



# Philadelphia Gas Works Pension Plan - Funding

Actuarial Valuation Report for the Plan Year  
July 1, 2016 – June 30, 2017



October 28, 2016

Philadelphia Gas Works  
1800 N. Ninth Street  
Philadelphia, PA 19122

We have been retained by Philadelphia Gas Works to perform the actuarial valuation of the Philadelphia Gas Works Pension Plan as of July 1, 2016. This report sets forth the contribution range for the Plan Year, running from July 1, 2016 through June 30, 2017. The valuation is based on data sent to us by Philadelphia Gas Works, the Plan as described in the official Plan document, the assets of the Plan as reported by Philadelphia Gas Works, and the stated actuarial assumptions.

The purposes of the actuarial valuation are:

1. To determine the financial condition of the Plan and the contribution requirements for the Plan year;
2. To provide information to be used in the preparation of any required governmental forms;
3. To provide information for use in satisfying the requirements of your auditors;
4. To provide actuarial certification of the adequacy and appropriateness of the cost method and assumptions used for your Plan; and
5. To provide comments on the developing experience under your Plan, the need for changes in the Plan or funding, and other areas of concern to you. In this respect, the actuarial valuation report becomes an essential source of information for discussions throughout the year on the Pension Plan.



In our opinion, this report is complete and accurate, and the actuarial assumptions and methods, in the aggregate, are reasonably related to the experience of the Plan and represent our best estimate of future Plan experience as it should be considered for proper funding of your pension obligations. It is also our opinion that each of the actuarial assumptions and methods utilized in this valuation are reasonable (taking into account the experience of the plan and reasonable expectations) or, in the aggregate, result in total contribution equivalents that would be determined if each assumption and method were reasonable.

Aon Hewitt is pleased to submit this report of the Pension Plan to you, and will also be pleased to discuss any aspects of the report with you after you have had a chance to review it.

Respectfully submitted,

A handwritten signature in black ink, reading "Thomas Vicente", written over a horizontal line.

Thomas G. Vicente, FSA, EA  
Partner

Enrollment #14-05034

## Table of Contents

A. Comparative Summary of Principal Valuation Results.....	1
B. Discussion.....	5
C. Financial Summary .....	6
D. Summary of Valuation Results .....	8
E. Contribution Levels.....	9
F. Actuarial Present Value of Accumulated Benefits Determined .....	11
G. Estimated 10-Year Benefit Pay-Out Projections.....	12
H. Schedule of Funding Progress .....	13
I. Calculation of Annual Pension Cost .....	14
J. Schedule of Prospective Funded Status.....	16
K. Distribution of Inactive Participants by Age and Years of Retirement .....	19
L. Distribution of Active Participants by Age and Service .....	20
M. Data Reconciliation.....	22
N. Actuarial Methods and Assumptions .....	23
O. Summary of the Principal Plan Provisions.....	27

## A. Comparative Summary of Principal Valuation Results

	Actuarial Valuation for Plan Year Beginning		<i><b>Percent Change</b></i>	
	<u><b>July 1, 2016</b></u>	<u><b>July 1, 2015</b></u>		
1. <b><u>Participant Data</u></b>				
Active Participants	1,251	1,274	(1.8)	%
Retired Participants	2,192	2,199	(0.3)	%
Vested Terminated Participants	<u>329</u>	<u>327</u>	0.6	%
Total	3,772	3,800	(0.7)	%
Total Payroll	90,860,364	95,186,942	(4.5)	%
Average Pay	72,630	74,715	(2.8)	%
Average Age	44.76	44.25	1.2	%
Average Past Service	15.75	15.49	1.7	%

## A. Comparative Summary of Principal Valuation Results (cont.)

	Actuarial Valuation for Plan Year Beginning		<b>Percent Change</b>	
	<u>July 1, 2016</u>	<u>July 1, 2015<sup>1</sup></u>		
1. <b><u>Contribution Range</u></b>				
Normal Cost ( <i>Exhibit D</i> )	\$ 7,991,587	\$ 7,858,658	1.7	%
Indicated Midyear -				
20 Year Contribution ( <i>Exhibit E</i> )	\$ 29,260,334	\$ 26,912,652	8.7	%
30 Year Contribution ( <i>Exhibit E</i> )	\$ 26,470,015	\$ 24,019,697	10.2	%
20 Year Contribution as Percentage of Compensation	32.20%	28.27%	13.9	%
30 Year Contribution as Percentage of Compensation	29.13%	25.23%	15.4	%

The Normal Cost above represents the cost of benefits being earned by additional years of service with PGW. This figure has risen since the previous year as the result of an additional year of interest accumulation and a decrease in the discount rate from 7.65% to 7.30%.

The contribution levels are the sum of the Normal Cost and a level dollar amortization of the unfunded actuarial liability. The contribution amounts have increased over the prior period (20 year basis) for several reasons:

- Discount rate change: The discount rate was changed to 7.30% for the 2015 valuation from the 7.65% rate used the prior year. This increased the measurement of plan liabilities approximately 3.6%. This increased the annual contribution by \$2,407,000 (2.6% of pay).
- Investment returns: The investment return for the period ending June 30, 2016 was approximately \$2,900,000. Based on the 7.65% assumption in place on July 1, 2015, a return of \$38,200,000 would have been expected over this period. This increased the annual contribution by \$631,000 (0.7% of pay). The change to recognizing a smoothed value of assets reduced the impact of the asset returns.
- Demographic losses: The changes in the plan census differed from those expected by the plan assumptions. Salary used for valuation purposes increased approximately 0.2% for continuing actives compared to a 4.5% salary increase assumption. This decreased plan liabilities approximately 0.5%. In addition, there were 166 actives with 30 or more years of service eligible for full retirement benefits who remained active as of the valuation date. This accounted for an additional decrease in plan liabilities of approximately 0.3%. This decreased the annual contribution by \$625,000 (0.7% of pay).

<sup>1</sup> July 1, 2015 contributions shown reflect values stated in the Philadelphia Gas Works Pension Plan – Funding Actuarial Valuation Report for the Plan Year July 1, 2015 – June 30, 2016. Revised asset values were provided after this report was produced.

