



Philadelphia Gas Works Pension Plan - Funding

Actuarial Valuation Report for the Plan Year
July 1, 2019 – June 30, 2020



October 29, 2019

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, 2019. This report sets forth the contribution range for the Plan Year, running from July 1, 2019 through June 30, 2020. 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 be pleased to discuss any aspects of the report with you after you have had a chance to review it.

Respectfully submitted,

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Executive Summary

The plan's actuarial funded ratio increased from 70.66% to 72.64% as of June 30, 2019 on a smoothed Actuarial Value of Assets basis. This ratio is above the 71.60% forecast in 2018. The main driver for the ratio exceeding expectations was a decrease in average pay for the year.

The calculated contribution rate for the upcoming year under the funding policy is 27.27% of pay. This is a decrease from the prior year rate of 28.44% but slightly higher than the forecast rate of 26.70%. In developing the contribution rate, PGW uses a "smoothed" asset value that gradually accounts for deviations in the investment performance. As a result, the impact of the prior year's investment returns will be phased in over several years.

The number of active plan participants continues to decline gradually as the impact of the pension choice provision continues to mature. In the year ending June 30, 2019, about 55% of incoming employees chose the pension program with 45% choosing the Defined Contribution program. The expected employee contributions now equal about 1.3% of total payroll, and will, over time, grow to 6.0% of pay, once all active participants are in the contributory tier.

Several other factors had an impact on this year's cost and liabilities:

- Total covered payroll decreased by 2.8% from the prior year, resulting in a decrease in liability
- The adoption of a new mortality improvement scale, resulting in a decrease in liability
- More retiree deaths than assumed, resulting in a decrease in liability
- Investment return slightly less than assumed

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A. Comparative Summary of Principal Valuation Results

	Actuarial Valuation for Plan Year Beginning		<u>Percent Change</u>
	<u>July 1, 2018</u>	<u>July 1, 2019</u>	
1. <u>Participant Data</u>			
Active Participants	1,213	1,195	(1.5) %
Retired Participants	2,193	2,178	(0.7) %
Vested Terminated Participants	323	317	(1.9) %
Total	3,729	3,690	(1.0) %
Total Payroll	101,270,528	98,453,547	(2.8) %
Average Pay	83,488	82,388	(1.3) %
Average Age	44.58	44.44	(0.3) %
Average Past Service	15.19	14.96	(1.5) %

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

	Actuarial Valuation for Plan Year Beginning		<u>Percent Change</u>
	<u>July 1, 2018</u>	<u>July 1, 2019</u>	
1. <u>Contribution Range</u>			
Net Normal Cost (<i>Exhibit D</i>)	\$ 7,760,389	\$ 7,281,627	(6.2) %
Indicated Midyear -			
20 Year Contribution (<i>Exhibit E</i>)	\$ 28,796,913	\$ 26,844,381	(6.8) %
30 Year Contribution (<i>Exhibit E</i>)	\$ 26,436,938	\$ 24,914,161	(5.8) %
20 Year Contribution as Percentage of Compensation	28.44%	27.27%	(4.1) %
30 Year Contribution as Percentage of Compensation	26.11%	25.31%	(3.1) %

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

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) Net Normal Cost: The portion of the contribution associated with the net normal cost decreased compared to last year. This decreased the contribution by \$0.5 million (0.5% of pay).
- b) Open amortization policy: The 20-year contribution is based on an open amortization period. An open amortization period leads to a decrease in the contribution amount year-over-year assuming no experience gains or losses. The effect of this policy is a decrease of \$0.5 million (0.5% of pay).
- c) Demographic changes: The accrued actuarial liability as of July 1, 2019 was approximately \$9.7 million lower than expected based on the prior year valuation. A significant driver of this decrease was a 1.3% decrease in average pay. This decreased the annual contribution by \$0.8 million (0.8% of pay).
- d) Investment returns: The investment return for the period ending June 30, 2019 was approximately \$34.3 million. Based on the 7.30% assumption in place on July 1, 2018, a return of \$38.7 million would have been expected over this period. The asset performance not meeting expectations led to an increase in the annual contribution of less than \$0.1 million (0.1% of pay). Recognizing a smoothed value of assets reduces the impact of the asset returns.
- e) Mortality Table Assumption: A change in the mortality table assumption to the RP-2014 mortality table generationally projected with scale MP-2018 for healthy lives decreased the Accrued Actuarial Liability by approximately \$1.7 million (or approximately 0.2%). This decreased the annual contribution by approximately \$0.2 million (0.2% of pay).

