



Philadelphia Gas Works Pension Plan

Actuarial Valuation Report for the Plan Year Ending
June 30, 2020—Accounting under GASB 67/68

Introduction

This report documents the results of the actuarial valuation for the plan year ending June 30, 2020 for the fiscal year ending August 31, 2020 of the Philadelphia Gas Works Pension Plan. The plan is a single-employer plan and does not issue a separate financial statement. As a result, all reporting requirements are included in the employer's financial statement. These results are based on a Measurement Date of June 30, 2020. The information provided in this report is intended strictly for documenting information relating to company and plan disclosure and reporting requirements.

Determinations for purposes other than the financial accounting requirements may be significantly different from the results in this report. Thus, the use of this report for purposes other than those expressed here may not be appropriate.

This valuation has been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board. In addition, the valuation results are based on our understanding of the financial accounting and reporting requirements under U.S. Generally Accepted Accounting Principles as set forth in Government Accounting Standards Board Statement 68 (GASB 68) including any guidance or interpretations provided by the Company and/or its audit partners prior to the issuance of this report. The information in this report is not intended to supersede or supplant the advice and interpretations of the Philadelphia Gas Works' auditors. Additional disclosures may be required under GASB 67.

A valuation model was used to develop the liabilities for the July 1, 2020 valuation. The valuation model relies on ProVal software, which was developed by Winklevoss Technologies, LLC. Experts within Aon selected this software and determined it is appropriate for performing valuations. We coded and reviewed the software for the provisions, assumptions, methods, and data of the Philadelphia Gas Works Pension Plan.

The undersigned relied on experts at PFM Asset Management LLC for the development of the capital market assumptions and the model underlying the expected rate of return.

The valuation model outputs various cost scenarios. The "1% increase" and "1% decrease" interest rate scenarios vary only the discount rate assumption, in order to illustrate the impact of a change in that assumption in isolation. In practice, certain other assumptions, such as the expected or realized asset returns, would also be expected to vary when the discount rate changes. Therefore, the output from these scenarios should be used solely for assessing the impact of the discount rate in isolation and may not represent a realistic set of results for other purposes.

The valuation model was used to project certain financial results for the funded status projections. The valuation model relies on ProVal software, which was developed by Winklevoss Technologies, LLC and selected, reviewed, and evaluated by experts within Aon as appropriate for use for developing liabilities for the funded status projections.

Future actuarial measurements may differ significantly from the current measurements presented in this report due (but not limited to) to such factors as the following:

- Plan experience differing from that anticipated by the economic or demographic assumptions;
- Changes in actuarial methods or in economic or demographic assumptions;
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- Changes in plan provisions or applicable law.

Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements. However, an assessment and disclosure of risks pertaining to the funding valuation as required by the actuarial standards of practice is being provided in a separate report.

Funded status measurements shown in this report are determined based on various measures of plan assets and liabilities. For entity and plan disclosure and reporting purposes, funded status is determined using plan assets measured at market value. Plan liabilities are measured based on the interest rates and other assumptions summarized in the Actuarial Assumptions and Methods section of this report.

These funded status measurements may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, and funded status measurements for Philadelphia Gas Works and plan disclosure and reporting purposes may not be appropriate for assessing the need for or the amount of future contributions.

In conducting the valuation, we have relied on personnel, plan design, and asset information supplied by Philadelphia Gas Works as of the valuation date. While we cannot verify the accuracy of all the information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy or completeness of the information and believe that it has produced appropriate results.

The actuarial assumptions and methods used in this valuation are described in the Actuarial Assumptions and Methods section of this report. Philadelphia Gas Works selected the economic and demographic assumptions and prescribed them for use for purposes of compliance with GASB 68. Aon provided guidance with respect to these assumptions, and it is our belief that the assumptions represent reasonable expectations of anticipated plan experience.

The undersigned are familiar with the near-term and long-term aspects of pension valuations and collectively meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. The information provided in this report is dependent upon various factors as documented throughout this report, which may be subject to change. Each section of this report is considered to be an integral part of the actuarial opinions.

To our knowledge, no colleague of Aon providing services to Philadelphia Gas Works has any material direct or indirect financial interest in Philadelphia Gas Works. Thus, we believe there is no relationship existing that might affect our capacity to prepare and certify this actuarial report for Philadelphia Gas Works.



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A. Comparative Summary of Principal Valuation Results

| | Actuarial Valuation for Plan Year Ending | | <u>Percent Change</u> |
|--------------------------------------|---|-----------------------------|----------------------------------|
| | <u>June 30, 2019</u> | <u>June 30, 2020</u> | |
| 1. <u>Participant Data</u> | | | |
| Active Participants | 1,195 | 1,163 | (2.7) % |
| Retired Participants | 2,178 | 2,195 | 0.8 % |
| Vested Terminated Participants | <u>317</u> | <u>319</u> | 0.6 % |
| Total | 3,690 | 3,677 | (0.4) % |
| Total Payroll | 98,453,547 | 95,933,744 | (2.6) % |
| Average Pay | 82,388 | 82,488 | 0.1 % |
| Active Employee Average Age | 44.44 | 44.26 | (0.4) % |
| Active Employee Average Past Service | 14.96 | 14.63 | (2.2) % |

A. Comparative Summary of Principal Valuation Results (continued)

| | Actuarial Valuation for Plan Year Ending | | Percent Change |
|---|---|----------------------|---------------------------|
| | <u>June 30, 2020</u> | <u>June 30, 2021</u> | |
| 1. <u>Contribution Range</u> | | | |
| Net Normal Cost | \$ 7,281,627 | \$ 6,161,485 | (15.4) % |
| <u>Indicated Midyear -</u> | | | |
| 20 Year Contribution | \$ 26,844,381 | \$ 23,492,377 | (12.5) % |
| 30 Year Contribution | \$ 24,914,161 | \$ 22,101,298 | (11.3) % |
| Directed Contribution ¹ | \$ 29,227,000 | \$ 30,000,000 | 2.6 % |
| <u>Contribution as a Percentage of Compensation</u> | | | |
| 20 Year Contribution | 27.27% | 24.49% | (10.2) % |
| 30 Year Contribution | 25.31% | 23.04% | (9.0) % |
| Directed Contribution | 29.69% | 31.27% | 5.3 % |

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) Experience Study Assumptions: A change in assumptions based on the experience study reduced the Accrued Actuarial Liability by approximately \$12.6 million and the normal cost by \$0.6 million. This decreased the annual contribution by approximately \$1.8 million (1.8% 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) Investment returns and smoothed value of assets: The investment return for the period ending June 30, 2020 was approximately \$14.3 million. Based on the 7.30% assumption in place on July 1, 2019, a return of \$39.5 million would have been expected over this period. The plan recognizes a smoothed value of assets which reduces the impact of the asset returns. The impact of asset performance not meeting expectations and the impact of asset smoothing led to an increase in the annual contribution of \$0.6 million (0.6% of pay).
- d) Mortality Table Assumption: A change in the mortality table assumption to the Pri-2012 mortality table generationally projected with scale MP-2020 decreased the Accrued Actuarial Liability by approximately \$6.2 million. This decreased the annual contribution by approximately \$0.5 million (0.5% of pay).
- e) Demographic Changes: The accrued actuarial liability as of July 1, 2020 was approximately \$1.6 million lower than expected based on the prior year valuation. This decreased the annual contribution by \$0.3 million (0.3% of pay).

