

# PENNSYLVANIA NATURAL GAS OUTLOOK REPORT

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## Section 1 - Exposition

### **I. Introduction**

The Public Utility Code requires natural gas distribution companies (NGDCs) to file annual financial reports with the Pennsylvania Public Utility Commission (PUC).<sup>1</sup> These Reports detail financial and accounting data, including revenues and expenses. NGDCs are also required to file annual resource planning reports (ARPR) with the PUC.<sup>2</sup> NGDCs with sales of 8 billion cubic feet (Bcf) of gas per year or more must file these reports, which include the past year's historical data, program changes and the next three-year forecast of demand requirements.<sup>3</sup>

This report has been prepared using information filed by the NGDCs, including the information in the reports noted above, as well as the U.S. Energy Information Administration (EIA) and other sources. The most recent available data is reported, although much of the EIA production and reserves data has a one-year lag for reporting. With the uncertainty of the unconventional gas supplies, EIA has not presented proven reserves information since 2009.

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<sup>1</sup> 52 Pa. Code § 59.48.

<sup>2</sup> 52 Pa. Code § 59.81.

<sup>3</sup> The NGDCs in PA with sales of 8 Bcf or more include Philadelphia Gas Works (PGW), PECO Energy Company (PECO), Columbia Gas of PA (Columbia), Peoples Natural Gas Company (Peoples), UGI, and National Fuel Gas Distribution Company (NFG).

## II. Executive Summary

The PUC's Bureau of Technical Utility Services has prepared this report to summarize the 2021 financial and supply and demand data for the Pennsylvania NGDCs. This report also presents several topics of interest regarding the Pennsylvania natural gas industry. National trends in the natural gas industry are affected by trends and events in Pennsylvania. Therefore, macroeconomic and industry data for the entire U.S. are included in this report.

### National Summary

The national natural gas storage inventory peak for the 12 months prior to this winter heating season<sup>4</sup> was 3.6 trillion cubic feet (Tcf). This was 0.3 Tcf lower than the peak from the prior injection season. Domestic dry natural gas production in the U.S. averaged 94.6 billion cubic feet per day (Bcfd) in 2021, which was a decrease of 3.2% from 2020.<sup>5</sup> Domestic consumption in 2021 was 84.0 Bcfd, which is a decrease of 0.5 Bcfd from 2020. Henry Hub spot prices averaged \$3.89 per million British thermal units (MMBtus) in 2021, which is an increase of 91.6% from \$2.03 in 2020.<sup>6</sup> So far, 2022 has shown a continued increase in the upward pricing trend, with an average price of \$6.73. However, an analysis of Henry Hub natural gas futures shows an expected reversal of pricing with a decrease in prices in 2023; producing a national average price of \$5.64/MMBtu for 2023.<sup>7</sup>

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<sup>4</sup> 2021-2022 heating season.

<sup>5</sup> EIA, *EIA Natural Gas Gross Withdrawals and Production*, available at <http://www.eia.gov>.

<sup>6</sup> Henry Hub is a distribution hub in Louisiana. The price at this delivery point is frequently used by industry and trading markets as a benchmark for natural gas prices.

<sup>7</sup> EIA, *EIA Short Term Energy Outlook*, available at <http://www.eia.gov>.



## Pennsylvania Summary

There are nearly 3.1 million natural gas customers in Pennsylvania, with about 2.8 million residential customers.<sup>8</sup> There are 27 regulated natural gas utility companies in Pennsylvania, and 6 of these are major distribution companies with gross revenues greater than \$40 million per year.<sup>9</sup> Pennsylvania's natural gas infrastructure includes intrastate pipelines, interstate pipelines, landfill gas pipeline projects, propane facilities and liquefied natural gas (LNG) facilities. Infrastructure needs are being met by expansion and replacement of existing pipelines, with new pipelines and compressor stations being constructed.

As of Sep. 30, 2022, 30,310 unconventional drilling permit applications have been filed with the Pennsylvania Department of Environmental Protection (541 new applications YTD 2022).<sup>10</sup> Of those 30,310 applications, 13,758 unconventional wells have been drilled.<sup>11</sup> As of Sep. 30, 2022, there were 23 rotary rigs active in Pennsylvania, a 35% increase in of the number of active rigs a year ago. Rotary rigs are a piece or set of equipment, usually mobile, that is used to provide the rotational force needed to drill a borehole. The rotary rig count is an indicator of how many rigs are in service and the demand for drilling equipment.<sup>12</sup> The EIA estimates that there were 68,929 producing shale and conventional gas wells in Pennsylvania in 2020, which is a 1.7% decrease from 2019.<sup>13</sup>

Financial statistics taken from the Gas Annual Reports of the NGDCs are presented in Section VII, in time series fashion from 2011 through 2021. Sections V through VII present broad category financial data for several categories, including revenue, expenses, plant in service,

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<sup>8</sup> EIA, *EIA Number of Natural Gas Consumers*, available at <http://www.eia.gov>.

<sup>9</sup> \$40 million in gross revenue is the threshold over which an NGDC files under 66 Pa.C.S. § 1307(f) to recover natural gas costs.

<sup>10</sup> A conventional gas well is typically shallower than an unconventional well, and drills into a pocket or reservoir of gas. Such wells generally rely on the natural pressure to extract the gas once the well is drilled. An unconventional well uses more sophisticated means to extract gas from underground deposits, typically by hydraulic fracturing of shale structures (fracking). These unconventional wells also tend to require drilling to much greater depths than conventional wells.

<sup>11</sup> See *PA DEP Well Permit Workload Report*, available at <http://www.dep.pa.gov/DataandTools/Reports/Oil%20and%20Gas%20reports/Pages/default.aspx>.

<sup>12</sup> Baker Hughes, rotary rig count, available at <http://www.bakerhughes.com/rig-count>.

<sup>13</sup> EIA, *Number of Producing Gas Wells*, available at <http://www.eia.gov>.

depreciation, maintenance, and gas costs. Data on the number of customers, reserves, wellhead prices, Pennsylvania production and average consumption is also provided.

The following are a few of the notable statistics contained in this report:

- Total natural gas consumption in Pennsylvania has increased from 706.2 Bcf in 1997 to 1,808 Bcf in 2021.
- Pennsylvania gas production reached 7.6 Tcf in 2021, up from only 121 Bcf (0.12 Tcf) in 1997, and up 6.7% from 2020.
- Gas deliveries for Pennsylvania electric generation have increased markedly from 3% of total deliveries in 1997, to 58% in 2021, or 20 Bcf in 1997 as compared to 859 Bcf in 2021.<sup>14</sup>

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<sup>14</sup> EIA, *Natural Gas Consumption by End Use*, available at <http://www.eia.gov>.

### **III. Pennsylvania Natural Gas Infrastructure**

#### **Pipelines**

Twenty interstate natural gas pipelines exist in the Northeast Region, which includes Connecticut, Delaware, Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Virginia and West Virginia. These interstate pipelines deliver to several intrastate pipelines and more than 50 local distribution companies (LDCs). They also deliver to natural gas-fired electric generating facilities and large industrial customers. The pipelines in Pennsylvania have access to natural gas production from the South and Midwest, from the Rocky Mountains via the Rockies Express Pipeline, from Canada, and from the Marcellus and Utica Shales that span large portions of Pennsylvania, Ohio, and West Virginia.<sup>15</sup>

Marcellus shale production in the northeast U.S. has risen from 0.5 Bcfd in January 2010 to 25.0 Bcfd in August 2022. Despite this vast increase in production, many portions of eastern Pennsylvania and New England are still subject to higher priced gas, as well as dramatic spikes in price during cold snaps in the winter heating season. These price differences are mostly caused by a lack of pipeline capacity to transport supply to the markets with demand. There are 3.6 Bcfd of pipeline projects that have been, or are scheduled to be, placed in service in the Northeast region in 2022, and a further 3.7 Bcfd of projects are scheduled to be placed in service in 2023, as shown in Tables 1 and 2 below, respectively. The additional pipelines are intended to remove some of the above-mentioned constraints and may assist in stabilizing regional prices by moving the increased Marcellus Shale gas production to market or linking other sources of gas to the Northeast region.<sup>16</sup>

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<sup>15</sup> EIA, Natural Gas Pipelines in the Northeast Region, *About U.S. Natural Gas Pipelines*, available at <http://www.eia.gov>.

<sup>16</sup> EIA, *EIA Marcellus Region Drilling Productivity Report*, available at <http://www.eia.gov>.

**Table 1: Proposed Pipeline Infrastructure for 2022 In-Service in the Northeast Region<sup>17 18</sup>**

<b>Project Name</b>	<b>Pipeline Operator Name</b>	<b>State(s)</b>	<b>Additional Capacity (MMcf/d)</b>
Bailey East Mine Panel 11J Project	Texas Eastern Transmission	WV	0
Central Corridor Pipeline Extension	Duke Energy Ohio	OH	1
Conemaugh River Crossing Replacement Project	Texas Eastern Transmission	PA	0
East 300 Upgrade Project	Tennessee Gas Pipeline Co	PA, NJ	115
Greater Philadelphia Expansion	Texas Eastern Transmission	PA	475
Greene Interconnect Project	Mountain Valley Pipeline, LLC	WV	1,000
L-722 Replacement Project	Columbia Gas	OH	0
Leidy North Project	Dominion Energy Transmission Co	PA, NY	10
Long Ridge Lateral	Equitrans Midstream Corporation	OH	0
Marshall County Mine Panels 19E and 20E Projects	Texas Eastern Transmission	WV	0
Mid-Atlantic Chiller Project	Eastern Gas Transmission and Storage	PA, VA	25
Rover - North Coast Interconnect Project	Rover Pipeline	OH	108
Supply Header Project	Dominion Energy Transmission Co	PA, WV	1,500
Virginia Electrification Project	Columbia Gas	VA	350
Yorktown Meter Station Upgrade	Algonquin Gas Transmission	NY	18

<sup>17</sup> EIA, EIA Natural Gas Pipeline Projects, available at <http://www.eia.gov>.

<sup>18</sup> Some projects providing 0 MMcf/d additional capacity are designed to meet new regulations, or to provide additional flexibility in deliverability to underserved or new areas of consumption.

**Table 2: Proposed Pipeline Infrastructure for 2023 In-Service in the Northeast Region<sup>19 20</sup>**

<b>Project Name</b>	<b>Pipeline Operator Name</b>	<b>State(s)</b>	<b>Additional Capacity (MMcf/d)</b>
Adelphia Gateway Project	Adelphia	PA	250
Line 8000 Replacement Project	TC Energy	MD	0
Mountain Valley Pipeline	Mountain Valley Pipeline, LLC	WV, VA	2,000
Northeast Supply Enhancement Project	Williams Transco	PA, NJ, NY	400
Northern Loop Project	Columbia Gas	PA, WV, OH	0
Regional Energy Access Project (Phase I and II)	Transcontinental Gas Pipeline	PA, NJ	1,050

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<sup>19</sup> EIA, EIA Natural Gas Pipeline Projects, available at <http://www.eia.gov>

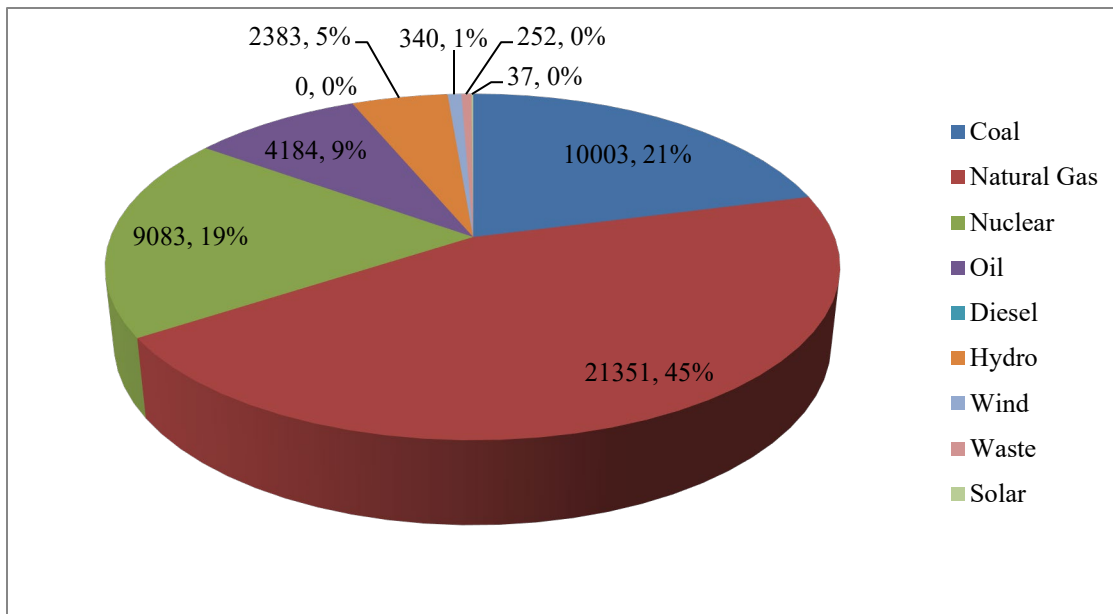
<sup>20</sup> Some projects providing 0 MMcf/d additional capacity are designed to meet new regulations, or to provide additional flexibility in deliverability to underserved or new areas of consumption.



