Play Analysis and Geologic Framework

Basin Scale Tectonics and Sedimentation

Regional Synthesis of Gulf of Mexico
Global Energy

- Energy is a long-term “fuel” for economic growth
- Production and commercialization of energy is capital and technology intensive
- Energy price volatility negatively impacts economic growth and strains political relationships
- Political instability, resource nationalism, civil conflict, and economic downturns hurt all nations
- *Growth in energy revenues* represents an increase in resources for societal investment
Latin America – Oil and Gas

- > 30% of U.S. petroleum imports come from Latin America and the Caribbean; <20% from the Persian Gulf

- **Mexico** and Venezuela are among the top five suppliers of crude oil and petroleum products to the United States

- Argentina and **Mexico** have high estimated technically recoverable shale gas reserves

Source: US EIA
Labor Productivity

GDP per Employed Person

*$1,000 at Purchasing Power Parity, 2013 prices

There is a shortage of qualified human capital in science, technology, engineering, and mathematics (STEM) degree programs, particularly in geosciences and engineering.

Academic institutions can play a role as thought-leaders to transfer knowledge and best practices:

- Brazil’s “Scientists Without Borders”
- U. S. “100,000 Strong in the Americas”
- University of Texas “GeoForce”
Why Energy Reform?

- Shared Risk
- Competition
  - Increase reserves and production
  - Improve efficiency
  - Attract expertise and technology
  - Economic growth
- Enhanced Social Investment
Growth Drives Social Investment

- Entrepreneurship
- Education
- Sustainable agricultural and fishing
- Investment in small enterprises
- Training and mentoring
- Health and medical programs

External investor expects a stable, long-term operating environment
Lessons – Fiscal Regimes

- Encourage fiscal and investment models that **align objectives** of host governments and foreign investors and promote governance standards
  
  - **Rule of law** - incorruptible law enforcement agencies and an independent judiciary
  
  - **Division of Responsibility** - between the supervisory, regulatory and enforcement authorities
  
  - **Accountability** - public and private institutions must demonstrate how actions and decisions follow objectives
  
  - **Transparency** - government actions and decisions are open to scrutiny by government and civil society
  
  - **Integrity** - strong socially responsible public and private institutions resistant to corruption
### Mexico – Federal Opportunities

<table>
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<tr>
<th>Description</th>
<th>Oil BBO</th>
<th>Gas TCF</th>
<th>BBOE</th>
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<tbody>
<tr>
<td>1. Produced volumes</td>
<td>40.6</td>
<td>71.6</td>
<td>55.0</td>
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<td>2. Reserves (3P)</td>
<td>30.8</td>
<td>63.2</td>
<td>44.5</td>
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<tr>
<td>3. Yet to be found conventional</td>
<td>45.3</td>
<td>46.5</td>
<td>54.6</td>
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<tr>
<td>4. Yet to be certified unconventional</td>
<td>31.9</td>
<td>141.5</td>
<td>60.2</td>
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<td>5. Remnant oil “not economic”</td>
<td>191.9</td>
<td>144.7</td>
<td>220.7</td>
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<tr>
<td></td>
<td>340.5</td>
<td>467.5</td>
<td>435.0</td>
</tr>
</tbody>
</table>

From Guzman, 2014

Source: Pemex
Mexico has 12 basins with petroleum systems but only 6 produce oil or gas.
Mexico – Challenges for Government

- **Design of secondary legislation**
  - New laws must reflect spirit of the amendments

- **Efficiency among government entities**
  - Duplicated responsibilities must be avoided

- **Overregulation vs. strong regulators**
  - Regulatory bodies with budget and autonomy
  - Bureaucracy avoided

- **Embracing Competition**
  - Free market environment is essential
  - Creating synergies between NOC, IOCs, others
Mexico – Challenges for Government

- **Central government planning**
  - Well defined policy and implementation guidelines

- **Talent**
  - Attract prepared and qualified people; not there yet

- **Manage momentum**
  - Tender 3 or 4 projects right after secondary legislation

- **Supporting the job market**

- **Improving Higher Education**
Mexico – Reform Risks

- Regulatory frameworks do not keep up and the environment suffers
- External companies circumvent rules and environmental protections
- Regulatory agencies are ineffective or not transparent
- Country not prepared for the opening
- Basins are less prolific than anticipated
- The public does not feel or see the benefit and false expectations created
Summary

• Mexico should be very proud of its successful oil and gas history!

• If energy reforms follow a rigorous fiscal regime it will be successful and result in enhanced social benefit.

• Consider how to the distribute and share regulatory with the states.

• Mexico is poised to be a major player on the world stage with its young people and an economy built on energy!