Drilling Productivity Report

For key tight oil and shale gas regions

The six regions analyzed in this report accounted for 95% of domestic oil production growth and all domestic natural gas production growth during 2011-13.

Note: Permian Basin oil production shows a significant increase this month, based on new data from the Railroad Commission of Texas.

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New-well oil production per rig
barrels/day

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

Legacy oil production change
thousand barrels/day

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

Indicated monthly change in oil production (Jun vs. May)
thousand barrels/day

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

Oil production
thousand barrels/day

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

Natural gas production
million cubic feet/day

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

Legacy gas production change
million cubic feet/day

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

Indicated monthly change in gas production (Jun vs. May)
million cubic feet/day

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

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

- Bakken
- Eagle Ford
- Haynesville
- Marcellus
- Niobrara
- Permian

June-2013 vs June-2014

May 2014
Drilling Productivity Report
Year-over-year summary
Bakken
Drilling Productivity Report

May 2014

Drilling data through April projected production through June

Oil +7 barrels/day month over month

May 505 barrels/day

June 513 barrels/day

Gas +8 thousand cubic feet/day month over month

New-well oil production per rig

Rig count

barrels/day
rigs

2007 2008 2009 2010 2011 2012 2013 2014

300 400 500 600

Bakken
Legacy oil production change

thousand barrels/day

2007 2008 2009 2010 2011 2012 2013 2014

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

New-well gas production per rig

Rig count

thousand cubic feet/day

barrels/day
rigs

2007 2008 2009 2010 2011 2012 2013 2014

3,600 3,000 2,400 1,800 1,200 600 0

Bakken
Legacy gas production change

million cubic feet/day

2007 2008 2009 2010 2011 2012 2013 2014

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

Indicated change in oil production (Jun vs. May)

thousand barrels/day

May 1,046 Mbbl/d

Production from new wells

Legacy production change

Net change

Jun 1,068 Mbbl/d

100 50 0

+93 -71 +22

Indicated change in natural gas production (Jun vs. May)

million cubic feet/day

May 1,241 MMcf/d

Production from new wells

Legacy production change

Net change

Jun 1,266 MMcf/d

100 50 0

+94 -69 +25

Oil production

thousand barrels/day

1,200

2007 2008 2009 2010 2011 2012 2013 2014

200 400 600 800 1,000

Bakken Natural gas production

million cubic feet/day

2007 2008 2009 2010 2011 2012 2013 2014

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000

Oil +22 thousand barrels/day month over month

Gas +25 million cubic feet/day month over month

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Oil +6 barrels/day month over month

Eagle Ford
New-well oil production per rig
barrels/day

Rig count
rigs

2007 2008 2009 2010 2011 2012 2013 2014

Eagle Ford
Legacy oil production change
thousand barrels/day

2007 2008 2009 2010 2011 2012 2013 2014

Eagle Ford
Indicated change in oil production (Jun vs. May)
thousand barrels/day

May 1,392 Mbbld
Production from new wells
Legacy production change
Net change
Jun 1,418 Mbbld

Eagle Ford
Oil production
thousand barrels/day

2007 2008 2009 2010 2011 2012 2013 2014

Eagle Ford
New-well gas production per rig
day

Rig count
rigs

2007 2008 2009 2010 2011 2012 2013 2014

Eagle Ford
Legacy gas production change
million cubic feet/day

2007 2008 2009 2010 2011 2012 2013 2014

Eagle Ford
Indicated change in natural gas production (Jun vs. May)
million cubic feet/day

May 6,818 MMcf/d
Production from new wells
Legacy production change
Net change
Jun 6,925 MMcf/d

Eagle Ford
Natural gas production
million cubic feet/day

2007 2008 2009 2010 2011 2012 2013 2014

Gas +3 thousand cubic feet/day month over month
**May 2014**

**Drilling Productivity Report**

**Haynesville**

- **New-well oil production per rig**:
  - Rig count: 1,000
  - New-well oil production per rig: 800

- **Legacy oil production change**:
  - 2007: 0
  - 2008: (1)
  - 2009: (2)
  - 2010: (3)

- **Indicated change in oil production (Jun vs. May)**:
  - May: +1
  - June: +0

- **Oil production**:
  - 2007: 0
  - 2008: 1,000

**Gas production**:

- **Legacy gas production change**:
  - 2007: (100)
  - 2008: (200)

- **Indicated change in natural gas production (Jun vs. May)**:
  - May: +281
  - June: +19

