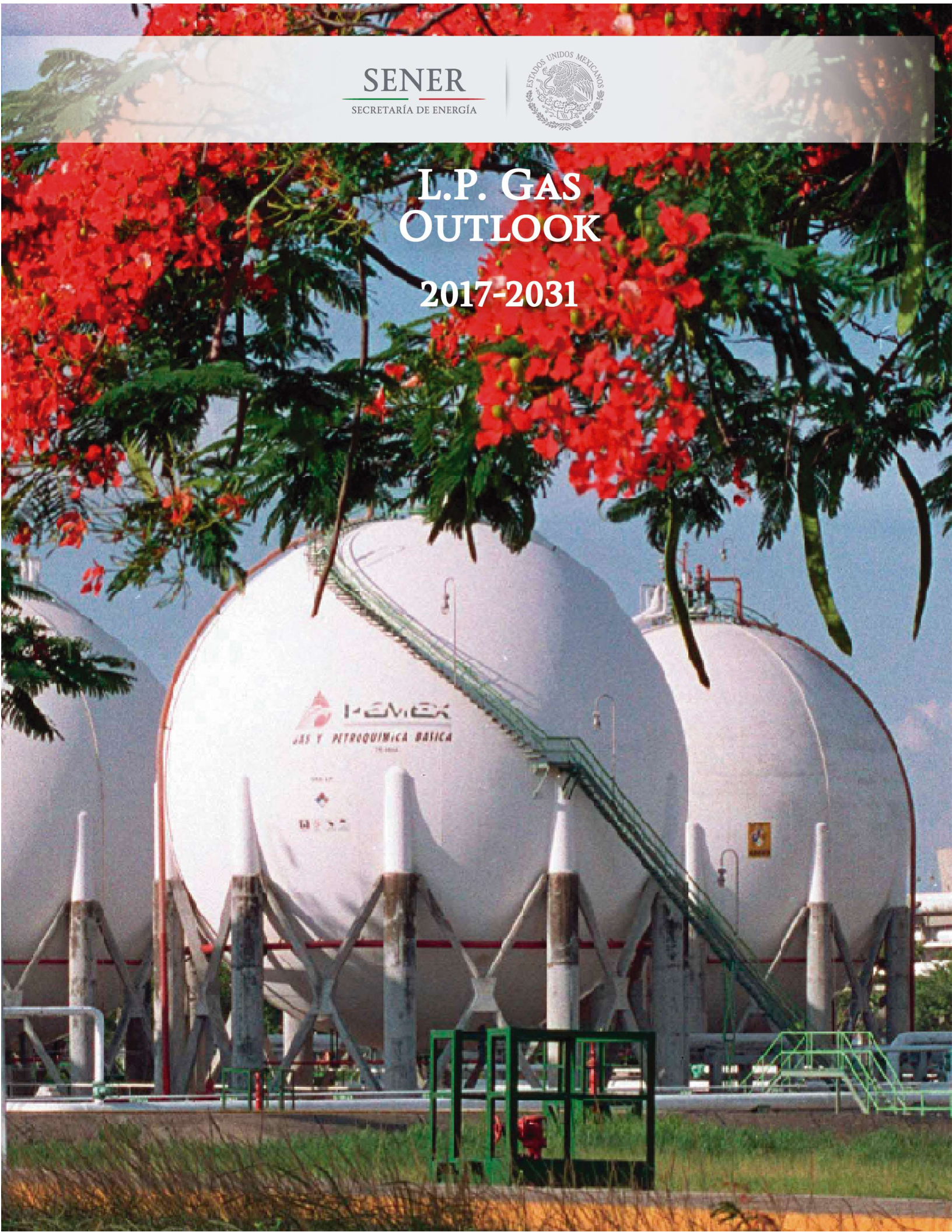
SENER

SECRETARÍA DE ENERGÍA

L.P. Gas Outlook

2017-2031



L.P. Gas Outlook

2017-2031

SENER
SECRETARÍA DE ENERGÍA

Mexico, 2017

Secretariat of Energy

Pedro Joaquín Coldwell
Secretary of Energy

Leonardo Beltrán Rodríguez
Deputy Secretary of Energy Planning and Transition

Fernando Zendejas Reyes
Deputy Secretary of Electricity

Aldo Flores Quiroga
Deputy Secretary of Hydrocarbons

Gloria Brasdefer Hernández
Senior Officer

Rafael Alexandri Rionda
Director General of Energy Planning and Information

Víctor Manuel Avilés Castro
Director General of Social Communication

ELABORATION AND REVIEW:

Rafael Alexandri Rionda
Director General of Energy Planning and Information
(ralexandri@energia.gob.mx)

Fabiola Rodriguez Bolaños
Director for the Integration of the Sector's Outlooks
(frodriguez@energia.gob.mx)

Eder García Jiménez
Deputy Director of the Energy Sector Planning
(egarciaj@energia.gob.mx)

Alain de los Ángeles Ubaldo Higuera
Deputy Director of Energy Consumption
(aubaldo@energia.gob.mx)

Thalia Ramirez Flores
Head of Department of Energy Markets Planning
(tramirez@energia.gob.mx)

Administrative support: María de la Paz León Femat, Maricela de Guadalupe Novelo Manrique.

2017. Secretariat of Energy

INDEX

INDEX OF FIGURES

INDEX OF TABLES

Acknowledgments

National Hydrocarbons Commission

Energy Regulatory Commission

National Commission for the Efficient Use of Energy

Mexican Petroleum Institute

Petróleos Mexicanos

Secretariat of Finance and Public Credit

Undersecretariat of Hydrocarbons

PRESENTATION

The implementation of the Energy Reform lay the grounds for achieving a more productive and sustainable use of the energy resources, enabling an open and competitive environment, sustained by strengthening the regulatory framework of the hydrocarbons supply chain, which fosters participation among private companies and State Productive Enterprises (EPE, for its Spanish acronym) in the same transparency context.

LP gas is an essential fuel in the everyday life of every Mexican, therefore, it plays a fundamental role in the country's social and economic development. 75% of households use this fuel as their main energy source and contributes to the wellbeing of population as it is an important step towards the country's energy transition. LP gas is a cleaner fuel with a higher energy efficiency compared to the traditional use of other fuels, mainly used in the household sector, such as firewood and coal.

Within the scope of the LP gas trade, the LP gas market has had a great dynamism due to the liberalization strategy. With the latter, starting January 1st, 2016, free import was opened to any interested party that complies with the applicable legal provisions and obtain, thus, an import permit.

The Hydrocarbons Law establishes it corresponds to the Secretariat of Energy (SENER, for its Spanish acronym) to regulate, supervise, grant, modify, and revoke the permits to import and export hydrocarbons and oil products. By December 20, 2017, the SENER has authorized 111 LP gas import permit.

Starting January 2017, LP gas retail prices will be determined under market conditions, that is, they will be the result of the demand and supply dynamic, and of the conditions of the international market. As for the First-Hand Sales (FHS) of Petróleos Mexicanos (PEMEX), they are regulated by the Energy Regulatory Commission (CRE, for its Spanish acronym).

The regulatory bases ruling the current LP gas market were defined thanks to the coordination of the SENER with the CRE and with the other organs involved in the sector; these bases will provide optimal conditions of security, quality, competitivity, transparency, and certainty to the current market participants.

INTRODUCTION

LP gas plays a meaningful role in the Mexican population's quality of life, as seven of each ten Mexican families use this fuel to meet their household needs. Thereby, it is important to elaborate indicative planning tools subjected to the current regulating conditions of the markets, which will contribute to a decision making that benefits society.

The LP Gas Outlook 2017-2031 enables a vision of the behavior of this fuel's market in the medium and long terms that will be a supporting point in the strategic decisions of the country. The document is formed by three chapters which display the dynamic behavior, historical and prospective, of the LP gas supply and demand.

Chapter One addresses the advances in this fuel's market in line with the current legal and regulatory framework to which are subjected the Permissioned activities within the value chain.

Chapter Two describes the behavior of the LP gas domestic market for the period 2006-2016, providing information regarding the sectoral and regional demand, historic production, current prices, current infrastructure, and foreign trade.

The projections on the LP gas market demand for the next 15 years are included in Chapter Three and displays the growth trends of the market estimated for this sector.

EXECUTIVE SUMMARY

Chapter One. LP Gas Regulatory Framework

The new domestic energy model has redefined the activities within the hydrocarbons' value chain in order to foster the transformation of the sector towards a more efficient, competitive, and reliable market opened to the participation of the State Productive Enterprises (EPE, for its Spanish acronym) as well as of private companies in equal circumstances, under the same rules and tariffs, following the principles of open access and effective competency to ensure the security and efficient supply of LP gas and other hydrocarbons throughout the national territory.

The regulatory basis which currently govern the LP gas market were determined thanks to the coordination of the SENER with the CRE, and the other organs involved in the sector, and which provided the optimal conditions of security, quality, competitivity, transparency, and certainty to the current market participants.

After the Reform, significant changes in the LP gas value chain have occurred, such as the opening to free import in January 1st, 2016, which allows this fuel to be unrestrictedly imported, as long as the interested parties comply with the applicable legal provisions. Regarding retail prices, these are determined on market conditions since January 1st, 2017.

Chapter Two. Historical Market of LP Gas

The use of LP gas is mainly destined to the residential and services sectors; in 2016, the LP gas demand reached a volume of 282.5 thousand barrels per day (MBD), 0.2% less regarding the previous year.

The residential sector was the largest consumer of this demand in 2016, with 163 MBD, seconded by the services, motor-carrier, and industrial sectors with 42.9 MBD, 39.9 MBD, and 31.6 MBD, respectively. The agriculture and livestock sector and the oil sector recorded the smallest demand volume with 3.4 MBD and 1.7 MBD, respectively.

In the last 10 years, LP gas domestic sales have reduced in 8.2% due to the expansion of the natural gas (NG) infrastructure and the preference in the use of this fuel.

By the end of 2016, the LP gas domestic demand recorded a volume of 232.5 MBD, 0.7% less regarding 2015. The Central region recorded the largest volume of domestic sales; on the contrary, the Northeast region had the smallest volume of demand.

As for the LP gas production, by the end of 2016 it recorded a volume of 159.6 MBD, 9.3% less regarding the previous year.

The LP gas infrastructure includes the transportation means through pipeline and other means used to receive, deliver, and convey the fuel from one place to another, without transferring its property to the transporter.

By October 1st, 2017, the Energy Regulatory Commission (CRE) had issued five permits to transport LP gas through pipelines with a total capacity of 56,440,802 liters, and three LP gas distribution permits through pipelines with a total capacity of 410,203,000 liters.

Regarding foreign trade, by the end of 2016, a volume of 133.6 MBD was imported to cover the domestic demand, 27% more than the volume imported the previous year. Maritime imports participated with 61.3% of the total, recording a volume of 81.9 MBD; imports by land accounted for 37.5 MBD, 28.1%;

and, lastly, imports by pipeline represented 10.6%, a volume of 14.2 MBD. On the other hand, exports recorded a volume of 4.5 MBD and were sent to Belize.

The LP gas market was liberalized on January 1st, 2017, so its FHS (first-hand sales) and end-user maximum prices are not fixed monthly by decrees published in the DOF.

As for the activities which entail LP gas retailing, the CRE establishes the regulation of the maximum prices for these products, prior resolution of the Federal Economic Competition Commission (COFECE, for its Spanish acronym).

Therefore, by January 2017, the LP gas maximum retail prices are fixed under the market's conditions and are the result of the dynamics of the supply and demand as well as of the international market conditions. The LP gas prices are quoted each week and comprise all the necessary acts and services for hiring, alienation, and delivery of LP gas.

Chapter Three. LP Gas Prospective Market

In 2031, the estimated demand of LP gas is of 275.1 MBD, 2.0% less than in 2016. This reduction is due to a smaller consumption of this fuel within the residential, industrial, and motor-carrier sectors.

The residential sector remains as the largest LP gas consumer in 2031, with a volume projected in 151.8 MBD, 48.7% of the total domestic demand of this fuel.

In 2031, the services sector will demand a fuels' volume of 83.2 MBDLPGE, an increase by 18.7% regarding 2016; LP gas will be the most consumed fuel with a share of 63.1%, equivalent to 52.5 MBD. By 2031 the motor-carrier sector is expected to reach a volume of 1,961.4 MBDLPGE, which means an increase of 27.4% regarding 2016; gasoline remains as the most demanded fuel with a share of 63% of this sector's total demand, while LP gas will have share of only 2%. Within the industrial sector, LP gas demand is expected to reach a 30.9 MBD volume, a decrease of 2.1% regarding 2016, by the end of the period. As for the oil sector, by 2031 the most demanded fuel will be NG with 528.6 MBDLPGE, seconded by LP gas with 36.4 MBDLPGE.

Regarding the regional demand of LP gas, the Central region will have the largest demand with a volume of 114.0 MBD, seconded by the South-Southeast region with 76.7 MBD; Central-Western, 55.3 MBD; Northeast, 39.6 MBD; and, finally Northwest, 25.9 MBD.

As for production, it is expected to reach a volume of 171.4 MBD, an increase by 7.4% regarding 2016 and a TMCA of 0.5% during the period 2016-2031. The South-Southeast region will have the largest contribution, reaching a volume of 144.0 MBD, seconded by the Northwest region with 19.4%, Central Western with 6.4 MBD, and Central with 1.7 MBD of the domestic production.

In 2031, LP gas imports are estimated to reach a 140.1 volume, 4.9% more regarding 2016. The South-Southeast region will receive the largest percentage of imports, estimated to reach 45.9% of the total, followed by the Northeast region with 31.2%, and finally the Northwest and the Central Western with 16.0% and 6.9%, respectively.

CHAPTER ONE. LP GAS REGULATORY FRAMEWORK

The new national energy model has defined the activities which integrate the value chain of the hydrocarbons sector in order to foster this sector's transformation towards a more efficient, competitive, and reliable market. A market which allows the participation of the State Productive Enterprises (EPEs, for its Spanish acronym) and private companies on equal ground, under the same rules and tariffs, following the principles of open access and effective competency to ensure the security supply and cost-effective prices of LP gas and other hydrocarbons throughout the national territory.

Besides, as a result of the new energy model, the regulatory mechanism of the Coordinating Regulatory Organs in energy matter was strengthened through their joint coordination with the SENER in the development of their function.

The Secretariat of Energy, under the command of the Federal Executive, is in charge of fostering and surveilling the supply of fuels in the national territory, for which it can instruct projects considered as necessary for generating social and economic benefits in the terms of the current public policy of the sector, but always prior opinion of the involved agents.

1.1 Regulatory framework of the Energy Sector Outlooks

The Hydrocarbons Law establishes the Secretariat of Energy is in charge of conducting and coordinating the energy policy within the current constitutional framework, as well as of supervise its compliance prioritizing energy security, sustainability, continuity in the fuels supply, and the diversification of the markets[1]. For that purpose, the SENER coordinates with the Coordinating Regulatory Organs in energy matter to comply with the public policies established by the Federal Executive.

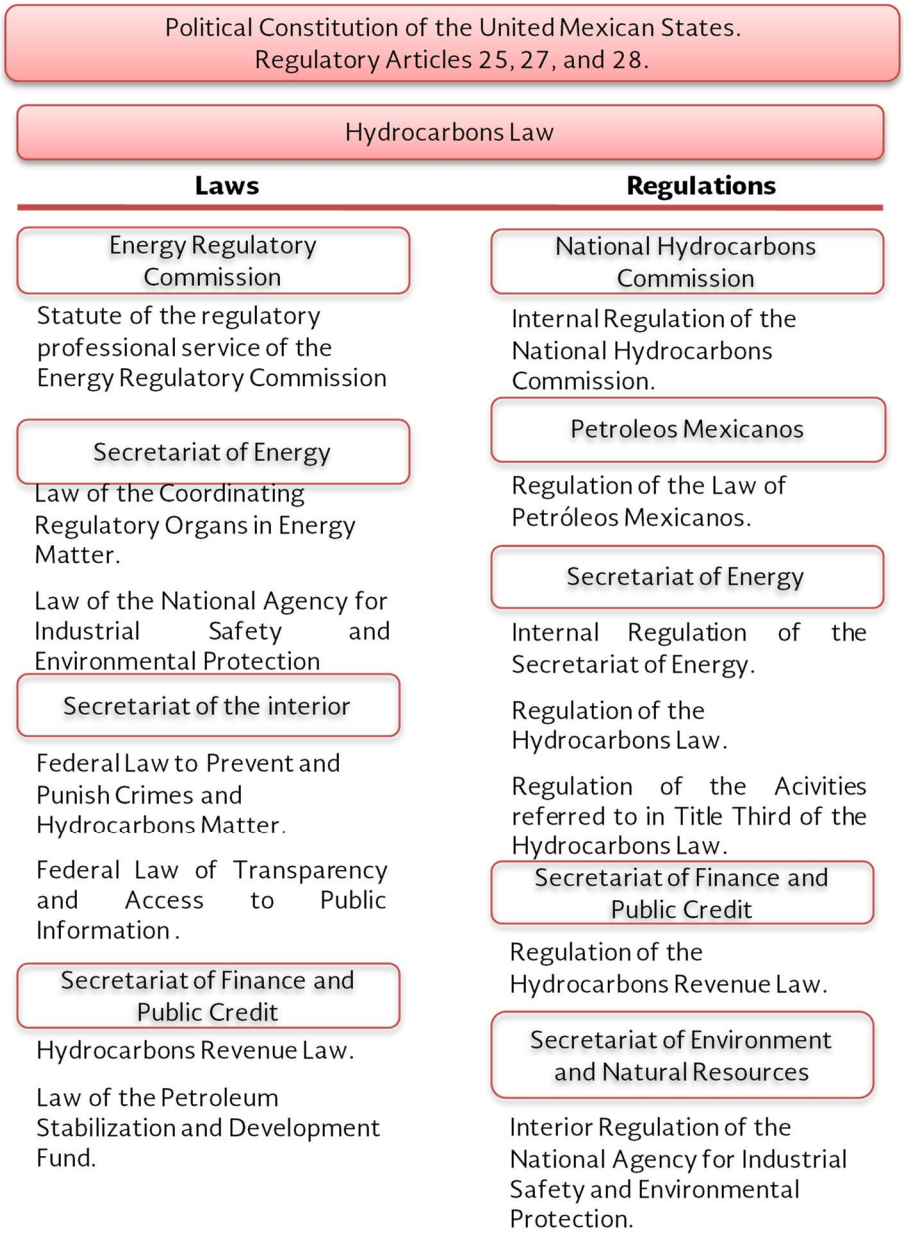
In addition, the Organic Law of the Federal Public Administration establishes the organizational basis of the State Secretariats, mentioning in its Article 33 the faculties of the Secretariat of Energy and, particularly in its Section V, the corresponding to the energy planning in the medium and long term in compliance with the criteria of sovereignty and energy security; improvement of the energy productivity, restitution of the hydrocarbons reserves, diversification of the fuels sources, the progressive reduction of environmental impacts on the production and consumption of energy, the provision of the population energy needs, energy saving and the best efficiency of their use and production, the strengthening of the EPEs of the energy sector; the support to the national research and technological development in energy matter. Likewise, the Interior Regulation of the Secretariat mentions in its article 24 Section XIV and XV the General Director of Planning and Energy Information is in charge of elaborating the outlook projects of the energy sector in the medium and long terms, with a 15-year planning horizon at least, in order to serve as planning exercises for the next years, displaying a view of the market scenarios, and becoming a supporting point for the country's strategic decisions.

[1] Article 80 of the Hydrocarbons Law.

1.2 Legal framework in hydrocarbons matters

The legal framework of the hydrocarbons industry is delimited by laws and regulations which define the mechanisms through which the Country directs the exploration, extraction, and processing of hydrocarbons (see Figure 1.1).

FIGURE 1. 1 LEGAL FRAMEWORK IN HYDROCARBONS MATTER



Source: SENER.