¹ The City of Philadelphia Director of Finance directed a contribution of \$29,227,000 for plan year ending June 30, 2020 and \$30,000,000 for plan year ending June 30, 2021

A. Comparative Summary of Principal Valuation Results (continued)

- f) Employee Contributions: Employee contribution are expected to increase by \$0.2 million compared to the prior year based on the plan population. This decreased the annual contribution by \$0.2 million (0.2% of pay).

| | Actuarial Valuation for Plan Year Beginning | | <u>Percent Change</u> |
|---|--|----------------------------|----------------------------------|
| | <u>July 1, 2019</u> | <u>July 1, 2020</u> | |
| 1. <u>Assets</u> | | | |
| Market Asset Value (<i>Exhibit C</i>) | \$ 553,239,562 | \$ 543,230,351 | (1.8) % |

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 2.83% for the plan year ending June 30, 2020 as provided by PFM in the monthly performance review for the period ended June 30, 2020. 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, 2019, the demographics of the plan participants have changed as follows:

- The number of plan participants decreased 0.4%
- The total number of actives in the plan decreased 2.7%
- Total payroll decreased 2.6%
- Average pay increased 0.1%
- Average age of active plan participants decreased 0.4%

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 Summary²

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

Receipts

| | | |
|-----------------------|------------|---------------|
| Employer Contribution | 29,413,979 | |
| Employee Contribution | 1,519,517 | |
| Investment return * | 14,286,177 | |
| Total Receipts | | \$ 45,219,673 |

Disbursements

| | | |
|-------------------------|------------|---------------|
| Benefit Payments | 55,061,155 | |
| Administrative Expenses | 167,729 | |
| Total Disbursements | | \$ 55,228,884 |

Assets as of July 1, 2020 \$ 543,230,351

Asset Information as of July 1, 2020

| <u>Asset Allocations</u> | <u>Current Allocation</u> | <u>Target Allocation</u> |
|---------------------------------|----------------------------------|---------------------------------|
| Equity | 64.56% | 65.00% |
| Total Fixed Income | 31.60% | 35.00% |
| Other | 3.84% | 0.00% |

| <u>Annual Rate of Return</u> | <u>Market Value</u> | <u>Assumed Rate</u> |
|-------------------------------------|----------------------------|----------------------------|
| Rate ³ | 2.83% | 7.30% |

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

² Asset information as reported by the City of Philadelphia.

³ The total fund asset return of 2.83% for the plan year ending June 30, 2020 as provided by PFM in the monthly performance review for the period ended June 30, 2020.

D. Plan Reporting – Unfunded Liability and Normal Cost

The following table illustrates the assets and liabilities as of the end of the Plan Year used for the development of the plan reporting information under GASB 67

| | June 30, 2019 | June 30, 2020 |
|-------------------------------------|-----------------------|-----------------------|
| 1. Fair Market Value of Plan Assets | \$ 553,239,562 | \$ 543,230,351 |
| 2. Accrued Liability | | |
| a) Active | \$ 244,404,599 | \$ 215,493,995 |
| b) Inactive (not in pay status) | \$ 14,437,435 | \$ 14,499,051 |
| c) Inactive (in pay status) | <u>\$ 541,643,453</u> | <u>\$ 550,798,902</u> |
| d) Total | \$ 800,485,487 | \$ 780,791,948 |
| 3. Unfunded Liability | \$ 247,245,925 | \$ 237,561,597 |
| 4. Assets as a percent of liability | 69.11% | 69.57% |

Valuation Date: Actuarial liabilities and assets are calculated as of the Plan Year end date.

Discount Rate: The discount rate used to measure the total pension liability was 7.30%. The projection of cash flows used to determine the discount rate assumed the contributions from Plan members will be made at the current contribution rate and that contributions from PGW will be made based on the current, actuarially determined funding policy. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability.

E. GASB 67 and 68 Reports

GASB 68 Reporting – Expense

The following table illustrates the development of the plan expense under GASB 68

| | June 30, 2019 | June 30, 2020 |
|--|----------------------|----------------------|
| 1. Service Cost | \$ 6,553,990 | \$ 6,400,412 |
| 2. Interest Cost | | |
| a) Total Pension Liability at Measurement Date | \$ 804,507,184 | \$ 800,485,487 |
| b) Normal Cost at Measurement Date | \$ 6,553,990 | \$ 6,400,412 |
| c) Actual Benefit Payments | \$ (53,892,944) | \$ (55,061,155) |
| d) Discount Rate | 7.30% | 7.30% |
| e) Interest Cost | \$ 57,240,373 | \$ 56,892,938 |
| 3. Expected Investment Return | | |
| a) Plan Fiduciary Net Position at Measurement Date | \$ 543,245,785 | \$ 553,239,562 |
| b) Actual Contributions-Employer | \$ 28,569,807 | \$ 29,413,979 |
| c) Actual Contributions-Employee | \$ 1,248,941 | \$ 1,519,517 |
| d) Actual Benefit Payments | \$ (53,892,944) | \$ (55,061,155) |
| e) Administrative Expenses | \$ (191,645) | \$ (167,729) |
| f) Discount Rate | 7.30% | 7.30% |
| g) Expected Return | \$ 38,771,239 | \$ 39,499,706 |
| 4. Pension Expense under GASB 68 | | |
| a) Service Cost | \$ 6,553,990 | \$ 6,400,412 |
| b) Interest Cost | \$ 57,240,373 | \$ 56,892,938 |
| c) Expected Investment Return | \$ (38,771,239) | \$ (39,499,706) |
| d) Employee Contributions | \$ (1,248,941) | \$ (1,519,517) |
| e) Administrative Expenses | \$ 191,645 | \$ 167,729 |
| f) Plan Changes | \$ - | \$ - |
| g) Amortization of: | | |
| i) Liability (Gain)/Loss | \$ (533,030) | \$ 631,614 |
| ii) Asset (Gain)/Loss | \$ 4,237,129 | \$ 6,229,142 |
| iii) Assumption Changes | \$ 2,598,273 | \$ (9,829,747) |
| h) Total Expense/(Income) | \$ 30,268,200 | \$ 19,472,865 |

E. GASB 67 and 68 Reports (continued)

GASB 68 Reporting – Amortization of Deferred Inflows/Outflows – 2019 Fiscal Year

The following table illustrates the amortization bases included in the Deferred Inflows/Outflows as of the Measurement Date, June 30, 2019

