

INDUSTRI PEMBEKALAN ELEKTRIK DI MALAYSIA

Electricity Supply Industry in Malaysia

MAKLUMAT PRESTASI DAN STATISTIK
Performance and Statistical Information

2012



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Segala data dan maklumat yang terkandung di dalam buku laporan ini memberi gambaran yang munasabah dan saksama bagi keseluruhan industri pembekalan elektrik di negara ini. Segala usaha telah diambil untuk memastikan semua maklumat yang terkandung di dalam laporan ini telah disahkan kesahihannya berdasarkan laporan harian, bulanan dan tahunan yang dihantar oleh pemegang-pemegang lesen sebagaimana termaktub di bawah syarat-syarat lesen. Manakala bagi negeri Sarawak, maklumat mengenai statistik dan prestasi utiliti di negeri tersebut dikemukakan oleh Sarawak Energy Berhad (SEB) mengikut permintaan Suruhanjaya Tenaga (ST).

ST dengan niat yang baik menerbitkan maklumat ini untuk kegunaan orang awam, sejajar dengan fungsi yang ditetapkan di bawah Akta. ST menafikan semua atau apa-apa jua tanggungjawab kepada sesiapa sahaja untuk maklumat yang terkandung di dalam laporan ini atau bagi apa-apa representasi atau kenyataan di sini, sama ada secara tersurat atau tersirat, atau untuk apa-apa jawapan yang diberikan sebagai maklumbalas kepada sebarang pertanyaan berhubung dengan laporan ini.

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) based on request by the Energy Commission (EC).

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RINGKASAN EKSEKUTIF

EXECUTIVE SUMMARY

Prestasi Sistem Pembekalan Elektrik di Semenanjung Malaysia

Sistem Penjanaaan

Pada tahun 2012, purata kecekapan thermal bagi stesen-stesen jana kuasa kitar padu, kitar terbuka dan arang batu milik Penjana-Penjana Bebas (IPPs) di Semenanjung Malaysia merosot sedikit berbanding tahun sebelumnya. Bagi stesen jana kuasa kitar padu dan kitar terbuka milik TNB, purata kecekapan thermalnya meningkat berikutan peningkatan jumlah senggaraan berjadual yang dilaksanakan sepanjang tahun, selain dari purata faktor kapasiti yang tinggi. Ini dibuktikan dengan peningkatan penggunaan gas di stesen jana kuasa berasaskan gas kepada 372, 739 mmscf berbanding 337, 151 mmscf pada tahun 2011. Stesen jana kuasa konvensional (minyak/gas) milik TNB pula menunjukkan prestasi yang lebih rendah disebabkan usia fasiliti yang telah lanjut usia dan degradasi loji jana kuasa tersebut.

Bagi Faktor Kesediaan Setara (EAF), stesen jana kuasa kitar padu telah pun mencatatkan pencapaian yang baik sekitar 94% hingga 95%. Stesen jana kuasa arang batu pula mencatatkan bacaan EAF terendah iaitu sekitar 84%. Peningkatan EAF secara keseluruhan ini turut mempengaruhi kadar bagi Faktor Henti Tugas Tidak Berjadual Setara (EUOF). Bekalan gas yang lebih terancang dan baik membolehkan stesen-stesen jana kuasa menjalankan aktiviti senggaraan dengan lebih teratur seterusnya mempertingkatkan daya harap sesebuah stesen jana kuasa dan mengurangkan peratusan EUOF.

Sistem Penghantaran

Tahun 2012 melaporkan 4 insiden pelantikan dengan kehilangan beban 50 MW ke atas, lebih baik berbanding tahun sebelumnya sebanyak 5 insiden pelantikan. Kejadian insiden yang direkodkan berlaku pada 1 Mac 2013 di pencawang 275/132/33/11 kV di Universiti Kebangsaan Malaysia (UKM), 6 Mac pada talian atas 132 kV Alor Setar ke Kota Setar L1 & L2, 28 April pada Busbar Rizab 132 kV Pasir Gudang Power Station, dan 24 Mei pada talian atas North-Damansara. Namun begitu, tiada insiden lucutan beban dilaporkan manakala jumlah tenaga yang tidak dibekalkan juga berkurang kepada 212.7 MWj berbanding 225.2 MWj pada tahun 2011. *Delivery Point Index* (DePUI) pula meningkat sedikit kepada 1.03 minit berbanding 1.01 minit pada tahun 2011.

Performance of Electricity Supply System in Peninsular Malaysia

Generation System

In 2012, the average thermal efficiency for combined cycle, open cycle and coal powered plants of Independent Power Producers (IPPs) in Peninsular Malaysia had slightly declined compared to that in the previous year. Meanwhile, the performance in the average thermal efficiency for TNB owned combined and open cycle power plants improved especially in gas combined cycle power plants due to frequent scheduled maintenance performed throughout the year, besides the high average capacity factor. This is proven as the gas consumption in gas-based power plants had increased to 372, 739 mmscf from 337, 151 mmscf in 2011. However, TNB's conventional (oil/gas) power plants showed a lower performance due to the aging facilities and degradation.

For the Equivalent Availability Factor (EAF), the combined cycle power plants achieved excellent performances and recorded a high EAF around 94 percent to 95 percent. However, coal-fired power plants recorded low EAF around 84 percent. The increase in the overall EAF affected the rate of Equivalent Unplanned Outage Factor (EUOF). In other words, with the certainty and planned supply of gas, it enables the power plants to run orderly maintenance activities thus improving the reliability of the power stations, thus reducing the percentage of EUOF.

Transmission System

Year 2012 recorded 4 tripping incidents with load loss of above 50 MW, an improvement compared to the previous year with 5 tripping incidents. The recorded incidents happened on March 1, 2013 at 275/132/33/11 kV substation at Universiti Kebangsaan Malaysia (UKM), March 6 at the 132 kV line from Kota Setar Alor Setar to L1 & L2, April 28 at the Reserve Busbar at 132 kV Pasir Gudang Power Station, and May 24 at the North-Damansara line. However, there were no reported case of load shedding and the amount of unsupplied energy had also declined to 212.7 MWh from 225.2 MWh in 2011. *Delivery Point Index* (DePUI) has increased slightly to 1.03 minutes from 1.01 minutes the previous year.

Sistem Pengagihan

Indeks SAIDI telah berkurangan sebanyak 12.5 peratus dari 69.11 minit/pelanggan/tahun pada tahun 2011 kepada 60.46 minit/pelanggan/tahun pada tahun 2012. Penurunan ini menunjukkan prestasi perkhidmatan sistem pengagihan TNB telah bertambah baik dan menepati sasaran yang ditetapkan sebanyak 70 minit/pelanggan/tahun.

Seperti tahun-tahun sebelumnya, gangguan voltan sederhana merupakan penyumbang utama indeks SAIDI. Ke arah usaha yang berterusan bagi mengurangkan indeks SAIDI ini, TNB telah melaksanakan beberapa pelan tindak. Antara yang dijalankan termasuklah pelan tindak bagi sistem voltan rendah seperti:

- memperketatkan semakan semasa penyerahan projek baru
- memberi kursus ulangan kepada supervisor dan kontraktor, dan
- penilaian amalan kejuruteraan

Manakala bagi sistem voltan sederhana yang menyumbang lebih daripada 90 peratus indeks SAIDI ini, fokus diberikan kepada sistem kabel bawah tanah, sambungan kabel, kerosakan oleh *third party* dan penamatan kabel. Antara tindakan jangka pendek telah dilaksanakan termasuklah:

- ujian penebatan kabel
- ujian *partial discharge* kabel bawah tanah
- menggantikan kabel *Paper Insulated Lead Cover (PILC)*, dan
- menggantikan tamatan lama kepada yang baru

Pelan tindakan jangka panjang juga telah dilaksanakan seperti menaik taraf saiz kabel, menukar kabel voltan sederhana yang banyak penyambungan, menukar kabel PILC kepada kabel XLPE dan lain-lain.

Sementara itu, di Kulim Hi-Tech Park (KHTP) pula, SAIDI dilaporkan telah meningkat dengan mendadak dari 7.88 minit/pelanggan/tahun kepada 33.23 minit/pelanggan/tahun. Perkara ini disebabkan berlakunya 2 kerosakan dalam bulan April 2012 dan 1 kerosakan dalam bulan September 2012 pada kabel 11 kV yang melibatkan ramai pengguna. Namun begitu, tiada pengguna yang dilaporkan terlibat di dalam insiden voltan tinggi di KHTP dalam tahun 2012.

Kualiti Kuasa

Merujuk kepada *IEEE 1159*, kualiti kuasa diukur berdasarkan insiden junaman voltan yang berlaku dalam jangka masa 10 milisaat sehingga 60 saat. Ia juga dikenali sebagai *undervoltage*

Distribution System

SAIDI has decreased by 12.5 percent from 69.11 minutes/customer/year in 2011 to 60.46 minutes/customer/year in 2012. The drop in SAIDI showed that TNB distribution system service has improved and achieved the given target set at 70 minutes/customer/ year.

As in previous years, the main contributor to the index for SAIDI was the medium voltage interruptions. In its continual efforts to reduce the index for SAIDI, TNB had put several action plans in place. The action plan, among others is for low voltage interruptions Several efforts were taken for low voltage interruptions such as:

- *stringent checks upon submission of new projects*
- *conducting courses for supervisors and contractors involved, and*
- *hand-holding.*

Meanwhile, for Medium Voltage System interruptions that contributes more than 90 percent of the index for SAIDI, primary focus were put on the underground cables system, cables' joint, damages caused by third party and cable termination. Several short-term plans had been conducted such as:

- *cable insulation test*
- *partial discharge test for underground cables*
- *replacing the Paper Insulated Lead Cable (PILC) cables, and*
- *replacing the old joints with new ones.*

Long-term action plans had also been implemented by upgrading the cable sizes, replacing the medium voltage cables with many joints, replacing PILC cable with XLPE cables and others.

In Kulim Hi- Tech Park (KHTP), SAIDI marked a sharp increase from 7.88 minutes/customer/year in 2011 to 33.23 minutes/customer/year in 2012. This is due to two major faults in April 2012 and 1 major fault in September, all at 11 kV cables involving many users. However, there were no customers involved in any high-voltage incidents in KHTP in 2012

Power Quality

With reference to IEEE 1159, power quality is measured by the number of voltage dips that occurs within 10 milliseconds to 60 seconds. Voltage dip is also known as undervoltage and

dan diukur menggunakan System Average RMS Index (SARFI). Pemantauan SARFI ini dilakukan dengan memasang 150 unit alat perakam kualiti kuasa di pencawang masuk utama (PMU) di mana aduan pengguna berkenaan kejadian junaman voltan dirakamkan di 150 PMU tersebut. Pada tahun 2012, sistem 33kV telah mencatatkan nilai SARFI₉₀ yang tertinggi iaitu 6.8. Bilangan aduan kualiti kuasa berkenaan junaman voltan telah meningkat kepada 103 aduan berbanding 93 aduan pada tahun 2011. Antara punca utama berlakunya kes junaman voltan termasuklah kejadian-kejadian seperti gangguan ubah-tika, kilat dan kerosakan kabel yang menyumbang sebanyak 72 peratus dari keseluruhan punca yang direkodkan. Bagi menangani masalah berkenaan kualiti kuasa terutamanya di kawasan perindustrian ini, pihak TNB telah menawarkan perkhidmatan rundingan dengan para pengguna. Bagi melaksanakan proses ini, TNB Bahagian Pembahagian telah melantik pihak TNB Engineering Services Sdn. Bhd. (TNBES) untuk bertanggungjawab memberikan maklumbalas punca seterusnya memberikan tindakan susulan.

Di KHTP pula, bilangan insiden junaman voltan telah meningkat sebanyak 17.6 peratus daripada 17 insiden pada tahun 2011 kepada 20 insiden tahun 2012. Dari jumlah keseluruhan, 18 kejadian dilaporkan berpunca dari sistem pembekalan TNB manakala 2 insiden berpunca dari sistem pengagihan NUR. Bilangan pengguna yang terlibat juga meningkat dengan ketara dari 9 pengguna pada tahun 2011 kepada 54 pengguna pada tahun 2012. Penyumbang utama peningkatan ini adalah disebabkan 2 kejadian pelantikan di talian 275kV dari Junjong ke Bukit Tengah dan talian 132 kV dari Kuala Ketil ke Guthrie.

Prestasi Sistem Pembekalan Elektrik di Sabah

Sistem Penjanaan

Stesen jana kuasa di Sabah secara keseluruhannya menunjukkan peningkatan purata kecekapan thermal yang konsisten sepanjang tahun 2012. Stesen jana kuasa disel milik SESB menunjukkan sedikit penurunan pada tahun 2012 berbanding tahun 2011. Namun begitu, stesen jana kuasa gas milik SESB pula menunjukkan peningkatan berikutan pengoperasian penuh stesen jana kuasa tersebut bagi memenuhi keperluan kapasiti penjanaan di Sabah.

EAF bagi stesen jana kuasa di Sabah pula didapati merosot pada purata 2 peratus hingga 11 peratus pada tahun 2012. Ini berikutan kekerapan henti tugas stesen jana kuasa disebabkan kerosakan di luar jangkaan, kesukaran mendapatkan alat gantinya, kenaikan kos operasi dan sebagainya. Antara faktor lain menyumbang pada penurunan peratusan EAF ini adalah seperti masalah teknikal yang dialami oleh stesen jana kuasa

measured by System Average RMS (SARFI). They are monitored by power quality recorders installed at PMUs whereby complaints made by the customers are recorded at these 150 PMUs. For the overall system, SARFI₉₀ has the highest average figure recorded at 6.8. Meanwhile, the number of complaints due to voltage dips had increased to 103 complaints in 2012 compared to only 93 complaints in 2011. The main reasons for voltage dips cases are transient, lightning and damaged cables and these have contributed about 72 percent out of the total number voltage dips cases. To overcome the problems in power quality, especially in industrial areas, TNB has come out with several measures such as by providing consultancy services to the customers. To carry out this responsibility, TNB Distribution Division has appointed TNB Energy Services Sdn.Bhd. (TNBES) to respond to any inquiry related to power quality raised by customers and to provide follow-up consultation services.

In KHTP, the number of voltage dip incidents had increased by 17.6 percent from 17 incidents in 2011 to 20 incidents in 2012. Out of the total, 18 incidents were reported due to the TNB supply system and the remaining stemming from the NUR distribution system. The number of affected users had significantly increased from only 9 users in 2011 to 54 users in 2012 due to two major tripping incidents at talian 275 kV from Junjong to Bukit Tengah and talian 132 kV from Kuala Ketil to Guthrie.

Performance of Electricity Supply System in Sabah

Generation System

Overall, the average thermal efficiency for all power plants in Sabah showed a consistent improvement throughout 2012. Despite an overall improvement in thermal efficiency, diesel power plants showed a slight decline in performance compared to the previous year. The improvement is actually contributed by gas based power plants owned by SESB as it is operated at full capacity due to the shortage of electricity supply capacity in Sabah.

EAF for all power stations in Sabah were found to have declined by an average of 2 percent to 11 percent in 2012. The reasons behind the declining EAF in Sabah are the unexpected problems which occurred at the power stations, difficulties to obtain relay devices and an increasing operating cost. Among other factors contributing to low EAF are technical problems at Tenom Pangi power station requiring unit 1 to stop its

Tenom Pangi di mana unit 1 ditutup sepanjang bulan Jun hingga Ogos serta penutupan stesen jana kuasa milik Sandakan Power Corporation Sdn. Bhd. (SPC).

EUOF bagi stesen jana kuasa SESB pula didapati bertambah baik berbanding tahun 2011 apabila stesen jana kuasa kitar padu dan disel beroperasi dalam keadaan baik. Di stesen jana kuasa disel, EUOF telah menurun daripada 30.8 peratus pada tahun 2011 kepada 20.8 peratus pada tahun 2012. Manakala stesen jana kuasa kitar padu pula, EUOF telah menurun daripada 11.5 peratus pada tahun 2011 kepada 6.6 peratus pada tahun 2012.

Sistem Penghantaran

Bacaan bagi *Delivery Point Index (DePUI)* di Sabah menunjukkan kemerosotan dengan pertambahan sistem minit kepada 67.12 minit daripada 40.13 minit tahun sebelumnya. Perkara ini disumbangkan oleh 5 kejadian pelantikan dengan kehilangan beban 50 MW ke atas yang berlaku pada sistem grid di Sabah. Namun begitu, bacaan ini tidak mengambil kira insiden besar lucutan beban yang berlaku pada 30 April yang menyebabkan kehilangan beban sebanyak 475 MW yang berlaku pada alatubah bagi talian 66kV Penampang-Inanam di PMU Penampang serta 1 insiden voltan berlebihan pada 1 Mei dengan kehilangan beban sebanyak 89.56 MW.

Sistem Pengagihan

Keseluruhannya, SAIDI di Sabah telah bertambah sebanyak 12.5 peratus daripada 495 minit/pelanggan/tahun pada tahun 2011 kepada 557 minit/pelanggan/tahun pada tahun 2012. Pertambahan SAIDI ini disumbang oleh beberapa isu kritikal yang telah menjejaskan sistem bekalan elektrik di Sabah seperti kerosakan yang di beberapa stesen jana kuasa dan sistem grid talian penghantaran negeri Sabah.

Kos Bahan Api

Pada tahun 2012, harga minyak mentah berdasarkan Brent Spot berada di atas paras USD 100 setong dengan harga tertinggi dicapai pada bulan Mac 2012, pada harga USD 125 setong. Namun begitu, harga arang batu yang ditunjukkan oleh indeks Newcastle (Freight on Board (FOB)) dan indeks Richard Bay (FOB) menurun di bawah paras USD 100 iaitu di dalam lingkungan USD 85 hingga USD 98 per tan. Penurunan ini disebabkan faktor-faktor seperti penurunan kadar tukaran wang asing USD, penurunan kadar bunker serta ekor dari kadar bekalan yang tinggi berbanding permintaan.

operation from June to August 2012 and the end of operation of power stations owned by Sandakan Power Corporation Sdn. Bhd. (SPC).

EUOF for SESB's power plants were found to have an improvement and showed a better performance compared to its performance in 2011 due to the good condition of these combined cycle and diesel power plants. EUOF for diesel power plants had decreased from 30.8 percent in 2011 to 20.8 percent in 2012. Meanwhile, the EUOF for combined cycle power plant had declined from 11.5 percent in 2011 to 6.6 percent in 2012.

Transmission System

Delivery Point Index (DePUI) in Sabah showed a decline in performance as the system minutes increased to 67.1 minutes from 40.13 minutes in the previous year. This situation was contributed by 5 tripping incidents cases with load loss of above 50 MW that occurred at Sabah grid system. However, this record does not take into account major incidents with load loss of 475 MW at 66 kV transformer line Penampang – Inanam at Penampang's PMU that happened on April 30 and another overvoltage incident with load loss of 89.56 MW.

Distribution System

Overall, SAIDI for Sabah had increased by 12.5 percent from 495 minutes/customer/year in 2011 to 557 minutes/customer/year in 2012. Increase in SAIDI were caused by critical issues that affected the electricity supply system in Sabah such as faults in several power plants and transmission lines of the grid system in Sabah.

Fuel Costs

In 2012, the market price for crude oil based on Brent Spot Price of crude oil stood above USD 100 per barrel with the highest price recorded in March 2012, at USD 125 per barrel. However, the price of coal indicated by the Newcastle index (Freight on Board (FOB)) and the Richard Bay index (FOB) fell below USD 100 to be within USD 85 to USD 98 per tonne. The reduction in coal price is attributed by several factors such as the decline in USD exchange and bunker rates, as well as due to supply of coal that exceeded the demand.

Bagi harga gas yang ditetapkan oleh kerajaan kepada sektor penjanaan elektrik pula, ia masih kekal seperti di tahun sebelumnya iaitu pada RM 13.70/mmBtu. Penetapan ini dibuat bagi mengekalkan tarif elektrik purata pada 33.54 sen/kWj. Sehingga November 2012, kerajaan telah memperuntukkan diskaun harga gas sebanyak 72 peratus daripada harga gas (formula) kepada sektor penjanaan elektrik

As for gas prices to the power sector set by the Government, it remains as in the previous year at RM 13.70/ mmBtu. The price remains in order to maintain the average electricity tariff at 33.54 sen/kWh. As of November 2012, the government has allocated a gas price discount of 72 percent from the gas price (formula) for electricity generation sector.

Mekanisme Pengebilan Gas

Sejak tahun 2011, satu jawatankuasa pengebilan gas yang dianggotai oleh PETRONAS, Unit Perancang Ekonomi, Kementerian Tenaga, Teknologi Hijau dan Air (KeTTHA) dan TNB telah diwujudkan bagi menangani isu *unintended gains* oleh pihak IPP. Jawatankuasa ini dipengerusikan oleh ST yang bertanggungjawab menyelia proses penjimatan wang serta memperakukan jumlah penjimatan tersebut kepada Dana Kumpulan Wang Disatukan. Pada tahun 2012, pelaksanaan mekanisme ini diteruskan serta berjaya merekodkan penjimatan TNB sebanyak RM 63.3 juta sepanjang Mac 2011 hingga Oktober 2012. Penjimatan dari hasil pengurangan pembayaran bahan api oleh TNB kepada pihak IPP seterusnya telah disalurkan kepada Dana Kumpulan Wang Disatukan di KeTTHA.

Gas Billing Mechanism

Since 2011, a gas billing committee was established with members consisting of PETRONAS, Economic Planning Unit, Ministry of Energy, Green Technology and Water (KeTTHA) and TNB. The objective is to address the issue of unintended gains by the IPPs. This committee was chaired by the Energy Commission that holds the responsibility to oversee the cost saving process and certifying the amount of savings to the Consolidated Fund. In 2012, the implementation of this mechanism continued and has successfully recorded TNB's savings amounted to RM 63.3 million between March 2011 until October 2012. The savings gained from the reduced energy payment paid by TNB to IPPs were then channeled to the Consolidated Fund in KeTTHA.

Situasi Pembekalan dan Permintaan Elektrik di Semenanjung Malaysia

Kehendak maksimum sistem grid di Semenanjung Malaysia telah meningkat sebanyak 2.3 peratus daripada 15,476 MW pada tahun 2011 kepada 15,826 MW pada tahun 2012. Rekod ini dicatat pada jam 16:00, 20 Jun 2012 dengan permintaan tenaga pada hari tersebut sebanyak 328.72 GWj. Permintaan tenaga pada hari itu juga merupakan permintaan tenaga harian tertinggi, kenaikan sebanyak 3.2 peratus berbanding tahun sebelumnya. Permintaan tenaga elektrik tahunan pula telah meningkat sebanyak 4.1 peratus dari 104, 220 GWj pada tahun 2011 kepada 108, 473 GWj pada tahun 2012. Jualan tenaga turut meningkat sebanyak 3.8 peratus daripada 93,640 GWj pada tahun 2011 kepada 97,243 GWj pada tahun 2012.

Electricity Supply and Demand Situation in Peninsular Malaysia

Maximum demand of the grid system in Peninsular Malaysia had increased by 2.3 percent from 15,476 MW in 2011 to 15, 826 MW in 2012. This reading was recorded at 16:00, 20 June 2012 with the daily demand stood at 328.72 GWh. That is the highest daily demand recorded throughout the year, an increase of 3.2 percent compared to the previous year. The total yearly electricity demand had also increase by 4.1 percent from 104,220 GWh in 2011 to 108,473 GWh in 2012. Meanwhile, the sales of electricity had increased by 3.8 percent from 93, 640 GWh in 2011 to 97, 243 GWh in 2012.

Kapasiti Penjanaan di Semenanjung Malaysia pula telah berkurang kepada 21,749 MW berikutan perpindahan turbin gas 68 MW di Teluk Ewa, Pulau Langkawi ke Tawau, Sabah. Daripada jumlah keseluruhan tersebut, stesen jana kuasa TNB menyumbang sebanyak 41.7 peratus (9,072 MW), terdiri daripada 1,911 MW stesen jana kuasa hidro, 5,061 MW stesenjana kuasa thermal dan 2,100 MW stesen jana kuasa arang batu. Selainnya, sebanyak 58.3 peratus (12,677 MW) disumbang oleh IPP di Semenanjung Malaysia.

The generation capacity in Peninsular Malaysia was reduced to 21,749 MW following the transfer of the 68 MW gas turbine in Teluk Ewa, Langkawi to Tawau, Sabah. Out of the total generation capacity, TNB power stations accounted for 41.7 percent (9,072 MW), consisting of 1,911 MW of hydro power plants, 5,061 MW thermal power plants and 2,100 MW coal -fired power plants. The remaining capacity of 58.3 percent (12,677 MW) were from IPPs in Peninsular Malaysia.

Bagaimanapun, berdasarkan pengujian tahunan yang dijalankan, *Tested Annual Available Capacity (TAAC)* yang dicatatkan adalah sebanyak 21,609 MW di mana 6,547 MW dibekalkan oleh stesen jana kuasa TNB dan selebihnya oleh stesen jana kuasa IPP di Semenanjung Malaysia. Tahun 2012 mencatatkan rizab margin yang masih selesa dalam lingkungan 37 peratus berbanding 41 peratus pada tahun 2011.

Situasi Pembekalan dan Permintaan Elektrik di Sabah

Sabah masih lagi berhadapan dengan isu kekurangan bekalan elektrik. Ianya berlanjutan dan semakin meruncing dengan pemberhentian operasi stesen jana kuasa Sandakan Power Corporation (SPC) berkapasiti 32 MW akibat kerosakan teruk pada enjin diselnya, kekerapan henti tugas di luar jangka stesen ARL Power berkapasiti 47.5 MW dan berikutan masalah berkenaan bekalan bahan api yang dihadapi oleh stesen jana kuasa Stratavest. Selain itu, sesetengah stesen jana kuasa SESB juga menghadapi masalah berikutan tahap kesediaan dan daya harapnya yang rendah.

Kehendak maksimum sistem grid di Sabah adalah sebanyak 828.4 MW direkodkan pada 24 Mei 2012, berkurang sebanyak 0.2 peratus berbanding tahun sebelumnya.

Jumlah kapasiti penjanaan terpasang di Sabah pula direkodkan sebanyak 1,265 MW, pengurangan sebanyak 32 MW ekoran pemberhentian stesen jana kuasa SPC. Bagi mengatasi masalah kekurangan bekalan elektrik di Sabah, beberapa langkah telah diambil termasuklah penambahan kapasiti sedia ada stesen jana kuasa serta meningkatkan tahap kesediaan stesen jana kuasa disel milik SESB. Dengan mengambilkira beberapa faktor seperti deration dan kekangan pada sistem penjanaan, kapasiti boleh harap dicatatkan sebanyak 1,130 MW. Dari jumlah keseluruhan ini, 673.5 MW merupakan kapasiti penjanaan IPP, 417.3 MW dari stesen jana kuasa SESB dan 39.5 MW dari stesen jana kuasa tenaga boleh baharu.

Jumlah penjanaan pula sebanyak 5,478 GWh dengan pecahan berikut, 69.6 peratus berasaskan gas, 19.5 peratus berasaskan Medium Fuel Oil (MFO) dan disel, 7.6 peratus dari hidro dan 3.3 peratus dari sumber tenaga boleh baharu.

However, based on the annual testing performed, the Tested Annual Available Capacity (TAAC) had recorded the total generation capacity of 21,609 MW of which 6,547 MW were supplied by TNB and the remaining were from the IPPs in Peninsular Malaysia. In 2012, the reserve margin remains at a comfortable zone around 37 percent compared to 41 percent in 2011.

Electricity Supply and Demand Situation in Sabah

Sabah is still facing an issue of insufficient supply of electricity. This situation had worsened with the cessation of the Sandakan Power Station Sdn. Bhd. (SPC) with a capacity of 32 MW due to severe damage of its diesel engine, frequent unscheduled outage of ARL Power Station with a capacity of 47.5 MW and due to fuel supply issue faced by Stratavest Power Station. Besides that it also includes problem faced by several SESB's plants due to their low availability and reliability level.

The maximum demand in Sabah stood at 828.4 MW recorded at 24 May 2012, a decrease by 0.2 percent compared with the previous year.

The total installed generation capacity stood at 1,265 MW, a decrease of 32 MW as a result of the ceased operation of SPC. To overcome the shortage in electricity, several measures had been taken such as by increasing the capacity of existing power plants as well as improving the availability of diesel based power stations owned by SESB. Taking into account of few factors such as deration and constraints of the generation system, the dependable capacity stood at 1,130 MW. Out of the total dependable capacity in Sabah, 673.5 GWh came from the IPPs in Sabah, followed by 417.3 GWh from SESB owned power plants and 39.5 GWh from renewable energy power plants.

The total generation in Sabah stood at 5,478 GWh with the share of generation mix as follows: gas at 69.6 percent, MFO and diesel at 19.5 percent, hydro at 7.6 percent and renewable energy sources at 3.3 percent.

Situasi Pembekalan dan Permintaan Elektrik di Sarawak

Sarawak Energy Berhad (SEB) yang dimiliki sepenuhnya oleh Kerajaan Negeri Sarawak beroperasi secara bersepadu serta terlibat dalam aktiviti penjanaan, penghantaran dan pengagihan elektrik di Sarawak. SEB melalui Syarikat SESCO Berhad (SESCO) bertanggungjawab ke atas infrastruktur penghantaran dan pengagihan. Jumlah keseluruhan kapasiti penjanaan pada tahun 2012 yang direkodkan oleh SEB ialah sebanyak 1,352 MW. Ini termasuklah jumlah kapasiti bagi stesen-stesen jana kuasa SESCO (555 MW), Sejingkat Power Corporation Sdn Bhd (SPC) (100 MW), PPLS Power Generation Sdn Bhd (PPLS) (110 MW), Sarawak Power Generation Sdn Bhd (SPG) (317 MW) dan Mukah Power Generation Sdn Bhd (MPG) (270 MW). Pada masa yang sama, 4 unit di Bakun telah pun beroperasi berbanding hanya 3 unit pada tahun sebelumnya, menyumbangkan kapasiti penjanaan tambahan sebanyak 1,200 MW di Sarawak.

Di Sarawak, kehendak maksimum telah berkurangan sebanyak 3.9 peratus dari 1,278 MW pada tahun 2011 kepada 1,228 MW pada tahun 2012. Namun begitu, jumlah pelanggan telah bertambah seramai 20,502 orang pelanggan baru menjadikan jumlah keseluruhan pelanggan SEB sebanyak 549,053. Jualan tenaga turut meningkat sebanyak 17 peratus berbanding tahun sebelumnya, menjadikan jumlah jualan tenaga pada tahun 2012 sebanyak 7,587 GWh bersamaan dengan nilai sebanyak RM 1,862 juta.

Electricity Supply and Demand Situation in Sarawak

Sarawak Energy Berhad (SEB), wholly owned by the Sarawak State Government is a vertically integrated utility group involved in the generation, transmission, and distribution of electricity in the state of Sarawak. SEB via Syarikat SESCO Berhad (SESCO) controls the state's transmission and distribution infrastructure. In 2012, the total generating capacity of SEB stood at 1,352 MW. The total includes the generating capacity from SESCO at 555 MW, Sejingkat Power Corporation Sdn. Bhd. (SPC) (100 MW), PPLS Power Generation Sdn Bhd (PPLS) (110 MW), Sarawak Power Generation Sdn Bhd (SPG) (317MW) and Mukah Power Generation Sdn Bhd (MPG) (270 MW). Meanwhile, 4 units of Bakun had operated in 2012 compared to only 3 units in the previous year, contributing to an additional generating capacity of 1,200 MW in Sarawak.

The maximum demand had reduced by 3.9 percent from 1,278 MW in 2011 to 1,228 MW in 2012. Meanwhile, the number of SEB's customers had increased by 20,502, bringing the total number of SEB's customer to 549,053. The total electricity sales had also increased by 17 percent compared to the previous year, bringing up the total electricity sales in 2012 to 7,587 GWh equivalents to a total value of RM 1,862 million.

PROFIL NEGARA, DATA UTAMA EKONOMI DAN TENAGA ELEKTRIK

COUNTRY PROFILE, KEY ECONOMIC AND ELECTRICITY DATA

Profil Negara | Country Profile

Keluasan Kawasan Land Area	: 330,290 km ²
Iklim Climate	: Jenis Tropika Tropical Type
	: Purata Suhu di antara 21° C hingga 32° C Average temperature is between 21° C to 32° C
	: Purata taburan hujan tahunan 3,540 mm Average annual rainfall is 3,540 mm
Jumlah Penduduk Population	: 29.3 juta million
Tenaga Kerja Labour Force	: 13.1 juta million

Data Utama Ekonomi | Key Economic Data

KDNK pada Harga Semasa GDP at Current Prices	: RM 941.2 bilion billion
KDNK pada Harga Malar 2005 GDP at Constant 2005 Prices	: RM 751.5 bilion billion
KDNK pada Harga Semasa per Kapita GDP at Current Prices per Capita	: RM 32, 124.10 per Kapita per Capita
KDNK pada Harga Malar 2005 per Kapita GDP at Constant 2005 Prices per Capita	: RM 25, 647.50 per Kapita per Capita
PNK pada Harga Semasa GNI at Current Prices	: RM 905.2 bilion billion
PNK pada Harga Malar 2005 GNI at Constant 2005 Prices	: RM 693.1 bilion billion
PNK pada Harga Semasa per Kapita GNI at Current Prices per Capita	: RM 30, 908 per Kapita per Capita
PNK pada Harga Malar 2005 per Kapita GNI at Constant 2005 Prices per Capita	: RM 23, 655 per Kapita per Capita
Imbangan Akaun Semasa Current Account Balance	: RM 57.3 bilion billion
Simpanan Luar Negara Kasar Gross International Reserves	: RM 427.2 bilion billion
Tabungan Negara Kasar Gross National Saving	: 299.9 bilion (33.1% daripada PNK) 299.9 billion (33.1% of PNK)

Data Utama Elektrik | Key Electricity Data

Jumlah Kapasiti Terpasang Total Electricity Generation	: 28, 824 MW MW
Jumlah Penjanaan Tenaga Elektrik Total Electricity Generation	: 134, 077 GWj GWh
Jumlah Penggunaan Tenaga Elektrik Total Electricity Consumption	: 115, 118 GWj GWh
Purata Harga Jualan Elektrik Electricity Average Selling Price	
Semenanjung Malaysia Peninsular Malaysia	: 33.73 sen/kWj sen/kWh
Sabah	: 29.12 sen/kWj sen/kWh
Sarawak	: 29.68 sen/kWj sen/kWh

Sumber | Source:

Syarikat Utama Utiliti Tenaga Elektrik, Co-Generators, Penjana Persendirian, Bank Negara Malaysia, Jabatan Perangkaan Negara
Main Electricity Utility Companies, Co-Generators, Self Generators, Central Bank of Malaysia, Department of Statistics

PETA MALAYSIA MAP OF MALAYSIA



**PRESTASI SISTEM PEMBEKALAN DAN
PERKHIDMATAN ELEKTRIK**
*PERFORMANCE OF ELECTRICITY SUPPLY
SYSTEM AND SERVICES*



PRESTASI PEMBEKALAN DAN PERKHIDMATAN ELEKTRIK DI SEMENANJUNG MALAYSIA

PERFORMANCE OF ELECTRICITY SUPPLY AND SERVICES IN PENINSULAR MALAYSIA

- 14** **Sistem Penjanaan Tenaga Nasional Berhad (TNB) dan Penjana-Penjana Kuasa Bebas (IPPs) di Semenanjung Malaysia**
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TNB Transmission System
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NUR Distribution Service Performance

Sistem Penjanaan TNB dan Penjana-Penjana Kuasa Bebas (IPPs) di Semenanjung Malaysia

TNB and Independent Power Producers (IPPs) Generation System in Peninsular Malaysia

Jadual 1: Purata Kecekapan Thermal (%)

Table 1: Average Thermal Efficiency (%)

Jenis Loji Plant Type	2008		2009		2010		2011		2012	
	TNB	IPP	TNB	IPP	TNB	IPP	TNB	IPP	TNB	IPP
Kitar Padu Combined Cycle	41.20	44.80	41.00	44.30	41.20	41.90	40.84	43.98	44.34	43.96
Kitar Terbuka Open Cycle	25.60	26.10	17.40	27.40	22.60	27.30	22.30	27.09	26.29	26.77
Konvensional (Minyak/Gas) Conventional (Oil/Gas)	18.30	32.20	n/a	31.90	25.60	32.30	27.27	30.58	26.6	32.34
Konvensional (Arang Batu) Conventional (Coal)	-	33.80	-	34.70	-	33.10	-	35.11	-	35.53

Jadual 2: Purata Faktor Kesediaan Setara (EAF) (%)

Table 2: Average Equivalent Availability Factor (EAF) (%)

Jenis Loji Plant Type	2008		2009		2010		2011		2012	
	TNB	IPP	TNB	IPP	TNB	IPP	TNB	IPP	TNB	IPP
Kitar Padu Combined Cycle	90.70	90.70	93.20	91.20	90.50	90.60	84.95	88.57	94.14	95.1
Kitar Terbuka Open Cycle	97.00	98.10	97.30	98.40	92.60	97.90	97.56	94.53	94.14	95.1
Konvensional (Minyak/Gas) Conventional (Oil/Gas)	99.90	78.10	99.30	83.20	98.10	88.20	82.46	87.43	88.53	85.42
Konvensional (Arang Batu) Conventional (Coal)	-	78.50	-	78.00	-	84.30	-	80.52	-	84.18
Hidro Hydro	91.30	-	95.30	-	86.00	-	92.34	-	90.77	-

Jadual 3: Purata Faktor Henti Tugas Tidak Berjadual Setara (EUOF) (%)

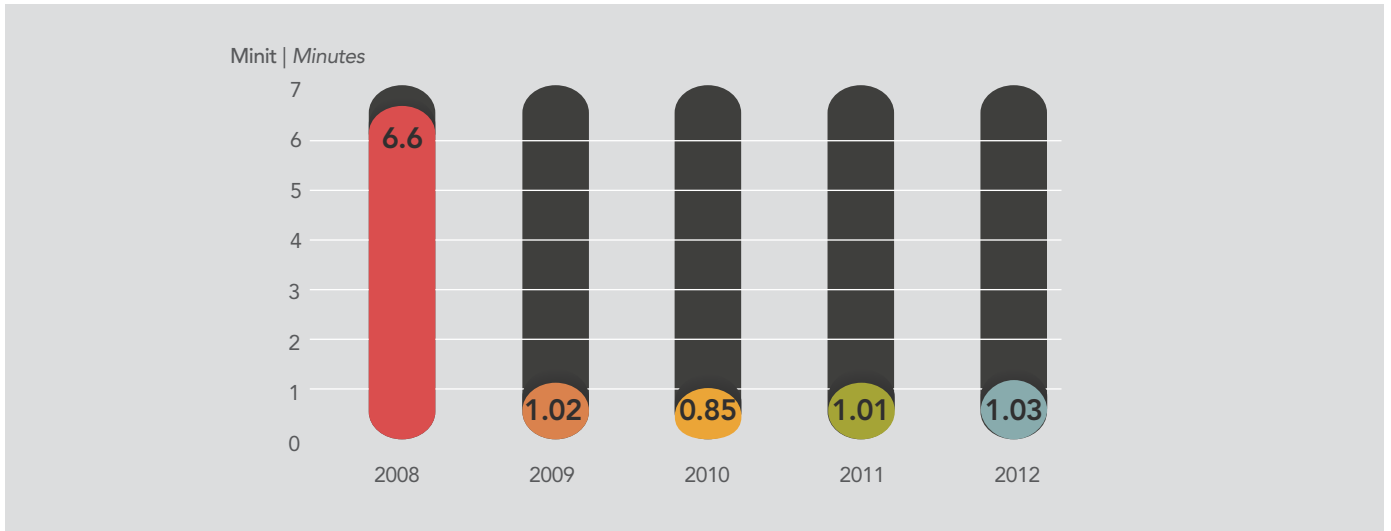
Table 3: Average Equivalent Unplanned Outage Factor (EUOF) (%)

Jenis Loji Plant Type	2008		2009		2010		2011		2012	
	TNB	IPP	TNB	IPP	TNB	IPP	TNB	IPP	TNB	IPP
Kitar Padu Combined Cycle	2.11	1.07	1.61	3.31	2.29	2.97	5.50	3.95	3.48	3.27
Kitar Terbuka Open Cycle	1.73	0.71	0.93	0.61	3.99	0.89	0.98	0.71	1.32	1.71
Konvensional (Minyak/Gas) Conventional (Oil/Gas)	n/a	5.12	n/a	11.85	0.33	4.38	17.53	5.62	0.46	2.96
Konvensional (Arang Batu) Conventional (Coal)	-	11.17	-	12.40	-	7.77	-	10.61	-	6.07
Hidro Hydro	n/a	-	1.35	-	0.37	-	0.93	-	1.9	-

Nota | Note:

n/a – Tiada maklumat | Not available

Carta 1: Delivery Point Unreliability Index (DePUI) - System Minutes TNB
 Chart 1: Delivery Point Unreliability Index (DePUI) - System Minutes TNB



Tahun Kewangan 2011/12 | Financial Year 2011/12

Carta 2: Insiden Pelantikan bagi Talian/Kabel per 100 cct-km Bulanan
 Carta 2: Monthly Tripping Incidents for Lines/Cables per 100 cct-km