## A. Comparative Summary of Principal Valuation Results (cont.)

	Actuarial Valuation for Plan Year Beginning		Percent Change
	<u>July 1, 2016</u>	<u>July 1, 2015</u>	
<b>1. <u>Liabilities</u></b>			
Unfunded Accrued Actuarial Liability (Exhibit E)	\$ 224,788,936	\$ 195,984,721 <sup>1</sup>	14.7 %
Present Value of Accumulated Vested Benefits (Exhibit F)	\$ 668,800,019	\$ 630,269,500	6.1 %
Present Value of Accumulated Plan Benefits (Exhibit F)	\$ 698,546,139	\$ 659,922,176	5.9 %
<b>2. <u>Development of Actuarial Liability</u></b>			
(1) Liability at July 1, 2015		\$ 706,703,768	
(2a) Normal Cost	\$ 8,355,250		
(2b) Interest Cost	\$ 52,769,491		
(2c) Expected Benefit Payments	\$ (51,471,949)		
(2d) Total Increase/(Decrease)	9,652,792		
(3) Expected Liability at June 30, 2016		\$ 716,356,560	
(3a) Demographic (Gain)/Loss	\$ (7,026,826)		
(3b) Discount Rate (Gain)/Loss	\$ 25,791,779		
(3c) Mortality (Gain)/Loss	\$ 956,164		
(3d) Total (Gain)/Loss	19,721,117		
(4) Actual Liability at July 1, 2016		\$ 736,077,677	

<sup>1</sup> Unfunded Accrued Actuarial Liability shown based on June 30, 2015 market value of assets provided by Philadelphia Gas Works. Revised asset values were provided after the July 1, 2015 report was produced and may differ from that report.  
Philadelphia Gas Works – Actuarial Valuation for the Plan Year – July 1, 2016 through June 30, 2017

## A. Comparative Summary of Principal Valuation Results (cont.)

	Actuarial Valuation for Plan Year Beginning		<b><u>Percent Change</u></b>
	<b><u>July 1, 2016</u></b>	<b><u>July 1, 2015<sup>1</sup></u></b>	
<b>1. <u>Assets</u></b>			
Market Asset Value <i>(Exhibit C)</i>	\$ 483,258,662	\$ 510,719,047	(5.4)%
Actuarial Asset Value <i>(Exhibit C)</i>	\$ 511,288,741	\$ 510,719,047	0.1%

Plan assets are invested in a mix of stocks and bonds held by the Sinking Fund Commission. The long term asset allocation strategy is an equity allocation of 65% of the portfolio and a fixed income allocation of 35% of the portfolio. The investment return for the period from July 1, 2015 through June 30, 2016 was approximately 0.58%. This represented an under performance of plan investments versus the actuarial assumption of 7.65% for the period (changing to 7.30% beginning July 1, 2016), but not necessarily an underperformance versus independent investment benchmarks. Review of performance against those benchmarks is outside the scope of this report.

Benefit payment distributions were the largest factor in asset movement during the period July 1, 2015 through June 30, 2016. The combination of plan investment returns and employer and employee contributions did not keep pace with the distributions which resulted in a large decrease in plan asset levels (-5.4%).

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<sup>1</sup> July 1, 2015 asset information shown based on June 30, 2015 market value of assets provided by Philadelphia Gas Works. Revised asset values were provided after the July 1, 2015 report was produced and may differ from that report.  
Philadelphia Gas Works – Actuarial Valuation for the Plan Year – July 1, 2016 through June 30, 2017



## B. Discussion

Since the last actuarial valuation performed as of July 1, 2015, the demographics of the plan participants has changed as follows:

- The number of plan participants has decreased 0.7%
- The total number of actives in the plan decreased 1.8%
- Total payroll has decreased 4.5%
- Average pay has decreased 2.8%
- Average age of active plan participants increased 1.2%

The restating of the assumptions around the discount rate created an increase in plan liabilities that translates to an increase in the contribution rate (on a 20 year amortization basis). This year, contribution schedules using a 20 year open amortization period and a 30 year closed amortization period of the unfunded liability were included in the range of potential contribution levels. PGW has indicated they plan to contribute the larger of the annual contributions calculated by these two amortization methods.

Both contribution schedules are expected to gradually improve the funded status of the plan.

## C. Financial Summary<sup>1</sup>

**Assets as of July 1, 2015<sup>2</sup>** \$ 510,719,047

**Receipts**

Employer Contribution	21,122,557	
Employee Contribution	602,287	
Investment return *	2,872,187	
Total Receipts		\$ 24,597,031

**Disbursements**

Benefit Payments	50,446,550	
Administrative Expenses	1,610,866	
Total Disbursements		\$ 52,057,416

**Assets as of July 1, 2016** \$ 483,258,662

**Asset Information as of July 1, 2016**

<b><u>Asset Allocations</u></b>	<b><u>Current Allocation</u></b>	<b><u>Target Allocation</u></b>
Equity	65.39%	65.00%
Total Fixed Income	34.53%	35.00%
Other	0.08%	0.00%

<b><u>Annual Rate of Return</u></b>	<b><u>Market Value</u></b>	<b><u>Assumed Rate</u></b>
Rate <sup>3</sup>	0.58%	7.65%

*\*Net of any additional fund expenses not included in Administrative Expenses under Disbursements*

<sup>1</sup> Asset information as reported by the City of Philadelphia.

<sup>2</sup> July 1, 2015 asset information shown based on June 30, 2015 market value of assets provided by Philadelphia Gas Works. Revised asset values were provided after the July 1, 2015 report was produced and may differ from that report.

<sup>3</sup> The above return was based on a simplified determination of returns. This will differ from the actual time-weighted return for the plan due to the incidence of inflows and outflows from the Trust. The time-weighted return was 0.19% for the year.

## C. Financial Summary (cont.)

### Development of Actuarial Value of Assets

Market Value of Assets as of July 1, 2015	\$	510,719,047
Expected Assets as of July 1, 2016	\$	518,296,261
Market Value of Assets as of July 1, 2016	\$	483,258,662

### Total Gain/(Loss) From Prior Years

Gain/(Loss) (Current Year)	\$	(35,037,599)
Gain/(Loss) (Valuation Year -1)	\$	-
Gain/(Loss) (Valuation Year -2)	\$	-
Gain/(Loss) (Valuation Year -3)	\$	-

### Unrecognized Gain/(Loss) From Prior Years

Gain/(Loss) (Current Year)	\$	(28,030,079)
Gain/(Loss) (Valuation Year -1)	\$	-
Gain/(Loss) (Valuation Year -2)	\$	-
Gain/(Loss) (Valuation Year -3)	\$	-

### Preliminary Actuarial Value of Assets as of July 1, 2016

	\$	511,288,741
80% of Market Value of Assets	\$	386,606,930
120% of Market Value of Assets	\$	579,910,394

### Actuarial Value of Assets as of July 1, 2016

	\$	511,288,741
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## D. Summary of Valuation Results

	<u>Retired</u>	<u>Vested Terminated</u>	<u>Active</u>	<u>Total</u>
1 Number of Participants Included in the Valuation	2,192	329	1,251	3,772
2 Projected Annual Benefits	\$ 50,770,851	\$ 3,557,498	\$ 119,677,174	\$ 174,005,523
3 Present Value of Projected Benefits as of July 1, 2016	\$ 520,251,013	\$ 14,813,594	\$ 290,675,291	\$ 825,739,898
4 Present Value of Future Normal Costs	\$ -	\$ -	\$ 89,662,221	\$ 89,662,221
5 Accrued Actuarial Liability as of July 1, 2016: (3)-(4)	\$ 520,251,013	\$ 14,813,594	\$ 201,013,070	\$ 736,077,677
6 Actuarial Asset Value				\$ 511,288,741
7 Unfunded Accrued Actuarial Liability: (5)-(6)				\$ 224,788,936
8 Normal Cost Payable on July 1, 2016				\$ 8,649,940
9 Expected Employee Contributions				\$ 658,353
10 Net Employer Normal Cost (8)-(9)				\$ 7,991,587