| Date Established | Type of Base | Period | | Balance | | Annual Payment for Fiscal Year |
|------------------|-----------------------|----------|--|---------------|--|--------------------------------|
| | | Original | Remaining After Fiscal Year Amortization | Original | Remaining After Fiscal Year Amortization | |
| 7/1/2015 | Asset (Gain)/Loss | 5.00 | 0.00 | \$ 15,253,464 | \$ 0 | \$ 3,050,692 |
| 7/1/2016 | Liability (Gain)/Loss | 3.89 | 0.00 | (8,841,025) | 0 | (2,022,754) |
| 7/1/2016 | Asset (Gain)/Loss | 5.00 | 1.00 | 35,037,599 | 7,007,519 | 7,007,519 |
| 7/1/2016 | Assumption Changes | 3.89 | 0.00 | 26,747,943 | 0 | 6,119,709 |
| 7/1/2017 | Liability (Gain)/Loss | 3.89 | 0.89 | 2,181,777 | 499,173 | 560,868 |
| 7/1/2017 | Asset (Gain)/Loss | 5.00 | 2.00 | (26,553,956) | (10,621,583) | (5,310,791) |
| 7/1/2017 | Assumption Changes | 3.89 | 0.89 | (7,951,953) | (1,819,341) | (2,044,204) |
| 7/1/2018 | Liability (Gain)/Loss | 3.86 | 1.86 | 15,706,057 | 7,568,203 | 4,068,927 |
| 7/1/2018 | Asset (Gain)/Loss | 5.00 | 3.00 | (7,063,075) | (4,237,845) | (1,412,615) |
| 7/1/2018 | Assumption Changes | 3.86 | 1.86 | (3,863,511) | (1,861,691) | (1,000,910) |
| 7/1/2019 | Liability (Gain)/Loss | 3.85 | 2.85 | (12,089,275) | (8,949,204) | (3,140,071) |
| 7/1/2019 | Asset (Gain)/Loss | 5.00 | 4.00 | 4,511,621 | 3,609,297 | 902,324 |
| 7/1/2019 | Assumption Changes | 3.85 | 2.85 | (1,833,841) | (1,357,519) | (476,322) |
| | Total Charges | | | \$ 31,241,825 | \$ (10,162,991) | \$ 6,302,372 |

E. GASB 67 and 68 Reports (continued)

GASB 68 Reporting – Amortization of Deferred Inflows/Outflows – 2019 Fiscal Year (continued)

Deferred Inflows/Outflows

The following table illustrates the Deferred Inflows and Outflows under GASB 68

| | Deferred Outflows | Deferred Inflows |
|--|----------------------|---------------------|
| | <hr/> | <hr/> |
| 1. Difference between actual and expected experience | | |
| a) Measurement Date June 30, 2017 – Experience | \$ 499,173 | \$ 0 |
| b) Measurement Date June 30, 2017 – Assumption Changes | \$ 0 | \$ (1,819,341) |
| c) Measurement Date June 30, 2018 – Experience | \$ 7,568,203 | \$ 0 |
| d) Measurement Date June 30, 2018 – Assumption Changes | \$ 0 | \$ (1,861,691) |
| e) Measurement Date June 30, 2019 – Experience | \$ 0 | \$ (8,949,204) |
| f) Measurement Date June 30, 2019 – Assumption Changes | \$ 0 | \$ (1,357,519) |
| 2. Difference between expected and actual earnings on plan investments | | |
| a) Measurement Date June 30, 2016 | \$ 7,007,519 | \$ 0 |
| b) Measurement Date June 30, 2017 | \$ 0 | \$ (10,621,583) |
| c) Measurement Date June 30, 2018 | \$ 0 | \$ (4,237,845) |
| d) Measurement Date June 30, 2019 | <hr/> \$ 3,609,297 | <hr/> \$ 0 |
| 3. Total, Before Contributions | \$ 18,684,192 | \$ (28,847,183) |
| 4. Contributions made after the Measurement Date | <hr/> 6,353,698 | <hr/> \$ 0 |
| 5. Total, After Contributions | \$ 25,037,890 | \$ (28,847,183) |

E. GASB 67 and 68 Reports (continued)

GASB 68 Reporting – Amortization of Deferred Inflows/Outflows – 2020 Fiscal Year

The following table illustrates the amortization bases included in the Deferred Inflows/Outflows as of the Measurement Date, June 30, 2020

| Date Established | Type of Base | Period | | Balance | | Annual Payment for Fiscal Year |
|------------------|-----------------------|----------|--|----------------|--|--------------------------------|
| | | Original | Remaining After Fiscal Year Amortization | Original | Remaining After Fiscal Year Amortization | |
| 7/1/2016 | Asset (Gain)/Loss | 5.00 | 0.00 | \$ 35,037,599 | \$ 0 | \$ 7,007,519 |
| 7/1/2017 | Liability (Gain)/Loss | 3.89 | 0.00 | 2,181,777 | 0 | 499,173 |
| 7/1/2017 | Asset (Gain)/Loss | 5.00 | 1.00 | (26,553,956) | (5,310,792) | (5,310,792) |
| 7/1/2017 | Assumption Changes | 3.89 | 0.00 | (7,951,953) | 0 | (1,819,341) |
| 7/1/2018 | Liability (Gain)/Loss | 3.86 | 0.86 | 15,706,057 | 3,499,276 | 4,068,927 |
| 7/1/2018 | Asset (Gain)/Loss | 5.00 | 2.00 | (7,063,075) | (2,825,230) | (1,412,615) |
| 7/1/2018 | Assumption Changes | 3.86 | 0.86 | (3,863,511) | (860,781) | (1,000,910) |
| 7/1/2019 | Liability (Gain)/Loss | 3.85 | 1.85 | (12,089,275) | (5,809,133) | (3,140,071) |
| 7/1/2019 | Asset (Gain)/Loss | 5.00 | 3.00 | 4,511,621 | 2,706,973 | 902,324 |
| 7/1/2019 | Assumption Changes | 3.85 | 1.85 | (1,833,841) | (881,197) | (476,322) |
| 7/1/2020 | Liability (Gain)/Loss | 3.81 | 2.81 | (3,034,342) | (2,237,927) | (796,415) |
| 7/1/2020 | Asset (Gain)/Loss | 5.00 | 4.00 | 25,213,529 | 20,170,823 | 5,042,706 |
| 7/1/2020 | Assumption Changes | 3.81 | 2.81 | (24,891,392) | (18,358,218) | (6,533,174) |
| | Total Charges | | | \$ (4,630,762) | \$ (9,906,206) | \$ (2,968,991) |

E. GASB 67 and 68 Reports (continued)

GASB 68 Reporting – Amortization of Deferred Inflows/Outflows – 2020 Fiscal Year (continued)

Deferred Inflows/Outflows

The following table illustrates the Deferred Inflows and Outflows under GASB 68

| | Deferred Outflows | Deferred Inflows |
|--|----------------------|---------------------|
| | <hr/> | <hr/> |
| 1. Difference between actual and expected experience | | |
| a) Measurement Date June 30, 2018 – Experience | \$ 3,499,276 | \$ 0 |
| b) Measurement Date June 30, 2018 – Assumption Changes | \$ 0 | \$ (860,781) |
| c) Measurement Date June 30, 2019 – Experience | \$ 0 | \$ (5,809,133) |
| d) Measurement Date June 30, 2019 – Assumption Changes | \$ 0 | \$ (881,197) |
| e) Measurement Date June 30, 2020 – Experience | \$ 0 | \$ (2,237,927) |
| f) Measurement Date June 30, 2020 – Assumption Changes | \$ 0 | \$ (18,358,218) |
| 2. Difference between expected and actual earnings on plan investments | | |
| a) Measurement Date June 30, 2017 | \$ 0 | \$ (5,310,792) |
| b) Measurement Date June 30, 2018 | \$ 0 | \$ (2,825,230) |
| c) Measurement Date June 30, 2019 | \$ 2,706,973 | \$ 0 |
| d) Measurement Date June 30, 2020 | \$ 20,170,823 | \$ 0 |
| | <hr/> | <hr/> |
| 3. Total, Before Contributions | \$ 26,377,072 | \$ (36,283,278) |
| 4. Contributions made after the Measurement Date | \$ 6,166,719 | \$ 0 |
| | <hr/> | <hr/> |
| 5. Total, After Contributions | \$ 32,543,791 | \$ (36,283,278) |

E. GASB 67 and 68 Reports (continued)

Sensitivity

The following table illustrates the impact of interest rate sensitivity on the Net Pension Liability for the Measurement Date June 30, 2020:

| | 1% Decrease 6.30% | Current Rate 7.30% | 1% Increase 8.30% |
|--------------------------------|------------------------------|-------------------------------|------------------------------|
| 1. Total Pension Liability | \$ 869,083,399 | \$ 780,791,948 | \$ 707,156,503 |
| 2. Plan Fiduciary Net Position | <u>\$ 543,230,351</u> | <u>\$ 543,230,351</u> | <u>\$ 543,230,351</u> |
| 3. Net Pension Liability | \$ 325,853,048 | \$ 237,561,597 | \$ 163,926,152 |

Valuation Date: Actuarial liabilities and assets are calculated as of the Fiscal Year end date.