The Hydrocarbons Law regulates articles 25, 27, and 28 of the Political Constitution of the United Mexican States, which are aimed to regulate the activities of reconnaissance, exploration, and extraction of hydrocarbons, as well as their processing, alienation, trading, transportations, and storage.

The regulation of the activities comprised in the hydrocarbons' value chain are surveilled by:

Energy Regulatory Commission (CRE), which regulates and fosters the efficient development of the activities of transportation, storage, distribution, trading, as well as retailing and management of the hydrocarbons, oil products, and petrochemicals integrated systems. Additionally, it issues the general provisions to regulate the sector's activities, within its scope, as well as it defines the applicable compensations, prices, and tariffs[2].

National Hydrocarbons Commission (CNH), which is a coordinated regulatory organ in energy matter, with legal, technical, operational, and own-managerial personality to issue its own resolutions; and which fosters, efficiently, reliably, and sustainably the activities of exploration and extraction of hydrocarbons to foster investment and economic growth[3].

Secretariat of Energy (SENER), is in charge of regulating and supervising the activities of oil treatment and refining, natural gas processing, and foreign trade of hydrocarbons; defining the public policy in energy matter in order to safeguard the national interests and security. Additionally, along with the Energy Regulatory Commission, it establishes the permits to be complied by the permitees regarding the public policy[4].

Secretariat of Finance and Public Credit (SHCP), establishes the revenues regime receive by the Country from the activities of exploration and extraction of hydrocarbons executed through the assignations and contracts referred to in the Hydrocarbons Law, as well as the contracts' compensation[5].

Secretariat of the interior (SEGOB), is aimed to establish the crimes in particular and applicable sanctions in matter of hydrocarbons, oil products, or petrochemicals, and other goods related to the process of production, transportation, storage, and distribution of hydrocarbons[6].

Petroleos Mexicanos (PEMEX) is aimed to develop the business, economic, industrial, and trading activities which generate economic value and profitability to the country, improving productivity to maximize oil revenues and contribute thus to the national development[7].

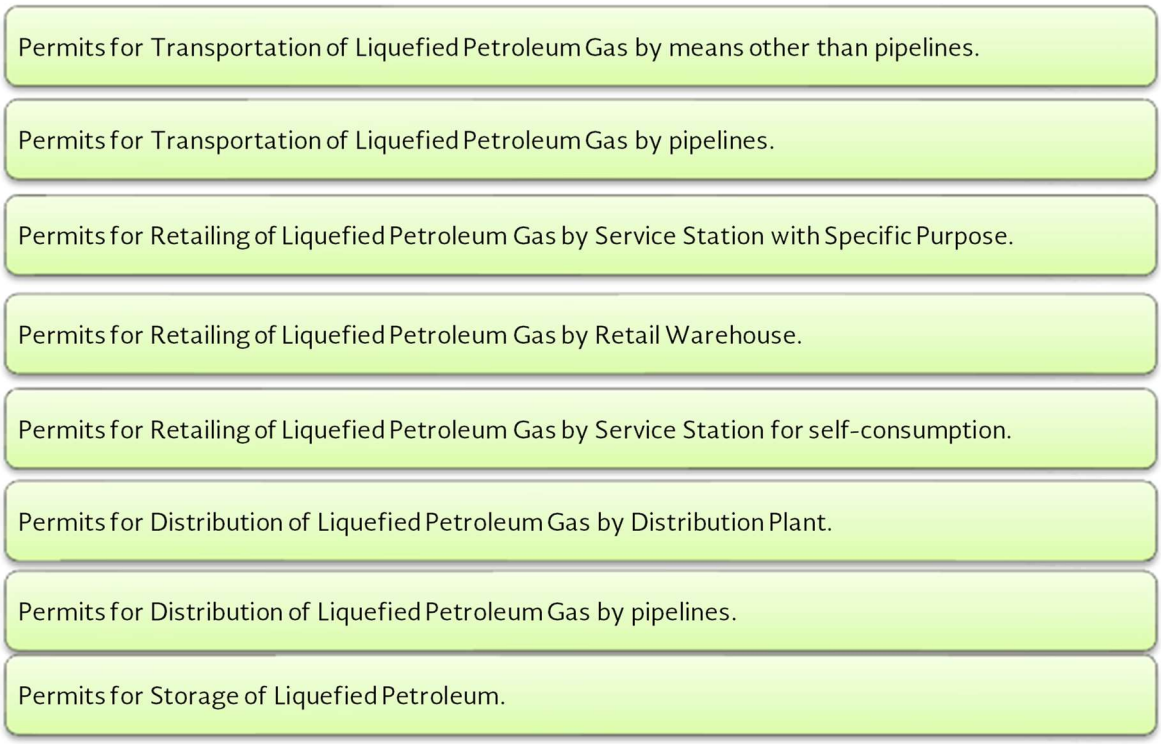
Secretariat of Environment and Natural Resources (SEMARNAT), through the Interior Regulation of the National Agency for Industrial Safety and Environmental Protection of the Hydrocarbon Sector, is in charge of exercising the faculties applicable in matters of industrial and operational safety, and environmental protection for the hydrocarbons sector[8].

1.3 Permitted Activities in LP gas Matter

Currently, the permission-based activities in matter of LP gas (transportation, storage, distribution, retailing) are regulated by the CRE, which should issue the permits related to the activities within the hydrocarbon's value chain (see Figure 1.2).

[2] Article 82 of the Hydrocarbons Law.
[3] National Hydrocarbons Commission – What we do.
[4] Article 80 of the Hydrocarbons Law.
[5] Article 1 of the Hydrocarbons Revenue Law.
[6] Article 1 and 3 of the Federal Law to Prevent and Punish Crimes and Hydrocarbons Matter.
[7] Article 4 of the Law of Mexican Petroleum.
[8] Article 1 of the Interior Regulation of the National Agency for Industrial Safety and Environmental Protection of the Hydrocarbons Sector.

FIGURE 1. 2 PERMITS ISSUED BY THE CRE IN LP GAS MATTER



Source: SENER with information from CRE.

By November 27, 2017, the CRE had granted 5,369 permits in matter of LP gas distributed as follows[9]:

- 211 transportation permits
- 33 storage permits
- 1,204 distribution permits
- 526 self-consumption permits
- 3,316 retailing permits
- 79 trading permits.

[9] https://www.gob.mx/cre/acciones-y-programas/como-vamos-en-materia-de-hidrocarburos

In Mexico, the standardization of the LP gas value chain is displayed in the Mexican Official Standards (NOM, for its Spanish acronym), the Mexican Standards (NMX, for its Spanish acronym), and the Emergency Standards (NOM-EN) which define the main technical specifications to assess and comprehensively prevent the risks in implementing the handling and distribution of the fuel. In addition, they guarantee that every installation project is performed with the appropriate infrastructure and technology, as well as all the activities of fuel usage and safety of the general population.

Standardization is stipulated compliant with what is established in the Federal Law on Metrology and Standardization (LFMN, for its Spanish acronym).

On the other hand, the SENER elaborates, updates, and issues the standards in accordance with the procedure established in the LFMN (see Table 1.1).

TABLE 1. 1 MEXICAN OFFICIAL STANDARDS IN LP GAS MATTER

PROY-NOM-012-SECRE-2000	• Transportation of LP as by pipelines: design, construction, operation, and maintenance.
PROY-NOM-002-SESH	• LP gas distribution warehouses: design, construction, operation, and safety conditions.
NOM-003-ASEA-2016	• Distribution of Natural Gas and Liquefied Petroleum Gas by pipelines
NOM-015-SECRE-2013	• Design, construction, safety, operation, and maintenance of the liquefied petroleum gas storage by deposit plant or supply plant which are directly linked to the transportation or distribution systems.
NOM-042-SEMARNAT-2003	• Establishes the maximum permissible limits for the emissions of total hydrocarbons or non-methane, carbon monoxide, nitrogen oxides, and particles from the exhausts of new motor-carrier vehicles with a gross vehicular weight of no more than 3,857 kilograms, fueled by gasoline, liquefied petroleum gas, natural gas, and diesel, as well as the emissions from evaporative hydrocarbons from the fueling system of those engines.
NOM-047-SEMARNAT-2014	• Established the characteristics of the equipment and measuring procedure for verifying the pollutant emission limits from circulating motor-carrier vehicles fueled by gasoline, liquefied petroleum gas, and natural gas.
NOM-076-SEMARNAT-2012	• Establishes the maximum permissible limits of hydrocarbons emissions, unburnt, carbon monoxide, and nitrogen oxides from the exhaust, as well as the evaporative hydrocarbons from the fueling system using liquefied petroleum gas, natural gas, and other alternative fuels to be used to propel motor-carrier vehicles with a vehicular gross weight of 3,857 kilograms new in plants.
NOM-EM-004-ASEA-2017	• Specifications and requirements in matter of industrial safety, operational safety, and environmental protection for the design, construction, pre-startup, operation, maintenance, closure, and dismantling of the service stations with specific purpose for the retailing of liquefied petroleum gas, through the partial or total filling of the pressurized portable containers.
NOM-016-CRE-2016	• Establishes the quality specification of oil products.
PROY-NOM-050-SEMARNAT-2017	• Establishes the maximum permissible limits of pollutant gases emission from the exhaust of circulating motor-carrier vehicles fueled by liquefied petroleum gas, natural gas, or other alternative fuels.

Source: SENER with information from CRE

1.4 LP Gas Value Chain

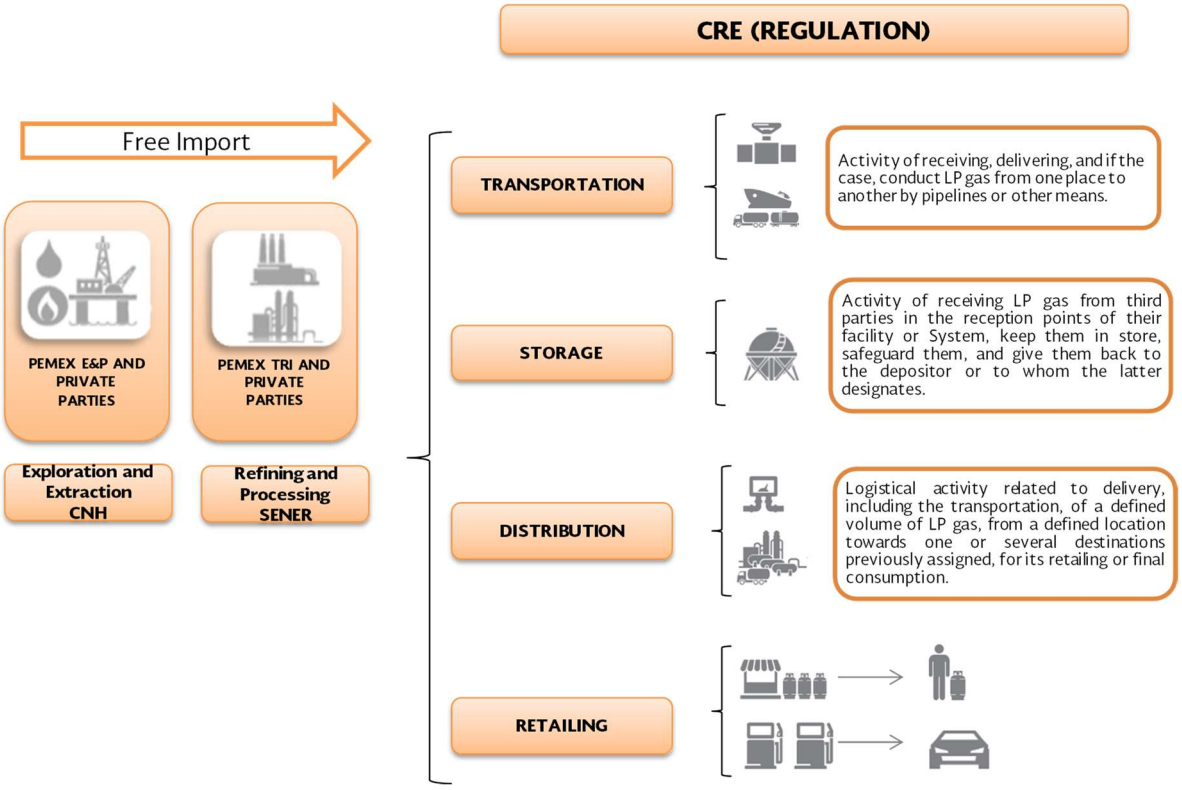
LP gas is the generic name for butane and propane gas of commercial use; it is mostly destined to the residential and services sector for heating water, food preparation, and heating. At industrial level it is used in any equipment which require this fuel; in the agricultural equipment, for seeds drying and for fueling carrier engines.

Prior to the transformation of the Mexican energy model, the LP-gas processing activities were exclusive to Pemex; nowadays, private parties can participate in all the chain. Regarding LP gas import, since January 2016, this fuel can be imported unrestrictedly[10]. LP-gas private distributors are already importing a percentage of the domestic demand, mainly from the USA by several means such as vessel, railway, land transportation, and pipelines. Nonetheless, Pemex Industrial Transformation, a State Productive Enterprise, is still producing the largest volume of LP gas in Mexico[11].

Regarding the LP gas produced in Mexico, it comes mainly from two sources: 1) wet natural gas processing, and 2) crude-oil refining. Pemex Industrial Transformation contributes with most of the wet natural gas processing, which is completed by the production from crude refining. When the production cannot cover the LP gas domestic demand it is required to import this fuel[12].

[10] Fifteenth transitory of the RES/717/2015 (Resolution whereby the CRE decides that oil products and petrochemicals will remain subjected to the FHS regulation).
[11] Pemex-Annual Report 2015.
[12] Idem.

FIGURE 1. 3 LP GAS VALUE CHAIN



Source: SENER with information from CRE.

1.5 LP Gas Exploration and Extraction Activities

After the Reform, the Quinquennial Tendering Plan for the Exploration and Extraction of Hydrocarbons was developed and which considers the areas and fields destined to exploration and extraction in conventional, non-conventional, shallow and deep-water fields; this means new investment opportunities in the Mexican hydrocarbons industry which will progressively reduce the exposure to technical, operational, financial, and environmental risks of the country related to such activities[13].

Currently, the tendering processes have been performed under the principles of transparency, maximum publicity, equality, competitivity, and simplicity, helping thus in the effective implementation of the energy reform. Up to date, three Rounds have been carried out: Round Zero, which allocated to Pemex the assignations which it can explore and exploit in accordance with its technical and financial capacities. The SENER was in charge of allocating such assignation with the technical assistance of the CNH.

Round One included four international public tenders to allocate contracts for the exploration and extraction of hydrocarbons. This round laid the grounds of the Quinquennial Plan, leading the competitive participation of private enterprises as well as State Productive ones in the exploration and extraction activities[14].

[13] Quinquennial Tendering Plan for the Exploration and Extraction of Hydrocarbons (version 2017).
[14] Quinquennial Tendering Plan for the Exploration and Extraction of Hydrocarbons 2015-2019.

Round Two, unlike Round One, includes contractual areas for exploring discoveries in order to increase the level of proved and probable reserves. Up to date, three tenders[15] have been carried out.

The first call for Round Three was published on September 29, 2017 in the DOF and is intended to foster the hydrocarbons marine sector by exploring and discovering new resources that will replace the country reserves; increase the production of oil and gas; consolidate comprehensive-developmental oil zones; and to attract investment and create quality employment.

It is formed by 35 areas of exploration and extraction in shallow water located in the oil provinces of Burgos, Southeast Basins, and Tampico-Misantla-Veracruz, and put out to tender under the modality of share production; with a 26,265 km^2 surface. This tender was programmed for March 27, 2018.

1.6 LP Gas Processing

LP gas is obtained through the refining processes of oil and from the natural-gas processing plants and then is traded with the different sectors which use it, being the residential sector the one with the largest consumption.

This hydrocarbon is obtained after sweetening processes of sour gas, sweetening of liquids, absorption, sulfur recovery, cryogenic process for recovering liquefied products, nitrogen elimination and fractioning. Currently, Pemex is the only enterprise in Mexico which processes this hydrocarbon, and its operational infrastructure by the end of 2016 consisted in:

[15] Quinquennial Tendering Plan for the Exploration and Extraction of Hydrocarbons 2015-2019, Assessment 2016 and New Strategy.

TABLE 1. 2. OPERATIONAL INFRASTRUCTURE

Production fields	405
Average of producing wells in operation	8,750
Marine platforms	256
Wells drilling and repairing equipment	133
Service units for wells	193
Refineries	6
Gas Processing Complexes	9
Petrochemical complexes	5
Liquefied-gas distribution terminals connected to a pipeline	10
Oil-Products storage and dispatch terminals	74
Maritime terminals	5
Operations and port services residences	10
82 own vessels, 13 on leasing, and 1 on rent	16
Tankers	1,485
Tank cars	511

Source: SENER with information from Pemex.

1.7 LP Gas Distribution and Transportation

After the LP gas is processed, it is stored and delivered to the pipelines' supply terminals or to import terminals (land or sea) for its subsequent trading[16].

LP gas distribution can be performed by pipelines or distribution plants. Pipelines distribution consists on delivering a defined volume of this hydrocarbon from a defined location towards one or two destinations previously assigned for its retailing or final consumption.

As for the distribution through distribution plan, it consists on delivering the hydrocarbon in bulk to one or several destinations previously assigned; this activity can be carried out by tank cars, transportable containers and/or portable containers. LP gas distribution by tank car can be performed through home delivery in the stationary tanks of end users, or well to retail permitees through a service station with specific purpose and/or multimodal service station. Likewise, it can be delivered to distribution permitees by pipelines[17].

Regarding LP gas transportation, this can be performed by pipeline of through different means. Distribution by pipelines do not entail the alienation on behalf of who performs such activity; "through different means" consist on delivering LP gas in bulk through tank cars, semitrailers, tankers, or tanker trucks, without alienating or trading; this activity can be performed from the processing plants, refineries, import points, storing systems to transportation systems through pipelines, distribution networks, LP gas utilization facilities and distribution plants[18].

In order to guarantee a reliable, safe, and cost-effective access to oil products throughout the national territory, the transportation infrastructure to be developed by the EPEs and private parties should pursue the principles of open access not unduly discriminatory[19].

[16] Pemex TRI.
[17] CRE. Actions and Programs.
[18] CRE- actions and programs.
[19] Article 10 of the Hydrocarbons Law.

1.8 LP Gas Trading

LP gas retail prices have been fixed under market conditions on January 1st, 2017 and are the result of the supply and demand dynamics and of the international market conditions. Regarding Pemex FHS, these are regulated by the CRE based on a formula which takes the following points into consideration[20]:

- The value of LP gas in the relevant reference point to define the price in each Pemex processing center.
- The lowest possible transportation cost for supplying LP gas in each point of sale.
- The remuneration from using the infrastructure required to deliver LP gas in each point of sale.

