Power & Politics
Navigating the Changing Vision of Our Energy Future

Rayola Dougher, API Senior Economic Advisor, dougherr@api.org
U.S. oil and natural gas production is increasing as a result of technological innovations.

U.S. Crude Oil Production (millions of barrels per day)

U.S. Natural Gas Marketed Production (billions of cubic feet per day)

Note: Bars in red show EIA’s Short-term Energy Outlook forecast. Source: Energy Information Administration.
Shale resources are widely dispersed across the U.S.
Shale production is offsetting declining production from other U.S. oil and natural gas resources.

U.S. Crude Oil Production by Source
(millions of barrels per day)

U.S. Natural Gas Production by Source
(trillion cubic feet per year)

Source: EIA, Annual Energy Outlook 2014
The U.S. will require 12 percent more energy in 2040 and more than 60 percent of it will be met by oil and natural gas.
The EIA projects U.S. energy-related CO2 emissions will be lower in 2040 than when they peaked in 2007.

Source: EIA
Methane emissions are falling even as natural gas production is increasing

Source: EPA and EIA
The price of natural gas has fallen relative to crude oil.

Changes in the price of crude oil and natural gas

Crude Oil (WTI)  Natural Gas (Henry Hub)

Source: EIA
Shale energy revolution has pronounced impact on energy-intensive industries

<table>
<thead>
<tr>
<th>Industry</th>
<th>2012</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron &amp; Steel</td>
<td>2.2%</td>
<td>6.7%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Resins &amp; Synthetic Material</td>
<td>1.7%</td>
<td>6.0%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Basic Organic Chemicals</td>
<td>1.5%</td>
<td>7.1%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Plastics and Rubber</td>
<td>1.5%</td>
<td>4.1%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Fabricated Metal</td>
<td>1.4%</td>
<td>3.2%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Agricultural Chemicals</td>
<td>1.2%</td>
<td>6.9%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Nonmetallic Mineral</td>
<td>1.2%</td>
<td>3.5%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Petroleum &amp; Coal</td>
<td>1.0%</td>
<td>5.8%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Machinery</td>
<td>1.4%</td>
<td>3.3%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Total Manufacturing</td>
<td>1.3%</td>
<td>3.5%</td>
<td>3.9%</td>
</tr>
</tbody>
</table>

More energy can lead to American prosperity

$1,200

American consumers’ annual savings due to lower gas prices resulting from shale energy development

(IHS Global Insight)
Oil and natural gas development equals more jobs

Construction Industry
Drilling Industry
Chemical Industry
Trucking Industry
Hospitality Industry
Steel Industry
Oil and natural gas jobs pay well
(average annual wages)

- Oil and natural gas extraction: $154,317
- Pipeline transportation: $116,425
- Drilling oil and gas wells: $94,115
- Support activities for oil and gas: $81,696
- Oil and gas pipeline construction: $72,667
- U.S. average: $49,700

Shale development equals more government revenue

- $74 billion in 2012
- $126 billion by 2020
- $1.6 trillion 2012-2025

Source: IHS Global Insight, August 2013
There are 48 federal agency activities relating to upstream oil and natural gas operations.

Source: API
There are 202 hydraulic fracturing bills/regulations under consideration in 34 API states this year.

Source: API
Where the money is going
The oil and natural gas industry has invested over $3 trillion in U.S. capital projects since 2000

*Planned
Source: Oil & Gas Journal, various issues.
## Where the funds will go for US projects

