



# **PENNSYLVANIA GAS OUTLOOK REPORT**

**October 2016**

Published by:  
Pennsylvania Public Utility Commission  
P.O. Box 3265  
Harrisburg, PA 17105-3265  
[www.puc.pa.gov](http://www.puc.pa.gov)

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## **I. Introduction**

The Public Utility Code requires natural gas distribution companies (NGDCs) to file annual financial reports with the Pennsylvania Public Utility Commission (PUC) per 52 Pa. Code § 59.48. These Gas Annual 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 per 52 Pa. Code § 59.81. 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.

This report has been prepared using information filed by the NGDCs, 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.

## II. Executive Summary

The Bureau of Technical Utility Services has prepared this report to summarize the 2015 financial as well as supply and demand data for the Pennsylvania NGDCs and to present several topics of interest with regard to the Pennsylvania natural gas industry. Trends regarding the nation as a whole are affected by trends and events in Pennsylvania. Therefore macroeconomic and industry data for the entire U.S. are included in this report for context and supporting data.

### National Summary

The national natural gas storage inventory peak for the 12 months prior to this winter heating season was 3.6 trillion cubic feet (Tcf) in the beginning of November 2015. This was identical to the peak from the prior injection season. Natural gas production in the U.S. in 2015 averaged 90.1 billion cubic feet per day (Bcfd), which was an increase of 4.2% from 2014. This was the tenth consecutive annual increase in US domestic production.<sup>1</sup> Domestic consumption in 2015 was 75.3 Bcfd, which was an increase of 2.3% from 2014. This was the sixth consecutive annual increase in US domestic consumption.<sup>2</sup> Henry Hub<sup>3</sup> spot prices averaged \$2.62 per million British thermal units (MMBtus) in 2015, a dramatic drop of 40.2% from \$4.38 in 2014. EIA predicts the Henry Hub annual average spot price to drop even further for 2016, to an average of \$2.22/MMBtu, while rebounding to \$2.96/MMBtu in 2017. Analysis of Henry Hub natural gas futures contracts in comparison to Henry Hub spot prices show an expected rise in prices over the coming 12 months, producing a national average price of \$3.06/MMBtu for the twelve months ending July 2017.<sup>4</sup>

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<sup>1</sup> EIA Natural Gas Gross Withdrawals and Production, June 2016 release. <http://www.eia.gov>

<sup>2</sup> EIA Natural Gas Consumption by End Use, June 2016 release. <http://www.eia.gov>

<sup>3</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>4</sup> EIA Short Term Energy Outlook, June 2016 release. <http://www.eia.gov>

Natural Gas futures quotes pulled July 6, 2016. <http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html>

## Pennsylvania Summary

There are nearly 3 million natural gas customers in Pennsylvania, with about 2.7 million of these being residential customers.<sup>5</sup> There are 30 regulated natural gas utility companies in Pennsylvania, and 9 of these are major distribution companies with gross revenues greater than \$40 million per year.<sup>6</sup> Pennsylvania gas infrastructure also 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 1, 2016, 21,927 unconventional drilling permit applications have been filed with the Pennsylvania Department of Environmental Protection. Of those applications, 9,792 unconventional wells have been drilled.<sup>7</sup> As of July 1, 2016, there were 13 rotary rigs active in Pennsylvania, which represent only 25% of the number of active rigs a year and a half 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>8</sup> EIA estimates the total number of producing shale and conventional gas wells in Pennsylvania as approximately 70,400 in 2014.<sup>9</sup>

Financial statistics taken from the Gas Annual Reports of the NGDCs are presented in time series fashion from 2005 through 2015. Broad category financial data is presented for several categories, such as revenue, expenses, plant in service, depreciation, maintenance, gas costs, etc. Data on the number of customers, reserves,

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<sup>5</sup> EIA Number of Natural Gas Consumers, most current data available. <http://www.eia.gov>

<sup>6</sup> \$40 million in gross revenue is the threshold over which a NGDC files under 66 PA Code § 1307(f)

<sup>7</sup> PA DEP Well Permit Workload Report for 1/1/2016 - 7/1/2016.

[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)

<sup>8</sup> Baker Hughes Rotary Rig Count, 7/1/16 release. <http://www.bakerhughes.com/rig-count>

<sup>9</sup> EIA Natural Gas Annual 2014, most current data available. <http://www.eia.gov>

wellhead prices, Pennsylvania production and average consumption figures are provided.

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

- Total natural gas consumption in Pennsylvania has increased from 706.2 Bcf in 1997 to 1,203 Bcf in 2014.
- Pennsylvania gas production reached nearly 4.8 Tcf in 2015.
- Gas deliveries for Pennsylvania electric generation have increased markedly from 3% of total deliveries in 1997 to 41% in 2015 (20 Bcf compared to 439 Bcf).<sup>10</sup>

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<sup>10</sup> EIA, Natural Gas Consumption by End Use. <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 concerns. The pipelines in Pennsylvania have access to natural gas production from the South and Midwest, from the Rockies via the Rockies Express Pipeline, from Canada, and from the Marcellus and Utica Shales spanning large portions of Pennsylvania, Ohio, and West Virginia.<sup>11</sup>

Marcellus shale production has risen from 2 Bcfd in January 2010 to over 17 Bcfd in May 2016. 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 the excess of supply to the markets where it is most needed. There are 5.2 Bcfd of pipeline projects slated to come online during the remainder of 2016 in the Northeast region to help move gas to market, and 19.5 Bcfd slated for 2017 as shown in Tables 1 and 2 below, respectively. The additional pipeline will help remove the above-mentioned constraints and assist in stabilizing regional prices, by moving the increased Marcellus Shale gas production to market.<sup>12</sup>

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<sup>11</sup> Natural Gas Pipelines in the Northeast Region, EIA, About U.S. Natural Gas Pipelines.

<http://www.eia.gov>

<sup>12</sup> EIA Marcellus Region Drilling Productivity Report, June 2016. <http://www.eia.gov>

**Table 1 Proposed Pipeline Infrastructure for 2016 In-Service<sup>13</sup>**

<b>Project Name</b>	<b>Pipeline Operator Name</b>	<b>State(s)</b>	<b>Additional Capacity (MMcf/d)</b>
Continent to Coast Expansion Project	Portland Natural Gas Transmission System	CN,ME	132
Rock Springs Expansion	Transcontinental Gas Pipeline	NJ	192
White Oak Mainline Expansion Project	Eastern Shore Natural Gas	PA	45
Connecticut Expansion Project	Tennessee Gas Pipeline	NY	72
Wright Interconnect Project	Iroquois gas pipeline	NY	650
Garden State Expansion	Transcontinental Gas Pipeline	NJ	180
Algonquin Incremental Market (AIM)	Algonquin Gas Transmission	NJ,NY,CT,RI,MA	342
New market project	Dominion Transmission	PA	112
Utica Access Project	Columbia Gas Transmission	WV	205
Clarington Project	Dominion Transmission	WV	250
Northern Access 2016 Project	National Fuel Gas Supply Corp	PA,NY	350
Ohio Valley Connector	Equitrans	WV,OH	850
Pipeline Zone Three Capacity Enhancement	Rockies Express Pipeline	OH,IN,IL	800
Lebanon West II	Dominion Transmission	PA,OH	130
Ohio-Louisiana Access project	Texas Gas Transmission	OH,IN,KY,TN,MS,LA	626
Western Kentucky Lateral Project	Texas Gas Transmission	KY	230

<sup>13</sup> EIA Natural Gas Pipeline Projects. <http://www.eia.gov>

**Table 2 Proposed Pipeline Infrastructure for 2017 In-Service<sup>14</sup>**

<b>Project Name</b>	<b>Pipeline Operator Name</b>	<b>State(s)</b>	<b>Additional Capacity (MMcf/d)</b>
Constitution Pipeline	Constitution Pipeline Co	PA,NY	650
Lebanon Extension Project	Texas Eastern Transmission Co	PA	102
Leidy South Project	Dominion Transmission	PA	155
EQM Appalachia Header Pipeline	ETC Katy Intrastate Pipeline	PA	500
Salem Lateral Project	Algonquin Gas Transmission	MA	115
Lebanon lateral project phase 3	ANR Pipeline	OH	
PennEast Pipeline Co	PennEast Pipeline Co	PA	1,107
Leach XPress project	Columbia Pipeline	OH,PA,WV	1,530
Mountaineer XPress Pipeline	Columbia Gas Transmission	WV	2,500
Virginia Southside Expansion Project II	Transcontinental Gas Pipeline	VA	250
Susquehanna West Project	Tennessee Gas Pipeline Company	PA	145
New York Bay Expansion Project	Transcontinental Gas Pipeline	NY	115
Triad Expansion Project	Tennessee Gas Pipeline Company	PA	180
CPV Valley lateral project	Millennium Pipeline	NY	130
Gibraltar and Buffalo Creek Pipelines	Gibraltar and Buffalo Creek Pipelines	PA	1,000
MARC II pipeline	Central New York Oil & Gas	PA	1,000
Atlantic Bridge project	Algonquin Gas Transmission	NJ,NY,CT,RI,MA	153
Virginia Southside II	Transcontinental Gas Pipeline	NJ	250
UGI Sunbury Pipeline	UGI Energy Services	PA	200
Panhandle Backhaul Project	Panhandle Eastern Pipeline	OH,IN,IL	750
Rover Pipeline Project	ET Rover Pipeline	PA,WV,OH,MI,CN	3,250
South to North project	Iroquois gas pipeline	NY,CN	650
NEXUS Gas Transmission	Spectra Energy	OH,MI,CN	1,500
Atlantic Sunrise Project (bi-directional)	Transcontinental Gas Pipeline	PA,VA,NC,SC,GA,AL	1,700
Gulf Markets Expansion (bi-directional)	Texas Eastern Transmission co	PA,OH,WV,KY,TX	650
Access South Project	Texas Eastern Transmission Co	PA,WV,KY,TN,AL,MS	320
Northern Supply Access Project	Texas Gas Transmission	OH,IN,KY,TN,MS,LA	384
Adair Southwest Project	Texas Eastern Transmission Co	PA,WV,OH,KY	200

<sup>14</sup> EIA Natural Gas Pipeline Projects. <http://www.eia.gov>

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

By the end of 2015, Pennsylvania had 10,407 megawatts (MWs) of natural gas fired electric generation, as shown by comparison to other capacity fuel sources in Chart 1, below. These facilities constitute 26.1% of Pennsylvania's generating capacity.