The following table illustrates the impact of interest rate sensitivity on the Net Pension Liability for the Measurement Date June 30, 2019:

| | 1% Decrease 6.30% | Current Rate 7.30% | 1% Increase 8.30% |
|--------------------------------|------------------------------|-------------------------------|------------------------------|
| 1. Total Pension Liability | \$ 891,597,040 | \$ 800,485,487 | \$ 724,431,385 |
| 2. Plan Fiduciary Net Position | <u>\$ 553,239,562</u> | <u>\$ 553,239,562</u> | <u>\$ 553,239,562</u> |
| 3. Net Pension Liability | \$ 338,357,478 | \$ 247,245,925 | \$ 171,191,823 |

Valuation Date: Actuarial liabilities and assets are calculated as of the Measurement Date.

E. GASB 67 and 68 Reports (continued)

Changes in Net Pension Liability and Related Ratios

| Fiscal Year Ending | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Total Pension Liability | | | | | | | | | |
| Service Cost | N/A | N/A | 8,924,073 | 4,890,358 | 5,399,272 | 5,822,919 | 6,102,724 | 6,553,990 | 6,400,412 |
| Interest Cost | N/A | N/A | 47,098,448 | 52,377,230 | 55,903,452 | 55,442,502 | 55,717,989 | 57,240,373 | 56,892,938 |
| Changes in Benefit Terms | N/A | N/A | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Differences between expected and actual experience | N/A | N/A | 59,325,855 | 17,960,374 | (8,841,025) | 2,181,777 | 15,706,057 | (12,089,275) | (3,034,342) |
| Changes in assumptions | N/A | N/A | 0 | 44,875,785 | 26,747,943 | (7,951,953) | (3,863,511) | (1,833,841) | (24,891,392) |
| Benefit Payments | N/A | N/A | (42,913,000) | (46,916,787) | (50,446,550) | (51,375,532) | (52,626,957) | (53,892,944) | (55,061,155) |
| Net Change in Total Pension Liability | N/A | N/A | 72,435,376 | 73,186,960 | 28,763,092 | 4,119,713 | 21,036,302 | (4,021,697) | (19,693,539) |
| Total Pension Liability (Beginning) | N/A | N/A | 604,965,741 | 677,401,117 | 750,588,077 | 779,351,169 | 783,470,882 | 804,507,184 | 800,485,487 |
| Total Pension Liability (Ending) | N/A | 604,965,741 | 677,401,117 | 750,588,077 | 779,351,169 | 783,470,882 | 804,507,184 | 800,485,487 | 780,791,948 |
| Plan Fiduciary Net Position | | | | | | | | | |
| Contributions-Employer | N/A | N/A | 24,934,000 | 21,106,136 | 21,122,557 | 27,918,136 | 29,143,382 | 28,569,807 | 29,413,979 |
| Contributions-Employee | N/A | N/A | 239,000 | 392,884 | 602,287 | 851,744 | 1,078,192 | 1,248,941 | 1,519,517 |
| Net Investment Income | N/A | N/A | 75,303,000 | 24,472,345 | 2,872,187 | 61,002,008 | 44,309,918 | 34,259,618 | 14,286,177 |
| Benefit Payments | N/A | N/A | (42,913,000) | (46,916,787) | (50,446,550) | (51,375,532) | (52,626,957) | (53,892,944) | (55,061,155) |
| Administrative Expense | N/A | N/A | (732,000) | (1,480,245) | (1,610,866) | (129,434) | (184,334) | (191,645) | (167,729) |
| Other | N/A | N/A | (613) | 0 | 0 | 0 | 0 | 0 | 0 |
| Net Change in Fiduciary Net Position | N/A | N/A | 56,830,387 | (2,425,667) | (27,460,385) | 38,266,922 | 21,720,200 | 9,993,777 | 10,009,211 |
| Plan Fiduciary Net Position (Beginning) | N/A | N/A | 456,314,327 | 513,144,714 | 510,719,047 | 483,258,662 | 521,525,584 | 543,245,785 | 553,239,562 |
| Plan Fiduciary Net Position (Ending) | N/A | 456,314,327 | 513,144,714 | 510,719,047 | 483,258,662 | 521,525,584 | 543,245,785 | 553,239,562 | 543,230,351 |
| Net Pension Liability (Ending) | N/A | 148,651,414 | 164,256,403 | 239,869,030 | 296,092,507 | 261,945,298 | 261,261,399 | 247,245,925 | 237,561,597 |

Valuation Date: Actuarial liabilities and assets are calculated as of the Measurement Date during the indicated Fiscal Year Ending period.

E. GASB 67 and 68 Reports (continued)

Schedule of Net Pension Liability

| Fiscal Year Ending | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Total Pension Liability | N/A | N/A | 677,401,117 | 750,588,077 | 779,351,169 | 783,470,882 | 804,507,184 | 800,485,487 | 780,791,948 |
| Plan Fiduciary Net Position | N/A | N/A | 513,144,714 | 510,719,047 | 483,258,662 | 521,525,584 | 543,245,785 | 553,239,562 | 543,230,351 |
| Net Pension Liability (Ending) | N/A | N/A | 164,256,403 | 239,869,030 | 296,092,507 | 261,945,298 | 261,261,399 | 247,245,925 | 237,561,597 |
| Net Position as a % of Pension Liability | N/A | N/A | 75.75% | 68.04% | 62.01% | 66.57% | 67.53% | 69.11% | 69.57% |
| Covered Employee Payroll | N/A | N/A | 103,529,519 | 95,186,942 | 90,860,364 | 94,767,845 | 101,270,528 | 98,453,547 | 95,933,744 |
| Net Pension Liability as a % of Payroll | N/A | N/A | 158.66% | 252.00% | 325.88% | 276.41% | 257.98% | 251.13% | 247.63% |

Valuation Date: Actuarial liabilities and assets are calculated as of the Measurement Date during the indicated Fiscal Year Ending period.

