

**LIQUEFIED PETROLEUM
GAS MARKET OUTLOOK
2007-2016**



**SECRETARÍA
DE ENERGÍA**

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PRESENTATION

Liquefied petroleum gas (LPG) is a vital energy source, since it is the main fuel used for domestic purposes in more than 70% of Mexican households. Having access to it is a sign of development and increase on the living standards. Therefore, the Mexican State's commitment is to ensure its supply under safe conditions to foster social welfare..

In its domestic market, LPG is a basic commodity. In view of this, support schemes have been implemented to mitigate fluctuations in the most vulnerable social sectors. In this way, LPG has been subject to a maximum controlled price scheme since 2003, to protect the families' economies.

In spite of these circumstances, LPG demand conditions have been modified in the last three years through substitution by natural gas, depending on the available infrastructure; lower sales of LPG for vehicles; fuel savings resulting from the increase of efficiency of certain appliances such as water heaters and stoves; as well as the shift in consumption habits which favors the use of microwave ovens.

However, in the long-term, the LPG market is expected to have a steady demand and a rising internal supply that will gradually decrease imports of this fuel.

Faced with this perspective, the LPG industry requires a new organization scheme in which both the public and private sectors participate for the benefit of consumers. To achieve this, the Ministry of Energy has promoted a new Regulation looking for more competition, facilitating the access of new participants, granting a higher degree of legal certainty and economic transparency to distributors, and ensuring safety enhancement in the LPG transportation, storage and distribution activities.

Bearing this in mind, the Ministry of Energy presents this new edition of the Liquefied petroleum gas market Outlook for 2007-2016. This publication represents an effort to provide recent analytical elements to increase market knowledge and turn into a helpful tool which can assist in medium and long-term decision-making.

Georgina Kessel Martínez
Minister of Energy

LIQUEFIED PETROLEUM GAS MARKET OUTLOOK, 2007-2016

This chapter revises the liquefied petroleum gas (LPG) demand and production trends for the next 10 years, both at national and regional levels. It also presents the analysis derived from the different combinations of scenarios projected for supply and demand, including planned investment flows aimed at ensuring adequate nation-wide supply of this energy source.

1.1 Demand for 2006-2016

Based on projections, LPG's domestic demand is expected to increase at an average annual rate of 1.0%, from 311.2 thousand barrels per day (tbd) in 2006 to 344.4 tbd in 2016. In 2016, demand by sectors will be concentrated on the residential sector, with 64% of the total; followed by the services sector with 14%; the industrial sector with 9%; vehicle transportation with 8%; and to a lesser degree, by the oil and the agriculture/livestock sectors with 3% and 2%, respectively.

Chart 1
LPG's domestic demand by sector*, 2006-2016
(thousand barrels per day)

| Sector | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Total | 311.2 | 313.7 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.2 | 334.3 | 339.4 | 344.4 | 1.0 |
| Residential | 195.9 | 199.4 | 203.3 | 206.8 | 209.5 | 210.4 | 210.5 | 210.6 | 210.9 | 215.0 | 218.7 | 1.1 |
| Services | 42.6 | 42.8 | 42.8 | 43.4 | 43.9 | 44.5 | 45.3 | 45.9 | 46.4 | 47.1 | 48.1 | 1.2 |
| Industrial | 27.3 | 26.9 | 27.0 | 27.7 | 28.0 | 28.4 | 29.3 | 30.1 | 30.7 | 31.5 | 32.4 | 1.7 |
| Vehicle transportation | 34.3 | 32.5 | 32.3 | 31.8 | 31.4 | 31.0 | 30.6 | 30.3 | 29.7 | 29.1 | 28.5 | -1.8 |
| Agriculture/livestock | 5.9 | 6.2 | 6.2 | 6.4 | 6.5 | 6.7 | 6.8 | 7.0 | 7.1 | 7.3 | 7.5 | 2.4 |
| Oil | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |

*Includes propanes and butanes used as raw material in the industrial sector.
Source: IMP, based on data from CRE, Pemex, Sener and private companies.

The loss of competitiveness expected from LPG caused by factors such as its price relationship with diesel and gasoline as well as the fostering and expansion of the use of diesel vehicles in sectors with a large presence of LPG units explain the lower dynamism in LPG consumption in the years to come.

Unlike previous projections and as shown in Graph 1, , the share of the vehicle transportation sector in domestic LPG demand will be reduced from 11% in 2006 to 8% in 2016, with an average decrease of 1.8%. On the other hand, projections assume that the residential sector's demand will be constant, or even increase moderately, representing approximately 64% of the total in 2016.

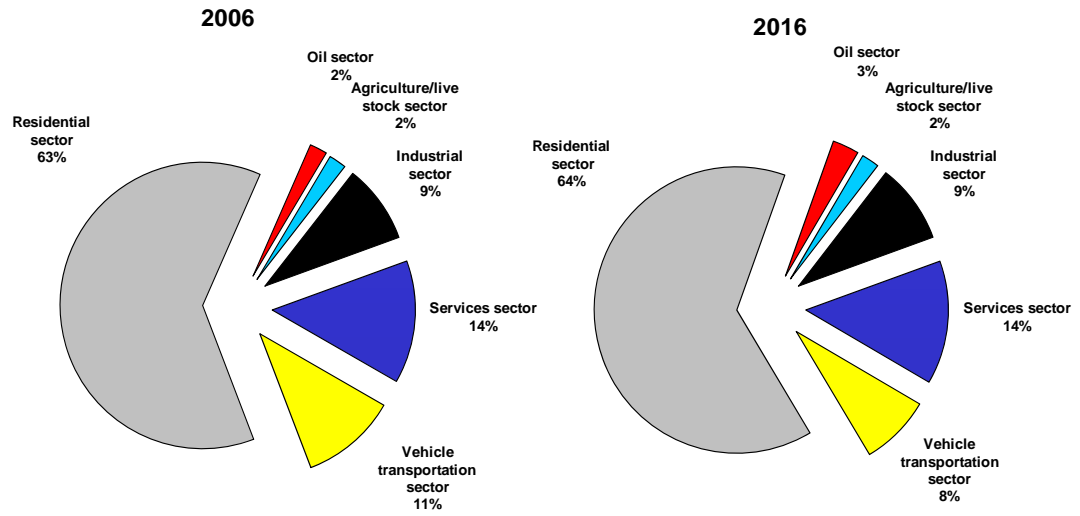
The services sector will be the second most important destination of LPG demand in 2016. As for the industrial sector, LPG is not really competitive among the other energy source options; its use is quite limited and specific, however, demand projections forecast an average annual increase of 1.7% for the next 10 years, maintaining the same proportion of its share in demand.

Even though the oil and agriculture/livestock sectors will have a rather minimal consumption by the end of the period, jointly representing almost 5% of the domestic demand, growth rate projections in both sectors are high. In the case of the oil sector, for the 2006-2016 period, Pemex's LPG self-consumption, mainly used for cooling production facilities and as input (butane and isobutane) in the Minatitlán refinery's processes, is expected to increase at an annual average rate of 6.1%. This situation matches with the conclusion of the upgrading works performed at this refinery in 2008, which will increase its demand of LPG by products in 2009.

Between 2006 and 2016, demand in the South-Southeastern and Northeastern regions will experience the greatest increase in LPG demand, registering average rates of 2.8% and 2.4% respectively. In spite of this , by the end of the period, LPG's domestic demand will be concentrated in the Central and Central-Western regions, jointly representing 60% of the total.

Graph 1

LPG's demand distribution by sector, 2006 and 2016



Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 2
LPG's domestic demand by region, 2006-2016
(thousand barrels per day)

| Region | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Total | 311.2 | 313.7 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.2 | 334.3 | 339.4 | 344.4 | 1.0 |
| Northwestern | 26.7 | 27.8 | 28.4 | 29.1 | 29.8 | 30.4 | 30.9 | 31.5 | 32.1 | 33.0 | 33.8 | 2.4 |
| Northeastern | 44.4 | 44.9 | 44.6 | 44.6 | 44.3 | 44.0 | 43.8 | 43.6 | 43.4 | 43.7 | 44.0 | -0.1 |
| Central-Western | 70.2 | 70.2 | 71.4 | 72.5 | 73.4 | 74.0 | 74.3 | 74.5 | 74.6 | 75.6 | 76.5 | 0.9 |
| Central | 124.6 | 124.4 | 125.2 | 126.7 | 127.8 | 127.9 | 127.9 | 127.7 | 127.5 | 129.0 | 130.4 | 0.5 |
| South-Southeastern | 45.3 | 46.4 | 49.5 | 51.5 | 53.5 | 54.1 | 55.1 | 55.8 | 56.7 | 58.1 | 59.7 | 2.8 |

*Includes propanes and butanes used as raw material in the industrial sector of the Central región

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

During the next ten years, the configuration of the sectoral LPG demand in each region will be modified as shown in Graph 2. This change will result mainly from a lower dynamism in the estimated competition with natural gas in several cities. Domestic consumption of LPG in the residential sector will be less dynamic, especially in the North of the country. This situation is not expected in the South-Southeastern region, where LPG continues penetrating the market and displacing other less conventional energy sources. In contrast, in the Northeast and Northwest, the share of LPG in the demand by sectors will increase by the end of the period.

Projections for the residential and services sectors foresee modifications in the thermal efficiency of water heaters, the ignition method of stoves as well as the displacement of LPG by the use of microwave ovens. In turn, LPG demand in other sectors will still be influenced by changes in consumption habits and by new technologies available in LPG-fueled equipment .

As shown in Graph 3, due to this reassessment in the demand's forecast, which will be explained further in this document, the projection for 2007-2016 foresees the growth of LPG demand by an average annual rate of 1.0%, while the 2006-2015 version forecasted a slightly higher rate of 1.2%. Other important factors included the estimates related to the greater degree of LPG substitution by natural gas, and a less favorable growth in the use of LPG.

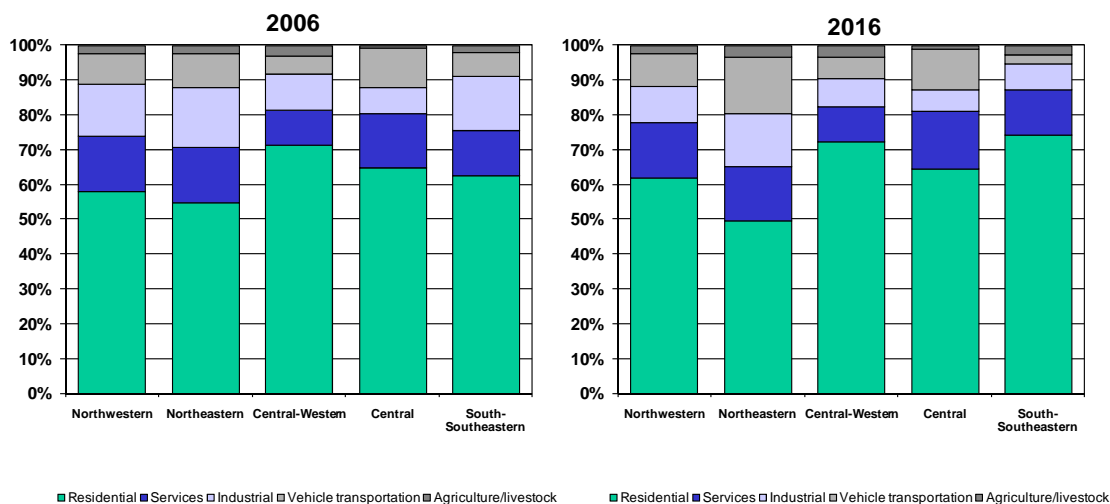
The search for new market niches, the penetration in areas that do not yet have access to supply, a more balanced and accelerated regional economic development and favorable expectations for the relative prices of LPG compared to other fuels are all decisive elements that would ensure the expansion of LPG demand in the long run, allowing for the readjustment of projections under a more optimistic approach.

1.1.1 Residential sector

LPG demand estimates in the residential sector show an annual average increase of 1.1% until 2016. This figure is based mainly on expectations related to family income, increase of households number, substitution of firewood by LPG and the supply of LPG in areas where there is no available natural gas infrastructure.