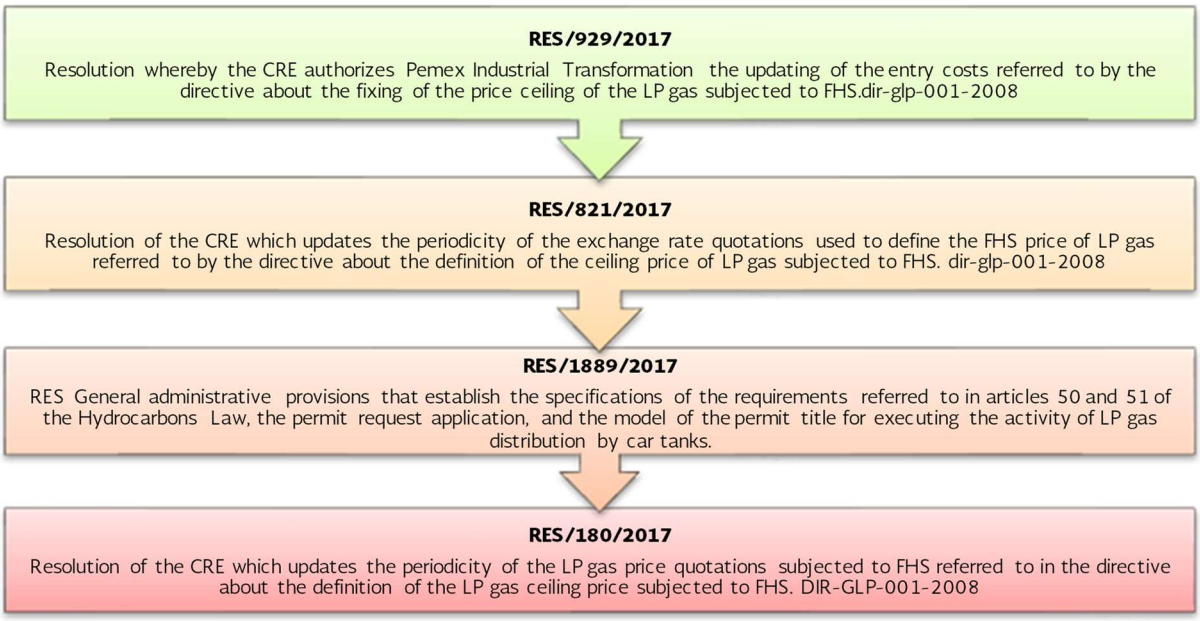
And which are aimed to:

- Foster the effective LP gas supply.
- Enable FHS to reflect the conditions of a competitive LP gas market.
- Foster the acquisition of LP gas at competitive prices.
- Avoid unduly discrimination.
- Prevent crossed subsidies in LP gas FHS.
- Design a predictable regulation regime, stable and transparent.

According to the latter, the CRE has recently published resolutions in matter of LP gas which are used as regulatory instruments (see Figure 1.5).

[20] Based on the directive about the implementation of the LPG's ceiling prices subject to FHS, DIR-GLP-001-2008.

FIGURE 1.4 RESOLUTIONS IN MATTER OF LP GAS TRADING (2017)



Source: SENER with information from DOF.

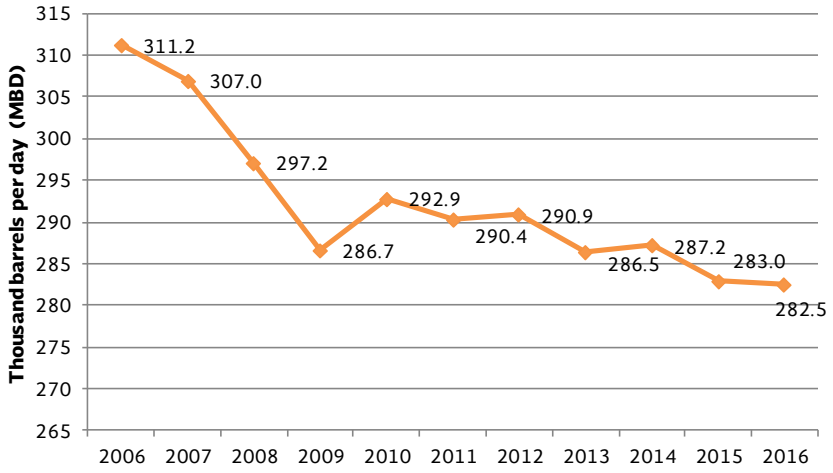
CHAPTER TWO. LP GAS HISTORICAL MARKET

The production and trading of energy is an economic activity relevant to the country and, therefore, a source of public revenue. LP gas is one of the main energy sources in Mexico, and its utilization has been focused, for years, in the residential and services sector. However, its demand behavior has shown a significant growth in the industrial and motor-carrier sectors.

2.1 Historical LP Gas Domestic Demand

- In the last ten years, the LP gas domestic demand has decreased 9.2%, displaying an AAGR of -1.0%. Nonetheless, the domestic supply cannot cover the country's necessities, making it to resort to imports, which have shown a AAGR of 5.9% in the last ten years (Figure 2.1).
- By the end of 2016, the LP gas demand was of 282.5 MBD, 0.2% less regarding 2015, while imports increased by 27% regarding 2015.
- Exports have increased 114% during the last decade showing an AAGR of 7.9%; in 2016, 4.5 MBD were exported and sent to Belize.

FIGURE 2. 1 HISTORICAL LP GAS DOMESTIC DEMAND

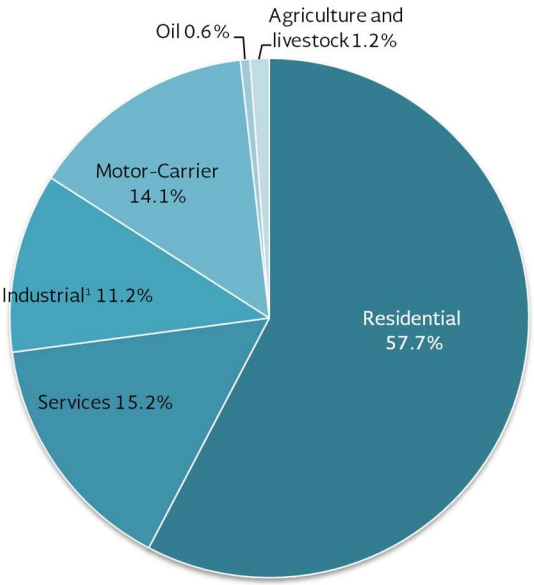


Source: SENER with information from IMP.

2.2 LP Gas Domestic Demand by Sector

- In 2016, the residential and services sectors concentrated 72.9% of the LP gas domestic demand with 163.0 MBD and 42.9 MBD, respectively (see Figure 2.2).

FIGURE 2. 2 LP GAS DOMESTIC DEMAND BY SECTOR, 2016
(Percentage)



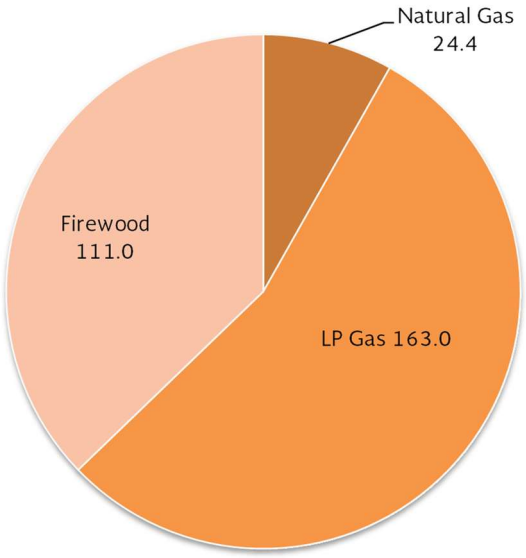
Source: SENER with information from IMP.

LP Gas Demand in the Residential Sector

- Up to date, the residential consumption per capita is of 74 kg/year[21].
- By the end of 2016, the fuels domestic demand in the residential sector was of 298.4 thousand barrels per day of LP gas equivalent (MBDLPGE).
- In the residential sector's demand, LP gas had a share of 54.6%; firewood, 37.2%; and natural gas, 8.2% (see Figure 2.3).
- In 2016, the heaters park increased by 2.9% regarding 2015, reaching 16,056,124 units; from these, 83.5% corresponded to LP gas-based heaters, 8.6% to firewood-based heaters, 7.2% to NG-based heaters, and solar panels had a share of 0.65%.

[21] Mexican Association of Liquefied Gas Distributors (AMEXGAS, for its Spanish acronym).

FIGURE 2. 3 FUELS DOMESTIC DEMAND IN THE RESIDENTIAL SECTOR, 2016
(MBDLPGE)

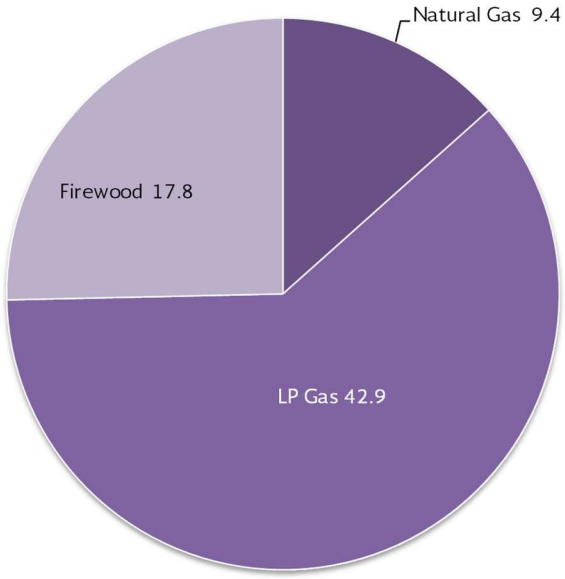


Source: SENER with information from IMP.

LP Gas Demand in the Services Sector

- In 2016, the fuels domestic demand in the services sector was of 70.1 MBDLPGE (see Figure 2.4).
- LP gas had a 61.3% of the fuels demanded in this sector.

FIGURE 2. 4 FUELS DOMESTIC DEMAND IN THE SERVICES SECTOR, 2016
(MBDLPGE)



Source: SENER with information from IMP.

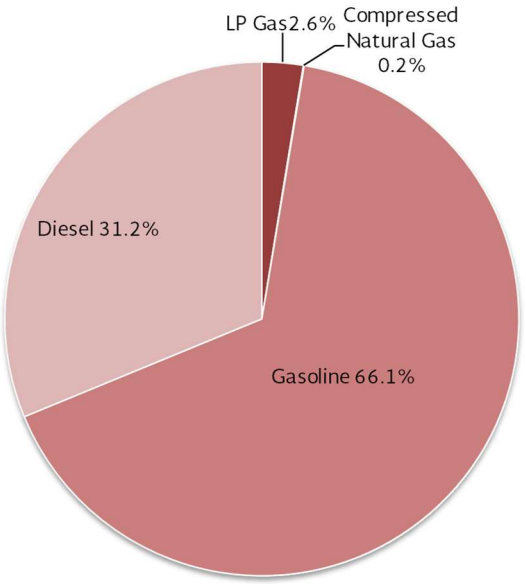
LP Gas Demand in the Motor-Carrier Sector

LP Gas Demand in the Motor-Carrier Sector

The motor-carrier sector, the most intensive one regarding the use of energy, represented 46.6% of the country's final energy consumption[22].

- In 2016, the consumption of fossil fuels in the motor-carrier sector recorded a volume of 1,540 MBDLPGE (see Figure 2.5).
- Compressed LP gas demanded 40.0 MBDLPGE.

FIGURE 2. 5 FUELS DEMAND IN THE MOTOR-CARRIER SECTOR, 2016
(Percentage)



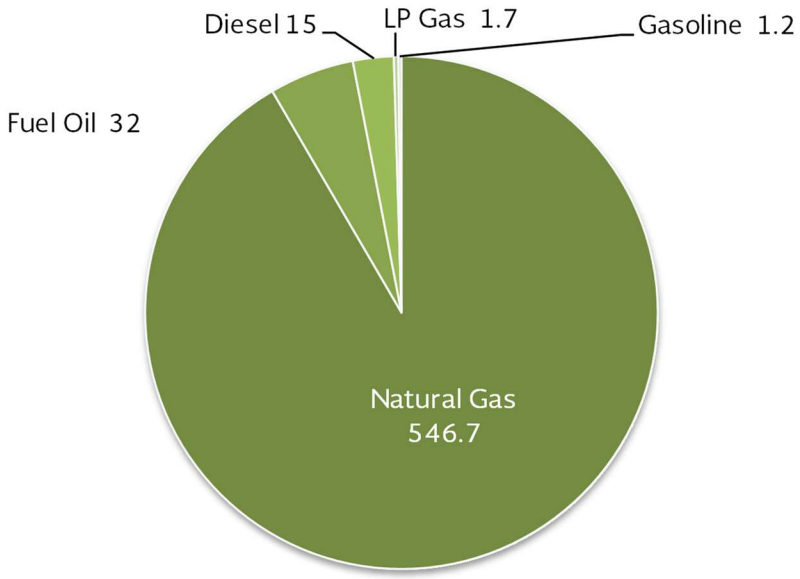
Source: SENER with information from IMP.

LP Gas Demand in the Oil Sector

- In 2016, Pemex used 596.9 MBDLPGE of fossil fuels for its internal processes, 6.6% less regarding 2015 (see Figure 2.6).
- LP gas recorded a demand of 1.7 MBD, 60.2% less regarding 2015.

[22] Energy National Balance 2015, p. 34.

FIGURE 2. 6 FUELS DEMAND IN THE OIL SECTOR
(MBDLPGE)



Source: SENER with information from IMP.

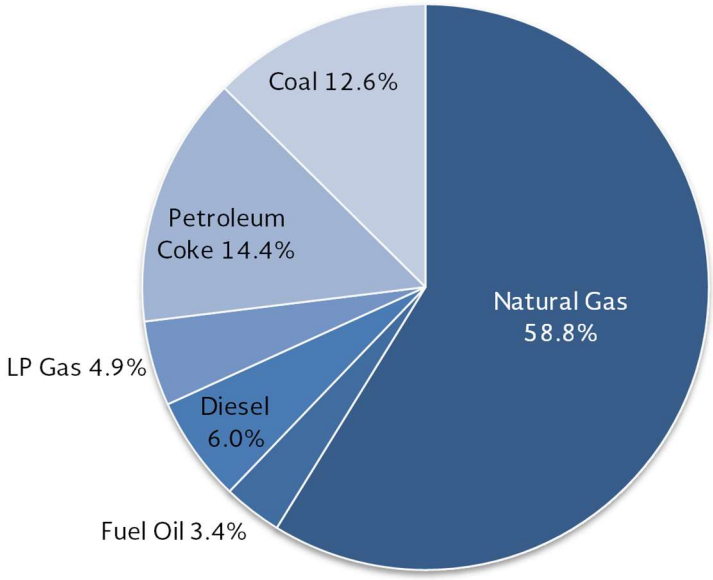
LP Gas Demand in the Industrial Sector

The industrial sector is the second largest consumer of energy in the country, reaching 31.4% of the total energy consumption towards 2015[23].

- In 2016, the fossil fuels demand in the industrial sector was of 650.4 MBDLPGE, 4.3% more regarding 2015 (see Figure 2.7).
- LP gas had a share of 4.9%, 31.6 MBD and an increase by 0.6% regarding 2015.

[23] Idem.

FIGURE 2. 7 FUELS DOMESTIC DEMAND IN THE INDUSTRIAL SECTOR, 2016
(Percentage)

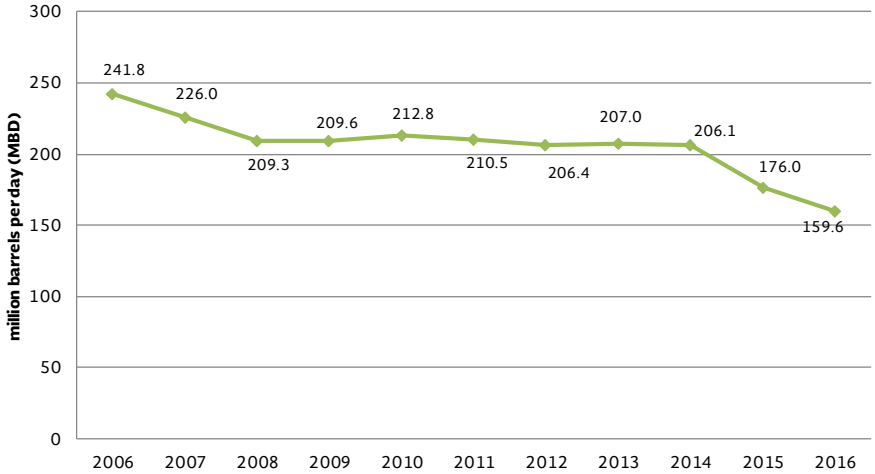


Source: SENER with information from IMP.

2.3 LP Gas Domestic Production

- By the end of 2016, the LP gas domestic production was of 159.6 MBD, 9.3% less regarding 2015 (see Figure 2.8).
- 87% of the production came from the Gas Processing Centers (CPG, for its Spanish acronym), 11.02% from refineries, and the rest from Pemex Exploration and Production.

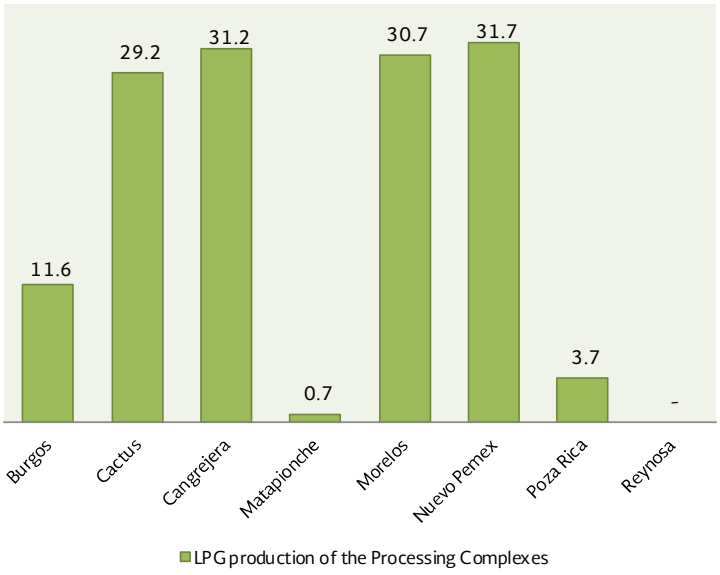
FIGURE 2. 8 LP GAS DOMESTIC SUPPLY



Source: SENER with information from Pemex.

- The CPGs recorded a production of 138.9 MBD, 7.2% less regarding 2015 (see Figure 2.9).
- The smallest production in the CPGs was the result of a decrease in the volume of gas sent to the CPGs due to the decline in the production of dry gas in the asset Veracruz and of sweet wet gas of the asset Burgos, and to a lesser availability of marine gas[24].

FIGURE 2. 9 LP GAS PRODUCTION IN THE CPGS, 2016



Source: SENER with information from Pemex.

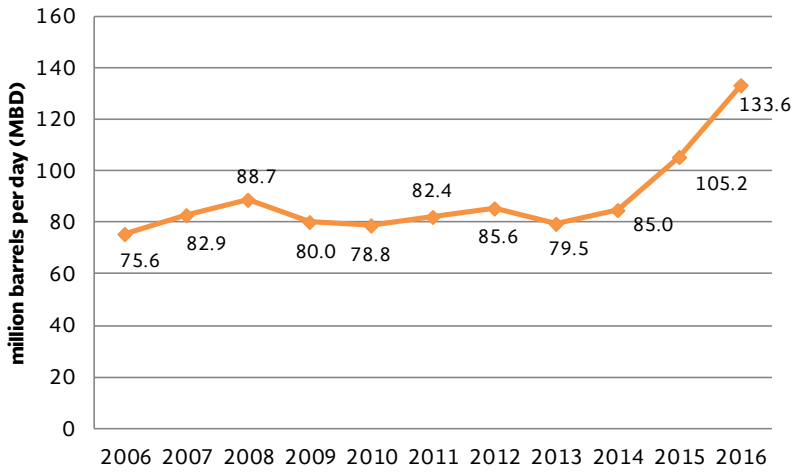
2.4 LP Gas Foreign Trade

In the last ten years, the LP gas domestic supply has not been able to cover the country needs, making it necessary to resort to imports.

- By the end of 2016, a volume of 133.6 MBD were imported, 27% more regarding the previous year (see Figure 2.10).
- Exports have increased by 114% in the last decade. In 2016, 4.5 MBD were exported and sent to Belize.

[24] Pemex Annual Report 2016, p.12.

