processing Plant- GPP A, Kertih, Lot 1902, 1903 dan 3541, Mukim Kertih, 24300 Daerah Kemaman, Terengganu.	Loji Memproses Gas, KM 105 Jalan Kuantan/Kuala Terengganu Kertih, 24300 Kemaman, Terengganu.	25	CCGT	Gas asli *Natural gas*
19.	PETRONAS Gas Berhad (Paka)	Gas Processing Plant-GPP B, Paka, Lot 7348, Mukim Paka, 23100 Daerah Dungun, Terengganu.	Loji Memproses Gas, KM 105, Jalan Kuantan/Kuala Terengganu Kertih, 24300 Kemaman, Terengganu.	25	CCGT	Gas asli *Natural gas*
20.	WRP Asia Pacific Sdn. Bhd.	No. Lot PT 5758 dan PT 5759, Mukim Bandar Baru Salak Tinggi, 43900 Daerah Sepang, Selangor	Lot 1, Jalan 3, Kawasan Perusahaan Bandar Baru Salak Tinggi, 43900 Sepang Selangor	8	Enjin Gas *Gas engine*	Gas asli *Natural gas*

Nota: ***Notes:***
CCGT: Turbin gas kitar padu *Combined cycle gas turbine*
OCGT: Turbin gas kitar terbuka *Open cycle gas turbine*
MFO: *Medium Fuel Oil*

Apendiks 19: Pemegang Lesen *Cogeneration* Persendirian di Sabah

Appendix 19: Private Cogeneration Licensees in Sabah

BIL. *NO.*	LOKASI *LOCATION*	PEMEGANG LESEN *LICENSEE*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
1.	Felda Palm Industries Sdn. Bhd.	Gugusan Felda Sahabat, Mukim Tungku, Daerah Lahad Datu, 91150 Sabah.	Loji Janakuasa Biomass Sahabat, Peti Surat 246, Cenderawasih, 91150 Lahad Datu Sabah	7.5	Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
2.	PETRONAS Chemicals Fertiliser Sabah Sdn. Bhd.	No. Lot PT2010191348, Mukim Mengalong, Daerah Sipitang, 89850 Sabah.	Tower 1, PETRONAS Twin Towers Kuala Lumpur City Centre 50088 Kuala Lumpur Wilayah Persekutuan	65	Turbin stim *Steam turbine*	Gas asli *Natural gas*

Apendiks 20: Pemegang Lesen Solar Berskala Besar (LSS) di Semenanjung Malaysia

Appendix 20: Large-Scale Solar (LSS) Licensees in Peninsular Malaysia

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY (MW_{DC})*
				DARI *FROM*	HINGGA *UNTIL*	
1.	Eastern Pacific GD Solar Sdn. Bhd.	PN 8283, No. Lot 6217, Mukim Teluk Kalung, 24000 Kemaman, Terengganu.	Wisma MIE, No 2, Jalan Industri PBP 2, Taman Industri Pusat Bandar Puchong, 47160 Puchong Selangor	3/10/2017	2/10/2038	23.055
2.	Gading Kencana Development Sdn. Bhd.	Lot 12191, Lot 12192 & PT12436, Mukim Bidor, Daerah Batang Padang, 35500 Perak.	2-06-02, Blok 2 Presint Alami Pusat Perniagaan Worldwide 2 Persiaran Akuatik, Seksyen 13, 40100 Shah Alam Selangor	8/3/2018	7/3/2039	37.57
3.	IL Solar Sdn. Bhd.	Sebahagian Lot No. 560-563, Lot 2011, Mukim Bandar Bukit Kayu Hitam, Daerah Kubang Pasu, 06050 Kedah.	Indera Subang Jaya, Jalan USJ 6/2L, UEP Subang Jaya, 47610 Subang Jaya Selangor	24/8/2017	23/8/2038	12
4.	Leader Solar Energy Sdn. Bhd.	No. 2 Sungai Pasir, Kuala Muda, 08000 Kedah.	Suite 7A, Menara Northam, 55, Jalan Sultan Ahmad Shah 10050 Georgetown Pulau Pinang	12/2/2018	11/2/2039	38
5.	PLB Green Solar Sdn. Bhd.	Lot 1340, 1341, 3897, Mukim 11, Daerah Seberang Perai Selatan, 14300 Pulau Pinang.	No.8A, Tingkat 1 Jalan Perdana Selatan Bandar Perda 14000 Bukit Mertajam Pulau Pinang	24/8/2017	23/8/2038	23.736
6.	Quantum Solar Park (Kedah) Sdn. Bhd.	Lot 70527-70545 dan 70511-70518, Mukim Ayer Puteh, Daerah Pendang. 06700 Kedah.	Unit 8-1 & 8-2, Level 8, Tower 9, UOA Business Park, No. 1, Jalan Pengaturcara U1/51A, Seksyen U1 40150 Shah Alam Selangor	10/10/2018	9/10/2039	65

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY (MW_{DC})*
				DARI *FROM*	HINGGA *UNTIL*	
7.	Revenue Vantage Sdn. Bhd.	Lot 9169, PN 44025, Mukim Glami Lemi, Daerah Jelebu, 71600 Negeri Sembilan.	Unit 203 Blok A, Phileo Damansara II, No 15 Jln 16/11, 46350 Petaling Jaya Selangor	23/8/2018	22/8/2039	4.355
8.	SBU Power Sdn Bhd	Sebahagian Lot 20265, Mukim Padang Siding, Daerah Perlis, 02600 Perlis	B-13-15, Level 13 Menara Prima Tower B Jalan Pju 1/39, Dataran Prima 47301 Petaling Jaya Selangor	19/1/2018	18/1/2039	5.247
9.	Selasih Mentari Sdn. Bhd.*	Sebahagian Lot PT 8303, Mukim Jimah, Daerah Port Dickson, 71000 Negeri Sembilan.	17-2, Jalan USJ 9/5Q Subang Business Centre 47620 Subang Jaya Selangor	23/8/2018	22/8/2039	11.67
10.	Sinar Kamiri Sdn. Bhd.	Sebahagian Lot 3702, Lot No.14900, Lot No. PT3336 dan Lot No. 2965, Mukim Pulau Kamiri, Daerah Kuala Kangsar, 31100 Perak.	Level 11, Menara Mudajaya, No 12A, Jalan PJU 7/3, Mutiara Damansara, 47810 Petaling Jaya Selangor	21/9/2018	20/9/2039	60.528
11.	Solar Management (Seremban) Sdn Bhd	Sebahagian PT 2539, Mukim Pedas, Daerah Rembau, 71300 Negeri Sembilan	D-7-13A, Oasis Ara Damansara Jalan PJU 1A/7A 47301 Petaling Jaya Selangor	2/10/2018	1/10/2039	60
12.	Tesdec Green Energy Sdn. Bhd.*	Lot 9902, Mukim Sura, 23000 Dungun, Terengganu.	Kampus Induk, Kawasan Perindustrian Bukit Khor, 21600 Marang Terengganu	27/10/2017	26/10/2038	4.28
13.	TNB Sepang Solar Sdn. Bhd.	Lot 32888, Mukim Tanjung Dua Belas, Daerah Kuala Langat, 42700 Kuala Langat, Selangor	L31-01-08, Level 31, PJX-HM Shah Tower, No. 16-A, Jalan Persiaran Barat, Petaling Jaya, 46050 Petaling Jaya Selangor	4/1/2018	3/1/2039	78
14.	UiTM Solar Power Sdn Bhd	109618 Kuala Kuantan Kuantan 26300 Pahang	Level 4, Block 1, Intekma Resort & Convention Centre Persiaran Raja Muda, Section 7 40000 Shah Alam Selangor	29/10/2018	28/10/2039	59.85