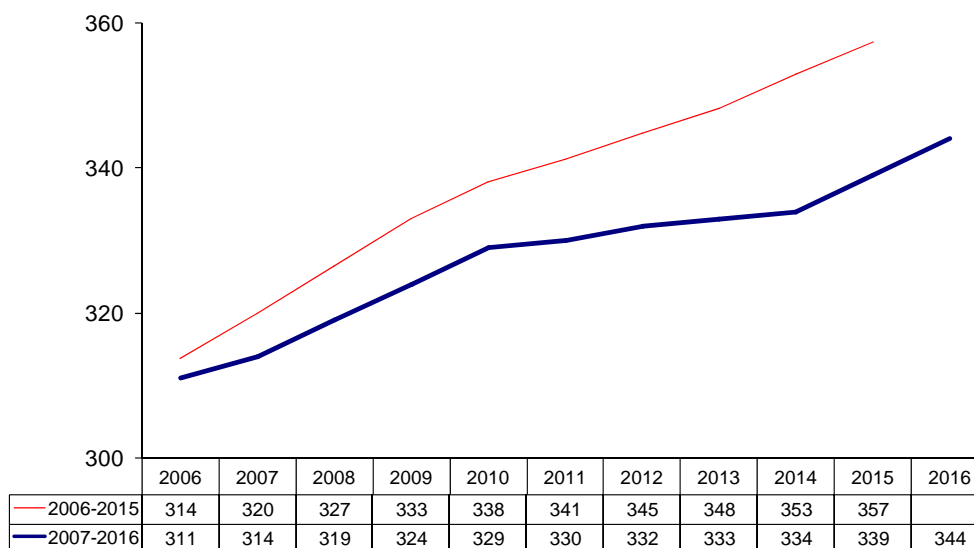
Graph 2

LPG's domestic demand distribution by region, 2006 and 2016



Source: IMP, based on data from Pemex, Sener and private companies.

Graph 3
LPG's demand projections, 2006-2015 and 2007-2016
(thousand barrels per day)



Source: IMP, based on data from CRE, Pemex, Sener and private companies.

On the other hand, there are other elements to be considered due to their impact on LPG's prospective demand. Among others, the behavior of LPG prices with respect to other substitute fuels, the expansion of natural gas distribution networks, the increase of energy efficiency of appliances and equipment like water heaters and stoves, and the increase usage of microwave ovens in homes.

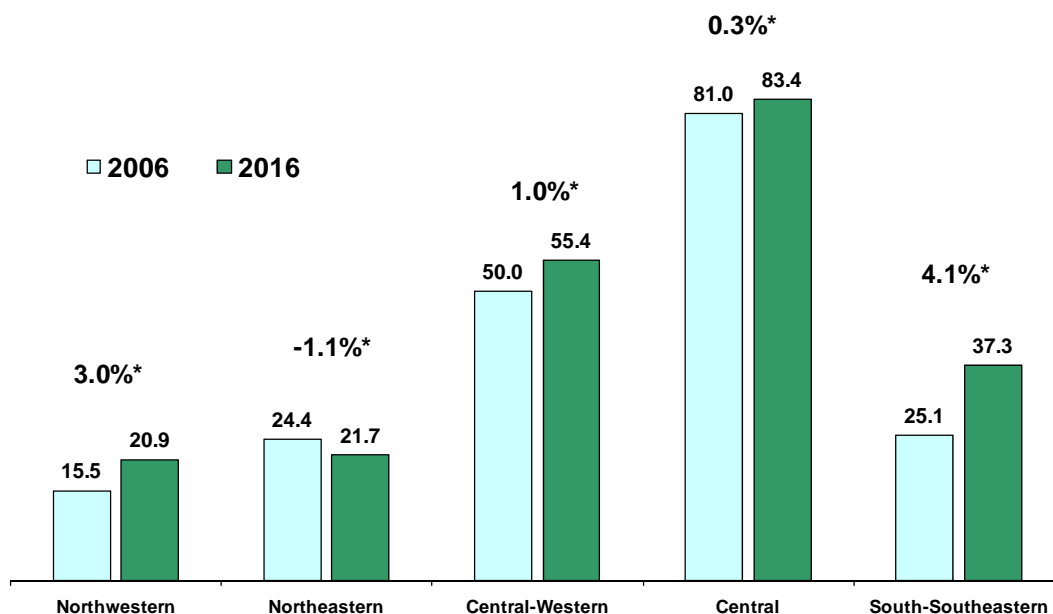
In the next ten years, domestic LPG demand in this sector will rise with greater dynamism in the South-Southeastern and Northwestern region, registering average growth rates of 4.1% and 3.0%, respectively. At the same time, natural gas will not be as strong a competitor in the Northwestern region, leading to growth opportunities in LPG consumption. For the South-Southeastern region, a relevant potential for the substitution of firewood and biomass by LPG in homes will be generated.

Chart 3
LPG's residential sector demand by region, 2006-2016
(thousand barrels per day)

| Region | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Total | 195.9 | 199.4 | 203.3 | 206.8 | 209.5 | 210.4 | 210.5 | 210.6 | 210.9 | 215.0 | 218.7 | 1.1 |
| Northwestern | 15.5 | 16.2 | 16.7 | 17.3 | 17.9 | 18.3 | 18.7 | 19.1 | 19.5 | 20.2 | 20.9 | 3.0 |
| Northeastern | 24.4 | 24.0 | 23.8 | 23.7 | 23.3 | 22.8 | 22.3 | 21.9 | 21.6 | 21.7 | 21.7 | -1.1 |
| Central-Western | 50.0 | 50.2 | 51.4 | 52.5 | 53.3 | 53.7 | 53.8 | 53.8 | 53.8 | 54.6 | 55.4 | 1.0 |
| Central | 81.0 | 80.7 | 81.9 | 82.8 | 83.4 | 83.1 | 82.5 | 81.9 | 81.5 | 82.6 | 83.4 | 0.3 |
| South-Southeastern | 25.1 | 28.2 | 29.4 | 30.6 | 31.7 | 32.4 | 33.2 | 33.8 | 34.5 | 35.8 | 37.3 | 4.1 |

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Graph 4
LPG's residential sector demand by region, 2006 and 2016
(thousand barrels per day)



*annual average growth rate 2006-2016

Source: IMP, based on data from Pemex, Sener and private companies.

In contrast, in the Northeast of the country LPG demand is expected to decrease by 1.1% per year during the projected period, as a consequence of the increasing penetration of natural gas in zones with supply networks. On the other hand, on the markets located in the Central region, LPG saturation to satisfy energy needs and the increase in the number of new natural gas households will limit the expansion possibilities of LPG demand in the residential sector, resulting in marginal growth rates.

1.1.2 Services sector

LPG demand growth in the services sector from 2006 until 2016 is estimated to represent 1.2% per year, increasing from 42.6 tbd to 48.1 tbd by the end of the period. This increase, slightly above the rate projected for the residential sector during the same period, will largely depend on the increase of LPG's real prices and on the competition with natural gas. Structurally, by 2016 this sector is expected to become the second most important within the distribution of LPG's domestic demand by sector.

By the end of the projected period, the regional distribution of LPG demand in this sector is expected to remain constant with slight variations. In 2016, demand will continue being the highest in the Central region that, together with the Central-Western and the Northeastern regions, will represent little more than three quarters of the total. In the Northeastern and Central regions natural gas is expected to represent a certain level of competition. In this sense, substitution by natural gas would only occur in urban areas, where natural gas distribution infrastructure allows for a higher degree of competition with LPG.

Hotels, restaurants, schools and hospitals are some of the main consumers of LPG within the services sector. Traditionally used for space-heating, cooking, tumble dryers, emergency power generators, air conditioning systems and outdoors illumination by torches.

1.1.3 Vehicle transportation sector

LPG demand within the vehicle transportation sector in 2006 reached 34.3 tbd, with a decreasing tendency for the third consecutive year. This situation has reinforced the hypothesis that LPG consumption will not experience any growth, and that this trend will continue for the following years.

Projections indicate that from 2006 until 2016 demand will decrease at an average rate of 1.8% and all regions will experience a fall in the demand of LPG, having the South-Southeastern region the highest setback, equal to 4.6% during aforementioned period.

Chart 4
LPG's services sector demand by region, 2006-2016
(thousand barrels per day)

| Region | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Total | 42.6 | 42.8 | 42.8 | 43.4 | 43.9 | 44.5 | 45.3 | 45.9 | 46.4 | 47.1 | 48.1 | 1.2 |
| Northwestern | 4.3 | 4.4 | 4.5 | 4.6 | 4.6 | 4.8 | 4.9 | 5.0 | 5.1 | 5.2 | 5.4 | 2.3 |
| Northeastern | 7.0 | 6.5 | 6.3 | 6.4 | 6.3 | 6.4 | 6.5 | 6.6 | 6.6 | 6.7 | 6.9 | -0.1 |
| Central-Western | 6.9 | 7.0 | 7.0 | 7.1 | 7.1 | 7.2 | 7.3 | 7.4 | 7.5 | 7.5 | 7.7 | 1.0 |
| Central | 19.3 | 19.6 | 19.6 | 20.0 | 20.2 | 20.4 | 20.7 | 20.9 | 21.0 | 21.3 | 21.6 | 1.2 |
| South-Southeastern | 5.2 | 5.3 | 5.3 | 5.5 | 5.6 | 5.7 | 5.9 | 6.0 | 6.2 | 6.3 | 6.5 | 2.3 |

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 5
LPG's vehicle transportation sector demand by region, 2006-2016
(thousand barrels per day)

| Region | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Total | 34.3 | 32.5 | 32.3 | 31.8 | 31.4 | 31.0 | 30.6 | 30.3 | 29.7 | 29.1 | 28.5 | -1.8 |
| Northwestern | 3.9 | 4.0 | 4.0 | 3.9 | 3.9 | 3.8 | 3.8 | 3.7 | 3.7 | 3.6 | 3.5 | -1.1 |
| Northeastern | 7.7 | 7.8 | 7.7 | 7.6 | 7.5 | 7.4 | 7.3 | 7.3 | 7.1 | 7.0 | 6.8 | -1.1 |
| Central-Western | 7.3 | 7.1 | 7.0 | 6.9 | 6.8 | 6.7 | 6.6 | 6.6 | 6.5 | 6.3 | 6.2 | -1.6 |
| Central | 9.2 | 9.2 | 9.1 | 9.0 | 8.9 | 8.8 | 8.6 | 8.6 | 8.4 | 8.2 | 8.0 | -1.4 |
| South-Southeastern | 6.2 | 4.4 | 4.4 | 4.3 | 4.3 | 4.2 | 4.2 | 4.1 | 4.1 | 4.0 | 3.9 | -4.6 |

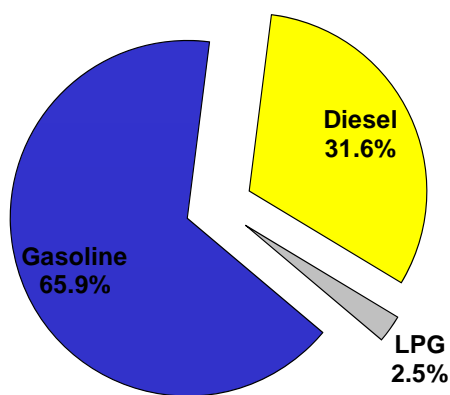
Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Due to the introduction of new technologies on the car market and since savings obtained from differences between LPG prices and other fuels is not attractive enough, the conversion of gasoline-fueled vehicles to LPG is expected to decrease slightly. These factors, together with the technical defects of converted vehicles and the proliferation of improvised facilities for the dispatch of fuel explain fairly well the lower dynamism of the sector, the loss of regular customers and a less favorable estimation about the development of the future demand of LPG.

Another factor that could be relevant for the reduction of LPG conversions and the decrease of LPG demand, is the fall of the conversion cost to compressed natural gas (CNG) that currently makes this option more competitive than the use of LPG. Together, these elements have deteriorated the competitiveness of LPG in the sector, creating conditions for a more successful penetration of other options, such as diesel.

In 2006, LPG's share in the vehicle transportation sector's energy demand together with gasoline and diesel, represented 2.5%, as shown in Graph 5¹.

Graph 5
Vehicle transportation sector's energy demand by fuel, 2006



Source: IMP, based on data from Pemex, Sener and private companies.

¹ Excluding compressed natural gas due to its marginal share in the demand of vehicle fuels

The vision of the LPG market also depends on the assessment of the feasibility of purchasing a vehicle within a determined category. It is necessary to estimate the minimum number of kilometers the user would have to drive to make the conversion to LPG profitable, considering the cost, maintenance, performance (km/l), fuel prices and interest rate. In this comparison, vehicles running on LPG will require longer trips in almost all categories, except for light vehicles², in which case, LPG will still offer economic advantages.