## E. Contribution Levels

### Twenty Year Amortization (Open Amortization Period)

1. Contribution for Normal Cost \$ 7,991,587
2. Amortization Schedule

<u>Effective Date</u>	<u>Amortization Period</u>	<u>Initial Amount</u>	<u>Unfunded Accrued Actuarial Liability</u>	<u>BOY Annual Payment</u>	
7/1/2016	20	\$224,788,936	\$ 224,788,936	\$ 20,238,354	\$ 20,238,354

3. Contributions July 1, 2016: (1) + (2) \$ 28,229,941
4. Contributions Mid-year (3) x 1.0365 \$ 29,260,334
5. Contributions June 30, 2017: (3) x 1.073 \$ 30,290,727

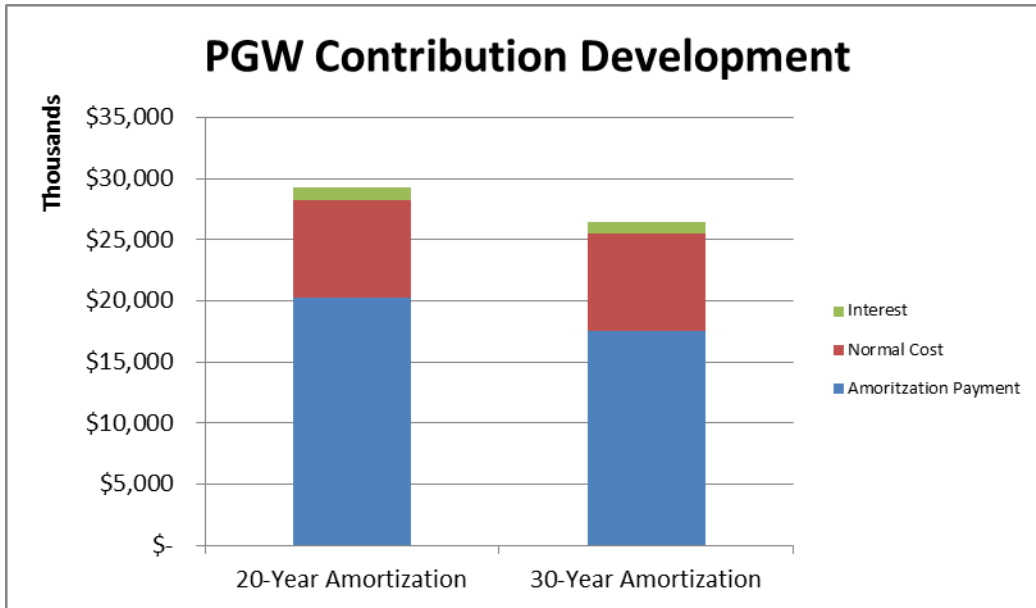
### Thirty Year Amortization (Closed Amortization Period)

1. Contribution for Normal Cost \$ 7,991,587
2. Amortization Schedule

<u>Effective Date</u>	<u>Amortization Period</u>	<u>Initial Amount</u>	<u>Unamortized Amount</u>	<u>BOY Annual Payment</u>	
7/1/2015	29	\$195,984,721	\$ 194,140,348	\$ 15,174,714	
7/1/2016	30	\$ 30,648,588	\$ 30,648,588	\$ 2,371,581	
<b>Total</b>			<b>\$ 224,788,936</b>	<b>\$ 17,546,295</b>	

3. Contributions July 1, 2016: (1) + (2) \$ 25,537,882
4. Contributions Mid-year (3) x 1.0365 \$ 26,470,015
5. Contributions June 30, 2017: (3) x 1.073 \$ 27,402,147

## E. Contribution Levels (cont.)



## F. Actuarial Present Value of Accumulated Benefits Determined

### Accounting Standards Codification Topic 960

	<u>July 1, 2016</u>	<u>July 1, 2015</u>
1. Actuarial Present Value of Accumulated Vested Benefits		
Participants currently receiving		
a. benefits	\$ 520,251,013	\$ 502,054,773
b. Vested terminated participants	\$ 14,813,594	\$ 14,399,979
c. Active Participants	<u>\$ 133,735,412</u>	<u>\$ 113,814,748</u>
d. Total	\$ 668,800,019	\$ 630,269,500
2. Actuarial Present Value of Accumulated Non-Vested Benefits	\$ 29,746,120	\$ 29,652,676
3. Total Actuarial Present Value of Accumulated Plan Benefits: (1d) + (2)	\$ 698,546,139	\$ 659,922,176
4. Net Assets Available for Benefits (Market Value, Exhibit C) <sup>1</sup>	\$ 483,258,662	\$ 510,719,047
5. Excess (deficiency) of Net Assets Available for Benefits over (under) Actuarial Present Value of Accumulated Plan Benefits: (4) - (3)	\$ (215,287,477)	\$ (149,203,129)
6. Active Participant Count		
a. 100% Vested	1,036	1,003
b. Partially Vested	0	0
c. Non-Vested	215	271

<sup>1</sup> July 1, 2015 asset information shown based on June 30, 2015 market value of assets provided by Philadelphia Gas Works. Revised asset values were provided after the July 1, 2015 report was produced.