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

	Actuarial Valuation for Plan Year Beginning		<u>Percent Change</u>
	<u>July 1, 2018</u>	<u>July 1, 2019</u>	
1. <u>Liabilities</u>			
Unfunded Accrued Actuarial Liability (Exhibit E)	\$ 222,390,872	\$ 206,785,296	(7.0) %
Present Value of Accumulated Vested Benefits (<i>Exhibit F</i>)	\$ 682,128,997	\$ 687,829,656	0.8 %
Present Value of Accumulated Plan Benefits (<i>Exhibit F</i>)	\$ 708,695,000	\$ 712,658,528	0.6 %
2. <u>Development of Actuarial Liability</u>			
(1) Liability at July 1, 2018		\$ 758,068,864	
(2a) Normal Cost	\$ 8,942,733		
(2b) Interest Cost	\$ 54,002,990		
(2c) Expected Benefit Payments	\$ <u>(55,466,137)</u>		
(2d) Total Increase/(Decrease)	\$ 7,479,586		
(3) Expected Liability at June 30, 2019		\$ 765,548,450	
(3a) Demographic (Gain)/Loss	\$ (8,079,410)		
(3b) Discount Rate (Gain)/Loss	\$ 0		
(3c) Mortality (Gain)/Loss	\$ <u>(1,686,792)</u>		
(3d) Total (Gain)/Loss	\$ (9,766,202)		
(4) Actual Liability at July 1, 2019		\$ 755,782,248	

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

	Actuarial Valuation for Plan Year Beginning		<i>Percent Change</i>
	<u>July 1, 2018</u>	<u>July 1, 2019</u>	
1. <u>Assets</u>			
Market Asset Value (<i>Exhibit C</i>)	\$ 543,245,785	\$ 553,239,562	1.8 %
Actuarial Asset Value (<i>Exhibit C</i>)	\$ 535,677,992	\$ 548,996,952	2.5 %

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 total fund asset return provided by PFM was 6.73% for the fiscal year ending June 30, 2019. This represented an underperformance of plan investments versus the actuarial assumption of 7.30% for the period, but not necessarily an underperformance versus independent investment benchmarks. Review of performance against those benchmarks is outside the scope of this report.

B. Discussion

Since the last actuarial valuation performed as of July 1, 2018, the demographics of the plan participants has changed as follows:

- The number of plan participants decreased 1.0%
- The total number of actives in the plan decreased 1.5%
- Total payroll decreased 2.8%
- Average pay decreased 1.3%
- Average age of active plan participants decreased 0.3%

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.

At the October 1, 2019 meeting of the Sinking Fund Commission, the Board of Commissioners decided to seek approval for PGW to make an additional contribution to the Plan to maintain the current funding level through June 30, 2020. The request for the additional contribution has been approved by the Office of the City Finance Director. Therefore, PGW is expected to contribute \$29.227 million during valuation year 7/1/2019 which exceeds the amount under the historical contribution policy for the valuation year and is consistent with the contribution amount in PGW's base rates.

C. Financial Summary¹

Assets as of July 1, 2018 \$ 543,245,785

Receipts

Employer Contribution	28,569,807	
Employee Contribution	1,248,941	
Investment return *	34,259,618	
Total Receipts		\$ 64,078,366

Disbursements

Benefit Payments	53,892,944	
Administrative Expenses	191,645	
Total Disbursements		\$ 54,084,589

Assets as of July 1, 2019 \$ 553,239,562

Asset Information as of July 1, 2019

<u>Asset Allocations</u>	<u>Current Allocation</u>	<u>Target Allocation</u>
Equity	67.25%	65.00%
Total Fixed Income	29.95%	35.00%
Other	2.80%	0.00%

<u>Annual Rate of Return</u>	<u>Market Value</u>	<u>Assumed Rate</u>
Rate ²	6.73%	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 total fund asset return of 6.73% for the fiscal year ending June 30, 2019 was provided by PFM.

C. Financial Summary (cont.)

Development of Actuarial Value of Assets

Market Value of Assets as of July 1, 2018	\$	543,245,785
Expected Assets as of July 1, 2019	\$	557,751,183
Market Value of Assets as of July 1, 2019	\$	553,239,562
<u>Total Gain/(Loss) From Prior Years</u>		
Gain/(Loss) (Current Year)	\$	(4,511,621)
Gain/(Loss) (Valuation Year -1)	\$	7,063,075
Gain/(Loss) (Valuation Year -2)	\$	26,553,955
Gain/(Loss) (Valuation Year -3)	\$	(35,037,599)
<u>Unrecognized Gain/(Loss) From Prior Years</u>		
Gain/(Loss) (Current Year)	\$	(3,609,297)
Gain/(Loss) (Valuation Year -1)	\$	4,237,845
Gain/(Loss) (Valuation Year -2)	\$	10,621,582
Gain/(Loss) (Valuation Year -3)	\$	(7,007,520)
<u>Preliminary Actuarial Value of Assets as of July 1, 2019</u>		
	\$	548,996,952
80% of Market Value of Assets	\$	442,591,650
120% of Market Value of Assets	\$	663,887,474
<u>Actuarial Value of Assets as of July 1, 2019</u>		
	\$	548,996,952

