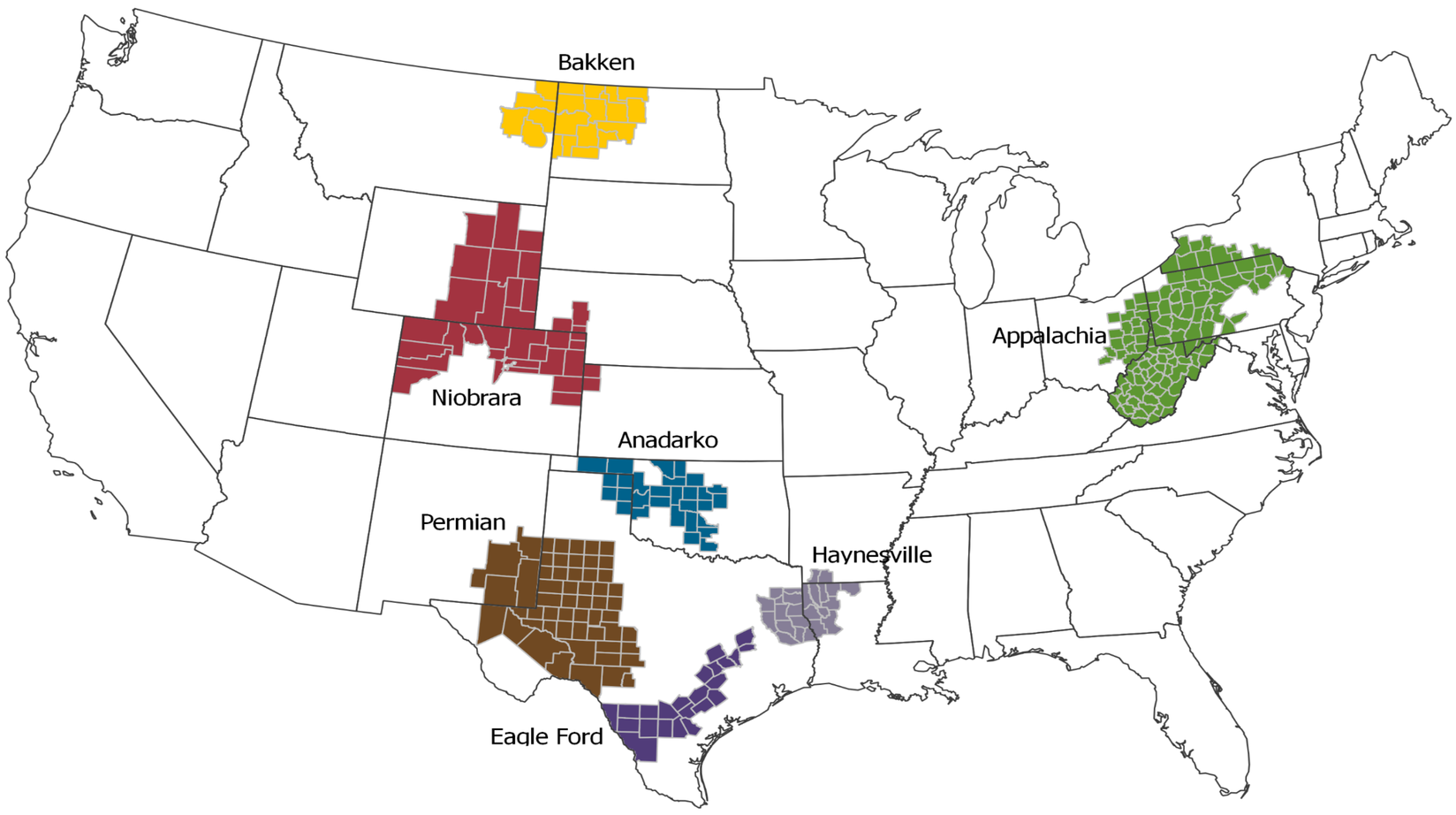
Independent Statistics & Analysis

U.S. Energy Information Administration

January 2022

Drilling Productivity Report

For key tight oil and shale gas regions



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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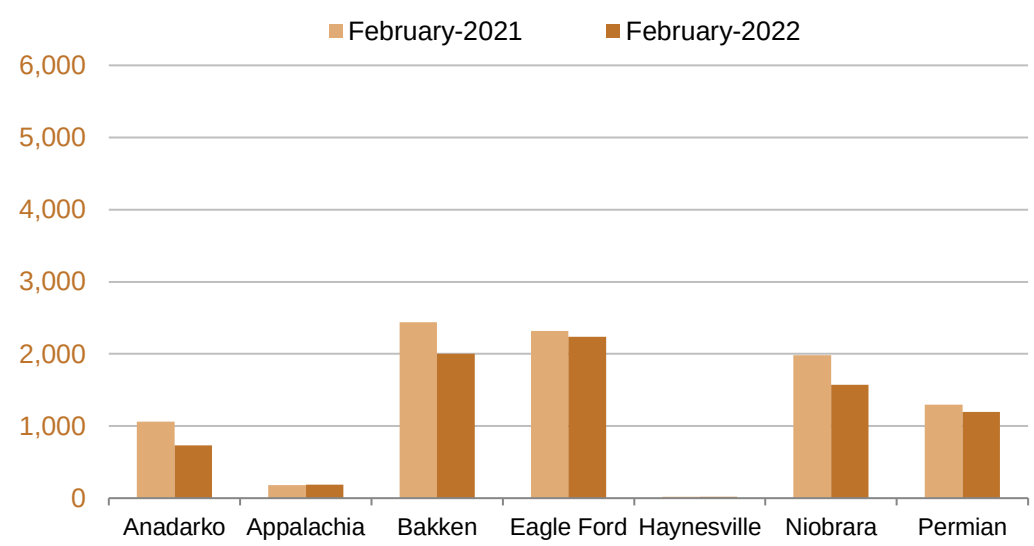
Year-over-year summary

January 2022

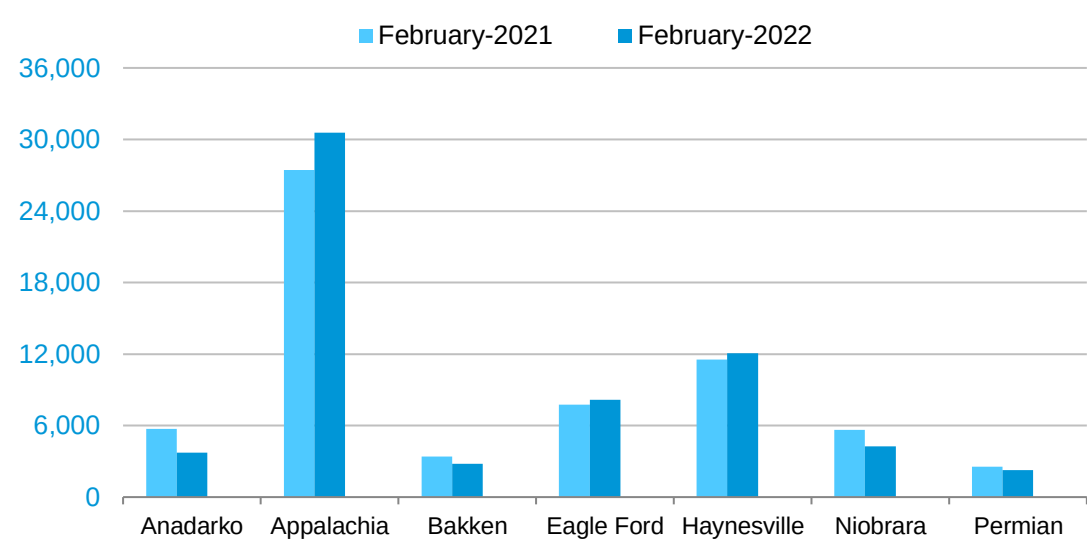
Drilling Productivity Report

drilling data through December
projected production through February

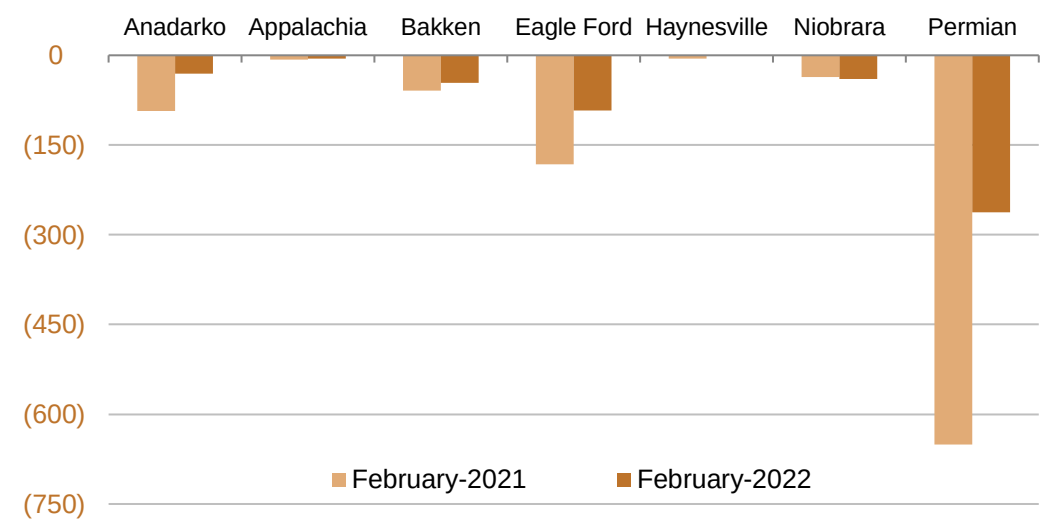
New-well oil production per rig
barrels/day



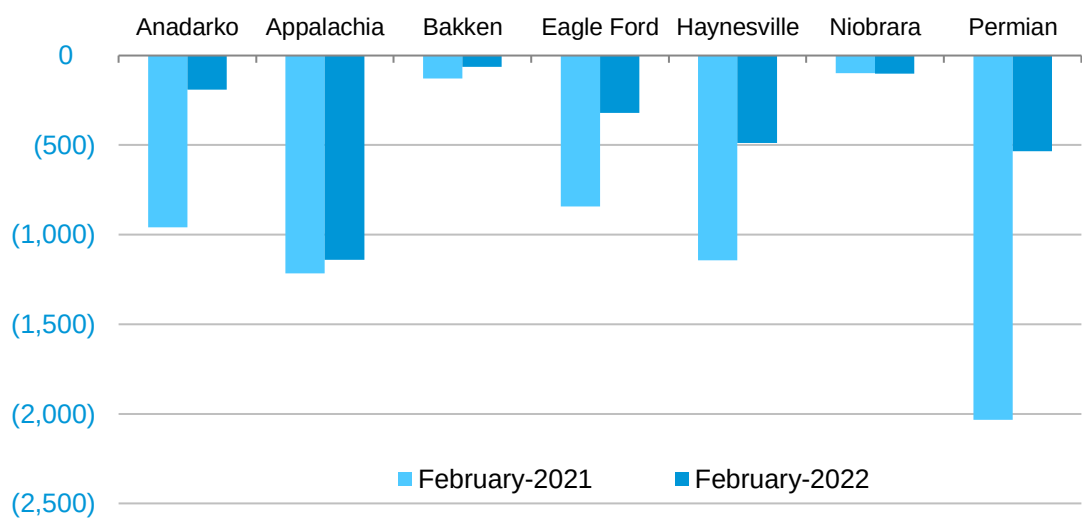
New-well gas production per rig
thousand cubic feet/day



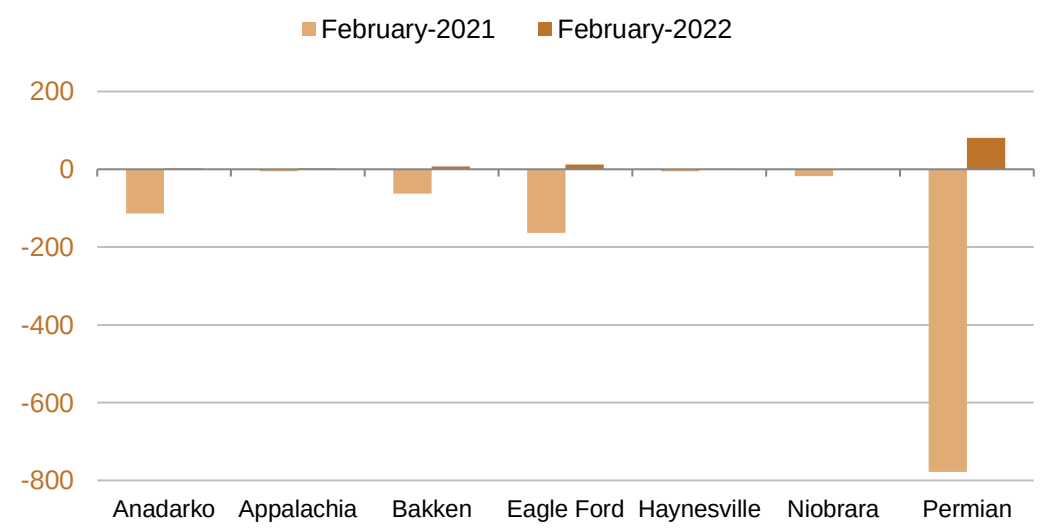
Legacy oil production change
thousand barrels/day



