Balancing the North America Gas Market

CFE
from Market Taker
to Market Maker
In its latest natural gas prospective (2003 – 2012), the Ministry of Energy estimates a net importer position for Mexico.

The prospective presents two scenarios:
- The high supply with domestic production of 8.4 Bcf/d
- The low supply with 6.8 Bcf/d of domestic production

Both scenarios consider production from the MSC contracts for 1 Bcf/d and the high supply scenario is contingent to Pemex’s fiscal reform.

In the high supply scenario Mexico is a net importer of 1.1 Bcf/d while in the low supply scenario net imports are 2.6 Bcf/d.

In both scenarios Mexico imports 0.5 MMcf/d of LNG from the Altamira project already in construction.
Main consumer of natural gas is the power sector with a growing share of private IPP projects.

The power sector natural gas demand in Mexico has seen an increase from approximately 1 Bcf/d in 2002 to over 4.5 Bcf/d in 2012. This growth is primarily driven by the Public and Private sectors, with the Private sector growing at a faster rate than the Public sector.
Power sector has not been as dynamic as expected

- Prospectives have reached the same level of electricity consumption but one year later every year

**Total sales of electricity**

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWh</td>
<td>150k</td>
<td>170k</td>
<td>190k</td>
<td>210k</td>
<td>230k</td>
<td>250k</td>
<td>270k</td>
<td>290k</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Balancing North America Gas Market
• Future annual growth rates used in the prospective seem high compared to historical data.

![Electricity demand growth rates](image)

Balancing North America Gas Market
Balancing North America Gas Market

- Moderate growth rates influence significantly the need of power generation installed capacity

**Power generation installed capacity**

- **Installed capacity may not grow as expected**

<table>
<thead>
<tr>
<th>Year</th>
<th>MW</th>
<th>2012 Prospective</th>
<th>2% growth</th>
<th>4% growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>40,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>40,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>45,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>50,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>55,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>60,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>65,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Moderate growth rates have a strong impact on the need of natural gas by the power sector

**Natural gas demand by the power sector**

![Graph showing natural gas demand by the power sector from 2003 to 2012.](image)

- 2012 Prospective
- 2% growth
- 4% growth

Balancing North America Gas Market
Balancing North America Gas Market

Current indicators show more moderate growth

- 4% growth in electricity demand:
  - Contracted IPP projects are sufficient to cover demand up to 2010
  - CFE has some time flexibility in its IPP program
  - Power sector will demand 1 Bcfd less than the estimates of the 2012 prospective

- 2% growth in electricity demand:
  - Contracted IPP projects are sufficient to cover demand up to 2013
  - CFE can delay its IPP program for the medium term
  - Power sector will demand 1.5 Bcfd less than the estimates of the 2012 prospective

- CFE will not plan with a 2% growth rate. Recent delays in the IPP program are in line with a 4% growth rate
CFE will take an active role in the LNG market

- CFE will import most of its natural gas needs to avoid depending on Pemex’s budget and/or exploration and production success rates.

- New natural gas demand of power generation projects, either CFE owned or IPPs, will be covered by CFE.

- CFE will call for bids for the acquisition of LNG with the specific objective of converting power generation facilities in the Pacific.

- CFE will evaluate the cost advantage of LNG supply versus US supply for their power generation clusters in northern Mexico (Agua Prieta, Chihuahua and La Laguna).

Balancing North America Gas Market
• Many LNG projects have been mentioned as possible in Mexico

- Baja California 1.0 Bcfd
- Sonora 1.0 Bcfd
- Topolobambo 0.5 Bcfd
- Mazatlan 0.5 Bcfd
- Manzanillo 0.5 Bcfd
- Lázaro Cárdenas 0.5 Bcfd
- Altamira 0.5 Bcfd

• Altamira project is already under construction and competition in Baja projects will result in at least one project

Balancing North America Gas Market
Two types of LNG projects in Mexico:
- US driven (Baja, Sonora)
- CFE driven (Altamira, Topolobampo, Manzanillo, Lazaro Cárdenas)

US driven projects will help North America natural gas balance but do not have any impact in Mexico’s natural gas imbalance.

CFE driven projects have the advantage of supply assurance and better basis for CFE acquisitions.

CFE will have to develop a trading company to manage their imbalances and consumption peaks by supplying LDCs and industrial users.
CFE considered sites and projects

- CFE is considering many sites, possibilities and combinations

- Manzanillo should be their next bid (0.5 Bcfd) with documents to be issued by the end of the year

Balancing North America Gas Market
Additions to installed capacity present the same one year lag for the later years but reflect CFE’s IPP bids in the early years.

Power generation installed capacity

Balancing North America Gas Market
The same pattern is observed in natural gas demand by the power sector between prospectives.

Balancing North America Gas Market
Moderate growth rates have a strong impact on the expected total sales of electricity.

**Total sales of electricity**

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWh</td>
<td>150,000</td>
<td>170,000</td>
<td>190,000</td>
<td>210,000</td>
<td>230,000</td>
<td>250,000</td>
<td>270,000</td>
<td>290,000</td>
<td>310,000</td>
<td>330,000</td>
</tr>
</tbody>
</table>

- **2012 Prospective**
- **2% growth**
- **4% growth**

Balancing North America Gas Market