



Philadelphia Gas Works Pension Plan - Funding

Actuarial Valuation Report for the Plan Year
July 1, 2017 – June 30, 2018



August 10, 2018

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, 2017. This report sets forth the contribution range for the Plan Year, running from July 1, 2017 through June 30, 2018. 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 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,



Thomas G. Vicente, FSA, EA
Partner

Enrollment #17-05034

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A. Comparative Summary of Principal Valuation Results

	Actuarial Valuation for Plan Year Beginning		<u>Percent Change</u>
	<u>July 1, 2017</u>	<u>July 1, 2016</u>	
1. <u>Participant Data</u>			
Active Participants	1,243	1,251	(0.6) %
Retired Participants	2,180	2,192	(0.5) %
Vested Terminated Participants	<u>333</u>	<u>329</u>	1.2 %
Total	3,756	3,772	(0.4) %
Total Payroll	94,767,845	90,860,364	4.3 %
Average Pay	76,241	72,630	5.0 %
Average Age	44.66	44.76	(0.2) %
Average Past Service	15.46	15.75	(1.8) %

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

	Actuarial Valuation for Plan Year Beginning		<u>Percent Change</u>
	<u>July 1, 2017</u>	<u>July 1, 2016</u>	
1. <u>Contribution Range</u>			
Normal Cost (<i>Exhibit D</i>)	\$ 7,716,628	\$ 7,991,587	(3.4) %
Indicated Midyear -			
20 Year Contribution (<i>Exhibit E</i>)	\$ 28,394,739	\$ 29,260,334	(3.0) %
30 Year Contribution (<i>Exhibit E</i>)	\$ 25,879,915	\$ 26,470,015	(2.2) %
20 Year Contribution as Percentage of Compensation	29.96%	32.20%	(7.0) %
30 Year Contribution as Percentage of Compensation	27.31%	29.13%	(6.3) %

The Normal Cost above represents the cost of benefits being earned by additional years of service with PGW. This figure has decreased since the previous year as the result of an increase in expected payroll leading to an increase in expected employee contributions which offset the Normal Cost figure.

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

- a) Investment returns: The investment return for the period ending June 30, 2017 was approximately \$61.0 million. Based on the 7.30% assumption in place on July 1, 2017, a return of \$34.5 million would have been expected over this period. The asset performance exceeding expectations led to a decrease in the annual contribution of \$0.5 million (0.5% of pay). Recognizing a smoothed value of assets reduces the impact of the asset returns.
- b) Mortality Table Assumption: A change in the mortality table assumption to the RP-2014 mortality table generationally projected with scale MP-2016 for healthy lives decreased the Accrued Actuarial Liability by approximately \$7.5 million (or approximately 1%). This decreased the annual contribution by approximately \$0.7 million (0.7% of pay).

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

	Actuarial Valuation for Plan Year Beginning		Percent Change
	<u>July 1, 2017</u>	<u>July 1, 2016</u>	
1. <u>Liabilities</u>			
Unfunded Accrued Actuarial Liability (Exhibit E)	\$ 218,567,257	\$ 224,788,936	(2.8) %
Present Value of Accumulated Vested Benefits (Exhibit F)	\$ 667,782,711	\$ 668,800,019	(0.2) %
Present Value of Accumulated Plan Benefits (Exhibit F)	\$ 695,758,606	\$ 698,546,139	(0.4) %
2. <u>Development of Actuarial Liability</u>			
(1) Liability at July 1, 2016		\$ 736,077,677	
(2a) Normal Cost	\$ 8,649,940		
(2b) Interest Cost	\$ 52,488,100		
(2c) Expected Benefit Payments	\$ (52,347,089)		
(2d) Total Increase/(Decrease)	8,790,951		
(3) Expected Liability at June 30, 2017		\$ 744,868,628	
(3a) Demographic (Gain)/Loss	\$ 2,523,470		
(3b) Discount Rate (Gain)/Loss	\$ 0		
(3c) Mortality (Gain)/Loss	\$ (7,519,862)		
(3d) Total (Gain)/Loss	(4,996,392)		
(4) Actual Liability at July 1, 2017		\$ 739,872,236	

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

	Actuarial Valuation for Plan Year Beginning		<u>Percent Change</u>
	<u>July 1, 2017</u>	<u>July 1, 2016</u>	
1. <u>Assets</u>			
Market Asset Value (<i>Exhibit C</i>)	\$ 521,525,584	\$ 483,258,662	7.9 %
Actuarial Asset Value (<i>Exhibit C</i>)	\$ 521,304,979	\$ 511,288,741	2.0 %

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, 2016 through June 30, 2017 was approximately 12.93%. This represented an over performance of plan investments versus the actuarial assumption of 7.30% for the period, but not necessarily an over performance versus independent investment benchmarks. Review of performance against those benchmarks is outside the scope of this report.

The asset returns provided by PFM were a money-weighted return of 13.04% and a time-weighted return of 13.07%.

B. Discussion

Since the last actuarial valuation performed as of July 1, 2016, the demographics of the plan participants has changed as follows:

- The number of plan participants has decreased 0.4%
- The total number of actives in the plan decreased 0.6%
- Total payroll has increased 4.3%
- Average pay has increased 5.0%
- Average age of active plan participants decreased 0.2%

PGW has indicated they plan to contribute the larger of a 20-year open amortization period and a 30-year closed amortization period of the unfunded liability. Both schedules were included in the range of potential contribution levels and both are expected to gradually improve the funded status of the plan.

