Drilling Productivity Report

For key tight oil and shale gas regions

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**Year-over-year summary**

**Drilling Productivity Report**

**Dec 2018**

*drilling data through July*

*projected production through September*

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**New-well oil production per rig**

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**New-well gas production per rig**

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**Legacy oil production change**

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**Indicated monthly change in oil production (Sep vs. Aug)**

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**Indicated monthly change in gas production (Sep vs. Aug)**

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**Oil production**

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**Natural gas production**

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Anadarko Region
Drilling Productivity Report

**Oil**

- **January**: 416 barrels/day
- **December**: 413 barrels/day

**Gas**

- **January**: 2,942 thousand cubic feet/day
- **December**: 2,919 thousand cubic feet/day

**Anadarko Region**

- **New-well oil production per rig**
  - barrels/day
  - Rig count

- **Legacy oil production change**
  - thousand barrels/day

- **Indicated change in oil production (Jan vs. Dec)**
  - thousand barrels/day

- **Oil production**
  - thousand barrels/day

- **Natural gas production**
  - million cubic feet/day

- **Indicated change in natural gas production (Jan vs. Dec)**
  - million cubic feet/day

**Rig count**

- **Rigs**

**Anadarko Region**

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

- **Legacy gas production change**
  - million cubic feet/day

- **Indicated change in natural gas production (Jan vs. Dec)**
  - million cubic feet/day

- **Gas production**
  - million cubic feet/day

**Month over month**

- **January**: Oil +3 barrels/day
- **December**: Oil +23 barrels/day
- **January**: Gas +23 thousand cubic feet/day

**Drilling data through November**

**Projected production through January**

**December 2018**

**U. S. Energy Information Administration | Drilling Productivity Report**
Niobrara Region

Drilling Productivity Report

December 2018

drilling data through November
projected production through January

Oil

+10

barrels/day

month over month

1,237
January

1,227
December

barrels/day

Monthly additions from one average rig

January
4,390
thousand cubic feet/day

December
4,368

Gas

+22

thousand cubic feet/day

month over month

Niobrara Region

New-well oil production per rig

barrels/day

Niobrara Region

New-well gas production per rig

thousand cubic feet/day

Niobrara Region

Legacy oil production change

thousand barrels/day

Niobrara Region

Legacy gas production change

million cubic feet/day

Niobrara Region

Indicated change in oil production (Jan vs. Dec)

thousand barrels/day

Niobrara Region

Indicated change in natural gas production (Jan vs. Dec)

million cubic feet/day

Niobrara Region

Oil production

thousand barrels/day

Niobrara Region

Natural gas production

million cubic feet/day

January
669
Mmbbl/d

December
679
Mmbbl/d

600
500
400
300
200
100
(10)
(20)
(30)
(40)
(50)
(60)

0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

New production from new wells

Legacy production change

Net change

Jan

679
Mmbbl/d

December

669
Mmbbl/d

January

5,155
MMcf/d

December

5,209
MMcf/d

250
200
150
100
50
0

2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

New production from new wells

Legacy production change

Net change

Jan

5,155
MMcf/d

December

5,209
MMcf/d

+62

+219

-52

-165

+10

+54

U. S. Energy Information Administration | Drilling Productivity Report
### Permian Region

**Monthly additions from one average rig**

- **Oil**: +15 thousand barrels/day month over month
- **Gas**: 0 thousand cubic feet/day month over month

**New-well oil production per rig**

- Average rig: 631 barrels/day in January, 616 barrels/day in December

**Legacy oil production change**

- 2009: 3,729 Mbbl/d
- 2018: 3,802 Mbbl/d

**Indicated change in oil production (Jan vs. Dec)**

- January: +309 thousand barrels/day
- December: -236 thousand barrels/day
- Net change: +73 thousand barrels/day

**New-well gas production per rig**

- Average rig: 1,236 thousand cubic feet/day

**Legacy gas production change**

- 2009: 12,478 MMcf/d
- 2018: 12,736 MMcf/d

**Indicated change in natural gas production (Jan vs. Dec)**

- January: +606 million cubic feet/day
- December: -348 million cubic feet/day
- Net change: +258 million cubic feet/day

**Oil production**

- January: 27,000 Mbbl/day
- December: 22,500 Mbbl/day
- Natural gas production
  - January: 4,500 MMcf/day
  - December: 9,000 MMcf/day

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**Vital statistics for December 2018**

- **Rig count**: 536
- **New well oil production**
  - Year-over-year change: +73 thousand barrels/day
- **New well gas production**
  - Year-over-year change: +258 million cubic feet/day

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*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\(^1\) and natural gas\(^2\) 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\(^3\) 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.

**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.

**Oklahoma Corporation Commission** (http://www.occeweb.com/og/oghome.htm) Source of well production, permit, and completion data in the counties associated with this report in Oklahoma.