*Chart 1 Capacity in PA by Fuel Type at Year End 2015 (MW)*

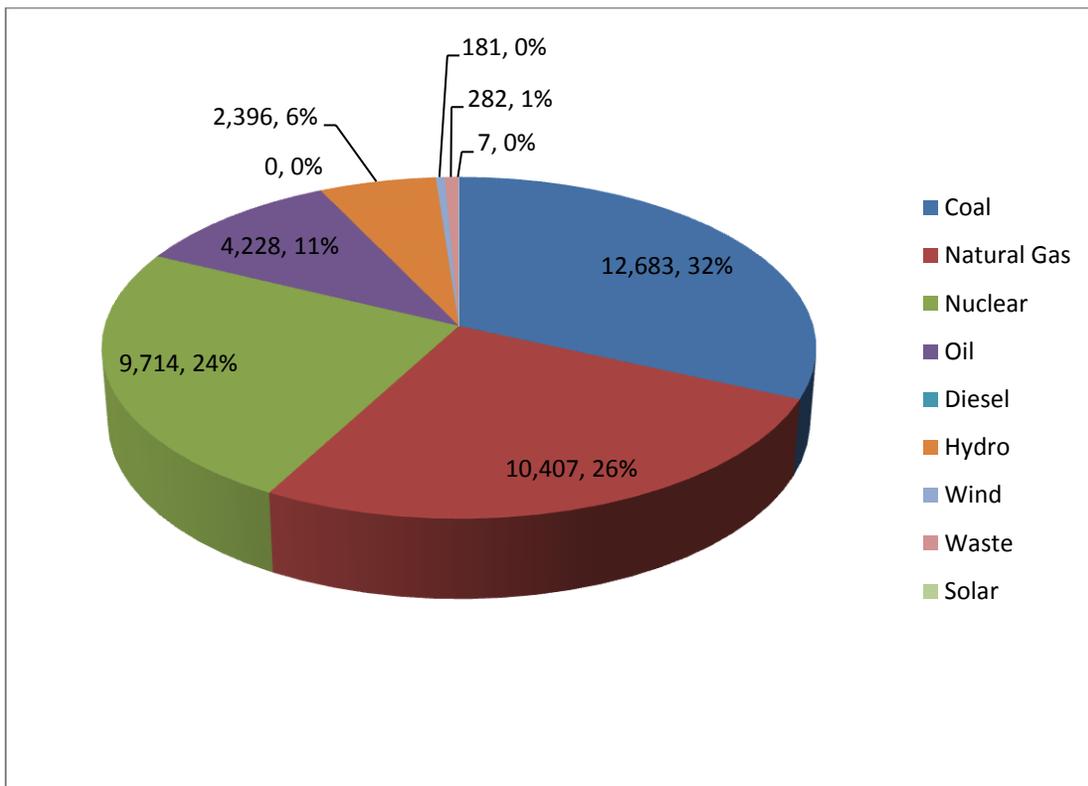
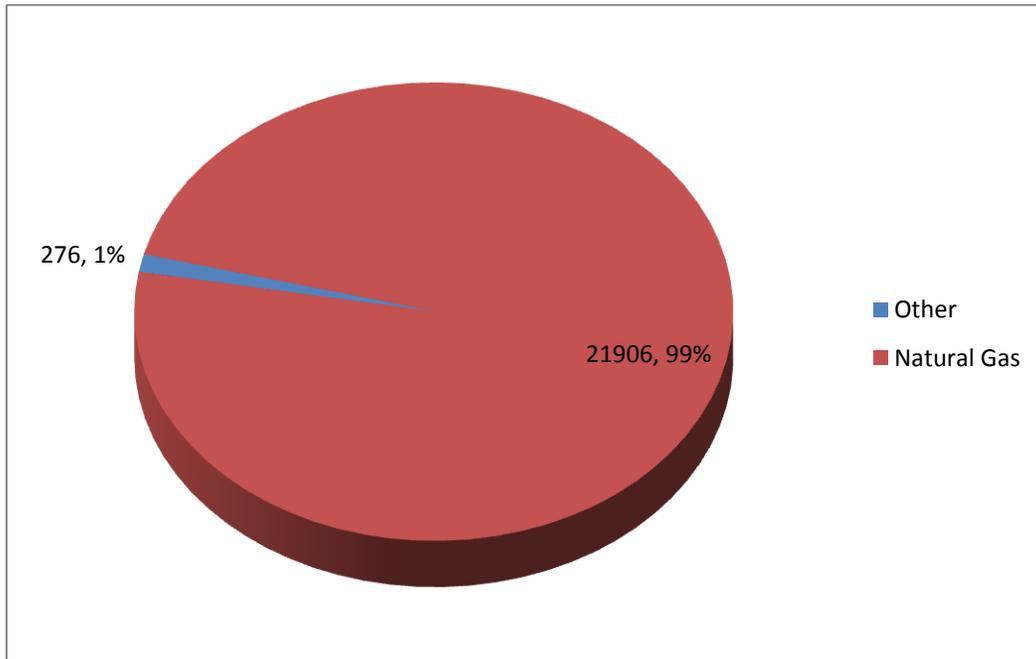


Chart 2, below, summarizes the PJM queues for new electric generation capacity for PA as of December 2015. The queues include 21,906 MW of proposed new natural gas fired capacity, making up nearly the entire PJM queue for Pennsylvania.<sup>15</sup> Typically about 25% of the queue actually gets built.<sup>16</sup>

**Chart 2 Queued Capacity in PA by Fuel Type (MW)**



Charts 3 and 4, below, illustrate the gas delivered for electric generation compared to other end uses in PA in 1997 and in 2015. As depicted, the fraction of natural gas usage for electric generation has dramatically increased. Reasons for this increase include: more supply of natural gas and the resultant lower cost for natural gas; the advancement of efficient natural gas generation technology; and retirements of older coal-fired plants. As the composition of the generating fleet changes to more gas-

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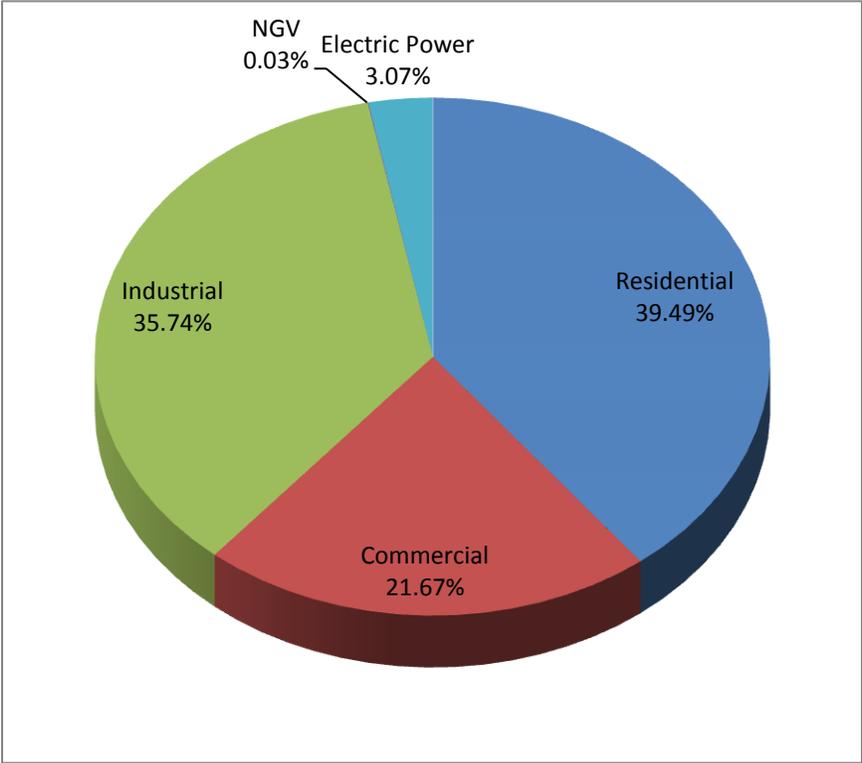
<sup>15</sup> Pennsylvania State Report (PJM), May 2016 release

<sup>16</sup> PJM 2013 Regional Transmission Expansion Plan (RTEP), released 2014.

<http://www.pjm.com/documents/reports/rtep-documents/2013-rtep.aspx>

fired units, pressure will increase on the natural gas industry to augment production and transportation capacity.

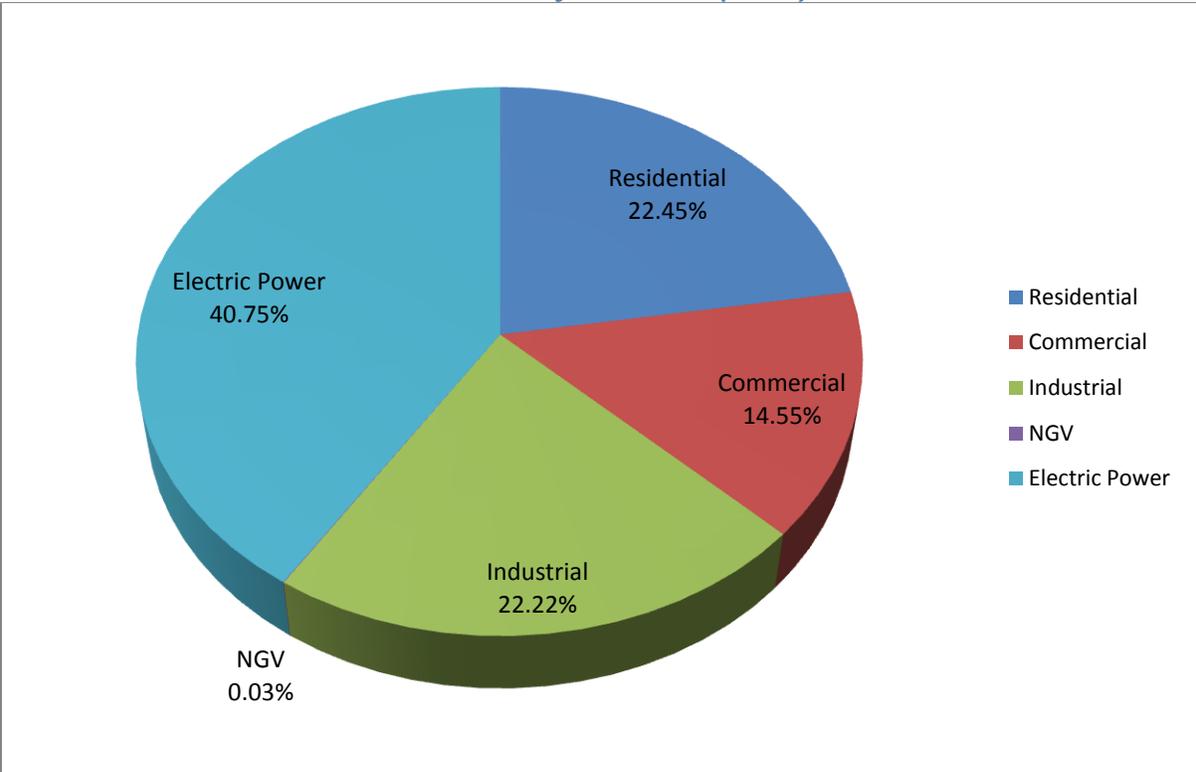
**Chart 3 Natural Gas Deliveries in PA by End Use (1997)<sup>17</sup>**



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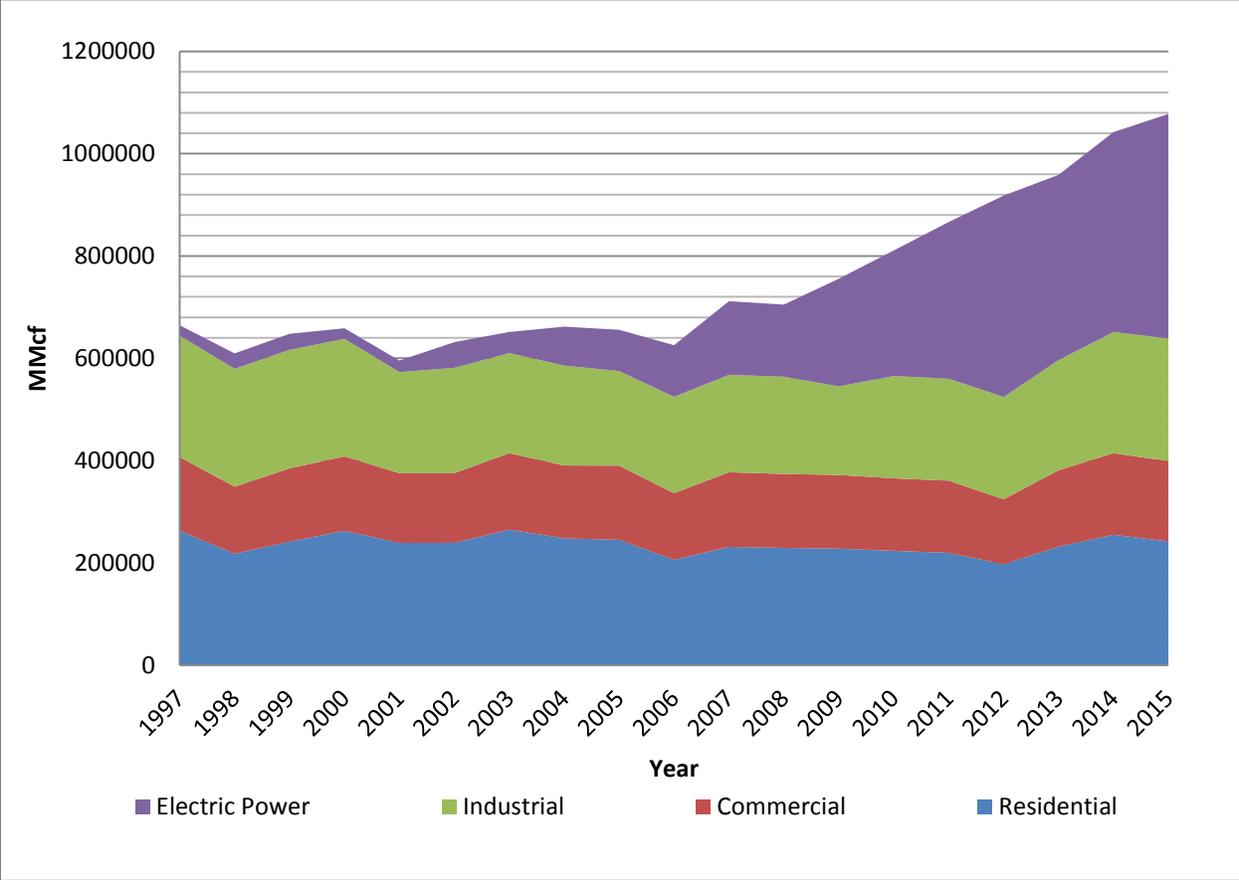
<sup>17</sup> NGV = Natural Gas Vehicles

*Chart 4 Natural Gas Deliveries in PA by End Use (2015)*



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 1997-2015, with a marked acceleration beginning in 2008 as Marcellus Shale production ramped up, as seen in Figure 1 below. In just the two years from 2013 to 2015, natural gas usage for electric generation has increased about 21%, accounting for nearly two thirds of the 119 Bcf of total usage increases in PA. While all categories of end usage experienced an increase over this timeframe, the substantially higher increase in electric generation accounts for the shift of 3% from Residential to Electric Power. In addition, it is important to note that although the share of natural gas going to different end uses has shifted, all uses other than power production have remained relatively steady. The resultant increase in electric generation has come from an increase in the total amount of gas being delivered in PA, not a shifting of resources away from other uses.