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	2,178	317	1,195	3,690
2 Projected Annual Benefits	\$ 54,094,867	\$ 3,355,095	\$ 137,714,643	\$ 195,164,605
3 Present Value of Projected Benefits as of July 1, 2019	\$ 541,643,453	\$ 14,437,435	\$ 295,866,589	\$ 851,947,477
4 Present Value of Future Normal Costs	\$ _____ -	\$ _____ -	\$ 96,165,229	\$ 96,165,229
5 Accrued Actuarial Liability as of July 1, 2019: (3)-(4)	\$ 541,643,453	\$ 14,437,435	\$ 199,701,360	\$ 755,782,248
6 Actuarial Asset Value				\$ 548,996,952
7 Unfunded Accrued Actuarial Liability: (5)-(6)				\$ 206,785,296
8 Normal Cost Payable on July 1, 2019				\$ 8,591,346
9 Expected Employee Contributions				\$ 1,309,719
10 Net Employer Normal Cost (8)-(9)				\$ 7,281,627

E. Contribution Levels¹

Twenty Year Amortization (Open Amortization Period)

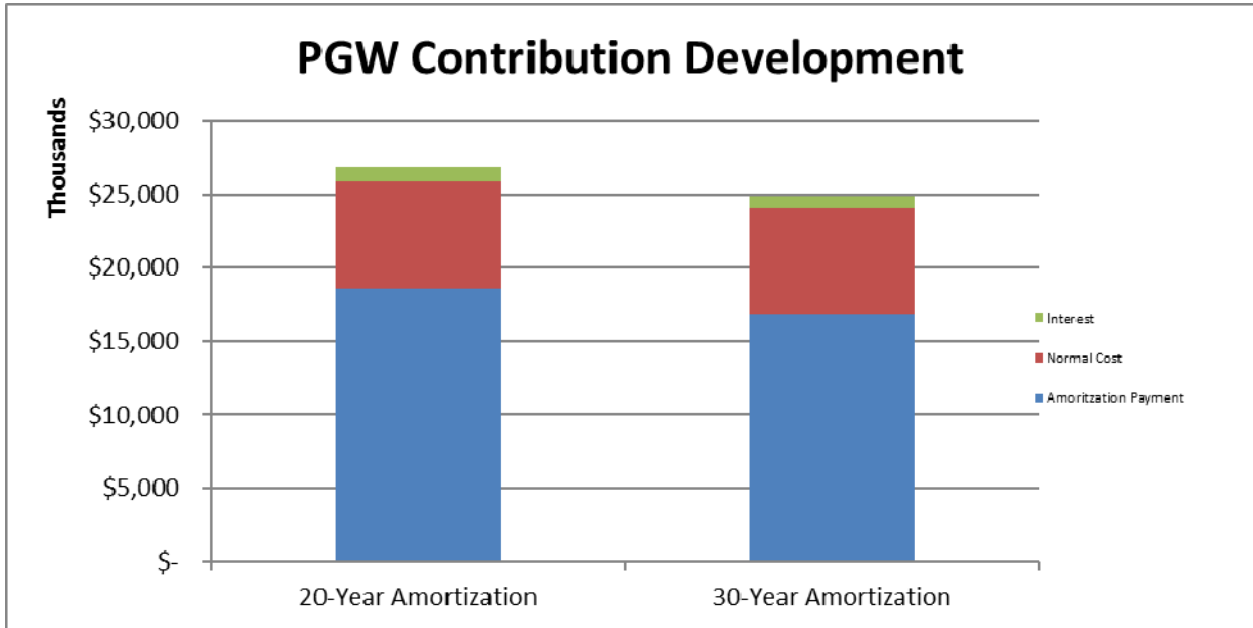
1.	Contribution for Normal Cost					\$ 7,281,627
2.	Amortization Schedule					
	<u>Effective Date</u>	<u>Amortization Period</u>	<u>Initial Amount</u>	<u>Unfunded Accrued Actuarial Liability</u>	<u>BOY Annual Payment</u>	
	7/1/2019	20	\$ 206,785,296	\$ 206,785,296	\$ 18,617,438	\$ 18,617,438
3.	Contributions July 1, 2019: (1) + (2)					\$ 25,899,065
4.	Contributions Mid-year (3) x 1.0365					\$ 26,844,381
5.	Contributions June 30, 2020: (3) x 1.073					\$ 27,789,697

