LATEST DEVELOPMENTS:
THE ROLE OF NATURAL GAS AND OIL IN AMERICA’S ENERGY FUTURE

Rayola Dougher
API Senior Economic Advisor
Oil & Natural Gas Industry: The Backbone of the American Economy

- Supports more than 9 million jobs
- Supplies more than 60% of our energy needs
- Generates hundreds of billions of dollars in government revenue
Future U.S. Energy Demand
The U.S. will require 20 percent more energy in 2035 than in 2009

Natural Gas Demand & Supply
Shale Gas Plays, Lower 48 States
Over the last decade, U.S. shale gas production has increased 14-fold and now comprises about 22 percent of total U.S. production.

Source: EIA, Lippman Consulting (2010 estimated)
# Estimated Job Gains from Shale Gas Development by Basin

<table>
<thead>
<tr>
<th>State</th>
<th>Shale Play</th>
<th>Year</th>
<th>Job Gains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas</td>
<td>Fayetteville</td>
<td>2008</td>
<td>9,683</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Haynesville</td>
<td>2009</td>
<td>57,637</td>
</tr>
<tr>
<td>Texas</td>
<td>Barnett</td>
<td>2008</td>
<td>132,497</td>
</tr>
<tr>
<td>Pennsylvania &amp; West Virginia</td>
<td>Marcellus</td>
<td>2009</td>
<td>57,357</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2009 PA &amp; WV</th>
<th>2011</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (thousands)</td>
<td>57</td>
<td>72 – 136</td>
<td>906 – 212</td>
<td>102 – 283</td>
</tr>
<tr>
<td>Value Added (billions)</td>
<td>$5</td>
<td>$6 – $12</td>
<td>$8 – $19</td>
<td>$9 – $25</td>
</tr>
<tr>
<td>State &amp; Local Taxes (billions)</td>
<td>$0.5</td>
<td>$0.7 – $1.2</td>
<td>$0.8 – $2.1</td>
<td>$0.9 – $3.0</td>
</tr>
<tr>
<td>Federal Taxes (billions)</td>
<td>$1.2</td>
<td>$0.8 – $1.6</td>
<td>$1.0 – $2.5</td>
<td>$1.2 – $3.2</td>
</tr>
</tbody>
</table>

Proper well construction provides groundwater protection.
Four-fold increase in shale gas production offsets declines in other U.S. supply, meeting consumption growth and lowering import needs.

U.S. dry gas
trillion cubic feet per year

<table>
<thead>
<tr>
<th>Year</th>
<th>History</th>
<th>2009</th>
<th>Projections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1990</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2020</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2025</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2030</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2035</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Net imports
Shale gas
Non-associated onshore
Non-associated offshore
Tight gas
Coalbed methane
Associated with oil

Source: EIA, Annual Energy Outlook 2011
Changes in Gasoline and Diesel Prices Mirror Changes in Crude Oil Prices

10/11/2011
- Diesel (AAA) $3.79
- Gasoline (AAA) $3.40
- Crude Oil (NYMEX) $2.04

Source: NYMEX (WTI crude oil) and AAA (gasoline and diesel)
Oil prices relate to many uncertain factors

- Non-OPEC supply growth
- OPEC production decisions
- Spare production capacity
- Geo-political risks
- Weather
- Inventories
- Global economic growth
- Speculation, hedging, investment
- Exchange rates and Inflation
What Consumers are Paying for at the Gasoline Pump

Average of gasoline components for January – April 21, 2011 as reported by EIA
Second Quarter 2011 Earnings by Industry (net income/sales)

- Computers: 23.9
- Pharmaceuticals: 22.9
- Chemicals: 15.4
- All Manufacturing: 10.0
- Oil and Natural Gas: 9.5
- Aerospace: 8.2
- Motor Vehicles: 6.9
- Food: 4.4
Who Owns “Big Oil”? (holdings of oil stocks, 2007)

- 29.5% Mutual Funds and Other Firms
- 23.0% Individual Investors
- 27.0% Pension Funds
- 14.0% IRAs
- 1.5% Corporate Management of Oil Companies
- 5.0% Other Institutional Investors

Source: The Distribution of Ownership of U.S. Oil and Natural Gas Companies, SONECON, September 2007
Oil Supply
Sources of Crude Oil Supply