*Belum beroperasi
**Not operational yet*

Apendiks 21: Pemegang Lesen Solar Berskala Besar (LSS) di Sabah

Appendix 21: Large-Scale Solar (LSS) Licensees in Sabah

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY (MW_{DC})*
				DARI *FROM*	HINGGA *UNTIL*	
1.	Tadau Energy Sdn. Bhd.	CL 055322953 & CL 055025824, 89050 Kudat, Sabah	36, Jalan Batai Barat, Bukit Damansara 50490 Kuala Lumpur Wilayah Persekutuan	7/6/2017	6/6/2038	2
2.	Tadau Energy Sdn. Bhd.	CL 055025824, CL 055322953, CL 055026830, CL 055022485, CL 055022529, CL 055021764, CL 055024274, CL 055021782 & CL 05502819, Kudat, 89050 Sabah.	36, Jalan Batai Barat, Bukit Damansara, 50490 Kuala Lumpur Wilayah Persekutuan	27/3/2018	26/3/2039	48

Apendiks 22: Pemegang Lesen Net Energy Metering (NEM)

Appendix 22: Net Energy Metering (NEM) Licencees

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY (MW_{DC})*
				DARI *FROM*	HINGGA *UNTIL*	
1.	Aident Corporation Sdn. Bhd.	Sebahagian Lot 4565, Mukim 13, Daerah Seberang Perai Tengah, 14000 Pulau Pinang.	790, Jalan Perindustrian Bukit Minyak 4, Kawasan Perindustrian Bukit Minyak, 14000 Bukit Mertajam Pulau Pinang	8/8/2017	7/8/2038	0.2
2.	Alumac Industries Sdn. Bhd.	Sebahagian Lot PT 2038, Bandar Sungai Buloh, Daerah Gombak, 47000 Selangor.	No 38D-2A, Jalan Radin Anum, Bandar Baru Seri Petaling, 57000 Kuala Lumpur Wilayah Persekutuan	22/6/2018	21/6/2039	0.4422
3.	Asiabina Holdings Sdn. Bhd.	Sebahagian Lot PT 1333, Mukim Bandar Taiping, Daerah Larut & Matang, 34000 Perak.	Lot R-01, Rooftop Taiping Sentral Mall No. 36, Jalan Istana Larut 34000 Taiping Perak	19/1/2018	18/1/2039	0.23
4.	BD Agriculture (Malaysia) Sdn. Bhd.	Sebahagian Lot No. PT 74422, Mukim Kapar, Daerah Klang, 41050 Selangor.	No.9, Persiaran Astana/ KU 2 Bandar Bukit Raja 41050 Klang Selangor	19/1/2018	18/1/2039	0.4452
5.	Becker Industrial Coatings (M) Sdn. Bhd.	118480 Klang Daerah Klang, 40460 Klang, Selangor.	No 3 & 5, Jln Anggerik Mokara 31/54, Kota Kemuning, 40460 Shah Alam Selangor	3/8/2017	2/8/2038	0.1

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY* (MW_{DC})
				DARI *FROM*	HINGGA *UNTIL*	
6.	Bersatu Integrated Logistics Sdn. Bhd.	Lot No 2, Lebuh Sultan Hishamuddin 2, Kawasan Perusahaan Bandar Sultan Sulaiman Selat, Kelang Utara, Port Klang, 42000 Selangor.	No 1, Lingkaran Sultan Mohamed 1A, Taman Perindustrian Bandar Sultan Suleiman, 42000 Pelabuhan Klang Selangor	19/1/2018	18/1/2039	0.18
7.	Danapac Industries (M) Sdn. Bhd.	Lot PT194, Mukim 13, Daerah Seberang Perai Tengah, 10450 Pulau Pinang.	Plot 40, Jalan Perindustrian Bukit Minyak, Kawasan Perindustrian Bukit Minyak, 14100 Simpang Ampat Pulau Pinang	4/1/2018	3/1/2039	0.32076
8.	DK Leather Seats Sdn Bhd	Sebahagian Lot 11, Pekan Puchong Perdana, Daerah Petaling 47100 Selangor	Suite 16-1 (Penthouse Upper) Menara Penang Garden 42A, Jalan Sultan Ahmad Shah, 10050 Georgetown Pulau Pinang	26/11/2018	25/11/2039	0.5032
9.	Evergreen Venues Sdn. Bhd.	No Lot 519, Seksyen 9, Bandar Shah Alam, Daerah Petaling, 40100 Selangor.	Unit 13A-10, Block B, Phileo Damansara II, No 15 Jalan 16/11, 46350 Petaling Jaya Selangor	19/1/2018	18/1/2039	0.2
10.	Guinea Foods Sdn. Bhd.	Sebahagian Lot PT 32721, Mukim Asam Kumbang, Daerah Larut & Matang, 34600, Perak.	PT 11551, Jalan Lintasan Perusahaan Kamunting 3, Kamunting Raya Ind Estate 34600 Taiping Perak	3/7/2018	2/7/2039	0.23694
11.	Guinea Foods Sdn. Bhd.	Sebahagian Lot PT 32721, Mukim Asam Kumbang, Daerah Larut & Matang, 34600, Perak.	PT 11551, Jalan Lintasan Perusahaan Kamunting 3 Kamunting Raya Ind. Estate 34600 Taiping Perak	3/7/2018	2/7/2039	0.30756
12.	Hap Seng Star Sdn Bhd	Sebahagian PT 8417, Pekan Kinrara, Daerah Petaling, 47180 Selangor	21 st Floor Menara Hap Seng, Jalan P. Ramlee 50250 Kuala Lumpur Wilayah Persekutuan	11/12/2018	10/12/2039	0.49792
13.	Hock Chuan Enterprise Sdn. Bhd.	Sebahagian Lot 5587 & 6779, Paya Mengkuang, Mukim Gurun, Daerah Kuala Muda, 08300, Kedah.	30-A Jalan Kampung Baru, 08000 Sungai Petani Kedah	13/7/2018	12/7/2039	0.1792
14.	Infinity Logistics & Transport Sdn. Bhd.	Di Sebahagian Lot 102495, Mukim Klang, Daerah Klang, Negeri Selangor Darul Ehsan	No. 2, Jalan Kasuarina 8 Bandar Botanic 41200 Klang Selangor	16/11/2018	15/11/2039	0.15456
15.	Ken TTDI Sdn. Bhd.	Sebahagian Lot 480009, Mukim Kuala Lumpur, Daerah Kuala Lumpur, 60000 Kuala Lumpur.	Level 12, Menara Ken TTDI, Jalan Burhanuddin Helmi, Taman Tun Dr Ismail, 60000 Kuala Lumpur Wilayah Persekutuan	8/3/2018	7/3/2039	0.138

