OPORTUNIDADES DE LA INDUSTRIA DEL GAS NATURAL EN AMÉRICA LATINA

October 22, 2015

RÉNÉ RAMÍREZ ROMERO
Market description

- 49 Billion dollar market in 2015, world 3rd LPG, 6th gasoline, and 8th NG largest consumer markets.
- Deficit in high value O&G products, net imports: gasoline (48%), diesel and jet fuel (29%), LPG (35%), NG (27%) and petrochemicals (>50%).
- Expected growth in O&G products demand of about 3% per year for the next 5 years.
- Strategically located in the North America Region, large northern border with the USA and a 200 km isthmus in the south that may capture the high price differential between the Pacific and the Atlantic oceans.
- Pemex has a competitive advantage in Production & Logistics through its existing infrastructure.

### 2015

$48,637 MMUSD\(^1\)

- **Gasolines**: 23,137
- **LPG**: 4,964
- **Natural gas**: 3,491
- **Petrochemicals**: 1,760
- **Fuel oil**: 1,507
- **Kerosene**: 1,812
- **Others**: 614
- **Asphalts**: 519

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\(^1\) The values for 2015 are annualized.

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Industry Transition

From state-owned monopoly…

A cultural change is necessary to move from an oil monopoly to a productive enterprise.

…to a productive state enterprise

Efficiency

• Asset manager.
• Supply obligation.
• Volumetric approach.
• Prices set by the Ministry of Finance.
• Public debt.
• Balance sheet and credit rating not linked.
• Free license to operate.
• Rigid regulatory framework.

• Business administrator.
• Economic supply with obligations.
• Maximize company value.
• Prices set by the market.
• Company debt.
• Link between balance sheet and credit rating.
• Operating license subject to performance.
• Flexible regulatory framework.

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Transforming PEMEX

- New corporate governance
- New Tax Regime
- New Procurement System
- Autonomy budget
- New compensation scheme
- Autonomy managerial
- New internal control regime
- Partnerships strategic
- Round zero
- Restructuring pension funds

PEMEX: A competitive business

Change Strategy
Change in Structure
Cultural exchange

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PEMEX Downstream

Operating model

Input
- Non associated gas
- Associated gas
- Condensates
- Natural gas
- Natural gasoline
- Benzene
- Naphtha
- Crude oil

Project management

Processing
- Sweetening
- Cryogenics
- Fractionating
- Hydro desulfurization
- Reforming
- Aromatic fractionation
- Reforming
- Synthesis / reaction
- Distillation
- Reforming
- Coking

Products
- Natural gas
- LPG
- Natural gasoline
- Styrene
- Xylenes
- Benzene
- Methanol
- Petrochemicals
- Gasoline
- Jet fuel
- Diesel
- Fuel oil
- Lubricants
- Sulphur
- Ethane
- Toluene
- HAO
- Asphalts
- Coke
- Sulphur
- Propylene
Mexico Gas Natural: Highlights

**TOTAL POPULATION**: 112,336,538

**GDP**: USD $834,968 MILLION

**8TH PLACE IN NATURAL GAS WORLD CONSUMPTION** 3,029 Bcf

**13TH PLACE IN NATURAL GAS WORLD PRODUCTION** 2,051 Bcf

**35TH PLACE IN NATURAL GAS WORLD PROVED RESERVES** 12.3 Tcf

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**ELECTRICITY PRODUCTION FROM FOSSIL FUELS - NATURAL GAS (2012)**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>USA</th>
<th>RUSSIAN FEDERATION</th>
<th>JAPAN</th>
<th>IRAN</th>
<th>MEXICO</th>
<th>ITALY</th>
<th>EGYPT</th>
<th>SAUDI ARABIA</th>
<th>THAILAND</th>
<th>KOREA</th>
<th>REST OF THE WORLD</th>
<th>WORLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWH</td>
<td>1265</td>
<td>525</td>
<td>397</td>
<td>170</td>
<td>151</td>
<td>129</td>
<td>125</td>
<td>121</td>
<td>112</td>
<td>117</td>
<td>1988</td>
<td>5100</td>
</tr>
</tbody>
</table>

