Suruhanjaya Tenaga
Energy Commission

STATISTIK INDUSTRI PENGAGIHAN GAS BERPAIP

PIPED GAS DISTRIBUTION INDUSTRY STATISTICS

2011

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PENAFIAN

Data dan maklumat yang terkandung di dalam buku laporan ini memberi gambaran yang munasabah dan saksama bagi keseluruhan industri pengagihan gas berpaip 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.

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The data and information in this report represent a fair and reasonable overview of the whole piped gas distribution industry. Every effort has been made to verify, validate and accurately represent the information in this report, based on the daily, monthly and yearly reports which were submitted by licensees pursuant to their licence conditions.

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RINGKASAN STATISTIK INDUSTRI GAS BERPAIP 2011
2011 PIPED GAS DISTRIBUTION INDUSTRY HIGHLIGHTS

Nilai Kalori Kasar Gas ***Gas Gross Calorific Value***	Nilai Kalori Kasar Gas Asli dari MT-JDA: 9,326 kcal/Sm^3 *Gross Calorific Value for Natural Gas (NG) as supplied by MT-JDA: 9,326 kcal/Sm^3* Nilai Kalori Kasar Gas Asli dari Kerteh: 9,534 kcal/Sm^3 *Gross Calorific Value for Natural Gas (NG) from Kerteh: 9,534 kcal/Sm^3* Nilai Kalori Kasar Gas Asli di Kota Kinabalu: 9,537 kcal/Sm^3 *Gross Calorific Value for Natural Gas (NG) in Kota Kinabalu: 9,537 kcal/Sm^3* Nilai Kalori Kasar Gas Asli di Labuan: 10,109 kcal/Sm^3 *Gross Calorific Value for Natural Gas (NG) in Labuan: 10,109 kcal/Sm^3* Nilai Kalori Kasar Gas Petroleum Cecair: 28,059 kcal/Sm^3 *Gross Calorific Value for Liquefied Petroleum Gas (LPG): 28,059 kcal/Sm^3*
Isipadu Gas ***Gas Volume***	Kuantiti gas asli yang dibekalkan oleh Gas Malaysia Berhad (GMB) pada 2011: 124,628,939 MMBTU *Total natural gas supplied by Gas Malaysia Berhad (GMB) in 2011: 124,628,939 MMBTU* • Sektor industri 123,587,690 MMBTU (99.16%) *Industrial sector 123,587,690 MMBTU (99.16%)* • Sektor komersil 1,021,176 MMBTU (0.82%) *Commercial sector 1,021,176 MMBTU (0.82%)* • Sektor perumahan 20,073 MMBTU (0.02%) *Residential sector 20,073 MMBTU (0.02%)* Pengguna tertinggi gas asli dalam sektor industri bagi tahun 2011 adalah sektor sub-Industri Makanan & Minuman iaitu 33,315,737 MMBTU (27%) *The largest consumer of natural gas in 2011 was the industrial sector and its sub-category was the Food and Beverages Industry which consumed 33,315,737 MMBTU (27%)* Kuantiti LPG yang dibekalkan oleh Gas Malaysia Berhad (GMB) bagi tahun 2011: 254,904 MMBTU *Total LPG supplied by Gas Malaysia Berhad (GMB) in 2011: 254,904 MMBTU* • Sektor industri 415 MMBTU (0.16%) *Industrial sector 415 MMBTU (0.16%)* • Sektor komersil 199,050 MMBTU (78.09%) *Commercial sector 199,050 MMBTU (78.09%)* • Sektor perumahan 55,439 MMBTU (0.22%) *Residential sector 55,439 MMBTU (0.22%)* Pembekalan gas asli di Sabah dan Labuan oleh Sabah Energy Corp. Sdn. Bhd. (SEC) bagi tahun 2011: 66,794.5 MMBTU *Natural gas supplied in Sabah and Labuan by Sabah Energy Corp. Sdn. Bhd. (SEC) in 2011: 66,794.5 MMBTU*

Perpaipan Gas ***Gas Pipelines***	Panjang talian paip pengagihan gas asli yang beroperasi di Semenanjung Malaysia adalah 1,791 km *Length of operational natural gas pipeline in Peninsular Malaysia in 2011 was 1,791 km* Panjang talian paip pengagihan gas asli yang beroperasi di Sabah dan Labuan adalah 7,861 m *Length of operational natural gas pipeline in Sabah and Labuan in 2011 was 7,861 m* Panjang talian paip gas petroleum cecair yang beroperasi di Semenanjung Malaysia adalah 72.14 km *Length of operational liquefied petroleum gas pipeline in Peninsular Malaysia was 72.14 km*
Lesen Pembekalan Gas ***Gas Supply Licence***	Tiga (3) Pemegang Lesen Utiliti Gas pada 2011 *There were three (3) Gas Utility Licensees in 2011* • Gas Malaysia Berhad - Gas Asli *Gas Malaysia Berhad - Natural Gas* • Gas Malaysia Berhad - Gas Petroleum Cecair *Gas Malaysia Berhad - Liquefied Petroleum Gas* • Sabah Energy Corporation Sdn. Bhd. - Gas Asli *Sabah Energy Corporation Sdn. Bhd. - Natural Gas* Bilangan Lesen Gas Persendirian pada 2011: 976 lesen *Total Number of Private Gas Licensees in 2011: 976 licenses*
Orang Kompeten Gas & Kontraktor ***Gas Competent Persons & Contractors***	• Bilangan perakuan orang kompeten dikeluarkan sehingga 2011: 718 perakuan *Total numbers of gas competent person certificates issued until 2011: 718 certificates* • Bilangan kontraktor gas berdaftar sehingga 2011: 126 syarikat. *Total numbers of registered gas contractors in 2011: 126 companies*
Petunjuk Prestasi GMB pada 2011 ***GMB Key Performance Indicators in 2011***	• SAIDI 0.3630 minit/pelanggan/tahun *SAIDI 0.3630 minute/customer/year* • SAIFI 0.0039 gangguan/pelanggan/tahun *SAIFI 0.0039 disruption/customer/year* • CAIDI 90.96 minit/gangguan *CAIDI 90.96 minute/disruption* • Kebocoran di sepanjang talian paip gas adalah 0.003827 bagi setiap 1000 km *Leakage along the gas pipeline for every 1000 km was 0.003827* • Kebocoran di stesen dan premis pengguna adalah 0.003615 bagi setiap 1000 pelanggan *Leakage at station and customer premises for every 1000 customer was 0.003615*

KANDUNGAN
CONTENTS

LATAR BELAKANG
BACKGROUND

1.0 LATAR BELAKANG
BACKGROUND

1.1 AKTA BEKALAN GAS 1993 (AKTA 501)

Kerajaan telah mewujudkan Akta Bekalan Gas 1993 (Akta 501) dan Peraturan-Peraturan Bekalan Gas 1997 bagi mengawalselia aktiviti pembekalan dan penggunaan gas berpaip. Matlamat utama adalah untuk melindungi kepentingan pengguna gas berpaip dan keselamatan orang awam, dan pada masa yang sama memastikan pembekalan gas adalah berdaya maju. Akta 501 menggariskan standard pengurusan dan standard teknikal daripada aspek keselamatan, keboleharapan, ekonomi, kecekapan dan kualiti.

Perkataan 'gas' didefinisikan di dalam Akta 501 sebagai 'metana, etana, propana, butana atau hidrokarbon yang mengandungi satu atau lebih gas yang di atas sama ada dalam bentuk gas atau cecair'. Kandungan utama gas asli ialah metana dengan peratusan kecil gas hidrokarbon dan bukan hidrokarbon manakala kandungan utama Gas Petroleum Cecair (GPC) ialah propana dan butana. Oleh itu, gas jenis lain seperti oksigen, nitrogen dan acetelina, yang digunakan oleh industri tidak terpakai di bawah Akta 501.

Akta ini juga tidak terpakai ke atas keseluruhan rangkaian pembekalan gas. Skop akta hanya meliputi pembekalan gas asli melalui talian paip ke hilir dari bebibir penghujung stesen pintu kota, atau pembekalan GPC dari sambungan pengisian tangki atau silinder penstoran ke peralatan gas. Oleh itu, sistem talian paip penghantaran dan talian sisi (sebelum dan termasuk stesen pintu kota) adalah di luar skop Akta 501. Buat masa ini, Akta 501 hanya terpakai di Semenanjung dan Sabah.

1.1 GAS SUPPLY ACT 1993 (ACT 501)

The government introduced the Gas Supply Act 1993 (ACT 501) and Gas Supply Regulations 1997 to regulate piped gas supply and utilization activities. The main objective is to protect the interest of the consumers and the public who are affected by the supply activities whilst at the same time ensuring continued viability of the gas supply businesses. Act 501 prescribes the administrative and technical standards in the aspects of safety, reliability, economy, efficiency and quality.

In ACT 501 the word 'gas' is defined as 'methane, ethane, propane, butane or hydrocarbons which may consist of one or more of the above gases in the form of gas or liquid'. Natural gas is mainly methane with a small percentage of other hydrocarbons and non-hydrocarbon gases whereas Liquefied Petroleum Gas (LPG) comprises of mainly propane and butane. Other types of gases, such as oxygen, nitrogen and acetylene, used in the industrial sector are not covered by ACT 501.

The act is not applicable throughout the gas supply chain. Its scope covers only the supply of natural gas through pipeline downstream of the last flange of the city gate station, or the supply of LPG from the filling point of storage tanks or cylinders to gas appliances. Natural gas transmission and lateral pipeline systems (up to and including the city gate stations) are outside the scope of ACT 501. Presently, ACT 501 is only applicable in the Peninsular and Sabah.

1.2 FUNGSI SURUHANJAYA TENAGA DI BAWAH AKTA 501

1. Memastikan bahawa pemegang lesen dapat memenuhi permintaan yang munasabah bagi gas yang dibekalkan melalui talian paip.

2. Memastikan pemegang lesen dapat membiayai perkhidmatan pembekalan gas.

3. Melindungi kepentingan pengguna gas yang dibekalkan melalui talian paip dari aspek:
   - Harga yang dikenakan dan terma-terma pembekalan.
   - Keberterusan bekalan.
   - Kualiti perkhidmatan pembekalan gas.

4. Mengawalselia komposisi, tekanan, ketulenan dan isipadu gas yang dibekalkan.

5. Meningkatkan kecekapan dan ekonomi dalam pembekalan gas melalui talian paip dan penggunaan gas yang cekap melalui talian paip.

6. Melindungi pengguna dan orang awam daripada bahaya yang berbangkit daripada aktiviti pengagihan dan penggunaan gas melalui talian paip.

7. Membolehkan persaingan secara berkesan dalam pembekalan gas melalui talian paip.

8. Menyiasat kemalangan atau kebakaran yang melibatkan talian paip atau pepasangan gas.

1.2 FUNCTIONS OF ENERGY COMMISSION UNDER ACT 501

1. *To ensure a licensee satisfies all reasonable demands for gas through pipelines.*

2. *To ensure a licensee could finance the provision of gas supply services.*

3. *To protect the interests of consumers of gas supplied through pipelines in respect of:*
   - *The prices charged and the other terms of supply.*
   - *The continuity of supply.*
   - *The quality of the gas supply services provided.*

4. *To regulate the composition, pressure, purity and volume of gas supplied through pipelines.*

5. *To promote efficiency and economy to supply gas through pipeline and the efficient use of gas supplied through pipelines.*

6. *To protect the public from dangers arising from the distribution of gas through pipeline or from the use of gas supplied through pipelines.*

7. *To enable persons to compete effectively in the supply of gas through pipelines.*

8. *To investigate any accident or fire involving any gas pipeline or installation.*

1.3 SPESIFIKASI GAS
GAS SPECIFICATIONS

SEMENANJUNG MALAYSIA
PENINSULAR MALAYSIA

Komposisi purata gas asli yang dibekalkan oleh Gas Malaysia Berhad daripada Malaysia-Thailand Joint Development Area (MT-JDA), Thailand dan Kerteh, Malaysia.

Average Natural Gas Composition Supplied by Gas Malaysia Berhad from Malaysia-Thailand Joint Development Area (MT-JDA), Thailand and Kerteh, Malaysia.

Jadual 1: Komposisi Purata Gas Asli yang Dibekalkan oleh Gas Malaysia Berhad
Table 1: Average Natural Gas Composition Supplied by Gas Malaysia Berhad.

Sumber Gas | *Gas Source* Komposisi Gas | *Gas Composition*	MT-JDA Gas Mol (%) | *Mole (%)*	Kerteh Mol (%) | *Mole (%)*
CH_4	85.86	95.17
C_2H_6	4.99	2.47
C_3H_8	1.54	0.43
iC_4H_{10}	0.12	0.02
nC_4H_{10}	0.09	0.02
iC_5H_{12} +	0.08	0.01
nC_5H_{12} +	0.04	0.01
C_6H_{14} +	0.02	0.01
CO_2	5.38	1.23
N_2	1.88	0.63

Jadual 2: Sifat-Sifat Tipikal Gas Asli
Table 2: Typical Natural Gas Characteristics

Sifat-Sifat Tipikal Gas Asli *Typical Natural Gas Characteristics*	MT-JDA	Kerteh
Graviti Tentu | *Specific Gravity*	0.66	0.60
Nilai Kalori Kasar, (kcal/Sm^3) | *Gross Calorific Value, (kcal/Sm^3)*	9,326	9,534
Halaju Pembakaran, (m/s) | *Burning Velocity, (m/s)*	0.28	0.31
Had Atas Kemudahbakaran, (%) | *Upper Flammability Limit, (%)*	15.3	15.4
Had Bawah Kemudahbakaran, (%) | *Lower Flammability Limit, (%)*	4.3	4.5
Suhu Pengautocucuhan, (^{0}C) | *Auto-ignition Temperature, (^{0}C)*	628	640
Teori Keperluan Udara, (m^3/m^3) | *Theoretical Air Requirement, (m^3/m^3)*	9.71	9.74

Jadual 3: Komposisi Purata Gas Petroleum Cecair (GPC) di Semenanjung
Table 3: Average Liquefied Petroleum Gas (LPG) Composition in the Peninsular

Gas *Gas*	Mol (%) *Mole (%)*
C_3H_8	40.0
iC_4H_{10}	30.0
nC_4H_{10}	30.0

Jadual 4: Sifat-Sifat Tipikal GPC
Table 4: Typical LPG Characteristics

Sifat-Sifat Tipikal GPC *Typical LPG Characteristics*	
Graviti Tentu | *Specific Gravity*	1.65
Nilai Kalori Kasar, (kcal/Sm^3) | *Gross Calorific Value, (kcal/Sm^3)*	28,059
Halaju Pembakaran, (m/s) | *Burning Velocity, (m/s)*	0.46
Had Atas Kemudahbakaran, (%) | *Upper Flammability Limit, (%)*	8.5
Had Bawah Kemudahbakaran, (%) | *Lower Flammability Limit, (%)*	1.9
Suhu Pengautocucuhan, (^{0}C) | *Auto-ignition Temperature, (^{0}C)*	510
Teori Keperluan Udara, (m^3/m^3) | *Theoretical Air Requirement, (m^3/m^3)*	28.81

SABAH DAN LABUAN
SABAH AND LABUAN

Jadual 5: Komposisi Purata Gas Asli oleh Sabah Energy Corporation Sdn. Bhd.
Table 5: Average Natural Gas Composition by Sabah Energy Corporation Sdn. Bhd.