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY* (MW_{DC})
				DARI *FROM*	HINGGA *UNTIL*	
16.	Kumpulan Ikram Sdn. Bhd.	Sebahagian Lot 52518, Mukim Bandar Baru Bangi, Daerah Sepang, 43000 Selangor.	2nd Floor, Corporate Block, Unipark Suria, Jalan Ikram-Uniten, 43000 Kajang Selangor	15/8/2017	14/8/2038	0.1855
17.	Lean Lee Trading Company Sdn. Berhad	Lot 5280, Lot 5281, Mukim 13, Daerah Seberang Perai Tengah, 14000 Pulau Pinang.	1st Floor, 50 Jalan Khaw Sin Bee, 10400 Georgetown Pulau Pinang	4/1/2018	3/1/2039	0.6752
18.	LJK Development Sdn, Bhd,	PN 5626 Lot 2, Seksyen 15 Bandar Shah Alam, Daerah Petaling, 40000 Selangor.	No.1, Jalan Anggerik Mokara 31/49, Kota Kemuning, 40460 Shah Alam Selangor	9/1/2018	8/1/2039	0.18
19.	Mafipro Sdn. Bhd.	Sebahagian Lot 103, Mukim Asam Kumbang, Daerah Larut & Matang, 34600, Perak.	Lot 103, Jalan Perusahaan Tiga Kamunting Industrial Estate 34600 Taiping Perak	3/7/2018	2/7/2039	0.3168
20.	Mafipro Sdn. Bhd.	Sebahagian Lot 19079, Mukim Asam Kumbang, Daerah Larut & Matang, 34600, Perak.	Lot 103, Jalan Perusahaan Tiga Kamunting Industrial Estate 34600 Taiping Perak	3/7/2018	2/7/2039	0.10395
21.	Malayan Metal Works Sdn. Bhd.	No Lot 650, Mukim 1, Kawasan Perusahaan Perai, Seberang Perai Tengah, 13600 Pulau Pinang.	2444 Lorong Perusahaan Satu, Prai Industrial Estate, 13600 Perai Pulau Pinang	19/1/2018	18/1/2039	0.25
22.	Maran Road Sawmill Sdn. Bhd.	Sebahagian Lot 3887, Siak Kechik, Mukim Perak, Daerah Temerloh 28000 Pahang	10th Floor, Wisma Maran 28 Medan Pasar 50400 Kuala Lumpur Wilayah Persekutuan	26/9/2018	25/9/2039	0.247
23.	Maran Road Sawmill Sdn. Bhd.	Lot 3868, Mukim Perak, Daerah Temerloh, 28000 Pahang.	10th Floor, Wisma Maran, 28 Medan Pasar, 50050 Kuala Lumpur Wilayah Persekutuan	2/1/2018	1/1/2039	0.20352
24.	Ninamaju Sdn. Bhd.	Sebahagian Lot 2772, Bandar Jitra, Daerah Kubang Pasu, 06000 Kedah.	No.8, Bt 16 Jalan Changlun 06000 Jitra Kedah	28/2/2018	27/2/2039	0.3
25.	Perbadanan Perpustakaan Awam Selangor	Perpustakaan Raja Tun Uda, Jalan Kelab Golf 13/6, Seksyen 13, Shah Alam, 40100 Selangor.	No 16 Jalan PJS 7/1 A, Bandar Sunway, Petaling Jaya, 46150 Petaling Jaya Selangor	26/9/2018	25/9/2039	0.1027
26.	Perbadanan Perpustakaan Awam Selangor	Perpustakaan Raja Tun Uda, Jalan Kelab Golf 13/6, Shah Alam, 40100 Selangor.	No 16 Jalan PJS 7/1 A, Bandar Sunway, Petaling Jaya, 46150 Petaling Jaya Selangor	26/9/2018	25/9/2039	0.4046