Moreover, the assessment considers economic savings generated by the differences in fuel prices and performance of vehicles running on gasoline and LPG. In this stage, fuel price expectations, conversion costs and energy source density translated into the performance of compared vehicles will acquire great relevance. Though CNG has a similar density to LPG's, conversion costs and fuel prices will make it more competitive.

Under these conditions, the vehicle fleet will decrease by an annual average rate of 1.1% on the projection horizon. This rate must be interpreted as the average growth of the categories of vehicles running on LPG (see Graph 6).

Technological expectations regarding conversions to LPG

The viability of LPG as fuel for the vehicle transportation sector is based on different aspects, such as infrastructure and availability, conversion costs, performance, fuel prices and available technologies.

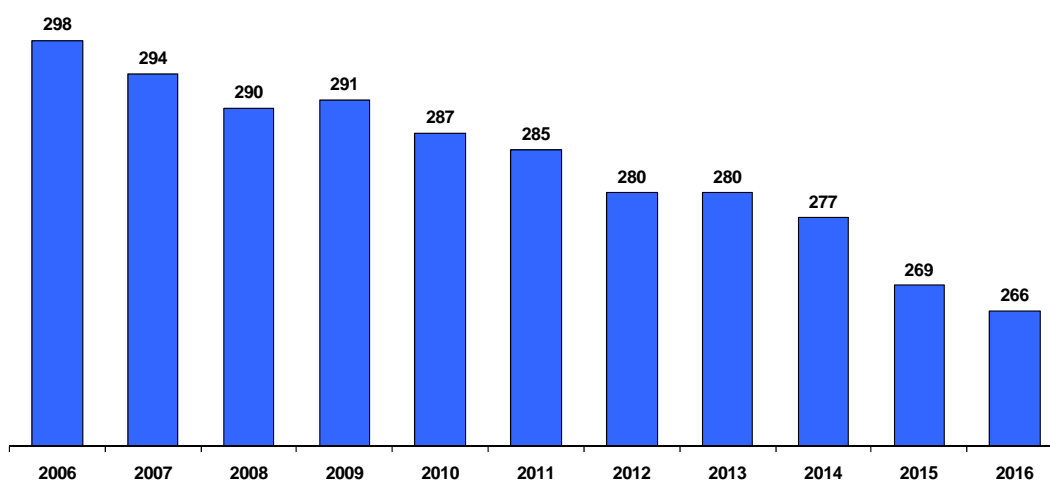
In the case of LPG conversion systems, the conventional technology used in Mexico is starting to show a setback when compared to the innovations developed and implemented in other countries. Europe has background in the use of more efficient conversion systems providing greater performance than traditional systems. In Mexico, these systems have not had proper diffusion and their application is still irrelevant.

Technological progress in LPG conversions is based on the air/fuel mixture control system, thus their application requires vehicles to be equipped with advanced electronic controls. LPG ignition systems represent a

² The category of light vehicles includes cargo and passenger vehicles whose weight does not exceed 2,722 kg.

new technology in which vapor phase fuel injection improves vehicle performance when compared to conventional liquid injection systems. Through a micro-processor, the air/fuel mixture is properly adjusted to supply a precise amount of LPG to the system, generating low emissions and saving on fuel. The system is also provided with an adapter that allows for the compensation of fuel composition variations, changes of altitude and alterations in the air/fuel ratio.

Graph 6
LPG's vehicle fleet projection, 2006-2016
(thousands of units)



Source: IMP, based on data from private companies.

In the case of new vehicles, LPG conversion under this new technology offers advantages through electronic fuel injection, preserving the option of using gasoline and LPG. The success of these types of technologies depends on several factors, including the technology employed by the vehicle, related costs, price differences with other fuel types and the quality of the LPG mixture.

For LPG to remain an alternative to gasoline in the vehicle transportation sector, it is necessary to have more attractive price differences, promote more efficient technologies, guarantee a better conversion of vehicles to LPG compliant to the applicable standards and, above all, to ensure that LPG contributes to the reduction of pollutants.

1.1.4 Industrial sector

The demand of energy sources is closely related to economic growth. The type and magnitude of energy demand responds to the specific characteristics of every end-user. LPG meets part of the industrial sector's energy services, contributing to the development and fostering of the country's economic and industrial activities.

LPG is employed in various industrial processes, the most common being the direct heating of ceramic furnaces, treatment of textiles and paper, paint drying, cotton dyeing, metallurgy, pottery making, glass works and brick manufacture (see Figure 17).

To determine the LPG's share within the industrial sector's energy demand, a comprehensive study was carried out regarding the fuels used in the sector (natural gas, petroleum coke, fuel-oil, diesel and LPG) in order to determine the participation of each one.

Diagram 1
LPG's industrial applications

| Industry | Product obtained | Benefits of using LPG |
|-------------------|--|--|
| Ceramic | <ul style="list-style-type: none"> ▪ Bricks ▪ Roofing materials ▪ Tiles ▪ Other construction materials ▪ Sanitary and electric articles | <ul style="list-style-type: none"> ▪ Purenness of fuel |
| Chemical | <ul style="list-style-type: none"> ▪ Aerosol | <ul style="list-style-type: none"> ▪ Propeller of canned products ▪ Purenness of mixture (propane and isobutane) |
| Glass | <ul style="list-style-type: none"> ▪ Optic glass | <ul style="list-style-type: none"> ▪ Temperature control ▪ Purenness of fuel |
| Automotive | <ul style="list-style-type: none"> ▪ Assembly of pieces made of the same metal | <ul style="list-style-type: none"> ▪ Temperature control ▪ Purenness of fuel |
| Metallurgy | <ul style="list-style-type: none"> ▪ Fuel for welding appliances | |

Source: Shell LP Gas Global.

Results, shown in Graph 7, point to the fact that, in average, during the projection period natural gas will remain the main fuel used by the industrial sector.

During the 2006-2016 period, while the annual average growth rate of natural gas demand in the industrial sector will be 2.4%. Petroleum coke will be the highest among all other fuel types, representing 5.8%. As for LPG, its share will be modest and its growth rate moderate (1.7%). The negative rate of fuel-oil is caused by stricter environmental standards, favoring the replacement of this fuel by cleaner alternatives (see Chart 6).

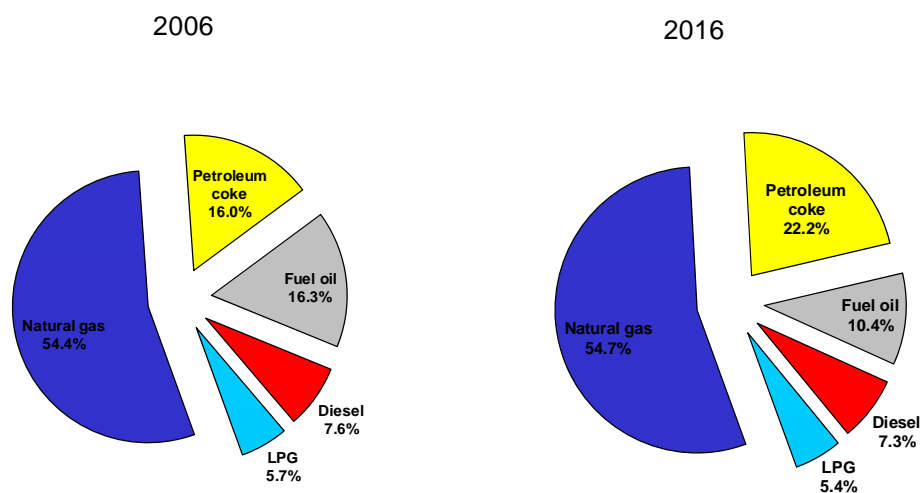
Regarding the regional projection of LPG demand, the Central region is expected to concentrate almost half of the volume consumed in 2016, due to the allocation of industries that use LPG in their production processes; in addition to propane, butane and isobutane used as chemical feedstocks. The latter have different costs than LPG as a mix, due to their import and the costs related to their separation process.

In order of magnitude, this region will be followed by the Northeastern and Central-Western regions. In these regions, the strong presence of natural gas in the industrial sector obeys the existence of networks, as well as its economic, environmental and technical convenience.

1.1.5 Agriculture/livestock sector

For the agriculture/livestock sector, LPG represents a relevant energy source supply in places where other fuel types (like natural gas and diesel) face problems due to transportation and distribution infrastructure issues. LPG's versatility has allowed its use in different activities in this sector, such as the drying of seeds and vegetables, the destruction of weeds, and the heating of greenhouses and areas for livestock and poultry farming.

Graph 7
Industrial sector's energy demand by fuel, 2006 and 2016



Source: IMP, based on data from Pemex, Sener and private companies.

Chart 6
Mexico's energy demand in the industrial sector by fuel, 2006-2016
(LPG-equivalent thousand barrels per day)

| Year | LPG ¹ | Petroleum coke | Diesel | Fuel oil | Natural Gas ² | Total | % of LPG within the total | Growth rates | | | | | | |
|-------------------|------------------|----------------|--------|----------|--------------------------|-------|---------------------------|--------------|----------------|--------|----------|-------------|-------|--|
| | | | | | | | | LPG | Petroleum coke | Diesel | Fuel oil | Natural gas | Total | |
| 2006 | 27.3 | 76.8 | 36.3 | 78.1 | 261.2 | 479.7 | 5.7 | | | | | | | |
| 2007 | 26.9 | 103.0 | 36.4 | 83.3 | 257.0 | 506.6 | 5.3 | -1.6 | 34.1 | 0.4 | 6.8 | -1.6 | 5.6 | |
| 2008 | 27.0 | 111.2 | 37.1 | 73.2 | 265.4 | 513.9 | 5.3 | 0.4 | 8.0 | 2.0 | -12.2 | 3.3 | 1.4 | |
| 2009 | 27.7 | 115.2 | 37.9 | 72.5 | 273.4 | 526.7 | 5.3 | 2.6 | 3.6 | 2.2 | -0.9 | 3.0 | 2.5 | |
| 2010 | 28.0 | 119.7 | 38.7 | 68.9 | 285.5 | 540.7 | 5.2 | 1.1 | 3.9 | 2.0 | -5.1 | 4.4 | 2.7 | |
| 2011 | 28.4 | 124.3 | 39.4 | 66.3 | 293.2 | 551.6 | 5.2 | 1.6 | 3.8 | 1.9 | -3.7 | 2.7 | 2.0 | |
| 2012 | 29.3 | 129.3 | 40.4 | 64.1 | 300.9 | 563.9 | 5.2 | 3.2 | 4.0 | 2.3 | -3.4 | 2.6 | 2.2 | |
| 2013 | 30.1 | 131.6 | 41.3 | 63.8 | 309.1 | 575.8 | 5.2 | 2.5 | 1.8 | 2.3 | -0.4 | 2.7 | 2.1 | |
| 2014 | 30.7 | 132.4 | 42.1 | 63.2 | 315.9 | 584.2 | 5.3 | 2.1 | 0.7 | 1.9 | -1.0 | 2.2 | 1.5 | |
| 2015 | 31.5 | 133.4 | 42.9 | 62.7 | 321.9 | 592.5 | 5.3 | 2.7 | 0.8 | 2.0 | -0.7 | 1.9 | 1.4 | |
| 2016 | 32.4 | 134.3 | 43.9 | 62.6 | 330.5 | 603.7 | 5.4 | 2.6 | 0.7 | 2.4 | -0.2 | 2.7 | 1.9 | |
| aagr | | | | | | | | | | | | | | |
| 2006-2016 average | 1.7 | 5.8 | 1.9 | -2.2 | 2.4 | 2.3 | | | | | | | | |
| average 2006-2016 | 29.0 | 119.2 | 39.7 | 69.0 | 292.2 | 549.0 | 5.3 | 1.7 | 6.1 | 1.9 | -2.1 | 2.4 | 2.3 | |

¹Includes raw material (propane and butanes).

²Does not include PPQ

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 7

LPG's energy demand in the industrial sector by region, 2006-2016
(thousand barrels per day)

| Region | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Total | 27.3 | 26.9 | 27.0 | 27.7 | 28.0 | 28.4 | 29.3 | 30.1 | 30.7 | 31.5 | 32.4 | 1.7 |
| Northwestern | 2.3 | 2.5 | 2.5 | 2.6 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.1 |
| Northeastern | 4.4 | 5.4 | 5.5 | 5.7 | 5.9 | 6.1 | 6.3 | 6.5 | 6.7 | 6.9 | 7.1 | 5.0 |
| Central-Western | 3.7 | 3.6 | 3.7 | 3.8 | 3.9 | 4.0 | 4.2 | 4.3 | 4.4 | 4.6 | 4.7 | 2.4 |
| Central | 14.1 | 13.8 | 13.5 | 13.9 | 14.2 | 14.5 | 14.9 | 15.2 | 15.3 | 15.7 | 16.1 | 1.4 |
| South-Southeastern | 2.8 | 1.6 | 1.7 | 1.7 | 1.4 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.3 | -7.7 |

Includes propanes and butanes used as raw material in the Central region

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

By becoming a fuel alternative on the Mexican scenario for farming equipment and mobile machinery, LPG utilization also contributes to decreasing deforestation problems related to the use of biomass as fuel. Therefore, LPG demand in this sector during the 2006-2016 period is expected to show an annual average growth of 2.4%. Regions with the highest share by the end of the period will be the Central-Western, Northeastern and South-Southeastern region, representing a joint share of almost three quarters of the sector's consumption (see Chart 8).