Figure 1 Natural Gas Deliveries in PA by End Use (1997-2015)

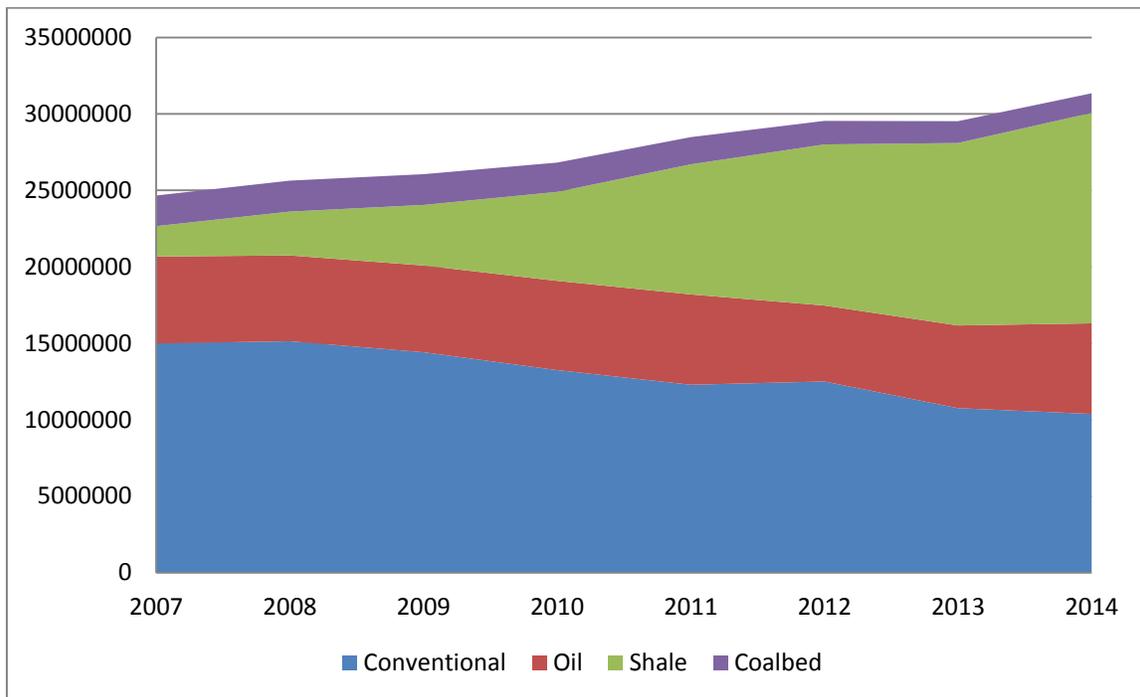


## V. Natural Gas Production, Consumption, Reserves, and Prices

### United States

Total US withdrawals of natural gas were 31.3 Tcf in 2014, of which, US gross withdrawals of unconventional shale gas were 13.8 Tcf.<sup>18</sup> As seen in Figure 2 below, this is the second year in a row where unconventional shale gas withdrawals outpaced conventional gas wells in the US. In fact, the trend is accelerating, with the spread between Shale and conventional gas production more than doubling from 1.2 Tcf in 2013 to 3.4 Tcf in 2014.

*Figure 2 US Gross Natural Gas Withdrawals (MMcf)*



The national storage inventory peak for the prior 12 months was 3.6 trillion cubic feet (Tcf), and was reached in the beginning of November 2015, identical to the peak

<sup>18</sup> EIA Natural Gas Summary. <http://www.eia.gov>

from the prior injection season. Natural gas production in the U.S. averaged 90.1 billion cubic feet per day (Bcfd) in 2015. This was an increase of 4.2% from 2014. This was the tenth consecutive annual increase in US domestic production.<sup>19</sup> Domestic natural gas consumption was 75.3 Bcfd in 2015. This was an increase of 2.3% from 2014. This was the sixth consecutive annual increase in US domestic consumption.<sup>20</sup> Henry Hub spot prices averaged \$2.62 per million British thermal units (MMBtus) in 2015, a dramatic drop of 40.2% from \$4.38 in 2014. EIA predicts the Henry Hub annual average spot price to drop even further for 2016, to an average of \$2.22/MMBtu for 2016, while rebounding to \$2.96/MMBtu in 2017.

Analysis of Henry Hub natural gas futures contracts in comparison to Henry Hub spot prices show an expected rise in prices over the coming 12 months, producing a national average price of \$3.06/MMBtu for the twelve months ending July 2017.<sup>21</sup> Although the Henry Hub price is frequently used as a proxy 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 (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 December 2017 delivery dates. Henry Hub prices are consistently higher, with an average spread over the 12 months ending December 2017 of \$1.02/MMBtu.

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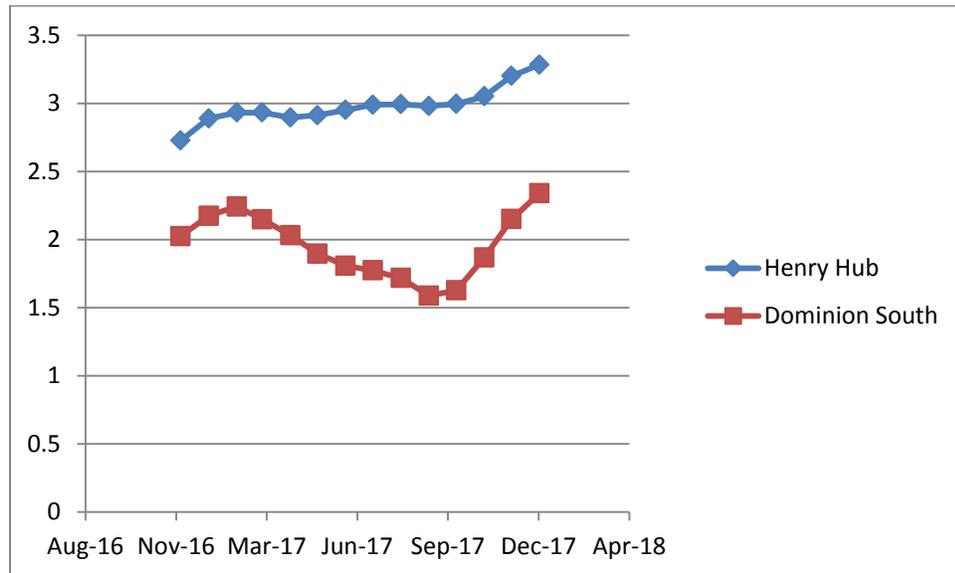
<sup>19</sup> EIA Natural Gas Gross Withdrawals and Production, June 2016 release. <http://www.eia.gov>

<sup>20</sup> EIA Natural Gas Consumption by End Use, June 2016 release. <http://www.eia.gov>

<sup>21</sup> EIA Short Term Energy Outlook, June 2016 release. <http://www.eia.gov>

Natural Gas futures quotes pulled July 6, 2016. <http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html>

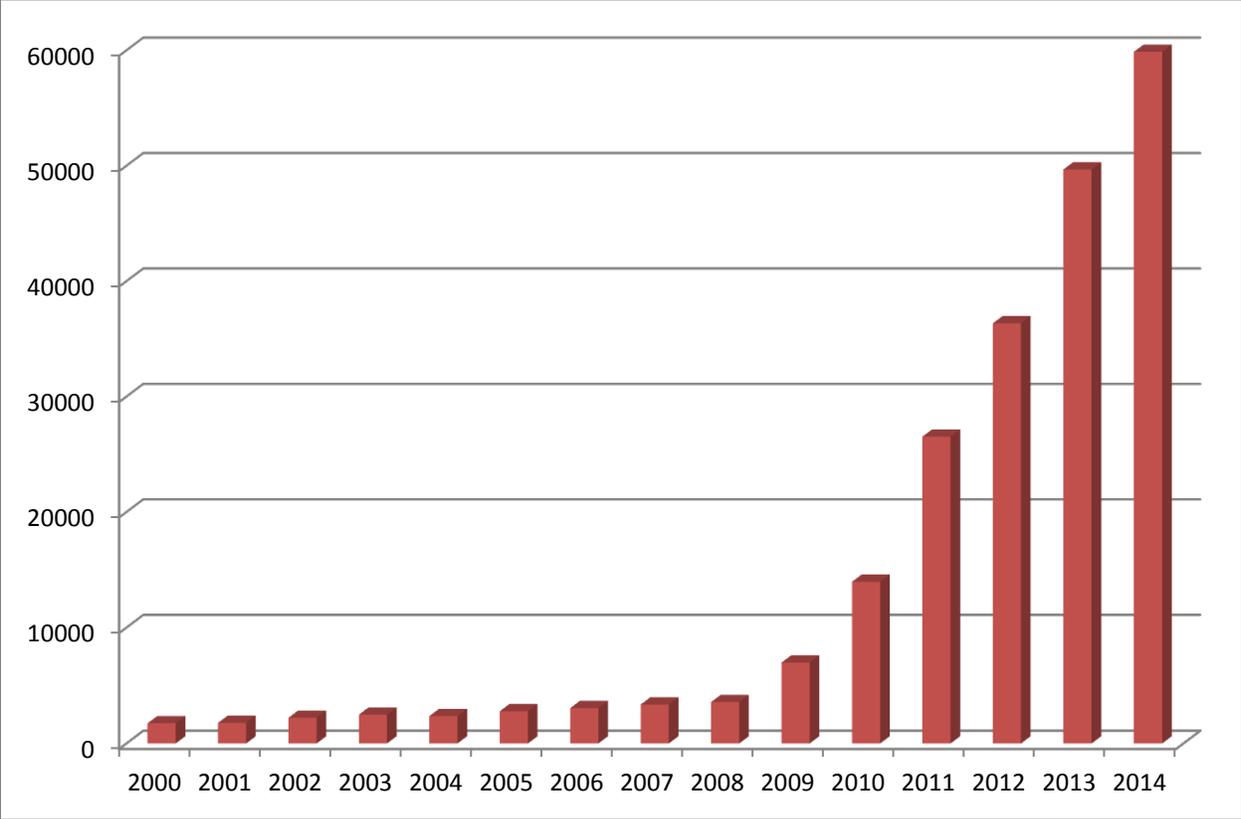
**Figure 3 Henry Hub and Dominion South Hub Futures Prices (\$/MMBtu)**



## 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 proven reserves for Pennsylvania as of Dec. 31, 2014 were 59.9 TCF, an increase of over 20% from 2013. Pennsylvania's dry proved reserves since 2000 can be seen in Figure 4 below.

Figure 4: Pennsylvania's Dry Proved Reserves (Bcf), 2000-2014



Total Pennsylvania storage capacity for 2014 was 774 BCF.<sup>22</sup> Table 3, below, shows the supply and demand balance for Pennsylvania in 2014. It is interesting to note that although Pennsylvania exported about 3.5 Tcf in 2014, the state still imported a little bit over 0.6 Tcf, likely due to some of the same transportation constraints discussed earlier.

<sup>22</sup> EIA Natural Gas Summary for Pennsylvania. <http://www.eia.gov>

**Table 3 2014 Pennsylvania Natural Gas Production, Transmission and Consumption (MMcf)**

Supply		Demand	
<b>Marketed Production</b>	4,214,613	<b>Consumption</b>	1,203,418
<b>Imports</b>	649,966	<b>Exports</b>	3,502,041
<b>Withdrawal From Storage in excess of additions</b>	-40,797		
<b>Supplemental Supply</b>	20		
<b>Total Supply</b>	4,823,802	<b>Total Consumption</b>	4,705,459 <sup>23</sup>
<b>Balancing Item*</b>	-78,758		

\*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.

