Natural Gas Production Report

Q2

April to June 2021

This report uses data reported to the Pennsylvania Department of Environmental Protection (DEP) by natural gas operators to develop statewide tabulations of production volume and well counts. These data are presented on a quarterly basis to show recent trends in natural gas activity in the Commonwealth. Production and well count data pertain only to gas produced from unconventional sources (e.g., shale). The production and well count data throughout this report focus on horizontal wells, which comprise over 99% of unconventional production in Pennsylvania. The report also provides (1) state production comparisons from the U.S. Energy Information Administration (EIA) and (2) recent regional price trends from Bentek Energy.

Production Volume and New Wells Spud

Recent data from DEP show that natural gas production volume from horizontal wells was 1,851 billion cubic feet (bcf) in the second quarter of 2021 (see **Table 1**). This output represents an increase of 7.8% from the second quarter of 2020, the strongest year-over-year growth for a quarter in nearly two years. The second quarter growth was largely driven by June production, which grew by 10.0% from June 2020. Year-over-year growth in quarterly production has now accelerated notably through the first half of 2021.

There were 120 new horizontal wells spud in the second quarter of 2021. This figure represents an increase of seven wells (6.2%) from the same period in the prior year. The second quarter of 2020 includes the first impacts of COVID-19 on natural gas production and drilling. This results in the year-over-year drilling increase for 2021 Q2, despite the reduction from 2021 Q1.

Table 1: Production Volume and New Wells Spud

	2020				2021	
	Q1	Q2	Q3	Q4	Q1	Q2
Production	1,767	1,718	1,765	1,827	1,863	1,851
Growth Rate	6.8%	3.3%	2.9%	3.0%	5.4%	7.8%
New Wells Spud	153	113	111	99	133	120
Growth Rate	-22.7%	-31.1%	-17.8%	-15.4%	-13.1%	6.2%

Note: Growth rates are year-over-year. Production in billion cubic feet. All data exclude vertical wells, which account for less than one percent of production.

Figure 1 displays the year-over-year growth rates of horizontal well production over the last 16 quarters. Quarterly growth fell to the lowest rate on record in the second quarter of 2020 and stagnated through the remainder of the year. Through the first two quarters of 2021, quarterly production growth accelerated to rates similar to those just prior to the pandemic.

