



# PENNSYLVANIA GAS OUTLOOK REPORT

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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 2014 financial and supply 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 affect and are affected by current trends and events in Pennsylvania. Therefore macroeconomic and industry data for the U.S. as a whole is included in this report for context and supporting data.

### National Summary

National storage inventory peaked prior to this winter season at a total of 3.6 trillion cubic feet (Tcf) in the beginning of November 2014, despite fears earlier in 2014 that there would not be sufficient injections to provide adequate storage this winter. Natural gas production in the U.S. increased by 5.2 percent from 2013 to 2014, to 86.5 billion cubic feet per day (Bcfd), marking the 9<sup>th</sup> consecutive annual increase in US domestic production.<sup>1</sup> Domestic consumption increased 2.8 percent from 2013 to 2014, to 73.6 Bcfd, marking the 5<sup>th</sup> consecutive annual increase in US domestic consumption.<sup>2</sup> Henry Hub spot prices averaged \$4.38 per million British thermal units (MMBtus) in 2014, up from \$3.73 in 2013. EIA predicts the Henry Hub annual average spot price to average \$3.83/MMBtu for 2015. However, based on natural gas futures contracts, it appears that the market expects prices to fall for the coming year, producing an average price of \$3/MMBtu for 2015, dramatically lower than EIA estimates.<sup>3</sup>

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<sup>1</sup> 2014 annual production estimated based on currently available EIA data through October 2014: EIA Natural Gas Gross Withdrawals and Production, December 2014 release. <http://www.eia.gov>

<sup>2</sup> 2014 annual consumption estimated based on currently available EIA data through October 2014: EIA Natural Gas Consumption by End Use, December 2014 release. <http://www.eia.gov>

<sup>3</sup> EIA Short Term Energy Outlook, December 2014 release. <http://www.eia.gov>

Natural Gas futures quotes pulled Jan. 6, 2015. <http://www.cmegroup.com/trading/energy/natural-gas/natural-gas.html>

## Pennsylvania Summary

There are approximately 2.8 million natural gas customers in Pennsylvania, with about 2.6 million of these being residential customers.<sup>4</sup> There are 31 regulated natural gas utility companies in Pennsylvania, and 10 of these are major distribution companies with gross revenues greater than \$40 million per year.<sup>5</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 Jan. 2, 2015, 18,609 unconventional drilling permit applications have been filed with the Pennsylvania Department of Environmental Protection. Of those applications, 8,827 unconventional wells have been drilled.<sup>6</sup> As of January 16, 2015, there were 51 rotary rigs active in Pennsylvania. 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>7</sup> EIA estimates the total number of producing shale and conventional gas wells in Pennsylvania as approximately 57,000 in 2013.<sup>8</sup>

Financial statistics taken from the Gas Annual Reports of the NGDCs are presented in time series fashion from 2005 through 2013. 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, wellhead prices, Pennsylvania production and average consumption figures are provided.

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<sup>4</sup> EIA Number of Natural Gas Consumers, December 2014 release. <http://www.eia.gov>

<sup>5</sup> \$40 million in gross revenue is the threshold over which a NGDC files under 66 PA Code § 1307(f)

<sup>6</sup> PA DEP Well Permit Workload Report for 1/1/2014-12/26/2014.

[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>7</sup> Baker Hughes Rotary Rig Count, 1/5/15 release. <http://www.bakerhughes.com/rig-count>

<sup>8</sup> EIA Natural Gas Annual 2013. <http://www.eia.gov>

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 1,090 Bcf in 2013. Total gas consumption for electric generation has increased from 21 Bcf in 1997 to 414 Bcf in 2013 (3% of total usage up to 38% of total usage)
- Pennsylvania gas production reached 3.2 Tcf in 2013.
- Gas deliveries for Pennsylvania electric generation have increased markedly from 3 percent of total deliveries in 1997 to 38 percent in 2013.<sup>9</sup>

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<sup>9</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, and from Canada.<sup>10</sup>

Marcellus shale production has risen from 2.7 Bcfd in October 2010 to over 16 Bcfd in January 2015. Despite this vast increase in production, many portions of eastern Pennsylvania and New England are still subject to higher priced gas in general, 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 glut of supply to the markets where it is most needed. There are almost 12 Bcfd of pipeline projects slated to come online in 2015 in the Northeast region, to help move gas to market, as shown in Table 1 below. Additional pipeline helps remove the above-mentioned constraints and stabilize regional prices, helping to move the vastly increased Marcellus Shale gas production to consumers.<sup>11</sup>

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<sup>10</sup> Natural Gas Pipelines in the Northeast Region, EIA About U.S. Natural Gas Pipelines.

<http://www.eia.gov>

<sup>11</sup> EIA Marcellus Region Drilling Productivity Report. <http://www.eia.gov>

**Table 1 Proposed Pipeline Infrastructure for 2015 In-Service<sup>12</sup>**

Project Name	Pipeline Operator Name	State(s)	Additional Capacity (MMcf/d)
Leidy Southeast Expansion	Transcontinental Gas Pipeline	PA	525
Broad Run Flexibility Project	Tennessee Gas Pipeline	WV	590
Woodbridge lateral	Transcontinental Gas Pipeline	NJ	264
Utica Ohio River Project	Regency Energy Partners/American Energy	OH	2,100
Utica Ohio River Project	Regency Energy Partners /American Energy	OH	2,100
Northern Access 2015 Project	National Fuel Gas Supply Corp	PA,NY	140
Salem Lateral Project	Algonquin Gas Transmission	MA	115
Constitution Pipeline	Constitution Pipeline Co	PA,NY	650
Line N West Side Expansion and Modernization Project	NiSource Gas Transmission & Storage	PA	175
Tuscarora Lateral Project	Empire Pipeline	NY	54
Line N West Side Expansion and Modernization Project	NiSource Gas Transmission & Storage	PA	175
Transco Rockaway Delivery Project	Transcontinental Gas Pipeline	NY	647
Tuscarora Lateral Project	Empire Pipeline	NY	54
Lebanon lateral project phase 2	ANR Pipeline	OH	290
Lebanon lateral project phase 2	ANR Pipeline	IN,OH	290
Virginia Southside Expansion	Transcontinental Gas Pipeline	VA	270
Virginia Southside Expansion	Transcontinental Gas Pipeline	VA	270
East Side Expansion Project	NiSource Gas Transmission & Storage	PA	650
Wright Interconnect Project	Iroquois gas pipeline	NY	650
East Side Expansion Project	NiSource Gas Transmission & Storage	PA	310
Leidy Southeast Expansion	Transcontinental Gas Pipeline	PA	525
Constitution Pipeline	Constitution Pipeline Co	PA,NY	650
West Side Expansion Project (Smithfield III)	NiSource Gas Transmission & Storage	PA,WV,KY	444

<sup>12</sup> EIA Natural Gas Pipeline Projects. <http://www.eia.gov>

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

By the end of 2013, Pennsylvania had 10,033 megawatts (MWs) of natural gas fired electric generation, as shown by comparison to other capacity fuel sources in Chart 1 below. These facilities constitute 24 percent of Pennsylvania's generating capacity.

*Chart 1 Capacity in PA by Fuel Type at Year End 2013 (MW)*

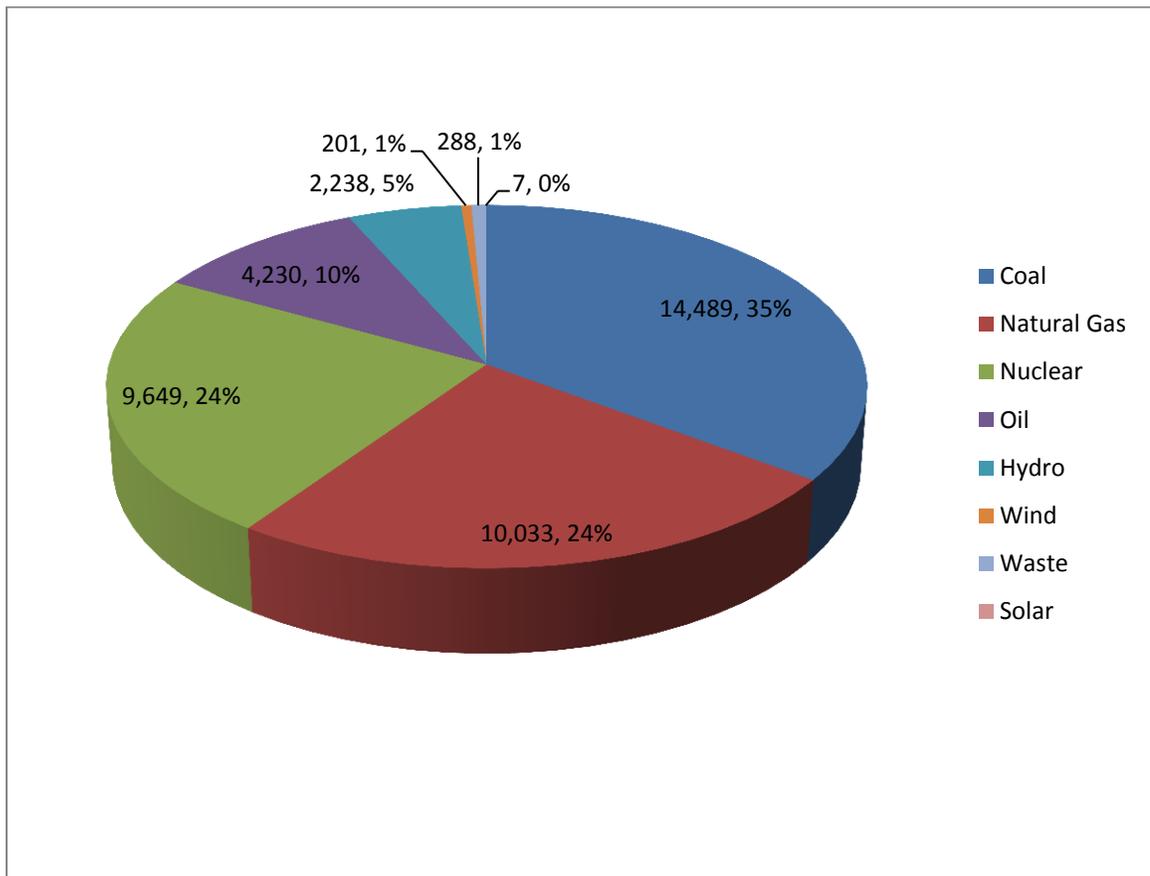
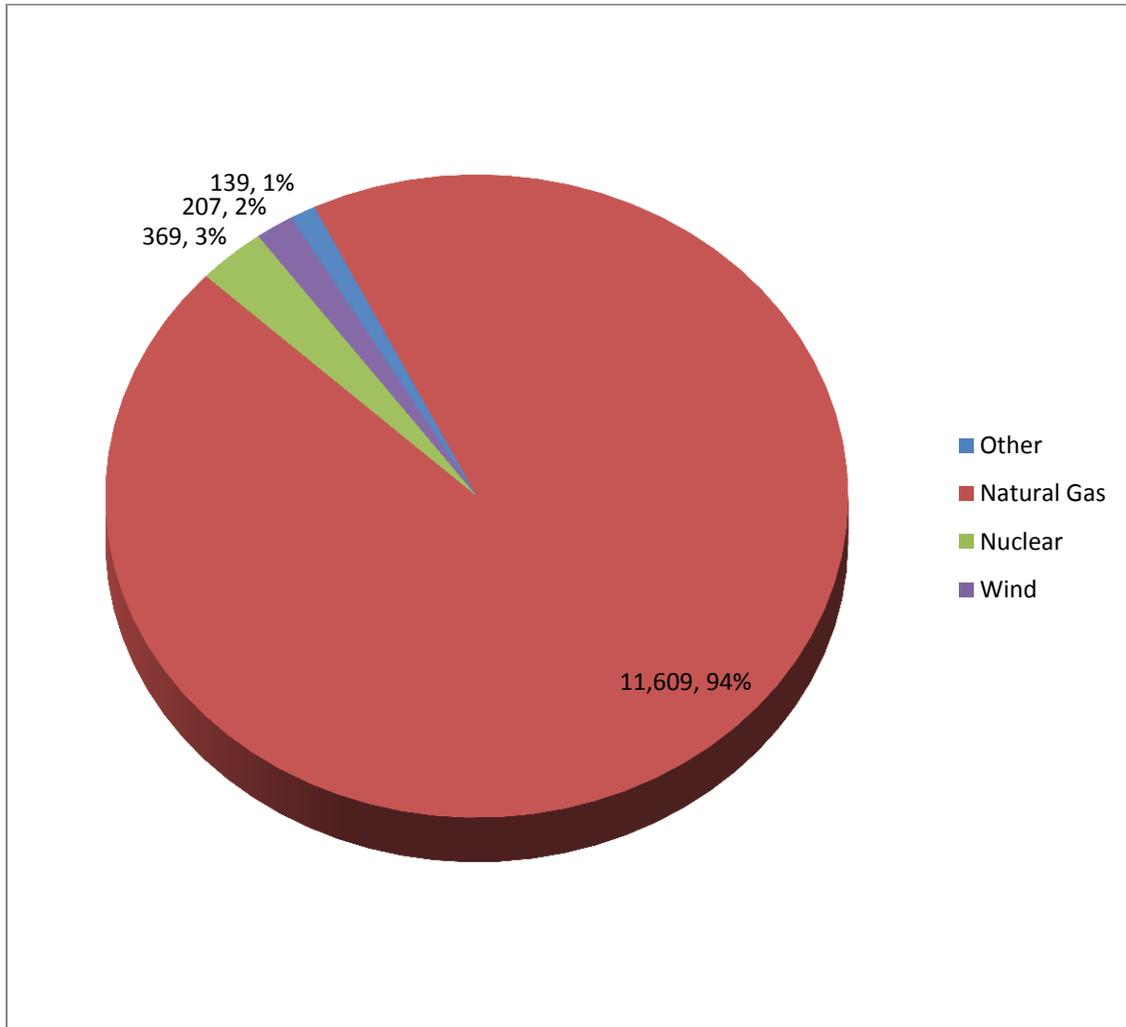