Natural gas consumption by sector

Consumption Distribution By Sector (August 2015)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Consumption</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEMEX</td>
<td>2,159</td>
<td>40%</td>
</tr>
<tr>
<td>DISTRIBUTORS</td>
<td>388</td>
<td>7%</td>
</tr>
<tr>
<td>ELECTRICITY</td>
<td>1,410</td>
<td>26%</td>
</tr>
<tr>
<td>SELF-GENERATION</td>
<td>141</td>
<td>3%</td>
</tr>
<tr>
<td>COMMERCIALS</td>
<td>352</td>
<td>7%</td>
</tr>
<tr>
<td>INDUSTRIAL</td>
<td>894</td>
<td>17%</td>
</tr>
<tr>
<td>TOTAL: 5,344 MMCFPD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: BDI, Sept 2015

www.pemex.com
Estimate trends for mexican industrial demand of natural gas

<table>
<thead>
<tr>
<th>Year</th>
<th>Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,240 MMcfpd</td>
</tr>
<tr>
<td>2014</td>
<td>1,366 MMcfpd</td>
</tr>
<tr>
<td>2015</td>
<td>1,590 MMcfpd</td>
</tr>
<tr>
<td>2016</td>
<td>1,804 MMcfpd</td>
</tr>
<tr>
<td>2017</td>
<td>1,910 MMcfpd</td>
</tr>
<tr>
<td>2018</td>
<td>1,973 MMcfpd</td>
</tr>
<tr>
<td>2019</td>
<td>2,033 MMcfpd</td>
</tr>
<tr>
<td>2020</td>
<td>2,100 MMcfpd</td>
</tr>
<tr>
<td>2021</td>
<td>2,166 MMcfpd</td>
</tr>
<tr>
<td>2022</td>
<td>2,234 MMcfpd</td>
</tr>
<tr>
<td>2023</td>
<td>2,304 MMcfpd</td>
</tr>
<tr>
<td>2024</td>
<td>2,383 MMcfpd</td>
</tr>
<tr>
<td>2025</td>
<td>2,462 MMcfpd</td>
</tr>
<tr>
<td>2026</td>
<td>2,546 MMcfpd</td>
</tr>
<tr>
<td>2027</td>
<td>2,630 MMcfpd</td>
</tr>
</tbody>
</table>

Source: SENER “Prospectiva de gas natural y gas LP 2014-2028”
Natural gas forecast demand in Mexico 2014-2019

It considers esports.

Source: SENER "Prospectiva de gas natural y gas LP 2014-2028"
Connecting Mexico with better markets

The Mexican pipeline expansions are giving the possibility to access in cheaper markets in the U.S.

**EXISTING PIPELINES**

**PROPOSED PIPELINES**
## Related market prices

**HYDROCARBONS**

<table>
<thead>
<tr>
<th>Hydrocarbons</th>
<th>Original Prices</th>
<th>Equivalent Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Oil (WTI, Cushing Oklahoma Nymex)</td>
<td>$46.14 USD/Barril</td>
<td>$7.9 USD/MMBtu</td>
</tr>
<tr>
<td>Heating Oil (Diesel, Nymex New York Harbor)</td>
<td>$1.5 USD/Gal</td>
<td>$11 USD/MMBtu</td>
</tr>
<tr>
<td>Propane (Mont Belvieu, TX)</td>
<td>$43.8 USD/Gal</td>
<td>$4.8 USD/MMBtu</td>
</tr>
<tr>
<td>Natural gas (Henry Hub, Nymex)</td>
<td>$2.5 USD/MMBtu</td>
<td>$11 USD/MMBtu</td>
</tr>
<tr>
<td>Fuel oil (High Sulfur fuel oil, Nymex)</td>
<td>$212 USD/Gal</td>
<td>$5.4 USD/MMBtu</td>
</tr>
<tr>
<td>Gasoline (Nymex)</td>
<td>$1.27 USD/Gal</td>
<td>$10.1 USD/MMBtu</td>
</tr>
</tbody>
</table>

Information as of Oct 19, 2015

*Reference Prices

Elaborated by Pemex Gas y Petroquímica Básica using Thomson Reuters prices.

