Mexico energy update:
Progress, bottlenecks and outlook

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Baker & Associates, Energy Consultants

- Based in Houston since 1996
- Business and public policy analysis
- Consultants for energy business development in oil and gas and LNG
- Publishers
  - Mexico Energy Intelligence®
  - Mexico Energy Press Report™
  - Market and policy reports

Topics

- Progress to report
  - Deep water developments
  - CFE aggressive push for West Coast LNG
  - LNG projects advance
- But bottlenecks persist
  - No energy reform in Congress
  - Popular opposition to private investment in energy
  - Petrochemical project (Fénix) still in ashes
  - Setback for Pemex in Burgos
  - Lack of natural gas pricing consensus

Deepwater

- In Nov. 2004 Pemex announced its deepest successful well, Nab-1 (good news) but the oil was heavy and in a known trend
- Semi-secret contracts (MOUs?) with several international oil companies to map deepwater areas of Mexican side of Gulf of Mexico
- Discussions of deepwater issues for Mexico:
  - Nov. 22, 2004 (OGJ) George Baker
  - Jan. 1, 2005 (Offshore) David Shields

CFE pushes West Coast LNG

- CFE awarded Sempra in January a gas supply contract for its Rosarito power plant
- CFE announced in favor of building its own LNG terminal in Manzanillo (Colima), leaving Repsol stranded in Lázaro Cárdenas (Michoacán)
- Discussion: Energy Ministry (17 Dec. 2003)
  - http://www.energia.com/press_releases/overview_detail.asp?news_type=5&news_id=262

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LNG projects advance, but . . .

- Sempra has all permits and won CFE supply tender, but still faces lawsuits in Rosarito
- Chevron has all permits, but did not bid on CFE supply contract (hence no anchor customer in Mexico) and faces political and environmental posturing
- Moss Maritime is last-minute entrant into Baja
- Repsol won right to use Lázaro Cárdenas port for LNG, but CFE went north
- DKRW advances in Sonora with state support, and CFE would be ideal anchor

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Bottlenecks: Energy Reform

- Specific meaning of “energy reform” is lost
  - PAN want constitutional amendment to permit private investment in energy sector
  - PRD wants greater congressional oversight over Pemex
  - Energy Ministry wants upstream authority
  - Pemex wants
    - Fiscal reform to leave it funds for investment
    - Greater managerial authority
    - Right to make deals in deep water

Popular opposition to private investment in energy projects

- MSC: The old (and stale) debate continues, with neither side gaining points and no end in sight
  - Multiple service contracts are illegal—say some
  - They are legal—says Pemex and the government
- LNG: Here the issue is not that they are private but
  - Northern projects to serve U.S. market not Mexico’s
  - Environmental and local opposition to industrial use of tourism corridor in Baja
  - Politicians in Mexico City worry about implications of Baja LNG for national security and terrorist vulnerability

Project Fénix

- A major greenfield chemical complex with minority Pemex participation
- Advertised in 2001 to be one of the major accomplishments of Pemex and the Fox administration
  - Pemex CEO was a chemical engineer with a career in the private sector, but four years later he was fired
- Project Fénix has prospective investors, including Nova, but nothing seems decided, not even the city of the complex

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Future of Gulf Coast chemical industry?

- Role of Mexico and other Caribbean countries
- UofH conference on April 29, 2005
  - Program on energia.com; see Calendar section
  - http://www.energia.com/press_releases/overview_detail.asp?news_type=3&news_id=451

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Multiple Service Contracts: Ricos

- Second Round of tenders began in 2004
- Tender for Ricos Block canceled Feb. 9
- Five companies bought the bid package.
  - Monterrey Services and Technology, SA de CV
  - Dowell Schlumberger de México, SA de CV
  - Naves Industriales de Nuevo Laredo, SA de CV
  - Servicios y Abastecimientos Industriales Mexicanos, SA de CV
  - Itera International Energy (www.itera.com)

Consensus missing re natural gas pricing

- After 5 years (since 2000), no consensus
- Mexican industry rejected Houston-netback pricing scheme
- Fox administration invented a “Mexico price” for gas at $4/mmBtu for 3 years in Jan. 2001
- “Mexico price” later extended 3 more years
- CFE wants LNG pricing for mainland disconnected from U.S. indexes

Another look at natural gas pricing options for Mexico

- Early period
- Transition to “opportunity cost” pricing
- Rethinking the Houston netback approach
  - Social wrapping of U.S. natural gas prices
  - Comparing Houston and Monterrey gas markets

Mexican gas markets

- Before 1997
  - Arbitrary, not market- or cost-based
  - Gas pricing used to encourage fuel switching to Pemex’s HS fuel oil
  - No open access on Pemex’s gas lines
  - Uncertain prices for Mexican consumers
- After 1997
  - Open access on Pemex lines as of Jan. 1
  - But, since then, gas supply diversification has been shunned by Mexican industry—why?
  - No new pipelines built to compete with Pemex
  - Nor has any gas storage been built anywhere in Mexico

