



PENNSYLVANIA GAS OUTLOOK REPORT

October 2017

**Published by:
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265
www.puc.pa.gov**

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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).¹ These Reports detail such items as financial and accounting data, including revenues and expenses. NGDCs are also required to file annual resource planning reports (ARPR) with the PUC.² 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.³

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 Agency (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.

¹ 52 Pa. Code § 59.48.

² 52 Pa. Code § 59.81.

³ 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), Peoples Gas Company (Peoples Gas), UGI Utilities (UGI or UGI Util.), UGI Central Penn Gas (UGI – CPG), UGI Penn Natural Gas (UGI – PNG), 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 2016 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 season⁴ was 4 trillion cubic feet (Tcf). This was 0.4 Tcf higher than the peak from the prior injection season. Natural gas production in the U.S. averaged 89.2 billion cubic feet per day (Bcfd) in 2016, which was a decrease of 1 percent from 2015. This drop interrupted the previous ten consecutive annual increases in U.S. domestic production.⁵ Domestic consumption in 2016 was 75.1 Bcfd, a slight decrease of 0.2 Bcfd from 2015. This was a leveling off of domestic consumption after 6 years of consecutive increases.⁶ Henry Hub spot prices averaged \$2.52 per million British thermal units (MMBtus) in 2016, a slight drop of 3.8 percent from \$2.62 in 2015.⁷ The EIA predicts the Henry Hub annual average spot price to rebound over the next two years, rising to an average of \$3.10/MMBtu in 2017 and \$3.40/MMBtu in 2018. An analysis of Henry Hub natural gas futures contracts in comparison to Henry Hub spot prices⁸ also shows an expected rise in prices over the coming 12 months; producing a national average price of \$3.03/MMBtu for the twelve months ending July 2018.⁹

⁴ 2017-2018 heating season

⁵ EIA, *EIA Natural Gas Gross Withdrawals and Production*, June 2016 release, available at <http://www.eia.gov>.

⁶ EIA, *EIA Natural Gas Consumption by End Use*, June 2016 release, available at <http://www.eia.gov>.

⁷ 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.

⁸ CME Group, Natural Gas futures quotes as of July 6, 2016, available at <http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html>.

⁹ EIA, *EIA Short Term Energy Outlook*, July 2017 release, available at <http://www.eia.gov>.

Pennsylvania Summary

There are nearly 3 million natural gas customers in Pennsylvania, with about 2.7 million residential customers.¹⁰ There are 31 regulated natural gas utility companies in Pennsylvania,¹¹ and 10 of these are major distribution companies with gross revenues greater than \$40 million per year.¹² 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 July 7, 2017, 24,033 unconventional drilling permit applications have been filed with the Pennsylvania Department of Environmental Protection.¹³ Of those applications, 10,528 unconventional wells have been drilled.¹⁴ As of July 17, 2017, there were 34 rotary rigs active in Pennsylvania, which is a 240 percent increase in the number of active rigs from 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.¹⁵ The EIA estimates that there were 68,500 producing shale and conventional gas wells in Pennsylvania in 2015.¹⁶

Financial statistics taken from the Gas Annual Reports of the NGDCs are presented in Section VII, in time series fashion from 2005 through 2016. Sections V through VII present broad category financial data for several categories, including revenue, expenses, plant in service,

¹⁰ EIA, EIA Number of Natural Gas Consumers, most current data available at <http://www.eia.gov>.

¹¹ One of the distribution companies is the Equitable Division of Peoples Natural Gas. While it is still separately certificated, Peoples is running both divisions as one company.

¹² \$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.

¹³ 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.

¹⁴ See *PA DEP Well Permit Workload Report for 1/1/2016 - 7/1/2016*, available at http://www.portal.state.pa.us/portal/server.pt/community/oil_and_gas_reports/20297.

¹⁵ Baker Hughes, Baker Hughes Rotary Rig Count, 7/1/16 release, available at <http://www.bakerhughes.com/rig-count>.

¹⁶ EIA, *Natural Gas Annual*, 2015 (most current data available), 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 1,286 Bcf in 2015.
- Pennsylvania gas production reached nearly 4.8 Tcf in 2015, up from only 80 Bcf (0.08 Tcf) in 1997.
- Gas deliveries for Pennsylvania electric generation have increased markedly from 3 percent of total deliveries in 1997, to 46 percent in 2016, or 20 Bcf in 1997 as compared to 501 Bcf in 2016.¹⁷

¹⁷ 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.¹⁸

Marcellus shale production in the northeast U.S. has risen from 2 Bcfd in January 2010 to 19.3 Bcfd in June 2017. 2 Bcfd of this production increase occurred in the most recent year, between 2016 and 2017. 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 30.5 Bcfd of pipeline projects that have been, or are scheduled to be, placed in service in the Northeast region in 2017. A further 29.7 Bcfd of projects are scheduled to be placed in service in 2018, 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.¹⁹

¹⁸ EIA, Natural Gas Pipelines in the Northeast Region, About U.S. Natural Gas Pipelines, available at <http://www.eia.gov>.

¹⁹ EIA, EIA Marcellus Region Drilling Productivity Report, June 2016, available at <http://www.eia.gov>.

Table 1: Proposed Pipeline Infrastructure for 2017 In-Service²⁰

Project Name	Pipeline Operator Name	State(s)	Additional Capacity (MMcf/d)
Lebanon Extension Project	Texas Eastern Transmission	PA,OH	102
Atlantic Sunrise Project (bi-directional)	Transcontinental Gas Pipeline	PA,VA,NC,SC,GA,AL	1,700
Access South Project	Texas Eastern Transmission	PA,WV,KY,TN,AL,MS	320
Salem Lateral Project	Algonquin Gas Transmission	MA	115
Lebanon lateral 2017	ANR Pipeline	OH	0
PennEast Pipeline Co	PennEast Pipeline Co	PA,NJ	1,107
Bayway Lateral Project	Texas Eastern Transmission	NJ	300
Gulf Markets Expansion Phase 2 (bi-directional)	Texas Eastern Transmission	PA,WV,OH,KY,TN,AL,MS,LA	400
Rover Pipeline Project Phase 2	Rover Pipeline	PA,WV,OH,MI,CN	1,050
Rover Pipeline Project Phase 1	Rover Pipeline	PA,WV,OH,MI,CN	2,200
Leach XPress project	Columbia Gas Transmission	OH,PA,WV	1,530
Mountaineer XPress Pipeline	Columbia Gas Transmission	WV	2,500
Northern Supply Access Project	Texas Gas Transmission	OH,IN,KY,TN,MS,LA	284
Susquehanna West Project	Tennessee Gas Pipeline Co	PA	145
Adair Southwest Project	Texas Eastern Transmission	PA,WV,OH,KY	200
New York Bay Expansion Project	Transcontinental Gas Pipeline	PA,NJ,NY	115
Triad Expansion Project	Tennessee Gas Pipeline Co	PA	180
CPV Valley lateral project	Millennium Pipeline	NY	130
NEXUS Gas Transmission	Spectra Energy	OH,MI,ON	1,500
MARC II pipeline	Central New York Oil & Gas	PA	700
Atlantic Bridge project	Algonquin Gas Transmission	NJ,NY,CT,RI,MA	153
Virginia Southside II	Transcontinental Gas Pipeline	VA	250
UGI Sunbury Pipeline	UGI Energy Services	PA	200
Eastern Shore 2017 Expansion	Eastern Shore Natural Gas	PA,MD,DE	86
Garden State Expansion Project	Transcontinental Gas Pipeline	NJ	180
Northern Access 2016 Project	National Fuel Gas Supply Corp	PA,NY	497
Northern Access 2016 Project	Empire Pipeline	NY,ON	350
Garden State Expansion	Transcontinental Gas Pipeline	NJ	180
System Reliability Project	Eastern Shore Natural Gas	DE	0
White Oak Mainline Expansion Project	Eastern Shore Natural Gas	PA,MD,DE	45

²⁰ EIA, EIA Natural Gas Pipeline Projects, available at <http://www.eia.gov>

Table 2: Proposed Pipeline Infrastructure for 2018 In-Service²¹

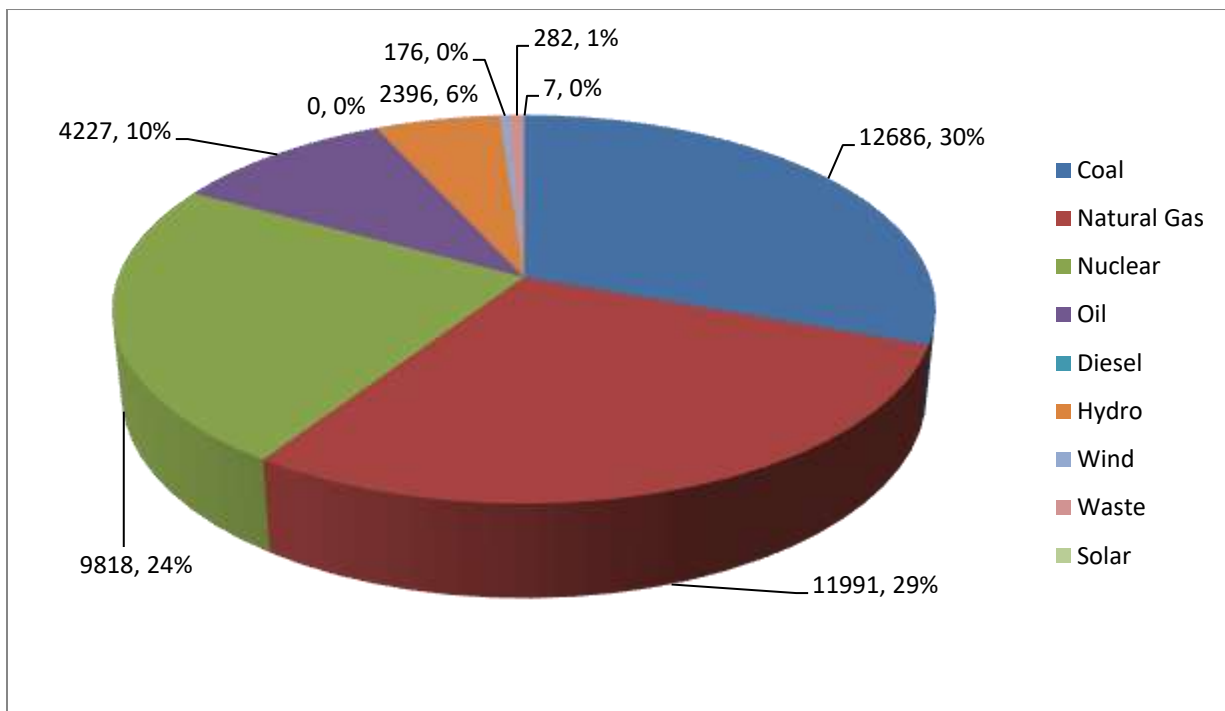
Project Name	Pipeline Operator Name	State(s)	Additional Capacity (MMcf/d)
ANR East Pipeline Project	ANR Pipeline	OH,IN	1,200
Keys Energy Project	Dominion Cove Point LNG PL Co	VA,MD	107
Diamond East Project	Transcontinental Gas Pipeline	PA,NY	1,000
Tennessee Gas Abandonment Capacity and Restoration Project (Gas-to-NGL pipe)	Tennessee Gas Pipeline Co	OH, KY,TN,MS,LA	0
Atlantic Coast Pipeline	Atlantic Coast Pipeline	WV,VA,NC	1,500
Southwest Louisiana Supply Project	Tennessee Gas Pipeline Co	PA,OH,KY,TN,MS,LA	900
Supply Header Project	Dominion Transmission	PA,WV	1,500
Orion Project	Tennessee Gas Pipeline Co	PA	135
Northeast Energy Direct	Tennessee Gas Pipeline Co	PA,NY,MA	1,300
Eastern System Upgrade Project	Millennium Pipeline	NY	200
Western Marcellus Pipeline Project/Appalachian Connector	Transcontinental Gas Pipeline	OH,WV,VA	2,000
WB (West Bound) Xpress	Columbia Gas Transmission	MD,VA,WV	1,300
Access Northeast	Algonquin Gas Transmission	NY,CT,MA	925
Appalachia to Market Project (A2M Project)	Texas Eastern Transmission	OH,WV,PA,NJ	1,000
Mountain Valley Pipeline	Mountain Valley Pipeline/EQT Corp	WV,VA,NC	2,000
Appalachian Lease Project (TEAL)	Texas Eastern Transmission	PA,WV,OH	950
Panhandle Backhaul Project	Panhandle Eastern Pipeline Co	OH,IN,IL	750
Constitution Pipeline	Constitution Pipeline Co	PA,NY	650
South to North project	Iroquois Pipeline Co	NY,CN	650
Wright Interconnect Project	Iroquois Pipeline Co	NY	650
Central Virginia Connector	Columbia Gas Transmission	VA	45
Leidy South Project	Dominion Transmission	PA,MD,VA	155

²¹ *Id.*

IV. Natural Gas Generation and End Uses in Pennsylvania

By the end of 2016, Pennsylvania had 11,991 megawatts (MWs) of natural gas fired electric generation installed capacity, as shown by comparison to other capacity fuel sources in Chart 1, below²². These facilities constitute 29 percent of Pennsylvania's generating capacity, up from 26 percent the prior year. All other generation sources stayed relatively flat, so the change in the share of natural gas capacity was caused almost entirely by the 1,584 MW increase in natural gas capacity.

