Natural Gas Production Report

Q1

January to March 2022

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 used throughout this report focus on horizontal wells, which comprise over 99% of total 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 first quarter of 2022 (see **Table 1**). This output represents a slight decrease (-0.6%) from the first quarter of 2021. Since the prior publication, production growth for the fourth quarter of 2021 was revised up from 6.7% to 7.1%.

There were 136 new horizontal wells spud in the first quarter of 2022. This figure represents an increase of nine wells (7.1%) compared to the same period in the prior year. Preliminary data for the second quarter show that the number of wells spud in April and May is up 18.2% from the same period in 2021.

Table 1: Production Volume and New Wells Spud

	2020	2021				2022
	Q4	Q1	Q2	Q3	Q4	Q1
Production Volume	1,827	1,863	1,852	1,892	1,956	1,851
Growth Rate	3.0%	5.4%	7.8%	7.2%	7.1%	-0.6%
New Wells Spud	99	127	120	111	154	136
Growth Rate	-15.4%	-17.0%	6.2%	0.0%	55.6%	7.1%

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 first quarter of 2022.

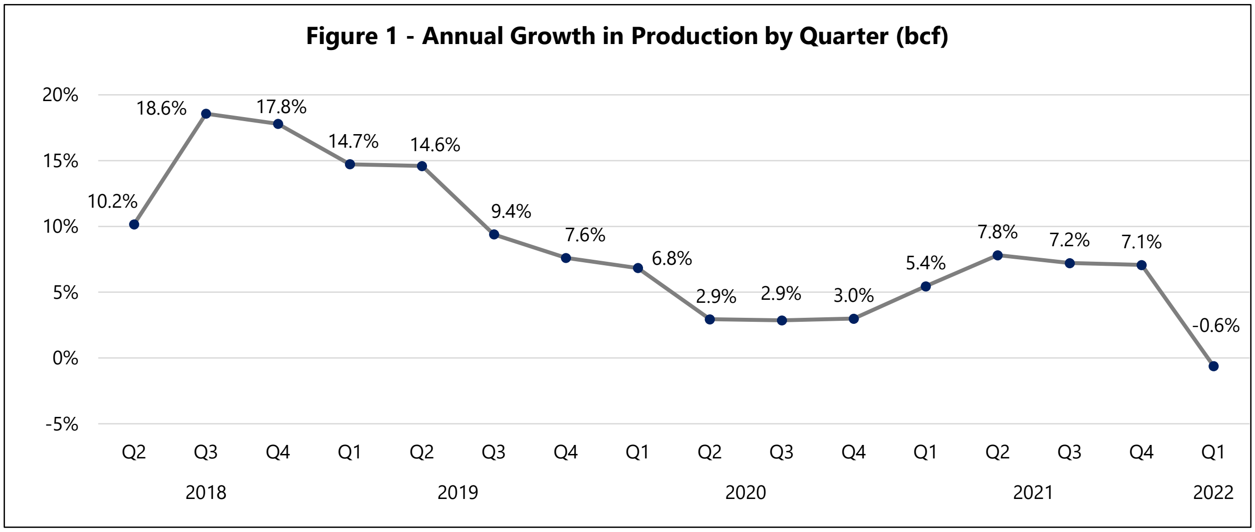
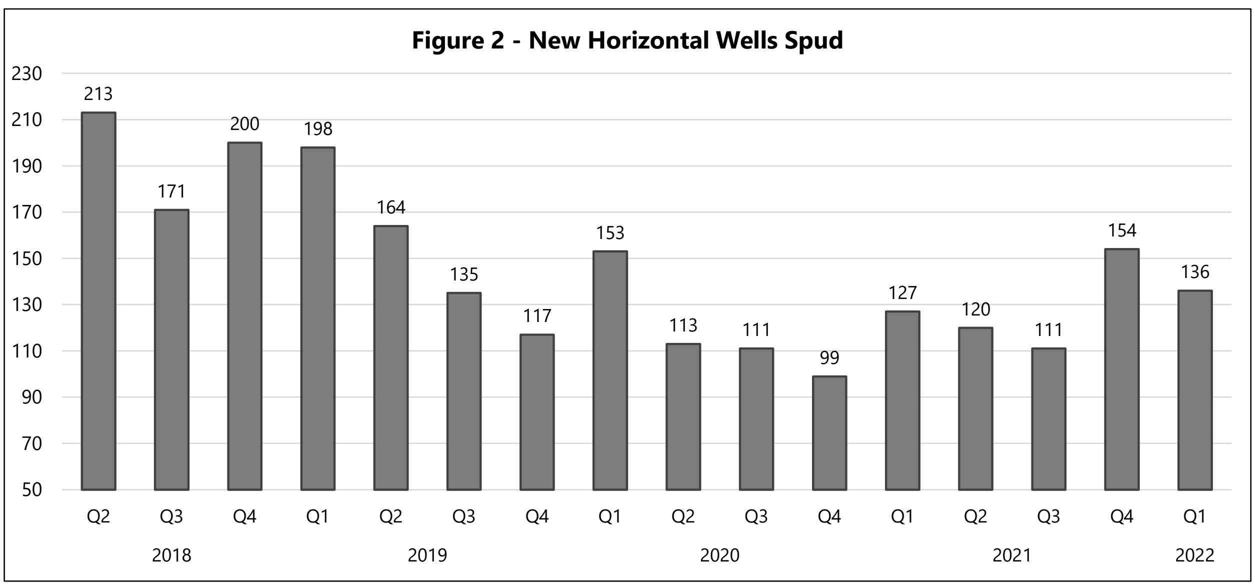