## G. Estimated 10-Year Benefit Pay-Out Projections

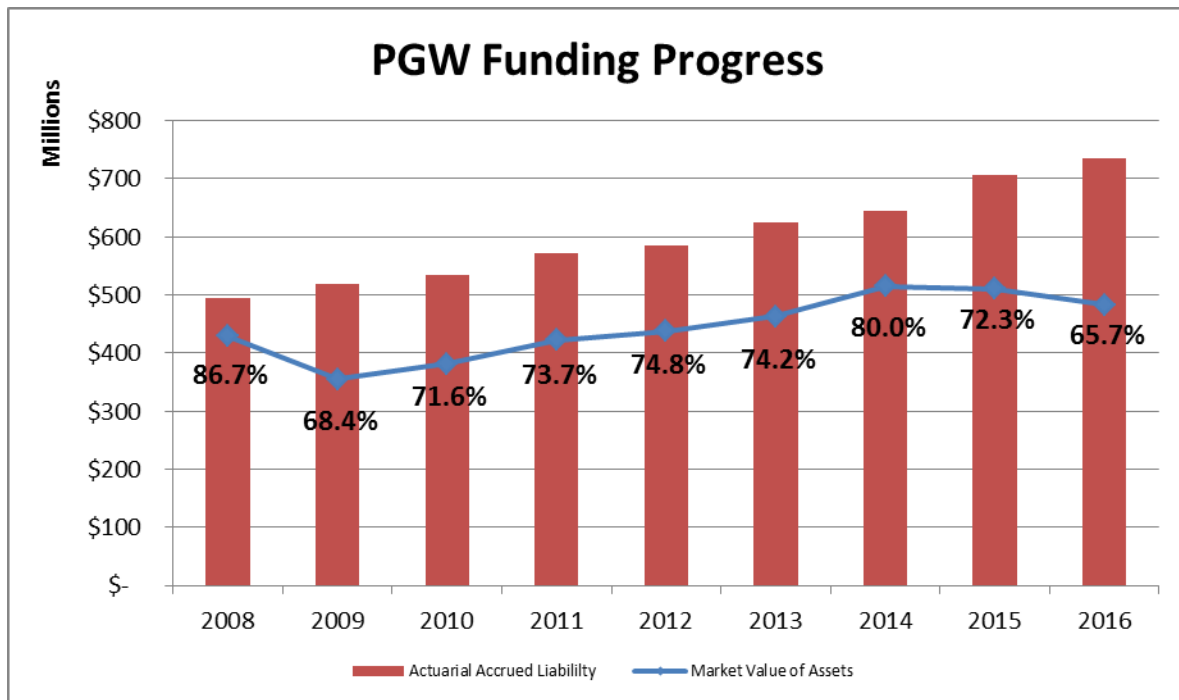
<b>Plan Year Beginning <u>July 1</u></b>	<b><u>Expected Annual Benefit Pay-Out During Plan Year</u></b>
2016	\$ 52,347,089
2017	\$ 53,533,015
2018	\$ 54,829,606
2019	\$ 56,070,639
2020	\$ 57,266,902
2021	\$ 58,388,061
2022	\$ 59,485,838
2023	\$ 60,606,023
2024	\$ 61,628,671
2025	\$ 62,615,164

Note: The above projected pay-outs recognized expected mortality, termination, and incidence of disability and assume all benefits will commence at Assumed Retirement Date. No assumption has been made regarding possible retirements prior to Assumed Retirement Date or anticipation of new entrants.



## H. Schedule of Funding Progress

Actuarial Valuation Date	Market Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
9/1/2008	\$ 429,170	\$ 495,155	\$ 65,985	86.67%	\$ 106,047	62.22%
9/1/2009	355,499	519,773	164,274	68.40%	108,474	151.44%
9/1/2010	381,975	533,630	151,655	71.58%	111,728	135.74%
9/1/2011	421,949	572,190	150,241	73.74%	103,737	144.83%
9/1/2012	437,780	585,632	147,852	74.75%	107,494	137.54%
9/1/2013	462,691	623,612	160,921	74.20%	103,530	155.43%
9/1/2014	514,944	643,988	129,044	79.96%	105,636	122.16%
7/1/2015	510,719	706,704	195,985	72.27%	95,187	205.89%
7/1/2016	483,259	736,078	252,819	65.65%	90,860	278.25%



**Notes:**

Covered payroll was assumed to increase by 3% in years when the full valuation was not done.

Asset Values estimated for years when this full valuation was not done.

# I. Calculation of Annual Pension Cost

## I. Calculation of Annual Pension Cost (20 Year Open Amortization)

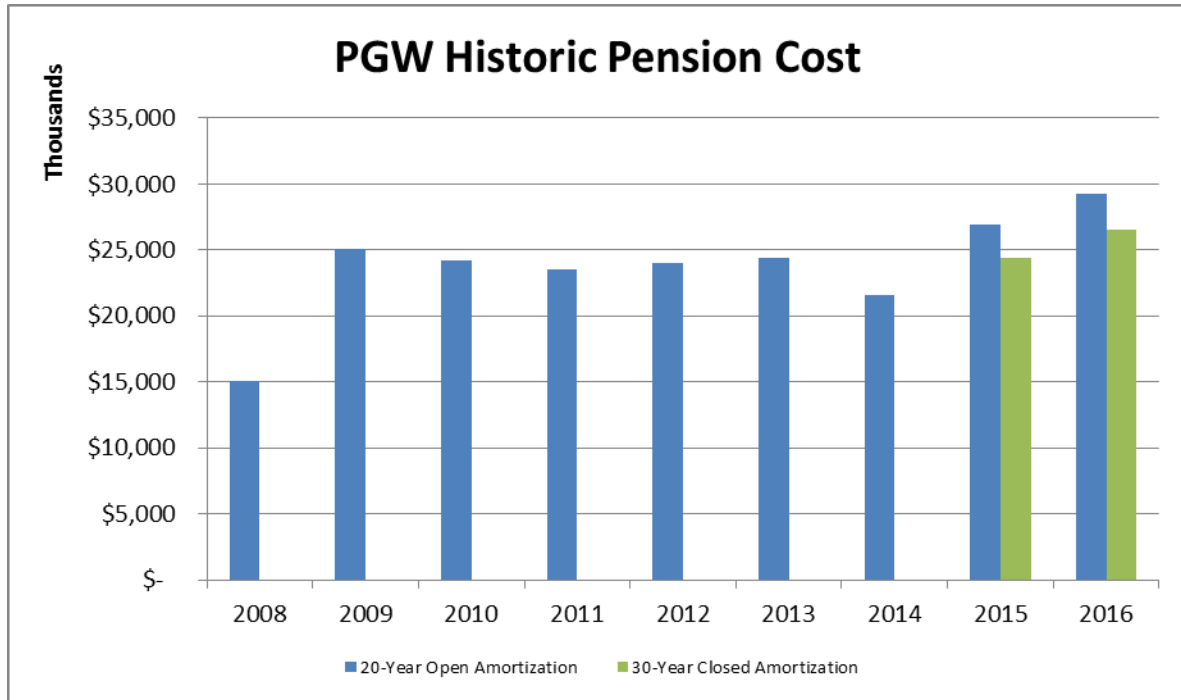
Actuarial Valuation Date	Unfunded Actuarial Accrued Liability	Amortization Payment	Normal Cost	Employee Contribution	Mid-year Contribution
9/1/2008	65,985	\$ 6,342	\$ 8,125	\$ -	\$ 15,064
9/1/2009	164,274	15,745	8,292	-	25,029
9/1/2010	151,655	14,851	8,333	-	24,140
9/1/2011	150,241	14,400	8,171	-	23,502
9/1/2012	147,852	14,357	8,782	137	23,951
9/1/2013	160,921	15,127	8,533	207	24,385
9/1/2014	129,044	12,130	8,852	279	21,526
7/1/2015	195,985	18,063	7,859	497	26,913
7/1/2016	224,789	20,238	7,992	658	29,260

## I-2. Calculation of Annual Pension Cost (30 Year Closed Amortization)

Actuarial Valuation Date	Unfunded Actuarial Accrued Liability	Amortization Payment	Normal Cost	Employee Contribution	Mid-year Contribution
9/1/2008	65,985	\$ 6,342	\$ 8,125	\$ -	\$ N/A
9/1/2009	164,274	15,745	8,292	-	N/A
9/1/2010	151,655	14,851	8,333	-	N/A
9/1/2011	150,241	14,400	8,171	-	N/A
9/1/2012	147,852	14,357	8,782	137	N/A
9/1/2013	160,921	15,127	8,533	207	N/A
9/1/2014	129,044	12,130	8,852	279	N/A
7/1/2015	195,985	15,641	7,859	497	24,398
7/1/2016	224,789	17,546	7,992	658	26,470

Employee contributions estimated based on census data.