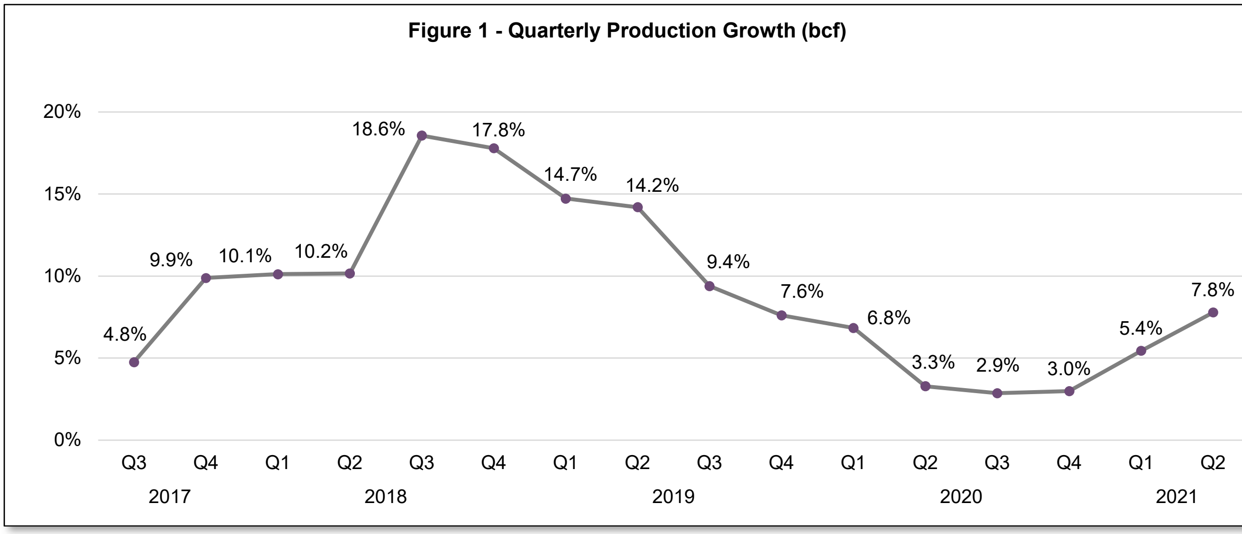
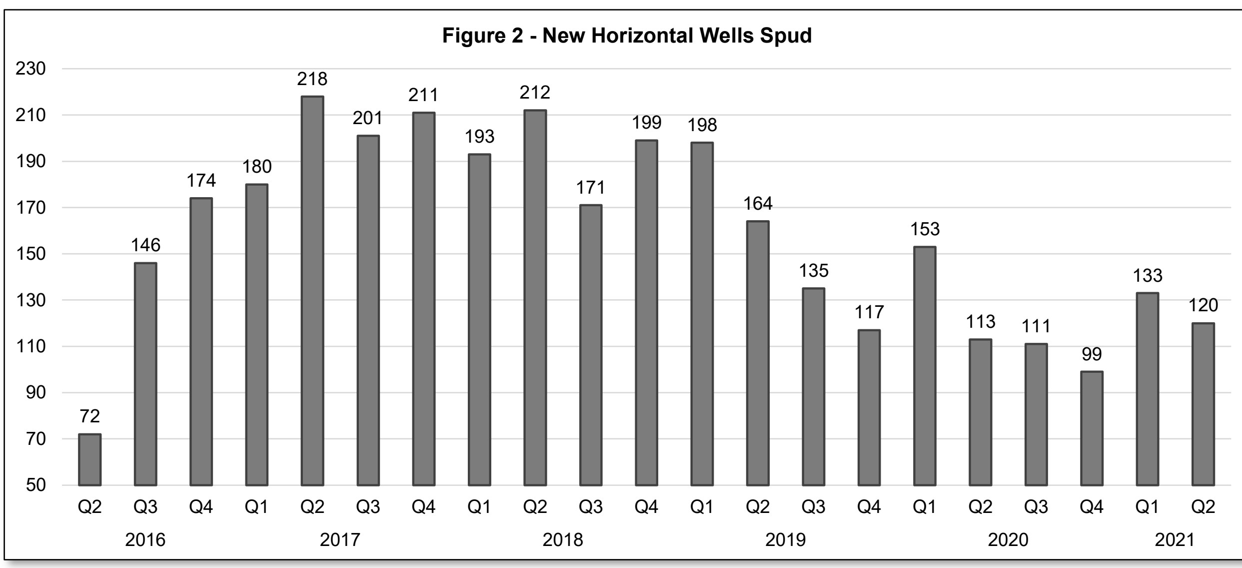


Figure 2 shows the quarterly number of new horizontal wells spud since the second quarter of 2016. After a notable quarter-to-quarter uptick in 2021 Q1, new wells spud in the second quarter reverted to a level similar to the spring and fall of 2020. Preliminary third quarter data show that wells spud in July and August are up 15% from the same period in 2020.



Well Count Trends

Table 2 displays the number of producing wells over the last six quarters. There were 10,569 total producing wells in the second quarter of 2021, an increase of 4.9% from the prior year. Horizontal producing wells, which account for over 99% of production, recorded an annual increase of 5.4%. Decelerating growth in producing wells is due to less drilling activity and older wells being shut in or plugged.