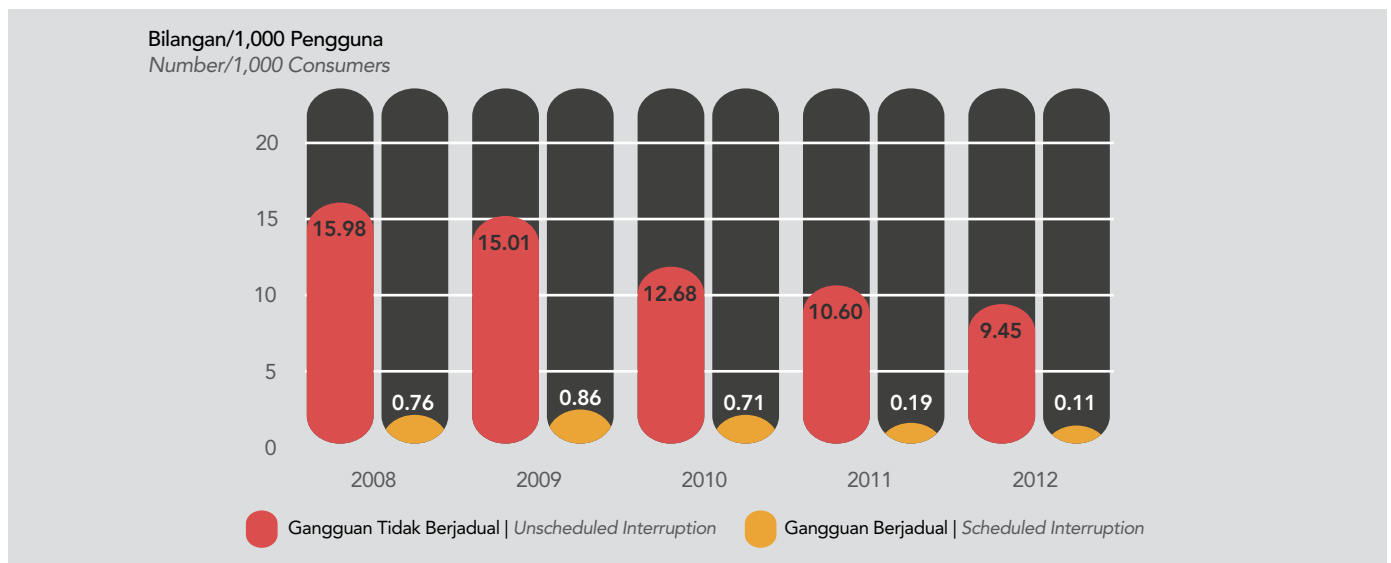


Sistem Pengagihan TNB

TNB Distribution System

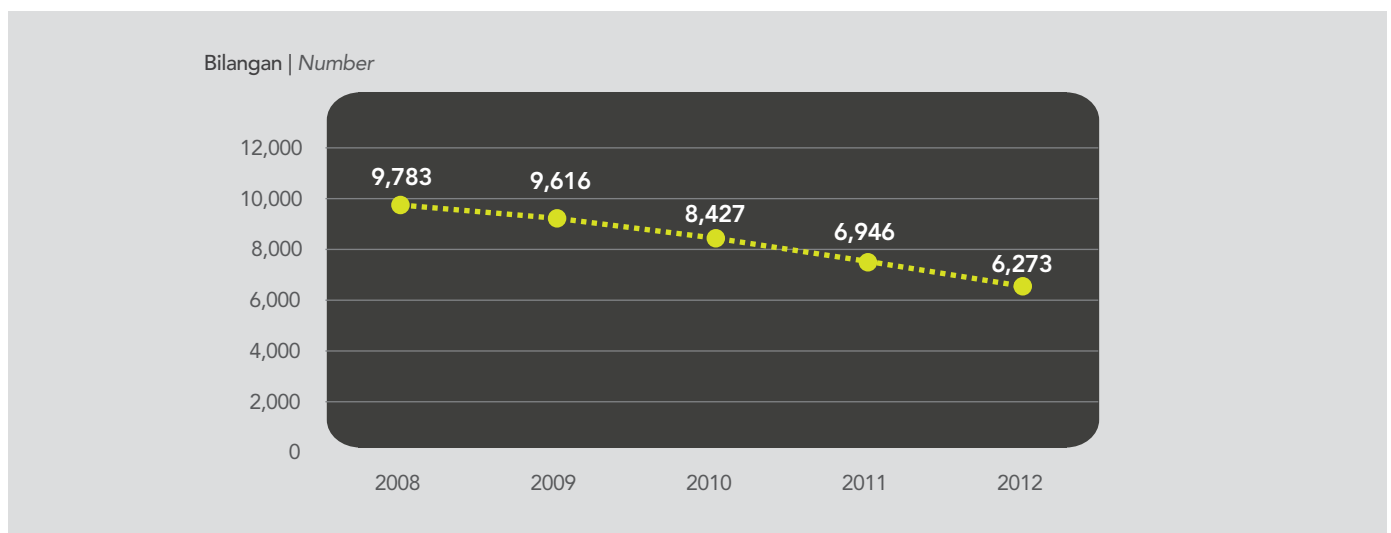
Carta 3: Gangguan Bekalan Elektrik per 1,000 Pengguna

Chart 3: Electricity Supply Interruptions per 1,000 Consumers



Carta 4: Purata Gangguan Bekalan Elektrik Bulanan

Chart 4: Monthly Average Electricity Supply Interruptions



Jadual 6: Gangguan Bekalan Elektrik mengikut Negeri

Table 6: Electricity Supply Interruptions by State

Negeri State	2008	2009	2010	2011	2012
Perak	11,308	11,673	10,835	8,930	7,958
Kedah	9,448	9,604	7,901	7,635	6,590
Johor	19,960	18,873	16,590	12,540	11,935
Pulau Pinang	10,711	8,610	7,376	5,662	6,269
Kelantan	12,499	13,615	10,151	8,211	7,843
Selangor	16,176	16,015	14,569	11,885	9,745
Perlis	1,900	2,029	772	1,240	420
Kuala Lumpur	13,962	12,901	11,970	9,620	10,481
Putrajaya / Cyberjaya	28	8	13	8	7
Negeri Sembilan	6,148	6,397	6,461	5,248	4,876
Melaka	4,529	4,973	4,131	4,772	2,318
Pahang	5,760	6,538	5,621	4,226	4,039
Terengganu	4,965	3,735	3,866	3,370	3,150
Semenanjung Malaysia Peninsular Malaysia	117,394	115,392	101,126	83,347	75,271

Jadual 7: Gangguan Bekalan Elektrik mengikut Tahap Voltan

Table 7: Electricity Supply Interruptions by Voltage Level

Tahap Voltan Voltage Level	2008	2009	2010	2011	2012
Voltan Tinggi High Voltage (66 kV dan ke atas 66kV and above)	35	30	24	26	17
Voltan Sederhana Medium Voltage (6.6 kV – 33 kV)	12,671	13,438	12,170	9,681	8,376
Voltan Rendah Low Voltage (1kV dan ke bawah 1kV and below)	104,688	101,924	88,932	73,640	66,878
Jumlah Total	117,394	115,392	101,126	83,347	75,271

Jadual 8: Bilangan Gangguan Bekalan Elektrik

Table 8: Number of Electricity Supply Interruptions

Bilangan Number	2008	2009	2010	2011	2012
Gangguan Tidak Berjadual Unscheduled Interruptions	112,064	108,708	94,940	81,860	74,436
Gangguan Berjadual Scheduled Interruptions	5,330	6,263	6,011	1,487	835
Jumlah Gangguan Total Interruptions	117,394	115,392	101,126	83,347	75,271

Jadual 9: Peratus Gangguan Bekalan Elektrik Tidak Berjadual mengikut Jenis Gangguan

Table 9: Percentage of Unscheduled Supply Interruptions by Type of Interruptions

Punca Gangguan Type of Interruption	Voltan Rendah Low Voltage	Voltan Sederhana Medium Voltage	Jumlah Total	Peratus Percentage (%)
Haiwan Animal	750	495	1,245	1.65
Kabel Cable	2,144	1,448	3,592	4.77
Auto Reclose	-	5	5	0.01
Konduktor Conductor	9,680	305	9,985	13.27
Feeder Pillar	1,876	-	1,876	2.49
Banjir Flood	1	4	4	0.01
Fius Fuse	3,841	4	3,845	5.11
Kotak Fius Fuse Box	8,709	30	8,739	11.61
Insulated Piercing Connector (IPC)	22,756	-	22,756	30.24
Penebat Insulator	-	6	6	0.02
Sendi Joint	13	3,945	3,958	5.26
Pautan Link	54	9	63	0.08
Lain-lain Others	38	512	550	0.73
Pokok Trees	10,665	88	10,753	14.29
Jumper	-	16	16	0.02
Tiang Pole	2,376	75	2,451	3.26
Ribut Storm	382	20	402	0.53
Geganti Relay	-	35	35	0.05
Peralatan Suis Switchgear	-	198	198	0.26
Tamatan Termination	164	72	236	0.31
Pihak Ketiga Third Party	3,140	765	3,905	5.19
Alatubah Transformer	-	107	107	0.14
Ubahtika Transient	-	203	203	0.27
Vandalisma Vandalisme	289	34	323	0.43
Total Jumlah	66,878	8,376	75,253	100.00

Nota | Note:

Tidak Termasuk Gangguan Voltan Tinggi | Excluding High Voltage Interruptions

TNB System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI)

Jadual 10: SAIDI (Minit/Pelanggan/Tahun) mengikut Tahap Voltan

Table 10: SAIDI (Minutes/Customer/Year) by Voltage Level

Tahap Voltan Voltage Level	2008	2009	2010	2011	2012
Voltan Tinggi (66 kV dan ke atas) High Voltage (66kV and above)	3.21	1.05	1.17	0.94	6.87
Voltan Sederhana (6.6 kV – 33 kV) Medium Voltage (6.6 kV – 33 kV)	68.31	56.72	88.1	63.25	49.3
Voltan Rendah (1kV dan ke bawah) Low Voltage (1kV and below)	15.79	8.30	6.98	4.93	4.29
Jumlah Total	87.3	66.1	96.25	69.11	60.46

Nota | Note:

2008 – 2009: pengukuran SAIDI menggunakan TOMS | SAIDI measured by TOMS

2010 – 2012: pengukuran SAIDI menggunakan Enhanced TOMS | SAIDI measured by Enhanced TOMS

Jadual 11: SAIDI (Minit/Pelanggan/Tahun) mengikut Negeri

Table 11: SAIDI (Minutes/Customer/Year) by State

Negeri State	2008	2009	2010	2011	2012
Perak	61.26	67.51	194.71	119.73	83.61
Kedah	116.55	77.21	127.66	87.18	81.36
Johor	120.47	79.88	119.95	78.05	61.77
Pulau Pinang	104.43	111.28	109.62	76.56	73.29
Kelantan	99.21	81.86	85.01	72.78	72.35
Selangor	69.97	48.86	79.73	61.35	56.69
Perlis	56.83	53.25	64.64	37.80	35.24
Kuala Lumpur	67.92	47.24	41.94	33.46	33.69
Putrajaya / Cyberjaya	6.57	0.23	9.08	0.22	8.48
Negeri Sembilan	79.36	53.32	81.38	55.94	54.60
Melaka	98.80	60.69	60.47	43.52	45.64
Pahang	102.76	61.76	74.35	88.96	62.15
Terengganu	72.94	49.08	55.57	54.26	50.29
Semenanjung Malaysia Peninsular Malaysia	87.31	66.07	96.25	69.11	60.46

Jadual 12: SAIFI (Bilangan Gangguan/Pelanggan/Year) mengikut Tahap Voltan

Table 12: SAIFI (Number of Interruptions/Customers/Year) by Voltage Level

Tahap Voltan Voltage Level	2008	2009	2010	2011	2012
Voltan Tinggi (66 kV dan ke atas) High Voltage (66kV and above)	0.017	0.02	0.01	0.01	0.01
Voltan Sederhana (6.6 kV – 33 kV) Medium Voltage (6.6 kV – 33 kV)	0.759	0.67	1.17	0.93	0.80
Voltan Rendah Low Voltage (1kV dan ke bawah 1kV and below)	0.091	0.06	0.05	0.02	0.00
Jumlah Total	0.87	0.76	1.23	0.97	0.81

Jadual 13: SAIFI (Bilangan Gangguan/Pelanggan/Year) mengikut Negeri

Table 13: SAIFI (Number of Interruptions/Customers/Year) by State

Negeri State	2008	2009	2010	2011	2012
Perak	0.93	0.86	2.35	1.81	0.21
Kedah	1.09	0.87	1.76	1.32	0.29
Johor	0.87	0.67	1.57	0.95	0.12
P. Pinang	1.41	1.50	1.46	1.06	0.16
Kelantan	1.16	1.25	1.75	1.48	0.24
Selangor	0.65	0.50	0.95	0.86	0.12
Perlis	0.73	0.68	0.86	0.48	0.05
Kuala Lumpur	0.52	0.52	0.48	0.44	0.03
Putrajaya / Cyberjaya	0.03	0.00	0.04	0.00	0.00
N. Sembilan	0.64	0.57	0.87	0.64	0.10
Melaka	1.03	0.86	0.71	0.60	0.15
Pahang	0.96	0.73	0.90	1.24	0.19
Terengganu	1.22	0.96	1.22	1.29	0.16
Semenanjung Malaysia Peninsular Malaysia	0.87	0.76	1.23	0.97	0.81

Jadual 14: CAIDI (Minit/Pelanggan Terlibat/Tahun) mengikut Tahap Voltan

Table 14: CAIDI (Minutes/Involved Customer/Year) by Voltage Level

Tahap Voltan Voltage Level	2008	2009	2010	2011	2012
Voltan Tinggi (66 kV dan ke atas) High Voltage (66kV and above)	189.00	47.47	114.6	92.00	687.00
Voltan Sederhana (6.6 kV – 33 kV) Medium Voltage (6.6 kV – 33 kV)	90.00	84.05	75.5	68.04	61.63
Voltan Rendah Low Voltage (1kV dan ke bawah 1kV and below)	173.46	133.14	136.9	245.60	429.00
Jumlah Total	100.7	87.01	78.3	71.62	74.64

Jadual 15: CAIDI (Minit/Pelanggan Terlibat/Tahun) mengikut Negeri

Table 15: CAIDI (Minutes/Involved Customer/Year) by State

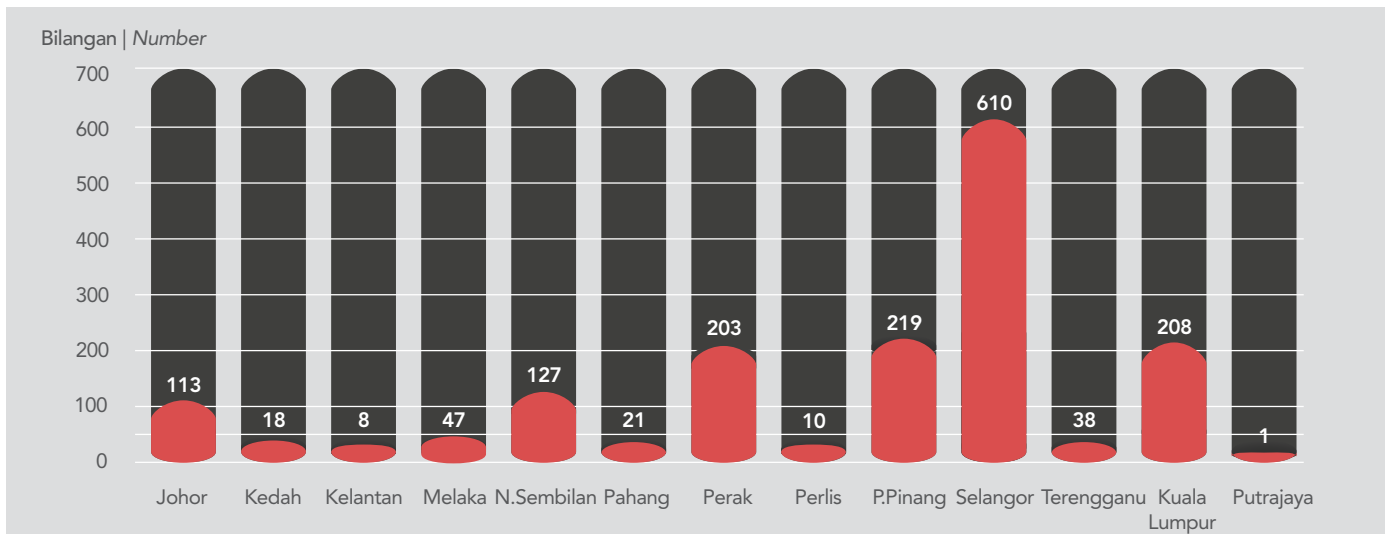
Negeri State	2008	2009	2010	2011	2012
Perak	65.57	78.22	82.93	65.39	66.52
Kedah	106.73	89.14	72.50	55.55	47.45
Johor	137.88	119.02	76.19	77.25	73.07
Pulau Pinang	74.06	74.25	75.09	64.43	67.06
Kelantan	85.70	65.34	48.53	89.94	54.80
Selangor	108.29	96.95	83.77	63.07	66.77
Perlis	77.76	78.09	75.49	95.73	72.67
Kuala Lumpur	130.37	91.56	87.30	62.88	98.59
Putrajaya / Cyberjaya	225.55	98.92	211.99	52.00	38.78
Negeri Sembilan	123.22	112.06	93.59	79.68	82.21
Melaka	96.39	70.55	85.14	89.32	73.74
Pahang	107.40	84.86	82.16	42.69	57.46
Terengganu	59.97	50.99	45.72	83.62	49.12
Semenanjung Malaysia Peninsular Malaysia	100.70	87.01	78.25	71.62	74.64

Kualiti Pembekalan Elektrik TNB

TNB Electricity Supply Quality

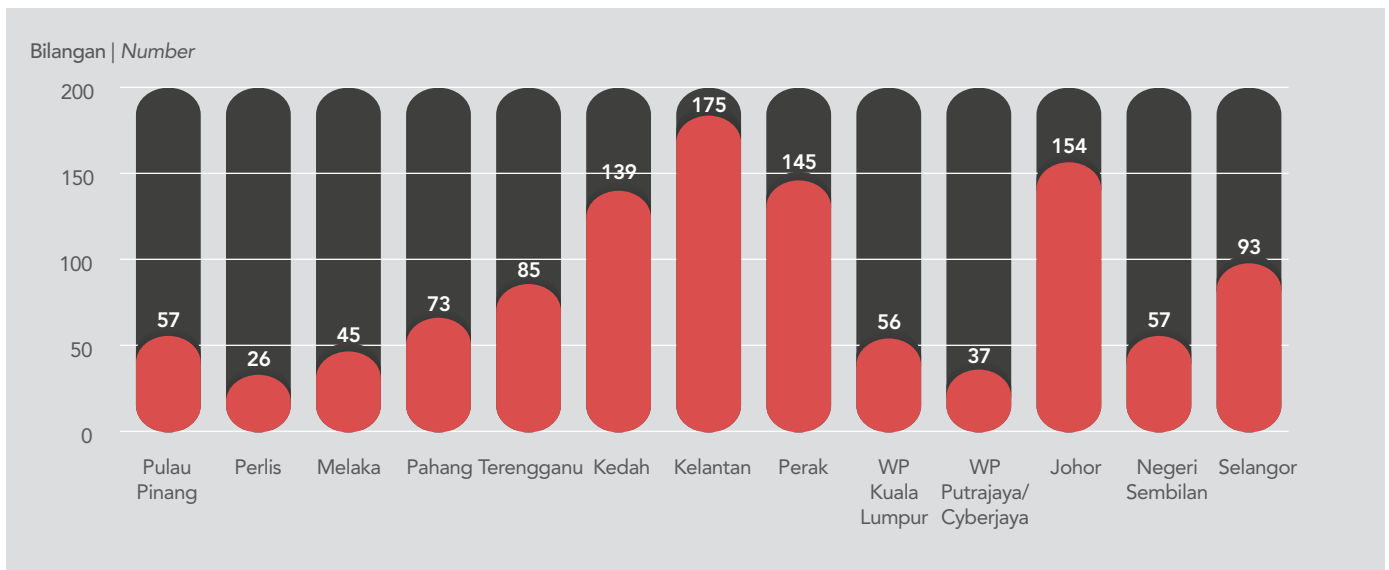
Carta 5: Kejadian Voltan Luar Biasa

Chart 5: Reported Overvoltage Incidents



Carta 6: Kejadian Junaman Voltan yang dilaporkan mengikut Negeri

Chart 6: Reported Voltage Dip Incidents by State



Jadual 16: Bilangan Pengguna Terlibat dalam Insiden Junaman Voltan mengikut Negeri

Table 16: Number of Consumers Involved in Voltage Dip Incidents by State

Negeri State	2008	2009	2010	2011	2012
Pulau Pinang	17	12	3	6	7
Perlis	0	0	0	0	0
Melaka	0	0	2	3	2
Pahang	10	2	4	3	1
Terengganu	1	0	0	0	1
Kedah	1	0	2	2	0
Kelantan	0	0	9	1	0
Perak	5	33	22	13	5
WP Kuala Lumpur	34	32	18	1	6
WP Putrajaya / Cyberjaya	0	0	0	0	0
Johor	9	7	6	7	7
Negeri Sembilan	45	7	18	3	3
Selangor	90	14	91	12	16
Semenanjung Malaysia Peninsular Malaysia	212	107	175	51	48

Jadual 17: SARFI (System Average RMS Frequency Index)

Table 17: SARFI (System Average RMS Frequency Index)

Sistem TNB TNB System	SARFI ₉₀	SARFI ₈₀	SARFI ₇₀
11 kV	6.3	3.7	2.1
22 kV	7.8	5.6	3.9
33 kV	8.1	4.1	2.9
Sistem Keseluruhan Overall System	6.8	3.9	2.6

Jadual 18: SARFI (System Average RMS Frequency Index): Perbandingan dengan Syarikat Utiliti yang Terpilih

Table 18: SARFI (System Average RMS Frequency Index): Comparison with Selected Power Utility Companies

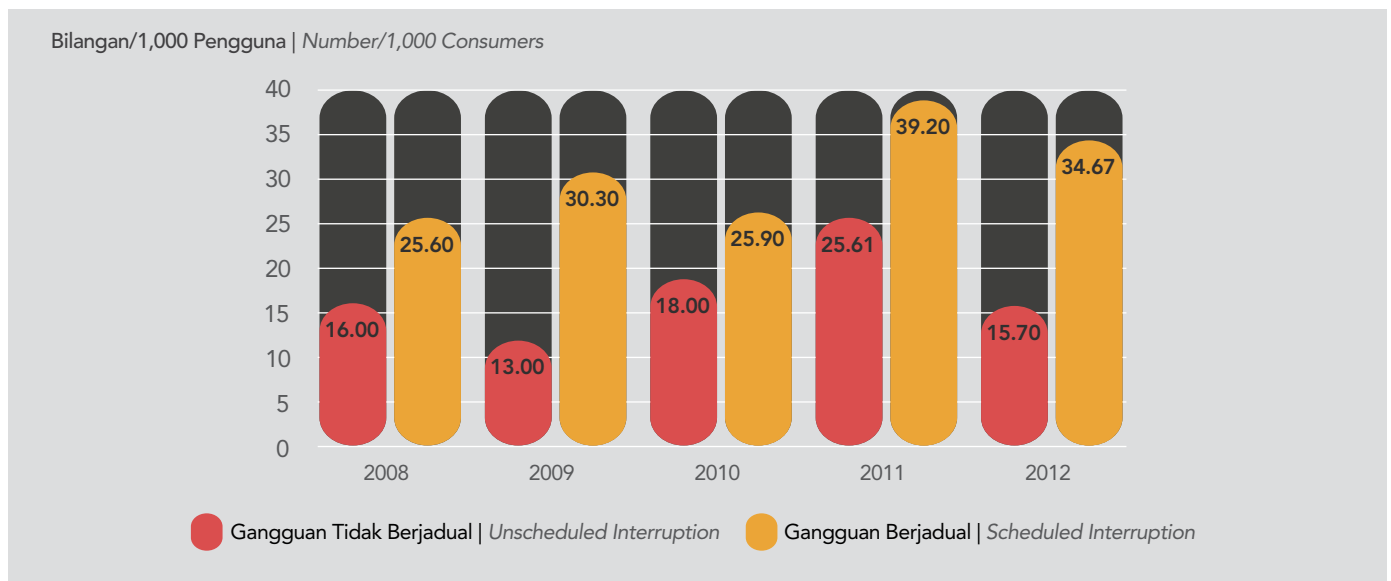
Utiliti Elektrik Electricity Utility	SARFI ₉₀	SARFI ₈₀	SARFI ₇₀
Singapore Power Grid	3	0.7	0.4
United State DPQ Project	50	27.3	18
Europe Mixed Systems (UNIPED)	103	0	44
Europe Cable Systems (UNIPED)	35	0	11
South Africa NRS-048 Indicate Level	153	78	47
Tenaga Nasional Berhad	6.8	3.9	2.6

Sistem Pengagihan NUR Distribution Sdn. Bhd. (NUR Distribution)

NUR Distribution Sdn. Bhd. (NUR Distribution) Distribution System

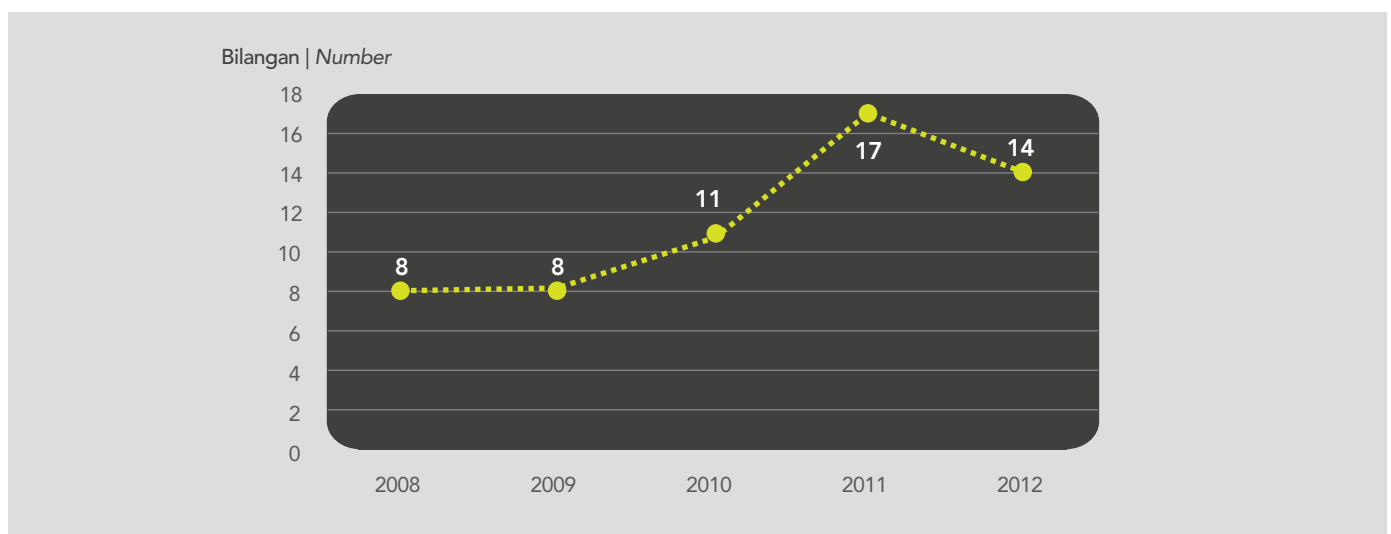
Carta 7: Gangguan Bekalan Elektrik per 1,000 Pengguna

Chart 7: Electricity Supply Interruptions per 1,000 Consumers



Carta 8: Purata Gangguan Bekalan Elektrik Bulanan

Chart 8: Monthly Average Electricity Supply Interruptions



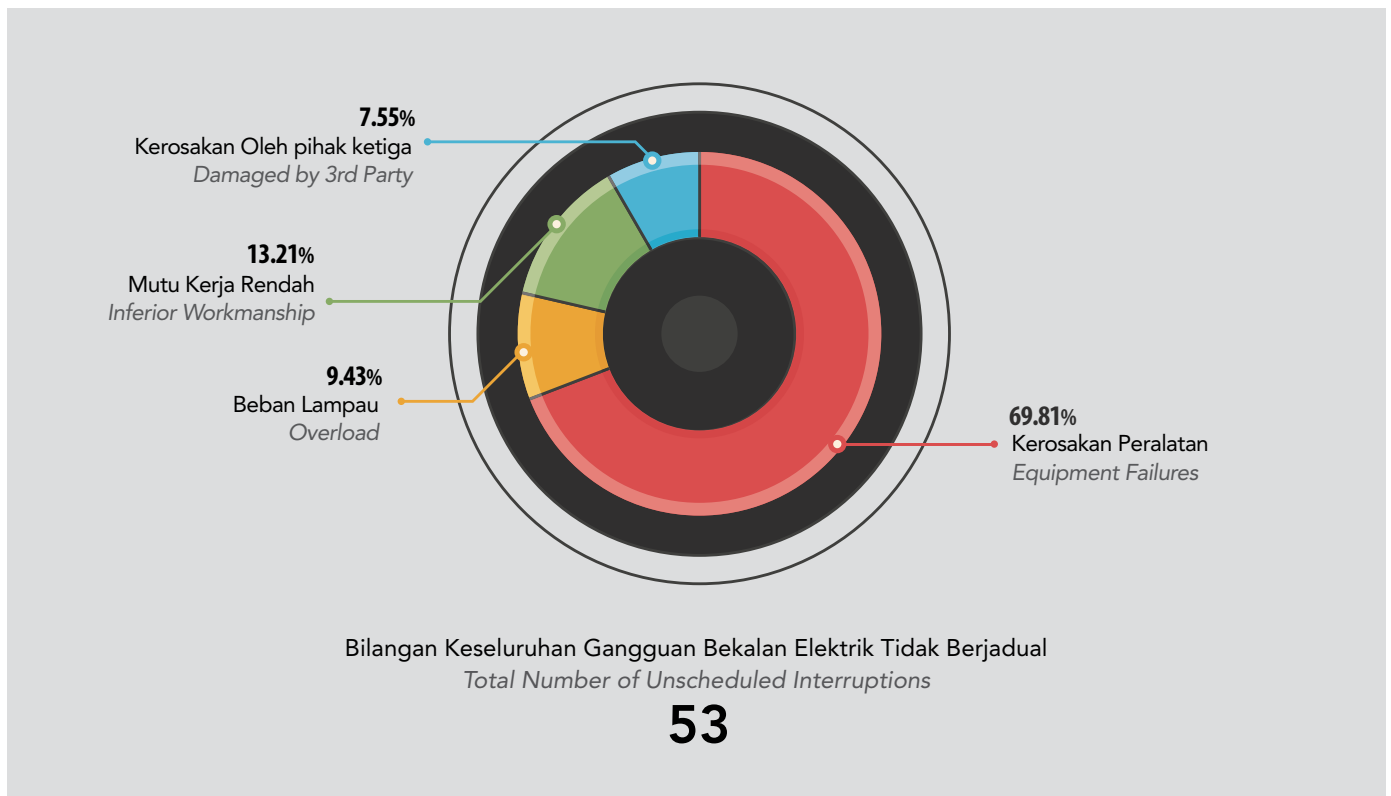
Jadual 19: Bilangan Gangguan Bekalan Elektrik

Table 19: Number of Electricity Supply Interruptions

Bilangan Number	2008	2009	2010	2011	2012
Gangguan Tidak Berjadual <i>Unscheduled Interruptions</i>	35	30	53	81	53
Gangguan Berjadual <i>Scheduled Interruptions</i>	56	70	76	124	117
Jumlah Gangguan <i>Total Interruptions</i>	91	100	129	205	170

Carta 9: Peratus Gangguan Bekalan Elektrik Tidak Berjadual mengikut Jenis Gangguan

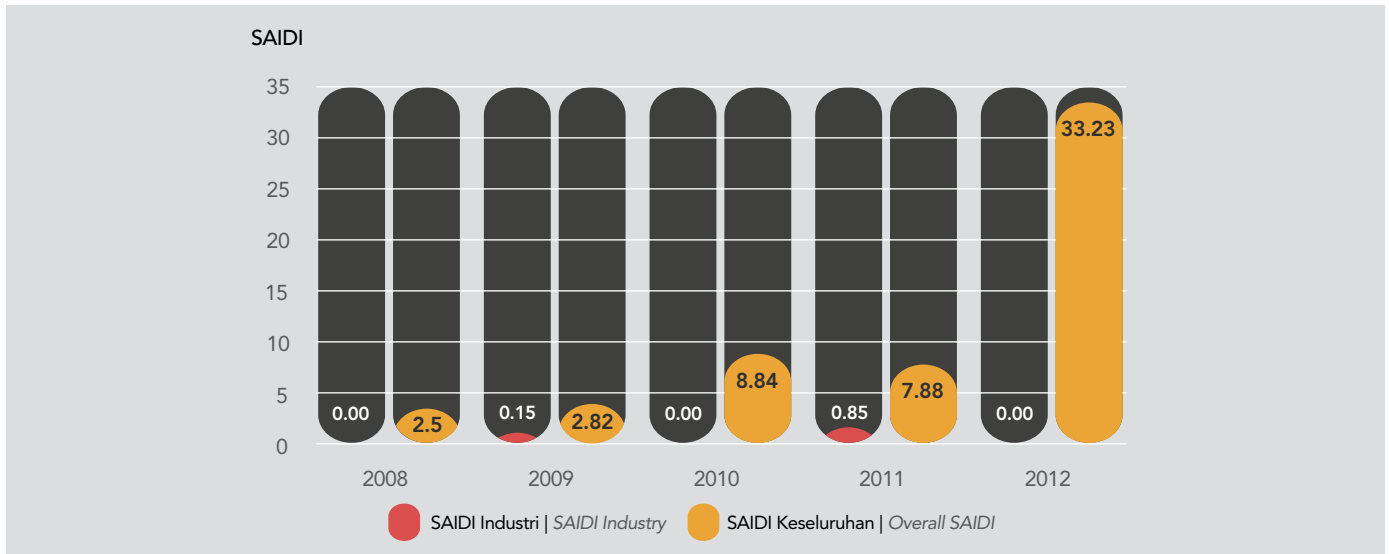
Chart.9: Percentage of Unscheduled Supply Interruption by Type of Interruptions



System Average Interruption Duration Index (SAIDI) of NUR Distribution

Carta 10: SAIDI (Minit/ Pelanggan/ Tahun)

Chart 10: SAIDI (Minutes/Customer/ Year)



Nota | Note:

SAIDI 2012 meningkat disebabkan kerosakan kabel 11kV pada April 2012 dan September 2012 yang melibatkan ramai pengguna. Kerosakan ini menyumbang sebanyak 29.2 minit/pelanggan/tahun atau 88 peratus daripada SAIDI keseluruhan tahun 2012

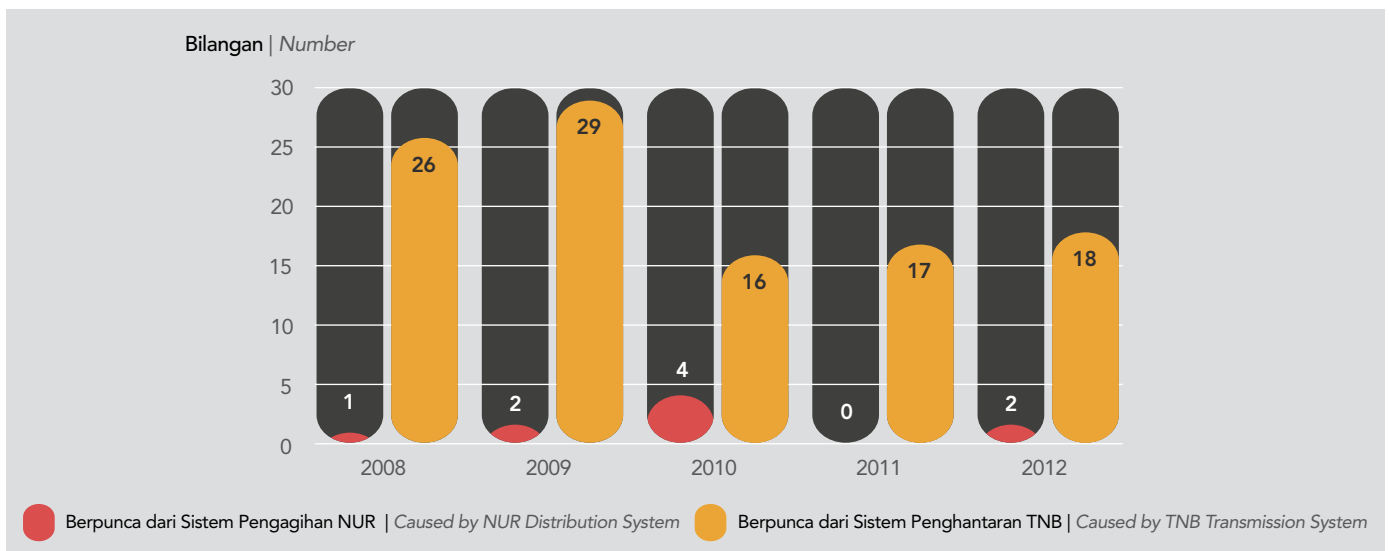
SAIDI 2012 increased due to fault of 11kV cable in April 2012 and September 2012 involving a big number of customers. The damages accounted for 29.2 minutes/customer/year or 88 percent of the overall SAIDI in 2012

Kualiti Pembekalan Elektrik NUR Distribution

NUR Distribution Electricity Supply Quality

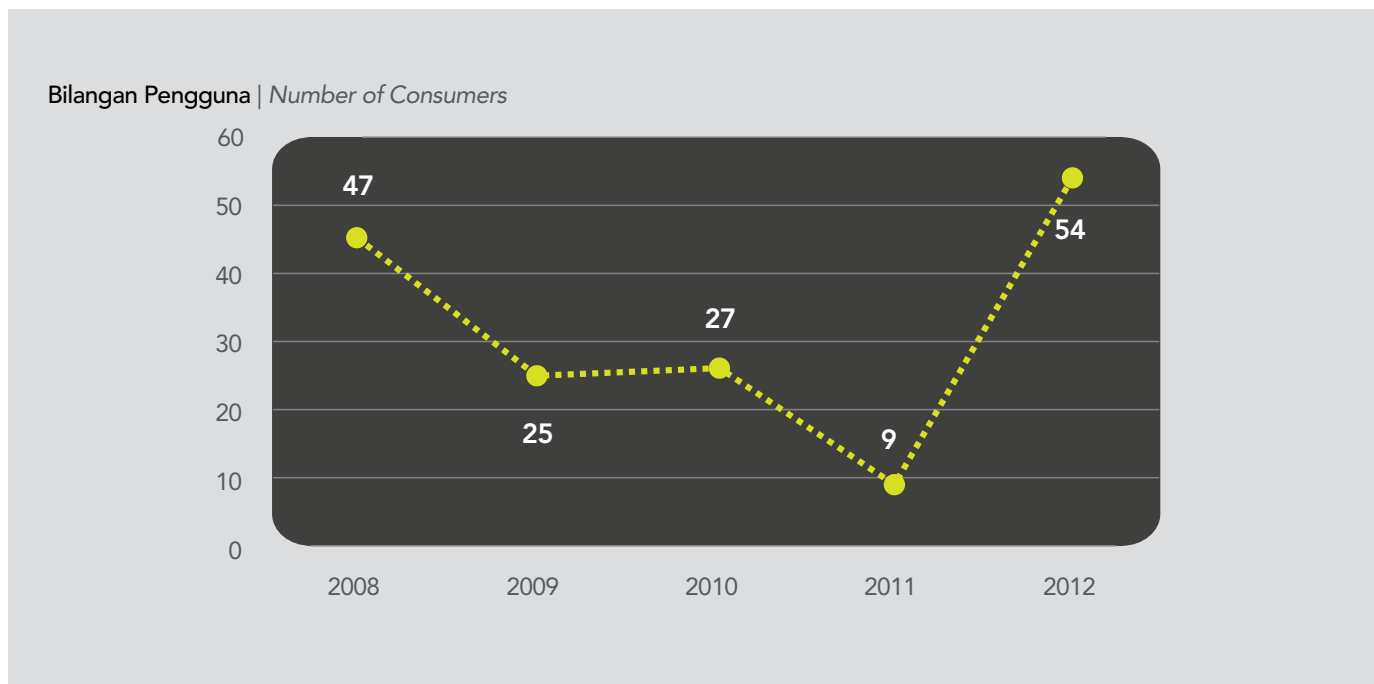
Carta 11: Kejadian Junaman Voltan yang Dilaporkan di KHTP

Chart 11: Reported Voltage Dips Incidents in KHTP



Carta 12: Bilangan Pengguna yang Terlibat dengan Insiden Junaman Voltan

Chart 12: Number of Consumers Involved in Voltage Dips Incidents



Jadual 20: SARFI (System Average RMS Frequency Index)

Table 20: SARFI (System Average RMS Frequency Index)

	2008	2009	2010	2011	2012
Berpunca Dari Sistem Pengagihan NUR Caused by NUR Distribution System	0	1	1	0	1
Berpunca Dari Sistem Penghantaran TNB Caused by TNB Transmission System	2	1	1	0	2