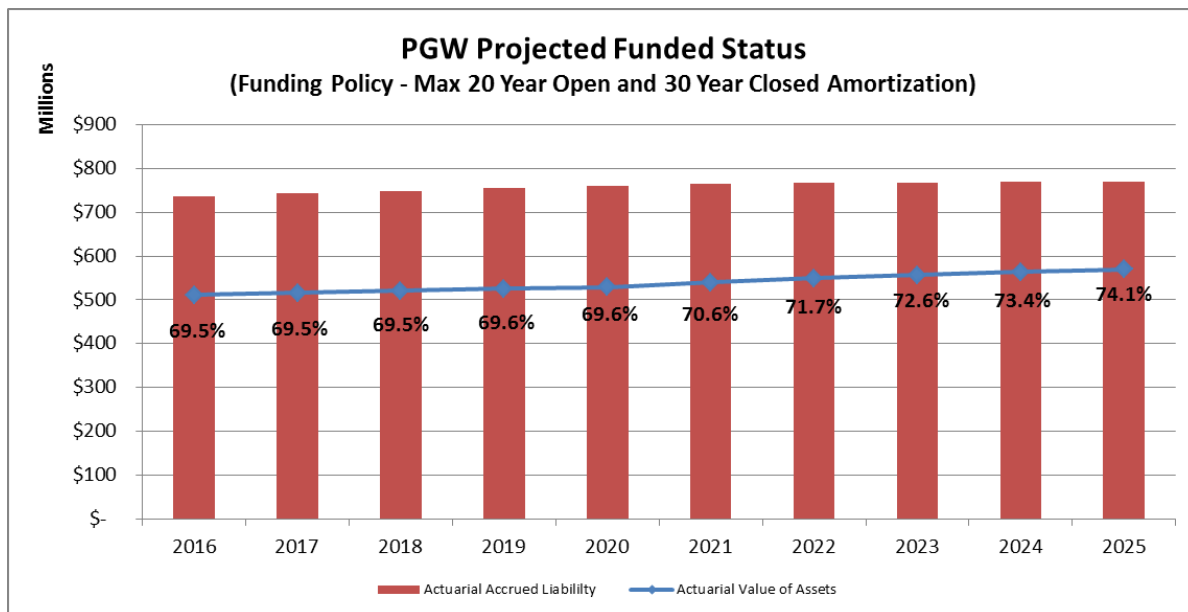
## I. Calculation of Annual Pension Cost (cont.)



## J. Schedule of Prospective Funded Status

### J. Schedule of Prospective Funded Status (Funding Policy - Max 20 Year Open and 30 Year Closed Amortization)

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Actual Mid-Year Contribution	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
7/1/2016	\$ 511,289	\$ 736,078	\$ 224,789	\$ 29,260	69.46%	\$ 90,860	247.40%
7/1/2017	516,312	743,161	226,849	29,201	69.48%	94,949	238.92%
7/1/2018	520,981	749,322	228,341	29,227	69.53%	99,222	230.13%
7/1/2019	525,256	754,759	229,502	29,361	69.59%	103,687	221.34%
7/1/2020	529,287	760,354	231,067	29,267	69.61%	108,353	213.25%
7/1/2021	539,874	764,209	224,335	28,403	70.64%	113,229	198.12%
7/1/2022	549,285	766,619	217,334	27,526	71.65%	118,324	183.68%
7/1/2023	557,447	767,850	210,403	26,709	72.60%	123,649	170.16%
7/1/2024	564,315	768,739	204,424	25,598	73.41%	129,213	158.21%
7/1/2025	569,580	769,172	199,591	25,018	74.05%	135,028	147.81%



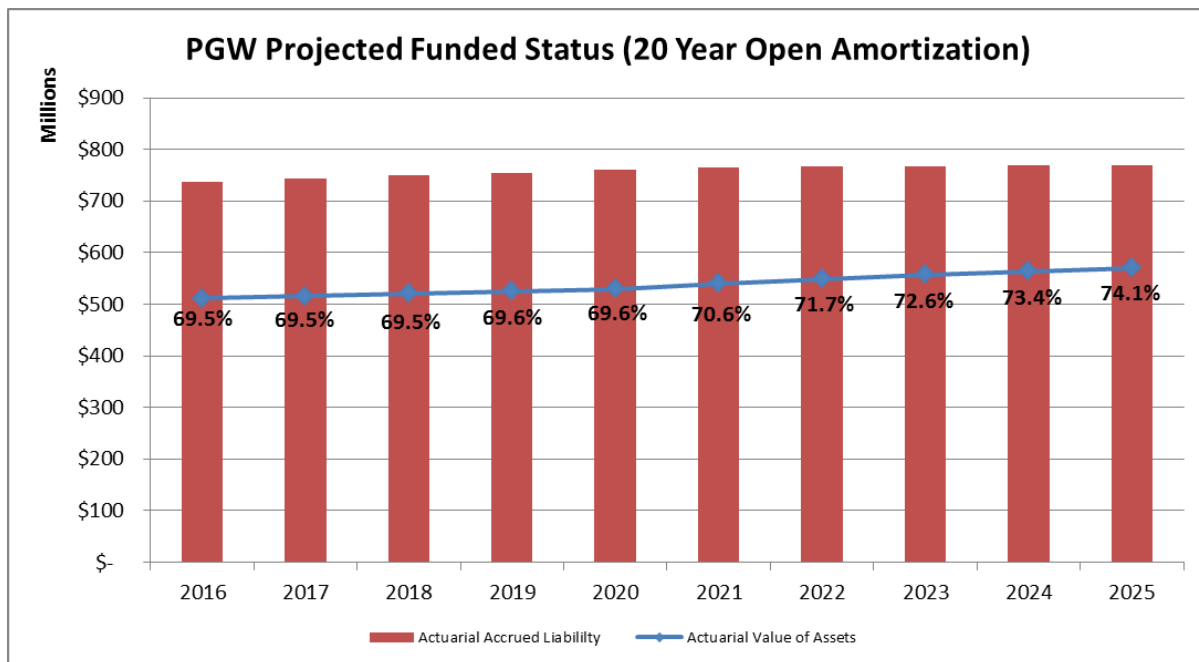
Investment returns assumed to be 7.30% per year.

Covered payroll projected to increase by 4.5% per year.

