North American Unconventional Production and its impact on the US Economy
The Unconventional Story

US Unconventional Production

Economic Impact
Activity in the ~50 identified unconventional dry gas plays in North America is declining and shifting to wet gas plays.
Substantial activity will continue and build in some of the 30 identified oil plays - not all identified plays will be successfully developed*

- Eagle Ford Oil
- Utica
- Niobrara
- Bakken
- Wolfcamp
- Bone Spring/Avalon
- Mississippian
- Duvernay
- Montney
- etc.
US Lower 48 oil production - share of conventional and unconventional historical and forecast

US Forecasted Oil Production

Mmbo/day

- 12,000
- 10,000
- 8,000
- 6,000
- 4,000
- 2,000
- 0


Unconventional: Dark Blue
Conventional Offshore: Yellow
Conventional Other: Green
Conventional Alaska: Red

Source: EIA and IHS CERA
The Bakken, Eagle Ford and Permian Plays add significant volumes to the US forecast.
Oil Directed Spending increases $170 Billion per year by 2030.
Forecasting Unconventional Production is Difficult

FIGURE 2.5
US EIA Annual Energy Outlook (AEO) Domestic Crude Production Forecasts (2010-2014)

Source: EIA
Note: EIA Reference Case
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Imported oil has dropped to about 32% of US Demand
The Current Situation

US Unconventional Production

Economic Impact
America’s New Energy Future

Domestic Unconventional Oil and Gas

=  

1.7 million jobs today; 3.5 million jobs by 2035  
Increased Energy Independence  
Manufacturing Renaissance

=  

Transformation of both US Energy and the US Economy

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Unconventionals are redefining energy import-export dynamics…

• US Oil import requirements down from 60% in 2005 to 32% today
  • Tight oil plays have added nearly 3 million barrels per day of new domestic crude oil production, helping to reverse a three-decade decline in US oil production

• US natural gas production up 25% over the same period
  • From 52 billion cubic feet (Bcf) per day in 2005 to 65 Bcf per day
  • Driven largely by unconventional gas activity

• The increase in US natural gas production from shale gas and tight gas plays is making it possible that the United States will become a net exporter of gas before the end of this decade.
Nearly $5.1 trillion in cumulative capital investments are expected to be made between 2012 and 2035.
Defining the Economic Contribution

- **Direct Contribution** – Impact on the core producing industries: Exploring, producing, transporting and delivering to downstream elements or providing critical onsite services

- **Indirect Contribution** – Impact on the supply chain and their supplier industries

- **Induced Contribution** – Expenditure induced impact through household income
From 2012 to 2035 the employment contribution of the unconventional oil and gas industry will double.

Employment Contributions of Unconventional Oil and Gas Activity (thousands of workers)

- Induced
- Indirect
- Direct
By 2020, the annual contribution of unconventional oil and gas activity to GDP is projected to reach $416 billion by 2020 and by 2035 is expected to reach $475 billion.
Taxes, royalties, and private lease payments are projected to exceed $2.5 trillion over 2012-2035.

### Contribution to US Lower 48 Government Revenue: Total Unconventional Activity*

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2012-2035**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal Taxes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Taxes</td>
<td>28,936</td>
<td>42,183</td>
<td>50,229</td>
<td>55,686</td>
<td>57,365</td>
<td>57,846</td>
<td>1,137,602</td>
</tr>
<tr>
<td>Corporate Taxes</td>
<td>6,827</td>
<td>10,180</td>
<td>12,147</td>
<td>13,385</td>
<td>13,644</td>
<td>13,631</td>
<td>272,405</td>
</tr>
<tr>
<td><strong>State and Local Taxes</strong></td>
<td>30,931</td>
<td>46,582</td>
<td>57,731</td>
<td>63,999</td>
<td>65,009</td>
<td>64,967</td>
<td>1,317,506</td>
</tr>
<tr>
<td>Personal Taxes</td>
<td>3,536</td>
<td>5,136</td>
<td>6,112</td>
<td>6,783</td>
<td>6,999</td>
<td>7,067</td>
<td>138,650</td>
</tr>
<tr>
<td>Corporate Taxes</td>
<td>19,150</td>
<td>28,539</td>
<td>34,024</td>
<td>37,493</td>
<td>38,217</td>
<td>38,186</td>
<td>763,165</td>
</tr>
<tr>
<td>Severance Taxes</td>
<td>5,450</td>
<td>8,657</td>
<td>11,769</td>
<td>13,306</td>
<td>13,387</td>
<td>13,442</td>
<td>279,882</td>
</tr>
<tr>
<td>Ad Valorem Taxes</td>
<td>2,795</td>
<td>4,251</td>
<td>5,825</td>
<td>6,417</td>
<td>6,407</td>
<td>6,272</td>
<td>135,809</td>
</tr>
<tr>
<td><strong>Federal Royalty Payments</strong></td>
<td>1,964</td>
<td>2,639</td>
<td>3,204</td>
<td>2,923</td>
<td>2,271</td>
<td>1,593</td>
<td>62,141</td>
</tr>
<tr>
<td><strong>Total Government Revenue</strong></td>
<td>61,832</td>
<td>91,404</td>
<td>111,164</td>
<td>122,608</td>
<td>124,645</td>
<td>124,406</td>
<td>2,517,248</td>
</tr>
<tr>
<td><strong>Lease Payments to Private Landowners</strong></td>
<td>504</td>
<td>711</td>
<td>913</td>
<td>1,096</td>
<td>1,185</td>
<td>1,232</td>
<td>23,599</td>
</tr>
</tbody>
</table>