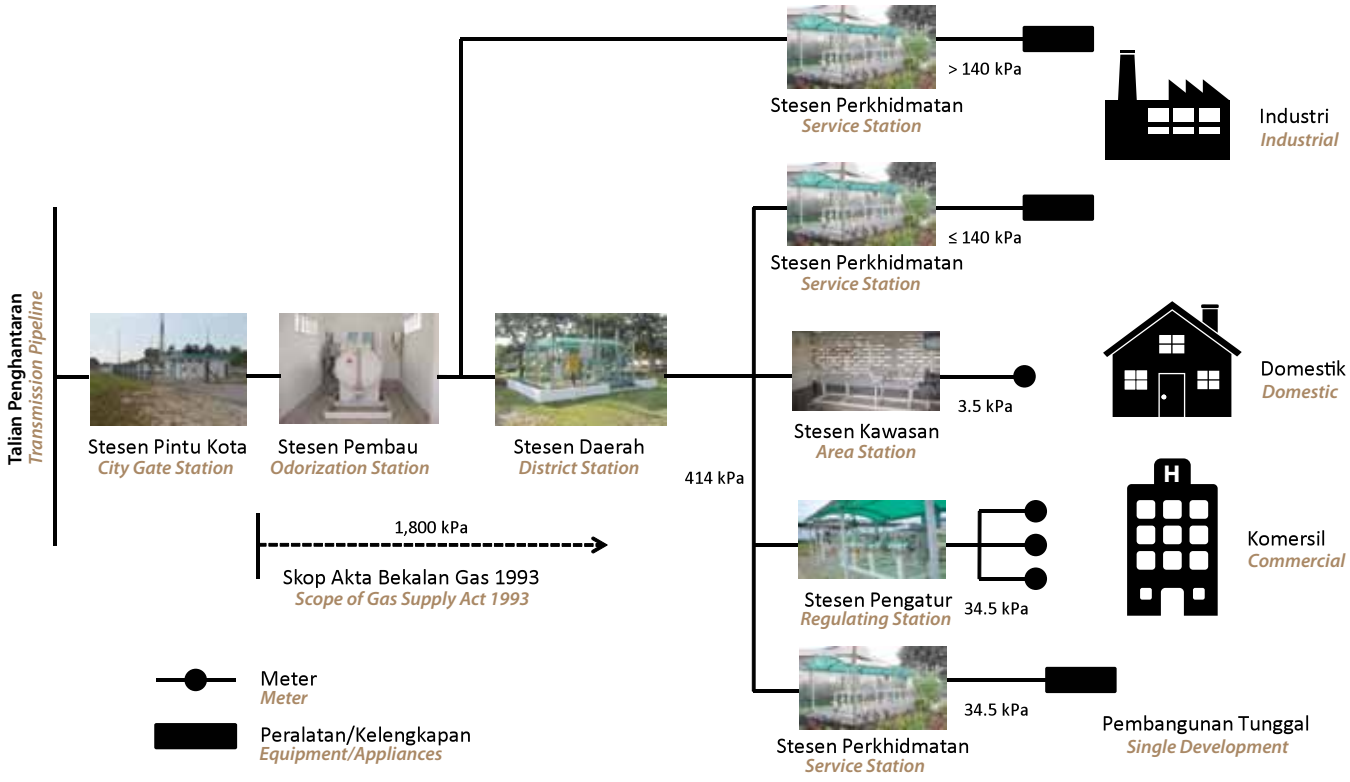
Komposisi Gas *Gas Composition*	Kota Kinabalu, Sabah Mol (%) | *Mole (%)*	Labuan Mol (%) | *Mole (%)*
CH_4	92.69	91.22
C_2H_6	3.54	3.93
C_3H_8	1.42	1.99
iC_4H_{10}	0.30	0.43
nC_4H_{10}	0.32	0.57
iC_5H_{12} +	0.13	0.21
nC_5H_{12} +	0.05	0.15
C_6H_{14} +	0.16	0.53
CO_2	1.28	1.36
N_2	0.14	0.13

Jadual 6: Sifat-Sifat Tipikal Gas Asli
Table 6: Typical Natural Gas Characteristics

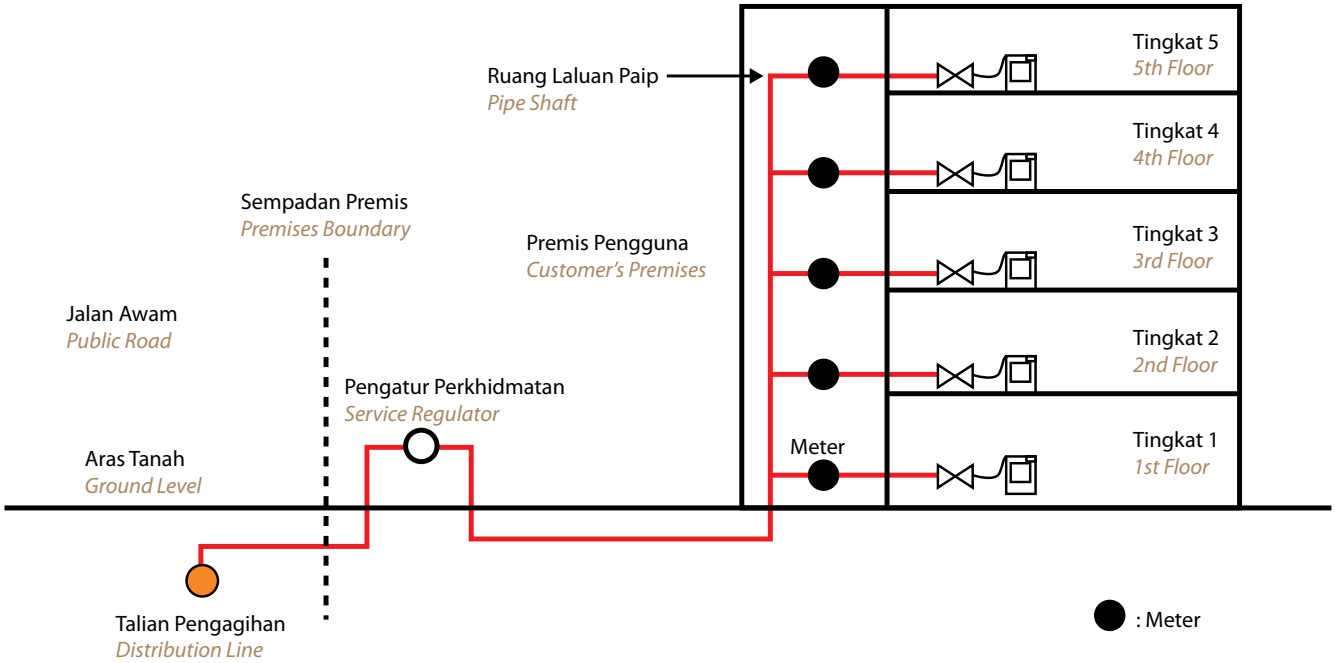
Sifat-Sifat Tipikal Gas Asli *Typical Natural Gas Characteristics*	Kota Kinabalu, Sabah	Labuan
Graviti Tentu | *Specific Gravity*	0.61	0.62
Nilai Kalori Kasar, (kcal/Sm^3) | *Gross Calorific Value, (kcal/Sm^3)*	9,536.58	10,109.14
Halaju Pembakaran, (m/s) | *Burning Velocity, (m/s)*	>0.39	>0.39
Had Atas Kemudahbakaran, (%) | *Upper Flammability Limit, (%)*	14.0	14.0
Had Bawah Kemudahbakaran, (%) *Lower Flammability Limit, (%)*	4.0	4.0
Suhu Pengautocucuhan, (^{0}C) | *Auto-ignition Temperature, (^{0}C)*	>630	>630
Teori Keperluan Udara, (m^3/m^3) | *Theoretical Air Requirement, (m^3/m^3)*	9.87	9.87

1.4 SISTEM PENGAGIHAN GAS
GAS DISTRIBUTION SYSTEM

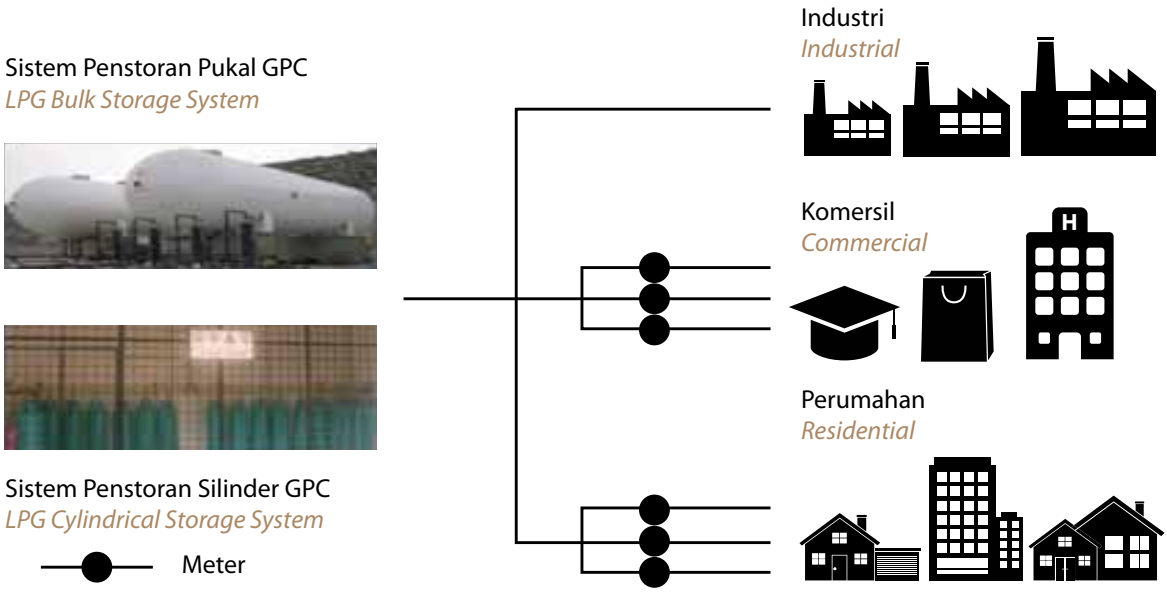
Rajah 1: Sistem Pengagihan Gas Asli
Figure 1: Natural Gas Distribution System



Rajah 2: Sistem Perpaipan Gas Asli ke Pengguna Perumahan
Figure 2: Natural Gas Piping System to Residential Users



Rajah 3: Sistem Pengagihan Gas Petroleum Cecair
Figure 3: Liquefied Petroleum Gas Distribution System



PEMBEKALAN DAN PENGGUNAAN GAS BERPAIP

PIPED GAS SUPPLY AND CONSUMPTION

2.0 PEMBEKALAN DAN PENGGUNAAN GAS BERPAIP
PIPED GAS SUPPLY AND CONSUMPTION

2.1 SITUASI PEMBEKALAN GAS ASLI BERPAIP DI SEMENANJUNG

Pada tahun 2011, isipadu bekalan gas asli yang dibekalkan oleh Pemegang Lesen Penggunaan Gas, Gas Malaysia Berhad (GMB) terus mencatatkan peningkatan ekoran keputusan kerajaan memperuntukkan semula bekalan gas asli berjumlah 100 MMSCFD daripada sektor tenaga kepada sektor bukan tenaga. GMB menerima peruntukan tambahan sebanyak 82 MMSCFD dan selebihnya diperuntukan kepada pelanggan Petroliam Nasional Berhad (PETRONAS). Jumlah bekalan gas asli ini adalah tambahan kepada jumlah semasa yang dibekalkan oleh PETRONAS kepada GMB iaitu 300 MMSCFD. Situasi ini berkuatkuasa bagi tempoh dua (2) tahun dan berakhir pada Disember 2011. Namun begitu, kerajaan telah memutuskan bahawa peruntukan tersebut akan berterusan sehingga Regasification Terminal (RGT) Sungai Udang, Melaka yang dijangka akan beroperasi pada September 2012.

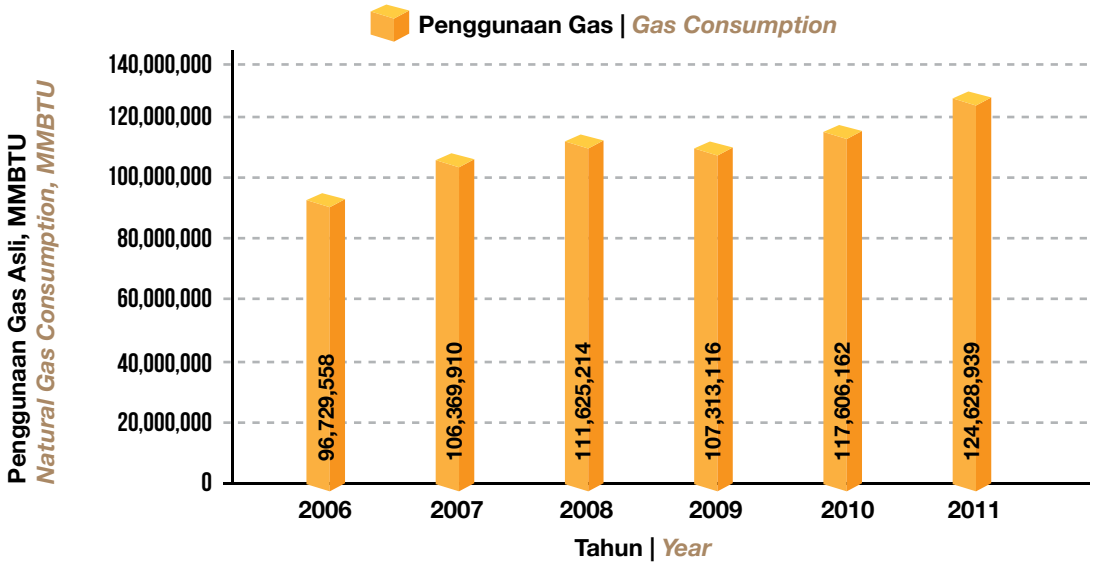
Kuantiti gas asli yang dibekalkan oleh GMB telah meningkat sebanyak 5.97% kepada 124,628,939 MMBTU pada tahun 2011 berbanding 117,606,162 MMBTU pada tahun 2010 seperti yang ditunjukkan di dalam Rajah 4. Sektor industri merupakan pengguna utama gas asli dengan penggunaan sebanyak 123,587,690 MMBTU iaitu bersamaan 99.16% daripada keseluruhan penggunaan gas asli. Sementara itu sektor komersil menggunakan 1,021,176 MMBTU (0.82%) dan sektor perumahan pula menggunakan 20,073 MMBTU (0.02%) pada tahun 2011. Bagi tahun 2011, bilangan pengguna gas asli yang dibekalkan oleh GMB bagi sektor industri adalah 704 pengguna, sektor komersil adalah 536 pengguna dan bagi sektor domestik adalah 10,541 pengguna.

2.1 OVERVIEW OF PIPED NATURAL GAS SUPPLY IN THE PENINSULAR

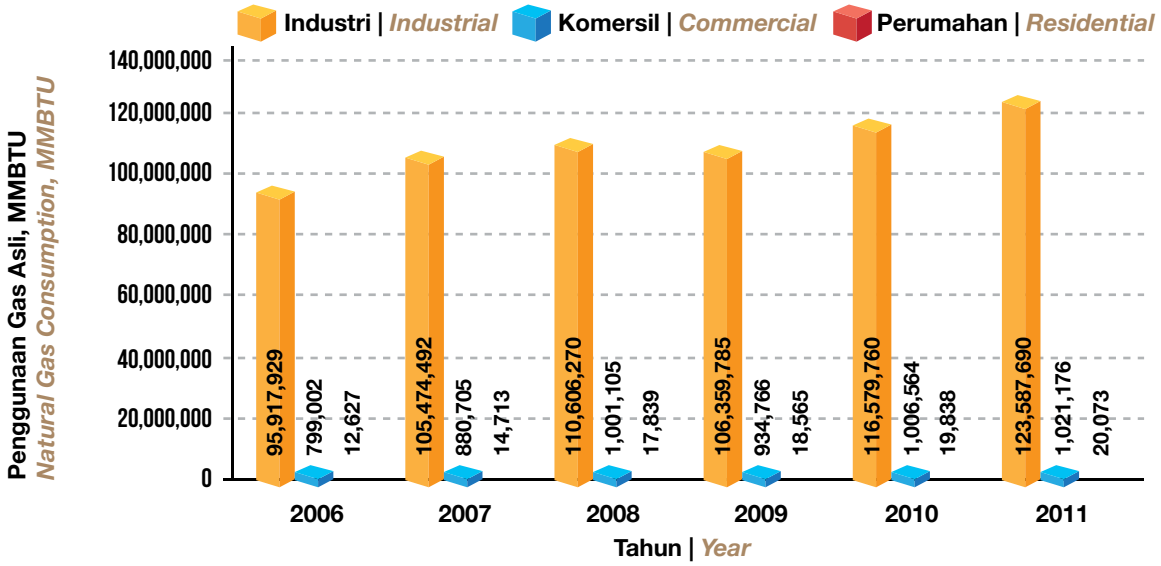
In 2011, the volume of natural gas provided by the Gas Utility Licensee, Gas Malaysia Berhad (GMB) continued to rise following government's decision to allocate the supply of natural gas of 100 MMSCFD from the energy sector to the non-energy sector. GMB received an additional allocation of 82 MMSCFD and the remainder was allocated to the clients of Petroleum Nasional Berhad (PETRONAS). The total natural gas supplied was in addition to the amount currently supplied by PETRONAS to GMB at 300 MMSCFD. This situation was in force for a period of two (2) years and ended in December 2011. However, the government has decided that the provision will be continued until the Regasification terminal (RGT) Sungai Udang, Malacca is operational by September 2012.