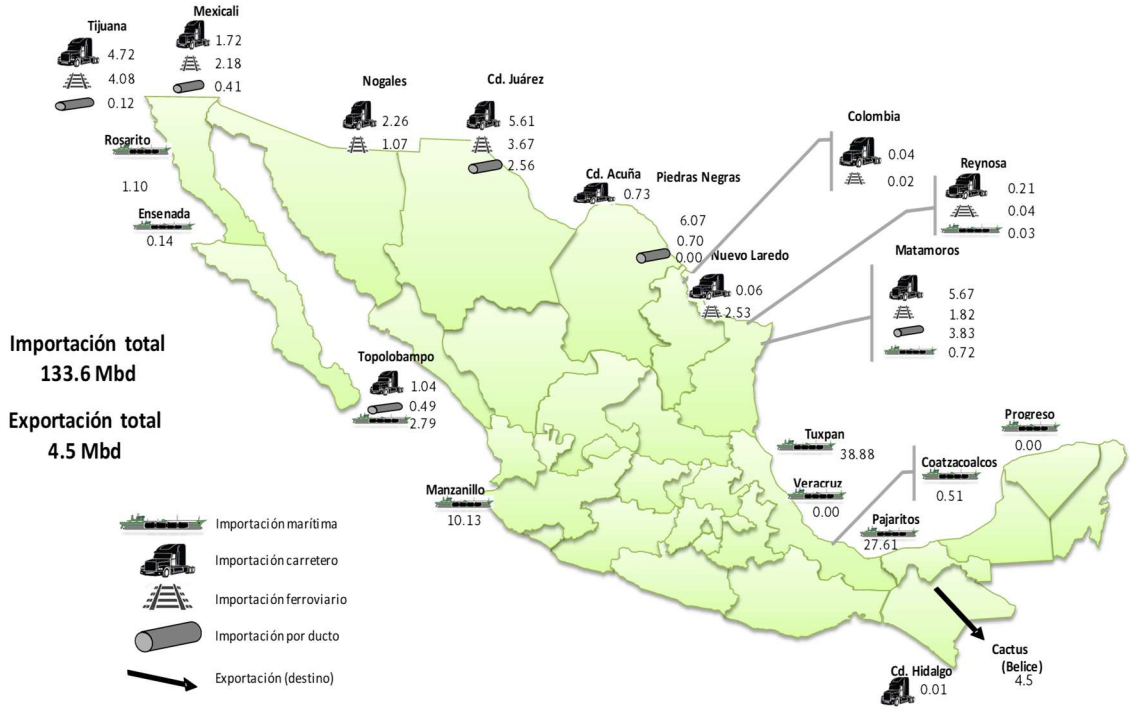
FIGURE 2. 10 LP GAS HISTORICAL IMPORT



Source: SENER with information from IMP

Maritime imports accounted for 81.9 MBD; by land, 37.5 MBD; and by pipeline, 14.2 MBD (see Figure 2.11).

FIGURE 2. 11 LP GAS FOREIGN TRADE, 2016

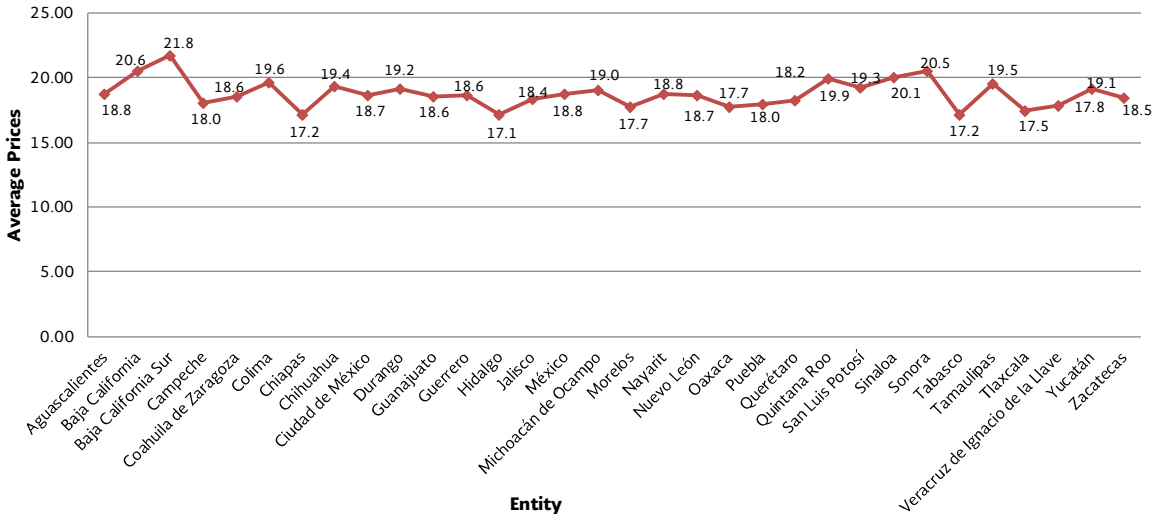


Source: SENER with information from IMP.

2.5 LP Gas Prices

According to the twenty-ninth transitory of the Hydrocarbons Law, since January 1st, 2017, LP gas retail prices are defined under market conditions, and are the result of the dynamics of the demand, supply, and international market conditions (see Figure 2.12).

FIGURE 2. 12 AVERAGE RETAIL PRICES BY ENTITY
(Prices in $ per kg)



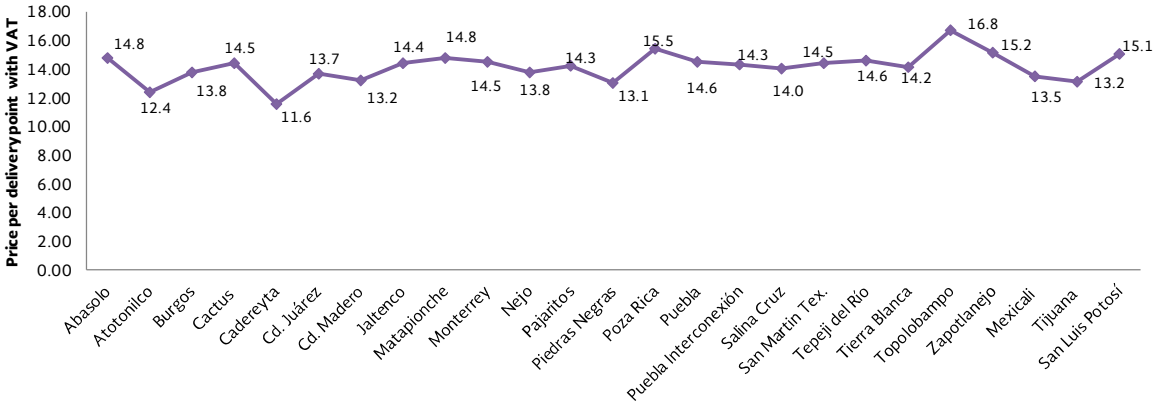
*Prices valid to December 15, 2017.
Source: CRE.

Regarding first-hand sales (FHS), Pemex and its subsidiary productive enterprises, affiliates, and divisions are still carrying out this activity freely[25], subjected to asymmetric regulation principles from the CRE, to limit dominant power of Pemex and achieve a larger participation of the economic agents[26] (see Figure 2.13).

FHS prices are quoted by week since March 1st, 2017 and comprise all the acts and services needed for the contraction, alienation, and delivery of LP gas.

[25] Second Resolutive of the Agreement A/055/2016.
[26] Based on the DIRECTIVE about the definition of the price ceiling of LP gas subjected to FHS, DIR-GLP-2008.

FIGURE 2. 13 FIRST-HAND SALES IN LP GAS MATTER
(Prices in $ per kg)



*Prices valid from December 25 to 31st, 2017.
Source: CRE.

2.6 LP Gas Infrastructure

LP Gas Infrastructure comprises means of transportation by pipelines and other for receiving, delivering, and conduct the fuel from one place to another without entailing its alienation on behalf of who performs these activities; in addition, it comprises storing and distribution by pipelines, distribution plants and/or tank cars, and retail through retail warehouses or service stations with specific purpose.

- To October 1st, 2017 the CRE issued 5 LP gas transportation permits by pipelines with a total capacity of 56,440,802 liters[27] and 3 LP gas distribution by pipelines with a total capacity of 410,203,000 liters [28] (see Figure 2.14 and 2.15).

[27]https://www.gob.mx/cms/uploads/attachment/file/256605/Transporte_de_Gas_Licuado_de_Petr_leo_por_medio_de_ductos.pdf
[28]https://www.gob.mx/cms/uploads/attachment/file/256601/Distribuci_n_de_Gas_Licuado_de_Petr_leo_por_medio_de_ductos.pdf

FIGURE 2. 14 LP GAS DISTRIBUTION INFRASTRUCTURE, 2016

Source: SENER with information from IMP.

FIGURE 2. 15 LP GAS TRANSPORTATION INFRASTRUCTURE TO OCTOBER 2017

Source: LPG Statistical Handbook, October 2017.

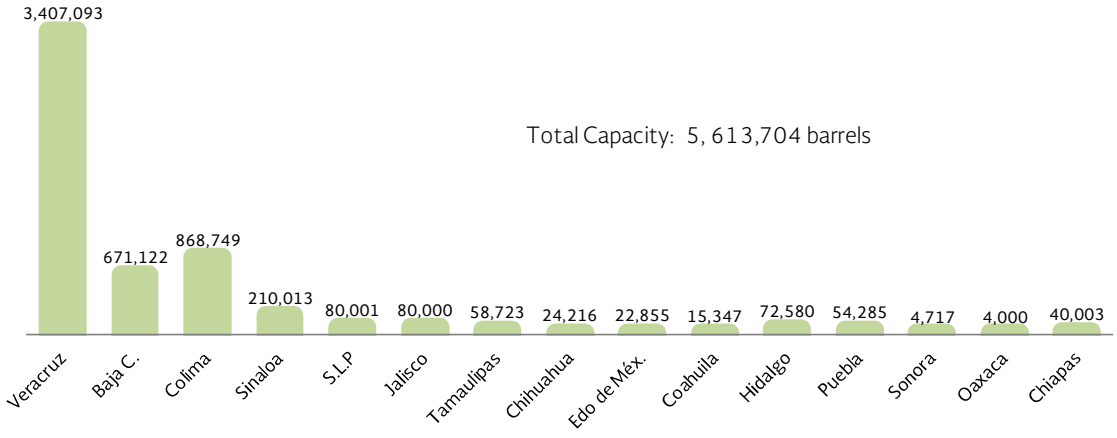
- By the end of 2016, the country had a storage capacity of LP gas of 5,469,415 barrels (see Figure 2.15).

- On November 2014, Pemex and a private company signed an agreement aimed to develop a Project for LP gas underground storage in a salt cavern constructed specifically for such purpose, and whose permit to be executed was issued by the CRE on April 2015.

- The storage system is located in the community of Shalapa, municipality of Ixhuatlan del Sureste in the state of Veracruz, close to the maritime terminal of Pajaritos. The development consists in a salt cavern with an operational capacity of 1.8 million barrels of LP gas and the construction of the infrastructure required on the surface for the injection, extraction, and transfer of up to 120,000 barrels per day[29].

[29] http://www.cydsa.com/almacenamientos/

FIGURE 2. 16 LP GAS STORAGE CAPACITY, 2016



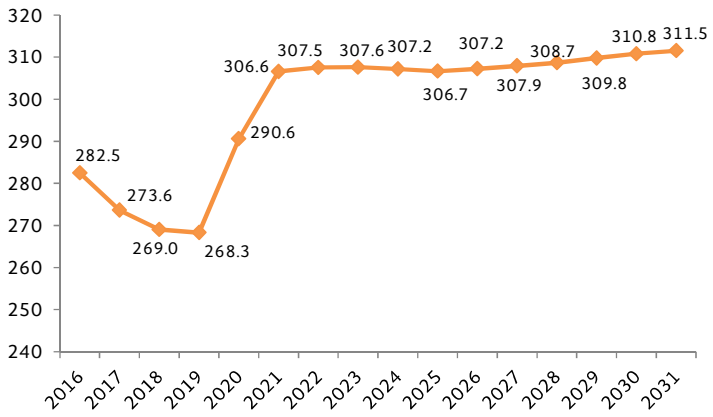
Source: SENER with information from CRE.

CHAPTER THREE. LP GAS PROSPECTIVE MARKET

3.1 LP Gas Domestic Demand by Sector

In 2031 is expected a LP gas demand of 311.5 MBD, 10.2% more regarding 2016, increase associated to the supply of propane as an input in the production chain of plastics by 2020 of the subsidiary productive enterprise Pemex Ethylene (see Figure 3.1).

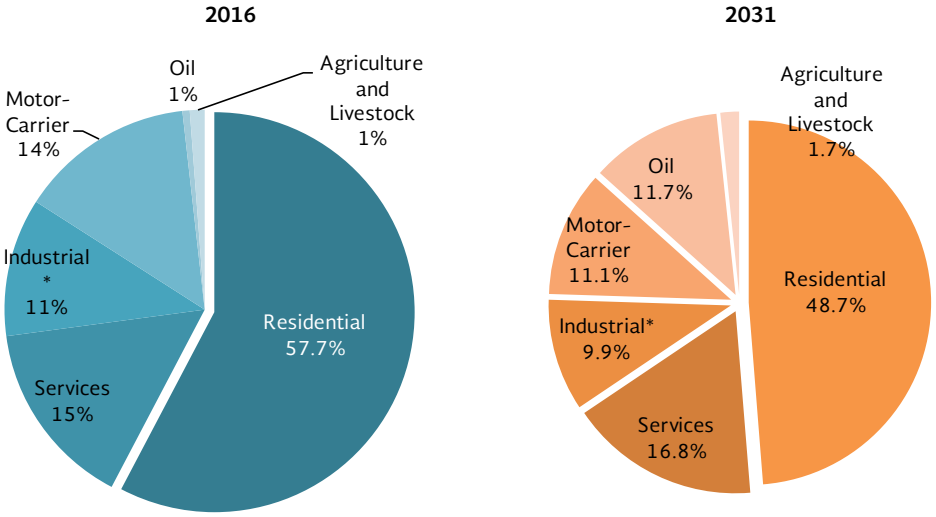
FIGURE 3. 1. LP GAS DOMESTIC DEMAND, 2016-2031
(MBD)



Source: SENER with information from IMP.

In 2031, the residential sector will remain as the largest LP gas consumer, with a projected volume of 151.8 MBD, equivalent to 48.7% of the total domestic demand of this fuel; however, it will decrease 6.9% regarding 2016. Within the next 15 years, LP gas demand in the services sector is estimated in 52.5 MBD; 30.9 MBD in the industrial sector; 34.7 MBD in motor-carrier; 36.4 MBD in the oil sector; and, finally, 5.2 MBD in the agriculture and livestock sector (see Figure 3.2).

FIGURE 3. 2. LP GAS DOMESTIC DEMAND BY SECTOR, 2016-2031.
(MBD)



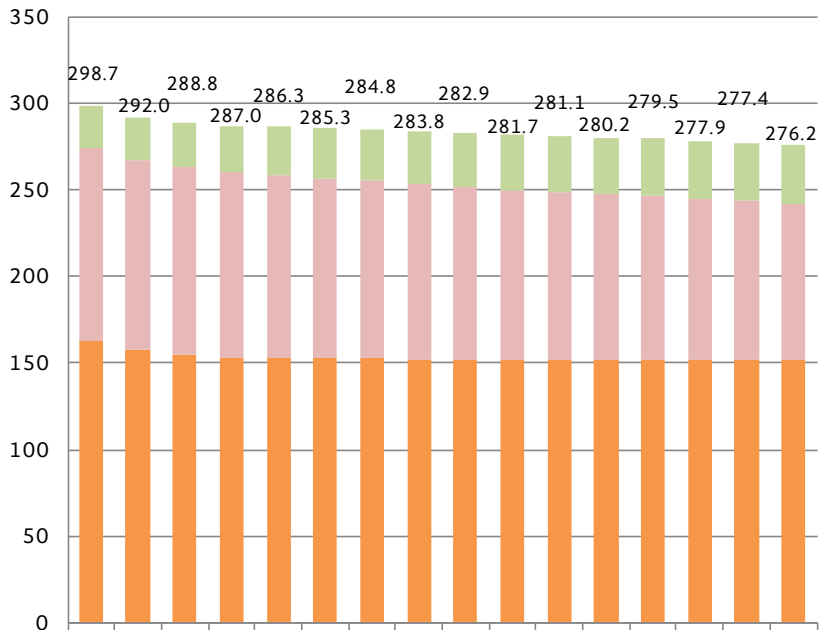
Note: Includes propane and butanes used as inputs in the Industrial Sector.
Source: SENER based on information from IMP.

LP Gas Demand in the Residential Sector

In 2031, the residential sector will present a fuels demand of 276.2 MBDLPGE, a decrease of 7.6% regarding 2016. In this sector, LP gas will remain as the most consumed fuel with a share of 54.9% of the total demand, which will represent a volume of 151.8 MBD and a decrease of 6.9% regarding 2016 (see Figure 3.3).

Firewood will remain the second most consumed fuel with a volume of 90.2 MBDLPGE, with a 32.6% share. As LP gas, firewood will decrease its demand by 18.9% regarding 2016. In the case of natural gas, it will increase its demand by 40% regarding 2016, going from 24.4 MBDLPGE to 34.2 MBDLPGE.

FIGURE 3. 3. FUELS CONSUMPTION IN THE RESIDENTIAL SECTOR, 2016-2031
(MBDLPGE)



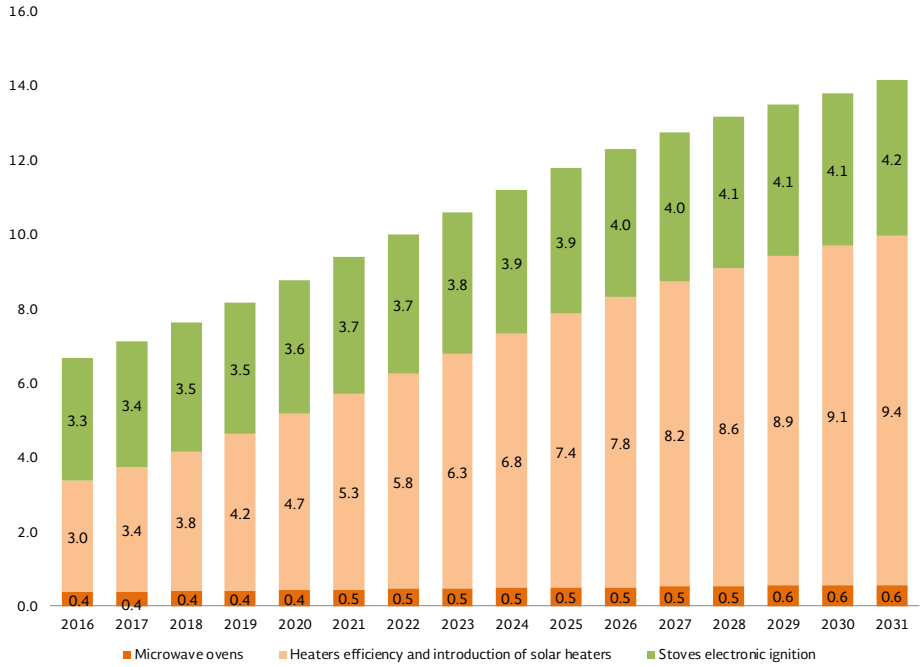
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Natural Gas	24.4	24.9	25.9	27.0	27.9	28.8	29.6	30.3	31.0	31.6	32.1	32.7	33.1	33.6	34.0	34.2
Firewood	111.0	109.5	108.5	107.0	105.6	103.7	102.7	101.2	99.8	98.1	97.0	95.6	94.4	92.3	91.4	90.2
LP Gas	163.0	157.6	154.4	153.0	152.8	152.7	152.6	152.3	152.1	152.0	151.9	151.9	151.9	152.0	152.1	151.8

Source: SENER with information from IMP.

The LP gas savings in the residential sector will reach a volume of 14.1 MBD in 2031, derived from the efficiency of heaters and the introduction of solar heaters, the incorporation of microwave ovens and electric ignition stoves. The savings associated with the efficiency of heaters and the introduction of solar heaters will reach a volume of 9.4 MBD, which will represent a share of 66.6% of the total saving of LP gas. Regarding the saving from electronic ignition stoves, it will be of 4.2 MBD, and 0.6 MBD from microwave ovens (see Figure 3.4).

