Natural Gas Production Report

April to June 2022

Q2

This report uses data reported to the Pennsylvania Department of Environmental Protection (DEP) by natural gas operators to compute statewide totals for 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 volume and well count data pertain only to gas produced from unconventional sources (e.g., shale) and data used by this report focus on horizontal wells, which comprise over 99% of total production in Pennsylvania. The report also includes (1) county-level production and well count comparisons, (2) state production comparisons from the U.S. Energy Information Administration (EIA) and (3) natural gas hub 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 1,836 billion cubic feet (bcf) in the second quarter of 2022 (see **Table 1**). This output represents a 0.9% decrease from the second quarter of 2021 and marks the first time that production recorded a year-over-year decline in consecutive quarters since quarterly production data became available (2015).

There were 133 new horizontal wells spud in the second quarter of 2022. This figure represents an increase of 13 wells (10.8%) compared to the same period in the prior year. Preliminary data for the third quarter show that the number of wells spud in July and August is up 73.3% from the same period in 2021. The recent uptick in drilling is likely in response to elevated natural gas prices.

Table 1: Production Volume and New Wells Spud

	2021				2022	
	Q1	Q2	Q3	Q4	Q1	Q2
Production Volume	1,863	1,852	1,892	1,956	1,852	1,836
Growth Rate	5.4%	7.8%	7.2%	7.1%	-0.6%	-0.9%
New Wells Spud	133	120	111	154	147	133
Growth Rate	-13.1%	6.2%	0.0%	55.6%	10.5%	10.8%

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 for horizontal well production over the last 16 quarters. Annual growth in quarterly production fell to the lowest rate in the last decade in the second quarter.

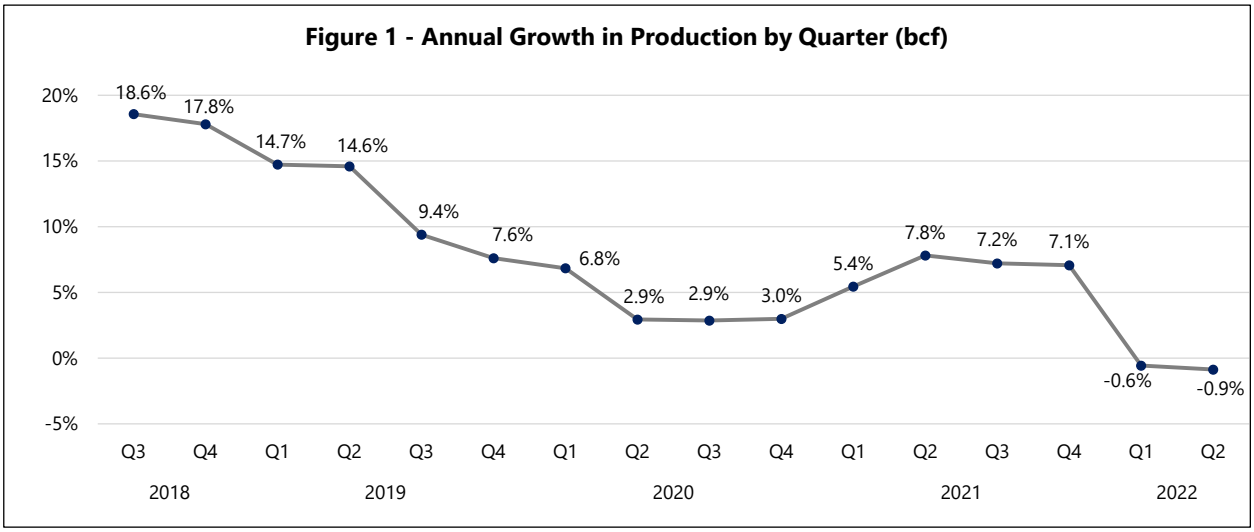
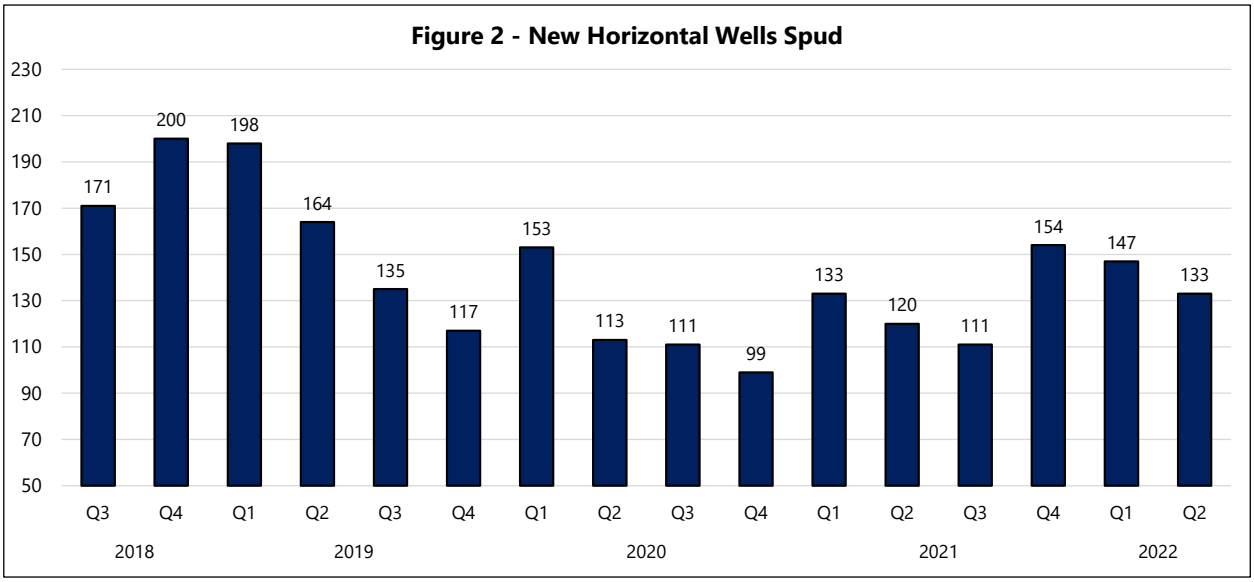