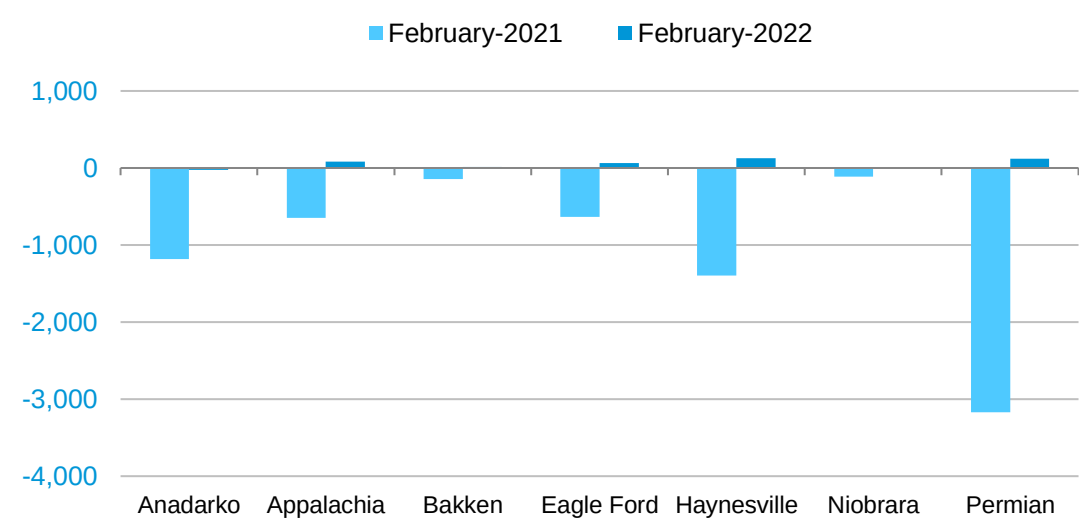
Legacy gas production change
million cubic feet/day



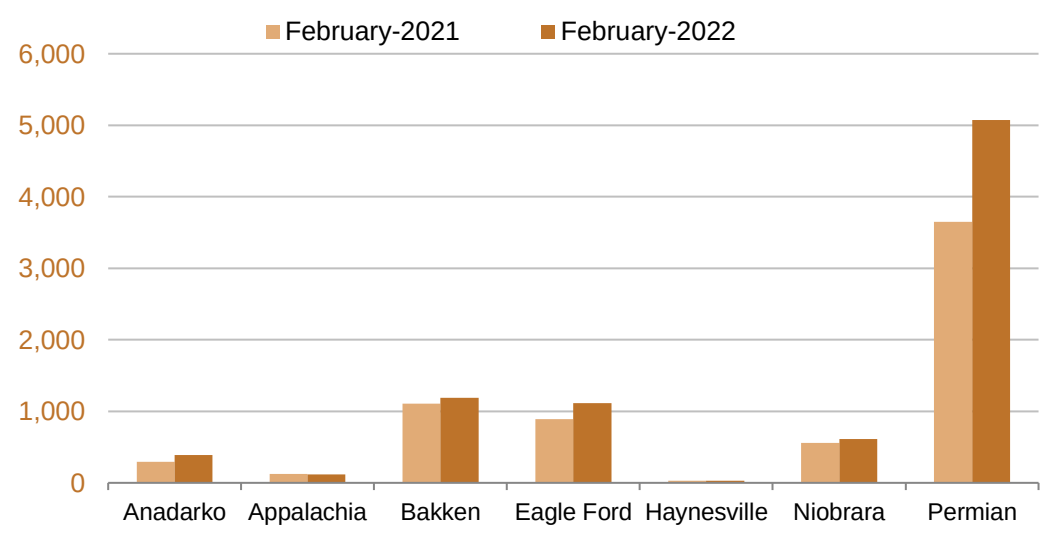
Indicated monthly change in oil production (Feb vs. Jan)
thousand barrels/day



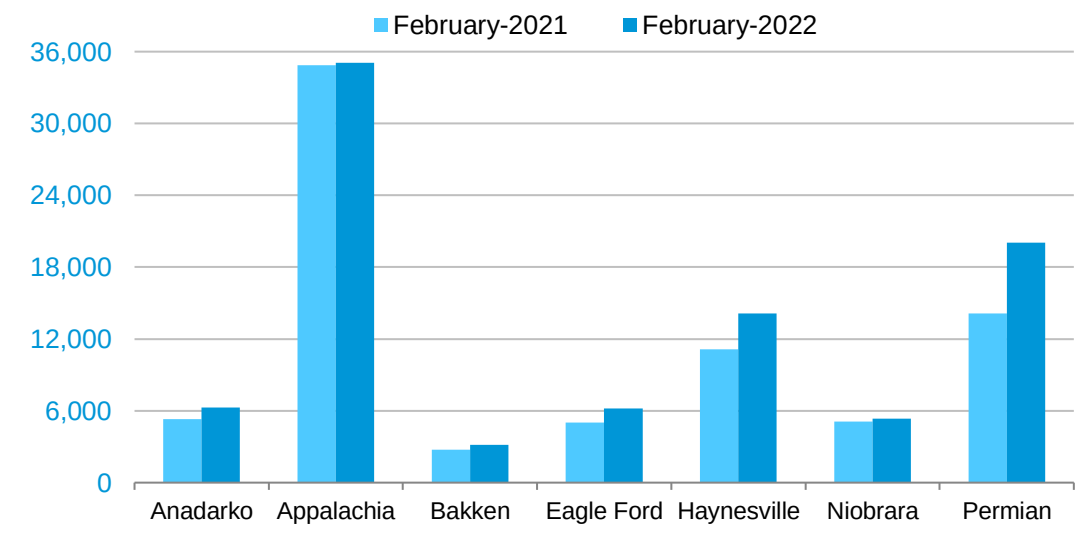
Indicated monthly change in gas production (Feb vs. Jan)
million cubic feet/day



Oil production
thousand barrels/day



Natural gas production
million cubic feet/day



Anadarko Region

Drilling Productivity Report

January 2022

drilling data through December
projected production through February

Oil -31 barrels/day month over month

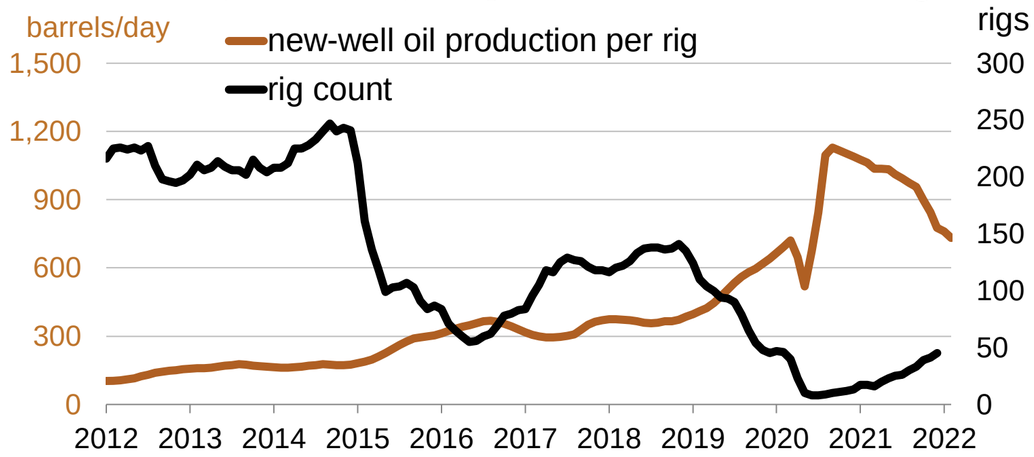
731 *February*
762 *January*
barrels/day

Monthly additions from one average rig

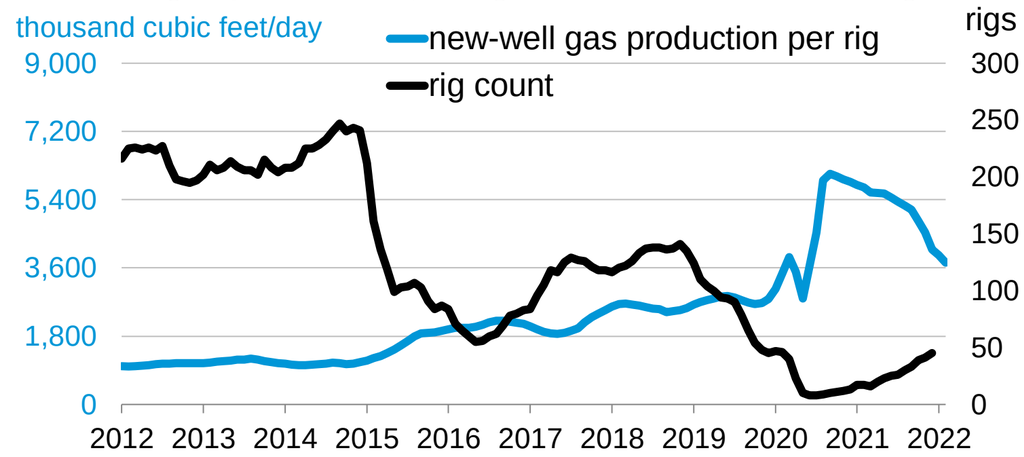
February **3,744**
January **3,941**
thousand cubic feet/day

Gas -197 thousand cubic feet/day month over month

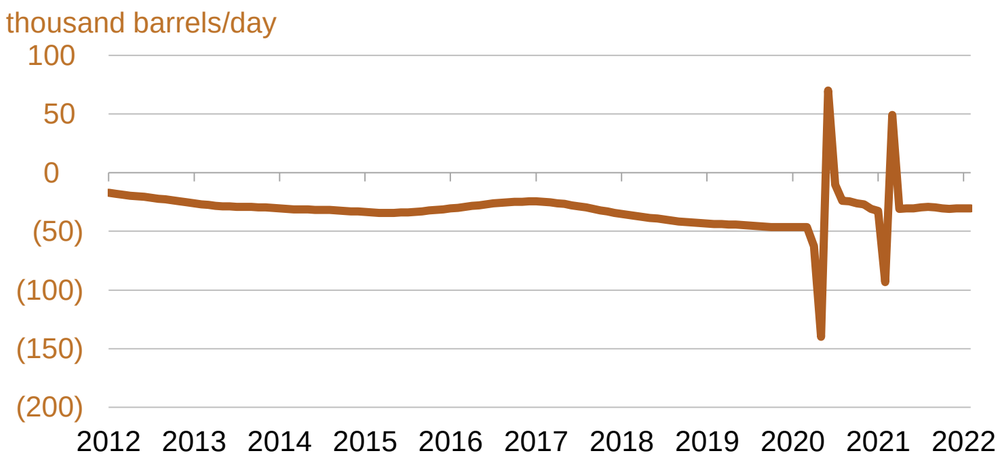
Anadarko Region
New-well oil production per rig



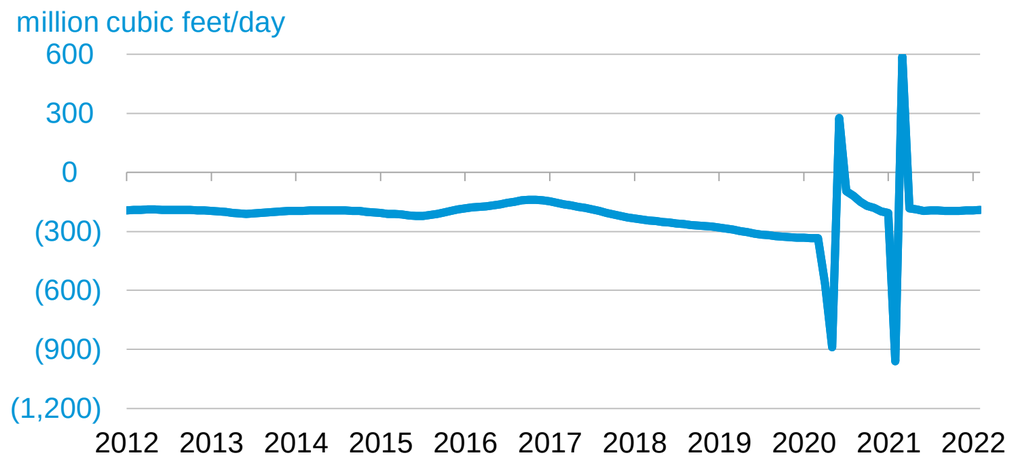
Anadarko Region
New-well gas production per rig



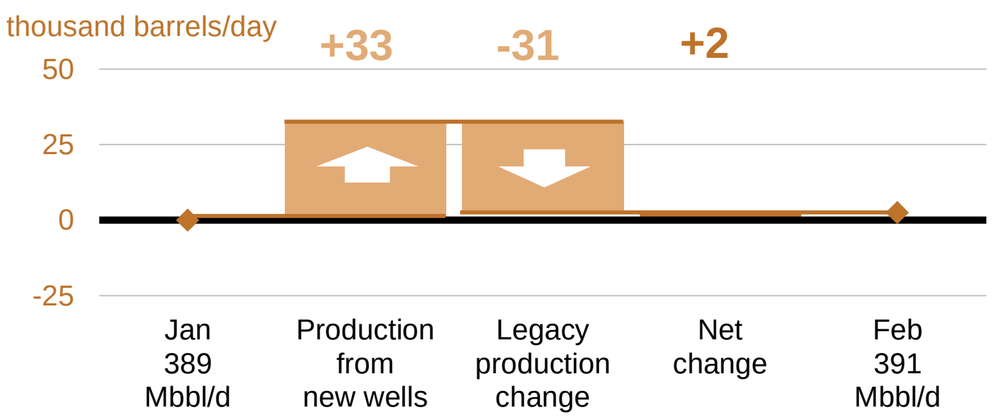
Anadarko Region
Legacy oil production change