E. GASB 67 and 68 Reports (continued)

Actuarially Determined Contribution

| Fiscal Year Ending | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020¹ |
|--|-------------|-------------|---------------|---------------|---------------|---------------|----------------|---------------|-------------------------|
| Actuarially Determined Contribution | N/A | N/A | 24,385,017 | 21,525,928 | 26,475,652 | 29,260,334 | 28,394,739 | 28,796,913 | 29,227,000 |
| Contributions made | N/A | N/A | 24,385,017 | 21,106,136 | 21,122,557 | 27,918,136 | 29,143,382 | 28,569,807 | 29,413,979 |
| Contribution Deficiency/(Excess) | N/A | N/A | 0 | 419,792 | 5,353,095 | 1,342,198 | (748,643) | 227,106 | (186,979) |
| Covered Employee Payroll | N/A | N/A | \$103,529,519 | \$ 95,186,942 | \$ 90,860,364 | \$ 94,767,845 | \$ 101,270,528 | \$ 98,453,547 | \$ 95,933,744 |
| Contributions as a percent of covered employee payroll | N/A | N/A | 23.55% | 22.61% | 29.14% | 30.88% | 28.04% | 29.25% | 30.47% |

Notes to schedule:

Methods and Assumptions used to determine contribution rates:

Measurement Date: July 1

Actuarial Cost Method: Projected Unit Credit

Asset Valuation Method: Assets smoothed over a 5 year period beginning in 2016. Valued using Market Value prior to 2016.

Amortization Method: Contributions based on greater of 20 year level dollar open amortization method and 30 year level dollar closed amortization method

Salary Increases: Varies by participant years of service. See the assumptions and methods section for more details.

General Inflation: 2.00%

Investment Rate of Return: 7.30% in 2016–2020, 7.65% in 2015, 7.95% in 2014

Cost of Living: N/A

Mortality Rates: Pri-2012 mortality table projected generationally from the central year using Scale MP-2020.

¹ Note the Actuarial Determined Contribution for 2020 was set by the City of Philadelphia Director of Finance's direction to contribute \$29,227,000 which exceeded the contribution determined by the plan's amortization method.

F. Estimated 10-Year Benefit Pay-Out Projections

Figures Shown in Thousands

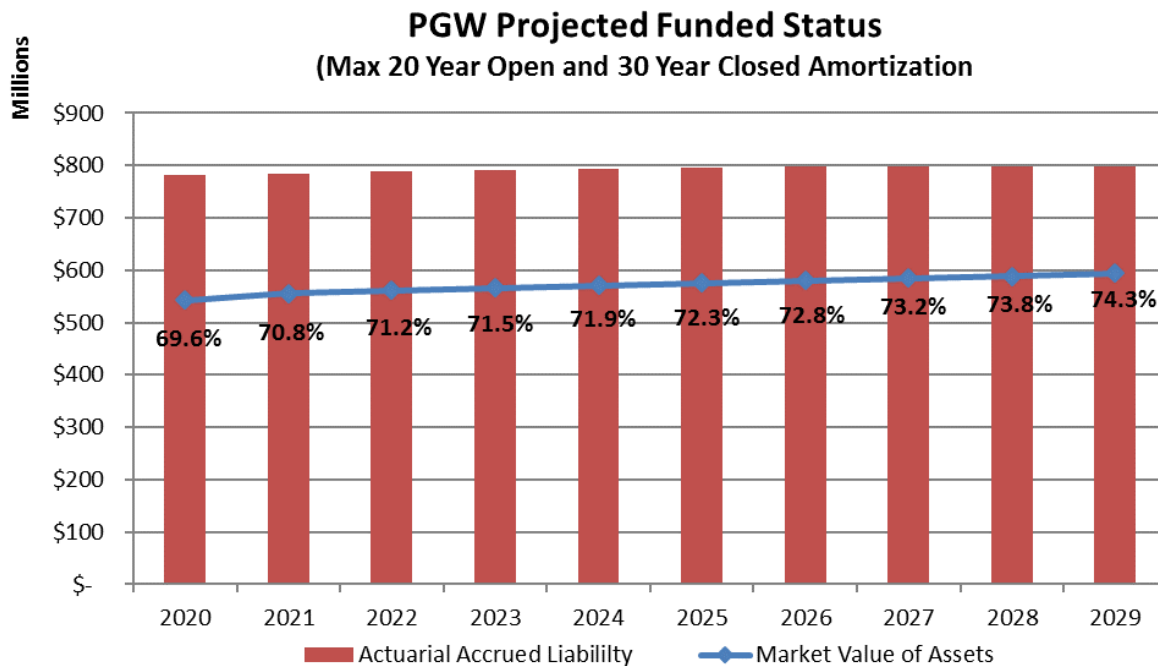
| Plan Year Beginning <u>July 1</u> | Expected Annual Benefit Pay-Out During <u>Plan Year</u> | Expected PGW Contributions <u>During Plan Year</u> | Expected Employee Contributions <u>During Plan Year</u> | Expected Benefits Paid from Plan <u>Assets</u> |
|--|--|---|--|---|
| 2020 | \$57,316 | \$30,000 | \$1,495 | \$25,821 |
| 2021 | 58,006 | 22,172 | 1,624 | 34,210 |
| 2022 | 58,694 | 22,032 | 1,761 | 34,901 |
| 2023 | 59,411 | 22,211 | 1,915 | 35,285 |
| 2024 | 59,963 | 22,412 | 2,070 | 35,481 |
| 2025 | 60,451 | 21,993 | 2,225 | 36,233 |
| 2026 | 60,861 | 21,742 | 2,383 | 36,736 |
| 2027 | 61,170 | 21,762 | 2,533 | 36,875 |
| 2028 | 61,434 | 21,827 | 2,680 | 36,927 |
| 2029 | 61,568 | 21,945 | 2,820 | 36,803 |

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 based on valuation assumptions. Expected PGW contributions calculated assuming contributions made based on greater of 20 year open amortization policy and 30 year closed amortization policy. The City of Philadelphia Director of Finance directed a contribution of \$30 million for plan year ending June 30, 2021. Expected employee contributions assume 50% of new employees select the PGW defined benefit pension plan and employee contribution rate remains 6% of pay.

G. Schedule of Prospective Funded Status

G. Schedule of Prospective Funded Status – Additional Contribution for 7/1/2020 Plan Year (Funding Policy - Max 20 Year Open and 30 Year Closed Amortization) (\$ thousands)

| Actuarial Valuation Date | Market Value of Assets | Total Pension Liability | Net Pension Liability | Mid-Year Contribution | Funded Ratio | Covered Payroll | Contribution as % of Covered Payroll | NPL as a % of Covered Payroll |
|--------------------------|------------------------|-------------------------|-----------------------|-----------------------|--------------|-----------------|--------------------------------------|-------------------------------|
| 7/1/2020 | \$543,230 | \$780,792 | \$237,562 | \$30,000 ¹ | 69.57% | \$95,934 | 31.27% | 247.63% |
| 7/1/2021 | 556,123 | 785,266 | 229,143 | 22,172 | 70.82% | 95,357 | 23.25% | 240.30% |
| 7/1/2022 | 561,261 | 788,787 | 227,526 | 22,032 | 71.15% | 95,046 | 23.18% | 239.39% |
| 7/1/2023 | 566,058 | 791,522 | 225,464 | 22,211 | 71.52% | 94,668 | 23.46% | 238.16% |
| 7/1/2024 | 570,808 | 793,763 | 222,955 | 22,412 | 71.91% | 94,813 | 23.64% | 235.15% |
| 7/1/2025 | 575,701 | 795,725 | 220,024 | 21,993 | 72.35% | 95,386 | 23.06% | 230.67% |
| 7/1/2026 | 580,171 | 797,060 | 216,889 | 21,742 | 72.79% | 95,521 | 22.76% | 227.06% |
| 7/1/2027 | 584,447 | 797,928 | 213,481 | 21,762 | 73.25% | 95,765 | 22.72% | 222.92% |
| 7/1/2028 | 588,891 | 798,448 | 209,557 | 21,827 | 73.75% | 95,556 | 22.84% | 219.30% |
| 7/1/2029 | 593,605 | 798,765 | 205,160 | 21,945 | 74.32% | 95,699 | 22.93% | 214.38% |