<table>
<thead>
<tr>
<th></th>
<th>2014 Million $</th>
<th>% Change 2014-2013</th>
<th>2013 Million $</th>
<th>% Change 2013-2012</th>
<th>2012 Million $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration-production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drilling-exploration</td>
<td>250,202</td>
<td>9.3</td>
<td>228,948</td>
<td>-4.3</td>
<td>239,205</td>
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<tr>
<td>Production</td>
<td>47,538</td>
<td>9.3</td>
<td>43,500</td>
<td>-4.3</td>
<td>45,449</td>
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<tr>
<td>OCS lease bonus</td>
<td>1,600</td>
<td>23.1</td>
<td>1,300</td>
<td>-28.4</td>
<td>1,815</td>
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<tr>
<td>Subtotal</td>
<td>299,340</td>
<td>9.3</td>
<td>273,748</td>
<td>-4.4</td>
<td>286,469</td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refining and marketing</td>
<td>12,900</td>
<td>0.8</td>
<td>12,800</td>
<td>-1.5</td>
<td>13,000</td>
</tr>
<tr>
<td>Petrochemicals</td>
<td>5,600</td>
<td>51.0</td>
<td>3,709</td>
<td>54.5</td>
<td>2,400</td>
</tr>
<tr>
<td>Crude and product pipelines</td>
<td>9,207</td>
<td>-41.7</td>
<td>15,804</td>
<td>421.9</td>
<td>3,028</td>
</tr>
<tr>
<td>Natural gas pipelines</td>
<td>3,660</td>
<td>-60.1</td>
<td>9,169</td>
<td>158.0</td>
<td>3,554</td>
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<tr>
<td>Other transportation</td>
<td>2,750</td>
<td>52.8</td>
<td>1,800</td>
<td>50.0</td>
<td>1,200</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>4,800</td>
<td>4.3</td>
<td>4,600</td>
<td>9.5</td>
<td>4,200</td>
</tr>
<tr>
<td>Subtotal</td>
<td>38,917</td>
<td>-18.7</td>
<td>47,882</td>
<td>74.9</td>
<td>27,382</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>338,257</td>
<td>5.2</td>
<td>321,630</td>
<td>2.5</td>
<td>313,851</td>
</tr>
</tbody>
</table>

Source: Oil & Gas Journal, March 4, 2014
Cumulative spending on oil and natural gas infrastructure to reach $890 billion over next eleven years

(2012 dollars)

U.S. refining capacity continues to expand even as the number of refineries contracts

*Operable as of January 1st of each year.
Source: EIA
For the first time since 1949, the U.S. became a net exporter of petroleum products in 2011.
Expanding alternative fuels for transportation: current laws

NERA predicts the cost of manufacturing gasoline could be 30% greater AND the cost for diesel 300% greater by 2015.
Factors Affecting Price
Changes in gasoline and diesel prices mirror changes in crude oil prices

Average prices as of October 2, 2014

- Crude Oil $2.17
- Gasoline $3.32
- Diesel $3.73

Sources: NYMEX (WTI crude oil) and AAA (gasoline and diesel)
Many factors affect the price of oil, but in the end it comes down to supply and demand.
Estimated unplanned OPEC crude oil production outages

Source: EIA, Short-term Energy Outlook, September 2014
Growth in U.S. oil production has largely offset the growth in global supply disruptions.

Growth in Global Supply Disruptions (mmb/d)

Source: EIA

Growth in U.S. Oil Production* (mmb/d)

* Light blue represents production of hydrocarbon gas liquids, biofuels, and refinery processing gains.
World crude oil and liquid fuels production growth

Source: EIA, Short-term Energy Outlook, September 2014
Non-OPEC crude oil and liquid fuels production growth

Source: EIA, Short-term Energy Outlook, September 2014
Crude oil and petroleum product imports have declined as a share of consumption

Source: EIA
Why export crude oil?

Crude oil exports yield economic benefit across all 50 states

- Save consumers up to $5.8 billion a year in lower fuel costs
- Add 300,000 jobs to U.S. economy in 2020
- Reduce America’s trade deficit by $22 billion in 2020

Source: ICF International and EnSys Energy,
EIA projects U.S. will be net exporter of natural gas by 2017

Source: EIA, AEO 2014
Eight US facilities have been approved to export LNG, over 20 are awaiting approval and there are more than 60 competing sites planned or under construction in foreign nations.

Source: API LNG Export Facility Map
Why export natural gas?