## IV. Natural Gas Generation and End Uses in Pennsylvania

By the end of 2021, Pennsylvania had 21,351 megawatts (MWs) of natural gas fired electric generation installed capacity, as shown by comparison to other capacity fuel sources in Chart 1, below.<sup>21</sup> These facilities constitute 44.8% of Pennsylvania’s electric generating capacity, up slightly from 44.0% the prior year, making natural gas the largest portion of Pennsylvania’s electric generation mix for the fourth year in a row. The change in the share of natural gas fired electric generation capacity was predominantly caused by a 689 MW increase in natural gas capacity, while most other electric generation capacity sources remained relatively unchanged.<sup>22</sup> Chart 2, below, shows the percentage of electric generation capacity by fuel source over time, from 2010 through 2021. Chart 2 also shows that natural gas has been steadily increasing as a share of the total electric generation capacity in PA, firmly overtaking coal in 2018, and maintaining its dominance in Pennsylvania through 2021.

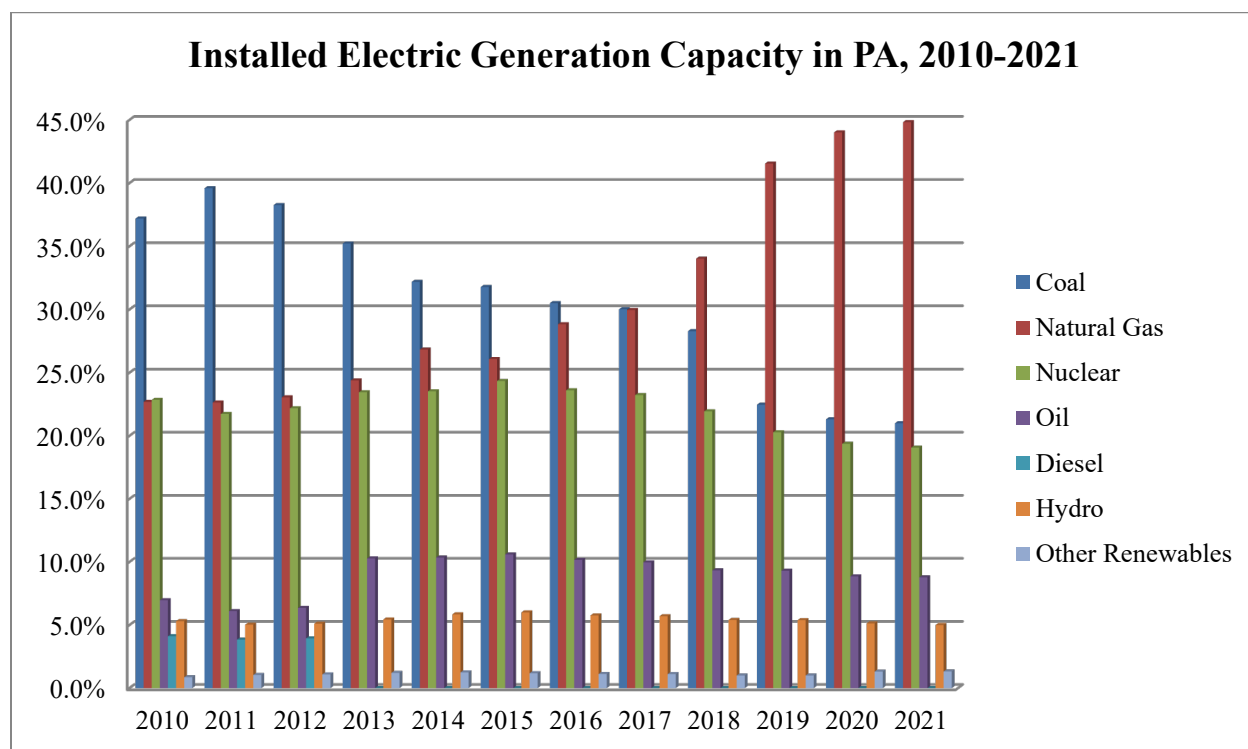
**Chart 1: Electric Generation Capacity in Pennsylvania by Fuel Type at Year End 2021 (MW)**



<sup>21</sup> Data from PJM’s 2021 PA State Report

<sup>22</sup> While a relatively small portion of Pennsylvania’s total electric generation capacity, solar has seen noticeable increases over the past two years, increase of 30 MW, an increase of 429% from 2019. Wind has also seen a substantial increase of 152 MW since 2019, an increase of 81%.

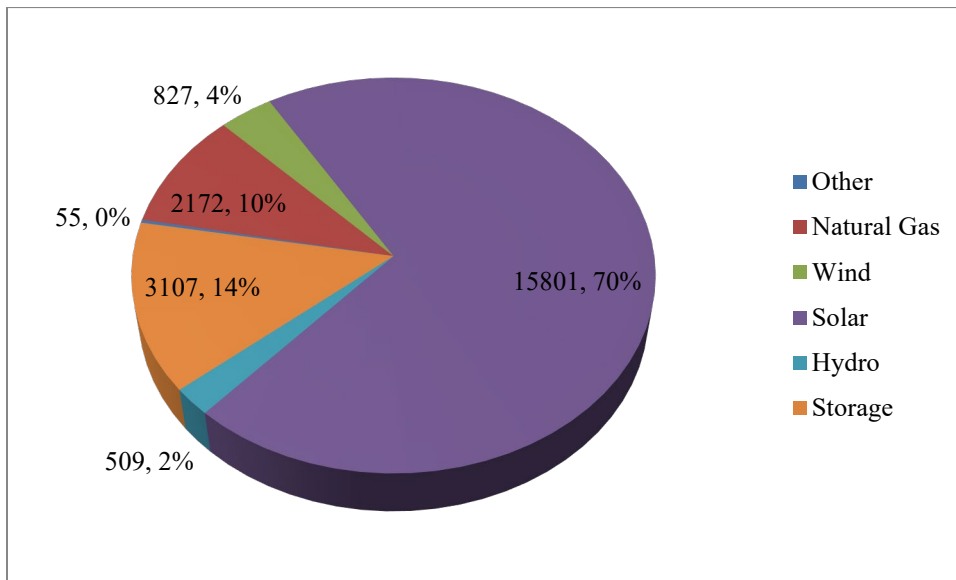
*Chart 2: Installed Electric Generation Capacity in PA, 2010-2021*



Charts 3 and 4, below, summarize the PJM queue for new electric generation capacity for Pennsylvania as of Dec. 31, 2021. The queue includes 2,172 MW of proposed new natural gas fired capacity, making up 14% of the PJM queue for Pennsylvania, representing a reduction from 2020, when natural gas made up 32% of the total queue. This is due predominantly to a substantial increase in solar and storage resources in the PJM queue this year. However, PJM treats intermittent energy sources such as solar and wind facilities differently than other generation sources when bidding into PJM’s capacity market. These facilities are assigned an Unforced Capacity value (UCAP) by PJM, which is a fraction of the Installed Capacity (ICAP), or nameplate value for the facility. For wind resources, UCAP is roughly 15% of ICAP on

average, and for solar resources it is roughly 50% of ICAP. With this in mind, Chart 4 shows the PJM queue with UCAP values for the appropriate resources in the queue. In Chart 4, we can see that natural gas takes up 14% of the PJM queue for Pennsylvania.<sup>23 24</sup> As mentioned above, of note this year is the continued dramatic increase in solar projects in the queue, taking up 70% of the ICAP total, substantially higher than natural gas. Typically, about 25% of the projects in PJM’s queue are actually put in service.<sup>25</sup>

**Chart 3: Queued Electric Generation Capacity (ICAP) in Pennsylvania by Fuel Type (MW)**

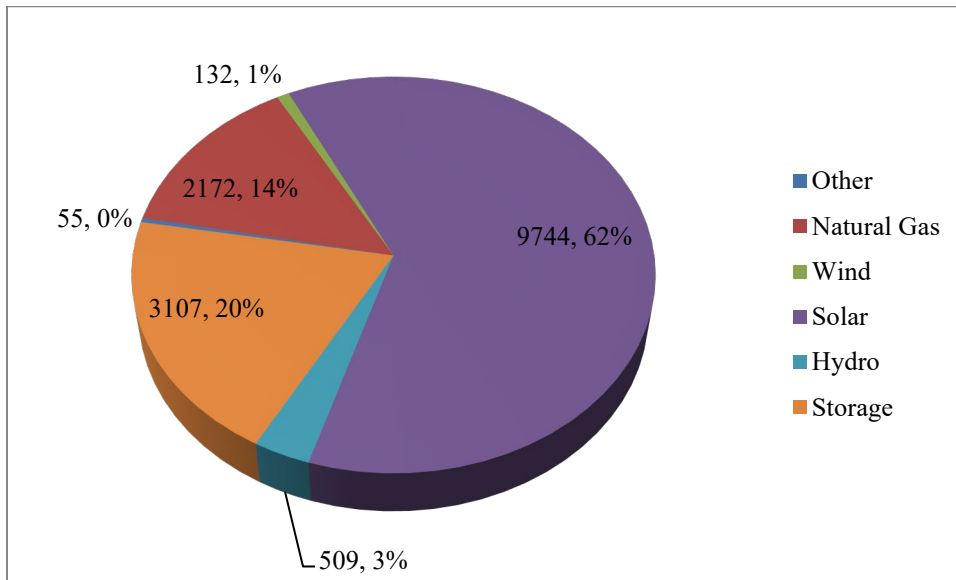


<sup>23</sup> PJM 2021 Pennsylvania State Infrastructure Report, available at: <https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2021/2021-pennsylvania-state-infrastructure-report.ashx>.

<sup>24</sup> The largest component of the “Other” fuel types is Nuclear (44 MW).

<sup>25</sup> PJM, PJM Regional Transmission Expansion Plan Report, available at <http://www.pjm.com>.

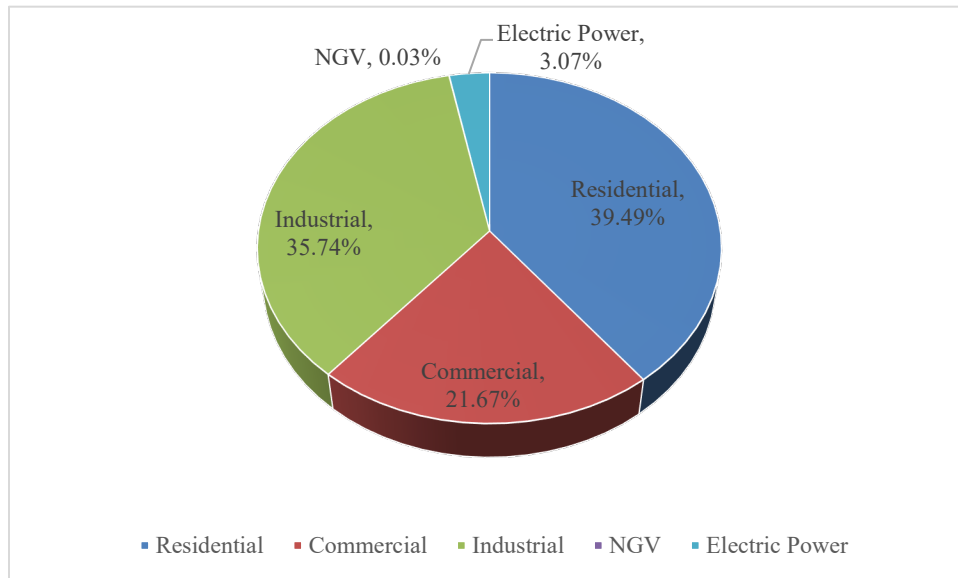
**Chart 4: Queued Electric Generation Capacity (UCAP) in Pennsylvania by Fuel Type (MW)**



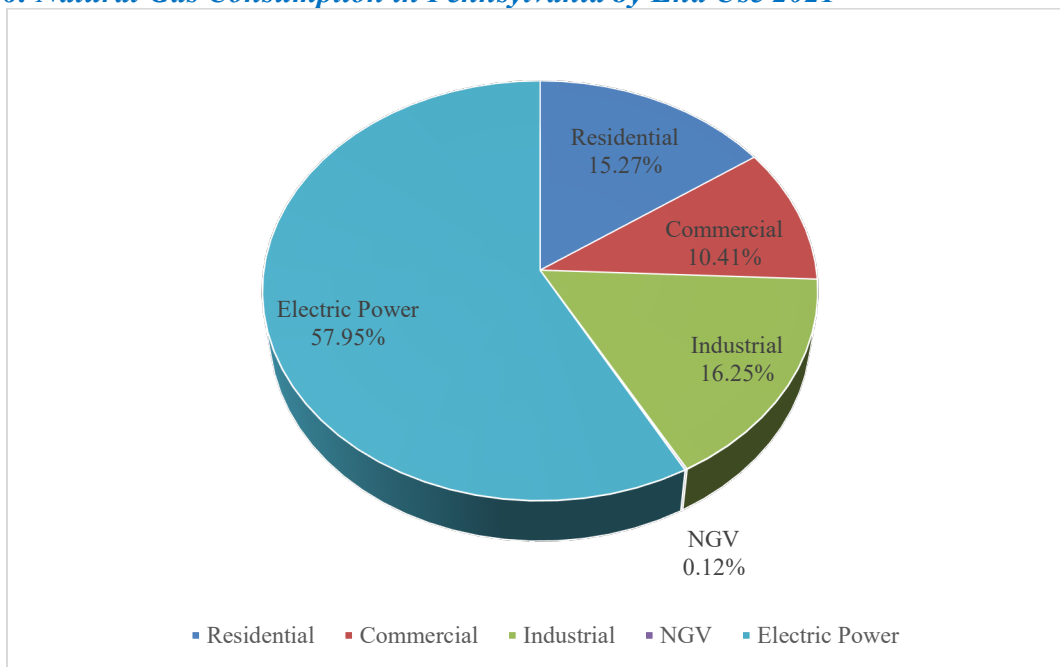
Charts 5 and 6, below, compare the gas consumed in Pennsylvania for electric generation compared to other end-uses in 1997 and 2021, respectively.<sup>26</sup> As depicted, the fraction of natural gas usage for electric generation has dramatically increased. Reasons for this increase include: greater supply of natural gas and the resultant lower cost for natural gas; the advancement of efficient natural gas fueled electric generation technology; and retirements of older coal-fired and nuclear power plants. As the composition of the generating fleet changes to more gas-fired units, pressure will continue to increase on the natural gas industry to augment production and transportation capacity.