Chart 2 below summarizes the PJM queues for PA as of December 2013 which include 11,609 MW of proposed new natural gas fired capacity for Pennsylvania. Typically about 25 percent of the queue actually gets built.<sup>13</sup>

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

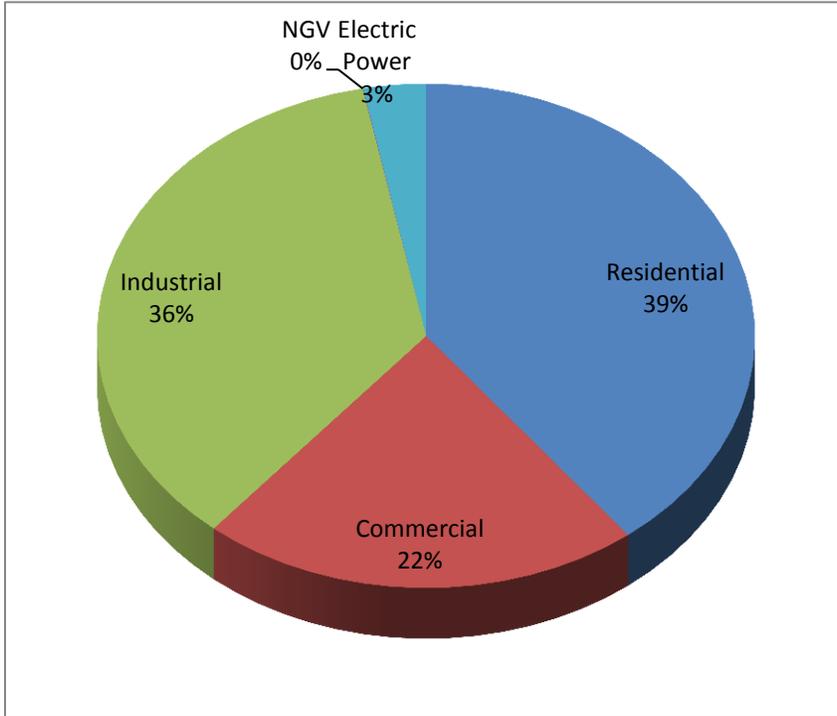


<sup>13</sup> PJM 2013 Regional Transmission Expansion Plan (RTEP), released 2014.

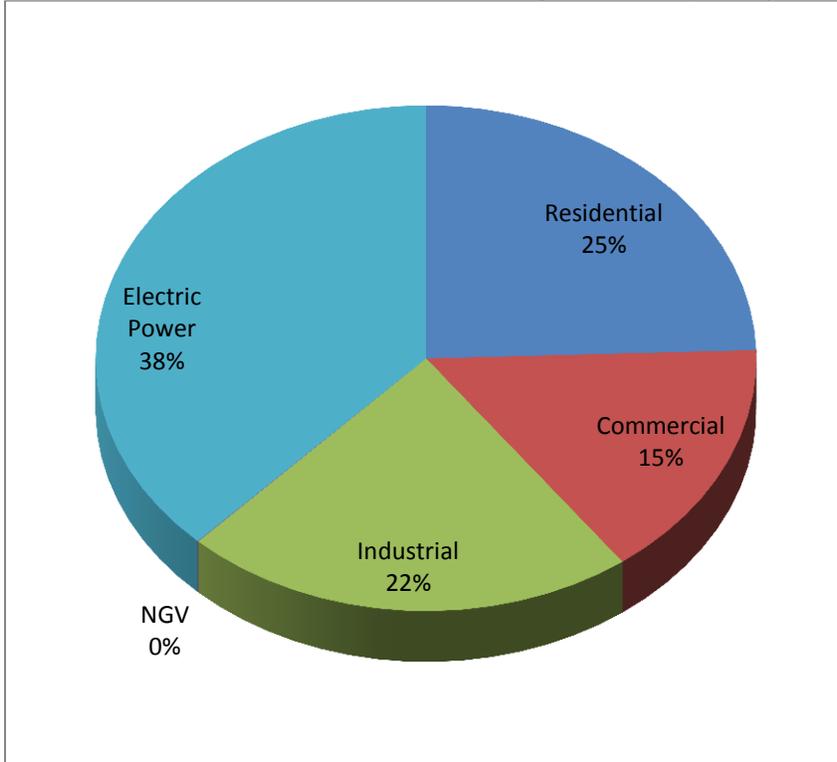
<http://www.pjm.com/documents/reports/rtep-documents/2013-rtep.aspx>

Charts 3 and 4 on the following page illustrate the gas delivered for electric generation compared to other end uses in PA in 1997 and in 2013. As can be seen, 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-fired units, pressures on the natural gas industry to augment production and transportation capacity will continue to increase.

*Chart 3 Natural Gas Deliveries in PA by End Use (1997)<sup>14</sup>*



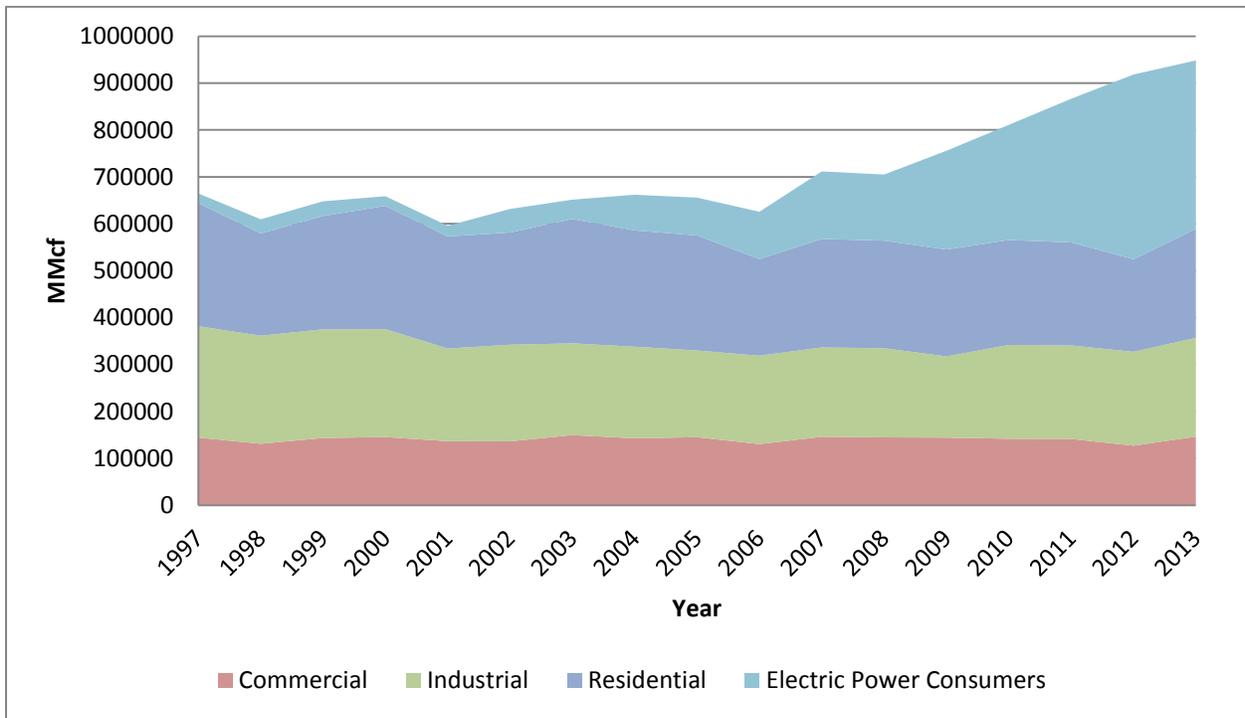
*Chart 4 Natural Gas Deliveries in PA by End Use (2013)*



<sup>14</sup> NGV = Natural Gas Vehicles

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 1997-2013, with a marked acceleration beginning in 2008 as Marcellus Shale production ramped up, as seen in Figure 1 below. 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 rather 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 (1997-2013)**

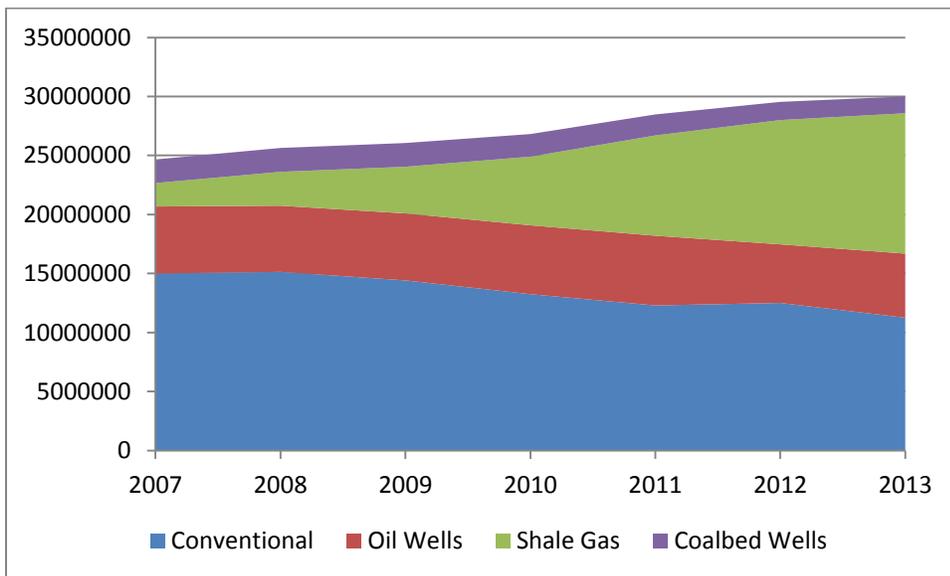


## V. Natural Gas Production, Consumption, Reserves, and Prices

### United States

U.S. gross withdrawals of unconventional shale gas were 11.9 Tcf in 2013, out of total US withdrawals of 30 Tcf of natural gas.<sup>15</sup> As seen in Figure 2 below, this marks the first year where unconventional shale gas withdrawals outpaced conventional gas wells (11.2 Tcf in 2013) in the U.S.