EIA estimated the total number of producing shale and conventional gas wells in Pennsylvania as approximately 70,400 in 2014.<sup>24</sup> As of July 1, 2016, 21,927 unconventional drilling permit applications had been filed with the Pennsylvania Department of Environmental Protection. Of those applications, 9,792 unconventional wells have been drilled.<sup>25</sup> As of July 1, 2016, there were 13 rotary rigs active in Pennsylvania, only 25% of the number of active rigs a year and a half 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>26</sup> Table 4, below, illustrates Pennsylvania's production far outpacing its deliveries to consumers in the state, specifically by a factor of three in 2014.

<sup>23</sup> The Total Supply and Total Consumption are close, but do not perfectly balance. There is a remaining balance of 39,585 MMcf. A small discrepancy in any or multiple values pulled from the EIA could account for this.

<sup>24</sup> EIA Natural Gas Annual 2014, most current data available. <http://www.eia.gov>

<sup>25</sup> PA DEP Well Permit Workload Report for 1/1/2016 - 7/1/2016.

[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)

<sup>26</sup> Baker Hughes Rotary Rig Count, 7/1/16 release. <http://www.bakerhughes.com/rig-count>

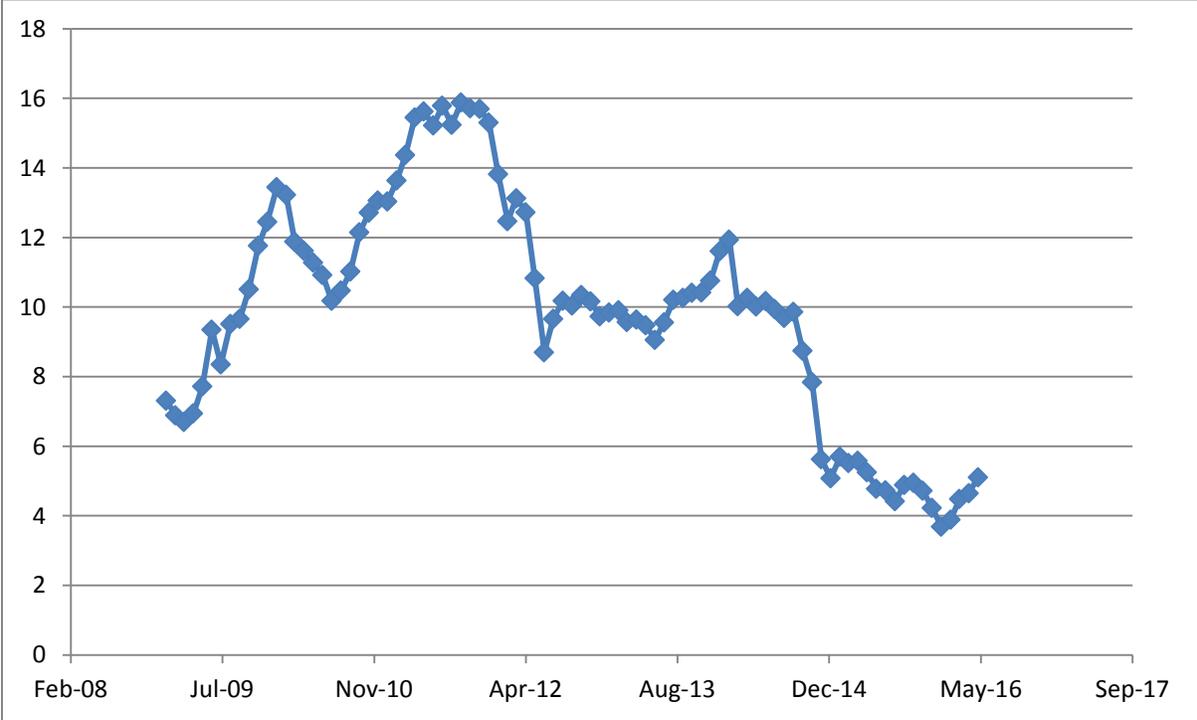
**Table 4 Historical Pennsylvania Deliveries, Transportation and Production (Bcf)**

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	1,077.8	*	4,768.9

\*Not available from EIA as of 7/8/2015.

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. Meanwhile, pipeline capacity to move the NGLs to markets has not caught up with production, exacerbating the problem further. Figure 5 below shows the Mont Belvieu NGL Composite price from January 2011 through May 2016.

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



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 has scheduled the project to be completed in the first half of 2017, bringing a total capacity of approximately 350,000 barrels per day of NGLs online.<sup>27</sup> 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

<sup>27</sup> Sunoco Logistics, August 1, 2016. <http://www.sunocologistics.com/Customers/Business-Lines/Natural-Gas-Liquids-NGLs-Segment/257/>

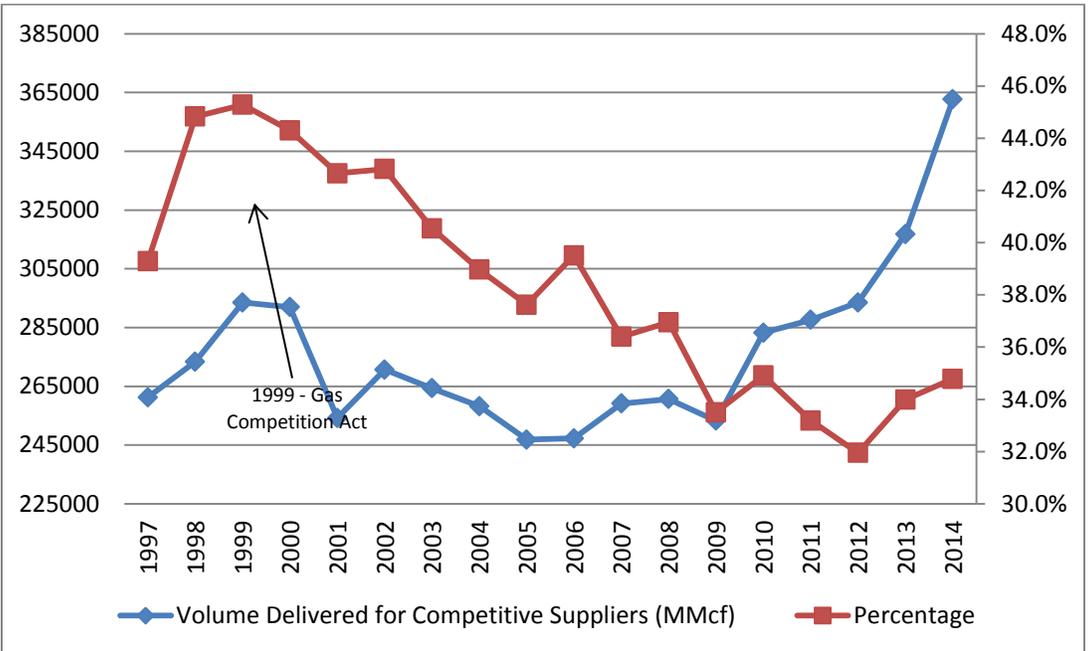
the downward pressure on NGL prices. However, projects such as the Mariner East II may relieve this oversupply of NGLs. This should stabilize or raise the prices for these commodities.

As these new pipelines are placed in service, there could be a substantial shift in the relationship between NGL supplies and the natural gas market. An estimated 2 Bcfd of NGLs currently being fed into the natural gas system will be redirected, so it is likely that both NGLs and natural gas prices will rise, creating incentive for additional production in Pennsylvania.

Figure 6, below, shows Pennsylvania deliveries of natural gas for competitive suppliers, often called transportation gas. In 2014, 34.8% of the natural gas delivered to customers was transportation gas. In 2014, the percentages of gas delivered for competitive suppliers by customer class were as follows:

Residential:	13.8%
Commercial:	58.6%
Industrial:	98.8%

**Figure 6 Natural Gas Delivered for Competitive Suppliers by PA Natural Gas Utilities**



Over the last 5 years, not only has total transportation gas been increasing every year, but every customer class has seen an increase. The reason for the low percentage increases in competitive deliveries compared to the significant increase in volume (see Figure 6) is the rapid increase in total gas deliveries in PA over the same time period.

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

### Customer Data

The following information in Tables 5 and 6, below, is derived from data contained in the Gas Annual Reports and the Annual Resource Planning Reports for major 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 2015 Customer Statistical Data**

<b>Company</b>	<b>Number of Residential Customers</b>	<b>Average per customer usage (MCF)</b>	<b>Number of Commercial Customers</b>	<b>Average per customer usage (MCF)</b>	<b>Number of Industrial Customers</b>	<b>Average per customer usage (MCF)</b>	<b>Number of Transportation Customers</b>	<b>Average per customer usage (MCF)</b>
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 TWP	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 <sup>28</sup>	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

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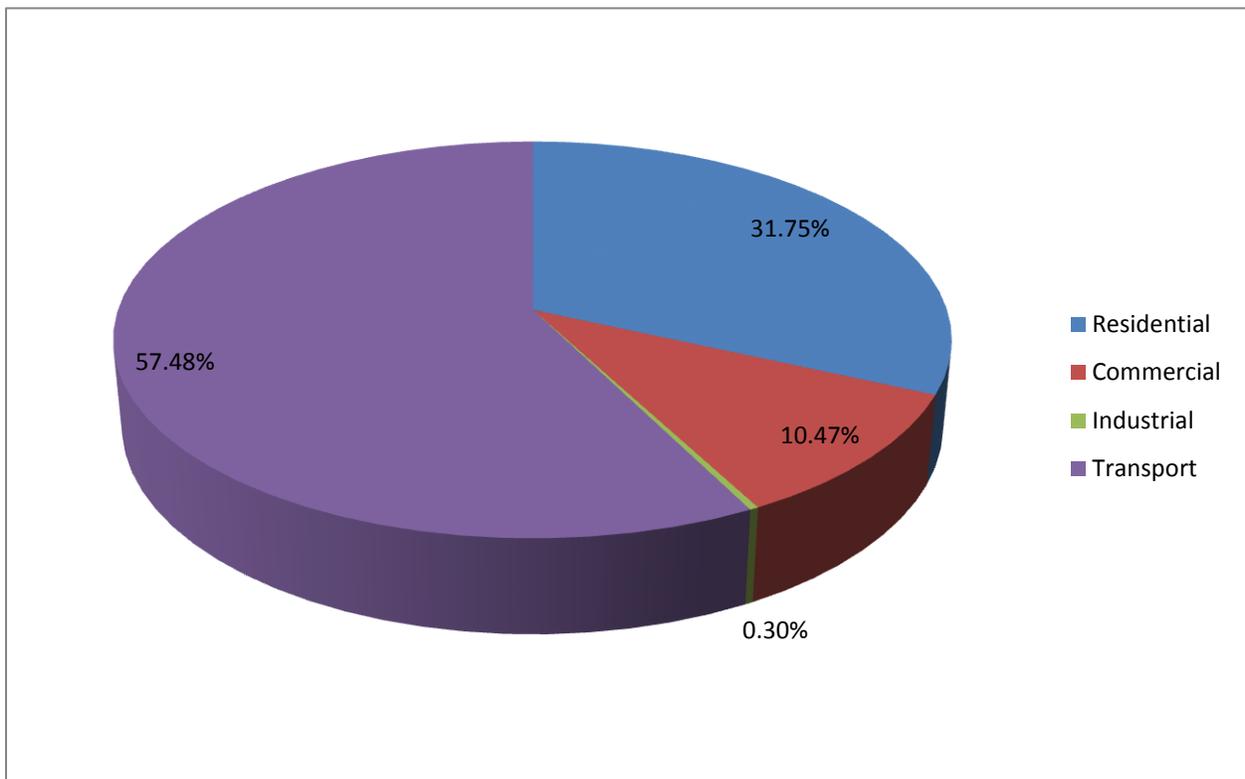
<sup>28</sup> The tracking of customer classes and natural gas usage are not necessarily done within one tracking system. Some customers may be classed in a certain category, but depending on their usage for the year, may end up assigned to a different rate class. This can create the appearance of a customer class with 0 Mcf of usage, when in reality they had simply been shifted to a different rate class that year, and are accounted for under a different category.