## J. Schedule of Prospective Funded Status (cont.)

### J-2. Schedule of Prospective Funded Status (20 Year Open Amortization)

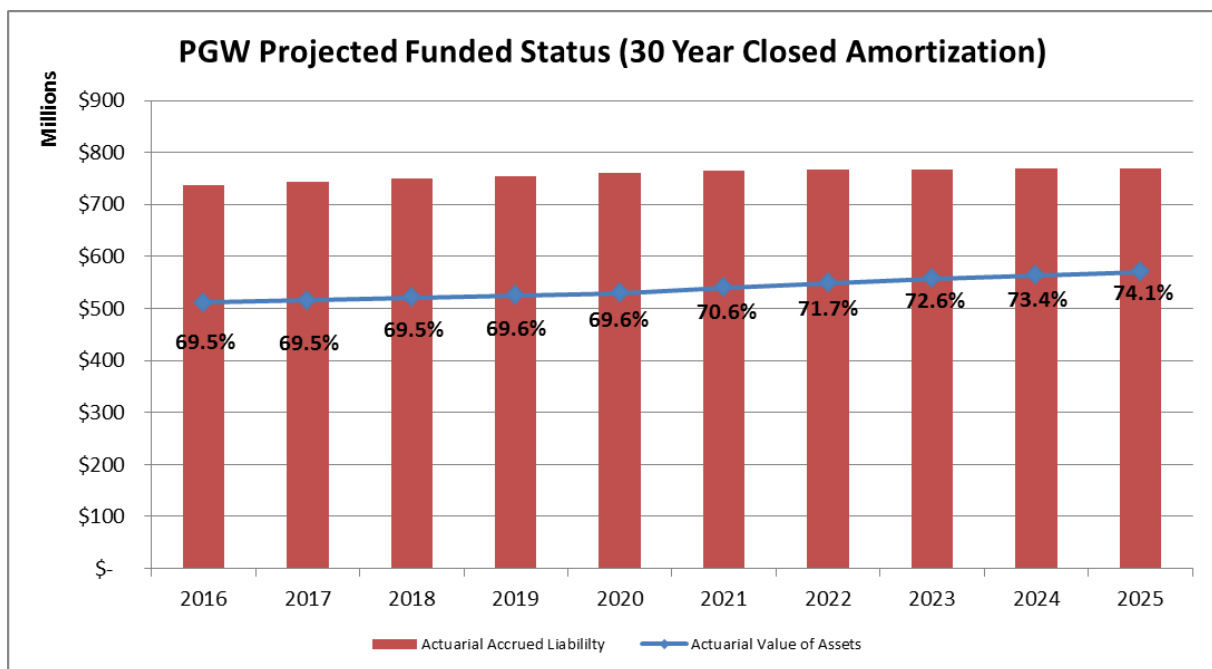
Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Calculated Mid-Year Contribution	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
7/1/2016	\$ 511,289	\$ 736,078	\$ 224,789	\$ 29,260	69.46%	\$ 90,860	247.40%
7/1/2017	516,312	743,161	226,849	29,201	69.48%	94,949	238.92%
7/1/2018	520,981	749,322	228,341	29,227	69.53%	99,222	230.13%
7/1/2019	525,256	754,759	229,502	29,361	69.59%	103,687	221.34%
7/1/2020	529,287	760,354	231,067	29,267	69.61%	108,353	213.25%
7/1/2021	539,874	764,209	224,335	28,403	70.64%	113,229	198.12%
7/1/2022	549,285	766,619	217,334	27,526	71.65%	118,324	183.68%
7/1/2023	557,447	767,850	210,403	26,709	72.60%	123,649	170.16%
7/1/2024	564,315	768,739	204,424	25,598	73.41%	129,213	158.21%
7/1/2025	569,580	769,172	199,591	25,018	74.05%	135,028	147.81%



## J. Schedule of Prospective Funded Status (cont.)

### J-3. Schedule of Prospective Funded Status (30 Year Closed Amortization)

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Calculated Mid-Year Contribution	Funded Ratio	Covered Payroll	UAAL as a % of Covered Payroll
7/1/2016	\$ 511,289	\$ 736,078	\$ 224,789	\$ 26,470	69.46%	\$ 90,860	247.40%
7/1/2017	516,312	743,161	226,849	26,587	69.48%	94,949	238.92%
7/1/2018	520,981	749,322	228,341	26,806	69.53%	99,222	230.13%
7/1/2019	525,256	754,759	229,502	27,157	69.59%	103,687	221.34%
7/1/2020	529,287	760,354	231,067	27,293	69.61%	108,353	213.25%
7/1/2021	539,874	764,209	224,335	26,792	70.64%	113,229	198.12%
7/1/2022	549,285	766,619	217,334	26,298	71.65%	118,324	183.68%
7/1/2023	557,447	767,850	210,403	25,880	72.60%	123,649	170.16%
7/1/2024	564,315	768,739	204,424	25,178	73.41%	129,213	158.21%
7/1/2025	569,580	769,172	199,591	25,013	74.05%	135,028	147.81%



## K. Distribution of Inactive Participants by Age and Years of Retirement

### 1. Retirees

<b><u>Years of Retirement as of July 1, 2016</u></b>									
<b><u>Age</u></b>	<b><u>0-4</u></b>	<b><u>5-9</u></b>	<b><u>10-14</u></b>	<b><u>15-19</u></b>	<b><u>20-24</u></b>	<b><u>25+</u></b>	<b><u>Total</u></b>	<b><u>Annual Benefits</u></b>	
								<b><u>Total</u></b>	<b><u>Average</u></b>
15-44	3	0	0	0	0	0	3	\$ 31,009	\$ 10,336
45-49	5	2	0	0	0	0	7	147,992	21,142
50-54	47	10	5	0	0	0	62	1,928,254	31,101
55-59	232	89	9	6	1	3	340	10,271,567	30,210
60-64	161	147	61	26	4	0	399	11,339,744	28,420
65-69	86	137	93	70	31	2	419	10,529,925	25,131
70-74	25	45	41	37	85	3	236	4,997,089	21,174
75-79	27	19	20	28	105	10	209	4,308,965	20,617
80-84	24	15	21	24	69	41	194	3,247,108	16,738
85-89	19	19	13	17	32	85	185	2,487,435	13,446
90+	9	12	10	10	9	88	138	1,481,763	10,737
<b>Total</b>	<b>638</b>	<b>495</b>	<b>273</b>	<b>218</b>	<b>336</b>	<b>232</b>	<b>2192</b>	<b>\$ 50,770,851</b>	<b>\$ 23,162</b>
Average Age: 70.72      Average Retirement Years: 12.04									

