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Base production in North Dakota has fully recovered after a significant reduction

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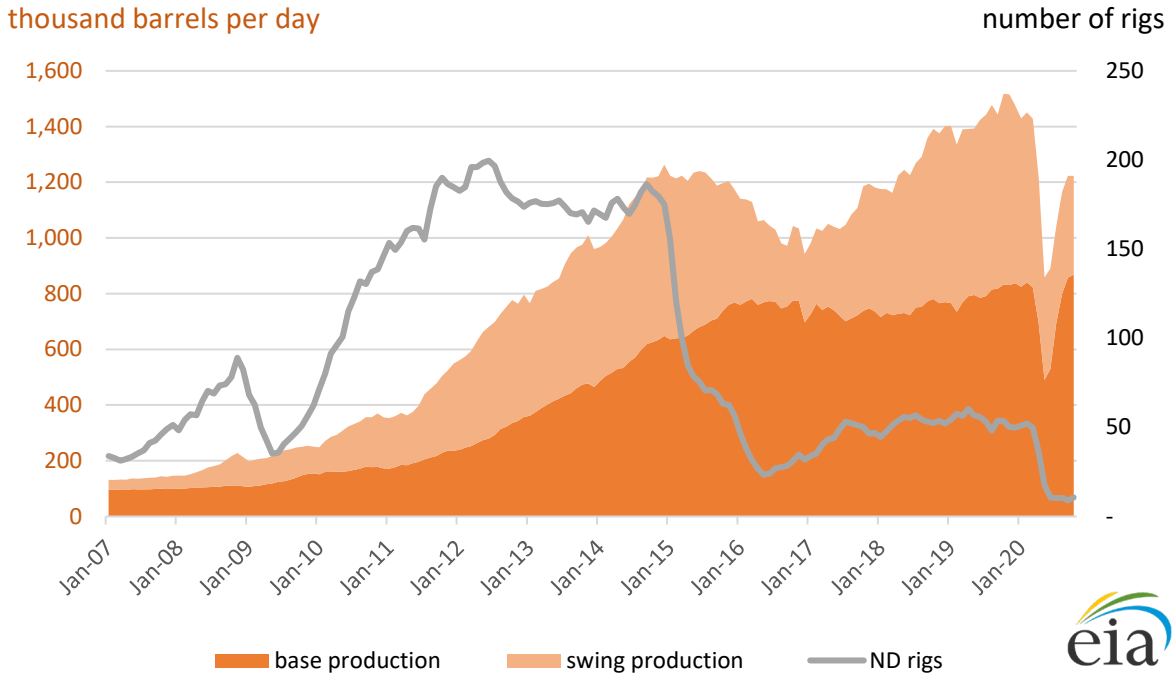
Base production in North Dakota has fully recovered after a significant reduction

Falling crude oil demand and prices, in response to the COVID-19 pandemic, caused rig counts and drilling activity in North Dakota to decline sharply in 2020. Furthermore, producers delayed deliveries of new wells and shut in or curtailed already producing wells, reducing May 2020 oil production in North Dakota by more than 40% from the peak month of October 2019, as Figure 1 illustrates.

After June 2020, crude oil production in North Dakota has been recovering, but it is still about 20% lower than the historical high in October 2019. Although the base production (production from wells more than one year old) has fully recovered, the swing production (production from wells less than a year old) has not because a lower rate of new well completions has resulted in fewer new wells.

Figure 1. North Dakota oil production and rig activity through October 2020



Note: EIA categorized crude oil production into two groups: base production from wells more than one year old and swing production from wells less than one year old.

Source: North Dakota Oil & Gas Division; Baker Hughes; U.S. Energy Information Administration (EIA), *Drilling Productivity Report* (DPR), January 2021

Both base and swing production recorded significant reductions in the second quarter of 2020. As analyzed in the March 2020 *Drilling Productivity Report* Supplement, base production was relatively immune to market conditions in the past. For example, it remained almost unchanged in 2015 and 2016 when the rig count collapsed by more than 80%. In contrast, swing production is more sensitive to market conditions. During years past, including 2020, producers reduced swing production by drilling and completing fewer new wells and by curtailing output at some very productive existing newer wells.

Table 1 illustrates the number of wells producing for at least one day per month. Well counts are divided into wells less than one year old and wells more than one year old. Additionally, Table 1 shows monthly base and swing production levels.

Table 1. Production and producing well count by age in North Dakota in 2020

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Total production (Mb/d)	1,430	1,451	1,428	1,219	858	890	1,040	1,164	1,222	1,223
Swing production (Mb/d)	605	611	605	524	368	360	347	366	364	355
Base production (Mb/d)	825	840	823	695	490	530	693	798	858	868
Less than one-year-old wells (number of wells)	1,195	1,234	1,281	1,162	917	860	807	806	755	685
More than one-year-old wells (number of wells)	14,819	14,915	14,999	14,312	11,907	12,328	13,609	14,343	14,634	14,827

Source: North Dakota Oil & Gas Division; U.S. Energy Information Administration, *Drilling Productivity Report* (DPR), January 2021

From March 2020 to May 2020, more than 3,000 wells in North Dakota were shut in for an entire month or longer. With 19% of wells shut-in, the base and total production decreased 41% from the peak production month in October 2019. The swing production, which also peaked in October 2019, declined 46% in May 2020. Swing production has remained around May levels through October 2020. By October 2020, most of the shut-in wells older than one year returned to production, and the base production fully recovered, resulting in new highs in September and October.

While drilling productivity continues to improve, as DPR data shows, the rig count activity suggests that new-well deliveries did not fully recover in 2020. The swing production, with relatively low new-well deliveries, will remain low until new-well completions return to higher levels.

EIA estimates that North Dakota produced about 11% of U.S. crude oil production and about 97% of Bakken production in November 2020.