<sup>26</sup> EIA.gov, *Natural Gas Consumption by End Use*, [Natural Gas Delivered to Consumers \(eia.gov\)](https://www.eia.gov/naturalgas/consumption/)

*Chart 5: Natural Gas Consumption in Pennsylvania by End Use 1997<sup>27</sup>*



*Chart 6: Natural Gas Consumption in Pennsylvania by End Use 2021*



The dramatic shift in the use of natural gas from primarily residential, commercial, and industrial uses to electric power generation has been occurring steadily over the period from 1997 through

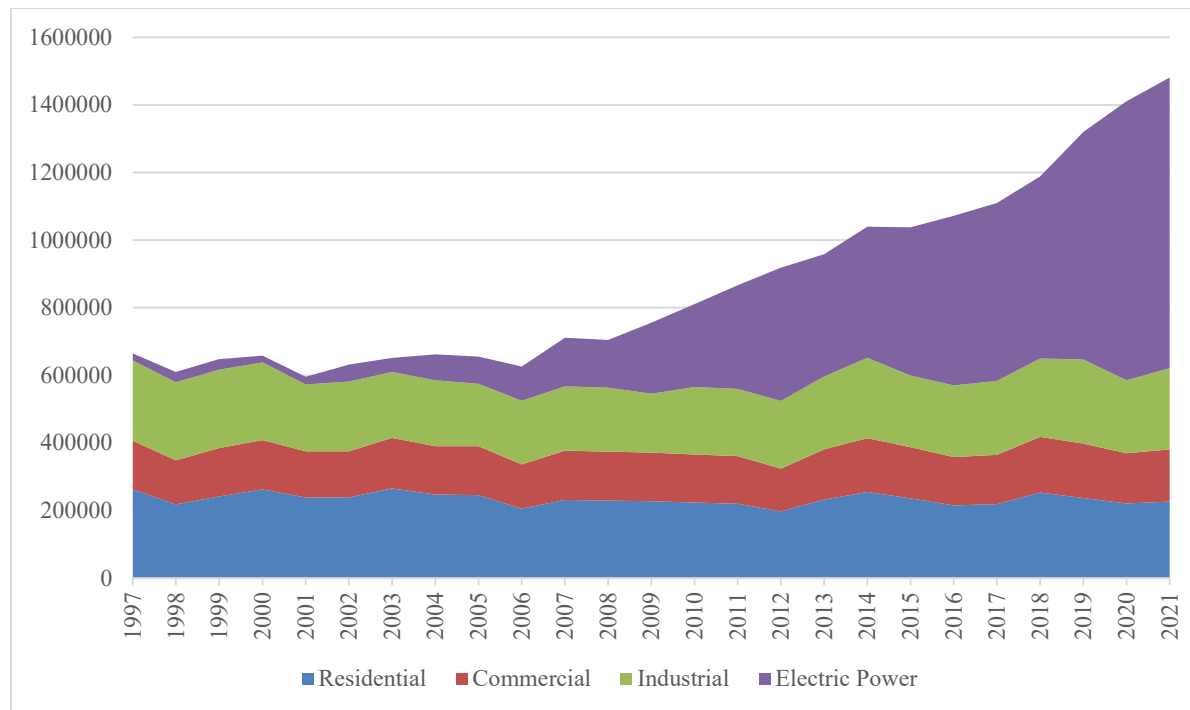
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<sup>27</sup> NGV = Natural Gas Vehicles.



2021, with a marked acceleration beginning in 2008 as Marcellus Shale production ramped up, as seen in Figure 1, below.<sup>28</sup> Notably, natural gas usage for electric generation increased over 128% from 2013 to 2021, rising 497 Bcf, while total usage increased 522 Bcf over the same period.<sup>29</sup> Gas usage for all other end uses generally increased over this period, although residential, commercial, and industrial usage saw a slight drop in 2020, likely due to the drop in demand during the COVID-19 pandemic. Usage in all three of these categories saw a recovery in 2021. Electricity demand increased in 2021 as compared to 2020, with a year-over-year increase of 2.62%. Electricity demand in 2020 was 4.07% lower than in 2019, primarily due to the impact of COVID-19 on the world economy.<sup>30</sup>

**Figure 1: Natural Gas Deliveries in Pennsylvania by End Use 1997-2021**



<sup>28</sup> EIA.gov, *Natural Gas Consumption by End Use*, [Natural Gas Delivered to Consumers \(eia.gov\)](https://www.eia.gov/naturalgas/consumption/)

<sup>29</sup> Usage for NGVs actually increased over this time period, but since the amount going to this sector is so small, it is negligible for the purposes of the analysis in this section. NGV usage went from 312 MMcf to 1709 MMcf, an increase of 448% from 2013-2021.

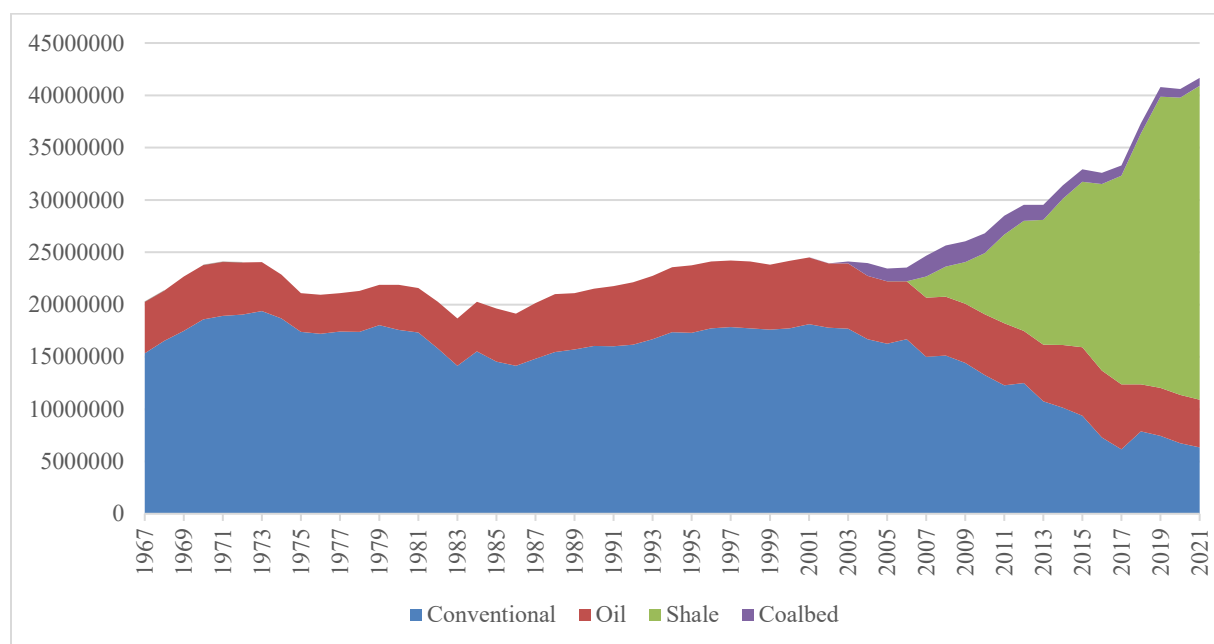
<sup>30</sup> PUC *Electric Power Outlook Report for Pennsylvania 2021-2026*, available here: <https://www.puc.pa.gov/filing-resources/reports/electric-power-outlook-report/>

## V. Natural Gas Production, Consumption, Reserves, and Prices

### United States

Total U.S. withdrawals of natural gas were 41.7 Tcf in 2021, of which, gross withdrawals of unconventional shale gas were 30.0 Tcf.<sup>31</sup> As shown in Figure 2 below, this is the ninth consecutive year in which unconventional shale gas withdrawals outpaced conventional gas wells in the U.S. This trend is accelerating, with the spread between shale and conventional gas production increasing from 1.2 Tcf in 2013 to 23.7 Tcf in 2021. Total US withdrawals of natural gas increased by 1.1 Tcf in 2021, which was a 2.6% increase from 2020.

**Figure 2: US Gross Natural Gas Withdrawals (MMcf), 1967-2021**



The national storage inventory peak for the prior heating season was 3.6 Tcf and was reached in November 2021. This is down from the peak from the prior injection season of 3.9 Tcf in November 2020. Dry natural gas production in the U.S. averaged 94.6 Bcfd in 2021. This was

<sup>31</sup> EIA, *EIA Natural Gas Summary*, available at <http://www.eia.gov>.

an increase of 3.2% from 2020. Over the past decade, U.S. domestic dry natural gas production has increased an average of 5.1% per annum.<sup>32</sup> Domestic natural gas consumption was 84.0 Bcfd in 2021, up slightly from 83.5 Bcfd from 2020.<sup>33</sup> Henry Hub spot prices averaged \$3.89 in 2021, an increase of 91.6% from \$2.03/MMBtu in 2020.

An analysis of Henry Hub natural gas futures contracts in comparison to Henry Hub spot prices<sup>34</sup> shows an expected decrease in price over the coming year. Henry Hub spot prices have averaged \$6.73/MMBtu in 2022, while the average projected price is \$5.64/MMBtu for 2023.<sup>35</sup> Figure 3, below, shows the futures prices for Henry Hub through May 2024 delivery dates. Although the Henry Hub price is frequently used as a benchmark for the “price” of natural gas, there are significant differences in price at delivery points based on geography. For example, the Dominion South Hub is located in southwestern Pennsylvania, which is in the middle of the Marcellus and Utica Shale plays. Based on past spot prices, Henry Hub prices are generally higher, with an average basis spread of \$0.30/MMBtu to \$0.80/MMBtu.<sup>36</sup> Although it is purely speculative, if this pricing trend were to continue going forward, we could expect lower pricing in 2023 at the Dominion South Hub compared to Henry Hub.

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<sup>32</sup> EIA, *Natural Gas Gross Withdrawals and Production*, available at <http://www.eia.gov>.

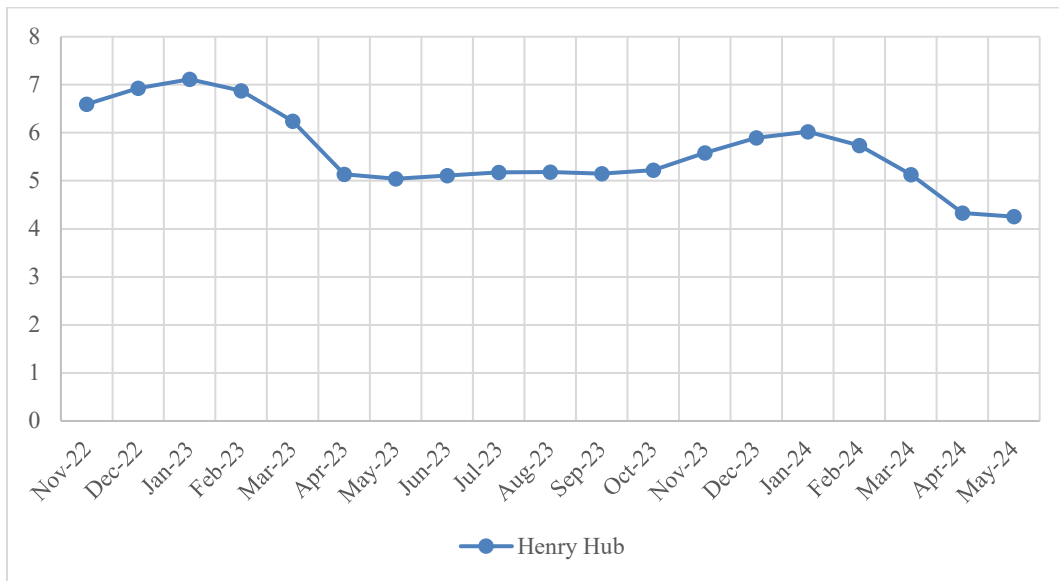
<sup>33</sup> EIA, *Natural Gas Consumption by End Use*, available at <http://www.eia.gov>.

<sup>34</sup> CME Group, available at <http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html>.

<sup>35</sup> EIA, *EIA Short Term Energy Outlook*, available at <http://www.eia.gov>.

<sup>36</sup> CME Group, available at <http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html>.