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



National storage inventory peaked prior to this winter season at a total of 3.6 Tcf in the beginning of November 2014, despite some concerns earlier in 2014 that there would not be sufficient injections to provide adequate storage this winter. Year over year natural gas production in the U. S. increased by 5.2 percent in 2014 to 86.5 Bcfd,

<sup>15</sup> EIA Natural Gas Summary 2013. <http://www.eia.gov>

marking the 9<sup>th</sup> consecutive annual increase in US domestic production.<sup>16</sup> Domestic consumption increased 2.8 percent to 73.6 Bcfd, marking the 5<sup>th</sup> consecutive annual increase in US domestic consumption.<sup>17</sup> Henry Hub spot prices averaged \$4.38 per million British thermal units (MMBtus) in 2014, up from \$3.73 in 2013. EIA predicts that the Henry Hub annual average spot price will average \$3.83/MMBtu for 2015. However, based on natural gas futures contracts,<sup>18</sup> it appears that the market expects average prices to fall for the coming year, producing an average price of \$3/MMBtu for 2015, dramatically lower than EIA estimates.<sup>19</sup>

## 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, 2013, were 49.7 TCF. Total Pennsylvania storage capacity for 2013 was 774 BCF.<sup>20</sup> Table 2 below shows the supply and demand balance for Pennsylvania in 2013. It is interesting to note that although Pennsylvania exported about 3 Tcf in 2013, the state still imported about 1 Tcf, likely due to some of the same transportation constraints discussed earlier.

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<sup>16</sup> 2014 annual production estimated based on currently available EIA data through October 2014: EIA Natural Gas Gross Withdrawals and Production, December 2014 release. <http://www.eia.gov>

<sup>17</sup> 2014 annual consumption estimated based on currently available EIA data through October 2014: EIA Natural Gas Consumption by End Use, December 2014 release. <http://www.eia.gov>

<sup>18</sup> Natural gas futures quotes pulled February 23, 2015. <http://www.cmegroup.com/>

<sup>19</sup> EIA Short Term Energy Outlook, December 2014 release. <http://www.eia.gov>

Natural gas futures quotes pulled Jan.6, 2015. <http://www.cmegroup.com/>

<sup>20</sup> EIA Natural Gas Summary for Pennsylvania. <http://www.eia.gov>

**Table 2 2013 Pennsylvania Natural Gas Production, Transmission and Consumption**

(Million Cubic Feet)

Supply		Demand	
<b>Marketed Production</b>	3,259,042	<b>Consumption</b>	1,090,866
<b>Imports</b>	815,746	<b>Exports</b>	3,100,098
<b>Withdrawal From Storage in excess of additions</b>	53,389		
<b>Supplemental Supply</b>	3		
<b>Total Supply</b>	4,128,180	<b>Total Consumption</b>	4,190,964
<b>Balancing Item*</b>	-62,784		

\*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. May also include metering error/accuracy issues.

Pennsylvania had 57,068 producing gas wells at the end of 2013. As of Jan. 2, 2015, more than 18,609 unconventional drilling permits have been issued by the Pennsylvania Department of Environmental Protection. Of those permits issued, 8,827 unconventional wells have been drilled.<sup>21</sup> As of Jan. 16, 2015, there are 51 rotary drilling rigs active in Pennsylvania. The rotary rig count is an indicator of how many rigs are in service and the demand for drilling equipment.<sup>22</sup> Table 3 below illustrates Pennsylvania's production far outpacing its deliveries to consumers in the state, by almost a factor of three.

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<sup>21</sup> PA DEP Weekly Well Permit Workload Report 1/7/2015.

[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>22</sup> Baker Hughes Rotary Rig Count, Retrieved 1/21/2015. <http://www.bakerhughes.com/rig-count>

*Table 3 Historical Pennsylvania Deliveries, Transportation and Production*

Pennsylvania Deliveries, Transportation, and Production Volume (BCF)			
From EIA Natural Gas Navigator			
Year	Gas Delivered to Consumers	Delivered for the Account of Others (Transport)	PA Dry Gas Production
1997	664.8	261.2	79.3
1998	609.8	273.4	129.6
1999	648.2	293.5	173.8
2000	659.0	292.0	149.4
2001	596.0	254.2	130.2
2002	632.0	270.6	157.2
2003	651.9	264.3	159.2
2004	662.5	258.2	196.6
2005	656.1	246.8	167.8
2006	625.9	247.3	175.2
2007	711.9	259.1	181.4
2008	705.3	260.6	197.3
2009	755.9	253.3	272.6
2010	811.2	283.2	568.3
2011	866.8	287.6	1,301.7
2012	918.5	293.5	2,244.7
2013	932.0	316.8	3,232.3

Natural gas liquids (NGLs) remain at an attractive enough selling price to encourage more drilling in shale formations with a higher proportion of NGLs, such as ethane, propane, and butane. As more drillers have shifted to areas of higher NGL content, NGL prices have dropped somewhat in conjunction with the collapse in crude oil prices, but have held relatively steady considering the volatility in the market.

Additionally, Table 4 below shows the declining wellhead price for natural gas, further encouraging the preference for wells producing a higher quantity of NGLs. There is a lack of a 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 capitalize on this void in the NGL marketplace by investing in the Mariner East II pipeline project. Sunoco has scheduled the project to be completed by the end of 2016, bringing online a total capacity of approximately 350,000 barrels per day of NGLs.<sup>23</sup>

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; however, projects such as the Mariner East II will relieve this oversupply of NGLs, likely stabilizing or raising the prices for these commodities.

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<sup>23</sup> Central Penn Business Journal, Nov. 6, 2014. <http://www.cpbj.com/>

*Table 4 Historical U.S. Natural Gas Production, Reserves, and Prices*

	Dry Natural Gas Production (Tcf)	Wellhead price (\$/Mcf)	Dry Proved Reserves (Bcf)
1977	19.2	0.79	207.4
1978	19.1	0.91	208.0
1979	19.7	1.18	201.0
1980	19.4	1.59	199.0
1981	19.2	1.98	201.7
1982	17.8	2.46	201.5
1983	16.1	2.59	200.2
1984	17.5	2.66	197.5
1985	16.5	2.51	193.4
1986	16.1	1.94	191.6
1987	16.6	1.67	187.2
1988	17.1	1.69	168.0
1989	17.3	1.69	167.6
1990	17.8	1.71	169.3
1991	17.7	1.64	167.1
1992	17.8	1.74	165.0
1993	18.1	2.04	162.4
1994	18.8	1.85	163.8
1995	18.6	1.55	165.1
1996	18.9	2.17	166.5
1997	18.9	2.32	167.2
1998	19.0	1.96	164.0
1999	18.8	2.19	167.4
2000	19.2	3.68	177.4
2001	19.6	4.00	183.5
2002	18.9	2.95	186.9
2003	19.1	4.88	189.0
2004	18.6	5.46	192.5
2005	18.1	7.33	204.4
2006	18.5	6.39	211.1
2007	19.3	6.25	237.7
2008	20.2	7.97	244.7
2009	20.6	3.67	272.5
2010	21.3	4.48	304.6
2011	22.9	3.95	334.1
2012	24.0	2.66	308.0
2013	24.3	*	338.3

\*Not available from EIA as of 1/7/2015.

Figure 3 below shows production of natural gas within Pennsylvania in conjunction with the U.S. average wellhead price of natural gas through 2012, showing a precipitous decline in wellhead prices coinciding with a spike in PA production after 2008.

*Figure 3 Pennsylvania Production vs. U.S. Wellhead Price*

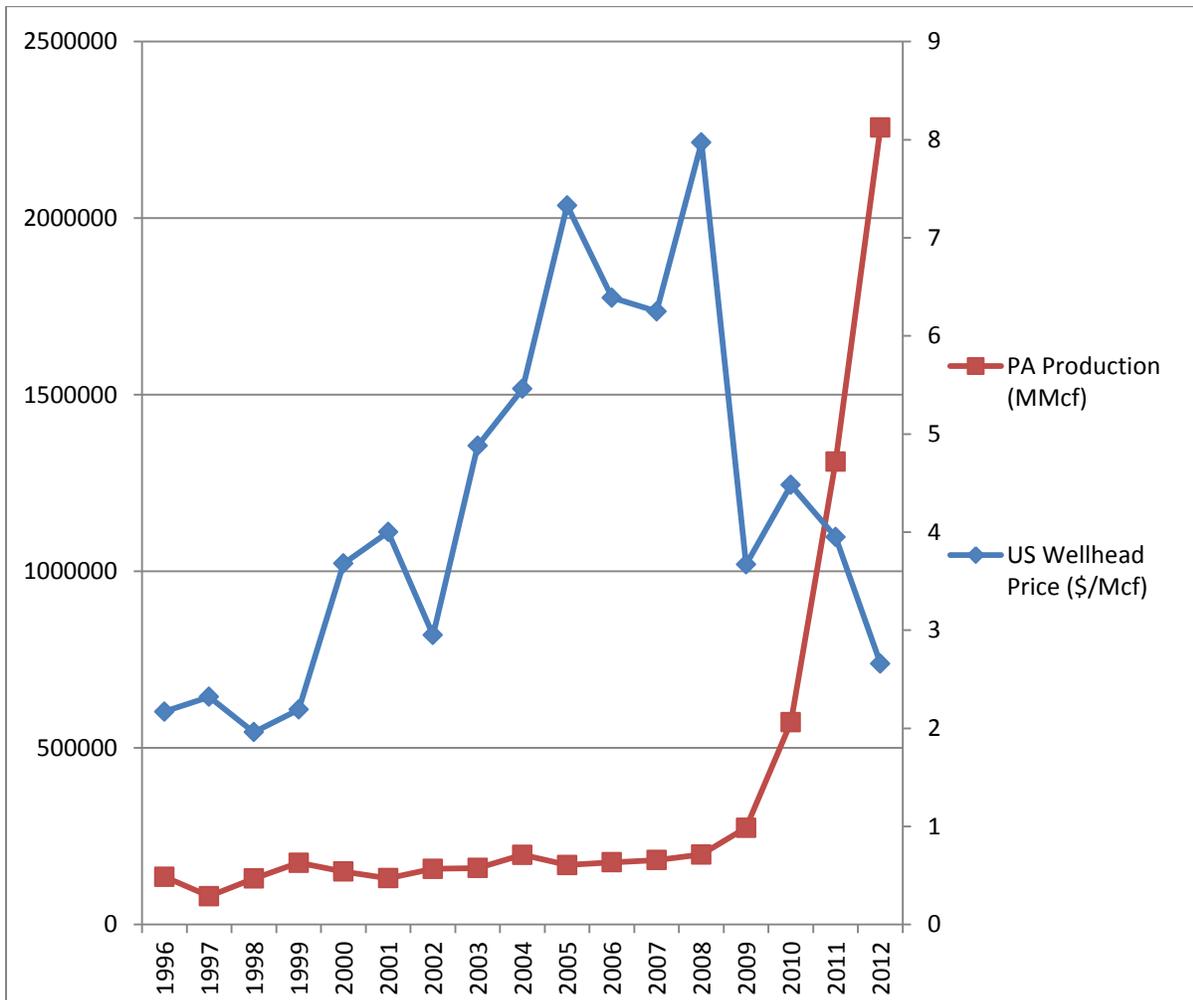
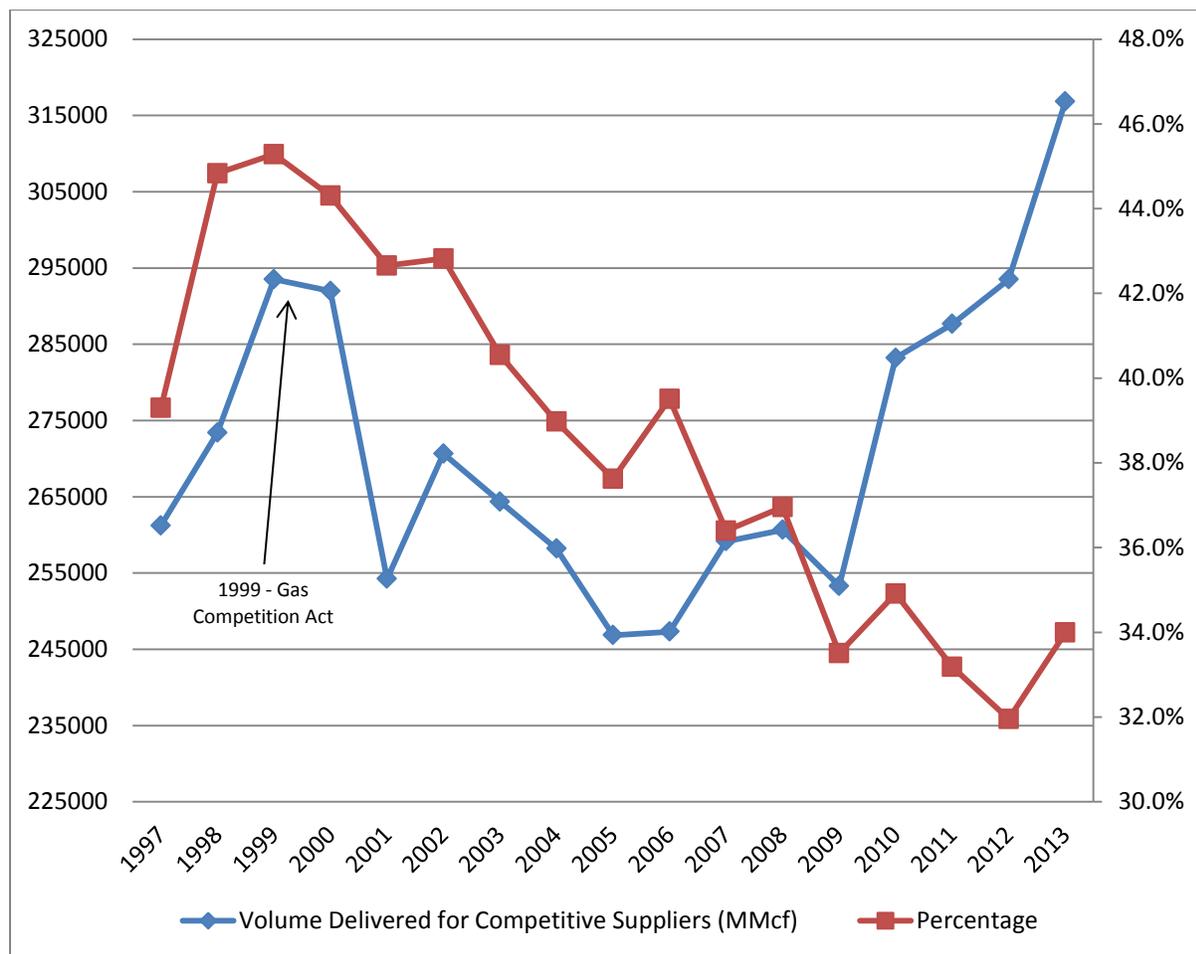