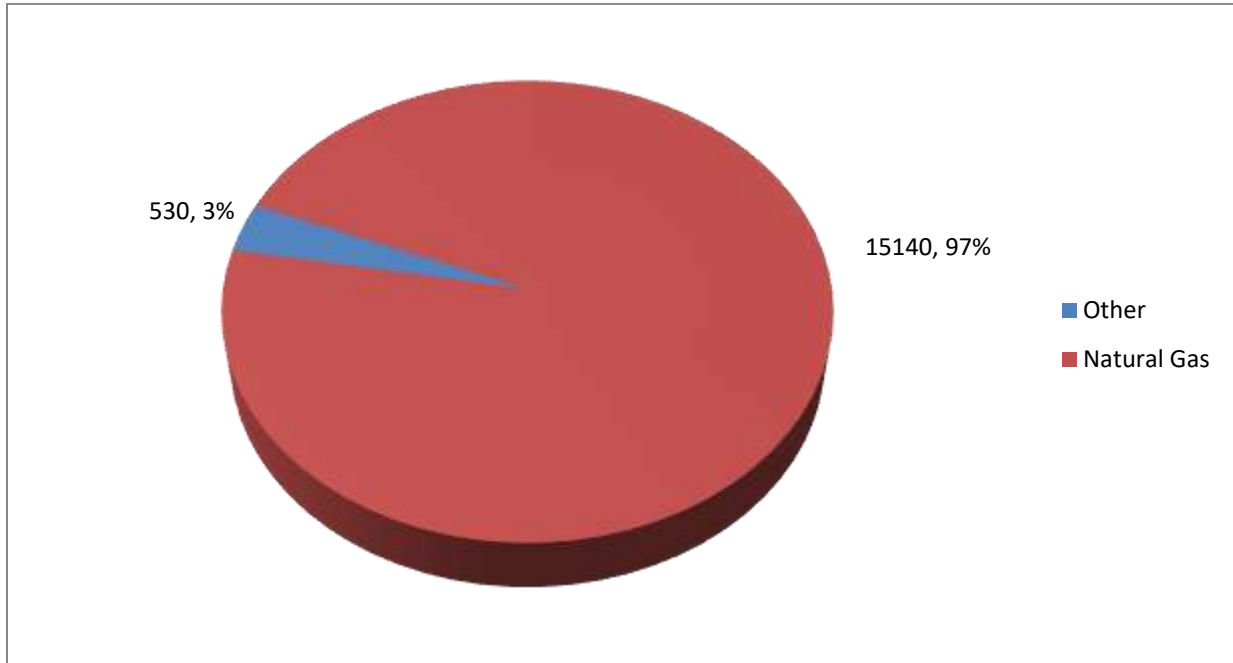
Chart 1: Capacity in Pennsylvania by Fuel Type at Year End 2016 (MW)



²² Data from PJM's 2016 PA State Report

Chart 2, below, summarizes the PJM queue for new electric generation capacity for Pennsylvania as of December 2016. The queue includes 15,140 MW of proposed new natural gas fired capacity, making up nearly the entire PJM queue for Pennsylvania.^{23 24} Typically, about 25 percent of the projects in PJM’s queue are built.²⁵

Chart 2: Queued Capacity in Pennsylvania by Fuel Type (MW)



Charts 3 and 4, below, compare, between 1997 and 2016, the gas delivered in Pennsylvania for electric generation compared to other end-uses. 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

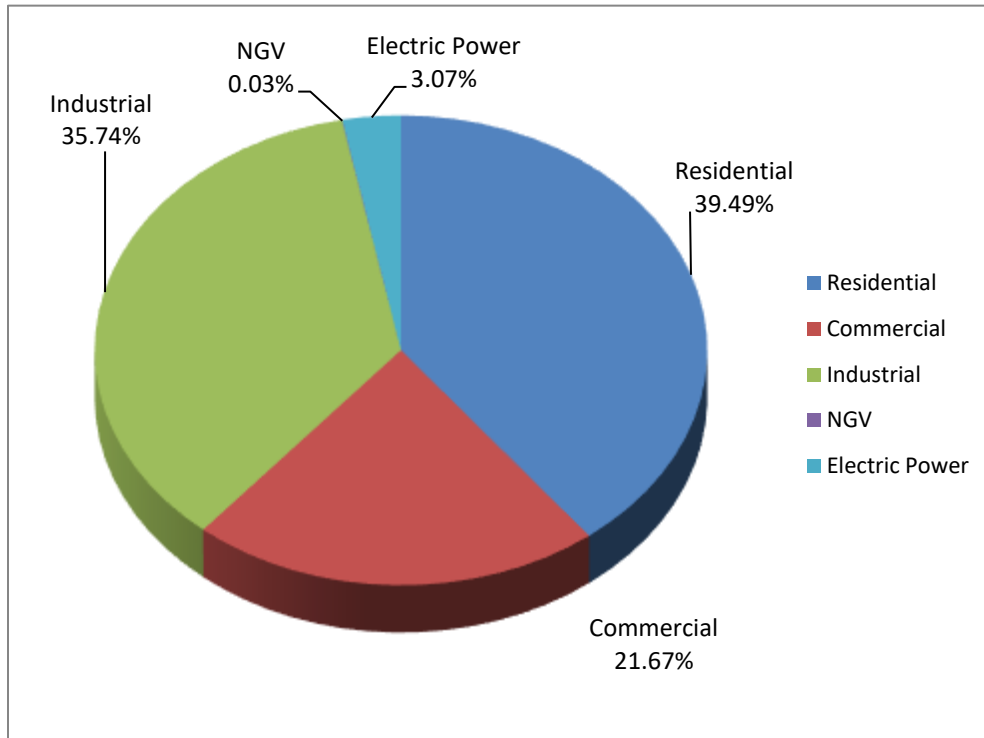
²³ PJM Pennsylvania State Report 2017, provided to PUC staff in July, 2017.

²⁴ The three largest components of the “Other” fuel types are Solar (214 MW) and Wind (172 MW) and Nuclear (94 MW).

²⁵ PJM, PJM 2016 Regional Transmission Expansion Plan Report, available at <http://www.pjm.com/library/reports-notices/rtep-documents/2016-rtep.aspx>.

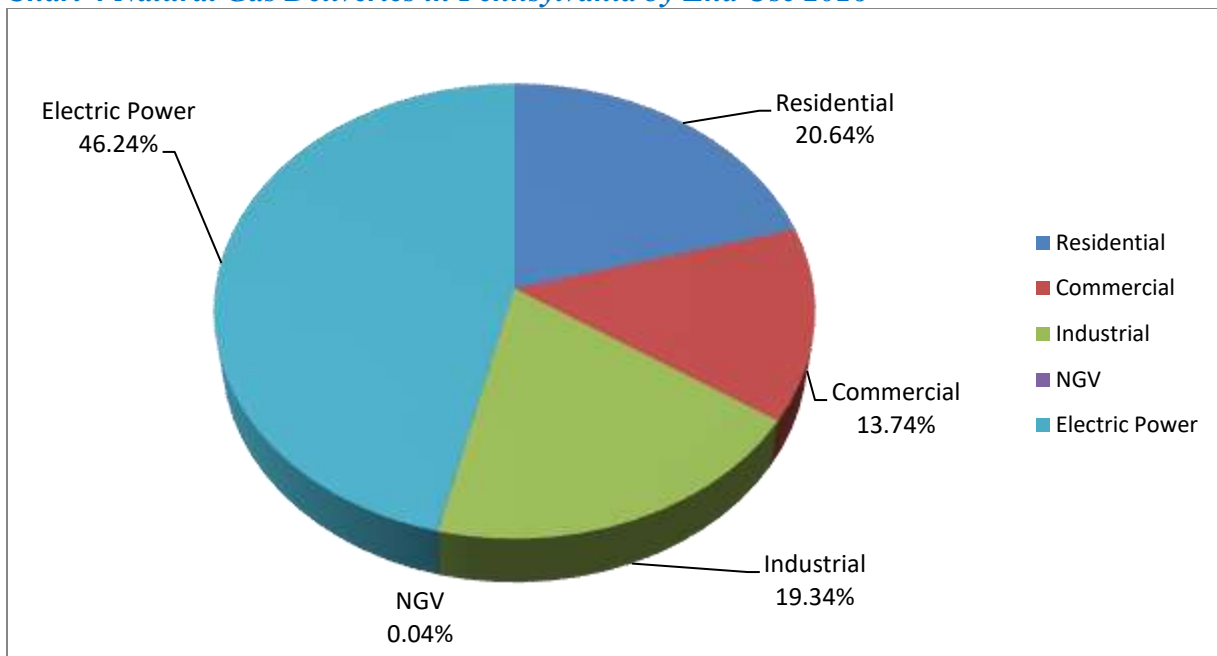
gas fueled electric generation technology; and retirements of older coal-fired plants. As the composition of the generating fleet changes to more gas-fired units, pressure will increase on the natural gas industry to augment production and transportation capacity.

Chart 3: Natural Gas Deliveries in Pennsylvania by End Use 1997²⁶



²⁶ NGV = Natural Gas Vehicles

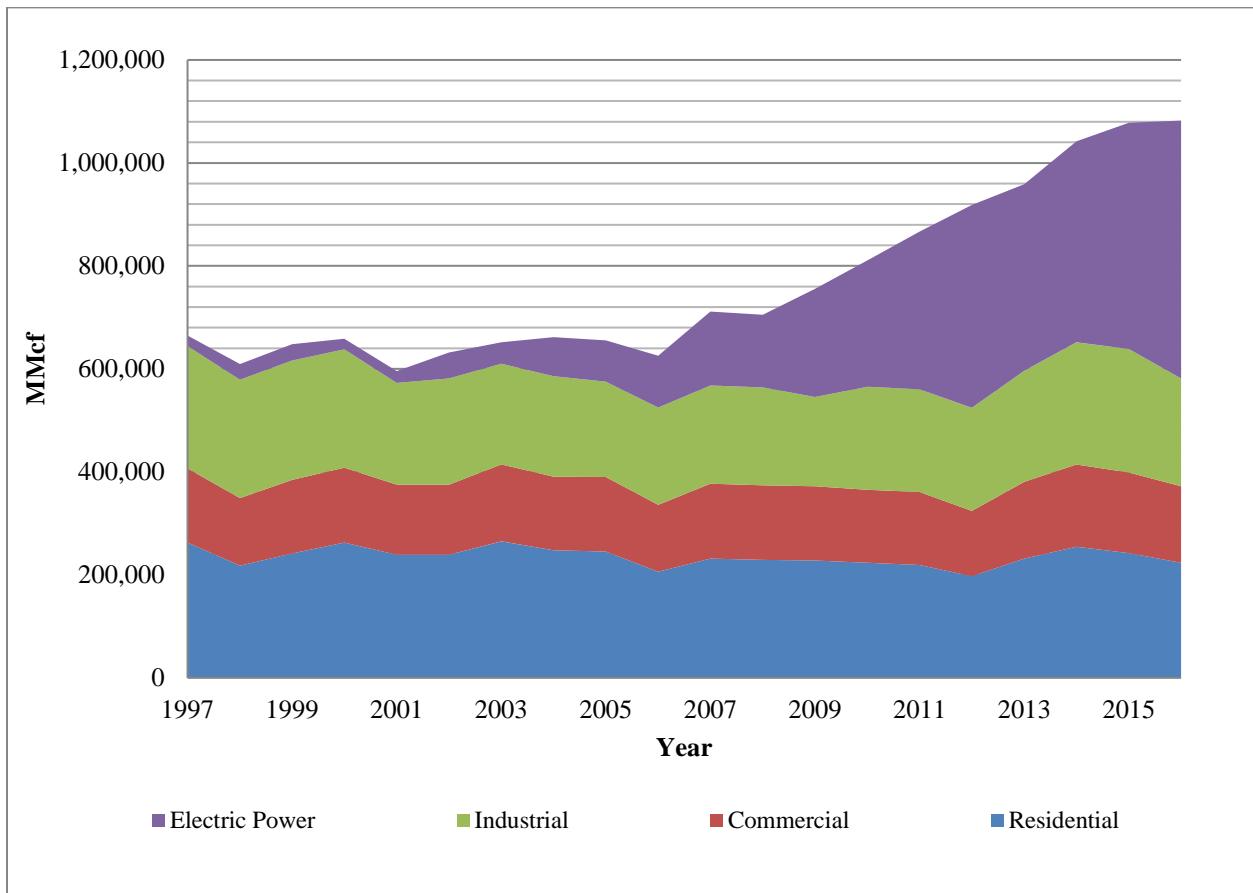
Chart 4 Natural Gas Deliveries in Pennsylvania by End Use 2016



The dramatic shift in the use of natural gas from primarily residential and industrial uses to electric power generation has been occurring steadily over the period from 1997 through 2016, with a marked acceleration beginning in 2008 as Marcellus Shale production ramped up, as seen in Figure 1, below. Notably, natural gas usage for electric generation increased about 38 percent from 2013 to 2016, rising 138 Bcf, while total usage increased only 123 Bcf over the same time period.²⁷ All categories of usage decreased over this time with the exception of electric power, resulting in the increased share of gas usage for electric power of 8.5 percent.

²⁷ 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 336 MMcf to 449 MMcf, an increase of 34% from 2013-2016.