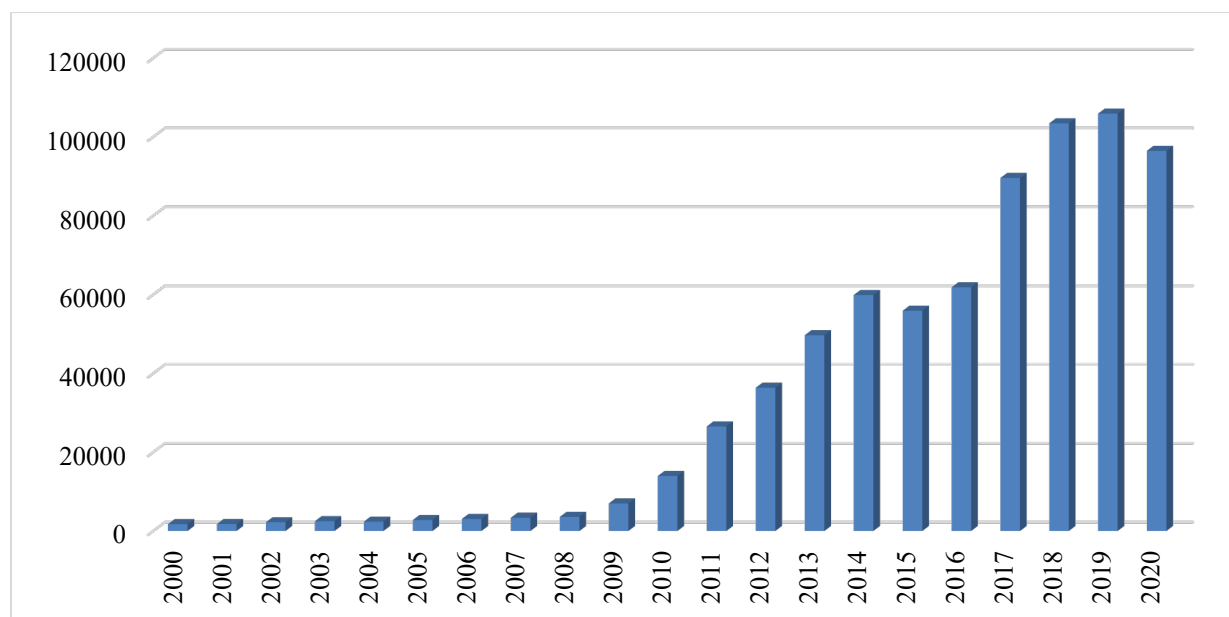
**Figure 3: Henry Hub Futures Prices (\$/MMBtu)**



## Pennsylvania

This section presents Pennsylvania specific data. The data includes sales by NGDCs, deliveries by NGDCs for competitive suppliers and production of natural gas in Pennsylvania. Dry proved reserves for Pennsylvania as of Dec. 31, 2020, were 96.5 Tcf, a decrease of 8.9% from 2019. Pennsylvania's dry proved reserves since 2000 can be seen in Figure 4, below.

**Figure 4: Pennsylvania's Dry Proved Reserves (Bcf), 2000-2020<sup>37</sup>**



The EIA estimates that there were 68,929 producing natural gas wells in Pennsylvania in 2020.<sup>38</sup>

<sup>39</sup> As of Sep. 30, 2022, 30,310 unconventional drilling permit applications had been filed with the Pennsylvania Department of Environmental Protection. Of those applications, 13,758 unconventional wells have been drilled.<sup>40</sup> As of Sep. 30, 2022, there were 23 rotary rigs active in Pennsylvania, a 28% increase from the number of active rigs a year ago. Rotary rigs are a piece or set of equipment, usually mobile, that is used to provide the rotational force needed to

<sup>37</sup> 2021 Data was not yet available.

<sup>38</sup> EIA, *Natural Gas Annual*, available at <http://www.eia.gov>.

<sup>39</sup> 2021 Data was not yet available.

<sup>40</sup> Pennsylvania Department of Environmental Protection Well Permit Workload Report, available at [http://www.portal.state.pa.us/portal/server.pt/community/oil\\_and\\_gas\\_reports/20297](http://www.portal.state.pa.us/portal/server.pt/community/oil_and_gas_reports/20297).



drill a borehole. The rotary rig count is an indicator of how many rigs are in service and the demand for drilling equipment.<sup>41</sup> Table 4, below, illustrates that Pennsylvania’s production in 2021 greatly exceeded its deliveries to consumers in the state by more than a factor of four.

*Table 4: Historical Pennsylvania Deliveries, Transportation and Production (Bcf)<sup>42</sup>*

<b>Year</b>	<b>Gas Delivered to Consumers</b>	<b>Delivered for the Account of Others (Transport)</b>	<b>PA Gross Gas Production</b>
1997	706.2	261.2	80.0
1998	644.0	273.4	130.3
1999	688.7	293.5	174.7
2000	702.8	292.0	150.0
2001	634.8	254.2	130.9
2002	675.6	270.6	157.8
2003	690.0	264.3	159.8
2004	696.2	258.2	197.2
2005	691.6	246.8	168.5
2006	659.8	247.3	176.0
2007	752.4	259.1	182.3
2008	749.9	260.6	198.3
2009	809.7	253.3	273.9
2010	879.4	283.2	572.9
2011	965.7	287.6	1,310.6
2012	1,038.0	293.5	2,256.7
2013	1,121.7	331.4	3,259.0
2014	1,244.4	362.7	4,257.7
2015	1,255.6	332.5	4,813.0
2016	1,301.0	326.3	5,210.2
2017	1,350.2	335.2	5,453.6
2018	1,460.5	365.8	6,264.8
2019	1,618.0	382.1	6,896.8
2020	1,714.4	341.9	7,148.3
2021	1,807.8	366.4	7,626.5

<sup>41</sup> Baker Hughes, rotary rig count, available at <http://www.bakerhughes.com/rig-count>.

<sup>42</sup> EIA, <http://www.eia.gov>.

## Natural Gas Liquids (NGLs) and the Natural Gas Market

At this time, a significant amount of NGLs is simply sold directly into the natural gas system, owing to a lack of supply transportation to other markets, e.g., manufacturing, retail sales, etc. With natural gas prices still relatively low, this adds to the downward pressure on NGL prices. However, over the past several years, the pricing for NGLs has begun to rise, as Mariner East I came online for ethane service and some energy companies have begun transporting additional quantities of NGLs through other means, such as rail and road transportation.<sup>43</sup> These transportation options have allowed more NGLs to be sold to higher priced markets, such as manufacturing. Although prices for natural gas are projected to decrease over the coming year, the price of natural gas has generally been rising over the previous four years, boosting the price received for NGLs sold back into the natural gas pipelines.

As new pipelines are placed in service, it is possible that a substantial shift in the relationship between NGL supplies and the natural gas market could develop. Currently, there is a substantial, though unmeasured, volume of NGLs within the natural gas system, both in Pennsylvania and throughout the U.S. This causes variation in the heat content of natural gas being delivered to consumers. Heat content is a measure of the amount of energy derived from a given quantity of gas when it is combusted, usually measured in Btu. For example, pure methane, the primary component of natural gas, has a heat content of 1,010 Btu/ft<sup>3</sup>.<sup>44</sup> Ethane, the most common NGL to be produced from natural gas wells by volume, has a much higher heat content of 1,783 Btu/ft<sup>3</sup>. Other potential impurities in natural gas, such as carbon monoxide, have much lower heat content.<sup>45</sup>

It is possible for the heat content of the mixture that is delivered to a customer to have a heat content either higher or lower than that of pure methane, depending on the amounts of these various impurities within a given sample of natural gas. If it is higher, an estimate can be made of the amount of NGLs present in the gas. To prepare estimates of the amount of NGLs in gas produced in Pennsylvania, two assumptions have been made:

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<sup>43</sup> <https://www.reuters.com/article/us-range-resources-npls-mariner-east/range-finds-alternatives-to-ship-npls-due-penn-mariner-east-shutdown-idUSKCN1J42EK>

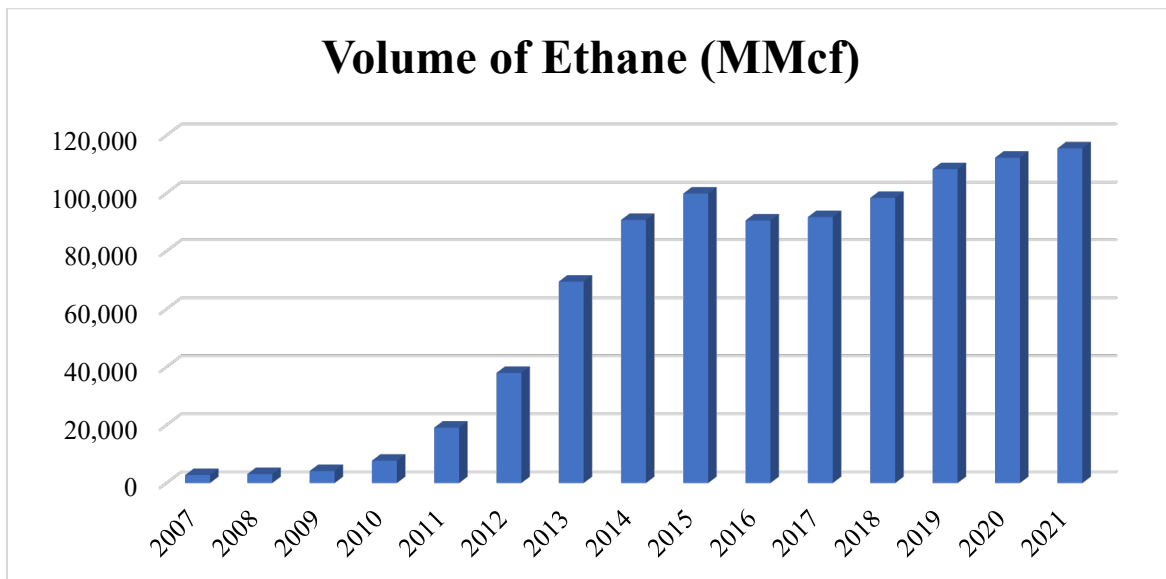
<sup>44</sup> In the natural gas industry, the heat content of natural gas is often approximated to be 1,000 Btu/ft<sup>3</sup>.

<sup>45</sup> Carbon monoxide has a heat content of 323 Btu/ft<sup>3</sup>.

1. The heat content of gas consumed in Pennsylvania is the same as the heat content of the gas being produced in Pennsylvania. This assumption is necessary since EIA only provides data on the heat content of gas consumed.
2. The only NGL in the gas is ethane, and there are no other low-heat content impurities in the gas. This is done for simplicity. While there may be other impurities, including a small quantity of larger hydrocarbons, e.g., propane, butane, etc., ethane is used to try to derive an estimate of the overall amount of NGLs in the natural gas.

Using these assumptions, Figure 6, below, shows the theoretical quantity of ethane produced and fed into the natural gas system by Pennsylvania producers. These estimates were determined using the average heat content of natural gas delivered in Pennsylvania, combined with the gross production of natural gas in Pennsylvania.<sup>46</sup> Using the assumptions, above, it then follows that any additional heat content above 1,010 Btu/ft<sup>3</sup> of methane is derived purely from ethane, and the exact quantity of ethane injected into the natural gas system can be determined.

**Figure 6: Hypothetical Volume of Ethane Injected into the Natural Gas System by Pennsylvania Producers (MMcf)**



<sup>46</sup> EIA, *Heat Content of Natural Gas Delivered to Consumers, and Natural Gas Gross Withdrawals*, both available at <http://www.eia.gov>.

In 2021, this could have meant that an estimated 115,000 million cubic feet (MMcf) of NGLs currently being fed into the natural gas system would have been redirected, possibly causing the prices of both NGLs and natural gas to rise, creating incentive for additional production in Pennsylvania.

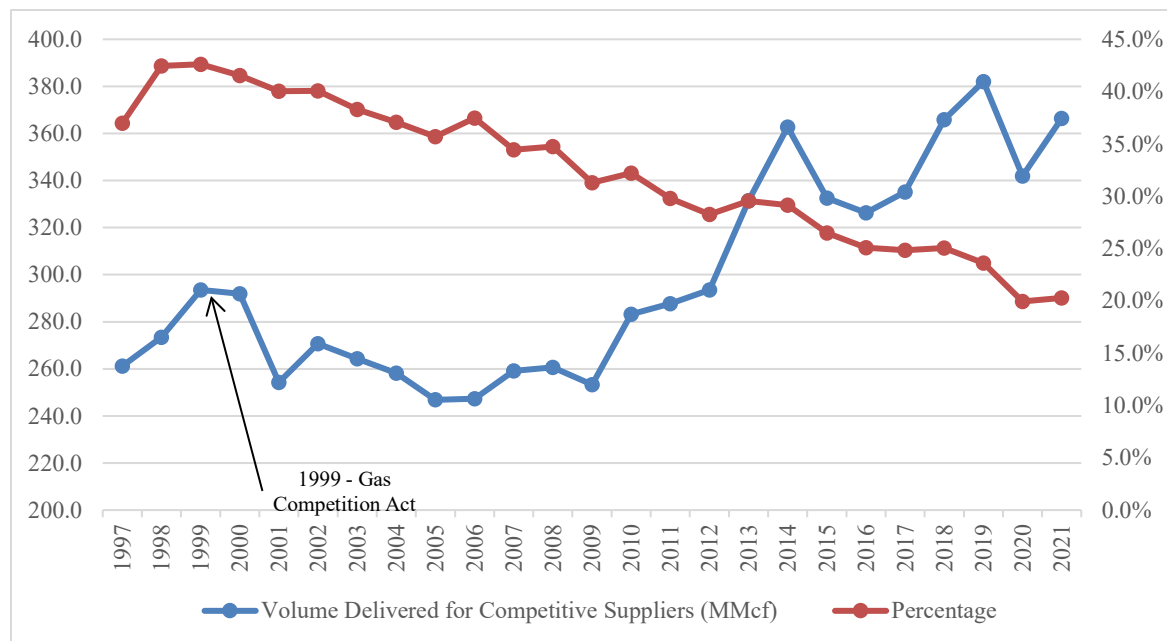
Figure 7, below, shows Pennsylvania deliveries of natural gas for competitive suppliers, often called transportation gas, as a percentage of total gas delivered. In 2021, 20.3% of the total natural gas delivered was for competitive suppliers in Pennsylvania. In 2021, the percentages of gas delivered for competitive suppliers by customer class were as follows:<sup>47</sup>

Residential: 12.7%

Commercial: 64.3%

Industrial: 99.0%

**Figure 7: Natural Gas Delivered for Competitive Suppliers by Pennsylvania NGDCs** <sup>48 49</sup>



<sup>47</sup> EIA, *Natural Gas Delivered on Account of Others*.