**Table 6 2014 Customer Statistical Data**

<b>Company</b>	<b>Number of Residential Customers</b>	<b>Average per customer usage (MCF)</b>	<b>Number of Commercial Customers</b>	<b>Average per customer usage (MCF)</b>	<b>Number of Industrial Customers</b>	<b>Average per customer usage (MCF)</b>	<b>Number of Transportation Customers</b>	<b>Average per customer usage (MCF)</b>
Columbia	279,362	89	29,132	344	275	844	115,653	408
Peoples	476,265	101	34,357	309	76	3,211	113,283	585
Peoples TWP	56,426	100	4,207	505	6	333	195	84,810
NFG	170,878	103	10,818	30	162	1,512	31,772	899
PECO	462,663	90	42,629	488	3	15,667	853	32,353
PGW	471,706	83	22,808	384	564	890	3,505	8,274
UGI CPG	69,633	98	9,043	365	139	2,345	2,180	7,101
UGI PNG	148,730	114	12,547	423	65	1,862	6,040	6,377
UGI Utilities	288,439	76	25,612	348	579	1,088	55,861	1,622

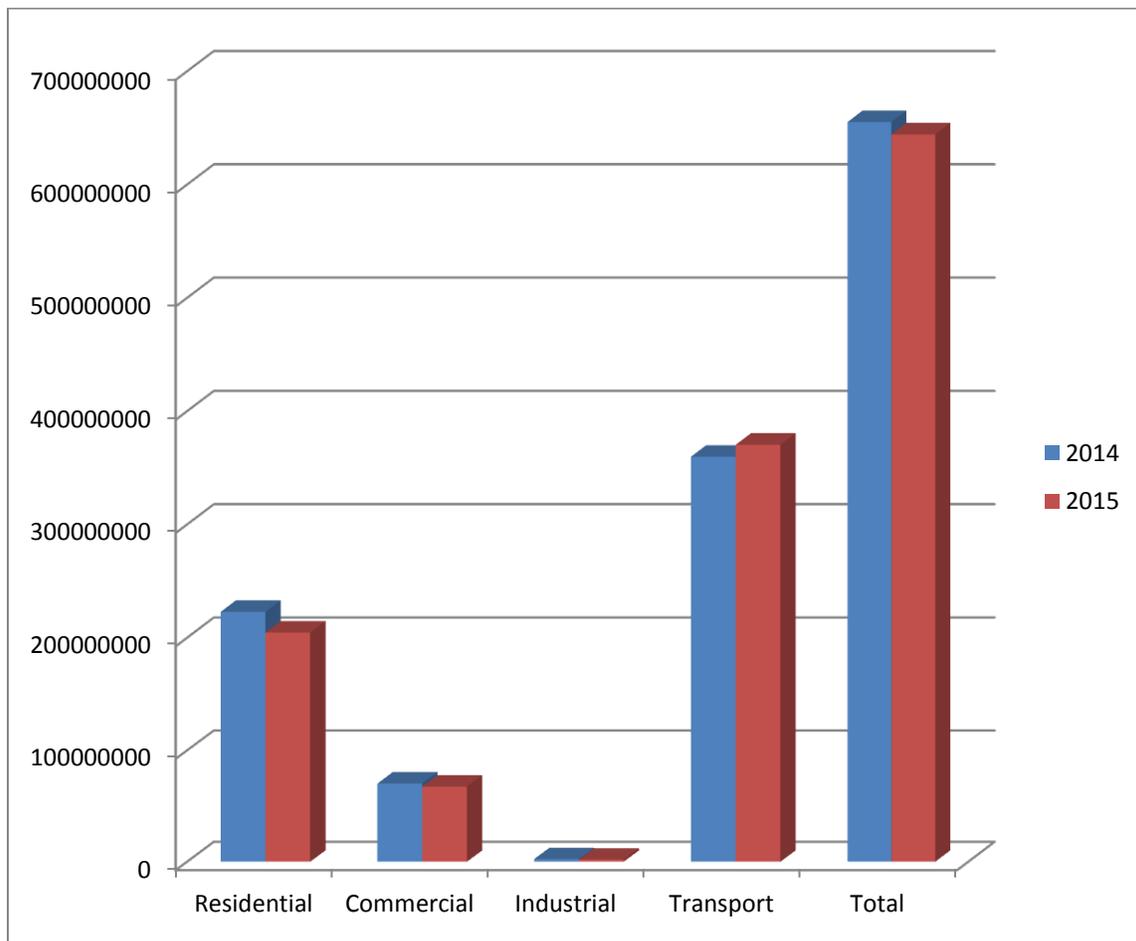
Chart 5, below, provides a breakdown of gas usage by customer class among Pennsylvania's major NGDCs (those with more than 8 Bcf in sales per year). More than half of all sales volume was from transportation customers. These are typically larger customers that procure their own natural gas supply, and 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 2015 Pennsylvania Gas Usage by Customer Class within Major NGDCs*



As seen in Figure 7, below, natural gas usage in 2015 was lower for each NGDC customer class other than Transportation, and slightly lower overall than in 2014.

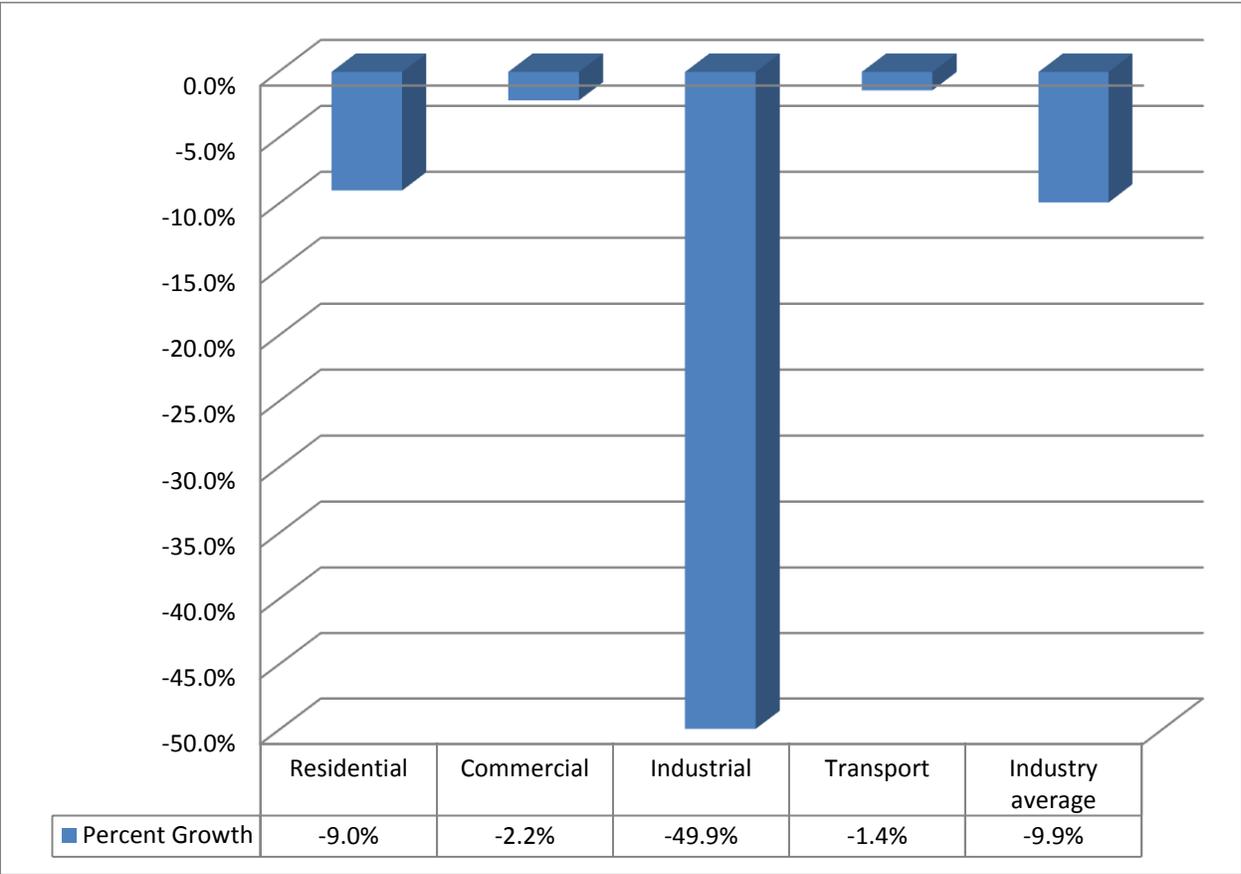
**Figure 7: Pennsylvania Gas Usage by Customer Class within Major NGDCs: 2014-2015**



In total, gas usage fell by 1.7% between 2014 and 2015, while the number of customers remained relatively flat, rising only 0.4%. The reason for this is likely the relatively mild winter of 2015-2016, causing the reduced usage in 2015 compared to 2014.

Per customer usage fell in all categories, dropping a total of nearly 10% overall. Total consumption dropped in every category as well, except for transportation, which saw a modest 3% increase in overall usage. This increase was due to 1.8% increase in the number of transportation customers year over year. Figure 8, below, illustrates the change in average gas usage by customer class, showing the drop in usage among all customer classes.

**Figure 8: Growth in Average Customer Usage for Major NGDCs by Customer Class: 2014-2015**



## **VII. Pennsylvania NGDC Gas Supply and Demand Balance**

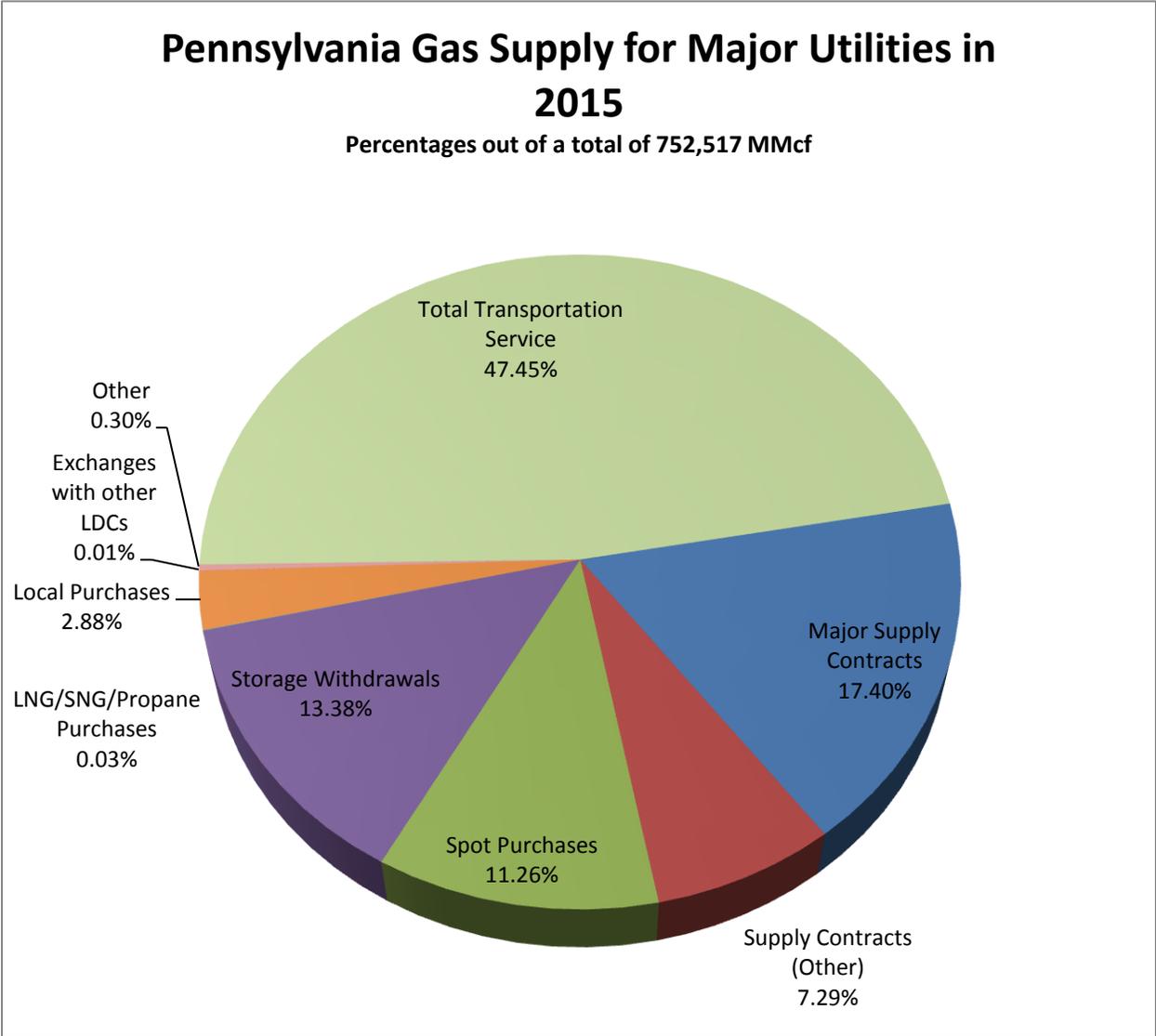
The following tables and charts provide natural gas supply and demand data for Pennsylvania's NGDCs. The NGDCs provided the supply and demand data for the 2015 delivery year. The data is presented for 2015 on an annual basis and also for peak day. Peak day is non-coincident data such that demand for a specific customer class is not necessarily at the same time as the system peak. Data is derived from PUC Annual Resource Planning Reports.