Figure 4 below shows Pennsylvania deliveries of natural gas for competitive suppliers, often called transportation gas. In 2013, 34 percent of the natural gas delivered to customers was transport gas. In 2013, the percentages of gas delivered for competitive suppliers by customer class were as follows:

Residential:	13.1%
Commercial:	59.9%
Industrial:	98.8%

*Figure 4 Natural Gas Delivered for Competitive Suppliers by PA Natural Gas Utilities*



The Commission's Office of Competitive Market Oversight (OCMO) by Order entered Dec. 18, 2014, began a Retail Market Investigation (RMI) into the state of retail competition in Pennsylvania's natural gas market.<sup>24</sup> This investigation will be looking into various changes that can be made to the natural gas shopping environment in PA, with the aim of increasing shopping within the state and allowing more consumers to take advantage of price savings from low-cost natural gas.

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<sup>24</sup> See Docket No. I-2013-2381742

## 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 2013 Customer Statistical Data*

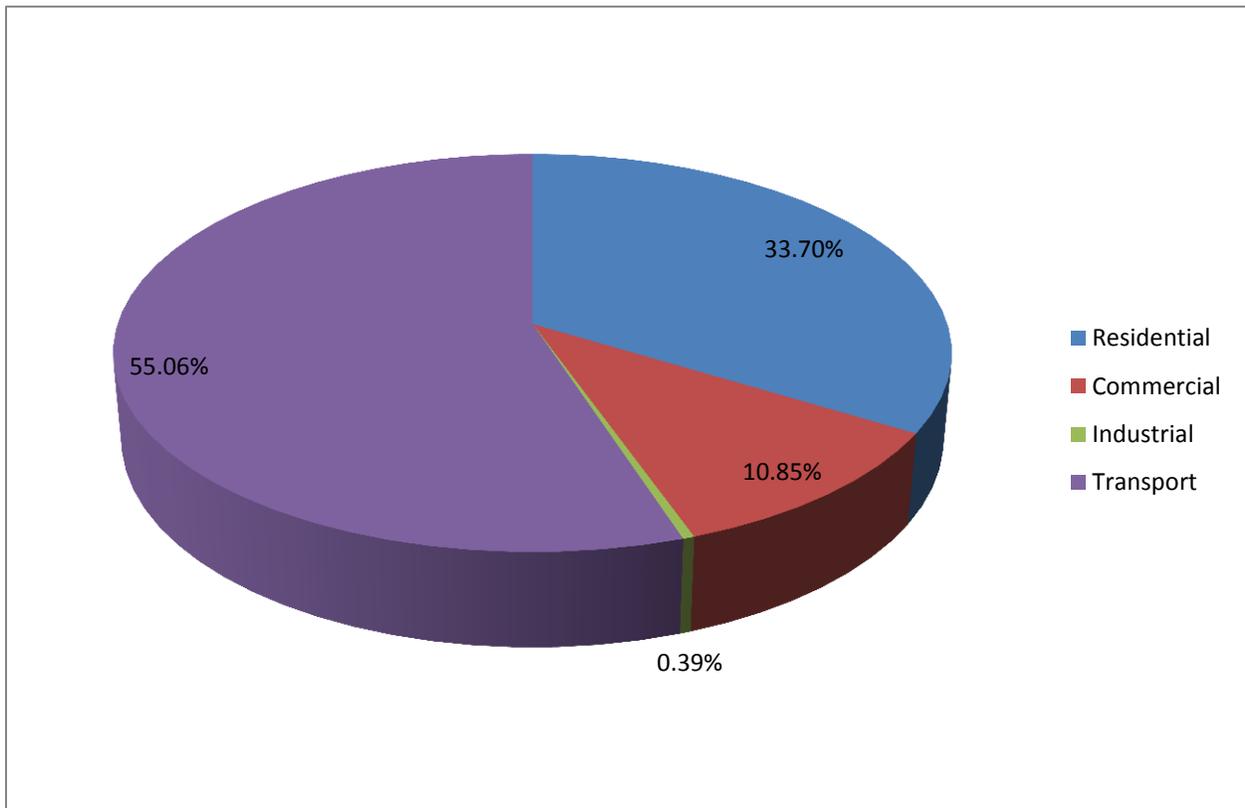
<b>Company</b>	<b>Number of Residential Customers</b>	<b>Average Annual per customer usage (MCF)</b>	<b>Number of Commercial Customers</b>	<b>Average Annual per customer usage (MCF)</b>	<b>Number of Industrial Customers</b>	<b>Average Annual per customer usage (MCF)</b>	<b>Number of Transportation Customers</b>	<b>Average Annual per customer usage (MCF)</b>
Columbia	273,342	83	28,845	318	285	811	119,350	363
Equitable	229,539	100	13,991	300	41	1,301	18,417	1,424
Peoples	247,366	97	20,807	278	34	5,735	91,758	416
Peoples TWP	56,344	90	4,218	463	2	102,000	129	118,326
NFG	169,409	96	10,800	273	187	1,540	32,693	761
PECO	458,335	86	42,051	461	59	17	907	33,086
PGW	472,066	76	23,116	368	580	826	3,169	8,565
UGI CPG	68,983	88	9,048	327	141	1,943	1,709	8,570
UGI PNG	147,910	107	12,314	375	66	1,621	5,695	5,807
UGI Utilities	284,683	71	24,732	310	583	1,026	53,185	1,662

**Table 6 2012 Customer Statistical Data**

<b>Company</b>	<b>Number of Residential Customers</b>	<b>Average Annual per customer usage (MCF)</b>	<b>Number of Commercial Customers</b>	<b>Average Annual per customer usage (MCF)</b>	<b>Number of Industrial Customers</b>	<b>Average Annual per customer usage (MCF)</b>	<b>Number of Transportation Customers</b>	<b>Average Annual per customer usage (MCF)</b>
Columbia	274,877	71	29,006	266	286	633	115,559	346
Equitable	228,377	80	14,011	238	40	2,075	18,391	1,401
Peoples	244,650	81	20,155	241	28	5,500	93,025	388
Peoples TWP	55,963	77	4,211	409	4	48,500	123	121,650
NFG	177,936	82	11,272	226	202	1,213	23,312	906
PECO	454,487	73	41,722	391	48	21	901	31,195
PGW	471,272	64	23,618	329	617	828	2,621	9,517
UGI CPG	67,818	75	8,842	282	140	1,736	1,760	7,712
UGI PNG	146,865	91	11,803	320	66	1,333	5,231	5,172
UGI Utilities	285,986	60	23,645	267	582	971	44,553	2,072

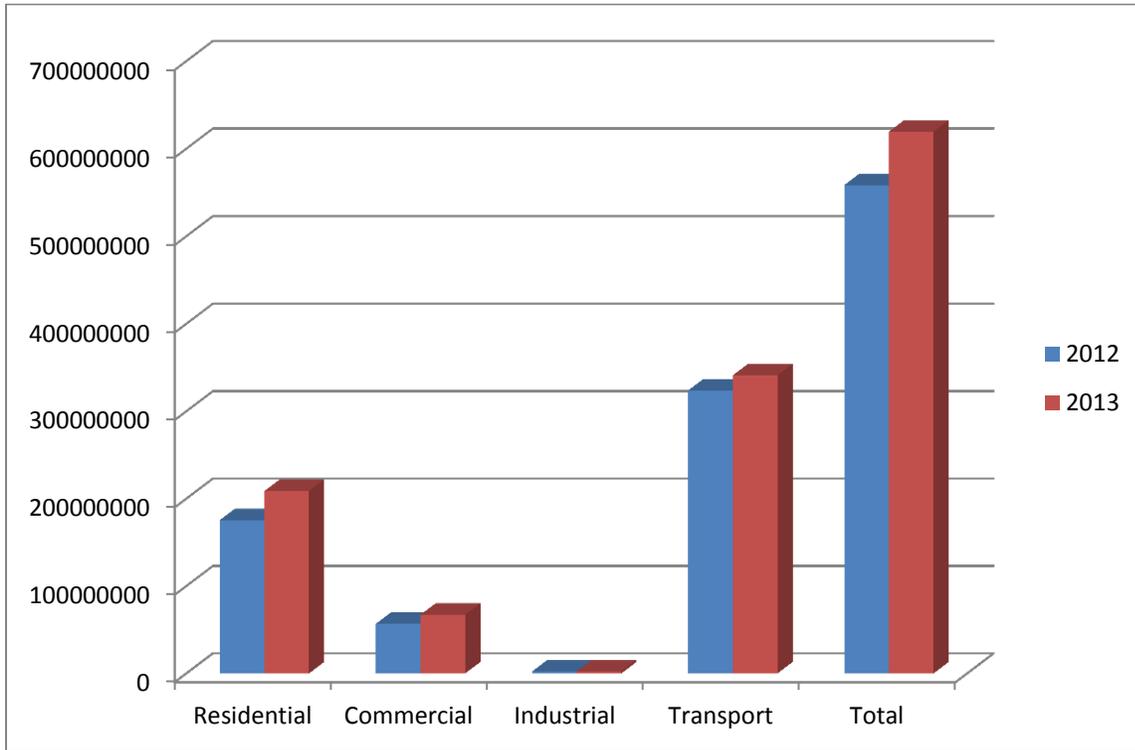
Chart 5 below gives a breakdown of the amount of gas usage by customer class among Pennsylvania's major NGDCs (those with more than 8 Bcf in sales per year). More than half of all sales volume was transportation customers. These are typically larger customers that procure their own natural gas supply, and the utility delivers the natural gas to them, but also includes residential and commercial customers that shop for an alternate natural gas supplier (NGS).