[https://www.eia.gov/dnav/ng/ng\\_cons\\_acct\\_a\\_EPG0\\_VRT\\_mmcf\\_a.htm](https://www.eia.gov/dnav/ng/ng_cons_acct_a_EPG0_VRT_mmcf_a.htm).

<sup>48</sup> *Id.*

<sup>49</sup> The Natural Gas Choice and Competition Act was signed into law on June 22, 1999.

Since 2009, total transportation gas had been generally trending upward. While the total amount of transportation gas has been increasing, the percentage of transportation gas has been declining despite the slight rise in 2021, as overall usage in other delivery sectors has increased dramatically.



## VI. Natural Gas Distribution Company (NGDC) Statistical Data

### Customer Data

The information in Tables 5 and 6, below, is derived from data contained in the Gas Annual Reports and the ARPRs submitted to the Commission by those Pennsylvania NGDCs with greater than 8 Bcf of annual sales. The charts and data analysis in this section are derived from the raw data in these two tables.

*Table 5: 2021 Customer Statistical Data*

<i>Company</i>	<i>Number of Residential Customers</i>	<i>Average per customer usage (MCF)</i>	<i>Number of Commercial Customers</i>	<i>Average per customer usage (MCF)</i>	<i>Number of Industrial Customers</i>	<i>Average per customer usage (MCF)</i>	<i>Number of Transportation Customers</i>	<i>Average per customer usage (MCF)</i>
Columbia	353,598	76	25,992	311	71	2,901	63,020	680
Peoples	494,813	85	33,474	254	87	2,690	108,363	601
Peoples Gas	58,177	85	4,148	334	1	0	888	12,420
NFG	178,806	91	11,455	258	172	1,465	23,350	1,118
PECO	497,873	79	44,804	477	16	375	670	37,454
PGW	469,879	68	22,413	343	474	943	24,905	1,249
UGI	532,340	78	49,706	311	710	1,348	99,263	2,486

*Table 6: 2020 Customer Statistical Data*<sup>50</sup>

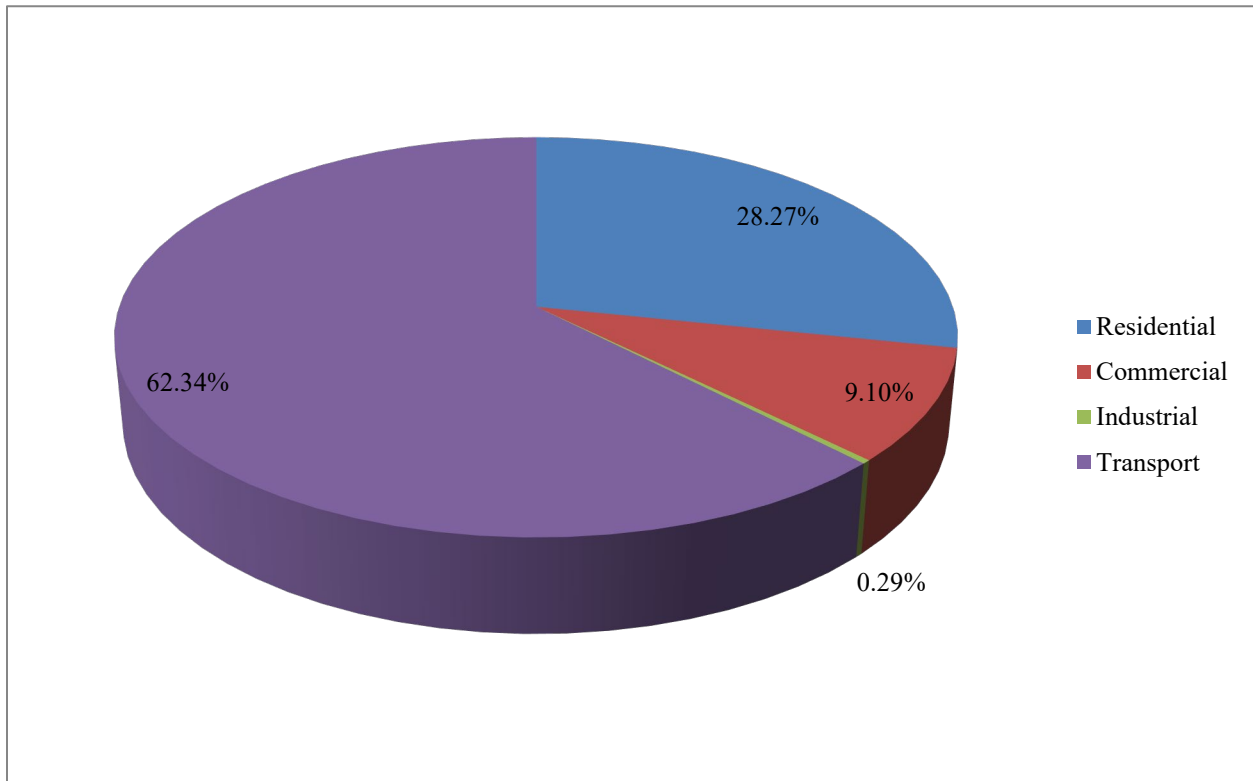
<i>Company</i>	<i>Number of Residential Customers</i>	<i>Average per customer usage (MCF)</i>	<i>Number of Commercial Customers</i>	<i>Average per customer usage (MCF)</i>	<i>Number of Industrial Customers</i>	<i>Average per customer usage (MCF)</i>	<i>Number of Transportation Customers</i>	<i>Average per customer usage (MCF)</i>
Columbia	322,930	80	25,355	288	71	2,465	92,295	423
Peoples	491,218	82	33,163	238	93	2,903	111,742	579
Peoples Gas	58,332	81	3,822	322	1	0	956	12,416
NFG	174,203	92	11,289	258	176	1,494	27,598	893
PECO	492,298	82	44,460	457	16	1,500	713	36,129
PGW	464,940	68	21,707	323	476	838	25,217	1,230
UGI	521,665	75	49,774	289	675	1,121	102,968	2,470

Chart 7, below, provides a breakdown of gas usage by customer class among Pennsylvania’s major NGDCs (those with more than 8 Bcf in sales per year). 62.3% of all sales volume was from transportation customers, down from 63.4% the previous year. These are typically larger customers that procure their own natural gas supply, and the utility delivers the natural gas to them. Transportation also includes residential and commercial customers that utilize an alternate natural gas supplier (NGS).

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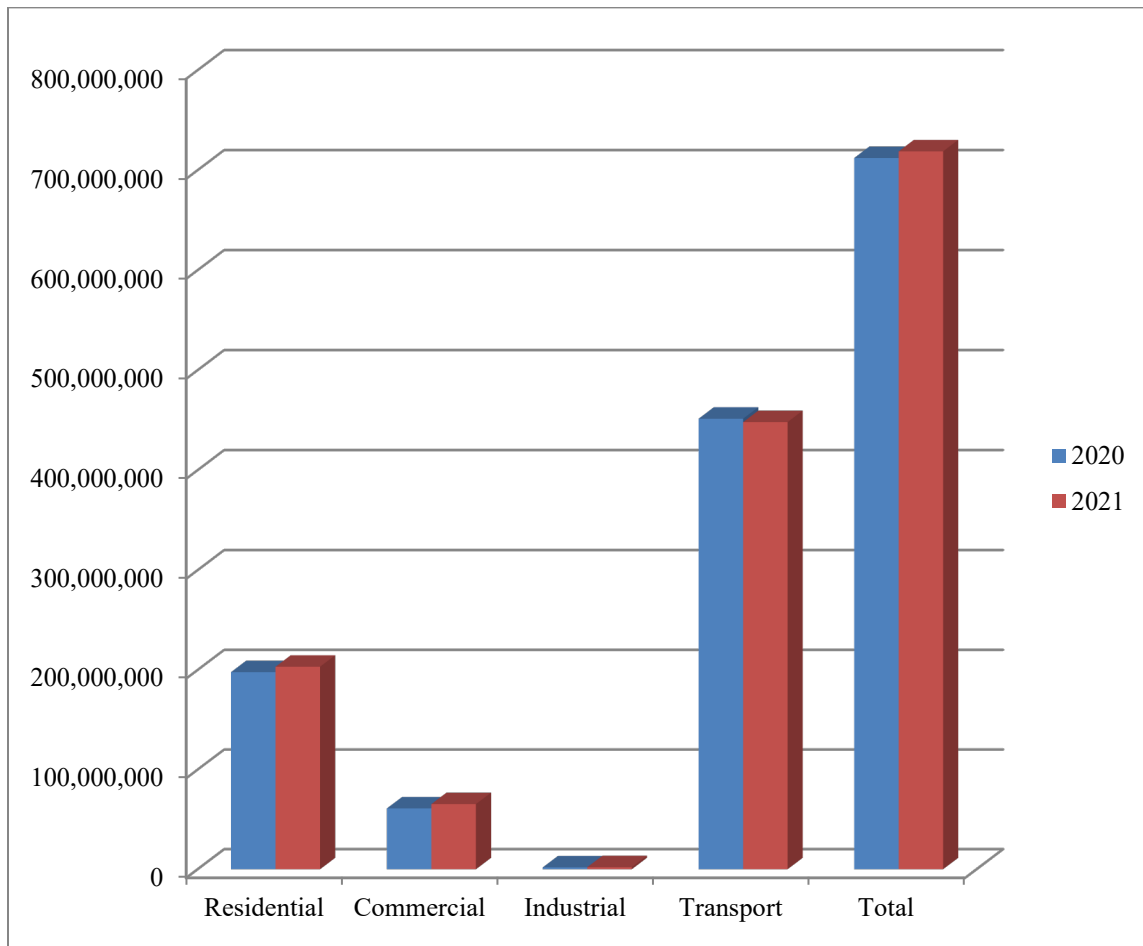
<sup>50</sup> The tracking of customer classes and natural gas usage are not necessarily done within one tracking system. Some customers may be classed in a certain category, but depending on their usage for the year, may end up assigned to a different rate class. This can create the appearance of a customer class with 0 Mcf of usage, when in actuality they had simply been shifted to a different rate class that year and are accounted for under a different category.

*Chart 7: 2021 Pennsylvania Gas Usage by Customer Class within Major NGDCs*



As seen in Figure 8, below, natural gas usage in 2021 was higher for all customer classes in Pennsylvania except for transportation, when compared to 2020.

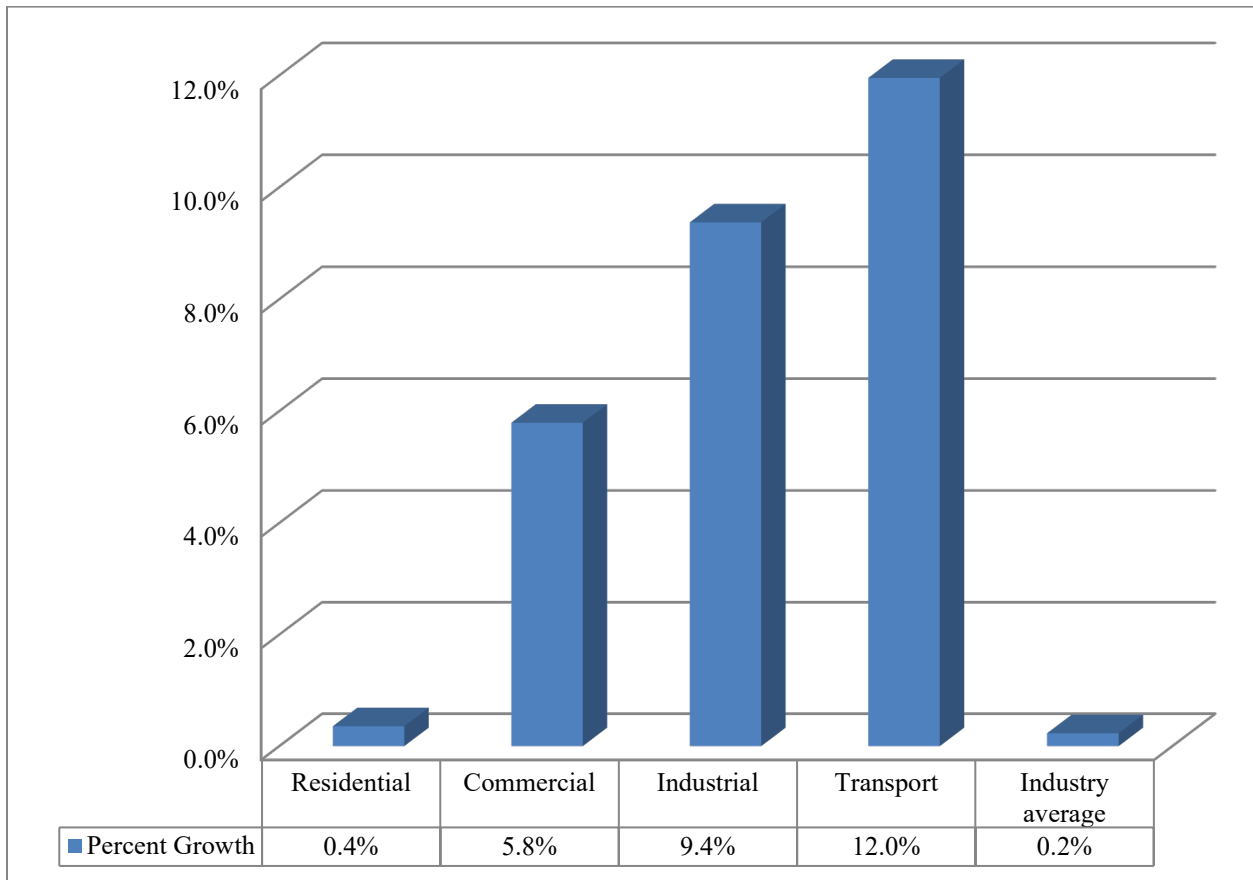
*Figure 8: Pennsylvania Gas Usage by Customer Class within Major NGDCs: 2020-2021*



In total, gas usage rose by 0.9% between 2020 and 2021, while the number of customers rose by 0.7%. This increase in usage was across all customer classes except transportation, with the highest increase being from the residential and commercial classes. This may be in part a rebound from the decline in usage during the COVID-19 pandemic, which caused a number of businesses to curtail hours, or close down altogether for portions of 2020. The rise in the number of customers was also seen among all customer classes except transportation, with residential in particular seeing the largest rise at a 2.4% increase in the number of customers.