### 2. Vested Terminated

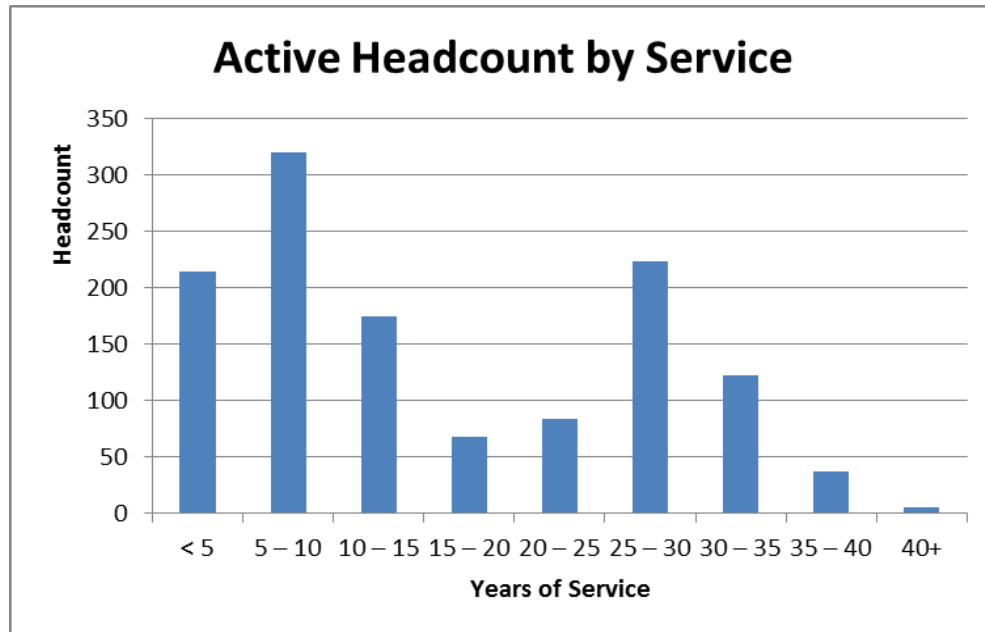
<b><u>Age</u></b>	<b><u>Number</u></b>	<b><u>Annual Benefits</u></b>	
		<b><u>Total</u></b>	<b><u>Average</u></b>
15-44	98	\$ 707,536	\$ 7,220
45-49	61	736,018	12,066
50-54	106	1,295,225	12,219
55-59	43	574,092	13,351
60-64	18	220,525	12,251
65+	3	24,102	8,034
<b>Total</b>	<b>329</b>	<b>\$ 3,557,498</b>	<b>\$ 10,813</b>

## (Showing Number of Employees and Average Earnings)

20



## L. Distribution of Active Participants by Service (cont.)



<u>Service</u>	<u>Active Headcount</u>
< 5	215
5 – 10	320
10 – 15	175
15 – 20	68
20 – 25	84
25 – 30	223
30 – 35	123
35 – 40	37
40+	6
<b>Total</b>	<b>1,251</b>

## M. Data Reconciliation

	<i>Actives</i>	<i>Term Vested</i>	<i>Retiree*</i>	<i>Total</i>
1. Participants as of 7/1/15	<b>1,274</b>	<b>327</b>	<b>2,199</b>	<b>3,800</b>
a. New Participants	58	0	0	<b>58</b>
b. Return from Retirement	0	0	0	<b>0</b>
c. Retirements	(39)	(17)	56	<b>0</b>
d. Surviving Spouses	0	0	0	<b>0</b>
e. Rehires	2	(2)	0	<b>0</b>
f. Terminations	(22)	22	0	<b>0</b>
g. Nonvested Terminations	(21)	0	0	<b>(21)</b>
h. Deaths w/ Beneficiary	0	0	(28)	<b>(28)</b>
i. New Beneficiary	0	0	28	<b>28</b>
j. Deaths w/o Beneficiary	(1)	(1)	(66)	<b>(68)</b>
k. Data Corrections	0	0	0	<b>0</b>
l. New QDRO	<u>0</u>	<u>0</u>	<u>3</u>	<b><u>3</u></b>
m. Total Increase / (Decrease)	(23)	2	(7)	<b>(28)</b>
2. Actual Participants as of 6/30/16	<b>1,251</b>	<b>329</b>	<b>2,192</b>	<b>3,772</b>

*\*Includes Surviving Spouses and Alternate Payees*

## N. Actuarial Methods and Assumptions

### 1. *Cost Methods*

The cost method used is the Projected Unit Credit Cost method. Each year the projected benefits of each participant are estimated and their present value determined. The normal cost for each active participant is determined by dividing this present value by service from entry into the plan to assumed retirement age. The total normal cost is equal to the sum of individual normal costs.

The accrued actuarial liability for each active participant is equal to the normal cost multiplied by service since entry to valuation date. The accrued actuarial liability for inactive participants is equal to the present value of their benefits. The total accrued actuarial liability is equal to the sum of the individual accrued actuarial liabilities.

The Unfunded Accrued Actuarial Liability as of any date is equal to the accrued actuarial liability less the actuarial value of assets as of such date.

Each year actuarial gains and losses occur since actual experience under the Plan will vary from the actuarial assumptions. All gains and losses will be amortized in future years.

### 2. *Asset Valuation Technique*

The Actuarial Asset Value is equal to the value of fund assets as reported by the City of Philadelphia smoothed over a period of 5 years. The Actuarial Asset Value is further limited to fall within a corridor of 80% and 120% of the Market Value of Assets.

## N. Actuarial Methods and Assumptions (cont.)

### 3. Actuarial Assumptions

(Unless otherwise specified, the same assumptions have been used for the determination of the Contribution Range and Accumulated Plan Benefits)

- a. Mortality: Healthy Lives: RP-2014 mortality table generationally projected with Scale MP-2015:

**Percentage of Healthy, Pre-Commencement Participants Expected to Die in the Next Year Prior to Applying Generational Improvement Scale**

<u>Age</u>	<u>Males</u>	<u>Females</u>	<u>Age</u>	<u>Males</u>	<u>Females</u>
20	.0510%	.0202%	45	.1207%	.0758%
25	.0545%	.0186%	50	.1979%	.1151%
30	.0470%	.0209%	55	.2967%	.1735%
35	.0557%	.0301%	60	.4954%	.2795%
40	.0750%	.0471%	65	.9486%	.4482%

Disabled Lives: Disabled mortality rates are used for anticipated future disablements and current disabled lives. Sample percentages are as follows:

**Percentage of Disabled Participants Expected to Die in the Next Year**

<u>Age</u>	<u>Males</u>	<u>Females</u>	<u>Age</u>	<u>Males</u>	<u>Females</u>
20	2.4583%	0.9650%	45	4.3033%	2.3988%
25	2.7457%	1.1974%	50	4.8004%	2.7961%
30	3.0661%	1.4843%	55	5.3120%	3.2594%
35	3.4184%	1.7654%	60	5.8118%	3.7993%
40	3.8373%	2.0579%	65	6.3669%	4.4287%

- b. Interest: 7.30%, compounded annually.