Figure 2 shows the quarterly number of new horizontal wells spud over the last 16 quarters. Although the number of wells spud in the second quarter of 2022 declined from the prior quarter, it increased compared to the same period in the prior year.



Well Count Trends

Table 2 displays the number of producing wells over the last six quarters. There were 11,042 total producing wells in the second quarter of 2022, an increase of 4.4% from the prior year. Horizontal producing wells, which account for over 99% of production, recorded an annual increase of 4.8%.

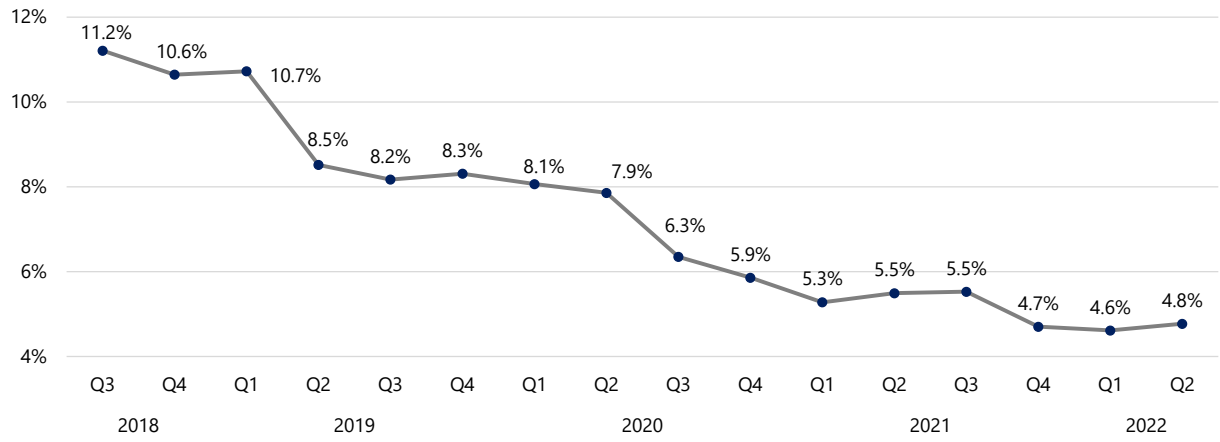
Table 2: Quarterly Producing Well Count

	2021				2022	
	Q1	Q2	Q3	Q4	Q1	Q2
Horizontal	9,973	10,121	10,236	10,331	10,433	10,604
Growth Rate	5.3%	5.5%	5.5%	4.7%	4.6%	4.8%
Total	10,442	10,580	10,682	10,776	10,872	11,042
Growth Rate	4.9%	5.0%	5.1%	4.3%	4.1%	4.4%

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. Growth in producing wells ticked up slightly in the second quarter of 2022 after several years of consistent deceleration. Decelerating or flat growth in producing wells is due to less drilling activity in 2020 and 2021 and older wells that were shut in or plugged. The uptick in drilling in 2022 should lead to stronger growth in producing wells.

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 2022 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 75.7% of production and 67.3% of producing wells statewide. Three of the top five producing counties (Susquehanna, Greene and Lycoming) recorded a year-over-year decline in production volume. Most other counties also recorded a decline in quarterly production volume.

