Oil and natural gas supply and demand trends in North America and beyond

For
April 7, 2015 | Houston, TX

By
Adam Sieminski
U.S. Energy Information Administration
Historical and projected oil prices

Crude oil price
Price per barrel (real 2010 dollars)

Sources: U.S. Energy Information Administration, Thomson Reuters
Brent crude oil prices were relatively stable through the first half of 2014; increased oil supply and lower global economic growth expectations lowered prices from July 2014 to January 2015.

Source: EIA, Bloomberg
Oil prices rise from mid-2015 through mid-2016 in EIA’s forecast—however, the market-implied confidence band is very wide.

WTI price
dollars per barrel

Source: EIA, Short-Term Energy Outlook, April 2015
Average household energy expenditures fall by 16% in 2015, then increase somewhat in 2016 (based on EIA price forecast).

Sources: 2013 expenditures and income from BLS Consumer Expenditure Survey. The average household in the BLS survey (called a consuming unit) averages 2.5 people and 1.3 income earners. Expenditures for 2014-16 based on average prices from EIA Short-Term Energy Outlook, April 2015.
Various events could lead to changes in global supply or demand that could push future crude oil prices higher or lower than the STEO forecast.

<table>
<thead>
<tr>
<th>Event</th>
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<tr>
<td>Social unrest in Venezuela leads to supply disruptions</td>
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<td>ISIL disrupts Iraqi exports</td>
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<td>Iranian sanctions are tightened</td>
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<td>Social unrest in oil-dependent countries leads to supply disruptions</td>
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<td>OPEC cuts output more than projected</td>
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<td>World economic growth is lower than projected (e.g., China)</td>
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<td>Saudi Arabia keeps production at 9.6-9.7 million bbl/d in 2016</td>
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<td>Reduction in unplanned production outages</td>
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<td>Iranian sanctions are lifted</td>
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Global oil demand tracks world GDP growth

annual percent change

EIA forecasts global liquids consumption growth at 1.0 million bbl/d in 2015 and 1.1 million bbl/d in 2016.

Source: EIA, Short-Term Energy Outlook, April 2015
Employment growth and lower prices contributed to U.S. gasoline consumption increases from late-2013 through early 2015.

monthly U.S. gasoline consumption (year-over-year change)

thousand barrels per day

Source: EIA, Short-Term Energy Outlook, April 2015
U.S. crude oil production is expected to increase only 660 kb/d in 2015 and 140 kb/d in 2016; if prices do not recover to the mid-$70s by mid-2016 as forecast by EIA, production would be lower.

Source: EIA, Short-Term Energy Outlook, April 2015
North American oil production growth slows with lower oil prices but remains the main driver of global production growth

Source: EIA, Short-Term Energy Outlook, April 2015
Long-term price scenario

Brent crude oil spot price
2013 dollars per barrel

history

2012

projections


Higher price case

Lower price case

Source: EIA, preliminary analysis

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Short-term lower oil prices have small impact on U.S. total oil production; 10 years of lower prices required for significant impact.

Source: EIA, preliminary analysis
U.S. dependence on imported liquids increases with lower oil prices

U.S. liquid fuel supply
million barrels per day

Source: EIA, preliminary analysis
Natural gas
Henry Hub spot prices are expected to average $3.07/million Btu in 2015 and $3.45/million Btu in 2016.

Source: EIA, Short-Term Energy Outlook, April 2015
After cold weather caused large natural gas storage withdrawals in 2014, inventories are expected to return to historical average levels in 2015 and 2016.

U.S. working natural gas in storage
billion cubic feet per day

deviation from average

Forecast

-60%
-40%
-20%
0%
20%
40%
60%
80%
100%
120%

-4,000
-3,000
-2,000
-1,000
0
1,000
2,000
3,000
4,000
5,000


Deviation from average
Storage level

Note: Colored band around storage levels represents the range between the minimum and maximum from Jan. 2010 - Dec. 2014.