Figure 9, below, shows the change in average customer usage by class.

*Figure 9: Change in Average Customer Usage for Major NGDCs by Customer Class: 2020-2021*



## **VII. Pennsylvania Natural Gas Distribution Company Gas Supply and Demand Balance**

The following tables and charts provide natural gas supply and demand data for Pennsylvania's NGDCs. The NGDCs provided the supply and demand data for the 2021 delivery year. The data is presented for 2021 on an annual basis as well as for peak day. Peak day is non-coincident data such that demand for a specific customer class is not necessarily at the same time as the system peak. Data is derived from the ARPRs.<sup>51</sup>

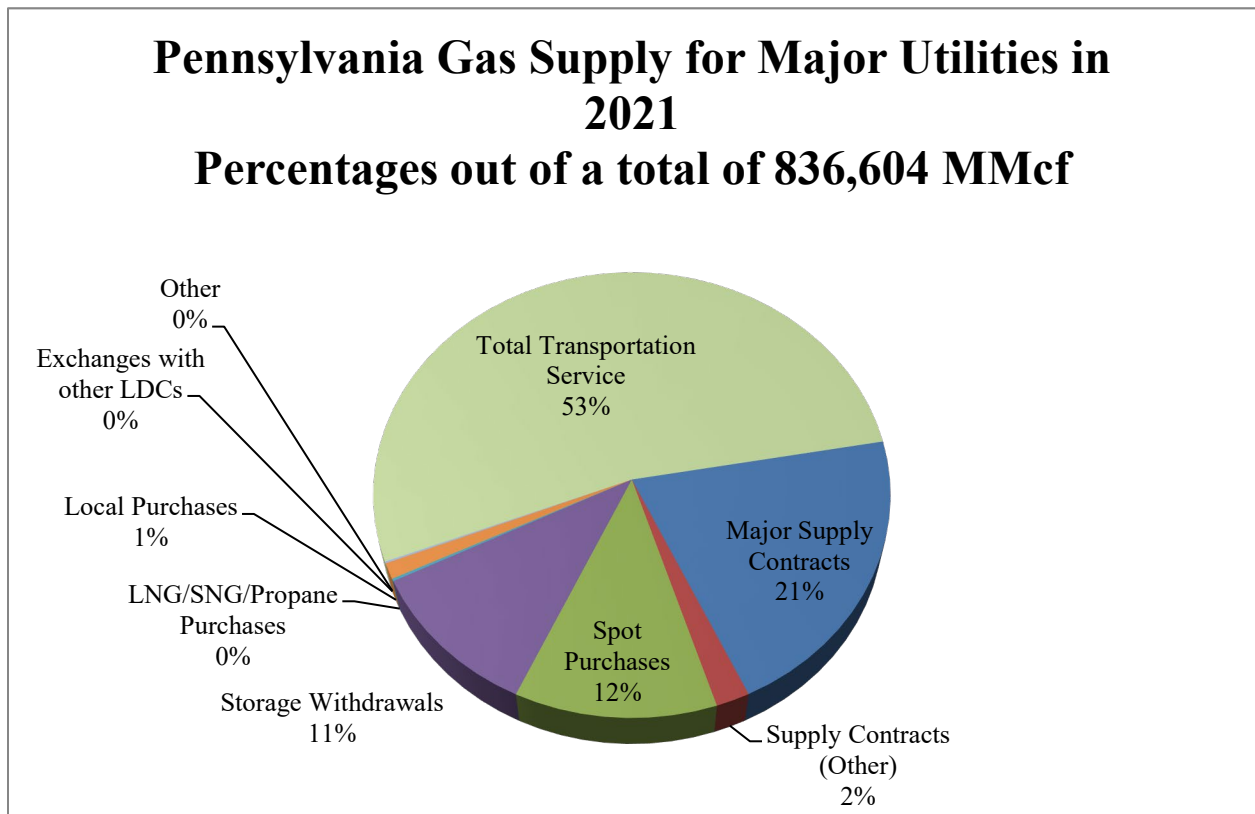
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<sup>51</sup> Some large users bypass the local distribution companies, buy gas at the wellhead or from suppliers, and receive the gas directly from the interstate pipelines. Gas-fired electric generation stations are usually bypass customers, and most of their gas consumption is not included in the PUC reports.

**Table 7: 2021 Annual Gas Supply and Demand for Major Gas Utilities (MMcf)**

	UGI	PGW	Columbia	NFG	PECO	Peoples	Peoples Gas
<b>Gas Supply:</b>							
Supply Contracts	83,706	42,108	24,846	15,702	55,159	27,230	2,885
Spot Purchases	15,637	0	10,530	3,739	7,672	30,236	3,861
Storage Withdrawal	0	10,521	0	0	0	0	0
LNG	0	1,293	0	0	0	0	0
<b>Subtotal Gas Supply</b>	<b>99,343</b>	<b>53,922</b>	<b>35,376</b>	<b>19,441</b>	<b>62,831</b>	<b>57,466</b>	<b>6,746</b>
<b>Transportation</b>	<b>246,767</b>	<b>31,109</b>	<b>39,949</b>	<b>26,110</b>	<b>25,094</b>	<b>63,229</b>	<b>11,996</b>
<b>TOTAL GAS SUPPLY</b>	<b>346,110</b>	<b>85,031</b>	<b>75,325</b>	<b>45,551</b>	<b>87,925</b>	<b>120,695</b>	<b>18,742</b>
<b>Requirements:</b>							
Firm Requirements	59,060	41,564	35,376	19,441	62,814	56,596	7,713
Liquefaction	0	1,192	0	0	0	0	0
Interruptible Requirements	0	557	0	0	16	0	0
Storage Injections	0	10,608	0	0	0	0	0
<b>Subtotal Firm &amp; Interruptible</b>	<b>59,060</b>	<b>53,921</b>	<b>35,376</b>	<b>19,441</b>	<b>62,830</b>	<b>56,596</b>	<b>7,713</b>
<b>Transportation</b>	<b>246,768</b>	<b>31,109</b>	<b>39,949</b>	<b>26,110</b>	<b>25,094</b>	<b>65,137</b>	<b>11,029</b>
<b>Load Deductions</b>	<b>(40,283)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL GAS REQUIREMENTS</b>	<b>346,111</b>	<b>85,030</b>	<b>75,325</b>	<b>45,551</b>	<b>87,924</b>	<b>121,733</b>	<b>18,742</b>
<b>Surplus (Deficiency)</b>	<b>(1)</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>(1,038)</b>	<b>0</b>

*Chart 8: Pennsylvania Gas Utility Annual Supply 2021*



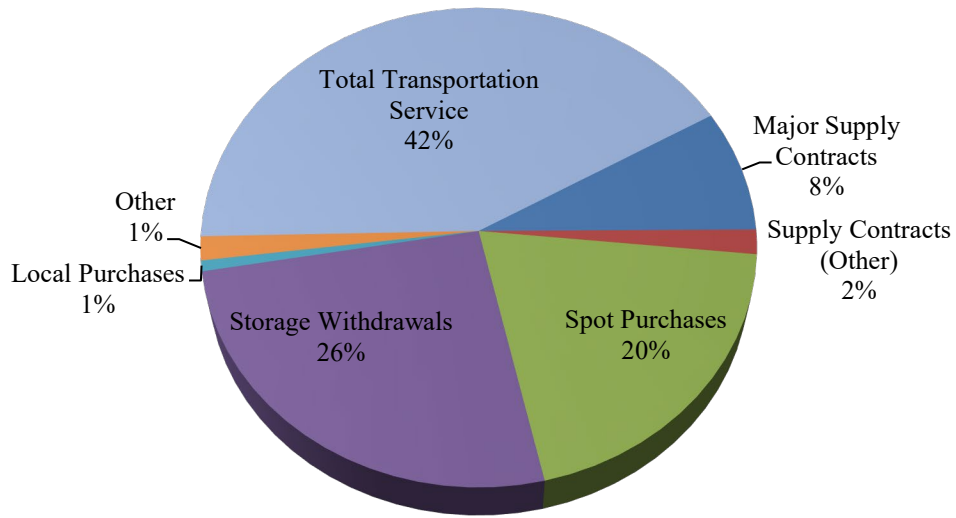


**Table 8: 2021 Peak Day Gas Supply and Demand Balance for Major Gas Utilities (MMcf)**

	UGI	PGW	Columbia	NFG	PECO	Peoples	Peoples Gas
<b>Gas Supply:</b>							
Supply Contracts	134	153	304	164	365	307	73
Spot Purchases	541	0	0	0	164	228	0
Storage Withdrawal	0	165	0	0	0	0	0
LNG	0	74	0	0	0	0	0
<b>Subtotal Gas Supply</b>	<b>675</b>	<b>392</b>	<b>304</b>	<b>164</b>	<b>529</b>	<b>535</b>	<b>73</b>
<b>Transportation</b>	<b>951</b>	<b>161</b>	<b>207</b>	<b>118</b>	<b>149</b>	<b>315</b>	<b>34</b>
<b>TOTAL GAS SUPPLY</b>	<b>1,626</b>	<b>553</b>	<b>510</b>	<b>282</b>	<b>678</b>	<b>850</b>	<b>107</b>
<b>Requirements:</b>							
Firm Requirements	504	391	304	164	605	486	61
Liquefaction Interruptible Requirements	0	0	0	0	0	0	0
Storage Injections	0	0	0	0	0	0	0
<b>Subtotal Firm &amp; Interruptible</b>	<b>504</b>	<b>391</b>	<b>304</b>	<b>164</b>	<b>605</b>	<b>486</b>	<b>61</b>
<b>Transportation</b>	<b>962</b>	<b>161</b>	<b>207</b>	<b>118</b>	<b>72</b>	<b>364</b>	<b>45</b>
<b>Load Deductions</b>	<b>(160)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL GAS REQUIREMENTS</b>	<b>1,626</b>	<b>552</b>	<b>510</b>	<b>282</b>	<b>677</b>	<b>850</b>	<b>106</b>
<b>Surplus (Deficiency)</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>

*Chart 9: Pennsylvania Peak Day Supply 2021*

**Pennsylvania Gas Peak Day Supply  
for Major Utilities in 2021  
Percentages out of a total of 4,604 MMcf**



## Section 3 – Financial Data

### **VIII. Natural Gas Distribution Company Financial Statistics**

#### **Data Set**

This section presents selected NGDC financial data taken from the Gas Annual Reports of the major NGDCs for an eleven-year period from 2011 through 2021.<sup>52</sup>

The data in Tables 9 through 13 includes operating revenues and expenses, net operating income, gross plant in service, administrative and general expense, maintenance expense, depreciation expense and total gas cost, and average cost of gas purchased by the NGDC.

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<sup>52</sup> Note: UGI Central Penn Gas was purchased from PPL Gas Utilities in 2007. UGI Penn Natural Gas was purchased from PG Energy in 2006. Equitable Gas Company merged with Peoples Natural Gas in 2013-2014, becoming Peoples Natural Gas Company, which has since merged with Peoples Gas Company. For ease of comparison in the tables, the data for Peoples includes combined data for Peoples, Equitable, and Peoples Gas during the years when they were still separate companies. UGI now reports as a combined company, so totals across the 3 companies in prior years have also been combined.