C. Financial Summary¹

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

Receipts

Employer Contribution	27,918,136	
Employee Contribution	851,744	
Investment return *	61,002,008	
Total Receipts		\$ 89,771,888

Disbursements

Benefit Payments	51,375,532	
Administrative Expenses	129,434	
Total Disbursements		\$ 51,504,966

Assets as of July 1, 2017 \$ 521,525,584

Asset Information as of July 1, 2017

<u>Asset Allocations</u>	<u>Current Allocation</u>	<u>Target Allocation</u>
Equity	66.81%	65.00%
Total Fixed Income	30.80%	35.00%
Other	2.39%	0.00%

<u>Annual Rate of Return</u>	<u>Market Value</u>	<u>Assumed Rate</u>
Rate ²	12.93%	7.30%

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

¹ Asset information as reported by the City of Philadelphia.

² 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 for the year was 13.07% and the money-weighted return for the year was 13.04% as provided by PFM.

C. Financial Summary (cont.)

Development of Actuarial Value of Assets

Market Value of Assets as of July 1, 2016	\$	483,258,662
Expected Assets as of July 1, 2017	\$	494,971,629
Market Value of Assets as of July 1, 2017	\$	521,525,584

Total Gain/(Loss) From Prior Years

Gain/(Loss) (Current Year)	\$	26,553,955
Gain/(Loss) (Valuation Year -1)	\$	(35,037,599)
Gain/(Loss) (Valuation Year -2)	\$	-
Gain/(Loss) (Valuation Year -3)	\$	-

Unrecognized Gain/(Loss) From Prior Years

Gain/(Loss) (Current Year)	\$	21,243,164
Gain/(Loss) (Valuation Year -1)	\$	(21,022,559)
Gain/(Loss) (Valuation Year -2)	\$	-
Gain/(Loss) (Valuation Year -3)	\$	-

Preliminary Actuarial Value of Assets as of July 1, 2017

	\$	521,304,979
80% of Market Value of Assets	\$	417,220,467
120% of Market Value of Assets	\$	625,830,701

Actuarial Value of Assets as of July 1, 2017

\$ 521,304,979

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	2,180	333	1,243	3,756
2 Projected Annual Benefits	\$ 51,836,733	\$ 3,614,727	\$ 132,794,372	\$ 188,245,832
3 Present Value of Projected Benefits as of July 1, 2017	\$ 525,067,531	\$ 15,254,012	\$ 292,168,548	\$ 832,490,091
4 Present Value of Future Normal Costs	\$ -	\$ -	\$ 92,617,855	\$ 92,617,855
5 Accrued Actuarial Liability as of July 1, 2017: (3)-(4)	\$ 525,067,531	\$ 15,254,012	\$ 199,550,693	\$ 739,872,236
6 Actuarial Asset Value				\$ 521,304,979
7 Unfunded Accrued Actuarial Liability: (5)-(6)				\$ 218,567,257
8 Normal Cost Payable on July 1, 2017				\$ 8,635,176
9 Expected Employee Contributions				\$ 918,548
10 Net Employer Normal Cost (8)-(9)				\$ 7,716,628

E. Contribution Levels

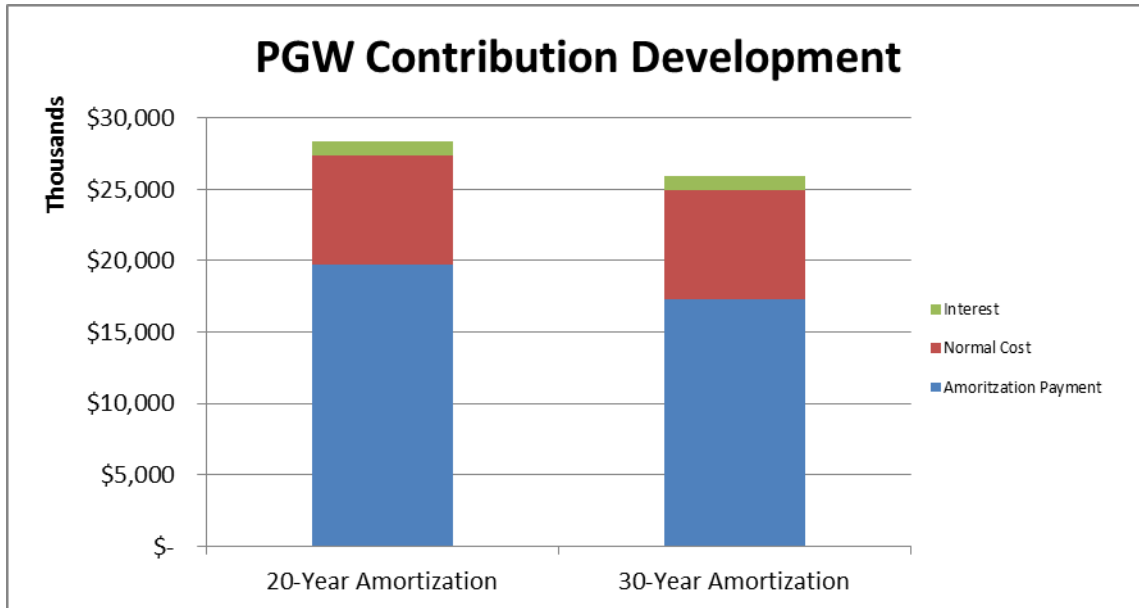
Twenty Year Amortization (Open Amortization Period)