Figure 1: Natural Gas Deliveries in Pennsylvania by End Use 1997-2016

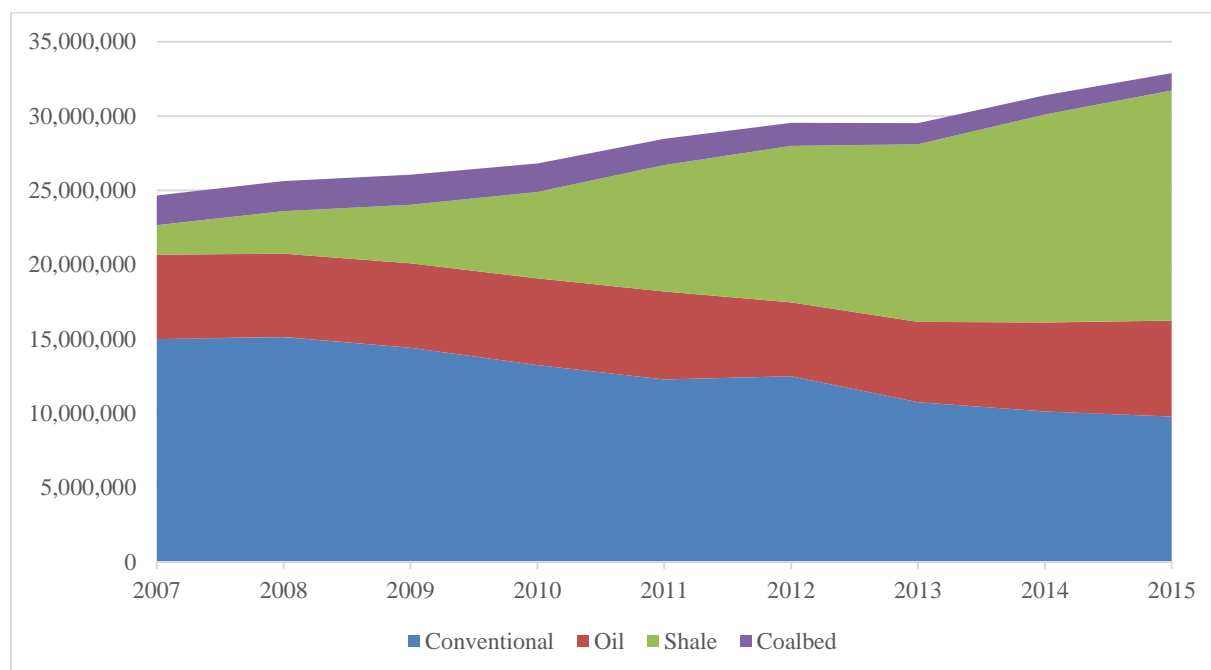


V. Natural Gas Production, Consumption, Reserves, and Prices

United States

Total U.S. withdrawals of natural gas were 32.9 Tcf in 2015, of which, gross withdrawals of unconventional shale gas were 15.5 Tcf.²⁸ As seen in Figure 2 below, this is the third consecutive year in which unconventional shale gas withdrawals outpaced conventional gas wells in the US. This trend is accelerating, with the spread between shale and conventional gas production increasing nearly 400 percent from 1.2 Tcf in 2013 to 5.7 Tcf in 2015.

Figure 2: US Gross Natural Gas Withdrawals (MMcf)



The national storage inventory peak for the prior 12 months was 4 trillion cubic feet Tcf, and was reached in the beginning of November 2016. This is the same as the peak from the prior injection season. Natural gas production in the U.S. averaged 89.2 Bcfd in 2016. This was a

²⁸ EIA, EIA Natural Gas Summary, available at <http://www.eia.gov>.

slight decrease of 1 percent from 2015. Prior to 2016, U.S. domestic production had increased every year for the prior 10 years.²⁹ Domestic natural gas consumption was 75.1 Bcfd in 2016, roughly maintaining the level of consumption from 2015.³⁰ Henry Hub spot prices averaged \$2.52/MMBtu in 2016, a slight drop of 3.8 percent from \$2.62/MMBtu in 2015. EIA predicts the Henry Hub annual average spot price to rise in 2017, to an average of \$3.10/MMBtu, and continue to rise to \$3.40/MMBtu in 2018.

Analysis of Henry Hub natural gas futures contracts in comparison to Henry Hub spot prices show either steady pricing or an expected modest rise in prices over the coming 12 months, producing an average price of \$3.02/MMBtu for the twelve months ending August 2018.³¹ 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. Figure 3, below, shows the futures prices for Henry Hub and Dominion South Hub through August 2018 delivery dates. Henry Hub prices are consistently higher, with an average basis spread over the 12 months ending December 2017 of \$0.64/MMBtu.³²

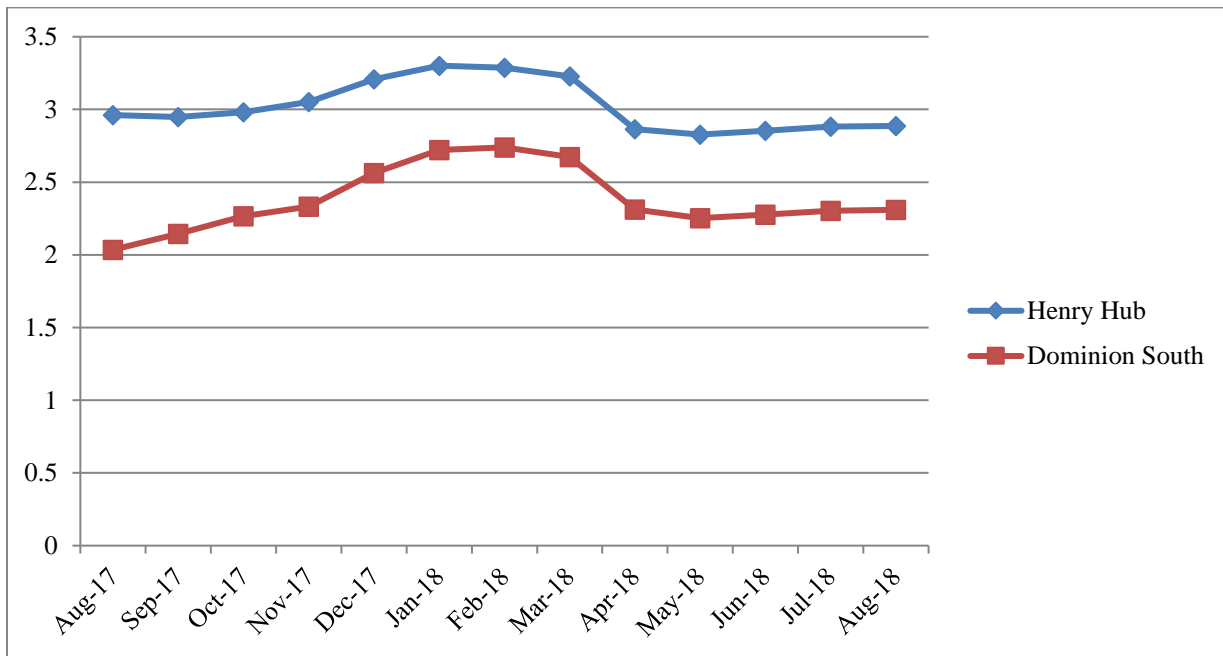
²⁹ EIA, *Natural Gas Gross Withdrawals and Production*, June 2016 release, available at <http://www.eia.gov>.

³⁰ EIA, *Natural Gas Consumption by End Use*, June 2016 release, available at <http://www.eia.gov>.

³¹ EIA, *Short Term Energy Outlook*, June 2016 release, available at <http://www.eia.gov>.

³² CME Group, natural gas futures quotes as of July 6, 2016, available at <http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html>.

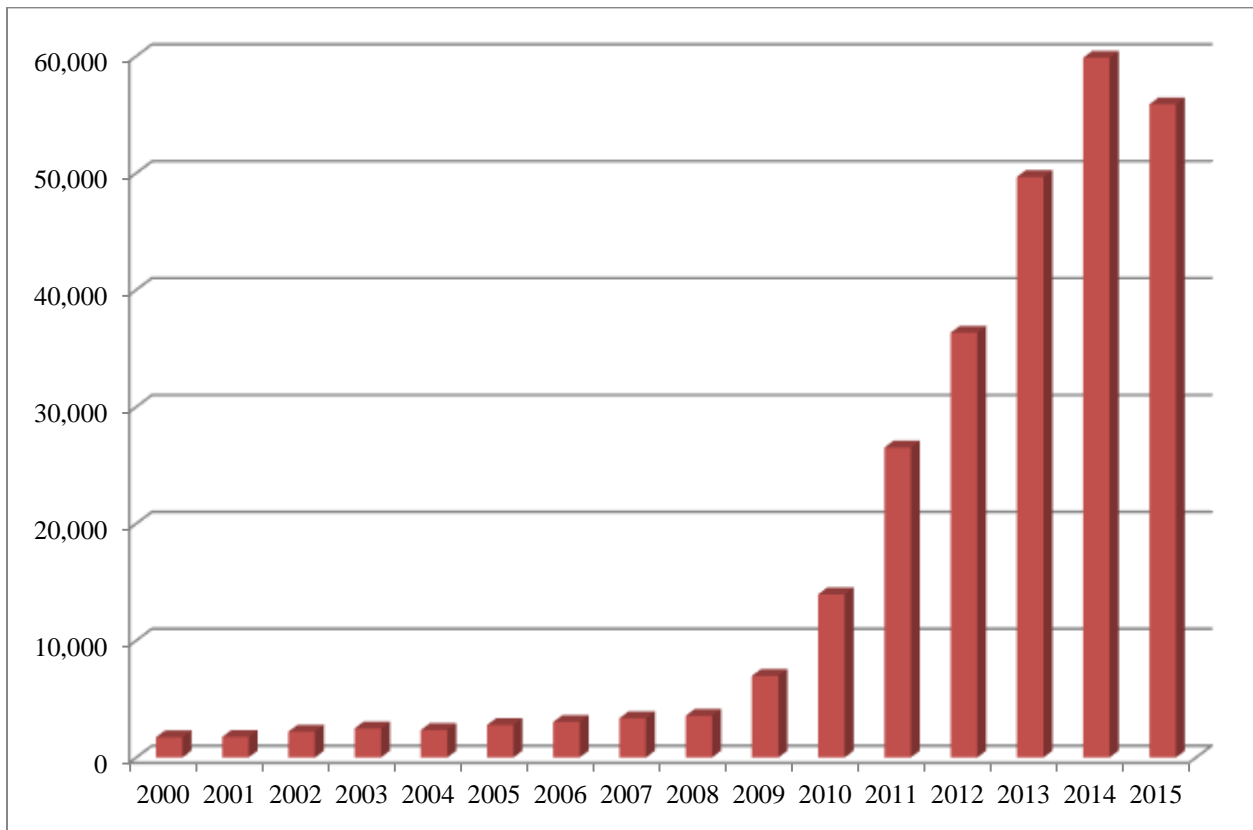
Figure 3: Henry Hub and Dominion South Hub Futures Prices (\$/MMBtu)



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 December 31, 2015, were 55.9 Tcf, a drop of 6.6 percent from 2014. Pennsylvania’s dry proved reserves since 2000 can be seen in Figure 4, below.

Figure 4: Pennsylvania's Dry Proved Reserves (Bcf), 2000-2015



Total Pennsylvania storage capacity for 2014 was 771 Bcf.³³ Table 3, below, shows the supply and demand balance for Pennsylvania in 2015. Although Pennsylvania exported about 4.2 Tcf of natural gas in 2015, the state still imported approximately 0.5 Tcf, likely due to some of the same transportation constraints discussed earlier.

³³ EIA, *Natural Gas Summary for Pennsylvania*, available at <http://www.eia.gov>.

Table 3: 2015 Pennsylvania Natural Gas Production, Transmission and Consumption (MMcf)

Supply		Demand	
Marketed Production	4,812,983	Consumption	1,285,649
Imports	529,701	Exports	4,239,773
Withdrawal From Storage in excess of additions	76,436		
Supplemental Supply	28		
Total Supply	5,696,499	Total Consumption	5,525,422³⁴
Balancing Item*	277,351		

*Balancing item - reflects the difference between total disposition and total supply. Lost and unaccounted (L&U) for natural gas is the difference between the total gas available from all sources and the total gas accounted for from sales, net interchange and company use. Releases occur through leaks from compressor and pump seals, old leaking pipes, and vented emissions from operation practices or accidental breaks. This may also include metering error/accuracy issues.

The EIA estimates that there were 68,500 producing shale and conventional gas wells in Pennsylvania in 2015.³⁵ As of July 7, 2017, 24,033 unconventional drilling permit applications had been filed with the Pennsylvania Department of Environmental Protection. Of those applications, 10,528 unconventional wells have been drilled.³⁶ As of July 17, 2017, there were 34 rotary rigs active in Pennsylvania, a 240 percent 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.³⁷ Table 4, below, illustrates that Pennsylvania’s production in 2015 greatly exceeded its deliveries to consumers in the state, specifically by nearly a factor of four in 2015.

³⁴ The Total Supply and Total Consumption do not perfectly balance. There is a remaining balance of 171,077 MMcf. A discrepancy in any or multiple values pulled from the EIA could account for this.

³⁵ EIA, *Natural Gas Annual 2014*, most current data available, available at <http://www.eia.gov>.

³⁶ Pennsylvania Department of Environmental Protection Well Permit Workload Report for January 1, 2016 – July 1, 2016, available at http://www.portal.state.pa.us/portal/server.pt/community/oil_and_gas_reports/20297.

³⁷ Baker Hughes, rotary rig count, July 1, 2016 release, available at <http://www.bakerhughes.com/rig-count>.

