

Impact Fee Update and Outlook



Independent Fiscal Office | June 2021

Pennsylvania imposes an annual impact fee on unconventional (i.e., shale) natural gas wells that were drilled or operating in the previous calendar year.¹ Proceeds from the impact fee are distributed to local governments and state agencies to provide for infrastructure, emergency services, environmental initiatives and various other programs. Local governments receive funds based on the number of wells located within their boundaries or their proximity to jurisdictions where natural gas extraction took place. Distributions for the last four calendar years are shown in **Table 1**.

The annual impact fee for an unconventional natural gas well is determined according to a bracketed schedule, based on the number of years since a well became subject to the impact fee (operating year), the type of well (horizontal or vertical) and, to a limited extent, the price of natural gas. Horizontal wells in operating years four or greater that produce less than 90 Mcf (thousand cubic feet) per day are exempt (stripper wells). Plugged horizontal wells are exempt after remitting the fee in the first year. Vertical wells that produce less than 90 Mcf per day are exempt from the fee in any operating year.

This report (1) analyzes calendar year (CY) 2020 impact fee collections (remitted in April 2021) reported by the Public Utility Commission (PUC), (2) details the number of wells and fee schedule by operating year and (3) discusses two potential scenarios for CY 2021 collections. It also translates the impact fee into an annual average effective tax rate (ETR) based on recent natural gas price and production data. The ETR quantifies the implicit tax burden imposed by the impact fee in a given year.

Table 1: Impact Fee Revenue and Distributions

	2017	2018	2019	2020
Total Distributions	\$209,557	\$251,831	\$200,365	\$146,255
Counties, Municipalities and HARE Fund	114,784	140,060	109,180	76,714
Marcellus Legacy Fund	76,523	93,373	72,787	51,143
Commonwealth Agencies	10,500	10,500	10,500	10,500
Conservation Districts/Commission	7,750	7,897	7,897	7,897

Note: Dollar amounts in thousands. Fees are remitted in the following April and distributed in July.

Source: Pennsylvania Public Utility Commission.

2020 Impact Fee Revenues

For CY 2020, the PUC reported impact fee revenues were \$146.3 million, which is \$54.1 million less than the amount collected for the prior year. **Table 2** details the well count, fee schedule and actual collections by operating year. The primary reasons for the decrease in collections are as follows:

- Lower Fee Schedule. The average annual price of natural gas on the New York Mercantile Exchange (NYMEX) for CY 2020 was \$2.08 per MMBtu. Due to the price dropping below \$2.25, the impact fee schedule decreased by \$5,000 per horizontal well compared to CY 2019 levels. Estimated impact: **-\$52.6 million.**
- New and Existing Wells. The net impact of fees from new wells offsetting lost collections from aging wells that pay lower fees. This was the first year in which collections from new wells were not enough to fully offset lost collections from aging wells. Estimated impact: **-\$0.2 million**
- Other. The net impact of (1) late or unpaid fees and (2) wells that enter or exit exempt status. Estimated impact: **-\$1.3 million.**

Table 2: Well Count and Actual Collections for 2020

Operating Year ¹	Wells Subject to Fee		Fee Amount		Collections (\$ millions)
	Horizontal	Vertical	Horizontal	Vertical	
1	475	0	\$40,500	\$8,100	\$19.2
2	617	1	30,400	6,100	18.8
3	752	0	25,400	5,100	19.1
4+	8,710	21	10,200	2,000	88.9
Subtotal	10,554	22			146.0
Prior Years ²	--	--	--	--	0.8
Late/Unpaid ³	-40	--	--	--	-0.5
Total	10,514	22			146.3

Source: Pennsylvania Public Utility Commission.

1 Number of years a well has been subject to the impact fee. Horizontal wells are subject to the fee for the first three years after being spud (unless they are plugged). Year 4+ includes all wells in operating years 4 through 10, which pay the same fee.

2 Payments received for 2020 that should have been paid in a prior year.

3 Payments that were due for 2020 but not received in time for disbursement.

Effective Tax Rate

The impact fee does not directly respond to the price of natural gas or the volume of production, and it does not provide a measure of tax burden relative to natural gas sales. Therefore, this report computes an annual average effective tax rate (ETR) for all wells in operation during the year.² The ETR is equal to annual impact fee revenues divided by the total market value of unconventional natural gas production. The market value is equal to the product of (1) the annual average regional hub price of natural gas net of post-production costs and (2) the total production from all unconventional wells.