Thirty Year Amortization (Closed Amortization Period)

1.	Contribution for Normal Cost					\$ 7,281,627
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	26	\$ 195,984,721	\$ 187,336,295	\$ 15,174,714	
	7/1/2016	27	\$ 30,648,588	\$ 29,657,567	\$ 2,371,581	
	7/1/2017	28	\$ (3,804,097)	\$ (3,725,024)	\$ (294,361)	
	7/1/2018	29	\$ 6,379,537	\$ 6,315,559	\$ 493,647	
	7/1/2019	30	\$ (12,799,101)	\$ (12,799,101)	\$ (990,391)	
	Total			\$ 206,785,296	\$ 16,755,190	
3.	Contributions July 1, 2019: (1) + (2)					\$ 24,036,817
4.	Contributions Mid-year: (3) x 1.0365					\$ 24,914,161
5.	Contributions June 30, 2020: (3) x 1.073					\$ 25,791,505

¹ PGW has indicated they will contribute \$29.2 million during valuation year 7/1/2019 which exceeds the historical contribution policy and is consistent with the contribution amount in PGW's base rates.

E. Contribution Levels (cont.)



F. Actuarial Present Value of Accumulated Benefits Determined

Accounting Standards Codification Topic 960

	<u>July 1, 2018</u>	<u>July 1, 2019</u>
1. Actuarial Present Value of Accumulated Vested Benefits		
a. Participants currently receiving benefits	\$ 537,223,543	\$ 541,643,453
b. Vested terminated participants	\$ 15,470,065	\$ 14,437,435
c. Active Participants	<u>\$ 129,435,389</u>	<u>\$ 131,748,768</u>
d. Total	\$ 682,128,997	\$ 687,829,656
2. Actuarial Present Value of Accumulated Non-Vested Benefits	\$ 26,566,003	\$ 24,828,872
3. Total Actuarial Present Value of Accumulated Plan Benefits: (1d) + (2)	\$ 708,695,000	\$ 712,658,528
4. Net Assets Available for Benefits (Market Value, Exhibit C)	\$ 543,245,785	\$ 553,239,562
5. Excess (deficiency) of Net Assets Available for Benefits over (under) Actuarial Present Value of Accumulated Plan Benefits: (4) - (3)	\$ (165,449,215)	\$ (159,418,966)
6. Active Participant Count		
a. 100% Vested	961	909
b. Partially Vested	0	0
c. Non-Vested	252	286

G. Estimated 10-Year Benefit Pay-Out Projections

Figures Shown in Thousands

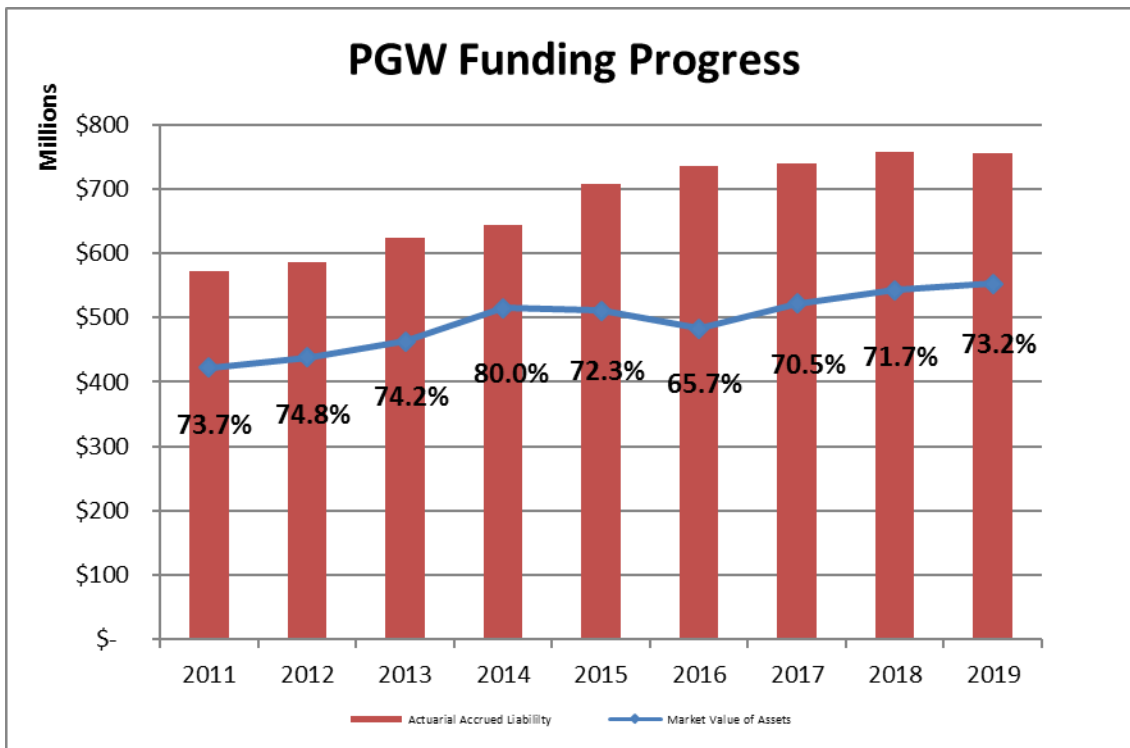
Plan Year Beginning July 1	Expected Annual Benefit Pay-Out During Plan Year	Expected PGW Contributions During Plan Year	Expected Employee Contributions During Plan Year	Expected Benefits Paid from Plan Assets
2019	\$56,484	\$29,227	\$1,310	\$25,947
2020	57,826	26,472	1,414	29,940
2021	58,897	25,601	1,539	31,757
2022	59,820	25,263	1,677	32,880
2023	60,756	24,911	1,826	34,019
2024	61,610	24,347	1,975	35,288
2025	62,414	23,910	2,113	36,391
2026	63,078	23,959	2,268	36,851
2027	63,639	23,792	2,434	37,413
2028	64,133	23,665	2,601	37,867