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY* (MW_{DC})
				DARI *FROM*	HINGGA *UNTIL*	
27.	Pipeco Tanks Malaysia Sdn. Bhd.	No, Lot PT 2587, Mukim Kapar, Daerah Klang, 42000 Selangor.	Lot 3, Lorong 2/1 Solok Sultan Hishamuddin 1, Kawasan Perusahaan Selat Kelang Utara, Pelabuhan Klang, 42000 Klang Selangor	3/10/2018	2/10/2039	0.332475
28.	Punch Industry Malaysia Sdn Bhd	Sebahagian Lot PT 2991, Mukim 06, Daerah Seberang Perai Tengah, 13600 Pulau Pinang;	51-13-A Menara BHL Bank Jalan Sultan Ahmad Shah Kawasan Perusahaan Perai, 10050 Georgetown Pulau Pinang	26/11/2018	25/11/2039	0.1456
29.	Pusat Pembangunan Kemahiran Pulau Pinang (Penang Skills Development Centre)	Sebahagian Lot No.PTBP/ A/50/80,PT5168, Mukim 12, Daerah Barat Daya, 11900 Pulau Pinang	100N Block C Mukim 12= Kampung Jawa FTZ 11900 Bayan Lepas Pulau Pinang	27/11/2018	26/11/2039	0.41464
30.	SFI Food Sdn. Bhd.	Lot 19779, Mukim Asam Kumbang, Daerah Larut & Matang, 34600 Perak.	PT 32730, Jalan Logam 5 Kawasan Perusahaan Kamunting Raya 34600 Taiping Perak	31/7/2018	30/7/2039	0.3135
31.	Sky Leisure Sdn. Bhd.	Lot PT 12166, Mukim Dengkil, Daerah Sepang, 63000 Sepang, Selangor	Suite 1-1, First Floor, Bio-X Centre, Persiaran Cyberpoint Selatan, Cyber 8, 63000 Cyberjaya Selangor	9/1/2018	8/1/2039	0.12012
32.	Supreme Maju Sdn Bhd	Sebahagian Lot 629, Tempat Telaga Batu, Mukim Jeram, Daerah Kubang Pasu 06150 Kedah	Lot 629, Kg Telaga Batu Sungai Korok Mukim Jeram 06150 Ayer Hitam Kedah	26/11/2018	25/11/2039	0.2522
33.	Syarikat Ang Hock Stockfeeds Manufacturing Sendirian Berhad	Sebahagian Lot 5998, Mukim 11 Daerah Seberang Perai Tengah, 14000 Pulau Pinang	82 Jalan IKS Taman IKS Bukit Tengah 14000 Bukit Mertajam Pulau Pinang	27/11/2018	26/11/2039	0.15678
34.	Team Printers Sdn. Bhd.	Lot 4390, 4393, 4395, 5698, 5699, 5700, Mukim 01, Seberang Perai Tengah, 13700 Pulau Pinang.	1260, Jalan Baru, 13700 Perai Pulau Pinang	17/1/2018	16/1/2039	0.27552

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	ALAMAT PEPASANGAN *INSTALLATION ADDRESS*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH LESEN *LICENSE DURATION*		KAPASITI (MW_{DC}) *CAPACITY (MW_{DC})*
				DARI *FROM*	HINGGA *UNTIL*	
35.	Vitrox Technologies Sdn. Bhd.	PT 5920, Mukim 13, Daerah Seberang Perai Selatan, 14100 Pulau Pinang.	57-G Persiaran Bayan Indah, Bayan Bay, Sungai Nibong, 11900 Bayan Lepas Pulau Pinang	30/7/2018	29/7/2039	0.45825
36.	YFM Logistic Services Sdn. Bhd.	No. Lot 606, Seksyen 16, Bandar Shah Alam, Daerah Petaling, 40200 Selangor.	4-6 Jalan Pahat 16/8A, Seksyen 16, 40200 Shah Alam Selangor	12/9/2018	11/9/2039	0.20513
37.	Yuen Fee (Wan Soon) Engineering Sdn Bhd	Sebahagian No P.T 4967, Mukim Rasah, Daerah Seremban Negeri Smbilan	Lot 17224, Jalan Haruan 6, Oakland Industrial Park 70300 Seremban Negeri Sembilan	6/12/2018	5/12/2039	0.245

Apendiks 23: Pemegang Lesen Penjanaan Persendirian Lebih 5 MW

Appendix 23: Above 5 MW Self-generation Licensees

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
1.	Compass Group Malaysia	No. Lot 1742, Mukim Pengerang, Daerah Kota Tinggi, 81900 Johor.	25.03A, Level 25, Johor Bahru City Square Office Tower, 106-108 Jalan Wong Ah Fook, 80000 Johor Bahru Johor	12.043	Enjin diesel *Diesel engine*	Diesel
2.	Ikano Cochrane Sdn. Bhd.	No. Lot PT 478, Mukim Seksyen 90, Daerah Bandar Kuala Lumpur, 55100 Wilayah Persekutuan.	No. 2, Jalan PJU 7/2, Mutiara Damansara, 47800 Petaling Jaya Selangor	1.35	PV Modul	Solar
3.	Kilang Sawit C.P Sdn. Bhd.	Sebahagian Lot PT 2136, Mukim Perak, Daerah Temerloh, 28000 Pahang.	Charuk Putting Palm Oil Mill, 28000 Temerloh Pahang	5.64	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
4.	Kilang Sawit Muar Berhad	Sebahagian Lot 2743, Mukim Parit Jawa, Daerah Muar, 84150 Johor.	Jalan Bukit Mor, Mukim Parit Jawa, 84009 Muar Johor	6.39	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
5.	Liziz Plantation Sdn. Bhd.	Lot PT 5893, Mukim Ulu Nenggiri, Daerah Jajahan Gua Musang, 18300 Kelantan.	Kilang Sawit Liziz, Ladang Kuala Betis, 18300 Gua Musang Kelantan	5.85	Enjin diesel *Diesel engine* Turbin stim *Steam turbine*	Sisa pertanian (Sisa kilang minyak sawit) *Agricultural waste (Palm oil mill waste)*
6.	Mahamurni Plantations Sdn. Bhd.	Sebahagian Lot 721, Mukim Sedenak, Daerah Johor Bahru, 80990 Johor.	Sedenak Palm Oil Mill,K.B. No 721,80990 Johor Bahru Johor	6.5	Enjin diesel *Diesel engine* Enjin gas *Gas engine* Turbin stim *Steam turbine*	Sisa pertanian (Sisa kilang minyak sawit) *Agricultural waste (Palm oil mill waste)*
7.	Nam Bee Company Sdn. Bhd.	Lot 548, Mukim Ayer Kuning Selatan, Daerah Tampin, 73200 Negeri Sembilan.	(Palm Oil Mill Division), Air Kuning Selatan, 73200 Gemencheh Negeri Sembilan	9.02	Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
8.	Rompin Palm Oil Mill Sdn Bhd	Sebahagian Lot HSD 2220, PT 3922(A), Mukim Bebar, Bebar Pekan, 26700 Pahang.	P.O Box 58 Muadzam Shah Pahang Darul Makmur 26700 Muadzam Shah Pahang	7.66	Enjin diesel *Diesel engine* Turbin Stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
9.	Sri Senggora Kilang Kelapa Sawit Sdn Bhd	Sebahagian Lot PT 6108, Mukim Luit Daerah Maran, 26500 Pahang.	PT 6108 Jalan Kampong Belimbing 26500 Maran Pahang	8.23	Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
10.	United Plantations Berhad	Lot 10100, Mukim Hutan Melintang, Daerah Hilir Perak, 36500 Perak	Ulu Bernam Engineering Department Ulu Bernam Estate Ulu Bernam 36500 Hutan Melintang Perak	6.7	Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
11.	Xinyi Energy Smart (Malaysia) Sdn. Bhd.	Lot PT 6625, Mukim Jasin, Daerah Jasin, 77000 Melaka.	Plot 23 A&B, Elkay Industries Park, Lipat Kajang, 77000 Jasin Melaka	17.18	PV Modul	Solar