Table 3: County Production Comparison

		Production Volume				Producing Wells			
		Year-to-Date		2022 Metrics		Year-to-Date		2022 Metrics	
Rank	County	2021	2022	Share	Growth	2021	2022	Share	Growth
1	Susquehanna	791	775	21.0%	-2.1%	1,644	1,746	16.4%	6.2%
2	Washington	675	676	18.3%	0.2%	1,785	1,836	17.2%	2.9%
3	Bradford	551	584	15.8%	6.0%	1,368	1,421	13.3%	3.9%
4	Greene	541	538	14.6%	-0.5%	1,180	1,255	11.8%	6.4%
5	Lycoming	249	219	5.9%	-12.1%	901	923	8.6%	2.4%
6-10	Next 5 Counties	613	590	16.0%	-3.8%	1,836	1,927	18.1%	5.0%
	All Other	294	305	8.3%	3.6%	1,477	1,566	14.7%	6.0%

Note: Horizontal wells only. Production in billion cubic feet. Next 5 Counties includes Wyoming, Tioga, Butler, Allegheny and Armstrong 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. These data show that after recording the strongest year-over-year growth among producing states in CY 2021, Pennsylvania is the only major producing state to record negative annual growth in the first five months of CY 2022.

Table 4: State Production Comparison

		Production Volume			Annual Growth Rate		
Rank	State	CY 2020	CY 2021	CY 2022	CY 2020	CY 2021	CY 2022
1	Texas	10,410	10,500	4,575	-0.2%	0.9%	10.7%
2	Pennsylvania	7,148	7,693	3,133	3.6%	7.6%	-0.5%
3	Louisiana	3,212	3,390	1,563	-0.2%	5.5%	16.8%
4	Alaska	3,429	3,486	1,535	5.5%	1.7%	2.6%
5	West Virginia	2,592	2,760	1,167	20.3%	6.5%	2.9%
6-10	Next 5 States	10,522	10,396	4,323	-4.7%	-1.2%	2.3%
	All Other	3,300	3,258	1,312	-12.7%	-1.3%	-3.2%

Source: U.S. Energy Information Administration. Production does not directly correspond to DEP data. Includes all production sources and well types. Production in billion cubic feet. Next 5 States includes Oklahoma, New Mexico, Ohio, Colorado and Wyoming. The growth rate for CY 2022 compares the first five months of the year.

Price Trends

Table 5 displays recent trends in natural gas spot prices for the Henry Hub and an average price for two major Pennsylvania hubs. Data for the second quarter of 2022 show that the Henry Hub price increased by 156.8% from the same period in 2021 and the average Pennsylvania hub price increased by 221.8%. The dramatic increase in prices was due to the combination of weaker-than-usual production growth and demand rebounding from the COVID-19 pandemic. Current forecasts project that prices will remain elevated in the short term due to global supply and demand pressures.

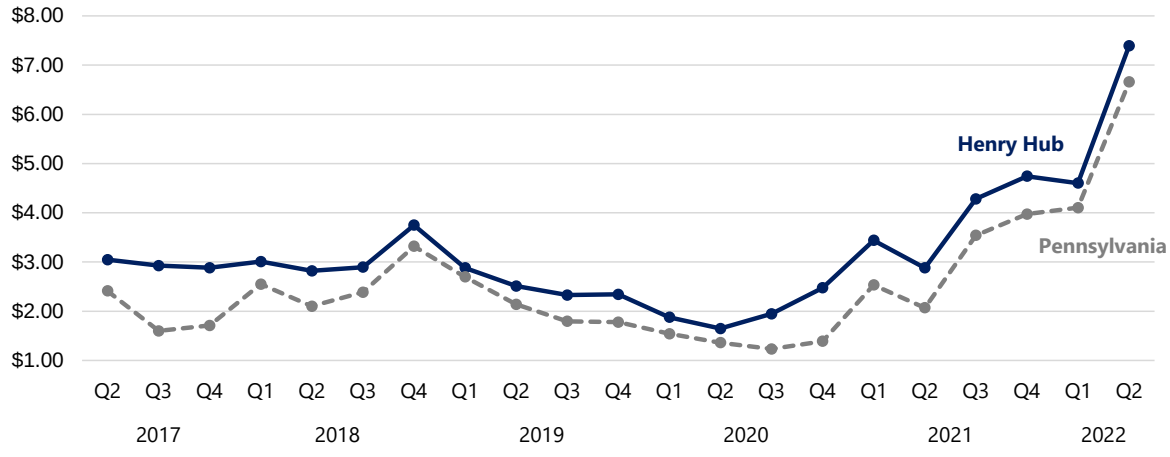
Table 5: Regional Spot Price Trends

	2021				2022	
	Q1	Q2	Q3	Q4	Q1	Q2
Henry Hub	$3.44	$2.88	$4.28	$4.74	$4.60	$7.39
Growth Rate	83.4%	74.7%	120.1%	91.7%	33.8%	156.8%
PA Average	$2.53	$2.07	$3.54	$3.97	$4.10	$6.66
Growth Rate	64.4%	52.2%	187.1%	186.0%	62.1%	221.8%

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 last time the Henry Hub quarterly price exceeded the level from the second quarter was the third quarter of 2008.

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



Staff Acknowledgements

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