The quantity of natural gas supplied by GMB increased by 5.97% to 124,628,939 MMBTU in 2011 compared to 117,606,162 MMBTU in 2010 as shown in Figure 4. The industrial sector was the major consumer of natural gas at 123,587,690 MMBTU, which was equivalent to 99.16% of the total natural gas consumption. Meanwhile, the commercial sector used 1,021,176 MMBTU (0.82 %) and the residential sector used 20.073 MMBTU (0.02 %) in 2011. Number of natural gas users supplied by GMB in 2011 were 704 industrial users, 536 commercial users and 10,541 domestic users.

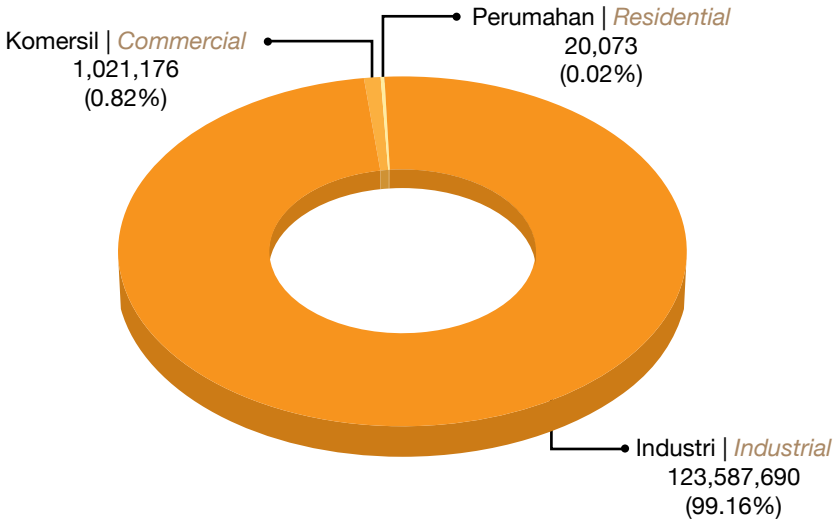
Rajah 4: Jumlah Penggunaan Gas Asli di Semenanjung
Figure 4: Total Natural Gas Consumption in the Peninsular



Rajah 5: Jumlah Penggunaan Gas Asli mengikut Kategori di Semenanjung
Figure 5: Total Natural Gas Consumption in the Peninsular according to Category



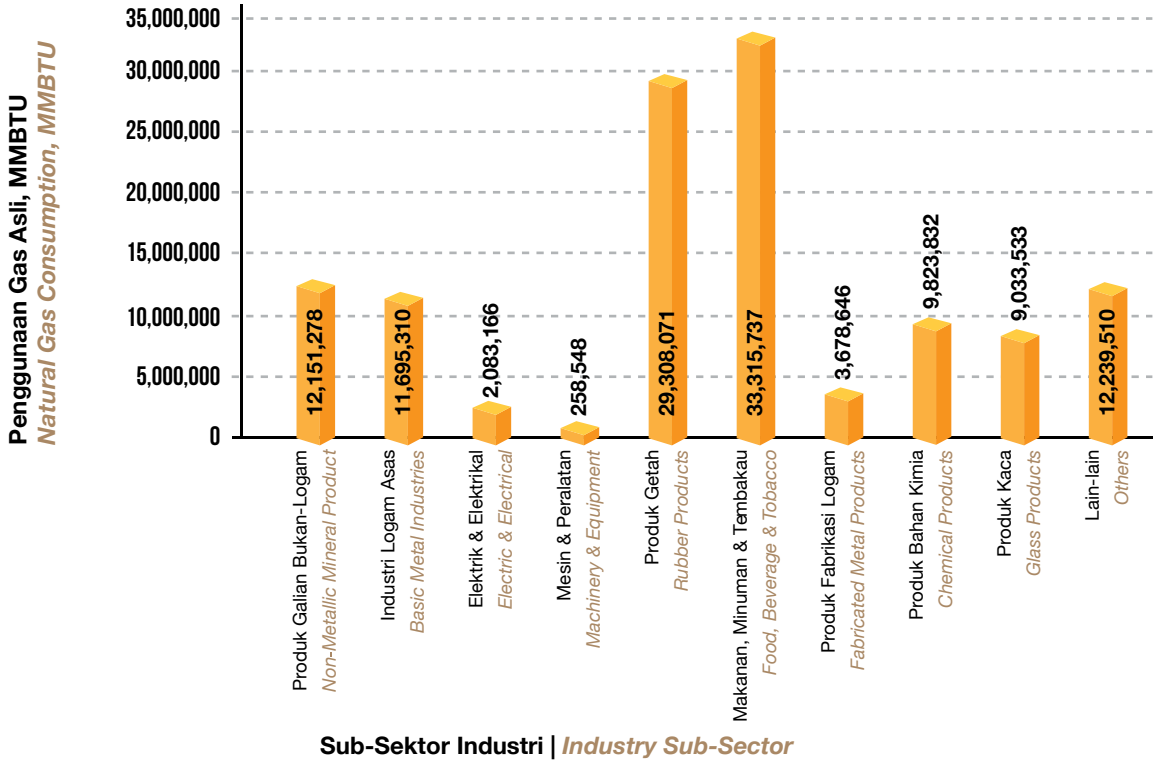
Rajah 6: Jumlah Penggunaan Gas Asli mengikut Kategori di Semenanjung bagi 2011
Figure 6: Natural Gas Consumption according to Category for the Peninsular in 2011



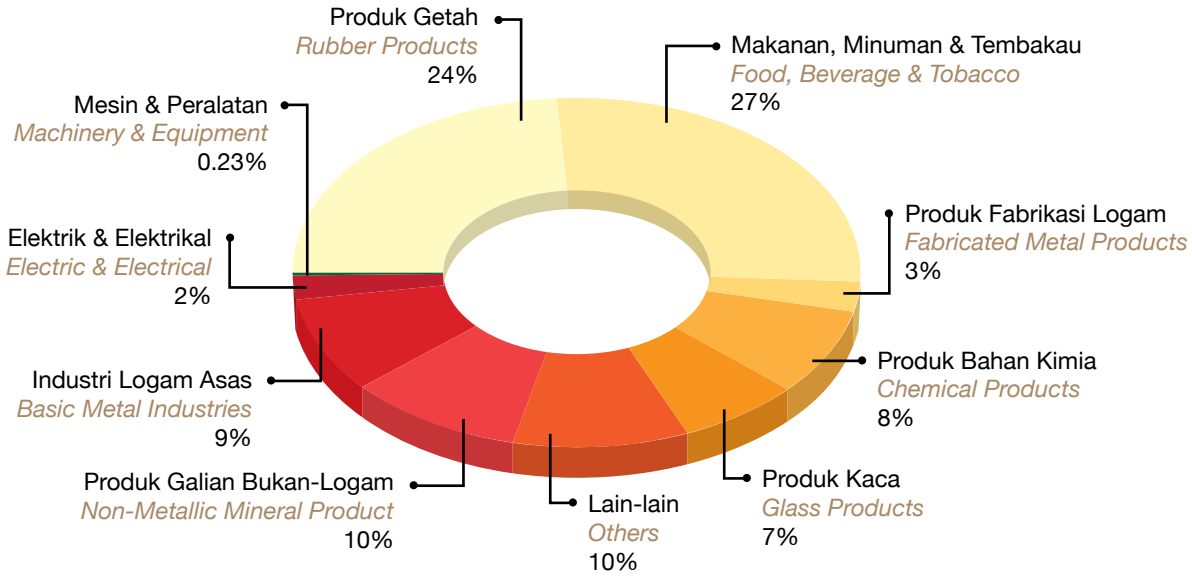
Jumlah penggunaan gas asli oleh pengguna utama mengikut kategori sub-sektor industri untuk tahun 2011 adalah seperti yang ditunjukkan di Rajah 7. Sub-sektor industri berasaskan makanan, minuman dan tembakau merupakan pengguna tertinggi kategori industri dengan jumlah penggunaan gas asli sebanyak 33,315,737 MMBTU (27%) pada tahun 2011.

Breakdown of natural gas consumption by major consumers by industry sub-sector for the year 2011 is shown in Figure 7. Food, beverage and tobacco based industry was the highest consumer of natural gas with consumption at 33,315,737 MMBTU (27%) in 2011.

Rajah 7: Penggunaan Gas Asli Berdasarkan Sub-sektor Industri di Semenanjung
Figure 7: Natural Gas Consumption by Industry Sub-sector in the Peninsular



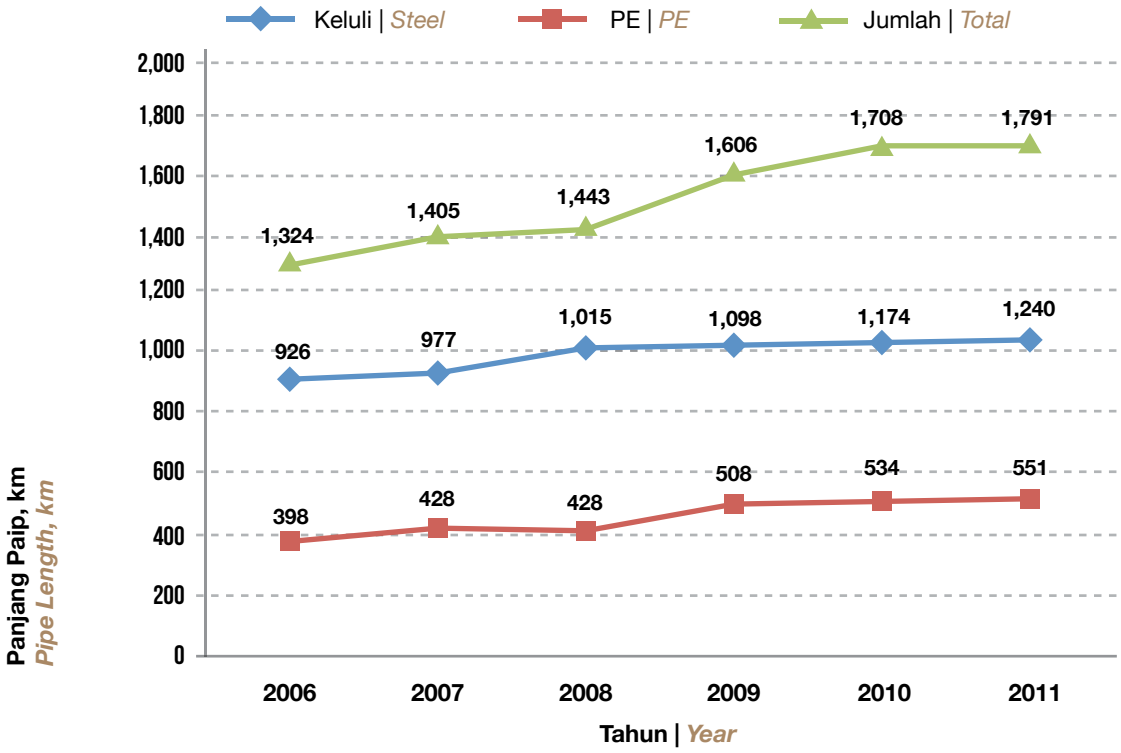
Rajah 8: Peratusan Penggunaan Gas Asli Berdasarkan Sub-sektor Industri di Semenanjung
Figure 8: Percentage of Natural Gas Consumption by Industry Sub-sector in the Peninsular



Impak peningkatan isipadu bekalan gas asli di Semenanjung tidak menambahkan peningkatan panjang talian paip yang ketara berikutan isipadu bekalan gas asli tambahan hanya diagihkan kepada premis-premis pengguna sedia ada dan pengguna baru yang terletak berdekatan talian paip sedia ada. Panjang talian paip gas asli yang beroperasi pada tahun 2011 ditunjukkan di dalam Rajah 9.

The impact of increasing natural gas supply in the Peninsular is not in line with the increase of pipeline length due to the fact that additional natural gas supply volume is distributed to the premises of existing users and new users are located near existing pipeline. The length of natural gas pipelines in operation in 2011 is shown in Figure 9.

Rajah 9: Panjang Talian Paip Gas Asli yang Beroperasi di Semenanjung
Figure 9: Length of Operational Natural Gas Pipeline in the Peninsular



Kawasan pembekalan gas asli di Semenanjung ditunjukkan di dalam Rajah 10.

Natural gas supply areas in the Peninsular are shown in Figure 10.

Rajah 10: Kawasan Pembekalan Gas Asli di Semenanjung
Figure 10: Natural Gas Supply Areas in the Peninsular

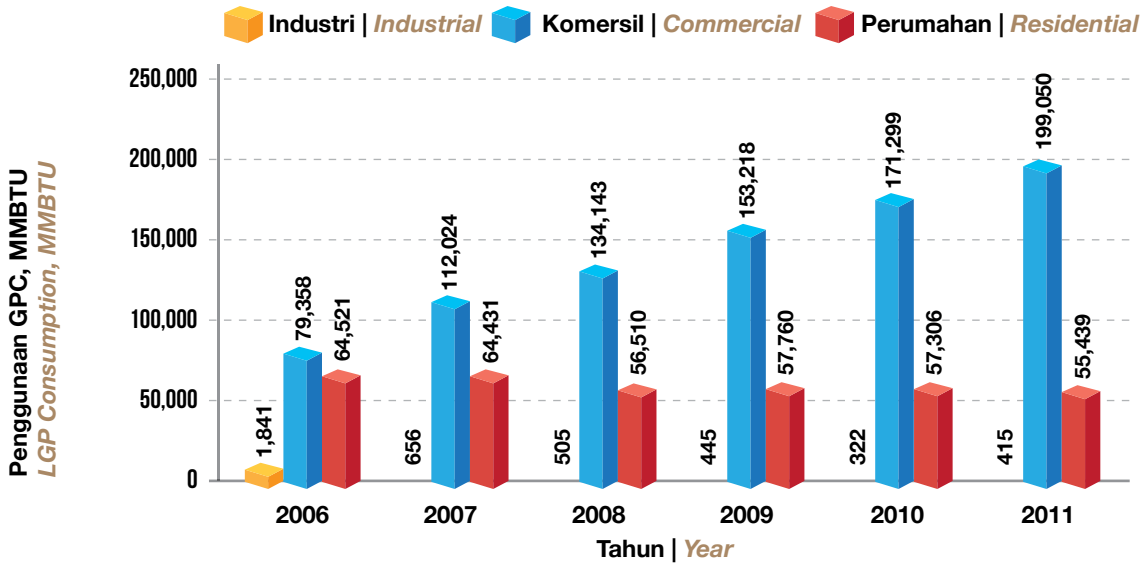
2.2 SITUASI PEMBEKALAN GAS PETROLEUM CECAIR (GPC) DI SEMENANJUNG

Kuantiti GPC yang dibekalkan oleh Gas Malaysia Berhad (GMB) turut meningkat sebanyak 11.35% kepada 254,904 MMBTU pada tahun 2011 berbanding 228,927 MMBTU pada tahun 2010 seperti yang ditunjukkan di dalam Rajah 11. Sektor komersil merupakan pengguna utama GPC dengan penggunaan sebanyak 199,050 MMBTU iaitu bersamaan 78.09% daripada keseluruhan penggunaan GPC bagi tahun 2011. Sementara itu sektor perumahan menggunakan 55,439 MMBTU (21.75%) dan sektor industri pula menggunakan 415 MMBTU (0.16%).

