Forecasting U.S. Crude Oil Production

For
EIA Webinar: Forecasting U.S. Crude Oil Production
November 16, 2017 | Washington, DC

By
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Key takeaways

• The November Short-Term Energy Outlook (STEO) is forecasting U.S. oil production for December 2017 at 9.7 million barrels per day (b/d)

• U.S. oil production grew 340,000 b/d in H1 (first half) 2017 and is forecast to grow by 336,000 b/d in H2 (second half) 2017

• Production in the Permian grew by 214,000 b/d in H1 2017 and is forecast to grow by 257,000 b/d in H2 2017

• Hedging activity has likely increased with rising WTI prices

• Increased frack sand usage increases well productivity but slows well completions
November STEO forecasts Permian to lead production growth from H1 to H2 2017

Forecasting U.S. Oil Production, November 2017

Source: EIA Short-Term Energy Outlook, November 2017
Forecasted Permian production growth stands out compared to six other key Lower 48 regions

**Crude oil production**
- thousand barrels per day

<table>
<thead>
<tr>
<th>Region</th>
<th>Forecast</th>
<th>Dec. values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permian</td>
<td>3,076</td>
<td>2,118</td>
</tr>
<tr>
<td>Eagle Ford</td>
<td>2,647</td>
<td>750</td>
</tr>
<tr>
<td>Bakken</td>
<td>1,250</td>
<td>1,750</td>
</tr>
<tr>
<td>Niobrara</td>
<td>1,200</td>
<td>800</td>
</tr>
<tr>
<td>Anadarko</td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td>California</td>
<td>600</td>
<td>500</td>
</tr>
<tr>
<td>Other</td>
<td>500</td>
<td>400</td>
</tr>
</tbody>
</table>

*Source: EIA Short-Term Energy Outlook, November 2017*
Factors affecting EIA’s *Short-Term Energy Outlook* oil production forecast

- Oil prices
- Rig counts
- EIA-914 survey of oil production by state
- Drillinginfo well-level data
- Fracfocus completion filings
- 10Ks, trade press, infrastructure reports
DI well level production data

EIA-914

Legacy well declines

Pre-2015 well production

New well profiles

2015-latest well production

Lower 48 crude oil production forecast

Assumptions
- rig efficiency
- tech improvement
- DUCs

Historical rig counts

Price forecasts

Cash flow proxy

New well forecast

New well production

Rig count forecast

lagged

lagged
New wells completed in Permian drive the growth in H2 2017 and 2018, providing 1.7 MMb/d of production by December 2018.

Source: EIA Short-Term Energy Outlook, November 2017
Early 2017 WTI price flattened and Permian rig count increased as rigs from other regions moved to Permian.

Source: Bloomberg, Baker Hughes, EIA Short-Term Energy Outlook, November 2017

Source: FracFocus, EIA Short-Term Energy Outlook, November 2017
Permian average productivity per well continues to increase in 2017

Average new well oil production
barrels per day

Source: EIA, Drilling Productivity Report
Exaggerated growth rate in the November STEO forecast as operations returning to normal after Hurricanes Harvey and Nate

Source: EIA Short-Term Energy Outlook, November 2017
EIA forecasts 1.5 million b/d of new production in December 2017 from wells that started or will start producing in Sept. through Dec. 2017

U.S. crude oil production
million barrels per day

Source: EIA Short-Term Energy Outlook, November 2017
U.S. crude oil production and WTI price forecasts reflect market uncertainty

Sources: Forecasts provided by Barclays, Citi, Deutsche Bank, Drillinginfo, ESAI Energy, IHS, PIRA, Raymond James, Rystad Energy during summer and fall 2017, EIA Short-Term Energy Outlook, November 2017.

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Additional Materials
There are 57 regions in the STEO Lower 48 model.