*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 2015 Annual Gas Supply and Demand for Major Gas Utilities (MMcf)**

	UGI PNG	UGI CPG	UGI Util.	PGW	Columbia	NFG	PECO	Peoples	Peoples TWP
<b>Gas Supply:</b>									
<b>Supply Contracts</b>	26,916	11,706	41,174	51,378	20,484	9,098	57,281	52,201	8,373
<b>Spot Purchases</b>	7,705	2,937	11,333	0	11,152	11,664	4,015	4,757	413
<b>Storage Withdrawal</b>	0	0	0	12,235	0	0	0	0	0
<b>LNG</b>	0	0	0	2,238	0	0	0	0	0
<b>Subtotal Gas Supply</b>	34,621	14,643	52,507	65,851	31,636	20,762	61,296	56,958	8,786
<b>Transportation</b>	35,292	15,432	95,055	30,835	41,643	26,385	27,877	65,928	18,736
<b>TOTAL GAS SUPPLY</b>	69,913	30,075	147,562	96,686	73,279	47,147	89,173	122,886	27,522
<b>Requirements:</b>									
<b>Firm Requirements</b>	21,423	10,606	30,218	50,401	31,636	20,762	61,246	59,595	8,974
<b>Liquefaction Interruptible Requirements</b>	0	0	0	2,145	0	0	0	0	0
<b>Storage Injections</b>	0	0	7	571	0	0	50	0	0
<b>Subtotal Firm &amp; Interruptible</b>	21,423	10,606	30,225	65,850	31,636	20,762	61,296	59,595	8,974
<b>Transportation</b>	35,292	15,432	95,055	30,835	41,643	26,385	27,877	63,291	18,549
<b>Load Deductions</b>	(13,198)	(4,037)	(22,282)	0	0	0	0	0	0
<b>TOTAL GAS REQUIREMENTS</b>	69,913	30,075	147,562	96,685	73,279	47,147	89,173	122,886	27,523
<b>Surplus(Deficiency)</b>	0	0	0	1	0	0	0	0	(1)

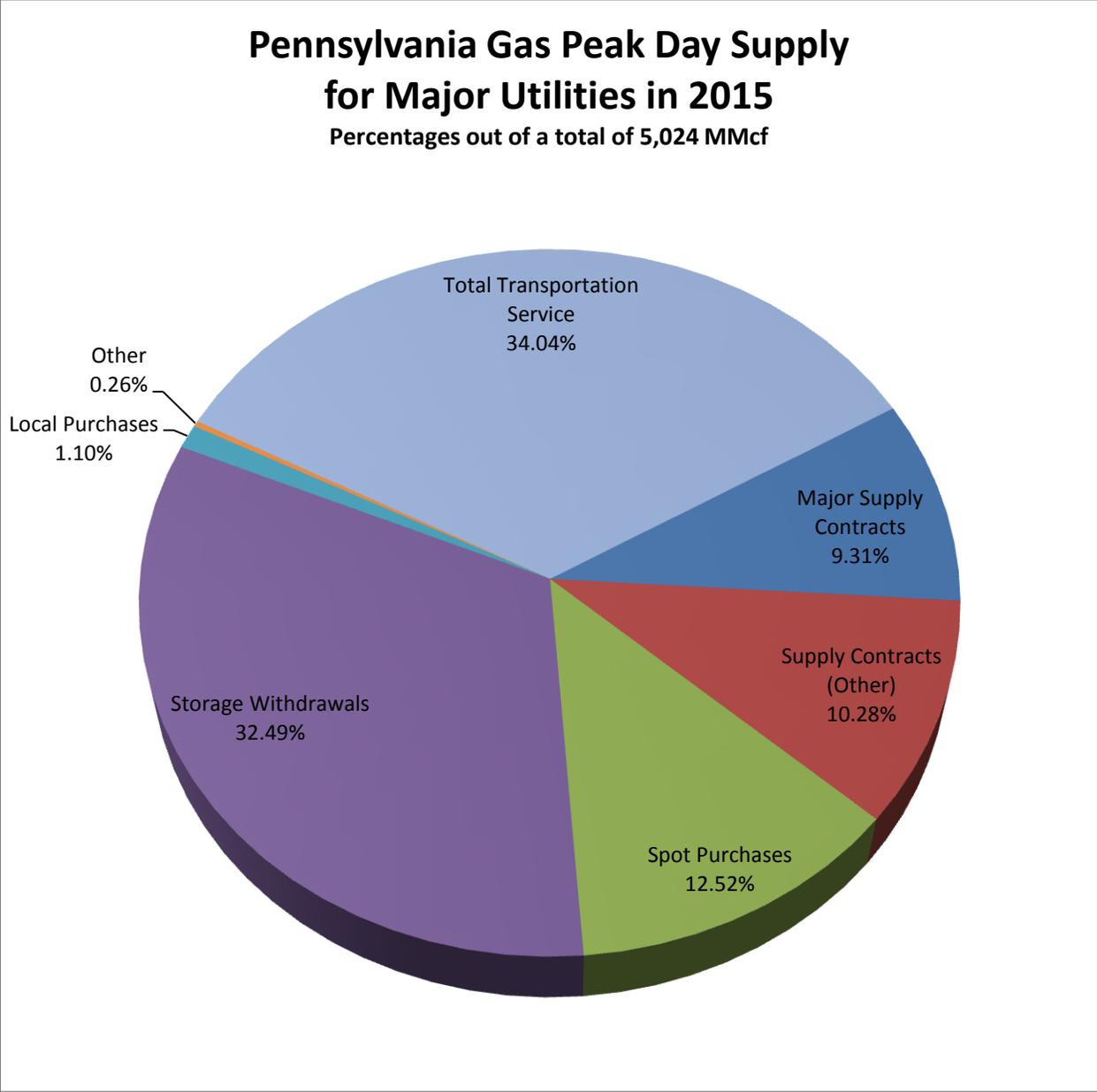
Chart 6 Pennsylvania Gas Utility Annual Supply 2015



**Table 8 2015 Peak Day Gas Supply and Demand Balance for Major Gas Utilities  
(MMcf)**

	UGI PNG	UGI CPG	UGI Util.	PGW	Columbia	NFG	PECO	Peoples	Peoples TWP
<b>Gas Supply:</b>									
Supply Contracts	109	46	112	211	429	201	407	734	71
Spot Purchases	139	66	213	0	0	0	232	17	11
Storage Withdrawal	0	0	0	171	0	0	0	0	0
LNG	0	0	0	146	0	0	0	0	0
Subtotal Gas Supply	248	112	325	528	429	201	639	751	82
Transportation	151	74	377	156	266	170	138	313	65
<b>TOTAL GAS SUPPLY</b>	<b>399</b>	<b>186</b>	<b>702</b>	<b>684</b>	<b>695</b>	<b>371</b>	<b>777</b>	<b>1,064</b>	<b>147</b>
<b>Requirements:</b>									
Firm Requirements	235	104	282	523	429	201	695	647	85
Liquefaction	0	0	0	0	0	0	0	0	0
Interruptible Requirements	0	0	0	5	0	0	0	0	0
Storage Injections	0	0	0	0	0	0	0	0	0
Subtotal Firm & Interruptible	235	104	282	528	429	201	695	647	85
Transportation	139	70	369	156	266	170	81	418	62
Load Deductions	(24)	(12)	(51)	0	0	0	0	0	0
<b>TOTAL GAS REQUIREMENTS</b>	<b>398</b>	<b>186</b>	<b>702</b>	<b>684</b>	<b>695</b>	<b>371</b>	<b>776</b>	<b>1,065</b>	<b>147</b>
Surplus(Deficiency)	1	0	0	0	0	0	1	(1)	0

Chart 7 Pennsylvania Peak Day Supply 2015



## VIII. NGDC Financial Statistics

### Data Set

This section presents selected NGDC financial data taken from the Gas Annual Report of the major NGDCs for an eleven-year period from 2005 through 2015.

The data in Tables 9 through 11 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.

*Note: UGI Central Penn was purchased from PPL Gas Utilities in 2007. UGI Penn Natural 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	TWP	UGI	Total
2005	652.1	376.3	816.8	1022.7	312.7	907.2	163.5	135.5	586.7	4,974
2006	575.4	363.7	795.5	950.6	302.6	845.8	189.4	133.9	580.6	4,738
2007	650.5	351.8	838.8	928.8	326.6	871.9	187	134.6	618.4	4,908
2008	781.9	388.8	821.7	1163.7	348.4	886	193	151.9	626.3	5,362
2009	544.9	325.1	759.6	939.8	337	823.1	169	109.2	556.1	4,564
2010	559.2	255.5	686.8	736.1	328.5	749.2	156.2	100.2	573.3	4,145
2011	504.8	248.1	613.0	715.3	306.9	705.1	148.2	53.2	534.1	3,829
2012	406.3	215.9	545.4	634.2	243.5	642.6	128.4	47.4	412.7	3,276
2013	512.3	235.5	600.8	738.5	276.9	688.2	128.4	89.2	450.5	3,720
2014	563.3	248.3	646.8	835.5	308.6	746.6	154.0	110.6	511.4	4,125
2015	536.2	196.9	546.5	716.1	265.1	621.5	131.1	85.8	457.4	3,557
OPERATING EXPENSE (\$ Million)										
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI	Total
2005	613.5	360.1	700.8	892.6	273.9	868.7	149.7	125.6	528.4	4,513
2006	546	347.4	614.9	883.7	274.7	777	183	124.4	528.3	4,279
2007	619	324.4	782.2	855.5	299.1	823.5	175.6	123.2	552.5	4,555
2008	741.7	359.8	779.5	1025.5	327.8	824.2	178.3	142.3	566	4,945
2009	492.8	294.5	671.6	749.6	312.9	748.6	154.3	101.5	492.7	4,019
2010	495.7	220.4	599.8	613.6	297.5	655.3	135.8	93.5	506	3,618
2011	444.6	200.8	406.7	558.2	237.0	523.6	109.3	37.4	409.7	2,927
2012	337.6	176.9	350.2	452.3	177.0	473.3	81.2	33.6	291.0	2,373
2013	416.1	187.9	484.8	499.1	204.1	491.2	81.2	71.7	307.2	2,743
2014	478.5	209.0	525.7	707.3	279.2	627.3	129.9	89.7	432.7	3,479
2015	445.2	165.0	430.5	590.5	239.7	564.9	109.3	69.5	382.3	2,997

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

NET OPERATING INCOME (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	38.6	16.2	116	130.1	38.8	-19.7	13.8	9.9	58.3		402
2006	29.4	16.3	180.6	66.9	27.9	62.0	6.4	9.5	52.3		451
2007	31.5	27.4	56.6	73.3	27.5	-6.9	11.4	11.4	65.9		298
2008	40.2	29	42.2	90.3	20.6	9.0	14.7	9.6	60.3		316
2009	52.1	30.5	88	141.3	24.1	4.1	14.7	7.7	63.4		426
2010	63.5	35.1	87	91.6	31	26.5	20.4	6.7	67.3		429
2011	41.5	25.6	115.7	24.0	32.7	30.8	19.5	6.8	40.5		337
2012	46.7	20.7	106.3	38.7	15.7	32.7	16.3	5.6	53.8		337
2013	56.5	29.6	116.1	44.9	18.6	56.5	17.0	7.3	66.9		413
2014	97.0	45.8	121.0	58.0	44.9	67.7	39.3	26.4	98.8		599
2015	100.4	35.8	115.9	51.3	37.5	5.8	38.2	20.0	85.4		490

ADMINISTRATION & GENERAL EXPENSE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	47.8	26.5	34.8	62	13.7	74.8	19.8	7.3	37.3		324
2006	45.5	26.5	35.8	53.8	13.9	77.9	22	9.1	40.3		325
2007	49.6	26.3	33	70.7	16.8	101.6	23.4	9.6	36.6		368
2008	39.9	26.7	30.4	52	20.1	101.9	16.7	9.9	35.6		333
2009	45.3	26.5	31.9	41.8	21.8	103.4	15	10.2	37.4		333
2010	53.4	27.1	29.4	60.9	21.2	120.3	17.6	12.3	36.5		379
2011	56.2	29.4	29.0	78.4	19.8	108.5	14.8	11.7	35.1		383
2012	47.4	28.9	32.7	70.9	15.1	124.1	11.2	9.6	35.1		375
2013	53.0	31.2	28.0	82.7	21.8	107.9	15.2	11.0	38.6		389
2014	58.9	27.7	27.4	66.0	20.7	110.9	14.8	9.3	44.3		380
2015	62.3	27.9	30.2	69.1	24.2	152.9	15.2	10.5	46.5		439