1.	Contribution for Normal Cost					\$ 7,716,628
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>	
	7/1/2017	20	\$218,567,257	\$ 218,567,257	\$ 19,678,200	\$ 19,678,200
3.	Contributions July 1, 2017: (1) + (2)					\$ 27,394,828
4.	Contributions Mid-year (3) x 1.0365					\$ 28,394,739
5.	Contributions June 30, 2018: (3) x 1.073					\$ 29,394,650

Thirty Year Amortization (Closed Amortization Period)

1.	Contribution for Normal Cost					\$ 7,716,628
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	28	\$195,984,721	\$ 192,030,125	\$ 15,174,714	
	7/1/2016	29	\$ 30,648,588	\$ 30,341,229	\$ 2,371,581	
	7/1/2017	30	\$ (3,804,097)	\$ (3,804,097)	\$ (294,361)	
	Total			\$ 218,567,257	\$ 17,251,934	
3.	Contributions July 1, 2017: (1) + (2)					\$ 24,968,562
4.	Contributions Mid-year (3) x 1.0365					\$ 25,879,915
5.	Contributions June 30, 2018: (3) x 1.073					\$ 26,791,267

E. Contribution Levels (cont.)



F. Actuarial Present Value of Accumulated Benefits Determined

Accounting Standards Codification Topic 960

	<u>July 1, 2017</u>	<u>July 1, 2016</u>
1. Actuarial Present Value of Accumulated Vested Benefits		
Participants currently receiving		
a. benefits	\$ 525,067,531	\$ 520,251,013
b. Vested terminated participants	\$ 15,254,012	\$ 14,813,594
c. Active Participants	<u>\$ 127,461,168</u>	<u>\$ 133,735,412</u>
d. Total	\$ 667,782,711	\$ 668,800,019
2. Actuarial Present Value of Accumulated Non-Vested Benefits	\$ 27,975,895	\$ 29,746,120
3. Total Actuarial Present Value of Accumulated Plan Benefits: (1d) + (2)	\$ 695,758,606	\$ 698,546,139
4. Net Assets Available for Benefits (Market Value, Exhibit C)	\$ 521,525,584	\$ 483,258,662
5. Excess (deficiency) of Net Assets Available for Benefits over (under) Actuarial Present Value of Accumulated Plan Benefits: (4) - (3)	\$ (174,233,022)	\$ (215,287,477)
6. Active Participant Count		
a. 100% Vested	993	1,036
b. Partially Vested	0	0
c. Non-Vested	250	215

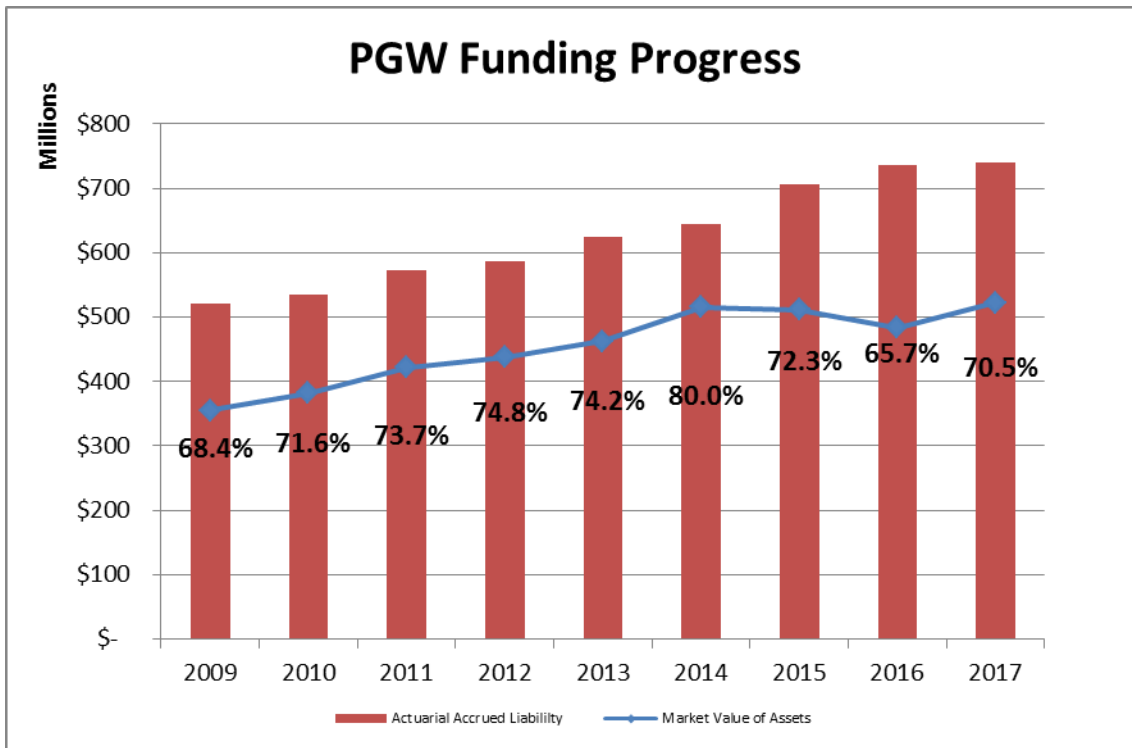
G. Estimated 10-Year Benefit Pay-Out Projections