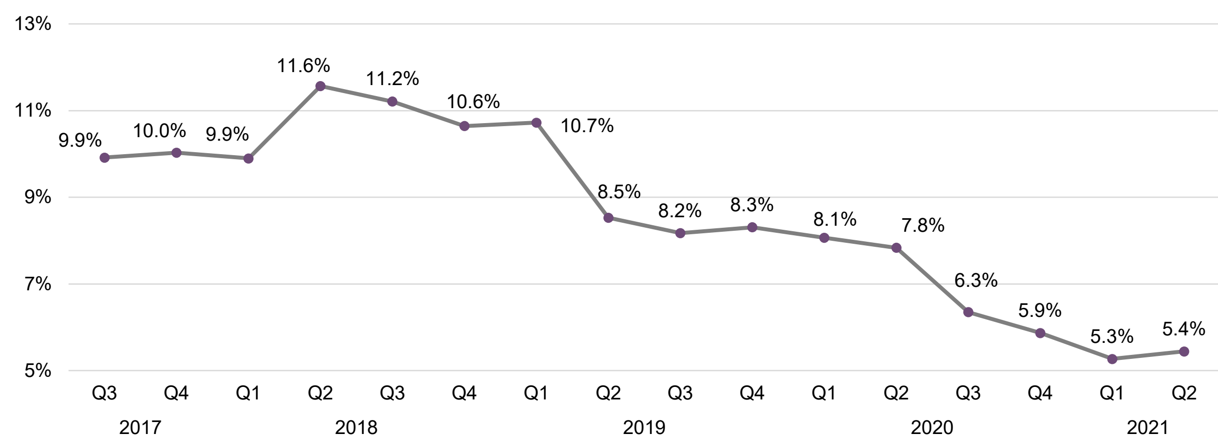
Table 2: Quarterly Producing Well Count

	2020				2021	
	Q1	Q2	Q3	Q4	Q1	Q2
Horizontal	9,473	9,593	9,700	9,868	9,972	10,115
Growth Rate	8.1%	7.8%	6.3%	5.9%	5.3%	5.4%
Total	9,950	10,072	10,168	10,333	10,438	10,569
Growth Rate	7.6%	7.4%	5.9%	5.6%	4.9%	4.9%

Note: Growth rates are year-over-year. Vertical wells are not shown separately, as they account for less than one percent of production.

Figure 3 shows the year-over-year growth in the number of horizontal producing wells over the last 16 quarters. Recent growth in producing wells dropped to its lowest rate on record. Without a significant uptick in new wells spud, producing well growth will likely continue to decelerate or stagnate.

Figure 3 - Annual Growth in Producing Well Counts by Quarter



County and State Comparison

Table 3 shows county-level production volume and producing wells through the second quarter of 2020 and 2021. Ranked in order of production, the table shows (1) the top five counties, (2) the next five counties combined into one group and (3) the remaining counties as another group. The top five counties accounted for 75.6% of production and 67.5% of producing wells statewide. The top producing county, Susquehanna, recorded a year-over-year decline in production. The combined growth in Washington, Bradford, Lycoming and Wyoming counties represented over 100% of the statewide increase, as most other counties recorded only a modest increase or a decline in quarterly production.

Table 3: County Production Comparison

		Production Volume				Producing Wells			
		Year-to-date		2021 Metrics		Year-to-date		2021 Metrics	
Rank	County	2020	2021	Share	Growth	2020	2021	Share	Growth
1	Susquehanna	806	791	21.3%	-1.8%	1,545	1,644	16.1%	6.4%
2	Washington	571	675	18.2%	18.2%	1,640	1,785	17.5%	8.8%
3	Bradford	452	551	14.6%	22.0%	1,291	1,368	11.6%	6.0%
4	Greene	529	541	14.8%	2.2%	1,141	1,180	13.4%	3.4%
5	Lycoming	215	249	6.7%	15.4%	865	901	8.8%	4.2%
6-10	Next 5 Counties	630	620	16.7%	-1.6%	1,762	1,837	18.0%	4.3%
	All Other	280	287	7.7%	2.3%	1,416	1,473	14.5%	4.0%

Note: Horizontal wells only. Production in billion cubic feet. Next 5 Counties includes Wyoming, Tioga, Butler, Allegheny and Sullivan Counties.

Table 4 provides a state comparison of gross natural gas production from all well types. Ranked in order of production, the table shows (1) the top five states, (2) the next five states combined into one group and (3) the remaining states combined into one group. Through May 2021, Pennsylvania production recorded the strongest year-over-year growth of any top-five state. Pennsylvania production also comprised 18.7% of nationwide production through May, which would be the state's highest share on record for a full year.

