Note:

The DPR rig productivity metric new-well oil/gas production per rig can become unstable during periods of rapid decreases or increases in the number of active rigs and well completions. The metric uses a fixed ratio of estimated total production from new wells divided by the region’s monthly rig count, lagged by two months. The metric does not represent new-well oil/natural gas production per newly completed well.

The DPR metric legacy oil/gas production change can become unstable during periods of rapid decreases or increases in the volume of well production curtailments or shut-ins. This effect has been observed during winter weather freeze-offs, extreme flooding events, and the 2020 global oil demand contraction. The DPR methodology involves applying smoothing techniques to most of the data series because of inherent noise in the data.

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</table>
### Year-over-year summary

#### Drilling Productivity Report

**November 2021**

**Drilling data through October**

**Projected production through December**

### New-well oil production per rig

<table>
<thead>
<tr>
<th>Region</th>
<th>December-2020</th>
<th>December-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anadarko</td>
<td>1,000</td>
<td>1,500</td>
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<tr>
<td>Appalachia</td>
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<td>Bakken</td>
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<td>5,500</td>
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</tr>
<tr>
<td>Permian</td>
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</tbody>
</table>

### New-well gas production per rig

<table>
<thead>
<tr>
<th>Region</th>
<th>December-2020</th>
<th>December-2021</th>
</tr>
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<tbody>
<tr>
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<td>6,500</td>
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<tr>
<td>Appalachia</td>
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<tr>
<td>Bakken</td>
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<tr>
<td>Permian</td>
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### Legacy oil production change

<table>
<thead>
<tr>
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<tbody>
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<td>Permian</td>
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### Legacy gas production change

<table>
<thead>
<tr>
<th>Region</th>
<th>December-2020</th>
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<tbody>
<tr>
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<td>Haynesville</td>
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</tr>
<tr>
<td>Permian</td>
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<td>-2,040</td>
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### Indicated monthly change in oil production (Dec vs. Nov)

<table>
<thead>
<tr>
<th>Region</th>
<th>December-2020</th>
<th>December-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anadarko</td>
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<td>Appalachia</td>
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<td>45</td>
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<tr>
<td>Permian</td>
<td>60</td>
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</table>

### Indicated monthly change in gas production (Dec vs. Nov)

<table>
<thead>
<tr>
<th>Region</th>
<th>December-2020</th>
<th>December-2021</th>
</tr>
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<tbody>
<tr>
<td>Anadarko</td>
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</tbody>
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### Oil production

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<th>Region</th>
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<tbody>
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<tr>
<td>Permian</td>
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</table>

### Natural gas production

<table>
<thead>
<tr>
<th>Region</th>
<th>December-2020</th>
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<tbody>
<tr>
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</tbody>
</table>
Anadarko Region

Drilling Productivity Report

November 2021

Drilling data through October
Projected production through December

Oil
-50 barrels/day
Month over month

Gas
-454 thousand cubic feet/day
Month over month

795 barrels/day
845 barrels/day

December
November

Monthly additions from one average rig

December
4,086 thousand barrels/day
November
4,540 thousand barrels/day

Anadarko Region
New-well oil production per rig

1,500 barrels/day

Rig count

250
200
150
100
50
0

barrels/day


Anadarko Region
Legacy oil production change

100 thousand barrels/day

50
0

-50

-100


Anadarko Region
Indicated change in oil production (Dec vs. Nov)

50 thousand barrels/day

31 -29 +2

Nov 366 Mbbbl/d
Production from new wells
Legacy production change
Net change
Dec 368 Mbbbl/d

Anadarko Region
Natural gas production

8,000 million cubic feet/day

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


Oil +2 thousand barrels/day
Month over month

Gas -30 million cubic feet/day
Month over month
Appalachia Region

Oil production

- New-well oil production per rig (thousand barrels/day)
- Rig count (rigs)

- Legacy oil production change (thousand barrels/day)

- Indicated change in oil production (Dec vs. Nov)
  - +7, -5, +2

- Oil production (thousand barrels/day)

Gas production

- New-well gas production per rig (million cubic feet/day)
- Rig count (rigs)

- Legacy gas production change (million cubic feet/day)

- Indicated change in natural gas production (Dec vs. Nov)
  - +1151, -1144, +7

- Natural gas production (million cubic feet/day)

- New-well gas production per rig (thousand cubic feet/day)
- Rig count (rigs)

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

November 2021

Drilling data through October
Projected production through December

Niobrara Region
New-well oil production per rig

Rig count

Niobrara Region
New-well gas production per rig

Rig count

Niobrara Region
Legacy oil production change

Niobrara Region
Legacy gas production change

Niobrara Region
Indicated change in oil production (Dec vs. Nov)

Niobrara Region
Indicated change in natural gas production (Dec vs. Nov)

Niobrara Region
Oil production

Niobrara Region
Natural gas production
Permian Region
Drilling Productivity Report

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

Rig count
rigs
0
200
400
600
800
1,000
1,200


Permian Region
Legacy oil production change
thousand barrels/day


Permian Region
Indicated change in oil production (Dec vs. Nov)
thousand barrels/day

+323 -256 +67

Nov 4,886 Mbbl/d
Production from new wells
Legacy production change
Net change
Dec 4,953 Mbbl/d

Permian Region
Oil production
thousand barrels/day

Oil +67 thousand barrels/day month over month


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

Rig count
rigs
0
200
400
600
800
1,000
1,200


Permian Region
Legacy gas production change
million cubic feet/day


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

+594 -507 +87

Nov 19,298 MMcfd
Production from new wells
Legacy production change
Net change
Dec 19,385 MMcfd

Permian Region
Natural gas production
million cubic feet/day

Gas +87 million cubic feet/day month over month


Oil -5 barrels/day month over month

1,213 December
1,218 November

Monthly additions from one average rig

December 2,233 thousand cubic feet/day
November 2,245 thousand cubic feet/day

Permian Region
Natural gas production
million cubic feet/day

2,233
2,245


Oil -12 thousand cubic feet/day month over month

U. S. Energy Information Administration | Drilling Productivity Report

November 2021
drilling data through October
projected production through December

New-well oil production per rig
rig count

Oil +67 thousand barrels/day month over month

Permian Region
New-well gas production per rig
rig count

Oil -5 barrels/day month over month

Permian Region
Oil production

Gas -12 thousand cubic feet/day month over month

Oil -5 barrels/day month over month

Permian Region
New-well gas production per rig

Permian Region
Legacy oil production change

Permian Region
Indicated change in natural gas production (Dec vs. Nov)
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.