¹ The City of Philadelphia Director of Finance directed a contribution of \$30 million for plan year ending June 30, 2021

Investment returns assumed to be 7.30% per year

Covered payroll projected to increase based on valuation assumptions

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

1. Receiving Benefits

| Years Receiving Benefits as of July 1, 2020 | | | | | | | | | |
|--|------------|------------|--------------|--------------|---------------------------------|------------|--------------|------------------------|----------------|
| Age | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25+ | Total | Annual Benefits | |
| | | | | | | | | Total | Average |
| 15-44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 45-49 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 31,009 | 10,336 |
| 50-54 | 38 | 7 | 0 | 0 | 0 | 0 | 45 | 1,693,085 | 37,624 |
| 55-59 | 139 | 64 | 15 | 4 | 0 | 1 | 223 | 6,786,739 | 30,434 |
| 60-64 | 114 | 250 | 67 | 14 | 4 | 3 | 452 | 14,441,314 | 31,950 |
| 65-69 | 59 | 172 | 116 | 85 | 15 | 5 | 452 | 12,439,144 | 27,520 |
| 70-74 | 25 | 77 | 102 | 99 | 28 | 35 | 366 | 8,841,021 | 24,156 |
| 75-79 | 16 | 30 | 30 | 39 | 30 | 66 | 211 | 4,349,614 | 20,614 |
| 80-84 | 18 | 23 | 6 | 16 | 23 | 80 | 166 | 3,216,947 | 19,379 |
| 85-89 | 14 | 17 | 10 | 14 | 14 | 81 | 150 | 2,458,392 | 16,389 |
| 90+ | 9 | 9 | 13 | 14 | 14 | 68 | 127 | 1,507,701 | 11,872 |
| Total | 433 | 651 | 359 | 285 | 128 | 339 | 2,195 | 55,764,966 | 25,405 |
| Average Age: 70.94 | | | | | Average Retirement Years: 12.52 | | | | |

2. Vested Terminated

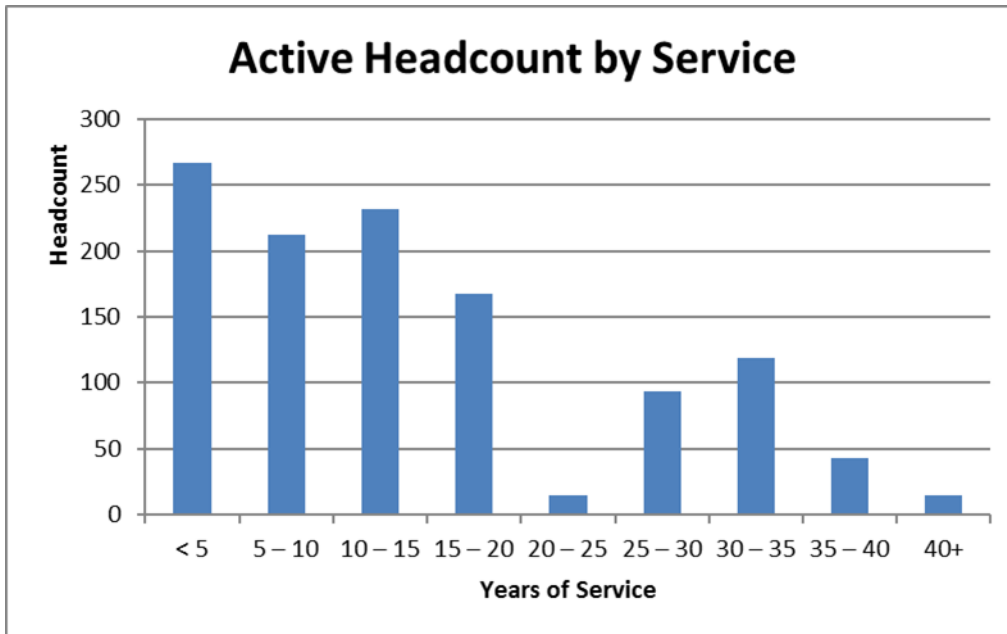
| Age | Number | Annual Benefits | |
|--------------|---------------|------------------------|-----------------|
| | | Total | Average |
| 15-44 | 109 | \$872,837 | \$8,008 |
| 45-49 | 36 | 351,085 | 9,752 |
| 50-54 | 76 | 959,572 | 12,626 |
| 55-59 | 66 | 750,660 | 11,374 |
| 60-64 | 26 | 342,130 | 13,159 |
| 65+ | 6 | 57,747 | 9,624 |
| Total | 319 | \$3,334,031 | \$10,452 |

I. Distribution of Active Participants by Age and Service

(Showing Number of Employees and Average Earnings)

| <u>Completed Years of Service as of July 1, 2020</u> | | | | | | | | | | | | | |
|--|---------|--------|--------|---------|--------|---------|--------|---------|---------|---------|-------------------------------|------------|---------|
| Age | 00-00 | 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40+ | Total | Earnings | |
| | | | | | | | | | | | | Total | Average |
| 15-19 | - | - | - | - | - | - | - | - | - | - | - | 0 | 0 |
| 20-24 | 12 | 28 | 2 | - | - | - | - | - | - | - | 42 | 2,114,698 | 50,350 |
| | 40,536 | 53,151 | 70,015 | - | - | - | - | - | - | - | 50,350 | | |
| 25-29 | 15 | 51 | 30 | 3 | - | - | - | - | - | - | 99 | 6,050,419 | 61,115 |
| | 42,709 | 59,171 | 70,342 | 93,946 | - | - | - | - | - | - | 61,115 | | |
| 30-34 | 16 | 45 | 80 | 62 | - | - | - | - | - | - | 203 | 15,000,946 | 73,896 |
| | 42,661 | 59,363 | 80,647 | 83,795 | - | - | - | - | - | - | 73,896 | | |
| 35-39 | 7 | 19 | 31 | 61 | 35 | - | - | - | - | - | 153 | 12,692,958 | 82,961 |
| | 47,919 | 65,439 | 82,280 | 88,995 | 89,567 | - | - | - | - | - | 82,961 | | |
| 40-44 | 4 | 21 | 17 | 28 | 36 | 1 | - | - | - | - | 107 | 9,119,866 | 85,232 |
| | 47,467 | 68,916 | 84,175 | 93,981 | 93,359 | 59,419 | - | - | - | - | 85,232 | | |
| 45-49 | 2 | 14 | 23 | 22 | 36 | - | 18 | 2 | - | - | 117 | 9,996,566 | 85,441 |
| | 66,691 | 77,609 | 76,786 | 92,347 | 88,381 | - | 89,293 | 94,977 | - | - | 85,441 | | |
| 50-54 | 2 | 15 | 11 | 23 | 28 | 5 | 31 | 44 | 4 | - | 163 | 14,869,372 | 91,223 |
| | 65,964 | 61,838 | 86,826 | 99,791 | 93,922 | 108,466 | 91,521 | 93,448 | 109,648 | - | 91,223 | | |
| 55-59 | 2 | 11 | 9 | 18 | 20 | 5 | 26 | 54 | 18 | 1 | 164 | 14,750,516 | 89,942 |
| | 82,348 | 76,587 | 77,385 | 87,425 | 92,667 | 124,992 | 87,165 | 90,041 | 91,425 | 220,775 | 89,942 | | |
| 60-64 | 1 | 1 | 6 | 9 | 8 | 3 | 15 | 16 | 21 | 8 | 88 | 8,729,379 | 99,197 |
| | 120,000 | 78,308 | 64,489 | 81,668 | 79,695 | 119,395 | 90,926 | 108,550 | 97,428 | 158,336 | 99,197 | | |
| 65-69 | - | 1 | 3 | 5 | 3 | - | 2 | 3 | - | 4 | 21 | 1,957,531 | 93,216 |
| | - | 98,331 | 55,980 | 90,650 | 84,783 | - | 79,316 | 79,601 | - | 146,557 | 93,216 | | |
| 70+ | - | - | - | 1 | 1 | 1 | 1 | - | - | 2 | 6 | 651,494 | 108,582 |
| | - | - | - | 222,695 | 71,251 | 118,417 | 73,913 | - | - | 82,609 | 108,582 | | |
| Total | 61 | 206 | 212 | 232 | 167 | 15 | 93 | 119 | 43 | 15 | 1,163 | 95,933,744 | 82,488 |
| | 47,294 | 62,626 | 78,567 | 89,865 | 90,562 | 113,554 | 89,324 | 93,609 | 96,052 | 149,261 | 82,488 | | |
| Average Age: 44.26 | | | | | | | | | | | Average Service: 14.63 | | |