No.	Service Dimension	Service Indicator	Target	Penalty	Kedah	Selangor	Pulau Pinang	Johor	Perak	Kuala Lumpur	Pahang	Kelantan	Terengganu	Negeri Sembilan	Perlis	Melaka	Putrajaya/Cyberjaya	Total			
GSL 3	Providing Supply	Time taken to implement service connection (underground cable) requiring low voltage cable installation work	21 working days	RM50	259	1,647	409	715	336	1,438	368	291	360	273	84	286	88	6,554			
		Total service connection			42	236	98	40	48	21	34	31	0	6	14	686					
		Total service connection not completed in 21 working days			2,100	11,800	4,900	2,000	2,400	1,050	1,700	550	0	300	700	34,300					
		Total penalty (RM)			12,736	19,017	11,862	19,091	15,358	7,674	8,872	8,387	1,756	6,084	153	130,652					
GSL 4	Providing Supply	Time taken to connect new electricity supply for individual domestic low voltage consumer	5 working days	RM50	146	452	62	281	105	335	13	19	8	41	0	11	2	1,475			
		Total supply connection			7,300	22,600	3,100	14,050	5,250	650	950	400	0	550	100	73,750					
		Total supply connection not completed in 5 working days																			
		Total penalty (RM)			113,227	132,595	78,362	86,442	128,968	39,891	47,830	70,255	9,427	39,646	9,883	965,949					
GSL 5	Customer Contact	Disconnection of supply according to the applicable legislation or disconnection procedures	0	RM100	0	0	1	0	0	2	0	0	0	0	0	0	0	3			
		Total disconnection			0	0	100	0	0	0	0	0	0	0	0	0	300				
		Total disconnection not done with procedures			1,676,130	1,652,370	1,313,100	1,204,240	1,152,440	820,000	285,230	143,030	45,610	4,050	1,030	9,233,630					
		Total penalty (RM)																			
Total Penalty in RM for GSL 1, 2, 3, 4, 5 according to states					9,233,630																
Total Penalty in RM - Nationwide (GSL 1, 2, 3, 4, 5)																					

Nota 1 Note:
 *GSL 1 & 2 hanya akan berkuatkuasa selepas Sistem Maklumat Korporat Geospasial (CGIS) disiapkan I GSL 1 & 2 will only take effects after the Corporate Geospatial Information System (CGIS) is completed
 Sumber 1 Source: Tenaga Nasional Berhad

Prestasi Perkhidmatan TNB (Minimum Service Level (MSL))
TNB Service Performance (Minimum Service Level (MSL))

No.	Service Indicator	Service Standard	Perlis	Melaka	Pulau Pinang	Negeri Sembilan	Pahang	Kuala Lumpur	Terengganu	Selangor	Putrajaya/Cyberjaya	Johor	Perak	Kedah	Kelantan	Total/Average %
1	Availability of Supply															
	1a. Minimum duration of notice for planned / scheduled interruptions of electricity supply	> 2 days	71	519	1,849	1,193	545	1,379	195	6,430	0	2,075	1,469	614	848	17,187
	Total notices served more than 2 days before planned/scheduled interruptions		71	517	1,838	1,188	537	1,352	190	6,336	0	2,042	1,452	605	819	16,947
	(%) Compliance		100.00	99.61	99.41	99.58	98.53	98.04	97.44	98.54	0	98.41	98.84	98.53	96.58	98.60
2	1b. Upon request, time taken to provide initial information to consumer who report on electricity interruptions															
	Total requests from consumers	< 1 hour	18,736	18,736	18,736	18,736	18,736	18,736	18,736	18,736	18,736	18,736	18,736	18,736	18,736	18,736
	Total requests replied within 1 hour		18,273	18,273	18,273	18,273	18,273	18,273	18,273	18,273	18,273	18,273	18,273	18,273	18,273	18,273
	(%) Compliance		97.53	97.53	97.53	97.53	97.53	97.53	97.53	97.53	97.53	97.53	97.53	97.53	97.53	97.53
2	Quality of Supply															
	2a. Time taken to rectify voltage complaint or limit violation	< 2 days	0	1	4	38	0	1	155	12	0	0	6	1	5	223
	Total complaints received		0	1	4	35	0	1	153	10	0	0	5	1	3	213
	(%) Compliance		0	100.00	100.00	92.11	0	100.00	98.71	83.33	0	0	83.33	100.00	60.00	95.52
2	2b. Time taken to correct voltage complaint which requires network reinforcement	< 180 days	0	1	2	1	0	0	0	0	0	0	0	2	1	7
	Total complaints received		0	1	2	1	0	0	0	0	0	0	0	2	1	7
	Total complaints solved within 180 days		0	100.00	100.00	100.00	0	0	0	0	0	0	0	100.00	100.00	100.00
	(%) Compliance		0	100.00	100.00	100.00	0	0	0	0	0	0	0	100.00	100.00	100.00

No.	Service Indicator	Service Standard	Perlis	Melaka	Pulau Pinang	Negeri Sembilan	Pahang	Kuala Lumpur	Terengganu	Selangor	Putrajaya/Cyberjaya	Johor	Perak	Kedah	Kelantan	Total/Average %	
5	5b. Time taken to respond to metering problem or dispute upon official notification/request by the consumer (replace, relocate, etc) No. of meter replacement/relocation completed No. of meter replacement/relocation completed within 3 working days (%) Compliance	< 3 working days	61	227	191	237	75	71	32	379	3	501	175	23	183	2,158	
			61	226	181	234	73	70	369	32	369	3	492	172	23	169	2,105
			100.00	99.56	94.76	98.73	97.33	98.59	97.36	100.00	98.20	100.00	98.29	100.00	92.35	97.54	
			898,850	3,568,540	7,028,265	4,836,680	5,247,117	12,422,353	3,716,187	19,349,928	13,543,473	9,758,430	7,369,870	4,884,444	93,183,471		
			898,849	3,568,531	7,028,243	4,836,645	5,246,968	12,422,264	3,716,184	19,347,257	13,542,605	9,758,420	7,367,642	4,884,437	93,177,352		
	(%) Compliance	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.99	100.00	100.00	99.99	99.97	100.00	99.99		
	Average 12 month (% Compliance)	99.12	98.28	98.15	97.47	97.21	97.01	96.99	96.55	96.50	96.41	95.57	93.32	97.19			
	Average 12 month (% Compliance)	97.19															

Sumber | Source: Tenaga Nasional Berhad

Prestasi Perkhidmatan NUR Distribution

NUR Distribution Service Performance

Details	2008	2009	2010	2011	2012
1. Connection of Electricity Supply					
A. Change of Consumers					
• No. of applications	21	6	13	63	47
• Percentage of connection within 1 working day after an appointment for connection	100%	100%	100%	100%	100%
B. New Supply (Low Voltage)					
i. Individual Applications Under Normal Conditions					
• No. of applications	144	120	594	207	162
• Percentage of connection within 1 working day after an appointment for connection	100%	100%	100%	100%	100%
ii. Bulk Supply Application And Housing Schemes					
• No. of applications	0	0	0	0	0
• Percentage of connection within 1 week after an appointment for connection	n/a	n/a	n/a	n/a	n/a
2. Supply Restoration After Breakdowns					
i. Reports					
• No. of reports	0	0	0	0	0
• Percentage of consumers being given report numbers	n/a	n/a	n/a	n/a	n/a
ii. Minor Breakdowns					
• No. of minor breakdowns	20	13	33	40	11
• Percentage of breakdown rectified within 2 hours	100%	86.7%	93.9%	80.0%	72.7%
iii. Major/Extra Ordinary Breakdowns					
• No. of major breakdowns	15	15	20	41	42
• Percentage of restoration within 24 hours	100%	100%	85%	95.12%	97.6
3. Supply Reconnection After Disconnection					
• No. of supply disconnections	92	85	33	122	181
• No. of consumer bills paid before 1:00 p.m. on disconnection day	92	85	33	122	181
• Percentage of supply reconnection on the same day or bills paid before 1:00 p.m.	100%	100%	100%	100%	100%
4. Supply Interruptions Which Are Planned / Scheduled					
• No. of scheduled interruptions	32	40	46	79	77
• Percentage of consumers given 7 days notice before scheduled interruptions	88%	95%	91.3%	91.1%	98.7%
5. Meter Reading					
• No. of consumers with estimated readings exceeding 2 consecutive months	59	32	73	23	46
• Notice given to customers with estimated readings exceeding 2 consecutive months (%)	100%	100%	100%	100%	100%
6. Enquiries / Written Complaints From Consumers					
i. Written Enquiries Including Question Regarding Accounts/Bills					
• No. of written complaints received	61	115	93	84	82
• Percentage of reply within 5 working days	100%	100%	100%	100%	100%

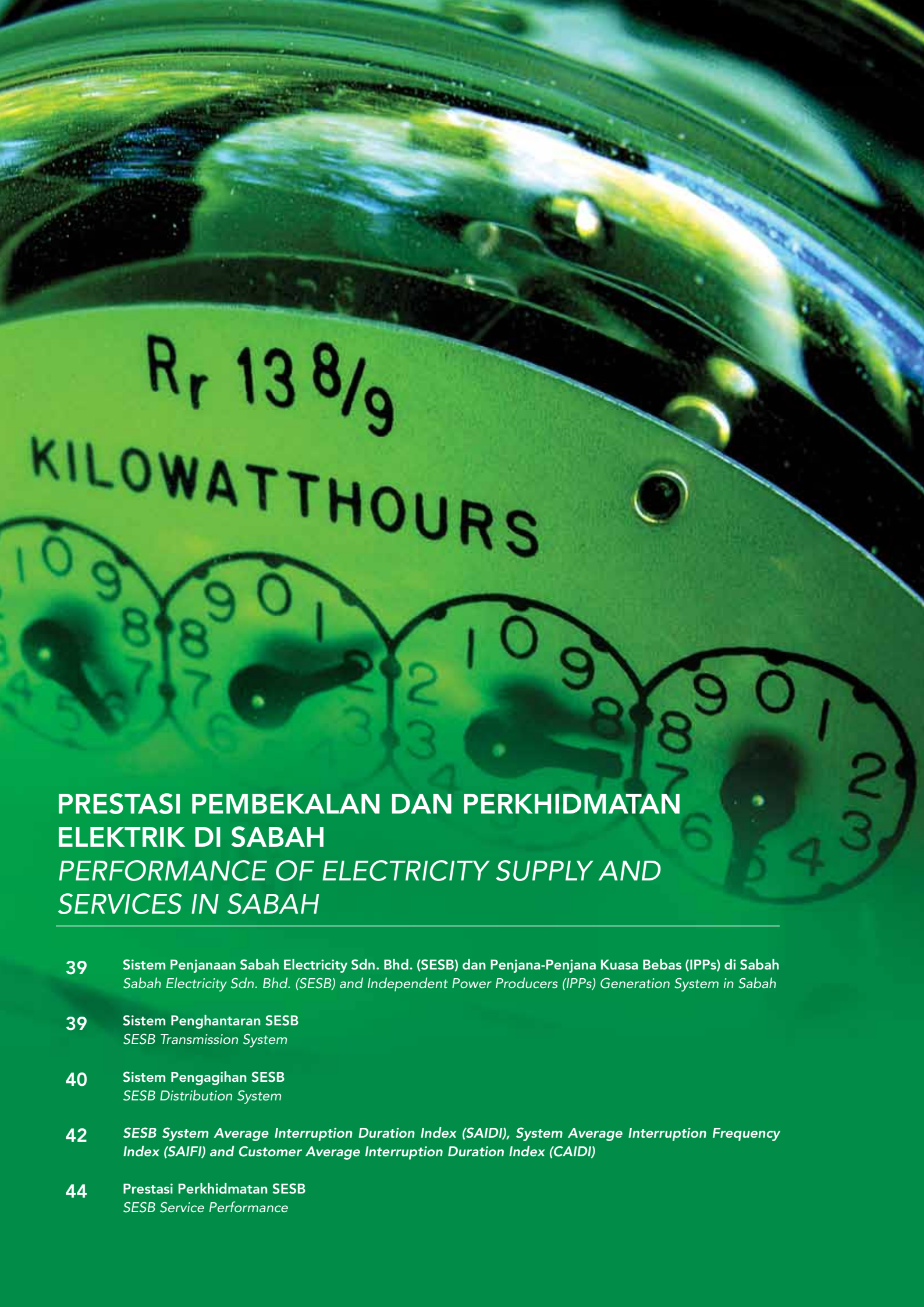
Details	2008	2009	2010	2011	2012
7. Service Counter					
• Percentage of consumers that the waiting time should not exceed 20 minutes	n/a	n/a	n/a	n/a	n/a
8. Appointment for Meter Accuracy Check					
• No. of appointments for meter accuracy check	14	5	8	6	1
• Percentage of meter accuracy check carried out within 1 working day	100%	100%	100%	100%	100%
9. Meter Replacement					
• No. of meter replacement	9	5	3	9	12
• Percentage of meter replacement within 2 working days	100%	100%	100%	100%	100%
10. Appointment With Consumers					
i. For Appointments Outside NUR Premises					
• No. of appointments where NUR officers arrived not later than 15 minutes from the agreed time	316	184	648	276	265
ii. Postponement by NUR					
• Percentage of subsequent appointment made within 1 working day	100%	100%	98.5%	100%	100%
11. Deposits					
• No. of consumers found after 6 months that their deposits exceed average consumption of 2 months	0	0	0	0	0
• Percentage of consumers who have the excess deposits returned	n/a	n/a	n/a	n/a	n/a
12. Refund of Consumer Deposits					
• No. of consumers who have forwarded all required documents for refund of deposits	81	124	102	111	121
• Percentage of consumers who have their deposits refunded within 15 working days	100%	100%	100%	100%	100%
13. Collection					
• Percentage of proof of payment sent to payment via mail within 5 working days	100%	100%	100%	100%	100%
14. Supply Disconnection					
i. With 24 hours Notice					
• No. of disconnections due to dangerous consumer installations	0	0	0	0	0
• No. of disconnections due to suspicion of theft of electricity	0	0	0	0	0
• No. of disconnections due to electricity meter being damaged	0	0	0	0	0
ii. Without Any Notice					
• No. of disconnections due to failure to pay bills within 15 days after issuance of bill	0	0	0	0	0
• No. of disconnections due to failure to pay additional deposits within 7 days from the date of notice	94	86	45	142	145
• No. of disconnections of installations which are dangerous	0	0	0	9	0
15. Special Consumers Who Face Problems in Paying Electric Bills					
• No of handicapped and senior consumers who face problems in paying electric bills, and having special arrangements provided by NUR to collect from them	0	0	0	0	0

Details	2008	2009	2010	2011	2012
16. Voltage Outside Standard					
i. No Enhancement Work on Network is Required					
• No. of complaints	1	6	3	10	5
• Percentage of complaints settled within 2 days from the date of complaint	100%	100%	100%	100%	100%
ii. Network Enhancement Work is Required					
• No. of complaints	0	0	0	0	0
• Percentage of complaints settled within 6 months from the date of complaint	n/a	n/a	n/a	n/a	n/a
17. New / Increase of Supply Application Reply					
i. No New Substation Required					
• No. of applications	10	3	7	12	12
• Percentage of applications being replied within 1 weeks from the date of application	100%	100%	100%	100%	100%
ii. New Substation Required					
• No. of applications	3	2	0	4	0
• Percentage of applications being replied within 2 weeks from the date of application	100%	100%	n/a	100%	n/a
18. Transferring of Meter Location Upon Consumer Request					
• No. of applications for transferring of meter location upon consumer which was felt as necessary and applicable	9	2	7	8	14
• Percentage of applications which was necessary and being felt an applicable was settled within 7 working days	100%	100%	100%	100%	100%
19. Education of Energy Efficiency					
• No. of consumers education programmes on energy efficiency and electricity accident, including the activities near installation and electricity lines	4	4	4	4	4
20. Power Quality Improvement					
• No. of activities to improve power quality	49	66	49	61	56

Nota | Note:

n/a Tiada Maklumat | Not Available

Sumber | Source : NUR Distribution Sdn. Bhd.



PRESTASI PEMBEKALAN DAN PERKHIDMATAN ELEKTRIK DI SABAH *PERFORMANCE OF ELECTRICITY SUPPLY AND SERVICES IN SABAH*

- 39** **Sistem Penjanaan Sabah Electricity Sdn. Bhd. (SESB) dan Penjana-Penjana Kuasa Bebas (IPPs) di Sabah**
Sabah Electricity Sdn. Bhd. (SESB) and Independent Power Producers (IPPs) Generation System in Sabah
- 39** **Sistem Penghantaran SESB**
SESB Transmission System
- 40** **Sistem Pengagihan SESB**
SESB Distribution System
- 42** **SESB System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI)**
- 44** **Prestasi Perkhidmatan SESB**
SESB Service Performance

Sistem Penjanaan Sabah Electricity Sdn. Bhd. (SESB) dan Penjana-Penjana Kuasa Bebas (IPPs) di Sabah

Sabah Electricity Sdn. Bhd. (SESB) and Independent Power Producers (IPPs) Generation System in Sabah

Jadual 1: Purata Kecekapan Thermal (%), Faktor Kesediaan Setara (EAF) (%) dan Faktor Henti Tugas Tidak Berjadual Setara (EUOF) (%)

Table 1: Average Thermal Efficiency (%), Equivalent Availability Factor (EAF) (%) and Equivalent Unplanned Outage Factor (EUOF) (%)

Jenis Loji Plant Type	Purata Kecekapan Thermal Average Thermal Efficiency (%)				EAF (%)				EUOF (%)			
	2011		2012		2011		2012		2011		2012	
	SESB	IPP	SESB	IPP	SESB	IPP	SESB	IPP	SESB	IPP	SESB	IPP
Kitar Padu Combined Cycle	24.90	38.05	26.73	38.72	70.91	95.19	73.43	93.92	11.49	3.31	6.59	1.88
Disel I Diesel	29.06	38.69	27.72	38.20	58.53	71.72	60.76	74.57	30.79	27.06	20.77	23.66
Hidro I Hydro	-	-	-	-	90.68	-	86.23	-	0.94	-	10.34	-

Sistem Penghantaran SESB

SESB Transmission System

Jadual 2: Pelantikan Bulanan bagi Sistem Penghantaran dengan Kehilangan Beban sebanyak 50 MW ke Atas

Table 2: Monthly Trippings of Transmission System with Load Loss of Above 50 MW

Petunjuk Indicator	Jan Jan	Feb Feb	Mac Mar	Apr Apr	Mei May	Jun June	Jul Jul	Ogos Aug	Sept Sept	Okt Oct	Nov Nov	Dis Dec
Bilangan Pelantikan Tanpa Lucutan Beban Number of Trippings Without Load Shedding	1	0	1	1	1	1	0	0	0	0	0	0
Bilangan Pelantikan Dengan Lucutan Beban Number of Trippings With Load Shedding	0	0	0	0	0	0	0	0	0	0	0	0
Kehilangan Beban Maksimum (MW) Maximum Load Losses (MW)	59.06	-	86.01	475	89.56	69.03	-	-	-	-	-	-
Tenaga Yang Tidak Dibekalkan Semasa Pelantikan (MWj) Unsupplied Energy During Trippings (MWh)	186.56	-	173.34	2,722.53	341.10	73.50	-	-	-	-	-	-
Purata Tenaga Tidak Dibekalkan Setiap Pelantikan (MWj) Average Unsupplied Energy During Trippings (MWh)	186.56	-	173.34	2,722.53	341.10	73.50	-	-	-	-	-	-
Purata Tempoh Setiap Pelantikan (Jam: Minit) Average Duration Per Tripping (Hour: Minutes)	4:58	-	3:38	14:56	6:32	1:46	-	-	-	-	-	-
Tenaga Tidak Dibekalkan Semasa Lucutan Beban (MWj) Unsupplied Energy During Load Shedding (MWh)	0	-	0	0	0	0	-	-	-	-	-	-

Jadual 3: Delivery Point Unreliability Index (DePUI) - System Minutes SESB

Table 3: Delivery Point Unreliability Index (DePUI) - System Minutes SESB

Tahun Year	2008	2009	2010	2011	2012
Termasuk Bekalan Elektrik Terputus <i>Including Blackout</i>	154.38	-	-	-	263.91*
Tidak Termasuk Bekalan Elektrik Terputus <i>Excluding Blackout</i>	11.89	31.58	20.21	40.13	67.12

Nota | Note:

* Termasuk 5 insiden besar | Including 5 major incidents

Tahun Kewangan 2011/12 | Financial Year 2011/12

Jadual 4: Insiden Pelantikan bagi Talian/Kabel per 100 cct-km mengikut Tahap Voltan

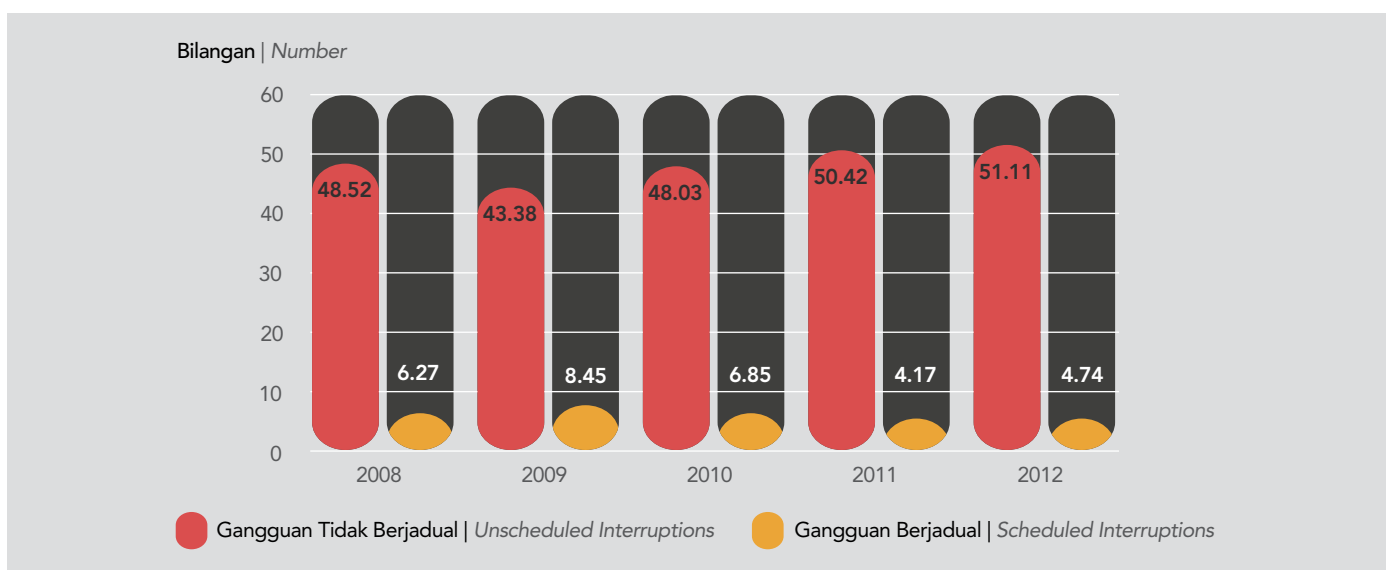
Table 4: Lines/Cables Tripping Incidents per 100 cct-km by Voltage Level

Tahap Voltan Voltage Level	2008	2009	2010	2011	2012
275kV	-	0.2	0.2	0.2	0
132kV	0.28	0.44	0.12	0.42	1.08
66kV	5.51	4.34	16.34	6.68	5.56

Tahun Kewangan 2011/12 | Financial Year 2011/12

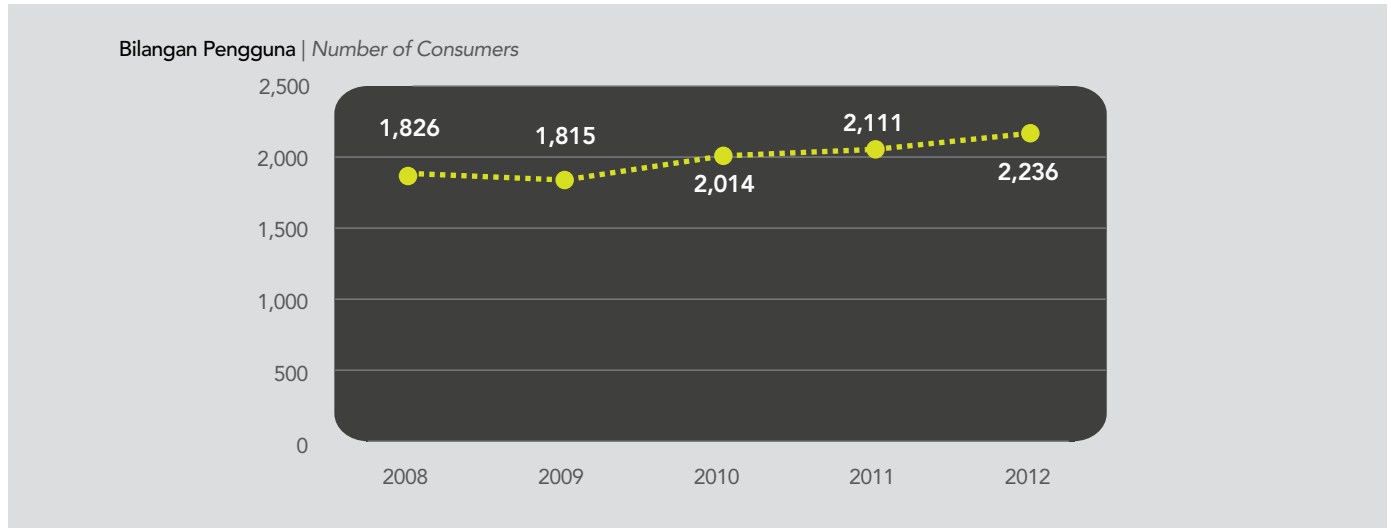
Sistem Pengagihan SESB*SESB Distribution System***Carta 1: Gangguan Bekalan Elektrik per 1,000 Pengguna**

Chart 1: Electricity Supply Interruptions per 1,000 Consumers



Nota | Note :

Tidak termasuk gangguan pada sistem penjanaan dan penghantaran | Excluding the interruptions at generation and transmission system

Carta 2: Purata Bulanan Gangguan Bekalan Elektrik**Chart 2: Monthly Average Electricity Supply Interruptions**

Nota | Note :

Tidak termasuk gangguan pada sistem penjanaan dan penghantaran | Excluding the interruptions at generation and transmission system

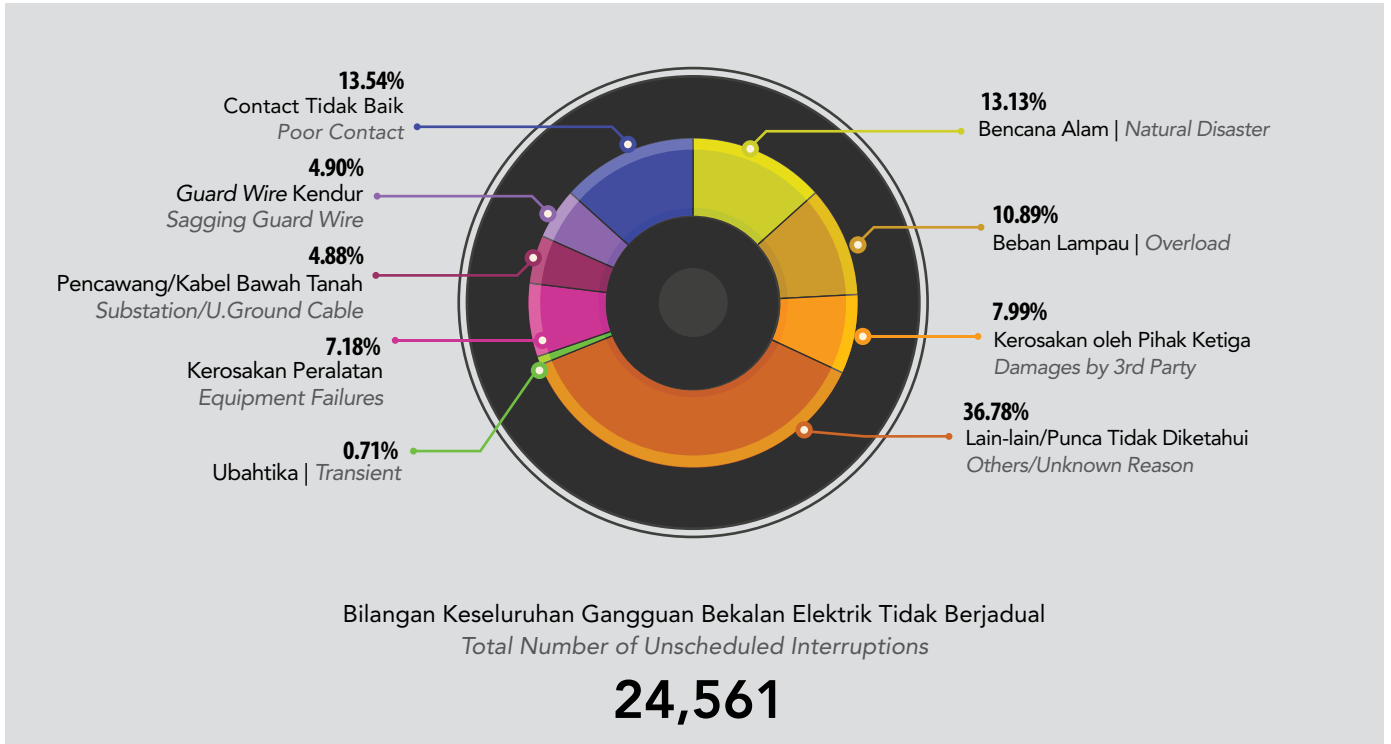
Jadual 5: Bilangan Gangguan Bekalan Elektrik**Table 5: Number of Electricity Supply Interruptions**

Bilangan Number	2008	2009	2010	2011	2012
Gangguan Tidak Berjadual <i>Unscheduled Interruptions</i>	19,484	18,228	21,157	23,397	24,561
Gangguan Berjadual <i>Scheduled Interruptions</i>	2,427	3,550	3,016	1,937	2,280
Jumlah Gangguan <i>Total Interruptions</i>	21,911	21,778	24,173	25,334	26,841

Nota | Note:

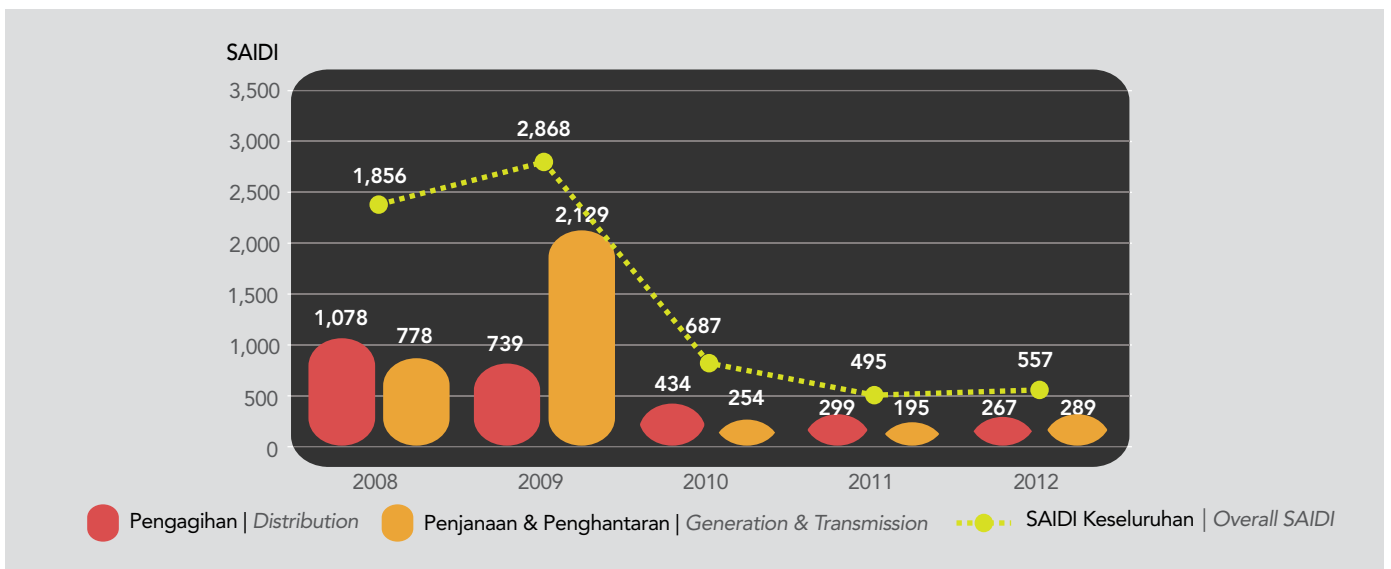
Tidak termasuk gangguan pada sistem penjanaan dan penghantaran | Excluding interruptions at generation and transmission systems

Carta 3: Peratus Gangguan Bekalan Elektrik Tidak Berjadual mengikut Jenis Gangguan
 Chart 3: Percentage of Unscheduled Supply Interruption by Type of Interruptions

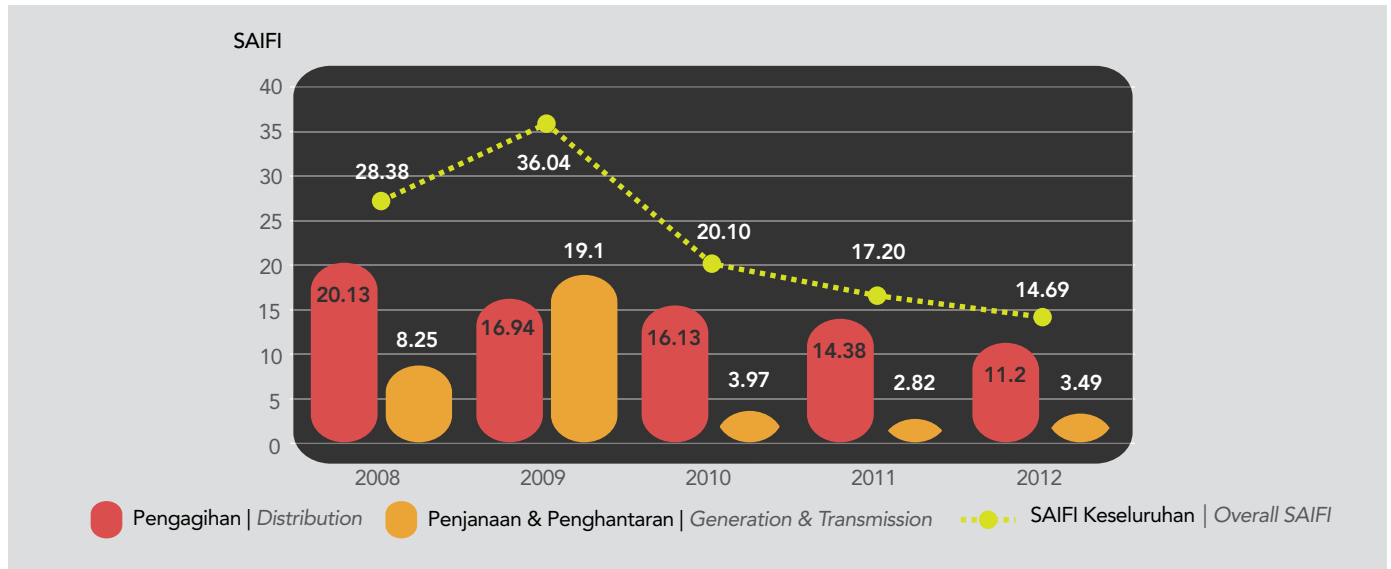


SESB System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI)

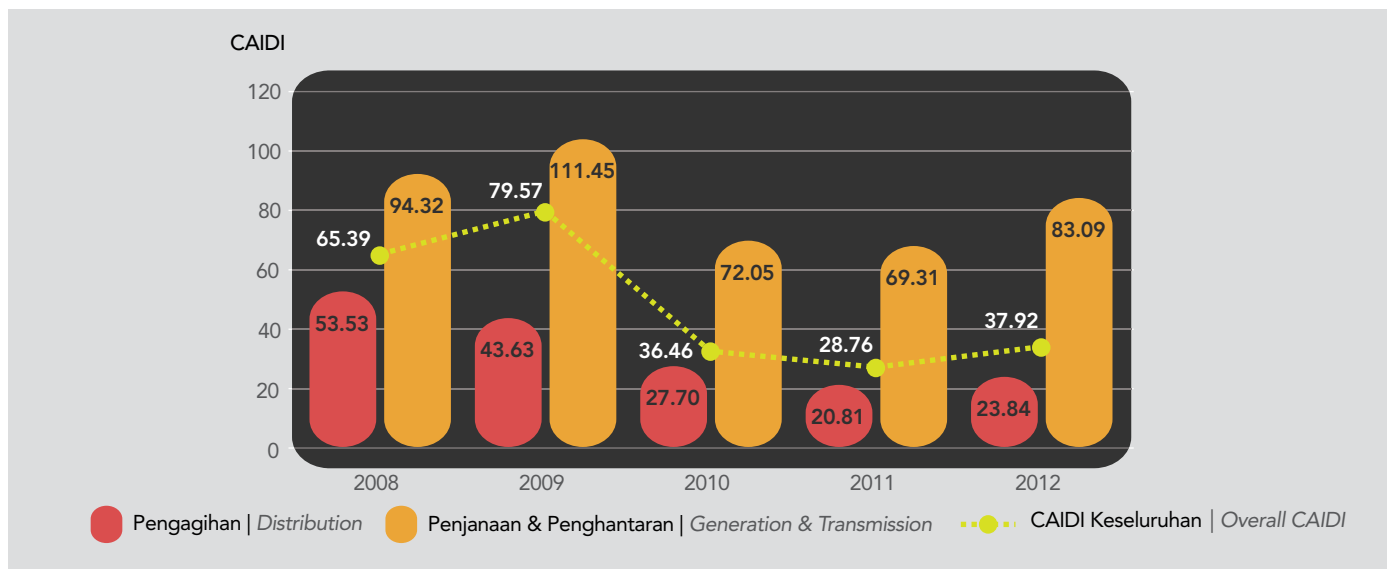
Carta 4: SAIDI (Minit/Pelanggan/Tahun)
 Chart 4: SAIDI (Minutes/Customer/Year)



Carta 5: SAIFI (Bilangan Gangguan/Pelanggan/Year)
 Chart 5: SAIFI (Number of Interruptions/Customer/Year)



Carta 6: CAIDI (Minit/Pelanggan Terlibat/Tahun)
 Chart 6: CAIDI (Minutes/Involved Customer/Year)



Prestasi Perkhidmatan SESB

SESB Service Performance

Details	2008	2009	2010	2011	2012
1. Connection of Electricity Supply					
A. Change of Consumers					
• No. of applications	7,638	6,893	7,600	12,209	8,725
• Percentage of connection within 1 working day after an appointment for connection	90.0%	79.0%	80.9%	92.0%	95.8%
B. New Supply (Low Voltage)					
i. Individual Applications Under Normal Conditions	11,741	12,491	15,742	17,000	19,385
• No. of applications	68.6%	62.4%	67.6%	70.0%	89.6%
• Percentage of connection within 2 working days after an appointment for connection					
ii. Bulk Supply Application And Housing Schemes					
• No. of applications	6,352	6,340	6,645	5,493	4,850
• Percentage of connection within 2 weeks after an appointment for connection	89.9%	96.7%	91.6%	94.6%	97.0%
2. Supply Restoration After Breakdowns					
i. Complaints	248,957	190,251	209,508	55,638	76,664
• No. of complaints	2,819	3,775	5,897	52,856	66,455
• No. of consumers where the information not available at that time was contacted again within 15 minutes					
• Percentage of consumers being given complaint numbers	95.0%	95.0%	95.5%	37.85%	98.0%
• Percentage of consumers where the information not available at that time was contacted again within 15 minutes	1.13%	1.9%	2.8%	95.0%	86.7%
ii. Minor Breakdowns					
• No. of minor breakdowns	20,268	17,981	19,513	19,547	22,415
• Percentage of breakdown rectified within 2 hours	92.8%	93.0%	99.0%	95.0%	91.3%
iii. Major/Extra Ordinary Breakdowns					
• No. of major breakdowns	404	618	452	2,743	3,406
• Percentage of restoration within 12 hours	96.5%	95.9%	97.1%	97.01%	85.5%
3. Supply Reconnection After Disconnection					
• No. of supply disconnections	86,317	80,142	89,166	127,786	124,745
• Bills paid before 1.00 p.m. on disconnection day	60,421	48,330	52,393	70,865	115,770
• Percentage of supply reconnection on the same day for bills paid before 1.00 p.m.	70.0%	60.3%	58.8%	55.46%	92.8%
4. Supply Interruptions Which Are Planned / Scheduled					
i. Scheduled Interruptions					
• No. of scheduled interruptions	3,020	4,980	5,020	504	601
• Percentage of consumers being given notice within 7 days before interruptions	70.0%	71.0%	81.8%	80.0%	92.3%
ii. Planning of Scheduled Interruptions					
• No. of yearly and monthly planning of scheduled interruptions	332	337	339	231	157
• No. of affected consumers	78,625	6,579	73,901	3,421	3,462
• Percentage of affected consumers informed about the planning of scheduled interruptions	93.8%	99.7%	99.9%	94.01%	97.0%
5. Meter Reading					
• No. of consumers with estimated readings exceeding 3 consecutive months	6,762	5,177	6,843	33,335	14,211
• Percentage of notice given to consumers with estimated readings exceeding 3 consecutive months	50.0%	50.9%	58.4%	55.0%	95.9%