**Table 9: Operating Revenue and Operating Expense**

OPERATING REVENUE (\$ Million)							
	Columbia	NFG	PECO	Peoples	UGI	PGW	Total
2011	504.8	248.1	613.0	768.5	989.2	306.9	3,430.4
2012	406.3	215.9	545.4	681.6	784.7	642.6	3,276.4
2013	512.3	235.5	600.8	827.7	855.8	688.2	3,720.3
2014	563.3	248.3	646.8	946.1	973.9	746.6	4,125.0
2015	536.2	196.9	546.5	802.0	853.7	621.5	3,556.7
2016	493.9	175.0	463.4	667.1	739.7	629.0	3,168.1
2017	552.6	204.6	495.3	766.7	868.1	635.0	3,522.3
2018	590.2	215.3	569.8	820.0	1,002.0	697.2	3,894.4
2019	602.4	206.9	611.4	818.0	965.5	703.4	3,907.5
2020	555.3	189.2	515.1	722.6	908.1	608.1	3,498.4
2021	666.6	206.2	538.9	789.7	1,016.0	692.1	3,909.5
OPERATING EXPENSE (\$ Million)							
	Columbia	NFG	PECO	Peoples	UGI	PGW	Total
2011	444.6	200.8	406.7	595.5	755.9	237.0	2,640.6
2012	337.6	176.9	350.2	485.9	549.2	473.3	2,373.1
2013	416.1	187.9	484.8	571.0	592.5	491.2	2,743.5
2014	478.5	209.0	525.7	797.0	841.8	627.3	3,479.3
2015	445.2	165.0	430.5	660.0	731.2	564.9	2,996.8
2016	400.2	143.3	340.1	538.6	609.5	520.7	2,552.3
2017	467.1	177.0	367.7	643.2	713.5	540.0	2,908.4
2018	450.2	187.1	421.8	667.2	837.9	563.3	3,127.5
2019	466.8	175.1	457.7	645.4	780.2	552.5	3,077.7
2020	427.2	163.9	379.0	535.3	741.7	468.9	2,716.0
2021	510.5	165.2	392.0	570.4	824.9	480.7	2,943.6

**Table 10: Net Operating Income and Administration & General Expense**

NET OPERATING INCOME (\$ Million)							
	Columbia	NFG	PECO	Peoples	UGI	PGW	Total
2011	35.5	115.7	84.0	139.1	52.0	30.8	457.0
2012	45.2	27.9	106.3	110.7	135.3	32.7	458.3
2013	70.3	37.6	116.1	90.2	164.5	56.5	535.2
2014	97.0	45.8	121.0	165.3	182.9	67.7	679.8
2015	100.4	35.8	115.9	140.3	161.2	5.8	559.5
2016	66.8	24.0	123.2	84.2	109.7	63.3	471.3
2017	85.8	20.2	127.6	86.1	136.0	56.1	511.8
2018	105.8	21.8	148.0	104.5	127.2	97.7	605.0
2019	97.0	27.4	153.7	115.7	135.9	124.1	653.8
2020	86.6	20.9	136.2	137.3	119.5	105.0	605.4
2021	110.5	34.7	146.9	181.4	148.5	174.0	795.9
ADMINISTRATION & GENERAL EXPENSE (\$ Million)							
	Columbia	NFG	PECO	Peoples	UGI	PGW	Total
2011	56.2	29.4	29.0	90.1	69.7	19.8	294.2
2012	47.4	28.9	32.7	80.5	61.4	124.1	375.0
2013	53.0	31.2	28.0	93.7	75.7	107.9	389.4
2014	58.9	27.7	27.4	75.3	79.8	110.9	380.0
2015	62.3	27.9	30.2	79.6	85.8	152.9	438.8
2016	70.5	24.5	31.3	63.2	72.8	168.3	430.7
2017	91.5	28.2	33.2	59.9	85.4	148.5	446.7
2018	64.8	30.3	33.8	60.6	91.0	133.0	413.4
2019	74.2	26.0	31.1	59.3	96.8	120.8	408.2
2020	84.6	30.7	31.2	56.1	110.4	89.5	402.3
2021	86.7	8.5	33.6	55.8	112.5	50.7	347.7

**Table 11: Maintenance Expense and Depreciation Expense**

MAINTENANCE EXPENSE (\$ Million)								
	Columbia	NFG	PECO	Peoples	UGI	PGW		Total
2011	13.9	3.9	21.5	40.3	26.4	7.8		113.8
2012	14.4	3.3	20.8	41.4	27.5	29.8		137.2
2013	15.5	5.6	27.0	45.2	28.0	33.6		154.9
2014	18.3	6.1	26.8	47.6	31.9	40.5		171.2
2015	22.0	6.4	32.4	47.6	34.3	38.5		181.1
2016	23.6	5.9	29.5	42.5	30.8	41.0		173.4
2017	25.8	6.1	29.9	42.7	33.2	42.5		180.3
2018	22.3	6.4	28.7	48.7	38.4	45.8		190.3
2019	23.8	6.8	30.2	51.7	41.7	46.5		200.8
2020	25.7	6.8	33.6	53.8	23.7	45.7		189.2
2021	28.5	7.6	34.2	53.6	23.0	47.9		194.8
DEPRECIATION EXPENSE (\$ Million)								
	Columbia	NFG	PECO	Peoples	UGI	PGW		Total
2011	25.0	11.3	33.5	51.5	45.8	14.4		181.5
2012	14.4	11.4	35.1	53.8	46.5	40.1		201.3
2013	33.4	11.4	36.7	55.1	49.2	41.5		227.3
2014	37.7	11.5	39.2	53.6	52.5	41.7		236.1
2015	42.1	12.0	42.0	53.3	56.8	44.6		250.8
2016	47.5	12.9	43.1	56.0	60.7	46.7		267.0
2017	52.0	14.2	47.2	59.9	66.9	48.6		288.9
2018	55.6	14.4	51.8	64.5	74.6	60.5		321.4
2019	65.7	14.4	56.4	69.6	86.7	68.2		361.0
2020	72.3	15.0	59.7	76.4	100.9	65.0		389.2
2021	79.0	16.3	63.2	83.9	111.4	70.2		424.1

**Table 12: Total Gas Costs and Average Cost of Gas Purchased**

TOTAL GAS COSTS (\$ Million)							
	Columbia	NFG	PECO	Peoples	UGI	PGW	Total
2011	332.2	96.6	314.5	420.0	596.4	194.2	1,953.9
2012	152.8	69.4	239.1	251.1	391.5	220.8	1,324.6
2013	265.3	79.3	275.5	342.5	467.0	258.9	1,688.5
2014	259.1	91.3	320.3	397.6	545.6	295.1	1,909.0
2015	182.6	44.5	189.2	311.8	361.1	196.8	1,286.0
2016	114.7	22.5	174.1	213.7	307.1	149.8	981.8
2017	176.4	54.3	190.9	307.3	401.7	187.9	1,318.5
2018	184.2	62.5	297.1	350.8	507.8	203.5	1,605.9
2019	157.4	57.9	209.6	322.8	451.8	191.7	1,391.2
2020	120.9	37.1	163.3	236.7	484.8	144.3	1,187.1
2021	207.5	56.2	222.2	331.4	443.7	216.0	1,477.0
AVERAGE COST OF GAS PURCHASED (\$/MCF)							
	Columbia	NFG	PECO	Peoples	UGI	PGW	Ave.
2011	7.51	4.72	6.18	7.30	6.47	5.74	6.32
2012	4.79	3.37	5.47	5.29	6.16	4.98	5.01
2013	5.75	3.81	5.51	5.25	4.74	5.29	5.06
2014	6.25	4.07	6.15	4.20	5.29	5.78	5.29
2015	4.90	2.10	4.09	4.60	6.29	4.17	4.36
2016	3.56	1.21	3.97	5.44	4.34	3.33	3.64
2017	5.22	2.85	4.39	4.11	4.02	4.28	4.15
2018	4.43	2.93	6.11	3.06	4.55	4.31	4.23
2019	4.30	2.82	4.53	4.78	5.64	4.17	4.37
2020	3.60	1.90	4.11	3.93	5.79	3.44	3.80
2021	5.20	2.84	5.17	5.42	5.66	5.18	4.91

*Table 13: Gross Utility Plant in Service*

GROSS UTILITY PLANT IN SERVICE (\$ Million)							
	Columbia	NFG	PECO	Peoples	UGI	PGW	Total
2011	1,073.6	491.5	1,792.9	2,277.7	2,033.4	597.8	8,267.0
2012	1,198.2	501.4	1,859.5	2,392.7	2,137.4	1,575.8	9,665.0
2013	1,335.7	511.7	1,932.4	2,350.6	2,262.9	1,596.6	9,989.9
2014	1,500.5	527.2	2,071.4	2,469.8	2,418.9	1,646.7	10,634.5
2015	1,660.1	542.5	2,205.4	2,589.7	2,581.9	1,685.2	11,264.7
2016	1,860.1	577.8	2,260.4	2,697.5	2,945.3	1,741.5	12,082.6
2017	2,074.1	594.5	2,503.6	2,892.3	3,035.8	1,793.6	12,893.9
2018	2,330.6	611.8	2,694.0	3,110.5	3,329.1	1,905.1	13,981.0
2019	2,568.9	637.9	2,899.1	3,357.7	3,681.6	2,038.5	15,183.7
2020	2,851.1	662.2	3,098.4	3,592.3	4,004.8	2,172.1	16,380.9
2021	3,141.1	690.8	3,339.3	3,872.3	4,359.7	2,331.7	17,735.1

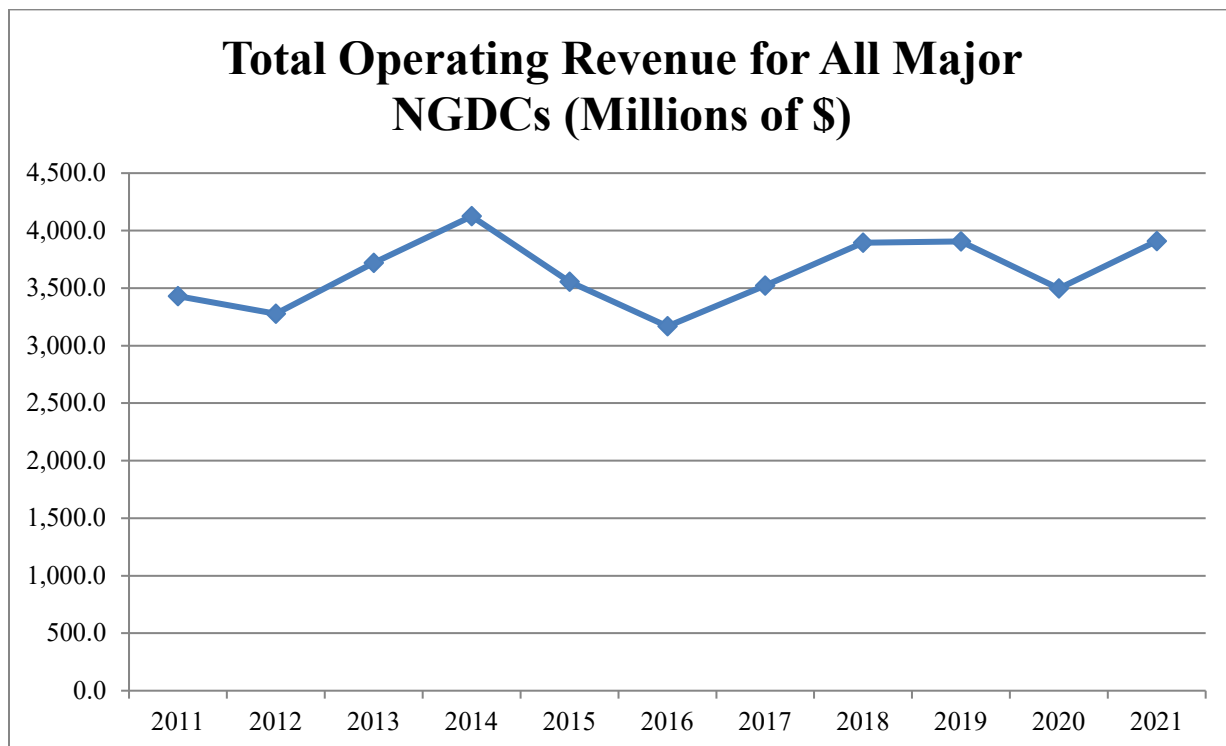


## IX. Industry Trends

Many indicators of the financial status of the gas utilities in Pennsylvania are very closely correlated with current prices of natural gas. The single largest expense for NGDCs is the procurement of natural gas and the largest source of revenue is the sale of natural gas.<sup>53</sup>

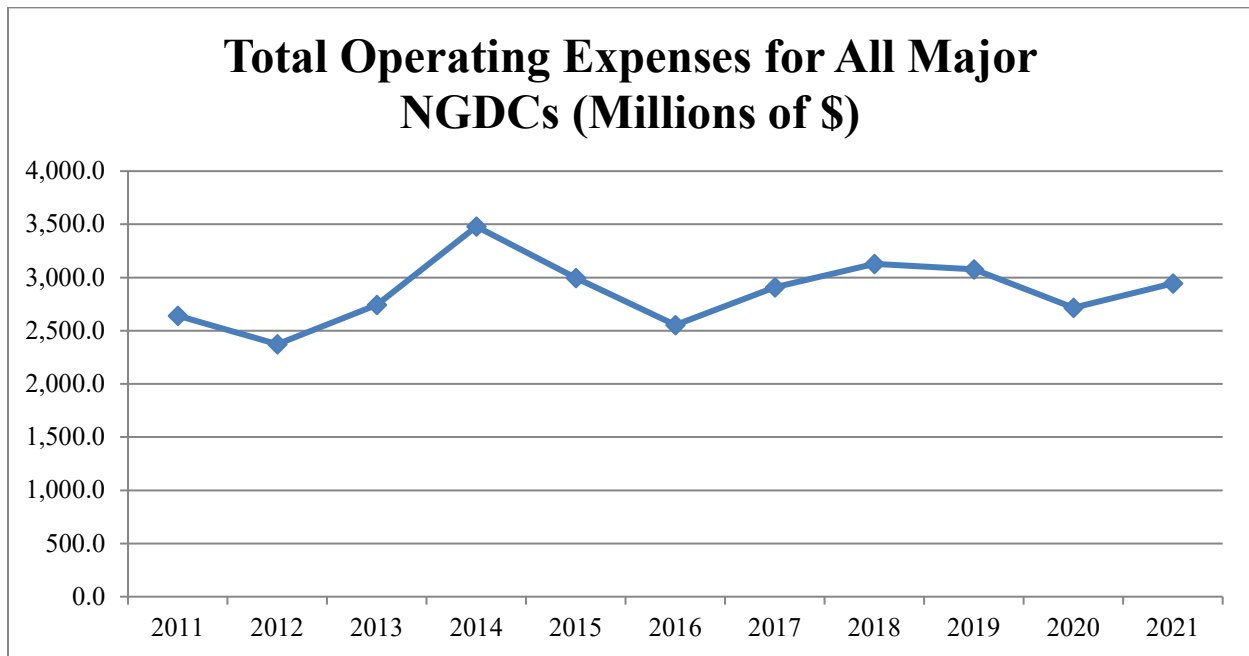
Therefore, as gas prices have remained low in recent years, so too have the sales revenues of the NGDCs. Figures 10 through 12, below, illustrate this correlation with very similar patterns for Operating Revenues, Operating Expenses, and the Average Cost of Gas Purchased for the major NGDCs since 2011.