I. Distribution of Active Participants by Service (continued)



| <u>Service</u> | <u>Active Headcount</u> |
|----------------|-------------------------|
| < 5 | 267 |
| 5 - 10 | 212 |
| 10 - 15 | 232 |
| 15 - 20 | 167 |
| 20 - 25 | 15 |
| 25 - 30 | 93 |
| 30 - 35 | 119 |
| 35 - 40 | 43 |
| 40+ | 15 |
| Total | 1,163 |

J. Data Reconciliation

| | <i>Actives</i> | <i>Term Vested</i> | <i>Retiree*</i> | <i>Total</i> |
|--|----------------|--------------------|-----------------|-----------------|
| 1. Participants as of 7/1/2019 | 1,195 | 317 | 2,178 | 3,690 |
| a. New Participants | 61 | 0 | 0 | 61 |
| b. Return from Retirement | 0 | 0 | 0 | 0 |
| c. Retirements | (59) | (12) | 71 | 0 |
| d. Surviving Spouses | 0 | 0 | 0 | 0 |
| e. Rehires | 1 | (1) | 0 | 0 |
| f. Terminations | (15) | 15 | 0 | 0 |
| g. Nonvested Terminations | (18) | 0 | 0 | (18) |
| h. Deaths w/ Beneficiary | 0 | 0 | (29) | (29) |
| i. New Beneficiary | 0 | 0 | 29 | 29 |
| j. Deaths w/o Beneficiary | (2) | 0 | (59) | (61) |
| k. Data Corrections | 0 | 0 | 1 | 1 |
| l. New QDRO | <u>0</u> | <u>0</u> | <u>4</u> | <u>4</u> |
| m. Total Increase / (Decrease) | (32) | 2 | 17 | (13) |
| 2. Actual Participants as of 6/30/2020 | 1,163 | 319 | 2,195 | 3,677 |

**Includes Surviving Spouses and Alternate Payees*

K. Actuarial Methods and Assumptions

1. *Cost Methods*

The Cost Method is called the Entry Age Normal Cost Method. The Normal Cost is calculated for each participant as the contribution required, as a level percentage of compensation over the participant's entire period of credited service, to provide his or her projected pension benefits. This contribution is assumed to be payable over a period commencing on the date on which the participant first met the funding eligibility conditions and ending on the assumed retirement date. That percentage, applied to the current year compensation, yields the current year Normal Cost for that participant. The total Normal Cost is the aggregate of the individual Normal Costs. The Plan Sponsor's Normal Cost is the total Normal Cost less that part of the total participant contributions due to be made during the year which is expected to be available at assumed retirement date.

The Plan Sponsor's Accrued Actuarial Liability, as of any date, is determined as the excess of the total present value of benefits for both active and non-active lives, over the total present value of both future normal costs and future employee contributions. This is also equal to the accumulated total of past Normal Costs, assuming this cost method and these assumptions, for this group of participants.

Each year actuarial gains and losses occur since actuarial experience under the Plan will vary from the actuarial assumptions. All gains and losses will be determined each year and amortized from date of inception.

2. *Asset Valuation Technique*

The Actuarial Asset Value is equal to the value of fund assets as reported by the City of Philadelphia with no adjustments.

3. *Accounting Information*

GASB Statement 67

- Measurement Date: June 30, 2020
- Valuation Date: June 30, 2020

GASB Statement 68

- Measurement Date: June 30, 2020
- Valuation Date: June 30, 2020

K. Actuarial Methods and Assumptions (continued)

4. Actuarial Assumptions

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

- a. Mortality Rates: Healthy: Pri-2012 employees and healthy annuitants mortality table projected generationally from the central year using Scale MP-2020:
- Disabled: Pri-2012 disabled retiree mortality table projected generationally from the central year using Scale MP-2020:
- Surviving Spouses: Pri-2012 contingent survivor mortality table projected generationally from the central year using Scale MP-2020:
- b. Interest: 7.30%, compounded annually.
- c. Turnover: A scale varying by age and service with illustrative annual rates of turnover. See table 1 for details.
- d. Disability A scale varying by age with illustrative annual rates of disability. See table 2 for details
- e. Salary Increase
- Determination of Contribution Range* Salaries are assumed to increase by an amount based on years of service. See table 3 for details.
- 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.

K. Actuarial Methods and Assumptions (continued)

- 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> |
|------------|----------------------------------|----------------------------------|------------|----------------------------------|----------------------------------|
| 50 | 0% | 15% | 61 | 10% | 15% |
| 51 | 0% | 15% | 62 | 10% | 40% |
| 52 | 0% | 15% | 63 | 10% | 25% |
| 53 | 0% | 15% | 64 | 10% | 25% |
| 54 | 0% | 15% | 65 | 20% | 25% |
| 55 | 5% | 15% | 66 | 20% | 40% |
| 56 | 5% | 15% | 67 | 20% | 40% |
| 57 | 10% | 15% | 68 | 20% | 40% |
| 58 | 10% | 15% | 69 | 20% | 40% |
| 59 | 10% | 15% | 70+ | 100% | 100% |
| 60 | 10% | 15% | | | |

- g. Salary Current year salary is assumed to be the greater of the annualized 2020 Taxable Gross Wages based on actual wages through June 30, 2020 and the annual pay rate as provided by Philadelphia Gas Works.
- h. Conversion of Time Off Balances Participant compensation is assumed to increase in the final year of employment prior to retirement due to conversion of time off balances based on the following schedule:
 Less than 30 years of service: 7.5% increase in final year compensation
 30 of more years of service: 19.5% increase in final year compensation
- i. Optional payment form election percentage 40% single life annuity
 25% joint and 50% survivor annuity
 10% joint and 75% survivor annuity
 25% joint and 100% survivor annuity
- j. Surviving spouse benefit It is assumed that 70% of males and 70% of females have an eligible spouse, and that males are two years older than their spouses.