1.2 Supply, 2006-2016

Between 2006 and 2016, LPG production is expected to increase at an average rate of 1.5% per year, from 241.8 tbd in 2006 to 281.2 tbd in 2016. By Pemex branches, PGPB's production will increase at an annual average rate of 0.9%, while Pemex Refinación's will be more dynamic with an annual average growth rate of 6.0%.

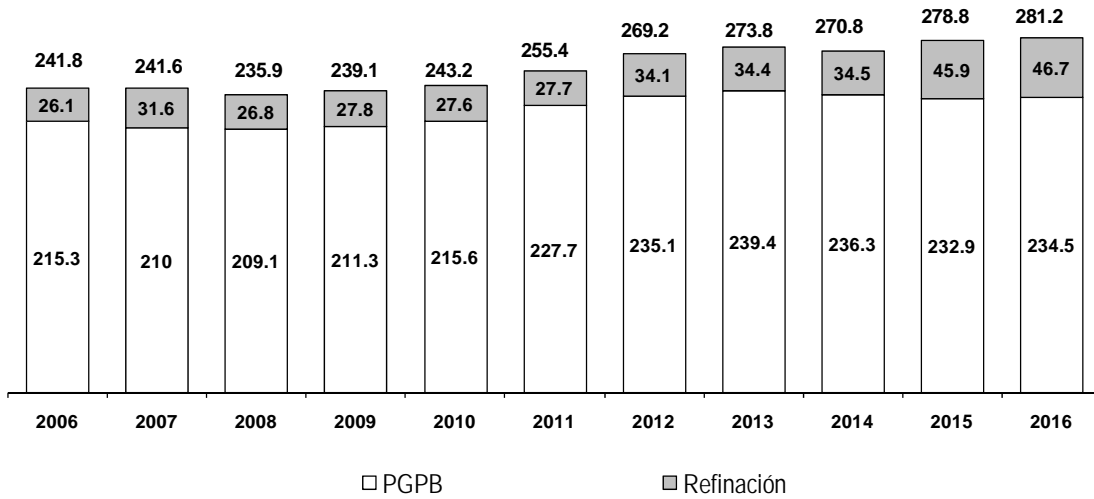
Chart 8
Agriculture/livestock sector's LPG demand by region, 2006-2016
(thousand barrels per day)

| Region | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|
| Total | 5.9 | 6.2 | 6.2 | 6.4 | 6.5 | 6.7 | 6.8 | 7.0 | 7.1 | 7.3 | 7.5 | 2.4 |
| Northwestern | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 1.9 |
| Northeastern | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 2.8 |
| Central-Western | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.6 | 1.6 |
| Central | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 |
| South-Southeastern | 0.8 | 1.0 | 1.1 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 5.8 |

Source: IMP, based on data from CRE, Pemex, Sener and private companies.



Graph 8
LPG's domestic production by Pemex branch 2006-2016
(thousand barrels per day)



Note: Does not include marginal production by PEP.

Source: Pemex Gas y Petroquímica Básica and Pemex Refinación

PGPB's LPG supply is closely related to the volume and type of wet gas received from PEP for processing. Depending on the volume of condensates and liquids contained in the gas, LPG production by PGPB is expected to rise by an annual average of 0.9% during the 2006-2016 period, decreasing its share in domestic LPG production from 89% in the first year to 83% by the end of the period (see Graph 8).

Through the processing and refining of crude oil, from 2006 to 2016 Pemex Refinación will increase its LPG flows at a rate of 6.0% per year, to reach a volume close to 47 tbd in the last year of the period. The future production of Pemex Refinación will depend on the normal operation of the National Refining System and on the execution of strategic projects to ensure the subsidiary's viability in the medium and long terms. These projects are the upgrades of the Minatitlán and Salina Cruz refineries, modernization of the lubricant train of the Salamanca refinery and the main maritime fleet, as well as the installation of coking trains (waste conversion units) at the Salamanca and Tula refineries.

In comparison with the LPG Outlook for 2006-2015, the current production scenario forecasts lower national availability of LPG for the medium and long terms, maintaining a similar growth rate (an annual 1.5% for the 10-year projection period). The causes of this decrease include the lower production of gas liquids and a lower estimate for the availability of condensates for PGPB.

The new reference scenario presents a slight decrease in LPG production in the short term, mainly due to the lower production of the Nuevo Pemex and Cangrejera GPC (Gas Processing Complex), though increase is expected in the medium and long term, from the incremental volume coming from the future wet gas production projects in the Río Bravo's Delta and the Southern Gulf of Mexico, thus necessary measures are already being taken by PEP and PGPB to guarantee the characteristics and scopes of these projects.

Interest by Pemex in the development of natural gas exploitation and processing projects in the Northeastern region of the Republic has driven the positioning of the Reynosa area during the last years. Through the coordinated action of PEP and PGPB, a growth strategy known as "Proyecto Integral Burgos" has been outlined, with the main objective of increasing the domestic supply of natural gas in that area. A larger volume of gas to be

processed is expected in the Northeastern region, and therefore additional cryogenic capacity and even sour gas sweetening units must be generated besides the programmed capacity, especially between 2007 and 2010.

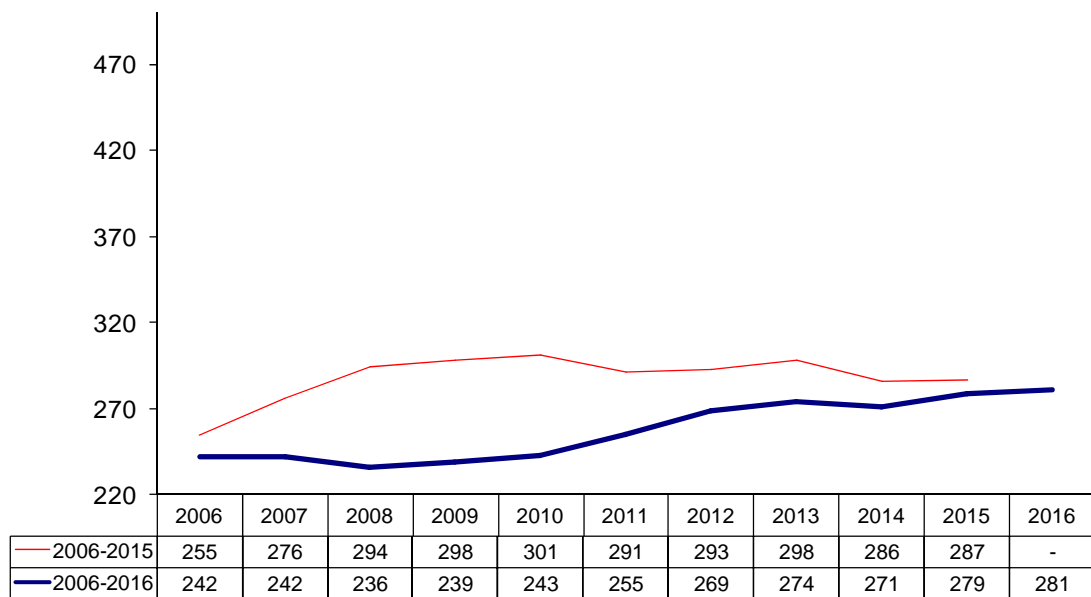
Chart 9
LPG's domestic production by Pemex branch, 2006-2016
(thousand barrels per day)

| Origin | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Total | 241.8 | 241.6 | 235.9 | 239.1 | 243.2 | 255.4 | 269.2 | 273.8 | 270.8 | 278.8 | 281.2 | 1.5 |
| PGPB | 215.3 | 210.0 | 209.1 | 211.3 | 215.6 | 227.7 | 235.1 | 239.4 | 236.3 | 232.9 | 234.5 | 0.9 |
| Refinación | 26.1 | 31.6 | 26.8 | 27.8 | 27.6 | 27.7 | 34.1 | 34.4 | 34.5 | 45.9 | 46.7 | 6.0 |
| Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |

*annual average growth rate 2006-2016

Source: IMP, based on data from Pemex, Sener and private companies.

Graph 9
Projections of LPG production, 2006-2015 and 2006-2016
(thousand barrels per day)



Source: Pemex Gas y Petroquímica Básica and Pemex Refinación

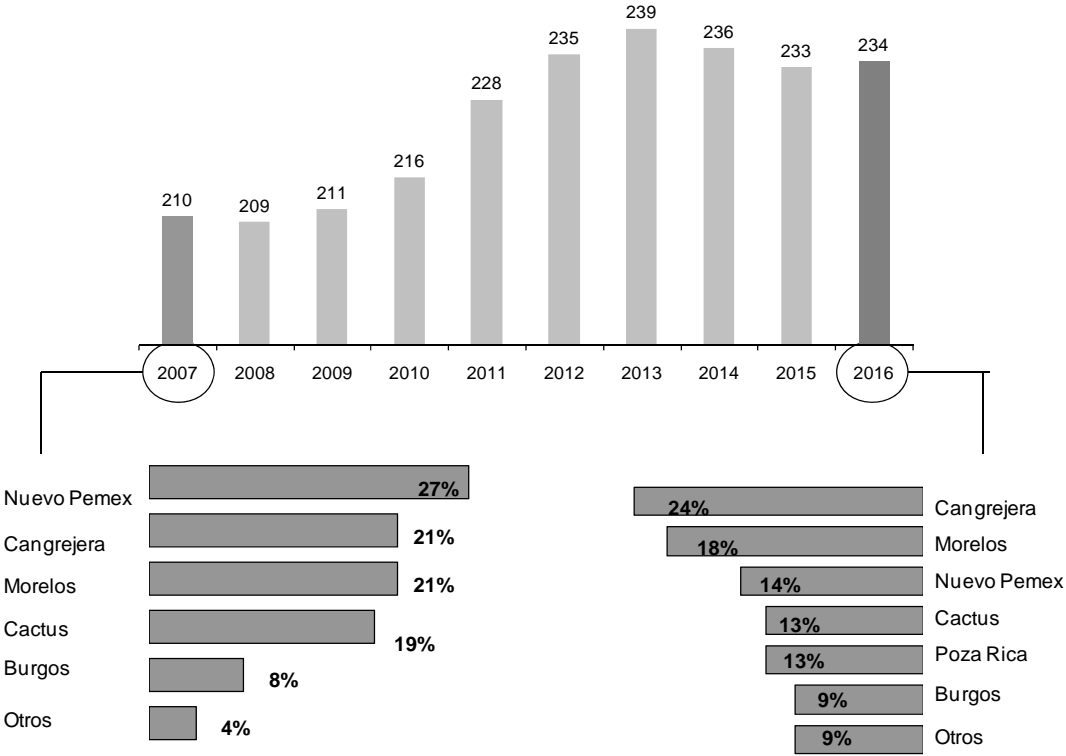
Considering the expected expansion rate of natural gas supply from PEP, the Burgos GPC was created. By increasing the installed capacity for natural gas processing, a larger volume of liquefiable gas is expected to be recovered and fractionated, implying the generation of a larger volume of products such as LPG. Within the future production of LPG by PGPB, the facilities in Poza Rica will also experience a relevant increase in LPG generation due to the boosting of gas exploration and extraction activities in Chicontepec. By 2009, the GPC in Reynosa is expected to stop operations, resulting in a concentration of production and processing activities in the Northeastern region at the Burgos GPC.

Regarding Pemex Refinación, the Tula refinery will concentrate LPG production in 2016, representing nearly 19%, followed by the Salina Cruz refinery with 15%. As a result of the planning models applied for the coming years supply, under a high scenario, Pemex Refinación simulated the opening of a new refinery by 2015. This refinery would be responsible for a new production capacity of almost 12.4 tbd, representing nearly 27% of the LPG production expected in 2016 by Pemex Refinación.