FIGURE 3. 4. LP GAS SAVING IN RESIDENTIAL CONSUMPTION DUE TO TECHNICAL IMPROVEMENTS AND CHANGES IN THE CONSUMPTION PATTERNS, 2016-2031

(MBD)



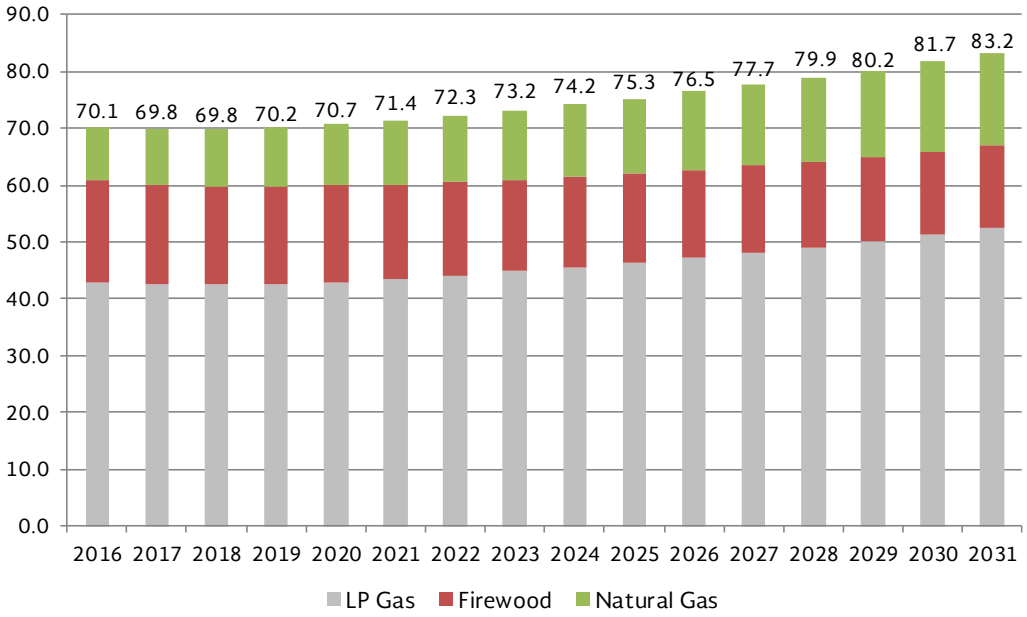
Source: SENER with information from IMP.

LP Gas Demand in the Services Sector

In 2031, the services sector will demand a fuels volume of 83.2 MBDLPGE, an increase by 18.7% regarding 2016. In this sector, LP gas will be the most consumed with a share of 63.1%, equivalent to 52.5 MBD and an AAGR of 1.3% from 2016 to 2031. Natural gas will be the second most demanded fuel with a share of 19.6% (16.34 MBDLPGE) and an AAGR of 3.8% from 2016 to 2031.

Finally, firewood will have a demand of 14.4 MBDLPGE, which represents a share of 17.3% and an AAGR of -1.4% for the same period (see Figure 3.5).

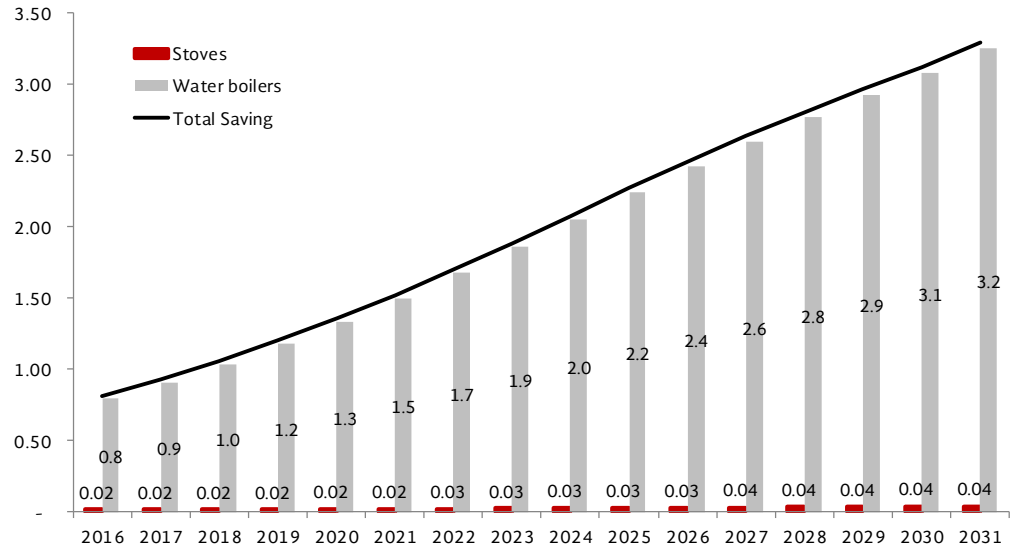
FIGURE 3. 5. FUELS CONSUMPTION IN THE SERVICES SECTOR, 2017-2031
(MBDLPGE)



Source: SENER with information from IMP

The saving of LP gas in the services sector will increase from 0.82 MBD in 2016 to 3.24 MBD in 2031, which will represent a cumulative saving of 32.1 MBD during the period 2016-2031. Such saving is associated to the efficiency in water heaters and stoves. The saving derived from heaters' efficiency will be of 3.2 MBD in 2031, while the savings from stoves will be of 0.04 MBD (see Figure 3.6).

FIGURE 3. 6. LP GAS SAVING IN THE SERVICES SECTOR BY TYPE OF EQUIPMENT, 2016-2031
(MBD)

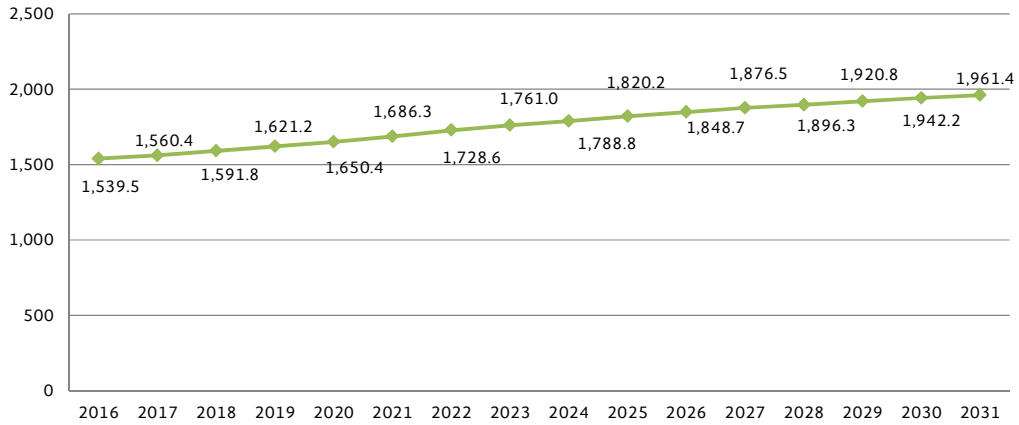


Source: SENER with information from IMP.

LP Gas Demand in the Motor-Carrier Sector

The motor-carrier sector fuels demand is expected to reach a volume of 1,961.4 MBDLPGE in 2031, which represents an increase of 27.4% regarding 2016, related to an increase in the vehicle fleet, which is estimated in 42 million units by the end of the prospective period (see Figure 3.7).

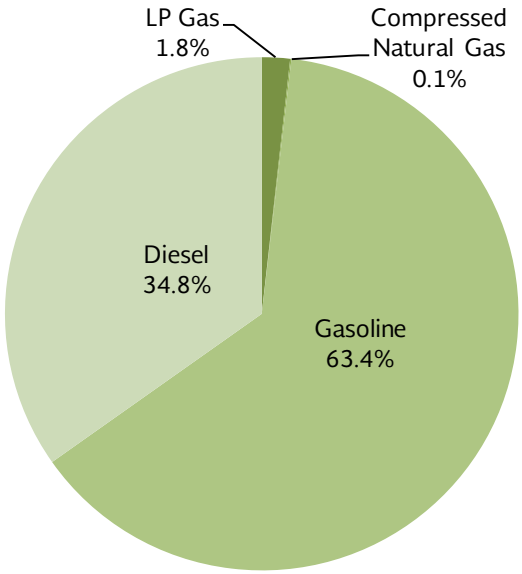
FIGURE 3. 7 FUELS DEMAND IN THE MOTOR-CARRIER SECTOR, 2016-2031
(MBDLPGE)



Source: SENER with information from IMP.

By 2031, gasoline will remain as the most consumed fuel with a share of 63% of the total demand, which means a volume of 1,242.9 MBDLPGE. Diesel will be second with 682.3 MBDLPGE, 35% of share; and finally, LP gas and NG with a share of 2% and 0.1%, respectively (see Figure 3.8).

FIGURE 3. 8 FUELS DEMAND IN THE MOTOR-CARRIER SECTOR, 2031
(Percentage)



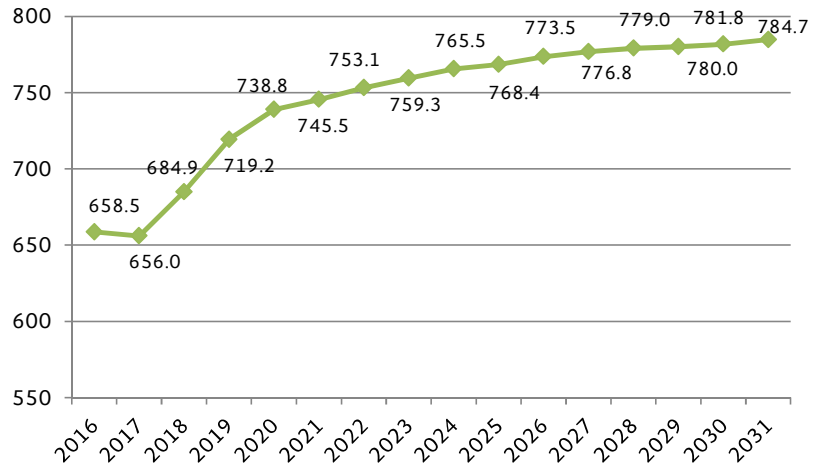
Source: SENER with information from IMP.

LP Gas Demand in the Industrial Sector

In 2031, it is expected the industrial GDP will grow 4,400 million pesos[30]. It is estimated that in the last 15 years, the fuels demand of the industrial sector will increase by 19.2%, going from 658.5 MBDLPGE in 2016 to 784.7 MBDLPGE in 2031, and an AAGR of 1.2% during this period. In this sector, natural gas will remain as the most consumed fuel with a volume of 506.0 MBDLPGE, which represents a share of 64.5%; it will be seconded by petroleum coke, carbon diesel, and finally, LP gas with shares of 13.1%, 12.4%, 6.0%, and 3.9%, respectively.

LP gas will reach a volume of 30.9 MBD decreasing 2.1% regarding 2016 by the end of the period (see Figure 3.9).

FIGURE 3. 9. FUELS DEMAND IN THE INDUSTRIAL SECTOR, 2016-2031
(MBDLPGE)



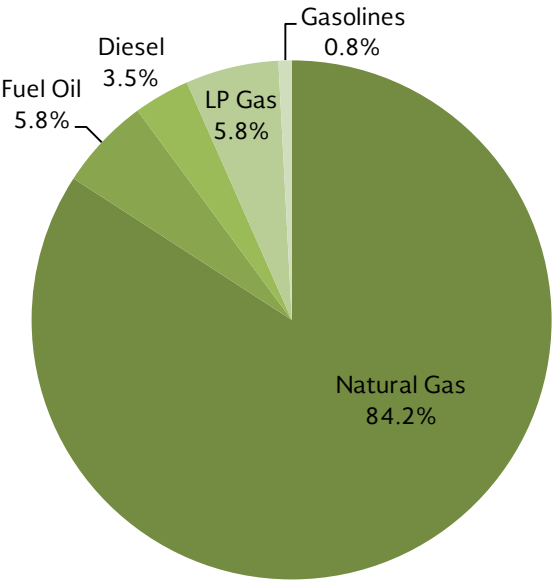
Source: SENER with information from IMP.

LP Gas Demand in the Oil Sector

In 2031, the fuels demand in the oil sector will increase by 5.2% regarding 2016, going from 596.9 MBDLPGE to 628.1 MBDLPGE. Natural gas will be the most consumed fuel in 2031 with 528.6 MBDLPGE, seconded by the LP gas with a demand of 36.4 MBDLPGE, fuel oil with 36.1 MBDLPGE, diesel with 21.8 MBDLPGE, and finally, gasoline with 5.1 MBDLPGE (see Figure 3.10).

[30] Based on information from INEGI and Oxford Economics.

FIGURE 3. 10. FUELS DEMAND IN THE OIL SECTOR, 2031
(Percentage)



Source: SENER with information from IMP.

LP Gas Regional and State Demand

The Central region will display the largest demand with a volume of 114.0 MBD, followed by the South-Southeast region with 76.7 MBD, the Central-Western with 55.3 MBD, the Northeast with 39.6 MBD, and finally, the Northwest region with 25.9 MBD.

In 2031, the demand in the Central region will decrease 0.8% regarding 2016, going from 115.0 MBD to 114.0 MBD. In this region, the State of Mexico will remain the larger consumer of LP gas with a volume of 51.8 MBD, representing 45.43% of the regional total demand and 16.62% of the national demand, mainly due to the number of households in the state (according to data from INEGI). On the contrary, Tlaxcala will be the state with the smallest demand in the region, with a volume of 4.1 MBD and a 3.5% share in the regional demand.

The South-Southeast region will have a 24.6% share in the LP gas national demand, being the state of Veracruz the largest LP gas consumer in the region with a 50.5 MBD volume and a share of 65.8% in the regional demand. The latter, because the affiliate Pemex Ethylene located in the Petrochemical Complex Morelos in Coatzacoalcos, Veracruz, will start producing propane by 2020 for producing ethane. The state with the smallest demand in this region will be Campeche, with a volume of 1.1 MBD and a 1.4% share in the total regional share.

The Central-Western region will have a share of 17.7% of the LP gas national total demand. It is estimated that by 2031, Jalisco will be the state with the largest demand, a volume of 18.1 MBD and a share of 32.7% of the regional demand, mainly due to its use in the agricultural and livestock sector. The state of Colima will present the smallest demand with 1.8 MBD.

The Northeast region will have a 12.7% share of the national demand, being Chihuahua the state with the largest demand of this fuel with a volume of 9.7 MBD and a share of 24.4% of the regional demand. As for Durango, this state will have the smallest demand, 3.8 MBD and a 9.6% share of the regional demand.

Finally, the Northwest demand will display an 8.3% share of national total demand, being Baja California the state with the largest demand, a volume of 9.3 MBD and a share of 35.9% of the regional demand. On the other hand, Baja California Sur will have the smallest demand, reaching a volume of 2.3 MBD and a share of 8.8% of the regional demand (see Chart 3.1).

TABLE 3. 1 LP GAS DEMAND BY REGION AND FEDERAL ENTITY, 2016-2031 (MBD)

State	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Northwest	25.5	24.4	24.4	24.5	24.7	24.9	25.1	25.2	25.4	25.5	25.6	25.7	25.8	25.9	26.0	25.9	0.1
Baja California	9.0	8.9	8.8	8.9	8.9	9.0	9.0	9.1	9.1	9.2	9.2	9.2	9.2	9.3	9.3	9.3	0.2
Baja California Sur	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	0.6
Sinaloa	6.7	6.4	6.4	6.5	6.5	6.6	6.6	6.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	0.0
Sonora	7.7	7.1	7.1	7.2	7.2	7.3	7.4	7.4	7.5	7.5	7.5	7.6	7.6	7.6	7.7	7.7	-0.1
Noreste	39.4	39.1	38.1	37.6	37.8	38.1	38.4	38.7	38.9	39.0	39.2	39.4	39.5	39.7	39.7	39.6	0.0
Coahuila	8.1	8.8	8.6	8.5	8.6	8.7	8.9	8.9	9.0	9.1	9.1	9.2	9.2	9.3	9.3	9.3	0.9
Chihuahua	10.1	10.4	10.0	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.7	9.7	-0.3
Durango	3.3	3.5	3.4	3.4	3.4	3.5	3.5	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.8	3.8	1.0
Nuevo León	9.0	7.4	7.2	7.0	7.1	7.2	7.2	7.3	7.3	7.4	7.4	7.4	7.4	7.4	7.4	7.4	-1.3
Tamaulipas	9.0	9.1	8.9	8.8	8.9	8.9	9.0	9.1	9.2	9.2	9.3	9.3	9.4	9.5	9.5	9.5	0.4
Central-Western	64.2	60.6	59.3	58.1	57.7	57.3	57.0	56.7	56.4	56.1	55.9	55.7	55.6	55.4	55.3	55.3	-1.0
Aguascalientes	6.2	4.4	4.3	4.2	4.1	4.1	4.0	4.0	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	-3.3
Colima	1.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.1
Guanajuato	13.7	12.8	12.4	12.1	12.0	11.9	11.8	11.7	11.6	11.6	11.5	11.4	11.3	11.3	11.2	11.2	-1.4
Jalisco	19.2	19.9	19.4	19.1	19.0	18.8	18.7	18.6	18.5	18.5	18.4	18.3	18.3	18.2	18.2	18.1	-0.4
Michoacán	10.2	9.4	9.1	9.0	8.9	8.8	8.8	8.7	8.7	8.6	8.6	8.5	8.5	8.5	8.4	8.4	-1.3
Nayarit	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	0.1
Querétaro	3.1	2.4	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	-2.4
San Luis Potosí	4.6	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.4	-0.3
Zacatecas	3.4	3.5	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	-0.3
Central	115.0	112.2	110.4	109.9	110.3	110.9	111.2	111.2	111.4	111.5	111.6	111.9	112.3	112.8	113.4	114.0	-0.1
Ciudad de México	25.0	27.6	26.9	26.5	26.3	26.1	25.9	25.6	25.3	25.1	24.8	24.7	24.5	24.4	24.3	24.3	-0.2
Hidalgo	8.2	7.5	7.4	7.4	7.4	7.5	7.6	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.1	8.1	-0.1
México	49.7	49.6	49.1	49.1	49.6	50.0	50.3	50.4	50.5	50.6	50.7	50.9	51.1	51.3	51.5	51.8	0.3
Morelos	5.5	5.4	5.3	5.2	5.2	5.3	5.3	5.3	5.4	5.4	5.5	5.5	5.5	5.6	5.7	5.7	0.3
Puebla	22.0	18.1	17.9	17.9	18.0	18.2	18.3	18.5	18.6	18.7	18.9	19.1	19.3	19.5	19.7	20.0	-0.7
Tlaxcala	4.6	3.9	3.8	3.8	3.8	3.8	3.9	3.9	3.9	3.9	3.9	4.0	4.0	4.0	4.1	4.1	-0.7
South-Southeast	38.3	37.4	36.9	38.2	60.1	75.4	75.8	75.8	75.1	74.6	74.9	75.2	75.5	76.0	76.4	76.7	4.7
Campeche	1.0	1.0	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	0.5
Chiapas	4.9	4.5	4.5	4.6	4.6	4.7	4.8	4.9	5.0	5.1	5.1	5.2	5.3	5.4	5.5	5.6	0.9
Guerrero	1.4	2.7	2.7	2.7	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.1	3.2	3.2	5.9
Oaxaca	4.8	4.3	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.3	4.4	4.4	4.4	4.5	4.5	4.5	-0.4
Quintana Roo	4.2	3.8	3.8	3.8	3.8	3.9	3.9	3.9	4.0	4.1	4.1	4.2	4.3	4.3	4.4	4.5	0.5
Tabasco	5.6	4.0	3.7	3.7	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8	-2.6
Veracruz	13.3	13.8	13.7	15.1	36.9	51.9	52.1	51.8	50.9	50.1	50.1	50.2	50.2	50.3	50.4	50.5	9.3
Yucatán	3.2	3.3	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.5	3.5	3.5	3.6	0.7
Total Domestic	282.5	273.6	269.0	268.3	290.6	306.6	307.5	307.6	307.2	306.7	307.2	307.9	308.7	309.8	310.8	311.5	0.7

Note: Does not include Pemex self-consumptions.