Plan Year Beginning July 1	Expected Annual Benefit Pay-Out During Plan Year
2017	\$ 53,613,767
2018	\$ 54,925,055
2019	\$ 56,129,082
2020	\$ 57,274,930
2021	\$ 58,371,529
2022	\$ 59,404,060
2023	\$ 60,449,359
2024	\$ 61,398,628
2025	\$ 62,309,521
2026	\$ 63,136,721

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	Assumed Rate of Return	Covered Payroll	UAAL as a % of Covered Payroll
9/1/2009	\$355,499	\$519,773	\$164,274	68.40%	8.25%	\$108,474	151.44%
9/1/2010	381,975	533,630	151,655	71.58%	8.25%	111,728	135.74%
9/1/2011	421,949	572,190	150,241	73.74%	8.15%	103,737	144.83%
9/1/2012	437,780	585,632	147,852	74.75%	8.15%	107,494	137.54%
9/1/2013	462,691	623,612	160,921	74.20%	7.95%	103,530	155.43%
9/1/2014	514,944	643,988	129,044	79.96%	7.95%	105,636	122.16%
7/1/2015	510,719	706,704	195,985	72.27%	7.65%	95,187	205.89%
7/1/2016	483,259	736,078	252,819	65.65%	7.30%	90,860	278.25%
7/1/2017	521,526	739,872	218,347	70.49%	7.30%	94,768	230.40%



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)

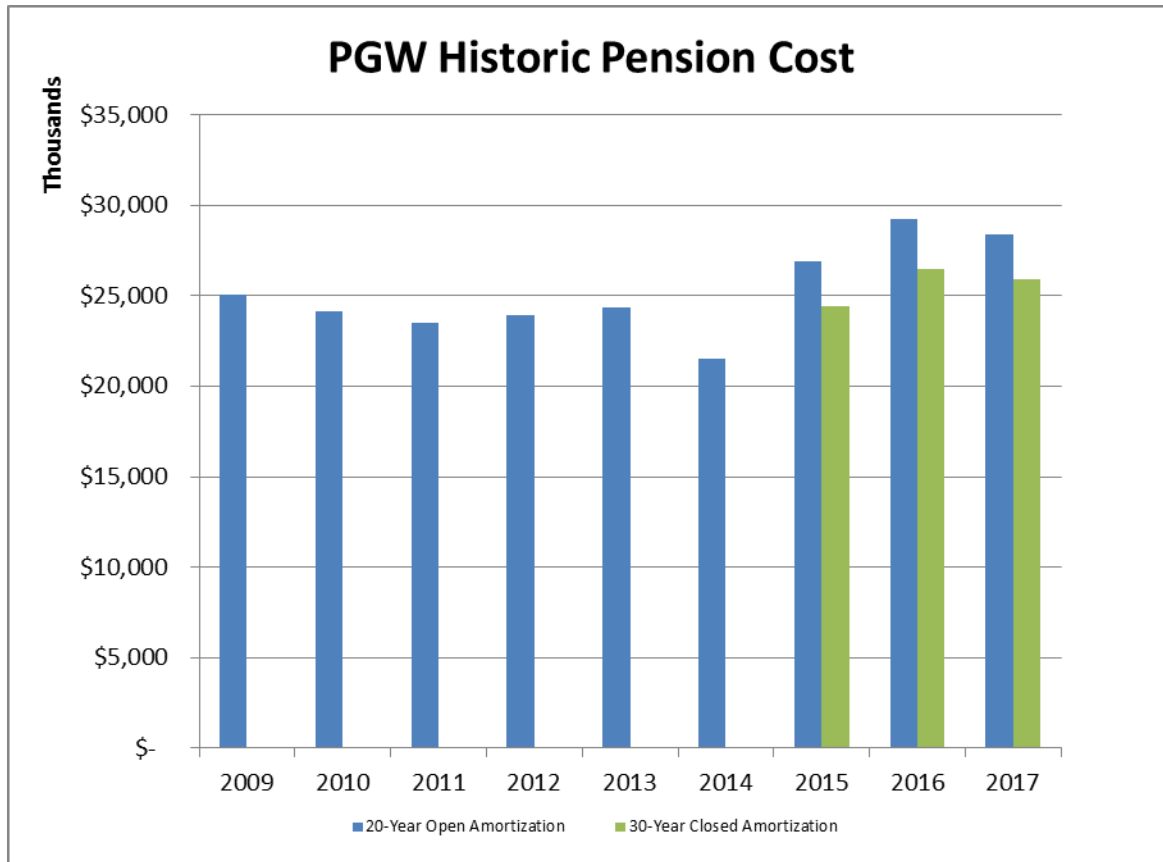
Actuarial Valuation Date	Unfunded Actuarial Accrued Liability	Amortization Payment	Normal Cost	Employee Contribution	Mid-year Contribution
9/1/2009	\$164,274	\$15,745	\$8,292	-	\$25,029
9/1/2010	151,655	14,851	8,333	-	24,140
9/1/2011	150,241	14,400	8,171	-	23,502
9/1/2012	147,852	14,357	8,782	\$137	23,951
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
7/1/2017	218,567	19,678	7,717	919	28,395

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
9/1/2009	\$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
7/1/2017	218,567	17,252	7,717	919	25,880

Employee contributions estimated based on census data.