Table 4 Historical Pennsylvania Deliveries, Transportation and Production (Bcf)

Year	Gas Delivered to Consumers	Delivered for the Account of Others (Transport)	PA Gross Gas Production
2005	655.7	246.8	168.5
2006	625.6	247.3	176.0
2007	711.6	259.1	182.3
2008	705.0	260.6	198.3
2009	755.7	253.3	273.9
2010	810.9	283.2	572.9
2011	866.5	287.6	1,310.6
2012	918.2	293.5	2,256.7
2013	958.7	331.4	3,259.0
2014	1,042.3	362.7	4,214.6
2015	1,068.7	361.8	4,768.9
2016	1,082.7	*	*

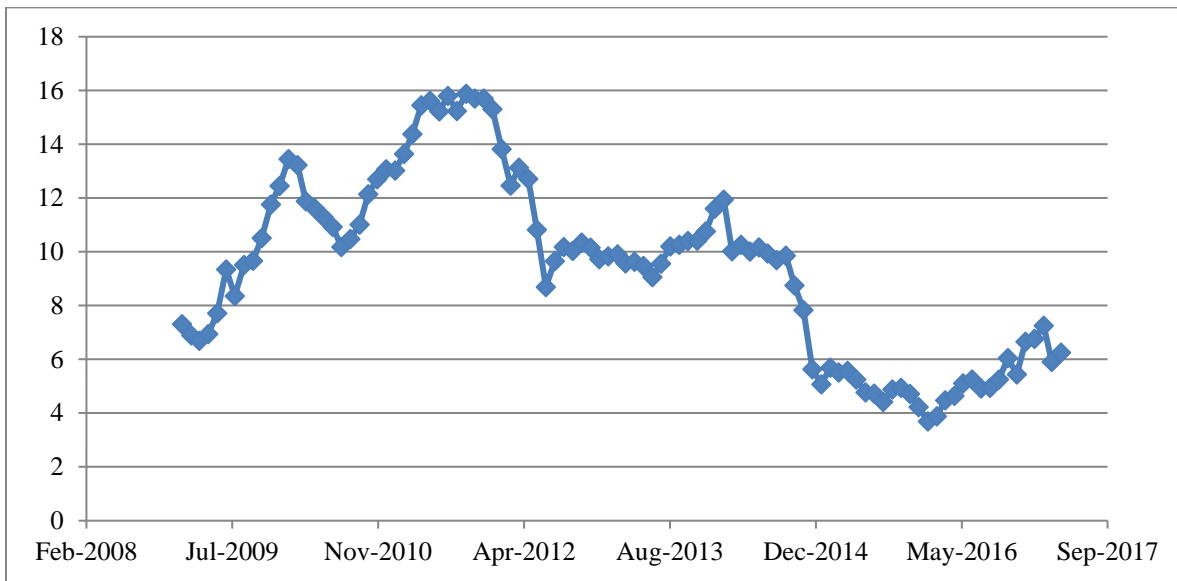
*Not available from EIA as of 7/20/2017.

Natural gas liquids (NGLs) prices have continued to drop over the past several years as production has increased, and as more drillers have shifted to areas of higher NGL content.³⁸ Meanwhile, pipeline capacity to move the NGLs to markets has not caught up with production, further exacerbating the oversupply of NGLs that cannot be delivered to demand centers. Figure 5 below shows the Mont Belvieu NGL Composite price from January 2008 through April 2017.³⁹

³⁸ NGLs are hydrocarbons with a higher molecular weight than methane. Some examples include ethane, propane, and butane.

³⁹ Just as the Henry Hub has historically been a standard for natural gas pricing because it is geographically near the production centers in the south, Mont Belvieu is similarly situated geographically.

Figure 5: Mont Belvieu Composite NGL Monthly Historical Spot Prices (\$/Gallon)⁴⁰



Based on the pricing trend in Figure 5, it appears that there is likely an insufficient local market for the NGLs in the Marcellus shale area, mostly due to limited local processing and transportation capacity. Sunoco Logistics Partners LP (Sunoco) is looking to fill this void in the NGL marketplace by investing in the Mariner East II pipeline project. Sunoco plans to complete the project in the third quarter of 2017, bringing a total capacity of approximately 350,000 barrels per day of NGLs online.⁴¹ This pipeline will transport ethane, propane, and butane from the Marcellus and Utica shale regions to eastern markets, including the Marcus Hook industrial complex along the Delaware River.

At this time, a significant amount of NGLs are simply sold directly into the natural gas system, owing to a lack of supply transportation to other markets, i.e., manufacturing, retail sales, etc. With natural gas prices at historic lows, this adds to the downward pressure on NGL prices.

As new pipelines are placed in service, there could be a substantial shift in the relationship between NGL supplies and the natural gas market; currently, there is a substantial, though unmeasured, volume of NGLs within the natural gas system, both in Pennsylvania and

⁴⁰ EIA, Natural Gas Futures Prices (NYMEX), available at <http://www.eia.gov>.

⁴¹ Sunoco Logistics, information available at <http://www.sunocologistics.com/Customers/Business-Lines/Natural-Gas-Liquids-NGLs-Segment/257/>.

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/ft³.⁴² Ethane, the most common NGL to be produced from natural gas wells by volume, has a much higher heat content of 1,783 Btu/ft³. Other potential impurities in natural gas, such as carbon monoxide, have much lower heat content.⁴³

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:

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 of 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, i.e., 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.⁴⁴ Using the assumptions, above, it then follows that

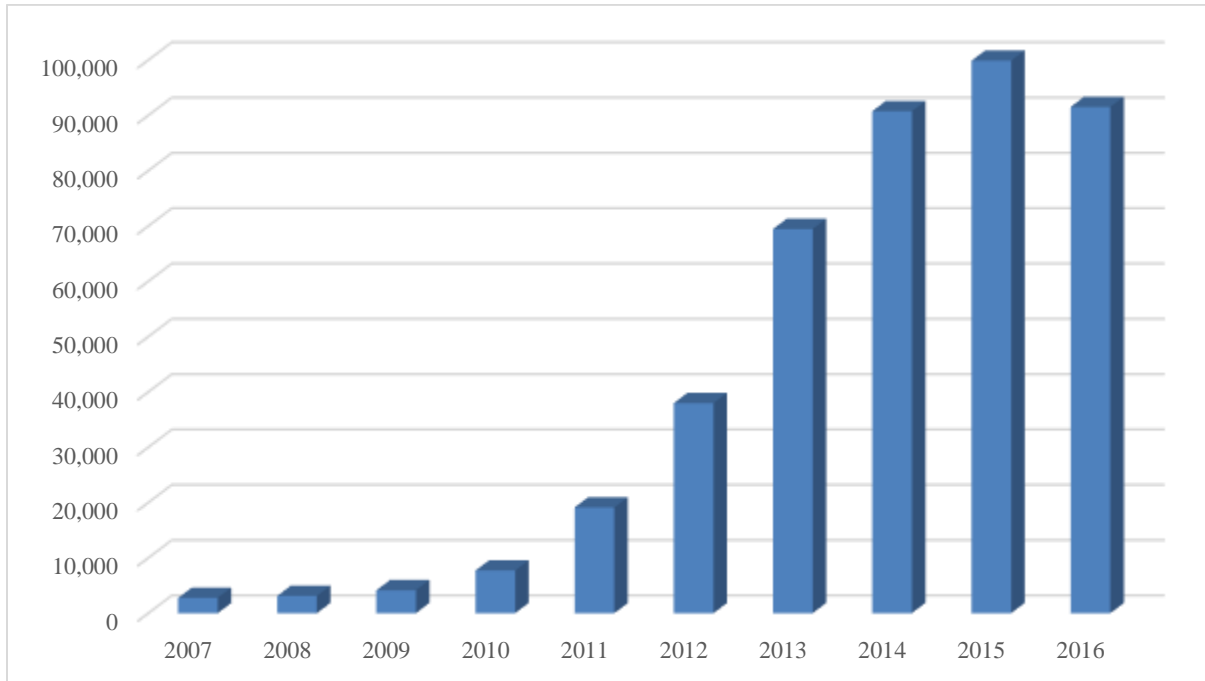
⁴² In the natural gas industry, the heat content of natural gas is often approximated to be 1000 Btu/ft³.

⁴³ Carbon monoxide has a heat content of 323 Btu/ft³.

⁴⁴ EIA, Heat Content of Natural Gas Delivered to Consumers, available at <http://www.eia.gov>;
EIA, Natural Gas Gross Withdrawals, available at <http://www.eia.gov>.

any additional heat content above 1010 Btu/ft³ 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)



Projects such as the Mariner East II may relieve this oversupply of NGLs. This should stabilize or raise the prices for these commodities. In 2016, this would mean that an estimated 250 million cubic feet (MMcf) of NGLs currently being fed into the natural gas system would be redirected, likely causing the prices of both NGLs and natural gas to rise, creating incentive for additional production in Pennsylvania.

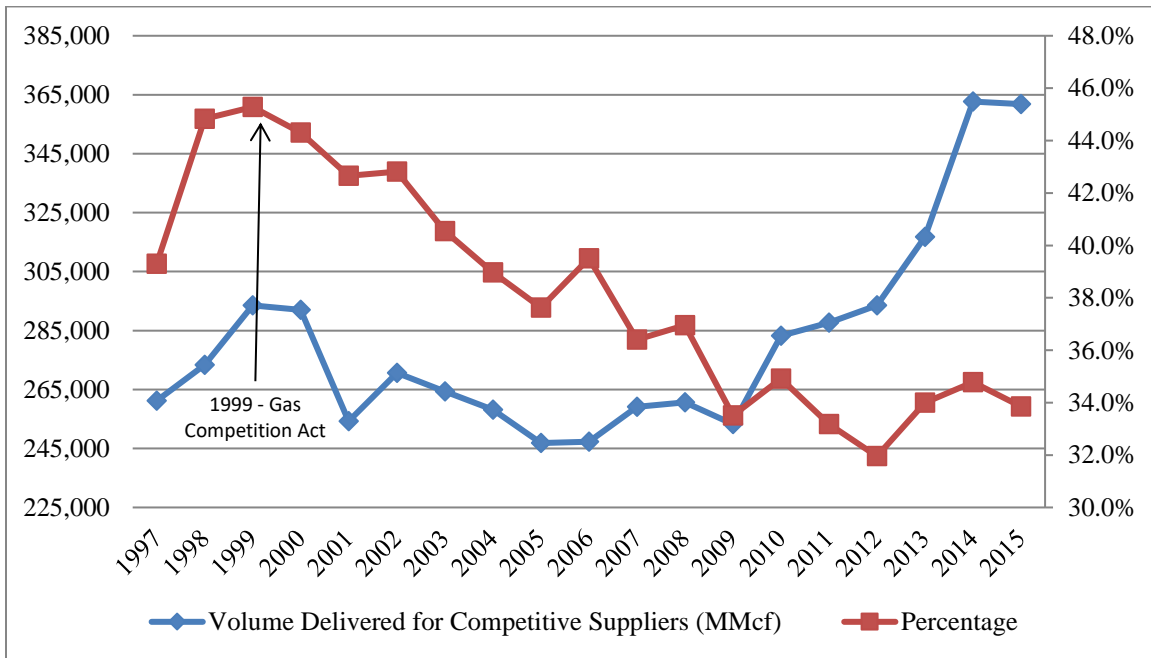
Figure 7, below, shows Pennsylvania deliveries of natural gas for competitive suppliers, often called transportation gas. In 2015, 33.9 percent of the total natural gas delivered to customers was transportation gas. In 2015, the percentages of gas delivered for competitive suppliers by customer class were as follows:

Residential: 13.6 percent

Commercial: 59.8 percent

Industrial: 99.0 percent

Figure 7: Natural Gas Delivered for Competitive Suppliers by Pennsylvania NGDCs



Since 2009, total transportation gas had been increasing every year, until 2015, during which the volume delivered leveled off. The reason for the low percentage increases in competitive deliveries compared to the significant increase in volume (see Figure 6) is the rapid 41 percent increase in total gas deliveries in Pennsylvania over the same time period.