**Table 11 Maintenance Expense and Depreciation Expense**

MAINTENANCE EXPENSE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	9.3	3.8	16.5	32.4	4.6	22.1	2.4	4.6	10		106
2006	11	3.6	17.9	32.2	4.4	18.7	2.2	4.7	10.1		105
2007	12.3	4.1	21.2	31.7	4.8	20.1	3.6	5.8	9.8		113
2008	13.8	4.2	22.5	33	6.4	21	7.7	6.5	10.6		126
2009	14.1	4.1	22.8	36.6	7.1	25.6	4.7	5.8	11.8		133
2010	14.1	4	23.7	35.5	6.7	25.7	4.3	6.2	11.9		132
2011	13.9	3.9	21.5	35.2	7.8	31.7	4.5	5.1	14.1		138
2012	14.4	3.3	20.8	36.6	8.8	29.8	4.5	4.8	14.1		137
2013	15.5	5.6	27.0	41.0	9.1	33.6	3.9	4.2	14.9		155
2014	18.3	6.1	26.8	43.4	10.7	40.5	4.6	4.2	16.6		171
2015	22.0	6.4	32.4	42.3	14.1	38.5	4.4	5.3	15.7		181

DEPRECIATION EXPENSE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	15.4	11.2	34.8	34.6	12.3	34.7	6.9	6	20.3		176
2006	15.8	11.3	29.6	36.4	13.3	35.6	7	6.2	21.3		177
2007	16.9	11.6	29	37.2	15	38.1	8.3	5.8	20.8		183
2008	18.2	11.2	30.8	39	15.2	38.8	8.5	6.1	21		189
2009	21	11.1	31.5	39.2	16.3	37.2	7.5	6.1	22.1		192
2010	22.5	11.1	32.7	41.6	16.7	39	7.8	5.9	22.5		200
2011	25.0	11.3	33.5	44.9	14.4	39.6	8.1	6.5	23.3		207
2012	14.4	11.4	35.1	46.7	14.1	40.1	8.3	7.1	24.1		201
2013	33.4	11.4	36.7	48.7	14.6	41.5	8.7	6.3	25.9		227
2014	37.7	11.5	39.2	46.4	15.6	41.7	8.8	7.2	28.1		236
2015	42.1	12.0	42.0	45.9	16.6	44.6	9.1	7.4	31.0		251

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

TOTAL GAS COSTS (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	436.2	219.6	617.3	619.5	239.3	659.9	107.3	95.8	450.2		3,445
2006	427.3	236.2	618.2	580.9	221.7	531.2	130	84.3	410.2		3,240
2007	436.9	188.4	569.3	536.8	230	540.9	122.8	85.2	428.4		3,139
2008	621.4	229.1	647.5	790.9	245.9	587.2	124.8	112.2	428.1		3,787
2009	250.2	174.3	384.4	498.3	232	392.6	78.9	63.8	390.7		2,465
2010	328.7	95.1	381.3	390.9	198.9	321.7	83.4	52	340		2,192
2011	332.2	96.6	314.5	371.1	194.2	303.8	73.0	48.8	329.2		2,063
2012	152.8	69.4	239.1	216.9	127.3	220.8	47.2	34.2	217.0		1,325
2013	265.3	79.3	275.5	312.0	164.6	258.9	51.2	30.5	251.1		1,689
2014	259.1	91.3	320.3	356.1	195.6	295.1	59.9	41.5	290.1		1,909
2015	182.6	44.5	189.2	288.6	100.7	196.8	39.0	23.2	221.4		1,286

AVERAGE COST OF GAS PURCHASED (\$/MCF)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Ave.
2005	9.86	8.68	10.30	8.89	9.33	9.90	8.10	8.95	11.75		9.53
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

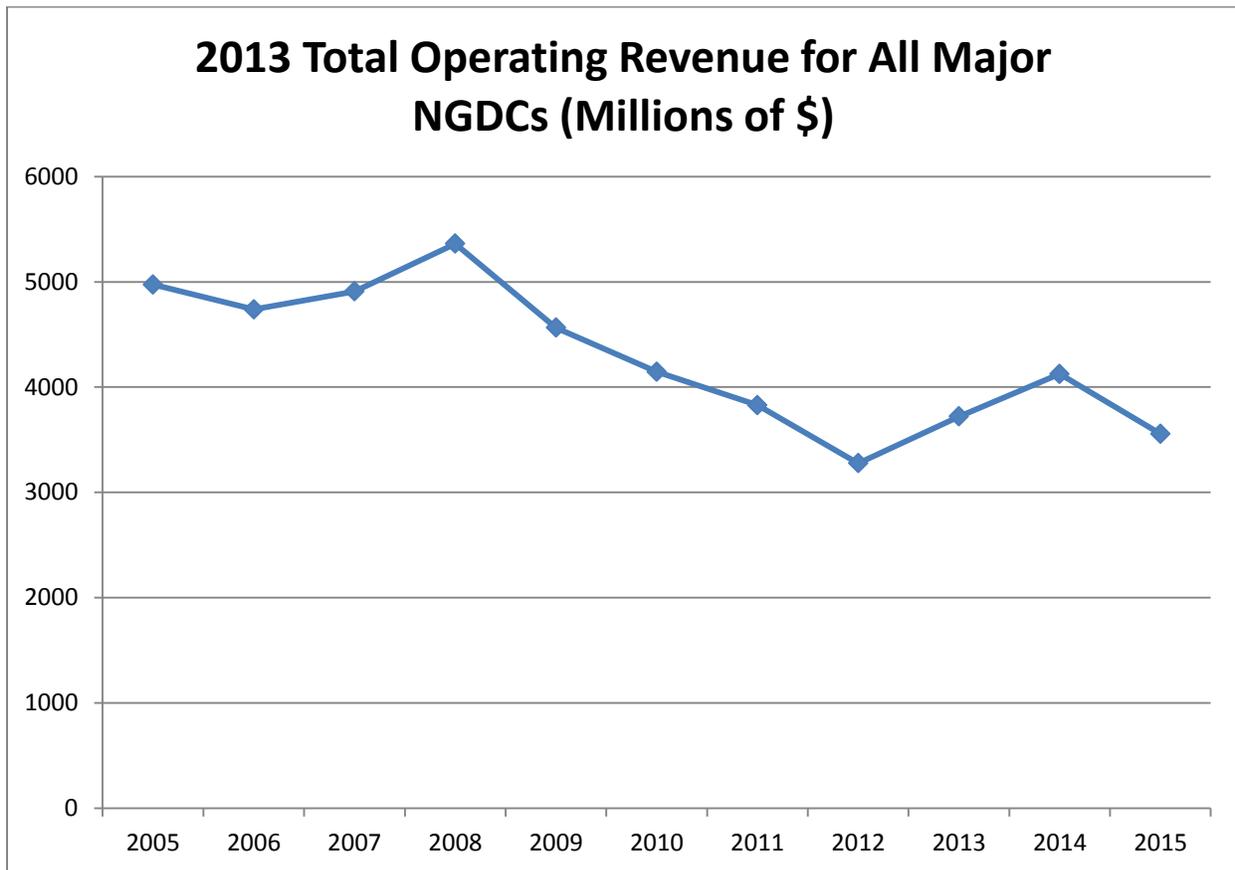
**Table 13 Gross Utility Plant in Service**

GROSS UTILITY PLANT IN SERVICE (\$ Million)											
	Columbia	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	710.4	415.8	1,452.3	1,568.3	503.7	1,362	259.4	230.6	977.4		7,480
2006	748.6	428.7	1,510.1	1,632.6	515.2	1,389.8	280	204.6	1,027		7,737
2007	788.6	441	1,556.5	1,702.3	531.9	1,421.1	294.6	213.7	1,068.5		8,018
2008	851.1	454.6	1,595.5	1,791.3	552.9	1,454.9	312.6	224.4	1,113.2		8,351
2009	925.1	465.7	1,646.8	1,858.2	564.4	1,502	332.3	229.4	1,153.5		8,677
2010	981.9	478.9	1,698.5	1,919.3	575.2	1,531	347.3	237.7	1,187.7		8,958
2011	1,073.6	491.5	1,792.9	2,032.5	597.8	1,555.1	357.4	245.2	1,078.2		9,224
2012	1,198.2	501.4	1,859.5	2,143.0	618.1	1,575.8	370.6	249.6	1,148.7		9,665
2013	1,335.7	511.7	1,932.4	2,077.3	650.2	1,596.6	384.4	273.3	1,228.3		9,990
2014	1,500.5	527.2	2,071.4	2,169.9	685.6	1,646.7	395.6	299.9	1,337.7		10,635
2015	1,660.1	542.5	2,205.4	2,278.2	733.1	1,685.2	425.4	311.5	1,423.3		11,265

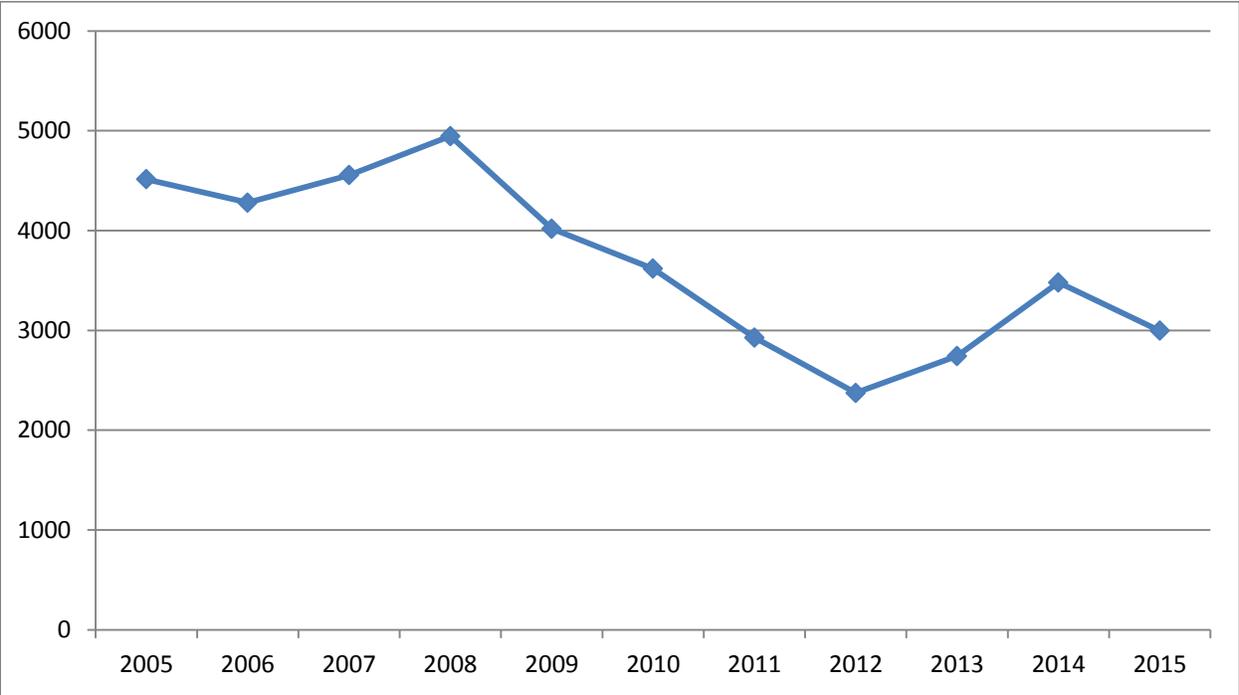
## IX. Industry Trends

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 and source of revenue for gas utilities is the procurement and sale of natural gas respectively. Therefore, as gas prices have plunged in recent years, so too have the sales revenues of the NGDCs. Figures 9-11, 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 2005.