2.2 OVERVIEW OF LIQUEFIED PETROLEUM GAS (LPG) SUPPLY IN THE PENINSULAR

Quantity of Liquefied Petroleum Gas (LPG) supplied by GMB also rose by 11.35% to 254,904 MMBTU in 2011 compared to 228,927 MMBTU in 2010 as shown in figure 11. Commercial sector was the main consumer of LPG with usage of 199,050 MMBTU which was equivalent to 78.09% of total LPG consumption, meanwhile the residential sector used 55,439 MMBTU (21.75%) and the industrial sector used 415 MMBTU (0.16%).

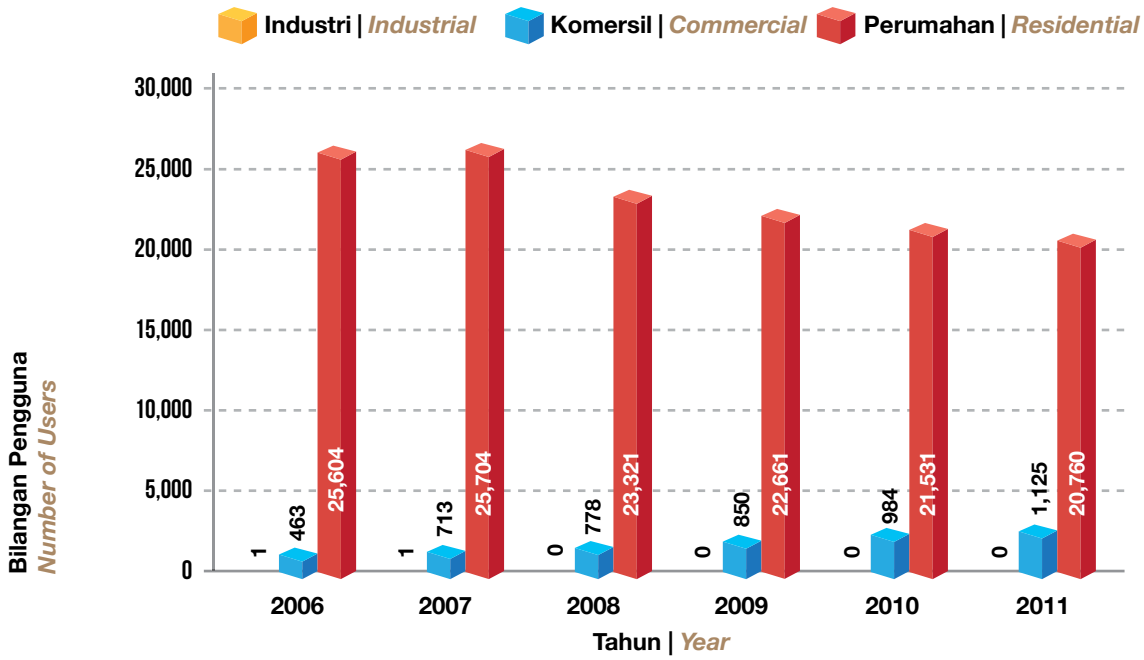
Rajah 11: Jumlah Penggunaan GPC mengikut Sektor di Semenanjung
Figure 11: Total LPG Consumption according to Sectors in the Peninsular



Bilangan pengguna GPC sektor komersil di Semenanjung menunjukkan peningkatan sebanyak 14.33% atau 141 pengguna (daripada 984 pengguna pada tahun 2010 kepada 1,125 pengguna pada tahun 2011). Manakala sektor perumahan mengalami penurunan sebanyak 3.58% atau 771 pengguna (daripada 21,531 pengguna pada tahun 2010 kepada 20,760 pengguna pada tahun 2011). Bilangan pengguna GPC di Semenanjung ditunjukkan di dalam Rajah 12.

The number of commercial sector LPG users in the peninsular showed an increase of 14.33% or 141 users (from 984 users in 2010 to 1,125 users in 2011). While users in the residential sector decreased by 3.58% or 771 users (from 21,531 users in 2010 to 20,760 users in 2011). The number of LPG users in the Peninsular is shown in Figure 12.

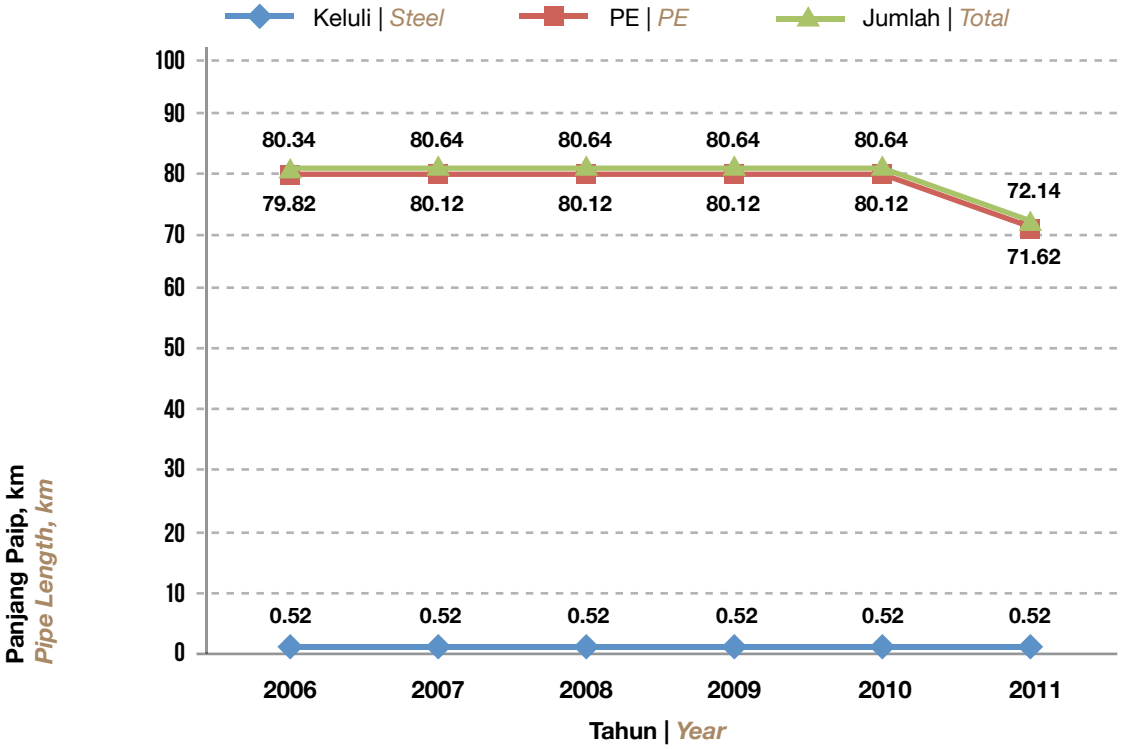
Rajah 12: Bilangan Pengguna GPC di Semenanjung
Figure 12: Number of LPG Users in the Peninsular



Panjang talian GPC yang dibekalkan oleh GMB turut mengalami penurunan berikutan operasi di beberapa lokasi bekalan GPC telah dihentikan berikutan penurunan bilangan pengguna GPC pada tahun 2011. Rajah 13 menunjukkan panjang talian paip GPC yang beroperasi di Semenanjung.

The length of LPG pipelines supplied by GMB had declined due to the closure of several supply points because of decreasing demands in 2011. Figure 13 shows the length of LPG pipelines operating in the Peninsular.

Rajah 13: Panjang Talian Paip GPC yang Beroperasi di Semenanjung
Figure 13: Length of Operational LPG Pipeline in the Peninsular



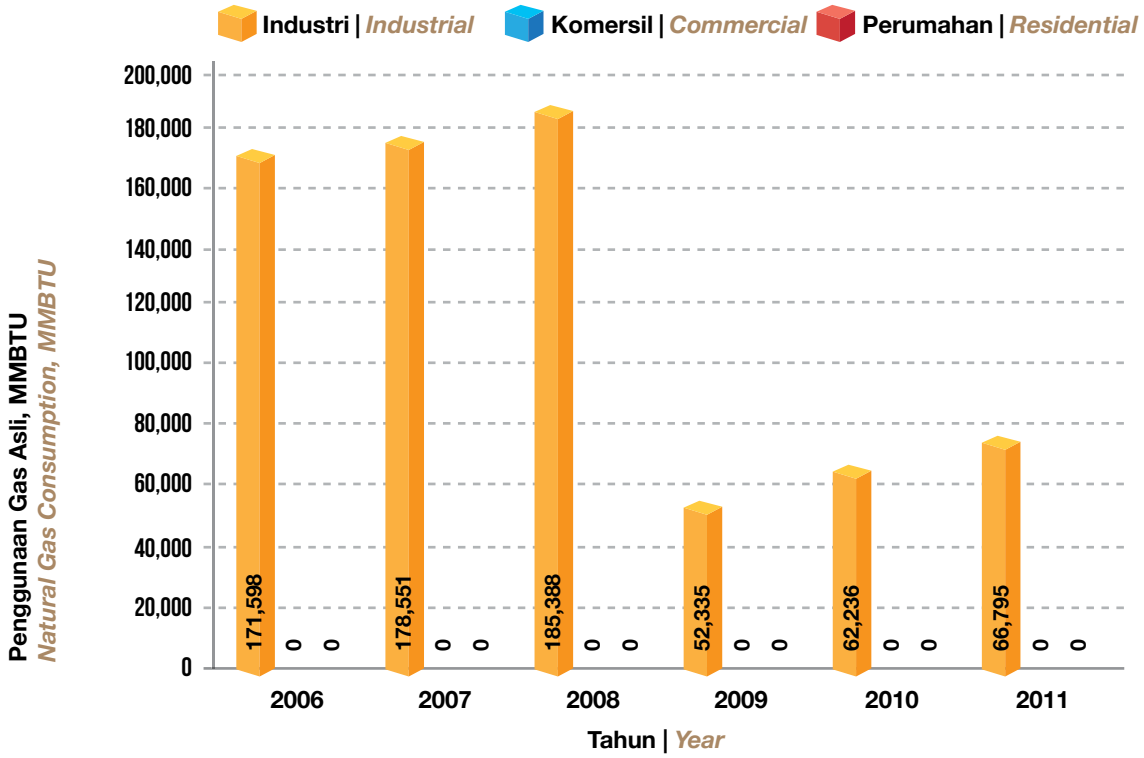
2.3 SITUASI PEMBEKALAN GAS ASLI BERPAIP DI SABAH DAN LABUAN

Pembekalan gas asli di Sabah dan Labuan oleh Sabah Energy Corp. Sdn. Bhd. (SEC) adalah sebanyak 66,794.5 MMBTU pada tahun 2011 menunjukkan peningkatan sebanyak 7.32% atau 4,558.5 MMBTU berbanding tahun sebelumnya iaitu 62,236 MMBTU walaupun tiada peningkatan bilangan pengguna baru. Penggunaan gas asli, bil pengguna dan panjang talian paip gas asli di Sabah dan Labuan seperti yang ditunjukkan di dalam Rajah 14, Rajah 15, dan Rajah 16.

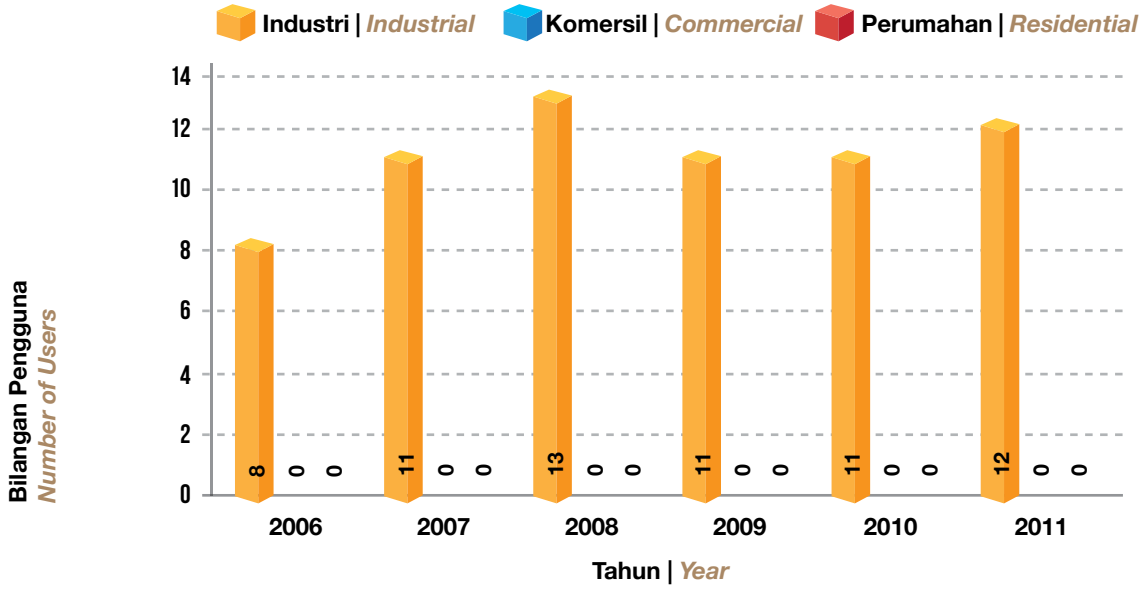
2.3 OVERVIEW OF PIPED NATURAL GAS SUPPLY IN SABAH AND LABUAN

The supply of natural gas in Sabah and Labuan by Sabah Energy Corp. Sdn. Bhd. (SEC) at 66,794.5 MMBTU showed a slight increase in 2011, by 7.32% or 4,558.5 MMBTU compared to the previous year 62,236 MMBTU, despite no increase in the number of new users. Natural gas consumption, number of users and length of natural gas pipeline in Sabah and Labuan are shown in Figure 14, Figure 15, and Figure 16, respectively.

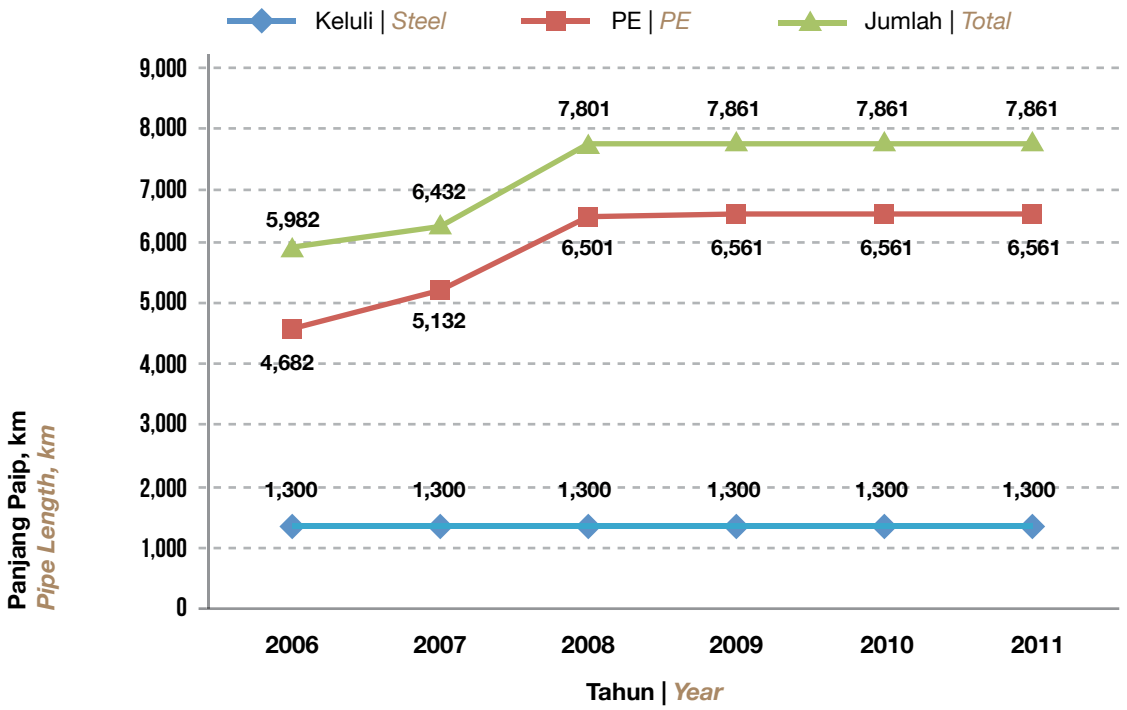
Rajah 14: Jumlah Penggunaan Gas Asli di Sabah dan Labuan
Figure 14: Natural Gas Consumption in Sabah and Labuan



Rajah 15: Bilangan Pengguna Gas Asli di Sabah dan Labuan
Figure 15: Number of Natural Gas Users in Sabah and Labuan



Rajah 16: Panjang Talian Paip Gas Asli yang Beroperasi di Sabah dan Labuan
Figure 16: Length of Natural Gas Pipeline in Operation in Sabah and Labuan



Pembekalan gas asli di Sabah dan Labuan terhad di kawasan Kota Kinabalu Industrial Park (KKIP) dan di Labuan seperti yang ditunjukkan di dalam Rajah 17.