Details	2008	2009	2010	2011	2012
6. Enquiries / Written Complaints From Consumers					
i. Written Enquiries					
• No. of written enquiries received	2,695	598	708	432	485
• Percentage of reply within 5 working days	80.0%	71.7%	83.3%	81.94%	96.9%
ii. Enquiries Through Telephone					
• No. of unresolved complaints made through telephone	22,572	27,296	19,936	24,488	26,522
• No. of consumers with unresolved complaints recontacted within 24 hours	1,598	2,297	2,744	3,791	25,545
• Percentage of consumers with unresolved complaints recontacted within 24 hours	7.1%	8.4%	13.8%	15.48%	96.3%
iii. Enquiries in Counter					
• No. of unresolved complaints made at counter	43,085	59,538	41,769	52,324	51,209
• No. of consumers with unresolved complaints recontacted within 24 hours	5,009	3,565	2,821	7,220	38,123
• Percentage of consumers with unresolved complaints recontacted within 24 hours	11.6%	5.9%	6.8%	13.80%	74.5%
7. Service Counter					
• No. of consumers who were getting services at the counter	268,142	246,343	200,888	278,940	313,942
• Percentage of consumers with waiting time not exceeding 15 minutes	75.0%	60.4%	53.5%	52.76%	95.9%
8. Appointment for Meter Accuracy Check					
• No. of appointments for meter accuracy check	1,425	1,388	1,726	1,502	1,344
• Percentage of meter accuracy check carried out within 2 working day	45.9%	44.8%	45.0%	78.03%	92.3%
9. Meter Replacement					
• No. of meter replacements	6,446	7,006	8,731	8,997	11,266
• Percentage of meter replacements within 2 working days from the date of application made	51.9%	52.0%	56.1%	61.35%	93.6%
10. Appointment With Consumers					
i. For Appointments Outside SESB Premises					
• Appointments where SESB officers arrived not later than the agreed time	90.5%	88.8%	84.1%	89.73%	93.1%
ii. Postponement by SESB					
• Percentage of subsequent appointment made within 1 working day	61.5%	67.6%	78.3%	71.15%	93.2%
11. Deposits					
• No. of consumers found after 6 months that their deposits exceed average consumption of 2 months	11,515	18,529	20,206	12,269	2,790
• Percentage of consumers who have the excess deposits returned	11.0%	2.6%	10.5%	10.9%	82.7%
12. Refund of Consumer Deposits					
• No. of consumers who have forwarded all required documents for refund of deposits	7,675	5,246	7,738	8,258	9,685
• Percentage of consumers who have their deposits refunded within 1 month	80.0%	96.5%	84.5%	85.0%	91.9%
13. Collection					
• Percentage of proof of payment sent via mail within 2 working days	93.0%	93.6%	93.9%	95.0%	99.2%

Details	2008	2009	2010	2011	2012
14. Supply Disconnection					
i. With 24 Hours Notice					
• No. of disconnections due to unsafe consumer installations	613	38	30	32	102
• No. of disconnections due to suspicion of electricity theft	90	54	22	102	138
• No. of disconnections due to electricity meter being tampered	19	32	15	1	16
ii. With More Than 24 Hours Notice					
• No. of disconnections due to failure to pay the bills within 30 days after issuance of bill and 7 days from the notice of disconnections	28,578	40,189	58,915	50,028	51,535
• Notice of disconnections due to failure to pay additional deposits within 7 days from notice date	115	254	134	86	0
iii. Without Any Notice					
• No. of disconnections due to unsafe installations	258	1,003	1,353	258	930
15. Special Group of Consumers Facing Difficulties In Order To Pay Electric Bills					
• No. of handicapped consumers who appealed to avoid disconnections	0	0	7	1	6
• No. of senior consumers who appealed to avoid disconnections	12	41	34	10	24
• No. of handicapped consumers who were assisted in the payment of bills	25	30	23	5	21
• No. of senior consumers who were assisted in the payment of bills	30	16	20	20	47
16. Voltage Incompliant With The Standards					
i. Not Requiring Enhancement Work on Network					
• No. of complaints	62	1,130	78	33	35
• Percentage of complaints settled within 2 days from the date of complaints	64.5%	38.9%	43.6%	100.0%	94.3%
ii. Requiring Enhancement Work on Network					
• No. of complaints	166	118	70	48	157
• Percentage of complaints settled within 3 months from the date of complaints	98.2%	68.6%	75.7%	97.92%	94.9%
17. Reply To New/Increase of Supply Application					
i. No New Substation Required					
• No. of applications	1,897	2,087	2,274	3,248	3,084
• Percentage of applications replied within 1 week from the date of application	72.9%	64.9%	76.2%	79.99%	94.2%
ii. New Substation Required					
• No. of applications	114	61	237	242	465
• Percentage of applications replied within 2 week from the date of application	86.8%	90.2%	73.4%	96.69%	99.8%
18. Transferring of Meter Location Upon Consumer Request					
• No. of applications for meter relocation	11	88	16	33	61
• Percentage of applications settled within 3 working days	68.8%	62.5%	68.8%	72.73%	98.0%
19. Education of Energy Efficiency					
• No. of education programmes on energy efficiency and safety, including activities near installations and electricity lines	11	19	23	6	56
20. Power Quality Improvement					
• No. of activities to improve power quality	379	446	454	269	184



PRESTASI PEMBEKALAN DAN PERKHIDMATAN ELEKTRIK DI SARAWAK *PERFORMANCE OF ELECTRICITY SUPPLY AND SERVICES IN SARAWAK*

- 48** **Sistem Penghantaran Sarawak Energy Berhad (SEB)**
Sarawak Energy Berhad (SEB) Transmission System
- 49** **Sistem Pengagihan SEB**
SEB Distribution System
- 51** **SEB System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI)**

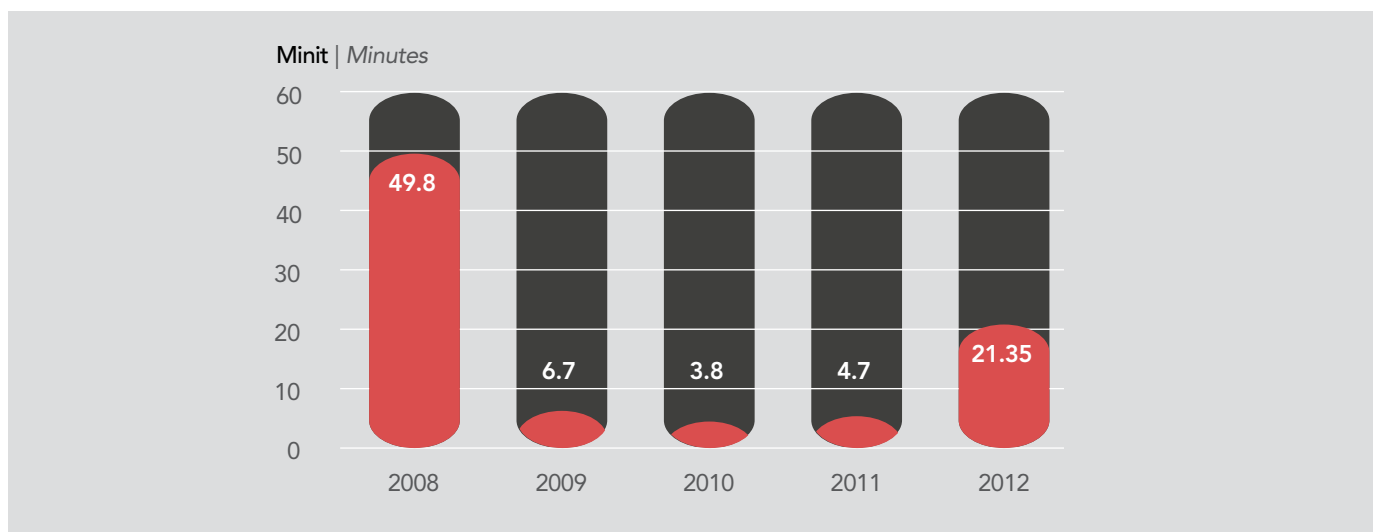
Sistem Penghantaran Sarawak Energy Berhad (SEB)

Sarawak Energy Berhad (SEB) Transmission System

Jadual 1: Pelantikan Sistem Penghantaran dengan Kehilangan Beban sebanyak 50 MW ke Atas
Table 1: Monthly Trippings of Transmission System with Load Loss of Above 50 MW

Petunjuk Indicator	Jan Jan	Feb Feb	Mac Mar	Apr Apr	Mei May	Jun June	Jul Jul	Ogos Aug	Sept Sept	Okt Oct	Nov Nov	Dis Dec
Bilangan Pelantikan Tanpa Lucutan Beban Number of Trippings Without Load Shedding	1	1	2	1	0	2	0	1	3	3	2	2
Bilangan Pelantikan Dengan Lucutan Beban Number of Trippings With Load Shedding	0	0	0	0	0	0	0	0	0	0	189	0
Kehilangan Beban Maksimum (MW) Maximum Load Losses (MW)	14	4	140	4	0	9	0	12	68	15	244	11
Tenaga Yang Tidak Dibekalkan Semasa Pelantikan (MWj) Unsupplied Energy During Trippings (MWh)	3	1	274	5	0	2	0	12	94	21	555	8
Purata Tenaga Tidak Dibekalkan Setiap Pelantikan (MWj) Average Unsupplied Energy During Trippings (MWh)	3	1	274	5	0	2	0	12	31	7	278	4
Purata Tempoh Setiap Pelantikan (Jam: Minit) Average Duration Per Tripping (Hour: Minutes)	12	22	172	80	0	30	0	60	77	86	417	48
Tenaga Tidak Dibekalkan Semasa Lucutan Beban (MWj) Unsupplied Energy During Load Shedding (MWh)	0	0	0	0	0	0	0	0	0	0	222	0

Carta 1: Delivery Point Unreliability Index (DePUI) - System Minutes SEB
Chart 1: Delivery Point Unreliability Index (DePUI) - System Minutes SEB

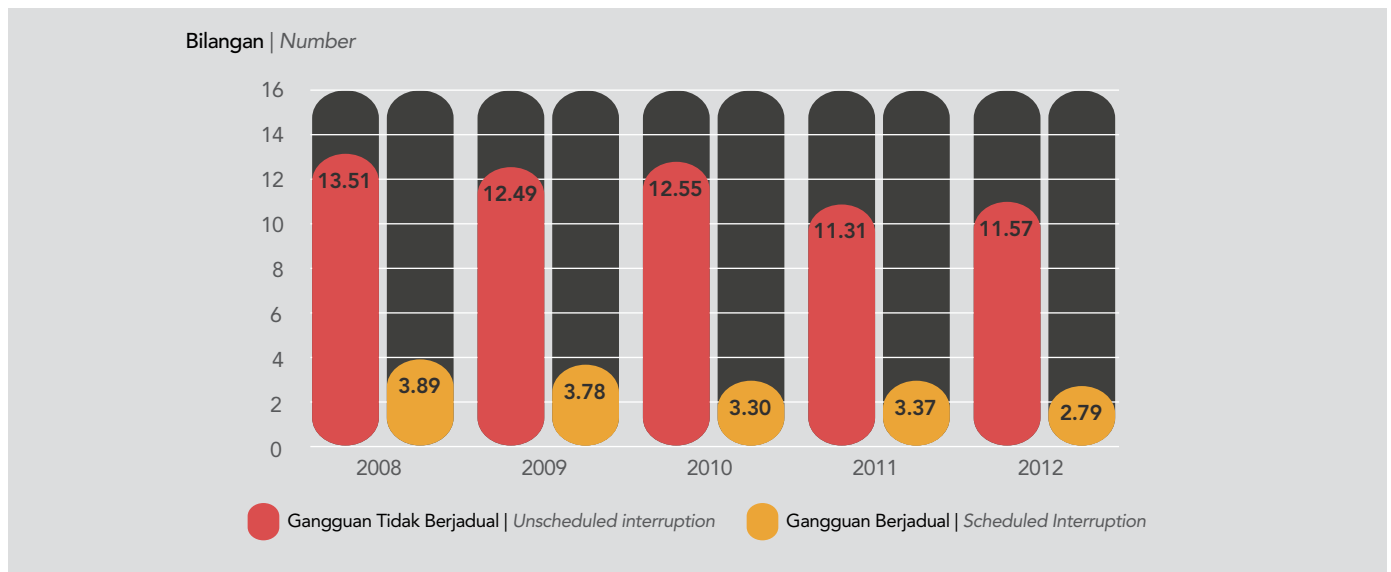


Sistem Pengagihan SEB

SEB Distribution System

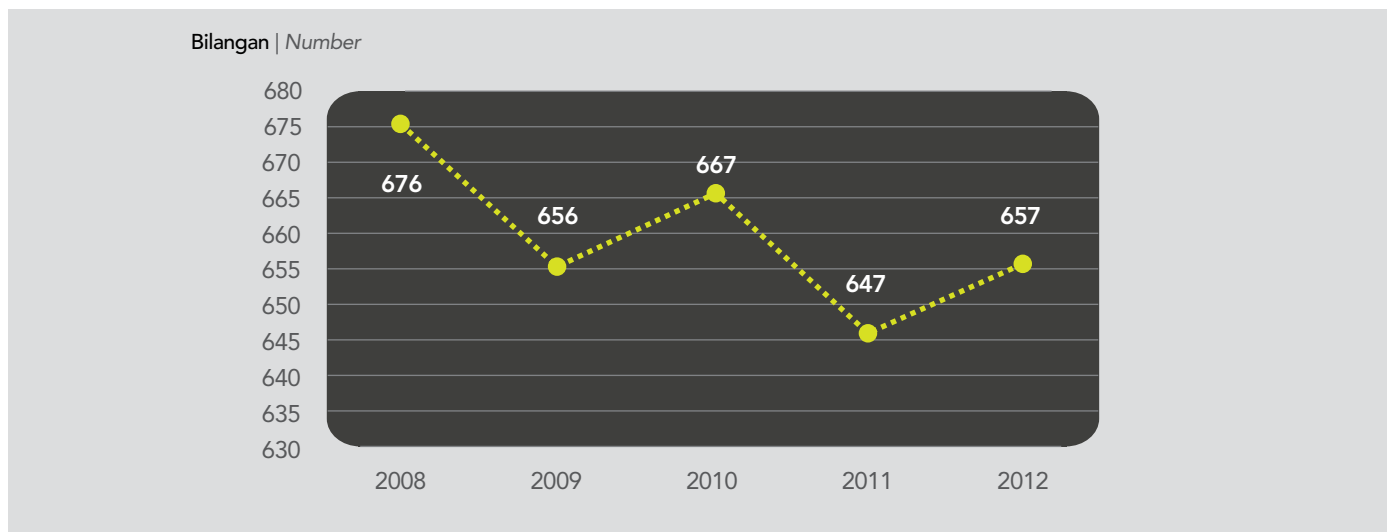
Carta 2: Gangguan Bekalan Elektrik per 1,000 Pengguna

Chart 2: Electricity Supply Interruptions per 1,000 Consumers



Carta 3: Purata Gangguan Bekalan Elektrik Bulanan

Chart 3: Monthly Average Electricity Supply Interruptions



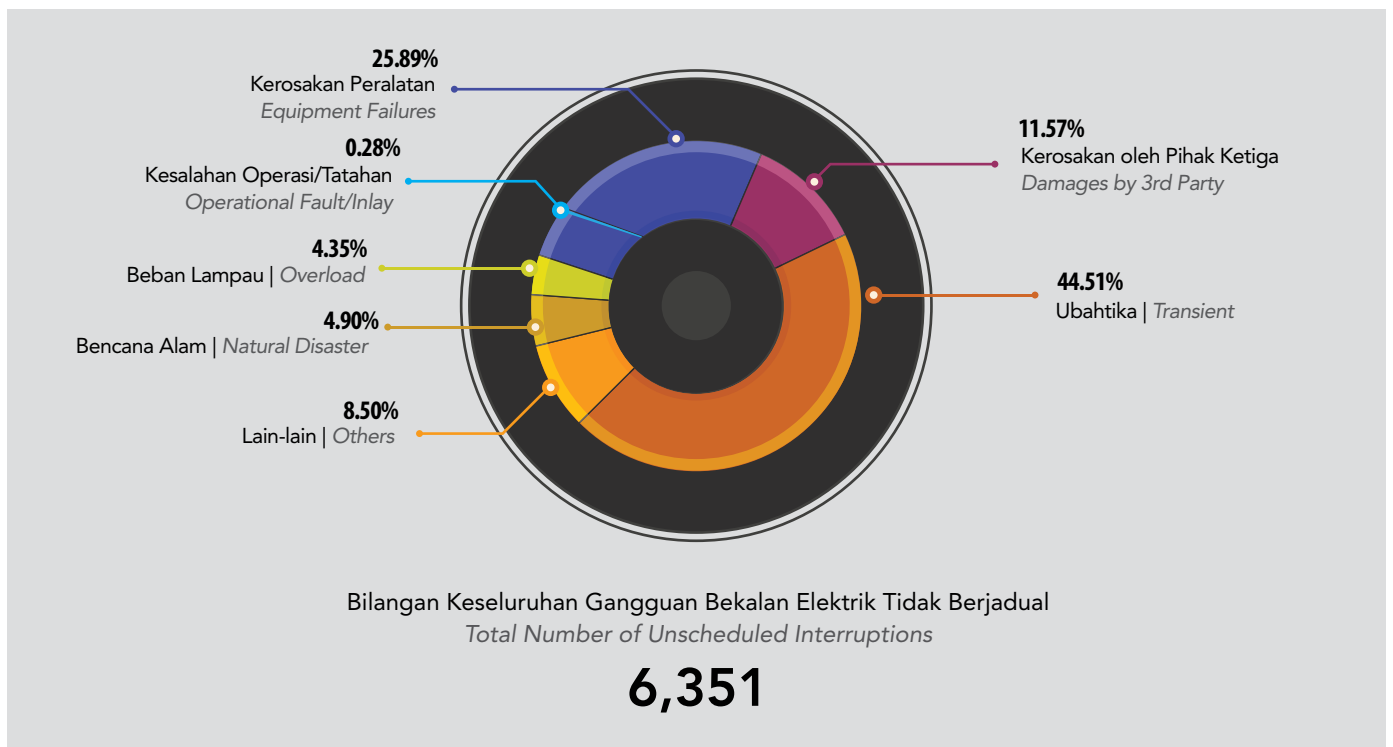
Jadual 2: Bilangan Gangguan Bekalan Elektrik

Table 2: Number of Electricity Supply Interruptions

Bilangan Number	2008	2009	2010	2011	2012
Gangguan Tidak Berjadual <i>Unscheduled Interruptions</i>	6,301	6,040	6,338	5,976	6,351
Gangguan Berjadual <i>Scheduled Interruptions</i>	1,816	1,828	1,665	1,783	1,530
Jumlah Gangguan <i>Total Interruptions</i>	8,117	7,868	8,003	7,759	7,881

Carta 4: Peratus Gangguan Bekalan Elektrik Tidak Berjadual mengikut Jenis Gangguan

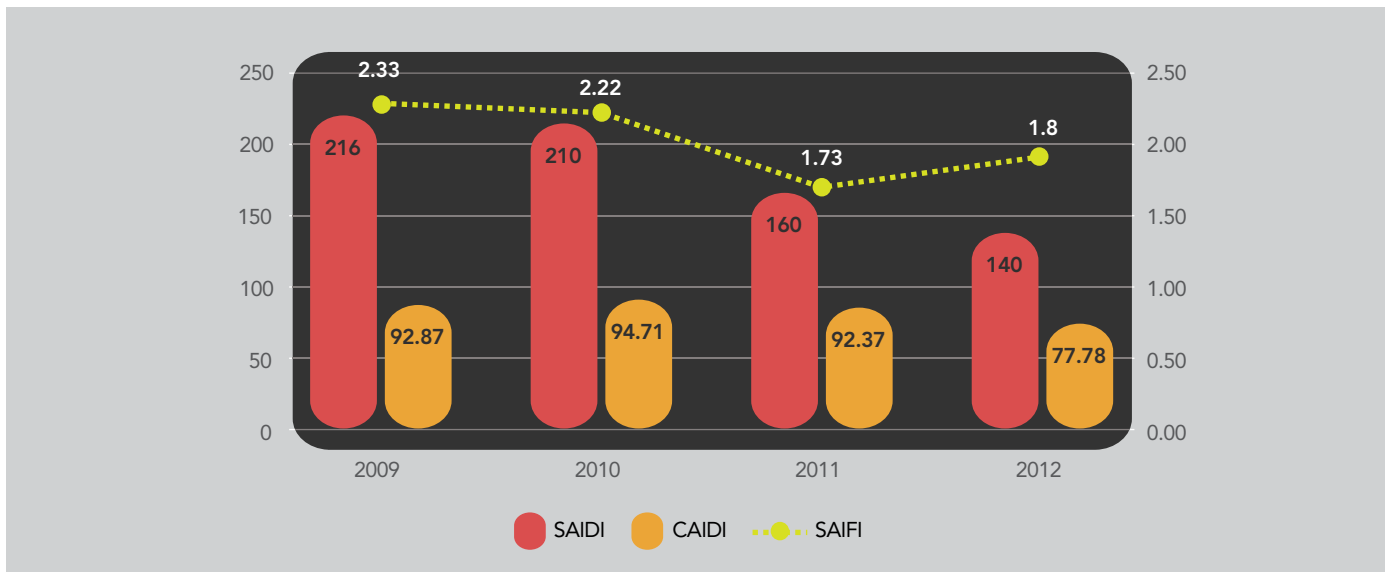
Chart 4: Percentage of Unscheduled Supply Interruption by Type of Interruptions



SEB System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI)

Carta 5: SAIDI (Minit/ Pelanggan/ Tahun), SAIFI (Bilangan Gangguan/Pelanggan/Tahun), CAIDI (Minit/Pelanggan Terlibat/Tahun)

Chart 5: SAIDI (Minutes/Customer/ Year, SAIFI (Number of Interruptions/Customer/Year), CAIDI (Minutes/Involved Customer/Year)



HARGA TENAGA ELEKTRIK
ELECTRICITY PRICES



TARIF-TARIF ELEKTRIK DI MALAYSIA *ELECTRICITY TARIFFS IN MALAYSIA*

- 54** **Tarif-Tarif Elektrik bagi Tenaga Nasional Berhad (TNB)**
Electricity Tariffs for Tenaga Nasional Berhad (TNB)
- 59** **Tarif-Tarif Elektrik bagi Sabah Electricity Sdn. Bhd (SESB)**
Electricity Tariffs for Sabah Electricity Sdn. Bhd (SESB)
- 60** **Tarif-Tarif Elektrik bagi Sarawak Energy Berhad (SEB)**
Electricity Tariffs for Sarawak Energy Berhad (SEB)

Tarif-Tarif Elektrik bagi Tenaga Nasional Berhad (TNB)

Electricity Tariffs for Tenaga Nasional Berhad (TNB)

Jadual 1: Tarif Elektrik TNB mengikut Sektor (Berkuat Kuasa 1 Jun 2011)
Table 1: TNB Electricity Tariff by sector (Effective 1st June 2011)

Kategori Tarif Tariff Category	Unit	Kadar Rates
Tarif A – Tarif Kediaman I Tariff A – Domestic Tariff		
200 kWj pertama (1–200 kWj) sebulan <i>For the first 200 kWh (1-200 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	21.80
100 kWj berikutnya (201–300 kWj) sebulan <i>For the next 100 kWh (201-300 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	33.40
100 kWj berikutnya (301–400 kWj) sebulan <i>For the next 100 kWh (301-400 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	40.00
100 kWj berikutnya (401–500 kWj) sebulan <i>For the next 100 kWh (401-500 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	40.20
100 kWj berikutnya (501– 600 kWj) sebulan <i>For the next 100 kWh (501-600 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	41.60
100 kWj berikutnya (601- 700 kWj) sebulan <i>For the next 100 kWh (601-700 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	42.60
100 kWj berikutnya (701- 800 kWj) sebulan <i>For the next 100 kWh (701-800 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	43.70
100 kWj berikutnya (801- 900 kWj) sebulan <i>For the next 100 kWh (801-900 kWh) per month</i>	sen/kWj <i>sen/kWh</i>	45.30
Setiap kWj berikutnya (901 kWj ke atas) sebulan <i>For the next 100 kWh (901 and above) per month</i>	sen/kWj <i>sen/kWh</i>	45.40
Caj minimum bulanan <i>Minimum monthly charge:</i>	RM	3.00
Tarif B – Tarif Perdagangan Voltan Rendah I Tariff B – Low Voltage Commercial Tariff		
Bagi Jumlah Penggunaan Keseluruhan di antara 0-200 kWj sebulan <i>For Overall Monthly Consumption between 0-200 kWh per month</i>	sen/kWj <i>sen/kWh</i>	39.30
Bagi Jumlah Penggunaan Keseluruhan Melebihi 200 kWj sebulan <i>For Overall Monthly Consumption more than 200 kWh per month</i>	sen/kWj <i>sen/kWh</i>	43.0
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	7.20
Tarif C1 – Tarif Perdagangan Am Voltan Sederhana I Tariff C1 Medium Voltage General Commercial Tariff		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	25.90
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	31.20
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	600.00

Kategori Tarif Tariff Category	Unit	Kadar Rates
Tarif C2 – Tarif Perdagangan Puncak/Luar Puncak Voltan Sederhana <i>Tariff C2 – Medium Voltage Peak/Off-Peak Commercial Tariff</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	38.60
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj sen/kWh	31.20
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj sen/kWh	19.20
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	600.00
Tarif D – Tarif Perindustrian Voltan Rendah Tariff D – Low Voltage Industrial Tariff		
Bagi Jumlah Penggunaan Keseluruhan di antara 0-200 kWj sebulan <i>For Overall Monthly Consumption Between 0-200 kWh per month</i>	sen/kWj sen/kWh	34.50
Bagi Jumlah Penggunaan Keseluruhan Melebihi 200 kWj sebulan <i>For Overall Monthly Consumption More Than 200 kWh per month</i>	sen/kWj sen/kWh	37.70
Tarif Ds – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) <i>Tariff Ds – Special Industrial Tariff (only for qualified consumers)</i>	sen/kWj sen/kWh	35.90
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	7.20
Tarif E1 – Tarif Perindustrian Am Voltan Sederhana Tariff E1 – Medium Voltage General Industrial Tariff		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	25.30
Bagi semua kWj <i>For all kWh</i>	sen/kWj sen/kWh	28.80
Tarif E1s – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) <i>Tariff E1s – Special Industrial Tariff (only for qualified consumers)</i>		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	19.90
Bagi semua kWj <i>For all kWh</i>	sen/kWj sen/kWh	28.30
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	600.00
Tarif E2 – Tarif Perindustrian Puncak/Luar Puncak Voltan Sederhana <i>Tariff E2 – Medium Voltage Peak/Off-Peak Industrial Tariff</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	31.70
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj sen/kWh	30.40
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj sen/kWh	18.70
Tarif E2s – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) <i>Tariff E2s – Special Industrial Tariff (only for qualified consumers)</i>		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	19.90
Bagi semua kWj <i>For all kWh</i>	sen/kWj sen/kWh	28.30
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	600.00

Kategori Tarif <i>Tariff Category</i>	Unit	Kadar Rates
Tarif E3 – Tarif Perindustrian Puncak/Luar Puncak Voltan Tinggi <i>Tariff E3 – High Voltage Peak/Off-Peak Industrial Tariff</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	30.40
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	28.80
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	17.30
Tarif E3s – Tarif Perindustrian Khas (untuk pengguna yang layak sahaja) <i>Tariff E3s – Special Industrial Tariff (only for qualified consumers)</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	24.40
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	26.70
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	14.70
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	600.00
Tarif F – Tarif Perlombongan Voltan Rendah <i>Tariff F – Low Voltage Mining Tariff</i>		
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	32.60
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	120.00
Tarif F1 – Tarif Perlombongan Am Voltan Sederhana <i>Tariff F1 – Medium Voltage General Mining Tariff</i>		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	18.10
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	26.80
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	120.00
Tarif F2 – Tarif Perlombongan Puncak/Luar Puncak Voltan Sederhana <i>Tariff F2 – Medium Voltage Peak/Off-Peak Mining Tariff</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	25.50
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	26.80
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	14.70
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	120.00
Tarif G – Tarif Lampu Jalanraya <i>Tariff G – Street Lighting Tariff</i>		
Bagi semua kWj (termasuk senggaraan) <i>For all kWh (including maintenance)</i>	sen/kWj <i>sen/kWh</i>	26.10
Bagi semua kWj (tidak termasuk senggaraan) <i>For all kWh (excluding maintenance)</i>	sen/kWj <i>sen/kWh</i>	16.40
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	7.20
Tarif G1 – Tarif Lampu Neon & Lampu Limpah <i>Tariff G1 – Neon & Floodlight Tariff</i>		

Kategori Tariff <i>Tariff Category</i>	Unit	Kadar <i>Rates</i>
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	17.80
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	7.20
Tariff H - Tariff Pertanian Spesifik Voltan Rendah <i>Tariff H - Low Voltage Specific Agriculture Tariff</i>		
Bagi Jumlah Penggunaan Keseluruhan di antara 0-200 kWj sebulan <i>For Overall Monthly Consumption between 200 kWh per month</i>	sen/kWj <i>sen/kWh</i>	36.90
Bagi Jumlah Penggunaan Keseluruhan Melebihi 200 kWj sebulan <i>For Overall Monthly Consumption more than 200 kWh per month</i>	sen/kWj <i>sen/kWh</i>	40.30
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	7.20
Tariff H1 – Tariff Pertanian Spesifik Am Voltan Sederhana <i>Tariff H1 – Medium Voltage General Specific Agriculture Tariff</i>		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	25.90
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	30.0
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	600.00
Tariff H2 – Tariff Pertanian Spesifik Puncak/Luar Puncak Voltan Sederhana <i>Tariff H2 - Medium Voltage Peak/Off-peak Specific Agriculture Tariff</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	34.90
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	31.20
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	19.20
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	600.00

Nota | Note :

Berkuatkuasa mulai 1 September 2011, kutipan 1% Feed-in Tariff (FIT) untuk Dana Sumber Tenaga Boleh Baharu (RE) dikenakan ke atas bil elektrik bulanan pengguna (kecuali pengguna domestik dengan penggunaan tidak melebihi 300 kWj sebulan)

Effective starting from the 1st of September 2011, 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)

Jadual 2: Tarif Elektrik TNB untuk 'Top-Up' dan caj-caj 'Standby' untuk 'Co-Generators' (Berkuat Kuasa 1 Jun 2011)Table 2: TNB Electricity Tariff for 'Top-Up' and 'Standby' Charges for Co-Generators (Effective 1st June 2011)

Kategori Tarif <i>Tariff Category</i>	Unit	Kadar <i>Rates</i>	
		Top-up	Standby
Tarif C1 – Tariff Perdagangan Am Voltan Sederhana <i>Tariff C1 – Medium Voltage General Commercial Tariff</i>			
Caj kehendak maksimum sebulan <i>Maximum demand charge per month</i>	RM/kW	25.90	14.00
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	31.20	
Tarif C2 – Perdagangan Puncak/Luar Puncak Voltan Sederhana <i>Tariff C2 – Medium Voltage Peak/Off-Peak Commercial Tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	38.60	14.00
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	31.20	
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	19.20	
Tarif E1 – Perindustrian Am Voltan Sederhana <i>Tariff E1 – Medium Voltage General Industrial Tariff</i>			
Caj kehendak maksimum sebulan <i>Maximum demand charge per month</i>	RM/kW	25.30	14.00
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	28.80	
Tarif E2 – Perindustrian Puncak/Luar Puncak Voltan Sederhana <i>Tariff E2 – Medium Voltage Peak/Off-Peak Industrial Tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	31.70	14.00
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	30.40	
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	18.70	
Tarif E3 – Perindustrian Puncak/Luar Puncak Voltan Tinggi <i>Tariff E3 – High Voltage Peak/Off-Peak Industrial Tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	30.40	12.00
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	28.80	
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	17.30	
Tarif F1 – Perlombongan Am Voltan Sederhana <i>Tariff F1 - Medium Voltage General Mining Tariff</i>			
Caj kehendak maksimum sebulan <i>Maximum demand charge per month</i>	RM/kW	18.10	14.00
Bagi semua kWj <i>For all kWh</i>	sen/kWj <i>sen/kWh</i>	26.80	
Tarif F2 – Perlombongan Puncak/Luar Puncak Voltan Sederhana <i>Tariff F2 – Medium Voltage Peak/Off-Peak Mining Tariff</i>			
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	25.50	14.00
Bagi semua kWj dalam tempoh puncak <i>For all kWh during the peak period</i>	sen/kWj <i>sen/kWh</i>	26.80	
Bagi semua kWj dalam tempoh luar puncak <i>For all kWh during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	14.70	

Nota | Note :

Kadar standby baru (bermula 1 Jun 2011) akan digunakan oleh pengguna-pengguna berikut | This new Standby rate (as of 1st June 2011) is applicable to the following customers:-

- Kesemua pengguna baru co-generation | All new co-generation customers
- Pengguna co-generation sedia ada yang ingin bertukar kepada kadar Standby yang baru | Existing co-generation customers who wish to migrate to this new Standby rate.

Bagi pengguna co-generation yang ingin mengekalkan kadar Standby (Firm and Non-Firm) lama, kadar berikut boleh digunakan bersama kadar Top-up yang baru (bermula 1 June 2011)

For existing co-generation 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 1st June 2011)

Tarif-Tarif Elektrik bagi Sabah Electricity Sdn. Bhd. (SESB)

Electricity Tariffs for Sabah Electricity Sdn. Bhd. (SESB)

Jadual 3: Tarif Elektrik untuk Sabah Electricity Sdn. Bhd. dan Wilayah Persekutuan Labuan (Berkuatkuasa 15 Julai 2011)

Table 3: Electricity Tariff for Sabah Electricity Sdn. Bhd. and Labuan Federal Territory (Effective 15th July 2011)

Kategori Tarif Tariff Category	Unit	Kadar Rates
Tarif DM – Tarif Kediaman Tariff DM – Domestic Tariff		
100 kWj pertama (1-100 kWj) sebulan <i>For the first 100 kWh (1-100 kWh) per month</i>	sen/kWj sen/kWh	17.50
100 kWj berikutnya (101-200 kWj) sebulan <i>For the next 100 kWh (101-200 kWh) per month</i>	sen/kWj sen/kWh	18.50
300 kWj berikutnya (201-500 kWj) sebulan <i>For the next 300 kWh (201-500 kWh) per month</i>	sen/kWj sen/kWh	33.00
Setiap kWj berikutnya (501 kWj ke atas) sebulan <i>For the next kWh (501 onwards) per month</i>	sen/kWj sen/kWh	34.50
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	5.00
Tarif CM1 – Tarif Perdagangan Voltan Rendah Tariff CM1 – Low Voltage Commercial Tariff		
200 kWj pertama (1-200 kWj) sebulan <i>For the first 200 kWh (1-200 kWh) per month</i>	sen/kWj sen/kWh	33.00
Setiap kWj berikutnya (201 kWj ke atas) sebulan <i>For the next kWh (201 kWh onwards) per month</i>	sen/kWj sen/kWh	33.50
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	15.00
Tarif CM2 – Tarif Perdagangan Am Voltan Sederhana Tariff CM2 – Medium Voltage General Commercial Tariff		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	18.50
Bagi semua kWj <i>For all kWh</i>	sen/kWj sen/kWh	28.00
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	1,000.00
Tarif CM3 – Tarif Perdagangan Puncak/Luar Puncak Voltan Sederhana Tariff CM3 – Medium Voltage Peak/Off Peak Commercial		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	24.00
Bagi semua kWj dalam tempoh puncak <i>All units during the peak period</i>	sen/kWj sen/kWh	28.80
Bagi semua kWj dalam tempoh luar puncak <i>All units during the off-peak period</i>	sen/kWj sen/kWh	17.60
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	1,000.00
Tarif ID1 – Tarif Perindustrian Voltan Rendah Tariff ID1 – Low Voltage Industrial Tariff		
Bagi semua kWj <i>For all kWh</i>	sen/kWj sen/kWh	32.00
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	15.00
Tarif ID2 – Tarif Perindustrian Am Voltan Sederhana Tariff ID2 – Medium Voltage General Industrial		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	18.50
Bagi semua kWj <i>For all kWh</i>	sen/kWj sen/kWh	22.80
Caj minimum bulanan <i>Minimum monthly charge</i> :	RM	1,000.00

Kategori Tarif <i>Tariff Category</i>	Unit	Kadar Rates
Tarif ID3 – Tarif Perindustrian Puncak/Luar Puncak Voltan Sederhana <i>Tariff ID3 – Medium Voltage Peak/Off Peak Industrial</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam tempoh puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	21.40
Bagi semua kWj dalam tempoh puncak <i>All units during the peak period</i>	sen/kWj <i>sen/kWh</i>	26.5
Bagi semua kWj dalam tempoh luar puncak <i>All units during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	15.6
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	1,000.00
Tarif PL – Tarif Lampu Jalanraya <i>Tariff PL – Public Lighting</i>		
Bagi semua kWj (tidak termasuk senggaraan) <i>For all kWh (excluding maintenance)</i>	sen/kWj <i>sen/kWh</i>	16.0
Bagi semua kWj (termasuk senggaraan) <i>For all kWh (including maintenance)</i>	sen/kWj <i>sen/kWh</i>	31.0
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	15.00

Tarif-Tarif Elektrik bagi Sarawak Energy Berhad (SEB)

Electricity Tariffs for Sarawak Energy Berhad (SEB)

Jadual 4: Tarif Elektrik untuk Sarawak Energy Berhad (Berkuatkuasa 1 April 2007)
Table 4: Electricity Tariff for Sarawak Energy Berhad (Effective 1st April 2007)

Kategori Tarif <i>Tariff Category</i>	Unit	Kadar Rates
Tarif C1 – Perdagangan <i>Tariff C1 – Commercial</i>		
Bagi 100 unit pertama sebulan <i>For the first 100 units per month</i>	sen/kWj <i>sen/kWh</i>	40
Bagi 4,900 unit berikutnya sebulan <i>For the next 4,900 units per month</i>	sen/kWj <i>sen/kWh</i>	34
Bagi setiap unit tambahan sebulan <i>For each additional unit per month</i>	sen/kWj <i>sen/kWh</i>	30
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	10.00
Tarif C2 – Kehendak Perdagangan <i>Tariff C2 – Commercial Demand</i>		
Bagi setiap kilowatt kehendak maksimum bulanan <i>For each kilowatt of maximum demand per month</i>	RM/kW	16.00
Bagi setiap unit <i>All each unit</i>	sen/kWj <i>sen/kWh</i>	25
Caj minimum bulanan <i>Minimum monthly charge</i> (per kW x Kehendak Bayaran Dikenakan <i>Billing Demand</i>)	RM	16.00
Tarif C3 – Kehendak Waktu Puncak/Waktu Bukan Puncak <i>Tariff C3 – Commercial Peak/Off Peak Demand</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam waktu puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	20.00
Bagi setiap unit waktu puncak <i>For each unit during the peak period</i>	sen/kWj <i>sen/kWh</i>	25
Bagi setiap unit waktu bukan puncak <i>For each unit during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	14.4
Caj minimum bulanan <i>Minimum monthly charge</i> (per kW x Kehendak Bayaran Dikenakan <i>Billing Demand</i>)	RM	20.00

Kategori Tarif <i>Tariff Category</i>	Unit	Kadar <i>Rates</i>
Tarif D – Domestik <i>Tariff D – Domestic</i>		
Bagi 100 unit pertama sebulan <i>For the first 100 units per month</i>	sen/kWj <i>sen/kWh</i>	34
Bagi 300 unit berikutnya sebulan <i>For the next 300 units per month</i>	sen/kWj <i>sen/kWh</i>	29
Bagi setiap unit tambahan sebulan <i>For each additional unit per month</i>	sen/kWj <i>sen/kWh</i>	33
Caj minimum bulanan <i>Minimum monthly charge</i> (per kW x Kehendak Bayaran Dikenakan <i>Billing Demand</i>)	RM	5.00
Tarif I1 – Perindustrian <i>Tariff I1 – Industrial</i>		
Bagi 100 unit pertama sebulan <i>For the first 100 units per month</i>	sen/kWj <i>sen/kWh</i>	40
Bagi 2900 unit berikutnya sebulan <i>For the next 2900 units per month</i>	sen/kWj <i>sen/kWh</i>	30
Bagi setiap unit tambahan sebulan <i>For each additional unit per month</i>	sen/kWj <i>sen/kWh</i>	27
Caj minimum bulanan <i>Minimum monthly charge</i> (per kW x Kehendak Bayaran Dikenakan <i>Billing Demand</i>)	RM	10.00
Tarif I2 – Kehendak Perindustrian <i>Tariff I2 – Industrial Demand</i>		
Bagi setiap kilowatt kehendak maksimum sebulan <i>For each kilowatt of maximum demand per month</i>	RM/kW	16.00
Bagi setiap unit <i>For each unit</i>	sen/kWj <i>sen/kWh</i>	22.2
Caj minimum bulanan <i>Minimum monthly charge</i> (per kW x Kehendak Bayaran Dikenakan <i>Billing Demand</i>)	RM	16.00
Tarif I3 – Kehendak Waktu Puncak/Waktu Bukan Puncak Perindustrian <i>Tariff I3 – Industrial Peak/Off Peak Demand</i>		
Bagi setiap kilowatt kehendak maksimum sebulan dalam waktu puncak <i>For each kilowatt of maximum demand per month during the peak period</i>	RM/kW	20.00
Bagi setiap unit waktu puncak <i>For each unit during the peak period</i>	sen/kWj <i>sen/kWh</i>	23.4
Bagi setiap unit bukan puncak <i>For each unit during the off-peak period</i>	sen/kWj <i>sen/kWh</i>	14.4
Caj minimum bulanan <i>Minimum monthly charge</i> (per kW x Kehendak Bayaran Dikenakan <i>Billing Demand</i>)	RM	20.00
Tarif PL – Lampu Awam <i>Tariff PL – Public Lighting</i>		
Bagi setiap unit <i>For each unit</i>	sen/kWj <i>sen/kWh</i>	47
Caj minimum bulanan <i>Minimum monthly charge</i>	RM	10.00



PURATA HARGA JUALAN DAN KOS-KOS PENJANAAN AVERAGE SELLING PRICE AND GENERATION COSTS

- 63** Perbandingan Purata Harga Jualan (sen/kWj) antara Syarikat Utiliti Kuasa yang Terpilih
Comparison of Average Selling Price (sen/kWh) among Selected Power Utility Companies
- 63** Kos-Kos Penjanaan Syarikat Utiliti Kuasa Utama
Generation Costs of Major Power Utility Companies

Perbandingan Purata Harga Jualan (sen/kWh) antara Syarikat Utiliti Kuasa yang Terpilih

Comparison of Average Selling Price (sen/kWh) among Selected Power Utility Companies

Jadual 1: Perbandingan Purata Harga Jualan (sen/kWh) dengan Syarikat Utiliti Kuasa yang Terpilih

Table 1: Comparison of Average Selling Price (sen/kWh) among Selected Power Utility Companies

Syarikat Utiliti Kuasa Terpilih Power Utility Companies	Domestik Domestic	Komersil Commercial	Perindustrian Industry	Lampu Awam Public Lighting	Pertanian Agriculture	Jumlah Total
TNB	28.76	40.74	30.91	21.50	39.82	33.73
SESB	25.08	32.98	28.13	18.51	-	29.12
SESCO	31.22	31.97	24.9	47.04	-	29.68
PLN, Indonesia	21.06	32.41	23.7	26.97	-	24.34
Taipower, Taiwan	30.07	35.93	25.67	12.53	-	28.36
EGAT, Thailand	37.76	n/a	n/a	n/a	-	35.94
Meralco, Philippines	81.43	72.01	57.26	8.54	-	70.4
TEPCO, Japan	86.61	n/a	n/a	n/a	-	87.55
KEPCO, Korea	34.85	31.75	26.31	27.76	12.71	28.05
Singapore	57.5	52.6	49.8	n/a	-	56.89

Kos-Kos Penjanaan Syarikat Utiliti Kuasa Utama

Generation Costs of Major Power Utility Companies

Jadual 2: Kos Penjanaan (sen/kWh) TNB

Table 2: TNB Generation Cost (sen/kWh)

Kos Penjanaan Generation Cost	2008	2009	2010	2011	2012
(a) Penjanaan Sendiri Own Generation	13.22	17.65	16.16	18.22	20.28
(b) Tenaga Dibeli Energy Purchased	17.50	23.01	21.99	24.68	25.05
(c) Kos Keseluruhan Overall Cost - (a) & (b)	16.29	21.58	20.42	23.08	23.95

Jadual 3: Kos Penjanaan (sen/kWh) SESB

Table 3: SESB Generation Cost (sen/kWh)

Kos Penjanaan Generation Cost	2008	2009	2010	2011	2012
(a) Penjanaan Sendiri Own Generation	12.8	15.23	17.42	24.30	16.16
(b) Tenaga Dibeli Energy Purchased	17.8	16.44	22.33	25.80	17.90
(c) Kos Keseluruhan Overall Cost - (a) & (b)	16.00	16.15	21.21	25.20	17.40

Jadual 4: Kos Penjanaan (sen/kWh) SEB

Table 4: SEB Generation Cost (sen/kWh)

Kos Penjanaan Generation Cost	2008	2009	2010	2011	2012
(a) Penjanaan Sendiri Own Generation	19.2	15.6	14.6	21.8	25.89
(b) Tenaga Dibeli Energy Purchased	13.6	15.4	14.2	13.2	11.72
(c) Kos Keseluruhan Overall Cost - (a) & (b)	16.2	15.5	14.3	15.4	14.15

The background of the page is a photograph of several high-voltage power transmission towers. The towers are silhouetted against a vibrant sunset sky, which transitions from a deep blue at the top to a bright orange and red near the horizon. The towers are arranged in a line, receding into the distance. The overall mood is industrial and serene.