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: 2016 Customer Statistical Data

Company	Number of Residential Customers	Average per customer usage (Mcf)	Number of Commercial Customers	Average per customer usage (Mcf)	Number of Industrial Customers	Average per customer usage (Mcf)	Number of Transportation Customers	Average per customer usage (Mcf)
Columbia	312,033	78	26,063	312	65	2,800	88,087	455
Peoples	478,287	85	36,153	233	91	2,000	114,104	1
Peoples Gas	56,882	81	4,338	351	0	N/A	306	52
NFG	172,382	90	10,988	255	164	756	30,071	823
PECO	469,813	75	43,164	435	18	1,056	808	34,189
PGW	473,798	65	21,912	308	527	630	4,603	6,211
UGI CPG	70,533	82	9,121	305	132	1,864	2,815	5,448
UGI PNG	149,281	102	12,509	322	61	1,426	8,074	7,022
UGI Utilities	297,149	68	26,833	292	536	856	61,839	1,609

*Table 6: 2015 Customer Statistical Data*⁴⁵

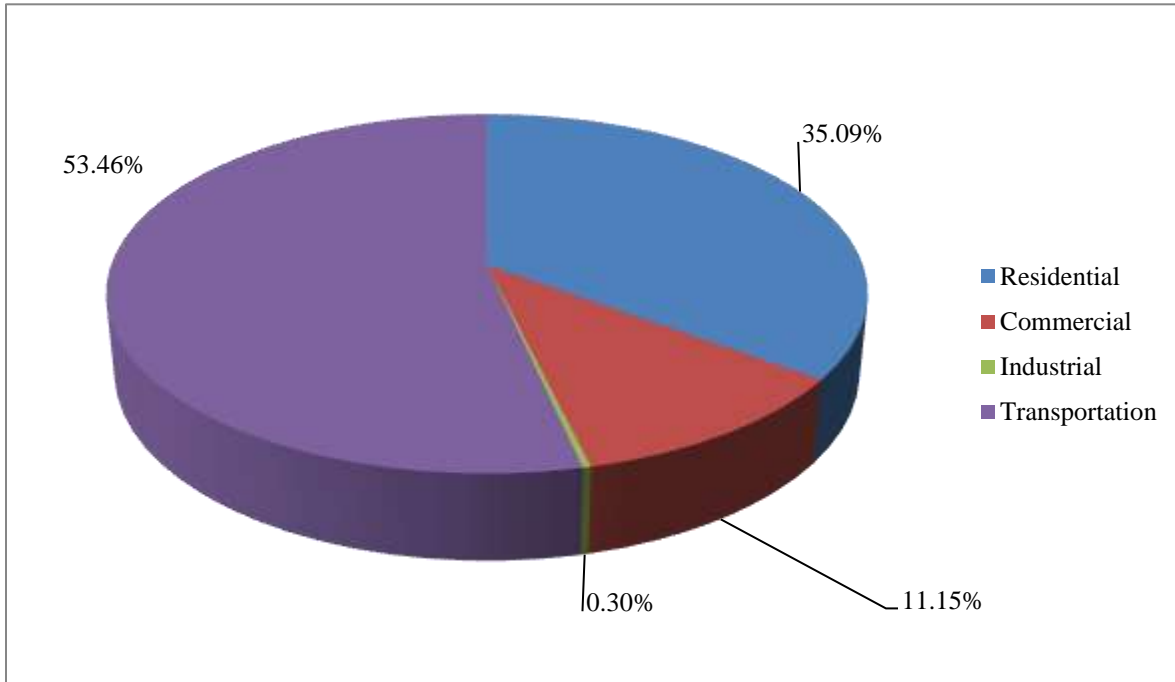
Company	Number of Residential Customers	Average per customer usage (Mcf)	Number of Commercial Customers	Average per customer usage (Mcf)	Number of Industrial Customers	Average per customer usage (Mcf)	Number of Transportation Customers	Average per customer usage (Mcf)
Columbia	276,091	79	28,933	322	285	793	118,039	373
Peoples	474,534	90	21,390	459	80	3,913	113,571	557
Peoples GAS	55,869	91	4,230	457	2	0	195	80,005
NFG	169,438	89	10,706	206	173	566	33,154	823
PECO	463,586	85	42,508	459	18	0	855	31,936
PGW	471,043	78	22,715	372	555	793	3,567	8,405
UGI CPG	71,751	88	9,123	332	130	2,185	1,718	8,864
UGI PNG	151,182	107	12,519	395	57	2,281	6,659	7,904
UGI Utilities	296,028	71	26,538	312	559	780	57,361	1,656

Chart 5, 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). More than half of all sales volume was from transportation customers. These are typically larger customers that procure their own

⁴⁵ 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.

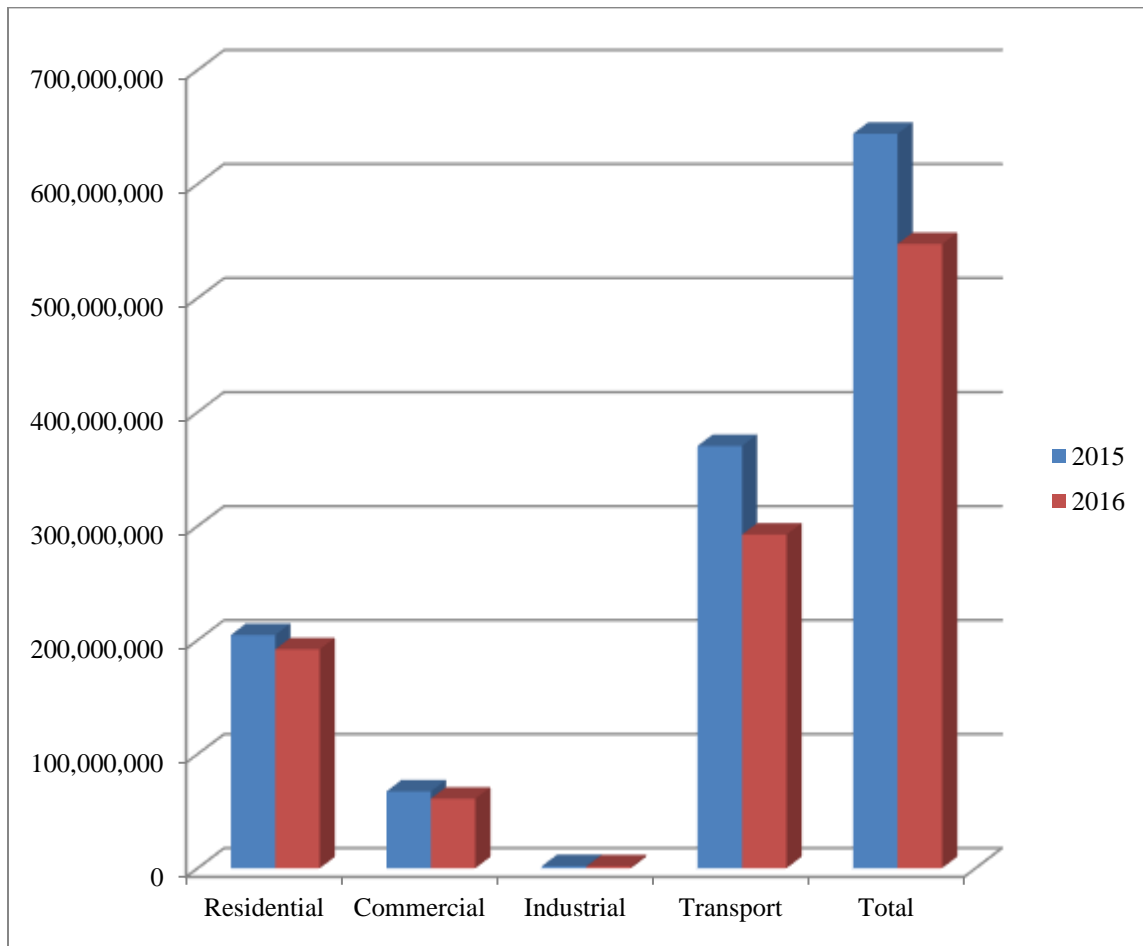
natural gas supply, and the utility delivers the natural gas to them. Transportation also includes residential and commercial customers that utilize an alternate natural gas supplier (NGS).

Chart 5: 2016 Pennsylvania Gas Usage by Customer Class within Major NGDCs



As seen in Figure 8, below, natural gas usage in 2016 was lower for each NGDC customer class as compared to 2015.

Figure 8: Pennsylvania Gas Usage by Customer Class within Major NGDCs: 2015-2016

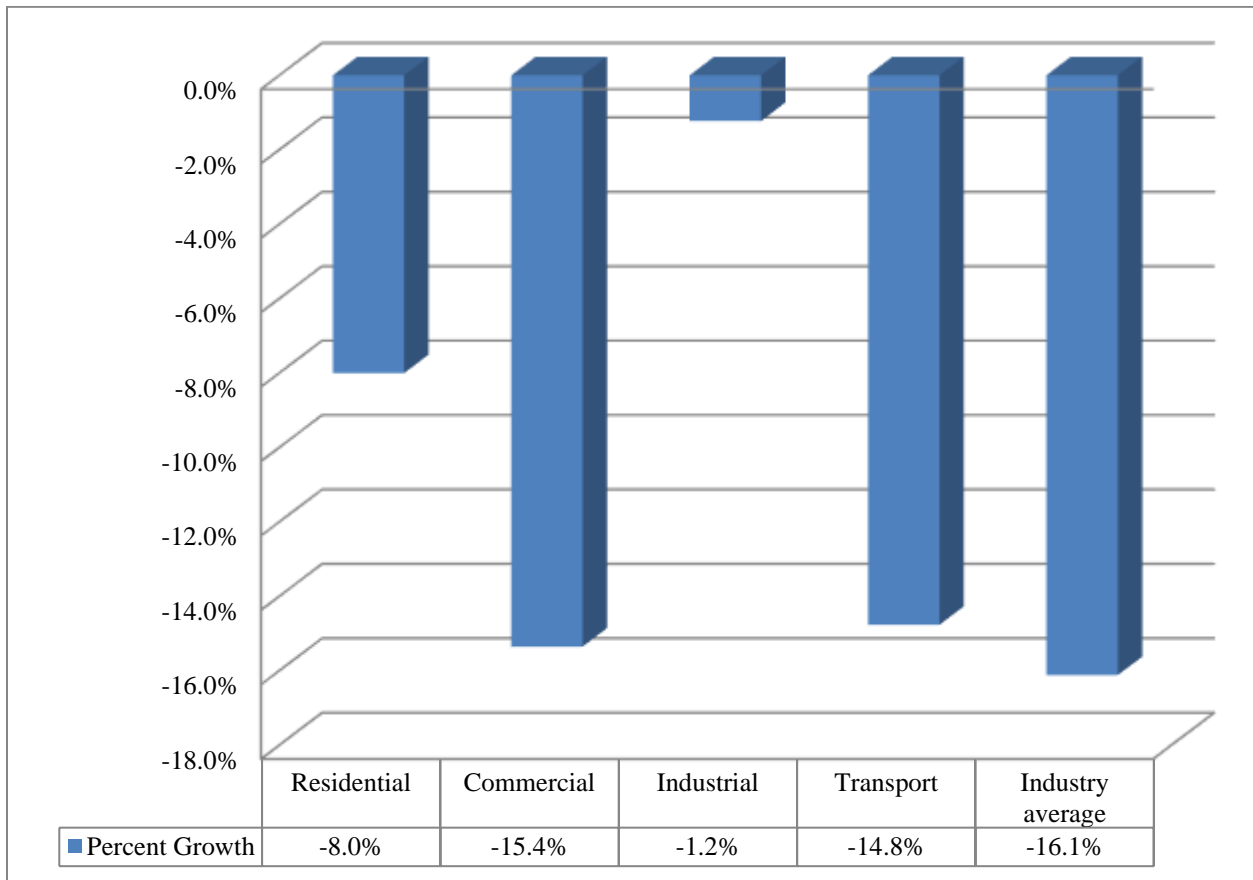


In total, gas usage fell by 15 percent between 2015 and 2016, while the number of customers rose by 1.3 percent. The reason for this is likely the relatively mild weather of 2016, causing the reduced usage for heating in 2016 compared to 2015. The Mid-Atlantic Region (New Jersey, New York, and Pennsylvania) had 10.2 percent fewer heating degree days in 2016 than in 2015.⁴⁶

⁴⁶ Information gathered from the American Gas Association, available at <https://www.aga.org>. Heating Degree Days are a measure of the coldness of the weather experienced, based on the extent to which the daily mean temperature falls below a reference temperature (65° F). For example, on a day when the mean outdoor dry-bulb temperature is 35°F, there would be 30 degree-day experienced. A daily mean temperature represents the sum of the high and the low readings divided by two.

In addition to the drop in total usage for each customer category, per customer usage also fell in all categories, dropping a total of 16.1 percent overall. Figure 9, below, illustrates the change in average gas usage by customer class, showing the reduction in usage among all customer classes.

