The seven regions analyzed in this report accounted for 92% of domestic oil production growth and all domestic natural gas production growth during 2011-14.

Contents
- Year-over-year summary 2
- Bakken Region 3
- Eagle Ford Region 4
- Haynesville Region 5
- Marcellus Region 6
- Niobrara Region 7
- Permian Region 8
- Utica Region 9
- Explanatory notes 10
- Sources 11
Year-over-year summary

Drilling Productivity Report

February 2016

Drilling data through January projected production through March

New-well oil production per rig

New-well gas production per rig

Legacy oil production change

Legacy gas production change

Indicated monthly change in oil production (Mar vs. Feb)

Indicated monthly change in gas production (Mar vs. Feb)

Oil production

Natural gas production

U. S. Energy Information Administration | Drilling Productivity Report
Bakken Region
Drilling Productivity Report

February 2016

Monthly additions from one average rig

<table>
<thead>
<tr>
<th>Month</th>
<th>New-well oil production per rig</th>
<th>New-well gas production per rig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb</td>
<td>737 MBbl/d</td>
<td>1,125 MMcf/d</td>
</tr>
<tr>
<td>March</td>
<td>735 MBbl/d</td>
<td>1,601 MMcf/d</td>
</tr>
</tbody>
</table>

Indicated change in oil production (Mar vs. Feb)

<table>
<thead>
<tr>
<th>Feb</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,125</td>
<td>1,100</td>
</tr>
<tr>
<td>MBbl/d</td>
<td>MBbl/d</td>
</tr>
</tbody>
</table>

Indicated change in natural gas production (Mar vs. Feb)

<table>
<thead>
<tr>
<th>Feb</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,601</td>
<td>1,577</td>
</tr>
<tr>
<td>MMcf/d</td>
<td>MMcf/d</td>
</tr>
</tbody>
</table>

New-well oil production per rig

- New-well oil production per rig
- Rig count

New-well gas production per rig

- New-well gas production per rig
- Rig count

New-well oil production per rig

Barrels/day


- New-well oil production per rig
- Rig count

New-well gas production per rig

Barrels/day


- New-well gas production per rig
- Rig count

Legacy oil production change

- Legacy oil production change


- Legacy oil production change

New-well gas production per rig

Barrels/day


- New-well gas production per rig
- Rig count

Legacy gas production change

- Legacy gas production change


- Legacy gas production change

Oil production

Barrels/day


- Oil production
- Oil -25 barrels/day month over month

Natural gas production

Barrels/day


- Natural gas production
- Gas -24 barrels/day month over month
Haynesville Region

Oil production

New-well oil production per rig

Haynesville Region

Legacy oil production change

Indicated change in oil production (Mar vs. Feb)

Oil production

Natural gas production

New-well gas production per rig

Legacy gas production change

Indicated change in natural gas production (Mar vs. Feb)

Gas production

Rig count

Bars/Day


0 50 100 150 200 250 300

New-well oil production per rig

Haynesville Region

new-well oil production per rig

rig count


0 50 100 150

Haynesville Region

Legacy oil production change

0

(1)

(2)

(3)


0

Haynesville Region

Indicated change in oil production (Mar vs. Feb)

2.0

1.0

0.0

-1.0

Feb

50 Mmbd

Production from new wells

Legacy production change

Net change

Mar

49 Mmbd

New-well oil production per rig

rig count

November

December

January

February

March

April

May

June

July

August

September

October

New-well gas production per rig

Haynesville Region

new-well gas production per rig

rig count


0 50 100 150 200 250 300

Haynesville Region

Legacy gas production change

0

(100)

(200)

(300)

(400)

(500)

(600)


Haynesville Region

Indicated change in natural gas production (Mar vs. Feb)

250

150

50

-50

-150

-250

Feb

6,225 MMcf/d

Production from new wells

Legacy production change

Net change

Mar

6,202 MMcf/d

New-well gas production per rig

rig count

Haynesville Region

Natural gas production

 طبيعي

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


Oil -1 thousand barrels/day

month over month

Gas -23 million cubic feet/day

month over month

U. S. Energy Information Administration | Drilling Productivity Report

February 2016

drilling data through January

projected production through March
Marcellus Region

New-well oil production per rig

<table>
<thead>
<tr>
<th>Year</th>
<th>Rig count</th>
<th>New-well oil production per rig</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2009</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2010</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2011</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2012</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2013</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2014</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2015</td>
<td>7</td>
<td>1,500</td>
</tr>
<tr>
<td>2016</td>
<td>7</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Legacy oil production change

<table>
<thead>
<tr>
<th>Year</th>
<th>Legacy oil production change thousand barrels/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>(700)</td>
</tr>
<tr>
<td>2009</td>
<td>(600)</td>
</tr>
<tr>
<td>2010</td>
<td>(500)</td>
</tr>
<tr>
<td>2011</td>
<td>(400)</td>
</tr>
<tr>
<td>2012</td>
<td>(300)</td>
</tr>
<tr>
<td>2013</td>
<td>(200)</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
</tr>
</tbody>
</table>