The supply of natural gas in Sabah and Labuan is limited to Kota Kinabalu Industrial Park (KKIP) and Labuan as shown in Figure 17.

Rajah 17: Kawasan Pembekalan Gas Asli di Sabah dan Labuan
Figure 17: Natural Gas Supply Areas in Sabah and Labuan

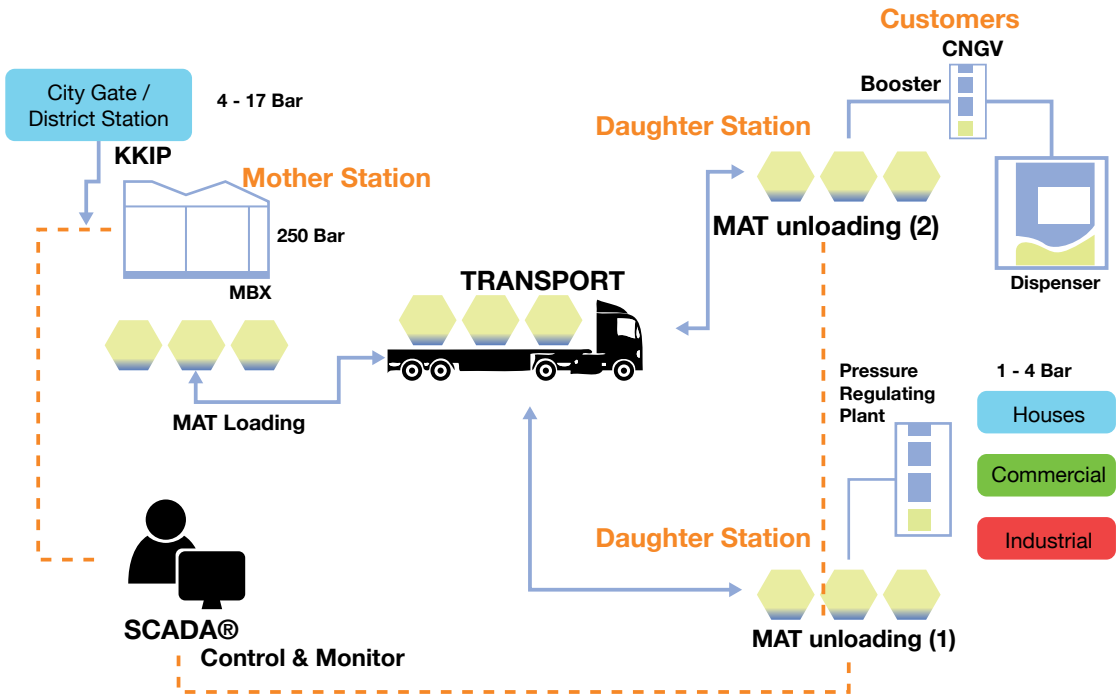
Bagi menggalakkan pertumbuhan industri gas asli di Sabah, SEC telah mengemukakan cadangan kepada Suruhanjaya Tenaga untuk melaksanakan projek *"Virtual Pipeline System"*. Projek ini akan membekalkan gas asli termampat kepada premis pengguna gas asli yang beroperasi di luar kawasan Kota Kinabalu Industrial Park (KKIP) melalui kaedah pengangkutan darat (contoh: trailer dan trak).

Teknologi *virtual pipeline system* adalah berdasarkan konsep stesen ibu-anak. Gambarajah tipikal pengoperasian *virtual pipeline system* di Sabah yang dicadangkan oleh SEC adalah seperti yang ditunjukkan di dalam Rajah 18.

To encourage the growth of the natural gas industry in Sabah, SEC has proposed to the Energy Commission to implement the project entitled "Virtual Pipeline System". The project will supply compressed natural gas to consumer premises that operate outside Kota Kinabalu Industrial Park (KKIP) through land transport (eg: trailer and truck).

The technology of virtual pipeline system is based on the concept of mother-daughter stations. A typical operating virtual pipeline system in Sabah proposed by the SEC is shown in Figure 18.

Rajah 18: Gambarajah Tipikal Pengoperasian *Virtual Pipeline System* di Sabah
Figure 18: A Typical Operating Virtual Pipeline System in Sabah



Skop pengawalseliaan Suruhanjaya Tenaga hanya terpakai bagi pembekalan gas melalui talian paip gas dari bebibir penghujung stesen pintu kota sehingga sesalur masuk stesen ibu *(mother station)* dan dari sesalur keluar stesen anak *(daughter station)* sehingga premis pengguna selain pengguna industri.

Energy Commission's regulatory scope only applies to the supply of gas through gas pipelines from the last flange of the city gate station to the station mains in the mother-station and from the daughter-station until the users' premises excluding industrial users.

PEMEGANG LESEN
LICENCE HOLDERS

3.0 PEMEGANG LESEN
LICENCE HOLDERS

3.1 LESEN PENGGUNAAN GAS

Sehingga tahun 2011, tiga (3) pemegang lesen penggunaan gas yang beroperasi iaitu:

Gas Malaysia Berhad (GMB): Gas Asli
Gas Malaysia Berhad (GMB): Gas Petroleum Cecair
Sabah Energy Corp. Sdn. Bhd. (SEC): Gas Asli

GMB membekalkan gas asli dan GPC di Semenanjung Malaysia manakala SEC membekalkan gas asli di Sabah dan Labuan.

3.1 GAS UTILITY LICENCE

Until the year 2011, there are three (3) operational gas utility licensees, they are:

Gas Malaysia Berhad (GMB): Natural Gas
Gas Malaysia Berhad (GMB): Liquefied Petroleum Gas
Sabah Energy Corp. Sdn. Bhd. (SEC): Natural Gas

GMB supplies natural gas and LPG in Peninsular Malaysia while SEC supplies natural gas in Sabah and Labuan.

Jadual 7: Senarai Pemegang Lesen
Table 7: List of Licensees

Pemegang Lesen Penggunaan Gas *Licensee*	Tempoh Lesen *License Validity*
GMB – Gas Asli *GMB (Natural Gas)*	30 Tahun: Berkuatkuasa pada 1 September 1998 *30 Years: Effective from 1 September 1998*
GMB – Gas Petroleum Cecair *GMB (Liquefied Petroleum Gas)*	20 Tahun: Berkuatkuasa pada 15 Disember 2000 *20 Years: Effective from 15 December 2000*
SEC – Gas Asli *SEC (Natural Gas)*	30 Tahun: Berkuatkuasa pada 1 September 1998 *30 Years: Effective from 1 September 1998*

3.2 ALAMAT PEMEGANG LESEN PENGGUNAAN GAS

3.2.1 GAS MALAYSIA BERHAD

Ibu Pejabat

No. 5, Jalan Serendah 26/17
Seksyen 26, Peti Surat 7901
40732 Shah Alam
Selangor

Tel: 03 5192 3000
Faks: 03 5192 6766
Laman web: www.gasmalaysia.com

3.2 ADDRESS OF LICENSEES

3.2.1 GAS MALAYSIA BERHAD

Head Office

No. 5, Jalan Serendah 26/17
Seksyen 26, Peti Surat 7901
40732 Shah Alam
Selangor

Phone: 03 5192 3000
Fax: 03 5192 6766
Website: www.gasmalaysia.com

Pejabat Bahagian

Selatan
PLO343, Jalan Emas Tiga
Kawasan Perindustrian
Pasir Gudang
81700 Pasir Gudang
Johor
Tel: 07 252 2314
Faks: 07 252 2561

Timur
Lot 104, Gebeng
Industrial Area
26080 Kuantan
Pahang
Tel: 09 583 6340
Faks: 09 583 6339

Utara
No. 27, Jalan Todak 4
Pusat Bandar Seberang Jaya
13700 Seberang Jaya
Pulau Pinang
Tel: 04 398 1727 / 1757
Faks: 04 398 2636

Pejabat Cawangan

Selangor
Bangi
No. 30, Jalan 4/12B
43650 Bandar Baru Bangi
Selangor
Tel: 03 8922 1191 / 1192
Faks: 03 8922 1190

Johor
Kluang
No. 9, Jalan 53B
Taman Kluang Barat
86000 Kluang
Johor
Tel: 07 771 2105
Faks: 07 777 2108

Perak
Seri Manjung
9 PSN PM7, Pusat Bandar
Seri Manjung
32040 Seri Manjung
Perak
Tel: 04 976 8400
Faks: 04 976 0625

Regional Offices

South
PLO343, Jalan Emas Tiga
Kawasan Perindustrian
Pasir Gudang
81700 Pasir Gudang
Johor
Phone: 07 252 2314
Fax: 07 252 2561

East
Lot 104, Gebeng
Industrial Area
26080 Kuantan
Pahang
Phone: 09 583 6340
Fax: 09 583 6339

North
No. 27, Jalan Todak 4
Pusat Bandar Seberang Jaya
13700 Seberang Jaya
Pulau Pinang
Phone: 04 398 1727 / 1757
Fax: 04 398 2636

Branch Offices

Selangor
Bangi
No. 30, Jalan 4/12B
43650 Bandar Baru Bangi
Selangor
Phone: 03 8922 1191 / 1192
Fax: 03 8922 1190

Johor
Kluang
No. 9, Jalan 53B
Taman Kluang Barat
86000 Kluang
Johor
Phone: 07 771 2105
Fax: 07 777 2108

Perak
Seri Manjung
9 PSN PM7, Pusat Bandar
Seri Manjung
32040 Seri Manjung
Perak
Phone: 04 976 8400
Fax: 04 976 0625

Kuala Lumpur
Jalan Gurney
No. 20, Jalan Gurney
54100 Kuala Lumpur
Tel: 03 9206 7800
Faks: 03 9287 4282

WP Putrajaya
Putrajaya
No. 1, Jalan P9 B/1
Precinct 9
62250 Putrajaya
Putrajaya
Tel: 03 8888 5264 / 5224
Faks: 03 8888 3990

Negeri Sembilan
Senawang
No. 34, Jalan Bunga Raya 9
Pusat Perniagaan Senawang
Taman Tasik Jaya
70400 Seremban
Negeri Sembilan
Tel: 06 678 1995 / 5348 / 5425
Faks: 06 678 6937

Selangor
Shah Alam
No. 1, Jalan 13/15, Sekyen 13
40000 Shah Alam
Selangor Darul Ehsan
Tel: 03 5511 9914
Faks: 03 5511 9912

Kecemasan
Pusat Kawalan Operasi (24 jam)
1-800-88-9119
orc@gasmalaysia.com

3.2.2 SABAH ENERGY CORPORATION SDN. BHD.

Ibu Pejabat
1st, 2nd & 3rd Floors
Wisma Bandaraya
Jalan Mesjid Lama
Locked Bag No. 2
88990 Kota Kinabalu, Sabah
Tel: 088 311290 / 299
Faks: 088 311361
Laman web: www.sabahenergycorp.com

Unit Labuan
Saguking Warehouse D8
P. O. Box 80244
87012 Labuan
Wilayah Persekutuan Labuan
Tel: 087 418 060 / 417 162
Faks: 087 413 877

Kuala Lumpur
Jalan Gurney
No. 20, Jalan Gurney
54100 Kuala Lumpur
Phone: 03 9206 7800
Fax: 03 9287 4282

WP Putrajaya
Putrajaya
No. 1, Jalan P9 B/1
Precinct 9
62250 Putrajaya
Putrajaya
Phone: 03 8888 5264 / 5224
Fax: 03 8888 3990

Negeri Sembilan
Senawang
No. 34, Jalan Bunga Raya 9
Pusat Perniagaan Senawang
Taman Tasik Jaya
70400 Seremban
Negeri Sembilan
Phone: 06 678 1995 / 5348 / 5425
Fax: 06 678 6937

Selangor
Shah Alam
No. 1, Jalan 13/15, Sekyen 13
40000 Shah Alam
Selangor Darul Ehsan
Phone: 03 5511 9914
Fax: 03 5511 9912

Emergency
Operations Control Center (24 Hours)
1-800-88-9119
orc@gasmalaysia.com

3.2.2 SABAH ENERGY CORPORATION SDN. BHD.

Head Office
1st, 2nd & 3rd Floors
Wisma Bandaraya
Jalan Mesjid Lama
Locked Bag No. 2
88990 Kota Kinabalu, Sabah
Phone: 088 311290 / 299
Fax: 088 311361
Website: www.sabahenergycorp.com

Labuan Unit
Saguking Warehouse D8
P. O. Box 80244
87012 Labuan
Wilayah Persekutuan Labuan
Phone: 087 418 060 / 417 162
Fax: 087 413 877

3.3 LESEN GAS PERSENDIRIAN

Lesen Gas Persendirian diberi kepada seseorang yang membekalkan dan menggunakan gas melalui talian paip gas di premisnya sendiri atau harta atau premis pemunya atau penduduk. Pemegang Lesen Gas Persendirian telah dibahagikan kepada tujuh (7) kategori iaitu hotel, hospital, pasaraya, institusi pendidikan, pusat rekreasi/kelab, restoran dan lain-lain. Jumlah bilangan permohonan baru dan pembaharuan lesen gas persendirian telah meningkat kepada 976 pada tahun 2011 berbanding 877 pada tahun 2010.

3.3 PRIVATE GAS LICENCE

Private Gas Licence is granted to a person who provides and uses gas through a gas pipeline in their own premises or property or the owner or occupier of the premises. Private Gas Licensee is divided into seven (7) categories: hotels, hospitals, supermarkets, educational institutions, recreational centres/clubs, restaurants and others. Total number of new applications and renewals of private gas licences have increased to 976 in 2011 from 877 in 2010.