*Chart 5 2013 Pennsylvania Gas Usage by Customer Class within Major NGDCs*



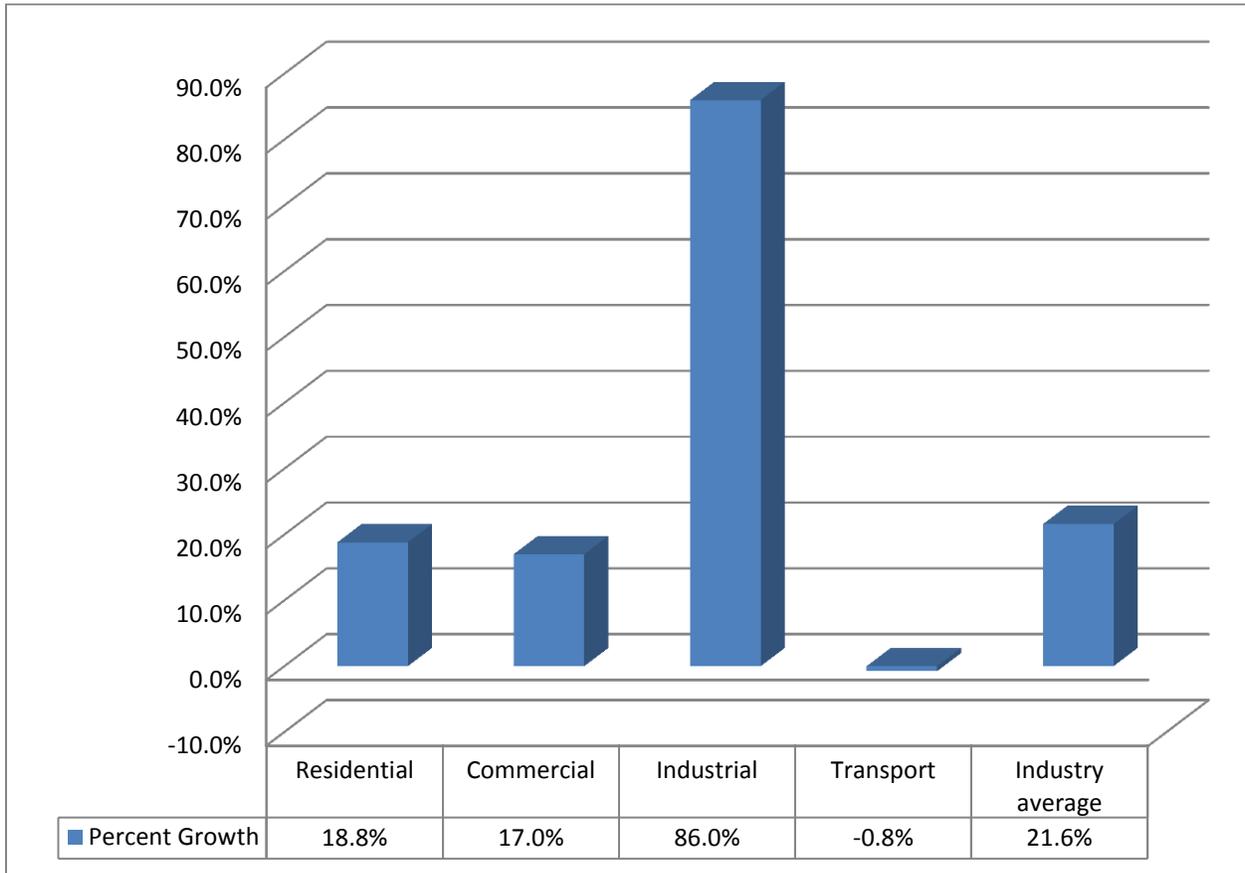
As seen in Figure 5 below, natural gas usage rose across all customer classes for the major NGDCs in 2013 over 2012.

*Figure 5 Pennsylvania Gas Usage by Customer Class within Major NGDCs: 2012-2013*



In total, gas usage rose by 10.9 percent between 2012 and 2013, while customer count remained rather flat, rising only 0.8 percent. The reason for this seeming mismatch of rising gas usage with relatively little customer growth is due to a combination of two factors. First, the vast majority of the new gas customers are large volume transportation customers (this customer class saw a 7 percent increase in customer count in 2013), thereby posting a significant increase in total usage for a relatively modest increase in customer base. Second, while the number of residential customers remained steady, this customer class used much more gas per customer in 2013 over 2012, likely a result of the colder than normal temperatures in the winter heating season of 2013-2014. These two customer classes account for almost all (83%) of the increase in usage between 2012 and 2013. Figure 6 below illustrates the change in average gas usage by customer class, showing a significant rise in usage among residential, commercial, and industrial customers, illustrating the increase in total usage of gas among these classes despite flat customer count.

**Figure 6 Growth in Average Customer Usage for Major NGDCs by Customer Class: 2012-2013**



## 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 2013 delivery year. The data is presented for 2013 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.

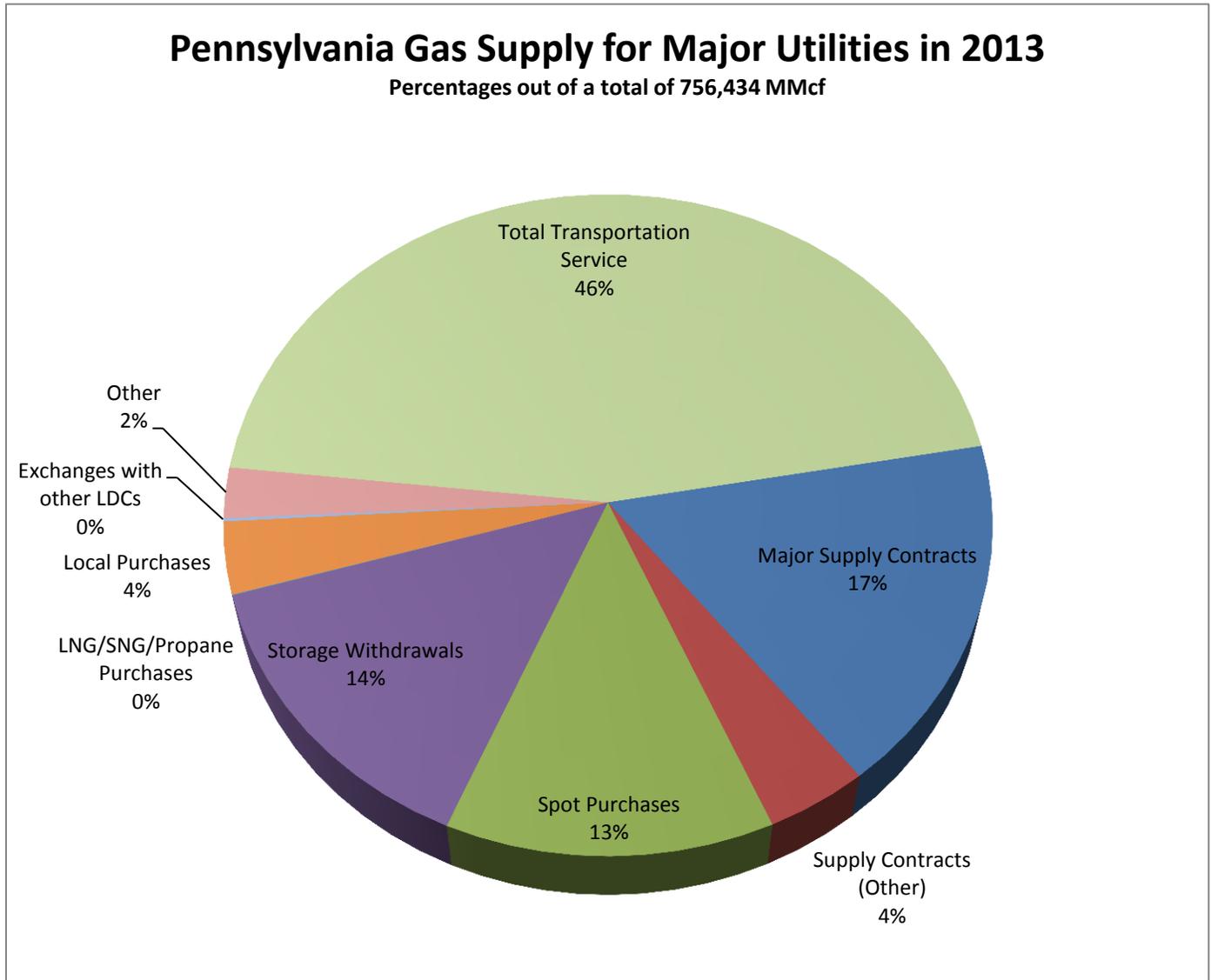
*Note: Some large users bypass the local distribution companies, buy gas at the wellhead or from suppliers, and receive the gas directly from the interstate pipelines. Gas-fired electric generation stations are usually bypass customers, and their gas consumption is not included in the PUC reports.*

**Table 7 2013 Annual Gas Supply and Demand for Major Gas Utilities (MMcf)**

	UGI PNG	UGI CPG	UGI Util.	PGW	Columbia	Equitable	NFG	PECO	Peoples	Peoples TWP
<b>Gas Supply:</b>										
Supply Contracts	30,965	8,985	38,974	47,432	17,069	42,782	21,862	56,665	33,589	5,773
Spot Purchases	9,628	5,816	12,637	0	18,601	0	0	4,821	0	2,161
Storage Withdrawal	0	0	0	11,421	0	0	0	0	0	0
LNG	0	0	0	1,538	0	0	0	0	0	0
Subtotal Gas Supply	40,593	14,801	51,610	60,391	35,670	42,782	21,862	61,486	33,589	7,934
Transportation	33,069	14,646	88,402	27,144	43,295	25,222	24,871	29,135	39,658	15,264
<b>TOTAL GAS SUPPLY</b>	<b>73,662</b>	<b>29,447</b>	<b>140,012</b>	<b>87,534</b>	<b>78,965</b>	<b>68,004</b>	<b>46,733</b>	<b>90,621</b>	<b>73,247</b>	<b>23,198</b>
<b>Requirements:</b>										
Firm Requirements	20,649	10,167	29,225	46,630	35,670	29,443	21,862	61,129	35,055	8,180
Liquefaction Interruptible Requirements	0	0	0	1,790	0	0	0	0	0	0
Storage Injections	0	0	0	10,999	0	0	0	0	0	0
Subtotal Firm & Interruptible	20,649	10,167	29,233	60,391	35,670	29,443	21,862	61,487	35,055	8,180
Transportation	33,069	14,646	88,402	27,144	43,295	26,232	24,871	29,135	38,192	15,264
Load Deductions <sup>25</sup>	19,944	4,634	22,377	0	0	12,329	0	0	0	0
<b>TOTAL GAS REQUIREMENTS</b>	<b>73,662</b>	<b>29,447</b>	<b>140,012</b>	<b>87,534</b>	<b>78,965</b>	<b>68,004</b>	<b>46,733</b>	<b>90,621</b>	<b>73,247</b>	<b>23,444</b>
Surplus(Deficiency)	0	0	0	0	0	0	0	0	0	(246)