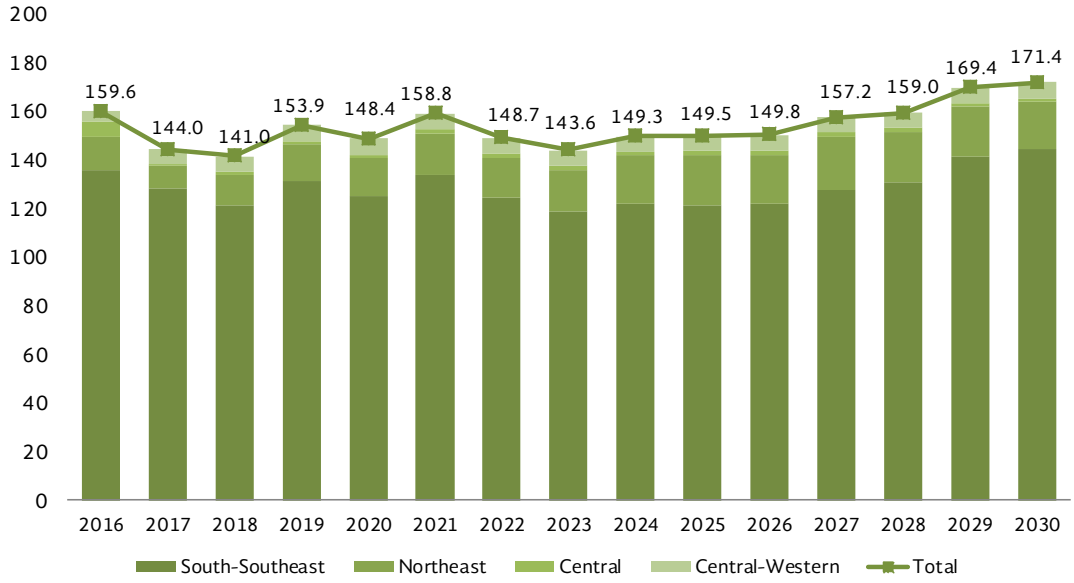
Source: SENER with information from IMP.

3.2 LP Gas Production

In 2031, LP gas production is expected to reach a volume of 171.4 MBD, an increase by 7.4% regarding 2016 and an AAGR of 0.5% during the period 2016-2031.

The South-Southeast region will have the largest contribution in the national production, and it is estimated to reach a volume of 144.0 MBD, seconded by the Northeast region with 19.4 MBD; the Central-Western with 6.4 MBD; and the Central with 1.7 MBD of the national total supply (see Figure 3.11).

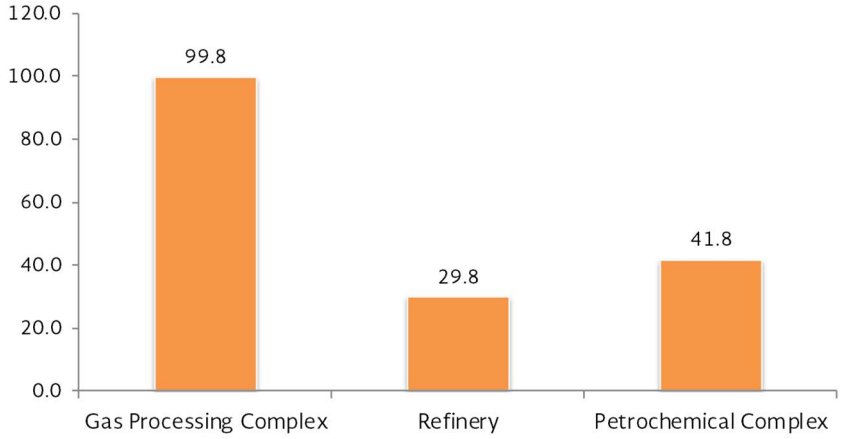
FIGURE 3. 11. LP GAS PRODUCTION, 2016-2031
(MBD)



Source: SENER with information from IMP.

By 2031, from the total production of LP gas, it is estimated that 58.2% will be produced in the Gas Processing Complexes (CPGs), 24.4% from the Petrochemical Complexes, and finally, 17.4% from refineries.

FIGURE 3. 12 DISTRIBUCIÓN DE LA PRODUCCIÓN DE LP GAS 2031
(MBD)

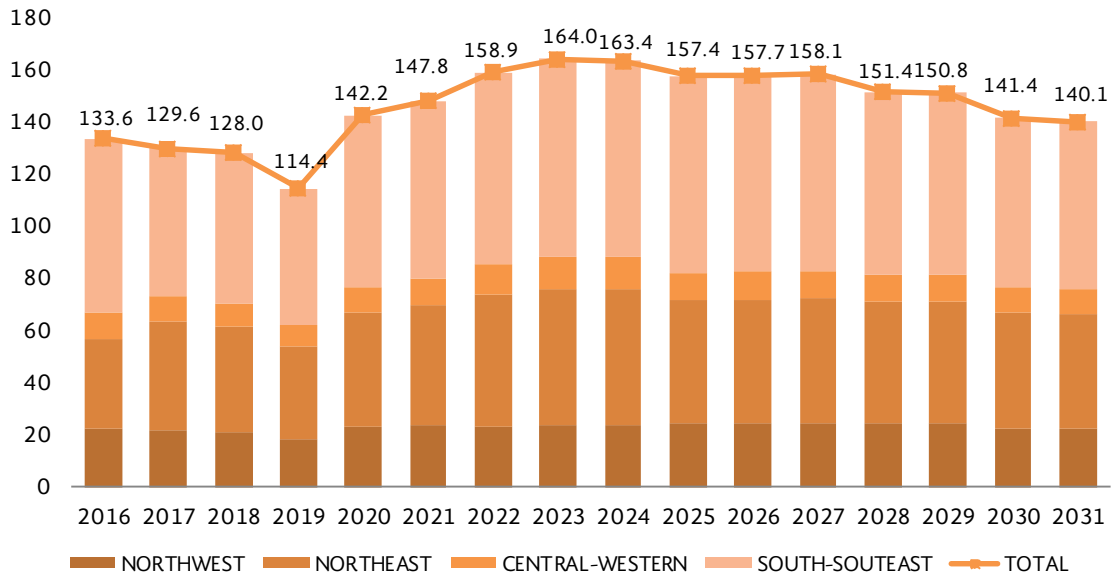


Source: SENER with information from IMP.

3.3 LP Gas Trade

In 2031, LP gas imports are estimated to reach a volume of 140.1 MBD, 4.9% more regarding 2016. The South-Southeast region will receive the largest percentage of imports, which are estimated to reach 45.9% of the total, seconded by the Northeast region with 31.2%, and finally, the Northwest and Central-Western regions with 16.0% and 6.9%, respectively (see Figure 3.13).

FIGURE 3. 13. LP GAS FOREIGN TRADE, 2016-2031
(MBD)



Source: SENER with information from IMP.

ANNEXES

TABLE A. 1. LP GAS DOMESTIC DEMAND BY SECTOR
(MBD)

Sector	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Total	**311.2**	**307.0**	**297.2**	**286.7**	**292.9**	**290.4**	**290.9**	**286.5**	**287.2**	**283.0**	**282.5**	**-1.0**
Residential	198.1	196.0	191.5	183.5	188.3	182.9	179.6	171.0	166.4	160.3	163.0	-1.9
Services	45.8	42.5	39.9	39.6	40.5	41.9	42.6	43.4	42.7	42.3	42.9	-0.6
Industrial[1]	29.8	29.1	27.8	27.4	28.9	27.0	27.4	29.8	30.2	31.4	31.6	0.6
Motor-Carrier	28.1	30.5	28.3	26.8	26.6	29.2	32.8	35.8	39.4	41.4	39.9	3.6
Oil	5.2	5.7	5.1	4.9	4.0	4.6	4.4	2.5	5.1	4.2	1.7	-10.7
Agriculture and Livestock	4.2	3.3	4.6	4.4	4.4	4.7	4.1	4.0	3.4	3.3	3.4	-2.1

[1]Includes butane, isobutane, and propane sales as inputs in the Central Region.
Source. Elaborated by IMP, based on Pemex and SENER.

TABLE A. 2. RESIDENTIAL SECTOR FUELS DOMESTIC DEMAND, 2006-2016
(MBD and MBDLPGE)

Year	Residential Sector Fuels			Total
	Natural Gas	LP Gas	Firewood	
	MBDLPGE	MBD	MBDLPGE	MBDLPGE
2006	21.8	198.1	125.9	345.8
2007	22.8	196.0	125.2	344.0
2008	22.5	191.5	124.2	338.2
2009	21.4	183.5	124.0	328.8
2010	22.1	188.3	123.1	333.5
2011	21.0	182.9	121.4	325.3
2012	21.7	179.6	119.2	320.4
2013	22.3	171.0	117.5	310.8
2014	22.6	166.4	115.4	304.4
2015	24.4	160.3	113.2	297.9
2016	24.4	163.0	111.0	298.4
AAGR	1.2	-1.9	-1.3	

Source. Elaborated by IMP, based on Pemex and SENER.

TABLE A. 3. SERVICES SECTOR FUELS DOMESTIC DEMAND, 2006-2016
(MBD and MBDLPGE)

Year	Fuels of theServices Sector			Total
	Natural Gas	LP Gas	Firewood	
	MBDLPGE	MBD	MBDLPGE	MBDLPGE
2006	6.0	45.8	20.1	72.0
2007	6.2	42.5	20.0	68.7
2008	6.5	39.9	19.9	66.3
2009	6.3	39.6	19.8	65.8
2010	6.9	40.5	19.7	67.1
2011	6.5	41.9	19.4	67.9
2012	6.9	42.6	19.1	68.6
2013	7.3	43.4	18.8	69.5
2014	7.7	42.7	18.5	68.8
2015	8.6	42.3	18.1	69.0
2016	9.4	42.9	17.8	70.1
AAGR	4.6	-0.6	-1.3	**-0.3**

Source. Elaborated by IMP, based on Pemex and SENER.

TABLE A. 4. MOTOR-CARRIER SECTOR FUELS DEMAND 2016
(MBD and MBDLPGE)

Year	LP Gas	Compressed Natural Gas	Gasoline	Diesel	Total
2006	20.4	0.1	718.3	343.9	1,082.7
2007	22.1	0.1	760.3	364.0	1,146.5
2008	20.5	0.1	792.0	386.0	1,198.6
2009	19.5	0.1	791.9	365.7	1,177.2
2010	19.3	0.1	801.6	376.8	1,197.9
2011	21.2	0.1	799.1	382.4	1,202.9
2012	23.9	0.1	803.2	394.0	1,221.1
2013	26.0	0.1	786.9	386.4	1,199.5
2014	28.7	0.1	776.3	390.2	1,195.3
2015	30.1	0.1	792.9	382.5	1,205.6
2016	29.0	0.2	823.0	388.4	1,240.5
AAGR 2006-2016	3.6	3.4	1.4	1.2	

Source. Elaborated by IMP, based on Pemex and SENER.

TABLE A. 5. INDUSTRIAL SECTOR FUELS DEMAND, 2016

(MBD and MBDLPGE)

Year	Natural Gas	Fuel Oil	Diesel	LP Gas	Petroleum Coke	Coal	Total
	MBDLPGE	MBDLPGE	MBDLPGE	MBD	MBDLPGE	MBDLPGE	MBDLPGE
2006	261.3	78.7	36.3	29.8	77.5	36.4	520.0
2007	268.0	73.4	37.0	29.1	89.7	33.6	530.9
2008	264.5	57.2	38.0	27.8	77.8	63.6	529.0
2009	235.2	48.0	34.4	27.4	64.5	44.1	453.6
2010	271.6	38.8	36.5	28.9	60.0	94.8	530.7
2011	290.9	33.6	40.8	27.0	65.6	98.4	556.3
2012	304.3	23.1	46.9	27.4	67.7	96.7	566.0
2013	319.5	17.5	46.2	29.8	81.7	125.3	620.0
2014	338.4	10.5	43.9	30.2	77.5	99.9	600.4
2015	354.6	14.9	44.4	31.4	87.4	90.9	623.6
2016	382.4	21.9	39.3	31.6	93.5	81.7	650.4
AAGR	3.9	-12.0	0.8	0.6	1.9	8.4	
Percentage 2016	**58.8%**	**3.4%**	**6.0%**	**4.9%**	**14.4%**	**12.6%**	**100.0%**

Source. Elaborated by IMP, based on Pemex and SENER.

TABLE A. 6. OIL SECTOR FUELS DOMESTIC DEMAND, 2016

(MBD and MBDLPGE)

Year	Natural Gas	Fuel Oil	Diesel	LP Gas	Gasoline	Total
	MBDLPGE	MBDLPGE	MBDLPGE	MBD	MBDLPGE	MBDLPGE
2006	556.4	60	22	5.2	0.8	645.3
2007	547.6	59	26	5.7	0.8	639.1
2008	560.4	58	26	5.1	0.8	650.6
2009	553.8	54	30	4.9	0.8	642.7
2010	576.2	46	29	4.0	0.8	655.6
2011	563.3	49	26	4.6	1.1	644.1
2012	585.6	39	30	4.4	1.5	659.7
2013	585.4	42	33	2.5	1.6	664.4
2014	586.3	39	31	5.1	2.6	664.1
2015	566.8	36	30	4.2	2.2	639.3
2016	546.7	32	15	1.7	1.2	596.9
AAGR	-0.2	-6.2	-3.7	-10.7	3.6	

Source. Elaborated by IMP, based on Pemex and SENER.

TABLE A. 7. OIL SECTOR LP GAS DEMAND, 2006-2016
(MBD)

Concept	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Total	5.2	5.7	5.1	4.9	4.0	4.6	4.4	2.5	5.1	4.2	1.7	-10.7
Refining	4.6	5.0	4.3	4.3	3.4	3.9	3.8	2.2	2.9	2.3	0.0	NA
Gas and Basic Petrochemistry	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.3	0.4	0.5	0.4	-3.5
Exploration and Production	0.0	0.0	0.0	0.0	0.0	-	-	-	1.8	1.4	1.3	73.9
Petrochemistry	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	NA

Source. IMP, based on Pemex and SENER.

TABLE A. 8. LP GAS DOMESTIC BALANCE, 2006-2016
(MBD)

Concept	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Origin	**317.4**	**308.9**	**298.0**	**289.6**	**291.6**	**292.9**	**292.0**	**286.5**	**291.0**	**281.2**	**293.1**	**-0.8**
Domestic supply	241.8	226.0	209.3	209.6	212.8	210.5	206.4	207.0	206.1	176.0	159.6	-4.1
Pemex Gas and Basic Petrochemistry	215.3	198.9	182.4	180.6	184.2	185.4	176.0	177.7	175.7	149.7	138.9	-4.3
Pemex Refining	26.1	26.8	26.4	28.0	26.7	22.7	27.5	26.1	27.1	22.9	17.6	-3.9
Pemex Petrochemistry	0.0	-	-	-	0.0	-	-	-	-	-	-	NA
Pemex Exploration and Production	0.3	0.2	0.6	1.0	1.9	2.4	2.9	3.3	3.3	3.3	3.1	24.9
Import	75.6	82.9	88.7	80.0	78.8	82.4	85.6	79.5	85.0	105.2	133.6	5.9
Destination	**313.3**	**308.0**	**297.3**	**287.8**	**292.9**	**291.9**	**291.0**	**286.7**	**288.5**	**283.0**	**287.0**	**-0.9**
Domestic Demand	311.2	307.0	297.2	286.7	292.9	290.4	290.9	286.5	287.2	283.0	282.5	-1.0
Agriculture and Livestock Sector	4.2	3.3	4.6	4.4	4.4	4.7	4.1	4.0	3.4	3.3	3.4	-2.1
Motor-Carrier Sector	28.1	30.5	28.3	26.8	26.6	29.2	32.8	35.8	39.4	41.4	39.9	3.6
Industrial Sector	29.8	29.1	27.8	27.4	28.9	27.0	27.4	29.8	30.2	31.4	31.6	0.6
Oil Sector	5.2	5.7	5.1	4.9	4.0	4.6	4.4	2.5	5.1	4.2	1.7	-10.7
Residential Sector	198.1	196.0	191.5	183.5	188.3	182.9	179.6	171.0	166.4	160.3	163.0	-1.9
Services Sector	45.8	42.5	39.9	39.6	40.5	41.9	42.6	43.4	42.7	42.3	42.9	-0.6
Export	2.1	1.0	0.1	1.1	0.1	1.5	0.1	0.2	1.3	0.0	4.5	7.9
Inventories variation *	**4.1**	**0.9**	**0.7**	**1.8**	**- 1.3**	**1.0**	**1.0**	**- 0.1**	**2.5**	**- 1.8**	**6.2**	**4.3**

Note: The volume of propane and butanes consumed as inputs are included in the Industrial Sector.
* Includes differences, packaging, and vessels in transit.
Source: IMP, based on Pemex and SENER.

TABLE A. 9. LP GAS, PROPANE, AND BUTANES BALANCE, NORTHWEST REGION, 2006-2016
(MBD)

Concept	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Origin	27.1	26.0	25.3	23.9	23.9	24.4	24.4	24.7	25.5	25.0	25.5	- 0.6
Domestic	-	-	-	-	-	-	-	-	-	-	-	
Import	21.1	17.9	16.3	14.8	15.5	16.7	13.4	12.3	14.7	17.0	22.1	0.5
From other regions	6.0	8.1	9.0	9.1	8.5	7.7	11.0	12.4	10.7	8.0	3.4	- 5.5
Destination	27.1	26.0	25.3	23.9	23.9	24.4	24.4	24.7	25.5	25.0	25.5	- 0.7
Domestic Demand	26.7	26.1	25.1	24.0	24.0	24.3	24.4	24.7	25.4	25.0	25.5	- 0.5
Agriculture and Livestock Sector	0.7	0.5	0.5	0.5	0.6	0.7	0.5	0.6	0.6	0.6	0.6	- 0.7
Motor-Carrier Sector	2.7	2.6	2.8	2.1	2.1	2.3	2.6	2.7	3.1	3.5	3.6	3.0
Industrial Sector	3.7	3.7	3.7	3.4	3.3	3.4	3.3	3.5	4.0	4.6	4.7	2.4
Oil Sector												
Residential Sector	14.8	15.1	14.1	14.0	14.0	13.7	13.9	13.8	13.5	11.2	11.5	- 2.5
Services Sector	5.0	4.2	4.0	4.0	4.0	4.3	4.0	4.2	4.2	5.1	5.2	0.4
Export												
To other regions	0.5		0.0	0.0								NA
Inventories variation*	- 0.2	- 0.1	0.2	- 0.1	- 0.0	0.1	0.0	- 0.0	0.0	- 0.0	0.0	NA

* Includes differences, packaging, and vessels in transit. Source: IMP, based on Pemex and SENER.