Indicated change in oil production (Mar vs. Feb)

<table>
<thead>
<tr>
<th>Month</th>
<th>Change thousand barrels/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb</td>
<td>+2</td>
</tr>
<tr>
<td>Mar</td>
<td>-4</td>
</tr>
<tr>
<td>Mar</td>
<td>-2</td>
</tr>
</tbody>
</table>

New-well gas production per rig

<table>
<thead>
<tr>
<th>Year</th>
<th>Rig count</th>
<th>New-well gas production per rig</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2009</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2010</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2011</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2012</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2013</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2014</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2015</td>
<td>7</td>
<td>9,000</td>
</tr>
<tr>
<td>2016</td>
<td>7</td>
<td>9,000</td>
</tr>
</tbody>
</table>

Legacy gas production change

<table>
<thead>
<tr>
<th>Year</th>
<th>Legacy gas production change million cubic feet/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>(100)</td>
</tr>
<tr>
<td>2009</td>
<td>(200)</td>
</tr>
<tr>
<td>2010</td>
<td>(300)</td>
</tr>
<tr>
<td>2011</td>
<td>(400)</td>
</tr>
<tr>
<td>2012</td>
<td>(500)</td>
</tr>
<tr>
<td>2013</td>
<td>(600)</td>
</tr>
<tr>
<td>2014</td>
<td>(700)</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
</tr>
</tbody>
</table>

Indicated change in natural gas production (Mar vs. Feb)

<table>
<thead>
<tr>
<th>Month</th>
<th>Change million cubic feet/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb</td>
<td>-2</td>
</tr>
<tr>
<td>Mar</td>
<td>-202</td>
</tr>
</tbody>
</table>

Oil production

<table>
<thead>
<tr>
<th>Year</th>
<th>Oil production thousand barrels/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>65</td>
</tr>
<tr>
<td>2009</td>
<td>64</td>
</tr>
<tr>
<td>2010</td>
<td>64</td>
</tr>
<tr>
<td>2011</td>
<td>64</td>
</tr>
<tr>
<td>2012</td>
<td>64</td>
</tr>
<tr>
<td>2013</td>
<td>64</td>
</tr>
<tr>
<td>2014</td>
<td>64</td>
</tr>
<tr>
<td>2015</td>
<td>64</td>
</tr>
<tr>
<td>2016</td>
<td>64</td>
</tr>
</tbody>
</table>

Natural gas production

<table>
<thead>
<tr>
<th>Year</th>
<th>Natural gas production million cubic feet/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
</tr>
</tbody>
</table>
Permian Region

Drilling Productivity Report

Oil +2 barrels/day
month over month

Permian Region
New-well oil production per rig barrels/day

Rig count rigs

0
100
200
300
400
500


new-well oil production per rig
rig count

Permian Region
Legacy oil production change thousand barrels/day


0 (10) (20) (30) (40) (50) (60) (70) (80) (90)

Permian Region
Indicated change in oil production (Mar vs. Feb) thousand barrels/day

Feb 20139 Mbbbl/d Production from new wells Legacy production change Net change Mar 2040 Mbbbl/d

+84 -83 +1

Permian Region
Natural gas production million cubic feet/day


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

Oil +1 thousand barrels/day
month over month

Permian Region
Natural gas production million cubic feet/day


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

Gas -6 million cubic feet/day
month over month

Permian Region
New-well gas production per rig thousand cubic feet/day

Rig count rigs

0
100
200
300
400
500


new-well gas production per rig
rig count

Permian Region
Legacy gas production change million cubic feet/day


0 (20) (40) (60) (80) (100) (120) (140) (160) (180)

Permian Region
Indicated change in natural gas production (Mar vs. Feb) million cubic feet/day

Feb 6,914 MMcf/d Production from new wells Legacy production change Net change Mar 6,908 MMcf/d

+163 -169 -6

February 2016

drilling data through January
projected production through March
### Utica Region Drilling Productivity Report

#### Monthly additions from one average rig

**Oil**
- March: 308 barrels/day
- February: 295 barrels/day
- Month over month: +13 barrels/day

**Gas**
- March: 6,931 thousand cubic feet/day
- February: 6,740 thousand cubic feet/day
- Month over month: +191 thousand cubic feet/day

#### Utica Region

**New-well oil production per rig**

- Rig count: 50
- New-well oil production per rig: 1,400 barrels/day

**New-well gas production per rig**

- Rig count: 50
- New-well gas production per rig: 8,400 thousand cubic feet/day

**Legacy oil production change**

- February: 78 Mmbbl/d
- March: 78 Mmbbl/d
- Change: 0 thousand barrels/day

**Legacy gas production change**

- February: 3,248 MMcf/d
- March: 3,280 MMcf/d
- Change: 32 million cubic feet/day