Figure 2 shows the quarterly number of new horizontal wells spud over the last 16 quarters. Although the number of wells spud in the first quarter of 2022 declined from the prior quarter, it increased compared to the same period in the prior year.



Well Count Trends

Table 2 displays the number of producing wells over the last six quarters. There were 10,872 total producing wells in the first quarter of 2022, an increase of 4.1% from the prior year. Horizontal producing wells, which account for over 99% of production, recorded an annual increase of 4.6%. Decelerating growth in producing wells is due to less drilling activity in 2020 and 2021 and older wells that were shut in or plugged.

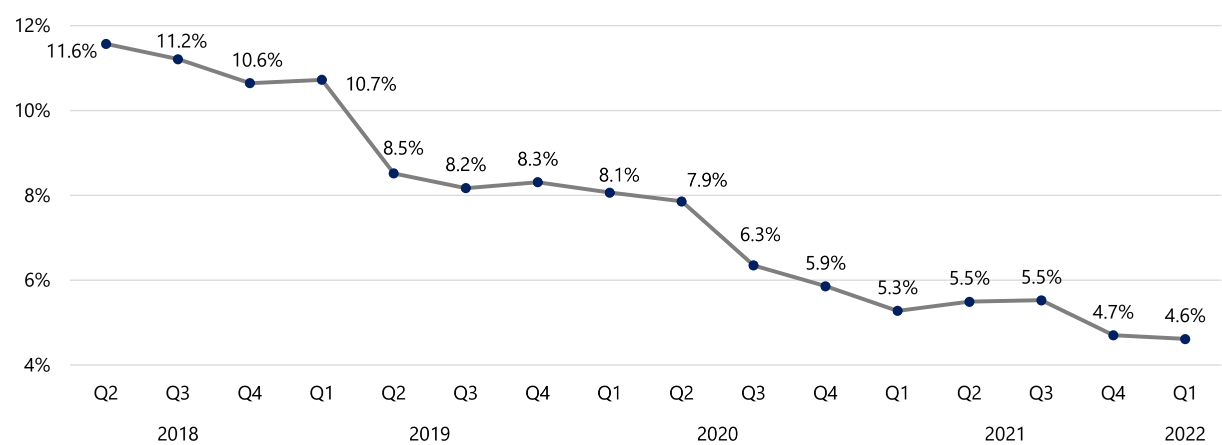
Table 2: Quarterly Producing Well Count

	2020	2021				2022
	Q4	Q1	Q2	Q3	Q4	Q1
Horizontal	9,867	9,973	10,121	10,236	10,331	10,433
Growth Rate	5.9%	5.3%	5.5%	5.5%	4.7%	4.6%
Total	10,332	10,442	10,580	10,682	10,776	10,872
Growth Rate	5.5%	4.9%	5.0%	5.1%	4.3%	4.1%

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 has consistently declined over the last nine quarters and has dropped to its lowest rate in the past decade. 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 for the first quarter of 2021 and 2022. 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 67.4% 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. Only seven counties, with a combined share of 38.9%, recorded year-over-year growth in production volume.