TABLE A. 10. LP GAS, PROPANE, AND BUTANES BALANCE, NORTHWEST REGION, 2006-2016
(MBD)

Concept	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Origin	59.8	62.7	61.8	58.9	56.8	52.2	52.6	52.7	42.4	47.5	48.0	- 2.2
Domestic	20.6	23.3	23.4	23.6	22.5	21.9	20.7	22.1	20.2	18.0	13.8	- 3.9
Import	39.3	39.4	38.3	35.3	34.3	30.3	31.9	30.6	22.2	29.5	34.3	- 1.4
From other regions			0.0	0.0				0.1	0.1		0.0	NA
Destination	59.8	62.7	61.8	58.9	56.9	52.2	52.5	52.9	42.5	47.6	48.1	- 2.2
Domestic Demand	44.4	43.5	40.0	38.1	41.0	40.7	41.8	42.7	40.3	38.7	39.4	- 1.2
Agriculture and Livestock Sector	0.8	0.5	2.3	2.1	2.2	2.1	1.7	1.8	0.9	0.9	0.9	1.3
Motor-Carrier Sector	7.3	7.1	5.3	4.8	5.2	5.4	7.0	7.3	9.2	9.4	9.6	2.7
Industrial Sector	6.0	6.4	5.8	4.8	5.2	5.2	4.5	5.0	5.2	5.0	5.1	- 1.7
Oil Sector	-	-	-	-	-	-	-	-	-	-	-	
Residential Sector	22.5	22.0	20.7	20.2	21.6	20.8	22.0	21.8	17.1	16.1	16.5	- 3.0
Services Sector	7.8	7.4	5.9	6.1	6.8	7.3	6.5	6.8	7.9	7.3	7.4	- 0.6
Export												
To other regions	15.4	19.3	21.8	20.9	15.9	11.4	10.8	10.2	2.2	8.8	8.7	- 5.6
Inventories variation*	0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	0.1	- 0.1	0.0	- 0.1	0.0	

Includes differences, packaging, and vessels in transit.
Source: IMP, based on Pemex and SENER.

TABLE A. 11. LP GAS, PROPANE, AND BUTANES BALANCE, CENTRAL-WESTERN REGION, 2006-2016
(MBD)

Concept	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Origin	70.1	69.7	67.8	64.3	65.9	65.4	64.4	64.0	63.3	64.7	63.9	-0.9
Domestic	3.3	2.2	2.6	2.0	1.5	1.6	1.7	2.4	2.9	3.2	3.9	1.8
Import	4.5	11.0	10.0	10.4	9.2	2.0	1.8	0.1	3.2	4.3	10.1	8.5
From other regions	62.4	56.5	55.2	52.0	55.2	61.9	60.9	61.5	57.2	57.1	49.9	-2.2
Destination	70.2	69.7	67.8	64.3	65.9	65.4	64.4	64.0	63.3	64.7	64.2	-0.9
Domestic Demand	70.2	69.7	67.8	64.3	65.9	65.4	64.4	64.0	63.3	64.7	64.2	-0.9
Agriculture and Livestock Sector	1.2	1.0	1.1	1.1	1.1	1.1	0.9	0.9	1.0	1.0	1.1	-1.4
Motor-Carrier Sector	5.3	5.1	5.0	5.4	6.0	6.7	7.8	8.8	8.9	9.8	9.6	6.2
Industrial Sector	4.2	4.1	4.4	4.3	5.0	4.8	5.4	6.5	7.2	8.7	8.6	7.5
Oil Sector					0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential Sector	51.6	51.5	48.6	44.9	45.4	44.5	41.3	37.5	35.9	34.5	34.3	-4.0
Services Sector	7.9	8.0	8.6	8.6	8.5	8.3	9.0	10.4	10.3	10.6	10.5	2.9
Export	-	-	-	-	-	-	-	-	-	-	0.0	
To other regions	-	-	0.0	0.0	-	-	-	-	-	-	-	NA
Inventories variation*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	

* Includes differences, packaging, and vessels in transit.
Source: IMP, based on Pemex and SENER.

TABLE A. 12. LP GAS, PROPANE, AND BUTANES BALANCE, CENTRAL REGION, 2006-2016
(MBD)

Concept	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Origin	124.7	122.5	120.2	118.7	120.1	117.4	117.6	114.8	116.0	113.7	114.8	-0.8
Domestic	8.3	9.6	8.4	10.4	10.6	8.5	11.7	10.8	12.2	9.4	6.7	-2.2
Import	-	-	-	-	-	-	-	-	-	-	0.0	
From other regions	116.4	112.9	111.8	108.3	109.4	108.9	105.9	104.0	103.8	104.2	108.2	-0.7
Destination	124.6	122.6	120.3	118.8	120.1	117.3	117.5	114.8	116.1	113.6	115.0	-0.8
Domestic Demand	124.6	122.6	120.3	118.8	120.1	117.3	117.5	114.8	116.1	113.6	115.0	-0.8
Agriculture and Livestock Sector	0.9	0.6	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4	-7.5
Motor-Carrier Sector	9.5	13.4	12.2	11.7	10.4	11.7	11.8	13.3	15.3	15.3	13.8	3.8
Industrial Sector	13.9	13.1	12.0	13.0	13.8	11.5	11.0	11.6	11.7	11.2	11.3	-2.1
Oil Sector					0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential Sector	81.7	78.7	79.8	78.0	79.7	77.6	78.0	75.0	74.6	73.6	76.0	-0.7
Services Sector	18.8	16.8	15.8	15.8	15.7	15.8	16.2	14.5	14.1	13.1	13.7	-3.1
Export	-	-	-	-	-	-	-	-	-	-	-	
To other regions	-	-	0.0	0.0	-	-	-	-	-	-	-	NA
Inventories variation*	0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.0	-0.1	0.0	-0.2	

* Includes differences, packaging, and vessels in transit.
Source: IMP, based on Pemex and SENER.

TABLE A. 13. LP GAS, PROPANE, AND BUTANES BALANCE, SOUTH-SOUTHEAST REGION, 2006-2016
(MBD)

Concept	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	AAGR 2006-2016
Origin	220.4	205.4	199.0	193.1	197.9	212.0	210.8	208.2	215.6	199.7	202.3	-0.9
Domestic	209.6	190.8	174.9	173.5	178.1	178.5	172.4	171.7	170.8	145.3	135.2	-4.3
Import	10.7	14.6	24.1	19.6	19.8	33.4	38.5	36.5	44.8	54.4	67.0	20.1
From other regions			0.0	0.0								NA
Destination	216.2	204.3	198.3	191.1	199.2	211.1	210.0	208.3	213.0	201.4	195.7	-1.0
Domestic Demand	45.3	45.2	44.0	41.5	41.9	42.6	42.7	40.2	42.0	40.9	38.3	-1.6
Agriculture and Livestock Sector	0.7	0.6	0.2	0.2	0.1	0.2	0.4	0.4	0.5	0.4	0.4	-4.2
Motor-Carrier Sector	3.3	2.3	2.9	2.8	2.9	3.2	3.5	3.7	3.0	3.4	3.4	0.2
Industrial Sector	2.1	1.8	1.9	1.8	1.6	2.1	3.2	3.2	2.1	1.9	1.9	-0.8
Oil Sector	5.2	5.7	5.1	4.9	4.0	4.6	4.4	2.5	5.1	4.2	1.7	-10.7
Residential Sector	27.7	28.8	28.3	26.5	27.6	26.3	24.3	22.9	25.3	24.7	24.7	-1.1
Services Sector	6.3	6.1	5.6	5.3	5.6	6.2	6.9	7.5	6.1	6.2	6.2	-0.2
Export	2.1	1.0	0.1	1.1	0.1	1.5	0.1	0.2	1.3	0.0	4.5	7.9
To other regions	168.8	158.1	154.2	148.5	157.2	167.0	167.1	167.9	169.7	160.5	152.9	-1.0
Inventories variation*	4.2	1.1	0.7	2.1	-1.3	0.8	0.9	0.0	2.6	-1.7	6.6	

* Includes differences, packaging, and vessels in transit.
Source: IMP, based on Pemex and SENER.

TABLE A. 14. MOTOR-CARRIER SECTOR FUELS DEMAND, 2016-2031
(MBD and MBDLPGE)

Year	LP Gas	Compressed Natural Gas	Gasoline	Diesel	Total
2016	39.9	0.7	1018.3	480.5	1,539.5
2017	39.9	0.8	1024.8	494.9	1,560.4
2018	38.9	0.9	1044.7	507.3	1,591.8
2019	38.4	1.0	1059.8	522.1	1,621.2
2020	38.7	1.0	1074.7	536.0	1,650.4
2021	39.0	1.1	1091.6	554.5	1,686.3
2022	39.2	1.2	1116.2	571.9	1,728.6
2023	39.0	1.3	1135.2	585.5	1,761.0
2024	38.7	1.4	1152.0	596.7	1,788.8
2025	38.2	1.4	1170.9	609.7	1,820.2
2026	37.6	1.5	1186.4	623.2	1,848.7
2027	37.1	1.5	1201.2	636.7	1,876.5
2028	36.6	1.5	1210.0	648.1	1,896.3
2029	36.1	1.5	1222.5	660.7	1,920.8
2030	35.5	1.5	1232.8	672.4	1,942.2
2031	34.7	1.5	1242.9	682.3	1,961.4
AAGR 2016-2031	**-0.9**	**5.0**	**1.3**	**2.4**	**1.6**

Source: IMP, based on Pemex and SENER.

TABLE A. 15. INDUSTRIAL SECTOR FUELS DOMESTIC DEMAND, 2016-2031
(MBD and MBDLPGE)

Year	Natural Gas (MBDLPGE)	Fuel Oil (MBDLPGE)	LP Gas (MBD)	Diesel (MBDLPGE)	Petroleum Coke (MBDLPGE)	Coal (MBDLPGE)	Total (MBDLPGE)
2016	382.4	21.9	31.6	39.3	93.8	89.7	658.5
2017	385.6	9.3	29.5	42.4	92.2	97.0	656.0
2018	410.4	6.2	29.1	42.6	98.7	97.9	684.9
2019	450.6	3.1	28.6	42.9	96.4	97.6	719.2
2020	472.1	0.0	28.7	43.3	97.1	97.7	738.8
2021	477.4	0.0	28.7	43.6	98.2	97.4	745.5
2022	482.6	0.0	28.9	44.0	100.0	97.7	753.1
2023	487.1	0.0	29.0	44.3	101.3	97.7	759.3
2024	491.4	0.0	29.1	44.7	102.6	97.7	765.5
2025	494.5	0.0	29.3	45.0	102.3	97.4	768.4
2026	497.5	0.0	29.4	45.4	103.5	97.7	773.5
2027	500.3	0.0	29.6	45.7	103.5	97.7	776.8
2028	502.2	0.0	29.9	46.1	103.2	97.7	779.0
2029	503.5	0.0	30.2	46.4	102.5	97.4	780.0
2030	504.5	0.0	30.6	46.8	102.3	97.6	781.8
2031	506.0	0.0	30.9	47.2	103.1	97.5	784.7
AAGR 2016-2031	1.9	NA	-0.1	1.2	0.6	0.6	1.2

Source: IMP, based on Banxico, CONAGUA, CONAPO, CRE, INEGI, Pemex, SENER and private companies.

TABLE A. 16. OIL SECTOR FUELS DOMESTIC DEMAND, 2016-2031
(MBD and MBDLPGE)

Year	Natural Gas (MBDLPGE)	Fuel Oil (MBDLPGE)	Diesel (MBDLPGE)	LP Gas (MBD)	Gasolines (MBDLPGE)	Total (MBDLPGE)
2016	546.7	32.0	15.3	1.7	1.2	596.9
2017	561.3	24.0	10.3	0.5	1.7	597.7
2018	561.3	31.6	16.1	0.5	3.4	612.8
2019	651.0	36.1	21.8	1.9	5.1	716.0
2020	674.3	36.1	21.8	23.7	5.1	761.0
2021	715.8	36.1	21.8	38.7	5.1	817.6
2022	724.0	36.1	21.8	38.8	5.1	825.9
2023	699.6	36.1	21.8	38.4	5.1	801.1
2024	690.8	36.1	21.8	37.5	5.1	791.4
2025	677.5	36.1	21.8	36.6	5.1	777.2
2026	656.8	36.1	21.8	36.5	5.1	756.4
2027	631.9	36.1	21.8	36.5	5.1	731.5
2028	611.6	36.1	21.8	36.4	5.1	711.1
2029	588.3	36.1	21.8	36.5	5.1	687.8
2030	563.1	36.1	21.8	36.4	5.1	662.6
2031	528.6	36.1	21.8	36.4	5.1	628.1
AAGR 2016-2031	-0.2	0.8	2.4	22.8	10.3	0.3

Source: Elaborated by IMP, based on CNH and SENER.

TABLE A. 17. LP GAS DEMAND BY REGION AND FEDERAL ENTITY, 2016-2031
(MBD)

State	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Northwest	25.5	24.4	24.4	24.5	24.7	24.9	25.1	25.2	25.4	25.5	25.6	25.7	25.8	25.9	26.0	25.9	0.1
Baja California	9.0	8.9	8.8	8.9	8.9	9.0	9.0	9.1	9.1	9.2	9.2	9.2	9.2	9.3	9.3	9.3	0.2
Baja California Sur	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.3	0.6
Sinaloa	6.7	6.4	6.4	6.5	6.5	6.6	6.6	6.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	0.0
Sonora	7.7	7.1	7.1	7.2	7.2	7.3	7.4	7.4	7.5	7.5	7.5	7.6	7.6	7.6	7.7	7.7	-0.1
Noreste	39.4	39.1	38.1	37.6	37.8	38.1	38.4	38.7	38.9	39.0	39.2	39.4	39.5	39.7	39.7	39.6	0.0
Coahuila	8.1	8.8	8.6	8.5	8.6	8.7	8.9	8.9	9.0	9.1	9.1	9.2	9.2	9.3	9.3	9.3	0.9
Chihuahua	10.1	10.4	10.0	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.7	9.7	-0.3
Durango	3.3	3.5	3.4	3.4	3.4	3.5	3.5	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.8	3.8	1.0
Nuevo León	9.0	7.4	7.2	7.0	7.1	7.2	7.2	7.3	7.3	7.4	7.4	7.4	7.4	7.4	7.4	7.4	-1.3
Tamaulipas	9.0	9.1	8.9	8.8	8.9	8.9	9.0	9.1	9.2	9.2	9.3	9.3	9.4	9.5	9.5	9.5	0.4
Central-Western	64.2	60.6	59.3	58.1	57.7	57.3	57.0	56.7	56.4	56.1	55.9	55.7	55.6	55.4	55.3	55.3	-1.0
Aguascalientes	6.2	4.4	4.3	4.2	4.1	4.1	4.0	4.0	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	-3.3
Colima	1.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.1
Guanajuato	13.7	12.8	12.4	12.1	12.0	11.9	11.8	11.7	11.6	11.6	11.5	11.4	11.3	11.3	11.2	11.2	-1.4
Jalisco	19.2	19.9	19.4	19.1	19.0	18.8	18.7	18.6	18.5	18.5	18.4	18.3	18.3	18.2	18.2	18.1	-0.4
Michoacán	10.2	9.4	9.1	9.0	8.9	8.8	8.8	8.7	8.7	8.6	8.6	8.5	8.5	8.5	8.4	8.4	-1.3
Nayarit	2.2	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	0.1
Querétaro	3.1	2.4	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	-2.4
San Luis Potosí	4.6	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.4	-0.3
Zacatecas	3.4	3.5	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	-0.3
Central	115.0	112.2	110.4	109.9	110.3	110.9	111.2	111.2	111.4	111.5	111.6	111.9	112.3	112.8	113.4	114.0	-0.1
Ciudad de México	25.0	27.6	26.9	26.5	26.3	26.1	25.9	25.6	25.3	25.1	24.8	24.7	24.5	24.4	24.3	24.3	-0.2
Hidalgo	8.2	7.5	7.4	7.4	7.4	7.5	7.6	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.1	8.1	-0.1
México	49.7	49.6	49.1	49.1	49.6	50.0	50.3	50.4	50.5	50.6	50.7	50.9	51.1	51.3	51.5	51.8	0.3
Morelos	5.5	5.4	5.3	5.2	5.2	5.3	5.3	5.3	5.4	5.4	5.5	5.5	5.5	5.6	5.7	5.7	0.3
Puebla	22.0	18.1	17.9	17.9	18.0	18.2	18.3	18.5	18.6	18.7	18.9	19.1	19.3	19.5	19.7	20.0	-0.7
Tlaxcala	4.6	3.9	3.8	3.8	3.8	3.8	3.9	3.9	3.9	3.9	3.9	4.0	4.0	4.0	4.1	4.1	-0.7
South-Southeast	38.3	37.4	36.9	38.2	60.1	75.4	75.8	75.8	75.1	74.6	74.9	75.2	75.5	76.0	76.4	76.7	4.7
Campeche	1.0	1.0	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	0.5
Chiapas	4.9	4.5	4.5	4.6	4.6	4.7	4.8	4.9	5.0	5.1	5.1	5.2	5.3	5.4	5.5	5.6	0.9
Guerrero	1.4	2.7	2.7	2.7	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.1	3.2	3.2	5.9
Oaxaca	4.8	4.3	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.3	4.4	4.4	4.4	4.5	4.5	4.5	-0.4
Quintana Roo	4.2	3.8	3.8	3.8	3.8	3.9	3.9	3.9	4.0	4.1	4.1	4.2	4.3	4.3	4.4	4.5	0.5
Tabasco	5.6	4.0	3.7	3.7	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8	-2.6
Veracruz	13.3	13.8	13.7	15.1	36.9	51.9	52.1	51.8	50.9	50.1	50.1	50.2	50.2	50.3	50.4	50.5	9.3
Yucatán	3.2	3.3	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.5	3.5	3.5	3.6	0.7
Total Domestic	282.5	273.6	269.0	268.3	290.6	306.6	307.5	307.6	307.2	306.7	307.2	307.9	308.7	309.8	310.8	311.5	0.7

Note: Does not include Pemex self-consumption.
Source: Elaborated by IMP, based on AMDA, AMIA, ANPACT, BANXICO, CONAGUA, CONAPO, CONUEE, CRE, EIA, EPA, IEA, INE, INEGI, Pemex, SEMARNAT, SCT, SENER and private companies.

TABLE A. 18 LP GAS DOMESTIC BALANCE 2016-2031
(MBD)

Concept	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Origin	293.1	273.6	269.0	268.3	290.6	306.6	307.5	307.6	307.2	306.7	307.2	307.9	308.7	309.8	310.8	311.5	0.4
Domestic supply	159.6	144.0	141.0	153.9	148.4	158.8	148.7	143.6	143.8	149.3	149.5	149.8	157.2	159.0	169.4	171.4	0.5
Import	133.6	129.6	128.0	114.4	142.2	147.8	158.9	164.0	163.4	157.4	157.7	158.1	151.4	150.8	141.4	140.1	0.3
Destination	288.7	273.6	269.0	268.3	290.6	306.6	307.5	307.6	307.2	306.7	307.2	307.9	308.7	309.8	310.8	311.5	0.5
Domestic Demand	282.5	273.6	269.0	268.3	290.6	306.6	307.5	307.6	307.2	306.7	307.2	307.9	308.7	309.8	310.8	311.5	0.7
Agriculture and Livestock Sector	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.5	4.6	4.7	4.9	5.0	5.2	2.9
Motor-Carrier Sector	39.9	39.9	38.9	38.4	38.7	39.0	39.2	39.0	38.7	38.2	37.6	37.1	36.6	36.1	35.5	34.7	-0.9
Industrial Sector	31.6	29.5	29.1	28.6	28.7	28.7	28.9	29.0	29.1	29.3	29.4	29.6	29.9	30.2	30.6	30.9	-0.1
Oil Sector	1.7	0.5	0.5	1.9	23.7	38.7	38.8	38.4	37.5	36.6	36.5	36.5	36.4	36.5	36.4	36.4	22.8
Residential Sector	163.0	157.6	154.4	153.0	152.8	152.7	152.6	152.3	152.1	152.0	151.9	151.9	151.9	152.0	152.1	151.8	-0.5
Services Sector	42.9	42.6	42.5	42.7	43.0	43.5	44.1	44.8	45.6	46.4	47.2	48.1	49.1	50.2	51.3	52.5	1.3
Export	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
Inventories variation *	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
Note: The volume of pr	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.0

*Includes statistical difference, packaging in pipelines, and vessels in transit.
Note: The volume reported in destination, is the total up of the Domestic Demand and from Inventories Variation.
Source: IMP, based on BANXICO, CONAGUA, CONAPO, PEMEX, SENER and private companies.