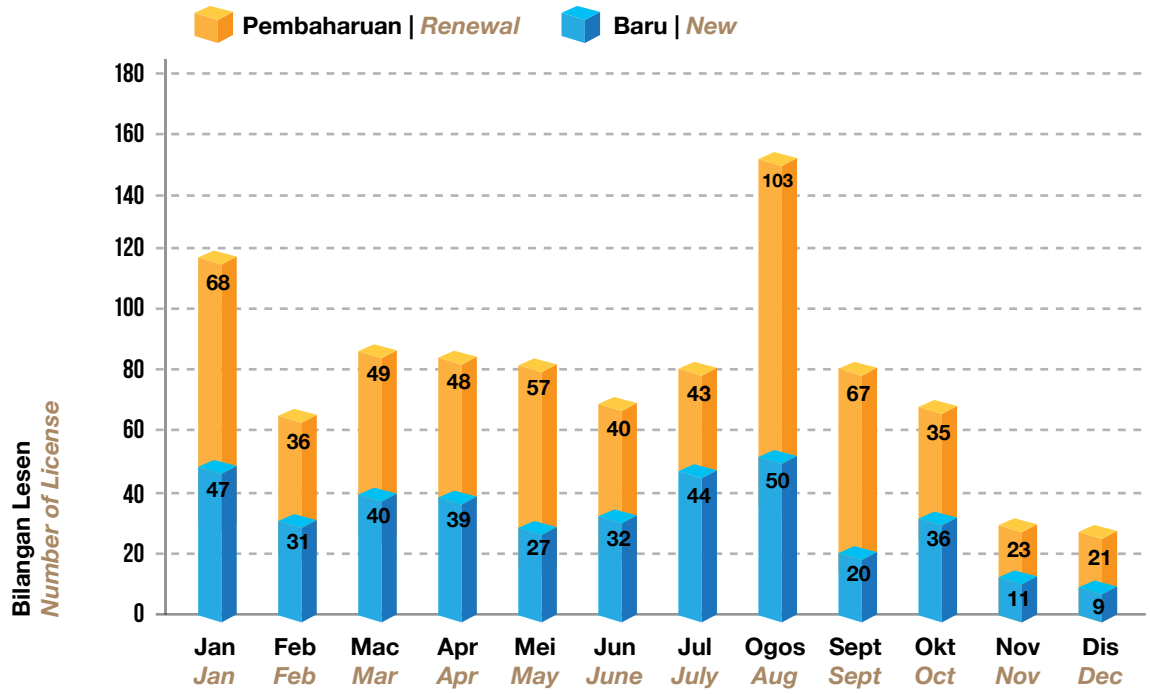
Jadual 8: Permohonan Baru Lesen Gas Persendirian
Table 8: New Private Gas Licence Applications

Jenis Lesen Gas Persendirian *Type of Private Gas License*	2007	2008	2009	2010	2011
Permohonan Baru *New Applications*	182	238	246	340	386

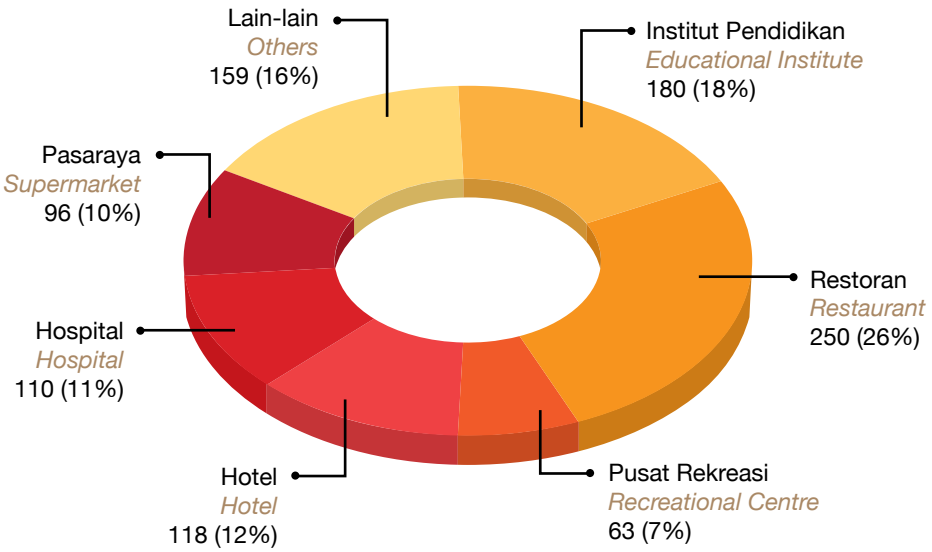
Jadual 9: Permohonan Pembaharuan Lesen Gas Persendirian
Table 9: Private Gas Licence Renewal Applications

Jenis Lesen Gas Persendirian *Type of Private Gas License*	2007	2008	2009	2010	2011
Permohonan Pembaharuan *Renewal Applications*	444	477	391	537	590

Rajah 19 : Jumlah Bilangan Lesen Gas Persendirian bagi 2011
Figure 19: Number of Private Gas Licensees in 2011



Rajah 20: Jumlah Bilangan Lesen Gas Persendirian Berdasarkan Kategori Pengguna bagi 2011
Figure 20: Number of Private Gas Licence by User Category in 2011



KUALITI DAN RELIABILITI PERKHIDMATAN PEMBEKALAN

SUPPLY SERVICE QUALITY AND RELIABILITY

4.0 KUALITI DAN RELIABILITI PERKHIDMATAN PEMBEKALAN
SUPPLY SERVICE QUALITY AND RELIABILITY

Aspek-aspek utama yang dipantau dan dianalisis bagi menilai keadaan sistem pembekalan gas oleh pemegang-pemegang lesen penggunaan gas adalah seperti berikut:

- Bilangan Gangguan Bekalan
- Tempoh dan Punca Gangguan Bekalan
- Indeks Tempoh Purata Gangguan Bekalan (SAIDI)
- Indeks Purata Kekerapan Gangguan Bekalan (SAIFI)
- Indeks Tempoh Purata Gangguan Pelanggan (CAIDI)
- Aduan Pengguna

The main aspects that are monitored and analysed to assess the state of gas supply from the gas license holders are as follows:

- *Number of Service Disruptions*
- *Duration & Cause of Service Disruptions*
- *System Average Interruption Duration Index (SAIDI)*
- *System Average Interruption Frequency Index (SAIFI)*
- *Customer Average Interruption Duration Index (CAIDI)*
- *Customer Complaints*

4.1 KUALITI PERKHIDMATAN PEMBEKALAN GAS

Pada tahun 2011, sejumlah 125 aduan berkaitan gangguan bekalan telah diterima oleh pemegang lesen penggunaan gas. Gangguan bekalan gas yang berlaku di premis pengguna adalah berpunca daripada injap tertutup, kerosakan pada meter atau pengatur tekanan. Pemegang lesen telah mengambil tindakan untuk membaikpulih keadaan keadaan di atas dalam tempoh yang ditetapkan dalam Piagam Pelanggan.

4.1 GAS SUPPLY SERVICE QUALITY

In 2011, a total of 125 complaints related to service disruptions were received by the gas utility licensees. Most gas supply disruptions that occurred in the consumer's premises were caused by closed valves, faulty meters or damaged pressure regulators. Gas licensees have to take immediate actions to rectify the above conditions within the period specified in the Customer Charter.

Jadual 10: Bilangan Aduan Berkaitan Gangguan Bekalan yang Diterima oleh Pemegang Lesen bagi 2011
Table 10: Number of Complaints Received by the Gas Licensee in 2011

Sistem Talian Paip *Pipeline System*	Gangguan Bekalan bagi 2011 | *Supply Disruption in 2011*			Jumlah *Total*
	Industri | *Industrial*	Komersil | *Commercial*	Perumahan | *Residential*	
Gas Asli *Natural Gas*	*9*	*1*	*28*	*38*
GPC *LPG*	-	22	65	87
Jumlah | *Total*	**9**	**23**	**93**	**125**

Jadual 11: Bilangan Gangguan Bekalan Gas Bulanan bagi Tahun 2011
Table 11: Number of Gas Supply Disruptions for the Year 2011

Gangguan Bekalan Bulanan bagi 2011 | *Monthly Gas Supply Disruptions in 2011*													
Kategori *Category*	**Jan** *Jan*	**Feb** *Feb*	**Mac** *Mar*	**Apr** *Apr*	**Mei** *May*	**Jun** *June*	**Jul** *July*	**Ogos** *Aug*	**Sept** *Sept*	**Okt** *Oct*	**Nov** *Nov*	**Dis** *Dec*	**Jumlah** *Total*
Industri | *Industrial*	1	0	1	1	3	1	0	1	0	1	0	0	9
Komersil | *Commercial*	1	1	4	2	1	1	1	2	3	1	3	3	23
Domestik | *Domestic*	10	1	5	8	8	6	5	12	13	6	10	9	93
Jumlah | *Total*	**12**	**2**	**10**	**11**	**12**	**8**	**6**	**15**	**16**	**8**	**13**	**12**	**125**

Jadual 12: Tempoh Masa Gangguan Bekalan Bulanan bagi Tahun 2011
Table 12: Supply Disruption Period for the Year 2011

Tempoh Masa Gangguan Bekalan Bulanan bagi 2011, Minit *Monthly Supply Disruption Period for the Year 2011, Minute*													
Kategori *Category*	**Jan** *Jan*	**Feb** *Feb*	**Mac** *Mar*	**Apr** *Apr*	**Mei** *May*	**Jun** *June*	**Jul** *July*	**Ogos** *Aug*	**Sept** *Sept*	**Okt** *Oct*	**Nov** *Nov*	**Dis** *Dec*	**Jumlah** *Total*
Industri | *Industrial*	385	0	22	28	2655	72	0	380	0	695	0	0	4237
Komersil | *Commercial*	54	40	145	141	42	27	45	80	114	28	105	141	962
Domestik | *Domestic*	456	15	311	415	386	340	234	555	696	261	414	491	4574
Jumlah | *Total*	**895**	**55**	**478**	**584**	**3083**	**439**	**279**	**1015**	**810**	**984**	**519**	**632**	**9773**

Pada tahun 2011, sejumlah 36,663 pertanyaan telah dilayani oleh pemegang lesen yang merangkumi pertanyaan berkaitan bil gas, harga gas, aduan bil, pendaftaran pelanggan baru, penyambungan semula dan lain-lain.

In 2011, a total of 36,663 inquiries were entertained by the licensees which includes enquiries related to gas bills, gas prices, billing complaints, new customer registration, reconnection and others.

4.2 KEBERTERUSAN DAN KEBOLEHARAPAN BEKALAN GAS

Pada keseluruhannya, prestasi keberterusan dan kebolehharapan bekalan telah meningkat berbanding tahun 2010 seperti yang ditunjukkan di dalam Jadual 13. Tiada gangguan atau kebocoran berskala besar berlaku sepanjang tahun 2011. Majoriti gangguan bekalan dan kebocoran berlaku di sektor perumahan yang mempunyai bilangan pengguna tertinggi berbanding sektor industri dan komersil. Bagi mengatasi masalah ini, pemegang lesen telah meningkatkan pemeriksaan dan penyenggaraan ke atas sistem talian paip sama ada gas asli atau GPC. Lanjutan daripada itu, pemegang lesen juga telah mengenalpasti dan melaksanakan langkah-langkah pencegahan yang lebih berkesan bagi meningkatkan kesedaran awam terhadap keselamatan talian paip gas.

4.2 GAS SUPPLY CONTINUITY AND SECURITY

The overall performance of gas supply continuity and security in 2011 has improved considerably compared to the year 2010, as shown in Table 13. No large scale disruptions or leakages occurred in the year 2011. Residential sector which had the highest number of users compared to industrial and commercial sectors had the most supply disruptions and leakages. To overcome this problem, the gas licensees have intensified inspection and maintenance of the pipeline systems for both natural gas and LPG. The licensees have also identified and implemented preventive measures to educate the public on the importance of gas pipeline safety.

Jadual 13: Petunjuk Prestasi GMB [Indeks Tempoh Purata Ganguan Bekalan (SAIDI), Indeks Purata Kekerapan Gangguan Bekalan (SAIFI), Indeks Tempoh Purata Gangguan Pelanggan (CAIDI)]
Table 13: GMB's Performance Indicators [System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI)]

Petunjuk Prestasi *Performance Indicators*	**Unit** *Unit*	**Indeks 2010** *2010 Index*	**Indeks 2011** *2011 Index*
SAIDI	minit/pelanggan/tahun *minutes/customer/year*	0.6299	0.3630
SAIFI	gangguan/pelanggan/tahun *disruption/customer/year*	0.0037	0.0039
CAIDI	minit/gangguan *minute/disruption*	169.27	90.96
Kebocoran di sepanjang talian paip gas bagi setiap 1000km | *Leakage along the gas pipeline for every 1000km*	bil. kebocoran/1000km *leakage/1000km*	7.2343	0.003827
Kebocoran di stesen dan premis pengguna bagi setiap 1000 pelanggan | *Leakage at station and consumers' premises for every 1000 customers*	bil. kebocoran/1000 pelanggan *leakage/1000 customer*	6.7983	0.003615

Nota | *Note:*
SAIDI = System Average Interruption Duration Index
SAIFI = System Average Interruption Frequency Index
CAIDI = Customer Average Interruption Duration Index

4.3 TARIF GAS ASLI DAN HARGA GPC DI SEMENANJUNG

Harga gas asli yang dibekalkan oleh PETRONAS kepada GMB telah disemak semula pada Mei 2011 dan Jemaah Menteri dalam mesyuaratnya pada 4 Mei 2011 dan 25 Mei 2011 serta mesyuarat Majlis Ekonomi pada 27 Mei 2011 telah bersetuju mengenai "Cadangan Semakan Semula Harga Gas bagi Sektor Tenaga dan Bukan Tenaga di Semenanjung Malaysia". Kerajaan turut memutuskan untuk mengekalkan polisi semakan semula harga gas asli yang dibekalkan kepada sektor tenaga dan bukan tenaga di Semenanjung Malaysia setiap enam bulan.

Ekoran kenaikan harga gas asli, tarif gas asli yang dibekalkan oleh GMB turut disemak semula dan berkuatkuasa 1 Jun 2011, purata tarif gas asli GMB dinaikkan sebanyak 7.13% daripada RM15.00/MMBTU kepada RM16.07/MMBTU. Jadual 14 menunjukkan tarif gas asli yang berkuatkuasa 1 Jun 2011 berdasarkan kategori tarif.

4.3 NATURAL GAS TARIFF AND LPG PRICES IN THE PENINSULAR

Price of natural gas supplied by PETRONAS to GMB was revised in May 2011 and the Cabinet in its meeting on 4 May 2011 and 25 May 2011 and Economic Council meeting on 27 May 2011 has agreed on the "Proposed Revision of Gas Prices of Power and Non-Power Sectors in Peninsular Malaysia". The government decided to maintain the policy to revise the natural gas price supplied to the power and non-power sectors in the Peninsular every six months.

Following the increase in the price of natural gas, natural gas tariffs supplied by GMB have been revised and effective June 1, 2011, the average tariff for natural gas supplied GMB increased by 7.13% from RM15.00/MMBTU to RM16.07/MMBTU. Table 14 shows the natural gas tariff effective June 1, 2011 based on the tariff category.

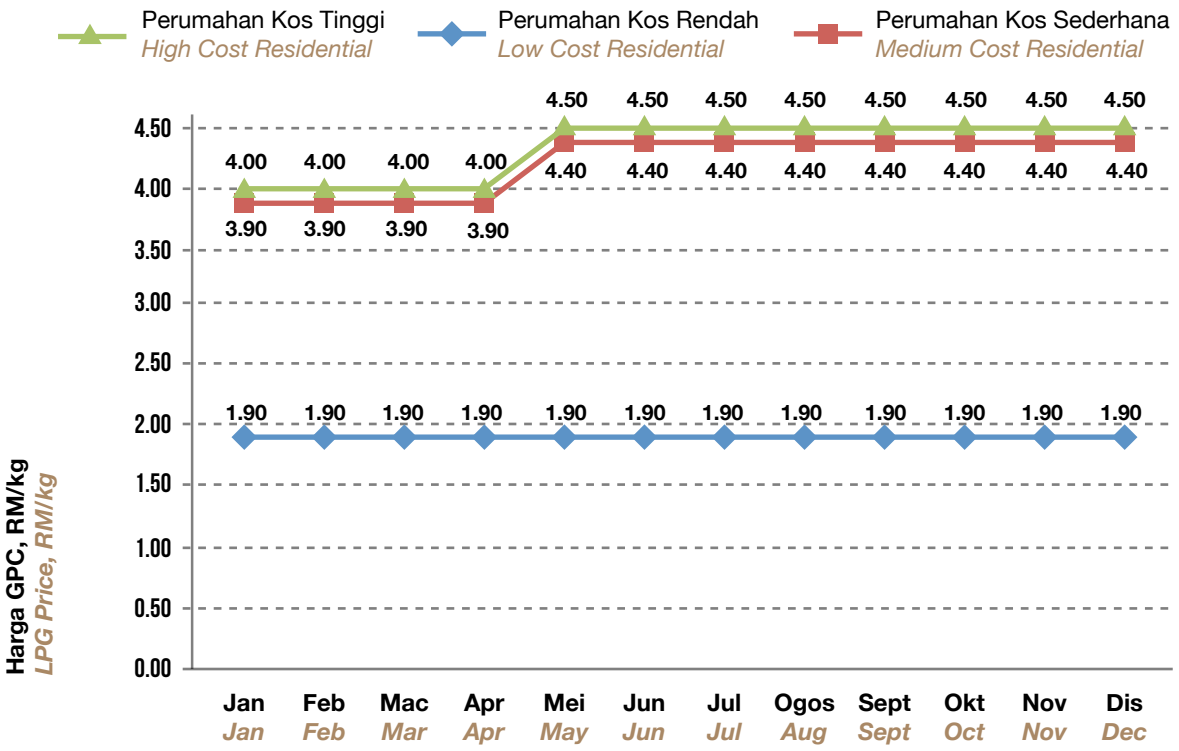
Jadual 14: Tarif Gas Asli di Semenanjung
Table 14: Natural Gas Tariff in the Peninsular

Kategori Tarif *Tariff Category*	Julat Penggunaan Gas (MMBTU/Tahun) *Gas Usage Range (MMBTU/Year)*	Tarif (RM/MMBTU) *Tariff (RM/MMBTU)*
A	0	19.52
B	0 - 600	20.61
C	601 - 5,000	13.98
D	5,001 - 50,000	14.61
E	50,001 - 200,000	16.07
F	200,001 - 750,000	16.07
L	750,000 ke atas	16.45

Harga GPC di sektor perumahan yang dibekalkan oleh GMB terbahagi kepada tiga (3) kategori. Harga GPC di premis perumahan kos rendah ditetapkan setara dengan harga subsidi GPC 12kg atau 14kg silinder yang ditetapkan oleh kerajaan. Manakala harga GPC di premis perumahan kos sederhana dan tinggi adalah berdasarkan harga pasaran.