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. Investment returns assumed to be 7.30% per year. Covered payroll projected to increase by 4.5% per year. Expected PGW contributions calculated assuming contributions made based on greater of 20 year open amortization policy and 30 year closed amortization policy. PGW has indicated they will contribute \$29.227 million during valuation year 7/1/2019 which is reflected in the expected PGW contribution figures shown above. Expected employee contributions assume 50% of new employees select the PGW defined benefit pension plan and employee contribution rate remains 6% of pay.

H. Schedule of Funding Progress

(\$ thousands)

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
9/1/2011	\$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	218,346	70.49%	7.30%	94,768	230.40%
7/1/2018	543,246	758,069	214,823	71.66%	7.30%	101,271	212.13%
7/1/2019	553,240	755,782	202,543	73.20%	7.30%	98,454	205.72%



Notes:

Covered payroll was assumed to increase by 3% in years when a full valuation was not performed.
 Asset Values estimated for years when a full valuation was not performed.

I. Calculation of Annual Pension Cost

I. Calculation of Annual Pension Cost (20 Year Open Amortization) (\$ thousands)

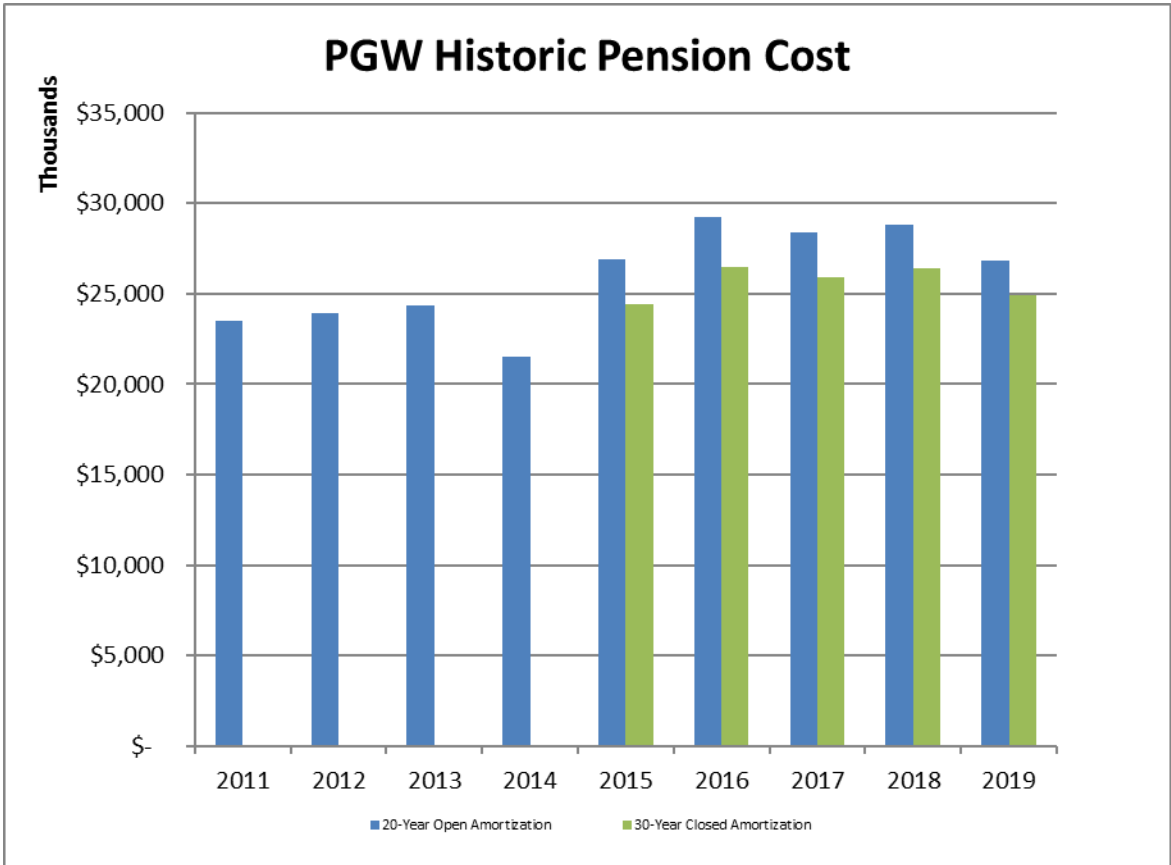
Actuarial Valuation Date	Unfunded Actuarial Accrued Liability	Amortization Payment	Normal Cost	Employee Contribution	Mid-year Contribution
9/1/2011	\$150,241	\$14,400	\$8,171	-	\$23,502
9/1/2012	147,852	14,357	8,782	\$137	23,951
9/1/2013	160,921	15,127	8,533	207	24,385
9/1/2014	129,044	12,130	8,852	279	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
7/1/2018	222,391	20,022	7,760	1,182	28,797
7/1/2019	206,785	18,617	7,282	1,310	26,844