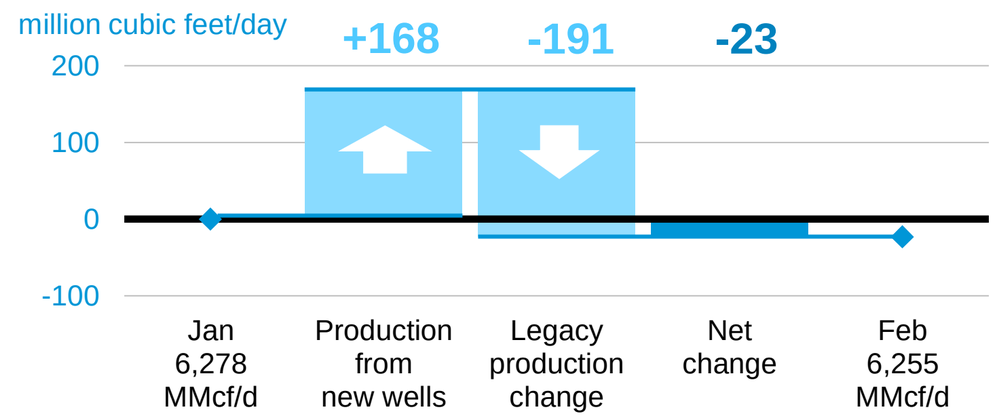
Anadarko Region
Legacy gas production change



Anadarko Region
Indicated change in oil production (Feb vs. Jan)

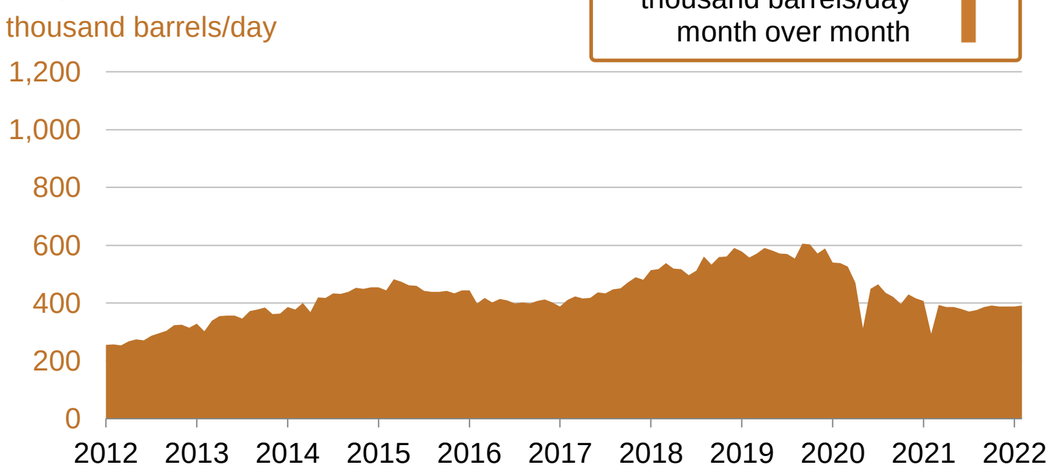


Anadarko Region
Indicated change in natural gas production (Feb vs. Jan)



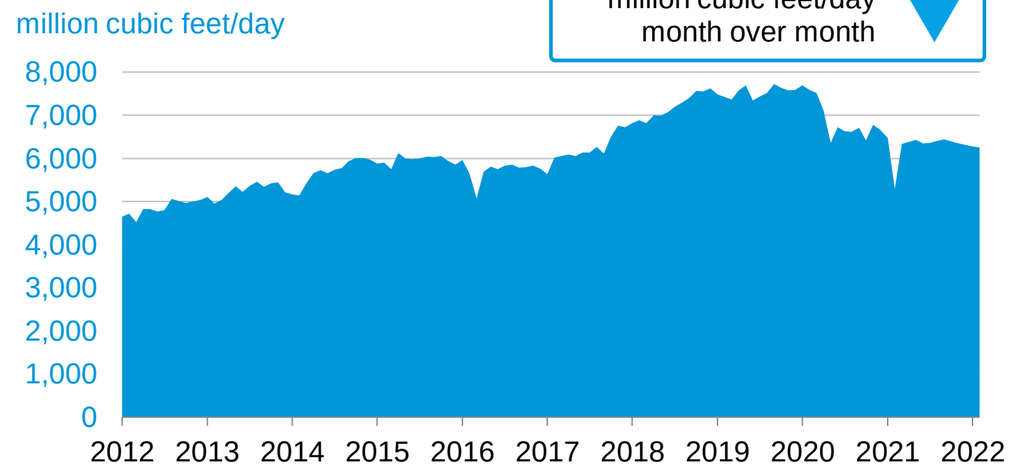
Anadarko Region
Oil production

Oil +2 thousand barrels/day month over month



Anadarko Region
Natural gas production

Gas -23 million cubic feet/day month over month



Appalachia Region
Drilling Productivity Report

January 2022

drilling data through December
projected production through February

Oil 0 barrels/day month over month

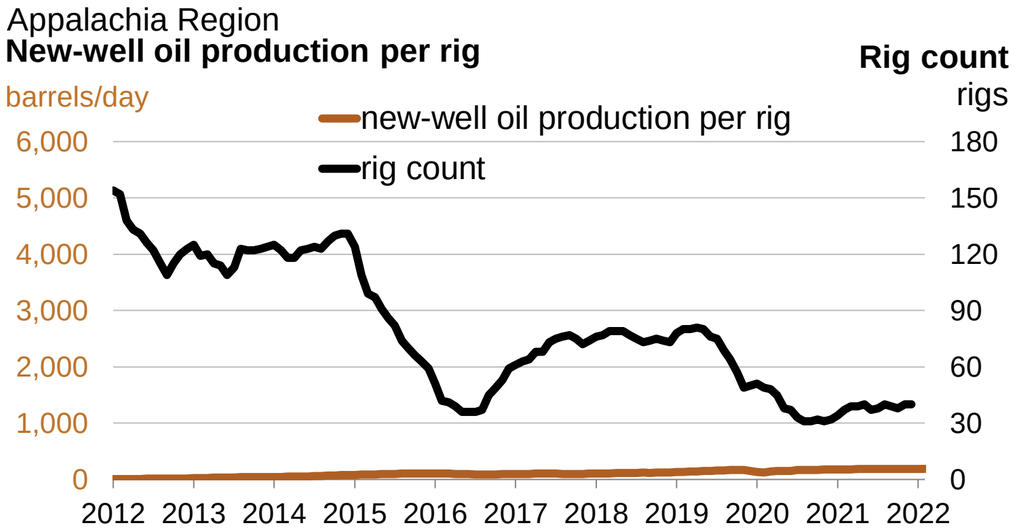
188 *February*
188 *January*
barrels/day

Monthly additions from one average rig

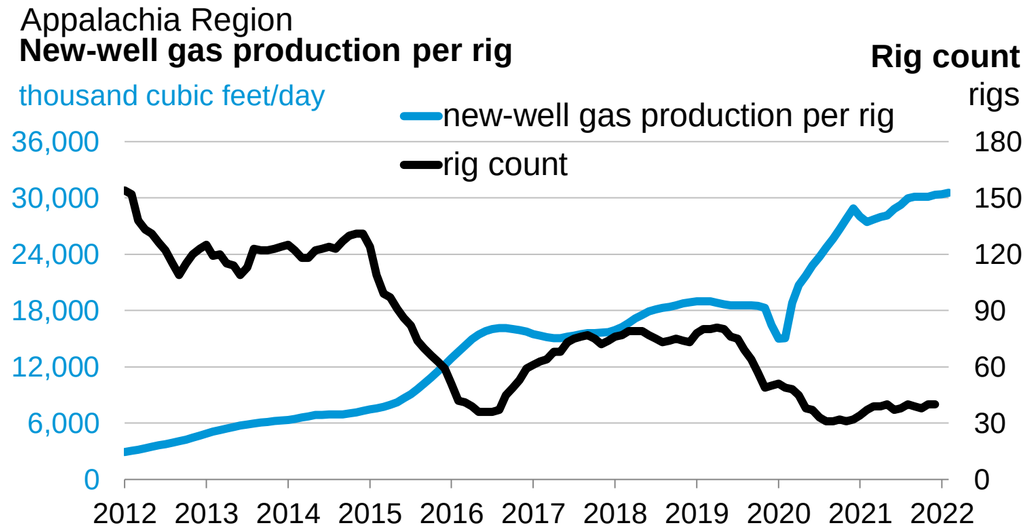
February **30,551**
January **30,399**
thousand cubic feet/day

Gas +152 thousand cubic feet/day month over month

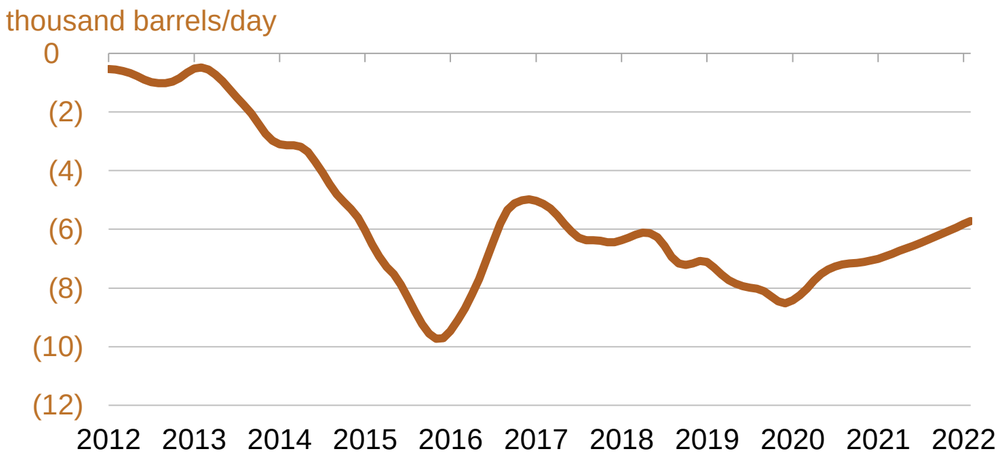
Appalachia Region
New-well oil production per rig



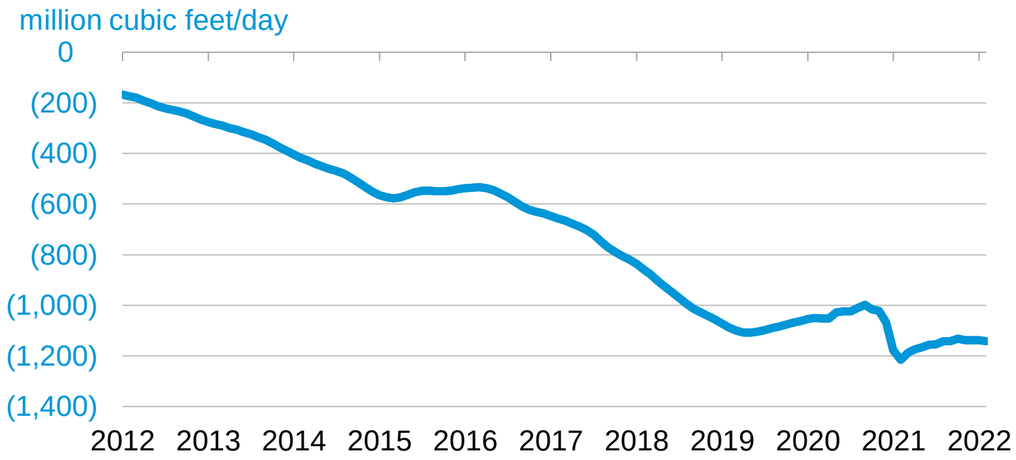
Appalachia Region
New-well gas production per rig



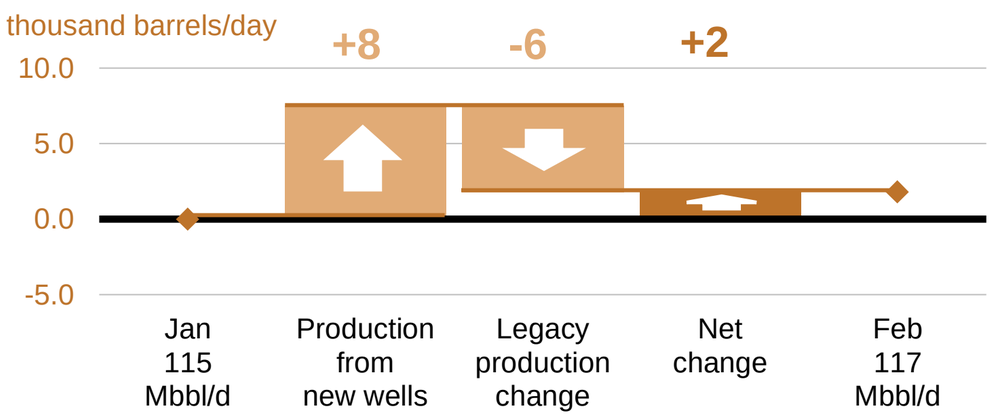
Appalachia Region
Legacy oil production change



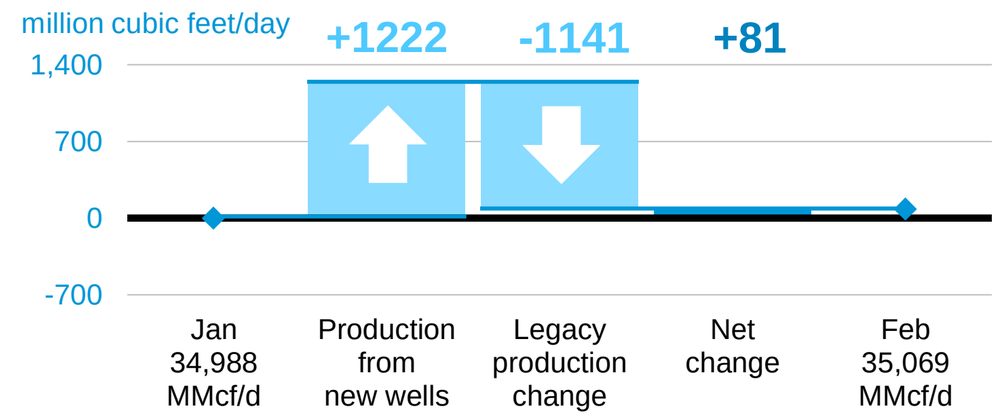
Appalachia Region
Legacy gas production change