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
12.	Asia Oil Palm Sdn. Bhd.	Ladang Asia Palm Oil, Lot CL 095317383, Mukim Kinabatangan, Daerah Lahad Datu, 81100 Sabah.	Unit 30-02, Mail Box 288, Menara Landmark, No 12, Jalan Ngee Heng, 80000 Johor Bahru Johor	6.3	Turbin stim *Steam turbine*	Sisa pertanian (Sisa kilang minyak sawit) *Agricultural waste (Palm oil mill waste)*
13.	Global Enterprise Oil Mill Sdn. Bhd.	Kilang Global Enterperise Oil Mill Sdn. Bhd., KM 79, Lahad Datu - Sandakan Highway, Mukim Sg. Pin Supu, Daerah Kota Kinabatangan, 90200 Sabah.	Lot 4-7, MDLD 6014-6017, 1st Floor, Global Commercial Building, Mile 1, Jalan Tengah Nipah, 91100 Lahad Datu Sabah	7.806	Turbin stim *Steam turbine*	Diesel
14.	Kim Loong Power Sdn Bhd	No. Lot CL 095332648, Mukim Entilibon, Daerah Tongod, 90707 Telupid, Sabah	Kim Loong Power Sdn Bhd, No. A042, Pekan Telupid, Peti Surat No. 27, 89300 Sandakan Sabah	7.6	Enjin gas *Gas engine*	Biogas (efluen kilang kelapa sawit) *Biogas (palm oil mill effluent)*
15.	KL-Kepong (Sabah) Sdn. Bhd.	No. Lot CL 105387719, Mukim Kalumpang, Daerah Tawau, 91009 Sabah.	Mile 42, Jalan Tawau-Semporna, Locked Bag No.3, 91009 Tawau Sabah	8.8	Enjin gas *Gas engine*	Sisa pertanian (sisa kilang minyak sawit dan tandan sawit kosong) *Agricultural wastes (Palm oil mill waste and EFB)*
16.	Ladang Sabah Sdn. Bhd.	Kilang Ladang Sabah Palm Oil, Lot W.D.T. No. 164, Mukim Beluran, Daerah Sandakan, 90009 Sabah.	Ladang Sabah Palm Oil Mill, W.D.T. 164, 90009 Sandakan Sabah	7.79	Enjin diesel *Diesel engine* Enjin gas *Gas engine* Turbin stim *Steam turbine*	Sisa pertanian (tandan sawit kosong) *Agricultural wastes (EFB)*
17.	Melewar Properties Sdn. Bhd.	Melewar Palm Oil Mill, Sebahagian Lot 095310400, Daerah Kinabatangan, 91109 Sabah.	Unit 30-01, Mail Box 288, Menara Landmark No. 12, Jalan Ngee Heng 80000 Johor Bahru Johor	8.758	Enjin diesel *Diesel engine* Enjin gas *Gas engine* Turbin stim *Steam turbine*	Sisa pertanian (Sisa kilang minyak sawit) *Agricultural waste (Palm oil mill waste)*

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI *LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
18.	PETRONAS Carigali Sdn. Bhd.	No. LOT 023113608, 023113617, CL.25340489, 021250047, 023141212, 02126177 @PT.91021739, 025373540, LA.2009220180, LA.2009220181 dan JTSB-1989-LA01G, Mukim Kimanis, Daerah Papar, 89608 Sabah.	Sabah Operations, Menara PETRONAS, No 2, Jalan Belia 88100 Kota Kinabalu Sabah	52.48	OCGT	Gas asli *Natural gas*
19.	Tamaco Oil Mill Sdn Bhd	LOT CL 115360891, 91124 Daerah Lahad Datu, Sabah.	Lot 7, Kimbell Light Industrial Centre Mile 2, Jalan Dam P.O. Box 61625, 91124 Lahad Datu Sabah	7.6	Enjin diesel *Diesel engine*	Diesel
20.	Tamaco Oil Mill Sdn Bhd	LOT CL 115360891, 91124 Daerah Lahad Datu, Sabah.	Lot 7, Kimbell Light Industrial Centre Mile 2, Jalan Dam P.O. Box 61625, 91124 Lahad Datu Sabah	7.6	Enjin diesel *Diesel engine*	Diesel

Apendiks 24: Lesen *New Enhanced Dispatch Arrangement* (NEDA) Yang Dikeluarkan pada 2018

Appendix 24: New Enhanced Dispatch Arrangement (NEDA) Licences Issued in 2018

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI PEPASANGAN *INSTALLATION LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	TEMPOH SAH LESEN *LICENSE VALIDITY*		JENIS STESEN PENJANAAN *GENERATING STATION TYPE*	KAPASITI (MW) *CAPACITY (MW)*	JENIS LOJI *PLANT TYPE*	SUMBER TENAGA *ENERGY SOURCE*
				DARI *FROM*	HINGGA *TO*				
1.	NUR Generation Sdn Bhd	Lot PT 30, Bandar Kulim, Daerah Kulim, 09000 Kedah	D23-0 Jalan BK 5A/2B, Bandar Kinrara, 47180 Puchong Selangor	20/12/2018	19/12/2028	*Combined Cycle Gas Turbine* (CCGT) Power Generating Station	29.9	CCGT	Gas asli *Natural gas*
2.	Perstima Utility Sdn. Bhd.	No. Lot 56579, Mukim Plentong, Daerah Johor Bahru, 81700 Johor.	Plo 255, Jalan Timah Tiga, Kawasan Perindustrian Pasir Gudang, 81700 Pasir Gudang Johor	30/8/2018	29/8/2028	Co-Generation	3.6	CCGT	Gas asli *Natural gas*