The ETR computation for CY 2020 uses these data:

- Annual production of 7.1 trillion cubic feet. This figure is based on statewide well production data published by the Department of Environmental Protection (DEP).
- An annual average hub price of \$1.43 per Mcf, prior to the deduction of post-production costs. This price is a weighted average of spot prices at the Dominion South and Leidy trading hubs, converted to dollars per thousand cubic feet.³
- Post-production costs of \$0.80 per Mcf. This amount reflects costs for gathering, processing and transporting gas to markets. Such costs are deducted to approximate the value of gas at the wellhead, the point at which other states levy severance taxes.⁴

The annual ETR fluctuates based on the movement of its three components: fee revenues, production and price. As shown in **Table 3** (next page), the ETR for CY 2015 rose dramatically due to low prices, which caused a significant decline in market value. From CY 2015 to CY 2018, the ETR declined by over four percentage points as the market value of gas increased by nearly 300%, which outpaced the growth in impact fee collections (34.2%) during the same period. The significant growth in market value was driven by strong growth in prices (198.5%) and production (33.2%) during the time period.

For CY 2019, the ETR was relatively stable, as impact fee collections (-20.4%) and the market value of gas (-18.7%) declined at similar rates. Both declines can be entirely attributed to national and regional prices, as the low NYMEX average price caused a downward adjustment of the fee schedule, and low regional prices reduced the market value of Pennsylvania natural gas.

For CY 2020, the ETR increased by 1.2 percentage points. This was entirely attributable to the substantial year-over-year reduction in market value (-52.4%), which more than offset lower collections (-27.0%). The contraction in market value, which was driven by a 54.2% decline in prices and relatively modest production growth (4.0%), represents the largest such decline since CY 2015.

Table 3: Impact Fee Annual Effective Tax Rates

Calendar Year	Impact Fee Revenues	Unconventional Production (MMcf)	Price of Gas (Mcf) ¹	Market Value ²	Annual ETR
2014	\$223,500	4,069,117	\$2.35	\$9,573,700	2.3%
2015	187,712	4,596,145	0.63	2,905,600	6.4
2016	173,259	5,096,092	0.73	3,726,700	4.7
2017	209,557	5,363,748	1.37	7,350,800	2.9
2018	251,831	6,123,375	1.89	11,553,800	2.2
2019	200,365	6,821,125	1.38	9,398,900	2.1
2020	146,255	7,084,455	0.63	4,474,000	3.3

Note: Impact fee revenues in thousands of dollars. MMcf is million cubic feet. Mcf is thousand cubic feet.

Source: Pennsylvania Public Utility Commission, Department of Environmental Protection, Bentek Energy and the U.S. Energy Information Administration.

¹ Weighted average spot price converted to dollars per Mcf using Pennsylvania heat content, net of post-production costs.

² Market value at the wellhead in thousands of dollars. Does not include natural gas liquids (NGLs).

2021 Outlook

For CY 2021, two factors will have significant implications for impact fee revenues. They include:

- **Statutory fee schedule.** The schedule is based on the average annual price of natural gas on the New York Mercantile Exchange (NYMEX), which is based on the Henry Hub.⁵ This price declined to \$2.08 for CY 2020, the lowest annual average since the fee's inception, causing a fee schedule reduction and a \$52.6 million decrease in revenues. The CY 2021 monthly average price through June is \$2.76, a 50.6% increase from the same period in 2019. Bentek Energy projects that the Henry Hub price will average \$3.07 from July to December. If that projection holds, then the average annual NYMEX price will be \$2.91 and the fee schedule will revert to the higher CY 2019 level.
- **Number of new wells.** DEP spud data show that 223 new horizontal wells were spud from January 1 to June 8, 2021, which is 13 (-5.5%) fewer wells than the prior year. Wells in their first year of operation pay the impact fee at the highest level. (See Table 2.) Revenues from new wells are important to total impact fee collections because they offset the decline in fees received from existing wells as they age. For example, a well in its first operating year for CY 2020 paid a fee of \$40,500 while a well in its second operating year paid \$30,400, or \$10,100 less.