<sup>25</sup> Load Deductions include gas use on the demand side not specifically tied to serving customers (i.e., off-system sales)

Chart 6 Pennsylvania Gas Utility Annual Supply 2013



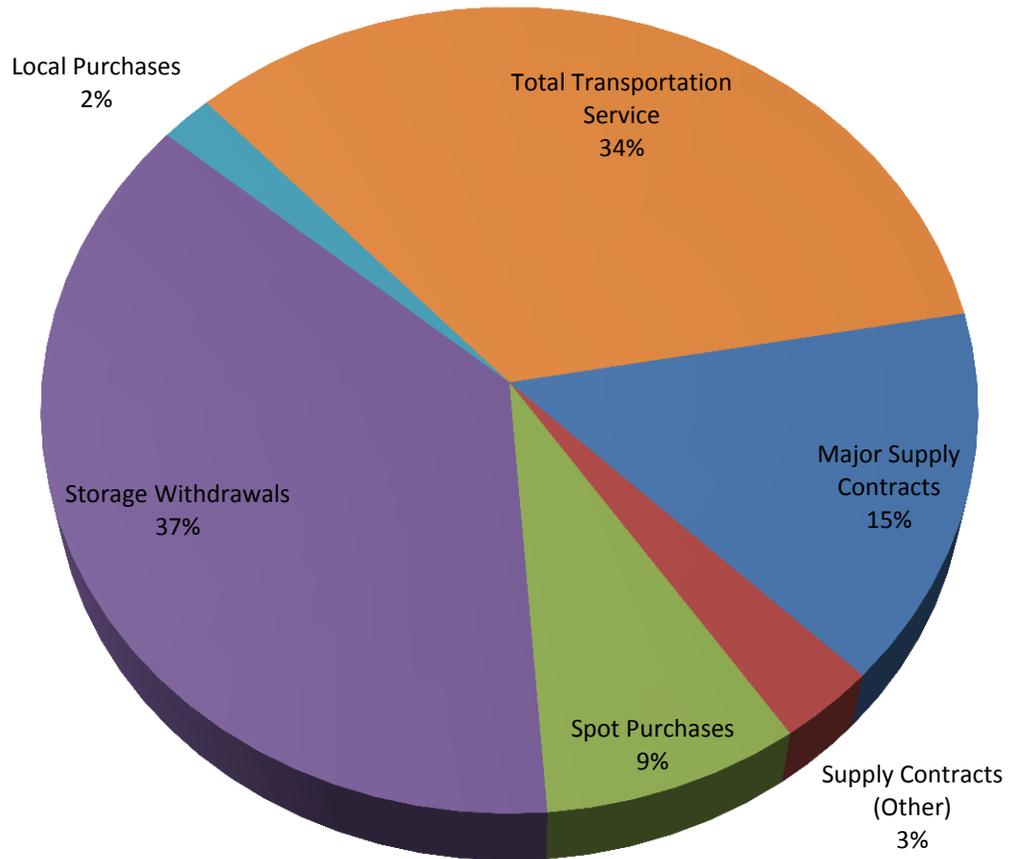
**Table 8 2013 Peak Day Gas Supply and Demand Balance for Major Gas Utilities (MMcf)**

	UGI PNG	UGI CPG	UGI Util.	PGW	Columbia	Equitable	NFG	PECO	Peoples	Peoples TWP
<b>Gas Supply:</b>										
Supply Contracts	94	31	114	166	327	330	170	468	301	122
Spot Purchases	128	76	194	0	0	0	0	70	0	3
Storage Withdrawal	0	0	0	196	0	0	0	0	0	0
LNG	0	0	0	88	0	0	0	0	0	0
Subtotal Gas Supply	222	106	308	450	327	330	170	538	301	125
Transportation	133	56	360	137	261	89	147	163	263	45
<b>TOTAL GAS SUPPLY</b>	<b>355</b>	<b>163</b>	<b>668</b>	<b>588</b>	<b>588</b>	<b>419</b>	<b>318</b>	<b>701</b>	<b>564</b>	<b>170</b>
<b>Requirements:</b>										
Firm Requirements	196	86	243	450	327	331	170	539	316	68
Liquefaction Interruptible Requirements	0	0	0	0	0	0	0	0	0	0
Storage Injections	0	0	0	0	0	0	0	0	0	0
Subtotal Firm & Interruptible	196	86	243	450	327	331	170	539	316	68
Transportation	131	68	358	137	260	88	147	163	249	45
Load Deductions	(29)	(8)	(67)	0	0	0	0	0	0	0
<b>TOTAL GAS REQUIREMENTS</b>	<b>355</b>	<b>163</b>	<b>668</b>	<b>588</b>	<b>588</b>	<b>419</b>	<b>318</b>	<b>702</b>	<b>565</b>	<b>113</b>
Surplus(Deficiency)	0	0	0	0	0	0	0	(1)	(1)	57

Chart 7 Pennsylvania Peak Day Supply 2013

### Pennsylvania Gas Peak Day Supply for Major Utilities in 2013

Percentages out of a total of 4,372 MMcf



## VIII. NGDC Financial Statistics

### Data Set

This section presents selected NGDC financial data taken from the Gas Annual Report of the major NGDCs for a seven-year period from 2005 through 2013.

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, Operating Expense and Net Operating Income**

OPERATING REVENUE (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	652.1	471.2	376.3	816.8	551.5	312.7	907.2	163.5	135.5	586.7		4974
2006	575.4	445.3	363.7	795.5	505.3	302.6	845.8	189.4	133.9	580.6		4738
2007	650.5	458.9	351.8	838.8	469.9	326.6	871.9	187.0	134.6	618.4		4908
2008	781.9	628.9	388.8	821.7	534.8	348.4	886.0	193.0	151.9	626.3		5362
2009	544.9	507.5	325.1	759.6	432.3	337.0	823.1	169.0	109.2	556.1		4564
2010	559.2	367.0	255.5	686.8	369.1	328.5	749.2	156.2	100.2	573.3		4145
2011	504.8	333.9	248.1	613.0	381.4	306.9	705.1	148.2	53.2	534.1		3829
2012	406.3	271.3	215.9	545.4	362.9	243.5	642.6	128.4	47.4	412.7		3276
2013	512.3	319.9	235.5	600.8	418.7	276.9	688.2	128.4	89.2	450.5		3720
OPERATING EXPENSE (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	613.5	407.6	360.1	700.8	485.0	273.9	805.3	149.7	125.6	528.4		4450
2006	546.0	421.7	347.4	680.4	462.0	274.7	716.5	183.0	124.4	528.3		4284
2007	619.0	448.5	324.4	703.5	407.0	299.1	758.7	175.6	123.2	552.5		4412
2008	691.1	575.9	329.9	704.8	408.5	291.1	758.6	157.4	125.3	494.2		4537
2009	437.1	395.6	265.3	557.0	312.6	271.2	679.1	131.1	85.7	421.9		3557
2010	461.2	263.1	195.6	487.3	264.8	253.7	583.5	110.2	77.2	432.7		3129
2011	403.6	224.1	185.6	406.7	276.7	229.3	523.6	104.8	76.9	395.5		2827
2012	290.9	179.6	160.5	350.2	214.2	168.2	473.3	76.6	54.3	395.5		2363
2013	364.2	227.6	170.9	378.5	241.6	195.0	491.2	86.2	60.1	292.3		2508
NET OPERATING INCOME (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	38.6	63.6	16.2	116.0	66.5	38.8	-19.7	13.8	9.9	58.3		402
2006	29.4	23.6	16.3	180.6	43.3	27.9	62.0	6.4	9.5	52.3		451
2007	31.5	10.4	27.4	56.6	62.9	27.5	-6.9	11.4	11.4	65.9		298
2008	29.5	24.4	21.4	42.2	59.1	23.2	9.0	8.5	4.8	45.8		268
2009	33.7	47.7	21.3	88.0	15.9	25.2	4.1	14.2	3.1	49.7		303
2010	50.2	37.5	24.1	87.0	9.1	28.2	26.5	18.2	2.6	53.8		337
2011	41.5	39.8	25.6	115.7	24.0	32.7	30.8	19.5	6.8	40.5		377
2012	46.7	28.2	20.7	106.3	38.7	15.7	32.7	16.3	5.6	53.8		365
2013	56.5	-68.9	29.6	116.1	44.9	18.6	56.5	17.0	7.3	66.9		345

**Table 10 Administration & General Expense, Maintenance, and Depreciation**

ADMINISTRATION & GENERAL EXPENSE (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	47.8	45.2	26.5	34.8	16.8	13.7	74.8	19.8	7.3	37.3		324
2006	45.5	38.4	26.5	35.8	15.4	13.9	77.9	22.0	9.1	40.3		325
2007	49.6	62.7	26.3	33.0	8.0	16.8	101.6	23.4	9.6	36.6		368
2008	39.9	37.1	26.7	30.4	14.9	20.1	101.9	16.7	9.9	35.6		333
2009	45.3	32.1	26.5	31.9	9.7	21.8	103.4	15.0	10.2	37.4		333
2010	53.4	28.1	27.1	29.4	32.8	21.2	120.3	17.6	12.3	36.5		379
2011	56.2	27.6	29.4	29.0	50.9	19.8	108.5	14.8	11.7	35.1		383
2012	47.4	30.2	28.9	32.7	40.7	15.1	124.1	11.2	9.6	35.1		375
2013	53.0	45.5	31.2	28.0	37.2	21.8	107.9	15.2	11.0	38.6		389

MAINTENANCE EXPENSE (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	9.3	13.3	3.8	16.5	19.1	4.6	22.1	2.4	4.6	10.0		106
2006	11.0	11.7	3.7	17.9	20.5	4.4	18.7	2.2	4.7	10.1		105
2007	12.3	11.6	4.1	21.2	20.1	4.8	20.1	3.6	5.8	9.8		113
2008	13.8	11.4	4.2	22.5	21.6	6.4	21.0	7.7	6.5	10.6		126
2009	14.1	12.5	4.1	22.8	24.1	7.1	25.6	4.7	5.8	11.8		133
2010	14.1	10.8	4.0	23.7	24.7	6.7	25.7	4.3	6.2	11.9		132
2011	13.9	11.2	3.9	21.5	24.1	7.8	31.7	4.5	5.1	14.1		138
2012	14.4	10.7	3.3	20.8	25.9	8.8	29.8	4.5	4.8	14.1		137
2013	15.5	11.1	5.6	27.0	29.9	9.1	33.6	3.9	4.2	14.9		155

DEPRECIATION EXPENSE (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	15.4	15.9	11.2	34.8	18.7	12.3	34.7	6.9	6.0	20.3		176
2006	15.8	16.7	11.3	29.6	19.7	13.3	35.6	7.0	6.2	21.3		177
2007	16.9	17.5	11.6	29.0	19.7	15.0	38.1	8.3	5.8	20.8		183
2008	18.2	18.6	11.2	30.8	20.4	15.2	38.8	8.5	6.1	21.0		189
2009	21.0	18.8	11.1	31.5	20.4	16.3	37.2	7.5	6.1	22.1		192
2010	22.5	20.0	11.1	32.7	21.6	16.7	39.0	7.8	5.9	22.5		200
2011	25.0	19.3	11.3	33.5	25.6	14.4	39.6	8.1	6.5	23.3		207
2012	14.4	19.6	11.4	35.1	27.1	14.1	40.1	8.3	7.1	24.1		201
2013	33.4	20.0	11.4	36.7	28.7	14.6	41.5	8.7	6.3	25.9		227

