Independent Statistics & Analysis
U.S. Energy Information Administration

EIA Estimates of Drilled but Uncompleted Wells (DUCs)

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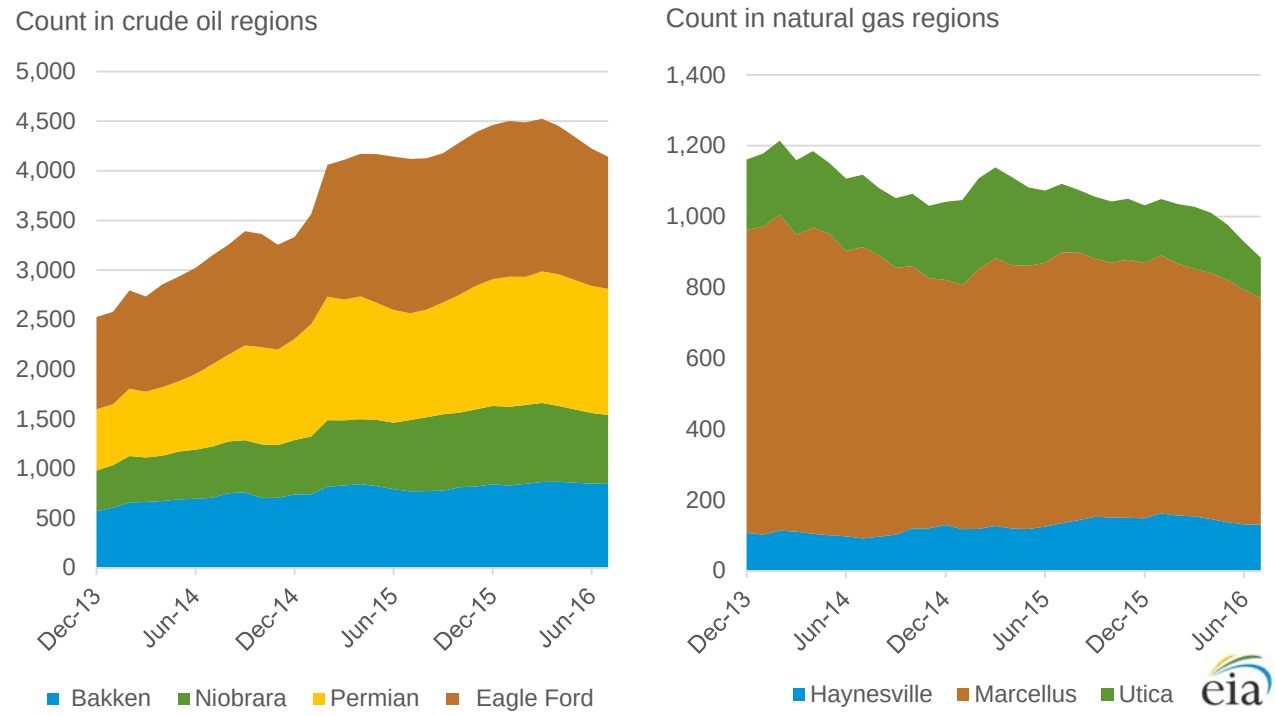
A DPR Supplement

Starting this month, EIA's monthly Drilling Productivity Report (DPR) includes a supplement that provides monthly estimates of the number of drilled but uncompleted wells (DUCs) in the 7 DPR regions. Estimates will be provided up to the month prior to the month in which the DPR is issued. Thus, the September DPR will include DUCs estimates through August.

Current EIA estimates show DUC counts as of the end of August totaling 4,117 in the 4 oil-dominant regions and 914 in the 3 gas-dominant regions that together account for nearly all U.S. tight oil and shale gas production. In the oil regions, the estimated DUC count increased during 2014-15, but declined by about 400 over the last five months. The DUC count in the gas regions has generally been in decline since December 2013