1.2.1 Investment requirements, 2007-2016

The investment program of PGPB for the period between 2008 and 2016 foresees an investment of 54.6 billion pesos (54 billion dollars) at 2007 prices to face the greatest challenges expected for the period, including the management of the branch company's assets according to the best practices of safety and environmental protection, the timely satisfaction of the demand of products traded by the company, the increase of processing capacity pursuant to the expectations of gas and condensate supply, the adaptation of transportation and distribution capacities and the availability of IT technologies to support the rest of primary processes. Under these assumptions, and regarding LPG, PGPB has programmed to invest 3.8 billion pesos (347.7 million dollars), a figure equivalent to 7.0% of its total investments.

Graph 10
PGPB's LPG production and share by Gas Processing Complex, 2007-2016
(thousand barrels per day)



Source: Pemex Gas y Petroquímica Básica.

Investment resources focused on the LPG industry respond to the strategy designed in this field, mainly oriented at maintaining operational excellence at distribution terminals and obtain the ISO-14000 certification, increasing the storage capacity of the Refrigerated Terminal of Pajaritos, complying with the comprehensive maintenance program for inter-center pipelines transporting petrochemicals, and restoring and modernizing pumping stations.

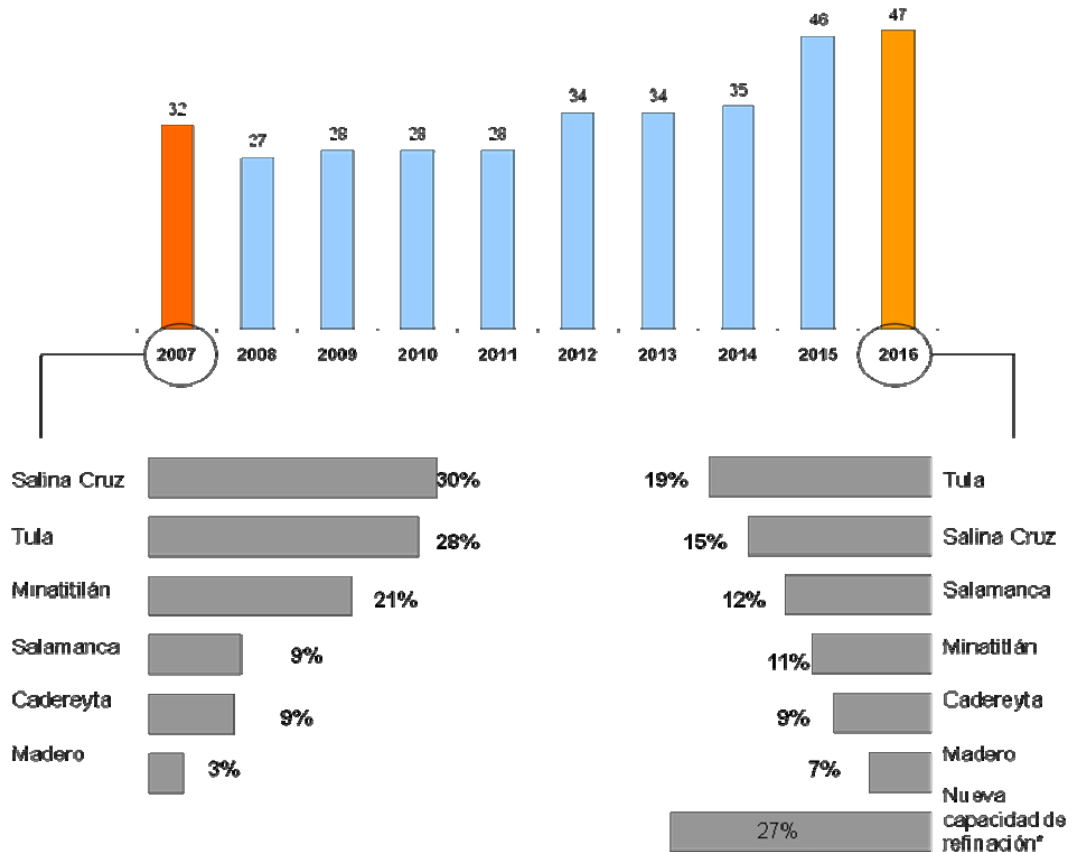
In order to enhance safety in the transportation of natural gas liquids, the following 3 new pipelines will be constructed in the Southeastern part of the country to transport C2+ and C3+:

- One 24" diameter C2+ pipeline, Nuevo Pemex-Cactus-Coatzacoalcos.
- One 16" diameter C3+ pipeline along 81 km, Ciudad Pemex-Cactus
- One 16" diameter C2+ pipeline along 70 km, Ciudad Pemex-Nuevo Pemex

With these global investment expectations, PGPB will be able to successfully face the market expectations regarding LPG in the short, medium and long term.

On the other hand, it is important to point out that in addition to these investments, PGPB also fosters the construction of a LPG pipeline from the Burgos GPC to the city of Monterrey, and one Distribution Terminal in the same city, allowing for the distribution, under the best safety practices, of LPG production coming from the wet sweet gas supply of the Burgos Basin and from Multiple Service Contracts processed at that GPC. This infrastructure is expected to start operations by the end of August 2007.

Graph 11
Pemex Refinación's LPG production and share by refinery, 2007-2016
(thousand barrels per day)



* Project under study.

Source: Pemex Gas y Petroquímica Básica.



1.3 Supply and demand Balance, 2006-2016

The combination of LPG supply and demand projections provides a probable vision of the market, pictured in the LPG's national balance.

The usefulness of LPG balance lies in making previsions and applying measures to guarantee the industry's efficient functioning and timely supply to consumers. It has two main components: fuel supply, composed by the domestic production of Pemex and by imports, and the demand of this energy source, comprising internal sales to all end-users, including the oil industry's consumption (self-consumption). Stock variations are also incorporated, integrating several concepts and allowing for the balance of supply and demand volumes.

This Outlook incorporates three scenarios for LPG demand (moderate, base and high) and two for supply (medium and high). The combination of supply and demand profiles generates six different domestic LPG balances.

The different profiles are explained with respect to the project Pemex's portfolio and to the assigned budget level. The estimation of these profiles also includes the probability of discovering reserves and the degree of uncertainty to the exact volume of extractable hydrocarbons.

The project portfolio complies with to the objectives of PEP's Business Plan and details the specific investment opportunities related to the exploitation of reserves and the prospective hydrocarbon resources in the country. The medium and high scenarios have been developed based on this portfolio.

The dynamics expected for the High Scenario would imply a greater availability of the energy source, and when relating it to the demand, it would reflect an LPG supply and therefore a lesser degree of dependence on external supplies.

In terms of volume, production at the end of the period will reach 290.5 tbd, representing an increase of 48.9 tbd with respect to 2007, the main reason being the investment project portfolio by PGPB and Refinación.

As for the origin of production, PGPB will contribute with 84% of product, from which little over 60% will correspond to the gas processing complexes of Cactus, Morelos and Cangrejera (with a share of 24%, 20% and 19% respectively). The greatest intensity in obtaining LPG will correspond to Poza Rica with an annual growth of 31.7%.

The National Refining System's operation together with its strategic projects will make Pemex Refinación contribute 16% of the availability of this fuel by 2017 (46.7 tbd), representing an annual growth of 4%.

Being a sub-product of several gas and oil refining processes, LPG's availability depends on the investment plans of PGPB and Refinación. Planned production plans are reflected by the high and medium scenarios.

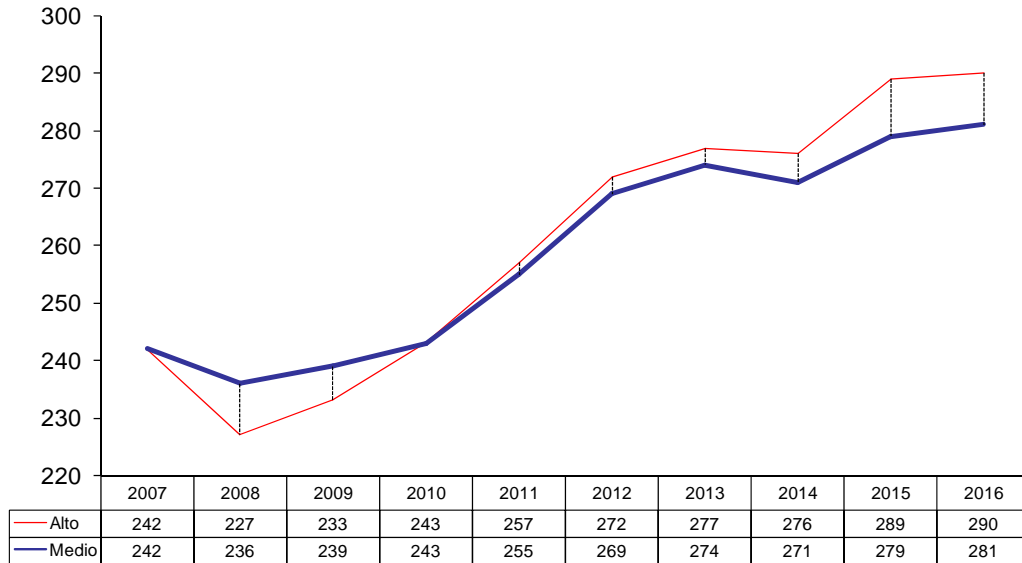
The difference between the medium and high scenarios lies in the forecasted production variations of PGPB. Processing centers that will increase LPG production from one scenario to another are: Matapionche, Cactus, and Morelos, increasing their production by 200%, 90% and 15% respectively, by the end of the period. This variation is compensated with decreases mainly by Nuevo Pemex (45%), Cangrejera (22%) and Altamira (20%).

Chart 10 shows the demand-supply balance of LPG for the next ten years. Around 81% will be supplied by the production of PGPB and Pemex Refinación. Import levels in turn will reach 63.2 tbd, providing the remaining 18% of the demand. Supply deficit will make imports continue despite an annual decrease rate of 1.9%.

The South-Southeastern region will be the main supplier of LPG, representing more than three quarters of domestic production (82%), followed to a lesser extent by the Northeastern (13%), Central and Central-Western regions (both with 5%).

The main region will be the Central region with 38%, followed by the Central-Western and South-Southeastern regions with 22% and 17%, respectively. The Northern regions of the country will jointly represent almost one fourth of the remaining demand.

Graph 12
Pemex's LPG production scenarios, 2007-2016
(thousand barrels per day)