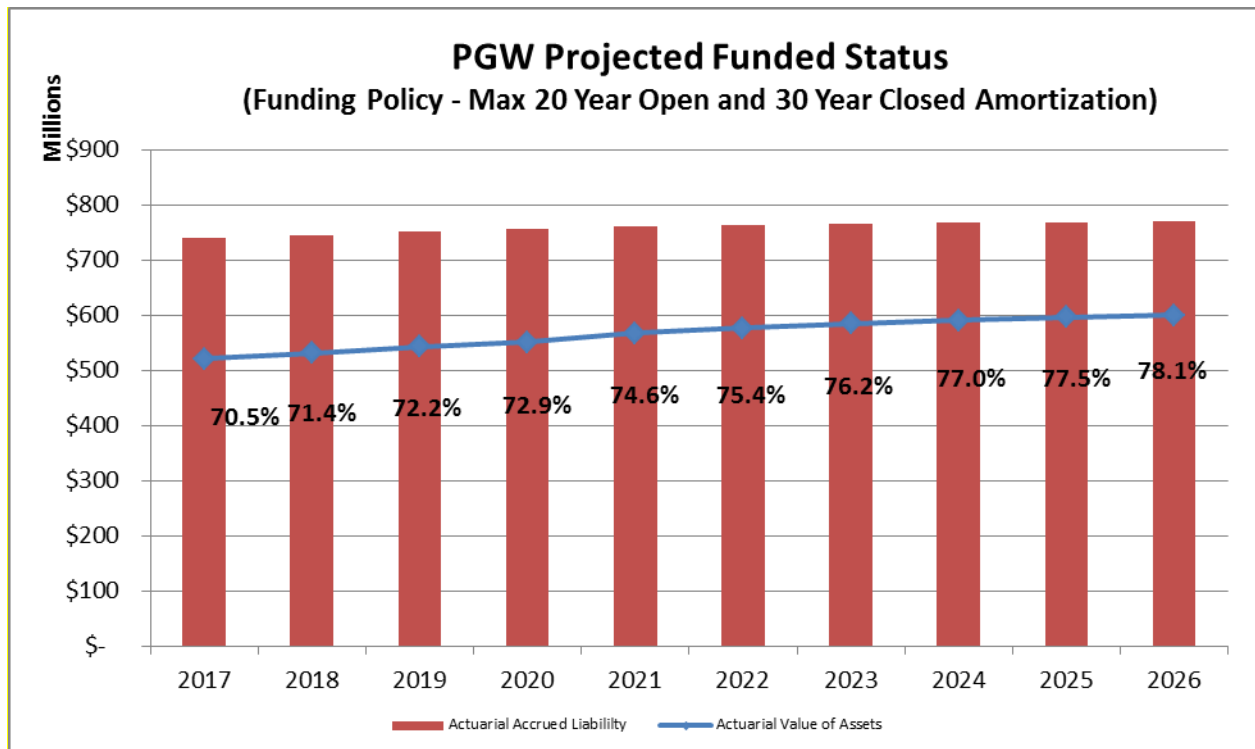
I. Calculation of Annual Pension Cost (cont.)



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
7/1/2017	\$ 521,305	\$ 739,872	\$ 218,567	\$ 28,395	70.46%	\$ 94,768	230.63%
7/1/2018	532,491	746,054	213,562	27,761	71.37%	99,033	215.65%
7/1/2019	542,703	751,502	208,799	27,282	72.22%	103,489	201.76%
7/1/2020	552,145	757,050	204,905	26,831	72.93%	108,146	184.56%
7/1/2021	567,858	761,537	193,679	25,580	74.57%	113,013	171.38%
7/1/2022	576,719	764,688	187,970	24,859	75.42%	118,099	159.16%
7/1/2023	584,557	766,788	182,231	24,090	76.23%	123,413	147.66%
7/1/2024	591,247	768,235	176,988	23,120	76.96%	128,967	137.24%
7/1/2025	596,588	769,308	172,721	22,705	77.55%	134,771	128.16%
7/1/2026	601,094	769,549	168,455	22,637	78.11%	140,836	119.61%



