Drilling Productivity Report
For key tight oil and shale gas regions

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### Year-over-year summary

#### Drilling Productivity Report

**September 2019**

Drilling data through August

Projected production through October

### New-well oil production per rig

<table>
<thead>
<tr>
<th></th>
<th>October-2018</th>
<th>October-2019</th>
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<tbody>
<tr>
<td>Anadarko</td>
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### Legacy oil production change

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<th>October-2018</th>
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### Indicated monthly change in oil production (Oct vs. Sep)

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### Oil production

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### Natural gas production

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<th>October-2018</th>
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</table>
Anadarko Region

New-well oil production per rig

Anadarko Region

New-well gas production per rig

Anadarko Region

Legacy oil production change

Anadarko Region

Legacy gas production change

Anadarko Region

Indicated change in oil production (Oct vs. Sep)

Anadarko Region

Indicated change in natural gas production (Oct vs. Sep)

Anadarko Region

Oil production

Anadarko Region

Natural gas production
**Bakken Region**

**Drilling Productivity Report**

**September 2019**

Drilling data through August

Projected production through October

**Oil**

+32 barrels/day

Month over month

**1,487**

October

**1,455**

September

**Monthly additions from one average rig**

October

**2,212,900**

thousand cubic feet/day

September

**2,154,000**

thousand cubic feet/day

**Gas**

+58 thousand cubic feet/day

Month over month

**Indicated change in oil production (Oct vs. Sep)**

Bakken Region

<table>
<thead>
<tr>
<th>Month</th>
<th>New-well oil production per rig (barrels/day)</th>
<th>Legacy oil production change (thousand barrels/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 1,469</td>
<td>New-well oil production per rig</td>
<td>Legacy production change</td>
</tr>
<tr>
<td>Production</td>
<td>from new wells</td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td></td>
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<tr>
<td>1,471</td>
<td>Net change</td>
<td></td>
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</table>

**Indicated change in natural gas production (Oct vs. Sep)**

Bakken Region

<table>
<thead>
<tr>
<th>Month</th>
<th>New-well gas production per rig (thousand cubic feet/day)</th>
<th>Legacy gas production change (million cubic feet/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 3,000</td>
<td>New-well gas production per rig</td>
<td>Legacy production change</td>
</tr>
<tr>
<td>MMcf/d</td>
<td>from new wells</td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,003</td>
<td>Net change</td>
<td></td>
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</tbody>
</table>

**Oil production**

+2 thousand barrels/day

Month over month

**Natural gas production**

+3 million cubic feet/day

Month over month
## Niobrara Region

### Drilling Productivity Report

**September 2019**

**Drilling data through August**

**Projected production through October**

### Niobrara Region

#### New-well oil production per rig

- **barrels/day**
  - **Niobrara Region**
  - **Rig count**

#### Legacy oil production change

- **thousand barrels/day**
  - **Niobrara Region**

#### Indicated change in oil production (Oct vs. Sep)

- **thousand barrels/day**
  - **Niobrara Region**

#### Natural gas production

- **million cubic feet/day**
  - **Niobrara Region**

### Analysis

- **Oil +3 barrels/day** month over month
- **Gas +13 thousand cubic feet/day** month over month

### Additional Notes

- **October 1,237 barrels/day**
- **September 1,234 barrels/day**
- **October 4,306 thousand cubic feet/day**
- **September 4,293 thousand cubic feet/day**

**Drilling Productivity Report**

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

September 2019
Drilling data through August
Projected production through October

Oil +11 barrels/day month over month

Oil production
thousand barrels/day

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

Rig count
rigs

Permian Region
Legacy oil production change
thousand barrels/day

Permian Region
Indicated change in oil production (Oct vs. Sep)
thousand barrels/day

Permian Region
Oil production
thousand barrels/day

Permian Region
Natural gas production
million cubic feet/day

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

Rig count
rigs

Permian Region
Legacy gas production change
million cubic feet/day

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

Permian Region
Natural gas production
million cubic feet/day

Monthly additions from one average rig

Permian Region
Production from new wells
thousand barrels/day

Legacy production change

Net change

New-well oil production per rig

New-well gas production per rig

thousand barrels/day

thousand cubic feet/day

Oil +71 barrels/day month over month

Natural gas +229 thousand cubic feet/day month over month

Gas +24 thousand cubic feet/day month over month

Drilling Productivity Report
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\(^1\) 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