Apendiks 25: Lesen Pengagihan Elektrik Yang Dikeluarkan pada 2018

Appendix 25: Electricity Distribution Licences Issued in 2018

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI PEPASANGAN *INSTALLATION LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	NO. TELEFON *TELEPHONE NO.*	NO. FAKS *FAX NO.*	KAPASITI (MW) *CAPACITY (MW)*
1.	AEON Co. (M) Bhd	No. Lot 320549 (Lot Lama 51150), Mukim Hulu Kinta, Daerah Kinta, 31400 Ipoh, Perak.	Head Office: 3rd Floor, AEON Taman Maluri Shopping Centre, Jalan Jejaka, Taman Maluri, Cheras 55100 Kuala Lumpur, Wilayah Persekutuan	03-92072023	0392072261	7.65
2.	AEON Co. (M) Bhd	No PT3583, Bandar Nilai Utama, Daerah Seremban, 71800 Negeri Sembilan	3rd Flr, AEON Taman Maluri Shopping Centre Jalan Jejaka, Taman Maluri, Cheras 55100 Kuala Lumpur Wilayah Persekutuan	603-9207 2005	603-9207 2006	12.75
3.	AEON Co. (M) Bhd.	AEON Bukit Tinggi Shopping Centre, No. Lot PT 2042 HS(D) 105957 dan PT 2043 HS(D) 105958, Mukim Klang, Daerah Klang, 41200 Selangor.	3rd Floor, AEON Taman Maluri Shopping Centre, Jalan Jejaka, Taman Maluri, Cheras, 55100 Kuala Lumpur Wilayah Persekutuan	03-9207 2023	03-9207 2261	30.6
4.	ASM Properties Sdn. Bhd.	Maju Junction Mall, Sebahagian Lot 1752, Mukim Bandar Kuala Lumpur, Daerah Kuala Lumpur, 50250 Wilayah Persekutuan.	Maintenance Office, Level 21, Maju Tower, 1001 Jalan Sultan Ismail, 50250 Kuala Lumpur Wilayah Persekutuan	03-2772 8888	03-2772 8512	11.48
5.	Boon Housing Sdn. Bhd.	Kenanga Residence, PT 1238, Kawasan Bandar V, Daerah Melaka Tengah, 75250 Melaka.	No.9, Tingkat 1, Jalan Intan 7/3, Taman Intan, 86000 Kluang Johor	07-772 4292	07-776 8772	2.125
6.	BR Property Holdings Sdn Bhd	Lot 41274 Mukim Kuala Lumpur Kuala Lumpur 59000 Wilayah Persekutuan	BR Property Holdings Sdn Bhd Lot No. T117A 3rd Floor, Bangsar Shopping Centre, 59000 Kuala Lumpur Wilayah Persekutuan	03-20947700	03 20941022	8.5
7.	Capital City Property Sdn Bhd	Lot (PTB 24274), Mukim Bandar Johor Bahru, Daerah Johor Bahru 8000 Johor	50-1,52-1 & 54-1 Jalan BPM 2, Taman Bukit Piatu Mutiara, 75150 Bukit Baru Melaka	07-2386622	07-2363322	16.065

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI PEPASANGAN *INSTALLATION LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	NO. TELEFON *TELEPHONE NO.*	NO. FAKS *FAX NO.*	KAPASITI (MW) *CAPACITY (MW)*
8.	Central Plaza I-City Real Estate Sdn. Bhd	Sebahagian Lot 17197, Seksyen 7, Mukim Bandar Shah Alam, Daerah Petaling nSelangor	Unit 30-01, Level 30, Tower A, Vertical Business Suite, Avenue 3, Bangsar South, No.8, Jalan Kerinchi 59200 Kuala Lumpur Wilayah Persekutuan	03-5521 8766	03-5521 8770	27.62
9.	Champs Elysees Electric Sdn. Bhd.	Champs Elysees Service Suite, Lot PT 31648, Mukim Kampar, Daerah Kampar, 31900 Perak.	D 3A 15, Level 3A, Block D, Kelana Square. Jalan SS 7/26, 47301 Petaling Jaya Selangor	03-7806 3996	03-7803 6996	3.4
10.	Damansara Uptown Retail Centre Sdn. Bhd.	Kompleks Starling Mall dan Hotel Somerset, Sebahagian Lot PT 207, Jalan SS21/60, Damansara Utama, Mukim Sungai Buloh, Daerah Petaling, 47400 Selangor.	1201D, Level 12 Tower D, Uptown 5, 5 Jalan SS21/39, Damansara Uptown, 47400 Petaling Jaya Selangor	03-7729 5933	03-7728 3636	51
11.	Foremost Wealth Managemant Sdn. Bhd.	BMC Mall, Lot PT 55919, HSD 142740, Mukim Cheras, Daerah Hulu Langat, 43200 Selangor.	BMC Mall Shopping Centre, Level 1 Management Office, Lot PT55919, Persiaran Mahkota Cheras 1, Bandar Mahkota Cheras, 43200 Cheras Selangor	03-9011 4077	03-9011 6944	3.825
12.	Forest City Electricity Sdn. Bhd.	PTD 4882, PTD 4884, 4941, PTD 4942, PTD 4930 dan PTD 5093 Mukim Tanjung Kupang Daerah Johor Bahru, 81550 Johor	Country Garden Forest City Phoneix Hotel, 3rd Floor Reception Jalan Forest City 1, Pulau Satu 81550 Johor Bahru Johor	07-5058888	047333555	55.68
13.	GCH Retail (M) Sdn. Bhd	Giant Superstore Tunjong, PT 1310, Mukim Kota, Jajahan Kota Bharu, 5100 Kelantan	GCH Retail (M) Sdn Bhd Lot 22051, Jalan Semarak, Mukim Kuala Nerus 21300 Kuala Terengganu Terengganu	1700819018	1700810257	3.4

