U.S. Natural Gas Market Dynamics

University of Houston – Global Energy Management Institute

The Future of the Gulf Coast Petrochemical Industry

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April 29, 2005
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Discussion Overview

• Gas Drilling & Gas Price
• Gas & Oil Price Relationship
• Power Generation Demand and Coal Price
• Industrial Demand
• Henry Hub Price Projections
• Projected LNG Imports & Potential Impact on Gas Liquids
U.S. Gas Production Essentially Flat – Despite Sharply Higher Drilling Activity

U.S. Dry Gas Production & Gas Oriented Rig Count

Source: EIA, Baker Hughes, CVX
Drilling Activity is Responsive to Gas Price

![Graph showing Gas Rig Count vs 12 Month Strip with data from Jan'96 to Feb'05. The graph indicates that gas rig count increases as the 12 month NYMEX strip price increases. Price data lagged by 5 months. Source: NYMEX, Baker Hughes, CVX.]
Oil & Gas Price Relationship has Changed

Henry Hub & USGC Oil Prices

$/MMBTU

Source: Platts, CVX
Henry Hub Price has Strengthened Significantly Relative to Crude Oil

Henry Hub Price and Ratio to WTI

Source: Platts, CVX
Projected Power Gen Capacity Additions Dominated by Gas

Net Capacity Additions

Source: EIA AEO 2005, CVX
Gas Projected to Remain Fastest Growing Source of Power Generation

U.S. Total Power Generation by Primary Energy

- Natural Gas
- Renewable / Other
- Coal
- Nuclear
- Oil

Source: EIA AEO 2005, CVX
In the East, Gas Can Compete with Inefficient Coal at ~$4/MMBTU

Adjusted Central Appalachian Coal Costs

Source: PIRA, CVX
Industrial Gas Demand - Vulnerable to Additional Losses?

Mfg Employees & Industrial Dmnd vs. Gas Price

Henry Hub
Mfg Employment Index
Indus Gas Dmnd Index

Source: EIA, BLS, Platts, CVX
Gas Price Expected to Remain Above Long-term Average

Henry Hub Price Projections

 NPC 2003 Reactive Path
 EIA AEO 2005
 Wood Mackenzie
 PIRA

<table>
<thead>
<tr>
<th></th>
<th>Average WTI, $/Bbl</th>
<th>HH / WTI Ratio</th>
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<tbody>
<tr>
<td>NPC 2003</td>
<td>20.25</td>
<td>150+%</td>
</tr>
<tr>
<td>EIA 2005</td>
<td>30.66</td>
<td>80%</td>
</tr>
<tr>
<td>Wood Mack</td>
<td>26.50</td>
<td>90%</td>
</tr>
<tr>
<td>PIRA</td>
<td>40.00</td>
<td>90%</td>
</tr>
</tbody>
</table>
World Gas Prices are Already Becoming More Closely Linked

World Gas Prices (US$/MMBtu)

Source: Platts, Heron, NOC, CVX
LNG Imports Projected to Increase Significantly

ChevronTexaco Global Gas
Greater Role for LNG may Shift Gas Liquids Supply

<table>
<thead>
<tr>
<th></th>
<th>Indigenous Gas at Wellhead</th>
<th>LNG</th>
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<tbody>
<tr>
<td></td>
<td>Onshore</td>
<td>Offshore</td>
</tr>
<tr>
<td>Mole %</td>
<td>South TX</td>
<td>GOM Shelf</td>
</tr>
<tr>
<td>Methane</td>
<td>88.9</td>
<td>94.0</td>
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<tr>
<td>Ethane</td>
<td>5.9</td>
<td>2.9</td>
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<tr>
<td>Propane</td>
<td>2.1</td>
<td>1.1</td>
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<tr>
<td>Butane &amp; Heavier</td>
<td>1.6</td>
<td>1.1</td>
</tr>
<tr>
<td>N2 &amp; CO2</td>
<td>1.6</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Source: Industry Data, CVX
Gas Liquids Recovery Influenced by the Liquids – Gas Price Spread

Source: EIA, Platts, CVX
Summary

• New Sources of Gas Supply Required to Meet Projected Demand
  — Alignment Needed in Energy, Environmental, Regulatory & Foreign Policies
• Energy Policy Should Encourage Greater Fuel Diversity for Power Generation
• Gas Prices Expected to Remain Above Long-term Historical Average
• World Gas Prices Becoming More Closely Linked
• Greater Role for LNG may Shift Gas Liquids Supply
Thank You!

• Questions?