Figure 9: Change in Average Customer Usage for Major NGDCs by Customer Class: 2015-2016



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 2016 delivery year. The data is presented for 2016 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.⁴⁷

⁴⁷ Note: 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: 2016 Annual Gas Supply and Demand for Major Gas Utilities (MMcf)

	UGI PNG	UGI CPG	UGI Util.	PGW	Columbia	NFG	PECO	Peoples	Peoples Gas
Gas Supply:									
Supply Contracts	24,363	9,979	37,386	43,445	22,265	14,460	54,520	49,762	6,103
Spot Purchases	5,004	2,837	15,356	0	11,138	4,303	2,115	7,077	835
Storage Withdrawal	0	0	0	8,363	0	0	0	0	0
LNG	0	0	0	1,348	0	0	0	0	0
Subtotal Gas Supply	29,367	12,816	52,742	53,156	33,403	18,763	56,635	56,839	6,938
Transportation	56,692	15,336	99,470	30,103	40,092	24,761	27,439	65,931	15,952
TOTAL GAS SUPPLY	86,059	28,152	152,212	83,259	73,495	43,524	84,074	122,770	22,890
Requirements:									
Firm Requirements	20,101	9,346	28,632	42,381	33,403	18,763	56,418	59,788	7,097
Liquefaction Interruptible Requirements	0	0	0	2,066	0	0	0	0	0
Storage Injections	0	0	0	8,405	0	0	0	0	0
Subtotal Firm & Interruptible	20,101	9,346	28,632	53,157	33,403	18,763	56,449	59,788	7,097
Transportation	56,692	15,336	99,470	30,103	40,092	24,761	27,625	62,982	15,793
Load Deductions	(9,266)	(3,470)	(24,105)	0	0	0	0	0	0
TOTAL GAS REQUIREMENTS	86,059	28,152	152,212	83,260	73,495	43,524	84,074	122,770	22,890
Surplus(Deficiency)	0	0	0	(1)	0	0	0	0	0

Chart 6: Pennsylvania Gas Utility Annual Supply 2016

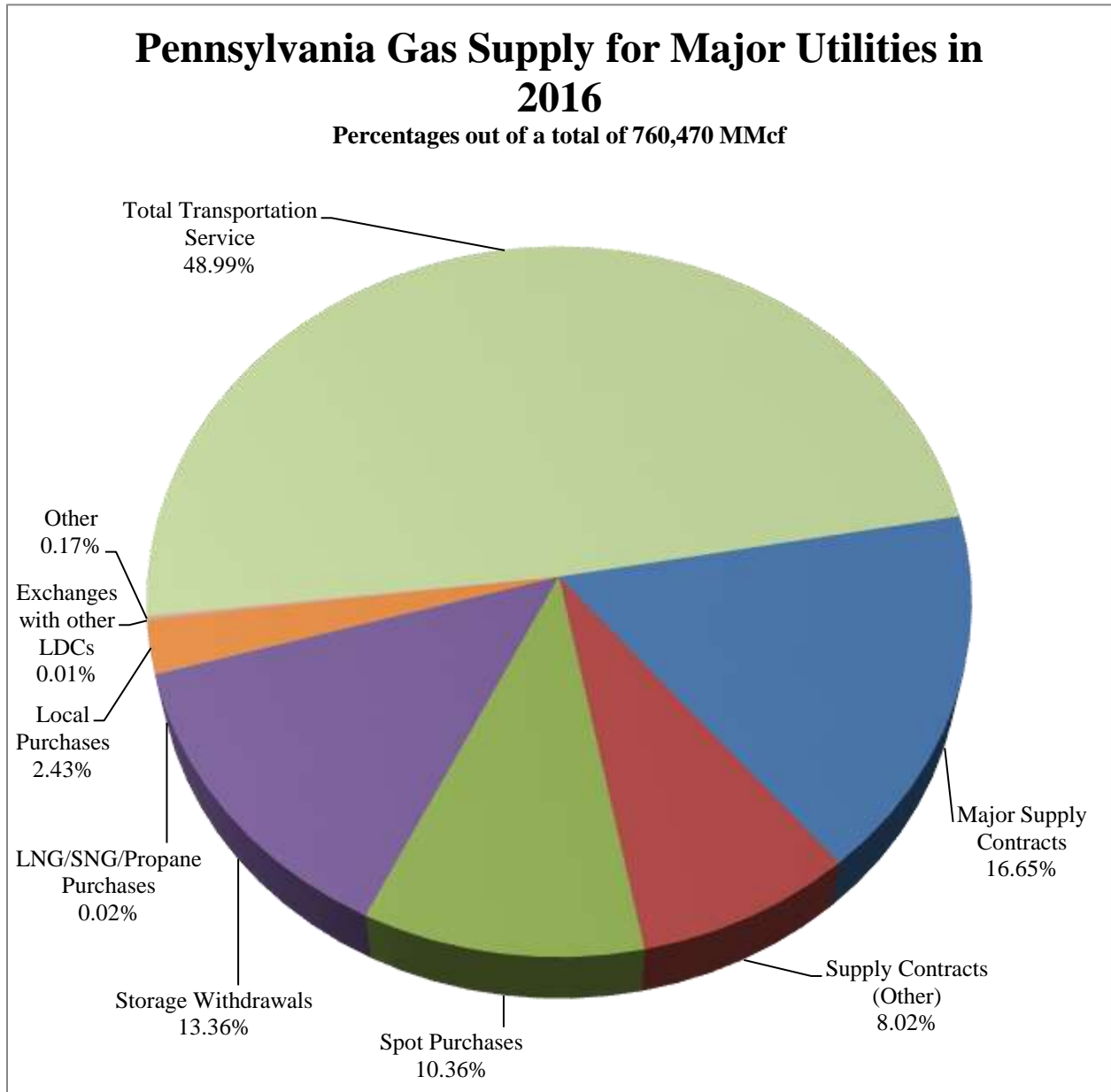
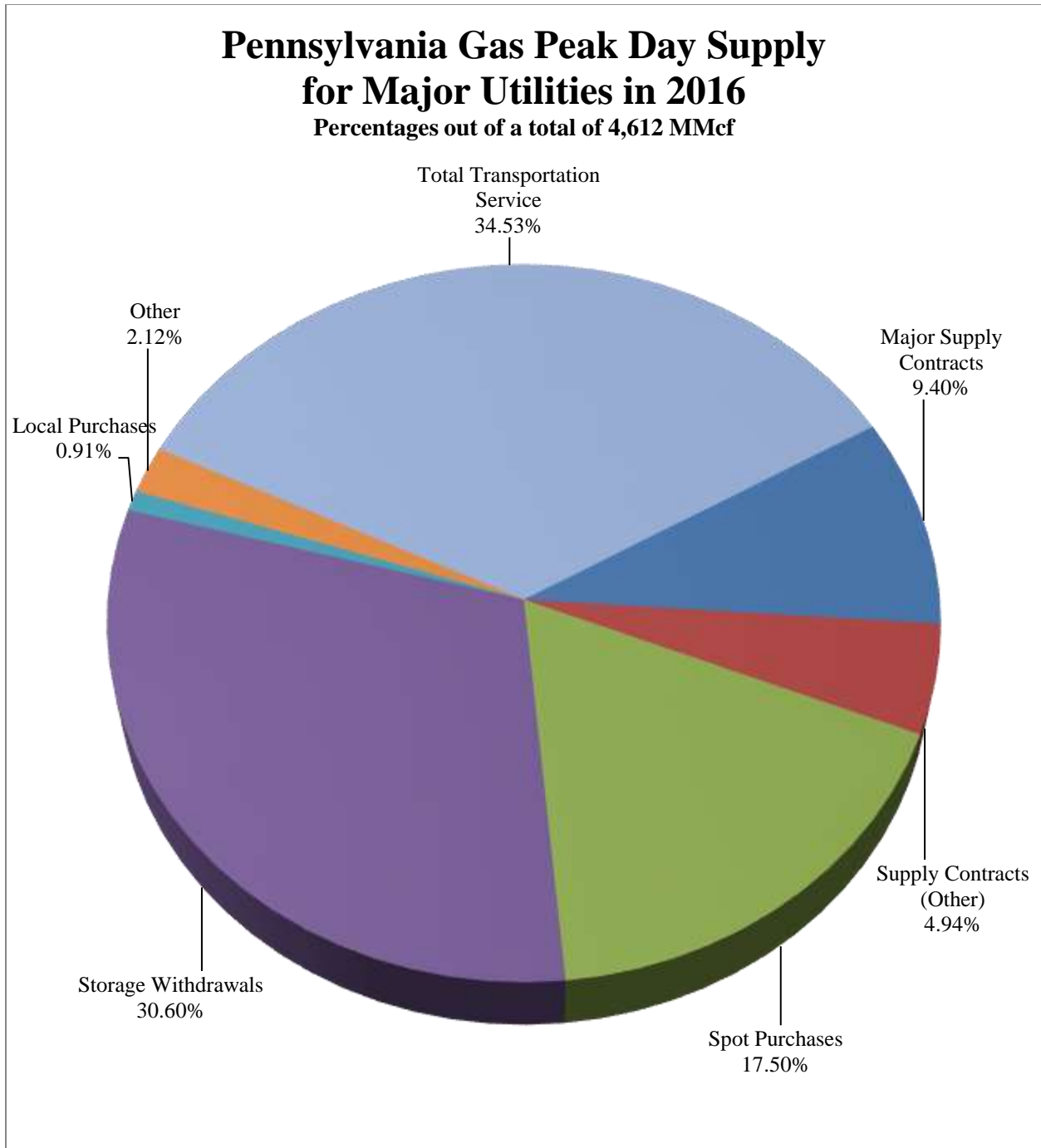


Table 8: 2016 Peak Day Gas Supply and Demand Balance for Major Gas Utilities (MMcf)

	UGI PNG	UGI CPG	UGI Util.	PGW	Columbia	NFG	PECO	Peoples	Peoples GAS
Gas Supply:									
Supply Contracts	69	45	165	277	352	190	424	300	84
Spot Purchases	134	72	231	0	0	0	129	355	1
Storage Withdrawal	0	0	0	159	0	0	0	0	0
LNG	0	0	0	164	0	0	0	0	0
Subtotal Gas Supply	203	117	396	600	352	190	553	655	85
Transportation	178	61	323	23	251	129	144	291	55
TOTAL GAS SUPPLY	381	178	719	623	603	319	697	946	140
Requirements:									
Firm Requirements	200	90	283	563	352	190	629	575	78
Liquefaction	0	0	0	0	0	0	0	0	0
Interruptible Requirements	0	0	0	1	0	0	0	0	0
Storage Injections	0	0	0	13	0	0	0	0	0
Subtotal Firm & Interruptible	200	90	283	577	352	190	629	575	78
Transportation	152	72	379	47	251	129	68	371	62
Load Deductions	(28)	(17)	(57)	0	0	0	0	0	0
TOTAL GAS REQUIREMENTS	380	179	719	624	603	319	697	946	140
Surplus(Deficiency)	1	(1)	0	(1)	0	0	0	0	0

Chart 7: Pennsylvania Peak Day Supply 2016



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 2006 through 2016.⁴⁸

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.

⁴⁸ 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, but is still being operated as a separate division of Peoples Natural Gas. Equitable's net loss in 2013 is attributable to a number assets being written off as a result of the merger, and the immediate payment of a substantial quantity of previously deferred taxes.

Table 9: Operating Revenue and Operating Expense

OPERATING REVENUE (\$ Million)										
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI	Total
2006	575.4	363.7	795.5	1,022.7	302.6	845.8	189.4	133.9	580.6	4,809.6
2007	650.5	351.8	838.8	950.6	326.6	871.9	187.0	134.6	618.4	4,930.2
2008	781.9	388.8	821.7	928.8	348.4	886.0	193.0	151.9	626.3	5,126.8
2009	544.9	325.1	759.6	1,163.7	337.0	823.1	169.0	109.2	556.1	4,787.7
2010	559.2	255.5	686.8	939.8	328.5	749.2	156.2	100.2	573.3	4,348.7
2011	504.8	248.1	613.0	736.1	306.9	705.1	148.2	53.2	534.1	3,849.5
2012	406.3	215.9	545.4	715.3	243.5	642.6	128.4	47.4	412.7	3,357.5
2013	512.3	235.5	600.8	634.2	276.9	688.2	128.4	89.2	450.5	3,616.0
2014	563.3	248.3	646.8	738.5	308.6	746.6	154.0	110.6	511.4	4,028.0
2015	536.2	196.9	546.5	835.5	265.1	621.5	131.1	85.8	457.4	3,676.1
2016	493.9	175.0	463.4	588.3	205.9	629.0	124.0	78.7	409.9	3,168.1

OPERATING EXPENSE (\$ Million)										
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI	Total
2006	546.0	347.4	614.9	892.6	274.7	777.0	183.0	124.4	528.3	4,288.3
2007	619.0	324.4	782.2	883.7	299.1	823.5	175.6	123.2	552.5	4,583.2
2008	741.7	359.8	779.5	855.5	327.8	824.2	178.3	142.3	566.0	4,775.1
2009	492.8	294.5	671.6	1,025.5	312.9	748.6	154.3	101.5	492.7	4,294.4
2010	495.7	220.4	599.8	749.6	297.5	655.3	135.8	93.5	506.0	3,753.6
2011	444.6	200.8	406.7	613.6	237.0	523.6	109.3	37.4	409.7	2,982.6
2012	337.6	176.9	350.2	558.2	177.0	473.3	81.2	33.6	291.0	2,478.9
2013	416.1	187.9	484.8	452.3	204.1	491.2	81.2	71.7	307.2	2,696.6
2014	478.5	209.0	525.7	499.1	279.2	627.3	129.9	89.7	432.7	3,271.1
2015	445.2	165.0	430.5	707.3	239.7	564.9	109.3	69.5	382.3	3,113.6
2016	400.2	143.3	340.1	476.5	186.5	520.7	103.7	62.1	319.3	2,552.3

Table 10: Net Operating Income and Administration & General Expense

NET OPERATING INCOME (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI		Total
2006	29.4	16.3	180.6	130.1	27.9	62.0	6.4	9.5	52.3		514.5
2007	31.5	27.4	56.6	66.9	27.5	-6.9	11.4	11.4	65.9		291.7
2008	40.2	29.0	42.2	73.3	20.6	9.0	14.7	9.6	60.3		298.9
2009	52.1	30.5	88.0	90.3	24.1	4.1	14.7	7.7	63.4		374.9
2010	63.5	35.1	87.0	141.3	31.0	26.5	20.4	6.7	67.3		478.8
2011	35.9	35.5	115.7	91.6	52.0	30.8	28.2	11.1	59.0		459.6
2012	45.2	27.9	106.3	72.9	33.8	32.7	28.8	9.3	72.7		429.8
2013	70.3	37.6	116.1	101.4	41.8	56.5	28.8	11.3	93.8		557.7
2014	97.0	45.8	121.0	78.9	44.9	67.7	39.3	26.4	98.8		619.8
2015	100.4	35.8	115.9	138.9	37.5	5.8	38.2	20.0	85.4		578.1
2016	66.8	24.0	123.2	72.2	14.2	63.3	17.5	12.0	78.1		471.3