I-2. Calculation of Annual Pension Cost (30 Year Closed Amortization) (\$ thousands)

Actuarial Valuation Date	Unfunded Actuarial Accrued Liability	Amortization Payment	Normal Cost	Employee Contribution	Mid-year Contribution
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
7/1/2018	222,391	17,746	7,760	1,182	26,437
7/1/2019	206,785	16,755	7,282	1,310	24,914

Employee contributions estimated based on census data.

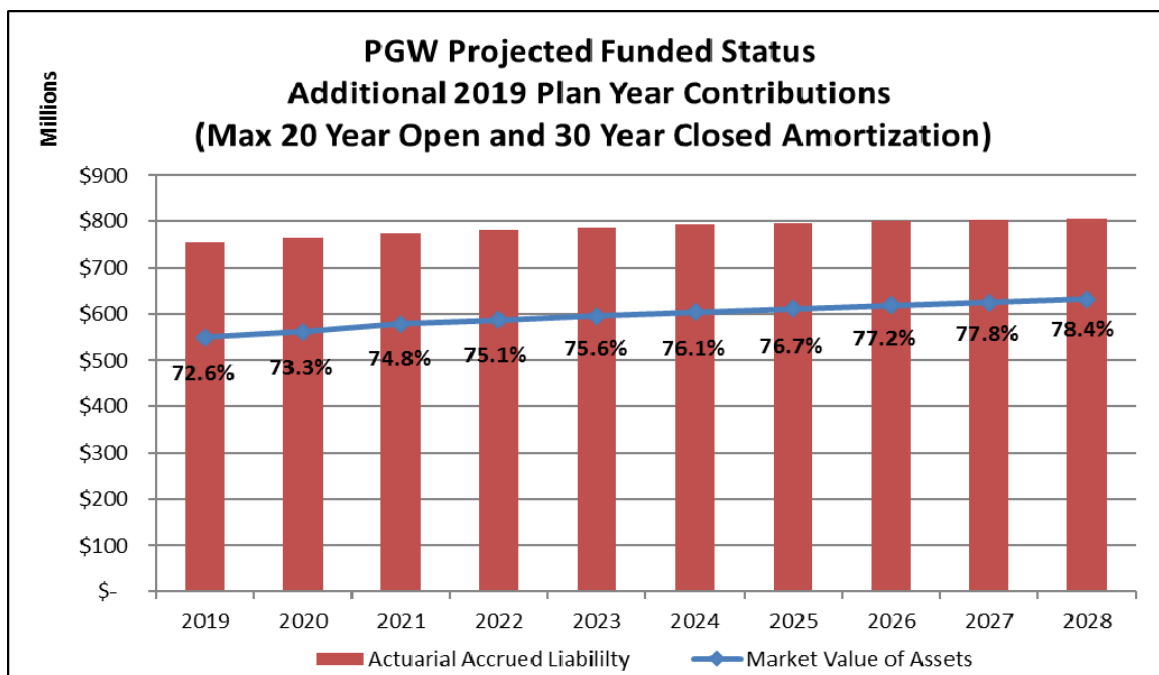
I. Calculation of Annual Pension Cost (cont.)