U.S. Supplies of Crude 2010
(14,633 Thousand Bps per Day)

- United States: 38%
- Canada: 13%
- Saudi Arabia: 7%
- Venezuela: 6%
- Mexico: 8%
- Algeria: 2%
- Brazil: 2%
- Angola: 3%
- Russia: 3%
- Nigeria: 7%
- Other: 10%

U.S. Imports of Crude 2010
(9,121 Thousand Bps per Day)

- Canada: 21%
- Saudi Arabia: 12%
- Mexico: 10%
- Venezuela: 6%
- Russia: 3%
- Brazil: 3%
- Angola: 4%
- Iraq: 5%
- Nigeria: 11%
- Other: 16%

Canadian oil sands development a boon to U.S. economy

For every two jobs supported in Canada, one job will be supported in the U.S.

Canada’s oil sands can support 600,000 U.S. jobs by 2035.

For every US dollar spent on Canadian exports (i.e. crude oil) up to 90 cents is spent on imports of US goods and services to Canada.

$775 billion dollars added to our GDP over next 25 years.
Offshore Undiscovered Technically Recoverable Federal Oil (Bbl) and Natural Gas (Tcf) Resources

Source: Minerals Management Service and Department of the Interior.
Response to the Gulf Spill

- Strengthened safety standards
- Worked with regulators to upgrade offshore rules
- Put in place technology to stop an oil release
- Created Center for Offshore Safety
FILLING AMERICA’S GAS TANK
Within 15 years Canada & US can provide all our liquid fuel needs

Sources of liquid fuel supply: 2026

EIA forecast
- Oil from rest of world: 32%
- Biofuels: 12%
- Oil from Canada: 12%
- US oil production: 45%

Potential
- Oil from rest of world: 12%
- Biofuels: 16%
- Oil from Canada: 72%

Sources: EIA; Wood Mackenzie
Potential Jobs and Government Revenue

<table>
<thead>
<tr>
<th>Region</th>
<th>Jobs (thousands)</th>
<th>Revenue (billions $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midwest (PADD 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 = 668</td>
<td>2020 = 1,139</td>
<td>2030 = 1,404</td>
</tr>
<tr>
<td>Rockies (PADD 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 = 175</td>
<td>2020 = 235</td>
<td>2030 = 232</td>
</tr>
<tr>
<td>Gulf Coast (PADD 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 = 196</td>
<td>2020 = 267</td>
<td>2030 = 291</td>
</tr>
<tr>
<td>West Coast, AK &amp; HI (PADD 5)</td>
<td>84 202 300</td>
<td></td>
</tr>
<tr>
<td>2015 = 8.4</td>
<td>2020 = 27.2</td>
<td>2030 = 242.6</td>
</tr>
<tr>
<td>East Coast (PADD 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015 = 168</td>
<td>2020 = 354</td>
<td>2030 = 410</td>
</tr>
<tr>
<td>2015 = 6.9</td>
<td>2020 = 31.2</td>
<td>2030 = 263.4</td>
</tr>
</tbody>
</table>

Figures may not add exactly due to rounding.
A tax of $90 billion or more on the oil & natural gas industry

‘Fairness?’

$86 million a day in revenue from oil & gas

Oil and gas income tax rate 41.1% versus 26.5% for S&P
America’s choice

**Increase**
- Oil & natural gas development
  - Jobs: + 1,100,000 jobs
  - Government revenue: + $127 billion
  - Energy production: + 4 million barrels’ worth of oil and natural gas per day

**2020**

**Raise**
- Oil & natural gas taxes
  - Jobs: - 48,000 jobs
  - Government revenue: - $29 billion
  - Energy production: - 700,000 barrels’ worth of oil and natural gas per day

America’s choice

Increase oil & natural gas development

- Jobs: +1,400,000 jobs
- Government revenue: +$800 billion
- Energy production: +10 million barrels’ worth of oil and natural gas per day

By 2030

Raise oil & natural gas taxes

- Jobs: -22,000 jobs
- Government revenue: -$223 billion
- Energy production: -280,000 barrels’ worth of oil and natural gas per day

Thank You

For more information visit

www.api.org

www.energymorrow.org

www.energycitizens.org