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI PEPASANGAN *INSTALLATION LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	NO. TELEFON *TELEPHONE NO.*	NO. FAKS *FAX NO.*	KAPASITI (MW) *CAPACITY (MW)*
14.	GCH Retail (Malaysia) Sdn Bhd	PT 1485, Mukim Cabang Tiga, Daerah Kuala Terengganu, 21100 Terengganu	GCH Retail (Malaysia) Sdn Bhd Kompleks Giant Hypermarket Kuala Terengganu Lot 1485, Jalan Padang Hiliran, Mukim Chabang Tiga 21100 Kuala Terengganu Terengganu	09-6319233	09-6319223	3.4
15.	GCH Retail (Malaysia) Sdn. Bhd.	Giant Superstore Jerteh, No. Lot 6000, Pekan Jerteh, 22000 Daerah Besut, Terengganu.	Giant Superstore Jerteh (GXJT), Complex Management Office, Lot 6000, Pusat Bandar Jerteh, 22000 Jerteh Terengganu	09-697 5511 / 019-371 0913	09-697 6060	1.7
16.	Jurus Kota Sdn. Bhd.	Alor Star Mall, Sebahagian Lot PT 9264 dan 9265, Mukim Pengkalan Kundor, Daerah Kota Setar, 05400 Kedah.	2-888, M-Floor, Alor Star Mall, Kawasan Perusahaan Tandop Baru, 05400 Alor Setar Kedah	04-7729 233 / 019-451 6617	04-7712 033	5.2
17.	Kampung Manis Realty Sdn Bhd	No. Lot 11973, 11974 & PT471 Jalan 17/38, Mukim Bandar Petaling Jaya, 46400 Selangor	Kampung Manis Realty Sdn Bhd 10th Floor Wisma Maran, 28, Medan Pasar 50050 Kuala Lumpur Wilayah Persekutuan	03-20702288	03-20701188	1.56
18.	Lembaga Tabung Haji	Kompleks Islam Putrajaya, Lot PT12081, PT 12075 dan PT 12074, Mukim Presint 3, Bandar Putrajaya, Daerah Putrajaya, 62624 Wilayah Persekutuan Putrajaya.	Pejabat Operasi dan Penyelenggaraan Aras 3, Blok D, Kompleks Islam Purtajaya Jalan Tun Abdul Razak, Presint 3 62100 Putrajaya Wilayah Persekutuan	03-8861 0642 / 8861 4742	03-8861 1382	10.2
19.	Lion Ipoh Parade Sdn. Bhd.	Ipoh Parade, Lot PT 232567, Mukim Bandar Ipoh, Daerah Kinta, Perak.	Box No. 001, Lot T05, 3rd Floor, Ipoh Parade, No. 105, Jalan Sultan Abdul Jalil, Greentown, 30450 Ipoh Perak	05-241 0885/0886	05-241 0894	6.5

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI PEPASANGAN *INSTALLATION LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	NO. TELEFON *TELEPHONE NO.*	NO. FAKS *FAX NO.*	KAPASITI (MW) *CAPACITY (MW)*
20.	Lion Klang Parade Sdn. Bhd.	Lion Klang Parade Lot PT 3737 (Lot 42553), Seksyen 24, Jalan Meru, Mukim Bandar Klang, Daerah Klang, 41700 Selangor.	Level 3A, Klang Parade, No. 2112, KM 2, Jalan Meru 41050 Klang Selangor	03-3343 7889	03-3343 7313	11.475
21.	Maarij Development Sdn Bhd	13423 Kota, Daerah Jajahan Kota Bharu Daerah Jajahan Kota Bharu 16010 Kelantan	D10-1-2, Block D10, Dana 1 Commercialcentre, Jalan PJU 1A/46 Ara Damansara, 47301 Petaling Jaya, Selangor 47301 Petaling Jaya Selangor	03-78317891	03-78426799	5.1
22.	Maybank Trustees Berhad	Menara Ambank Berhad (MAB), Lot 140, Seksyen 44, Bandar Kuala Lumpur, Daerah Kuala Lumpur, 50450 W. Persekutuan Kuala Lumpur.	C/O AM Ara Reit Managers Sdn. Bhd. Penthouse, Menara Amfirst No. 1, Jalan 19/3 46300 Petaling Jaya Selangor	03-7955 8780 / 2166 1780	03-7955 8360 / 2166 1791	5.95
23.	Maybank Trustees Berhad	Ambank Group Building, Lot 1200, Mukim Bandar Kuala Lumpur, 50050 Wilayah Persekutuan Kuala Lumpur.	Management Office, Bangunan Ambank Group Level 4, No. 55 Jalan Raja Chulan 50200 Kuala Lumpur Wilayah Persekutuan	603-20702703 / 20728955	603-2078 7752	7.0125
24.	MCT Green Technology Sdn. Bhd.	Sky Park Cyberjaya, Lot 47336, Mukim Dengkil Daerah Sepang, Selangor.	A-03-02(3rd Floor), Skypark@One City, Jalan USJ 25/1 47650 Subang Jaya Selangor	03-5115 9988	03-5115 9995	23.9
25.	Menara Hap Seng Sdn. Bhd.	Lot 593, 594 & 11383 Seksyen 57, Mukim Bandar Kuala Lumpur, Daerah Kuala Lumpur, 50250 Wilayah Persekutuan Kuala Lumpur.	2nd Floor, Menara Hap Seng, Letter Box No. 83, Jalan P. Ramlee 50250 Kuala Lumpur Wilayah Persekutuan	03-2142 0789	03-2145 7818	10.2
26.	Menara TA Sdn. Bhd.	Menara TA One, Sebahagian Lot 1261 Seksyen 57, Bandar Kuala Lumpur, Daerah Kuala Lumpur, 50250 Kuala Lumpur	34th Floor, Menara TA One, 22, Jalan P. Ramlee, 50250 Kuala Lumpur Wilayah Persekutuan	03-21679710		5.65

BIL. *NO.*	PEMEGANG LESEN *LICENSEE*	LOKASI PEPASANGAN *INSTALLATION LOCATION*	ALAMAT SURAT MENYURAT *MAILING ADDRESS*	NO. TELEFON *TELEPHONE NO.*	NO. FAKS *FAX NO.*	KAPASITI (MW) *CAPACITY (MW)*
27.	Mulia Property Development Sdn Bhd	PT 167, Seksyen 67, Bandar Kuala Lumpur, Daerah Kuala Lumpur, 55100 Kuala Lumpur.	Level 20, Menara HLA Menara HLA, No.3 Jalan Kia Peng, 50450 Kuala Lumpur Wilayah Persekutuan	03-2630 8989	03-2630 5789	34.17
28.	Naditech Power Sdn. Bhd.	Menara TA One, Sebahagian Lot 126502 Seksyen 2, Bandar Ulu Kelang, Daerah Gombak, 54200 Selangor.	F-1 @ 8 Suria 33 Jalan PJU 1/42 47301 Petaling Jaya Selangor	03-7887 3388	03-7887 3355	21.25
29.	OCR Flexus Sdn. Bhd.	Flexus Signature Suites, Sebahagian Lot 80913, Mukim Batu, Jalan Kuching, Daerah Kuala Lumpur, 51200 Kuala Lumpur.	A-3A-1, Block Allamanda, 10 Boulevard, Lebuhraya Sprint, PJU 6A, 47400 Petaling Jaya Selangor	03-7710 1000	03-7729 0300	2.125
30.	Pahlawan City Sdn. Bhd.	Sebahagian Lot 11354, Kawasan Bandar XLII, Daerah Melaka Tengah, 75200 Melaka	10-01, Hatten Square, Jalan Merdeka, 75000 Bandar Hilir Melaka	06-2821828	06-2831827	2.6
31.	Paramount Properties Sdn. Bhd.	Sebahagian Lot 58190 (Lot Lama 51516), Mukim Kuala Lumpur, Daerah Kuala Lumpur, 59200 Wilayah Persekutuan.	Uoa Corporate Tower, Lobby A, Avenue 10, The Vertical, Bangsar South City, No. 8, Jalan Kerinci 59200 Kuala Lumpur	03-2245 9188	03-22459168 / 2245 9118	1.7
32.	Pelaburan Hartanah Berhad	One Precinct Mall, Lot 17335, Mukim 12, 11950 Daerah Barat Daya, Pulau Pinang	Level 9 Block D, Dataran PHB Saujana Resort, Section U2, 40150 Shah Alam Selangor	03-7711 3000	03-7711 3031	8.5
33.	See Sen Chemical Berhad	Teluk Kalong Industrial Area Lot 2989, 3558, 3557 dan 4524 Mukim Teluk Kalong 24000 Kemaman Terengganu	Lot PT 3940 Kawasan Perindustrian Teluk Kalong Kemaman 24000 Kemaman Terengganu	098632142	098632143	4.08