**MAKLUMAT DAN STATISTIK INDUSTRI
PEMBEKALAN ELEKTRIK**
*INDUSTRY STATISTICS AND INFORMATION
ON ELECTRICITY SUPPLY INDUSTRY*



MAKLUMAT DAN STATISTIK INDUSTRI DI SEMENANJUNG MALAYSIA *INDUSTRY INFORMATION AND STATISTICS IN PENINSULAR MALAYSIA*

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Tenaga Nasional Berhad (TNB)

Jadual 1: Sorotan Prestasi

Table 1: Performance Highlights

Petunjuk Indicator	2008	2009	2010	2011	2012
Kehendak Maksimum (MW) Maximum Demand (MW)	14,007	14,245	15,072	15,476	15,826
Jumlah Unit Penjanaan (GWj) Total Units Generated (GWh) ¹	27,691	29,608	27,689	24,018	26,329
Jumlah Unit Jualan (GWj) Total Units Sold (GWh)	85,616	82,443	89,621	93,713	97,256
Hasil Jualan Elektrik (RM Juta) Sales of Electricity (RM million)	22,555	26,388	28,020	29,273	32,464
Kapasiti Penjanaan Terpasang (MW) ² Installed Generation Capacity (MW)	6,365	7,040	7,040	7,054	6,986
Jumlah Kakitangan Number of Employees ³	24,927	24,613	25,571	26,732	28,105
Hasil Jualan Setiap Kakitangan (RM Juta/Kakitangan) Sales of Electricity per Employee (RM Million/Employee)	0.90	1.07	1.10	1.10	1.16
Unit Jualan Setiap Kakitangan (GWj/Kakitangan) Units Sold per Employee (GWh/Employee)	3.43	3.35	3.50	3.46	3.43
Kapasiti Penjanaan Setiap Kakitangan (MW/Kakitangan) Installed Capacity per Employee (MW/Employee)	0.26	0.29	0.28	0.26	0.25
Jumlah Unit Pembelian (GWj) Total Units Purchased (GWh)	68,091	63,156	73,830	76,887	81,733
Jumlah Unit Eksport (GWj) Total Units Exported (GWh)	1,152	166	88	73	13
Jumlah Unit Import (GWj) Total Units Imported (GWh)	0.11	0.06	0.03	224.88	100.00

Jadual 2: Kapasiti Penjanaan Terpasang (MW) dan Kebolehdapatan Keseluruhan (%)

Table 2: Installed Generation Capacity (MW) and Overall Availability (%)

Jenis Bahan Api Fuel Type	2008	2009	2010	2011	2012
Hidro Hydro	1,911	1,911	1,911	1,911	1,911
Gas Asli Natural Gas	4,386	5,061	5,061	5,075	5,075
Arang batu Coal	-	-	-	-	-
Minyak Medium Fuel Oil (MFO)	-	-	-	-	-
Disel Diesel	68	68	68	68	-
Lain-lain Others	-	-	-	-	-
Jumlah Total	6,365	7,040	7,040	7,054	6,986
Kebolehdapatan Keseluruhan (%) Overall Availability (%)	90	91	89.4	86.8	93.5

Jadual 3: Campuran Penjanaan (GWj)

Table 3: Generation Mix (GWh)

Jenis Bahan Api Fuel Type	2008	2009	2010	2011	2012
Hidro Hydro	6,669	5,916	5,227	5,950	5,524
Gas Asli Natural Gas	20,979	23,658	22,337	15,915	19,558
Arang batu Coal	-	-	-	-	-
Minyak Medium Fuel Oil (MFO)	-	-	6	686	86
Disel Diesel	43	34	119	1,468	1,161
Lain-lain Others	-	-	-	-	-
Jumlah Total	27,691	29,608	27,689	24,018	26,329

Jadual 4: Jualan Tenaga Elektrik (GWj)

Table 4: Sales of Electricity (GWh)

Sektor Sector	2008	2009	2010	2011	2012
Domestik Domestic	15,810	16,792	18,217	18,916	20,301
Komersil Commercial	26,939	27,859	29,872	31,755	33,218
Industri Industry	40,511	36,261	40,071	41,449	42,047
Lampu Awam Public Lighting	956	1,078	1,046	1,139	1,235
Perlombongan Mining	34	47	62	75	98
Eksport (EGAT) Export (EGAT)	1,152	166	88	73	13
Lain-lain (Pertanian) Others (Agriculture)	214	240	265	306	344
Jumlah Total ⁴	85,616	82,443	89,621	93,713	97,256

Jadual 5: Bilangan Pengguna

Table 5: Number of Consumers

Sektor Sector	2008	2009	2010	2011	2012
Domestik Domestic	5,750,325	5,938,095	6,128,224	6,288,281	6,456,647
Komersil Commercial	1,110,718	1,164,959	1,224,414	1,281,108	1,334,371
Industri Industry	25,330	25,663	25,580	26,203	27,599
Lampu Awam Public Lighting	45,037	47,715	50,122	53,075	56,715
Perlombongan Mining	13	15	17	20	22
Lain-lain (Pertanian) Others (Agriculture)	906	996	1,080	1,166	1,241
Unit Percuma Free Units ⁵	-	-	2,218	2,264	2,271
Jumlah Total	6,932,329	7,177,443	7,431,655	7,652,117	7,878,866

Jadual 6: Keupayaan Sistem Penghantaran

Table 6: Transmission System Capacity

Talian/Kabel Sistem Penghantaran Transmission System Lines/Cables	2008	2009	2010	2011	2012
500 kV (km)	⁶ 890	⁷ 1,209	⁸ 1,094	⁸ 1,094	⁸ 1,295
275 kV (km)	7,616	7,738	8,028	8,425	8,449
132 kV (km)	11,299	11,308	11,415	11,672	11,640
66 kV (km)	-	-	⁹ 0.9	-	-
Pencawang Penghantaran Transmission Substations					
Bilangan Number	386	385	392	399	401
Keupayaan Capacity (MVA)	83,808	82,990	86,030	94,325	94,265
Prestasi Performance					
Bilangan Kejadian Pelantikan Number of Tripping Incidents	392	333	322	305	276
Tenaga Yang Tidak Dibekal (MWj) Unsupplied Energy (MWh)	1,532	242	215	261	271

Jadual 7: Keupayaan Sistem Pengagihan

Table 7: Distribution System Capacity

Talian/Kabel Sistem Pengagihan Distribution System Lines/Cables	2008	2009	2010	2011	2012
Talian Atas Overhead Lines (km)	191,714	341,318	475,972	477,191	495,925
Kabel Bawah Tanah Underground Cables (km)	357,267	361,763	376,226	379,661	423,758
Pencawang Pengagihan Distribution Substations					
Bilangan Number	61,238	62,852	63,341	65,556	67,925
Keupayaan Capacity (MVA)	66,696	68,454	69,456	125,222	126,969
Prestasi Performance					
Bilangan Gangguan Bekalan Number of Supply Interruption ¹⁰	103,876	126,566	110,633	90,979	84,925

Nota | Note :

- Jumlah Unit Penjanaaan (Jumlah Campuran Penjanaaan) bagi TNB tidak termasuk IPPs di Semenanjung Malaysia
Total Units Generated (Generation Mix) for TNB excluding IPPs in Peninsular Malaysia
- Jumlah Kapasiti Penjanaaan Terpasang TNB tidak termasuk IPPs
Installed Generation Capacity for TNB excluding IPPs in Peninsular Malaysia
- Kakitangan TNB tidak termasuk anak syarikat milik penuh TNB dan anak syarikat mempunyai saham terbesar
TNB employees excluding TNB wholly owned subsidiaries and TNB majority owned subsidiaries
- Jualan Tenaga Elektrik bagi TNB termasuk penjanaaan sendiri oleh TNB dan tenaga dibeli dari IPPs di Semenanjung Malaysia
Sales of Electricity for TNB includes TNB own generation and energy purchased from IPPs in Peninsular Malaysia
- 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 refers to electricity provided for free without being charged for monthly bill payments. Eligible premises are TNB premises including office buildings, clubhouse, quarters, main substations, transmission substations and distribution substations
- Sepanjang 440 km talian penghantaran 500 kV dikendalikan pada voltan 275 kV
440 km of transmission lines were operated at 275 kV
- Sepanjang 541 km talian penghantaran 500 kV dikendalikan pada voltan 275 kV
541 km of transmission lines were operated at 275 kV
- Sepanjang 425.92 km talian penghantaran 500 kV dikendalikan pada voltan 275 kV
425.92 km of transmission lines were operated at 275 kV
- Talian 66 kV yang berjumlah 0.9 km telah pun dihentitugas pada 16 September 2011
66kV lines amounting to 0.9 km has been terminated on 16 September 2011
- Angka ini meliputi pengguna tunggal yang mengalami gangguan melebihi 1 minit
This figure includes single consumers with duration of interruptions of more than 1 minute

Penjana-Penjana Kuasa Bebas (IPPs)

Independent Power Producers (IPPs)

Jadual 8: Kapasiti Berlesen, Unit Penjanaan dan Unit Jualan
Table 8: Licensed Capacity, Units Generated and Units Sold

No.	Pemegang Lesen & Lokasi Licensee & Location	Jenis Loji Plant Type	Kapasiti Berlesen Licensed Capacity (MW)	Unit Penjanaan (GWj) Units Generated (GWh)	Unit Jualan (GWj) Units Sold (GWh)
1	YTL Power Generation Sdn. Bhd.				
	Paka, Terengganu	Kitar Padu Combined Cycle	780.0	7,540.00	7,407.18
Pasir Gudang, Johor	390.0				
2	Genting Sanyen Power Sdn. Bhd.				
	Kuala Langat, Selangor	Kitar Padu Combined Cycle	762.0	4,053.96	3,955.19
3	Segari Energy Ventures Sdn. Bhd.				
	Manjung, Perak	Kitar Padu Combined Cycle	1,303.0	3,126.57	3,077.87
4	Powertek Bhd.				
	Alor Gajah, Melaka	Turbin Gas Gas Turbines	440.0	61.9	60.53
5	Port Dickson Power Bhd.				
	Port Dickson, Negeri Sembilan	Turbin Gas Gas Turbines	440.0	85.71	85.70
6	Musteq Hydro Sdn. Bhd.				
	Sg. Kenerong, Kelantan	Mini Hidro Mini Hydro	20.0	103.47	103.47
7	TNB Janamanjung Sdn. Bhd. ¹				
	Manjung, Perak	Arang Batu Coal	2,100.0	15,933.45	14,737.01
8	Teknologi Tenaga Perlis Consortium Sdn. Bhd.				
	Kuala Sungai Baru, Perlis	Kitar Padu Combined Cycle	650.0	4,584.85	4,512.91
9	Nur Generation Sdn. Bhd.				
	Kulim High-Tech Industrial Park, Kedah	Kitar Padu Combined Cycle	440.0	1,226.55	1,206.53
10	Pahlawan Power Sdn. Bhd.				
	Melaka Tengah, Melaka	Kitar Padu Combined Cycle	334.0	1,774.67	1,739.95
11	Prai Power Sdn. Bhd.				
	Seberang Perai Tengah, Pulau Pinang	Kitar Padu Combined Cycle	350.0	2,380.86	2,332.55
12	GB3 Sdn. Bhd.				
	Manjung Perak	Kitar Padu Combined Cycle	640.0	3,384.99	3,341.34
13	Panglima Power Sdn. Bhd.				
	Alor Gajah, Melaka	Kitar Padu Combined Cycle	720.0	4,412.51	4,283.42

No.	Pemegang Lesen & Lokasi <i>Licensee & Location</i>	Jenis Loji <i>Plant Type</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Unit Penjanaan (GWh) <i>Units Generated (GWj)</i>	Unit Jualan (GWh) <i>Units Sold (GWj)</i>
14	Tanjung Bin Power Sdn. Bhd.				
	Mukim Serkat, Daerah Pontian, Johor	Arang Batu Coal	2,100.0	15,265.83	14,571.9
15	Kapar Energy Ventures Sdn. Bhd.				
	Klang, Selangor	Minyak/Gas <i>Oil / Gas</i>	2,420.0	12,638.26	11,785.71
		Arang Batu <i>Coal</i>			
Turbin Gas <i>Gas Turbines</i>					
16	Jimah Energy Ventures Sdn. Bhd.				
	Port Dickson, Negeri Sembilan	Arang Batu <i>Coal</i>	1,400.0	10,967.4	10,366.57

Nota | Note :

¹ Anak Syarikat TNB | TNB Subsidiary

Projek-Projek Jana Kuasa Tenaga Boleh Baharu (TBB)

Renewable Energy (RE) Power Projects

Jadual 9: Kapasiti Berlesen, Unit Penjanaan dan Unit Jualan

Table 9: Licensed Capacity, Units Generated and Units Sold

No.	Pemegang Lesen & Lokasi <i>Licensee & Location</i>	Jenis Loji <i>Plant Type</i>	Bahan Api/ Pengerak <i>Fuel Type/Prime Mover</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Unit Penjanaan (MWj) <i>Units Generated (MWh)</i>	Unit Jualan (MWj) <i>Unit Sold (MWh)</i>
1	Jana Landfill Sdn. Bhd.					
	Seri Kembangan, Selangor.	Turbin Gas <i>Gas Turbines</i>	Gas Landfill <i>Landfill Gas</i>	2.0	9,942.73	9,942.73
2	Recycle Energy Sdn. Bhd.					
	Kajang, Selangor.	Turbin Stim <i>Steam Turbines</i>	Sampah Yang Telah Diproses <i>Refuse Derived Fuel</i>	8.9	16,885.43	10,422.78
3	MHES Asia Sdn. Bhd.					
	Jempol, Negeri Sembilan.	Turbin Stim <i>Steam Turbines</i>	Sisa Sawit <i>Palm Waste</i>	13.0	32,372.32	21,193.11
4	Sunquest Sdn. Bhd.					
	Port Dickson, Negeri Sembilan.	Turbin Stim <i>Steam Turbines</i>	Sisa Sawit <i>Palm Waste</i>	6.5	2,773.70	2,429.71
5	Amcorp Perting Hydro Sdn. Bhd.					
	Bentong, Pahang.	Mini Hidro <i>Mini Hydro</i>	Air <i>Water</i>	4.2	31,713.30	31,713.00
6	I.S. Energy Sdn. Bhd.					
	Kuala Krai, Kelantan.	Mini Hidro <i>Mini Hydro</i>	Air <i>Water</i>	2.8	3,742.58	3,401.86
7	Renewable Power Sdn. Bhd.					
	Hulu Selangor, Selangor	Mini Hidro <i>Mini Hydro</i>	Air <i>Water</i>	2.2	12,862.89	12,413.22

No.	Pemegang Lesen & Lokasi Licensee & Location	Jenis Loji Plant Type	Bahan Api/ Penggerak Fuel Type/Prime Mover	Kapasiti Berlesen Licensed Capacity (MW)	Unit Penjanaan (MWj) Units Generated (MWh)	Unit Jualan (MWj) Unit Sold (MWh)
8	Bell Eco Power Sdn. Bhd.					
	Batu Pahat, Johor.	Turbin Gas Gas Turbines	Palm Oil Mill Effluent (POME)	2.0	3,557.76	2,813.53
9	Achi Jaya Plantations Sdn. Bhd.					
	Segamat, Johor.	Biogas Biogas	Palm Oil Mill Effluent (POME)	1.3	5,191.10	5,191.10
10	Pesaka Technologies Sdn. Bhd. ¹					
	Gua Musang, Kelantan.	Mini Hidro Mini Hydro	Air Water	11.4	-	-
11	Kub-Berjaya Energy Sdn. Bhd.					
	Hulu Selangor, Selangor.	Turbin Gas Gas Turbines	Gas Landfill Landfill Gas	1.2	6,609.34	5,882.31
12	Felda Palm Industries Sdn. Bhd.					
	Jempul, Negeri Sembilan.	Biojisim Biomass	Tandan Sawit Kosong EFB	1.5	n/a	n/a
13	Perbadanan Memajukan Iktisad Negeri Terengganu					
	Marang, Terengganu	Suria Fotovolta Solar Photovoltaic	Suria Solar	0.5	67.78	137.58
14	Malaysian Green Technology Corporation					
	Kajang, Selangor	Suria Fotovolta Solar Photovoltaic	Suria Solar	0.1	110.40	17.348
15	Suria KLCC Sdn. Bhd.					
	Wilayah Persekutuan Kuala Lumpur	Suria Fotovolta Solar Photovoltaic	Suria Solar	0.7	526.10	0
16	Cypark Suria (Negeri Sembilan) Sdn. Bhd.					
	Nilai, Negeri Sembilan	Suria Fotovolta Solar Photovoltaic	Suria Solar	3	1,888.54	0
17	Cypark Suria (Pajam) Sdn. Bhd. ¹					
	Sentul, Negeri Sembilan	Suria Fotovolta Solar Photovoltaic	Suria Solar	5.0	-	-
18	Jana Landfill Sdn. Bhd. ¹					
	Kuala Selangor, Selangor	Biogas Biogas	Gas Landfill Landfill Gas	1.1	-	-
19	Alpha Automation (Selangor) Sdn. Bhd. ¹					
	Nilai, Negeri Sembilan	Suria Fotovolta Solar Photovoltaic	Suria Solar	0.2	-	-
20	Macglo Steel Service Centre Sdn. Bhd. ¹					
	Shah Alam, Selangor	Suria Fotovolta Solar Photovoltaic	Suria Solar	0.5	-	-
21	Exotic Access Sdn. Bhd. ¹					
	Mukim Kapar, Selangor	Suria Fotovolta Solar Photovoltaic	Suria Solar	0.5	-	-

Nota | Note :

¹ Belum Beroperasi | Not in operation

n/a Tiada maklumat | Not available

Co-Generators Utama

Major Co-Generators

Jadual 10: Kapasiti Berlesen dan Unit Penjanaan (Lesen Awam)

Table 10: Licensed Capacity and Units Generated (Public Licence)

No.	Pemegang Lesen & Lokasi Licensee & Location	Kapasiti Berlesen Licensed Capacity (MW)	Bahan Api Fuel Type	Unit Penjanaan (MWj) Units Generated (MWh)
1	Gas District Cooling (KLCC) Sdn. Bhd.			
	Jalan Ampang, Kuala Lumpur.	40.00	Gas Asli Natural Gas	84,608.58
2	Gas District Cooling (KLIA) Sdn. Bhd.			
	Sepang, Selangor.	60.00	Gas Asli Natural Gas	n/a
3	See Sen Chemical Bhd.			
	Kemaman, Terengganu.	6.00	Haba Buangan Proses Perindustrian Industrial Process Waste Heat	22,200.81
4	Shell Refining Company (FOM) Berhad			
	Port Dickson, Negeri Sembilan.	35.00	Minyak Oil	n/a
5	Petronas Gas Berhad			
	Kerteh Industrial Area, Terengganu.	210.00	Gas Asli Natural Gas	1,356,875.39
6	Petronas Gas Berhad			
	Gebeng Industrial Area, Pahang.	105.00	Gas Asli Natural Gas	775,327.40
7	Institute Of Technology Petronas Sdn. Bhd.			
	Tronoh, Perak.	8.40	Gas Asli Natural Gas	39,224.35
8	Fusion Energy Sdn. Bhd.¹			
	Kuala Langat, Selangor.	418.00	Gas Buangan Proses Perindustrian Industrial Process Waste Heat	-
9	Perstima Utility Sdn. Bhd.			
	Johor Bahru Johor.	5.67	Gas Asli Natural Gas	18,596.40
10	Optimistic Organic Sdn. Bhd.			
	Kemaman, Terengganu.	7.00	Haba Buangan Proses Perindustrian Industrial Process Waste Heat	n/a

Nota | Note :

¹ Belum Beroperasi | Not in operation

n/a Tiada maklumat | Not available

Jadual 11: Kapasiti Berlesen dan Unit Penjanaaan (Lesen Persendirian)

Table 11: Licensed Capacity and Units Generated (Private Licence)

No.	Pemegang Lesen & Lokasi <i>Licensee & Location</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Bahan Api <i>Fuel Type</i>	Unit Penjanaaan (MWj) <i>Units Generated (MWh)</i>
1	Perwaja Steel Sdn. Bhd.			
	Kemaman, Terengganu.	9.50	Gas Asli <i>Natural Gas</i>	n/a
2	Bernas Production Setia Sdn. Bhd.			
	Sekincan, Selangor.	0.23	Bahan Buangan Pertanian <i>Agricultural Waste</i>	n/a
3	Padiberas Nasional Berhad			
	Kampong Gajah, Perak.	0.65	Bahan Buangan Pertanian <i>Agricultural Waste</i>	n/a
4	Sime Darby Plantation Sdn. Bhd.			
	Batang Berjuntai, Selangor.	3.38	Bahan Buangan Pertanian <i>Agricultural Waste</i>	4,421.86
5	Sime Darby Plantation Sdn. Bhd.			
	Teluk Intan, Perak.	1.50	Bahan Buangan Pertanian / Disel <i>Agricultural Waste / Diesel</i>	4,860.51
6	Malaysian Newsprint Industries Sdn. Bhd.			
	Mentakab, Pahang.	79.20	Bahan Buangan Pertanian <i>Agricultural Waste</i>	6,542.00
7	Titan Petchem (M) Sdn. Bhd.			
	Pasir Gudang, Johor.	56.00	Gas Asli <i>Natural Gas</i>	66,786.00
8	Titan Petrochemicals (M) Sdn. Bhd.			
	Johor Bahru, Johor.	42.60	Gas Asli <i>Natural Gas</i>	43,098.00
9	Tiang Siang Oil Mill (Perak) Sdn. Bhd.			
	Beruas, Perak.	4.76	Bahan Buangan Pertanian <i>Agricultural Waste</i>	257.67
10	Central Sugars Refinery Sdn. Bhd.			
	Shah Alam, Selangor.	8.23	Gas Asli / Disel <i>Natural Gas / Diesel</i>	49,281.68
11	BASF Petronas Chemicals Sdn. Bhd.			
	Kuantan, Pahang	27.40	Gas Asli <i>Natural Gas</i>	n/a
12	Nibong Tebal Paper Mill Sdn. Bhd.			
	Nibong Tebal Pulau Pinang.	0.80	Habuk Kayu <i>Wood Waste</i>	n/a

No.	Pemegang Lesen & Lokasi Licensee & Location	Kapasiti Berlesen Licensed Capacity (MW)	Bahan Api Fuel Type	Unit Penjanaan (MWj) Units Generated (MWh)
13	Gas District Cooling (Putrajaya) Sdn. Bhd.			
	Wilayah Persekutuan Putrajaya.	10.74	Gas Asli Natural Gas	32,853.18
14	Petronas Penapisan (Melaka) Sdn. Bhd.			
	Sungai Udang, 76300 Melaka.	145.00	Gas Asli Natural Gas	695,942.19
15	Gas District Cooling (Putrajaya) Sdn. Bhd.			
	Putrajaya, 62000 Putrajaya.	6.50	Gas Asli Natural Gas	43,809.80
16	Muda Paper Mills Sdn. Bhd.			
	Hulu Langat, Selangor.	14.40	Gas Asli Natural Gas	115,913.61
17	Ban Heng Bee Rice Mill (1952) Sdn. Bhd.			
	Pendang, Kedah.	0.54	Bahan Buangan Pertanian Agricultural Waste	1,402.13
18	Petronas Fertilizer (Kedah) Sdn. Bhd.			
	Kuala Muda, Kedah.	18.31	Gas Asli Natural Gas	n/a
19	Kilang Gula Felda Perlis Sdn. Bhd.			
	Chuping, Perlis.	9.43	Gas Buangan Proses Perindustrian Industrial Process Waste Heat	25,677.45
20	Gula Padang Terap Sdn. Bhd.			
	Padang Terap, Kedah.	10.29	Bahan Buangan Pertanian/ Diesel Agricultural Waste/ Diesel	24,499.32
21	Malayan Sugar Manufacturing Co. Bhd.			
	Perai, Pulau Pinang.	8.95	Gas Asli Natural Gas	n/a
22	Perak-Hanjoong Simen Sdn. Bhd.			
	Kuala Kangsar, Perak	12.00	Gas Buangan Proses Perindustrian Industrial Process Waste Heat	n/a
23	PETRONAS GAS BERHAD (GPP A)			
	Kemaman, Terengganu	25.00	Gas Asli Natural Gas	n/a
24	PETRONAS GAS BERHAD (GPP B)			
	Dungun, Terengganu	25.00	Gas Asli Natural Gas	n/a
25	WRP Asia Pacific			
	Sepang, Selangor	8.00	Gas Asli Natural Gas	n/a

Nota | Note :

n/a Tiada maklumat | Not available

Penjanaan Persendirian Kurang daripada 5 MW

Self-Generation Less than 5 MW

Jadual 12: Kapasiti Berlesen dan Unit Penjanaan
Table 12: Licensed Capacity and Units Generated

Jenis Bahan Api Fuel Type	Sektor Sector	2008	2009	2010	2011	2012
	Bilangan Lesen Number of Licences	765	779	795	1,116	1,371
Gas	Kapasiti Berlesen Licensed Capacity (MW)	13	3	30	31	31
	Unit Penjanaan (MWj) Units Generated (GWh)	n/a	16	34	27	53
Disel Diesel	Kapasiti Berlesen Licensed Capacity (MW)	359	394	378	516	577
	Unit Penjanaan (MWj) Units Generated (GWh)	26	811	640	723	339
Sisa Sawit Palm Oil Waste	Kapasiti Berlesen Licensed Capacity (MW)	319	315	253	358	354
	Unit Penjanaan (MWj) Units Generated (GWh)	21	707	614	730	526
Lain-lain Others	Kapasiti Berlesen Licensed Capacity (MW)	34	27	29	29	16
	Unit Penjanaan (MWj) Units Generated (GWh)	n/a	7	5	6	69
Jumlah Total	Kapasiti Berlesen Licensed Capacity (MW)	725	739	691	933	979
	Unit Penjanaan (MWj) Units Generated (GWh)	47	1,542	1,293	1,486	987

Nota | Note :

Lain-lain termasuk lain-lain jenis biojisim (Hampas Padi, Hampas Tebu, Habuk Kayu, Cip Kayu) dan Biogas
Others including other types of biomass (Paddy Husk, Bagasse, Wood Dust, Wood Chips) and Biogas

Senarai Pengagih-Pengagih Elektrik

List of Electricity Distributors

Jadual 13: Senarai Pengagih-Pengagih Elektrik
Table 13: List of Electricity Distributors

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
Gas District Cooling (KLIA) Sdn. Bhd.				
1	Jalan KLIA S5 (KLIA Selatan), Southern Support Zone 64000 KLIA, Sepang, Selangor. Tel : 03-8787 4326 Faks : 03-8787 4282	Kuala Lumpur International Airport Daerah Sepang Selangor.	60.00	01-01-1996
Lembaga Pelabuhan Kelang				
2	Beg Berkunci 202, Jalan Pelabuhan Utara 42005 Pelabuhan Kelang, Selangor. Tel : 03-3168 8211 Faks : 03-3167 0211 / 3168 9117	Kelang Port Authority Premis Jalan Pelabuhan 42005 Port Klang Selangor.	5.80	25-03-1997
Pangkalan Bekalan Kemaman Sdn. Bhd.				
3	P.O. Box 64, Kemaman Supply Base 24007 Kemaman, Terengganu. Tel : 09-863 1566 Faks : 09-863 1716	Kawasan Pangkalan Bekalan Kemaman Kemaman Terengganu.	3.31	01-12-1997
Malaysia Airports (Sepang) Sdn. Bhd.				
4	3 rd & 4 th Floor, Airport Management Centre KL International Airport, 64000 KLIA, Selangor. Tel : 03-8776 2000 Faks : 03-8926 5510 / 8926 5209	PT 13, PT 89, PT 39 Bandar Lapangan Terbang Antarabangsa Sepang Daerah Sepang Selangor.	120.00	14-02-1998
Petronas Gas Bhd.				
5	Centralized Utility Facilities (CUF) Integrated Petrochemical Complex, KM 106 Jalan Kuantan/K. Terengganu, 24300 Kertih, Kemaman, Terengganu. Tel : 09-830 5500 Faks : 09-830 5514	Petrochemical Complex Kerteh Industrial Area Terengganu.	210.00	28-05-1998
Petronas Gas Bhd.				
6	Centralized Utility Facilities(CUF) Integrated Petrochemical Complex, Lot 139A Gebeng Industrial Area, Phase III, 26080 Kuantan, Pahang. Tel : 09-586 3300 Faks : 09-586 3311 / 586 3328	Petrochemical Complex Gebeng Industrial Area Pahang.	105.00	28-05-1998
NUR Distribution Sdn. Bhd.				
7	Central Control Building (CCB), Lot 30, Jalan Hi-Tech 4 Kulim Hi-Tech Park, 09000 Kulim, Kedah. Tel : 04-401 0100 Faks : 04-401 0344 / 401 0319	Kulim Hi-Tech Industrial Park Kedah.	440.00	17-09-1998
Gas District Cooling (KLCC) Sdn. Bhd.				
8	Level 1, Bangunan DCCI Persiaran KLCC Off Jalan Ampang, 50088 Kuala Lumpur. Tel : 03-2380 5660 Faks : 03-2381 7086	Bangunan DCC 1 / DCC 2 KLCC DCS/Co-Generation Plant Persiaran KLCC, Jalan Ampang 50088 Kuala Lumpur.	40.00	30-08-2000
Genting Utilities & Services Sdn. Bhd.				
9	Tingkat 24, Wisma Genting, 28 Jalan Sultan Ismail 50250 Kuala Lumpur. Tel : 03-2333 2288 / 6105 2637 Faks : 03-2333 3158 / 6015 2600	Kawasan Genting Highlands Negeri Pahang/Selangor.	48.00	17-10-2000

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
Ikano Corporation Sdn. Bhd.				
10	No. 2, Jalan PJU 7/2, Mutiara Damansara 47800 Petaling Jaya, Selangor. Tel : 03-7720 7350 Faks : 03-7726 6277	Lot PT 400038 Mutiara Damansara 47800 Petaling Jaya Selangor.	7.94	23-12-2003
Jaya Jusco Stores Berhad				
11	Jusco Taman Universiti Shopping Centre No. 4, Jalan Pendidikan, Taman Universiti 81300 Skudai, Johor. Tel : 07-520 8700 Faks : 07-521 3000	PTD 62861, Jalan Pendidikan Taman Universiti Mukim Pulau, Daerah Johor Bahru Johor.	3.11	28-02-2004
Institute Of Technology Petronas Sdn. Bhd.				
12	Bandar Seri Iskandar, 31750 Tronoh, Perak. Tel : 05-368 8000 Faks : 05-365 4075	Kampus Universiti Teknologi Petronas, Tronoh, Perak.	8.40	26-01-2006
Eng Lian Enterprise Sdn. Bhd.				
13	9 Jalan Ampang #05-00, 50450 Kuala Lumpur. Tel : 03-2056 0600 Faks : 03-2056 0700	Lot 51533 Mukim Kuala Lumpur Kuala Lumpur.	2.29	01-03-2006
AEON Co. (M) Bhd.				
14	Jusco Metro Prima Shopping Centre, 1st. Floor No. 1, Jalan Metro Prima, 52100 Kepong, Kuala Lumpur. Tel : 03-6259 1122 Faks : 03-6259 2805	PT 20954 Mukim Batu Kuala Lumpur.	4.83	15-03-2006
Fawanis Sdn. Bhd.				
15	13 th Floor, Wisma Denmark 86, Jalan Ampang, 50450 Kuala Lumpur. Tel : 03-2032 2111 Faks : 03-2078 4679	Queen's Park Retail Centre Lot 392, Batu 2 - 2 1/2 Jalan Cheras Kuala Lumpur.	0.94	11-05-2006
Malakoff Utilities Sdn. Bhd.				
16	Suite 4-G-A, Ground Floor, Block 4 Plaza Sentral, Jalan Stesen Sentral 5, 50470 Kuala Lumpur. Tel : 03-2263 3388 Faks : 03-2263 3366	Kawasan Pembangunan Kuala Lumpur Sentral Kuala Lumpur.	100.00	15-10-2006
Sunway Carnival Sdn. Bhd.				
17	No. 1, Persiaran Mahsuri 1/3, Sunway Tunas 11900 Bayan Lepas, Pulau Pinang. Tel : 04-643 9898 Faks : 04-644 1313	Lot 5497, 5498 dan 5499 Daerah Seberang Perai Tengah Pulau Pinang.	5.00	01-11-2006
ASM Properties Sdn. Bhd.				
18	Suite 5.4, Level 5, Maju Junction Mall 1001 Jalan Sultan Ismail, 50250 Kuala Lumpur. Tel : 03-2772 8500 Faks : 03-2772 8501	Maju Junction Mall Lot PT 19 Seksyen 46 Kuala Lumpur.	10.80	24-11-2006
Lembaga Tabung Haji				
19	Tingkat 7, Bangunan TH Perdana 1001, Jalan Sultan Ismail, 50250 Kuala Lumpur. Tel : 03-2781 9020 Faks : 03-2781 9023	Menara TH Perdana Lot 101 Mukim Kuala Lumpur Kuala Lumpur.	3.00	29-12-2006
Aeon Co. (M) Bhd.				
20	AEON Cheras Selatan Shopping Centre Aras 1, Lebuhr Tun Hussien Onn, 43200 Balakong, Selangor. Tel : 03-9080 3498 Faks : 03-9080 3598	AEON Cheras Selatan Shopping Centre PT 41977 (Sebahagian Lot 2225) Mukim Cheras, Daerah Hulu Langat Selangor.	8.16	05-02-2007

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
Urusharta Cemerlang Sdn. Bhd.				
21	Level 10 Pavilion Kuala Lumpur, 168, Jalan Bukit Bintang 55100 Kuala Lumpur. Tel : 03-2118 8888 / 2118 8880 Faks : 03-2118 8889 / 2118 8911	Pavilion Kuala Lumpur Lot 174, 185, 187, 188, 281, (Lot Baru : 332) dan 260 Jalan Bukit Bintang/Jalan Raja Chulan, Seksyen 67 Kuala Lumpur.	22.10	14-03-2007
AEON Co. (M) Bhd.				
22	Jusco Seremban 2 Shopping Centre 112, Persiaran S2 B1, Seremban 2 70300 Seremban, Negeri Sembilan. Tel : 06-601 5618 Faks : 06-601 5645	AEON Seremban 2 Lot PT 10787 HS(D) 97966 & PT 10790 HS(D) 97969 Mukim Rasah Daerah Seremban Negeri Sembilan.	7.05	30-03-2007
Mid Valley City Energy Sdn. Bhd.				
23	Level 32, The Gardens South Tower Mid Valley City Lingkar Syed Putra, 59200 Kuala Lumpur. Tel : 03-2289 8989 Faks : 03-2938 3230 / 2289 8981	The Gardens (Phase 2) Lot PT13, Mukim Kuala Lumpur Daerah Kuala Lumpur 59200 Wilayah Persekutuan.	55.00	03-05-2007
Bandar Utama City Corporation Sdn. Bhd.				
24	1, Persiaran Bandar Utama Bandar Utama 47800 Petaling Jaya Selangor. Tel : 03-7728 8878 Faks : 03-7728 9978	Kawasan Pembangunan Bandar Utama Lot PT 37649, 37650, 17970-17974, 17976 dan 15366, Mukim Sungai Buloh, PT 18 dan 17968 Bandar Petaling Jaya dan PT 22, 23, 44, 45, 83, Lot 27657-27659, 27962, 27669, 27671, 27673-27676, 27679, 27680 Seksyen 39, Bandar Petaling Jaya, Daerah Petaling 47800 Selangor.	100.00	10-05-2007
Fusion Energy Sdn. Bhd.				
25	Lot 2319, Kaw. Perindustrian Olak Lempit Mukim Tanjung 12, 42700 Banting Selangor. Tel : 03-3182 2000 Faks : 03- 3182 2382 / 3182 2279	Lion Group Complex Lot 2319, 2320, 2321, 2323, 2582, 2823, dan 2824 Mukim Tanjung Dua Belas Daerah Kuala Langat 42700 Selangor.	418.00	12-06-2007
Eng Lian Enterprise Sdn. Bhd.				
26	9 Jalan Ampang #05-00 50450 Kuala Lumpur. Tel : 03-2056 0600 Faks : 03-2056 0700	Bangsar Village II Lot 43872, 43873 dan 43874 Mukim Kuala Lumpur, Daerah Kuala Lumpur 59100 Wilayah Persekutuan.	3.12	03-09-2007
Y.S. Tang Holdings Sdn. Bhd.				
27	1-888, KB Mall, Jalan Hamzah 15050 Kota Bharu, Kelantan. Tel : 09-747 6622 Faks : 09-747 5900	KB Mall, PT 101, Jalan Hamzah Seksyen 16 Bandar Kota Bharu 15050 Kelantan.	3.16	18-09-2007
Jurus Kota Sdn. Bhd.				
28	2-888, M-Floor, Alor Star Mall Kawasan Perusahaan Tandop Baru, 05400 Alor Star, Kedah. Tel : 04-772 9233 Faks : 04-771 2033	Alor Star Mall, Lot 801 & 802 Dalam Kawasan Perniagaan Dan Industri Kecil Sri Tandop 1, Mukim Pengkalan Kundor Daerah Kota Setar, Kedah.	3.59	18-09-2007