J. Schedule of Prospective Funded Status

J. Schedule of Prospective Funded Status – Additional Contribution for 7/1/2019 Plan Year¹ (Funding Policy - Max 20 Year Open and 30 Year Closed Amortization) (\$ thousands)

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Mid-Year Contribution	Funded Ratio	Covered Payroll	Contribution as % of Covered Payroll	UAAL as a % of Covered Payroll
7/1/2019	\$548,997	\$755,782	\$206,785	\$29,227 ¹	72.64%	\$98,454	29.69%	210.03%
7/1/2020	561,303	765,294	203,991	26,472	73.34%	102,884	25.73%	198.27%
7/1/2021	578,875	773,638	194,763	25,601	74.83%	107,514	23.81%	181.15%
7/1/2022	586,280	780,981	194,701	25,263	75.07%	112,352	22.49%	173.30%
7/1/2023	594,998	787,203	192,205	24,911	75.58%	117,408	21.22%	163.71%
7/1/2024	603,173	792,179	189,006	24,347	76.14%	122,691	19.84%	154.05%
7/1/2025	610,629	796,040	185,412	23,910	76.71%	128,212	18.65%	144.61%
7/1/2026	617,485	799,478	181,993	23,959	77.24%	133,982	17.88%	135.83%
7/1/2027	624,365	802,474	178,109	23,792	77.81%	140,011	16.99%	127.21%
7/1/2028	631,166	804,699	173,533	23,665	78.44%	146,311	16.17%	118.61%



¹ PGW has indicated they will contribute \$29.227 million during valuation year 7/1/2019.

Investment returns assumed to be 7.30% per year.

Covered payroll projected to increase by 4.5% per year.

Projections calculated assuming contributions made based on policy stated on this page.

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

1. Receiving Benefits

<u>Years Receiving Benefits as of July 1, 2019</u>								<u>Annual Benefits</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>Total</u>	<u>Average</u>
15-44	0	0	0	0	0	0	0	\$0	\$0
45-49	2	3	0	0	0	0	5	84,397	16,879
50-54	41	6	2	0	0	0	49	1,764,142	36,003
55-59	164	59	13	4	0	2	242	7,347,190	30,360
60-64	190	191	50	15	7	2	455	14,123,196	31,040
65-69	80	140	104	93	11	4	432	11,422,980	26,442
70-74	28	78	67	99	53	6	331	7,964,076	24,061
75-79	22	23	26	42	84	8	205	4,154,598	20,266
80-84	19	20	5	17	97	24	182	3,591,186	19,732
85-89	11	21	14	12	29	63	150	2,165,619	14,437
90+	5	12	10	11	17	72	127	1,477,483	11,634
Total	562	553	291	293	298	181	2,178	54,094,867	24,837
Average Age: 70.85					Average Years Receiving Benefits: 12.50				

2. Vested Terminated

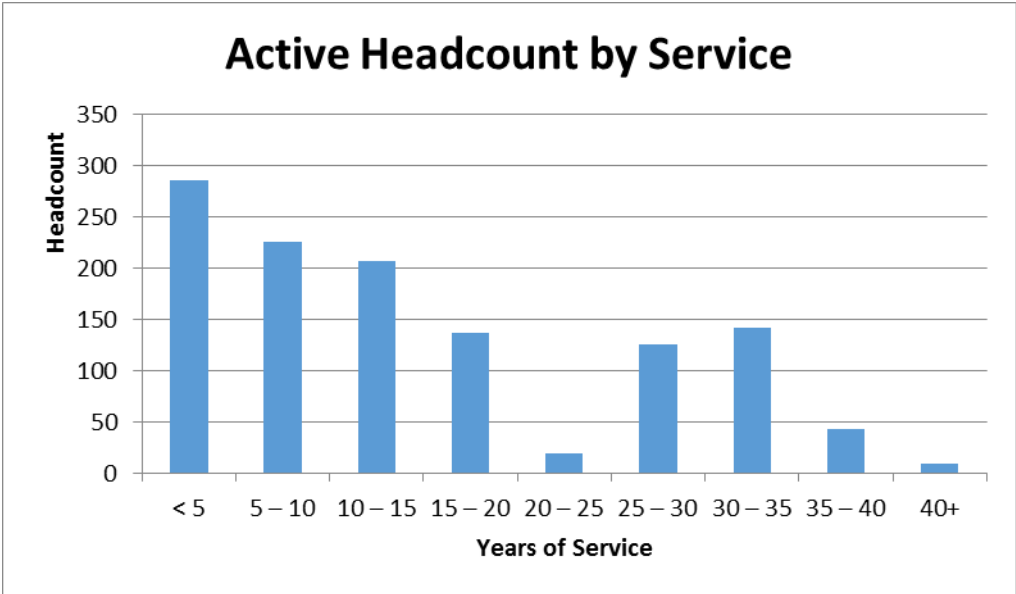
<u>Age</u>	<u>Number</u>	<u>Annual Benefits</u>	
		<u>Total</u>	<u>Average</u>
15-44	109	\$845,166	\$7,754
45-49	35	429,911	12,283
50-54	85	985,370	11,593
55-59	60	735,962	12,266
60-64	23	299,224	13,010
65+	5	59,463	11,893
Total	317	\$3,355,095	\$10,584