ADMINISTRATION & GENERAL EXPENSE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI		Total
2006	45.5	26.5	35.8	62.0	13.9	77.9	22.0	9.1	40.3		333.0
2007	49.6	26.3	33.0	53.8	16.8	101.6	23.4	9.6	36.6		350.7
2008	39.9	26.7	30.4	70.7	20.1	101.9	16.7	9.9	35.6		351.9
2009	45.3	26.5	31.9	52.0	21.8	103.4	15.0	10.2	37.4		343.5
2010	53.4	27.1	29.4	41.8	21.2	120.3	17.6	12.3	36.5		359.6
2011	56.2	29.4	29.0	60.9	19.8	108.5	14.8	11.7	35.1		365.5
2012	47.4	28.9	32.7	78.4	15.1	124.1	11.2	9.6	35.1		382.5
2013	53.0	31.2	28.0	70.9	21.8	107.9	15.2	11.0	38.6		377.7
2014	58.9	27.7	27.4	82.7	20.7	110.9	14.8	9.3	44.3		396.7
2015	62.3	27.9	30.2	66.0	24.2	152.9	15.2	10.5	46.5		435.7
2016	70.5	24.5	31.3	55.3	21.7	168.3	14.7	8.0	36.4		430.7

Table 11: Maintenance Expense and Depreciation Expense

MAINTENANCE EXPENSE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI		Total
2006	11.0	3.7	17.9	32.4	4.4	18.7	2.2	4.7	10.1		105.1
2007	12.3	4.1	21.2	32.2	4.8	20.1	3.6	5.8	9.8		113.9
2008	13.8	4.2	22.5	31.7	6.4	21.0	7.7	6.5	10.6		124.4
2009	14.1	4.1	22.8	33.0	7.1	25.6	4.7	5.8	11.8		129.0
2010	14.1	4.0	23.7	36.6	6.7	25.7	4.3	6.2	11.9		133.2
2011	13.9	3.9	21.5	35.5	7.8	31.7	4.5	5.1	14.1		138.0
2012	14.4	3.3	20.8	35.2	8.8	29.8	4.5	4.8	14.1		135.8
2013	15.5	5.6	27.0	36.6	9.1	33.6	3.9	4.2	14.9		150.6
2014	18.3	6.1	26.8	41.0	10.7	40.5	4.6	4.2	16.6		168.7
2015	22.0	6.4	32.4	43.4	14.1	38.5	4.4	5.3	15.7		182.2
2016	23.6	5.9	29.5	38.1	12.6	41.0	4.5	4.4	13.8		173.4

DEPRECIATION EXPENSE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI		Total
2006	15.8	11.3	29.6	34.6	13.3	35.6	7.0	6.2	21.3		174.7
2007	16.9	11.6	29.0	36.4	15.0	38.1	8.3	5.8	20.8		181.9
2008	18.2	11.2	30.8	37.2	15.2	38.8	8.5	6.1	21.0		187.0
2009	21.0	11.1	31.5	39.0	16.3	37.2	7.5	6.1	22.1		191.8
2010	22.5	11.1	32.7	39.2	16.7	39.0	7.8	5.9	22.5		197.4
2011	25.0	11.3	33.5	41.6	14.4	39.6	8.1	6.5	23.3		203.4
2012	14.4	11.4	35.1	44.9	14.1	40.1	8.3	7.1	24.1		199.5
2013	33.4	11.4	36.7	46.7	14.6	41.5	8.7	6.3	25.9		225.2
2014	37.7	11.5	39.2	48.7	15.6	41.7	8.8	7.2	28.1		238.5
2015	42.1	12.0	42.0	46.4	16.6	44.6	9.1	7.4	31.0		251.3
2016	47.5	12.9	43.1	48.8	16.6	46.7	10.0	7.2	34.2		267.0

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

TOTAL GAS COSTS (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI		Total
2006	427.3	236.2	618.2	619.5	221.7	531.2	130.0	84.3	410.2		3,278.6
2007	436.9	188.4	569.3	580.9	230.0	540.9	122.8	85.2	428.4		3,182.8
2008	621.4	229.1	647.5	536.8	245.9	587.2	124.8	112.2	428.1		3,533.0
2009	250.2	174.3	384.4	790.9	232.0	392.6	78.9	63.8	390.7		2,757.8
2010	328.7	95.1	381.3	498.3	198.9	321.7	83.4	52.0	340.0		2,299.4
2011	332.2	96.6	314.5	390.9	194.2	303.8	73.0	48.8	329.2		2,083.2
2012	152.8	69.4	239.1	371.1	127.3	220.8	47.2	34.2	217.0		1,478.8
2013	265.3	79.3	275.5	216.9	164.6	258.9	51.2	30.5	251.1		1,593.4
2014	259.1	91.3	320.3	312.0	195.6	295.1	59.9	41.5	290.1		1,864.9
2015	182.6	44.5	189.2	288.6	100.7	196.8	39.0	23.2	221.4		1,286.0
2016	114.7	22.5	174.1	193.9	76.9	149.8	33.1	19.8	197.1		981.8

AVERAGE COST OF GAS PURCHASED (\$/Mcf)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI		Ave.
2006	8.93	10.83	11.47	10.70	9.23	10.30	12.21	8.29	12.72		10.52
2007	8.99	7.97	9.85	7.92	7.77	9.30	8.85	8.14	11.79		8.95
2008	11.32	7.97	11.04	8.65	8.44	11.00	9.64	9.41	12.01		9.94
2009	6.00	7.76	6.79	7.30	9.60	7.44	8.23	7.00	11.46		7.95
2010	7.04	5.43	6.85	5.29	6.23	6.31	5.85	5.69	7.33		6.22
2011	7.51	4.72	6.18	5.25	5.75	5.74	5.72	6.29	7.02		6.02
2012	4.79	3.37	5.47	4.20	4.41	4.98	4.28	5.14	5.52		4.68
2013	5.75	3.81	5.51	4.60	5.18	5.29	4.41	3.42	6.27		4.92
2014	6.25	4.07	6.15	5.44	6.09	5.78	5.37	4.87	7.42		5.72
2015	4.90	2.10	4.09	4.11	3.66	4.17	3.73	3.06	5.64		3.94
2016	3.56	1.21	3.97	3.06	3.23	3.33	3.37	2.38	5.47		3.29

Table 13: Gross Utility Plant in Service

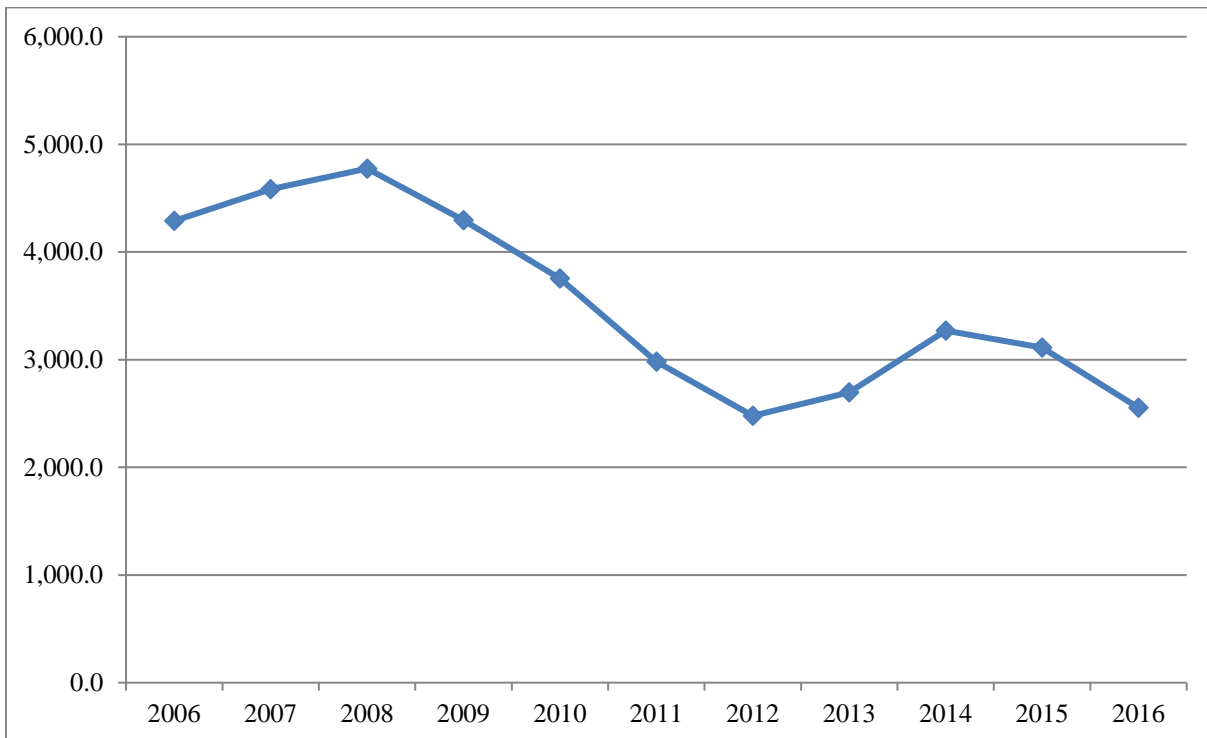
GROSS UTILITY PLANT IN SERVICE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	Peoples Gas	UGI		Total
2006	748.6	428.7	1,510.1	1,568.3	515.2	1,389.8	280.0	204.6	1,027.0		7,672.3
2007	788.6	441.0	1,556.5	1,632.6	531.9	1,421.1	294.6	213.7	1,068.5		7,948.5
2008	851.1	454.6	1,595.5	1,702.3	552.9	1,454.9	312.6	224.4	1,113.2		8,261.5
2009	925.1	465.7	1,646.8	1,791.3	564.4	1,502.0	332.3	229.4	1,153.5		8,610.5
2010	981.9	478.9	1,698.5	1,858.2	575.2	1,531.0	347.3	237.7	1,187.7		8,896.4
2011	1,073.6	491.5	1,792.9	1,919.3	597.8	1,555.1	357.4	245.2	1,078.2		9,111.0
2012	1,198.2	501.4	1,859.5	2,032.5	618.1	1,575.8	370.6	249.6	1,148.7		9,554.5
2013	1,335.7	511.7	1,932.4	2,143.0	650.2	1,596.6	384.4	273.3	1,228.3		10,055.6
2014	1,500.5	527.2	2,071.4	2,077.3	685.6	1,646.7	395.6	299.9	1,337.7		10,542.0
2015	1,660.1	542.5	2,205.4	2,169.9	733.1	1,685.2	425.4	311.5	1,423.3		11,156.4
2016	1,860.1	577.8	2,260.4	2,367.9	780.4	1,741.5	460.1	329.6	1,704.8		12,082.6

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.⁴⁹

Therefore, as gas prices have plunged 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 2006.

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



⁴⁹ 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 \$)