**Indicated change in oil production (Mar vs. Feb)**

- February: +4 thousand barrels/day
- March: -4 thousand barrels/day
- Change: +0 thousand barrels/day

**Indicated change in natural gas production (Mar vs. Feb)**

- February: +95 million cubic feet/day
- March: -63 million cubic feet/day
- Change: +32 million cubic feet/day

**Oil production**

- March: 6,931 thousand barrels/day

**Natural gas production**

- March: 3,280 million cubic feet/day

---

U. S. Energy Information Administration | Drilling Productivity Report
The Drilling Productivity Report uses recent data on the total number of drilling rigs in operation along with estimates of drilling productivity and estimated changes in production from existing oil and natural gas wells to provide estimated changes in oil and natural gas production for seven key regions. EIA’s approach does not distinguish between oil-directed rigs and gas-directed rigs because once a well is completed it may produce both oil and gas; more than half of the wells do that.

**Monthly additions from one average rig**
Monthly additions from one average rig represent EIA’s estimate of an average rig’s contribution to production of oil and natural gas from new wells. The estimation of new-well production per rig uses several months of recent historical data on total production from new wells for each field divided by the region’s monthly rig count, lagged by two months. Current- and next-month values are listed on the top header. The month-over-month change is listed alongside, with +/- signs and color-coded arrows to highlight the growth or decline in oil (brown) or natural gas (blue).

**New-well oil/gas production per rig**
Charts present historical estimated monthly additions from one average rig coupled with the number of total drilling rigs as reported by Baker Hughes.

**Legacy oil and natural gas production change**
Charts present EIA’s estimates of total oil and gas production changes from all the wells other than the new wells. The trend is dominated by the well depletion rates, but other circumstances can influence the direction of the change. For example, well freeze-offs or hurricanes can cause production to significantly decline in any given month, resulting in a production increase the next month when production simply returns to normal levels.

**Projected change in monthly oil/gas production**
Charts present the combined effects of new-well production and changes to legacy production. Total new-well production is offset by the anticipated change in legacy production to derive the net change in production. The estimated change in production does not reflect external circumstances that can affect the actual rates, such as infrastructure constraints, bad weather, or shut-ins based on environmental or economic issues.

**Oil/gas production**
Charts present all oil and natural gas production from both new and legacy wells since 2007. This production is based on all wells reported to the state oil and gas agencies. Where state data are not immediately available, EIA estimates the production based on estimated changes in new-well oil/gas production and the corresponding legacy change.

**Footnotes:**
1. Oil production represents both crude and condensate production from all formations in the region. Production is not limited to tight formations. The regions are defined by all selected counties, which include areas outside of tight oil formations.
2. Gas production represents gross (before processing) gas production from all formations in the region. Production is not limited to shale formations. The regions are defined by all selected counties, which include areas outside of shale formations.
3. The monthly average rig count used in this report is calculated from weekly data on total oil and gas rigs reported by Baker Hughes.
4. A new well is defined as one that began producing for the first time in the previous month. Each well belongs to the new-well category for only one month. Reworked and recompleted wells are excluded from the calculation.
5. Rig count data lag production data because EIA has observed that the best predictor of the number of new wells beginning production in a given month is the count of rigs in operation two months earlier.
The data used in the preparation of this report come from the following sources. EIA is solely responsible for the analysis, calculations, and conclusions.

Drilling Info (http://www.drillinginfo.com) Source of production, permit, and spud data for counties associated with this report. Source of real-time rig location to estimate new wells spudded and completed throughout the United States.

Baker Hughes (http://www.bakerhughes.com) Source of rig and well counts by county, state, and basin.

North Dakota Oil and Gas Division (https://www.dmr.nd.gov/oilgas) Source of well production, permit, and completion data in the counties associated with this report in North Dakota.

Railroad Commission of Texas (http://www.rrc.state.tx.us) Source of well production, permit, and completion data in the counties associated with this report in Texas.

Pennsylvania Department of Environmental Protection (https://www.paoilandgasreporting.state.pa.us/publicreports/Modules/Welcome/Welcome.aspx) Source of well production, permit, and completion data in the counties associated with this report in Pennsylvania.

West Virginia Department of Environmental Protection (http://www.dep.wv.gov/oil-and-gas/Pages/default.aspx) Source of well production, permit, and completion data in the counties associated with this report in West Virginia.

Colorado Oil and Gas Conservation Commission (http://cogcc.state.co.us) Source of well production, permit, and completion data in the counties associated with this report in Colorado.

Wyoming Oil and Conservation Commission (http://wogcc.state.wy.us) Source of well production, permit, and completion data in the counties associated with this report in Wyoming.

Louisiana Department of Natural Resources (http://dnr.louisiana.gov) Source of well production, permit, and completion data in the counties associated with this report in Louisiana.

Ohio Department of Natural Resources (http://oilandgas.ohiodnr.gov) Source of well production, permit, and completion data in the counties associated with this report in Ohio.