Below are two potential scenarios for CY 2021 impact fee revenues. Each scenario assumes (1) new wells spud are relatively the same as CY 2020, based on the new wells drilled in the first half of the year and (2) that the proportion of existing wells that either stop paying or begin to pay the fee based on exempt status will be the same as previous years. The two scenarios are as follows:

- **Scenario 1** assumes an average NYMEX price between \$2.25 and \$3.00 per MMBtu and the associated increase in the fee schedule. The scenario yields impact fee collections of \$167.7 million, a **\$21.4 million increase** over CY 2020. Based on current and projected prices, this is the more likely scenario.

- Scenario 2 assumes an average NYMEX price that is \$3.00 or more per MMBtu and the associated increase in the fee schedule. The scenario yields impact fee collections of \$220.6 million, a **\$74.3 million increase** over CY 2020. This scenario is less likely but plausible if price recovery outpaces projections as the economy reopens and energy demand continues to recover.

For CY 2021, the projected ETRs are 1.4% for Scenario 1 and 1.8% for Scenario 2. These rates are based on (1) a regional price of \$2.38 per Mcf (prior to deduction of post-production costs), (2) a projected 8.0% increase in production compared to the prior year and (3) the impact fee remittances projected under those scenarios. Either of the projected ETRs would be the lowest estimated rate since the fee's inception, due to a projected 171% increase in the market value of gas produced in CY 2021.

In the long term, future impact fee collections will be affected by prices, energy demand and drilling activity. After being relatively stable for two consecutive years, national and regional prices were suppressed in CY 2019 as sustained production growth outstripped record levels of natural gas demand. Prices declined even further in CY 2020 as the result of reduced demand for natural gas due to a mild winter (January to March 2020) and the COVID-19 pandemic. According to the U.S. Energy Information Administration (EIA), national consumption of natural gas declined by 2.0% in CY 2020, the first annual decline since CY 2009.

These market conditions discouraged new drilling activity and caused a slowdown in production growth. Data for the first quarter of 2021 from DEP show that Pennsylvania production accelerated, growing by 5.4% from the first quarter of CY 2020. DEP data on new wells spud show, however, that drilling has not accelerated despite stronger prices through the first half of CY 2021. Bentek Energy projects that the price of gas at the Henry Hub will average \$3.10 for CY 2021, its highest average in three years, and \$2.90 in CY 2022. If national and regional prices do recover to levels projected for the current year and next, then impact fee collections will also recover to the level of prior years, despite less drilling activity.

Endnotes

1. The Pennsylvania Public Utility Commission administers the impact fee and provides data on impact fee assessments and actual collections. This was cross-referenced with unconventional well production data and spud data published monthly by the Department of Environmental Protection.
2. An alternative to the annual average ETR is the lifetime ETR, which is the average rate over the lifetime of a single new well. That measure is best used to quantify the prospective tax burden on new wells across states. (See the IFO's previous publication, *Analysis of Revenue Proposals in the FY 2018-19 Executive Budget*, for a discussion of the lifetime and annual ETRs.)
3. Prices are from Bentek Energy, and are converted to dollars per thousand cubic feet using Pennsylvania-specific heat content.
4. Post-production cost estimates for wet and dry wells are informed by investor presentations for several regional producers.
5. See 58 Pa.C.S. § 2302(b) for the statutory adjustments and 46 Pa.B. 632 for the current fee schedule. Pursuant to 58 Pa.C.S. § 2301, the price used is the annual average of the settled prices for near-month contracts on the New York Mercantile Exchange (NYMEX) in million British thermal units (MMBtu). This is the national benchmark price for the sale of natural gas. Other regional hubs exist in Pennsylvania (e.g., Dominion South and Leidy), which are used in Table 3 to approximate the prices received by producers. The Henry Hub spot price is the price for a one-time open market transaction for near-term delivery of a specific quantity of gas from that hub.

Data Sources

- Statewide production data and spud well counts can be found at <https://www.depgreenport.state.pa.us/ReportExtracts/OG/OilGasWellProdReport>.
- Act 13 impact fee revenues and distributions can be found at http://www.puc.state.pa.us/filing_resources/issues_laws_regulations/act_13_impact_fee.aspx.

Staff Acknowledgements

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