Appalachia Region
Indicated change in oil production (Feb vs. Jan)

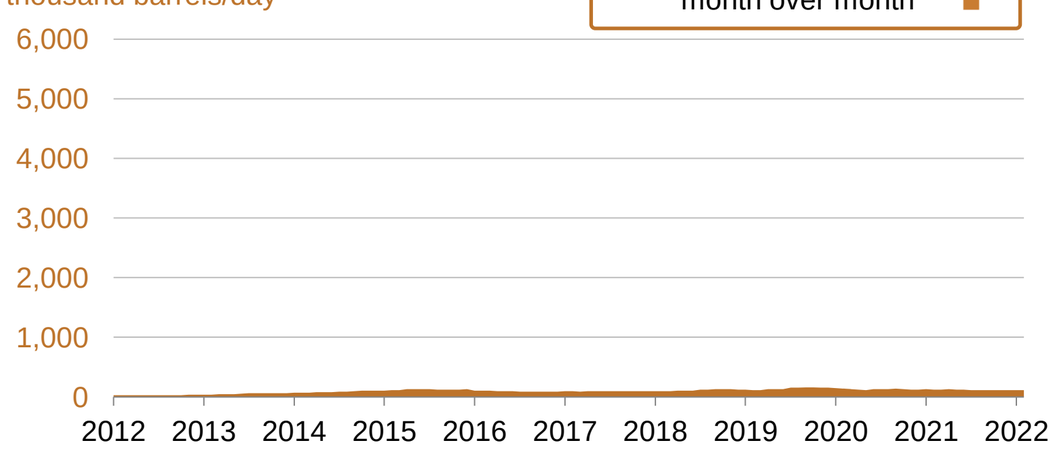


Appalachia Region
Indicated change in natural gas production (Feb vs. Jan)



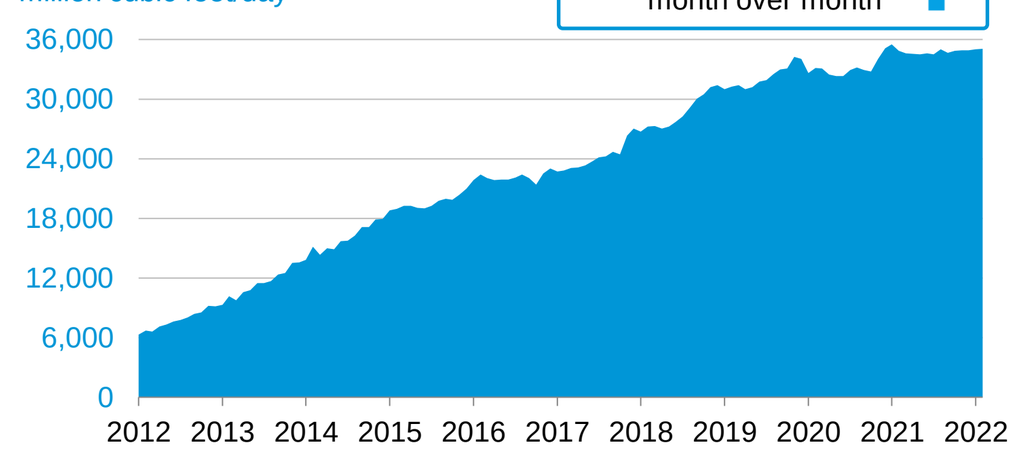
Appalachia Region
Oil production

Oil +2 thousand barrels/day month over month



Appalachia Region
Natural gas production

Gas +81 million cubic feet/day month over month



Bakken Region

Drilling Productivity Report

January 2022

drilling data through December
projected production through February

Oil -106 barrels/day month over month

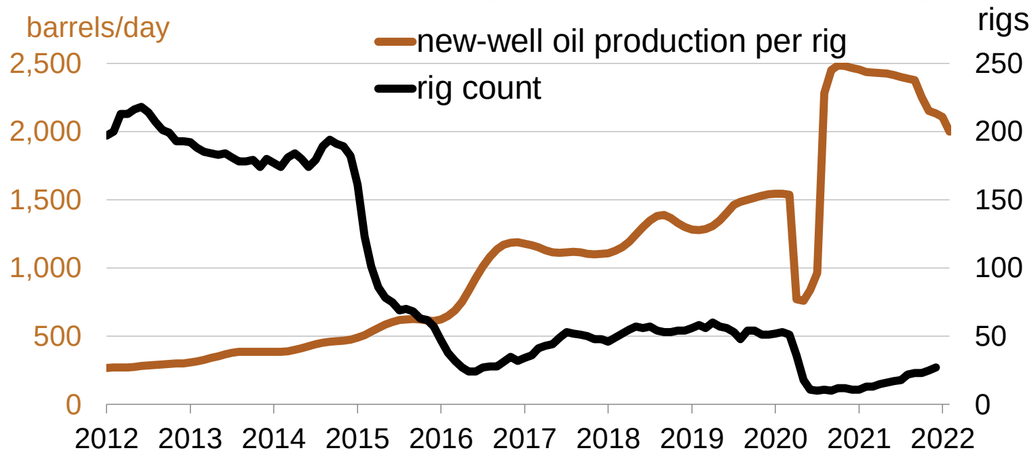
2,000 *February*
2,106 *January*
barrels/day

Monthly additions from one average rig

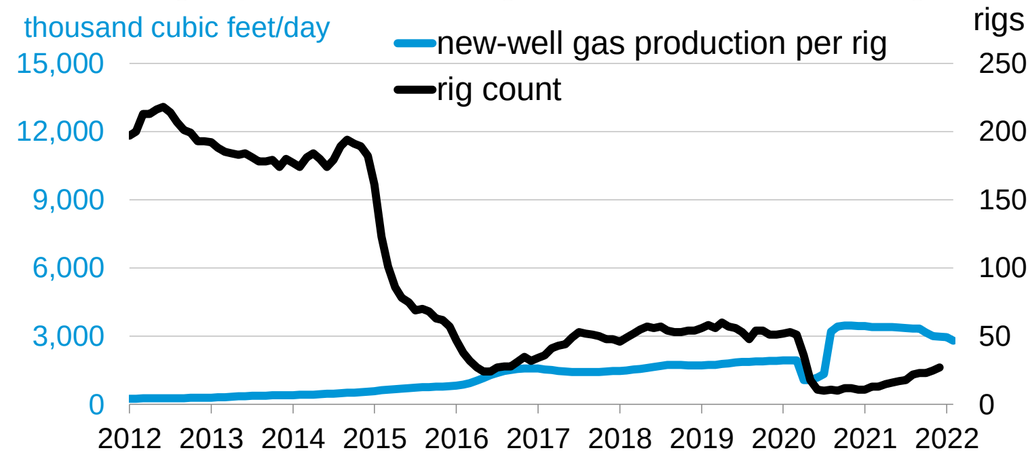
February **2,800**
January **2,948**
thousand cubic feet/day

Gas -148 thousand cubic feet/day month over month

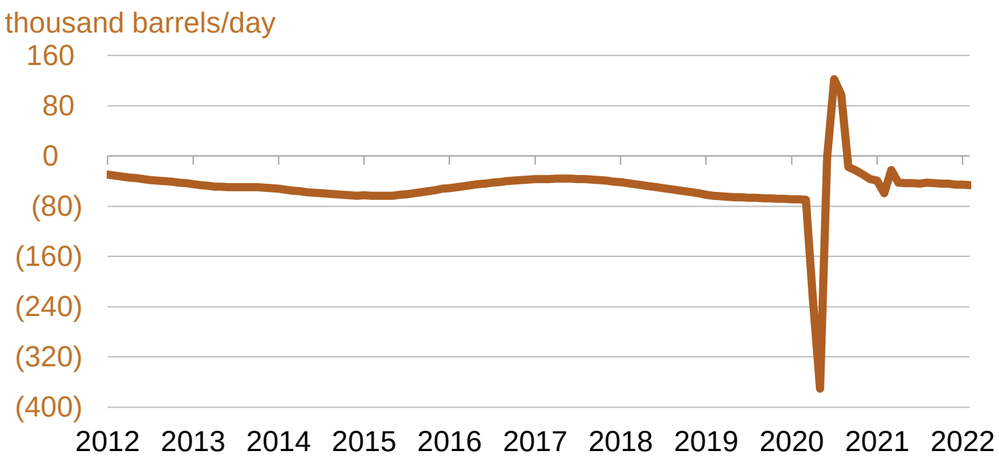
Bakken Region
New-well oil production per rig **Rig count**



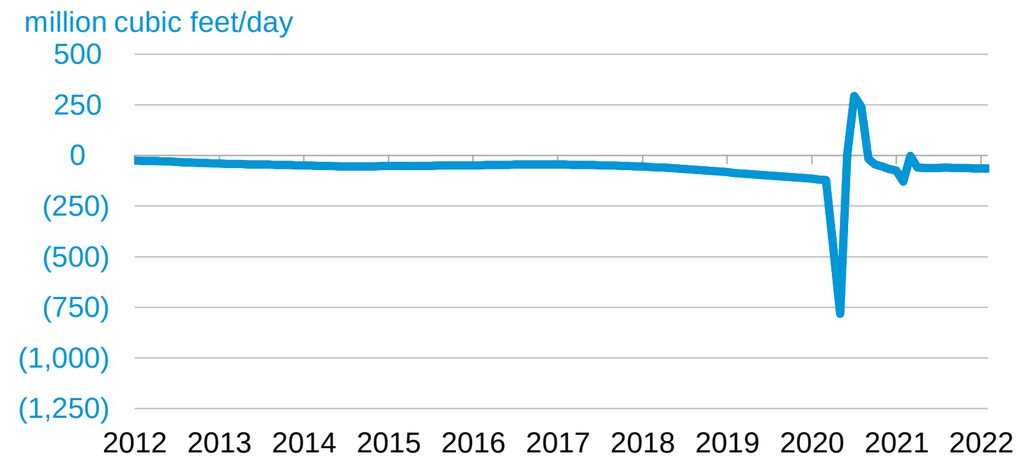
Bakken Region
New-well gas production per rig **Rig count**



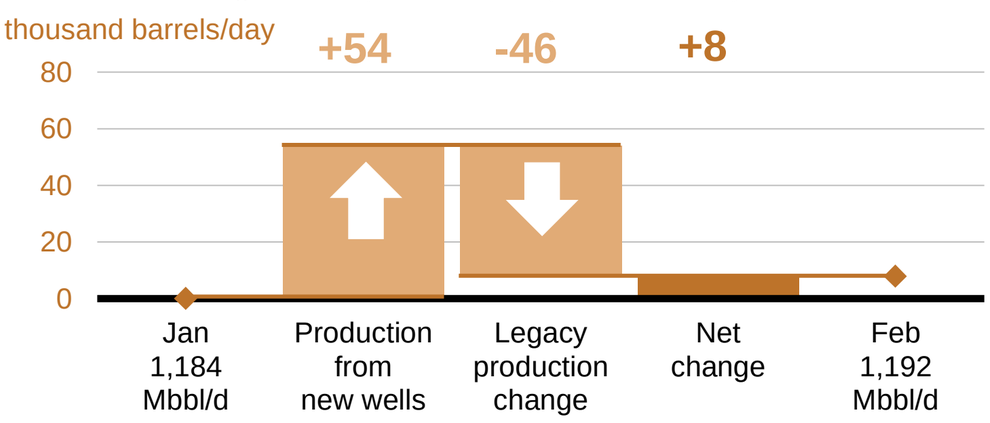
Bakken Region
Legacy oil production change



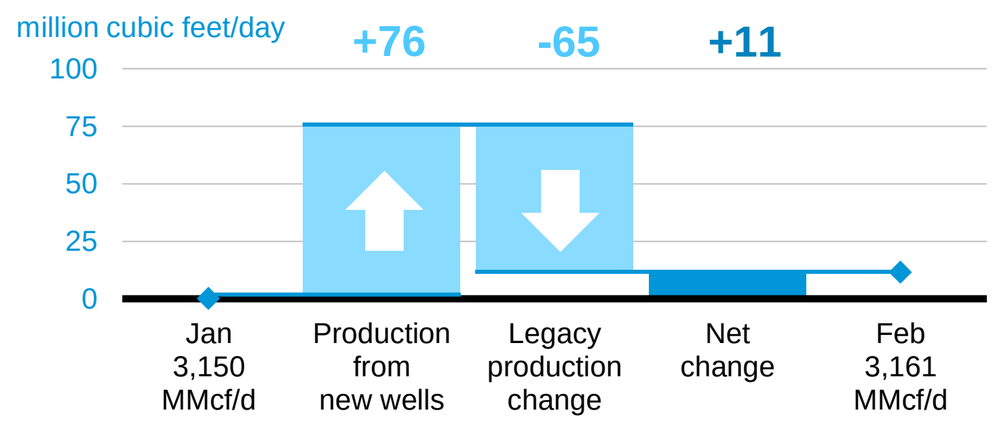
Bakken Region
Legacy gas production change