LPG prices for the residential sector that is supplied by GMB are divided into three (3) categories. LPG price for the low cost residential category is set at the subsidized prices of 12kg or 14kg LPG cylinder as set by the government. The price of LPG for the medium and high cost residential category is based on market prices.

Rajah 21: Harga GPC di Sektor Perumahan yang Dibekalkan oleh Pemegang Lesen bagi 2011
Figure 21: LPG Prices in the Residential Sector as Supplied by the Licensees in 2011



4.4 HARGA GAS ASLI DI SABAH DAN LABUAN

Harga gas asli yang dibekalkan di Sabah dan Labuan adalah berdasarkan perjanjian jual beli gas yang dimeterai antara pemegang lesen (SEC) dan pengguna berdasarkan Seksyen 18, Akta Bekalan Gas 1993.

4.4 NATURAL GAS PRICES IN SABAH AND LABUAN

Price of natural gas supplied in Sabah and Labuan is based on the gas sales and purchase agreement signed by the licensee (SEC) and the user according to Section 18 of the Gas Supply Act 1993.

4.5 STANDARD KUALITI PERKHIDMATAN PELANGGAN PEMEGANG LESEN PENGGUNAAN GAS

4.5 GAS LICENSEES' CUSTOMER SERVICE QUALITY STANDARDS

GAS MALAYSIA BERHAD

Bil. | *No.*	Perkhidmatan | *Service*	Penyata Prestasi | *Performance Indicator*
1.	Waktu Perniagaan *Business Hours*	8.30 pagi – 5.30 petang (Isnin - Jumaat) *8.30 a.m – 5.30 p.m (Mondays - Fridays)*
2.	Menangani Aduan *Dealing with Complaints*	Aduan bertulis - 5 hari bekerja dari tarikh penerimaan. *Witten complaints - 5 working days after complaint is received.* Aduan & pertanyaan menerusi telefon - 24 jam dari masa panggilan dibuat. *Complaints & inquiries by phone - 24 hours from the time the call is made.*
3.	Bayaran Bil *Bill Payment*	Pertanyaan / Aduan mengenai ketepatan bil - 5 hari bekerja. *Enquiries / Complaints about bill accuracy - 5 working days.*
4.	Pemulangan *Refund*	Pelanggan Komersil / Industri - Deposit dipulangkan dalam tempoh 1 bulan selepas pemotongan / pemberhentian bekalan. *Commercial / Industrial Customers - Deposit returned within 1 month of termination / disconnection of supply.* Pelanggan Perumahan - Deposit dipulangkan dalam tempoh 2 bulan selepas pemotongan / pemberhentian bekalan. *Residential Customers - Deposit returned within 2 months after the termination / disconnection of supply.* Jaminan Bank - Dilepaskan dalam tempoh 1 bulan selepas pemotongan / pemberhentian bekalan. *Bank Guarantee - Released within 1 month after the termination / disconnection of supply.*
5.	Tindakan Kecemasan *Emergency Response*	Menghantar Pasukan Tindakan Kecemasan dalam tempoh 90 minit selepas menerima sebarang panggilan yang berkaitan dengan hal kecemasan. *Sends Emergency Response Team within 90 minutes of receiving any calls of an emergency nature.*
6.	Pengawasan Pihak Ketiga *Third Party Supervision*	Notis bertulis daripada kontraktor sekurang-kurangnya 3 hari sebelum bermulanya kerja. Notis yang tidak cukup boleh mengakibatkan arahan berhenti kerja. *At least three days written notice from the contractor prior to the commencement of work. Late notice may result in a stop work order.*
7.	Mengenalpasti Lokasi Paip *Identification of Pipeline Location*	Permohonan bertulis - 4 hari selepas permohonan. *Written application - 4 days after application.*
8.	Pusat Panggilan 24 jam *24 hours Call Centre*	1-800-88-5656 & 1-800-88-9119
9.	Gangguan Terancang *Planned Disruptions*	Pelanggan akan diberitahu sekurang-kurang 48 jam sebelum dilakukan sebarang gangguan yang terancang. *Customers will be notified at least 48 hours before interruptions.*
10.	Penukaran Meter *Replacement of Meter*	Penukaran - 3 hari selepas siasatan. *Replacement - 3 days after investigation.*

SABAH ENERGY CORPORATION SDN. BHD.

Bil. | *No.*	Perkhidmatan | *Service*	Penyata Prestasi | *Performance Indicator*
1.	Waktu Perniagaan *Business Hours*	7.45 pagi – 5.00 petang (Isnin – Jumaat) *7.45 a.m – 5.00 p.m (Mondays – Fridays)*
2.	Menangani Aduan *Dealing with Complaints*	Aduan / pertanyaan bertulis - 5 hari bekerja dari tarikh penerimaan. *Written complaint / inquiry - 5 working days after complaint is received.* Pertanyaan melalui telefon - 1 hari bekerja. *Telephone inquiries - 1 working day.*
3.	Bayaran Bil *Bill Payment*	Apa-apa pertanyaan berkenaan bil gas - 5 hari bekerja. *Enquiries / Complaints about bill accuracy - 5 working days.*
4.	Pemulangan *Refund*	Pelanggan bukan perumahan - Deposit dipulangkan dalam tempoh 1 bulan jika bekalan tidak lagi diperlukan. *Non-residential customers - Deposits will be returned within 1 month if supply is no longer required.* Pelanggan perumahan - Deposit dipulangkan dalam tempoh 2 bulan jika bekalan gas tidak lagi diperlukan. *Residential customers - Deposits will be returned within 2 months if supply is no longer required.*
5.	Tindakan Kecemasan *Emergency Response*	Satu pasukan akan dihantar ke tapak binaan dalam tempoh 45 minit jika kecemasan berlaku di sepanjang atau di sekitar talian atau pepasangan paip gas. *A team will be dispatched to the site within 45 minutes if an emergency occurs during or around the gas pipeline or installation.*
6.	Pengawasan Pihak Ketiga *Third Party Supervision*	019 882 1480, 019 882 0850, 013 864 6079, 019 860 0860, 013 874 4973 Nombor Telefon Pejabat | *Office Phone Number* Kota Kinabalu 088-440600 Labuan 087-417162
7.	Mengenalpasti Lokasi Paip *Identification of Pipeline Location*	Notis bertulis daripada kontraktor sekurang-kurangnya 3 hari sebelum bermulanya kerja. Notis yang tidak cukup boleh mengakibatkan arahan berhenti kerja. *At least 3 days written notice from the contractor prior to the commencement of work. Late notice may result in a stop work order.*
8.	Pusat Panggilan 24 jam *24 hours Call Centre*	Maklumat akan disampaikan kepada pihak ketiga dalam tempoh 4 hari bekerja. *Information will be communicated to third parties within 4 working days.*
9.	Gangguan Terancang *Planned Disruptions*	Pelanggan akan diberitahu sekurang-kurang 48 jam sebelum dilakukan sebarang gangguan yang terancang. *Customers will be notified at least 48 hours before interruptions.*
10.	Penukaran Meter *Change of Meter*	Pengguna Domestik - Meter gas akan diganti dalam tempoh 3 bulan. *Domestic Users - Gas meters will be replaced within 3 months.* Pengguna Industri dan Komersil - Meter gas akan diganti dalam tempoh 6 bulan. *Industrial and Commercial Users - Gas meters will be replaced within 6 months.*

KESELAMATAN DAN KEKOMPETENAN

SAFETY AND COMPETENCY

5.0 KESELAMATAN DAN KEKOMPETENAN
SAFETY AND COMPETENCY

5.1 KELULUSAN PEPASANGAN DAN KELENGKAPAN GAS

5.1.1 KELULUSAN PEPASANGAN GAS

Jumlah permohonan Kelulusan untuk Memasang (ATI) dan Kelulusan untuk Mengendali (ATO) bagi kedua-dua pepasangan gas asli dan GPC menunjukkan sedikit penurunan iaitu 1,817 permohonan pada tahun 2011 berbanding 1,843 pada tahun sebelumnya seperti yang ditunjukkan dalam Jadual 15 dan Jadual 16. Kelulusan yang dikeluarkan merangkumi kelulusan untuk memasang stesen pemeteran, stesen pengaturan dan pepasangan gas tambahan. Setiap kelulusan pula terbahagi kepada kelas I, II dan III berdasarkan tekanan operasi maksimum pepasangan gas. Jadual 17 menunjukkan bilangan kelulusan ATI dan ATO yang dikeluarkan pada 2011 berdasarkan kelas pepasangan gas.

5.1 GAS INSTALLATION AND EQUIPMENT APPROVAL

5.1.1 GAS INSTALLATION APPROVALS

Total applications for Approval to Install (ATI) and Approval to Operate (ATO) for both natural gas and LPG installations showed a slight decrease of 1,817 applications in 2011 compared to 1,843 in the previous year as shown in Table 15 and Table 16. Approvals issued include approval to install metering stations, regulating stations and additional gas installations. Each approval is classified into class I, II and III based on the maximum operating pressure of gas installations. Table 17 shows the number of ATI and ATO issued in 2011 based on the Installation class.

Jadual 15: Bilangan Kelulusan Pepasangan Gas Asli
Table 15: Number of Approvals for Natural Gas Installation

Kelulusan | *Approval*	Kategori | *Category*	1998-2006	2007	2008	2009	2010	2011
Kelulusan untuk Memasang (ATI) *Approval to Install (ATI)*	Industri | *Industrial*	486	51	61	41	88	33
	Komersil | *Commercial*	473	77	87	48	51	65
	Perumahan | *Residential*	222	27	34	14	11	10
	Jumlah | *Total*	**1,181**	**155**	**182**	**103**	**150**	**108**
Kelulusan untuk Mengendali (ATO) *Approval to Operate (ATO)*	Industri | *Industrial*	483	49	83	39	73	41
	Komersil | *Commercial*	506	83	77	79	45	70
	Perumahan | *Residential*	136	28	27	37	15	20
	Jumlah | *Total*	**1,125**	**160**	**187**	**155**	**133**	**131**

Jadual 16: Bilangan Kelulusan Pepasangan GPC
Table 16: Number of Approvals for LPG Installation

Kelulusan | *Approval*	Kategori | *Category*	1998-2006	2007	2008	2009	2010	2011
Kelulusan untuk Memasang (ATI) *Approval to Install (ATI)*	Industri | *Industrial*	-	-	-	-	-	-
	Komersil | *Commercial*	2,694	508	636	601	846	850
	Perumahan | *Residential*	176	31	22	28	35	19
	Jumlah | *Total*	**2,870**	**539**	**658**	**629**	**881**	**869**
Kelulusan untuk Mengendali (ATO) *Approval to Operate (ATO)*	Industri | *Industrial*	-	-	-	-	-	-
	Komersil | *Commercial*	2,005	461	549	404	660	678
	Perumahan | *Residential*	127	32	31	21	19	31
	Jumlah | *Total*	**2,132**	**493**	**580**	**425**	**679**	**709**

Jadual 17: Bilangan Kelulusan Berdasarkan Kelas Pepasangan Gas
Table 17: Number of Approvals According to Installation Classes

Pepasangan Gas *Gas Installation*	ATI			ATO		
	Kelas I *Class I*	Kelas II *Class II*	Kelas III *Class III*	Kelas I *Class I*	Kelas II *Kelas II*	Kelas III *Kelas III*
Gas Asli | *Natural Gas*	25	9	74	32	9	90
GPC | *LPG*	1	48	820	0	42	667

5.1.2 KELULUSAN GEGASAN, PERKAKAS DAN KELENGKAPAN GAS

Sepanjang tahun 2011, satu (1) permohonan bagi pengilang gegasan, perkakas dan kelengkapan gas, lima (5) permohonan bagi pengimport gegasan, perkakas dan kelengkapan gas dan 110 permohonan bagi gegasan, perkakas dan kelengkapan gas telah diluluskan. Jumlah keseluruhan kelulusan yang telah dikeluarkan sehingga tahun 2011 bagi ketiga-tiga kategori tersebut adalah 39,110 dan 693. Gegasan, perkakas dan kelengkapan gas yang diluluskan merangkumi komponen-komponen pepasangan gas seperti paip *polyethylene*, gegasan, meter, injap bebola, pengatur tekanan dan alatan pengesan kebocoran gas.

5.1.2 GAS FITTINGS, GAS APPLIANCES AND GAS EQUIPMENT APPROVALS

During 2011, one (1) application for gas fittings, appliances, and equipment manufacture, five (5) applications for gas fittings, appliances and equipment importer and 110 applications for gas fittings, appliances and equipment have been approved. Total approvals issued until 2011 for all three categories are 39,110 and 693 respectively. Approved gas fittings, appliances and equipment include gas installation components such as polyethylene pipes, fittings, meters, ball valves, pressure regulators and gas leak detector.

Jadual 18: Bilangan Kelulusan bagi Pemasang *(Assembler)*, Pengilang atau Pengimport Gegasan Gas, Perkakas Gas atau Kelengkapan Gas
Table 18: Number of Approvals for Assembler, Manufacturer or Importer for Gas Fittings, Gas Appliances and Equipment

Jenis Kelulusan | *Type of Approval*	1998-2006	2007	2008	2009	2010	2011
Kelulusan bagi Pemasang atau Pengilang Gegasan Gas, Perkakas Gas atau Kelengkapan Gas *Approvals for Assembler or Manufacturer for Gas Fittings, Gas Appliances or Gas Equipment*	32	5	0	0	1	1
Kelulusan bagi Pengimport Gegasan Gas, Perkakas Gas atau Kelengkapan Gas *Approval for Importers of Gas Fittings, Gas Appliance or Gas Equipment*	82	3	1	14	5	5
Jumlah | *Total*	**114**	**8**	**1**	**14**	**6**	**6**

Jadual 19: Bilangan Kelulusan Gegasan Gas, Perkakas Gas atau Kelengkapan Gas
Table 19: Number of Approvals for Gas Fittings, Gas Appliances or Gas Equipment

Jenis Kelulusan | *Type of Approval*	1998-2006	2007	2008	2009	2010	2011
Kelulusan Gegasan Gas, Perkakas Gas atau Kelengkapan Gas *Approval of Gas Fittings, Gas appliance or Gas Equipment*	428	32	11	83	29	110

5.1.3 PEMERIKSAAN DAN UJIAN PEPASANGAN GAS

Sejumlah 239 pemeriksaan dan ujian ke atas pepasangan gas telah dijalankan pada tahun 2011. Pemeriksaan ke atas pepasangan dibuat untuk memastikan prestasi kerja kontraktor dan orang kompeten adalah memenuhi kehendak piawaian dan peraturan yang ditetapkan manakala pemeriksaan ke atas pepasangan gas sedia ada ialah sebagai langkah untuk meningkatkan tahap keselamatan pepasangan gas yang telah beroperasi. Pada tahun 2011, terdapat tiga (3) kemalangan gas melibatkan pepasangan gas telah dilaporkan dan disiasat di bawah bidangkuasa Akta Bekalan Gas 1993. Jadual 20 menunjukkan aktiviti pemeriksaan dan ujian yang telah dijalankan sehingga tahun 2011.