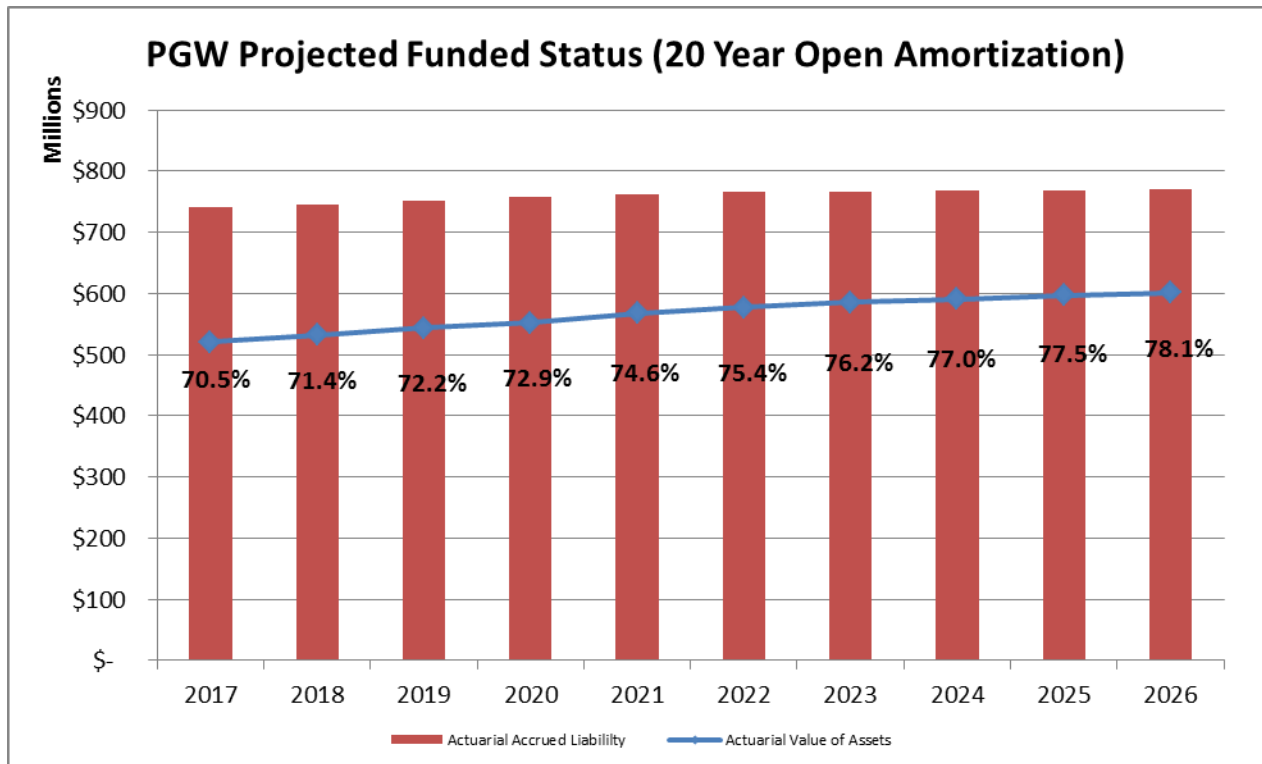
Investment returns assumed to be 7.30% per year.

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
7/1/2017	\$ 521,305	\$ 739,872	\$ 218,567	\$ 28,395	70.46%	\$ 94,768	230.63%
7/1/2018	532,491	746,054	213,562	27,761	71.37%	99,033	215.65%
7/1/2019	542,703	751,502	208,799	27,282	72.22%	103,489	201.76%
7/1/2020	552,145	757,050	204,905	26,831	72.93%	108,146	189.47%
7/1/2021	567,858	761,537	193,679	25,580	74.57%	113,013	171.38%
7/1/2022	576,719	764,688	187,970	24,859	75.42%	118,099	159.16%
7/1/2023	584,557	766,788	182,231	24,090	76.23%	123,413	147.66%
7/1/2024	591,247	768,235	176,988	23,120	76.96%	128,967	137.24%
7/1/2025	596,588	769,308	172,721	22,573	77.55%	134,771	128.16%
7/1/2026	601,094	769,549	168,455	22,104	78.11%	140,836	119.61%



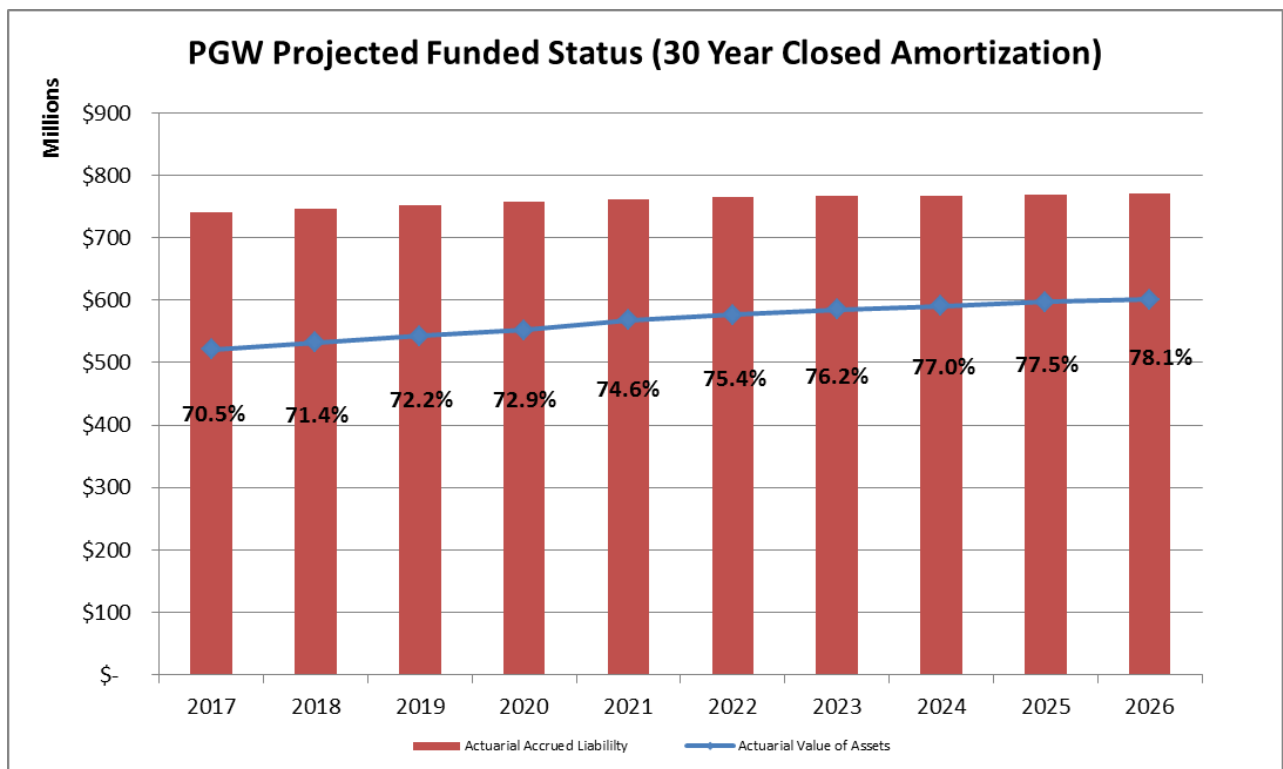
Investment returns assumed to be 7.30% per year.