NOTES: *Total unconventional activity represents the sum of unconventional oil and unconventional gas activity.

**2012-2035 represents the total for all years including those years not reported.

Source: IHS Global Insight
Impact of Unconventionals on the US Economy in 2020

Extensive Supply Chain will spread Economic Contribution beyond Producing States...

...adding $416 billion to US GDP in 2020...

...supporting millions of jobs...

3 million jobs in 2020

GDP Contribution (billions of 2011 dollars)

Producing States $2,094
Non-Producing States $461

Producing States
2,200,000
73%
Non-Producing States
800,000
27%

3 million jobs in 2020

...and generating significant Government Revenues...

Cumulative Govt. Revenue, 2012 - 2035 (billions of 2011 dollars)

Non-Producing States $461
Producing States $2,094

Major Industry Sectors Benefiting from Unconventional Oil and Gas Activity

<table>
<thead>
<tr>
<th>Producing States</th>
<th>Non-Producing States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top 10</strong></td>
<td><strong>Top 10</strong></td>
</tr>
<tr>
<td>Accommodation</td>
<td>Food &amp; Beverage Stores</td>
</tr>
<tr>
<td>Administrative &amp; Support Services</td>
<td>Food Services &amp; Drinking Places</td>
</tr>
<tr>
<td>Amusement, Gambling, &amp; Recreation</td>
<td>General Merchandise Stores</td>
</tr>
<tr>
<td>Chemical Manufacturing</td>
<td>Hospitals</td>
</tr>
<tr>
<td>Computer &amp; Electronic Product Mfg</td>
<td>Machinery Manufacturing</td>
</tr>
<tr>
<td>Construction</td>
<td>Management of Companies</td>
</tr>
<tr>
<td>Educational Services</td>
<td>Mining (except Oil &amp; Gas)</td>
</tr>
<tr>
<td>Fabricated Metal Product Mfg</td>
<td>Monetary Authorities, Central Bank</td>
</tr>
<tr>
<td>Financial and Insurance Services</td>
<td>Nonmetallic Mineral Product Mfg</td>
</tr>
</tbody>
</table>

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Measuring the Transformative Contribution of Unconventional Energy to the US Economy

- Unconventional oil and natural gas activity is reshaping America’s energy future and bringing significant benefits to the US economy in terms of jobs, government revenues, and GDP.

- A new era of affordable and abundant energy is creating significant competitive advantages for the US in both energy-intensive industries and industries that rely on natural gas derivatives as critical production feedstock.

  - **Jobs**: 2.1 million jobs in 2012, 3.0 million in 2020 and 3.5 million in 2035.
  
  - **GDP**: annual contributions will nearly double from $284 billion in 2012 to $533 billion in 2025.
  
  - **Government revenues**: average $115 billion annually, totaling over $1.6 trillion from 2012 to 2035.
  
  - **Real household disposable income**: increase of more than $1,200 in 2012, $2,000 in 2020 to more than $3,500 in 2035

Employment Contribution

- 2012: 2.1M
- 2020: 3.3M
- 2035: 3.5M

Contribution to Household Income

- 2012: $1,200
- 2020: $2,000
- 2035: $3,500
The US has a distinct economic advantage because of lower electricity costs
Conclusion

• Unconventional oil and natural gas activity is reshaping America’s energy future and bringing significant benefits to the US economy, in terms of jobs, government revenues, and GDP.

• A new era of affordable and abundant energy is creating significant competitive advantages for the US in both energy-intensive industries and industries that rely on natural gas derivatives as critical production feedstock.

• The composite economic contributions include:
  • Jobs: 2.1 million jobs in 2012, 3.3 million by the end of the decade, and almost 3.9 million by 2025.
  • GDP: annual contributions will nearly double from $284 billion in 2012 to $533 billion in 2025.
  • Government revenues: average $115 billion annually, totaling over $1.6 trillion from 2012 to 2025.
  • Real household disposable income: increase of more than $1,200 in 2012, just over $2,000 in 2015 and more than $3,500 in 2025.
    • With 120 million households in the country, this equates to an aggregate annual boost of over $163 billion.
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