Figure 1. DUCs in crude oil and natural gas regions



Source: U.S. Energy Information Administration

Motivation for tracking DUCs

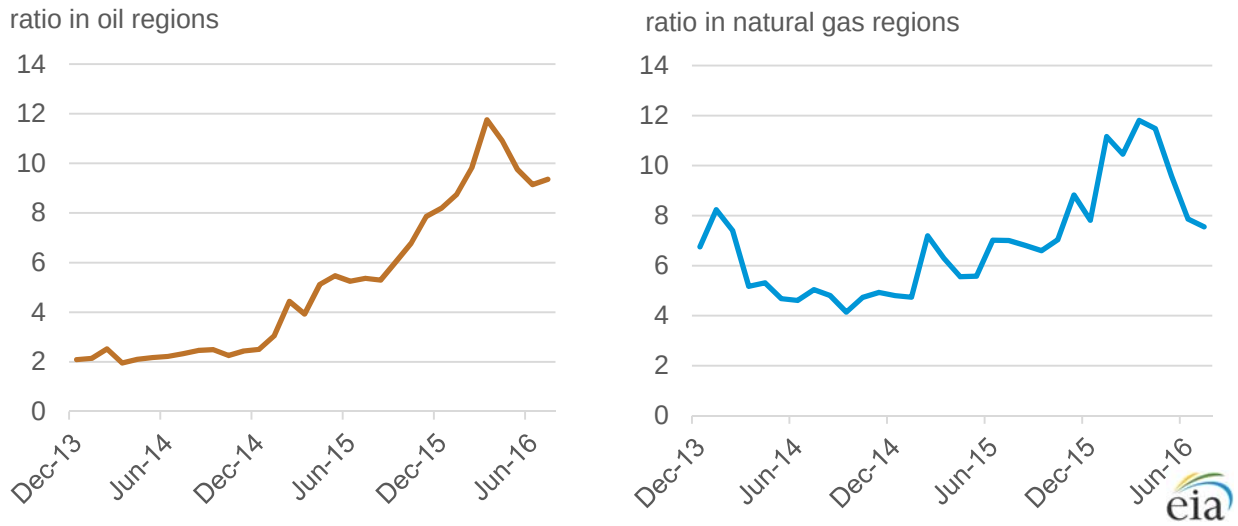
When producers are under economic duress, as has been the case following the large decline in oil prices since mid-2014 that triggered a significant slowdown in drilling and completion activity, the number of DUCs can provide useful insight into upstream industry conditions.

A high inventory of DUCs also has potential implications for the size and timing of the domestic supply response to a persistent or significant rise in oil prices with or without significant changes in the number of active drilling rigs.

While both drilling and completion activity has declined since late 2014, the completions have experienced a deeper decline than drilling causing the growing inventory of DUCs in the 4 DPR oil regions (Bakken, Niobrara, Permian, and Eagle Ford) that account for nearly all U.S. shale/tight oil production. The differential reduction in drilling and completion rates in these oil regions may be attributed to several factors, including long-term contracts for drilling rigs and lease contracts that mandate drilling and/or producing in order to fulfill commitments made to the landowners and mineral-right owners. The situation appears to be somewhat different in the other 3 DPR regions (Marcellus, Utica, and Haynesville) where the production mix skews heavily towards natural gas. A significant natural gas price-decline began as early as 2012.

Given requirements for planning and scheduling completion jobs, there will always be some DUCs. Prior to the decline in drilling activity and increases in the estimated number of DUCs in oil-dominant plays at the end of 2014, the ratio of DUCs to completions (D/C Ratio) was around 2:1 for oil regions and slightly over 4:1 for gas regions. These ratios could serve as long-term benchmarks to represent a level of DUCs representing a normal level of work in progress during periods when oil and gas producers are operating in a price environment that supports steady or growing production