Source: ICF International
### Key Economic Impacts (relative to zero LNG exports case)

<table>
<thead>
<tr>
<th>Impact (2016-2035 averages)*</th>
<th>ICF Base Exports Case (up to ~4 Bcfd)</th>
<th>Middle Exports Case (up to ~8 Bcfd)</th>
<th>High Exports Case (up to ~16 Bcfd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment Change (No.)</td>
<td>73,100 - 145,100</td>
<td>112,800 - 230,200</td>
<td>220,100 - 452,300</td>
</tr>
<tr>
<td>GDP Change (2010$ Billion)</td>
<td>$15.6 - $22.8</td>
<td>$25.4 - $37.2</td>
<td>$50.3 - $73.6</td>
</tr>
<tr>
<td>Henry Hub Price (2010$/Mmbtu)</td>
<td>$5.03</td>
<td>$5.30</td>
<td>$5.73</td>
</tr>
<tr>
<td>Henry Hub Price Change</td>
<td>$0.32</td>
<td>$0.59</td>
<td>$1.02</td>
</tr>
</tbody>
</table>

*Includes direct, indirect, and induced impacts

87% of federal offshore acreage is off-limits to development

U.S. Offshore Undiscovered Technically Recoverable Federal Oil and Natural Gas Resources
(billion barrels - Bbl and trillion cubic feet - Tcf)

- Pacific OCS
  - 10.2 Bbl
  - 16.1 Tcf

- Alaska OCS
  - 26.6 Bbl
  - 131.5 Tcf

- Chukchi Sea
  - 15.4 Bbl
  - 76.8 Tcf

- Beaufort Sea
  - 8.2 Bbl
  - 27.6 Tcf

- Cook Inlet
  - 1.0 Bbl
  - 1.2 Tcf

- Gulf of Mexico OCS
  - 48.4 Bbl
  - 219.5 Tcf

- Western Gulf
  - 12.4 Bbl
  - 69.5 Tcf

- Central Gulf
  - 30.9 Bbl
  - 133.9 Tcf

- Eastern Gulf
  - 5.1 Bbl
  - 16.1 Tcf

- Mid-Atlantic

- South Atlantic

Oil and natural gas production are down on federal lands and waters

Development of Canadian oil sands would benefit the U.S. economy

2011 Trade in Goods

For every dollar of goods the U.S. imports, we get back...

Source: http://www.census.gov/foreign-trade/balance/
Filling America’s tank
Within 10 years Canada and U.S. can provide all our liquid fuel needs

Sources: EIA; Wood Mackenzie
President’s FY 2015 calls for nearly $97 billion in targeted tax increases on America’s oil and natural gas producers

- Repeal LIFO* $29.0
- Repeal Expensing Intangible Drilling Costs $14.4
- Repeal Sec 199 for O & G Companies $14.2
- Repeal Percentage Depletion $13.0
- Reinstatement Superfund Taxes* $11.6
- Modifications of Duel Capacity $10.4
- Increase G&G Amortization Period $3.1

*Approximate industry share of broad industry tax increase
Source: Office of Management and Budget and API calculations. All amounts encompass a 10-year period
U.S. oil and natural gas companies pay their fair share of taxes and are a great source of public revenue.


- Oil and Natural Gas Companies: 40.2%
- S&P Industrials Excluding Oil and Natural Gas Companies: 25.2%

Source: Compustat North America Database (March 2014 update).
America’s choice

increase
oil & natural gas development

2020

raise
oil & natural gas taxes

jobs
+ 1,100,000 jobs

jobs
- 48,000 jobs

government revenue
+ $127 billion

government revenue
- $29 billion

energy production
+ 4 million barrels’ worth of oil and natural gas per day

energy production
- 700,000 barrels’ worth of oil and natural gas per day

Voters voice strong support for increased domestic oil and natural gas development

Harris Poll Results on Increased U.S. Oil and Natural Gas Development

- Importance of energy security: 94%
- Lead to more jobs: 91%
- Help lower energy costs: 86%
- Support building Keystone XL pipeline: 75%
- Support O&NG development: 73%
- Support offshore development: 69%
- Increasing energy taxes may hurt consumers: 68%

Source: Harris Interactive telephone poll, November 6, 2012
For more information visit:
www.api.org
www.energytomorrow.org
www.energynation.org