Source: Pemex Gas y Petroquímica Básica and Pemex Refinación

Chart 10
LPG's national balance, 2006-2016
Base demand-Medium production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Origin | 318.5 | 316.6 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.2 | 334.3 | 339.4 | 344.4 | 0.8 |
| Domestic supply | 241.8 | 241.6 | 235.9 | 239.1 | 243.2 | 255.4 | 269.2 | 273.8 | 270.8 | 278.8 | 281.2 | 1.5 |
| Pemex Gas y Petroquímica Básica | 215.3 | 210.0 | 209.1 | 211.3 | 215.6 | 227.7 | 235.1 | 239.4 | 236.3 | 232.9 | 234.5 | 0.9 |
| Pemex Refinación | 26.1 | 31.6 | 26.8 | 27.8 | 27.6 | 27.7 | 34.1 | 34.4 | 34.5 | 45.9 | 46.7 | 6.0 |
| Pemex Petroquímica | 0.0 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Pemex Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Destination | 76.7 | 75.0 | 83.2 | 85.3 | 85.6 | 75.0 | 62.7 | 59.4 | 63.5 | 60.6 | 63.2 | -1.9 |
| From other regions | 313.3 | 319.0 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.2 | 334.3 | 339.4 | 344.4 | 0.9 |
| Domestic demand | 311.2 | 313.7 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.2 | 334.3 | 339.4 | 344.4 | 1.0 |
| Agriculture/livestock sector | 5.9 | 6.2 | 6.2 | 6.4 | 6.5 | 6.7 | 6.8 | 7.0 | 7.1 | 7.3 | 7.5 | 2.4 |
| Vehicle transportation sector | 34.3 | 32.5 | 32.3 | 31.8 | 31.4 | 31.0 | 30.6 | 30.3 | 29.7 | 29.1 | 28.5 | -1.8 |
| Industrial sector | 27.3 | 26.9 | 27.0 | 27.7 | 28.0 | 28.4 | 29.3 | 30.1 | 30.7 | 31.5 | 32.4 | 1.7 |
| Oil sector | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |
| Residential sector | 195.9 | 199.4 | 203.3 | 206.8 | 209.5 | 210.4 | 210.5 | 210.6 | 210.9 | 215.0 | 218.7 | 1.1 |
| Services sector | 42.6 | 42.8 | 42.8 | 43.4 | 43.9 | 44.5 | 45.3 | 45.9 | 46.4 | 47.1 | 48.1 | 1.2 |
| Export | 2.1 | 5.3 | - | - | - | - | - | - | - | - | - | n.a. |
| Inventory variation | 5.1 | -2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| To other regions | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.2 |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 11
Northwest region LPG balance, 2006-2016
Base demand-Medium production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Origin | 27.1 | 27.8 | 28.4 | 29.1 | 29.8 | 30.4 | 30.9 | 31.5 | 32.1 | 33.0 | 33.8 | 2.2 |
| Domestic | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Gas y Petroquímica Básica | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Refinación | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Petroquímica | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Exploración y Producción | - | - | - | - | - | - | - | - | - | - | - | - |
| Import | 21.1 | 21.1 | 15.7 | 18.6 | 19.3 | 15.2 | 12.6 | 12.7 | 12.7 | 13.0 | 13.2 | -4.6 |
| From other regions | 6.0 | 6.7 | 12.7 | 10.5 | 10.5 | 15.2 | 18.3 | 18.9 | 19.3 | 20.0 | 20.6 | 13.2 |
| Destination | 27.3 | 27.8 | 28.4 | 29.1 | 29.8 | 30.4 | 30.9 | 31.5 | 32.1 | 33.0 | 33.8 | 2.2 |
| Domestic demand | 26.7 | 27.8 | 28.4 | 29.1 | 29.8 | 30.4 | 30.9 | 31.5 | 32.1 | 33.0 | 33.8 | 2.4 |
| Agriculture/livestock sector | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 1.9 |
| Vehicle transportation sector | 3.9 | 4.0 | 4.0 | 3.9 | 3.9 | 3.8 | 3.8 | 3.7 | 3.7 | 3.6 | 3.5 | -1.1 |
| Industrial sector | 2.3 | 2.5 | 2.5 | 2.6 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.1 |
| Oil sector | - | - | - | - | - | - | - | - | - | - | - | - |
| Residential sector | 15.5 | 16.2 | 16.7 | 17.3 | 17.9 | 18.3 | 18.7 | 19.1 | 19.5 | 20.2 | 20.9 | 3.0 |
| Services sector | 4.3 | 4.4 | 4.5 | 4.6 | 4.6 | 4.8 | 4.9 | 5.0 | 5.1 | 5.2 | 5.4 | 2.3 |
| Export | - | - | - | - | - | - | - | - | - | - | - | - |
| To other regions | 0.5 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Inventory variation* | - | 0.2 | - | - | - | - | - | - | - | - | - | - |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 12
Northeast region LPG balance, 2006-2016
Base demand-Medium production Scenario

(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Origin | 59.8 | 63.1 | 70.4 | 68.6 | 69.7 | 67.7 | 64.5 | 64.5 | 64.0 | 64.2 | 65.9 | 1.0 |
| Domestic | 20.6 | 23.9 | 32.7 | 34.2 | 35.1 | 38.7 | 39.1 | 38.6 | 36.7 | 35.7 | 37.0 | 6.1 |
| Pemex Gas y Petroquímica Básica | 17.7 | 19.9 | 25.2 | 26.7 | 27.6 | 31.2 | 31.6 | 31.1 | 29.2 | 28.2 | 29.5 | 5.3 |
| Pemex Refinación | 2.9 | 4.0 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 10.1 |
| Pemex Petroquímica | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Exploración y Producción | - | - | - | - | - | - | - | - | - | - | - | - |
| Import | 39.3 | 39.2 | 37.7 | 34.4 | 34.6 | 29.0 | 25.3 | 25.9 | 27.3 | 28.5 | 28.8 | -3.0 |
| From other regions | - | - | - | - | - | - | - | - | - | - | - | - |
| Destination | 59.8 | 63.1 | 70.4 | 68.6 | 69.7 | 67.7 | 64.5 | 64.5 | 64.0 | 64.2 | 65.9 | 1.0 |
| Domestic demand | 44.4 | 44.9 | 44.6 | 44.6 | 44.3 | 44.0 | 43.8 | 43.6 | 43.4 | 43.7 | 44.0 | -0.1 |
| Agriculture/livestock sector | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 2.8 |
| Vehicle transportation sector | 7.7 | 7.8 | 7.7 | 7.6 | 7.5 | 7.4 | 7.3 | 7.3 | 7.1 | 7.0 | 6.8 | -1.1 |
| Industrial sector | 4.4 | 5.4 | 5.5 | 5.7 | 5.9 | 6.1 | 6.3 | 6.5 | 6.7 | 6.9 | 7.1 | 5.0 |
| Oil sector | - | - | - | - | - | - | - | - | - | - | - | - |
| Residential sector | 24.4 | 24.0 | 23.8 | 23.7 | 23.3 | 22.8 | 22.3 | 21.9 | 21.6 | 21.7 | 21.7 | -1.1 |
| Services sector | 7.0 | 6.5 | 6.3 | 6.4 | 6.3 | 6.4 | 6.5 | 6.6 | 6.6 | 6.7 | 6.9 | -0.1 |
| Export | - | - | - | - | - | - | - | - | - | - | - | - |
| To other regions | 15.4 | 18.1 | 25.7 | 24.0 | 25.4 | 23.7 | 20.7 | 20.9 | 20.6 | 20.5 | 21.9 | 3.6 |
| Inventory variation* | 0.0 | - | - | - | - | - | - | - | - | - | - | - |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 13**Central-Western region LPG balance, 2006-2016****Base demand-Medium production Scenario****(thousand barrels per day)**

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Origin | 70.1 | 70.2 | 71.4 | 72.5 | 73.4 | 74.0 | 74.3 | 74.5 | 74.6 | 75.6 | 76.5 | 0.9 |
| Domestic | 3.3 | 2.8 | 6.2 | 5.9 | 5.9 | 6.0 | 5.9 | 5.9 | 5.9 | 5.9 | 5.8 | 5.9 |
| Pemex Gas y Petroquímica Básica | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Refinación | 3.3 | 2.8 | 6.2 | 5.9 | 5.9 | 6.0 | 5.9 | 5.9 | 5.9 | 5.9 | 5.8 | 5.9 |
| Pemex Petroquímica | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Exploración y Producción | - | - | - | - | - | - | - | - | - | - | - | - |
| Import | 4.5 | 7.9 | 8.4 | 8.9 | 9.1 | 7.8 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 5.3 |
| From other regions | 62.4 | 59.5 | 56.8 | 57.7 | 58.4 | 60.3 | 60.9 | 61.1 | 61.1 | 62.2 | 63.2 | n.a. |
| Destination | 70.2 | 70.2 | 71.4 | 72.5 | 73.4 | 74.0 | 74.3 | 74.5 | 74.6 | 75.6 | 76.5 | 0.9 |
| Internal demand | 70.2 | 70.2 | 71.4 | 72.5 | 73.4 | 74.0 | 74.3 | 74.5 | 74.6 | 75.6 | 76.5 | 0.9 |
| Agriculture/livestock sector | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.5 | 2.6 | 1.6 |
| Vehicle transportation sector | 7.3 | 7.1 | 7.0 | 6.9 | 6.8 | 6.7 | 6.6 | 6.6 | 6.5 | 6.3 | 6.2 | -1.6 |
| Industrial sector | 3.7 | 3.6 | 3.7 | 3.8 | 3.9 | 4.0 | 4.2 | 4.3 | 4.4 | 4.6 | 4.7 | 2.4 |
| Oil sector | - | - | - | - | - | - | - | - | - | - | - | - |
| Residential sector | 50.0 | 50.2 | 51.4 | 52.5 | 53.3 | 53.7 | 53.8 | 53.8 | 53.8 | 54.6 | 55.4 | 1.0 |
| Services sector | 6.9 | 7.0 | 7.0 | 7.1 | 7.1 | 7.2 | 7.3 | 7.4 | 7.5 | 7.5 | 7.7 | 1.0 |
| Export | - | - | - | - | - | - | - | - | - | - | - | - |
| To other regions | - | - | - | - | - | - | - | - | - | - | - | - |
| Inventory variation* | 0.0 | - | - | - | - | - | - | - | - | - | - | - |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 14**Central region LPG balance, 2006-2016**

Base demand-Medium production Scenario (thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Origin | 124.7 | 124.4 | 125.2 | 126.7 | 127.8 | 127.9 | 127.9 | 127.7 | 127.5 | 129.0 | 130.4 | 0.4 |
| Domestic | 8.3 | 8.8 | 3.0 | 3.2 | 3.5 | 3.5 | 10.0 | 9.0 | 9.1 | 8.4 | 9.0 | 0.8 |
| Pemex Gas y Petroquímica Básica | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Refinación | 8.3 | 8.8 | 3.0 | 3.2 | 3.5 | 3.5 | 10.0 | 9.0 | 9.1 | 8.4 | 9.0 | 0.8 |
| Pemex Petroquímica | - | - | - | - | - | - | - | - | - | - | - | - |
| Pemex Exploración y Producción | - | - | - | - | - | - | - | - | - | - | - | - |
| Import | - | - | - | - | - | - | - | - | - | - | - | - |
| From other regions | 116.4 | 115.6 | 122.2 | 123.5 | 124.2 | 124.3 | 117.9 | 118.7 | 118.5 | 120.6 | 121.4 | 0.4 |
| Destination | 124.6 | 124.4 | 125.2 | 126.7 | 127.8 | 127.9 | 127.9 | 127.7 | 127.5 | 129.0 | 130.4 | 0.5 |
| Domestic demand | 124.6 | 124.4 | 125.2 | 126.7 | 127.8 | 127.9 | 127.9 | 127.7 | 127.5 | 129.0 | 130.4 | 0.5 |
| Agriculture/livestock sector | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 |
| Vehicle transportation sector | 9.2 | 9.2 | 9.1 | 9.0 | 8.9 | 8.8 | 8.6 | 8.6 | 8.4 | 8.2 | 8.0 | -1.4 |
| Industrial sector | 14.1 | 13.8 | 13.5 | 13.9 | 14.2 | 14.5 | 14.9 | 15.2 | 15.3 | 15.7 | 16.1 | 1.4 |
| Oil sector | - | - | - | - | - | - | - | - | - | - | - | - |
| Residential sector | 81.0 | 80.7 | 81.9 | 82.8 | 83.4 | 83.1 | 82.5 | 81.9 | 81.5 | 82.6 | 83.4 | 0.3 |
| Services sector | 19.3 | 19.6 | 19.6 | 20.0 | 20.2 | 20.4 | 20.7 | 20.9 | 21.0 | 21.3 | 21.6 | 1.2 |
| Export | - | - | - | - | - | - | - | - | - | - | - | - |
| To other regions | - | - | - | - | - | - | - | - | - | - | - | - |
| Inventory variation* | 0.1 | - | - | - | - | - | - | - | - | - | - | - |
| Note: Volume of propane and butane consumed as raw material included in the industrial sector. | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.2 |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 15
South-southeast region LPG balance, 2006-2016
Base demand-Medium production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Origin | 221.4 | 212.9 | 215.4 | 219.1 | 221.3 | 230.2 | 231.4 | 233.5 | 235.0 | 240.4 | 243.0 | 0.9 |
| Domestic | 209.6 | 206.1 | 194.0 | 195.8 | 198.7 | 207.2 | 214.2 | 220.3 | 219.1 | 228.8 | 229.3 | 0.9 |
| Pemex Gas y Petroquímica Básica | 197.6 | 190.1 | 183.9 | 184.6 | 188.0 | 196.5 | 203.5 | 208.3 | 207.1 | 204.7 | 204.9 | 0.4 |
| Pemex Refinación | 11.7 | 16.0 | 10.1 | 11.1 | 10.7 | 10.7 | 10.7 | 12.0 | 12.0 | 24.1 | 24.4 | 7.7 |
| Pemex Petroquímica | 0.0 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Pemex Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Import | 11.8 | 6.8 | 21.4 | 23.4 | 22.6 | 22.9 | 17.2 | 13.3 | 15.9 | 11.6 | 13.7 | 1.5 |
| From other regions | - | - | - | - | - | - | - | - | - | - | - | - |
| Destination | 216.2 | 215.3 | 215.4 | 219.1 | 221.3 | 230.2 | 231.4 | 233.5 | 235.0 | 240.4 | 243.0 | 1.2 |
| Domestic demand | 45.3 | 46.4 | 49.5 | 51.5 | 53.5 | 54.1 | 55.1 | 55.8 | 56.7 | 58.1 | 59.7 | 2.8 |
| Agriculture/livestock sector | 0.8 | 1.0 | 1.1 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 5.8 |
| Vehicle transportation sector | 6.2 | 4.4 | 4.4 | 4.3 | 4.3 | 4.2 | 4.2 | 4.1 | 4.1 | 4.0 | 3.9 | -4.6 |
| Industrial sector | 2.8 | 1.6 | 1.7 | 1.7 | 1.4 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.3 | -7.7 |
| Oil sector | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |
| Residential sector | 25.1 | 28.2 | 29.4 | 30.6 | 31.7 | 32.4 | 33.2 | 33.8 | 34.5 | 35.8 | 37.3 | 4.1 |
| Services sector | 5.2 | 5.3 | 5.3 | 5.5 | 5.6 | 5.7 | 5.9 | 6.0 | 6.2 | 6.3 | 6.5 | 2.3 |
| Export | 2.1 | 5.3 | - | - | - | - | - | - | - | - | - | n.a. |
| To other regions | 168.8 | 163.6 | 165.9 | 167.7 | 167.7 | 176.0 | 176.3 | 177.7 | 178.3 | 182.3 | 183.3 | 0.8 |
| Inventory variation* | 5.2 | -2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

1.3.1 Domestic LPG balance's alternative scenarios , 2006-2016

The following section introduces different combinations of LPG supply and demand scenarios in order to represent alternatives in production supply and their effect upon the volume demanded for the 2006-2017 period. For this purpose, moderate and high growth scenarios are combined, representing self-sufficiency or external dependence, depending on the case of fuel demand.