Table 3: County Production Comparison

		Production Volume				Producing Wells			
		First Quarter		2022 Metrics		First Quarter		2022 Metrics	
Rank	County	2021	2022	Share	Growth	2021	2022	Share	Growth
1	Susquehanna	401	387	20.9%	-3.5%	1,607	1,694	16.2%	5.4%
2	Washington	328	338	18.3%	2.9%	1,713	1,797	17.2%	4.9%
3	Bradford	272	298	16.1%	9.7%	1,340	1,413	11.6%	5.4%
4	Greene	284	268	14.5%	-5.6%	1,163	1,214	13.5%	4.4%
5	Lycoming	123	111	6.0%	-10.0%	892	916	8.8%	2.7%
6-10	Next 5 Counties	311	292	15.8%	-6.0%	1,798	1,865	17.9%	3.7%
	All Other	143	157	8.5%	9.3%	1,460	1,534	14.7%	5.1%

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. In CY 2021, Pennsylvania production recorded the strongest year-over-year growth of any top-five state. Pennsylvania's share of nationwide production was 18.5%, an increase of 0.9 percentage points from CY 2020 and its largest share on record.

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	10,433	10,410	10,500	14.5%	-0.2%	0.9%
2	Pennsylvania	6,897	7,148	7,693	10.1%	3.6%	7.6%
3	Louisiana	3,219	3,212	3,390	13.3%	-0.2%	5.5%
4	Alaska	3,250	3,429	3,486	-0.1%	5.5%	1.7%
5	West Virginia	2,155	2,592	2,760	21.6%	20.3%	6.5%
6-10	Next 5 States	11,045	10,522	10,396	6.3%	-4.7%	-1.2%
	All Other	3,782	3,300	3,258	2.5%	-12.7%	-1.3%

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.

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. These data show that the Henry Hub price increased by 33.8% from the same period in 2021 and the average Pennsylvania hub price increased by 62.1%. These prices increased over the same period in 2021 due to the combination of weaker-than-usual production growth and demand rebounding from the COVID-19 pandemic. Current forecasts project that prices will continue to increase due to global supply and demand pressures.

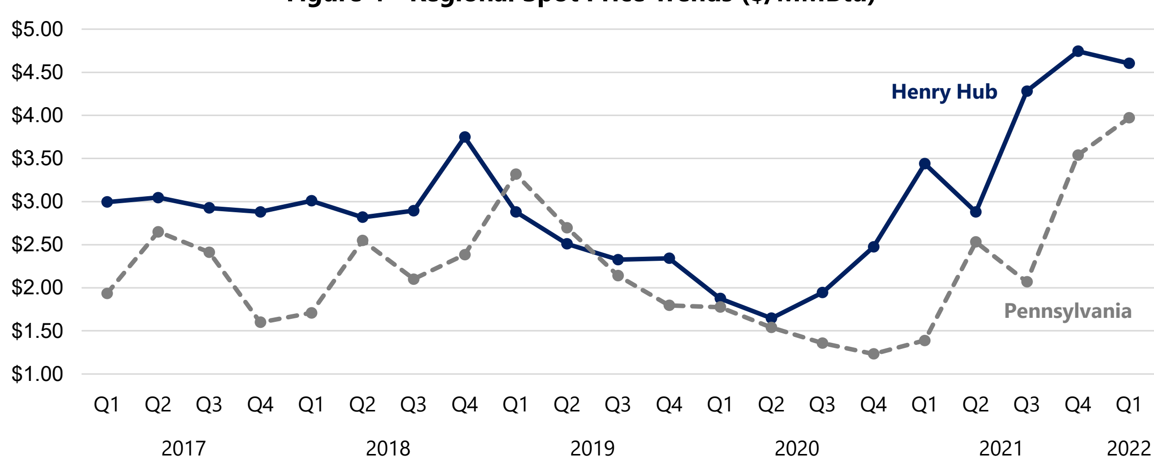
Table 5: Regional Spot Price Trends

	2020	2021				2022
	Q4	Q1	Q2	Q3	Q4	Q1
Henry Hub	$2.47	$3.44	$2.88	$4.28	$4.74	$4.60
Growth Rate	5.6%	83.4%	74.7%	120.1%	91.7%	33.8%
PA Average	$1.39	$2.53	$2.07	$3.54	$3.97	$4.10
Growth Rate	-21.8%	64.4%	52.2%	187.1%	186.0%	62.1%

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 that while national prices decreased slightly compared to 2021 Q4, regional prices increased to their highest levels in the past decade. The price increase is due to strong demand and limited production.

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



Staff Acknowledgements

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