Figure 2. DUC to completion ratios

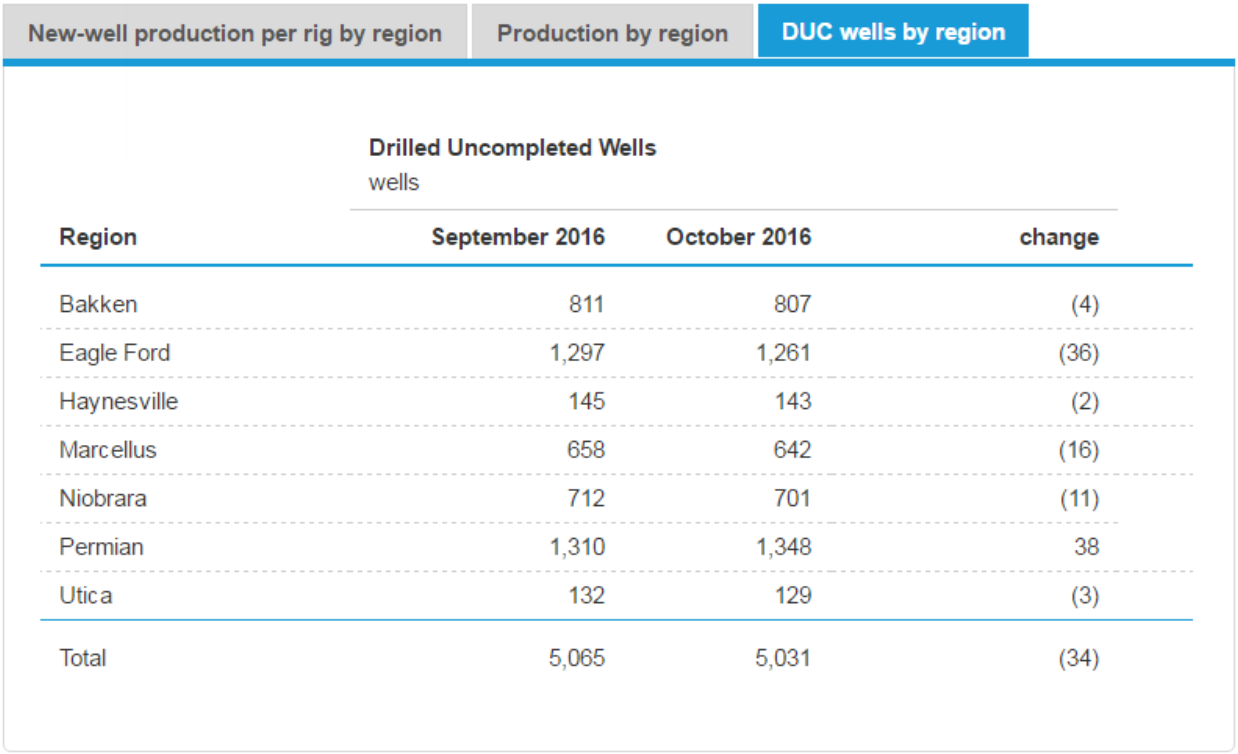


Source: U.S. Energy Information Administration

While data on DUCs may provide useful insights in times of stress, EIA will reevaluate the need for continued publication of DUCs estimates as a supplement to the DPR should the D/C ratio and other indicators suggest the absence of stress for a sustained period.

Reports and estimates

A tab with a summary on DUCs by DPR region now appears on the main DPR website at http://www.eia.gov/petroleum/drilling/.



Drilled Uncompleted Wells
wells

Region	September 2016	October 2016	change
Bakken	811	807	(4)
Eagle Ford	1,297	1,261	(36)
Haynesville	145	143	(2)
Marcellus	658	642	(16)
Niobrara	712	701	(11)
Permian	1,310	1,348	38
Utica	132	129	(3)
Total	5,065	5,031	(34)

The DPR webpage now also includes a link to an Excel file with monthly DUC estimates from December 2013 to the present for each DPR region.

EIA also recognizes that estimates of the number of DUCs are already available from several sources. However, estimates for particular regions often vary significantly across sources because of insufficient data and differences in methodology and operational assumptions. EIA develops its estimates of DUCs for all 7 DPR regions using a consistent methodology and uniform assumptions. However, we recognize that other analysts could have reasons for making other choices, and we invite constructive feedback regarding our estimates.

Definitions and methodology for EIA DUCs estimates

Definitions:

- A drilled but uncompleted well (DUC) is a new well after the end of the drilling process, but its first completion process has not been concluded.
- For the purpose of EIA's estimates, the end of the drilling process is estimated to be 20 days after drilling has commenced. The end of the first completion process is marked after the well is fracked for the first time.

Methodology

- Considering the availability and the quality of the data, EIA chose December 2013 as the starting month for our rolling estimates. All the new wells that existed on the last day of December 2013 that have been completed and have initiated production in 2014 or later are counted as December 2013 DUCs. EIA recognizes that there will be wells that will never be completed or reported, but such wells are excluded from our count. Wells drilled in or before December 2013 that will be completed in the future will be added to that number of DUCs in the December 2013 count.
- The inventory of DUCs starting from December 2013 is updated using information about monthly completions and drilling activity.
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      The number of wells drilled monthly in each DPR region is assessed using a combination of Baker Hughes rig counts and rig productivity factors (wells per rig-month) derived from Drilling Info and Baker Hughes data. The rig productivity factors are calibrated monthly to reflect the most recent data available.
    - Monthly completion activity is assessed by accessing the FracFocus.org database for all wells that were completed after December 2013. To eliminate recompletions from our count, wells fracked multiple times are only counted once. Because the hydraulic fracturing data is reported to FracFocus.org with a lag, estimates of well completions for recent months are based on weekly FracFocus.org filings and may be updated over the course of several months.
- EIA's reporting aims to provide estimates of DUCs that are both consistent and useful as an indicator of broad trends. However, the methodology used may not account for all the wells that some might consider to belong in this category. For example, EIA's DUCs estimate does not include conventional wells that do not require hydraulic stimulation.