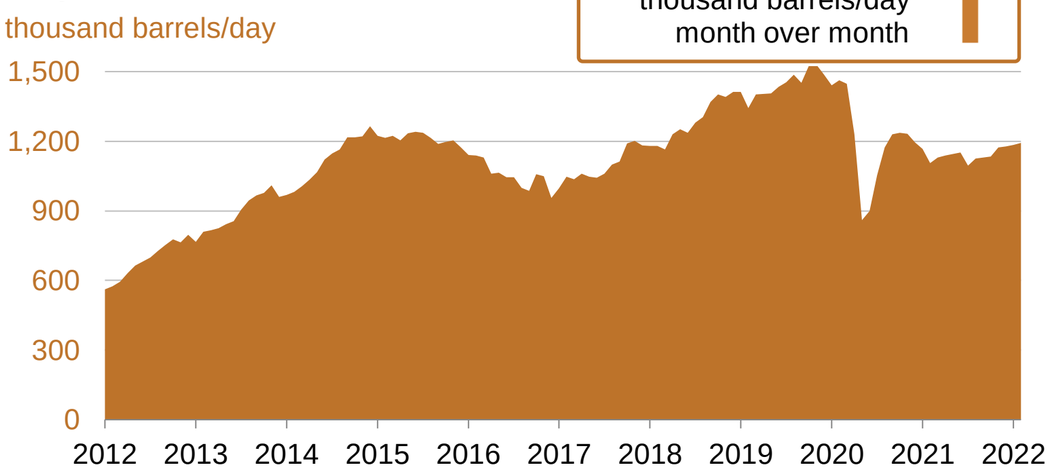
Bakken Region
Indicated change in oil production (Feb vs. Jan)



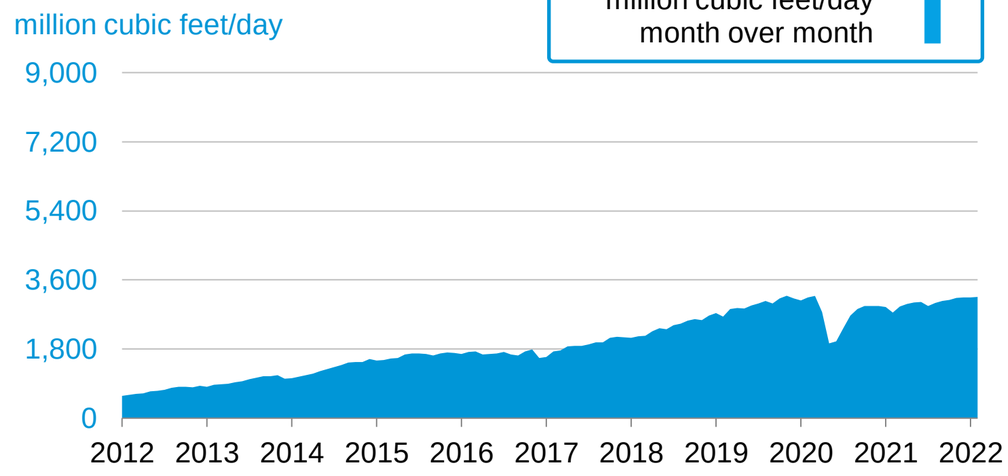
Bakken Region
Indicated change in natural gas production (Feb vs. Jan)



Bakken Region
Oil production



Bakken Region
Natural gas production



Eagle Ford Region

Drilling Productivity Report

January 2022

drilling data through December
projected production through February

Oil -69 barrels/day month over month

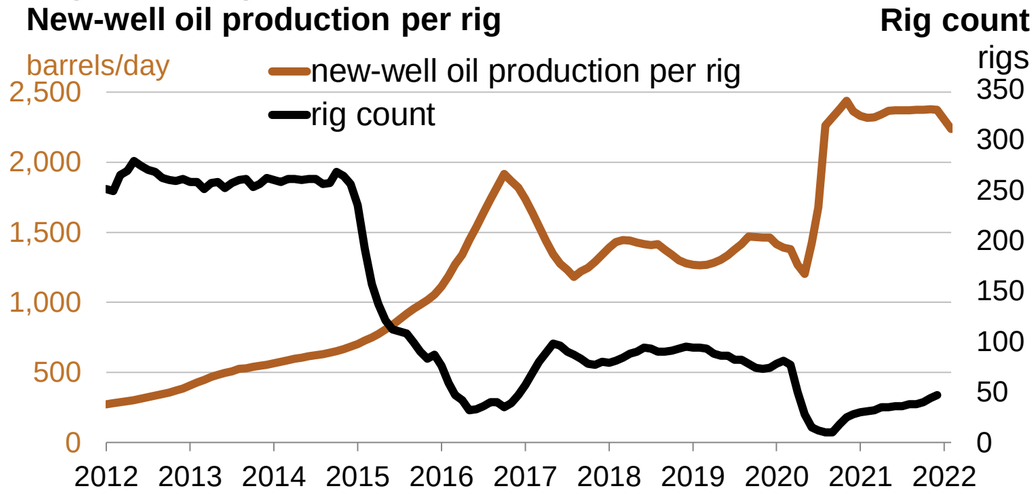
2,235 *February*
2,304 *January*
barrels/day

Monthly additions from one average rig

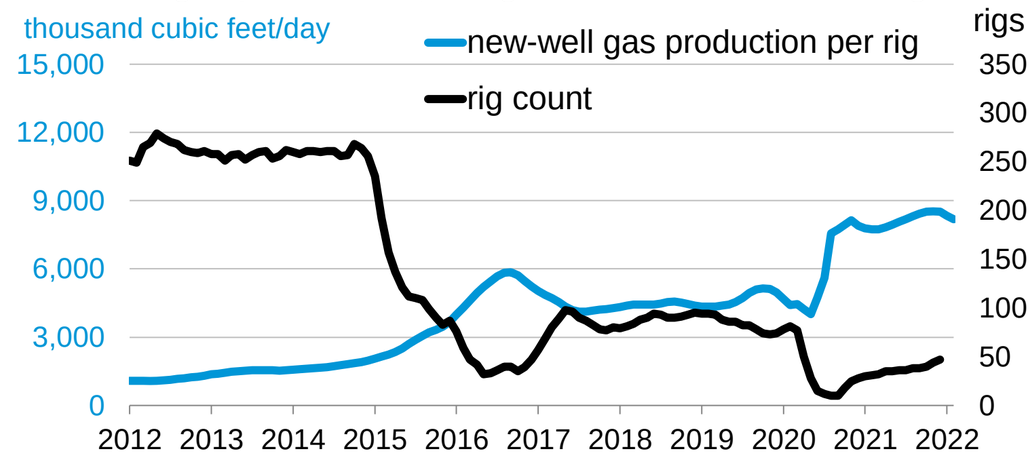
February **8,181**
January **8,348**
thousand cubic feet/day

Gas -167 thousand cubic feet/day month over month

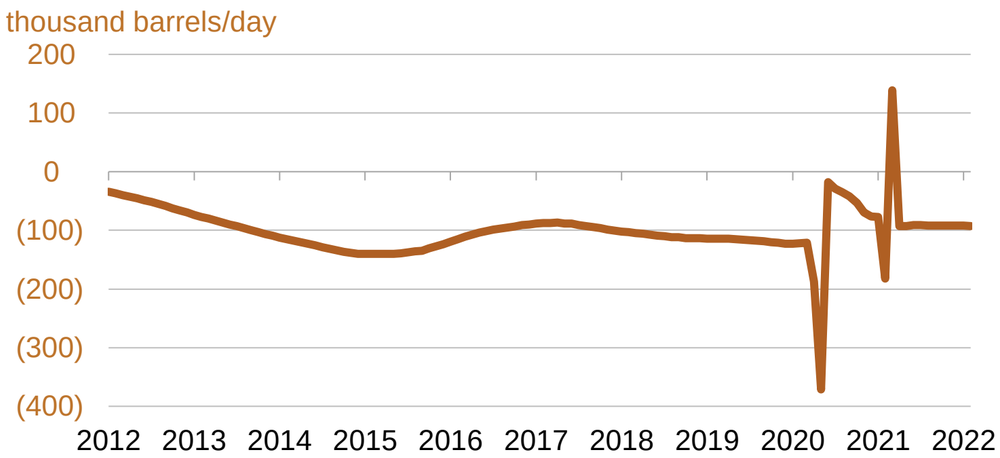
Eagle Ford Region
New-well oil production per rig — **Rig count**



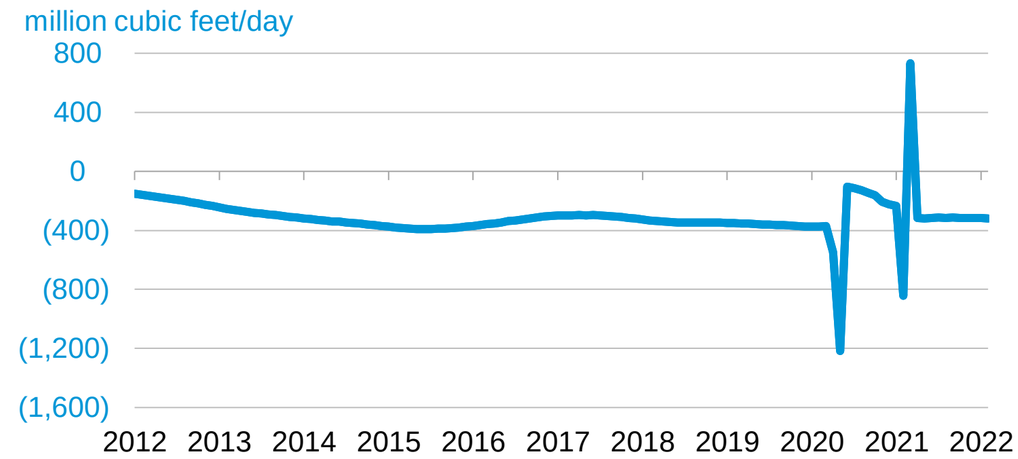
Eagle Ford Region
New-well gas production per rig — **Rig count**



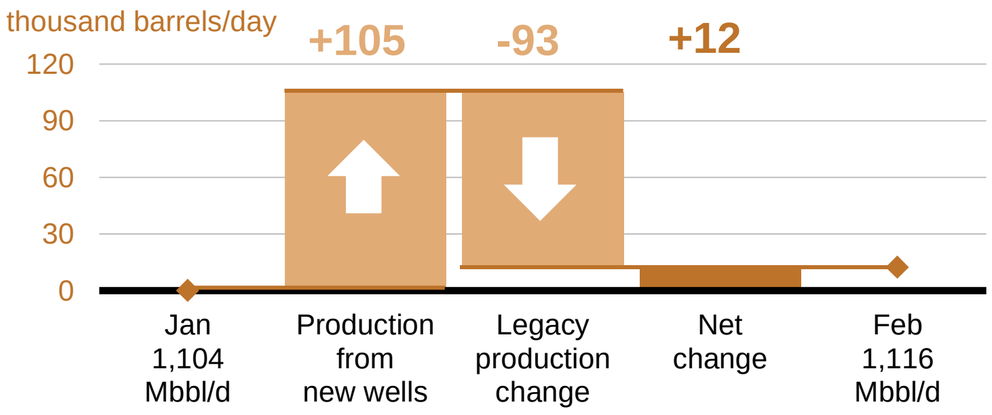
Eagle Ford Region
Legacy oil production change



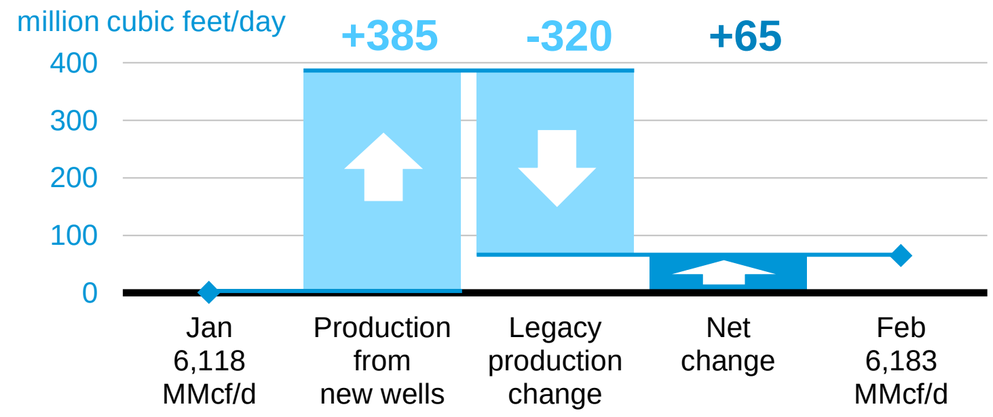
Eagle Ford Region
Legacy gas production change



Eagle Ford Region
Indicated change in oil production (Feb vs. Jan)

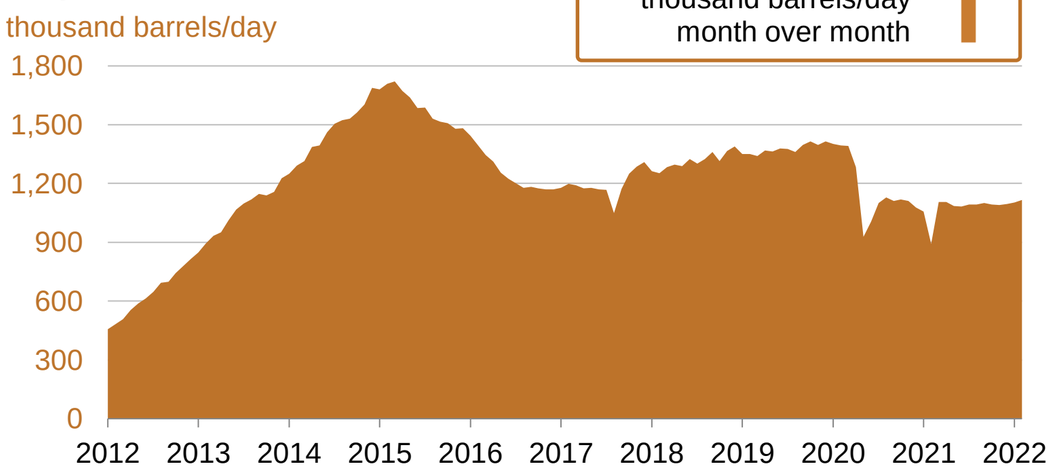


Eagle Ford Region
Indicated change in natural gas production (Feb vs. Jan)