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**Prices of Natural Gas**
Natural gas international prices

Prices as October 14th 2015 (USD/MMBtu)

- So Cal: $2.57/2.58
- Nymex Henry Hub: $2.52/2.52
- UK NBP: $6.23/6.06
- Italian PSV: $6.64/6.68
- Algonquin: $5.37/3.50
- Germany EGT: $6.06/6.04
- Japón: $6.65/6.60
- China: $6.45/6.40
- India: $6.65/6.60
- Corea del Sur: $6.65/6.60
- EUOPA: $6.06/6.04
- UK NBP: $6.04/6.02

* Prices in green are from a previous week

Source: Elaborated by Pemex Gas y Petroquímica Básica using Platts International Gas Reports.

NET EXPORTS 2014-2015 (MMBTU/d)

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. WEST TEXAS</td>
<td>299,339</td>
<td>45,940</td>
</tr>
<tr>
<td>2. SOUTH TEXAS</td>
<td>979,800</td>
<td>1,227,949</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,279,139</td>
<td>1,273,889</td>
</tr>
</tbody>
</table>

WEST TEXAS

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEST TEXAS, AZ. CALIF. MMBTU/d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAMALAYUCA</td>
<td>89,718</td>
<td>0</td>
</tr>
<tr>
<td>CHIHUAHUA-CDJ</td>
<td>117,965</td>
<td>38,796</td>
</tr>
<tr>
<td>NACO</td>
<td>34,801</td>
<td>7,144</td>
</tr>
<tr>
<td>NORTE II</td>
<td>56,855</td>
<td>0</td>
</tr>
<tr>
<td>NORTH BAJA</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>299,339</td>
<td>45,940</td>
</tr>
</tbody>
</table>

SOUTH TEXAS TRANSPORTATION

<table>
<thead>
<tr>
<th>SOUTH TEXAS</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>TENNESSEE</td>
<td>215,398</td>
<td>67,652</td>
</tr>
<tr>
<td>K.M. BORDER</td>
<td>216,192</td>
<td>173,816</td>
</tr>
<tr>
<td>K.M. TEXAS</td>
<td>422,316</td>
<td>452,441</td>
</tr>
<tr>
<td>TENNESSEE RB</td>
<td>73,768</td>
<td>0</td>
</tr>
<tr>
<td>TETCO</td>
<td>41,818</td>
<td>2,712</td>
</tr>
<tr>
<td>NET</td>
<td>10,308</td>
<td>531,328</td>
</tr>
<tr>
<td>TOTAL</td>
<td>979,800</td>
<td>1,227,949</td>
</tr>
</tbody>
</table>

Source: BDI, Sept 2015

www.pemex.com

**Net Average Exports 2014 – 2015 (MMBTU/D)**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015*</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>1,139,254</td>
<td>1,108,041</td>
</tr>
<tr>
<td>July</td>
<td>1,318,019</td>
<td>1,168,491</td>
</tr>
<tr>
<td>Aug</td>
<td>1,285,747</td>
<td>1,306,068</td>
</tr>
<tr>
<td>Sep</td>
<td>1,324,219</td>
<td>1,133,078</td>
</tr>
<tr>
<td>Oct</td>
<td>1,422,843</td>
<td>1,108,041</td>
</tr>
<tr>
<td>Nov</td>
<td>1,468,642</td>
<td>1,108,041</td>
</tr>
<tr>
<td>Dec</td>
<td>1,488,615</td>
<td>1,108,041</td>
</tr>
</tbody>
</table>

Source: BDI 2015 September

* Jan-Sep 2015
Natural gas infrastructure projects 2015-2019

Pipelines
1. El Encino – La Laguna
2. Sur de Texas – Tuxpan (submarino)
3. Tula – Villa de Reyes
4. Tuxpan – Tula
5. Samalayuca – Sásabe
6. Colombia – Escobedo
7. Jáltipan – Salina Cruz
8. Los Ramones – Cempoala
9. Villa de Reyes - Aguascalientes – Guadalajara
10. La Laguna – Centro
11. Lázaro Cárdenas – Acapulco
12. Salina Cruz – Tapachula

Conclusions

• PEMEX, as a **Productive State Enterprise** aims to maximize economic value and profitability for the Mexican state, by improving its productivity to maximize oil and gas revenues and contribute to national development.

• PEMEX operation as the only producer of hydrocarbons in the country has changed by a new model of open competition.

• PEMEX can take advantage of the opportunity to establish new legal framework with strategic partners to consider alliances or joint ventures to encourage the country's competitiveness to ensure industry and a national economy that transforms Mexico.