Table 4: State Production Comparison

		Production Volume			Annual Growth Rate		
Rank	State	CY 2019	CY 2020	CY 2021	CY 2019	CY 2020	CY 2021
1	Texas	10,355	10,291	4,118	13.7%	-0.6%	-6.1%
2	Pennsylvania	6,897	7,290	3,150	10.1%	5.7%	4.9%
3	Alaska	3,250	3,429	1,496	-0.1%	5.5%	2.8%
4	Louisiana	3,230	3,189	1,334	13.7%	-1.3%	-0.2%
5	Oklahoma	3,175	2,786	1,041	10.4%	-12.2%	-14.5%
6-10	Next 5 States	10,204	10,439	4,312	9.8%	2.3%	0.1%
	All Other	3,781	3,265	1,350	2.4%	-13.6%	-7.7%

Source: U.S. Energy Information Administration. Production does not directly correspond to DEP data. Includes all production sources and well types. Production and growth rates for CY 2021 are through May. Production in billion cubic feet. Next 5 States includes Ohio, Colorado, West Virginia, Wyoming and New Mexico.

Price Trends

Table 5 displays recent trends in natural gas spot prices at the Henry Hub and an average price for two major Pennsylvania hubs. These data show that the Henry Hub price increased by 74.7% from the same period in 2020 and the average Pennsylvania price increased by 52.2%. These prices did fall notably from the first quarter of this year, as the first quarter prices were pushed up by nationwide freezing temperatures. Preliminary data for July and August show that summer demand has pushed prices even higher for the third quarter.

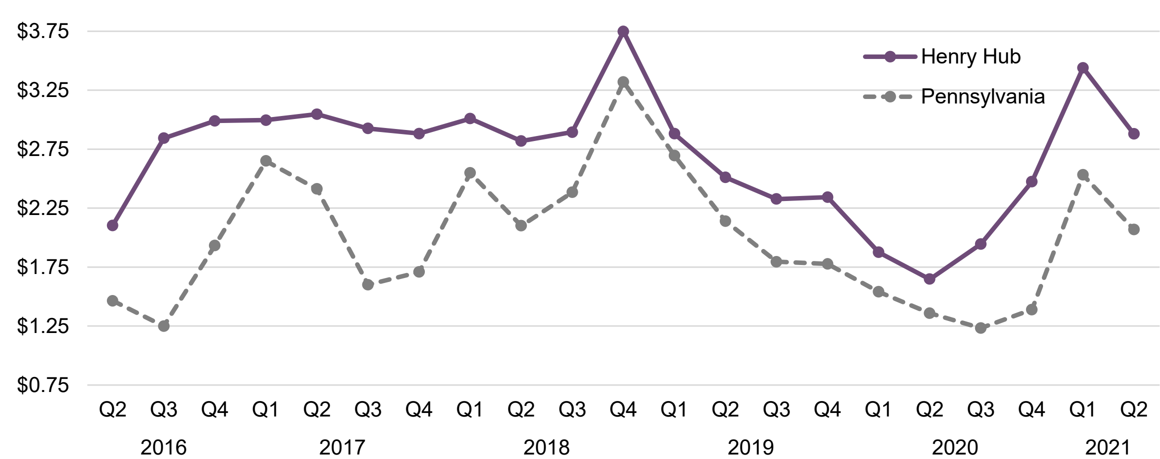
Table 5: Regional Spot Price Trends

	2020				2021	
	Q1	Q2	Q3	Q4	Q1	Q2
Henry Hub	$1.88	$1.65	$1.95	$2.47	$3.44	$2.88
Growth Rate	-34.9%	-34.4%	-16.4%	5.6%	83.4%	74.7%
PA Average	$1.54	$1.36	$1.23	$1.39	$2.53	$2.07
Growth Rate	-42.9%	-36.5%	-31.3%	-21.8%	64.4%	52.2%

Source: Bentek Energy. Prices in $/MMBtu. The PA Average is a weighted average of the Dominion South and Transco Leidy trading hubs. The Henry Hub is located in Louisiana. Growth rates are year-over-year.

Figure 4 displays trends in the same prices over the last 21 quarters. The figure shows the precipitous decline in both national and regional prices from late 2018 to mid-2020. Since then, both prices have increased to their highest levels in several years due to strong demand and limited production.

Figure 4 - Regional Spot Price Trends ($/MMBtu)



Staff Acknowledgements

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