K. Actuarial Methods and Assumptions (continued)

5. Change in Actuarial Assumptions

- The mortality table for healthy participants was updated from the RP-2014 mortality table for employees and healthy annuitants projected generationally from the central year using Scale MP-2018 to the Pri-2012 mortality table for employees and healthy annuitants projected generationally from the central year using Scale MP-2020.
- The mortality table for disabled participants was updated from the RP-2014 mortality table for disabled participants projected generationally from the central year using Scale MP-2018 to the Pri-2012 mortality table for disabled participants projected generationally from the central year using Scale MP-2020.
- The mortality table for surviving spouses was updated from the RP-2014 mortality table for employees and healthy annuitants projected generationally from the central year using Scale MP-2018 to the Pri-2012 mortality table for contingent survivors projected generationally from the central year using Scale MP-2020.
- The turnover rates were updated based on the experience study using actual terminations from 2014 to 2019.
- The disability rates were updated to use Aon's standard disability incidence table based on analysis as part of a recent experience review.
- The salary scale was updated based on the experience study using pay increases from 2014 to 2019.
- Participant compensation is assumed to increase in the final year of employment prior to retirement due to conversion of time off balances. The assumed increase is 7.5% for participants with less than 30 years of service and 19.5% for participants with 30 or more years of service.
- The retirement rates were updated based on the experience study using actual retirements from 2014 to 2019.
- Optional payment form election percentage was updated based on the experience study from 100% single life annuity to 40% single life annuity, 25% joint and 50% survivor annuity, 10% joint and 75% survivor annuity, and 25% joint and 100% survivor annuity.
- Surviving spouse benefit assumption was updated from 80% of males and 80% of females have an eligible spouse and males are three years older than their spouse to 70% of males and 70% of females have an eligible spouse and males are two years older than their spouse.

Additional details can be found in the experience study report issued in October 2020.

K. Actuarial Methods and Assumptions (cont.)

Table 1

Turnover Rates

| Age | 0 Years of Service | 1 Year of Service | 2 Years of Service | 3 Years of Service | 4 Years of Service | 5 or More Years of Service |
|---------------|-------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|---------------------------------------|
| 20 or Younger | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 21 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 22 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 23 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 24 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 25 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 26 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 27 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 28 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 29 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 30 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 31 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 32 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 33 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 34 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 35 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 36 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 37 | 25.0% | 15.0% | 12.0% | 10.0% | 7.0% | 3.0% |
| 38 | 23.0% | 15.0% | 12.0% | 9.0% | 6.6% | 2.8% |
| 39 | 21.0% | 15.0% | 12.0% | 8.0% | 6.2% | 2.6% |
| 40 | 19.0% | 15.0% | 12.0% | 7.0% | 5.8% | 2.4% |
| 41 | 17.0% | 15.0% | 12.0% | 6.0% | 5.4% | 2.2% |
| 42 | 15.0% | 15.0% | 12.0% | 5.0% | 5.0% | 2.0% |
| 43 | 14.0% | 14.0% | 10.6% | 4.6% | 4.6% | 2.0% |
| 44 | 13.0% | 13.0% | 9.2% | 4.2% | 4.2% | 2.0% |
| 45 | 12.0% | 12.0% | 7.8% | 3.8% | 3.8% | 2.0% |
| 46 | 11.0% | 11.0% | 6.4% | 3.4% | 3.4% | 2.0% |
| 47 | 10.0% | 10.0% | 5.0% | 3.0% | 3.0% | 2.0% |
| 48 | 10.0% | 10.0% | 5.0% | 2.8% | 2.8% | 2.0% |
| 49 | 10.0% | 10.0% | 5.0% | 2.6% | 2.6% | 2.0% |
| 50 | 10.0% | 10.0% | 5.0% | 2.4% | 2.4% | 2.0% |
| 51 | 10.0% | 10.0% | 5.0% | 2.2% | 2.2% | 2.0% |
| 52 | 10.0% | 10.0% | 5.0% | 2.0% | 2.0% | 2.0% |
| 53 | 10.0% | 10.0% | 5.0% | 2.0% | 2.0% | 2.0% |
| 54 | 10.0% | 10.0% | 5.0% | 2.0% | 2.0% | 2.0% |
| 55 or Older | 10.0% | 10.0% | 5.0% | 2.0% | 2.0% | 2.0% |

K. Actuarial Methods and Assumptions (cont.)

Table 2

Disability Rates

| Age | Males | Females |
|----------------|--------------|----------------|
| 27 and Younger | 0.03345% | 0.03345% |
| 28 | 0.03345% | 0.04460% |
| 29 | 0.03345% | 0.04460% |
| 30 | 0.03345% | 0.04460% |
| 31 | 0.03345% | 0.05575% |
| 32 | 0.03345% | 0.05575% |
| 33 | 0.03345% | 0.06690% |
| 34 | 0.03345% | 0.06690% |
| 35 | 0.04460% | 0.07805% |
| 36 | 0.04460% | 0.08920% |
| 37 | 0.05575% | 0.10035% |
| 38 | 0.06690% | 0.11150% |
| 39 | 0.07805% | 0.13380% |
| 40 | 0.08920% | 0.14495% |
| 41 | 0.10035% | 0.16725% |
| 42 | 0.11150% | 0.18955% |
| 43 | 0.13380% | 0.21185% |
| 44 | 0.15610% | 0.24530% |
| 45 | 0.17840% | 0.26760% |
| 46 | 0.20070% | 0.30105% |
| 47 | 0.23415% | 0.33450% |
| 48 | 0.27875% | 0.36795% |
| 49 | 0.31220% | 0.40140% |
| 50 | 0.36795% | 0.44600% |
| 51 | 0.43485% | 0.49060% |
| 52 | 0.51290% | 0.54635% |
| 53 | 0.59095% | 0.60210% |
| 54 | 0.68015% | 0.65785% |
| 55 | 0.76935% | 0.71360% |
| 56 | 0.85855% | 0.76935% |
| 57 | 0.95890% | 0.82510% |
| 58 | 1.05925% | 0.89200% |
| 59 | 1.17075% | 0.94775% |
| 60 | 1.28225% | 1.00350% |
| 61 | 1.40490% | 1.07040% |
| 62 | 1.53870% | 1.12615% |
| 63 | 1.68365% | 1.17075% |
| 64 | 1.82860% | 1.21535% |
| 65 and Older | 0.0% | 0.0% |

K. Actuarial Methods and Assumptions (cont.)

Table 3

Assumed Salary Increases

| Years of Service | Annual Increase |
|-------------------------|------------------------|
| 0 | 8.86% |
| 1 | 8.59% |
| 2 | 8.31% |
| 3 | 8.04% |
| 4 | 7.77% |
| 5 | 7.49% |
| 6 | 7.22% |
| 7 | 6.94% |
| 8 | 6.67% |
| 9 | 6.39% |
| 10 | 6.12% |
| 11 | 5.84% |
| 12 | 5.57% |
| 13 | 5.29% |
| 14 | 5.02% |
| 15 | 4.74% |
| 16 | 4.54% |
| 17 | 4.33% |
| 18 | 4.12% |
| 19 | 3.91% |
| 20 or more | 3.71% |

L. 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 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.

L. Summary of the Principal Plan Provisions (continued)

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.

L. Summary of the Principal Plan Provisions (continued)

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 plc (NYSE:AON) is a leading global professional services firm providing a broad range of risk, retirement, and health solutions. Our 50,000 colleagues in 120 countries empower results for clients by using proprietary data and analytics to deliver insights that reduce volatility and improve performance.

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