Source: EIA, Short-Term Energy Outlook, April 2015
Future natural gas prices depend on world energy prices and domestic resource availability

average Henry Hub spot prices for natural gas
2013 dollars per million Btu

Source: EIA, Annual Energy Outlook

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U.S. dry natural gas production

Higher price case

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Lower price case

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Source: EIA, preliminary analysis
Lower world oil prices affect the economics of U.S. LNG export projects, reducing the global demand for U.S. natural gas

Higher price case (HPC)

- In the LPC, LNG exports reach 0.8 Tcf (2.2 Bcf/d), and the only U.S. LNG export capacity that is built is currently under construction; in contrast, U.S. LNG exports in the HPC exceed 3.5 Tcf by 2025

- The lower growth of U.S. LNG exports in the LPC contributes to net export levels that only reach 3.3 Tcf by 2040, 54% below their level in the HPC

Source: EIA, preliminary analysis
U.S. energy production grows rapidly, particularly natural gas, renewables, and liquids in the near term

[Graph showing U.S. energy production from 1980 to 2040, with projections for 2025 and 2040.]

Source: EIA, Annual Energy Outlook 2014
U.S. energy use grows slowly over the projection reflecting steady growth in GDP offset by improving energy efficiency

U.S. primary energy consumption
quadrillion Btu

History

2012

Projections

Source: EIA, Annual Energy Outlook 2014

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Preview of coming attractions
• Both high priority
• Crude by rail due out with PSM, March 30
• Updated 914 expected in June with new data collection
Now playing: New Microsoft Excel add-in for Windows

- Enables spreadsheet users – inside and outside of EIA – to pull the most recent EIA data into their existing workbooks
- Includes FRED economic data from the St. Louis Federal Reserve
Upcoming: New AEO table browser

• Signature product redeveloped for EIA’s state-of-the-art table browser experience

• Compares up to 6 cases from AEO
Upcoming: EIA-930—hourly survey of electricity balancing authorities

- First near-real time report for EIA
- Dashboard view of the U.S. power grid
- Highly anticipated by EIA customers
- Status: dev largely complete; awaiting OES data to continue
- Launch: TBD
Upcoming: improved international energy web presence

- New data browser to replace IES
- Better map-based navigations and visualizations
- Consolidate CABs/CANs
- Launch: beta in April
Tri-lateral cooperation: Canada, Mexico, & United States memorandum of understanding signed 12/15/2014

1) **Reconciliation of import and export information on energy flows.** The working group would develop a cross reference for terminology and a table of conversion factors across the three countries. EIA would propose subcategories of crude oil, refined products, natural gas and electricity.

2) **GIS mapping.** The working group would establish a standard format, sourcing protocols and a mechanism for file/data sharing. Each party would provide its public map layers to each partner, while asking them to provide theirs. It would then be up to each party to decide if and how they want to display the information they receive from the other parties.

3) **Outlooks for crossborder flows of fuels.** EIA would propose that we begin by sharing information among the three partners regarding recent historical data and outlooks for cross border flows of oil, natural gas, and electricity. The information exchange would also provide some brief information on broader energy measures -- production and consumption of the energy commodities – as well as information on some of the key outlook drivers – economic and population growth.
North American border crossing points for electricity and oil and natural gas pipelines
Upcoming: Final reports on EIA crude oil exports

Over the next two months, the final four reports will cover:

1) Technical options for U.S. refineries to facilitate the processing additional light tight oil

2) Implications of increasing light tight oil production for the overall U.S. refining system

3) Update to EIA’s May 29, 2014, report on projections of U.S. crude oil production by API gravity

4) Effects on oil prices, oil production, and oil trade if restrictions on U.S. crude oil exports were removed
For more information


Annual Energy Outlook | www.eia.gov/aeo

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

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy

State Energy Profiles | http://www.eia.gov/state

Drilling Productivity Report | http://www.eia.gov/petroleum/drilling/