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
Astral Realty Sdn. Bhd.				
29	East Coast Mall, Level 3, Jalan Putra Square 6 Putra Square, 25200 Kuantan, Pahang. Tel : 09-560 9595 Faks : 09-560 9597	PUTRA Square Lot 423 (PN 5596) Mukim Kuantan, 25000 Kuantan Pahang.	4.79	10-10-2007
C.S. Khin Developments Sdn. Bhd.				
30	6 th Floor, Wisma Mirama Jalan Wisma Putra, 50460 Kuala Lumpur. Tel : 03-2142 1666 Faks : 03-2148 1229	Wisma Mirama Lot 888, Section 69 50460 Kuala Lumpur Wilayah Persekutuan.	0.85	10-10-2007
Wisma Central Management Corporation				
31	Lot 2.142, 1 st Floor, Wisma Central Jalan Ampang, Box #198, 50450 Kuala Lumpur. Tel : 03-2161 7522 Faks : 03-2161 9721	Wisma Central Geran 10015, Lot 150 Seksyen 58, Bandar Kuala Lumpur 50450 Wilayah Persekutuan.	2.20	31-10-2007
AEON Co. (M) Bhd.				
32	AEON Bukit Tinggi Shopping Centre Level 1, No. 1, Persiaran Batu Nilam 1/KS 6 Bandar Bukit Tinggi 2, 41200 Klang, Selangor. Tel : 03-3326 2370 Faks : 03-3326 2371	AEON Co. (M) Bhd. Mall Lot PT 2042 HS(D) 105957 dan PT 2043 HS(D) 105958 Mukim Klang Daerah Klang Selangor.	12.00	11-12-2007
Tradewinds Properties Sdn. Bhd.				
33	21 st Floor, Wisma Zelan No. 1, Jalan Tasik Permaisuri 2 Bandar Tun Razak, Cheras, 56000 Kuala Lumpur. Tel : 03-9106 3166 Faks : 03 9106 3177	Kompleks Antarabangsa Lot 1158, Seksyen 57 Mukim Bandar Kuala Lumpur Daerah Kuala Lumpur 50250 Wilayah Persekutuan.	4.97	11-12-2007
GCH Retail (Malaysia) Sdn. Bhd.				
34	Giant Hypermarket Kuala Terengganu Complex Division, Lot PT 1485, Jalan Padang Hiliran 21100 Kuala Terengganu, Terengganu. Tel : 09-631 9220 Faks : 09-631 9230	GCH Retail (Malaysia) Sdn. Bhd. Mall HS(D) 5917, PT 1485 Mukim Cabang Tiga Daerah Kuala Terengganu 21100 Terengganu.	3.30	09-01-2008
Awona Land Sdn. Bhd.				
35	Suite 4.09.03, 4 th Floor, Central Square No. 23, Jalan Kampung Baru, 08000 Sungai Petani, Kedah. Tel : 04-421 2268 / 423 8288 Faks : 04-422 4552	Central Square Shopping Centre Lot 134 HS(D) 759/95 Mukim Sungai Petani Daerah Kuala Muda 08000 Kedah.	4.10	14-03-2008
AEON Co. (M) Bhd.				
36	Kinta City Shopping Centre No. 2, Jalan Teh Lean Swee Off Jalan Sultan Azlan Shah Utara, 31400 Ipoh, Perak. Tel : 05-548 4668 / 545 0913 Faks : 05-546 0899	AEON Kinta City Shopping Centre Lot 51150 Mukim Ulu Kinta Daerah Kinta, 31400 Ipoh Perak.	7.65	18-03-2008
Menara Hap Seng Sdn. Bhd.				
37	19 th Floor, Menara Hap Seng Letter Box No. 83, Jalan P. Ramlee 50250 Kuala Lumpur. Tel : 03-2145 1363 / 2145 9363 Faks : 03-2145 7818	Menara Hap Seng Lot 593 & 594 Mukim Bandar Kuala Lumpur Daerah Kuala Lumpur 50250 Kuala Lumpur Wilayah Persekutuan.	4.82	19-03-2008

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
38	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Hypermarket Kuantan, Lot 5197 Jalan Tanah Putih, Seksyen 124, 25150 Kuantan, Pahang. Tel : 09-515 6999 Faks : 09-515 6466	Lot 5197 Mukim Kuantan Daerah Kuantan 25100 Pahang.	2.96	10-04-2008
39	AEON Co. (M) Bhd.			
	Aeon Seberang Prai City Shopping Centre Management Office, 1 st Floor Perdana Mall, Jalan Perda Timur 14000 Bukit Mertajam, Seberang Prai Tengah Pulau Pinang. Tel : 04-537 8022 Faks : 04-537 9022	Lot H.S.(M): 378 / PT 802 Mukim 6 & 7 Seberang Perai Tengah 14000 Pulau Pinang.	14.00	28-04-2008
40	Malaysia Airline System Berhad			
	3 rd Floor, Administration Building 1 MAS Complex A, Sultan Abdul Aziz Shah Airport 47200 Subang, Selangor. Tel : 03-7843 3000 Faks : 03-8783 3089	Kompleks Kampus MAS Lot PT 19 Mukim Dengkil Daerah Sepang 64000 Selangor.	25.00	29-04-2008
41	Amtrustee Berhad			
	Hektar Premier Sdn. Bhd. Lot F36, First Floor Subang Parade No. 5, Jalan SS 16/1, 47500 Subang Jaya, Selangor. Tel : 03-5032 9778 / 5633 2530 Faks : 03-5633 8079	Subang Parade Lot 14193, Mukim Bandar Subang Jaya Daerah Petaling 47500 Selangor.	10.00	07-05-2008
42	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Superstore Ulu Klang - Complex Division Lot 13793 & 13796, Jalan Changkat Permata Taman Permata, 53300 Kuala Lumpur. Tel : 03-4106 2275 / 4105 3194 Faks : 03-4106 7414	Lot 13793 dan 13796 Mukim Setapak Daerah Gombak 53300 Selangor.	2.68	20-05-2008
43	Reliable Capacity Sdn. Bhd.			
	G-M-1, Axis Atrium @ Axis Pandan Jalan Cempaka, Taman Cempaka, 68000 Ampang, Selangor. Tel : 03-9281 2307 Faks : 03-9281 2305	Parcel 1 Perdagangan 'Axis Atrium' No. Lot 27985, Mukim Ampang Daerah Hulu Langat Selangor.	3.60	13-06-2008
44	GCH Retail (Malaysia) Sdn. Bhd.			
	(Complex Management Division - Giant Tampoi) Lot 54, Jalan Skudai, 81200 Tampoi, Johor Bahru, Johor. Tel : 07-238 2353 Faks : 07-238 2354	Lot 54, Mukim Tampoi Daerah Johor Bahru 81200 Johor.	5.10	08-07-2008
45	GCH Retail (Malaysia) Sdn. Bhd.			
	(Complex Division - Plentong) 3 Jalan Masai Lama, Mukim Plentong, 81750 Johor Bahru. Tel : 07-358 1402 Faks : 07-352 6532	Lot P.T.D. 116058 dan 116059 Mukim Plentong Daerah Johor Bahru Johor.	4.20	17-07-2008
46	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Hypermarket Skudai, Lot 3066 & 3067 Mukim Tebrau, 81200 Johor Bahru, Johor. Tel : 07-554 7233 Faks : 07-554 7229	Lot 3066 & 3067 Mukim Tebrau Daerah Johor Bahru 81200 Johor.	3.70	12-08-2008
47	Panglobal Insurance Bhd.			
	(PanGlobal Marketing Berhad) Suite 34.01, Level 34, Menara KH Jalan Sultan Ismail, 50250 Kuala Lumpur. Tel : 03-2141 1010 Faks : 03-2141 5103	PanGlobal Building Lot 53 Section 20 Bandar Petaling Jaya Daerah Petaling Jaya Selangor.	1.70	24-10-2008

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
48	Lianbang Ventures Sdn. Bhd.			
	F4-40, Level 4, Dataran Pahlawan Melaka Megamall Jalan Merdeka, 75000 Bandar Hilir, Melaka. Tel : 06-282 1828 Faks : 06-283 1827	Dataran Pahlawan Melaka Megamall Lot 14, 141 dan 142 Mukim Kawasan Bandar XXVII, Daerah Melaka Tengah Melaka.	5.52	29-10-2008
49	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Mall Kelana Jaya No. 33, Jalan SS 6/12 SS 6, Kelana Jaya, 47301 Petaling Jaya, Selangor. Tel : 03-7880 4714 Faks : 03-7803 7858	Giant Mall Kelana Jaya Lot PT 67 Seksyen 40 Mukim Bandar Petaling Jaya Daerah Petaling 47301 Selangor.	6.11	05-11-2008
50	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Hypermarket Shah Alam, Lot 2, Persiaran Sukan Seksyen 13, 40100 Shah Alam, Selangor. Tel : 03-5544 8888 / 5511 8530 Faks : 03-5511 9681	Lot 2, Seksyen 13 Daerah Shah Alam Selangor.	4.20	05-11-2008
51	Tropicana City Sdn. Bhd., (Formerly Known as Dijaya Land Sdn. Bhd.)			
	Management Office, Lot B1-01 Basement 1, Tropicana City Mall, No. 3 Jalan SS20/27 47400 Petaling Jaya, Selangor. Tel : 03-7710 1818 Faks : 03-7710 0202	Tropicana City Lot 45821 Mukim Damansara Utama Daerah Petaling Jaya Selangor.	11.03	05-11-2008
52	BR Property Holdings Sdn. Bhd.			
	Lot No. T117A, 3 rd Floor, Bangsar Shopping Centre 285 Jalan Maarof, Bukit Bandaraya, 59000 Kuala Lumpur. Tel : 03-2094 7700 Faks : 03-2094 1022	Bangsar Shopping Centre Lot 41274 Daerah Kuala Lumpur Wilayah Persekutuan Kuala Lumpur.	8.51	18-11-2008
53	Dream Property Sdn. Bhd.			
	2-12, 2 nd Floor, Batu Pahat Mall Jalan Kluang 83000 Batu Pahat, Johor. Tel : 07-433 7733 Faks : 07-438 7773	Batu Pahat Mall Lot 2566 Mukim Simpang Kanan Daerah Batu Pahat Johor.	7.35	18-11-2008
54	AEON Co. (M) Bhd.			
	AEON Bukit Indah Shopping Centre 1 st Floor, No. 8, Jalan Indah 15/2 Bukit Indah, 51200 Johor Bahru, Johor. Tel : 07-2368 071 Faks : 07-2368 076	Lot PTD 90606 Mukim Pulai Daerah Johor Bahru Johor.	8.00	26-11-2008
55	Tesco Stores (M) Sdn. Bhd. (Melaka Branch)			
	No. 1 Jalan Tun Abdul Razak Peringgit 74500 Melaka. Tel : 06-288 3078 Faks : 06-288 2028	Kompleks Perniagaan TESCO Lot 1 PT 1053 dan Lot 2 PT 1111 Mukim Peringgit Lot 3 PT2 Mukim Town Area XXXII dan Lot 4 PT70 Mukim Town AreaXXXIII Daerah Melaka Tengah 75400 Melaka.	3.01	26-11-2008
56	GCH Retail (Malaysia) Sdn. Bhd.			
	Complex Management, Giant Hypermarket Klang Lot 83191 & 83192, Persiaran Batu Nilam Bandar Bukit Tinggi 1, 41200 Klang, Selangor. Tel : 03-3323 5518 Faks : 03-3323 5863	Lot PT 62366(HSD 63350), PT 62367(HSD 63351) dan PT 75234A (HSD 68651) Mukim Kelang, Daerah Kelang Selangor.	3.30	03-12-2008

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
57	Tanah Sutera Development Sdn. Bhd.			
	No. 2, Jalan Sutera Merah 2 Taman Sutera 81200 Johor Bharu. Tel : 07-289 9009 Faks : 07-289 9119	Kompleks Perniagaan Sutera Mall Lot Sebahagian PTD 67962 Mukim Pulau Daerah Johor Bharu Johor.	5.98	03-12-2008
58	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Hypermarket Senawang, Lot 1571 Jalan Senawang 70450 Seremban, Negeri Sembilan. Tel : 06-678 0719 / 678 0720 Faks : 06-678 2360	Lot PT 1571 HS(D) 133690 Pekan Senawang Daerah Seremban Negeri Sembilan.	2.12	03-12-2008
59	Malaysia Airports Sdn. Bhd.			
	Lapangan Terbang Sultan Ismail Petra 16100 Kota Bharu Kelantan. Tel : 09-773 7400 Faks : 09-773 2852	Kompleks Lapangan Terbang Sultan Ismail Petra Lot 833 (Sek 40), Mukim Pengkalan Chepa Dan Lot 2209 (Sek 39), Mukim Baung Daerah Kota Bharu Kelantan.	2.56	19-12-2008
60	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Hypermarket Southern City Ground Floor, Southern City, No. 3, Jalan Suria 19 Taman Suria, 81100 Johor Bahru, Johor. Tel : 07-334 7214 Faks: 07-334 6762	Lot HS(D)247769 PTB 20274 Daerah Bandar Johor Bahru Johor.	1.95	14-01-2009
61	Permodalan Nasional Berhad			
	19 th Floor, Menara Tun Ismail Mohamed Ali No. 25, Jalan Raja Laut, 50350 Kuala Lumpur. Tel : 03-2694 2213 Faks : 03-2691 3791	Menara Tun Ismail Mohamed Ali Lot 1406 Mukim Bandar Kuala Lumpur Wilayah Persekutuan Kuala Lumpur.	5.95	04-02-2009
62	AEON Co. (M) Bhd.			
	Aeon AU2 (Setiawangsa) Shopping Centre, Setiawangsa Lower Ground Floor, No. 6, Jalan Taman Setiawangsa (Jalan 37/56) AU2, Taman Keramat, 54200 Kuala Lumpur. Tel : 03-4257 2533 Faks: 03-4257 2633	Lot PT 1019 (HSD 83614) Mukim Hulu Kelang Wilayah Persekutuan Kuala Lumpur.	3.89	16-02-2009
63	Ivory Gleneary Sdn. Bhd.			
	77-4B-1, Penang Times Square Jalan Dato Keramat 10150 George Town Penang. Tel : 04-210 9020 Fax : 04-210 9021	Penang Times Square Lot 73, 96, 98, 101, 102, 145, 146, 150, 159, 160, 163, 278, 279, 735 hingga 753 dan 767 Seksyen 10, Georgetown 10150 Pulau Pinang.	15.80	16-02-2009
64	Bronze Towers Sdn. Bhd.			
	No. B 60, First Floor, Lorong Tun Ismail 5 25000 Kuantan Pahang. Tel : 09-515 9303 Faks : 09-515 9304	Plaza Kuantan Lot PT 6727/12 dan PT 6727/13 Mukim Kuala Kuantan Daerah Kuantan Pahang.	2.50	16-02-2009
65	Magic Coast Sdn. Bhd.			
	No. 2-2, Jalan SS 6/6, Kelana Jaya 47301 Petaling Jaya, Selangor. Tel : 03-7805 2022 Faks : 03-7804 7668	Lot 582 Mukim Jalan Tun Sambanthan Seksyen 55, Daerah Kuala Lumpur Negeri Persekutuan Kuala Lumpur.	13.00	23-02-2009

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
Floral E-Joy Sdn. Bhd.				
66	No : 36A (1 st Floor), Jalan Persiaran Flora Utama Taman Flora Utama, 83000 Batu Pahat, Johor. Tel : 07-432 7899 Faks : 07-432 6899	Square 1, Lot PTD 48031 Mukim Simpang Kanan Daerah Batu Pahat Johor.	1.99	25-02-2009
Legend Advance Sdn. Bhd.				
67	M - IOI, Jalan Alor Bukit Taman Legenda Putra 81000 Kulai, Johor. Tel : 07-662 6101 Faks : 07-662 2510	IOI Mart Lot 5592 - 5595 Mukim Senai Daerah Kulai Johor	0.92	12-03-2009
MSL Properties Sdn. Bhd.				
68	Wangsa Walk Mall Management Office, Lot G93A Wangsa Walk Mall, Wangsa Avenue, 9, Jalan Wangsa Perdana 1 Bandar Wangsa Maju, 53300 Kuala Lumpur. Tel : 03-4142 8888 Faks : 03-4149 7441	Wangsa Walk Mall Lot PT 8282 (HSD 111811) Mukim Setapak Daerah Kuala Lumpur Wilayah Persekutuan.	8.63	20-03-2009
Salak Park Sdn. Bhd.				
69	No. 3-1-1, Block A Megan Salak Park, Jalan 2/125E Taman Desa Petaling, 57100 Kuala Lumpur. Tel : 03-9057 5733 Faks : 03-9058 7481	Lot No. 38606 and 38603 Taman Desa Petaling Mukim Petaling Daerah Wilayah Persekutuan 57100 Kuala Lumpur.	2.27	27-04-2009
Tenaga Nusantara Sdn. Bhd.				
70	Lot 2-18, 2 nd Floor, Kluang Mall, Jalan Rambutan Bandar Kluang, 86000 Kluang, Johor. Tel : 07-776 1240 Faks : 07-776 1202	Lot 6113 Mukim Bandar Kluang Daerah Kluang 86000 Johor.	4.50	13-05-2009
Technology Park Malaysia Corporation Sdn. Bhd.				
71	Level 5, Enterprise 4, Lebuhraya Puchong - Sg. Besi Bukit Jalil, 57000 Kuala Lumpur. Tel : 03-8998 2260 Faks : 03-8998 2226	Taman Teknologi Malaysia Lot PT 5517, Mukim Petaling Daerah Kuala Lumpur Wilayah Persekutuan.	4.65	18-05-2009
1st Avenue Mall Sdn. Bhd.				
72	Centre Management Office, 5 th Floor, 1 st Avenue 182, Jalan Magazine, 10300 Penang. Tel : 04-261 1121 Faks : 04-263 1121	Lot 386 Mukim Seksyen 17 Daerah Georgetown Pulau Pinang.	6.08	22-05-2009
Mydin Mohamed Holdings Bhd.				
73	Mydin HQ Lot 675 & 676, Persiaran Subang Permai, Off Jalan SS13/1K 47500 Subang Jaya, Selangor. Tel : 03-8073 6000 Faks : 03-8073 6388	MYDIN Wholesale Hypermarket Lot 675 & 676 Mukim Damansara Daerah Petaling Jaya Selangor.	5.62	02-06-2009
Tesco Stores (Malaysia) Sdn. Bhd.				
74	TESCO Seri Alam Lot PTD 111515, Jalan Seri Alam, Bandar Seri Alam 81750 Masai, Johor. Tel : 07-388 5164 Faks : 07-388 6709	TESCO Seri Alam Lot PTD 111515 Mukim Plentong Daerah Johor Bharu Johor.	3.40	16-06-2009

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
75	Tesco Stores (Malaysia) Sdn. Bhd.			
	No.3 Jalan Batu Nilam 6/ks6, Bandar Bukit Tinggi 41200 Klang, Selangor. Tel : 03-3323 1100 Faks : 03-3323 8802	TESCO Kelang Lot 83595, Mukim Pekan Pandamaran Daerah Kelang Selangor.	3.40	16-06-2009
76	Tesco Stores (Malaysia) Sdn. Bhd.			
	148-149 Pusat Bandar Puchong Jalan Bandar 3, Off Jalan Puchong 47100 Puchong, Selangor. Tel : 03-8076 2166 Faks : 03-8076 1525	TESCO Puchong Lot PT 2, Mukim Pekan Desa Puchong Daerah Petaling Selangor.	3.40	16-06-2009
77	Tesco Stores (Malaysia) Sdn. Bhd.			
	TESCO Ipoh No. 2, Jalan Jambu, Taman Teh Teng Seng 31400 Ipoh, Perak. Tel : 05-546 3352 Faks : 05-548 4159	TESCO Ipoh Lot PT 217003 Mukim Hulu Kinta Daerah Kinta Perak.	3.40	16-06-2009
78	Tesco Stores (Malaysia) Sdn. Bhd.			
	Lot PT 37820 & 11196 Mukim Kajang Saujana Impian 43000 Kajang Selangor. Tel : 03-8734 1369 Faks : 03-8734 1297	TESCO Kajang Lot PT 37820, Mukim Kajang dan Lot PT 66452 & 44628 Seksyen 9, Mukim Bandar Kajang Daerah Ulu Langat Selangor.	3.40	16-06-2009
79	Kumpulan Wang Simpanan Pekerja			
	Jabatan Pengurusan Harta, Tingkat 14, Bangunan KWSP Jalan Raja Laut, 50350 Kuala Lumpur. Tel : 03-2616 2269 Faks : 03-2693 8704	Lot PT 144258 Bandar Ipoh Daerah Kinta Perak.	2.44	16-06-2009
80	See Sen Chemical Bhd.			
	PT 3940, Kawasan Perindustrian Teluk Kalong 24000 Kemaman, Terengganu. Tel : 09-863 2142 / 863 2304 Faks : 09-863 2143	Malay-Sino Chemical Industries Sdn. Bhd. Lot 2989, 3558, 3557 dan 4524 Mukim Teluk Kalong, Daerah Kemaman Terengganu.	6.00	17-06-2009
81	Crest Worldwide Resources Sdn. Bhd.			
	Wisma SKN, No. 5, Persiaran Lidco 1 Off Jalan Yap Kwan Seng, 50450 Kuala Lumpur. Tel : 03-2162 1929 Faks : 03-2162 0929	Lot 134, PT 32, Seksyen 44 Mukim Bandar Kuala Lumpur Daerah Kuala Lumpur Wilayah Persekutuan.	7.00	17-06-2009
82	Westports Malaysia Sdn. Bhd.			
	P.O. Box 266 Pulau Indah, 42009 Port Klang. Tel : 03-3169 4000 Faks : 03-3169 4101	Lot PT 65746 Mukim Klang, Daerah Klang Selangor.	83.00	26-06-2009
83	Tesco Stores (Malaysia) Sdn. Bhd.			
	TESCO Extra Ipoh No. 2, Laluan Tasek Timur 6, Perak. Taman Tasek Indra, Off Jalan Kg. Bercham, 31400 Ipoh. Tel : 05-546 3352 Faks : 05-548 4159	TESCO Extra Ipoh Lot PT 128421 Mukim Hulu Kinta Daerah Kinta Perak.	2.76	02-07-2009

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
84	Tesco Stores (Malaysia) Sdn. Bhd.			
	Ground Floor, AIM Point Plaza Jalan Emas 15 Bandar Sungai Emas 42700 Banting, Selangor. Tel : 03-3187 2909 Faks : 03-3187 2141	TESCO Banting Ground Floor, AIM Point Plaza Bandar Sungai Emas Mukim Tanjung Dua Belas 42700 Banting, Kuala Langat Selangor.	1.30	02-07-2009
85	Tesco Stores (Malaysia) Sdn. Bhd.			
	TESCO Extra Sungai Dua No. 657, Jalan Sg Dua, Pulau Pinang. 11700 Sungai Dua Tel : 04-656 9888 Faks : 04-659 1188	TESCO Extra Sungai Dua Lot 10252, Mukim 13 Daerah Timur Laut (DTL) Jalan Sungai Dua Pulau Pinang.	1.70	02-07-2009
86	Tesco Stores (Malaysia) Sdn. Bhd.			
	No 1, Persiaran Sukan, Peti Surat 7427 Seksyen 13, 40714 Shah Alam, Selangor. Tel : 03-5512 2600 Faks : 03-5510 2305	TESCO Extra Shah Alam Lot 1107, Mukim Bandar Shah Alam Daerah Petaling Selangor.	2.98	02-07-2009
87	Tesco Stores (Malaysia) Sdn. Bhd.			
	No. 2, Jalan Midah 2 Taman Midah Cheras Cheras, 56000 Kuala Lumpur. Tel : 03-9133 5100 Faks : 03-9132 3641	TESCO Extra Cheras Lot PT 4476 Mukim Kuala Lumpur Daerah Kuala Lumpur Wilayah Persekutuan.	2.98	02-07-2009
88	Tesco Stores (Malaysia) Sdn. Bhd.			
	Tesco Extra Seremban Kawasan Perindustrian Oakland 70300 Seremban 2, Negeri Sembilan. Tel : 06-762 3227 Faks : 06-762 3241	TESCO Extra Seremban Lot PT 452 Pekan Bukit Kepayan Daerah Seremban Negeri Sembilan.	2.13	02-07-2009
89	MRCB Selborn Corporation Sdn. Bhd.			
	MRCB Central Properties Sdn. Bhd. Level 22, 1 Sentral, Jalan Travers, Kuala Lumpur Sentral P.O.Box 12640, 50470 Kuala Lumpur. Tel : 03-2786 8080 Faks : 03-2780 7787	Plaza Alam Sentral Lot 58, Seksyen 14 Mukim Bandar Shah Alam Daerah Petaling, Selangor.	11.00	08-07-2009
90	Malaysia Airports Sdn. Bhd.			
	Lapangan Terbang Antarabangsa Langkawi 07100 Padang Mat Sirat Langkawi, Kedah. Tel : 04-955 1311 / 955 1312 Faks : 04-955 1314	Lapangan Terbang Antarabangsa Langkawi TK1 Mukim Bohor & TK2 Mukim Padang Mat Sirat & TK3, TK4 Mukim Kedawang Daerah Langkawi, Kedah.	2.29	17-07-2009
91	Amtrustee Berhad			
	PT 487, Mahkota Parade Jalan Banda Hilir, Kg. Banda Hilir 75000 Melaka. Tel : 06-282 6151 Faks : 06-282 7305	Mahkota Parade Lot PT 487 Mukim Melaka Tengah Daerah Melaka Melaka.	10.80	17-07-2009
92	Malaysia Airports Sdn. Bhd.			
	Lapangan Terbang Sultan Ahmad Shah 25150 Kuantan, Pahang. Tel : 09-531 2150 / 531 2123 Faks : 09-538 4017	Lapangan Terbang Sultan Ahmad Shah Lot PT 86418, Mukim Kuala Kuantan Daerah Kuantan, Pahang.	0.33	17-07-2009

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
Malaysia Airports Sdn. Bhd.				
93	Lapangan Terbang Antarabangsa Pulau Pinang 11900 Bayan Lepas Pulau Pinang. Tel : 04-643 4411 Faks : 04-643 5399	Lapangan Terbang Antarabangsa Pulau Pinang Lot 7565 dan PT 230, 231, 232, 228, 229, 3096, 1610, TK1 dan TK2, Mukim 12 Daerah Barat Daya Pulau Pinang.	4.00	17-07-2009
Abi Construction Sdn. Bhd.				
94	No. 332A, Lorong Serawak Melawati Urban 1, Pusat Bandar Melawati 53100 Kuala Lumpur. Tel : 03-4147 3733 Faks : 03-4147 4733	Plaza Paya Bunga Lot PT 3073K Bandar Kuala Terengganu Daerah Kuala Terengganu Terengganu.	3.83	31-07-2009
Pembinaan Titis Jaya Sdn. Bhd.				
95	TJ Mart, Lot 5035, Batu 17 1/2 Jalan Air-Hitam, Saleng, 81400 Senai, Johor. Tel : 07-598 4323 Faks : 07-598 5323	T.J. Mart, Lot 5035 Mukim Kulai Daerah Kulijaya Johor.	0.55	11-09-2009
Mydin Mohamed Holdings Bhd.				
96	Mydin Melaka Hypermarket Lot 15060, 15061, 15062, Mukim Bukit Katil Melaka Tengah, 75450 Ayer Keroh, Melaka. Tel : 06-231 3007 Faks : 06-231 3070	MYDIN Wholesale Hypermarket MITC Melaka Lot 15060, 15061 & 15062 Mukim Bukit Katil Daerah Melaka Tengah Melaka.	4.30	14-09-2009
Kuantan Port Consortium Sdn. Bhd.				
97	Wisma KPC, Km. 25, Tanjung Gelang, P.O.Box 199 25720 Kuantan, Pahang. Tel : 09-586 3888 Faks : 09-586 3777	Kuantan Port Lot 1863, Mukim Sungai Karang Daerah Kuantan Pahang.	3.49	05-10-2009
AEON Co. (M) Bhd.				
98	AEON Bandaraya Melaka Shopping Centre No. 2, Jalan Lagenda Taman 1 - Lagenda, 75400 Melaka. Tel : 06-282 9389 Faks : 06-281 6398	Jusco Shopping Mall Lot PT 1 Kawasan Bandar 32 dan PT 69 Kawasan Bandar 33 Daerah Melaka Tengah Melaka	22.50	05-10-2009
Shell Refining Company (Federation Of Malaya) Bhd.				
99	Batu 1, Jalan Pantai 71000 Port Dickson, Negeri Sembilan. Tel : 06-647 1311 Faks : 06-647 4622	71000 Port Dickson Negeri Sembilan.	35.00	05-10-2009
Couture Homes Sdn. Bhd.				
100	A-12-02, Empire Office, Empire Subang, Jalan SS 16/1 47500 Subang Jaya, Selangor. Tel : 03-5638 9888 Faks : 03-5631 9888	Lot 6 dan PT 20912 Mukim Bandar Subang Jaya Daerah Petaling Selangor	8.67	22-12-2009
Kumpulan Wang Simpanan Pekerja				
101	Jabatan Pengurusan Harta Tingkat 14, Bangunan KWSP, Jalan Raja Laut 50350 Kuala Lumpur. Tel : 03-2616 2269 Faks : 03-2693 8704	Lot 842, Seksyen 14 Mukim Bandar Georgetown Daerah Timur Laut Pulau Pinang	3.40	25-01-2010

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
Ipoh Tower Sdn. Bhd.				
102	Unit No. 2FO-1, Ipoh Tower Jalan Dato' Seri Ahmah Said Greentown, 30450 Ipoh, Perak. Tel : 05-241 4662 Faks : 05-242 4563	Complex Ipoh Tower Sdn. Bhd. Lot 23628 Mukim Bandar Ipoh (S) & 23629, 8701U, 9570U Mukim Bandar Ipoh (U) Daerah Kinta, Perak.	4.25	03-05-2010
Jasa Imani Sdn. Bhd.				
103	B-44, Tingkat Bawah dan Atas Pusat Komersial Semambu, Jalan Semambu 25300 Kuantan, Pahang. Tel : 09-566 9024 Faks : 09-568 4770	Menara Pejabat Putra Square Lot 423, Seksyen 20(PN5596) Jalan Bukit Sekilau Bandar Kuantan Pahang.	4.25	27-09-2010
Sepang Goldcoast Sdn. Bhd.				
104	No. 30B 1st & 2nd Floor, Jalan Pekedai U1/36 Section U1 Hicom Glenmarie Industrial Park 40150 Shah Alam, Selangor. Tel : 03-5569 0800 Faks : 03-5569 0900 / 5569 2488	Lot PT 5247 (PKT 67) Pantai Bagan Lalang, Mukim Sepang Daerah Sepang Selangor.	9.50	13-12-2010
Setia Haruman Sdn. Bhd.				
105	(Property Management Department) The Lodge, Persiaran Multimedia, Cyber 7 63000 Cyberjaya, Selangor. Tel : 03-8312 8000 Faks : 03-8312 8077	The Lodge Persiaran Multimedia, Cyber 7 63000 Cyberjaya, Selangor.	15.50	22-12-2010
Gch Retail (Malaysia) Sdn. Bhd.				
106	Giant Superstore Lukut Lot 12532, Jalan Dataran Segar Batu 3, Jalan Seremban 71010 Port Dickson, Negeri Sembilan.	Giant Superstore Lukut Complex Lot No. 12532 (Old Lot 1058) Mukim Port Dickson Daerah Port Dickson Negeri Sembilan.	2.55	22-12-2010
Petronas Chemicals Mtbe Sdn. Bhd.				
107	Lot 111/112, Kawasan Perindustri Gebeng Peti Surat 1/2 26080 Balok, Kuantan, Pahang. Tel : 09-585 6778 / 585 6700 Faks : 09-585 6751 / 585 4090	Polypropylene Malaysia Sdn. Bhd. (PMSB) No. Lot 111 dan 112 Mukim Gebeng, Daerah Kuantan 26080 Kuantan Pahang.	40.00	24-12-2010
Sun Victory Sdn. Bhd.				
108	Unit A5-UG1-01, Block A5, Solaris Dutamas No. 1, Jalan Dutamas 1, 50480 Kuala Lumpur. Tel : 03-6207 9426 Faks : 03-6207 9427	No. 1, Jalan Dutamas 1 50480 Kuala Lumpur.	5.08	18-01-2011
Aston Villa Sdn. Bhd.				
109	33-1-1 Villa Scott, Jalan Scott, Brickfields 50470 Kuala Lumpur. Tel : 03-2381 7777 Faks : 03-2381 8010	Lot 1810 (P.T. 3717 & P.T. 3718) Jalan Kelang Lama 58200 Kuala Lumpur.	5.41	29-04-2011
Amtrustee Berhad				
110	Capitamalls Malaysia Trust, 170-06-01, Plaza Gurney Persiaran Gurney, 10250 Penang. Tel : 03-2279 9863 Faks : 03-2279 9889	No. Lot 2903, Mukim Seksyen 1 Daerah Timur Laut 10250 Pulau Pinang.	22.50	29-04-2011
Festival City Sdn. Bhd.				
111	Level 5, Klang Parade, No. 2112, Jalan Meru 41050 Klang, Selangor. Tel : 03-3344 2882 / 3344 9889 Faks : 03-3344 2889	No. Lot 26220 Mukim Setapak 53300 Kuala Lumpur.	7.86	29-04-2011

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
Viva Mall Sdn. Bhd.				
112	Penthouse Corporate Suites, D-11-1 & @ Level 13, Block D Menara Uncang Emas (Ue3), No. 85, Jalan Loke Yew 55200 Kuala Lumpur. Tel : 03-9281 3888 Faks : 03-9281 8993	Lot P.T. 4 Section 91A Jalan Loke Yew 55200 Kuala Lumpur.	14.02	29-04-2011
AEON Co. (M) Bhd.				
113	AEON Mahkota Cheras Shopping Centre Management Office, 1 st Floor, Jalan Temenggung 21/9 Persiaran Mahkota Cheras 1, Bandar Mahkota Cheras 43200 Cheras, Selangor. Tel : 03-9080 3579 Faks : 03-9080 3580	Lot PT 47250 Mukim Cheras Daerah Hulu Langat 43200 Selangor.	3.50	29-04-2011
AEON Co. (M) Bhd.				
114	AEON Taman Equine Shopping Centre No. 2, Jalan Equine Taman Equine, Bandar Putra Permai 43300 Seri Kembangan, Selangor. Tel : 03-8945 2700 Faks: 03-8945 3700	AEON Taman Equine Shopping Mall No. Lot 53391 (PT 27427) Mukim Petaling Daerah Petaling Selangor.	5.44	11-05-2011
Jastamax Sdn. Bhd.				
115	Wisma Mah Sing, Penthouse Suite 2 No. 163, Jalan Sungai Besi, 57100 Kuala Lumpur. Tel : 03-9221 6888 Faks : 03-9222 8380	Lot PT 657 Seksyen 92 Sungai Besi 57100 Kuala Lumpur.	2.72	26-05-2011
Upwell Shopping Complex (Segamat) Sdn. Bhd.				
116	No. 25 - 39, Jalan Syed Abdul Kadir 85000 Segamat, Johor. Tel : 07-932 8888 Faks: 07-932 4732	Lot PTD 6880 – 6894 Jalan Syed Abdul Kadir 85000 Segamat Johor.	0.75	26-05-2011
Greenhill Resources Sdn. Bhd.				
117	Setia Alam Welcome Centre, No. 2, Jalan Setia Indah AD/U13 1 AD Setia Alam, Seksyen U13, 40170 Shah Alam, Selangor. Tel : 03-3344 9949 Faks : 03-3344 3546	No. PT 26535, Mukim Bukit Raja Daerah Petaling Selangor.	17.00	24-06-2011
Malaysia Airports Sdn. Bhd.				
118	Lapangan Terbang Sultan Abdul Aziz Shah 47200 Subang Selangor. Tel : 03-7846 7777 Faks: 03-7846 3300	Lapangan Terbang Sultan Abdul Aziz Shah Complex Lot 1210 dan PT 46225 Mukim Sungai Buloh dan Damansara, Daerah Petaling Selangor.	14.00	29-06-2011
Malaysia Airports Sdn. Bhd.				
119	Lapangan Terbang Sultan Mahmud 21300 Kuala Terengganu, Terengganu. Tel : 09-667 3666 / 662 4084 Faks : 09-662 6670	Lot 11467, PT12716K, PT12717K, PT12718 Lapangan Terbang Sultan Mahmud Terengganu.	1.60	29-06-2011
Malaysia Airports Sdn. Bhd.				
120	Lapangan Terbang Sultan Abdul Halim 06550 Alor Setar, Kedah. Tel : 04-714 2994 Faks : 04-714 5345	Lot TK1, TK2, TK3, PT230, 945, 824, 831, 828, 001061 Lapangan Terbang Sultan Abdul Halim, Kedah.	1.31	29-06-2011

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
Badan Pengurusan Bersama Riviera Bay Condominium				
121	b/p Badan Pengurusan Bersama Kondominium Riviera Bay P.O. Box 112, 75720 Melaka. Tel : 06-292 6700 Faks : 06-292 6700	Lot 134, 135, 136, 137, 292 dan Sebahagian Lot 281 dan 133, Tanjung Keling, Melaka Tengah Melaka.	3.00	25-07-2011
GSL Development Sdn. Bhd. (Bellworth Developments Sdn. Bhd.)				
122	No. 16, Jalan Wan Kadir Taman Tun Dr. Ismail, 60000 Kuala Lumpur. Tel : 03-7726 6688 Faks: 03-7725 8285	No. Lot 51888 Mukim Kuala Lumpur 60000 Wilayah Persekutuan Kuala Lumpur.	6.42	27-07-2011
Perstima Utility Sdn. Bhd.				
123	PLO 255 Jalan Timah 3 Kawasan Perindustrian Pasir Gudang 81700 Pasir Gudang, Johor. Tel : 07-254 1200 Faks : 07-251 4618	Perstima Berhad, No. Lot 00051694 Mukim Plentong Daerah Johor Bahru Johor.	5.67	27-07-2011
Kenanga Wholesale City Sdn. Bhd.				
124	8-01, Kompleks Kenanga Wholesale City No. 2, Jalan Gelugor, Off Jalan Kenanga 55200 Kuala Lumpur. Tel : 03-9222 2082 Faks : 03-9221 8082	Lot 477, Jalan Merlimau Seksyen 69 55200 Kuala Lumpur.	14.45	04-08-2011
Plus Expressways				
125	Menara Korporat, Persada PLUS Persimpangan Bertingkat Subang KM 15, Lebuhraya Baru Lembah Klang 47301 Petaling Jaya, Selangor. Tel : 03-7801 6666 / 7666 4666 Faks : 03-7801 6600	35 Locations under PLUS Expressways	6.99	26-08-2011
AEON Co. (M) Bhd.				
126	JUSCO Melaka Shopping Centre Leboh Ayer Keroh, 75450 Melaka. Tel : 06-7232 4899 / 231 4929 Faks: 06-233 2988	Lot 4991 (P.T. 7041) Mukim Bukit Baru Daerah Melaka Tengah 75450 Melaka.	5.60	21-09-2011
AEON Co. (M) Bhd.				
127	JUSCO Permas Jaya Shopping Centre No. 1, Jalan Permas Jaya Utara Bandar Baru Permas Jaya, 81750 Johor Bahru, Johor. Tel : 07-388 0600 Faks: 07-386 1600	AEON Bandar Baru Permas Jaya Lot 147003, Zone 3-1 Mukim Permas Jaya 81750 Johor Bahru Johor.	4.05	21-09-2011
AEON Co. (M) Bhd.				
128	Jusco Taman Maluri Shopping Centre, 1st. Floor Jalan Jejaka, Taman Maluri Cheras, 55100 Kuala Lumpur. Tel : 03-9285 5222 Faks : 03-9285 9999	Lot 33, 2386, 2595, 2596 dan 2388 Taman Maluri Jalan Jejaka, Seksyen 90A, Cheras 55100 Wilayah Persekutuan Kuala Lumpur.	4.80	21-09-2011
CSF Advisers Sdn. Bhd.				
129	3552 Jalan Teknokrat 6 63000 Cyberjaya, Selangor. Tel : 03-8318 1313 Faks: 03-8318 0303	Lot PT 12125 Mukim Dengkil Daerah Sepang 63000 Selangor.	6.80	18-10-2011
CSF CX Sdn. Bhd.				
130	7118 Jalan Impact 63000 Cyberjaya, Selangor. Tel : 03-8318 1313 Faks: 03-8318 0303	Lot PT 12144 dan Lot 12145 Mukim Dengkil Daerah Sepang 63000 Selangor.	20.40	18-10-2011

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
Optimistic Organic Sdn. Bhd.				
131	Lot 3351, Teluk Kalong Industrial Estate 24007 Kemaman, Terengganu Tel : 09-863 3029 / 863 3031 Faks : 09-863 3085	Plot No. 4248 Telok Kalong Industries Estate 24007 Kemaman Terengganu.	7.00	20-10-2011
Hunza Properties (Penang) Sdn. Bhd.				
132	5-4-8/11, Hunza Complex Jalan Gangsa, Island Park, 11600 Penang. Tel : 04-659 6210 Faks: 04-657 2831	No. Lot 2960 (Plot A) dan 2961 (Plot B) Mukim Seksyen 1 Daerah Timur Laut Pulau Pinang.	16.00	03-11-2011
AEON Co. (M) Bhd.				
133	AEON Ipoh Station 18 Shopping Centre No. 2, Susuran Stesen 18, Station 18 31650 Ipoh, Perak.	AEON Station 18 No. Lot 305553, 305554 & 305555 (PT 239099) Mukim Hulu Kinta, Daerah Kinta 31650 Perak.	16.00	03-11-2011
Amtrustee Berhad				
134	CapitaMalls Malaysia Trust, Box No. 228, Level 4 Centre Management Office, The Mines, Jalan Dulang MINES Resort City, Seri Kembangan, 43300 Selangor. Tel : 03-8949 6288 Faks: 03-8949 6388	The Mines No. Lot PT 16722 Mukim Petaling Daerah Petaling 43300 Selangor.	10.00	22-11-2011
OSK TRUSTEE BERHAD				
135	6 th Floor, Plaza OSK Jalan Ampang 50450 Kuala Lumpur. Tel : 03-7494 3000 Faks: 03-7492 6333	Sunway Pyramid Shopping Centre PT 161, Lot 32 dan Lot 51175 Bandar Sunway Petaling Jaya Selangor.	22.00	28-11-2011
Jelas Puri Sdn. Bhd.				
136	No. 63, Lorong Batu Nilam 1A Bandar Bukit Tinggi, 41200 Klang Selangor. Tel : 03-3324 3255 Faks : 03-3323 3257	Paradigm Shopping Complex @ Kelana Jaya Lot PT11, PT12, PT13 dan PT15 Bandar Petaling Jaya Tambahan II Daerah Petaling Selangor.	6.50	03-02-2012
AEON Co. (M) Bhd.				
137	AEON Rawang Anggun Shopping Centre No. 1, Kompleks Beli-belah AEON Rawang Anggun Persiaran Anggun, Taman Anggun, 48000 Rawang Selangor.	AEON Rawang Shopping Complex No. Lot 1851 & 1246 Mukim Rawang Daerah Gombak Selangor.	8.50	14-02-2012
Wisma Mirama Sdn. Bhd.				
138	6 th Floor, Wisma Mirama Jalan Wisma Putra, 50460 Kuala Lumpur. Tel : 03-2142 1666 Faks : 03-2148 1229	Wisma Mirama Complex Lot 888, Seksyen 69 Daerah Kuala Lumpur 50460 Wilayah Persekutuan Kuala Lumpur.	1.44	14-02-2012
Sungei Wang Plaza Management Corporation				
139	Lower Basement 1, Sungei Wang Plaza SWP Box No.:009, Jalan Bukit Bintang, 55100 Kuala Lumpur. Tel : 03-2142 6636 / 2144 9988 Faks : 03-2144 5269	Kompleks Beli-Belah Sungei Wang No. Lot 1197 Daerah Bukit Bintang Wilayah Persekutuan Kuala Lumpur.	20.00	21-02-2012

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
GCH Retail (Malaysia) Sdn. Bhd.				
140	Mezzanine Floor, Giant Hypermarket Shah Alam Stadium Lot 2, Persiaran Sukan, Seksyen 13 40100 Shah Alam, Selangor. Tel : 03-5544 8888 Faks : 03-5511 9692	Giant Hypermarket No. Lot PT 128899, Jalan Kebun (KS7) Mukim Klang Daerah Klang Selangor	1.53	23-02-2012
Universiti Tenaga Nasional Sdn. Bhd.				
141	UNITEN, Kampus Putrajaya, Jalan IKRAM-UNITEN 43000 Kajang, Selangor. Tel : 03-8921 2020 Faks : 03-8928 7166	Kampus UNITEN Putrajaya Jalan IKRAM-UNITEN 43000 Kajang Selangor.	3.83	22-03-2012
Universiti Tenaga Nasional Sdn. Bhd.				
142	UNITEN, Kampus Putrajaya, Jalan IKRAM-UNITEN 43000 Kajang, Selangor. Tel : 03-8921 2020 Faks : 03-8928 7166	Kampus UNITEN Sultan Haji Ahmad Shah 26700 Bandar Muadzam Shah Pahang.	2.98	22-03-2012
GCH Retail (Malaysia) Sdn. Bhd.				
143	Mezzanine Floor, Giant Hypermarket Shah Alam Stadium Lot 2, Persiaran Sukan, Seksyen 13 40100 Shah Alam, Selangor. Tel : 03-5544 8888 Faks : 03-5511 9692	Giant Hypermarket Banting Sebahagian Lot 555 seluas 8.15 ekar Mukim Tanjung Dua Belas Daerah Kuala Langat Selangor.	3.40	22-03-2012
GCH Retail (Malaysia) Sdn. Bhd.				
144	Mezzanine Floor, Giant Hypermarket Shah Alam Stadium Lot 2, Persiaran Sukan, Seksyen 13 40100 Shah Alam, Selangor. Tel : 03-5544 8888 Faks : 03-5511 9692	Kompleks Beli-belah Giant Cheras Hypermarket No. Lot 33924 Mukim Pekan Cheras Daerah Hulu Langat 43200 Selangor.	3.40	23-03-2012
Amtrustee Berhad				
145	Lot 10.00.00 Level 10, Pavilion Kuala Lumpur 168 Jalan Bukit Bintang 55100 Kuala Lumpur. Tel : 03-2118 8888 Faks : 03-2118 8911	Pavillion Kuala Lumpur Complex Lot 174, 185, 187, 188, 281 (New Lot : Lot 332) dan 260 Jalan Bukit Bintang/ Jalan Raja Chulan Seksyen 67, Kuala Lumpur Wilayah Persekutuan.	22.10	17-04-2012
EC Alamjaya Sdn. Bhd.				
146	No. 2, Jalan 1/128 Taman Gembira, Jalan Klang Lama 58200 Kuala Lumpur. Tel : 03-7983 7399 Faks: 03-7981 8813	Kota Bharu Trade Centre (KBTC) No. Lot PT 255 Seksyen 7, Jajahan Kota Bharu 15000 Bandar Kota Bharu Kelantan.	5.84	20-04-2012
Universiti Telekom Sdn. Bhd.				
147	Universiti Multimedia Persiaran Multimedia 63100 Cyberjaya, Selangor. Tel : 03-8312 5000 Faks : 03-8312 5022	Kawasan Universiti Multimedia Cyberjaya Lot PT 12197 Mukim Dengkil Daerah Sepang 63100 Selangor.	5.10	26-04-2012

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
148	Universiti Telekom Sdn. Bhd.			
	Universiti Multimedia Jalan Ayer Keroh Lama 75450 Melaka. Tel : 06-252 3500 Faks : 06-231 7989	Kawasan Universiti Multimedia Melaka Lot PT452, PT453, Lot 56, 57, 58 dan 60 Bukit Beruang Melaka Tengah 75450 Melaka.	8.00	26-04-2012
149	Malaysian Landed Property Sdn. Bhd.			
	Jones Lang Wootton, Lower Ground, Menara Perak No. 24, Jalan Perak, 50450 Kuala Lumpur. Tel : 03-2380 5032 Faks : 03-2380 5029	Lot 1370, Jalan Perak Seksyen 57 Kuala Lumpur.	3.00	10-05-2012
150	Era Baru Sdn. Bhd.			
	Property Management Division, Terminal 2, Level 4 Lot 7968-C Jalan Era Square 4, Era Square, 70200 Seremban. Tel : 06-768 7680 Faks: 06-768 7686	Lot 734 Bandar Seremban 70200 Negeri Sembilan.	5.95	22-05-2012
151	Mammoth Empire Estate Sdn. Bhd.			
	A-12-02, Empire Office Empire Subang, Jalan SS16/1 47500 Selangor. Tel : 03-5638 9888 Faks : 03-5631 9888	Lot PT47371 Mukim Sungai Buloh Daerah Petaling Selangor.	8.48	25-06-2012
152	GCH Retail (Malaysia) Sdn. Bhd.			
	Mezzanine Floor, Giant Hypermarket Shah Alam Stadium Lot 2, Persiaran Sukan Seksyen 13 40100 Shah Alam Selangor. Tel : 03-5544 8888 Faks : 03-5511 9692	Giant Subang Jaya Hypermarket No. Lot 672 dan 673 Persiaran Subang Permai Taman Industri Subang Ulu Subang Jaya 1 47300 Mukim Damansara Daerah Petaling, Selangor.	4.25	02-07-2012
153	GCH Retail (Malaysia) Sdn. Bhd.			
	Mezzanine Floor, Giant Hypermarket Shah Alam Stadium Lot 2, Persiaran Sukan, Seksyen 13 40100 Shah Alam, Selangor. Tel : 03-5544 8888 Faks : 03-5511 9692	Mezzanine Floor, Giant Hypermarket Shah Alam Stadium Lot 2, Persiaran Sukan, Seksyen 13 40100 Shah Alam, Selangor. Tel : 03-5544 8888 Faks : 03-5511 9692	2.04	02-07-2012
154	GCH Retail (Malaysia) Sdn. Bhd.			
	Mezzanine Floor, Giant Hypermarket Shah Alam Stadium Lot 2, Persiaran Sukan Seksyen 13 40100 Shah Alam Selangor. Tel : 03-5544 8888 Faks : 03-5511 9692	Giant Setapak Hypermarket No. Lot 23341, 23344 (PT8750) dan Sebahagian Lot 23343 Off jalan Genting Kelang Taman Danau Kota Mukim Setapak 53000 Wilayah Persekutuan Kuala Lumpur.	2.72	02-07-2012
155	Must Ehsan Development Sdn. Bhd.			
	No. 46G, Jalan PJU 5/22, The Strand Encorp Pusat Perdagangan Kota Damansara Kota Damansara PJU 5 47810 Petaling Jaya, Selangor. Tel : 03-6286 7777 Faks: 03-6286 7615	No. Lot PT 10562 Pusat Bandar 1 Kota Damansara Mukim Sungai Buloh Daerah Petaling Selangor.	8.55	02-07-2012

No.	Pemegang Lesen & Alamat Perhubungan <i>Licensee & Contact Address</i>	Kawasan Bekalan <i>Area of Supply</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Tarikh Lesen Dikeluarkan <i>Date of Licence Issued</i>
156	Esquire Collection Sdn. Bhd.			
	Suite 6.04, Penthouse Wisma Academy, 4A Jalan 19/1 46300 Petaling Jaya, Selangor. Tel : 03-7958 5928 Faks : 03-7954 2098	Bangunan PanGlobal No. Lot 53, Seksyen 20 Mukim Bandar Petaling Jaya Daerah Petaling Selangor.	1.00	05-07-2012
157	Prestige Scale Sdn. Bhd.			
	Unit 9-3, Level 9, Wisma UOA Damansara II No. 6, Changkat Semantan Damansara Heights, 50490 Kuala Lumpur. Tel : 03-2094 8778 Faks : 03-2094 8779	Menara Prestige Lot 844 dan PT 845 Seksyen 57 Jalan P. Ramlee/Jalan Pinang 50450 Kuala Lumpur.	8.50	05-07-2012
158	Badan Pengurusan Bersama Queensbay Mall			
	1F-78, Queensbay Mall 100, Persiaran Bayan Indah 11900 Bayan Lepas Pulau Pinang. Tel : 04-646 8888 Faks : 04-646 4848	Lot 11736 & Lot 11737 (PT. 5494) Tanah Tebusguna Kawasan Persisiran Pantai Sungai Nibong, Mukim 12 Daerah Barat Daya 11900 Pulau Pinang.	20.00	05-07-2012
159	MCT Green Technologies Sdn. Bhd.			
	No. 25, Jalan USJ 21/10 47630 UEP Subang Jaya Selangor. Tel : 03-8023 9988 Faks : 03-8024 9185	One City Skypark No. Lot 54445 & 77027 Mukim Damansara Daerah Petaling Jaya, Selangor.	10.16	16-07-2012
160	Pasti Anggun Sdn. Bhd.			
	6 th Floor, Asmah Tower Jalan Cerdas, Taman Connaught 56100 Kuala Lumpur. Tel : 03-9100 2882 Faks : 03-9100 1881	Ikon Mall No. Lot 39891 Mukim Petaling Daerah Kuala Lumpur Wilayah Persekutuan Kuala Lumpur.	3.44	16-07-2012
161	Wize Platinum Sdn. Bhd.			
	2A-2, Jalan Puteri 1/4 Bandar Puteri 47100 Puchong Selangor. Tel : 03-8061 3380 Faks : 03-8061 3315	South City Plaza Lot PT 520 Serdang Perdana Seri Kembangan, Mukim Petaling Daerah Petaling, Selangor.	3.00	27-07-2012
162	Genting Simon Sdn. Bhd.			
	Johor Premium Outlets Jalan Premium Outlets, Indahpura 81000 Kulajjaya, Johor. Tel : 07-661 8888 Faks : 07-661 8810	Lot PTD 104549 Zone 23, Jalan Premium Outlets Indahpura Kulajjaya 81000 Johor.	4.08	13-08-2012
163	GCH Retail (Malaysia) Sdn. Bhd.			
	Complex Management, Giant Hypermarket Rawang No. 1, Jalan Bintang, Pusat Bandar Rawang 48000 Rawang, Selangor. Tel : 03-6092 0161 Faks : 03-6092 0161	Giant Hypermarket Rawang Lot PT 65 & PT 66 Mukim Rawang Daerah Gombak 48000 Selangor.	1.28	05-9-2012
164	Atria Damansara Sdn. Bhd.			
	9 th Floor, Plaza OSK Jalan Ampang, 50450 Kuala Lumpur. Tel : 03-2161 3322 Faks : 03-2175 3216	No. Lot PT 9089, PT 9090, PT 10168, PT10197, PT 10198 Mukim Sungai Buloh Daerah Petaling 47400 Selangor.	11.50	27-09-2012

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
Petronas Gas Berhad				
165	Level 49-51, Tower 1, Petronas Twin Towers Kuala Lumpur City Centre, 50088 Kuala Lumpur. Tel : 03-2051 5000 Faks : 03-2051 5885	Sebahagian Kawasan Laut Mukim Tangga Batu Daerah Melaka Tengah, Melaka.	5.95	05-10-2012
Amtrustee Berhad				
166	CapitaMalls Malaysia Trust Level 3, Jalan Putra Square 6 Putra Square, 25200 Kuantan, Pahang. Tel : 09-565 8688 Faks : 09-565 8599	East Coast Mall Putra Square Lot 423(PN 5596) Mukim Kuantan 25000 Kuantan, Pahang.	10.00	05-10-2012
Mines Waterfront Business Park Sdn. Bhd.				
167	Level 1, Block B, Mines Waterfront Business Park No. 3, Jalan Tasik, The Mines Resort City 43300 Seri Kembangan, Selangor. Tel : 03-8943 8811 Faks : 03-8943 1837	Mines Waterfront Business Centre Lot PT 16715 43300 Daerah Petaling Selangor.	4.80	11-12-2012
Mines 2 Sdn. Bhd.				
168	No.L-4-6E The Mines Shopping Fair Jalan Dulang Mines Resort City 43300 Seri Kembangan, Selangor. Tel : 03-8958 3773 Faks : 03-8942 5153	Mines 2 Mall Lot 1584 Mukim Pekan Baru Sungai Besi 43300 Daerah Petaling Selangor.	3.20	12-12-2012
Nusajaya Lifestyle Sdn. Bhd.				
169	16-1, Mercu UEM, Jalan Stesen Sentral 5 Kuala Lumpur Sentral 5 50470 Kuala Lumpur Tel : 03-2727 6000 Faks : 03-2727 2000	Medini Lifestyle Mall No. Lot PTD 170657 dan PTD 170658 Mukim Pulai 79200 Daerah Johor Baharu Johor	3.4	21-12-2012
GCH Retail (Malaysia) Sdn. Bhd.				
170	GCH Retail (Malaysia) Sdn. Bhd. Giant Hypermarket Cheng Melaka Lot 2-13, Jalan TTC 9, Taman Technology Cheng 75250 Melaka. Tel : 06-336 5519 Faks : 06-336 5517	Giant Hypermarket Cheng Melaka Lot 8519, Mukim Cheng Daerah Melaka Tengah Melaka.	2.10	27-12-2012

Nota | Note :

* Menjana dan mengagih elektrik | Generating and distributing electricity



MAKLUMAT DAN STATISTIK INDUSTRI DI SABAH *INDUSTRY INFORMATION AND STATISTICS IN SABAH*



- 96** Sabah Electricity Sdn. Bhd. (SESB)
Sabah Electricity Sdn. Bhd. (SESB)
- 99** Penjana-Penjana Kuasa Bebas (IPPs)
Independent Power Producer (IPPs)
- 100** Projek-Projek Jana Kuasa Tenaga Boleh Baharu (TBB)
Renewable Energy (RE) Power Projects
- 101** Co-Generators Utama
Major Co-Generators
- 102** Penjanaan Persendirian Kurang daripada 5 MW
Self-Generation Less than 5 MW
- 103** Senarai Pengagih-Pengagih Elektrik
List of Electricity Distributors

Sabah Electricity Sdn. Bhd. (SESB)

Sabah Electricity Sdn. Bhd. (SESB)

Jadual 1: Sorotan Prestasi

Table 1: Performance Highlights

Petunjuk I Indicator	2008	2009	2010	2011	2012
Kehendak Maksimum (MW) Maximum Demand (MW)	673	719	780	830	828
Jumlah Unit Penjanaan (GWj) ¹ Total Units Generated (GWh)	1,489	1,317	1,178	1,524	1,294
Jumlah Unit Jualan (GWj) Total Units Sold (GWh)	3,474	3,855	4,127	4,275	4,456
Hasil Jualan Elektrik (RM Juta) Sales of Electricity (RM million)	836	975	1,055	1,155	1,350
Kapasiti Penjanaan Terpasang (MW) ² Installed Generation Capacity (MW)	357	489	375	435	417
Jumlah Kakitangan Number of Employees	2,272	2,484	2,613	2,613	2,679
Hasil Jualan Setiap Kakitangan (RM Juta/Kakitangan) Sales of Electricity per Employee (RM Million/Employee)	0.37	0.39	0.40	0.44	0.50
Unit Jualan Setiap Kakitangan (GWj/Kakitangan) Units Sold per Employee (GWh/Kakitangan)	1.53	1.55	1.58	1.64	1.66
Kapasiti Penjanaan Setiap Kakitangan (MW/Kakitangan) Installed Capacity per Employee (MW/Employee)	0.16	0.20	0.14	0.17	0.16
Jumlah Unit Pembelian (GWj) Total Units Purchased (GWh)	2,788	3,235	3,648	3,765	3,843
Jumlah Unit Eksport (GWj) Total Units Exported (GWh)	-	-	-	-	-
Jumlah Unit Import (GWj) Total Units Imported (GWh)	-	-	-	-	-

Jadual 2: Kapasiti Terpasang (MW) dan Kebolehdapatan Keseluruhan (%)

Table 2: Installed Capacity (MW) and Overall Availability (%)

Jenis Bahan Api Fuel Type	2008	2009	2010	2011	2012
Hidro Hydro	74	74	74	70	68
Gas Asli Natural Gas	107	162	101	107	105
Arang batu Coal	-	-	-	-	-
Minyak Medium Fuel Oil (MFO)	-	-	-	-	-
Disel Diesel	176	253	200	259	245
Lain-lain (Bekalan Elektrik Luar Bandar – Disel & Hidro Mini) Others (Rural Electricity Supply – Diesel & Mini Hydro)	-	-	-	-	-
Jumlah Total	357	489	375	435	417
Kebolehdapatan Keseluruhan (%) Overall Availability (%)	73.30	64.90	57.00	57.00	70.75

Jadual 3: Campuran Penjanaan (GWj)

Table 3: Generation Mix (GWh)

Jenis Bahan Api Fuel Type	2008	2009	2010	2011	2012
Hidro Hydro	489	393	482	754	377
Gas Asli Natural Gas	675	530	260	398	589
Arang batu Coal	-	-	-	0	0
Minyak Medium Fuel Oil (MFO)	-	-	-	0	0
Disel Diesel	325	394	436	372	328
Jumlah Total	1,489	1,317	1,178	1,524	1,294

Jadual 4: Jualan Tenaga Elektrik (GWj)

Table 4: Sales of Electricity (GWh)

Sektor Sector	2008	2009	2010	2011	2012
Domestik Domestic	1,090	1,204	1,295	1,332	1,436
Komersil Commercial	1,321	1,504	1,602	1,742	1,923
Industri Industry	1,017	1,099	1,178	1,146	1,038
Lampu Awam Public Lighting	47	49	52	56	59
Perlombongan Mining	-	-	-	-	-
Eksport Export	-	-	-	-	-
Jumlah Total ³	3,475	3,856	4,127	4,275	4,456

Jadual 5: Bilangan Pengguna

Table 5: Number of Consumers

Sektor Sector	2008	2009	2010	2011	2012
Domestik Domestic	332,861	347,640	364,376	384,384	403,387
Komersil Commercial	62,012	65,551	68,877	72,288	75,375
Industri Industry	2,799	2,870	2,971	2,865	2,903
Lampu Awam Public Lighting	3,918	4,117	4,302	4,516	4,820
Perlombongan Mining	-	-	-	-	-
Eksport Export	-	-	-	-	-
Jumlah Total	401,590	420,178	440,526	464,053	486,485

Jadual 6: Keupayaan Sistem Penghantaran

Table 6: Transmission System Capacity

Talian/Kabel Sistem Penghantaran Transmission System Lines/Cables	2008	2009	2010	2011	2012
500 kV (km)	-	-	-	-	-
275 kV (km)	492	492	492	492	492
132 kV (km)	1,672	1,674	1,721	1,780	1,772
66 kV (km)	123	123	123	123	123
Pencawang Penghantaran Transmission Substations					
Bilangan Number	34	36	39	41	42
Keupayaan Capacity (MVA)	3,793	3,913	4,517	4,652	4,672
Prestasi Performance					
Bilangan Kejadian Pelantikan Number of Tripping Incidents	12	18	26	31	30
Tenaga Yang Tidak Dibekal (MWj) Unsupplied Energy (MWh)	162	318	513	804	3,738

Jadual 7: Keupayaan Sistem Pengagihan

Table 7: Distribution System Capacity

Talian/Kabel Sistem Pengagihan Distribution System Lines/Cables	2008	2009	2010	2011	2012
Talian Atas Overhead Lines (km) ⁴	6,431	7,420	7,490	7,761	8,525
Kabel Bawah Tanah Underground Cables (km) ⁴	762	1,035	1,418	1,317	1,136
Pencawang Pengagihan Distribution Substations					
Bilangan Number	5,214	5,614	5,815	5,878	6,365
Keupayaan Capacity (MVA)	4,179	4,235	4,618	4,813	5,864
Prestasi Performance					
Bilangan Gangguan Bekalan Number of Supply Interruptions	21,911	24,969	24,169	23,397	27,409

Nota | Note :

- Jumlah Unit Penjanaan (Jumlah Campuran Penjanaan) bagi SESB tidak termasuk IPPs di Sabah
Total Units Generated (Generation Mix) for SESB excluding IPPs in Sabah
- Jumlah Kapasiti Penjanaan Terpasang SESB tidak termasuk IPPs di Sabah
Installed Generation Capacity for SESB excluding IPPs in Sabah
- Jualan Tenaga Elektrik bagi SESB termasuk penjanaan sendiri oleh SESB dan tenaga dibeli dari IPPs di Sabah
Sales of Electricity for SESB includes SESB own generation and energy purchased from IPPs in Sabah
- Sistem 33 kV dan 11kV sahaja
33 kV dan 11kV system only

Penjana-Penjana Kuasa Bebas (IPPs)

Independent Power Producers (IPPs)

Jadual 8: Kapasiti Berlesen, Unit Penjanaan dan Unit Jualan

Table 8: Licensed Capacity, Units Generated and Units Sold

No.	Pemegang Lesen & Lokasi Licensee & Location	Jenis Loji Plant Type	Kapasiti Berlesen Licensed Capacity (MW)	Penjanaan (GWh) Generation (GWh)	Unit Jualan (GWh) Units Sold (GWh)
1	ARL Tenaga Sdn. Bhd.				
	Melawa, Kota Kinabalu, Sabah	Enjin Diesel Diesel Engine	50.0	59.40	56.11
2	Serudong Power Sdn. Bhd.				
	Tawau, Sabah	Enjin Diesel Diesel Engine	36.0	233.59	225.65
3	Stratavest Sdn. Bhd.				
	Sandakan, Sabah	Enjin Diesel Diesel Engine	60.0	145.70	140.52
4	Sandakan Power Power Corporation Sdn. Bhd.*				
	Sandakan, Sabah	Enjin Diesel Diesel Engine	34.1	-	-
5	Sepangar Bay Power Corporation Sdn. Bhd.				
	Kota Kinabalu, Sabah	Kitar Padu Combined Cycle Turbin Stim Steam turbine	100.0	666.09	642.43
6	Ranhill Powertron Sdn. Bhd.				
	Kota Kinabalu, Sabah.	Kitar Padu Combined Cycle	190.0	1,253.73	1,216.48
7	Ranhill Powertron II Sdn. Bhd.				
	Kota Kinabalu, Sabah	Kitar Padu Combined Cycle	190.0	1,222.70	1,183.74

Nota I Note :

* Lesen dibatalkan pada 29 Mei 2012 | License was revoked on the 29th of May 2012

Projek-Projek Jana Kuasa Tenaga Boleh Baharu (TBB)

Renewable Energy (RE) Power Projects

Jadual 9: Kapasiti Berlesen, Unit Penjanaan dan Unit Jualan
Table 9: Licensed Capacity, Units Generated and Units Sold

No.	Pemegang Lesen & Lokasi <i>Licensee & Location</i>	Jenis Loji <i>Plant Type</i>	Bahan Api/ Pengerak <i>Fuel Type/Prime Mover</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Unit Penjanaan (MWj) <i>Units Generated (MWh)</i>	Unit Jualan (MWj) <i>Unit Sold (MWh)</i>
1	TSH Bio Energy Sdn. Bhd.					
	Tawau, Sabah.	Turbin Stim <i>Steam Turbines</i>	Sisa Sawit <i>Palm Waste</i>	14.0	85,731.17	69,748.84
2	Seguntor Bioenergy Sdn. Bhd.					
	Sandakan, Sabah.	Turbin Stim <i>Steam Turbines</i>	Tandan Sawit Kosong <i>Empty Fruit Bunch</i>	13.5	82,248.25	65,080.88
3	Kina Biopower Sdn. Bhd.					
	Sandakan, Sabah.	Turbin Stim <i>Steam Turbines</i>	Tandan Sawit Kosong <i>Empty Fruit Bunch</i>	11.5	50,558.08	41,825.11
4	Syarikat Esajadi Power Sdn. Bhd.					
	Sg. Pangpuyan, Kota Marudu, Sabah.	Mini Hidro <i>Mini Hydro</i>	Air <i>Water</i>	4.5	13,066.01	11,694.01
5	Syarikat Esajadi Power Sdn. Bhd.					
	Sungai Kadamaian, Kota Belud, Sabah.	Mini Hidro <i>Mini Hydro</i>	Air <i>Water</i>	2.0	10,219.52	10,219.52

Co-Generators Utama

Major Co-Generators

Jadual 10: Kapasiti Berlesen dan Unit Penjanaan (Lesen Awam)

Table 10: Licensed Capacity and Units Generated (Public Licence)

No.	Pemegang Lesen & Lokasi <i>Licensee & Location</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Bahan Api <i>Fuel Type</i>	Unit Penjanaan (MWj) <i>Units Generated (MWh)</i>
1	Bio Fuel Asia Sdn. Bhd.*			
	Kunak, Lahad Datu, Sabah.	10.00	Habuk Kayu Wood Waste	n/a
2	Bahagaya Sdn. Bhd.			
	Merotai, Tawau, Sabah	3.00	Tandan Sawit Kosong <i>Empty Fruit Bunch</i>	15,167.62
3	IJM Biofuel Sdn. Bhd.			
	Sandakan, Sabah.	3.60	Tandan Sawit Kosong <i>Empty Fruit Bunch</i>	n/a
4	IOI Bio-Energy Sdn. Bhd.			
	Sandakan, Sabah.	15.00	Biojsim Biomass	n/a
5	Petronas Methanol (Labuan) Sdn. Bhd.			
	Kawasan Perindustrian Ranca-Ranca Labuan, Wilayah Persekutuan Labuan.	41.80	Gas Asli Natural Gas	n/a
6	Profound Heritage Sdn. Bhd.			
	Kota Kinabalu, Sabah.	38.00	Disel Diesel	101,197.20
7	Seo Energy Sdn. Bhd.			
	Karamunting, Sandakan, Sabah.	1.20	Tandan Sawit Kosong <i>Empty Fruit Bunch</i>	2,917.61
8	Evergreen Intermerge Sdn. Bhd.			
	Tanjung Batu Laut, Tawau, Sabah	6.00	Tandan Sawit Kosong <i>Empty Fruit Bunch</i>	4,575.14

Nota | Note :

* Tiada aktiviti penjanaan | No generation activity

Jadual 11: Kapasiti Berlesen dan Unit Penjanaan (Lesen Persendirian)

Table 11: Licensed Capacity and Units Generated (Private Licence)

No.	Pemegang Lesen & Lokasi <i>Licensee & Location</i>	Kapasiti Berlesen <i>Licensed Capacity (MW)</i>	Bahan Api <i>Fuel Type</i>	Unit Penjanaan (MWj) <i>Units Generated (MWh)</i>
1	Felda Palm Industries Sdn. Bhd.			
	Gugusan Felda Sahabat, Mukim Tungku Daerah Lahad Datu, Sabah.	7.50	Tandan Sawit Kosong <i>Empty Fruit Bunch</i>	20,838.86
2	Palm Energy Sdn. Bhd.			
	No. Lot CL 115311138, Mukim Lahad Datu Daerah Lahad Datu, Sabah.	6.50	Bahan Buangan Pertanian <i>Agricultural Waste</i>	10.89
3	Sabah Forest Industries Sdn. Bhd.			
	Mukim Kg. Sebbuh Daerah Sipitang, Sabah.	79.50	Sisa Kayu / Disel <i>Wood Waste/Diesel</i>	320,666.81

Penjanaan Persendirian Kurang daripada 5 MW

Self-Generation Less than 5 MW

Jadual 12: Kapasiti Berlesen dan Unit Penjanaan
Table 12: Licensed Capacity and Units Generated

Jenis Bahan Api Fuel Type	Sektor Sector	2008	2009	2010	2011	2012
	Bilangan Lesen Number of Licences	881	955	969	1,002	971
Gas	Kapasiti Berlesen Licensed Capacity (MW)	3.70	5.70	5.70	5.70	-
	Unit Penjanaan (MWj) Units Generated (GWh)	n/a	1,274	1,426	2,958	-
Disel Diesel	Kapasiti Berlesen Licensed Capacity (MW)	523	509	512	499	526
	Unit Penjanaan (MWj) Units Generated (GWh)	n/a	111	99	68	67
Sisa Sawit Palm Oil Waste	Kapasiti Berlesen Licensed Capacity (MW)	108	119	115	122	123
	Unit Penjanaan (MWj) Units Generated (GWh)	n/a	208	222	244	261
Suria Fotovolta Solar Photovoltaic	Kapasiti Berlesen Licensed Capacity (MW)	n/a	n/a	n/a	n/a	1.41
	Unit Penjanaan (MWj) Units Generated (GWh)	n/a	n/a	n/a	n/a	n/a
Lain-Lain Others	Kapasiti Berlesen Licensed Capacity (MW)	3.66	1.41	7.13	7.13	9.78
	Unit Penjanaan (MWj) Units Generated (GWh)	0.00	135.08	7,085.39	9,260.69	n/a
Jumlah Total	Kapasiti Berlesen Licensed Capacity (MW)	638.11	635.63	640.50	634.21	659.86
	Unit Penjanaan (MWj) Units Generated (GWh)	0.00	321.36	329.50	324.83	327.99

Nota | Note :

Lain-lain termasuk lain-lain jenis biojisim (Hampas Padi, Hampas Tebu, Habuk Kayu, Cip Kayu) dan Biogas
Others including other types of biomass (Paddy Husk, Bagasse, Wood Dust, Wood Chips) and Biogas

Senarai Pengagih-Pengagih Elektrik

List of Electricity Distributors

Jadual 13: Senarai Pengagih-Pengagih Elektrik
Table 13: List of Electricity Distributors

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
1	K.K.I.P. Power Sdn. Bhd.	Kota Kinabalu Industrial Park (KKIP) Sabah.	210.00	15-06-1998
	Lot A7, Salut Commercial Centre Kota Kinabalu Industrial Park, Jalan Politeknik 88460 Kota Kinabalu, Sabah. Tel : 088-497 801 / 497 802 Faks : 088-498 177			
2	Profound Heritage Sdn. Bhd.	Sutera Harbour Resort Lot 2, LA. 93010260 Kota Kinabalu Sabah.	38.00	01-10-2006
	1 st Floor, Lorong Grace Square Jalan Pantai Sembulan, 88100 Kota Kinabalu, Sabah. Tel : 088-318 801 / 318 802 Faks : 088-233 362			
3	Evergreen Intermerge Sdn. Bhd.	Cacao Paramount Sdn. Bhd. Lot CL 105323797, Km 3 Tanjung Batu Laut, Tawau Sabah.	6.00	10-10-2006
	Teck Guan Regency, 318 Jalan St Patrick Off Jalan Belunu, Peti Surat 33, 91007 Tawau, Sabah. Tel : 089-758 955 Faks : 089-760 955			
4	Seo Energy Sdn. Bhd.	Lot No. 077533754 KM 8, Jalan Batu Sapi Karamunting Sabah.	1.20	10-10-2006
	KM 8, Jalan Batu Sapi, Karamunting, P.O. Box 2605 90729 Sandakan, Sabah. Tel : 089-611 011 / 611 012 Faks : 089-611 014 / 617 355			
5	Asian Supply Base Sdn. Bhd.	Asian Supply Base Lot 206291581, Daerah Labuan Wilayah Persekutuan Labuan Sabah.	12.00	13-11-2006
	Ranca-Ranca Industrial Estate, P.O. Box 80751 87017 Labuan Federal Territory, Sabah. Tel : 087-411 611 / 411 614 Faks : 087-415 477			
6	TSH-WILMAR (BF) Sdn. Bhd.	TSH Edible Oils Sdn Bhd PL 26166110 & 246290228 Kunak, Lahad Datu, Sabah.	10.00	29-12-2006
	Bangunan TSH, TB9, KM 7 Apas Road, 91000 Tawau, Sabah. Tel : 089-912 020 / 911 056 Faks : 089-913 000			
7	Eksons Biomass Energy Sdn. Bhd.	Rajang Plywood (Sabah) Sdn. Bhd. CLS 105486762, 105486771 dan PT2000100538 Sungai Umas, Umas Mukim Merotai, Tawau 91000 Sabah.	3.00	07-03-2007
	TB 4327, 2 nd Floor Block 31, Fajar Complex Jalan Haji Karim, 91000 Tawau, Sabah. Tel : 089-757 911 / 757 913 Faks : 089-761 022			
8	Petronas Methanol (Labuan) Sdn. Bhd.	Kawasan Perindustrian Ranca-Ranca Labuan 87010 Wilayah Persekutuan Labuan.	41.80	18-07-2007
	Kawasan Perindustrian Ranca-Ranca P.O. Box No. 80079, 87010 Wilayah Persekutuan Labuan. Tel : 087-411 211 Faks : 087-413 921 / 425 831			
9	1Borneo Management Corporation Sdn. Bhd.	Kompleks Beli-Belah 1 Borneo Hypermall CL 015607057 Mukim Kuala Menggatal Dearah Kota Kinabalu 88450 Sabah.	20.00	08-04-2008
	G-600A, Ground Floor, 1Borneo Hypermall Jalan Sulaman 88400 Kota Kinabalu, Sabah. Tel : 088-447 744 Faks : 088-447 743			

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
10	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Superstore Sandakan, Lot 3, Jalan IJM Bandar Utama, Batu 6, Off Jalan Utara, 90000 Sandakan, Sabah. Tel : 089-214 219 Faks : 089-214 207	Lot CL075477584 Mukim Sandakan Daerah Sandakan Sabah.	1.70	17-11-2008
11	IJM Biofuel Sdn. Bhd.			
	Wisma IJM Plantations Lot 1, Jalan Bandar Utama, Batu 6, Jalan Utara 90000 Sandakan Sabah. Tel : 089-667 721 Faks : 089-674 810	IJM Edible Oils Sdn. Bhd. IJMP Integrated Downstream Processing Complex Lot NT. 073019299 Mukim Sungai Mowtas Daerah Sandakan, Poskod 90009 Sabah.	3.60	18-06-2009
12	GCH Retail (Malaysia) Sdn. Bhd.			
	Giant Complex Tawau CL105466055, KM 5 1/2, Jalan Chong Thien Yun Off Jalan Apas, 91000 Tawau, Sabah. Tel : 089-911 890 Faks : 089-911 891	Giant Hypermarket Lot CL105466055 Jalan Datuk Chong Fuen Yun 91000 Tawau, Sabah.	3.00	10-07-2009
13	Makamewah Sdn. Bhd.			
	9 th Floor, 9-3, Suria Sabah Shopping Mall 1, Jalan Tun Fuad Stephens 88000 Kota Kinabalu, Sabah. Tel : 088-238 949 Faks : 088-239 040	Suria Sabah Shopping Mall Lot T.L. 017539810 Mukim Kota Kinabalu Daerah Kota Kinabalu Sabah.	13.00	27-08-2009
14	IOI Bio-Energy Sdn. Bhd.			
	Level 8, Two IOI Square IOI Resort 62502 Putrajaya Tel : 03-8947 8888 Faks : 03-8947 8686	IOI Edible Oils Sdn. Bhd. IOI Integrated Edible Oils Processing Complex Mukim Sungai Mowtas Daerah Sandakan 90738 Sabah.	15.00	20-01-2010
15	TSH Bio-Gas Sdn. Bhd.			
	Bangunan TSH, TB 9, KM7, Apas Road 91000 Tawau, Sabah. Tel : 089-912 020 / 911 056 Faks : 089-913 000	Lot CL 105392989 Mukim Kalumpang Daerah Tawau 91000 Sabah.	3.00	11-03-2010
16	SEH POWER SDN. BHD.			
	No. 2A, 2 nd Floor, NKE Building Lorong Kacang Tanah, Jalan Kolombong Off Mile 5 1/2, Jalan Tuaran 88450 Kota Kinabalu, Sabah. Tel : 088-426 322 Faks : 088-424 215	Sandakan Education Hub Lot 01 to 25 Mukim Sungai Batang Daerah Sandakan Sabah.	45.00	11-03-2010
17	Felda Engineering Services Sdn. Bhd.			
	Tingkat 6, Balai Felda Jalan Gurney Satu, 54000 Kuala Lumpur. Tel : 03-2693 5211 / 089-811 130 Faks: 03-2693 6717	Gugusan Felda Umas Umas 1, 2, 3 & 4 Mukim Umas, Daerah Tawau Sabah.	2.60	31-03-2010
18	Felda Engineering Services Sdn. Bhd.			
	Tingkat 6, Balai Felda Jalan Gurney Satu 54000 Kuala Lumpur. Tel : 03-2693 5211 / 089-811 130 Faks: 03-2693 6717	Gugusan Felda Sahabat Lot Sahabat 01-54 Mukim Sahabat Daerah Lahad Datu, Sabah.	23.94	31-03-2010

No.	Pemegang Lesen & Alamat Perhubungan Licensee & Contact Address	Kawasan Bekalan Area of Supply	Kapasiti Berlesen Licensed Capacity (MW)	Tarikh Lesen Dikeluarkan Date of Licence Issued
Felda Engineering Services Sdn. Bhd.				
19	Tingkat 6, Balai Felda Jalan Gurney Satu 54000 Kuala Lumpur. Tel : 03-2693 5211 / 089-811 130 Faks: 03-2693 6717	Gugusan Felda Kalabakan Kalabakan Tengah 01 & 02 Kalabakan Utara Dan Kalabakan Selatan Mukim Kalabakan, Daerah Tawau Sabah.	1.55	31-03-2010
Untung Ria Sdn. Bhd.				
20	11 th Floor, Wisma Perindustrian Jalan Istiadat, Likas, 88400 Kota Kinabalu, Sabah. Tel : 088-242 257 / 242 258 Faks : 088-242 169	Lot No. CL 135193752 dan CL 135366139 Kg. Ulu Patikang, Keningau Sabah.	4.00	09-08-2010
C3 Power Sdn. Bhd.				
21	2 nd Floor, U0271, Block F, Jati Commercial Centre P.O. Box 80737, 87017 F.T. Labuan. Tel : 087-411 175 Faks : 087-419 731	Temporary Settlement in some areas in W. Persekutuan Labuan Daerah Kota Kinabalu and Sandakan Sabah.	5.85	26-08-2010
Suara Wira Sdn. Bhd.				
22	Ground Floor, Lot 3 Blk. E, Donggongan New Township, Penampang 89500 Kota Kinabalu, Sabah. Tel : 088-712 792 Faks : 088-710 792	Lot TL 217501874 & TL 217502086 Mukim Donggongan New Township Daerah Penampang Sabah.	4.05	27-09-2010
Malaysia Airports Sdn. Bhd.				
23	Lapangan Terbang Antarabangsa Kota Kinabalu Pejabat Pengurusan, Aras 5 Bangunan Terminal Beg Berkunci 134 88740 Kota Kinabalu, Sabah. Tel : 088-325 555 Faks : 088-325 511	Lapangan Terbang Antarabangsa Kota Kinabalu Lot PT 92010207, TK1, TK2 & TK3, Mukim Kota Kinabalu dan PT 92210081 Mukim Penampang, Daerah Kota Kinabalu, Sabah.	5.50	03-11-2010
Malaysia Airports Sdn. Bhd.				
24	Lapangan Terbang Tawau P.O. Box 60132, 91011 Tawau, Sabah. Tel : 089-950 777 Faks : 089-950 781	Lapangan Terbang Tawau Lot TK1, Mukim Apas Balong Daerah Tawau, Sabah.	2.50	03-11-2010
Malaysia Airports Sdn. Bhd.				
25	Lapangan Terbang Sandakan P.O. Box 730, 90009 Sandakan, Sabah. Tel : 089-667 784 Faks : 089-667 778	Lapangan Terbang Sandakan Lot TK1, Mukim Sandakan Daerah Sandakan, Sabah.	2.50	03-11-2010
ICSD Ventures Sdn. Bhd.				
26	Harbour Mall Sandakan, Management Office Level 5, Sandakan Harbour Square 90000 Sandakan, Sabah. Tel : 089-276 888 Faks : 089-276 999	No. Lot T.L. 077579394 Daerah Sandakan Sabah.	4.00	08-06-2011
Sagajuta (Sabah) Sdn. Bhd.				
27	Lot No. CL.015080145 dan CL.015026392 Mukim Kuala Menggatal Daerah Kota Kinabalu Sabah. Tel : 088-447 722 / 447 288 Faks : 088-447 272 / 447 788	Bangunan Parcel 1 Phase 1 Shoplex (Tingkat Bawah - Tingkat 2, 106 unit) No. Lot CL. 015080145 dan CL.015026392 Mukim Kuala Menggatal Daerah Kota Kinabalu Sabah.	3.22	30-04-2012