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34.	Sojitz Retail Management Sdn. Bhd.	Lot 10 Bulding, Sebahagian Lot 1247, Seksyen 67, Mukim Bandar Kuala Lumpur, Daerah Kuala Lumpur, 50250 Wilayah Persekutuan Kuala Lumpur.	Level 23, Menara IMC, No.8, Jalan Sultan Ismail, 50250 Kuala Lumpur Wilayah Persekutuan	03-2031 9989	03-2032 1952	1.0625
35.	Sri Mersing Hotels Sdn Bhd	Lincoln Centre, Lot 283, 284, 295 dan 47, Seksyen 89A, Mukim Bandar Kuala Lumpur Daerah Kuala Lumpur, 50400 Wilayah Persekutuan	7th Floor, Cheras Plaza, No. 11, Jalan Manis 1, Taman Segar, Cheras 56100 Kuala Lumpur Wilayah Persekutuan	03-9130 5088		2.975
36.	Sunway Integrated Properties Sdn.Bhd.	Sebahagian No. Lot 20000, Seksyen 90, Mukim Bandar Kuala Lumpur Daerah Kuala Lumpur	Level 1-3 &5, Menara Sunway, Jalan Lagoon Timur, Bandar Sunway 47500 Petaling Jaya Selangor	03-5639 8888	03-5639 9992	2.125
37.	Sunway Iskandar Sdn. Bhd.	Citrine Hub, Lot PTd199241, Mukim Pulai, Daerah Johor Bahru, 79250 Johor.	Citrine Hub Management Office, B-02, Citrine Hub, Sunway Citrine, Sunway Iskandar Persiaran Medini 3, Bandar Medini Iskandar 79250 Nusajaya Johor	07-5099672		7.072
38.	Sunway Medical Centre Berhad	Sunway Medical Centre, Lot 917, Mukim Pekan Penaga, Daerah Petaling, 47100 Selangor.	No.5, Jalan Lagoon Selatan, Bandar Sunway, 47500 Petaling Jaya Selangor	03-7491 9191	03-5632 4688	2.72
39.	Tesco Stores (M) Sdn Bhd	Tesco Parit Raja, Sebahagian No. Lot PTD 23625, Mukim Sri Gading, Daerah Johor, 83000 Johor.	Head Office, Level 3 No. 3, Jalan 7A/62A Bandar Menjalara 52200 Kuala Lumpur Wilayah Persekutuan	03-62876000	03-62876003	2.125

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40.	UDA Legsi Sdn. Bhd.	Lot 20067 Seksyen 41, Bandar Kuala Lumpur, Daerah Kuala Lumpur, 50300 Wilayah Persekutuan Kuala Lumpur	Tingkat 15, Blok Menara, Kompleks Pertama, Jalan Tuanku Abdul Rahman, 50100 Kuala Lumpur Wilayah Persekutuan	03-2730 8500	03-2731 8500	8.5
41.	Urban Dna Sdn Bhd	No Lot 20003 Seksyen 63, Mukim Bandar Kuala Lumpur, Daerah Kuala Lumpur, Poskod 50450 Wilayah Perekutuan Kuala Lumpur	Level 18, Wisma Mont Kiara No 1, Jalan Kiara Mont Kiara 50480 Kuala Lumpur Wilayah Persekutuan	03-64116388	03-64116383	3.4
42.	Vistayu Sdn. Bhd.	Symphony Square, PT 25 Seksyen 13, Bandar Petaling Jaya, 47301 Petaling, 47301 Selangor.	Level 9, Symphony House. Dana 1 Commercial Centre, Jalan PJU 1A/46, 47301 Petaling Jaya Selangor	03-7844 6888	03-7844 6868	3.4
43.	Wisma Central Management Corporation	Wisma Central, Deran 10015, Lot 150, Seksyen 58, Bandar Kuala Lumpur, 50450 Kuala Lumpur	Lot 2.142A, 1st Floor, Box 198, Wisma Central Jalan Ampang 50450 Kuala Lumpur Wilayah Persekutuan	0321617522	0321617721	3.1875
44.	Wonderful Perfomance Sdn. Bhd	1599,1602 & 435 Bandar Tanjung Tokong, Timur Laut, 11200 Pulau Pinang.	25-B, Farquhar Street,10200 Georgetown Pulau Pinang	04-263 6314	04-263 6314	6.8
45.	Y.S. Tang Holdings Sdn. Bhd.	KB Mall, PT 101, Jalan Hamzah, Seksyen 16, Mukim Bandar Kota Bharu, Daerah Jajahan Kota Bharu, 15050 Kelantan.	Lot 4-888 KB Mall No 1 Jalan Hamzah,15050 Kota Bharu Kelantan	09-7417 888	09-7417 889	11.9
46.	YNH Utility Sdn. Bhd.	Sebahagian Lot 67384, Mukim Batu, Daerah Kuala Lumpur, 50480 Wilayah Persekutuan	G-01,633 Residency, Lot 2A, Jalan Tebing, Off Jalan Tun Sambanthan, 50470 Kuala Lumpur Wilayah Persekutuan	03-2274 6721	03-2273 8692	20.78
47.	Felda Global Ventures Plantation (Malaysia) Sdn Bhd	Sebahagian Gugusan Felda Sahabat dan Felda Kalabakan, Sabah.	Tingkat 21 Menara Felda, Platinum Park, No. 11 Persiaran KLCC,50088 Kuala Lumpur	03-2859 1580	-	8.25