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, 2019</u>													
Age											<u>Earnings</u>		
	00-00	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total	Total	Average
15-19	3 36,535	- -	- -	- -	- -	- -	- -	- -	- -	- -	3 -	0	0
20-24	21 42,282	23 54,439	1 61,904	- -	- -	- -	- -	- -	- -	- -	45 48,932	2,201,920	48,932
25-29	18 44,872	51 60,177	34 80,504	2 84,897	- -	- -	- -	- -	- -	- -	105 64,606	6,783,664	64,606
30-34	12 44,864	48 60,304	82 81,573	50 84,684	3 92,980	- -	- -	- -	- -	- -	195 75,052	14,635,078	75,052
35-39	3 45,046	21 67,499	37 85,453	44 87,668	27 93,675	- -	- -	- -	- -	- -	132 84,098	11,100,996	84,098
40-44	5 55,537	20 69,709	23 84,955	37 89,404	31 88,868	1 59,272	3 91,225	- -	- -	- -	120 83,513	10,021,608	83,513
45-49	3 74,694	21 63,540	20 86,228	18 83,497	26 93,533	- -	26 94,047	5 83,260	- -	- -	119 84,700	10,079,302	84,700
50-54	3 57,032	17 63,711	8 91,065	29 89,133	28 90,270	8 101,539	36 87,953	60 97,458	5 96,437	- -	194 89,708	17,403,402	89,708
55-59	2 78,617	10 70,826	11 86,397	12 79,044	16 90,185	6 108,211	38 85,160	52 91,508	17 90,853	3 136,679	167 88,657	14,805,666	88,657
60-64	1 76,092	2 55,321	6 70,947	11 90,297	4 75,773	3 109,493	20 89,926	22 102,189	19 132,448	3 87,402	91 99,590	9,062,665	99,590
65-69	- -	2 69,219	3 70,218	3 75,888	2 98,601	1 177,777	3 72,494	3 79,885	1 97,534	2 133,464	20 88,667	1,773,330	88,667
70+	- -	- -	1 222,717	1 78,507	- -	- -	- -	- -	1 95,015	1 80,070	4 119,077	476,309	119,077
Total	71 47,675	215 62,336	226 83,479	207 86,498	137 90,991	19 106,690	126 88,391	142 95,141	43 110,134	9 113,249	1,195 82,388	98,453,547	82,388
Average Age: 44.44											Average Service: 14.96		

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



<u>Service</u>	<u>Active Headcount</u>
< 5	286
5 - 10	226
10 - 15	207
15 - 20	137
20 - 25	19
25 - 30	126
30 - 35	142
35 - 40	43
40+	9
Total	1,195

M. Data Reconciliation

	<i>Actives</i>	<i>Term Vested</i>	<i>Retiree*</i>	<i>Total</i>
1. Participants as of 7/1/2018	1,213	323	2,193	3,729
a. New Participants	71	0	0	71
b. Return from Retirement	0	0	0	0
c. Retirements	(49)	(17)	66	0
d. Surviving Spouses	0	0	0	0
e. Rehires	0	0	0	0
f. Terminations	(11)	11	0	0
g. Nonvested Terminations	(30)	0	0	(30)
h. Deaths w/ Beneficiary	0	0	(27)	(27)
i. New Beneficiary	0	0	27	27
j. Deaths w/o Beneficiary	(5)	0	(84)	(89)
k. Data Corrections	6	0	2	8
l. New QDRO	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>
m. Total Increase / (Decrease)	(18)	(6)	(15)	(39)
2. Actual Participants as of 6/30/2019	1,195	317	2,178	3,690

**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-2018:

**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 2019 Taxable Gross Wages based on actual wages through June 30, 2019 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-2017 to Scale MP-2018 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

Aon 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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