- **Gas production**:
  - 2007: 0
  - 2008: 12,000

**June**

- **New-well gas production per rig**: 6,000
- **Rig count**: 300

- **Gas production**:
  - 6,643 MMcf/d
  - 6,662 MMcf/d

**May**

- **New-well gas production per rig**: 5,229
- **Rig count**: 250

- **Gas production**:
  - 5,318
  - +89

**Rig count**

- **New-well oil production per rig**
  - 2007: 0
  - 2008: 200

- **New-well gas production per rig**
  - 2007: 6,000
  - 2008: 5,229

**Production through June**

- **Oil**
  - May: 6,643 Mmbbl/d
  - June: 6,662 Mmbbl/d

- **Gas**
  - May: 5,318 MMcf/d
  - June: 5,339 MMcf/d

**Drilling data through April projected**

- **May**
  - Oil: +89
  - Gas: +281

- **June**
  - Oil: +0
  - Gas: +19

**Month over month**

- **Oil**
  - May: +1
  - June: +0

- **Gas**
  - May: +281
  - June: +19
Marcellus

**Drilling Productivity Report**

- **Oil**
  - **New-well oil production per rig**
  - **Rig count**
- **Legacy oil production change**
- **Indicated change in oil production (Jun vs. May)**
- **Oil +1**
  - **Oil month over month**

- **Gas**
  - **New-well gas production per rig**
  - **Rig count**
- **Legacy gas production change**
- **Indicated change in natural gas production (Jun vs. May)**
- **Gas +254**
  - **Gas month over month**

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**May 2014**

- Drilling data through April projected production through June

- **June**
  - **6,516**
  - **30 June**
  - **30 May**

- **Gas +37**
  - **6,479**

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**Marcellus**

**New-well oil production per rig**

- **Rig count**

**Legacy oil production change**

**Indicated change in oil production (Jun vs. May)**

**Oil +1**

**Oil month over month**

**Marcellus**

**New-well gas production per rig**

- **Rig count**

**Legacy gas production change**

**Indicated change in natural gas production (Jun vs. May)**

**Gas +254**

**Gas month over month**

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May 2014

Drilling Productivity Report

Drilling data through April projected production through June

Niobrara

Oil production

thousand barrels/day

1,000

2007 2008 2009 2010 2011 2012 2013 2014

New-well oil production per rig

barrels/day

Rig count

rigs

Rig count

2007 2008 2009 2010 2011 2012 2013 2014

Niobrara

Legacy oil production change

thousand barrels/day

Niobrara

Indicated change in oil production (Jun vs. May)

thousand barrels/day

Niobrara

Natural gas production

million cubic feet/day

May 2014

Drilling Productivity Report

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Niobrara

Legacy gas production change

million cubic feet/day

Niobrara

Indicated change in natural gas production (Jun vs. May)

million cubic feet/day

Oil +9

month over month

361 June

352 May

Enemy additions from one average rig

June

1,591 thousand barrels/day

May

1,569 thousand barrels/day

Gas +22

month over month
Permian

**Drilling Productivity Report**

May 2014

- **Oil +2 barrels/day** month over month
- **June 132**
- **May 130**
- **Gas +2 thousand cubic feet/day** month over month
- **June 295**
- **May 293**

**Permian New-well oil production per rig**

- **New-well oil production per rig**
- **Rig count**

**Permian Legacy oil production change**

- **Legacy oil production change**

**Permian Indicated change in oil production (Jun vs. May)**

- **Indicated change in oil production (Jun vs. May)**

**Permian Oil production**

- **Oil +21 thousand barrels/day** month over month

**Permian Natural gas production**

- **Gas +53 million cubic feet/day** month over month

**Permian Monthly additions from one average rig**

- **June 295 thousand barrels/day**
- **May 293 thousand barrels/day**

**Permian New-well gas production per rig**

- **New-well gas production per rig**
- **Rig count**

**Permian Legacy gas production change**

- **Legacy gas production change**

**Permian Indicated change in natural gas production (Jun vs. May)**

- **Indicated change in natural gas production (Jun vs. May)**

**Permian Natural gas production**

- **Oil +2 thousand barrels/day** month over month

**Permian Gas production**

- **Gas +2 thousand cubic feet/day** month over month

**Drilling data through April projected for June**

**Production through June May 2014**

**Average rig**

- **New-well oil production per rig**
- **Rig count**

- **Legacy oil production change**

- **Indicated change in oil production (Jun vs. May)**

- **Oil +2 thousand barrels/day** month over month

- **Gas +2 thousand cubic feet/day** month over month

**Production through June May 2014**

- **New-well gas production per rig**
- **Rig count**

- **Legacy gas production change**

- **Indicated change in natural gas production (Jun vs. May)**

- **Gas +2 thousand cubic feet/day** month over month
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\(^1\) and natural gas\(^2\) production for six 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\(^3\) contribution to production of oil and natural gas from new wells.\(^4\) 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.\(^5\) 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