TABLE A. 19 NORTHWEST REGION LP GAS BALANCE, 2016-2031
(MBD)

Concept	2015.0	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Origin	25.0	25.5	24.4	24.4	24.5	24.7	24.9	25.1	25.2	25.4	25.5	25.6	25.7	25.8	25.9	26.0	25.9	0.1
Production Domestic	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Imports	17.0	22.1	21.7	20.8	18.3	22.7	23.6	23.1	23.6	23.8	24.2	24.4	24.6	24.1	24.1	22.7	22.5	0.1
From other regions	8.0	3.4	2.7	3.6	6.2	2.0	1.3	2.0	1.6	1.5	1.2	1.1	1.1	1.6	1.7	3.3	3.4	0.1
Destination	25.0	25.5	24.4	24.4	24.5	24.7	24.9	25.1	25.2	25.4	25.5	25.6	25.7	25.8	25.9	26.0	25.9	0.1
Domestic Demand	25.0	25.5	24.4	24.4	24.5	24.7	24.9	25.1	25.2	25.4	25.5	25.6	25.7	25.8	25.9	26.0	25.9	0.1
Agriculture and Livestock Sector	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1	3.7
Motor-Carrier Sector	2.8	3.6	3.6	3.7	3.7	3.7	3.7	3.6	3.6	3.5	3.5	3.4	3.3	3.3	3.2	3.2	3.1	-1.0
Industrial Sector	3.7	4.7	3.7	3.8	3.9	3.9	4.0	4.0	4.1	4.1	4.1	4.1	4.1	4.0	4.0	3.9	3.9	-1.2
Oil Sector	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential Sector	13.7	11.5	11.5	11.3	11.3	11.4	11.4	11.5	11.5	11.6	11.6	11.6	11.7	11.7	11.8	11.8	11.7	0.1
Services Sector	4.3	5.2	4.9	4.9	4.9	5.0	5.1	5.1	5.2	5.3	5.4	5.5	5.7	5.8	5.9	6.0	6.2	1.2
Exports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
To other regions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
Inventories variation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA

NA: Not applicable
*Includes statistical difference, packaging in pipelines, and vessels in transit.
Note: The volume reported in destination, is the total up of the Domestic Demand, To other region, and Inventories Variation.
Source: IMP, based on BANXICO, CONAGUA, CONAPO, PEMEX, SENER and private companies.

TABLE A. 20 NORTHWEST REGION LP GAS BALANCE, 2016-2031
(MBD)

Concept	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Origin	**48.1**	**51.4**	**52.8**	**50.8**	**59.8**	**62.6**	**66.7**	**69.5**	**70.0**	**66.7**	**68.2**	**68.1**	**68.8**	**67.1**	**64.1**	**63.1**	**1.8**
Production Domestic	**13.8**	**9.3**	**12.4**	**15.2**	**15.7**	**16.9**	**16.0**	**17.2**	**17.9**	**19.6**	**20.7**	**20.4**	**22.0**	**20.2**	**20.1**	**19.4**	**2.3**
Imports	**34.3**	**42.1**	**40.4**	**35.6**	**44.1**	**45.8**	**50.7**	**52.3**	**52.0**	**47.1**	**47.5**	**47.7**	**46.9**	**46.9**	**44.0**	**43.6**	**1.6**
From other regions	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	
Destination	**48.1**	**51.4**	**52.8**	**50.8**	**59.8**	**62.6**	**66.7**	**69.5**	**70.0**	**66.7**	**68.2**	**68.1**	**68.8**	**67.1**	**64.1**	**63.1**	**1.8**
Domestic Demand	**39.4**	**39.1**	**38.1**	**37.6**	**37.8**	**38.1**	**38.4**	**38.7**	**38.9**	**39.0**	**39.2**	**39.4**	**39.5**	**39.7**	**39.7**	**39.6**	**0.0**
Agriculture and Livestock Sector	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**1.0**	**1.0**	**1.0**	**1.0**	**1.1**	**1.1**	**1.1**	**1.2**	**1.2**	**1.2**	**1.2**	**2.4**
Motor-Carrier Sector	**9.6**	**9.4**	**9.1**	**9.0**	**9.2**	**9.5**	**9.8**	**10.0**	**10.2**	**10.2**	**10.3**	**10.3**	**10.4**	**10.4**	**10.3**	**10.2**	**0.4**
Industrial Sector	**5.1**	**5.3**	**5.0**	**4.8**	**4.7**	**4.6**	**4.6**	**4.5**	**4.4**	**4.4**	**4.3**	**4.2**	**4.2**	**4.1**	**4.0**	**3.9**	**-1.7**
Oil Sector	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	
Residential Sector	**16.5**	**16.6**	**16.2**	**16.1**	**16.0**	**16.0**	**16.0**	**16.0**	**16.0**	**16.0**	**16.1**	**16.1**	**16.2**	**16.2**	**16.3**	**16.2**	**-0.1**
Services Sector	**7.4**	**6.9**	**6.9**	**6.9**	**6.9**	**7.0**	**7.1**	**7.1**	**7.2**	**7.3**	**7.5**	**7.6**	**7.7**	**7.8**	**8.0**	**8.1**	**0.6**
Exports	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	
To other regions	**8.7**	**12.3**	**14.7**	**13.1**	**22.0**	**24.5**	**28.2**	**30.8**	**31.1**	**27.7**	**28.9**	**28.7**	**29.3**	**27.4**	**24.4**	**23.4**	**6.9**
Inventories variation*	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**NA**

NA: Not applicable
*Includes statistical difference, packaging in pipelines, and vessels in transit.
Note: The volume reported in destination, is the total up of the Domestic Demand, To other regions, and of the Inventories variation.

Source: IMP, based on BANXICO, CONAGUA, CONAPO, PEMEX, SENER and private companies.

TABLE A. 21 CENTRAL REGION LP GAS BALANCE, 2016-2031

(MBD)

Concept	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Origin	114.8	112.2	110.4	109.9	110.3	110.9	111.2	111.2	111.4	111.5	111.6	111.9	112.3	112.8	113.4	114.0	-0.1
Production Domestic	6.7	1.0	1.1	1.1	1.1	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	-8.8
Imports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
From other regions	108.2	111.2	109.3	108.7	109.2	109.2	109.6	109.6	109.7	109.8	110.0	110.3	110.6	111.1	111.7	112.3	0.2
Destination	114.8	112.2	110.4	109.9	110.3	110.9	111.2	111.2	111.4	111.5	111.6	111.9	112.3	112.8	113.4	114.0	-0.1
Domestic Demand	115.0	112.2	110.4	109.9	110.3	110.9	111.2	111.2	111.4	111.5	111.6	111.9	112.3	112.8	113.4	114.0	-0.1
Agriculture and Livestock Sector	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	1.3
Motor-Carrier Sector	13.8	14.2	14.3	14.6	15.0	15.4	15.6	15.6	15.5	15.3	15.1	14.8	14.5	14.3	13.9	13.5	-0.1
Industrial Sector	11.3	12.8	12.6	12.4	12.3	12.4	12.4	12.6	12.8	13.0	13.3	13.7	14.1	14.6	15.2	15.8	2.3
Oil Sector	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential Sector	76.0	70.2	68.7	68.0	67.9	67.9	67.7	67.3	67.1	66.9	66.6	66.5	66.3	66.2	66.1	66.0	-0.9
Services Sector	13.7	14.6	14.5	14.5	14.6	14.8	15.0	15.3	15.6	15.9	16.2	16.5	16.9	17.3	17.7	18.1	1.9
Exports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
To other regions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Inventories variation*	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA

NA: Not applicable
*Includes statistical difference, packaging in pipelines, and vessels in transit.
Note: The volume reported in destination, is the total up of the Domestic Demand, To other regions, and of the Inventories variation.
Source: IMP, based on BANXICO, CONAGUA, CONAPO, PEMEX, SENER and private companies.

TABLE A. 22 CENTRAL-WESTERN REGION LP GAS BALANCE, 2016-2031

(MBD)

Concept	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Origin	63.9	60.6	59.3	58.1	57.7	57.3	57.0	56.7	56.4	56.1	55.9	55.7	55.6	55.4	55.3	55.3	-1.0
Production Domestic	3.9	6.0	6.5	6.5	6.7	6.7	6.7	6.2	6.1	6.2	6.2	6.3	6.3	6.3	6.4	6.4	3.3
Imports	10.1	9.4	9.0	8.0	9.9	10.2	11.7	12.1	12.0	10.5	10.6	10.7	10.5	10.5	9.8	9.8	-0.2
From other regions	49.9	45.3	43.7	43.7	41.1	40.4	38.6	38.3	38.3	39.5	39.1	38.8	38.8	38.6	39.1	39.1	-1.6
Destination	64.2	60.6	59.3	58.1	57.7	57.3	57.0	56.7	56.4	56.1	55.9	55.7	55.6	55.4	55.3	55.3	-1.0
Domestic Demand	64.2	60.6	59.3	58.1	57.7	57.3	57.0	56.7	56.4	56.1	55.9	55.7	55.6	55.4	55.3	55.3	-1.0
Agriculture and Livestock Sector	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	3.2
Motor-Carrier Sector	9.6	9.6	9.1	8.6	8.3	8.1	7.9	7.7	7.5	7.2	7.0	6.8	6.6	6.5	6.3	6.2	-2.9
Industrial Sector	8.6	5.8	5.7	5.6	5.7	5.8	5.8	5.9	5.9	5.9	5.9	5.8	5.8	5.7	5.6	5.5	-2.9
Oil Sector	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential Sector	34.3	34.2	33.2	32.6	32.3	32.0	31.7	31.4	31.2	31.0	30.8	30.6	30.4	30.3	30.1	30.0	-0.9
Services Sector	10.5	10.0	10.1	10.1	10.1	10.2	10.3	10.4	10.5	10.6	10.8	11.0	11.2	11.4	11.6	11.9	0.8
Exports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
To other regions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Inventories variation*	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA

NA: Not applicable
*Includes statistical difference, packaging in pipelines, and vessels in transit.
Note: The volume reported in destination, is the total up of the Domestic Demand, To other regions, and of the Inventories variation.
Source: IMP, based on BANXICO, CONAGUA, CONAPO, PEMEX, SENER and private companies.

TABLE A. 23 SOUTH-SOUTHEAST REGION LP GAS BALANCE, 2016-2031

(MBD)

Concept	2,015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	AAGR 2016-2031
Origin	199.7	202.3	184.2	178.8	183.7	190.4	201.8	197.7	194.5	193.5	197.3	196.2	196.7	197.2	200.0	206.1	208.2	0.2
Production Domestic	145.3	135.2	127.8	121.1	131.1	124.9	133.6	124.3	118.5	118.0	121.8	121.0	121.5	127.3	130.7	141.3	144.0	0.4
Imports	54.4	67.0	56.4	57.7	52.5	65.5	68.2	73.4	76.0	75.5	75.5	75.2	75.2	69.9	69.3	64.8	64.2	- 0.3
From other regions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Destination	201.4	197.8	184.2	178.8	183.7	190.4	201.8	197.7	194.5	193.5	197.3	196.2	196.7	197.2	200.0	206.1	208.2	0.4
Domestic Demand	40.9	38.3	37.4	36.9	38.2	60.1	75.4	75.8	75.8	75.1	74.6	74.9	75.2	75.5	76.0	76.4	76.7	4.7
Agriculture and Livestock Sector	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	3.1
Motor-Carrier Sector	3.6	3.4	3.1	2.8	2.6	2.4	2.3	2.2	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.8	- 4.3
Industrial Sector	2.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	- 0.8
Oil Sector	4.2	1.7	0.5	0.5	1.9	23.7	38.7	38.8	38.4	37.5	36.6	36.5	36.5	36.4	36.5	36.4	36.4	22.8
Residential Sector	22.5	24.7	25.1	24.9	24.9	25.2	25.5	25.7	26.0	26.3	26.5	26.8	27.0	27.3	27.5	27.8	27.9	0.8
Services Sector	7.3	6.2	6.2	6.2	6.3	6.4	6.5	6.6	6.8	6.9	7.1	7.2	7.4	7.6	7.8	8.0	8.2	1.9
Exports	0.0	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
To other regions	160.5	152.9	146.8	141.9	145.5	130.3	126.4	121.9	118.7	118.4	122.8	121.3	121.5	121.7	124.1	129.7	131.5	- 1.0
Inventories variation*	- 1.7	6.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA

NA: Not applicable
*Includes statistical difference, packaging in pipelines, and vessels in transit.
Note: The volume reported in destination, is the total up of the Domestic Demand, To other regions, and of the Inventories variation.
Source: IMP, based on BANXICO, CONAGUA, CONAPO, PEMEX, SENER and private companies.

GLOSSARY

Acid gas	Compound occasionally present in the NG, like sulfuric acid and carbon dioxide, and which give NG acid peculiarities due to their physical and chemical properties.
Butane	Hydrocarbons that belong to the alkane family formed by four atoms of carbon, and ten of hydrogen and which are produced by fractionating NG liquids, condensates, and some refining processes, like crude-oil atmospheric distillation, catalytic disintegration, and naphthas reforming. Mixed with propane, it produces liquefied petroleum gas.
Compressed natural gas	Dry natural gas stored at a pressure of 200-250 atmospheres in gaseous state in a container.
Cryogenic plant	Plant which, through a low-temperatures process separates and eliminates any gas component that could affect the transport and distribution systems, such as carbon dioxide, water steam, and heavy hydrocarbons.
Distributor	Permit holder of a distribution permit.
Distribution	Activity of receiving, conveying, delivering, and if the case, commercialize NG through pipelines within a geographical zone.
End user	Person who purchases gas for his/her consumption.
First-hand sales price	They are defined as the first sale of natural gas, produced in Mexico and sold by Petroleos Mexicanos to a third party for delivery in the national territory, the First-Hand Sale (VPM) is an activity regulated by the Energy Regulatory Commission (CRE).
Fuel	Substance used to produce thermal energy through a chemical or nuclear reaction. The energy is produced by the conversion of the fuel mass into heat.
Fueling L.P. Gas	Name given to the LP Gas used in vehicles with internal combustion engines.

Gas Processing Center	PGPB facility in which the sweetening process of the sour gas is carried out; the resultant sweet gas is processed for extracting, through cryogenic and fracking processes, liquid hydrocarbons contained in the NG, obtaining -among others- the products which form the L.P. gas.
Liquid or gas fossil fuels	Derivatives of crude oil or NT such as limpid petroleum (kerosene), gasolines, diesel, fuel oil, gasoil, LP gas, butane, methane, isobutane, propylene, butylene, or any of their combinations.
Liquids fractionation	Process through which condensates and gas liquids are separated by distillation to obtain mainly LP gas and gasoline
LP gas fueling station	Storage system using containers exclusively destined to deliver LP gas for gas-fueled vehicles.
Mexican Official Standards	Mandatory norms issued by the competent entities subjected to what is ordered in the Federal Law on Metrology and Normalization.
Permittee	Owner of a permit for transportation, storage, and distribution.
Pipes or LPG-pipelines	Piping systems used for transporting LP gas according to the Mexican Official Standards.
Propane	Hydrocarbon found in small amounts within NG. It is obtained by fractionating NG liquids, from condensates, and from diverse refining processes such as crude-oil atmospheric distillation, catalytic disintegration, and naphthas reforming. It is relatively easy to liquefy if compressed, and thereby is used on its own or blended with butane to form LP gas.
Refining capacity	Refers to the capacity per operation day, not to the capacity per calendar day. The capacity per operation day of a plant is the maximum volume that can be processed working uninterruptedly, while the capacity per calendar day considers stoppages normally demanded due to maintenance and other events.
Solid fuels	Varieties of mineral coal and oil coke whose fixed content of carbon ranges from 10% to 90% in weight.
Sour gas	NG containing sulfur derivatives such as sulfuric acid, mercaptans, sulfurs, and disulfurs. Comes directly from crude oil reservoirs or from the various refining processes.

Sweet gas	NG free of sulfuric acid, mercaptans, and other sulfur derivatives. There are sweet gas reservoirs, but it is mostly obtained through sweetening sour natural gas using chemical solvents, physical solvents, or absorbents.
Tank car	Container designed to work under pressure or at atmospheric conditions, assembled on a platform or directly on wheels to be transported on railways.
Tanker truck	Vehicle in which chassis is permanently installed a container for L.P. gas with a maximum capacity of 25,000 liters and is used to exclusively supply fuel to non-transportable containers within utilization facilities and L.P. gas stations for fuel through a filling system. They are known as "pipes".
Transportation	Reception, conveyance, and delivery of NG by means of pipelines to people who are no end users.
User	Person who uses or asks for the services of a permit-holder.
Wet gas	Hydrocarbons blend obtained from processing NG from which impurities or non-hydrocarbons compounds have been eliminated, and whose content of components heavier than methane is such that allow its commercial processing.

Acronyms and Abbreviations

AAGR	Annual Average Growth Rate
CENAGAS	National Center for Natural Gas Control
CFE	Federal Electricity Commission
CNH	National Hydrocarbons Commission
CONAGUA	National Water Commission
CONAPO	National Population Council
CPG	Gas Processing Center
CRE	Energy Regulatory Commission
DOF	Official Journal of the Federation
EIA	Energy Information Administration (U.S)
EIP	Energy Independent Producer
EPE	State Productive Enterprise
EPS	Subsidiary Productive Enterprise
FHS	First-Hand Sales
Gas L.P.	Liquefied Petroleum GAs
GCal	Gigacalorie
GDP	Gross Domestic Product
GN	Natural gas
GNC	Compressed natural gas
GNL	Liquefied natural gas
Ibidem	Same as the previous
IEA	International Energy Agency
IMP	Mexican Petroleum Institute
INEGI	National Institute of Statistics and Geography
MBD	Thousand barrels per day

MBDGE	Thousand barrels per day of gasoline equivalent
MBDLPGE	Thousand barrels per day of LP gas equivalent
MCFD	Thousand cubic feet per day
MMCFD	Million cubic feet per day
MMCFDNGE	Million cubic feet per day of natural gas equivalent
MMT	Million tons
MT	Thousand tons
N. A	Not applicable
PEMEX	Petroleos Mexicanos
PEP	PEMEX Exploration and Production
PGPB	PEMEX Gas and Basic Petrochemistry
PPQ	PEMEX Petrochemistry
PR	PEMEX Refining
SENER	Secretariat of Energy
SNG	National Gas-Pipelines System
SNR	National Refining System
US$	American dollars

Websites Consulted

- https://www.gob.mx/cre/acciones-y-programas/como-vamos-en-materia-de-hidrocarburos
- https://www.gob.mx/cms/uploads/attachment/file/256605/Transporte_de_Gas_Licuado_de_Petr_leo_por_medio_de_ductos.pdf
- https://www.gob.mx/cms/uploads/attachment/file/256601/Distribuci_n_de_Gas_Licuado_de_Petr_leo_por_medio_de_ductos.pdf
- http://www.cydsa.com/almacenamientos/

Explanatory Notes:

• The total up of the numerical or percentage data within the text, tables, charts, or figures may not add up due to rounding.

• The information corresponding to the last historical year is subjected to subsequent reviews.

• Likewise, regarding the sum of the figures, the manual estimation of the average annual growth rates may not coincide accurately with the values reported due to rounding.

• In the modality of Independent Power Producer (IPP), the figures reported under the concept of "authorized capacity" and "operating capacity" do not necessarily coincide with the figures reported under the concept of "gross capacity hired by the CFE".

References for comments

For those interested in provide their observations, suggestions, or make any questions, please contact:

Undersecretariat of Energy Planning and Transition

Secretariat of Energy

Insurgentes Sur 890, piso 3, Col. del Valle

México D.F. 03100

Tel: +(5255) 5000-6000 ext. 1418

Responsible for this publication:

Directorate General of Planning and Energy Information

Tel: +(5255) 5000-6000 ext. 2477, 2217, 1418

E-mail: prospectivas@energia.gob.mx

Satisfaction survey (only available in Spanish):

https://es.surveymonkey.com/r/V7QNQD6