Covered payroll projected to increase by 4.5% per year.

J. Schedule of Prospective Funded Status (cont.)

J-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
7/1/2017	\$ 521,305	\$ 739,872	\$ 218,567	\$ 25,880	70.46%	\$ 94,768	230.63%
7/1/2018	532,491	746,054	213,562	25,516	71.37%	99,033	215.65%
7/1/2019	542,703	751,502	208,799	25,318	72.22%	103,489	201.76%
7/1/2020	552,145	757,050	204,905	25,151	72.93%	108,146	184.56%
7/1/2021	567,858	761,537	193,679	24,296	74.57%	113,013	171.38%
7/1/2022	576,719	764,688	187,970	23,909	75.42%	118,099	159.16%
7/1/2023	584,557	766,788	182,231	23,492	76.23%	123,413	147.66%
7/1/2024	591,247	768,235	176,988	22,887	76.96%	128,967	137.24%
7/1/2025	596,588	769,308	172,721	22,711	77.55%	134,771	128.16%
7/1/2026	601,094	769,549	168,455	22,637	78.11%	140,836	119.61%



Investment returns assumed to be 7.30% per year.

Covered payroll projected to increase by 4.5% per year.

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

1. Receiving Benefits

<u>Years Receiving Benefits as of July 1, 2017</u>									
<u>Age</u>	<u>0-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>Total</u>	<u>Annual Benefits</u>	
								<u>Total</u>	<u>Average</u>
15-44	1	0	0	0	0	0	1	\$2,411	\$2,411
45-49	6	1	0	0	0	0	7	141,084	20,155
50-54	40	9	2	1	0	0	52	1,699,385	32,680
55-59	199	89	12	4	1	3	308	9,301,223	30,199
60-64	181	153	54	25	1	0	414	12,365,712	29,869
65-69	96	118	91	86	23	2	416	10,611,874	25,509
70-74	22	64	52	59	79	3	279	6,259,297	22,435
75-79	23	21	25	27	97	11	204	4,100,870	20,102
80-84	16	20	12	26	82	25	181	3,257,245	17,996
85-89	18	19	17	14	37	72	177	2,499,213	14,120
90+	7	12	12	8	10	92	141	1,598,417	11,336
Total	609	506	277	250	330	208	2180	51,836,733	23,778
Average Age: 70.83 Average Years Receiving Benefits: 12.27									

2. Vested Terminated

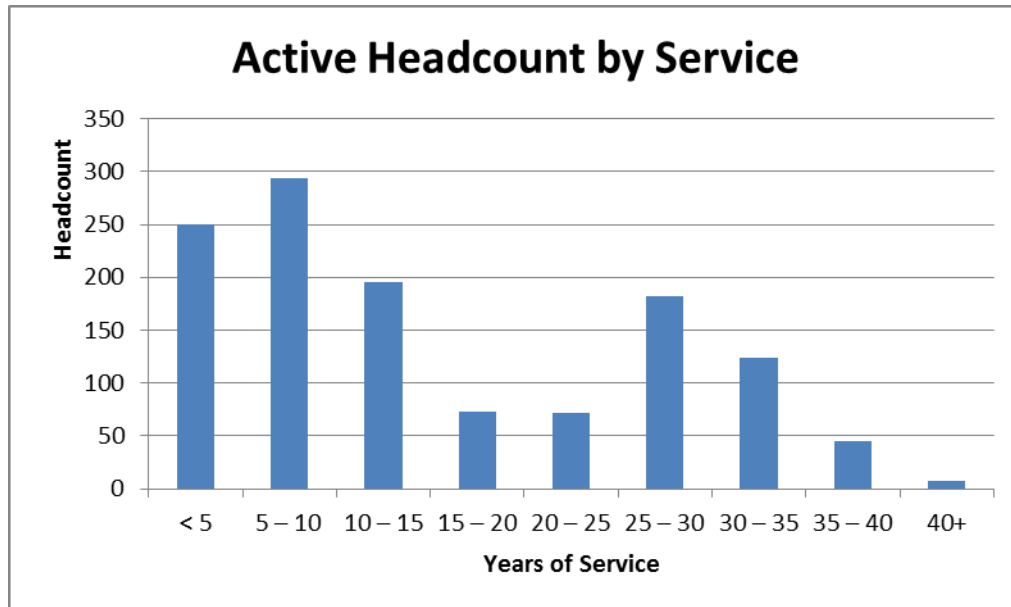
<u>Age</u>	<u>Number</u>	<u>Annual Benefits</u>	
		<u>Total</u>	<u>Average</u>
15-44	105	\$803,600	\$7,653
45-49	48	608,953	12,687
50-54	105	1,247,969	11,885
55-59	49	632,490	12,908
60-64	21	256,506	12,215
65+	5	65,208	13,042
Total	333	\$3,614,727	\$10,855