Nota | Note :

* Menjana dan mengagih elektrik | Generating and distributing electricity



MAKLUMAT DAN STATISTIK INDUSTRI DI SARAWAK

INDUSTRY INFORMATION AND STATISTICS IN SARAWAK

107 Sarawak Energy Berhad (SEB)
Sarawak Energy Berhad (SEB)

109 Penjana-Penjana Kuasa Bebas (IPPs)
Independent Power Producers (IPPs)

Sarawak Energy Berhad (SEB)

Sarawak Energy Berhad (SEB)

Jadual 1: Sorotan Prestasi

Table 1: Performance Highlights

Petunjuk I Indicator	2008	2009	2010	2011	2012
Kehendak Maksimum (MW) Maximum Demand (MW)	860	996	1,091	1,278	1,229
Jumlah Unit Penjanaan (GWj) ¹ Total Units Generated (GWh)	2,555	2,234	2,321	7,279	7,025
Jumlah Unit Jualan (GWj) Total Units Sold (GWh) ³	4,421	4,540	5,728	6,486	7,587
Hasil Jualan Elektrik (RM Juta) Sales of Electricity (RM million)	1,289	1,342	1,518	1,673	1,862
Kapasiti Penjanaan Terpasang (MW) ² Installed Generation Capacity (MW)	546	530	530	1,358	1,352
Jumlah Kakitangan Number of Employees	2,143	2,212	2,242	3,529	3,882
Hasil Jualan Setiap Kakitangan (RM Juta/Kakitangan) Sales of Electricity per Employee (RM Million/Employee)	0.60	0.61	0.68	0.47	0.48
Unit Jualan Setiap Kakitangan (GWj/Kakitangan) Units Sold per Employee (GWh/Kakitangan)	2.06	2.05	2.55	1.84	1.95
Kapasiti Penjanaan Setiap Kakitangan (MW/Kakitangan) Installed Capacity per Employee (MW/Employee)	0.25	0.24	0.24	0.38	0.35
Jumlah Unit Pembelian (GWj) Total Units Purchased (GWh)	2,851	3,643	4,672	759	2,712
Jumlah Unit Eksport (GWj) Total Units Exported (GWh)	-	-	-	-	-
Jumlah Unit Import (GWj) Total Units Imported (GWh)	-	-	-	-	-

Jadual 2: Kapasiti Terpasang (MW)

Table 2: Installed Capacity (MW)

Jenis Bahan Api Fuel Type	2008	2009	2010	2011	2012
Hidro Hydro	101	101	101	101	101
Gas Asli Natural Gas	271	271	271	675	608
Arang batu Coal	-	-	-	480	480
Minyak Medium Fuel Oil (MFO)	-	-	-	-	-
Disel Diesel	174	158	158	102	163
Lain-lain Others	-	-	-	-	-
Jumlah Total	546	530	530	1,358	1,352

Jadual 3: Campuran Penjanaan (GWj)

Table 3: Generation Mix (GWh)

Jenis Bahan Api Fuel Type	2008	2009	2010	2011	2012
Hidro Hydro	527	461	542	424	433
Gas Asli Natural Gas	1,672	1,479	1,516	3,243	2,777
Arang batu Coal	-	-	-	3,368	3,037
Minyak Medium Fuel Oil (MFO)	-	-	-	-	-
Disel Diesel	356	294	263	244	778
Lain-lain Others	-	-	-	-	-
Jumlah Total	2,555	2,234	2,321	7,279	7,025

Jadual 4: Jualan Tenaga Elektrik (GWj)

Table 4: Sales of Electricity (GWh)

Sektor Sector	2008	2009	2010	2011	2012
Domestik Domestic	1,132	1,249	1,335	1,423	1,584
Komersil Commercial	1,497	1,623	1,735	1,846	2,026
Industri Industry	1,726	1,606	2,593	3,151	3,904
Lampu Awam Public Lighting	66	62	64	66	73
Perlombongan Mining	-	-	-	-	-
Eksport Export	-	-	-	-	-
Lain-lain Others	-	-	-	-	-
Jumlah Total ³	4,421	4,540	5,728	6,486	7,587

Jadual 5: Bilangan Pengguna

Table 5: Number of Consumers

Sektor Sector	2008	2009	2010	2011	2012
Domestik Domestic	391,875	406,119	424,550	444,340	461,422
Komersil Commercial	67,480	70,040	72,921	76,222	79,278
Industri Industry	900	905	923	947	970
Lampu Awam Public Lighting	6,149	6,507	6,811	7,042	7,383
Perlombongan Mining	-	-	-	-	-
Lain-lain Others	-	-	-	-	-
Jumlah Total	466,404	483,571	505,205	528,551	549,053

Jadual 6: Keupayaan Sistem Penghantaran

Table 6: Transmission System Capacity

Talian/Kabel Sistem Penghantaran Transmission System Lines/Cables	2008	2009	2010	2011	2012
500 kV (km)	-	-	-	-	-
275 kV (km)	765	765	765	867	1026
132 kV (km)	138	225	225	235	386
66 kV (km)	-	-	-	-	-
Pencawang Penghantaran Transmission Substations					
Bilangan Number	22	23	24	22	25
Keupayaan Capacity (MVA)	4,726	4,806	4,886	5,206	5,876
Prestasi Performance					
Bilangan Kejadian Pelantikan Number of Tripping Incidents	9	4	7	8	16
Tenaga Yang Tidak Dibekal (MWj) Unsupplied Energy (MWh)	662	57	191	507	421

Jadual 7: Keupayaan Sistem Pengagihan

Table 7: Distribution System Capacity

Talian/Kabel Sistem Pengagihan Distribution System Lines/Cables	2008	2009	2010	2011	2012
Talian Atas Overhead Lines (km)	18,565	19,147	19,803	20,254	21,030
Kabel Bawah Tanah Underground Cables (km)	5,422	5,709	6,087	6,450	6,680
Pencawang Pengagihan Distribution Substations					
Bilangan Number	8,290	8,500	8,685	9,130	9,588
Keupayaan Capacity (MVA)	6,217	3,218	3,321	3,490	3,744
Prestasi Performance					
Bilangan Gangguan Bekalan Number of Supply Interruptions	8,124	7,868	8,003	7,759	7,507

Nota | Note :

- Jumlah Unit Penjanaan (Jumlah Campuran Penjanaan) bagi SEB tidak termasuk IPPs di Sarawak
Generation Mix for SEB excluding IPPs in Sarawak
- Jumlah Kapasiti Penjanaan Terpasang SEB tidak termasuk IPPs di Sarawak
Installed Generation Capacity for SEB excluding IPPs in Sarawak
- Jualan Tenaga Elektrik bagi SEB termasuk penjanaan sendiri oleh SEB dan tenaga dibeli dari IPPs di Sarawak
Sales of Electricity for SEB includes SEB own generation and energy purchased from IPPs in Sarawak

Maklumat bagi SEB mengambil kira penstrukturan semula SEB pada tahun 2011
Information on SEB taking into account SEB's restructuring in 2011

Penjana-Penjana Kuasa Bebas (IPPs)

Independent Power Producers (IPPs)

Jadual 8: Kapasiti Berlesen, Unit Penjanaan dan Unit Jualan

Table 8: Licensed Capacity, Units Generated and Units Sold

No.	Pemegang Lesen & Lokasi Licensee & Location	Jenis Loji Plant Type	Kapasiti Berlesen Licensed Capacity (MW)	Unit Penjanaan (GWh) Unit Generated (GWh)	Unit Jualan (GWh) Units Sold (GWh)
1	Sarawak Hydro Sdn. Bhd.				
	Bakun, Sarawak	Hidro Hydro	2,400	2,745	2,712

Nota | Note :

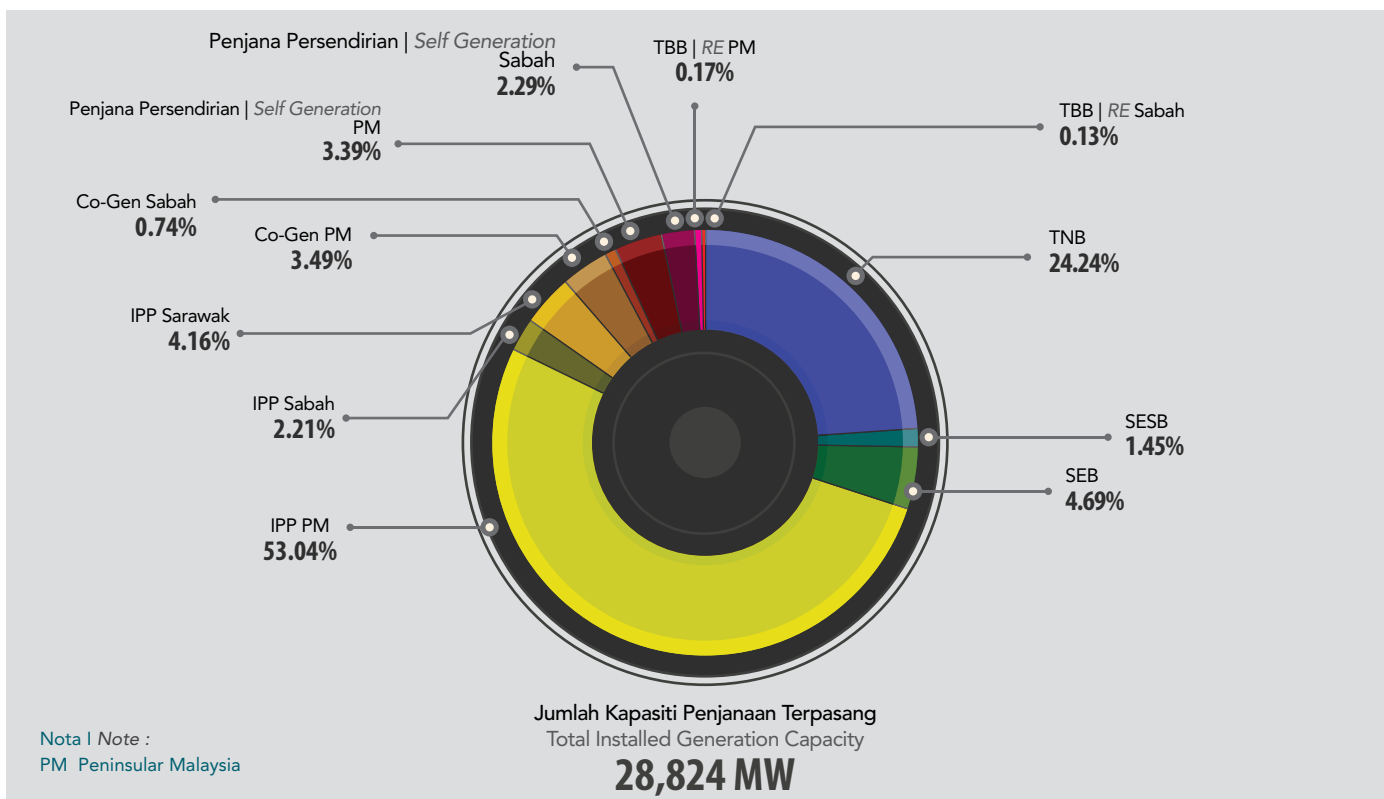
Bakun dimiliki dan dikendalikan oleh sebuah entiti di bawah kerajaan persekutuan, Sarawak Hidro Sdn. Bhd. Pada tahun 2012, Bakun beroperasi dengan Jumlah Kapasiti Terpasang sebanyak 1,200 MW dari jumlah keseluruhan kapasiti berlesen 2,400 MW

Bakun is owned and operated by an entity under the federal government namely Sarawak Hidro Sdn. Bhd. In 2012, Bakun operated at a total installed capacity of 1,200 MW out of the total licensed capacity of 2,400 MW

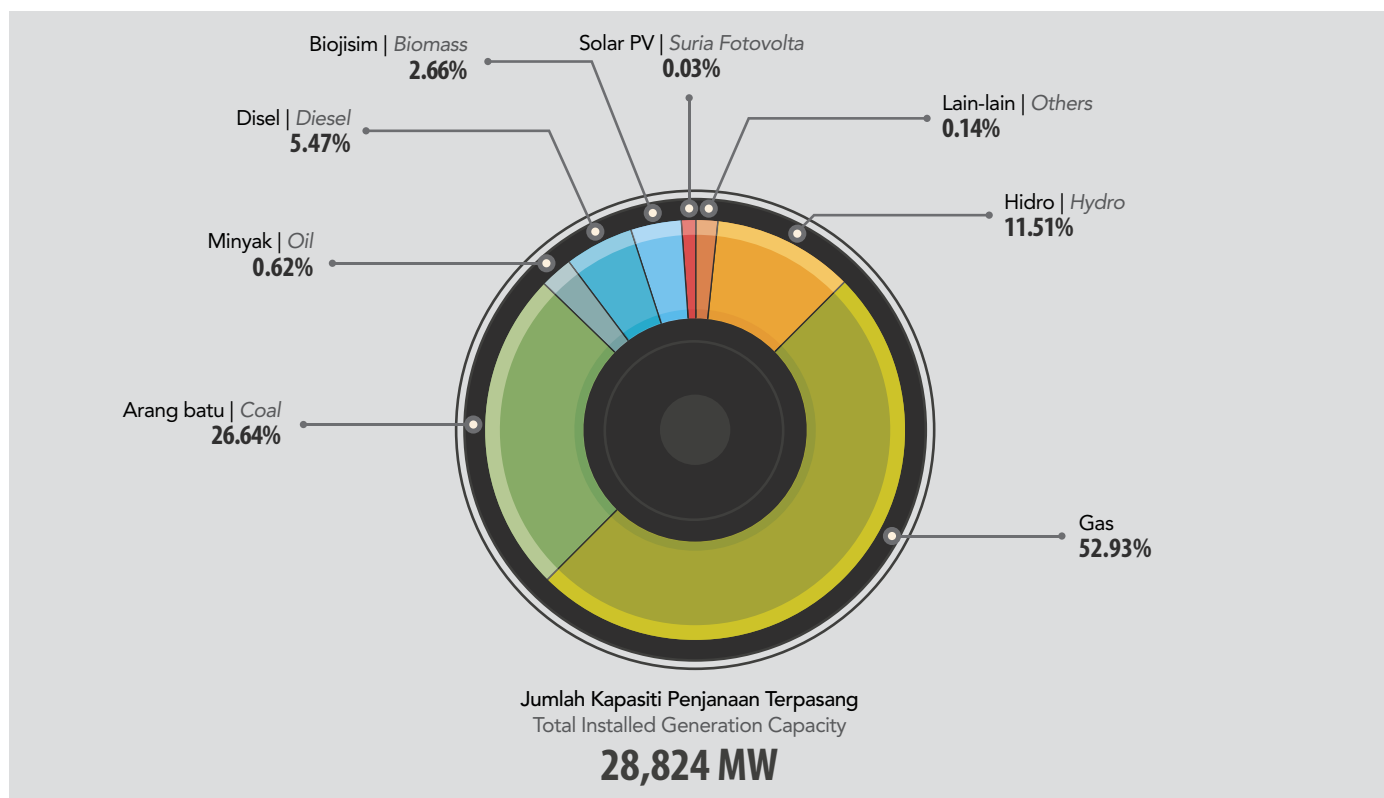


**RINGKASAN INDUSTRI PEMBEKALAN
ELEKTRIK DI MALAYSIA**
*SUMMARY OF ELECTRICITY SUPPLY
INDUSTRY IN MALAYSIA*

Kapasiti Penjanaan Penjana-Penjana Kuasa Utama Generation Capacity by Major Power Producers

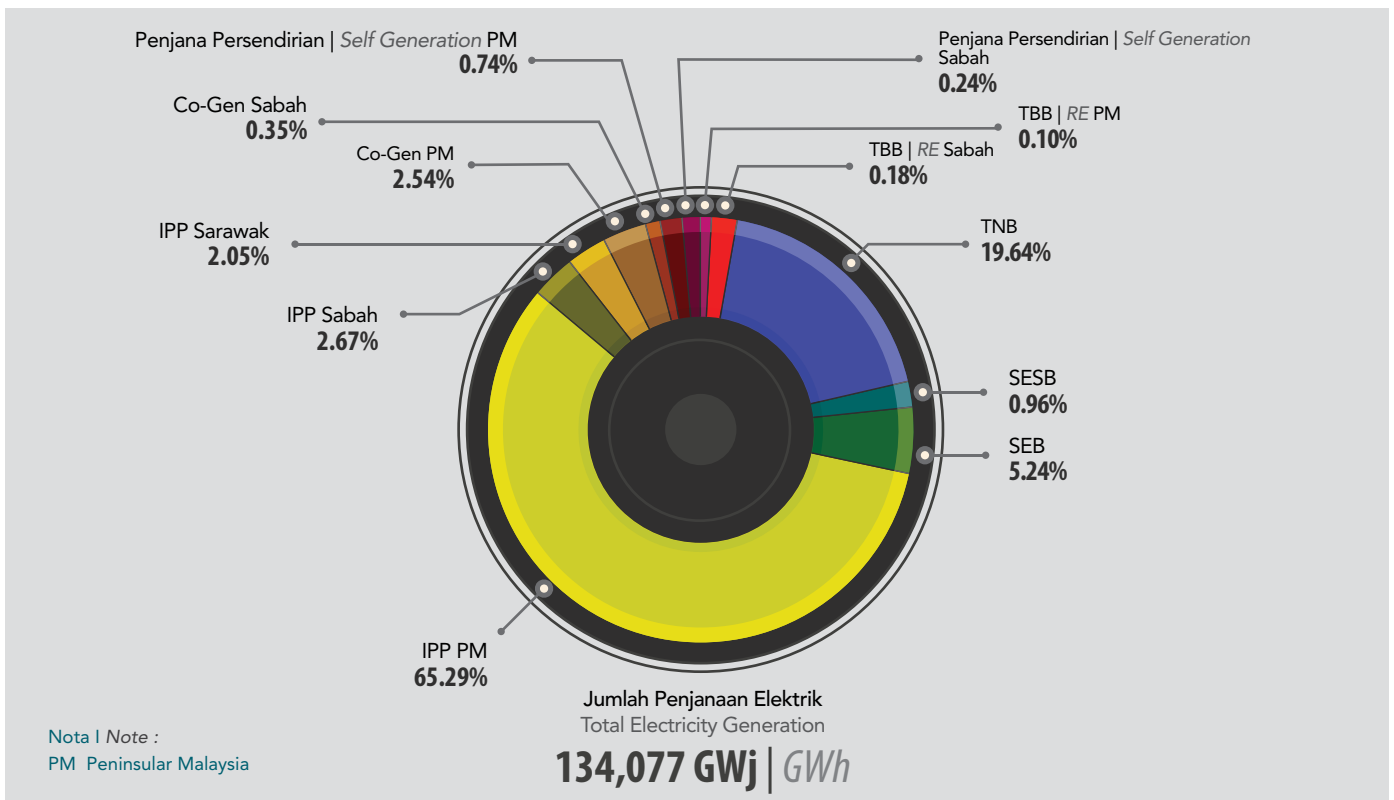


Kapasiti Penjanaan Mengikut Jenis Bahan Api Generation Capacity by Fuel Type



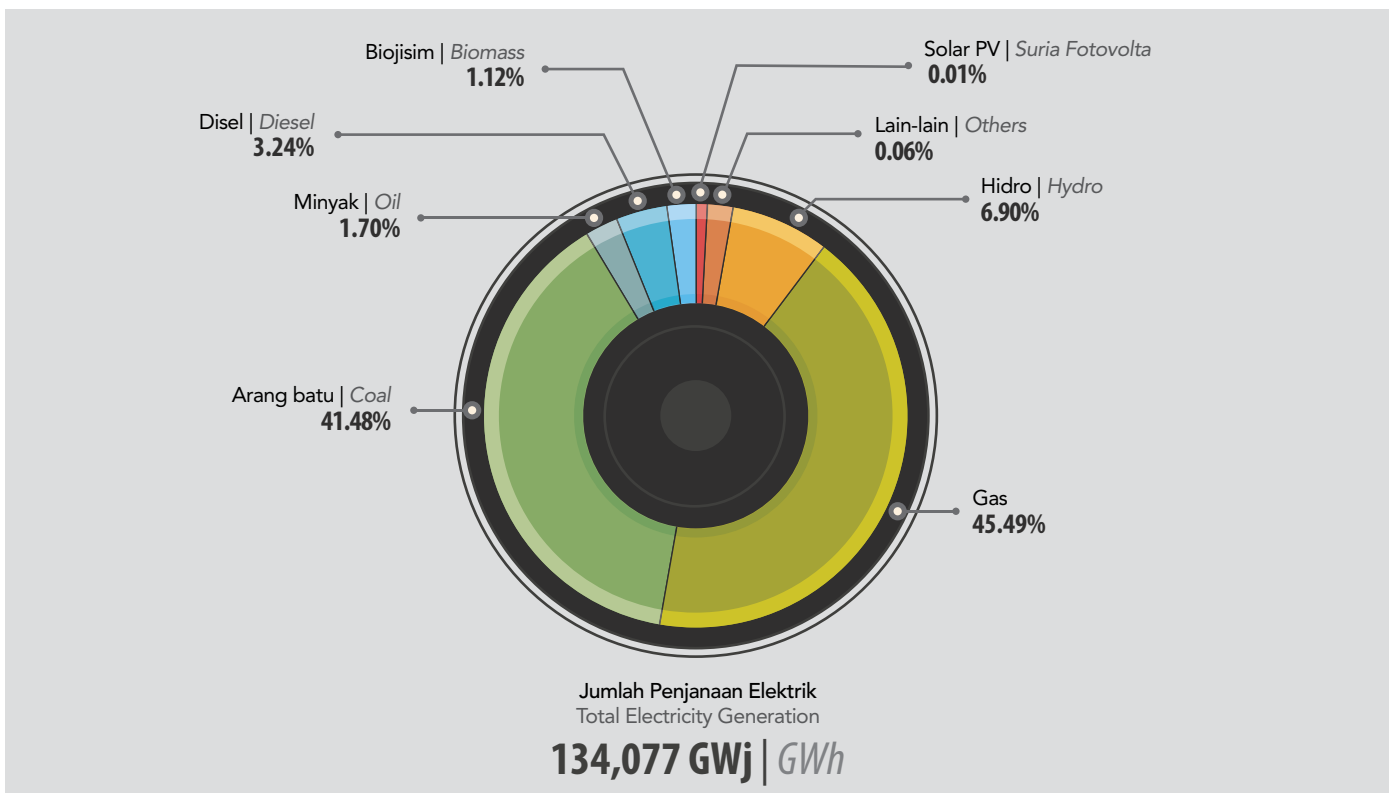
Campuran Penjanaan Penjana-Penjana Kuasa Utama

Generation Mix by Major Power Producers



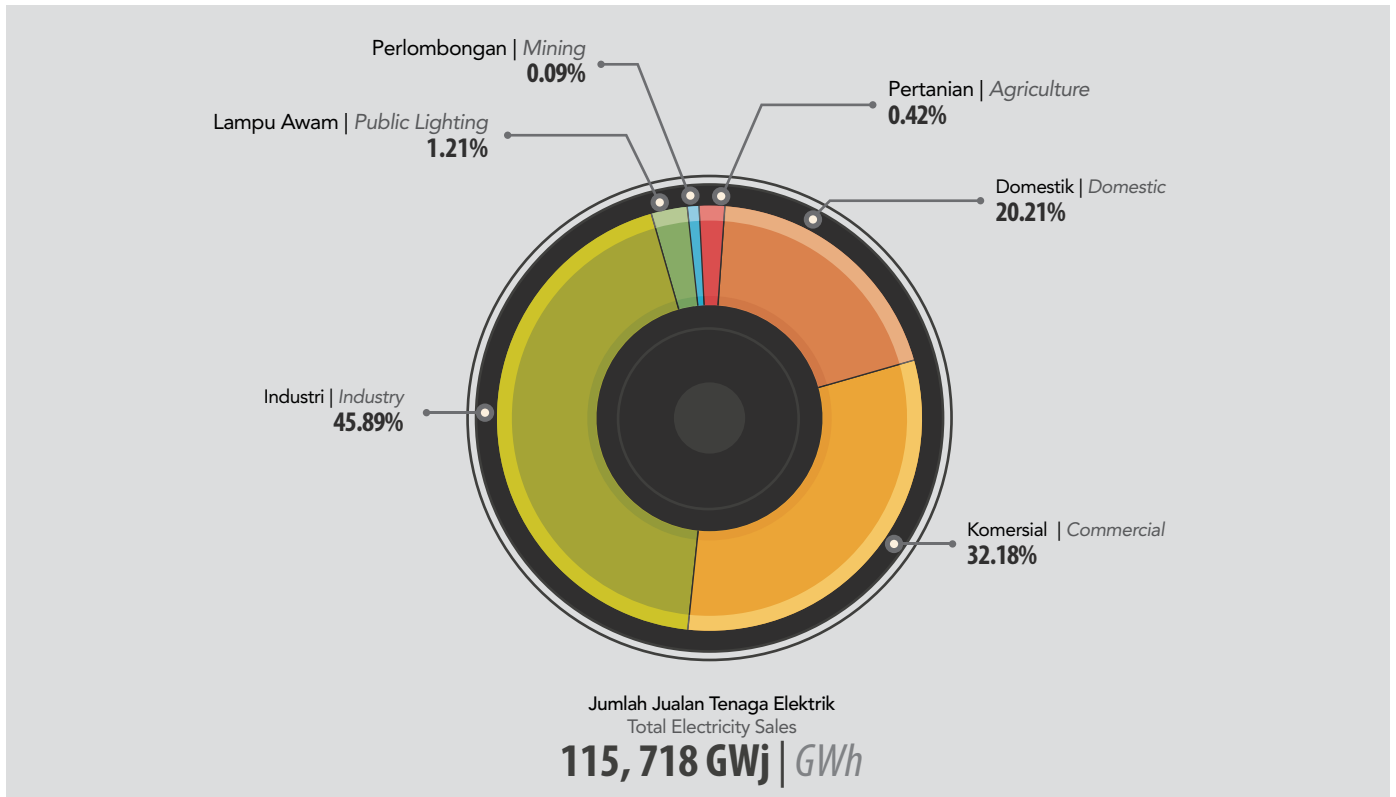
Campuran Penjanaan Mengikut Jenis Bahan Api

Generation Mix by Fuel Type



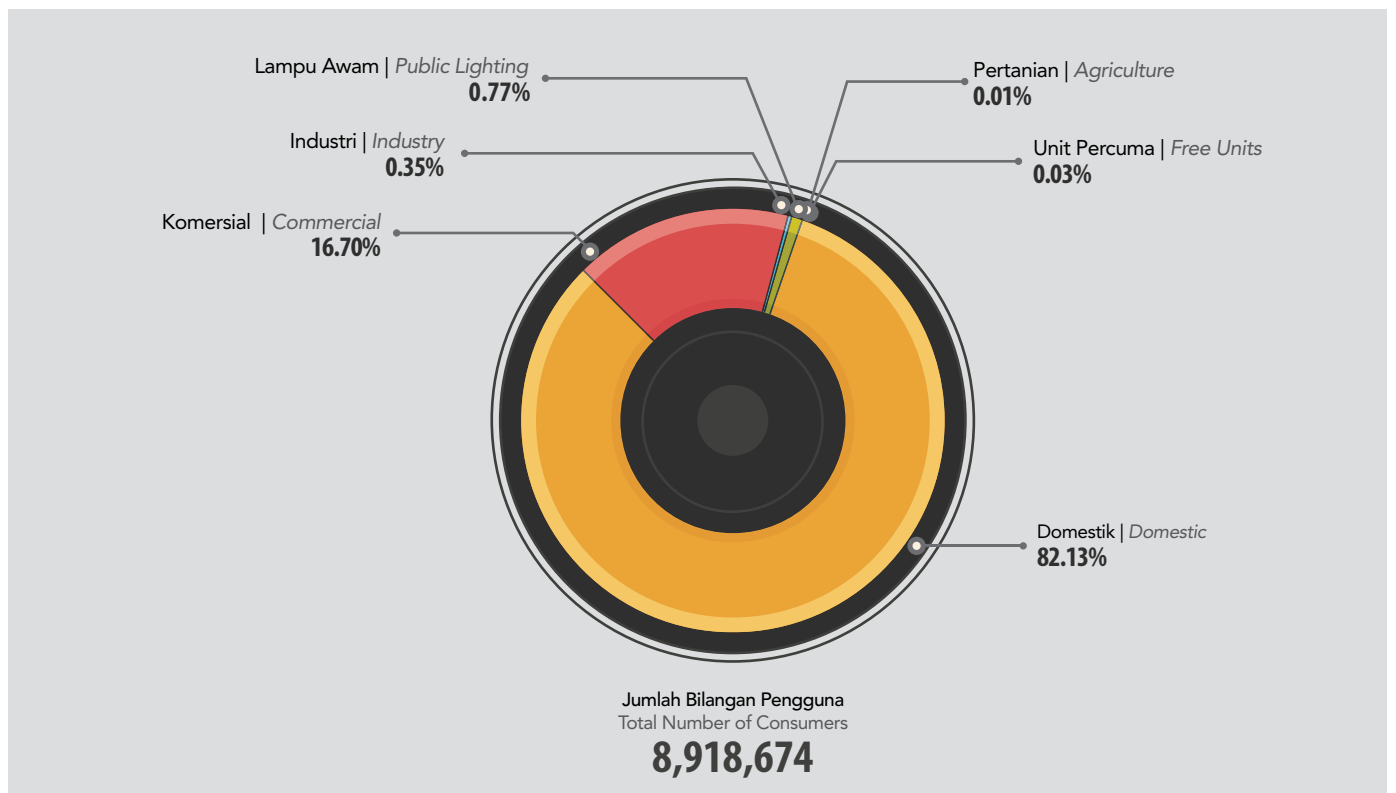
Penggunaan Tenaga Elektrik Mengikut Sektor

Electricity Consumption by Sector



Bilangan Pengguna

Number of Consumers





PETA LOKASI STESEN-STESEN JANA KUASA UTAMA DAN SISTEM GRID DI MALAYSIA

LOCATION MAP OF MAJOR POWER STATIONS AND GRID SYSTEM IN MALAYSIA

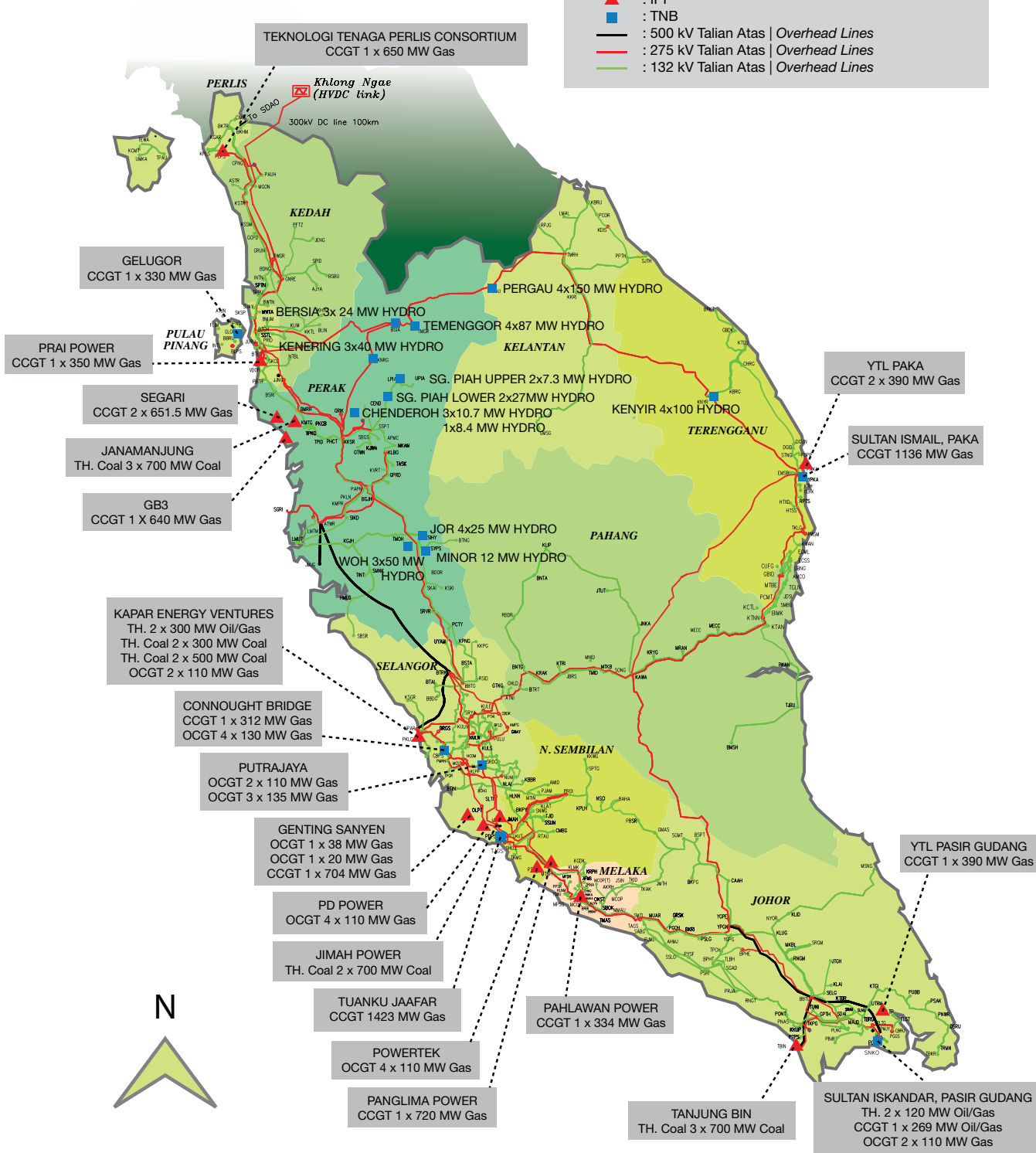
- 115** Lokasi Stesen Jana Kuasa Utama dan Sistem Grid di Semenanjung Malaysia
Major Power Stations and Grid System in Peninsular Malaysia
- 116** Lokasi Stesen Jana Kuasa Utama dan Sistem Grid di Sabah
Major Power Stations and Grid System in Sabah
- 117** Lokasi Stesen Jana Kuasa Utama dan Sistem Grid di Sarawak
Major Power Stations and Grid System in Sarawak

Lokasi Stesen Jana Kuasa Utama dan Sistem Grid di Semenanjung Malaysia

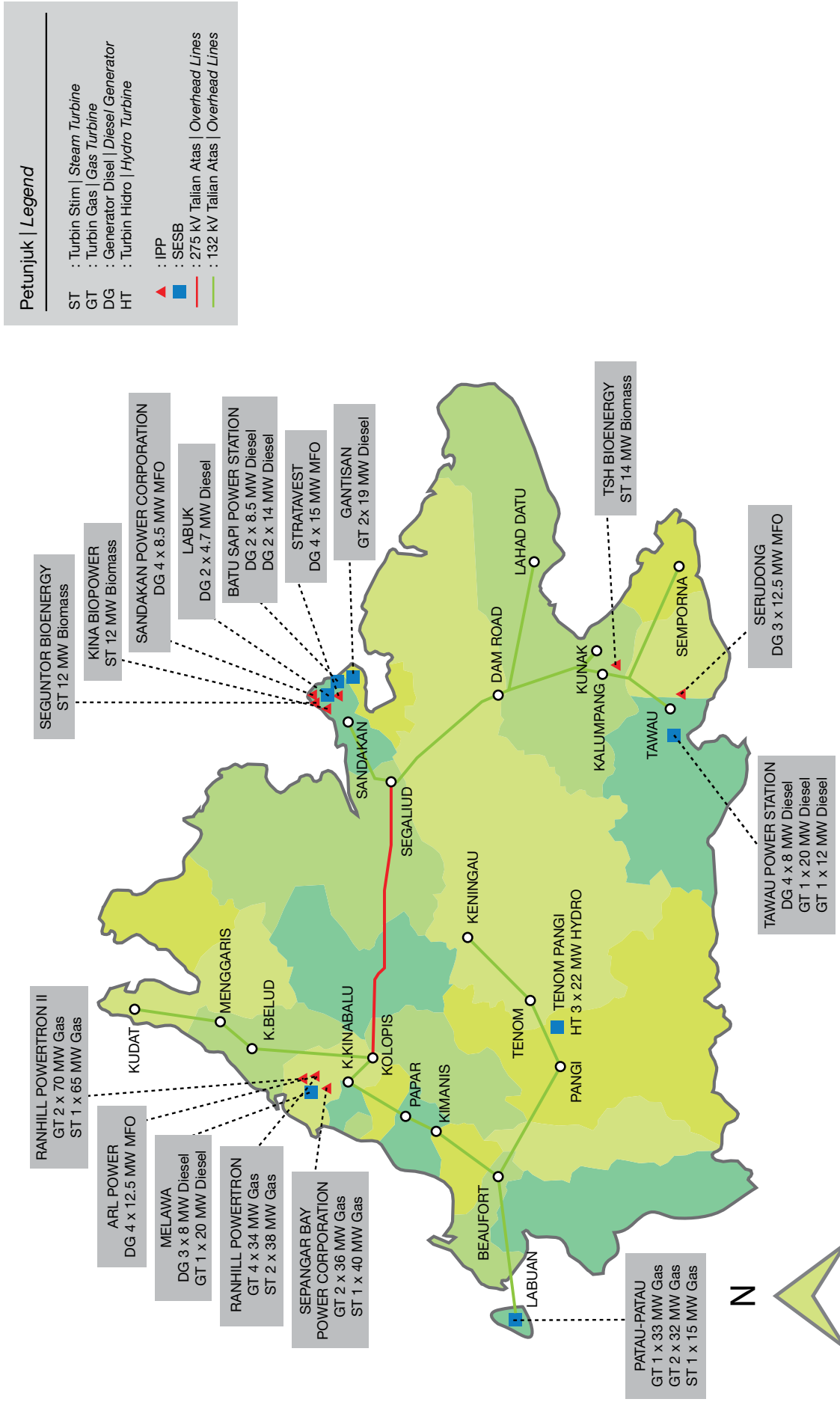
Major Power Stations and Grid System in Peninsular Malaysia

Petunjuk | Legend

- OCGT : Turbin Gas Kitar Terbuka | *Open Cycle Gas Turbine*
- CCGT : Turbin Gas Kitar Padu | *Combine Cycle Gas Turbine*
- TH. Coal : *Conventional Arang Batu | Coal*
- TH. : *Conventional (Minyak/Gas) | (Oil/Gas)*
- ▲ : IPP
- : TNB
- : 500 kV Talian Atas | *Overhead Lines*
- : 275 kV Talian Atas | *Overhead Lines*
- : 132 kV Talian Atas | *Overhead Lines*



Lokasi Stesen Jana Kuasa Utama dan Sistem Grid di Sabah Major Power Stations and Grid System in Sabah



Nota | Note:

Kapasiti penjanaan tidak termasuk jumlah keseluruhan bagi jenis penjanaan berikut | Installed capacity excluding :

- Stesen kecil | small station = 17.4 MW
- Mini hidro | mini hydro = 7.0 MW
- Stesen luar bandar | rural station = 2.7 MW
- Tenaga boleh baharu | Renewable energy = 6.5 MW

Henti tugas Sandakan Power Corporation (SPC) pada bulan Mei 2012 | Ceased Operation of SPC in May 2012

Lokasi Stesen Jana Kuasa Utama dan Sistem Grid di Sarawak

Major Power Stations and Grid System in Sarawak

Petunjuk | Legend

- TH. Coal : Convensional Arang Batu | Coal
- HT : Turbin hidro | Hydro Turbine
- GT : Turbin Gas | Gas Turbine
- DG : Generator Diesel | Diesel Generator
- ▲ : IPP
- : SEB
- : 275 kV Transmission Grid System
- : 132 kV Transmission Grid System



- Nota | Note:**
1. Wilayah Barat | Western Region
 2. Wilayah Sri Aman | Sri Aman Region
 3. Wilayah Sarikei | Sarikei Region
 4. Wilayah Tengah | Central Region
 5. Wilayah Bintulu | Bintulu Region
 6. Wilayah Utara | Northern Region
 7. Wilayah Limbang | Limbang Region

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