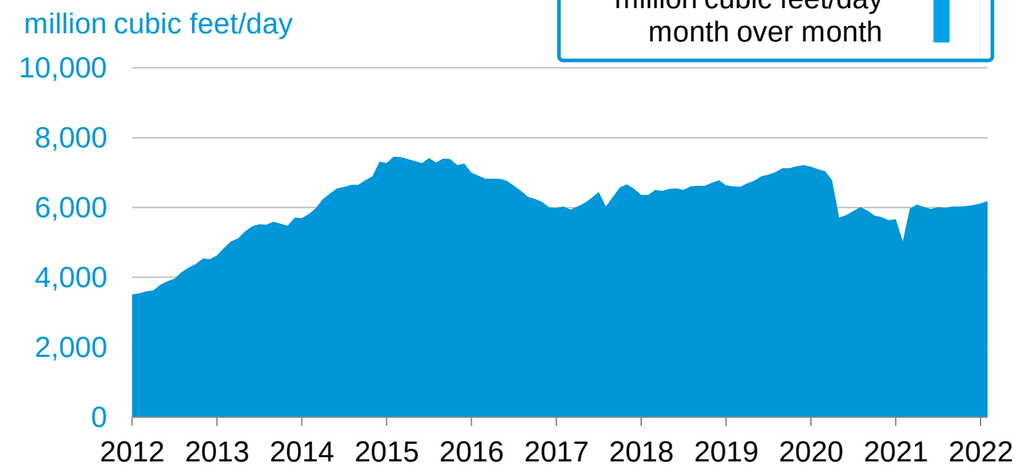
Eagle Ford Region
Oil production

Oil +12 thousand barrels/day month over month



Eagle Ford Region
Natural gas production

Gas +65 million cubic feet/day month over month



Haynesville Region

Drilling Productivity Report

January 2022

drilling data through December
projected production through February

Oil
0
barrels/day
month over month

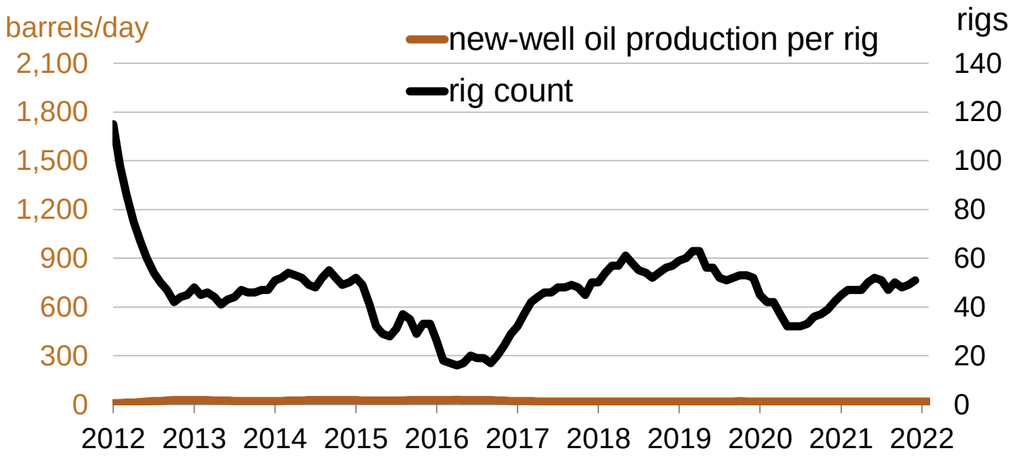
19 *February*
19 *January*
barrels/day

Monthly additions from one average rig

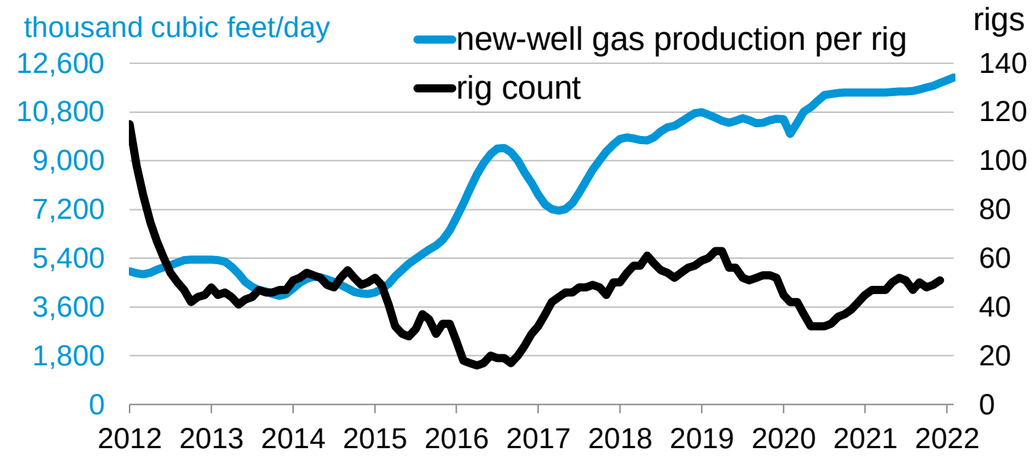
February **12,073**
January **11,971**
thousand cubic feet/day

Gas
+102
thousand cubic feet/day
month over month

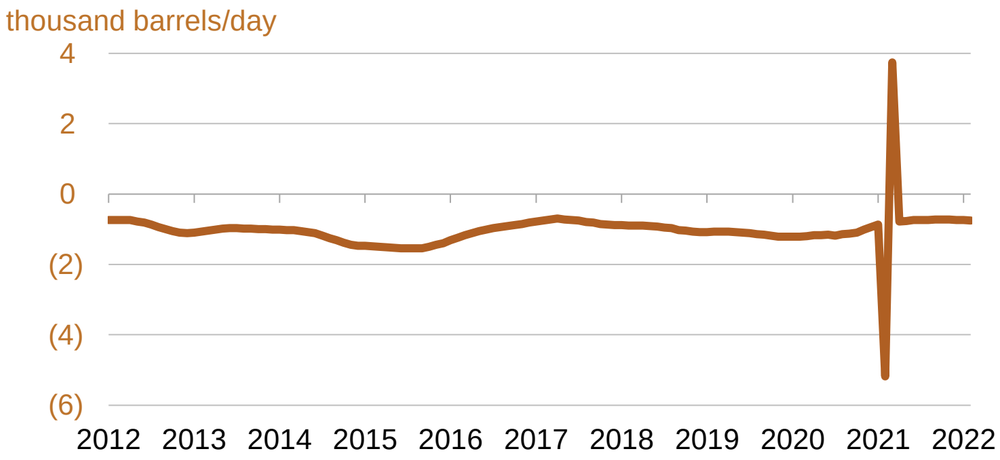
Haynesville Region
New-well oil production per rig **Rig count**



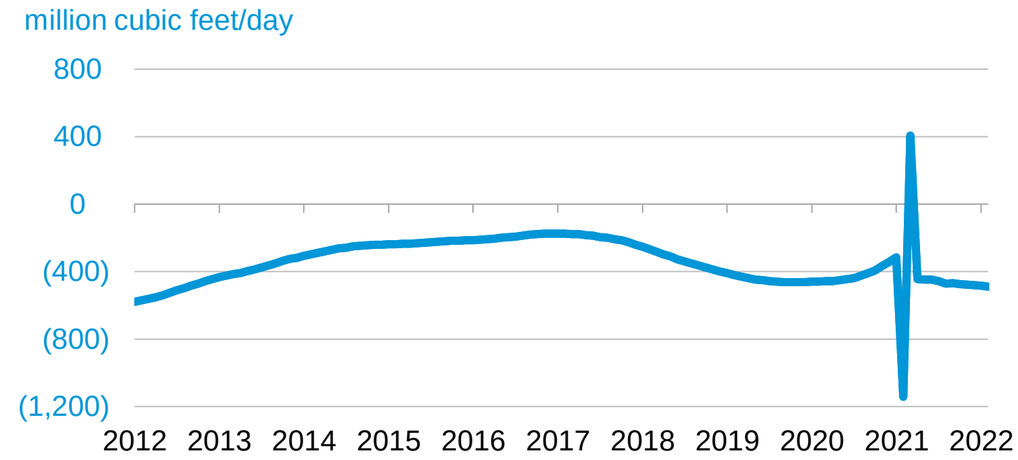
Haynesville Region
New-well gas production per rig **Rig count**



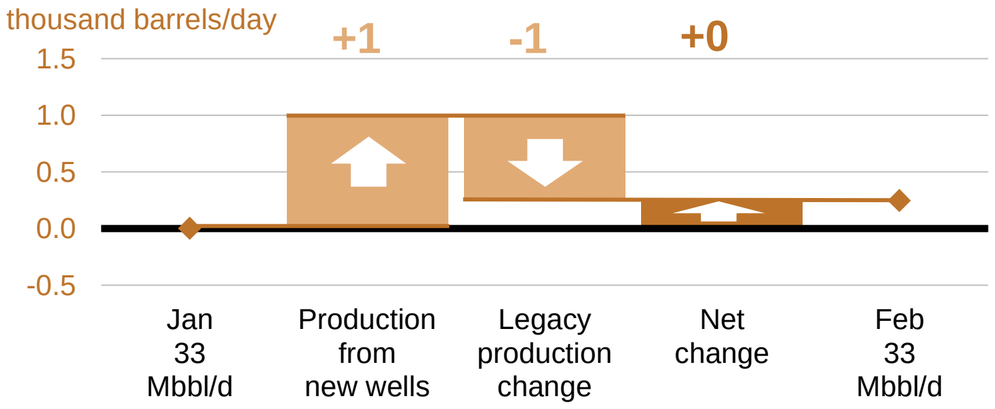
Haynesville Region
Legacy oil production change



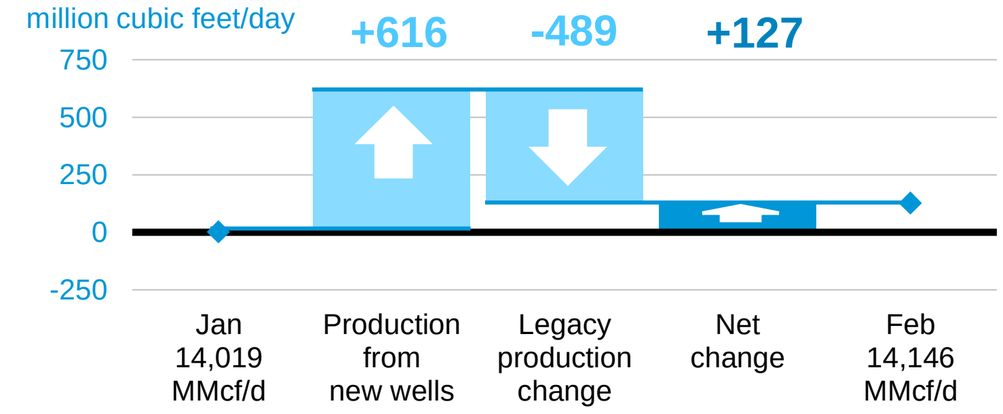
Haynesville Region
Legacy gas production change



Haynesville Region
Indicated change in oil production (Feb vs. Jan)

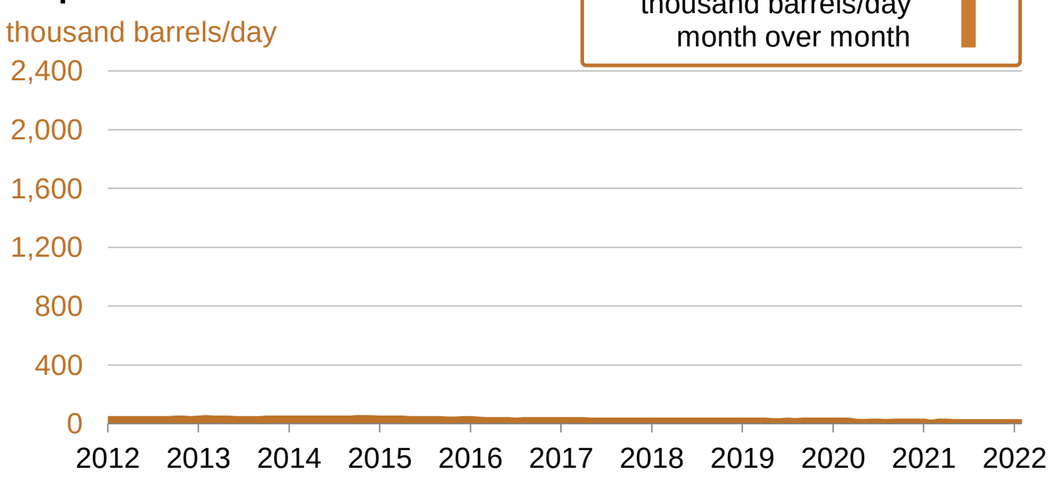


Haynesville Region
Indicated change in natural gas production (Feb vs. Jan)



