EIA’s short-term oil market outlook

3rd Annual Kay Bailey Hutchinson Center Symposium
September 27, 2018  |  Austin, Texas

By
Dr. Linda Capuano, EIA Administrator
Mission: EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.

EIA is the Nation’s source of energy information and, by law, its data, analyses, and forecasts are independent of approval by any other officer or employee of the United States Government.
Success: solid legal foundation and trust

Legal right to collect
- Federal Energy Administration Act of 1974 (Public Law 93-275)
- Department of Energy (DOE) Organization Act of 1977 (Public Law 95-91)
- Other legal mandates

Legal obligation to protect
- Confidential Information Protection and Statistical Efficiency Act (CIPSEA), Title V of the E-Government Act of 2002 (Pubic Law 107-347)
- Freedom of Information Act, 5 USC. 552, exemptions 3, 4, and 6
- Paperwork Reduction Act, 44 U.S.C. 3501
- Information Quality Act, P.L. No. 106-554; H.R. 5658, Section 515(a)
Structure of U.S. Statistical System

• Three Branches of Government: Executive; Legislative; and Judiciary.

• Executive Branch – 15 Departments

• 190 Agencies within 15 Departments

• 90 out of 190 Agencies perform statistical collections of some sort

• 13 out of 90 are Principal Federal Statistical Agencies
EIA’s data collection and analytical products integrate all energy sectors

Reserves, production, & trade
- Crude oil
- Natural gas
- Natural gas liquids
- Coal
- Uranium

Transformation, distribution, & storage
- Petroleum & biofuel refiners
- & terminals
- Natural gas storage & distribution
- Electricity generation & distribution

End-use consumption
- Commercial
- Residential
- Industrial
- Transportation
EIA mission and stakeholders

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**Examples of Activities**

**Business/Industry**
- Manufacturers – market research

**Energy Sector**
- Consumers – monitor price forecasts
- Producers – track inventory statistics

**Finance/Consulting**
- Commodities Analysts – market response to supply data

**Private Citizens**
- Public – research gasoline prices

**Government**
- Executive Agencies – WH, DOE, & EPA use EIA data to track energy markets and program performance and to analyze policy proposals
- Congress – policy development and agency funding
- State Governments – planning and program development

**Media/Education**
- Journalists – cite energy statistics
- Teachers – use Energy Kids materials
- Researchers – energy forecasting and modeling
EIA Data Products and Tools

• Coal Data Browser
• Crude Import Tool
• Weekly Natural Gas Storage Report
• Hourly Electric Load Tool
• Southern California Daily Energy Report
• Residential Energy Consumption
EIA Analytical Products

• Annual Energy Outlook
• International Energy Outlook
• Short-Term Energy Outlook
• This Week in Petroleum
• Weekly Natural Gas Storage Report
• Today in Energy
September Short Term Energy Outlook - Key takeaways

• Crude oil prices are expected to remain near current levels as oil markets are expected to be in relative balance in the coming months
  – Pipeline constraints in the Permian basin are expected to contribute to lower Permian well head and Cushing prices
  – Lower global oil inventory levels and OPEC spare capacity could contribute to oil price volatility and rising prices in the case of supply disruption

• Growth in global oil demand is expected to be relatively strong in 2018 and 2019, but there is mounting concern over the pace of economic growth that could trigger downward pressure on oil prices

• Crude oil and natural gas plant liquid production in the United States is expected to continue to grow strongly, even with pipeline constraints
EIA forecasts crude oil prices to generally remain near current levels through the end of 2019

Crude oil spot prices (monthly average)
dollars per barrel (nominal)

Sources: Thomson Reuters; EIA, September 2018 Short-Term Energy Outlook
A forecast for mostly balanced crude oil markets contributes to the expectation of a narrow range for prices

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September 27, 2018

Global oil market balances
million barrels per day

Sources: EIA, September 2018 Short-Term Energy Outlook
Most forecasted global oil supply growth is expected to come from North America

Annual change in liquid fuels production
million barrels per day

Sources: EIA, September 2018 Short-Term Energy Outlook
NGPLs and crude oil drive U.S. production growth, with much of this growth from the Permian

Annual change in U.S. liquid fuels production
million barrels per day

Sources: EIA, September 2018 Short-Term Energy Outlook
Low OPEC spare capacity combined with lower inventory levels could contribute to price volatility

OPEC spare crude oil production capacity (annual average) million barrels per day

2008-17 average

Sources: EIA, September 2018 Short-Term Energy Outlook
Non-OECD nations are projected to account for 64% of the 739 quadrillion Btu global energy consumption by 2040.

IEO2018 Reference case world energy consumption (quadrillion Btu)

Source: EIA, International Energy Outlook 2018
In the forecast, China, India, and the United States provide about two-thirds of global liquid fuels consumption growth.

Annual change in liquid fuels consumption
million barrels per day

Sources: EIA, September 2018 Short-Term Energy Outlook

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Many non-OECD countries are projected to lead global economic growth

IEO2018 Reference case average annual percent change in real GDP by region, 2015–40