Base demand – High production scenario

Though this scenario reflects a greater availability of LPG, imports decrease at an annual rate of 3.4%, decreasing by 22.7 tbd by the end of the period. Regarding production, most of the supply will be provided by PGPB, representing nearly 84%, while the rest will be supplied by the refining sector.

Chart 16
LPG's national balance, 2006-2016
Base demand-High production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Origin | 318.5 | 316.6 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.1 | 334.3 | 339.4 | 344.5 | 0.8 |
| Internal supply | 241.8 | 241.6 | 227.4 | 232.8 | 242.7 | 257.2 | 271.9 | 277.1 | 276.0 | 288.7 | 290.5 | 1.9 |
| Pemex Gas y Petroquímica Básica | 215.3 | 210.0 | 200.6 | 205.0 | 215.1 | 229.5 | 237.8 | 242.7 | 241.4 | 242.8 | 243.8 | 1.2 |
| Pemex Refinación | 26.1 | 31.6 | 26.8 | 27.8 | 27.6 | 27.7 | 34.1 | 34.4 | 34.5 | 45.9 | 46.7 | 6.0 |
| Pemex Petroquímica | 0.0 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Pemex Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Import | 76.7 | 75.0 | 91.8 | 91.6 | 86.1 | 73.2 | 60.0 | 56.1 | 58.3 | 50.6 | 54.0 | -3.4 |
| Destination | 313.3 | 319.0 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.1 | 334.3 | 339.4 | 344.5 | 1.0 |
| Domestic demand | 311.2 | 313.7 | 319.2 | 324.4 | 328.8 | 330.4 | 331.9 | 333.1 | 334.3 | 339.4 | 344.4 | 1.0 |
| Agriculture/livestock sector | 5.9 | 6.2 | 6.2 | 6.4 | 6.5 | 6.7 | 6.8 | 7.0 | 7.1 | 7.3 | 7.5 | 2.4 |
| Vehicle transportation sector | 34.3 | 32.5 | 32.3 | 31.8 | 31.4 | 31.0 | 30.6 | 30.3 | 29.7 | 29.1 | 28.5 | -1.8 |
| Industrial sector | 27.3 | 26.9 | 27.0 | 27.7 | 28.0 | 28.4 | 29.3 | 30.1 | 30.7 | 31.5 | 32.4 | 1.7 |
| Oil sector | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |
| Residential sector | 195.9 | 199.4 | 203.3 | 206.8 | 209.5 | 210.4 | 210.5 | 210.6 | 210.9 | 215.0 | 218.7 | 1.1 |
| Services sector | 42.6 | 42.8 | 42.8 | 43.4 | 43.9 | 44.5 | 45.3 | 45.9 | 46.4 | 47.1 | 48.1 | 1.2 |
| Export | 2.1 | 5.3 | - | - | - | - | - | - | - | - | 0.1 | n.a. |
| Inventory variation* | 5.1 | -2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | |
| Note: Volume of propane and butane consumed as raw material included in the industrial sector. | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.2 |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Moderate demand – Medium production scenario

Domestic balance on this scenario shows that LPG production will contribute 86% of the total supply, while the remaining percentage will be covered by fuel imports. LPG demand in turn reflects an increase of 0.5% reaching 327.8 tbd.

Lower growth in demand would mainly have an impact on the consumption of the vehicle transportation sector, expected to decrease by 2% per year. The consumption of the residential sector in turn will increase by 0.7%, as a result of the lower elasticity of expected income.

Chart 17
LPG's national balance, 2006-2016
Moderate demand-Medium production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Origin | 318.5 | 316.6 | 316.3 | 319.8 | 322.5 | 322.5 | 322.3 | 321.9 | 321.3 | 324.7 | 328.2 | 0.3 |
| Internal supply | 241.8 | 241.6 | 235.9 | 239.1 | 243.2 | 255.4 | 269.2 | 273.8 | 270.8 | 278.8 | 281.2 | 1.5 |
| Pemex Gas y Petroquímica Básica | 215.3 | 210.0 | 209.1 | 211.3 | 215.6 | 227.7 | 235.1 | 239.4 | 236.3 | 232.9 | 234.5 | 0.9 |
| Pemex Refinación | 26.1 | 31.6 | 26.8 | 27.8 | 27.6 | 27.7 | 34.1 | 34.4 | 34.5 | 45.9 | 46.7 | 6.0 |
| Pemex Petroquímica | 0.0 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Pemex Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Import | 76.7 | 75.0 | 80.4 | 80.7 | 79.3 | 67.0 | 53.1 | 48.1 | 50.5 | 45.9 | 47.0 | -4.8 |
| Destination | 313.3 | 317.8 | 316.3 | 319.8 | 322.5 | 322.5 | 322.3 | 321.9 | 321.3 | 324.7 | 328.2 | 0.5 |
| Domestic demand | 311.2 | 312.5 | 316.3 | 319.8 | 322.5 | 322.5 | 322.3 | 321.9 | 321.3 | 324.6 | 327.8 | 0.5 |
| Agriculture/livestock sector | 5.9 | 6.1 | 6.2 | 6.3 | 6.4 | 6.5 | 6.6 | 6.8 | 6.8 | 6.9 | 7.1 | 1.9 |
| Vehicle transportation sector | 34.3 | 32.5 | 32.2 | 31.7 | 31.2 | 30.8 | 30.3 | 29.9 | 29.3 | 28.7 | 28.0 | -2.0 |
| Industrial sector | 27.3 | 26.6 | 26.4 | 26.8 | 26.9 | 27.0 | 27.6 | 28.0 | 28.3 | 28.8 | 29.2 | 0.7 |
| Oil sector | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |
| Residential sector | 195.9 | 198.9 | 201.8 | 204.4 | 206.1 | 206.1 | 205.2 | 204.4 | 203.9 | 207.0 | 209.7 | 0.7 |
| Services sector | 42.6 | 42.5 | 42.1 | 42.4 | 42.5 | 42.7 | 43.2 | 43.4 | 43.6 | 43.9 | 44.4 | 0.4 |
| Export | 2.1 | 5.3 | - | - | - | - | - | - | - | 0.0 | 0.3 | n.a. |
| Inventory variation* | 5.1 | -1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 |
| Note: Volume of propane and butane consumed as raw material included in the industrial sector. | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.2 |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Moderate demand – High production scenario

This scenario combines the highest supply available with the lowest market requirements of the demand by sectors. Imports would represent the lowest contribution level with 40.3 tbd by the end of the period and an annual rate of decrease of 6.2%.

If this combination prevails, production would reach 290.5 tbd in 2016 with a constant annual growth level of 1.9%. In view of the increasing availability of this fuel and lower demand, a foreign trade surplus would be created, thus exports would reach 2.9 tbd by the end of the period.

Product of a macroeconomic scenario considering an annual growth rate of 2.4%, demand will reach 327.8 tbd by the end of the period. Market trends, driven by residential sector demand, will reach a moderate annual rate of 0.5%.

Chart 18
LPG's national balance, 2006-2016
Moderate demand-High production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Origin | 318.5 | 316.6 | 316.3 | 319.8 | 322.5 | 322.5 | 322.3 | 322.0 | 321.4 | 326.7 | 330.8 | 0.4 |
| Internal supply | 241.8 | 241.6 | 227.4 | 232.8 | 242.7 | 257.2 | 271.9 | 277.1 | 276.0 | 288.7 | 290.5 | 1.9 |
| Pemex Gas y Petroquímica Básica | 215.3 | 210.0 | 200.6 | 205.0 | 215.1 | 229.5 | 237.8 | 242.7 | 241.4 | 242.8 | 243.8 | 1.2 |
| Pemex Refinación | 26.1 | 31.6 | 26.8 | 27.8 | 27.6 | 27.7 | 34.1 | 34.4 | 34.5 | 45.9 | 46.7 | 6.0 |
| Pemex Petroquímica | 0.0 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Pemex Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Import | 76.7 | 75.0 | 88.9 | 87.0 | 79.8 | 65.3 | 50.4 | 44.9 | 45.4 | 38.0 | 40.3 | -6.2 |
| Destination | 313.3 | 317.8 | 316.3 | 319.8 | 322.5 | 322.5 | 322.3 | 322.0 | 321.4 | 326.7 | 330.8 | 0.5 |
| Domestic demand | 311.2 | 312.5 | 316.3 | 319.8 | 322.5 | 322.5 | 322.3 | 321.9 | 321.3 | 324.6 | 327.8 | 0.5 |
| Agriculture/livestock sector | 5.9 | 6.1 | 6.2 | 6.3 | 6.4 | 6.5 | 6.6 | 6.8 | 6.8 | 6.9 | 7.1 | 1.9 |
| Vehicle transportation sector | 34.3 | 32.5 | 32.2 | 31.7 | 31.2 | 30.8 | 30.3 | 29.9 | 29.3 | 28.7 | 28.0 | -2.0 |
| Industrial sector | 27.3 | 26.6 | 26.4 | 26.8 | 26.9 | 27.0 | 27.6 | 28.0 | 28.3 | 28.8 | 29.2 | 0.7 |
| Oil sector | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |
| Residential sector | 195.9 | 198.9 | 201.8 | 204.4 | 206.1 | 206.1 | 205.2 | 204.4 | 203.9 | 207.0 | 209.7 | 0.7 |
| Services sector | 42.6 | 42.5 | 42.1 | 42.4 | 42.5 | 42.7 | 43.2 | 43.4 | 43.6 | 43.9 | 44.4 | 0.4 |
| Export | 2.1 | 5.3 | - | - | - | - | - | 0.1 | 0.0 | 2.1 | 2.9 | 3.5 |
| Inventory variation* | 5.1 | -1.2 | 0.0 | - | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Note: Volume of propane and butane consumed as raw material included in the industrial sector. | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.2 |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

High demand – Medium production scenario

This balance shows lower LPG availability faced with a higher demand than in the base scenario. The dynamism of the market is supported by a greater economic growth; representing an annual average rate of 4.1%. This scenario will require higher import requirements when compared to other scenarios, representing one fifth of supply (20%).

Domestic LPG demand will grow at an annual rate of 1.3%, reaching 352.5 tbd by the end of the period, mainly driven by the consumption of the residential sector. Imports in turn would represent 71.3 tbd in 2016, while production will reach 281.2 tbd of the total of supply.

Chart 19
LPG's national balance, 2006-2016
High demand-Medium production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | aagr 2006-2016 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| Origin | 318.5 | 316.6 | 320.5 | 326.5 | 331.7 | 334.2 | 336.5 | 338.5 | 340.5 | 346.5 | 352.5 | 1.0 |
| Internal supply | 241.8 | 241.6 | 235.9 | 239.1 | 243.2 | 255.4 | 269.2 | 273.8 | 270.8 | 278.8 | 281.2 | 1.5 |
| Pemex Gas y Petroquímica Básica | 215.3 | 210.0 | 209.1 | 211.3 | 215.6 | 227.7 | 235.1 | 239.4 | 236.3 | 232.9 | 234.5 | 0.9 |
| Pemex Refinación | 26.1 | 31.6 | 26.8 | 27.8 | 27.6 | 27.7 | 34.1 | 34.4 | 34.5 | 45.9 | 46.7 | 6.0 |
| Pemex Petroquímica | 0.0 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Pemex Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Import | 76.7 | 75.0 | 84.6 | 87.4 | 88.5 | 78.7 | 67.2 | 64.8 | 69.7 | 67.7 | 71.3 | -0.7 |
| Destination | 313.3 | 319.5 | 320.5 | 326.5 | 331.7 | 334.2 | 336.5 | 338.5 | 340.5 | 346.5 | 352.5 | 1.2 |
| Domestic demand | 311.2 | 314.2 | 320.5 | 326.5 | 331.7 | 334.2 | 336.5 | 338.5 | 340.5 | 346.5 | 352.5 | 1.3 |
| Agriculture/livestock sector | 5.9 | 6.2 | 6.3 | 6.5 | 6.6 | 6.7 | 6.9 | 7.1 | 7.2 | 7.4 | 7.6 | 2.6 |
| Vehicle transportation sector | 34.3 | 32.5 | 32.3 | 31.9 | 31.5 | 31.1 | 30.7 | 30.4 | 29.9 | 29.3 | 28.7 | -1.8 |
| Industrial sector | 27.3 | 27.0 | 27.2 | 28.1 | 28.5 | 29.1 | 30.1 | 31.0 | 31.8 | 32.9 | 33.9 | 2.2 |
| Oil sector | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |
| Residential sector | 195.9 | 199.6 | 203.9 | 207.8 | 211.0 | 212.3 | 212.7 | 213.2 | 213.9 | 218.4 | 222.5 | 1.3 |
| Services sector | 42.6 | 43.0 | 43.2 | 44.1 | 44.8 | 45.6 | 46.6 | 47.4 | 48.3 | 49.2 | 50.5 | 1.7 |
| Export | 2.1 | 5.3 | - | - | - | - | - | - | - | - | - | n.a. |
| Inventory variation* | 5.1 | -2.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Note: Volume of propane and butane consumed as raw material included in the industrial sector. | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.2 |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

High demand – High production scenario

This scenario displays an increased availability of LPG as well as a larger demand to cover the needs of the residential and services sectors.

Total supply will reach 352.5 tbd by the end of the period; exceeding the 2006 figure by 34 tbd. On this high scenario, production by PGPB will represent 69% of the total of supply.

As opposed to increased product availability, demand will grow at an annual rate of 1.3%, resulting from sustained growth in almost all economic sectors. The highest of them represents the oil sector's demand with a growth rate of 6.1%, followed by the agriculture/livestock and the industrial sectors with 2.6% and 2.2%, respectively. In the case of the larger LPG-demanding sectors, the services sector will increase by 1.7% and the residential sector by 1.3%. Trends expected on the vehicle transportation market will make demand decrease at an annual rate of 1.8%.

Chart 20
LPG's national balance, 2006-2016
High demand-High production Scenario
(thousand barrels per day)

| Concept | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | agr 2006-2016 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------------|
| Origin | 318.5 | 316.6 | 320.5 | 326.5 | 331.7 | 334.2 | 336.5 | 338.5 | 340.5 | 346.5 | 352.5 | 1.0 |
| Internal supply | 241.8 | 241.6 | 227.4 | 232.8 | 242.7 | 257.2 | 271.9 | 277.1 | 276.0 | 288.7 | 290.5 | 1.9 |
| Pemex Gas y Petroquímica Básica | 215.3 | 210.0 | 200.6 | 205.0 | 215.1 | 229.5 | 237.8 | 242.7 | 241.4 | 242.8 | 243.8 | 1.2 |
| Pemex Refinación | 26.1 | 31.6 | 26.8 | 27.8 | 27.6 | 27.7 | 34.1 | 34.4 | 34.5 | 45.9 | 46.7 | 6.0 |
| Pemex Petroquímica | 0.0 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Pemex Exploración y Producción | 0.3 | - | - | - | - | - | - | - | - | - | - | n.a. |
| Import | 76.7 | 75.0 | 93.1 | 93.7 | 89.0 | 76.9 | 64.6 | 61.5 | 64.5 | 57.8 | 62.0 | -2.1 |
| Destination | 313.3 | 319.5 | 320.5 | 326.5 | 331.7 | 334.2 | 336.5 | 338.5 | 340.5 | 346.5 | 352.5 | 1.2 |
| Domestic demand | 311.2 | 314.2 | 320.5 | 326.5 | 331.7 | 334.2 | 336.5 | 338.5 | 340.5 | 346.5 | 352.5 | 1.3 |
| Agriculture/livestock sector | 5.9 | 6.2 | 6.3 | 6.5 | 6.6 | 6.7 | 6.9 | 7.1 | 7.2 | 7.4 | 7.6 | 2.6 |
| Vehicle transportation sector | 34.3 | 32.5 | 32.3 | 31.9 | 31.5 | 31.1 | 30.7 | 30.4 | 29.9 | 29.3 | 28.7 | -1.8 |
| Industrial sector | 27.3 | 27.0 | 27.2 | 28.1 | 28.5 | 29.1 | 30.1 | 31.0 | 31.8 | 32.9 | 33.9 | 2.2 |
| Oil sector | 5.2 | 5.9 | 7.6 | 8.2 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 |
| Residential sector | 195.9 | 199.6 | 203.9 | 207.8 | 211.0 | 212.3 | 212.7 | 213.2 | 213.9 | 218.4 | 222.5 | 1.3 |
| Services sector | 42.6 | 43.0 | 43.2 | 44.1 | 44.8 | 45.6 | 46.6 | 47.4 | 48.3 | 49.2 | 50.5 | 1.7 |
| Export | 2.1 | 5.3 | - | - | - | - | - | - | - | - | - | n.a. |
| Inventory variation* | 5.1 | -2.9 | 0.0 | 0.0 | - | - | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 |
| Note: Volume of propane and butane consumed as raw material included in the industrial sector. | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 1.2 |

n.a.: does not apply

* Includes statistical difference, pipeline packing and ships in transit

Source: IMP, based on data from CRE, Pemex, Sener and private companies.

Chart 21

LPG's domestic sales by region and state, 2006-2016
(thousand barrels per day)

| Region / State | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | tmca 2006- |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Domestic | 306.0 | 307.8 | 311.6 | 316.2 | 319.4 | 321.0 | 322.5 | 323.8 | 324.9 | 330.0 | 335.0 | 0.9 |
| Northwest | 26.7 | 27.8 | 28.4 | 29.1 | 29.8 | 30.4 | 30.9 | 31.5 | 32.1 | 33.0 | 33.8 | 2.4 |
| Baja California | 11.1 | 11.4 | 11.7 | 12.1 | 12.4 | 12.7 | 12.9 | 13.2 | 13.4 | 13.8 | 14.2 | 2.5 |
| Baja California Sur | 1.8 | 1.8 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.2 | 2.2 | 2.2 |
| Sinaloa | 6.4 | 6.7 | 6.8 | 7.0 | 7.1 | 7.2 | 7.4 | 7.5 | 7.6 | 7.8 | 7.9 | 2.2 |
| Sonora | 7.5 | 7.8 | 8.0 | 8.1 | 8.3 | 8.5 | 8.6 | 8.8 | 8.9 | 9.2 | 9.4 | 2.3 |
| Northeast | 44.4 | 44.9 | 44.6 | 44.6 | 44.3 | 44.0 | 43.8 | 43.6 | 43.4 | 43.7 | 44.0 | -0.1 |
| Coahuila | 9.2 | 9.1 | 9.1 | 9.2 | 9.2 | 9.2 | 9.2 | 9.3 | 9.3 | 9.4 | 9.5 | 0.3 |
| Chihuahua | 12.3 | 12.1 | 11.9 | 11.6 | 11.4 | 11.1 | 10.9 | 10.7 | 10.5 | 10.5 | 10.4 | -1.6 |
| Durango | 3.6 | 4.1 | 4.2 | 4.3 | 4.3 | 4.4 | 4.4 | 4.5 | 4.5 | 4.6 | 4.7 | 2.8 |
| Nuevo León | 10.7 | 10.9 | 10.7 | 10.6 | 10.5 | 10.4 | 10.4 | 10.3 | 10.2 | 10.2 | 10.3 | -0.4 |
| Tamaulipas | 8.8 | 8.7 | 8.8 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 9.0 | 9.1 | 0.3 |
| Central-West | 70.2 | 70.2 | 71.4 | 72.5 | 73.4 | 74.0 | 74.3 | 74.5 | 74.6 | 75.6 | 76.5 | 0.9 |
| Aguascalientes | 3.5 | 3.5 | 3.6 | 3.6 | 3.5 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 0.3 |
| Colima | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.7 |
| Guanajuato | 13.7 | 13.4 | 13.7 | 13.9 | 14.0 | 14.2 | 14.2 | 14.3 | 14.3 | 14.6 | 14.8 | 0.8 |
| Jalisco | 23.9 | 24.1 | 24.5 | 24.9 | 25.1 | 25.1 | 25.0 | 24.8 | 24.5 | 24.6 | 24.7 | 0.3 |
| Michoacán | 11.4 | 11.4 | 11.7 | 12.0 | 12.2 | 12.5 | 12.6 | 12.8 | 12.9 | 13.2 | 13.5 | 1.7 |
| Nayarit | 2.4 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 1.5 |
| Querétaro | 3.8 | 4.0 | 4.0 | 4.0 | 4.1 | 4.1 | 4.1 | 4.2 | 4.2 | 4.3 | 4.3 | 1.2 |
| San Luis Potosí | 5.4 | 5.3 | 5.3 | 5.3 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.5 | 5.6 | 0.4 |
| Zacatecas | 4.5 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 5.0 | 5.1 | 5.1 | 5.3 | 5.4 | 1.8 |
| Central | 124.6 | 124.4 | 125.2 | 126.7 | 127.8 | 127.9 | 127.9 | 127.7 | 127.5 | 129.0 | 130.4 | 0.5 |
| Distrito Federal | 9.1 | 31.2 | 31.8 | 32.0 | 32.1 | 31.9 | 31.5 | 31.2 | 30.9 | 31.1 | 31.3 | 13.1 |
| Hidalgo | 37.1 | 13.7 | 13.7 | 13.9 | 14.1 | 14.2 | 14.3 | 14.4 | 14.4 | 14.5 | 14.7 | -8.8 |
| México | 56.1 | 56.9 | 57.1 | 57.9 | 58.5 | 58.6 | 58.8 | 58.9 | 58.9 | 59.7 | 60.5 | 0.7 |
| Morelos | 2.3 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.6 | 2.6 | 1.1 |
| Puebla | 15.2 | 15.1 | 15.2 | 15.3 | 15.4 | 15.4 | 15.5 | 15.5 | 15.5 | 15.7 | 15.9 | 0.5 |
| Tlaxcala | 4.8 | 5.0 | 5.0 | 5.1 | 5.2 | 5.2 | 5.2 | 5.3 | 5.3 | 5.4 | 5.5 | 1.2 |
| South-Southeast | 40.1 | 40.5 | 42.0 | 43.3 | 44.2 | 44.8 | 45.7 | 46.4 | 47.3 | 48.7 | 50.4 | 2.3 |
| Campeche | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 2.1 |
| Chiapas | 5.3 | 5.5 | 5.8 | 6.0 | 6.1 | 6.1 | 6.2 | 6.3 | 6.4 | 6.6 | 6.8 | 2.4 |
| Guerrero | 3.7 | 3.8 | 3.9 | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 | 4.9 | 2.8 |
| Oaxaca | 4.3 | 4.4 | 4.5 | 4.7 | 4.7 | 4.8 | 4.9 | 5.0 | 5.1 | 5.3 | 5.4 | 2.3 |
| Quintana Roo | 2.5 | 2.4 | 2.5 | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.9 | 3.0 | 3.1 | 2.2 |
| Tabasco | 4.1 | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 4.5 | 4.6 | 4.7 | 4.8 | 4.9 | 1.9 |
| Veracruz | 15.5 | 15.7 | 16.2 | 16.7 | 17.1 | 17.3 | 17.7 | 18.0 | 18.3 | 18.8 | 19.5 | 2.3 |
| Yucatán | 3.7 | 3.8 | 3.9 | 4.0 | 4.1 | 4.1 | 4.2 | 4.2 | 4.3 | 4.4 | 4.6 | 2.0 |

Does not include self-consumption by Pemex.

Includes raw material.

Source: IMP, based on data from Pemex Gas y Petroquímica Básica and Sener.