**Table 11 Total Gas Costs, Average Cost of Gas Purchased, and Gross Plant in Service**

TOTAL GAS COSTS (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	436.2	249.8	219.6	617.3	369.7	239.3	659.9	107.3	95.8	450.2		3445
2006	427.3	255.4	236.2	618.2	325.5	221.7	531.2	130.0	84.3	410.2		3240
2007	436.9	255.6	188.4	569.3	281.2	230.0	540.9	122.8	85.2	428.4		3139
2008	621.4	436.5	229.1	647.5	354.4	245.9	587.2	124.8	112.2	428.1		3787
2009	250.2	234.5	174.3	384.4	263.8	232.0	392.6	78.9	63.8	390.7		2465
2010	328.7	204.1	95.1	381.3	186.8	198.9	321.7	83.4	52.0	340.0		2192
2011	332.2	184.1	96.6	314.5	187.1	194.2	303.8	73.0	48.8	329.2		2064
2012	152.8	107.0	69.4	239.1	109.9	127.3	220.8	47.2	34.2	217.0		1325
2013	265.3	157.4	79.3	275.5	154.6	164.6	258.9	51.2	30.5	251.1		1688

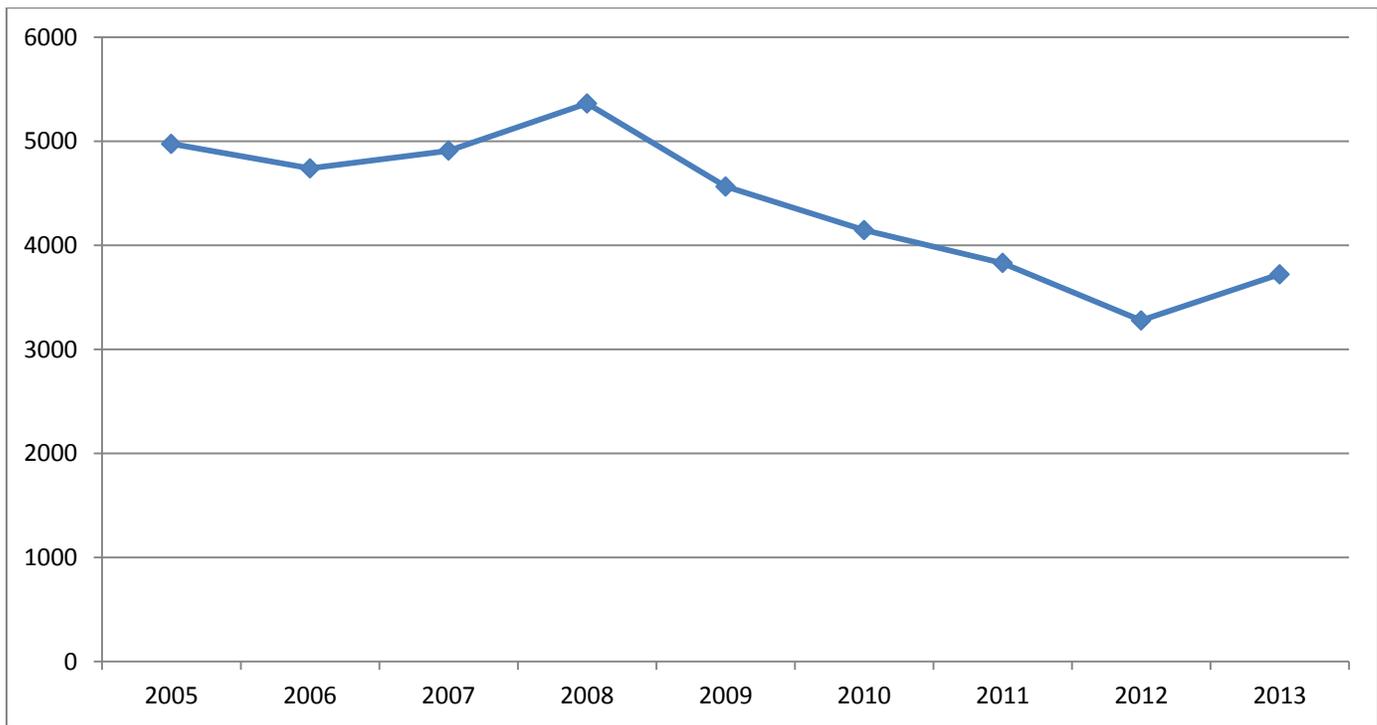
AVERAGE COST OF GAS PURCHASED (\$/MCF)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Ave.
2005	9.86	8.08	8.68	10.30	8.89	9.33	9.90	8.10	8.95	11.75		9.38
2006	8.93	7.45	10.83	11.47	10.70	9.23	10.30	12.21	8.29	12.72		10.21
2007	8.99	8.04	7.97	9.85	7.92	7.77	9.30	8.85	8.14	11.79		8.86
2008	11.32	9.02	7.97	11.04	8.65	8.44	11.00	9.64	9.41	12.01		9.85
2009	6.00	6.34	7.76	6.79	7.30	9.60	7.44	8.23	7.00	11.46		7.79
2010	7.04	7.67	5.43	6.85	5.29	5.08	6.31	5.85	5.69	5.11		6.03
2011	7.51	6.58	4.72	6.18	5.25	5.75	5.74	5.72	6.29	7.02		6.08
2012	4.79	4.80	3.37	5.47	4.20	4.41	4.98	4.28	5.14	5.52		4.70
2013	5.75	5.55	3.81	5.51	4.60	5.18	5.29	4.41	3.42	6.27		4.98

GROSS UTILITY PLANT IN SERVICE (\$ Million)												
	Columbia	Equitable	NFG	PECO	Peoples	UGI - PNG	PGW	UGI - CPG	TWP	UGI		Total
2005	710.4	722.2	415.8	1452.3	846.1	503.7	1362.0	259.4	230.6	977.4		7480
2006	748.6	746.8	428.7	1510.1	885.8	515.2	1389.8	280.0	204.6	1027.0		7737
2007	788.6	815.3	441.0	1556.5	887.0	531.9	1421.1	294.6	213.7	1068.5		8018
2008	851.1	874.2	454.6	1595.5	917.1	552.9	1454.9	312.6	224.4	1113.2		8351
2009	925.1	911.7	465.7	1646.8	946.5	564.4	1502.0	332.3	229.4	1153.5		8677
2010	981.9	925.4	478.9	1698.5	993.9	575.2	1531.0	347.3	237.7	1187.7		8958
2011	1073.6	920.6	491.5	1792.9	1112.0	597.8	1555.1	357.4	245.2	1078.2		9224
2012	1198.2	931.9	501.4	1859.5	1211.1	618.1	1575.8	370.6	249.6	1148.7		9665
2013	1335.7	944.2	511.7	1932.4	1133.1	650.2	1596.6	384.4	273.3	1228.3		9990

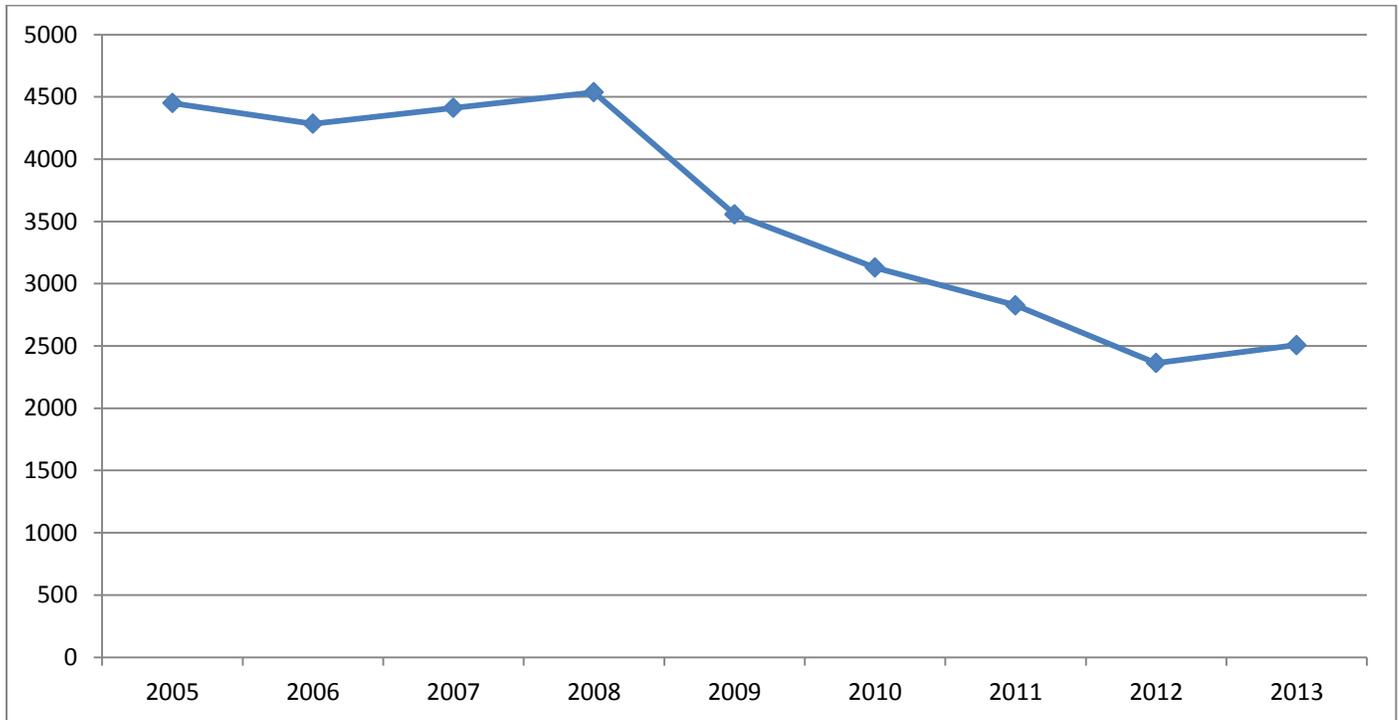
## IX. Industry Trends

Many of the indicators of 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 sales of natural gas respectively, and so as gas prices have plunged in recent years, so too have the sales of the NGDCs. Figures 7-9 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.