*Figure 10: Total Operating Revenue for All Major NGDCs (Millions of \$)*

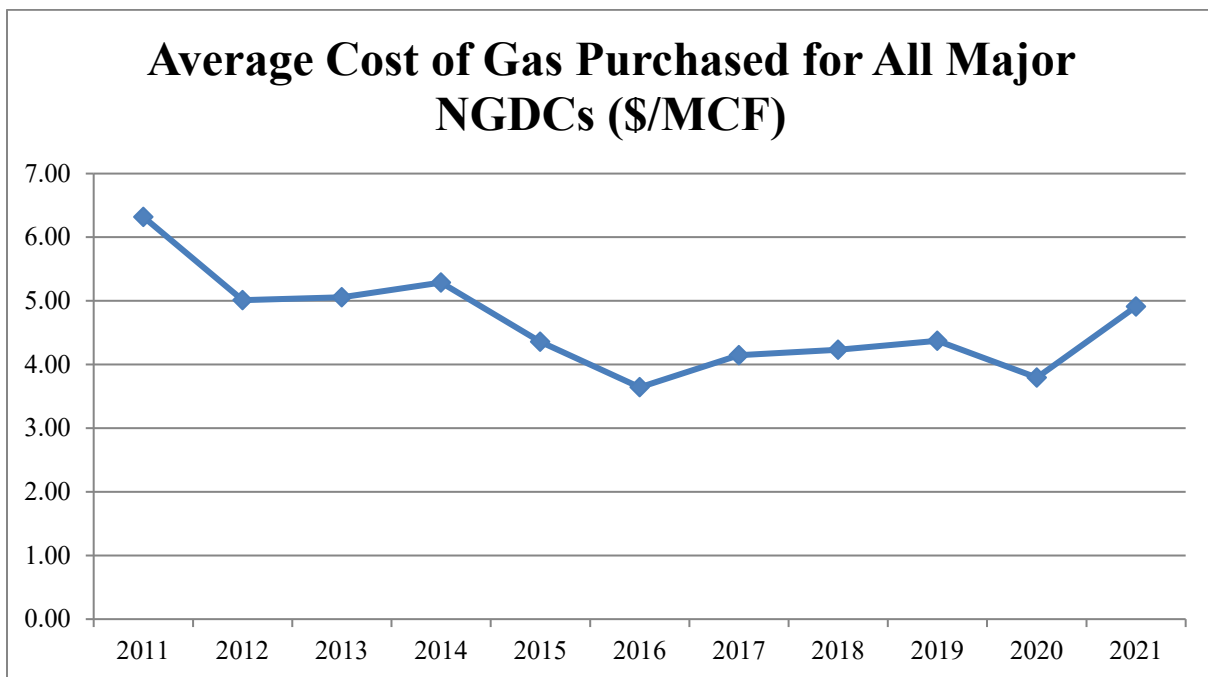


<sup>53</sup> Pennsylvania natural gas utilities do not derive any net earnings or profits from natural gas commodity prices. The cost of procuring natural gas for customers is purely a pass-through cost. NGDCs only earn a profit on the delivery of the commodity to customers.

*Figure 11: Total Operating Expenses for All Major NGDCs (Millions of \$)*



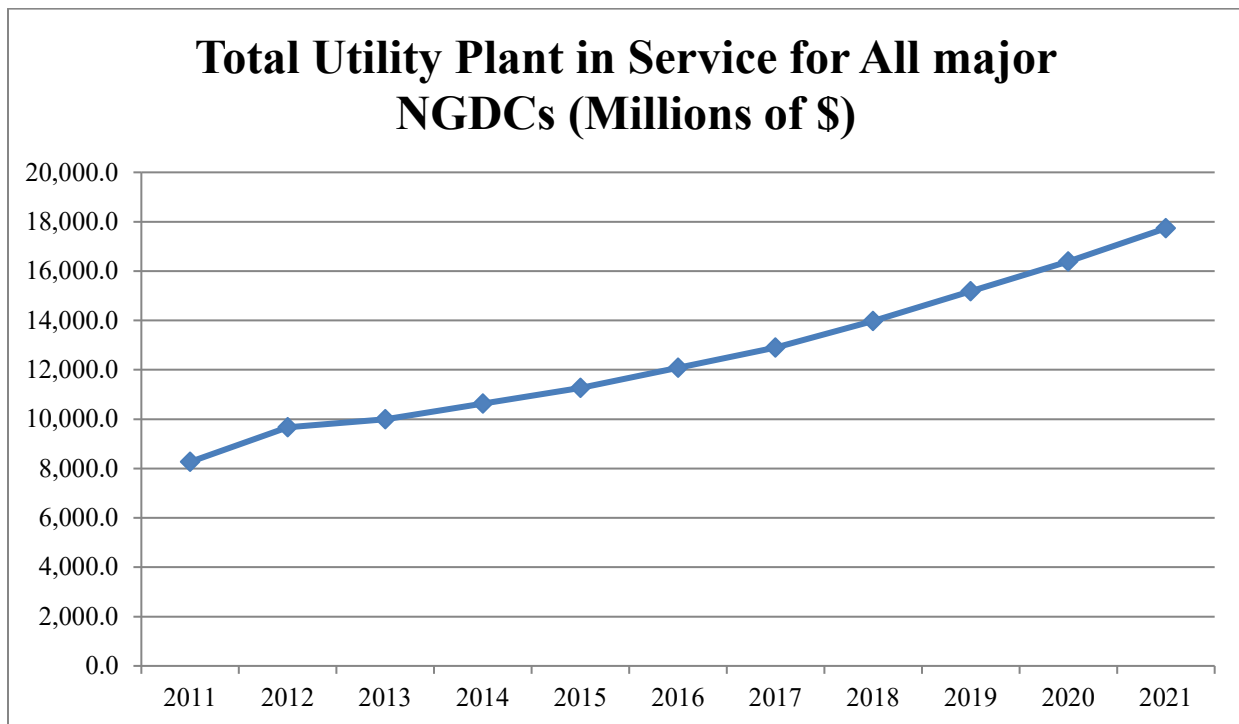
*Figure 12: Average Cost of Gas Purchased for All Major NGDCs (\$/Mcf)*



Over the past decade, NGDCs have been steadily investing in their infrastructure. Much of the increase in infrastructure spending was spurred by the implementation of Commission-approved Long-Term Infrastructure Improvement Plans (LTIIPs) and their corresponding Distribution

System Improvement Charge (DSIC) mechanisms for most of the major NGDCs.<sup>54</sup> Figure 13, below, shows that the major NGDCs have added approximately \$861 million per year to their total utility plant in service. This equates to a cumulative increase of 114.5% in plant in service for the total industry since 2011. Figure 14, below, shows that while all NGDCs have increased plant in service since 2011, PGW and Columbia have the fastest rates of increase, PGW has nearly quadrupled its total plant in service since 2011, while Columbia has nearly tripled its plant in service over the same period. NFG has the slowest rate of increase at 40.6% since 2011.<sup>55</sup>

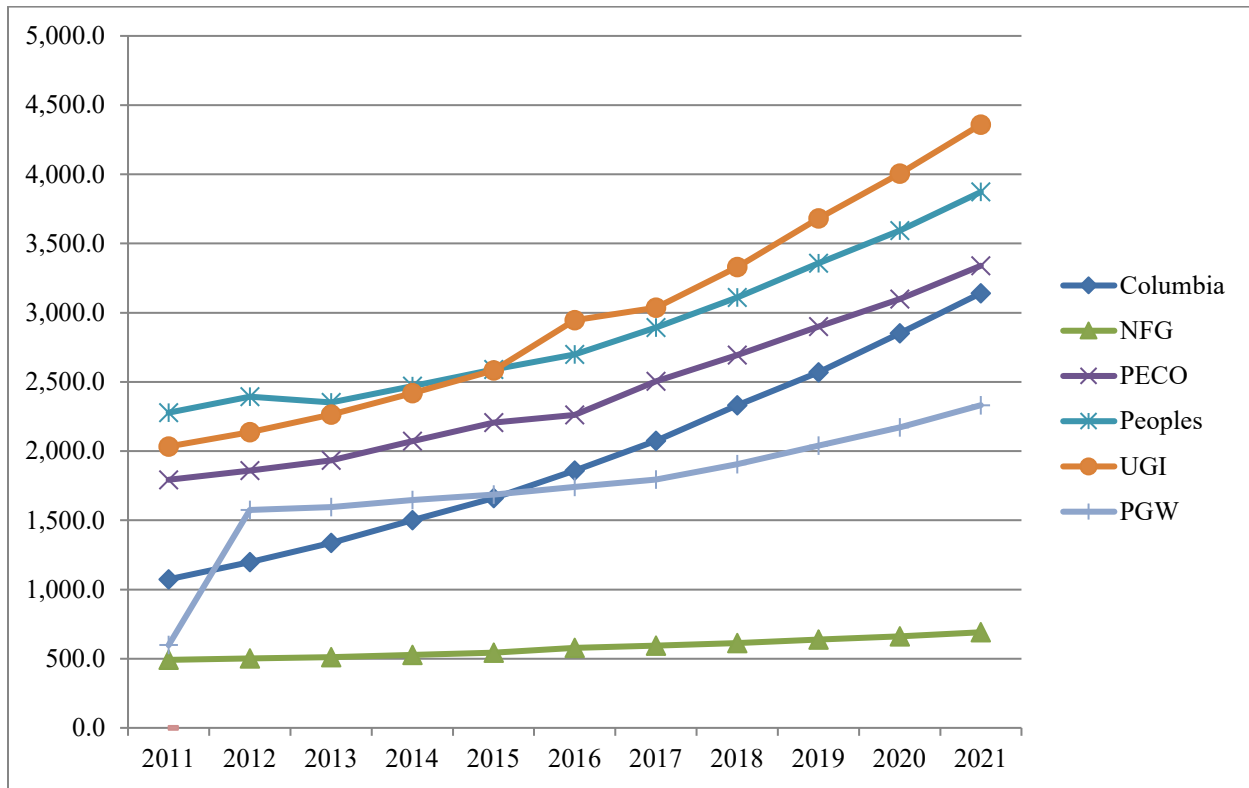
*Figure 13: Total Utility Plant in Service for All Major NGDCs (Millions of \$)*



<sup>54</sup> See *Final Implementation Order*, order entered May 23, 2014, at Docket No. L-2012-2317274.

<sup>55</sup> All of the other major NGDCs besides PGW and Columbia have had an increase in total plant in service of approximately 70-110% since 2011. The only other notable exception is NFG, with an increase of only 40.6%. NFG is also the only major NGDC without a Commission-approved LTIP in Pennsylvania. However, NFG filed a Petition for approval of an LTIP on September 2, 2022, at Docket No. P-2022-3034957, which is currently under consideration by the Commission.

**Figure 14: Cumulative Percentage Increase in Utility Plant in Service for All Major NGDCs (base year 2011)**



## *Section 4 - Conclusion*

### **X. Summary**

Natural gas production and consumption have both continued to increase in Pennsylvania in 2021. This mirrors the national rebound in both production and consumption in 2021, recovering from the reductions in 2020. Natural gas prices have risen significantly in 2021 and 2022, but it appears that prices will begin dropping again in 2023. These price fluctuations are significant, as natural gas has become the largest portion of Pennsylvania's electric power generation, and it seems likely that it will continue to be the largest share of the electric generation portfolio going forward.

A notable industry trend is the marked increase in natural gas usage in the electric power generation sector. The share of natural gas being allocated to electric power generation has been rapidly increasing year-over-year in Pennsylvania and in the US as a whole. In Pennsylvania, electric power generation now accounts for more than half of all natural gas deliveries to consumers, but it appears to have leveled off in 2021. Despite the leveling off of electric power generation in Pennsylvania, the other sectors of usage seem to be continuing to drive increases in natural gas consumption in the state.

In general, it appears that the natural gas industry in Pennsylvania is robust, and drilling for new natural gas wells is increasing again as commodity prices have risen. Natural gas utilities in Pennsylvania are making significant investments in their infrastructure, to ensure that they will be prepared to meet any increased demand in the future, providing the residents and businesses of the Commonwealth with safe and reliable natural gas service.

## Acronyms

ARPR	= Annual Resource Planning Report
Bcf	= Billion cubic feet
Bcfd	= Billion cubic feet per day
EIA	= Energy Information Administration
GSC	= Gas Supply Cost
LDC	= Local Distribution Company
LNG	= Liquefied Natural Gas
Mcf	= Thousand cubic feet
MMBtu	= Million British Thermal Units
MMcf	= Million cubic feet
MW	= Megawatt
NGDC	= Natural Gas Distribution Company
NGL	= Natural Gas Liquids
NGS	= Natural Gas Supplier
NYMEX	= New York Mercantile Exchange
PUC	= Public Utility Commission
Tcf	= Trillion cubic feet



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