## N. Actuarial Methods and Assumptions (cont.)

- c. Turnover: A scale varying by age and service with illustrative annual rates of turnover as follows:

Age	<u>Years of Service</u>					
	0	1	2	3	4	5
20	23.2%	17.4%	14.4%	11.6%	8.8%	5.8%
25	18.8%	14.0%	11.8%	9.4%	7.0%	4.6%
30	14.8%	11.0%	9.2%	7.4%	5.6%	3.6%
35	11.2%	8.4%	7.0%	5.6%	4.2%	2.8%
40	8.8%	6.6%	5.6%	4.4%	3.4%	2.2%
45	7.2%	5.4%	4.6%	3.6%	2.8%	1.8%
50	5.2%	3.8%	3.2%	2.6%	2.0%	1.2%
55	0	0	0	0	0	0

- d. Disability: A scale varying by age with illustrative annual rates of disability as follows:

**Percentage of Participants Expected  
to Become Disabled in the Next Year**

<u>Age</u>	<u>Percentage</u>
30	0.0600%
35	0.0700%
40	0.1100%
45	0.2200%
50	0.4600%
55	1.0200%
60	1.6200%

- e. Salary Increase

*Determination of Contribution Range* Salaries are assumed to increase by an amount equal to 4.5% of the salary for the current year.

*Accumulated Plan Benefits* Past salaries are discounted at the same rate as described above. Future salaries are assumed to remain at the same level as on the valuation date.

## N. Actuarial Methods and Assumptions (cont.)

- f. Retirement Age Retirements are assumed to occur at the following ages:

<u>Age</u>	<u>Service</u> <u>&lt; 30</u>	<u>Service</u> <u>&gt; 30</u>	<u>Age</u>	<u>Service</u> <u>&lt; 30</u>	<u>Service</u> <u>&gt; 30</u>
55	10%	15%	63	25%	50%
56	10%	15%	64	25%	50%
57	10%	15%	65	50%	50%
58	10%	15%	66	50%	50%
59	10%	15%	67	50%	50%
60	10%	15%	68	50%	50%
61	10%	30%	69	50%	50%
62	25%	50%	70+	100%	100%

- g. Salary Current year salary is assumed to be the greater of the annualized 2016 Taxable Gross Wages based on actual wages through June 30, 2016 and the annual pay rate as provided by Philadelphia Gas Works.

### 4. *Change in Actuarial Assumptions*

The mortality table was changed from the RP-2014 mortality table generationally projected with Scale MP-2014 to the RP-2014 mortality table generationally projected with Scale MP-2015 to better reflect actual and future mortality experience.

The discount rate was changed from 7.65% to 7.30%.

## O. Summary of the Principal Plan Provisions

*Any ambiguities or questionable provisions of this summary should be resolved by reference to the official Plan Document. This summary is not intended to be a source document, but merely an instrument of convenience for the administration of the Plan.*

1. Effective Date: March 24, 1967, most recently amended as of June 26, 2002.
2. Eligibility: Full-time employees hired prior to March 24, 1967 who will have completed 15 years of Credited Service at normal retirement occurring prior to January 1, 1979 or 5 years Credited Service at normal retirement occurring on or after January 1, 1979 became participants on March 24, 1967. Employees hired on or after March 24, 1967 will become participants on their date of employment. A full-time employee is one who works regularly for 20 or more hours each week.
3. Contribution: Philadelphia Gas Works pays the entire cost of the Plan for all employees hired prior to May 21, 2011. Union employees hired on or after May 21, 2011 and Non-Union employees hired on or after December 21, 2011 have the option to participate in the Philadelphia Gas Works Pension Plan and contribute 6% of applicable wages to the Plan, or they may elect to participate in the 401(a) Plan with Philadelphia Gas Works contributing 5.5% of applicable wages.
4. Credited Service: Years and months of service credited prior to March 24, 1967 and years and months of continuous service thereafter; continuous service is reduced for periods of approved unpaid leaves (except for military leave) in excess of one month. Layoff periods are also excluded and, if in excess of one year, when approved, the employee is considered terminated.
5. Final Average Compensation: Average of the five highest consecutive calendar years' earnings during the last 10 years of Credited Service. Compensation includes overtime, bonus, shift differential, and any other special compensation. Per the amendment approved on November 14, 1986, compensation includes amounts deferred under the PGW Employees' Deferred Compensation Plan.
6. Retirement Dates
  - a. Normal Retirement: First of the month next following attainment of age 65 and completion of 5 years of Credited Service.
  - b. Early Retirement: First of any month after attaining age 55 and completing 15 years of Credited Service, or after completing 30 years of credited service.
  - c. Late Retirement: First of any month after Normal Retirement up to age 70.
  - d. Disability Retirement: If permanently disabled and has attained age 45 and completed at least 15 years of Credited Service, provided age plus years of Credited Service equals at least 65. Or after completion of at least 20 years of Credited Service regardless of age, upon recommendation of the Medical Director of the Company.

## O. Summary of the Principal Plan Provisions (cont.)

### 7. Benefit Formula

- a. Normal Retirement: The monthly equivalent of the greater of (i) or (ii) below, payable for life.
    - i. 1.25% of the first \$6,600 of Final Average Earnings plus 1.75% of the excess of Final Average Earnings over \$6,600, times Credited Service; maximum of 60% of the highest annual earnings during any one of the last 10 years of Credited Service; applicable to all participants.
    - ii. 2% of total earnings received during period of Credited Service plus 22.5% of the first \$1,200 of such amount; applicable only to participants who were employees on or prior to March 24, 1967.
  - b. Early Retirement: Same as 7(a) above, based upon Final Average Earnings and Credited Service as of the early retirement date and reduced by the percentage described in 8 below depending upon Credited Service as of the early retirement date.
  - c. Late Retirement: Same as Normal Retirement Benefit based on Final Average Compensation and Credited Service as of Late Retirement Date.
  - d. Disability Retirement: Same as Normal Retirement Benefit, based on Final Average Compensation and Credited Service as of date of disability.
8. Benefits Upon Termination of Employment - Vesting: All participants who terminate after having completed at least 5 years of Credited Service are entitled to a benefit as described in 7(a) above, based upon Final Average Compensation and Credited Service as of the date of termination.

Early Commencement of Payments: A former participant who is entitled to a deferred benefit may elect to have his benefit commence on the first day of any month between his 55th and 65th birthdays. Such benefit will be reduced by 3% for each of the first 5 years and 5% for each of the next 5 years by which commencement of payments precedes age 65. If the participant has completed 25 years of Credited Service, his benefit will be unreduced for the first 3 years and reduced by 3% for each of the next 2 years and by 5% for the following 5 years by which commencement of payments precedes age 65.

If a participant has completed 30 or more years of credited service, payments are not reduced.



## O. Summary of the Principal Plan Provisions (cont.)

### 9. Death Benefits

- a. Before Retirement: Spouses of deceased active participants or of former participants are entitled to vested benefits, provided such participants died after having attained age 45 and completed at least 15 years of Credited Service and whose age plus years of Credited Service equals at least 65 years or who have completed at least 15 years of Credited Service regardless of age.

The benefit payable is an amount for the spouse's remaining lifetime equal to the amount the beneficiary of the participant would have received had the participant retired due to disability on the day preceding his death and elected the 100% Contingent Annuitant Option.

- b. After Retirement: None except as provided by election of an optional form.

### 10. Normal Form of Benefits: Life annuity

- 11. Optional Benefit Forms: 100%, 75%, or 50% Contingent Annuitant option, 75% or 50% Joint and Last Survivor option.