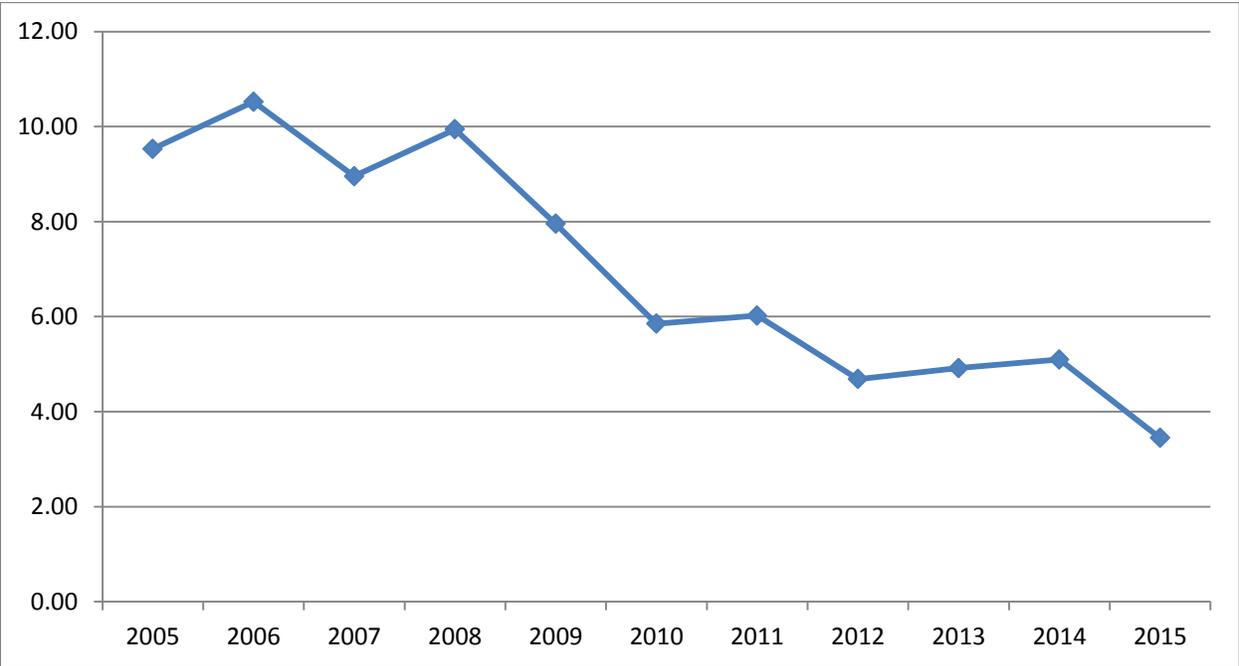
*Figure 9: Total Operating Revenue for All Major NGDCs (Millions of \$)*



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

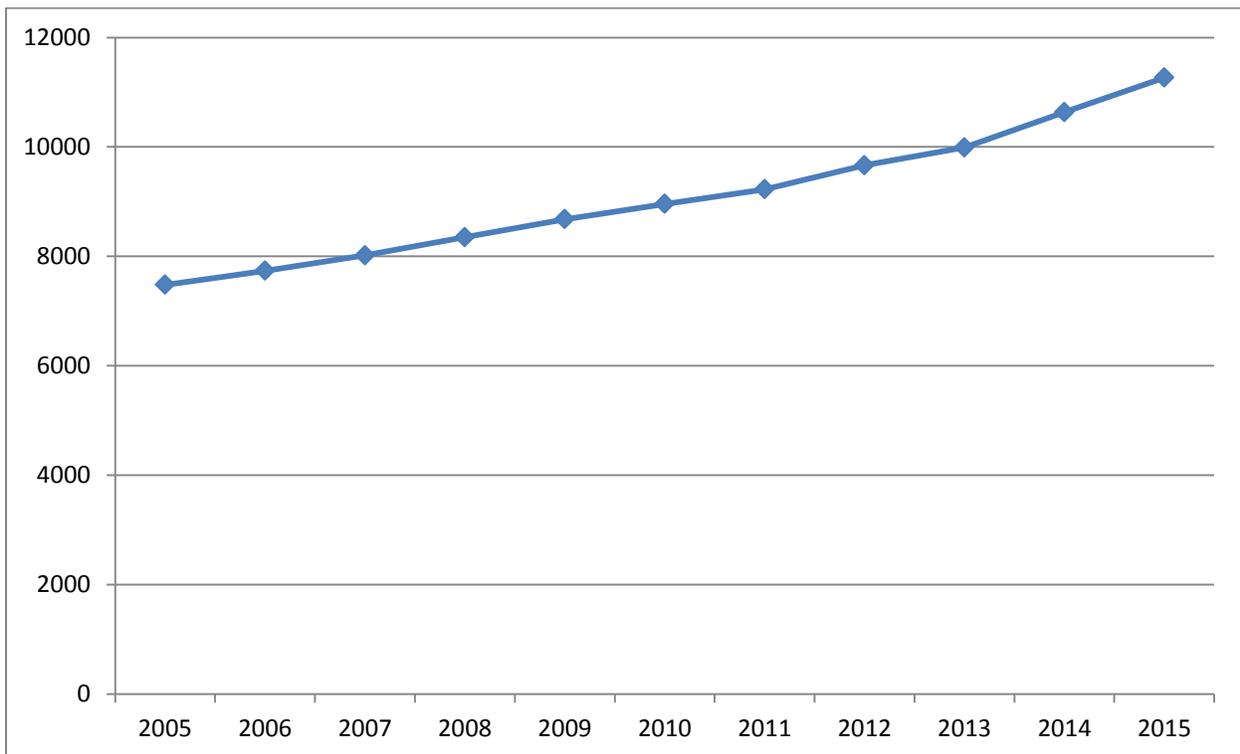


**Figure 11: Average Cost of Gas Purchased for All Major NGDCs (\$/MCF)**

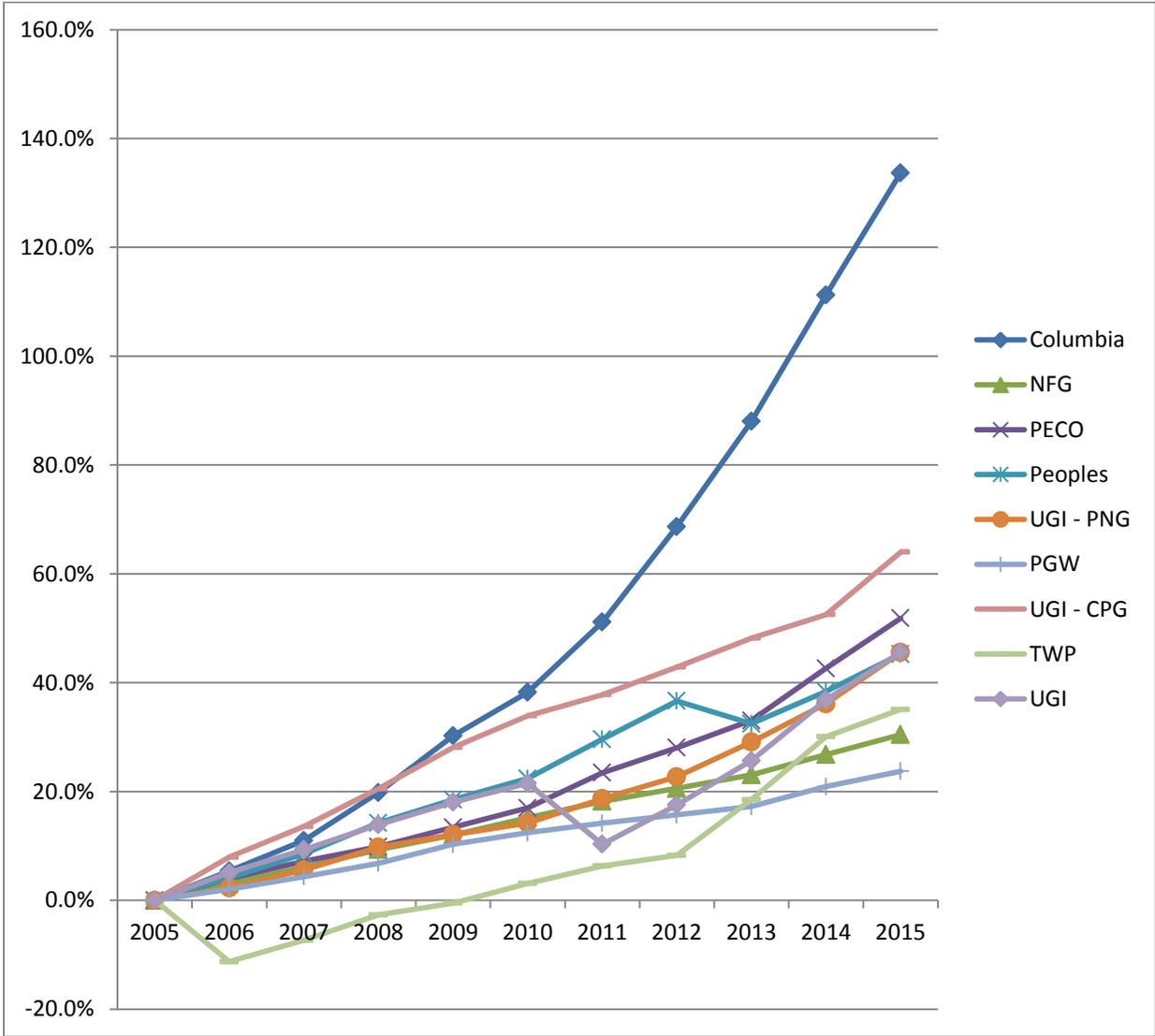


The NGDCs have been steadily investing in their infrastructure over the previous decade. Figure 12, below, shows that the major NGDCs have added roughly \$344 million per year to their total utility plant in service, with a total industry average of a 50.6% increase in plant in service since 2005. Figure 13, below, shows that while all NGDCs have increased plant in service since 2005, Columbia has the fastest rate of increase, more than doubling its total plant in service (133.7% increase since 2005) with PGW having the slowest rate of increase (23.7% since 2005).

**Figure 12: Total Utility Plant in Service for All Major NGDCs (Millions of \$)**



**Figure 13 Cumulative Percentage Increase in Utility Plant in Service for All Major NGDCs (base year 2005)**



## X. Natural Gas Distribution Company Cost Structures

### Overview

Due to the fairly uniform correlation between natural gas costs and the NGDCs' expenses, if one isolates the natural gas costs, one can observe the other cost drivers within an individual NGDC. The percentage of Gas Supply Expenses as a total of Net Operating Expenses was calculated and summarized in Table 14, below, for each of the major NGDCs. The percentages calculated in Table 14 provide an approximation of the share of a utility's total expenses that are purely related to the purchase or procurement of gas supplies. In other words, a lower percentage means that a larger portion of the utility's expenses are being driven by other costs, such as system operations, administration, or other cost drivers.

*Table 14 Gas Supply Cost (GSC) Percentage for All Major NGDCs in 2015 (% of Total Operating Expenses)*

	Gas Supply Cost %
Columbia	41.0%
NFG	27.0%
PECO	43.9%
Peoples	48.9%
UGI - PNG	42.0%
PGW	34.8%
UGI - CPG	35.7%
Peoples-TWP	33.3%
UGI	57.9%
<b>Total</b>	<b>42.9%</b>

This framework provides a starting point for looking at the differences in cost structures among the NGDCs, by doing further examination of the NGDCs which deviate substantially from the mean GSC. The mean GSC has dropped approximately 30% from 2013, almost exactly the same percentage as the drop in average gas costs per Mcf across the industry. Specifically, we will discuss NFG, TWP, and PGW, and UGI.

## Discussion

NFG has the lowest natural gas costs per Mcf of any major NGDC at \$1.84 lower than the average cost per Mcf, or 47% (the average cost of gas per Mcf in 2015 was \$3.94). This extremely low cost of gas supply accounts for the low GSC for NFG. If NFG had the average purchased gas cost, their GSC would shift 87.6% higher. Peoples TWP also has very low natural gas costs at \$0.88 lower than the average cost per Mcf, or 22%. This would bring them back in line with the average GSC as well when corrected for by using the average cost per Mcf. UGI has a very high GSC, essentially caused by their significantly higher than average gas costs. UGI pays \$1.70, or 43%, more than the industry average per Mcf for their gas. If UGI paid the average per Mcf for their gas, it would bring their GSC in line with the average.

PGW has a variety of factors contributing to its low GSC. A minor contributing factor is PGW's slightly above average cost of gas, at \$4.17 per Mcf. More significant are a pair of overhead costs for PGW. The first of these costs is related to PGW's vast uncollectible and delinquent accounts. At year end of 2013, PGW reported over \$40 million in uncollectible accounts, and over \$182 million of accounts receivable. These accounts typically result in missing revenues for PGW. There is also a cost associated with these delinquent accounts. PGW spent \$63 million in 2015 on "Customer Accounts Expenses," which includes tracking and attempting to collect on these accounts. This amount is nearly double that of any other NGDC in the Commonwealth (Columbia spent \$32 million in 2015). Although these numbers are still high, it should be noted that PGW has reduced its uncollectibles by \$52 million (57% reduction), and also reduced its accounts receivable by \$28 million (13% reduction) since 2013.

The second main factor driving PGW's costs is its employee benefits program. PGW spent over \$82 million in 2015 on "Employee Pensions and Benefits," more than 5 times that of any other NGDC in the Commonwealth. PGW's employee benefits, combined with the costs associated with PGW's delinquent accounts, are what cause PGW's operations expenses to be significantly higher than the average among its peers.