Two theories of natural gas pricing

- "Opportunity cost" theory
  - Urged by Pemex CEO-economist Adrián Lajous
  - The "fair" price for gas in Mexico was the price that Pemex could sell one unit of gas in Houston—adjusted for logistics differentials
  - Mexican reaction: *sí pero no*. Monterrey disliked paying more for bad weather in Chicago
- Little-Mirrlees Rule
  - Findings of Rice University consulting economist Bob Brito offered corollary to Little-Mirrlees
  - Gave new rationale for opportunity-cost explanation
  - Discussion:
    - http://bakerinstitute.org/Pubs/faculty_brito.pdf

New thinking on natural gas pricing

- CFE: For Mexican mainland, possibility of linking gas prices to crude prices (as in Japan)
- Bob Brito: Possibility of linking continental gas prices to LNG prices
- George Baker: Possibility to estimate economic value of Houston optionality package, and adjust Pemex prices down

Baker: Social wrapping of U.S. gas

- Regulations and public oversight: wellhead to burner tip; civic monitoring by NGOs
- Legal: Contract enforceability based on extensive case law (common law system)
- Purchasing: Best-value procurement
- Technology used to squeeze pennies, stretch BTUs and reduce accidents (and law suits)

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Houston gas market features:

- Highest “optionality”
  - High liquidity of market
  - Gas storage
  - Independent pipelines
  - Competition
    - Among producers
    - Among gas processors
    - Among gas pipelines

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Natural gas in two cities

- Houston
  - High optionality
  - High liquidity
  - Gas storage
  - Competition
  - Multiple producers
  - Independent pipelines
  - Constant demand = lower prices
  - Contracts enforceable
- Monterrey
  - Low optionality
  - Low liquidity
  - No gas storage
  - No competition
  - One gas producer
  - Only Pemex Gas
  - Swings in demand = premium prices
  - Contract risks

Calculating market parity: CRE

- Assume Houston gas price is US$4/mmBtu
- Assume "Opportunity cost" pricing for Pemex's gas
- Monterrey transportation differential is $0.20
  - 0.10 to the border
  - 0.10 to Houston
- Therefore, the fair value (parity price) of Pemex's gas in Mexico should be $3.80

Price effect of social wrapping

- Assume Houston gas price is US$4/mmBtu
- Assume value of Houston "social wrapping" is $1 (or 25% of market price)
- Assume Monterrey transportation differential is $0.20
- Pemex's gas is worth $2.80 in Mexico (but $4.00 in Houston)
- The customer in Mexico pays $2.80 plus distribution charges and value for any social wrapping of the Monterrey gas market.

What's wrong with today's netback pricing from Mexico's perspective?

- Attempts to calculate a market-parity (competitive) price based on transportation differentials alone gives
  - Uncompetitive natural gas prices
  - Uncompetitive chemical feedstock prices
  - Uncompetitive industrial power prices

But what's wrong with a "Mexico price"?

- Disconnected from any market condition
- Strengthens control of Pemex Gas
- Reinforces system of non-market negotiations between industry and government over gas prices
- Does not favor market liberalization in related areas such as exploration and production.

What is the medium-term future?

- Monterrey to reproduce equivalent "social wrapping" of natural gas
- Would require–
  - Gas storage infrastructure
  - Independent pipelines
  - Industry responsibility for gas procurement
  - Restructuring of Pemex Gas
  - Strengthening of CRE authority

Conclusions (1 of 3)

- *Deepwater: Pemex is very serious*
- *Pemex fiscal reform: Pemex is very serious*
- *West Coast LNG: CFE is very serious*
- *Energy reform: No one is serious*
- *Project Fénix: In trouble*
- *MSCs: In trouble (only 90 new MMcfd)*
- *Natural gas pricing: No consensus*

Conclusions (2 of 3)

- Regarding gas prices, Monterrey steel, glass and chemical industries have been right:
  - They have been overcharged for energy prices for power, gas and feedstock
- But the approaches to solving the problem have been wrong:
  - They have strengthened the status quo
  - They have not pushed for energy policy reforms

Conclusions (3 of 3)

- Implications for Houston-based companies
  - Strong export markets in Mexico for
    - Natural gas
    - Gasoline and LPG
    - Oilfield services
    - Chemicals
  - Weak investment opportunities
    - Pipelines (only as contractor to Pemex Gas or CFE)
    - Power (no wholesale market)
    - Chemicals (no feedstock incentives)
    - Upstream (no market-based incentives)
    - Midstream (Retail LPG is still off limits)

Lessons and outlook

- Could be worse (consider Venezuela)
- Presidential elections of 2006 are key
  - PRI victory is likely but record on energy is poor
  - PAN victory with Felipe Calderón would make former energy minister president
  - PRD victory with López Obrador would bring surprises
- Stay tuned. *Due diligence* is the password.

Questions and comments?

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