5.1.3 INSPECTION AND TESTING OF GAS INSTALLATIONS

A total of 239 inspections and tests have been conducted on gas installations in 2011. Inspection is carried out to ensure the performance of contractors and competent persons are in compliance with standards and regulations as well as to enhance the safety of gas installations that are in operation. In 2011 there were three (3) reported accidents involving gas installations and they were investigated under the provision of the Gas Supply Act 1993. Table 20 shows the inspection and investigation activities conducted until 2011.

Jadual 20: Aktiviti Pemeriksaan dan Ujian
Table 20: Inspection and Testing Activities

Aktiviti | *Activity*	1998-2006	2007	2008	2009	2010	2011
Pemeriksaan dan Ujian *Inspection and Test*	1,306	11	30	4	240	239
Arahan Pembaikan atau Pemberhentian Operasi Sistem Gas *Order to Repair or Cease Operation of Gas System*	365	1	0	293	302	266

5.1.4 PRESTASI KESELAMATAN

Pada tahun 2011, sebanyak tiga (3) kemalangan yang melibatkan sistem talian gas berpaip telah dilaporkan dan disiasat oleh Suruhanjaya Tenaga.

5.1.4 SAFETY PERFORMANCE

In 2011, a total of three (3) accidents involving piped gas systems were reported to and investigated by the Energy Commission.

Jadual 21: Kemalangan Gas bagi 2011
Table 21: Gas Accidents in 2011

Tarikh *Date*	Jenis Gas *Type of Gas*	Penerangan *Description*
8 Mei 2011 *8 May 2011*	Gas Asli *Natural Gas*	Pelepasan gas tidak sengaja dan letupan berpunca daripada satu unit rumah di Hampshire Kondominium, Jalan Ampang, Kuala Lumpur. *Accidental gas release and explosion occurred at Hampshire Condominium, Jalan Ampang, Kuala Lumpur.* Seorang mangsa dilaporkan maut | *One person was reported killed.*
28 September 2011	GPC *LPG*	Pelepasan gas tidak sengaja dan letupan di Empire Shopping Gallery, Subang Jaya, Selangor. *Accidental gas release and explosion occurred at Empire Shopping Gallery, Subang Jaya, Selangor.* Empat orang mangsa dilaporkan mengalami cedera ringan. *Four people with minor injuries were reported.*
26 November 2011	GPC *LPG*	Pelepasan gas tidak sengaja dan letupan berpunca daripada satu unit kedai di Restoran Noodle Station, Maju Junction Mall, Jalan Sultan Ismail, Kuala Lumpur. *Accidental gas release and explosion occurred at Noodle Station Restaurant, Maju Junction Mall, Jalan Sultan Ismail, Kuala Lumpur.* Tiada kecederaan dilaporkan | *No injuries were reported.*

Jadual 22: Siasatan Kemalangan Gas Berpaip
Table 22: Piped Gas Accident Investigations

Aktiviti | *Activity*	1998-2006	2007	2008	2009	2010	2011
Siasatan Kemalangan dan Aduan *Accident Investigations and Complaints*	53	9	4	2	3	3

5.2 KEKOMPETENAN GAS

5.2.1 PENSIJILAN KEKOMPETENAN GAS

Orang kompeten gas memainkan peranan yang penting bagi menjamin keselamatan dalam aktiviti pembekalan gas melalui talian paip. Orang kompeten gas mempunyai pengetahuan serta kemahiran yang mencukupi dalam kerja-kerja yang melibatkan pepasangan gas. Sehingga hujung tahun 2011 jumlah perakuan orang kompeten gas yang telah dikeluarkan adalah 718 (pertambahan sebanyak 25 daripada 693 pada tahun 2010) perakuan yang merangkumi kategori Jurutera Gas, Penyelia Kejuruteraan Gas dan Jurugegas Gas.

Jumlah orang kompeten yang berdaftar bagi tahun 2011 adalah sedikit berkurangan iaitu seramai 318 orang berbanding pada tahun 2010 iaitu 326 orang. Secara keseluruhannya, sebanyak 44% daripada 718 orang kompeten yang berdaftar pada tahun 2011.

5.2 GAS COMPETENCY

5.2.1 GAS COMPETENT PERSON CERTIFICATIONS

Gas competent person plays a vital role in ensuring the safety of gas supply activities through piping systems. Gas competent persons have sufficient knowledge and skills in work involving gas installations. Until the end of 2011 the amount of gas competent person certificates issued were 718 (an increase of 25 out of 693 in 2010) which include Gas Engineer, Gas Engineering Supervisor and Gas Fitter categories.

Total competent person registered in 2011 decreased slightly at 318 persons compared to 326 persons in 2010. Overall, 44% of 718 registered competent persons were registered in 2011.

Jadual 23: Bilangan Perakuan Orang Kompeten Gas
Table 23: Number of Gas Competent Person

Jenis Perakuan Kekompetenan *Certificate of Competency*	1998-2006	2007	2008	2009	2010	2011
Jurutera Gas | *Gas Engineer*	73	3	0	0	3	0
Penyelia Kejuruteraan Gas *Gas Engineering Supervisor*	227	6	6	5	11	9
Jurugegas Gas Kelas I *Gas Fitter Class I*	151	14	15	4	2	7
Jurugegas Gas Kelas II *Gas Fitter Class II*	85	3	2	0	1	0
Jurugegas Gas Kelas III *Gas Fitter Class III*	55	6	6	8	7	9
Jumlah | *Total*	**591**	**32**	**29**	**17**	**24**	**25**

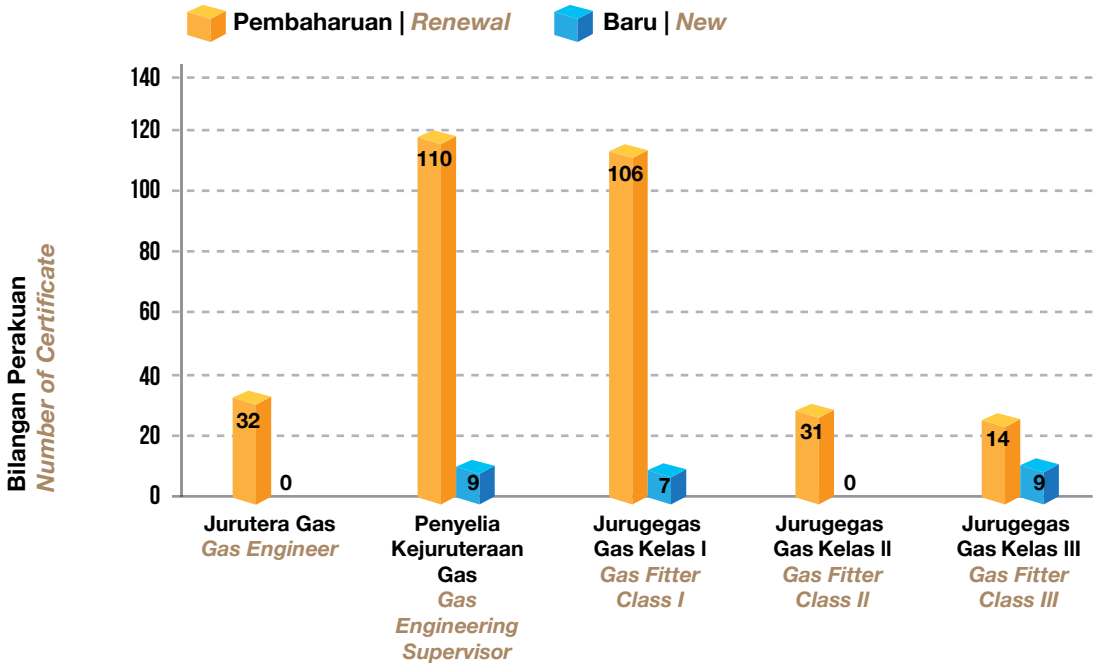
Jadual 24: Pendaftaran Baru Orang Kompetan Gas
Table 24: New Registration of Gas Competent Person

Jenis Pendaftaran | *Type of Registration*	2007	2008	2009	2010	2011
Jurutera Gas | *Gas Engineer*	6	3	0	4	0
Penyelia Kejuruteraan Gas *Gas Engineering Supervisor*	37	6	9	10	9
Jurugegas Gas Kelas I *Gas Fitter Class I*	30	18	13	4	7
Jurugegas Gas Kelas II *Gas Fitter Class II*	24	4	3	0	0
Jurugegas Gas Kelas III *Gas Fitter Class III*	7	5	10	5	9
Jumlah | *Total*	**104**	**36**	**35**	**23**	**25**

Jadual 25: Pembaharuan Orang Kompeten Gas
Table 25: Gas Competent Person Renewal

Jenis Pendaftaran | *Type of Registration*	2007	2008	2009	2010	2011
Jurutera Gas | *Gas Engineer*	32	37	35	30	32
Penyelia Kejuruteraan Gas *Gas Engineering Supervisor*	74	83	86	100	110
Jurugegas Gas Kelas I *Gas Fitter Class I*	91	93	99	119	106
Jurugegas Gas Kelas II *Gas Fitter Class II*	31	48	39	42	31
Jurugegas Gas Kelas III *Gas Fitter Class III*	60	6	10	12	14
Jumlah | *Total*	**199**	**267**	**269**	**303**	**293**

Rajah 22: Bilangan Pendaftaran Orang Kompeten bagi 2011
Figure 22: Number of Competent Person Registrations in 2011



5.2.2 PEPERIKSAAN ORANG KOMPETEN DAN PENGIKTIRAFAN KURSUS KEKOMPETENAN

Sepanjang tahun 2011, Jabatan Gas telah mengelolakan peperiksaan orang kompeten yang terdiri daripada peperiksaan bertulis dan peperiksaan lisan (temuduga). Peperiksaan bertulis perlu diduduki oleh calon yang tidak memenuhi kriteria pengecualian yang ditetapkan. Calon yang lulus peperiksaan bertulis akan dipanggil untuk ditemuduga bagi tujuan pengeluaran Perakuan Orang Kompeten. Selain itu, calon yang layak menghadiri temuduga juga terdiri daripada calon yang telah dikecualikan daripada peperiksaan bertulis atau telah lulus kursus-kursus dalam bidang talian paip gas yang dikelolakan oleh institusi-institusi yang diiktiraf.

Sejumlah satu (1) sesi peperiksaan bertulis telah dijalankan pada tahun 2011 dan hanya seorang (1) calon telah menduduki peperiksaan tersebut. Manakala 24 sesi temuduga telah dijalankan dan sejumlah 60 calon telah menghadiri temuduga tersebut.

5.2.2 COMPETENCY EXAMINATION AND ACCREDITATION OF COMPETENCY COURSES

In 2011, the Gas Department conducted competency examinations consisting written and oral (interview) examinations. Written examination must be taken by candidates who do not meet the exemptions criteria. Candidates who passed the written test will be called for an interview for issuance of Certificate of Competency. In addition, candidates who have been exempted from the written examination or the ones who have passed accredited courses in gas piping system will also be called for the interview.

A total of one (1) written examination session was conducted in 2011 and only one (1) candidate sat for the examination. Meanwhile 24 interviews were conducted and a total of 60 candidates attended the interview.

Jadual 26: Aktiviti Sesi Peperiksaan dan Temuduga
Table 26: Examination and Interview Sessions

Peperiksaan Orang Kompeten *Competent Person Examination*	**1998-2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Peperiksaan Bertulis | *Written Exam*	17	3	2	1	3	1
Peperiksaan Lisan (Temuduga) *Oral Exam (Interview)*	182	16	18	4	11	60

Sehingga akhir tahun 2011, tiada sebarang pengiktirafan terhadap kursus kekompetenan yang dikeluarkan dan bilangan pengiktirafan kekal dengan tiga (3) buah institusi pengajian.

By the end of 2011, there was no new accredited competency course issued and the number of recognized institutions remain at three (3) educational institutions.

Jadual 27: Bilangan Pengiktirafan Kursus Kekompetenan
Table 27: Number of Accredited Competency Course

Pengiktirafan Kursus Kekompetenan *Competency Course Accreditation*	**1998-2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Bilangan Kursus Pengajian *Number of Accredited Courses*	5	1	-	-	-	-

5.3 PENDAFTARAN KONTRAKTOR GAS

Kontraktor gas terbahagi kepada empat kelas iaitu Kelas A, Kelas B, Kelas C dan Kelas D. Setiap kelas mempunyai ruang lingkup kerja yang berbeza berdasarkan kelas pepasangan gas. Pada tahun 2011, sejumlah 6 kontraktor gas baru telah didaftarkan berbanding 23 kontraktor gas pada tahun 2010. Manakala jumlah keseluruhan kontraktor gas berdaftar pada tahun 2011 adalah 126 berbanding 139 pada tahun sebelumnya.

5.3 GAS CONTRACTOR REGISTRATIONS

Gas contractors are divided into four classes, namely Class A, Class B, Class C and Class D. Each class has a different scope of work based on the class of gas installations. In 2011, a total of 6 new gas contractors were registered compared to 23 in 2010. In total, 126 gas contractors were registered in 2011 compared to 139 in the previous year.

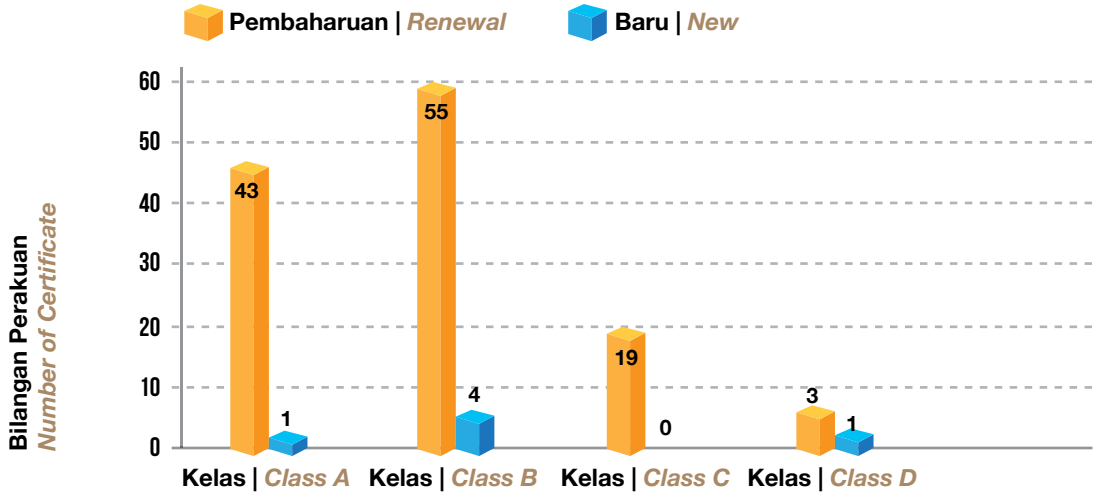
Jadual 28: Pendaftaran Baru Kontraktor Gas
Table 28: Gas Contractor New Registration

Kelas Pendaftaran *Registration Classes*	2007	2008	2009	2010	2011
Kelas A | *Class A*	6	2	1	5	1
Kelas B | *Class B*	4	2	5	14	4
Kelas C | *Class C*	6	1	4	0	0
Kelas D | *Class D*	0	1	0	4	1
Jumlah | *Total*	**16**	**6**	**10**	**23**	**6**

Jadual 29: Pembaharuan Kontraktor Gas
Table 29: Gas Contractor Renewal

Kelas Pendaftaran *Registration Classes*	2007	2008	2009	2010	2011
Kelas A | *Class A*	49	46	43	41	43
Kelas B | *Class B*	42	41	40	46	55
Kelas C | *Class C*	17	22	22	25	19
Kelas D | *Class D*	3	1	2	4	3
Jumlah | *Total*	**111**	**110**	**107**	**116**	**120**

Rajah 23: Bilangan Pendaftaran Kontraktor Gas bagi 2011
Figure 23: Number of Registered Gas Contractors in 2011



MAKLUMAT HUBUNGAN SURUHANJAYA TENAGA

ENERGY COMMISSION CONTACT INFORMATION

MAKLUMAT HUBUNGAN SURUHANJAYA TENAGA
ENERGY COMMISSION CONTACT INFORMATION

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