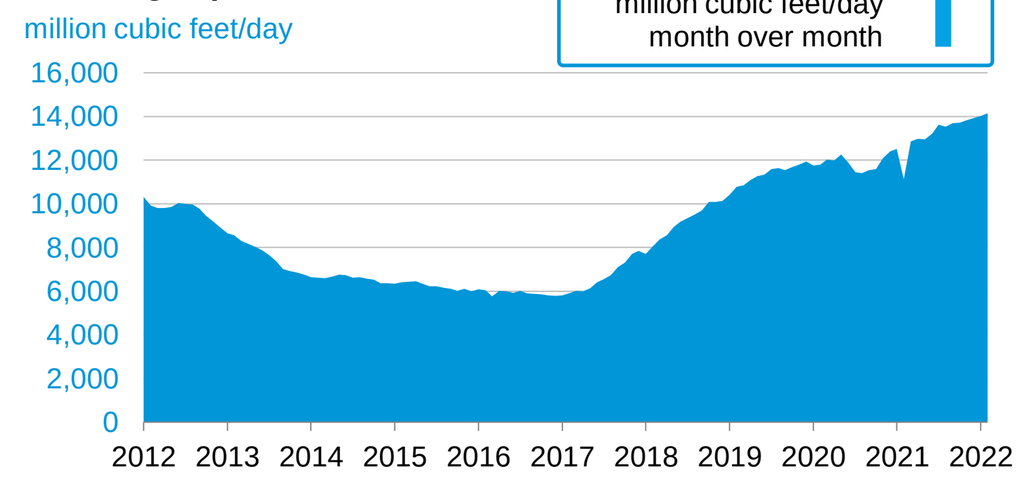
Haynesville Region
Oil production

Oil +0
thousand barrels/day
month over month



Haynesville Region
Natural gas production

Gas +127
million cubic feet/day
month over month



Niobrara Region

Drilling Productivity Report

January 2022

drilling data through December
projected production through February

Oil -33 barrels/day month over month

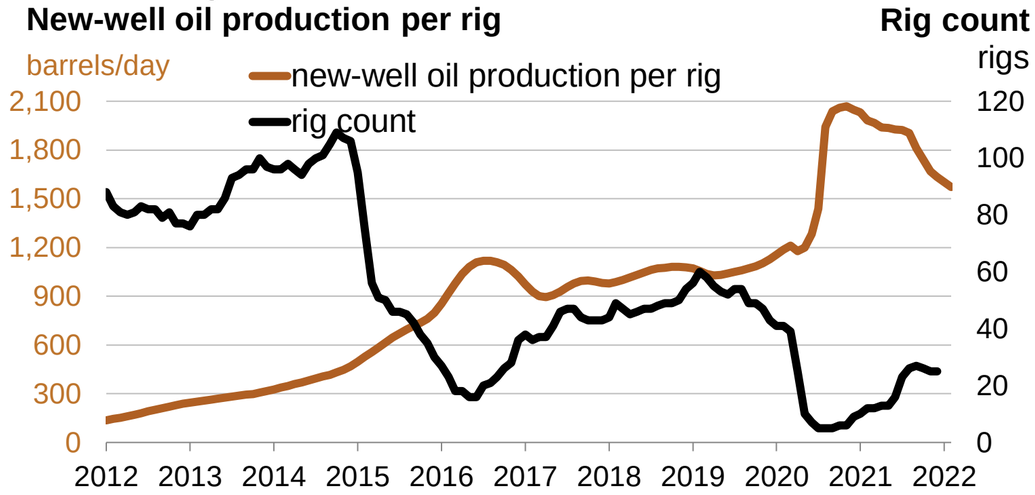
1,570 *February*
1,603 *January*
barrels/day

Monthly additions from one average rig

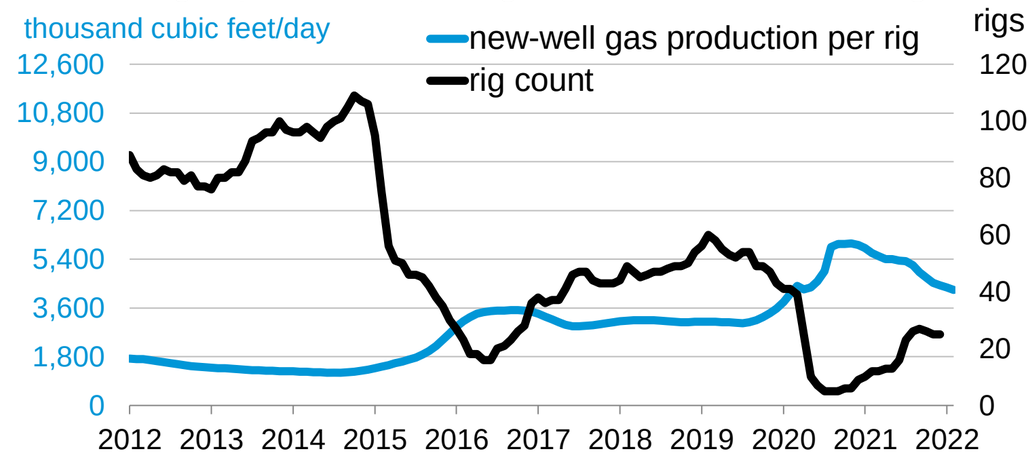
February **4,264**
January **4,351**
thousand cubic feet/day

Gas -87 thousand cubic feet/day month over month

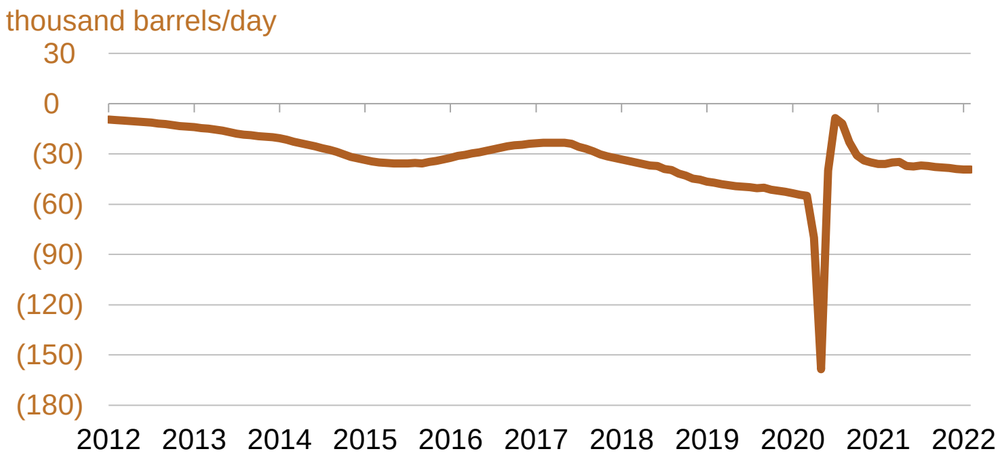
Niobrara Region
New-well oil production per rig — **Rig count**



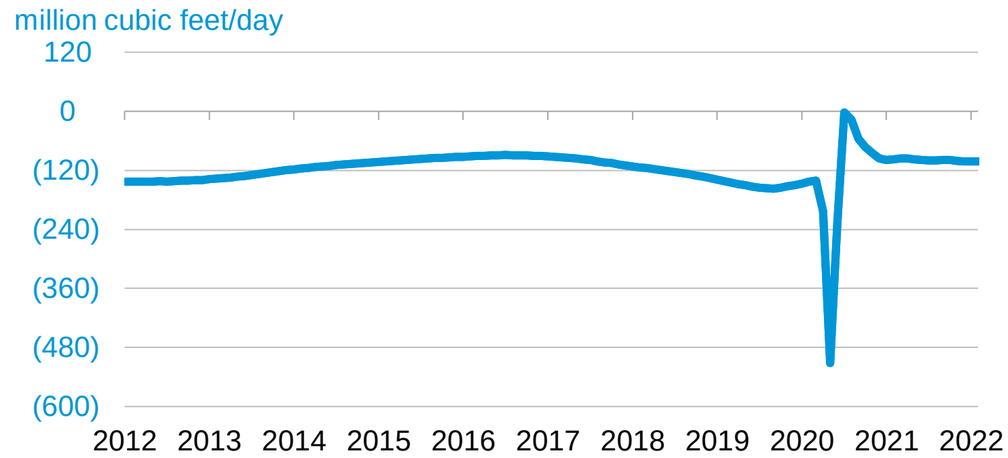
Niobrara Region
New-well gas production per rig — **Rig count**



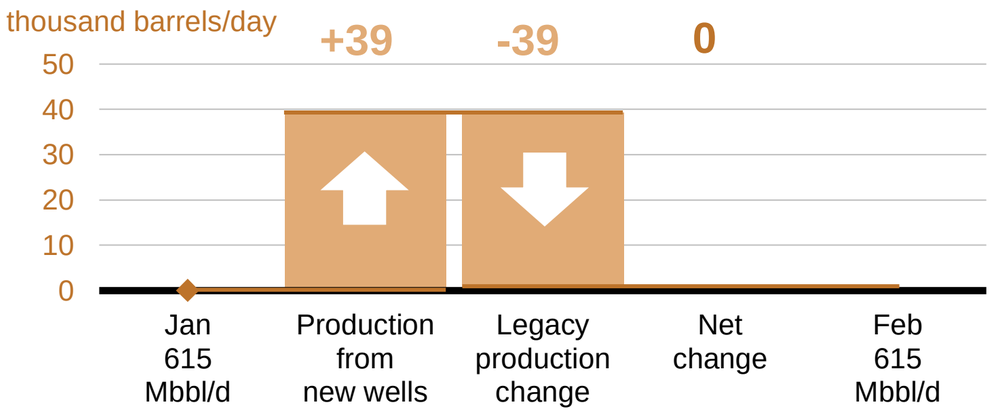
Niobrara Region
Legacy oil production change



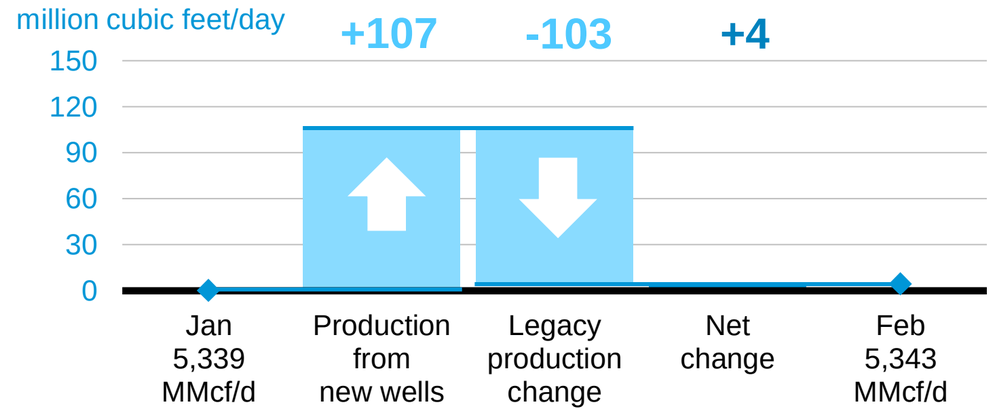
Niobrara Region
Legacy gas production change



Niobrara Region
Indicated change in oil production (Feb vs. Jan)

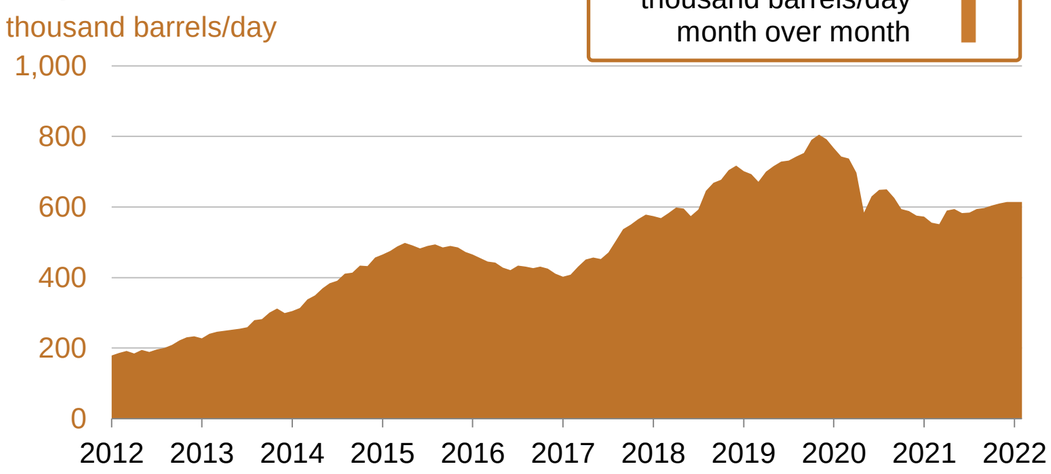


Niobrara Region
Indicated change in natural gas production (Feb vs. Jan)



