Texas Natural Gas Sector Update

Commissioner Victor G. Carrillo
Railroad Commission of Texas

Natural Gas STAR Program Workshop
October 25, 2006
Texas Railroad Commission

• Established in 1891
• No rail regulation
• Regulate oil & gas, pipelines, surface mining, natural gas utilities
• “TX Energy Commission”
“There is no greater issue facing our world over the next century than energy.”
Figure 7. World Marketed Energy Consumption, 1980-2030

Quadrillion Btu

History

1980: 283
1985: 309
1990: 347
1995: 366
2003: 421

Projections

2010: 510
2015: 563
2020: 613
2025: 665
2030: 722

Problem:

1. U.S. energy demand will continue to grow
2. Domestic oil & gas supplies are flat or declining
3. Leads to growing dependence on foreign sources

Part of the Solution:

1. Encourage domestic E & P
2. Open up areas currently off-limits
3. Diversify energy source spectrum
4. Emphasize conservation/efficiency
Potential Resources Currently Off-Limits
<table>
<thead>
<tr>
<th>TRADITIONAL ENERGY SOURCES</th>
<th>RENEWABLE ENERGY SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>Wind Power</td>
</tr>
<tr>
<td>Gas</td>
<td>Biomass</td>
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<tr>
<td>Coal</td>
<td>Solar Energy</td>
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<tr>
<td>LNG</td>
<td>Geothermal</td>
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<tr>
<td>Clean Coal</td>
<td>Fuel Cells</td>
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<tr>
<td>Nuclear</td>
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</tbody>
</table>
EPA Natural Gas Star Program

Designed to cost-effectively reduce methane emissions

Win, Win, Win:

• Helps protect the environment
• Increases domestic natural gas supply
• Increases industry profitability
TEXAS OVERVIEW

> 6,900 active operators; 229,050 producing wells:
    149,100 oil
    79,950 natural gas

#1 producer of oil & natural gas in the U.S
    348 million barrels oil (2005)
    5.9 Tcf natural gas (2005)
    > 25% of total U.S. natural gas demand

- > 42,000 mi. of nat gas transmission & gathering pipelines
- 26% total U.S. refinery capacity (TX: 4.9 mmbopd)
- Oil & gas & petrochemicals = $100 billion industry in TX
Average Daily Production Per Well (Mcf)
Barnett Shale Activity

- Gas wells
  ~ 5,205
- Permits
  ~ 2,612
- 156 operators
- > 160 active rigs
- > 1.2 Tcf produced since 2004

USGS: 28 Tcf
Drilling Permits Issued In Texas
1998 through 2006

- 2002: 9,716
- 2003: 12,664
- 2004: 14,700
- 2005: 16,914
- Estimated 2006: 21,000
Texas Active Rotary Rig Count
April 2002 – September 2006
Active Rig Count

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States Total</td>
<td>1739</td>
</tr>
<tr>
<td>(&gt; 80% natural gas)</td>
<td></td>
</tr>
<tr>
<td>U.S. Land Rigs</td>
<td>1629</td>
</tr>
<tr>
<td>Texas</td>
<td>799</td>
</tr>
</tbody>
</table>

= 49% of total U.S. land rig activity!

(Source: Baker Hughes, Oct 20, 2006)
Total U.S. Land Rig Activity
October 20, 2006

Texas: 799
OK, LA, WY, NM, CO, CA, AK: 698
Others: 8%

49%
43%
8%
Imports & Exports

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2005 U.S. Natural Gas Imports

- TOTAL: 4.326 Tcf/yr
- CANADA: 3.686 Tcf/yr
- LNG: 0.631 Tcf/yr
- MEXICO: 0.009 Tcf/yr
U.S. Exports of Natural Gas to Mexico
1994 - 2005

Source: U.S. Energy Information Administration.
Texas Pipeline Infrastructure

Natural Gas
Crude Oil
Hazardous Liquids
Pipeline Regulatory Oversight

1st pipeline safety order issued in 1937
- Required gas odorization
- New London, TX school explosion -- 293 died

RRC Pipeline Safety Program Goals

Encourage efficient & economical pipeline industry
Ensure compliance with state & federal pipeline safety rules
Promote public safety and awareness
How Do We Accomplish This?

1. Promulgate rules to ensure safety of intrastate pipeline facilities
2. Enforce state/fed pipeline rules for intrastate pipelines (e.g., pipeline integrity testing)
3. Conduct ~ 2,500 inspections per year
4. Investigate accidents & complaints involving pipeline facilities
RRC encourages proactive industry efforts to reduce methane emissions and otherwise minimize waste

- **SWR 32**: Gas venting & flaring rule
- **SWR 103**: Gas severance tax exemption for volumes returned to market that would otherwise be vented or flared
- **Waste Minimization Program**: Non-regulatory program encouraging best practice methods to reduce & better manage waste streams from operations
- **Support industry events**: e.g., Int’l Petroleum Environmental Conference
Waste Minimization in the Oil Field Manual

• Offers source reduction and recycling concepts
• Provides practical examples, including reduction of methane and other VOC emissions
• Provides info & software to help develop your own individualized waste minimization plan

Download from website: www.rrc.state.tx.us
The Commission is an Industry Resource

We support industry efforts to reduce methane emissions and otherwise minimize waste from production operations through regulatory, incentive, and outreach programs

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Help reduce methane emissions!!