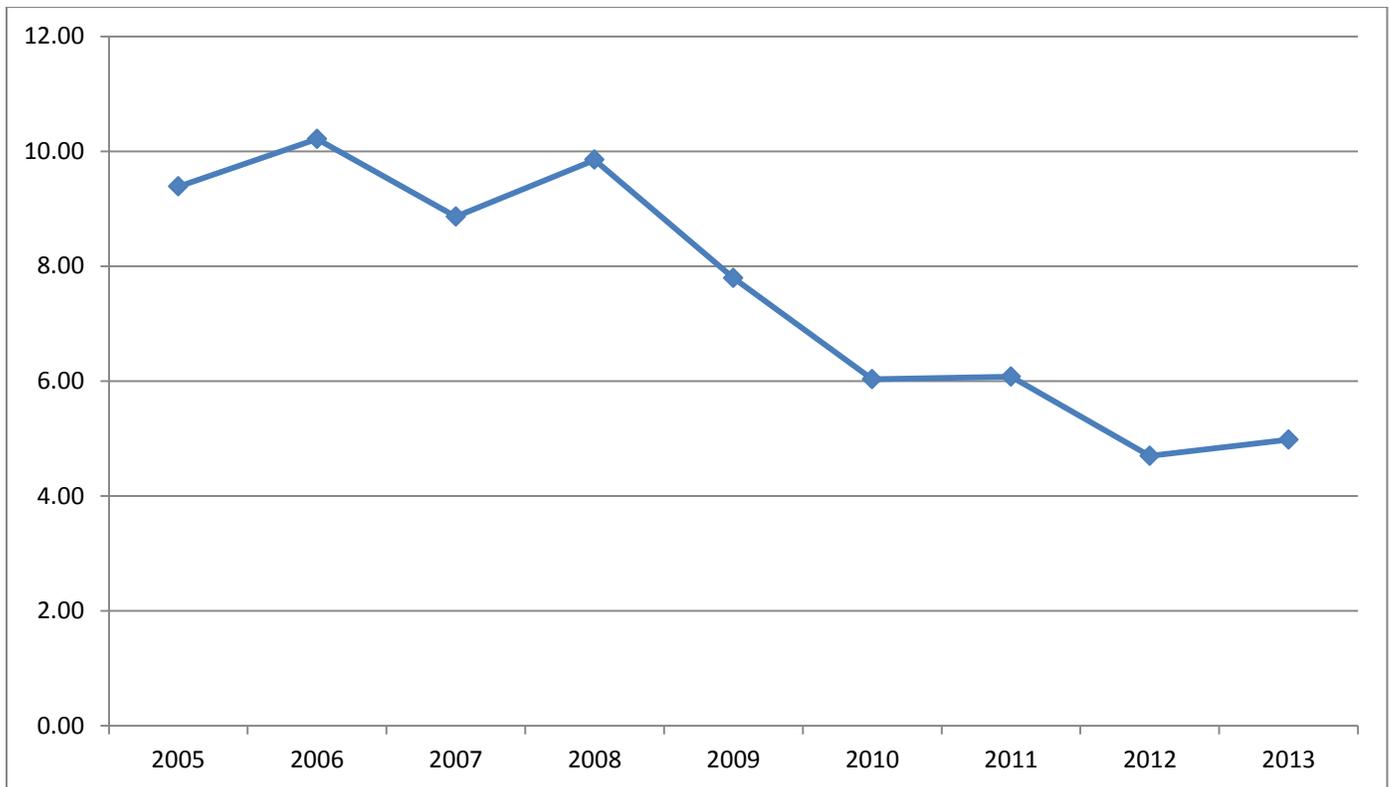
*Figure 7 Total Operating Revenue for All Major NGDCs (Millions of \$)*



*Figure 8 Total Operating Expenses for All Major NGDCs (Millions of \$)*

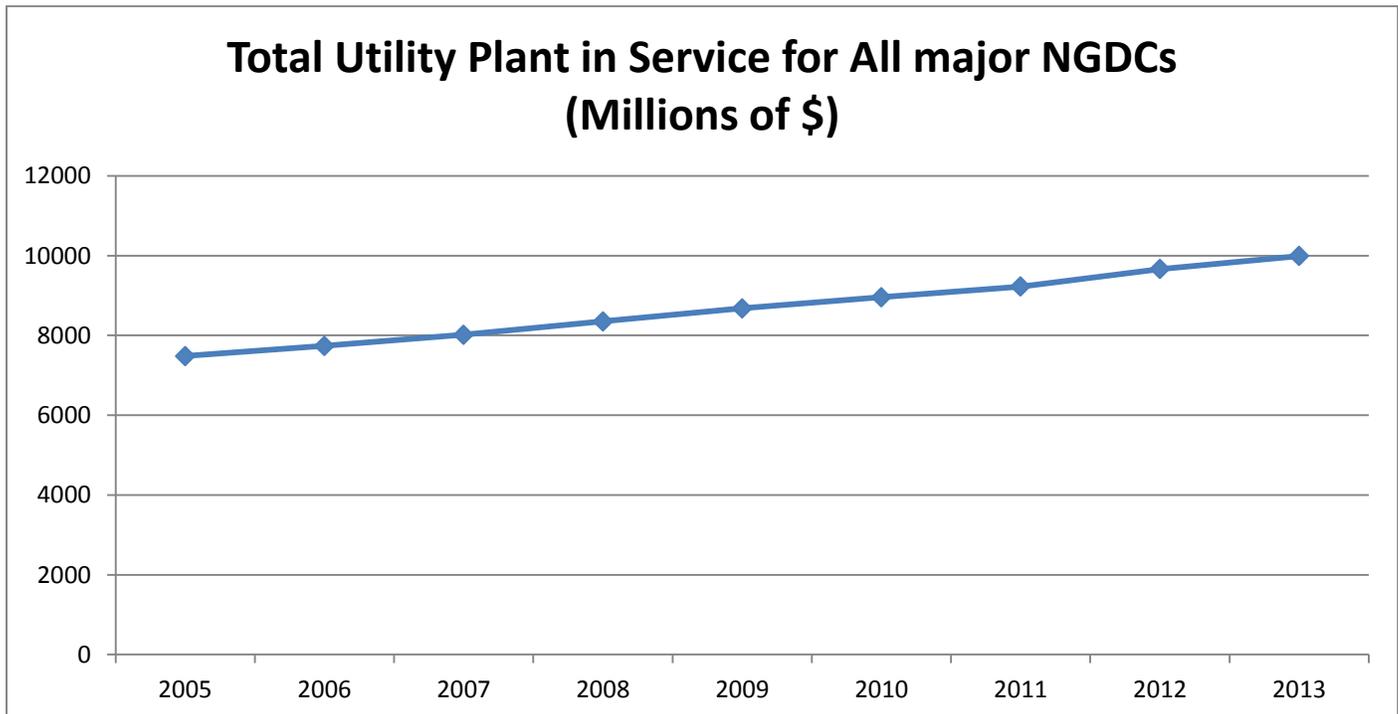


*Figure 9 Average Cost of Gas Purchased for All Major NGDCs (\$/MCF)*

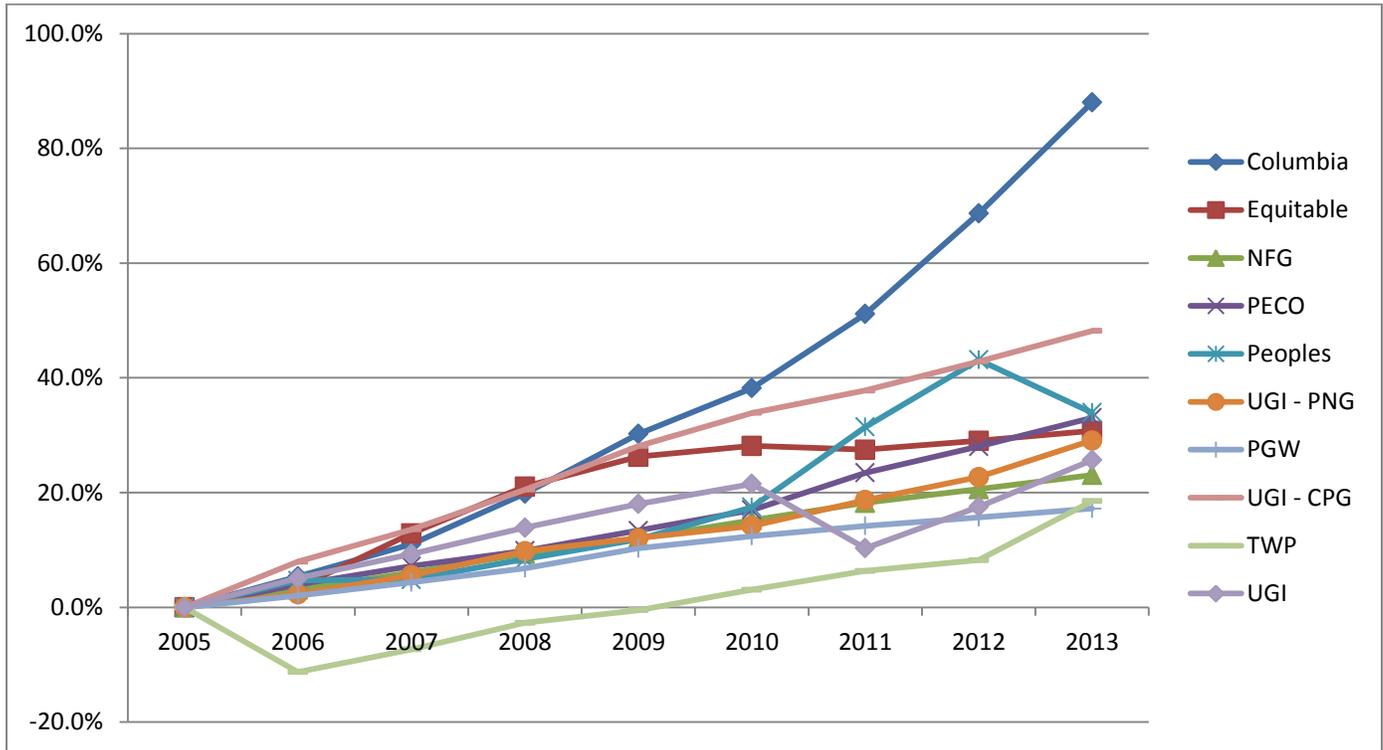


The NGDCs have been steadily adding to their infrastructure over the previous decade. In Figure 10 below, you can see that the major NGDCs have added roughly \$280 million per year to their total utility plant in service, with a total industry average of a 33.6 percent increase in plant in service since 2005. Figure 11 below shows that while all of the NGDCs have increased their plant in service since 2005, Columbia has the fastest rate of increase (88.0 percent increase since 2005) with PGW having the slowest rate of increase (17.2 percent since 2005).

*Figure 10 Total Utility Plant in Service for All Major NGDCs (Millions of \$)*



*Figure 11 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 we remove this factor, we can take a look at the cost drivers within an individual NGDC. To do this, a percentage of Gas Supply Expenses as a total of Net Operating Expenses was calculated, and summarized in Table 12 below for each of the major NGDCs:

*Table 12 Gas Supply Cost Percentage for All Major NGDCs in 2013 (% of Total Operating Expenses)*

Gas Supply Cost %	
Columbia	67.7%
Equitable	66.9%
NFG	47.2%
PECO	78.5%
Peoples	56.7%
UGI - PNG	78.9%
PGW	53.6%
UGI - CPG	64.3%
TWP	49.4%
UGI	74.3%
<b>Average</b>	<b>65.1%</b>

These percentages give us an idea 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. 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 Gas Supply Cost percentage (GSC). Specifically, we will discuss NFG, TWP, Peoples, PECO, and PGW.

## Discussion

TWP has the lowest natural gas costs per Mcf of any major NGDC, \$1.56 (31 percent) lower than the average cost per Mcf. This extremely low cost of gas supply accounts for the low GSC for TWP. If TWP had the average purchased gas cost, their GSC would shift 71.9 percent. NFG also has very low natural gas costs, \$1.17 (23 percent) lower than the average cost per Mcf, which would bring them back in line with the average GSC as well. PECO has a very high GSC, essentially caused by their significantly higher than average gas costs. PECO pays \$0.53 (11 percent) more than the industry average per Mcf for their gas, and when this is corrected for, it brings their GSC in line with the average.

Peoples is distinctive among the major NGDCs in that they run a system that is more “vertically integrated” than their peers. In other words, Peoples operates production/gathering facilities, transmission, distribution, and storage assets. The additional cost associated with the operation of these facilities is what drives much of Peoples’ costs, and reduces Peoples’ GSC.

PGW has a variety of factors contributing to its low GSC. A minor contributing factor is PGW’s slightly above average cost of gas. More significantly though, 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 \$92 million in uncollectible accounts, and over \$210 million of accounts receivable. Aside from the fact that the accounts result in missing revenues for PGW, there is an additional cost associated with these delinquent accounts. PGW spent \$61 million in 2013 on “Customer Accounts Expenses,” which includes tracking and attempting to collect on these accounts. This amount is more than double that of any other NGDC in the Commonwealth.

The second main factor driving PGW’s costs is its employee benefits program. PGW spent over \$85 million in 2013 on “Employee Pensions and Benefits,” more than 5 times that of any other NGDC in the Commonwealth. PGW’s generous 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.