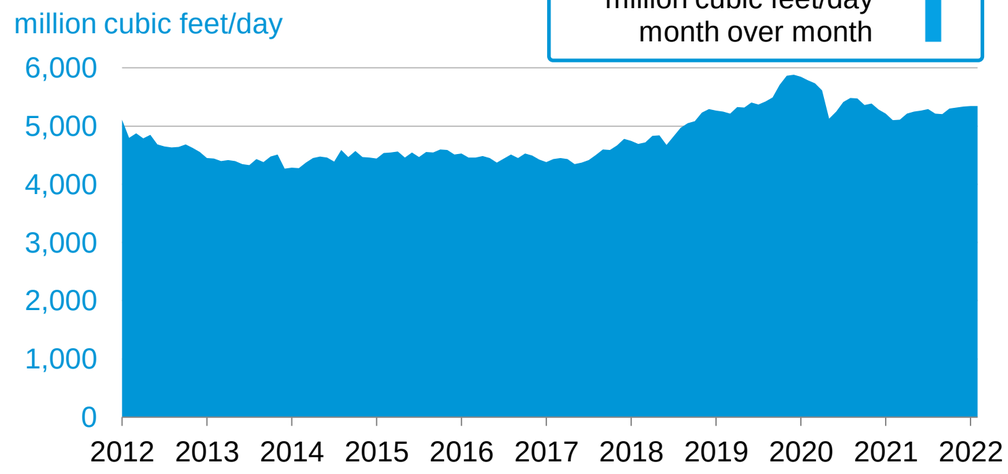
Niobrara Region
Oil production

Oil 0 thousand barrels/day month over month



Niobrara Region
Natural gas production

Gas +4 million cubic feet/day month over month



Permian Region

Drilling Productivity Report

January 2022

drilling data through December
projected production through February

Oil
-15
barrels/day
month over month

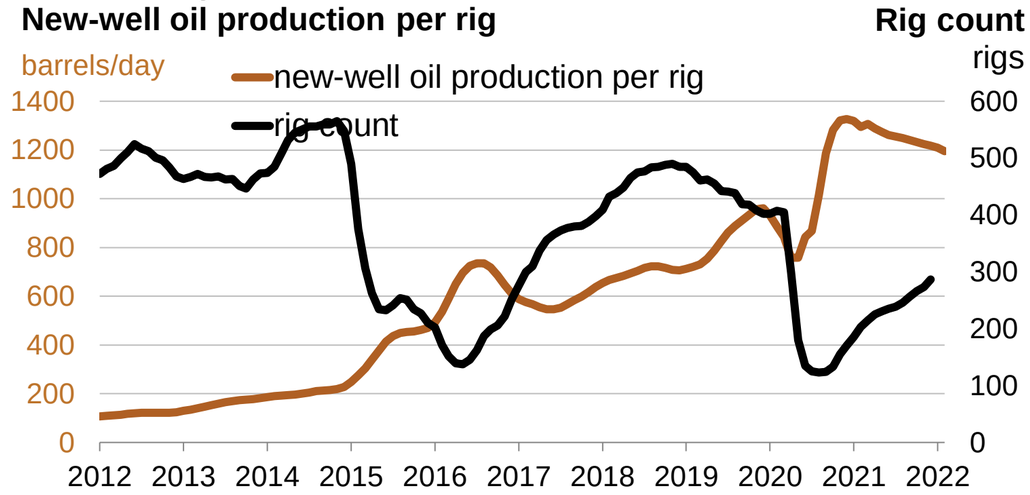
1,195 *February*
1,210 *January*
barrels/day

Monthly additions from one average rig

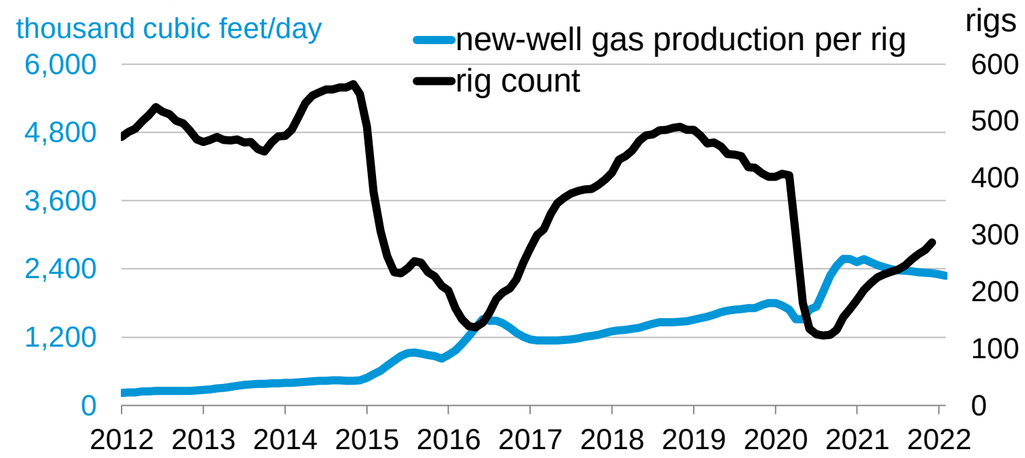
February **2,281**
January **2,309**
thousand cubic feet/day

Gas
-28
thousand cubic feet/day
month over month

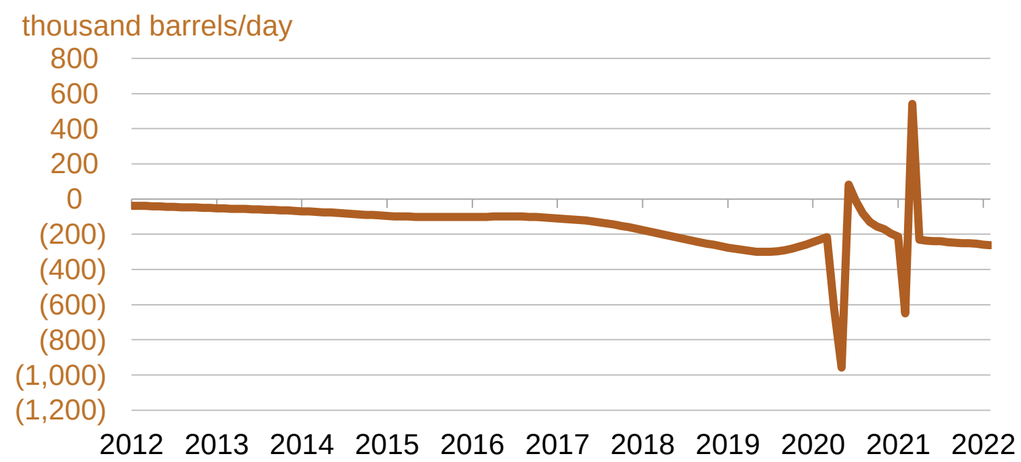
Permian Region
New-well oil production per rig



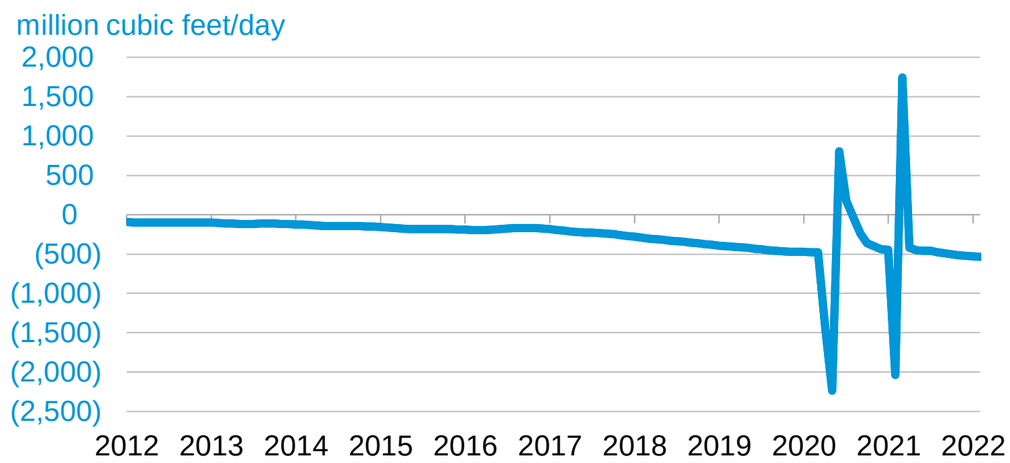
Permian Region
New-well gas production per rig



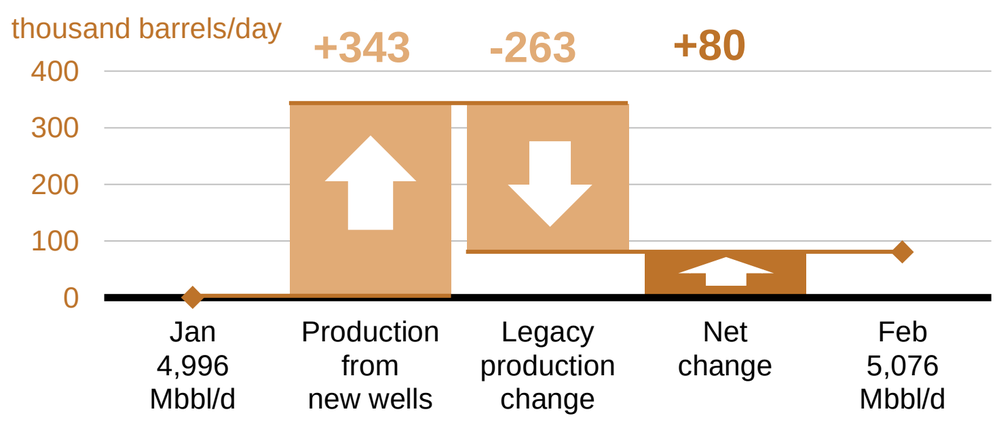
Permian Region
Legacy oil production change



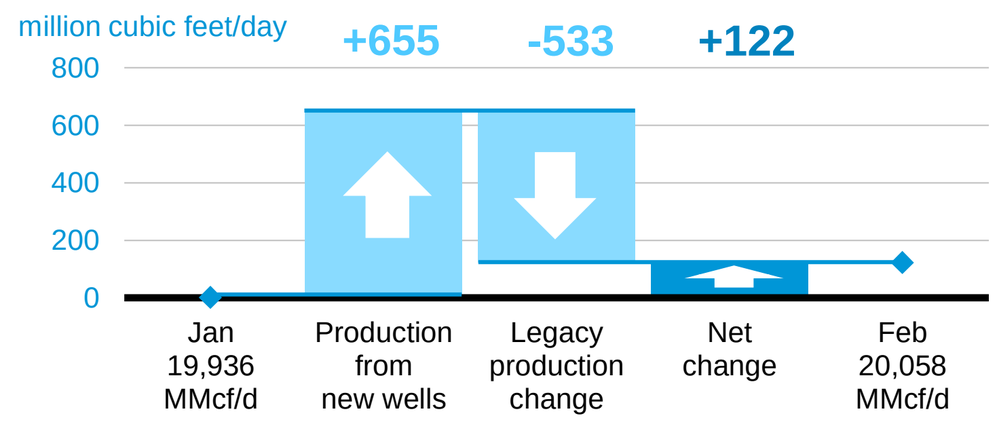
Permian Region
Legacy gas production change



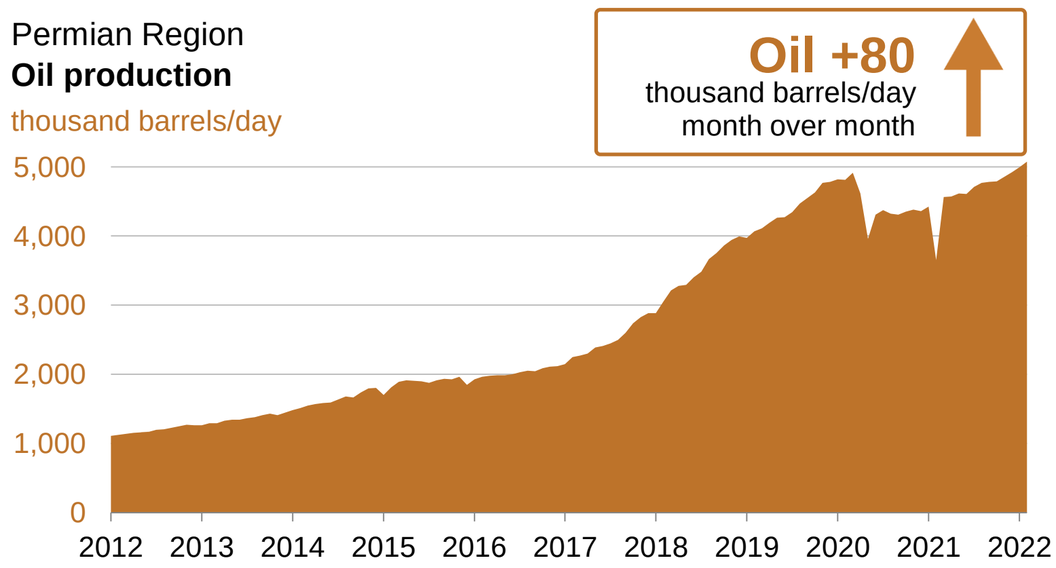
Permian Region
Indicated change in oil production (Feb vs. Jan)



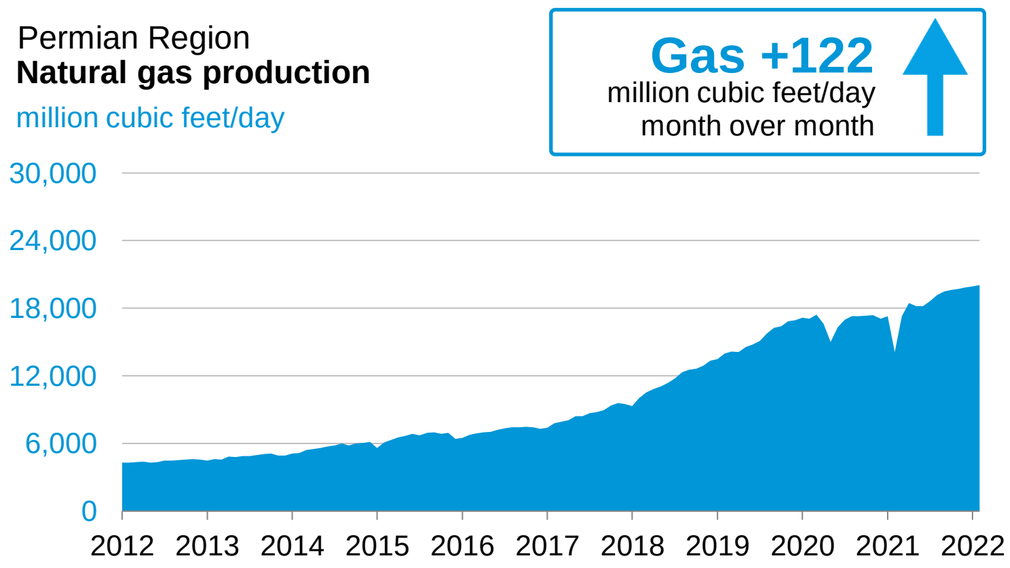
Permian Region
Indicated change in natural gas production (Feb vs. Jan)



Permian Region
Oil production



Permian Region
Natural gas production



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