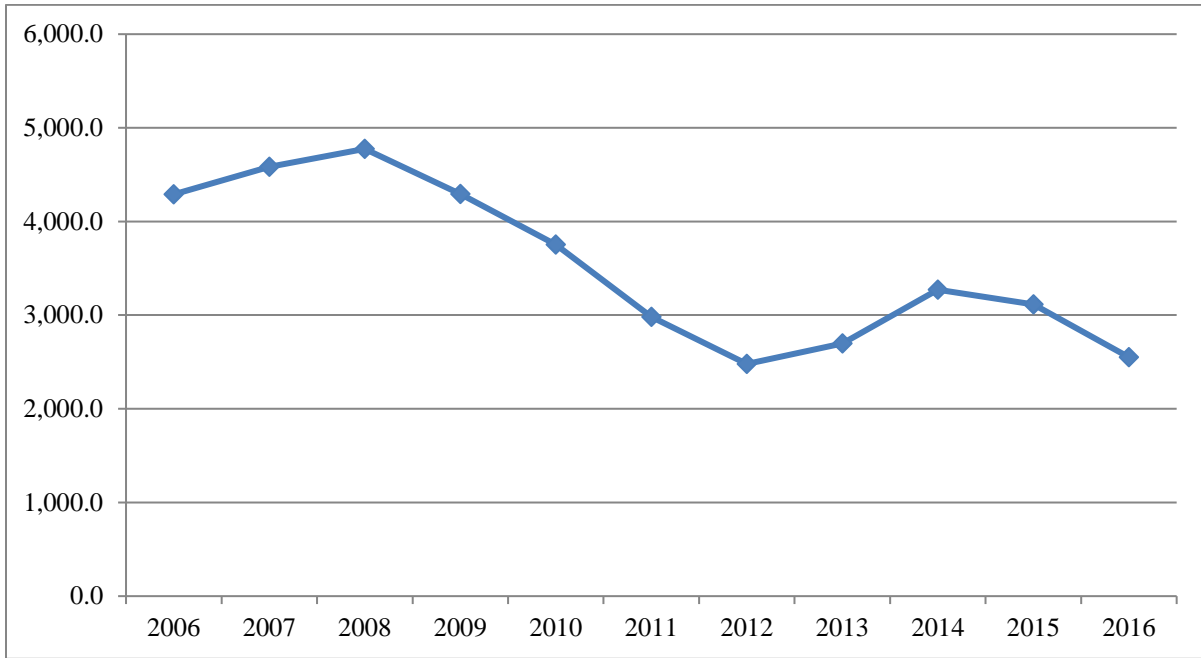
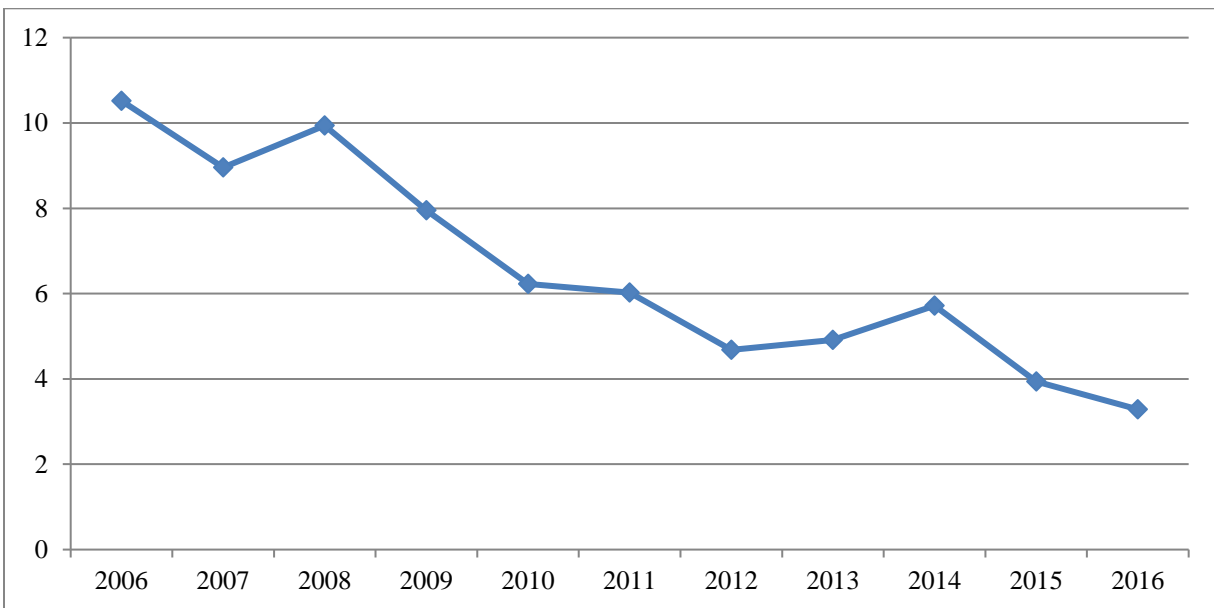
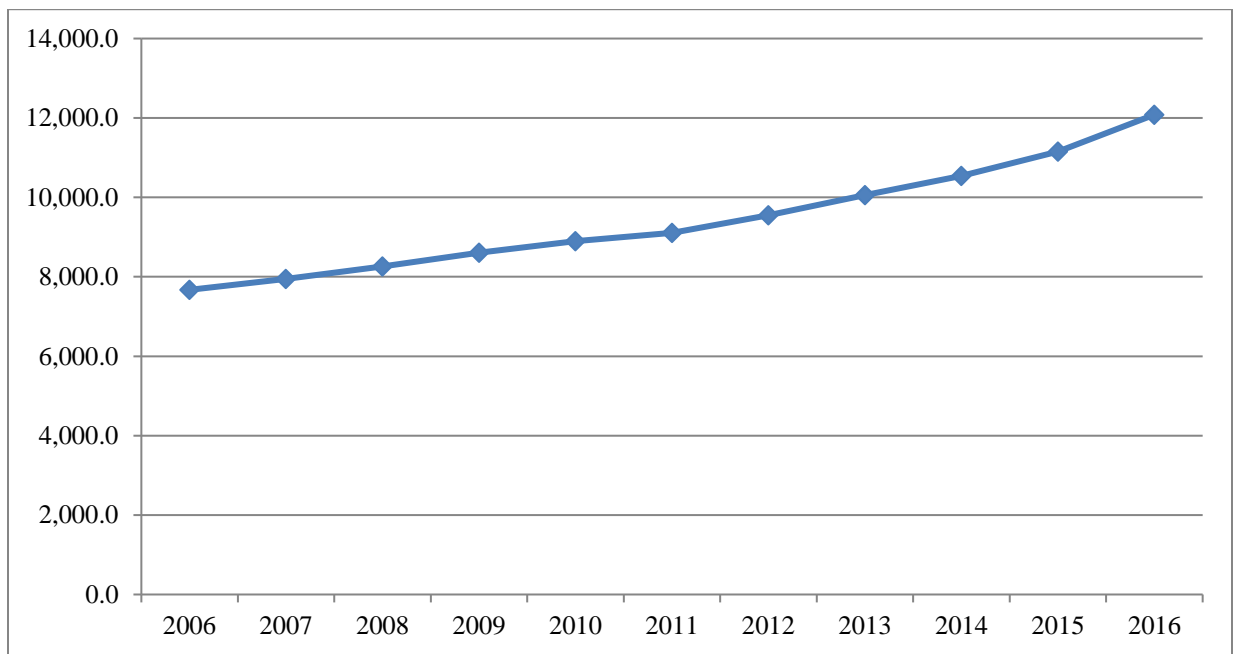


Figure 12: Average Cost of Gas Purchased for All Major NGDCs (\$/Mcf)



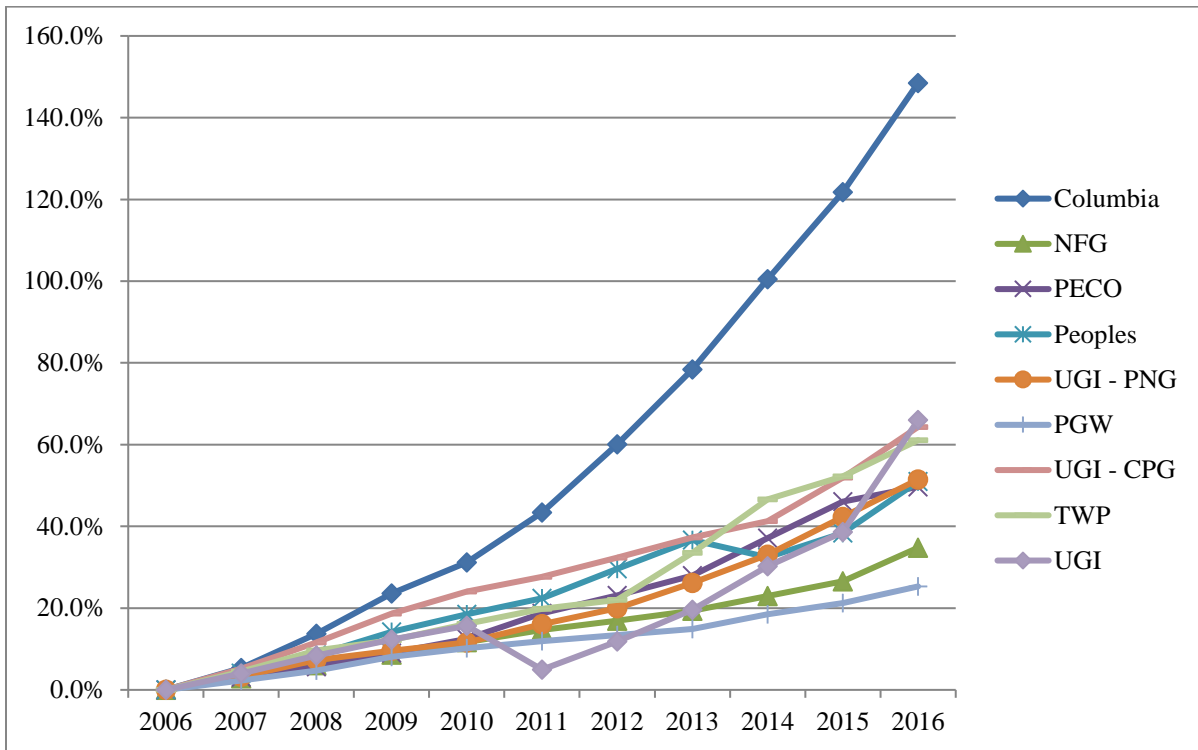
Over the past decade, NGDCs have been steadily investing in their infrastructure. Much of the recent increase in infrastructure spending was spurred by the implementation of Commission-approved Long-Term Infrastructure Improvement Plans (LTIIPs) and their corresponding Distribution System Improvement Charge (DSIC) mechanisms for most of the major NGDCs.⁵⁰ Figure 13, below, shows that the major NGDCs have added roughly \$401 million per year to their total utility plant in service. This equates to a cumulative increase of 57.4 percent in plant in service for the total industry since 2006. Figure 14, below, shows that while all NGDCs have increased plant in service since 2006, Columbia has the fastest rate of increase, more than doubling its total plant in service with a 148.5 percent increase since 2006. PGW has the slowest rate of increase at 25.3 percent since 2006.

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



⁵⁰ Final Implementation Order entered 5-23-14, Docket No. L-2012-2317274: *Review of Long-Term Infrastructure Improvement Plan*

Figure 14: Cumulative Percentage Increase in Utility Plant in Service for All Major NGDCs (base year 2006)



Section 4 - Conclusion

X. Summary

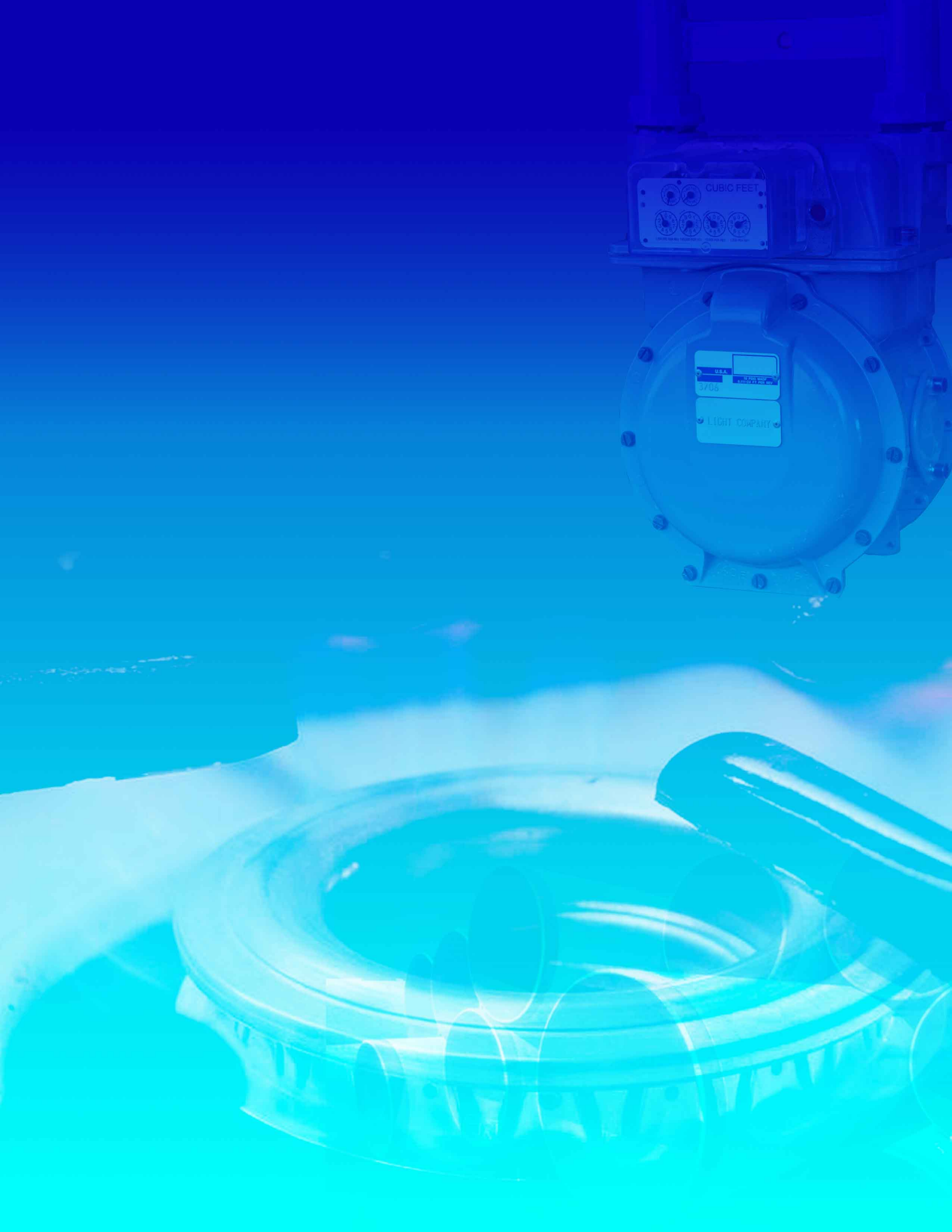
Natural gas production and consumption have both continued to rise in Pennsylvania, despite the recent relatively low prices. Prices have risen somewhat over the previous year, likely due to additional pipeline capacity that has come online to bring commodity to markets, as well as the increased demand for additional natural gas resources. Much of this increased demand is being driven by natural gas-fired electric generation plants that have been coming online in recent years. It is likely that market conditions will continue to push prices slightly higher in 2018.

Some market developments to watch for in the next couple of years will involve NGL production and transportation capacity, as well as LNG production. As additional pipeline capacity becomes available to move NGLs to market, it is likely that prices for these products will rise even as production of NGLs increases in response. Additionally, if one or more planned or proposed large LNG facilities comes online in the near future, this could further push natural gas prices up, and potentially spur incentives for additional unconventional natural gas production and offset the rise in prices.

In general, it appears that the natural gas industry in Pennsylvania is robust and continuing to grow, with most signs indicating that there will be continued increases in both production and consumption for the foreseeable future. Our natural gas utilities in Pennsylvania are making significant investments in their infrastructure, to ensure that they will be prepared to meet this increased demand going forward, 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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