L. Distribution of Active Participants by Age and Service

(Showing Number of Employees and Average Earnings)

<u>Completed Years of Service as of July 1, 2017</u>													
<u>Age</u>	<u>00-00</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>40+</u>	<u>Total</u>	<u>Earnings</u> <u>Total</u>	<u>Average</u>
15-19	-	-	-	-	-	-	-	-	-	-	-	0	0
	-	-	-	-	-	-	-	-	-	-	-		
20-24	16	23	-	-	-	-	-	-	-	-	39	1,863,007	47,769
	38,240	54,399	-	-	-	-	-	-	-	-	47,769		
25-29	20	56	59	4	-	-	-	-	-	-	139	8,627,656	62,069
	43,779	56,482	72,347	80,163	-	-	-	-	-	-	62,069		
30-34	13	29	95	35	-	-	-	-	-	-	172	12,169,487	70,753
	47,149	61,322	73,599	79,609	-	-	-	-	-	-	70,753		
35-39	8	17	41	46	10	-	-	-	-	-	122	9,344,451	76,594
	46,133	60,668	77,283	86,534	79,488	-	-	-	-	-	76,594		
40-44	5	19	27	32	21	8	1	-	-	-	113	8,550,553	75,669
	44,517	61,520	77,726	79,088	83,630	87,125	76,448	-	-	-	75,669		
45-49	8	11	24	27	12	20	40	4	-	-	146	11,457,982	78,479
	43,090	59,013	80,001	84,510	85,737	86,404	79,165	84,701	-	-	78,479		
50-54	2	11	20	26	18	20	78	62	-	-	237	19,369,662	81,729
	34,964	59,660	72,240	77,836	87,845	77,131	86,008	86,169	-	-	81,729		
55-59	-	9	16	13	8	13	45	40	29	1	174	14,074,705	80,889
	-	62,547	75,933	73,961	77,524	79,263	79,909	87,994	84,580	116,240	80,889		
60-64	-	1	8	7	3	9	17	17	15	4	81	7,627,097	94,162
	-	35,071	78,183	70,439	119,137	80,495	82,252	92,662	133,815	102,716	94,162		
65-69	-	2	3	4	1	2	1	1	-	3	17	1,426,050	83,885
	-	71,415	110,689	67,221	101,920	71,196	66,496	83,840	-	95,874	83,885		
70+	-	-	1	1	-	-	-	-	1	-	3	257,196	85,732
	-	-	79,107	85,840	-	-	-	-	92,248	-	85,732		
Total	72	178	294	195	73	72	182	124	45	8	1,243	94,767,845	76,241
	43,148	58,646	75,319	80,683	85,489	81,458	82,485	87,582	101,162	101,841	76,241		
Average Age: 44.66													
Average Service: 15.46													

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



<u>Service</u>	<u>Active Headcount</u>
< 5	250
5 – 10	294
10 – 15	195
15 – 20	73
20 – 25	72
25 – 30	182
30 – 35	124
35 – 40	45
40+	8
Total	1,243

M. Data Reconciliation

	<i>Actives</i>	<i>Term Vested</i>	<i>Retiree*</i>	<i>Total</i>
1. Participants as of 7/1/16	1,251	329	2,192	3,772
a. New Participants	73	0	0	73
b. Return from Retirement	0	0	0	0
c. Retirements	(50)	(9)	59	0
d. Surviving Spouses	0	0	0	0
e. Rehires	2	(2)	0	0
f. Terminations	(17)	17	0	0
g. Nonvested Terminations	(11)	0	0	(11)
h. Deaths w/ Beneficiary	0	0	(19)	(19)
i. New Beneficiary	0	0	19	19
j. Deaths w/o Beneficiary	(5)	(2)	(73)	(80)
k. Data Corrections	0	0	0	0
l. New QDRO	<u>0</u>	<u>0</u>	<u>2</u>	<u>2</u>
m. Total Increase / (Decrease)	(8)	4	(12)	(16)
2. Actual Participants as of 6/30/17	1,243	333	2,180	3,756

**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: The aggregate 2006 base rates from the RP-2014 mortality study projected generationally from 2006 with Scale MP-2016:

**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>< 30</u>	<u>Service</u> <u>> 30</u>	<u>Age</u>	<u>Service</u> <u>< 30</u>	<u>Service</u> <u>> 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 2017 Taxable Gross Wages based on actual wages through June 30, 2017 and the annual pay rate as provided by Philadelphia Gas Works.

4. Change in Actuarial Assumptions

The mortality table generational projection scale was changed from MP-2015 to Scale MP-2016 to better reflect actual and future mortality experience.

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.

About Aon Hewitt

Aon Hewitt empowers organizations and individuals to secure a better future through innovative retirement, health, and talent solutions. We advise and design a wide range of solutions that enable our clients' success. Our teams of experts help clients navigate the risks and opportunities to optimize financial security; redefine health solutions for greater choice, affordability, and wellbeing; and achieve sustainable growth by driving business performance through people performance. We serve more than 20,000 clients through our 15,000 professionals located in 50 countries around the world.

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