<table>
<thead>
<tr>
<th>OECD</th>
<th>Non-OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia/New Zealand</td>
<td>2.4%</td>
</tr>
<tr>
<td>Mexico/Chile</td>
<td>2.3%</td>
</tr>
<tr>
<td>United States</td>
<td>2.1%</td>
</tr>
<tr>
<td>South Korea</td>
<td>2.0%</td>
</tr>
<tr>
<td>Canada</td>
<td>1.6%</td>
</tr>
<tr>
<td>OECD Europe</td>
<td>1.5%</td>
</tr>
<tr>
<td>Japan</td>
<td>0.4%</td>
</tr>
<tr>
<td>Total OECD</td>
<td>1.7%</td>
</tr>
<tr>
<td>India</td>
<td>6.0%</td>
</tr>
<tr>
<td>China</td>
<td>4.5%</td>
</tr>
<tr>
<td>Other Asia</td>
<td>4.2%</td>
</tr>
<tr>
<td>Africa</td>
<td>3.8%</td>
</tr>
<tr>
<td>Middle East</td>
<td>3.1%</td>
</tr>
<tr>
<td>Other...</td>
<td>2.5%</td>
</tr>
<tr>
<td>Other Americas</td>
<td>2.4%</td>
</tr>
<tr>
<td>Brazil</td>
<td>1.6%</td>
</tr>
<tr>
<td>Russia</td>
<td>1.4%</td>
</tr>
<tr>
<td>Total Non-OECD</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Source: EIA, *International Energy Outlook 2018*
China’s GDP and energy consumption growth have slowed in recent years

Chinese GDP and energy consumption annual growth rate, five-year moving average

Source: EIA, International Energy Outlook 2018
Per capita income and energy consumption continue to lag other major economies

IEO2018 Reference case
energy consumption per capita
million Btu per person

Source: EIA, International Energy Outlook 2018
2018 International Energy Outlook - Key takeaways

• Energy consumption in the non-OECD countries began to exceed OECD consumption in 2007 and is projected to reach nearly two-thirds of the 739 quadrillion Btu global energy consumption in 2040

• The world’s energy consumption through 2040 increases, on average, for all fuels in the IEO2018 Reference case

• The IEO2018 side cases show higher economic growth drives increasing energy consumption, while services or manufacturing pathways to growth modulate that consumption

• Per capita energy consumption in India and Africa remain comparatively low despite high economic growth in the IEO2018 side cases

• IEO2018 side cases highlight the need to further explore the relationship between high economic growth, relative sizes of the services and manufacturing sectors, and energy consumption
World energy consumption increases for fuels other than coal

IEO2018 Reference case
world energy consumption by energy source
quadrillion Btu

Source: EIA, International Energy Outlook 2018
AEO2018 Highlights

• U.S. net energy exports occur over the projection period to 2050 in most cases
  – U.S. becomes a net energy exporter by 2022 in Reference Case
  – Strong domestic production and relatively flat demand

• Increased energy efficiency offsets growth in energy demand
  – Energy consumption grows about 0.4%/year on average in the Reference case
  – Gross Domestic Product is expected to average 2.0% annual growth to 2050 in the Reference case

• U.S. liquids and natural gas production continues to grow through 2042 and 2050, respectively
  – Result of further tight and shale resources development, despite relatively low prices

• Most new electricity generation capacity will be natural gas/renewables after 2022 (Reference case)
  – Result of low natural gas prices, declining renewables technology costs and supportive policies
The United States becomes a net energy exporter in most cases

Net energy trade
quadrillion British thermal units

Source: EIA, Annual Energy Outlook 2018
The United States becomes a net petroleum exporter in most cases

Petroleum net imports as a percentage of product supplied

percent

Source: EIA, Annual Energy Outlook 2018
EIA Annual Energy Outlook 2018: U.S. energy consumption and production sees significant changes through 2050 under current laws and policies

Energy Consumption (Reference case)
quadrillion British thermal units

Energy Production (Reference case)
quadrillion British thermal units

Source: EIA, Annual Energy Outlook 2018
The fuel sector mix of energy consumption changes over the projected period in the Reference case.

Energy Consumption by source (Reference case)
- quadrillion British thermal units

Consumption by sector (Reference case)
- quadrillion British thermal units

Source: EIA, Annual Energy Outlook 2018
Transportation demonstrates the impact of energy efficiency on consumption

Energy consumption by travel mode – Reference case quadrillion British thermal units

Transportation sector energy consumption by fuel type quadrillion British thermal units

Source: EIA, Annual Energy Outlook 2018
Light-duty vehicle fuel economy improves with increasing sales of more fuel-efficient cars, while electrified powertrains gain market share in the Reference case.

Light-duty vehicle sales by fuel type

Source: EIA, Annual Energy Outlook 2018
Residential and commercial energy consumption grows slowly through 2050

Residential sector delivered energy consumption
quadrillion British thermal units

Commercial sector delivered energy consumption
quadrillion British thermal units

Source: EIA, Annual Energy Outlook 2018
Increased efficiency contributes to slowing the growth of electricity use in buildings sector

Use of purchased electricity per household
thousand kilowatthours per household

<table>
<thead>
<tr>
<th>Category</th>
<th>2017</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>cooking</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>clothes &amp; dishwashing</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>TVs and PCs</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>heating</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>fridges &amp; freezers</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>lighting</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>water heating</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>cooling</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>other uses</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Use of purchased electricity per square foot of commercial floorspace
thousand kilowatthours per thousand square feet

<table>
<thead>
<tr>
<th>Category</th>
<th>2017</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>water heating</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>cooking</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>heating</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>lighting</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>cooling</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>ventilation</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>refrigeration</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>comp. &amp; office equip.</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>other uses</td>
<td>0.9</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Source: EIA, Annual Energy Outlook 2018
Change in electricity generation fuel mix is reflected in shifting capacity additions and retirements

Annual electricity generating capacity additions and retirements (Reference case) gigawatts

Source: EIA, Annual Energy Outlook 2018
U.S. energy consumption and production sees significant changes through 2050 under current laws and policies

Energy Consumption (Reference case)
quadrillion British thermal units

Energy Production (Reference case)
quadrillion British thermal units

Source: EIA, Annual Energy Outlook 2018
For more information


Short-Term Energy Outlook | www.eia.gov/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy