

Policemen's Annuity and Benefit Fund of Chicago

Actuarial Valuation Report for the Year Ending
December 31, 2023





May 13, 2024

Board of Trustees
Policemen's Annuity and Benefit Fund
City of Chicago
221 North LaSalle Street, Suite 1626
Chicago, Illinois 60601-1404

Subject: Actuarial Valuation Report for the Year Ending December 31, 2023

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Policemen's Annuity and Benefit Fund of Chicago ("the PABF" or "the Fund") as of December 31, 2023. The primary purposes of this actuarial valuation are to determine the statutory contribution for tax levy year 2025 (i.e., payment year 2026) and to measure the funded status of the Fund as of December 31, 2023, based on the statutes in effect as of December 31, 2023. This report also provides the development of the plan year end 2024 Actuarially Determined Contribution ("ADC") as required by GASB Statement Nos. 67 and 68. Other information required under GASB Statement Nos. 67 and 68 is provided in a separate report. The actuarial assumptions and methods used were recommended by the actuary and approved by the Board.

We have prepared the supporting schedules for the actuarial section of the annual comprehensive financial report, including:

- Summary of Actuarial Valuation Methods and Assumptions;
- Schedule of Active Member Data;
- Retirements and Beneficiaries Added to and Removed from Rolls;
- Prioritized Solvency (Termination) Test;
- Development of Actuarially Determined Contributions under GASB Statement Nos. 67 and 68;
- Development of Actuarial Gains and Losses; and
- Summary of Basic Actuarial Values.

This actuarial valuation is based upon:

Data Relative to the Members of the Fund – Data for active members and persons receiving benefits from the Fund was provided by the Fund's staff. We have tested this data for reasonableness.

Asset Values – The actuarial value of assets is used in the development of the statutory contribution requirements. In each future fiscal year, investment gains and losses will be phased in over a five-year period.

Actuarial Method – The actuarial method utilized by the Fund, as required by statute, is the Entry-Age Normal cost method. The objective of this method is to recognize the costs of Fund benefits over the entire career of each member as a level percentage of compensation. Any Unfunded Actuarial Accrued Liability (UAAL) under this method is separately financed. All actuarial gains and losses under this method are reflected in the UAAL.

Actuarial Assumptions – All actuarial assumptions remain unchanged from the prior actuarial valuation and reflect the results of the experience study performed for the period of January 1, 2014 through December 31, 2018, approved by the Board on August 27, 2019, first effective with the December 31, 2019, actuarial valuation. The assumptions used are set forth in Appendix 4: Actuarial Methods and Assumptions.

Plan Provisions – The actuarial valuation is based on plan provisions and statutes in effect as of December 31, 2023.

The funding objective of the Fund is to provide employer and employee contributions sufficient to provide the benefits of the Fund when due. Pursuant to Public Act ("P.A.") 99-0506, effective May 30, 2016, the funding policy was amended and requires City contributions to be equal to \$420 million in payment year 2016, \$464 million in payment year 2017, \$500 million in payment year 2018, \$557 million in payment year 2019, and \$579 million in payment year 2020. For payment years after 2020, the City is required to make level percent of pay contributions for plan years 2020 through 2055 that along with member contributions and investment earnings are expected to generate a projected funded ratio of 90% by plan year end 2055. The projections are based on an open group, level percent of pay financing and the Entry-Age Normal cost method. This actuarial valuation determines the statutory contribution of **\$1,042.6** million (73.4% of projected pay) for tax levy year 2025 (i.e., payment year 2026).

This is a severely underfunded plan. The funded ratio is only **23.4%** (using actuarial value of assets) and the unfunded liability is approximately \$13.4 billion as of December 31, 2023. The funded ratio is not projected to even reach 50% funded for another 19 years until 2042.

The funding policy defined in P.A. 99-0506 significantly defers contributions when compared to the provisions of the prior funding policy defined in P.A. 96-1495. The amount of annual contributions defined under P.A. 99-0506 does not even cover normal cost plus interest on the unfunded liability for the next six years. This means the unfunded liability is actually projected to increase to a high of \$14.1 billion in 2029, when contributions are finally sufficient to start reducing the unfunded liability.

We understand that P.A. 99-0506 defines the amount of City Contributions to the PABF. Nevertheless, we continue to recommend that the plan sponsor seriously consider making additional contributions (in excess of the statutory requirement) to ensure that there are sufficient assets available in the fund in all years to pay the promised benefits.

We also recommend that the Board perform projections which include pessimistic scenarios such as investment return lower than assumed, lower contributions received than expected, higher benefit payments than expected, etc. to more fully understand the impact of less than optimal future expectations.



The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Appendix 4 of this report. This report includes risk metrics starting on page 13 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this report. Pages 16 to 17 of the report provide the hypothetical Low Default Risk Obligation Measure as required by ASOP No. 4.

This actuarial valuation assumes that the City will be able to make future contributions on a timely basis. We did not perform an analysis of the ability of the City to make future contributions. Such an analysis is not within the scope of our assignment. Failure to receive City contributions on a timely basis could jeopardize the sustainability of the Fund.

The funding actuarial valuation results contained in this report were prepared based on the statutes in effect as of December 31, 2023. The projected contributions contained in this report will be used to develop the blended discount rate under GASB Statement Nos. 67 and 68.

The actuarial valuation was based on census data as of December 31, 2023, as provided by the Fund's Staff. We reviewed the census data for reasonableness and consistency. We are not responsible for the accuracy or completeness of the information provided by the Fund's Staff.

This report was prepared using actuarial assumptions, as described in Appendix 4, which were approved by the Board. All actuarial assumptions used in this report are reasonable for the purpose of the actuarial valuation and follow the applicable Actuarial Standards of Practice.

The actuarial valuation results set forth in this report are based on the data and actuarial techniques described above, and upon the provisions of the Fund as of the actuarial valuation date. To the best of our knowledge, this actuarial statement is complete and accurate based on the statutes in effect as of December 31, 2023, and fairly presents the actuarial position of the Fund as of December 31, 2023. Based on these items, we certify these results to be true and correct.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation, and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled. We are relying on the GRS actuaries and Internal Software, Training, and Processes Team who developed and maintain the model.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes 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 or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.



Actuarial valuations do not affect the ultimate cost of the Plan, only the timing of contributions into the Plan. Plan funding occurs over time. Contribution shortfalls (the difference between the actual contributions and the annual required contributions) remain the responsibility of the Plan sponsor. If the contribution levels over a period of years are lower or higher than necessary, it is normal and expected practice for adjustments to be made to future contribution levels to take account of this variance, with a view to funding the plan over time.

This report should not be relied on for any purpose other than the purpose stated.

This report was prepared at the request of the Board and is intended for use by the Fund and those designated or approved by the Board. This report may be provided to parties other than the Fund only in its entirety and only with the permission of the Fund. GRS is not responsible for unauthorized use of this report.

Alex Rivera and Francois Pieterse are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

The signing actuaries are independent of the plan sponsor.

Respectfully yours,
Gabriel, Roeder, Smith & Company



Alex Rivera, FSA, EA, MAAA, FCA
Senior Consultant



Francois Pieterse, ASA, MAAA, FCA
Senior Consultant

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Summary of Actuarial Valuation Results

This report sets forth the results of the actuarial valuation of the Policemen’s Annuity and Benefit Fund of the City of Chicago (“the PABF” or “the Fund”) as of December 31, 2023. This actuarial valuation is based on the funding provisions in effect as of December 31, 2023. The purposes of this actuarial valuation are:

1. To provide the statutory contribution for tax levy year 2025 (i.e., payment year 2026) based on the provisions of Public Act 99-0506.
2. To estimate the projected statutory contributions for tax levy years after 2025 based on the provisions of Public Act 99-0506, for purposes of developing the blended discount rate under GASB Statement Nos. 67 and 68.
3. To develop the actuarially determined contributions (ADC) under GASB Statement Nos. 67 and 68 for plan year 2024.
4. To review the funded status of the Fund as of December 31, 2023, based on the statutes in effect as of the actuarial valuation date.

The funded status, in basic terms, is a comparison of Fund liabilities to Fund assets expressed as either unfunded liability or as a ratio of assets to liabilities. This comparison can be measured in various ways. Fund liabilities are dependent on the actuarial assumptions and actuarial cost method. Fund assets can be measured at market value, book value, or some variation to smooth the fluctuations that invariably occur from year to year.

Funded status is measured differently for statutory funding and for Fund and City financial reports. The following chart shows how funded status is determined for each purpose.

PURPOSE	ACTUARIAL COST METHOD	ASSET VALUE
Statutory Funding	Entry-Age Normal	Actuarial (Market-Related) Value of Assets
Fund reporting after 2014 (GASB Statement No. 67 for pension benefits)	Entry-Age Normal	Market Value of Assets
City reporting after 2015 (GASB Statement No. 68 for pension benefits)	Entry-Age Normal	Market Value of Assets

Under the Entry Age Normal Cost Method, each participant’s projected benefit is allocated on a level percent of pay basis from entry age to assumed exit age. The Actuarial Accrued Liability is the portion of the present value associated with pay prior to the actuarial valuation date. The Normal Cost is the portion of the present value associated with pay during the current plan year.

The actuarial (market-related) value of assets is determined from market value with investment gains and losses smoothed over a five-year period. The actuarial assumptions used to determine the liabilities are the same in all three measures, with the exception of the investment return assumption.



Summary of Actuarial Valuation Results

Comments on Results

P.A. 99-0506, effective as of May 30, 2016, changed the City's contribution policy to a fixed dollar contribution of \$420 million in payment year 2016, \$464 million in payment year 2017, \$500 million in payment year 2018, \$557 million in payment year 2019, and \$579 million in payment year 2020. For payment years after 2020, the City is required to make level percent of pay contributions for plan years through 2055 which, along with member contributions and investment earnings, are expected to generate a projected funded ratio of 90% by plan year end 2055.

This actuarial valuation determines the statutory contribution of **\$1,042.6 million (73.4% of projected pay)** for tax levy year 2025 (i.e., payment year 2026). The statutory contribution rate increased from 68.4% for tax levy year 2024 to 73.4% for tax levy year 2025. The increase in the contribution rate was primary due to PA 103-0582 which provides 3 percent COLAs to Tier 1 member born on and after January 1, 1966.

Under the current statutory funding policy the funded ratio is projected to increase slowly over the next 10 years from **23.4%** in 2023 to 35.5% in 2033. The funded ratio is projected to increase to 46.6% in 2040, 56.8% in 2045, 70.7% in 2050, and 90.0% in 2055. The statutory funding policy generates "back-loaded" City contributions with slow growth in the funded ratio. Underfunding the Fund creates the risk that the long-term investment return cannot be supported, minimal investment income is available to pay benefits, or worse, that benefit obligations cannot be met from the trust.

The calculations in this report were prepared based on the funding policy methods required by Public Act 99-0506. In light of the current funded status of this Retirement Fund, we do not endorse this funding policy because the Statutory funding policy defers funding for benefits into the future and places a higher burden on future generations of taxpayers.

We recommend a funding policy that contributes the net normal cost plus amortization of the unfunded actuarial liability over a reasonable period. For example, contributing the net normal cost plus amortization of the unfunded actuarial liability on a level dollar basis over a 30-year period in our opinion would produce a reasonable growth pattern in the funded ratio. Using this basis, the City's Actuarially Determined Contribution ("ADC") for plan year end 2024, net of member contributions, is approximately \$1,242.0 million, or **90.0%** of payroll, which compares to the current statutory contribution of \$928.8 million or **67.3%** of payroll. The ADC is a required disclosure item under GASB Statement Nos. 67 and 68. We recognize that the State Statute governs the funding policy of the Fund. The purpose of these recommendations is to highlight the difference between the Statutory appropriation methodology and an actuarially sound funding policy and to highlight the risks and additional costs of continuing to underfund the Fund. As part of the next Experience Study, we recommend reviewing the effect of using an open 30-year level dollar amortization to develop the ADC.

Effective with Fiscal Year ending December 31, 2014, GASB Statement No. 67 is used for pension plan financial reporting requirements. GASB Statement No. 68 is used for employer financial reporting effective with fiscal year ending December 31, 2015. The discount rate used for GASB Statement Nos. 67 and 68 reporting purposes will be based on a single equivalent discount rate using a combination of 6.75% for the projected benefits for all current members that can be paid from current assets and projected investment return, future employee contributions from current members, and future employer



Summary of Actuarial Valuation Results

contributions attributable to current members, and a municipal bond rate for the portion of the projected benefits after assets are depleted.

The municipal bond rate is based on a yield or index rate for 20-year, tax exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale).

Due to the single equivalent discount rate and shorter amortization periods required under GASB Statement Nos. 67 and 68, the unfunded liabilities and pension expense will be much higher and more volatile than under the prior GASB standards. The measurements required under GASB Statement Nos. 67 and 68 are provided in a separate report.

Based on Fund experience during the year, the total unfunded actuarial accrued liability (based on the actuarial value of assets) was approximately \$1.20 billion more than expected. The unfunded liability as of December 31, 2023 was \$13.41 billion compared to an expected value of \$12.21 billion. PA 103-0582 increased the actuarial liability by \$1.04 billion which was the primary source of the unexpected increase in the unfunded actuarial liability.

Using the actuarial value of assets produced an unfunded liability of \$13.41 billion and a funded ratio of 23.4%. Using the market value of assets produced an unfunded liability of \$13.63 billion and a funded ratio 22.1%. Using the book value of assets produced an unfunded liability of \$14.03 billion and a funded ratio of 19.8%.

Please note the highlighted area on page 36 showing the age/service distribution for active members. A large portion of the population is at or nearing retirement. In addition, the number of active members has decreased over the past five years. We should continue to monitor this as the ratio of actives to retirees has been steadily declining, which can ultimately have a large impact on contribution requirements. A more thorough examination of these and other factors can be found in the 2023 Gain/Loss Analysis explanation on pages 11 and 12 and the gain/loss information in Table 5.

A summary of the primary results of this actuarial valuation is shown in the following table.

Summary of Actuarial Valuation Results

Actuarial Valuation at:	12/31/2022		12/31/2023	
	\$ in Millions	% of Proj Pay ¹	\$ in Millions	% of Proj Pay ¹
Contribution Levels				
Statutory Contribution ²	\$ 928.84	68.40%	\$ 1,042.58	73.38%
Tax Levy Year/Payment Year	2024 / 2025		2025 / 2026	
Actuarially Determined Contribution ³	1,118.72	85.29	1,242.01	89.99
Plan Year	2023		2024	
Funded Status - Actuarial Value ⁴				
Actuarial Value of Assets	\$ 3,815.01		\$ 4,090.21	
Actuarial Liability	16,020.81		17,500.21	
Funded Ratio	23.81%		23.37%	
Funded Status - Market Value				
Market Value of Assets	\$ 3,486.78		\$ 3,869.93	
Actuarial Liability	16,020.81		17,500.21	
Funded Ratios	21.76%		22.11%	

¹For the actuarial valuation as of December 31, 2022, payroll as of the valuation date was \$1,274 million and projected payroll was estimated to be \$1,312 million in 2023. For the actuarial valuation as of December 31, 2023, payroll as of the valuation date was \$1,340 million and projected payroll is estimated to be \$1,380 million in 2024.

²Pursuant to P.A. 99-0506, the fiscal year 2024 tax levy, payable in fiscal year 2025, is equal to \$928,841,536 and the fiscal year 2025 tax levy, payable in fiscal year 2026, is equal to \$1,042,582,135. The statutory contribution expressed as a percentage of pay is based on projected payroll for the respective tax levy year.

³The ADC for fiscal year December 31, 2024 was based on a 30-year level dollar amortization policy.

⁴Also used to determine the Actuarially Determined Contribution under GASB Statement Nos. 67 and 68.



Summary of Actuarial Valuation Results

Five-Year Projection of Statutory Contributions

Following is a five-year projection of the statutory contributions based on statutory actuarial calculations.

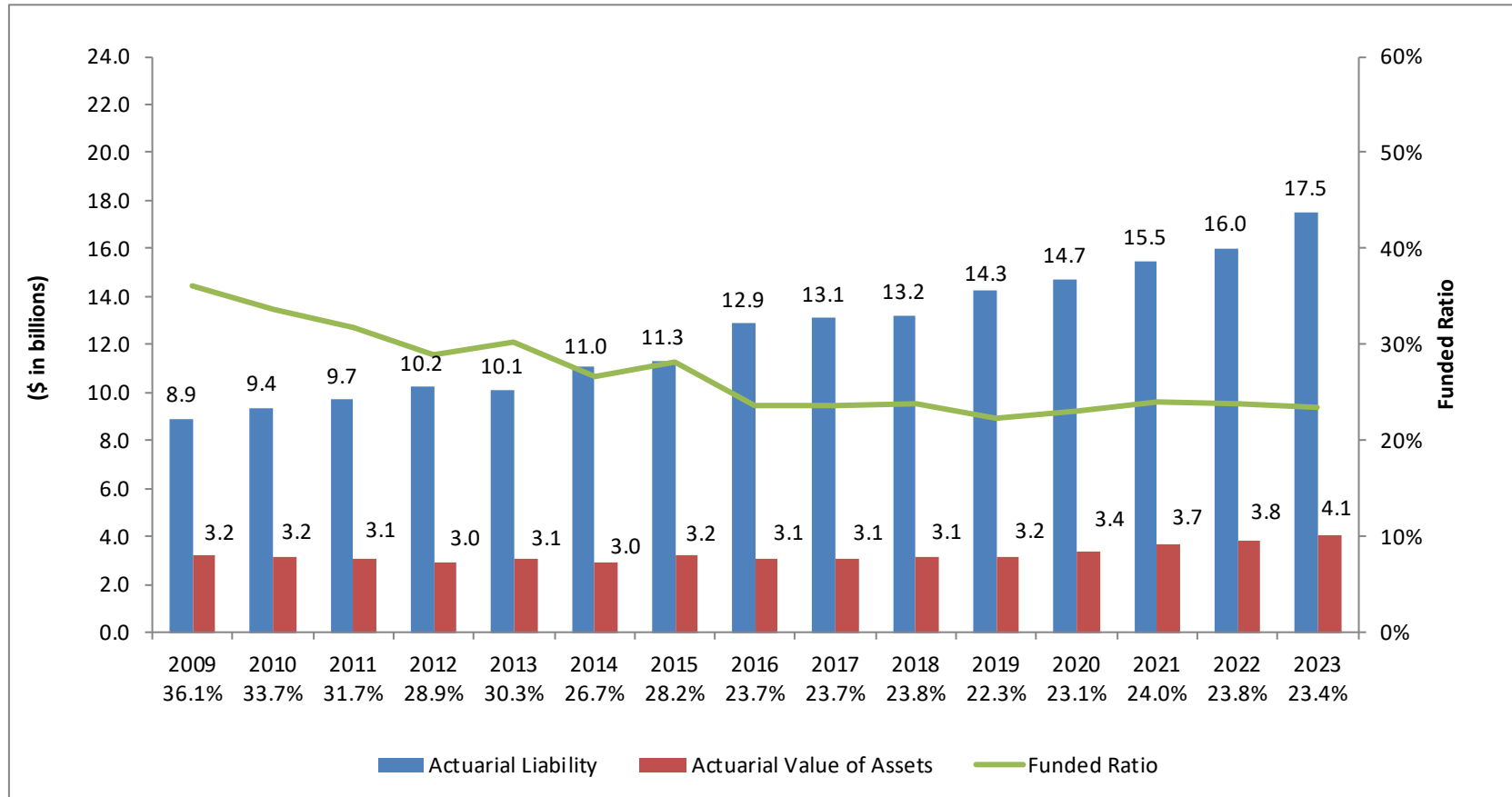
City Contributions \$ in Thousands		
Tax Levy Year	Payment Year	Statutory Contribution
2023	2024	\$ 851,100
2024	2025	928,842
2025	2026	1,042,582
2026	2027	1,065,128
2027	2028	1,089,752

Statutory Contributions for payment years 2027 and 2028 are estimated amounts and will be updated in subsequent actuarial valuations.

The projected statutory contributions for payment years 2024 and 2025 were determined in the actuarial valuations as of December 31, 2021, and December 31, 2022, respectively. The statutory contribution for payment year 2026 is \$1,042.6 million, which is approximately **73.4%** of projected payroll in 2026. After 2026, the projected city contribution is **73.4%** of projected payroll, but will increase as a dollar amount as payroll increases. Full projection results through 2055 are shown in Table 3a. The Statutory contributions set forth in this report represent the contribution amount determined consistent with the State Statute.

Summary of Actuarial Valuation Results

Components of Funded Ratio State Reporting

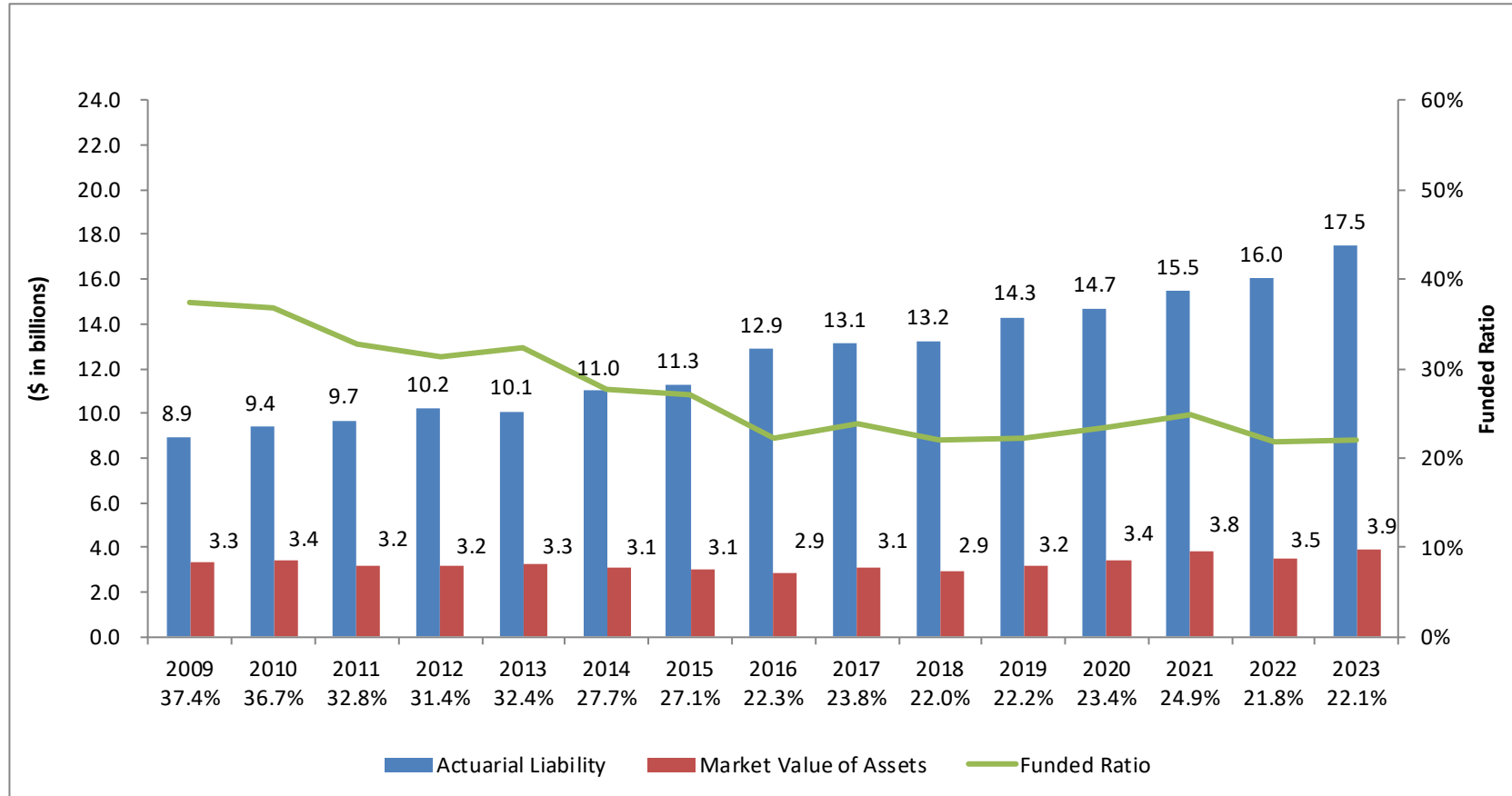


State reporting for 2016 through 2023 uses the Entry-Age Normal cost method. Years 2013 through 2015 used Projected Unit Credit for Actuarial Liabilities. Actuarial Liabilities prior to 2013 also use the Entry-Age Normal cost method. State reporting of assets is based on Actuarial (Market-Related) Value for Assets beginning in 2013 and Book Value of assets prior to 2013.



Summary of Actuarial Valuation Results

Components of Funded Ratio Market Value of Assets

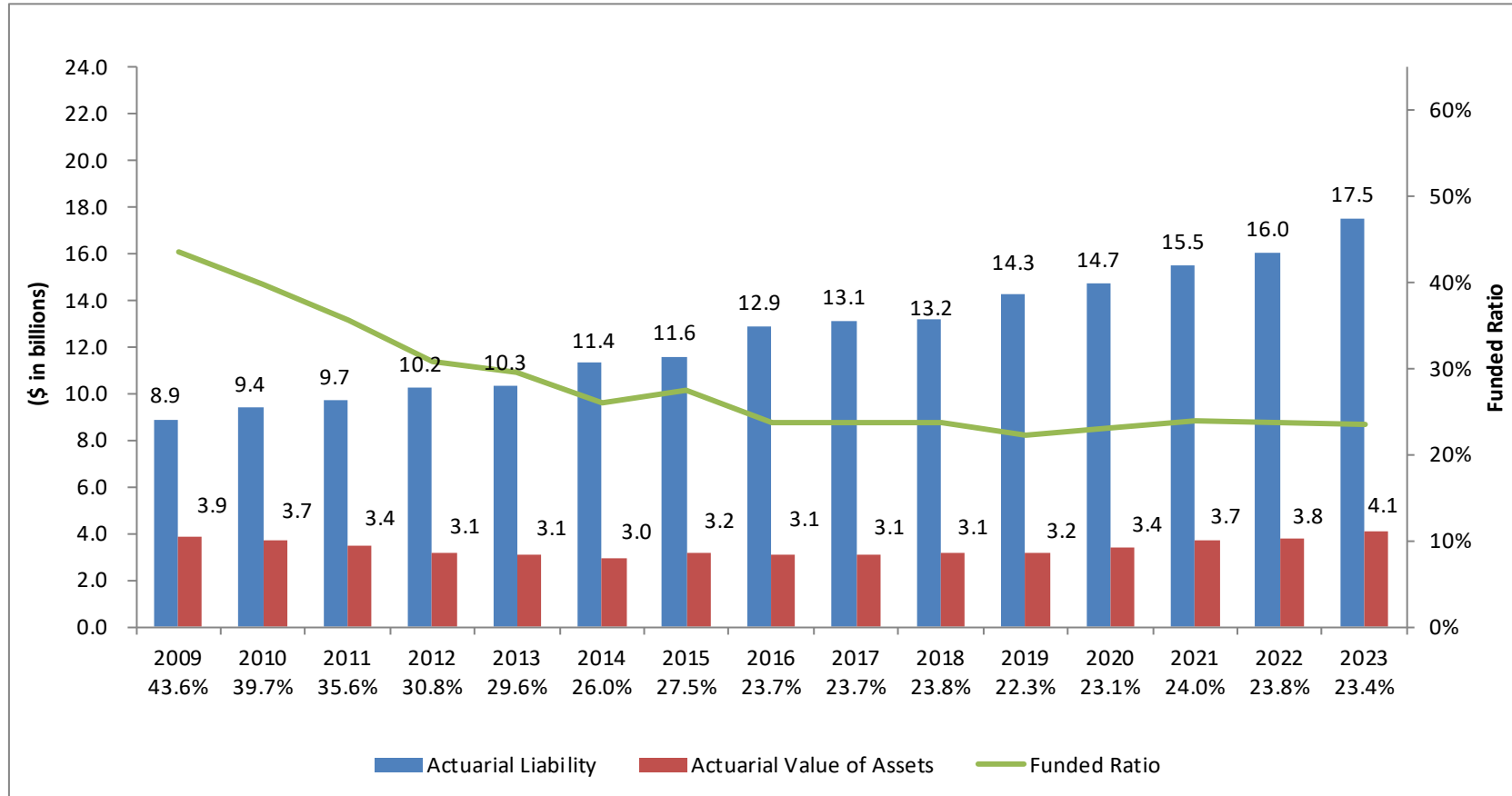


Years 2013 through 2015 used Projected Unit Credit for Actuarial Liabilities and Actuarial Liabilities for 2016 through 2023 and all years prior to 2013 used the Entry-Age Normal cost method. Market Value of Assets used for all years.



Summary of Actuarial Valuation Results

Components of Funded Ratio Based on ADC under GASB Statement Nos. 67 and 68



ADC (under GASB) Actuarial Value of Assets based on five-year smoothing for all years. Actuarial Liabilities uses Entry-Age Normal cost method for all years.



Summary of Actuarial Valuation Results

Participants

	December 31, 2022	December 31, 2023
Active Participants		
Number	11,868	11,850
Average Age	41.8	41.7
Average Service	13.9	13.8
Average Annual Salary	\$107,352 ¹	\$113,055 ²
Retirees		
Number	10,952	11,101
Average Age	69.4	69.5
Average Monthly Benefit	\$6,246	\$6,405
Survivors		
Number	3,154	3,136
Average Age	77.0	77.4
Average Monthly Benefit	\$2,285	\$2,457
Disabilities		
Number	219	219
Average Monthly Benefit	\$5,630	\$5,812
Children		
Number	314	306
Average Monthly Benefit	\$453	\$443

¹ Average annual salary for fiscal year end December 31, 2022, would have been \$103,918 without the addition of duty availability pay.

² Average annual salary for fiscal year end December 31, 2023, would have been \$109,638 without the addition of duty availability pay.

The major characteristics of the Fund participants are summarized as follows:

A large portion of the active participant population is nearing or is eligible for retirement; 32.4% of the workforce is between the ages of 45 and 54, while 31.7% of all actives have 20 or more years of service. Total participants receiving benefits under the Fund, including retirees, disabilities, survivors, and children increased 0.8% during 2023 from 14,639 to 14,762. The total retiree count increased by 1.4% during 2023. Total expenditures for benefits increased from \$947.6 million in 2022 to \$987.2 million during 2023, or 4.2%. There are more participants receiving benefits under the Fund than active members accruing benefits.

Changes in Provisions of the Fund

The following Public Acts passed in 2023 by the 103rd General Assembly, included changes to the Fund Provisions.



Summary of Actuarial Valuation Results

P.A. 103-0002, Effective May 10, 2023

Establishes a presumption that a member who became disabled as a result of exposure to and contraction of COVID-19 from March 9, 2020 to June 30, 2021 was injured in the line of duty and is entitled to receive a duty disability benefit; applied retroactively to March 9, 2020. This presumption does not apply if the member was on a leave of absence from his or her employment or otherwise not required to report for duty for a period of 14 or more consecutive days immediately prior to the date of contraction of COVID-19. A member who had previously been denied a duty disability benefit that would otherwise be entitled to a duty disability benefit under the amendatory Act shall be entitled to a retroactive duty disability benefit.

P.A. 103-0582, Effective December 8, 2023

Grants an annual 3% non-compounded cost-of-living adjustment (COLA) to all Tier 1 Chicago Police retirees who reach age 55 with 20 years of service. Any member born on or after January 1, 1966 and who qualifies for a minimum annuity and has not received an initial increase as of January 1, 2023 is entitled to receive the initial increase on the latest of (1) January 1, 2023, (2) the first anniversary of the date of retirement, or (3) the attainment of age 55.

This change increased the actuarial liability as of December 31, 2023, by \$1.04 billion, and increased the tax levy year 2025 contribution rate from 67.46% to 73.38% of covered payroll. A detailed description of the provisions of the Public Acts can be found in the Historical Information section of this report (Appendix 6).

Discussion of Actuarial Assumptions

Actuarial assumptions are used to project future demographic and economic expectations for purposes of valuing the liabilities of the plan. The assumptions should reflect current patterns. However, their primary orientation is the long-term outlook for each factor affecting the valuation. Thus, while actual experience will fluctuate over the short run, actuarial assumptions are chosen in an attempt to model the future long run experience.

There are two general types of actuarial assumptions:

1. Demographic Assumptions — reflect the flow of participants into and out of a retirement system; and
2. Economic Assumptions — reflect the effect of the economic climate on a retirement system.

Demographic assumptions can be readily studied over recent plan experience. Economic assumptions can be studied against recent experience; however, future experience is more likely to be a result of outside factors than of plan specifics. The most significant demographic assumptions are active turnover, retirement, disability incidence, and post-retirement mortality. The most significant economic assumptions are pay increases, investment return, and inflation. Other actuarial assumptions include active mortality and percent married.



Summary of Actuarial Valuation Results

Changes in Actuarial Assumptions and Methods

All actuarial assumptions remain unchanged from the prior actuarial valuation and reflect the results of the experience study performed for the period of January 1, 2014 through December 31, 2018, approved by the Board on August 27, 2019, first effective with the December 31, 2019 actuarial valuation. The assumptions used are set forth in Appendix 4: Actuarial Methods and Assumptions.

2023 Gain/Loss Analysis

We performed a gain/loss analysis of the major factors which contributed to the change in the unfunded actuarial liability between December 31, 2022, and December 31, 2023. A discussion by source follows.

Turnover

We reviewed withdrawals in 2023 from the Fund for reasons other than retirement, death, or disability. The ratio of actual withdrawals to expected withdrawals was of 237% (137% more than expected). The overall result is an actuarial loss. Members who were active as of December 31, 2022, and were on leave of absence or whose retirement was pending as of December 31, 2023, are included in this group.

Retirement

There were more retirements from active members during 2023 than expected. The ratio of actual retirements to expected retirements was 111%, resulting in an actuarial loss to the Fund.

Disability

The number of new disabled participants during 2023 was less than expected. The ratio of actual to expected disability was 38%, resulting in an actuarial gain to the Fund.

Mortality

There were more active member deaths and annuitant deaths than expected during 2023, which resulted in a net actuarial gain to the Fund.

Pay Increase

For continuing active members in the 2022 and 2023 actuarial valuations, average salaries increased by of 8.42% based on members' pay rates as of December 31 in each respective year. This was more than the expected increase of 5.23% from the 2022 salary based on the salary increase assumptions. The higher than expected salary increases resulted in an actuarial loss to the Fund.

Investment Return

During 2023, assets earned 11.72% on a market basis, 2.02% on a book basis and 5.42% on an actuarial basis, which compares to the 2023 assumed return of 6.75%. The market value rate of return was developed by the Fund's investment consultant, NEPC. The actuarial value and book value returns were estimated by GRS. During the year, the fund experienced a market value asset gain due to investment performance, and an actuarial loss on an actuarial (smoothed) value basis.



Summary of Actuarial Valuation Results

Data and Other Sources

There was a small gain on liabilities due to the retiree health subsidy that was offset by actuarial losses in liabilities due to changes in demographic data.

Plan Provision Changes

The change in COLA provisions for Tier 1 members born on or after January 1, 1966 resulted in a \$1.04 billion increase in the unfunded actuarial accrued liabilities of the Fund.

Changes in liabilities for participants impacted by the legislative changes related to duty disability benefits will flow through as a demographic gain or loss in the year the status and/or benefit change in made.

Assumption Changes

There were no changes to the actuarial assumptions during the plan year ending December 31, 2023.

An experience review is scheduled to be completed for the five-year period from January 1, 2019 to December 31, 2023 prior to the next actuarial valuation.

Conclusion

Based on our analysis of the recent experience and expectation of the future, we believe that the actuarial assumptions are reasonable for the purpose of the measurement of the Fund's costs in effect as of December 31, 2023, under the provisions of P.A. 99-0506. Table 5 of Appendix 1 shows a more detailed development of the actuarial gains and losses for the plan year ending December 31, 2023.

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the accrued liability and the statutory contribution requires the use of actuarial assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the actuarial assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the total required employer contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; 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, or additional cost or contribution requirements based on the Fund's funded status); and changes in plan provisions or applicable law. The scope of this actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the Fund's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the Fund's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. Other demographic risks – members may terminate, retire, or become disabled at times other than assumed, resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The statutory contribution for tax levy year 2025 shown on page 23 should be considered as the minimum contribution that complies with the funding policy governed by statute. The timely receipt of the statutory contribution is critical to support the financial health of the Fund. Users of this report should be aware that contributions made at the statutorily determined amount do not necessarily guarantee benefit security.



Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	2019	2020	2021	2022	2023
Ratio of the Market Value of Assets to Covered Payroll	2.57	2.88	3.06	2.74	2.89
Ratio of Actuarial Accrued Liability to Covered Payroll	11.61	12.29	12.29	12.57	13.06
Ratio of Actives to Retirees, Disabilities, and Beneficiaries	0.97	0.91	0.85	0.81	0.80
Ratio of Net Cash Flow to Market Value of Assets	-3.56%	0.22%	0.90%	-1.02%	1.73%

Ratio of Market Value of Assets to Payroll

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 5.0 times the payroll, a return on assets 5 percent different than assumed would equal 25 percent of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

Ratio of Actuarial Accrued Liability to Payroll

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100 percent is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 13 times the payroll, a change in liability 2 percent other than assumed would equal 26 percent of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

Ratio of Actives to Retirees and Beneficiaries

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, and stress tests.

Low-Default-Risk Obligation Measure

Introduction

In December 2021, the Actuarial Standards Board (ASB) adopted a revision to Actuarial Standard of Practice (ASOP) No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions. The revised ASOP No. 4 requires the calculation and disclosure of a liability referred to by the ASOP as the “Low-Default-Risk Obligation Measure” (LDRM).

What is the LDRM?

The LDRM is a particular measure of the benefits earned (or costs accrued if appropriate under the actuarial cost method used for this purpose) as of the measurement date.

How is the LDRM calculated?

The LDRM is calculated using an immediate gain actuarial cost method, one in which gains and losses become part of the unfunded actuarial accrued liabilities. Examples would be Entry Age Normal Cost, Projected Unit Credit, and Traditional Unit Credit. It is based upon a discount rate or discount rates derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future.

What does the LDRM tell me?

The LDRM gives an approximate measure of the cost as of the measurement date of securing benefits by constructing a hypothetical Low-Default-Risk Bond portfolio, whose cash flows match the pattern of benefits expected to be paid in the future. The LDRM is very dependent upon market interest rates at the time of the LDRM measurement. The lower the market interest rates, the higher the LDRM, and vice versa.

Is the LDRM the “right” liability that should be reported?

No single number, including the LDRM, can provide all of the information necessary to understand the financial condition of a pension plan. The rationale that the ASB cited for the calculation and disclosure of the LDRM was included in the Transmittal Memorandum of ASOP No. 4 and is presented below (emphasis added):

“The ASB believes that the calculation and disclosure of this measure provides **appropriate, useful information for the intended user regarding the funded status of a pension plan**. The calculation and disclosure of this additional measure is **not intended to suggest that this is the “right” liability measure** for a pension plan. However, the ASB does believe that **this additional disclosure provides a more complete assessment of a plan’s funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.**”

Low-Default-Risk Obligation Measure

Comparing the Accrued Liabilities and the LDROM

The LDROM results presented in this report are based on the Entry Age Normal (EAN) actuarial cost method and discount rates based upon the December 2023 (end of month) FTSE Pension Discount Curve (PDC). The PDC is calculated based on a universe of AA rated corporate bonds from the FTSE US Broad Investment-Grade Bond Index (USBIG®) of varying maturities and the yields of the Treasury model curve.

Representative 1-, 5-, 10-, 20-, and 30-year annual spot rates as of December 31, 2023 are 5.13 percent, 4.29 percent, 4.56 percent, 5.10 percent, and 4.79 percent, respectively. Discount rates based on the spot rates were applied to the PABF expected benefit payments to calculate a single equivalent rate of 4.80 percent on a present value of benefits basis.

The funding valuation actuarial accrued liability is based on the EAN actuarial cost method and discount rate (the expected long-term rate of return on assets) of 6.75 percent.

Presented below is a comparison of the statutory funding actuarial accrued liability and the LDROM as of December 31, 2023, for the PABF:

Funding Valuation Actuarial Accrued Liability	\$ 17,500,209,765
LDROM	22,210,897,403
Difference	4,710,687,638

The difference between the funding actuarial liability and the LDROM illustrates the potential present value of future contribution savings due to investing in a well-diversified portfolio, consistent with the assumed long-term investment return assumption, instead of a hypothetical low-default-risk bond portfolio.

Since plan assets are actually invested in a well-diversified portfolio, and not a low-default-risk bond portfolio, LDROM does not provide relevant information on the funded status or contribution requirements. Benefit security for members of the plan relies on a combination of the current assets in the plan, the future investment returns generated on those assets, and the promise of future contributions from the plan sponsor.

The LDROM liability contained in this report was provided solely to comply with the requirements of ASOP No. 4 section 3.11 and should not be used for any other purpose. This measure is not appropriate for assessing the need for or amount of future contributions. This measure is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation.

APPENDIX 1

RESULTS OF ACTUARIAL VALUATION

Summary

Table 1A

	December 31, 2022	December 31, 2023
Assets		
Book Value - Beginning of Year	\$ 3,226,512,339	\$ 3,335,172,462
Income		
Investment Income Net of Expenses	\$ 144,166,756	\$ 68,194,230
Employer Contributions	801,706,005	942,952,523
Employee Contributions	114,403,212	115,161,795
Miscellaneous	367,777	109,639
Subtotal	\$ 1,060,643,750	\$ 1,126,418,187
<u>Outgo (Refunds, Benefits, & Administration)</u>	\$ 951,983,627	\$ 991,459,012
Book Value - End of Year	\$ 3,335,172,462	\$ 3,470,131,637
Market Value - End of Year	3,486,779,785	3,869,934,220
Actuarial Value - End of Year	3,815,014,423	4,090,214,832
Member Counts		
Active	11,868	11,850
Retirees	10,952	11,101
Survivors	3,154	3,136
Disabilities	219	219
Inactives	1,151	1,162
Children	314	306
Payroll Data¹		
Valuation Payroll	\$ 1,274,049,642	\$ 1,339,703,857
Average Salary	107,352	113,055

¹ Payroll shown based on annualized pay rate at December 31, and does not include Tier 2 pensionable pay cap.



Summary

Table 1B

Actuarial Values	December 31, 2022	December 31, 2023
<u>Statutory Funding</u>		
Actuarial Liability	\$ 16,020,814,848	\$ 17,500,209,765
Assets - Actuarial Value	3,815,014,423	4,090,214,832
Unfunded Liability	12,205,800,425	13,409,994,933
Funded Ratio	23.81%	23.37%
Statutory Employer Contribution ¹ (Tax Levy Year)	\$ 851,100,156 (2023)	\$ 928,841,536 (2024)
<u>Book Value Funding</u>		
Actuarial Liability	\$ 16,020,814,848	\$ 17,500,209,765
Assets - Book Value	3,335,172,462	3,470,131,637
Unfunded Liability	12,685,642,386	14,030,078,128
Funded Ratio	20.82%	19.83%
<u>Termination Values</u>		
Liability ²	\$ 12,354,477,252	\$ 12,989,763,328
Assets - Book Value	3,335,172,462	3,470,131,637
Deficiency	9,019,304,790	9,519,631,691
Quick Ratio	27.00%	26.71%
<u>Market Value Funding</u>		
Actuarial Liability	\$ 16,020,814,848	\$ 17,500,209,765
Assets - Market Value	3,486,779,785	3,869,934,220
Unfunded Liability	12,534,035,063	13,630,275,545
Funded Ratio	21.76%	22.11%
<u>ADC Values</u>		
Actuarial Liability - Entry Age ³	\$ 16,020,814,848	\$ 17,500,209,765
Assets - Actuarial Value	3,815,014,423	4,090,214,832
Unfunded Liability ³	12,205,800,425	13,409,994,933
Funded Ratio	23.81%	23.37%
Actuarially Determined Contribution (ADC) (Plan Year End)	1,118,719,268 (2023)	1,242,009,627 (2024)

¹Pursuant to P.A. 99-0506, the fiscal year 2024 tax levy, payable in fiscal year 2025, is equal to \$928,841,536 and the fiscal year 2025 tax levy, payable in fiscal year 2026, is estimated to be \$1,042,582,135.

²Includes total liability for inactive and deferred members, and accumulated member contributions.

³Used to develop the Actuarially Determined Contribution under GASB Statement Nos. 67 and 68.

Summary

Table 1C

**Active Accrued Liability and Normal Cost by Tier
As of December 31, 2023**

	Tier 1 Members	Tier 2 Members ¹	Total
(1) Count	5,825	6,025	11,850
(2) Payroll ²	\$ 738,647,395	\$ 601,056,462	\$ 1,339,703,857
(3) Average Payroll ²	\$ 126,806	\$ 99,760	\$ 113,055
(4) Actuarial Accrued Liability (AAL)	\$ 5,480,781,954	\$ 626,752,296	\$ 6,107,534,250
(5) Total Normal Cost	\$ 190,724,347	\$ 107,022,511	\$ 297,746,858
(6) Total Normal Cost as a Percent of Pay	25.8%	17.8%	22.2%
(7) Estimated Member Contributions ³	\$ 66,653,016	\$ 54,233,130	\$ 120,886,146
(8) Net Normal Cost	\$ 124,071,331	\$ 52,789,381	\$ 176,860,712
(9) Net Normal Cost as a Percent of Pay	16.8%	8.8%	13.2%

¹Members hired on or after January 1, 2011.

²Payroll shown based on annualized pay rate at December 31, 2023, and does not include Tier 2 pensionable pay cap.

³Based on expected capped pay for plan year end December 31, 2023.



Summary of Basic Actuarial Values

Table 2

	Actuarial Present Value (APV) of Projected Benefits As of 12/31/2023	Actuarial Accrued Liability (AAL) As of 12/31/2023		
		Total	Tier 1	Tier 2
<u>(1) Values for Active Members</u>				
(a) Retirement	\$ 8,084,457,840	\$ 5,893,883,793	\$ 5,339,226,987	\$ 554,656,806
(b) Termination	136,796,269	22,792,027	7,641,599	15,150,428
(c) Disability	441,582,323	168,727,360	116,328,137	52,399,223
(d) Death	61,275,942	22,131,070	17,585,231	4,545,839
Total for Actives	\$ 8,724,112,374	\$ 6,107,534,250	\$ 5,480,781,954	\$ 626,752,296
<u>(2) Values for Inactive Members</u>				
(a) Retired	\$ 10,172,525,930	\$ 10,172,525,930	\$ 10,172,156,221	\$ 369,709
(b) Survivor	782,434,285	782,434,285	782,434,285	0
(c) Disability	287,993,712	287,993,712	268,927,447	19,066,265
(d) Inactive (Deferred Vested/ Terminated Pending Refund)	139,282,586	139,282,586	125,004,489	14,278,097
(e) Children	10,439,002	10,439,002	10,439,002	0
Total for Inactives	\$ 11,392,675,515	\$ 11,392,675,515	\$ 11,358,961,444	\$ 33,714,071
<u>(3) Grand Totals</u>	<u>\$ 20,116,787,889</u>	<u>\$ 17,500,209,765</u>	<u>\$ 16,839,743,398</u>	<u>\$ 660,466,367</u>
<u>(4) Normal Cost for Active Members</u>	\$ 297,746,858			
<u>(5) Actuarial Present Value of Future Compensation</u>	\$ 13,388,030,965			

Active members whose tier was not provided in the valuation data are assumed to be in Tier 2.
Inactive members whose tier was not provided in the valuation data are assumed to be in Tier 1.



Development of Statutory Contribution

Table 3A

Actuarial Valuation Projection Results as of December 31, 2023												
Discount Rate of 6.75%												
(\$ in Thousands)												
Year Ending	Actuarial Accrued Liability	Market Value of Assets	Actuarial Value of Assets	Unfunded Liability	Actuarial Value Funded Ratio ¹	Capped Payroll	Employer Normal Cost	Statutory Contribution ²	Statutory Contribution as % of Pay	Employee Contributions	Benefit Payments	Admin Expenses
2023	\$17,500,210	\$ 3,869,934	\$4,090,215	\$13,409,995	23.37%	\$1,339,229	\$149,295	\$ 943,062	70.4%	\$115,162	\$987,199	\$ 4,260
2024	17,937,431	4,114,002	4,272,469	13,664,962	23.82%	1,380,133	176,861	928,842	67.3%	120,886	1,017,884	4,356
2025	18,383,687	4,470,970	4,555,988	13,827,700	24.78%	1,420,837	172,404	1,042,582	73.4%	128,672	1,041,030	4,454
2026	18,823,441	4,837,776	4,822,013	14,001,427	25.62%	1,451,563	170,571	1,065,128	73.4%	131,456	1,077,430	4,554
2027	19,253,857	5,216,638	5,216,638	14,037,219	27.09%	1,485,120	168,453	1,089,752	73.4%	134,470	1,116,093	4,657
2028	19,673,877	5,608,375	5,608,375	14,065,501	28.51%	1,519,029	166,126	1,114,633	73.4%	137,524	1,155,002	4,762
2029	20,081,147	6,006,261	6,006,261	14,074,886	29.91%	1,543,543	162,874	1,132,621	73.4%	139,708	1,193,713	4,869
2030	20,474,625	6,409,487	6,409,487	14,065,138	31.30%	1,566,257	159,464	1,149,288	73.4%	141,745	1,232,297	4,978
2031	20,853,244	6,818,223	6,818,223	14,035,020	32.70%	1,588,626	155,882	1,165,702	73.4%	143,750	1,270,808	5,090
2032	21,215,728	7,232,493	7,232,493	13,983,236	34.09%	1,610,611	152,103	1,181,834	73.4%	145,712	1,309,342	5,205
2033	21,560,732	7,653,213	7,653,213	13,907,519	35.50%	1,633,501	148,192	1,198,630	73.4%	147,725	1,348,045	5,322
2034	21,888,017	8,083,301	8,083,301	13,804,716	36.93%	1,658,676	144,401	1,217,103	73.4%	149,926	1,386,145	5,442
2035	22,198,919	8,527,466	8,527,466	13,671,453	38.41%	1,686,581	141,023	1,237,579	73.4%	152,366	1,422,445	5,564
2036	22,493,632	8,986,249	8,986,249	13,507,383	39.95%	1,712,258	137,680	1,256,421	73.4%	154,602	1,457,318	5,689
2037	22,772,812	9,459,816	9,459,816	13,312,996	41.54%	1,734,284	134,255	1,272,583	73.4%	156,468	1,490,047	5,817
2038	23,036,189	9,946,056	9,946,056	13,090,133	43.18%	1,750,707	130,657	1,284,634	73.4%	157,831	1,521,345	5,948
2039	23,284,567	10,446,855	10,446,855	12,837,712	44.87%	1,766,113	127,214	1,295,938	73.4%	159,088	1,550,884	6,082
2040	23,518,931	10,964,880	10,964,880	12,554,051	46.62%	1,781,598	124,140	1,307,301	73.4%	160,300	1,578,813	6,219
2041	23,740,724	11,503,585	11,503,585	12,237,139	48.46%	1,797,666	121,571	1,319,091	73.4%	161,548	1,604,970	6,359
2042	23,951,260	12,066,187	12,066,187	11,885,073	50.38%	1,813,903	119,442	1,331,006	73.4%	162,821	1,629,499	6,502
2043	24,152,011	12,657,259	12,657,259	11,494,752	52.41%	1,831,850	117,818	1,344,175	73.4%	164,246	1,652,525	6,648
2044	24,343,755	13,280,500	13,280,500	11,063,255	54.55%	1,850,876	116,607	1,358,136	73.4%	165,761	1,674,662	6,798
2045	24,527,124	13,938,940	13,938,940	10,588,184	56.83%	1,869,819	115,689	1,372,036	73.4%	167,268	1,695,885	6,951
2046	24,702,628	14,636,474	14,636,474	10,066,154	59.25%	1,889,866	115,126	1,386,746	73.4%	168,839	1,716,483	7,107
2047	24,871,304	15,377,824	15,377,824	9,493,480	61.83%	1,911,224	114,975	1,402,418	73.4%	170,569	1,736,137	7,267
2048	25,033,498	16,167,027	16,167,027	8,866,471	64.58%	1,933,399	115,123	1,418,689	73.4%	172,313	1,755,322	7,431
2049	25,188,732	17,007,382	17,007,382	8,181,350	67.52%	1,956,124	115,541	1,435,365	73.4%	174,109	1,774,870	7,598
2050	25,337,026	17,903,103	17,903,103	7,433,923	70.66%	1,979,553	116,187	1,452,556	73.4%	176,014	1,794,278	7,769
2051	25,478,662	18,858,737	18,858,737	6,619,925	74.02%	2,003,343	117,017	1,470,013	73.4%	177,939	1,813,167	7,944
2052	25,614,514	19,879,870	19,879,870	5,734,645	77.61%	2,027,637	117,988	1,487,840	73.4%	179,933	1,830,982	8,122
2053	25,746,010	20,972,890	20,972,890	4,773,121	81.46%	2,052,306	119,070	1,505,941	73.4%	181,964	1,847,187	8,305
2054	25,873,992	22,143,895	22,143,895	3,730,097	85.58%	2,077,249	120,231	1,524,244	73.4%	183,988	1,862,364	8,492
2055	25,999,864	23,399,942	23,399,942	2,599,921	90.00%	2,102,617	121,540	1,542,858	73.4%	186,076	1,876,164	8,683

¹ The funded ratio includes receivable contributions.

² Contribution receivable to be paid in the following fiscal year. No tax levy loss assumed in development of the Statutory Contribution.



Development of Statutory Contribution

Table 3B

Key Projection Result Items

	<u>Total</u>
<u>(1) Total Normal Cost for 2025</u>	\$ 301,075,774
<u>(2) Actuarial Accrued Liability (AAL) at 12/31/2024¹</u>	\$ 17,937,431,164
<u>(3) Actuarial Value of Assets at 12/31/2024</u>	\$ 4,272,469,185
<u>(4) Unfunded Actuarial Accrued Liability (UAAL) (2-3)</u>	\$ 13,664,961,979
<u>(5) Estimated Member Contributions during 2025</u>	\$ 128,672,000
<u>(6) Estimated City Contribution for Tax Levy Year 2025</u>	\$ 1,042,582,135

¹ Liabilities were discounted at 6.75% per year.

Projection of Retiree Health Insurance Premium Subsidy

Table 3C

Projected Retiree Health Insurance Premium Subsidy	
Calendar Year	\$ in Thousands
2024	\$ 2,048
2025	2,143
2026	2,216
2027	2,253
2028	2,220

The present value as of December 31, 2023, of projected retiree health insurance premium subsidies is \$22,771,759. This amount is included in the actuarial accrued liability as of December 31, 2023, and the actuarial projections used to develop the statutory contribution requirements.

Development of Actuarially Determined Contribution under GASB Statement Nos. 67 and 68 for 2024

Table 4

	Total
<u>(1) Total Normal Cost for 2024</u>	\$ 297,746,858
<u>(2) Actuarial Accrued Liability (AAL) at 12/31/2023</u>	\$ 17,500,209,765
<u>(3) Unfunded AAL (UAAL)</u>	
(a) Actuarial Value of Assets at 12/31/2023	\$ 4,090,214,832
(b) UAAL (2-3(a))	13,409,994,933
<u>(4) Amortization Payable at Middle of Year ¹</u>	\$ 1,019,796,075
<u>(5) Estimated Member Contributions in 2024</u>	\$ 120,886,146
<u>(6) Actuarially Determined Contribution (ADC) for 2024</u>	
(a) Interest Adjustment for Semimonthly Payment	45,352,840
(b) Annual Required Contribution (1+4-5+6(a))	\$ 1,242,009,627
(c) Annual Required Contribution (Percent of Pay)	89.99%
<u>(7) Estimated City Contribution for Tax Levy Year 2024</u>	
(a) in Dollars	\$ 928,841,536
(b) as a Percentage of Pay	67.30%
<u>(8) Estimated Deficiency/(Excess) for 2024</u>	
(a) in Dollars (6(b)-7(a))	\$ 313,168,091
(b) as a Percentage of Pay	22.69%

¹ Amortization is over a 30-year open period as a level dollar amount.

Development of Actuarial Gains and Losses for 2023

Table 5

UNFUNDED ACTUARIAL ACCRUED LIABILITY - BEGINNING OF 2023

(1) Actuarial Accrued Liability - 12/31/2022	\$ 16,020,814,848
(2) Actuarial Value of Assets - 12/31/2022	3,815,014,423
(3) Unfunded Accrued Actuarial Liability - 12/31/2022	\$ 12,205,800,425

EXPECTED UNFUNDED ACTUARIAL ACCRUED LIABILITY - END OF 2023

(4) Normal Cost for 2023	\$ 264,456,800
(5) Total Contributions for 2023	1,058,223,957
(6) Interest on (3), (4), & (5) at Valuation Rates	797,539,320
(7) Expected Unfunded Actuarial Accrued Liability - 12/31/2023	\$ 12,209,572,588
((3)+(4)-(5)+(6))	

DEVIATIONS FROM EXPECTED

		<u>% OF 12/31/22 AAL</u>
(8) (Gain)/Loss on Investment Return (Smoothed (Actuarial) Value)	\$ 55,696,309	0.35%
(9) (Gain)/Loss from Salary Changes	88,163,200	0.55%
(10) (Gain)/Loss from Retirement	28,792,662	0.18%
(11) (Gain)/Loss from Turnover	6,112,912	0.04%
(12) (Gain)/Loss from Mortality	(1,816,186)	-0.01%
(13) (Gain)/Loss from Disability	(10,989,163)	-0.07%
(14) (Gain)/Loss from New Entrants and Rehired Members	5,009,379	0.03%
(15) (Gain)/Loss Due to Retirees Whose Benefit was Previously Suspended/Inactive	4,875,791	0.03%
(16) (Gain)/Loss from All Other Sources ¹	(12,735,011)	-0.08%
 (17) Composite Actuarial (Gain)/Loss	 \$ 163,109,893	 1.02%
(18) (Gain)/Loss from Actuarial Cost Method Change	\$ -	0.00%
(19) (Gain)/Loss from Provision Changes	\$ 1,037,312,452	6.47%
(20) (Gain)/Loss from Assumption Changes	\$ -	0.00%

UNFUNDED ACTUARIAL ACCRUED LIABILITY - END OF 2023

(21) Unfunded Accrued Actuarial Liability - 12/31/2023	\$ 13,409,994,933
((7)+(17)+(18)+(19)+(20))	

¹ Includes difference for Retiree Health Insurance Premium Subsidy.



History of Recommended Employer Multiples*

Table 6

Year of Report	Statutory Multiple	P.A. 99-0506 Multiple	Normal Cost Plus Interest	Normal Cost Plus Amortization ³	
				Level \$	Level % of Salary
1994	2.00	N/A	3.05	3.18	1.98
1995	2.00	N/A	3.34	3.49	2.17
1996	2.00	N/A	3.19	3.32	2.10
1997	2.00	N/A	3.10	3.23	2.04
1998 ^{1,2}	2.00	N/A	3.63	3.77	2.56
1999	2.00	N/A	3.15	3.27	2.24
2000 ¹	2.00	N/A	3.27	3.39	2.32
2001 ²	2.00	N/A	3.63	3.78	2.56
2002	2.00	N/A	4.62	4.79	3.33
2003 ^{1,2}	2.00	N/A	4.46	4.63	3.23
2004 ²	2.00	N/A	4.99	5.18	3.60
2005 ^{1,2}	2.00	N/A	5.33	5.56	3.85
2006	2.00	N/A	4.95	5.40	3.94
2007	2.00	N/A	4.98	5.43	3.97
2008	2.00	N/A	5.43	5.94	4.30
2009 ¹	2.00	N/A	5.87	6.42	4.61
2010	2.00	N/A	6.19	6.78	4.85
2011	2.00	N/A	5.71	6.26	4.45
2012 ¹	2.00	N/A	6.73	7.43	5.25
2013 ²	2.00	N/A	6.92	7.60	5.44
2014 ¹	2.00	N/A	7.94	8.88	6.49
2015 ⁴	N/A	4.57	7.76	8.68	6.35
2016 ^{1,2,5}	N/A	4.49	7.89	8.82	6.33
2017 ⁵	N/A	5.13	8.49	9.49	6.80
2018 ⁵	N/A	5.63	8.45	9.44	6.77
2019 ^{1,5}	N/A	5.63	8.65	9.81	7.22
2020 ⁵	N/A	6.93	8.44	9.58	7.03
2021 ⁵	N/A	7.21	8.52	9.68	7.08
2022 ^{2,5}	N/A	6.11	7.32	8.32	6.08
2023 ^{2,5}	N/A	7.75	9.69	11.00	8.07

¹Change in actuarial assumptions.

²Change in benefits.

³Prior to 2005, amortizations were over a 40-year period. In 2005, pension unfunded liability was amortized over a 40-year period and OPEB liability over a 30-year period. Starting in 2006, both pension and OPEB amortizations are over a 30-year open period. Starting in 2013, OPEB amortizations are over a closed 3-year period as a level percent of pay.

⁴Funding based on P.A. 96-1495, plan provisions in effect as of December 31, 2015.

⁵Funding based on P.A. 99-0506.

*Based on book value of assets through 2013, then Actuarial Value of assets starting in 2014. Assumes 4% Tax Levy Loss. Statutory contributions determined using the current funding policy shown in table 3A do not include any tax levy loss.



Ordinary Death Benefit Reserve

Table 7

Actuarial Balance Sheet – 6% Basis

December 31, 2023

ASSETS	
Fund Balance	\$ (61,293,936)
Present Values of Future Contributions:	
Contributions by Members at \$30.00 per Year	4,003,107
Annual City Contribution of \$224,000	2,522,351
Unfunded Liability	86,955,451
TOTAL ASSETS	\$ 32,186,973

LIABILITIES	
Present Value of Future Death Benefits (6%, Plan Mortality Basis)	
Active & Disabled Members	\$ 2,287,617
Retired Members	29,899,356
TOTAL LIABILITIES	\$ 32,186,973

Actuarial Accrued Liability Prioritized Solvency Test

Table 8

Valuation Date 12/31	(1)	(2)	(3)	Actuarial Value of Assets	Portion (%) of Present Value Covered By Assets		
	Active and Inactive Member Contribution	Retirees and Beneficiaries	Active and Inactive Members (ER Financed Portion)		(1)	(2)	(3)
2009 ¹	\$ 1,217,645,647	\$ 5,391,373,730	\$ 2,291,882,108	\$ 3,884,978,241	100.00%	49.47%	0.00%
2010	1,251,147,487	5,717,654,520	2,406,050,870	3,718,954,539	100.00%	43.16%	0.00%
2011	1,286,345,939	6,041,684,411	2,360,319,555	3,444,690,362	100.00%	35.72%	0.00%
2012 ¹	1,309,825,828	6,475,282,318	2,435,530,363	3,148,929,770	100.00%	28.40%	0.00%
2013 ²	1,358,193,244	6,594,792,197	2,127,620,103	3,053,881,777	100.00%	25.71%	0.00%
2014 ¹	1,410,544,951	7,159,705,456	2,477,941,780	2,954,318,954	100.00%	21.56%	0.00%
2015	1,484,316,625	7,279,289,531	2,524,630,892	3,186,423,762	100.00%	23.38%	0.00%
2016 ^{1,2}	1,518,846,208	8,018,211,337	3,319,492,854	3,052,056,555	100.00%	19.12%	0.00%
2017	1,532,514,218	8,344,902,504	3,216,465,846	3,103,989,602	100.00%	18.83%	0.00%
2018	1,602,674,638	8,390,112,363	3,221,871,110	3,145,136,204	100.00%	18.38%	0.00%
2019 ¹	1,634,237,599	8,887,010,483	3,748,521,831	3,179,502,852	100.00%	17.39%	0.00%
2020	1,648,385,618	9,453,458,094	3,601,274,947	3,399,988,145	100.00%	18.53%	0.00%
2021	1,648,593,934	10,052,754,002	3,769,294,678	3,709,382,279	100.00%	20.50%	0.00%
2022 ²	1,602,508,940	10,666,311,280	3,751,994,628	3,815,014,423	100.00%	20.74%	0.00%
2023 ²	1,624,888,533	11,253,392,929	4,621,928,303	4,090,214,832	100.00%	21.91%	0.00%

¹Change in actuarial assumptions.

²Change in benefits.

APPENDIX 2

ASSETS OF THE PLAN

Reconciliation of Assets as of December 31, 2023

The book value of the plan assets, net of accounts payable, increased from \$3.335 billion as of December 31, 2022, to \$3.470 billion as of December 31, 2023. The market value of the plan assets, net of accounts payable, increased from \$3.487 billion as of December 31, 2022, to \$3.870 billion as of December 31, 2023. Table 9 details the development of asset values during 2023 and Table 10 shows the development of the actuarial value of assets as of December 31, 2023. In each future fiscal year, investment gains and losses will be phased in over a five-year period to determine the actuarial value of assets.

Table 9

	2022	2023
1. Market Value of assets beginning of year ¹	\$ 3,846,664,456	\$ 3,486,779,785
a) Adjustment as of January 1 ³	(119,171)	-
2. Income for plan year:		
a) Member contributions	\$ 114,403,212	\$ 115,161,795
b) City contributions	801,706,005	942,952,523
c) Investment income net of expenses ¹	(324,258,867)	316,389,490
d) Miscellaneous revenue	367,777	109,639
e) Total income	<u>\$ 592,218,127</u>	<u>\$ 1,374,613,447</u>
3. Disbursements for plan year:		
a) Benefit payments		
i) Pension, disability, and death benefit payments	\$ 924,761,162	\$ 968,786,275
ii) Healthcare premium subsidy	1,732,304	1,921,463
b) Refunds	21,096,110	16,490,937
c) Administration	4,394,051	4,260,337
d) Total disbursements	<u>\$ 951,983,627</u>	<u>\$ 991,459,012</u>
4. Market Value of assets end of year ¹	\$ 3,486,779,785	\$ 3,869,934,220
5. Estimated rate of return during year: ²		
a) Gross	-10.49%	12.00%
b) Net of investment expense	-10.61%	11.72%
(Investment expense of \$7,959,591 in 2022 and \$8,079,813 in 2023)		

¹Book value of assets as of December 31, 2022, is \$3,335,172,462, Investment income net of expenses used for Book value for plan year 2023 is \$68,194,230 and book value as of December 31, 2023, is \$3,470,131,637.

²Plan year 2022 and 2023 returns were developed by NEPC.

³Adjustment for the difference between the end of year market value of assets from the prior year actuarial valuation and the final end of year market value of assets from the prior year. Assets as of December 31, 2021, were updated subsequent to the delivery date of each actuarial valuation report. The updates did not significantly impact the certified contribution rate determined in each actuarial valuation. The asset updates increased the administration expense from \$3,384,892 to \$3,440,227 as of December 31, 2021. The preceding changes decreased the market value of assets from \$3,846,664,456 to \$3,846,545,285 at December 31, 2021.



Development of Actuarial (Market-Related) Value of Assets as of December 31, 2023

Table 10

Year Ending December 31	2022	2023	2024	2025	2026	2027
Beginning of Year:						
(1) Market Value of Assets	\$ 3,846,664,456	\$ 3,486,779,785				
(1a) Adjustment as of January 1 ¹	(119,171)	-				
(2) Actuarial Value of Assets	3,709,382,279	3,815,014,423				
(2a) Adjustment as of January 1 ¹	(119,171)	-				
End of Year:						
(3) Market Value of Assets	3,486,779,785	3,869,934,220				
(4) Contributions and Disbursements						
(4a) City Contributions & Misc.	802,073,782	943,062,162				
(4b) Member Contributions	114,403,212	115,161,795				
(4c) Benefit Payouts & Refunds	(947,589,576)	(987,198,675)				
(4d) Administrative Expenses	(4,394,051)	(4,260,337)				
(4e) Net of Contributions and Disbursements	(35,506,633)	66,764,945				
(5) Total Investment Income						
=(3)-(1)-(1a)-(4e)	(324,258,867)	316,389,490				
(6) Projected Rate of Return	6.75%	6.75%				
(7) Projected Investment Income						
=([(1)+(1a)]x(6)+[(1+(6)] ⁵ -1)x(4e)	\$ 258,463,025	\$ 237,574,159				
(8) Investment Income in						
Excess of Projected Income	(582,721,892)	78,815,331				
(9) Excess Investment Income Recognized						
This Year (5-year recognition)						
(9a) From This Year	\$ (116,544,378)	\$ 15,763,066				
(9b) From One Year Ago	27,332,756	(116,544,378)	\$ 15,763,066			
(9c) From Two Years Ago	11,634,745	27,332,756	(116,544,378)	\$ 15,763,066		
(9d) From Three Years Ago	32,675,115	11,634,745	27,332,756	(116,544,378)	\$ 15,763,066	
(9e) From Four Years Ago	(72,303,315)	32,675,116	11,634,746	27,332,757	(116,544,380)	\$ 15,763,067
(9f) Total Recognized Investment Gain	(117,205,077)	(29,138,695)	(61,813,810)	(73,448,555)	(100,781,314)	15,763,067
(10) Change in Actuarial Value of Assets						
=(4e)+(7)+(9f)	105,751,315	275,200,409				
End of Year:						
(3) Market Value of Assets	\$ 3,486,779,785	\$ 3,869,934,220				
(11) Actuarial Value of Assets = (2)+(2a)+(10)	\$ 3,815,014,423	\$ 4,090,214,832				
(12) Difference between Market & Actuarial Values	\$ (328,234,638)	\$ (220,280,612)				
(13) Actuarial Value Rate of Return	3.83%	5.42%				
(14) Estimated Market Value Rate of Return	-10.61%	11.72%				

¹Adjustment for difference between end of year market value of assets from the actuarial valuation as of December 31, 2021, and beginning of year market value of assets from the actuarial valuation as of December 31, 2022.



APPENDIX 3

DATA REFLECTING PLAN MEMBERS

Exhibit A

Summary of Changes in Active Participants For Fiscal Year Ending December 31, 2023

	Male	Female	Total
Number of Active Participants at Beginning of Fiscal Year ²	8,916	2,952	11,868
Increases:			
Participants Added During Year	420	182	602
Participants Returning From Inactive or Disability Status	65	18	83
Total After Increases	9,401	3,152	12,553
Decreases:			
Terminations During Year	545	158	703
Number of Active Participants at End of Fiscal Year	8,856	2,994	11,850
Total Inactive Participants			1,162
<u>Terminations:</u>			
Withdrawal (With Refunds) ¹	60	18	78
Withdrawal (Without Refunds)	142	37	179
Ordinary Disability Benefit	7	1	8
Occupational Disease Disability Benefit	0	0	0
Duty Disability Benefit	3	0	3
Retirements	319	100	419
Deaths (Occupational)	1	0	1
Deaths (Non-occupational)	13	2	15
Totals	545	158	703

¹ This total differs from the total of 195 shown in Exhibit D due to the fact that only 78 of the refunds were paid to participants who were considered to be active as of December 31, 2022.

² Includes three active members reclassified from male to female and one active members reclassified from female to male in the valuation data.

Exhibit B

Summary of Changes in Annuitants and Beneficiaries For Fiscal Year Ending December 31, 2023

	Number at Beginning of Year	Additions During Year	Terminations During Year	Number at End of Year
Service Retirement Annuities	10,952	459	310	11,101
Widow Annuities	3,088	132	151	3,069
Children's Annuities	189	14	24	179
Ordinary Disability Benefit (Non-Occupational)	33	13	16	30
Occupational Disease Disability Benefit	20	0	3	17
Duty Disability Benefit (Occupational)	166	16	10	172
Children's Disability Benefit	125	20	18	127
Widows' Compensation Annuities (Service Connected Death)	66	1	0	67
Totals	14,639	655	532	14,762
Annual Benefits	\$923,890,605	\$ 65,658,715	\$ 27,003,286	\$962,546,034



Exhibit C – Part I
Total Lives and Annual Salaries of Active Male Participants
Classified by Age and Years of Service as of December 31, 2023

AGE	Years of Service									Total	Annual Salary
	Under 1 year	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 and over		
Under 20										0	0
20 to 24	107 \$ 6,293,292	145 \$ 12,754,473								252 \$ 19,047,765	
25 to 29	174 \$ 10,580,838	511 \$ 48,013,646	356 \$ 38,220,160							1,041 \$ 96,814,644	
30 to 34	87 \$ 5,202,366	312 \$ 29,178,791	851 \$ 91,472,284	1 \$ 110,282						1,251 \$ 125,963,723	
35 to 39	49 \$ 3,000,870	146 \$ 13,680,234	534 \$ 57,602,289	368 \$ 42,761,777	44 \$ 5,554,830					1,141 \$ 122,600,000	
40 to 44	2 \$ 161,712	51 \$ 5,053,166	265 \$ 28,513,709	318 \$ 36,561,197	649 \$ 80,044,466	165 \$ 21,439,197				1,450 \$ 171,773,447	
45 to 49			64 \$ 6,925,287	137 \$ 15,589,337	389 \$ 47,120,313	707 \$ 91,045,514	86 \$ 11,487,547			1,383 \$ 172,167,998	
50 to 54				29 \$ 3,392,132	205 \$ 24,293,362	522 \$ 65,945,027	752 \$ 100,680,493	95 \$ 13,093,797		1,603 \$ 207,404,810	
55 to 59				1 \$ 110,282	66 \$ 7,713,877	165 \$ 20,308,503	301 \$ 39,169,882	87 \$ 11,994,315	5 \$ 719,128	625 \$ 80,015,987	
60 to 63					2 \$ 227,956	22 \$ 2,715,768	54 \$ 7,031,310	21 \$ 2,831,980	11 \$ 1,575,043	110 \$ 14,382,057	
Total Active	419	1,165	2,070	854	1,355	1,581	1,193	203	16	8,856	
Annual Salary	\$25,239,078	\$108,680,310	\$222,733,729	\$98,525,006	\$164,954,804	\$201,454,009	\$158,369,232	\$27,920,092	\$ 2,294,171	\$ 1,010,170,431	

Annual salary shown based on annualized pay rate at December 31, 2023 and does not include Tier 2 pensionable pay cap.



Exhibit C – Part II

Total Lives and Annual Salaries of Active Female Participants Classified by Age and Years of Service as of December 31, 2023

AGE	Years of Service									Total	Annual Salary
	Under 1 year	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 and over		
Under 20										0	0
20 to 24	38 \$ 2,235,996	55 \$ 4,858,848								93	\$ 7,094,844
25 to 29	61 \$ 3,589,362	199 \$ 18,548,597	112 \$ 11,958,389							372	\$ 34,096,348
30 to 34	49 \$ 2,917,758	160 \$ 14,955,827	281 \$ 30,187,332	2 \$ 213,340						492	\$ 48,274,256
35 to 39	28 \$ 1,682,076	96 \$ 8,983,068	252 \$ 27,076,832	75 \$ 8,712,516	15 \$ 1,839,599					466	\$ 48,294,091
40 to 44	3 \$ 176,526	33 \$ 3,192,682	135 \$ 14,506,871	97 \$ 11,146,920	205 \$ 25,111,750	33 \$ 4,311,163				506	\$ 58,445,912
45 to 49			32 \$ 3,440,023	46 \$ 5,262,772	116 \$ 13,978,477	202 \$ 25,906,610	16 \$ 2,128,453			412	\$ 50,716,335
50 to 54	1 \$ 62,784			14 \$ 1,664,967	89 \$ 10,635,003	156 \$ 19,605,020	157 \$ 20,817,720	23 \$ 2,989,350		440	\$ 55,774,844
55 to 59					35 \$ 4,088,965	60 \$ 7,445,489	69 \$ 8,923,701	15 \$ 2,039,785		179	\$ 22,497,940
60 to 63						11 \$ 1,329,903	17 \$ 2,161,605	5 \$ 689,476	1 \$ 157,874	34	\$ 4,338,857
Total Active	180	543	812	234	460	462	259	43	1	2,994	
Annual Salary	\$10,664,502	\$50,539,021	\$87,169,447	\$27,000,515	\$55,653,793	\$58,598,186	\$34,031,478	\$5,718,611	\$ 157,874		\$ 329,533,427

Annual salary shown based on annualized pay rate at December 31, 2023 and does not include Tier 2 pensionable pay cap.



Exhibit C – Part III

Total Lives and Annual Salaries of All Active Participants Classified by Age and Years of Service as of December 31, 2023

AGE	Years of Service									Total	Annual Salary
	Under 1 year	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 and over		
Under 20										0	0
20 to 24	145 \$ 8,529,288	200 \$ 17,613,320								345	\$ 26,142,608
25 to 29	235 \$ 14,170,200	710 \$ 66,562,243	468 \$ 50,178,549							1,413	\$ 130,910,992
30 to 34	136 \$ 8,120,124	472 \$ 44,134,617	1,132 \$121,659,616	3 \$ 323,622						1,743	\$ 174,237,979
35 to 39	77 \$ 4,682,946	242 \$ 22,663,302	786 \$ 84,679,121	443 \$ 51,474,293	59 \$ 7,394,429					1,607	\$ 170,894,091
40 to 44	5 \$ 338,238	84 \$ 8,245,848	400 \$ 43,020,580	415 \$ 47,708,117	854 \$ 105,156,216	198 \$ 25,750,360				1,956	\$ 230,219,359
45 to 49			96 \$ 10,365,310	183 \$ 20,852,109	505 \$ 61,098,790	909 \$ 116,952,124	102 \$ 13,616,000			1,795	\$ 222,884,334
50 to 54	1 \$ 62,784			43 \$ 5,057,099	294 \$ 34,928,364	678 \$ 85,550,046	909 \$ 121,498,213	118 \$ 16,083,147		2,043	\$ 263,179,653
55 to 59				1 \$ 110,282	101 \$ 11,802,842	225 \$ 27,753,992	370 \$ 48,093,583	102 \$ 14,034,100	5 \$ 719,128	804	\$ 102,513,927
60 to 63					2 \$ 227,956	33 \$ 4,045,671	71 \$ 9,192,914	26 \$ 3,521,456	12 \$ 1,732,917	144	\$ 18,720,915
Total Active	599	1,708	2,882	1,088	1,815	2,043	1,452	246	17	11,850	
Annual Salary	\$35,903,580	\$159,219,331	\$309,903,176	\$125,525,521	\$220,608,597	\$260,052,195	\$192,400,710	\$33,638,703	\$ 2,452,045		\$ 1,339,703,857

Annual salary shown based on annualized pay rate at December 31, 2023, and does not include Tier 2 pensionable pay cap.

Shaded cells represent active participants that are nearing retirement or already eligible for retirement.



Exhibit D – Part I
Showing Number of Refund Payments Made during Year
To Male Employees for Fiscal Year Ending December 31, 2023

Age at Date of Refund	Length of Service at Date of Refund						Total
	Under 1 Year	Between 1 and 2	Between 2 and 3	Between 3 and 4	Between 4 and 5	5 and over	
Under 20							0
20 to 24	1	1					2
25 to 29	6	3	4	8	10	8	39
30 to 34	3	1	2	8	12	33	59
35 to 39	1	1		2	2	30	36
40 to 44	1				2	12	15
45 to 49						3	3
50 to 54						3	3
55 to 59	1						1
60 to 63							0
64 or older	1						1
Totals	14	6	6	18	26	89	159

Includes only number of actual refunds paid or accrued during fiscal year reported.

Includes members classified as active as of December 31, 2022, but had benefits suspended as of December 31, 2023.

Includes members previously classified as refunded as of December 31, 2023, who were previously reported as inactive as of December 31, 2022.

Exhibit D – Part II
Showing Number of Refund Payments Made during Year
To Female Employees for Fiscal Year Ending December 31, 2023

Age at Date of Refund	Length of Service at Date of Refund						Total
	Under 1 Year	Between 1 and 2	Between 2 and 3	Between 3 and 4	Between 4 and 5	5 and over	
Under 20							0
20 to 24	1						1
25 to 29	1				3		4
30 to 34	2			1	4	8	15
35 to 39	1		1	2		6	10
40 to 44		1		1	1	3	6
45 to 49							0
50 to 54							0
55 to 59							0
60 to 63							0
64 or older							0
Totals	5	1	1	4	8	17	36

Includes only number of actual refunds paid or accrued during fiscal year reported.

Includes members classified as active as of December 31, 2022, but had benefits suspended as of December 31, 2023.

Includes members previously classified as refunded as of December 31, 2023, who were previously reported as inactive as of December 31, 2022.

Exhibit E

Showing Statistics on Service Retirement Annuities Classified by Age as of December 31, 2023

AGE	MALE		FEMALE		TOTAL	
	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments
Under 50	3	\$ 53,438	3	\$ 49,050	6	\$ 102,488
50	42	2,731,440	10	628,388	52	3,359,828
51	54	3,682,807	14	868,680	68	4,551,487
52	94	6,243,730	22	1,283,731	116	7,527,461
53	138	10,259,879	42	2,802,562	180	13,062,441
54	127	8,657,297	37	2,534,877	164	11,192,174
55	153	11,393,328	61	4,586,228	214	15,979,556
56	254	19,834,313	57	4,209,031	311	24,043,344
57	244	18,607,206	85	6,053,429	329	24,660,635
58	261	21,412,324	83	6,260,402	344	27,672,726
59	307	24,784,324	103	8,077,255	410	32,861,579
60	277	22,920,050	93	6,774,377	370	29,694,427
61	250	19,927,975	106	8,131,013	356	28,058,988
62	237	19,163,522	103	7,970,793	340	27,134,315
63	273	22,501,766	104	8,173,314	377	30,675,080
64	250	20,542,285	104	7,809,106	354	28,351,391
65	206	16,999,234	122	9,605,742	328	26,604,976
66	229	18,617,265	127	9,691,773	356	28,309,038
67	194	15,474,872	108	7,626,983	302	23,101,855
68	201	16,694,121	83	5,783,000	284	22,477,121
69	215	18,395,347	89	6,337,470	304	24,732,817
70	232	19,021,969	81	5,970,123	313	24,992,092
71	250	20,332,027	92	6,696,000	342	27,028,027
72	339	28,665,609	85	6,222,325	424	34,887,934
73	356	30,412,540	98	6,692,334	454	37,104,874
74	381	31,319,625	67	4,730,094	448	36,049,719
75	425	34,482,348	87	5,670,857	512	40,153,205
76	438	35,278,351	60	3,979,827	498	39,258,178
77	413	32,358,170	33	1,844,318	446	34,202,488
78	257	19,509,756	30	1,792,326	287	21,302,082
79	247	18,786,788	32	1,987,001	279	20,773,789
80	251	18,823,055	28	1,468,489	279	20,291,544
81	224	16,098,337	16	899,235	240	16,997,572
82	181	12,239,113	12	779,517	193	13,018,630
83	146	10,170,062	11	611,387	157	10,781,449
84	107	7,450,026	2	51,729	109	7,501,755
85 to 89	373	24,006,778	9	557,340	382	24,564,118
90 to 94	141	8,364,302	0	0	141	8,364,302
95 to 99	31	1,732,886	0	0	31	1,732,886
100+	1	33,124	0	0	1	33,124
Totals	8,802	\$687,981,389	2,299	\$165,210,106	11,101	\$853,191,495



Exhibit F
Showing Statistics on Widow's Annuities
Classified by Age as of December 31, 2023

Age	No.	Annual Payments	Age	No.	Annual Payments
Under 30	0	\$ 0	65	42	\$ 1,345,884
30	0	0	66	50	1,577,073
31	1	30,532	67	53	1,623,279
32	0	0	68	52	1,603,390
33	1	27,293	69	87	2,643,775
34	0	0	70	81	2,721,450
35	0	0	71	82	2,599,741
36	0	0	72	106	3,279,524
37	1	24,490	73	105	3,203,510
38	1	26,627	74	127	3,880,346
39	3	81,907	75	136	4,163,258
40	5	127,555	76	143	4,399,340
41	2	59,028	77	160	4,798,984
42	1	27,976	78	119	3,363,348
43	6	166,240	79	103	2,975,606
44	2	60,822	80	122	3,389,809
45	3	86,664	81	141	3,860,696
46	3	77,812	82	111	3,216,071
47	6	206,670	83	97	2,543,688
48	5	161,539	84	96	2,570,625
49	9	274,580	85	112	2,766,301
50	8	267,637	86	88	2,215,983
51	9	263,915	87	96	2,474,188
52	12	350,217	88	62	1,620,345
53	12	345,730	89	65	1,615,221
54	15	415,708	90	57	1,443,342
55	12	344,942	91	64	1,558,402
56	20	601,670	92	54	1,278,934
57	11	341,063	93	47	1,141,047
58	15	454,953	94	24	610,066
59	17	495,391	95	20	461,456
60	21	687,747	96	23	531,773
61	18	580,736	97	18	422,381
62	22	581,409	98	7	173,037
63	29	863,056	99	6	141,988
64	35	1,116,906	100+	8	174,960
Total				3,069	\$87,539,636

Exhibit G
Showing Statistics on Miscellaneous Annuities
For Fiscal Year Ending December 31, 2023

	No.	Annual Payments
Children's Annuities	179	\$1,474,497
Widows' Compensation Annuities	67	4,913,916
Ordinary Disability Benefits	30	1,604,443
Occupational Disease Disability Benefits	17	1,130,966
Duty Disability Benefits	172	12,538,681
Children's Disability Benefits	127	152,400
Totals	592	\$21,814,903

Exhibit H – Part I
Showing Male Participants Receiving Duty Disability
Classified by Age and Length of Service as of December 31, 2023

ATTAINED AGE	Length of Service as of December 31, 2023												Total Annual Payments	
	Under 1 Year		1 to 4		5 to 9		10 to 14		15 to 19		20 & Over			
	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments		
Under 30	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ 0
30 to 34	0	-	1	60,399	2	147,328	0	-	0	-	0	-	3	207,727
35 to 39	0	-	0	-	4	265,342	0	-	0	-	0	-	4	265,342
40 to 44	0	-	2	126,672	2	152,661	6	428,823	0	-	0	-	10	708,156
45 to 49	0	-	0	-	5	328,535	7	489,704	5	373,300	2	163,011	19	1,354,550
50 to 54	0	-	4	277,838	6	420,376	5	358,548	14	1,020,268	11	989,702	40	3,066,732
55 to 59	0	-	3	225,744	2	137,033	5	360,890	12	907,489	7	572,977	29	2,204,133
60 to 63	0	-	3	208,379	1	67,822	2	138,919	4	277,838	4	290,915	14	983,873
Totals	0	\$ -	13	\$ 899,032	22	\$ 1,519,097	25	\$ 1,776,884	35	\$ 2,578,895	24	\$ 2,016,605	119	\$ 8,790,513



Exhibit H – Part II
Showing Female Participants Receiving Duty Disability
Classified by Age and Length of Service as of December 31, 2023

ATTAINED AGE	Length of Service as of December 31, 2023												Total Annual Payments			
	Under 1 Year		1 to 4		5 to 9		10 to 14		15 to 19		20 & Over					
	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments				
Under 30	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ 0
30 to 34	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	0
35 to 39	0	-	1	57,429	0	-	0	-	0	-	0	-	1	57,429	1	57,429
40 to 44	0	-	1	65,240	0	-	0	-	1	89,803	0	-	2	155,043	2	155,043
45 to 49	0	-	1	65,240	0	-	2	135,146	6	446,886	1	54,985	10	702,257	10	702,257
50 to 54	0	-	3	202,720	2	137,033	5	335,533	7	514,057	3	230,823	20	1,420,166	20	1,420,166
55 to 59	0	-	1	69,460	2	156,284	1	67,573	4	257,112	4	274,323	12	824,752	12	824,752
60 to 63	0	-	1	69,460	1	69,460	5	380,141	1	69,460	0	-	8	588,521	8	588,521
Totals	0	\$ -	8	\$ 529,549	5	\$ 362,777	13	\$ 918,393	19	\$ 1,377,318	8	\$ 560,131	53	\$ 3,748,168	53	\$ 3,748,168



Exhibit I – Part I
Showing Male Participants Receiving Ordinary Disability
Classified by Age and Length of Service as of December 31, 2023

ATTAINED AGE	Length of Service as of December 31, 2023												Total Annual Payments	
	Under 1 Year		1 to 4		5 to 9		10 to 14		15 to 19		20 & Over			
	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments		
Under 30	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
30 to 34	0	-	0	-	1	49,693	0	-	0	-	0	-	1	49,693
35 to 39	0	-	0	-	2	98,225	0	-	0	-	0	-	2	98,225
40 to 44	0	-	0	-	0	-	0	-	2	110,075	1	59,947	3	170,022
45 to 49	0	-	0	-	1	50,887	0	-	1	50,620	4	212,859	6	314,366
50 to 54	0	-	0	-	0	-	0	-	0	-	7	384,054	7	384,054
55 to 59	0	-	0	-	0	-	0	-	0	-	2	114,530	2	114,530
60 to 63	0	-	0	-	0	-	0	-	0	-	1	54,985	1	54,985
Totals	0	\$ -	0	\$ -	4	\$ 198,805	0	\$ -	3	\$ 160,695	15	\$ 826,375	22	\$ 1,185,875



Exhibit I – Part II
Showing Female Participants Receiving Ordinary Disability
Classified by Age and Length of Service as of December 31, 2023

ATTAINED AGE	Length of Service as of December 31, 2023												Total Annual Payments	
	Under 1 Year		1 to 4		5 to 9		10 to 14		15 to 19		20 & Over			
	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments		
Under 30	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
30 to 34	0	-	0	-	0	-	0	-	0	-	0	-	0	-
35 to 39	0	-	0	-	0	-	0	-	0	-	0	-	0	-
40 to 44	0	-	0	-	1	51,370	2	107,453	0	-	3	-	3	158,823
45 to 49	0	-	0	-	1	48,988	0	-	1	50,620	2	50,620	2	99,608
50 to 54	0	-	0	-	0	-	0	-	2	107,711	2	107,711	2	107,711
55 to 59	0	-	0	-	0	-	0	-	1	52,426	1	52,426	1	52,426
60 to 63	0	-	0	-	0	-	0	-	0	-	0	-	0	-
Totals	0	\$ -	0	\$ -	0	\$ -	2	\$ 100,358	2	\$ 107,453	4	\$ 210,757	8	\$ 418,568



Exhibit J – Part I
Showing Male Participants Receiving Occupational Disease Disability
Classified by Age and Length of Service as of December 31, 2023

ATTAINED AGE	Length of Service as of December 31, 2023												Total Annual Payments	
	Under 1 Year		1 to 4		5 to 9		10 to 14		15 to 19		20 & Over			
	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments		
Under 30	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
30 to 34	0	-	0	-	0	-	0	-	0	-	0	-	0	-
35 to 39	0	-	0	-	0	-	0	-	0	-	0	-	0	-
40 to 44	0	-	0	-	0	-	0	-	0	-	0	-	0	-
45 to 49	0	-	0	-	1	62,191	0	-	2	146,116	3	208,307	3	208,307
50 to 54	0	-	0	-	1	61,019	0	-	3	196,547	4	257,566	4	257,566
55 to 59	0	-	0	-	0	-	0	-	4	278,571	4	278,571	4	278,571
60 to 63	0	-	0	-	0	-	0	-	1	60,339	1	60,339	1	60,339
Totals	0	\$ -	0	\$ -	0	\$ -	2	\$ 123,210	0	\$ -	10	\$ 681,573	12	\$ 804,783



Exhibit J – Part II
Showing Female Participants Receiving Occupational Disease Disability
Classified by Age and Length of Service as of December 31, 2023

ATTAINED AGE	Length of Service as of December 31, 2023												Total Annual Payments	
	Under 1 Year		1 to 4		5 to 9		10 to 14		15 to 19		20 & Over			
	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments	No.	Annual Payments		
Under 30	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
30 to 34	0	-	0	-	0	-	0	-	0	-	0	-	0	-
35 to 39	0	-	0	-	0	-	0	-	0	-	0	-	0	-
40 to 44	0	-	0	-	0	-	0	-	0	-	0	-	0	-
45 to 49	0	-	0	-	0	-	0	-	0	-	0	-	0	-
50 to 54	0	-	0	-	0	-	1	60,267	1	60,267	0	-	1	60,267
55 to 59	0	-	0	-	0	-	1	57,883	0	-	2	150,150	3	208,033
60 to 63	0	-	0	-	0	-	1	57,883	1	57,883	0	-	1	57,883
Totals	0	\$ -	0	\$ -	0	\$ -	1	\$ 57,883	2	\$ 118,150	2	\$ 150,150	5	\$ 326,183



Exhibit K

History of Average Annual Salaries

Year End	Members in Service	Current Year			Average		CPI Chicago
		Increase	Salary	Increase	Salary	Increase	
1994	13,095	4.0 %	\$ 599,073,276	6.8 %	\$ 45,748	2.6 %	2.9 %
1995	13,437	2.6	622,413,737	3.9	46,321	1.3	2.2
1996	13,475	0.3	654,149,310	5.1	48,545	4.8	3.8
1997	13,435	(0.3)	675,515,532	3.7	50,280	3.6	1.7
1998 ¹	13,586	1.1	736,401,756	9.0	54,203	7.8	1.5
1999	13,829	1.8	755,303,667	2.6	54,617	0.8	2.6
2000	13,858	0.2	759,343,026	0.5	54,795	0.3	4.0
2001	13,889	0.2	763,352,475	0.5	54,961	0.3	0.8
2002	13,720	(1.2)	866,531,789	13.5	63,158	14.9	2.5
2003	13,746	0.2	887,555,791	2.4	64,568	2.2	1.7
2004	13,569	(1.3)	874,301,958	(1.5)	64,434	(0.2)	2.2
2005	13,462	(0.8)	948,973,732	8.5	70,493	9.4	3.6
2006	13,749	2.1	1,012,983,635	6.7	73,677	4.5	0.7
2007	13,748	0.0	1,038,957,026	2.6	75,572	2.6	4.7
2008	13,373	(2.7)	1,023,580,667	(1.5)	76,541	1.3	(0.6)
2009	13,154	(1.6)	1,011,205,359	(1.2)	76,874	0.4	2.5
2010	12,737	(3.2)	1,048,084,301	3.6	82,287	7.0	1.2
2011	12,236	(3.9)	1,034,403,526	(1.3)	84,538	2.7	2.1
2012	12,026	(1.7)	1,015,170,686	(1.9)	84,415	(0.1)	1.7
2013	12,161	1.1	1,015,426,126	0.0	83,499	(1.1)	0.5
2014	12,020	(1.2)	1,074,333,318	5.8	89,379	7.0	1.5
2015	12,061	0.3	1,086,607,979	1.1	90,093	0.8	0.0
2016	12,177	1.0	1,119,526,987	3.0	91,938	2.0	1.9
2017	12,633	3.7	1,150,406,094	2.8	91,064	(1.0)	1.7
2018	13,438	6.4	1,205,324,445	4.8	89,695	(1.5)	1.1
2019	13,353	(0.6)	1,228,986,864	2.0	92,038	2.6	2.2
2020	12,715	(4.8)	1,195,980,486	(2.7)	94,061	2.2	0.9
2021	12,126	(4.6)	1,258,338,033	5.2	103,772	10.3	6.6
2022	11,868	(2.1)	1,274,049,642	1.2	107,352	3.4	5.5
2023	11,850	(0.2)	1,339,703,857 ²	5.2	113,055	5.3	3.3
Average Increase (Decrease) for the last							
5 years:		(2.5)%		2.2 %		4.8 %	3.7 %
10 years:		(0.2)%		2.8 %		3.1 %	2.5 %
30 years:		(0.2)%		3.0 %		3.2 %	2.2 %

¹ Pay definition changed to include duty availability pay.

² Of the \$1,339,703,857 current year salary, \$40,495,747 is duty availability pay.

³ See Appendix 4 for a complete description of the current assumptions.



Exhibit L

New Annuities Granted during 2023

	Annuitants ⁴	Widows/ Widowers of Deceased Employees ¹	Widows/ Widowers of Deceased Annuitants	Compensation Widows/ Widowers
Number retired/deceased	458	9	123	1
Average age attained	55.7	48.9	76.3	30.0
Average length of service	27.4	N/A	N/A	N/A
Average annual salary ²	\$ 114,339	N/A	N/A	N/A
Average annual final salary	\$ 121,875	N/A	N/A	N/A
Total annual annuity	36,173,861	298,212	4,551,879	76,330
Average annual annuity	78,982	33,134	37,007	76,330
Total liability [[Based on 3% Comb. and 4% Amer. Exp.]]	\$ 528,844,412	5,417,211	35,166,971	1,799,371
Average liability	\$ 1,154,682	601,912	285,910	1,799,371
Total investment [Employee-paid for tax purposes]	\$ 83,617	N/A	N/A	N/A
Average investment ³	\$ 183	N/A	N/A	N/A
Liability/cost	6,324.6	N/A	N/A	N/A
Liability/final pay	\$ 9.47	N/A	N/A	N/A

¹ Not including compensation or supplemental.

² Average annual salary is 4 out of 10 years for members hired before January 1, 2011, and 8 out of 10 years for members hired on or after January 1, 2011.

³ Based on previously-taxed contributions.

⁴ Excludes one retiree whose annuity was reinstated after previously being suspended.

Exhibit M

Retirees and Beneficiaries by Type of Benefit

Years	ANNUITANTS			DISABILITY				Widow	Total
	Employee	Spouse ¹	Child	Ordinary	Duty	Occup.	Child	Comp.	
1994	5,309	3,123	281	51	221		159	64	9,208
1995	5,510	3,133	254	51	231	1	144	60	9,384
1996	5,714	3,120	252	67	256	12	158	59	9,638
1997	5,945	3,104	240	59	270	36	130	59	9,843
1998	6,241	3,093	228	56	279	57	150	57	10,161
1999	6,520	3,118	249	57	291	76	150	58	10,519
2000	6,876	3,107	267	48	274	87	149	59	10,867
2001	7,192	3,114	255	52	265	95	143	59	11,175
2002	7,392	3,092	235	38	289	103	150	59	11,358
2003	7,498	3,083	247	29	285	97	139	63	11,441
2004	7,815	3,133	249	44	287	85	130	65	11,808
2005	8,026	3,107	247	35	298	82	139	65	11,999
2006	8,083	3,093	255	39	291	69	132	64	12,026
2007	8,155	3,137	242	52	284	65	136	64	12,135
2008	8,210	3,148	237	39	286	58	139	66	12,183
2009	8,227	3,111	232	44	284	52	138	66	12,154
2010	8,495	3,079	222	37	284	40	155	69	12,381
2011	8,763	3,091	214	43	270	36	176	70	12,663
2012	9,035	3,122	214	47	263	36	180	69	12,966
2013	9,194	3,130	206	46	269	35	213	66	13,159
2014	9,311	3,109	197	48	259	36	204	66	13,230
2015	9,385	3,078	198	41	230	35	178	65	13,210
2016	9,603	3,102	186	40	202	33	164	64	13,394
2017	9,899	3,059	185	40	197	31	154	63	13,628
2018	9,930	3,054	190	36	182	29	147	63	13,631
2019	10,078	3,070	201	40	167	25	125	65	13,771
2020	10,283	3,025	198	31	160	22	114	67	13,900
2021	10,601	3,063	189	31	167	20	122	67	14,260
2022	10,952	3,088	189	33	166	20	125	66	14,639
2023	11,101	3,069	179	30	172	17	127	67	14,762

¹ Includes reversionary.

Exhibit N

Average Employee Retirement Benefits Payable

Years Ended	Average Annual Benefit	Average Current Age of Retirees	Average Age at Retirement Current Year ¹	Average Years of Benefit Service at Retirement Current Year ¹
1994	\$ 25,636	68	55.7	29.5
1995	26,996	67	55.3	29.2
1996	28,412	67	55.5	29.8
1997	29,867	67	55.0	29.3
1998	31,682	66	54.6	30.0
1999	33,220	66	54.8	29.9
2000	34,880	66	56.3	31.6
2001	36,428	66	56.4	29.8
2002	38,199	66	55.6	29.4
2003	38,998	66	57.1	30.2
2004	41,914	66	57.5	30.4
2005	43,930	67	57.3	30.6
2006	45,680	67	58.0	29.6
2007	47,392	67	58.1	29.3
2008	49,239	68	58.3	29.4
2009	50,799	68	59.2	28.6
2010	53,060	68	59.1	28.1
2011	55,104	68	59.5	27.4
2012	56,896	69	58.7	26.7
2013	58,556	69	58.2	26.1
2014	60,111	69	57.6	26.2
2015	61,702	69	57.5	26.5
2016	63,381	69	57.5	26.9
2017	65,615	69	57.5	26.6
2018	67,434	70	57.7	26.6
2019	68,746	70	57.1	26.9
2020	71,202	70	56.9	27.3
2021	72,942	70	56.1	27.0
2022	74,956	69	55.9	26.9
2023	76,857	70	55.7	27.4

¹ Averages for New Annuitants in 2023.

Exhibit O – Part 1

History of Annuities Employee Annuitants (Male and Female)

Year End	Number of Annuitants	Total Annuities	Average Annuities
1994	5,309	\$ 136,102,089	\$ 25,636
1995	5,510	148,748,836	26,996
1996	5,714	162,343,898	28,412
1997	5,945	177,557,655	29,867
1998	6,241	197,728,489	31,682
1999	6,520	216,593,933	33,220
2000	6,876	239,833,436	34,880
2001	7,192	261,991,891	36,428
2002	7,392	282,368,164	38,199
2003	7,498	292,407,321	38,998
2004	7,815	327,560,253	41,914
2005	8,026	352,579,199	43,930
2006	8,083	369,228,619	45,680
2007	8,155	386,485,701	47,392
2008	8,210	404,254,060	49,239
2009	8,227	417,924,766	50,799
2010	8,495	450,742,884	53,060
2011	8,763	482,875,300	55,104
2012	9,035	514,053,838	56,896
2013	9,194	538,368,228	58,556
2014	9,311	559,689,145	60,111
2015	9,385	579,069,731	61,702
2016	9,603	608,646,498	63,381
2017	9,899	649,527,055	65,615
2018	9,930	669,615,380	67,434
2019	10,078	692,826,321	68,746
2020	10,283	732,172,481	71,202
2021	10,601	773,262,816	72,942
2022	10,952	820,921,933	74,956
2023	11,101	853,191,495	76,857

Exhibit O – Part II

History of Annuities Spouse Annuitants (Not Including Compensation Widows)

Year End	Number of Annuitants	Total Annuities	Average Annuities
1994	3,123	\$ 28,041,269	\$ 8,979
1995	3,133	28,792,959	9,190
1996	3,120	30,778,518	9,865
1997	3,104	31,492,268	10,146
1998	3,093	32,285,743	10,438
1999	3,118	36,134,606	11,589
2000	3,107	37,022,962	11,916
2001	3,114	38,316,493	12,305
2002	3,092	40,086,748	12,965
2003	3,083	39,924,324	12,950
2004	3,133	44,609,535	14,239
2005	3,107	47,658,776	15,339
2006	3,093	49,187,928	15,903
2007	3,137	51,646,225	16,464
2008	3,148	53,489,665	16,992
2009	3,111	53,381,986	17,159
2010	3,079	53,621,501	17,415
2011	3,091	55,323,666	17,898
2012	3,122	57,650,477	18,466
2013	3,130	59,360,519	18,965
2014	3,109	60,248,462	19,379
2015	3,078	61,439,136	19,961
2016	3,102	63,731,123	20,545
2017	3,059	67,469,456	22,056
2018	3,054	69,740,449	22,836
2019	3,070	72,798,906	23,713
2020	3,025	73,811,776	24,401
2021	3,063	77,483,784	25,297
2022	3,088	81,684,130	26,452
2023	3,069	87,539,636	28,524

Exhibit P

Counts of Retirees and Beneficiaries with Healthcare Coverage Subsidies

Year End	Employee	Spouse ¹	Total
2009	7,763	2,285	10,048
2010	7,878	2,240	10,118
2011	8,111	2,257	10,368
2012	8,458	2,280	10,738
2013	8,539	2,270	10,809
2014	8,450	2,226	10,676
2015	8,278	2,127	10,405
2016	8,189	2,079	10,268
2017	0	0	0
2018	0	0	0
2019	0	0	0
2020 ²	4,328	0	4,328
2021 ²	4,499	0	4,499
2022 ²	4,739	0	4,739
2023 ²	4,921	0	4,921

¹ Includes children.

² Pursuant to the court order *Underwood, et al., v. City of Chicago, et al.*, PABF provides retiree health insurance premium subsidies to certain eligible annuitants.

Exhibit Q

Schedule of Retired Members by Types of Benefit and Monthly Benefit Levels

Monthly Benefit	Retirement		Disability		Widow ¹		Child		Totals	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Under \$100	1								1	0
\$100 to Under \$250	5	3					73	67	78	70
\$250 to Under \$500	17	9					15	9	32	18
\$500 to Under \$750	21	4					37	29	58	33
\$750 to Under \$1,000	10	5					30	25	40	30
\$1,000 to Under \$2,000	42	45			35	1,344	12	9	89	1,398
\$2,000 to Under \$3,000	48	9			37	1,111			85	1,120
\$3,000 to Under \$4,000	278	71	2		12	445			292	516
\$4,000 to Under \$5,000	1,049	495	20	15		79			1,069	589
\$5,000 to Under \$6,000	1,712	533	88	36	3	37			1,803	606
\$6,000 to Under \$7,000	2,404	543	26	9		13			2,430	565
\$7,000 to Under \$8,000	1,937	368	12	6	1	13			1,950	387
\$8,000 to Under \$9,000	802	136	3			3			805	139
\$9,000 to Under \$10,000	235	38	2			1			237	39
\$10,000 and over	241	40				2			241	42
Totals:	8,802	2,299	153	66	88	3,048	167	139	9,210	5,552

¹ Includes reversionary.

Exhibit R

Schedule of Average Benefit Payments for New Annuities Granted during Year

Years of Service:	0-9	10-14	15-19	20-24	25-29	30-34	>= 35	Total
Number of Retired Members	0	4	18	122	180	44	24	392
2014 Average annual salary used	\$0	\$64,795	\$72,985	\$87,586	\$95,372	\$94,991	\$104,035	\$92,097
Average Monthly Benefit	\$0	\$1,907	\$2,815	\$4,230	\$5,746	\$6,052	\$6,634	\$5,189
Number of Retired Members	0	7	14	105	184	42	11	363
2015 Average annual salary used	\$0	\$34,263	\$85,670	\$90,037	\$100,124	\$104,876	\$102,529	\$96,001
Average Monthly Benefit	\$0	\$951	\$3,334	\$4,271	\$6,005	\$6,555	\$6,408	\$5,379
Number of Retired Members ¹	1	5	14	124	257	80	12	493
2016 Average annual salary used	\$50,400	\$23,820	\$78,131	\$91,293	\$101,855	\$108,887	\$109,058	\$98,945
Average Monthly Benefit	\$1,050	\$622	\$2,966	\$4,292	\$6,123	\$6,805	\$6,816	\$5,634
Number of Retired Members	1	2	21	166	258	118	15	581
2017 Average annual salary used	\$94,501	\$19,905	\$74,798	\$93,477	\$98,445	\$103,641	\$104,267	\$97,099
Average Monthly Benefit	\$5,709	\$630	\$2,904	\$4,456	\$5,735	\$6,478	\$6,517	\$5,421
Number of Retired Members ²	0	1	15	105	112	95	11	339
2018 Average annual salary used	\$0	\$96,236	\$85,713	\$95,577	\$100,721	\$111,692	\$130,922	\$102,505
Average Monthly Benefit	\$0	\$2,606	\$3,301	\$4,569	\$5,901	\$6,981	\$8,183	\$5,740
Number of Retired Members ³	1	5	14	133	204	117	7	481
2019 Average annual salary used	\$29,649	\$27,298	\$72,912	\$95,939	\$104,238	\$113,077	\$122,510	\$102,493
Average Monthly Benefit	\$618	\$771	\$2,935	\$4,632	\$6,181	\$7,067	\$7,657	\$5,828
Number of Retired Members ⁴	0	1	5	126	279	134	8	553
2020 Average annual salary used	\$0	\$15,558	\$60,593	\$96,945	\$106,449	\$117,718	\$125,965	\$106,718
Average Monthly Benefit	\$0	\$357	\$2,361	\$4,572	\$6,270	\$7,357	\$7,873	\$6,124
Number of Retired Members ⁵	0	0	6	187	364	102	8	667
2021 Average annual salary used	\$0	\$0	\$54,123	\$99,691	\$107,104	\$112,400	\$113,858	\$105,440
Average Monthly Benefit	\$0	\$0	\$2,182	\$4,737	\$6,341	\$7,025	\$7,116	\$5,968
Number of Retired Members ⁶	1	0	9	203	319	152	17	701
2022 Average annual salary used	\$135,900	\$0	\$37,893	\$105,479	\$112,317	\$118,827	\$116,853	\$110,936
Average Monthly Benefit	\$1,416	\$0	\$1,372	\$5,082	\$6,582	\$7,427	\$7,303	\$6,274
Number of Retired Members ⁷	3	2	113	251	82	7	0	458
2023 Average annual salary used	\$26,565	\$33,332	\$107,487	\$116,947	\$120,022	\$125,641	\$0	\$114,339
Average Monthly Benefit	\$800	\$1,111	\$5,208	\$6,977	\$7,501	\$7,853	\$0	\$6,582

¹Excludes data correction for one retiree previously valued as deceased.

²Excludes four retirees whose annuities were reinstated after previously being classified as suspended.

³Excludes one retiree whose annuity was reinstated after previously being suspended.

⁴Excludes five retirees whose annuities were reinstated after previously being classified as suspended.

⁵Excludes three retirees whose annuities were reinstated after previously being classified as suspended.

⁶Excludes nine retirees whose annuities were reinstated after previously being classified as suspended.

⁷Excludes one retiree whose annuity was reinstated after previously being classified as suspended.



Exhibit S

History of Retirees and Beneficiaries Added to and Removed from Benefit Payroll

Yr.	Added		Removed		End of Year		Average Annual Benefits	Increase to Avg. Benefits
	No.	Annual Benefits.	No.	Annual Benefits	No.	Annual Benefits		
Employee Annuitants (Male and Female)								
2014	392	\$ 34,915,092	275	\$ 13,594,175	9,311	\$ 559,689,145	\$ 60,111	2.7%
2015	363	34,830,781	289	15,450,195	9,385	579,069,731	61,702	2.6%
2016	494	44,891,597	276	15,314,830	9,603	608,646,498	63,381	2.7%
2017	581	56,599,441	285	15,718,884	9,899	649,527,055	65,615	3.5%
2018	343	37,905,119	312	17,816,794	9,930	669,615,380	67,434	2.8%
2019	482	43,818,101	334	20,607,160	10,078	692,826,321	68,746	1.9%
2020	558	61,036,082	353	21,689,922	10,283	732,172,481	71,202	3.6%
2021	670	64,044,843	352	22,954,508	10,601	773,262,816	72,942	2.4%
2022	710	71,533,136	359	23,874,019	10,952	820,921,933	74,956	2.8%
2023	459	53,674,187	310	21,404,625	11,101	853,191,495	76,857	2.5%
Widow/Widower Annuitants (Not Including Compensation) ¹								
2014	128	\$ 3,403,918	149	\$ 2,515,975	3,109	\$ 60,248,462	\$ 19,379	2.2%
2015	147	4,022,206	178	2,831,532	3,078	61,439,136	19,961	3.0%
2016	140	4,231,504	116	1,939,517	3,102	63,731,123	20,545	2.9%
2017	158	7,074,268	201	3,335,935	3,059	67,469,456	22,056	7.4%
2018	179	5,804,968	184	3,533,975	3,054	69,740,449	22,836	3.5%
2019	185	6,443,233	169	3,384,776	3,070	72,798,906	23,713	3.8%
2020	143	4,885,497	188	3,872,627	3,025	73,811,776	24,401	2.9%
2021	216	7,479,141	178	3,807,133	3,063	77,483,784	25,297	3.7%
2022	234	8,895,028	209	4,694,682	3,088	81,684,130	26,452	4.6%
2023	132	9,425,218	151	3,569,712	3,069	87,539,636	28,524	7.8%

¹ Not including Compensation Annuitants.

Amounts shown are based on benefits in effect in that calendar year and have not been adjusted due to updated contracts and/or retroactive pay.



Exhibit T

History of Retirees and Beneficiaries

Total Retirees and Beneficiaries

Year	Annuitants and Beneficiaries Beginning Year	Additions During Year	Terminations During Year	Annuitants and Beneficiaries Year-End	Average Annuitants and Beneficiaries ¹
2014	13,159	596	525	13,230	13,195
2015	13,230	588	608	13,210	13,220
2016	13,210	697	513	13,394	13,302
2017	13,394	806	572	13,628	13,511
2018	13,628	585	582	13,631	13,630
2019	13,631	735	595	13,771	13,701
2020	13,771	746	617	13,900	13,836
2021	13,900	952	592	14,260	14,080
2022	14,260	1,030	651	14,639	14,450
2023	14,639	655	532	14,762	14,701

¹ Average number of annuitants and beneficiaries at beginning and end of year.

APPENDIX 4

ACTUARIAL METHODS AND ASSUMPTIONS AS OF DECEMBER 31, 2023

Actuarial Methods and Assumptions as of December 31, 2023

I. Actuarial Cost Method

An Actuarial Cost Method is a set of techniques used by the actuary to develop contribution levels under a retirement plan. The Actuarial Cost Method used in this valuation for statutory funding and State reporting purposes and GASB accounting purposes is the Entry-Age Normal actuarial cost method.

Under the Entry-Age Normal Cost Method, each participant's projected benefit is allocated on a level percent of pay basis from entry age to assumed exit age. The Actuarial Accrued Liability is the portion of the present value associated with pay prior to the valuation date. The Normal Cost is the portion of the present value associated with pay during the current plan year.

To the extent that current assets and future Normal Costs do not support participants' expected future benefits, an Unfunded Actuarial Accrued Liability ("UAAL") develops. The UAAL is generally amortized over a fixed period of time (e.g., 30 years) from the date incurred. The total contribution developed under this method is the sum of the Normal Cost and the payment toward the UAAL.

II. Current Actuarial Assumptions

The current actuarial assumptions are based on an experience study for the period January 1, 2014 to December 31, 2018 adopted by the Board on August 27, 2019, and became effective December 31, 2019.

Demographic Assumptions

Post-Retirement Mortality

Scaling factors of 119 percent for males, and 102 percent for females of the Pub-2010 Amount-weighted Safety Healthy Retiree Mortality Tables, sex distinct, set forward one-year for males, with generational mortality improvement using MP-2018 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements.

Disabled Mortality

Scaling factors of 129 percent for males, and 112 percent for females of the Pub-2010 Amount-weighted Safety Healthy Retiree Mortality Tables, sex distinct, set forward one-year for males, with generational mortality improvement using MP-2018 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements.

Pre-Retirement Mortality

Scaling factors of 100 percent for males, and 100 percent for females of the Pub-2010 Amount-weighted Safety Employee Mortality Tables, sex distinct, with generational mortality improvement using MP-2018 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements.

We use what is termed "the limited fluctuation credibility procedure" to determine the appropriate scaling factor of the base mortality tables for each gender and each member classification. We used a liability weighted basis. In each case, the partial credibility factor (or "Z-factor") is computed based on the



Actuarial Methods and Assumptions as of December 31, 2023

experience of the specific group being studied. This Z-factor is a measure of the credibility of the pertinent group.

The Best Fit is the ratio of actual to expected deaths using the base table. The final scale is then determined as the weighted average of the Best Fit and 100 percent based on the Z-factor. For example, the Z-factor for male retirees is 97 percent, suggesting that the data for this group is 97 percent credible (there were not enough deaths among active members to be completely credible). The Best Fit for this group would be to scale the base tables by 119 percent. The final scale of 119 percent is the credibility-weighted average ($119\% = 97\% \times 119\% + 3\% \times 100\%$). Factors for females are determined similarly.

Age	Future Life Expectancy (years) in 2023		Future Life Expectancy (years) in 2035	
	Postretirement		Postretirement	
	Male	Female	Male	Female
35	48.95	53.68	50.11	54.80
40	43.67	48.35	44.82	49.46
45	38.47	43.05	39.59	44.15
50	33.34	37.81	34.43	38.90
55	28.33	32.69	29.39	33.76
60	23.53	27.77	24.54	28.80
65	19.04	23.10	19.98	24.07
70	14.93	18.68	15.77	19.57
75	11.24	14.60	11.96	15.40

Actuarial Methods and Assumptions as of December 31, 2023

Rate of Retirement: The table below shows the assumed rates of retirement.

Attained Age	Tier 1	Tier 2
50	0.05	0.02
51	0.05	0.02
52	0.05	0.02
53	0.05	0.02
54	0.05	0.03
55	0.22	0.24
56	0.22	0.24
57	0.22	0.24
58	0.22	0.24
59	0.22	0.24
60	0.22	0.22
61	0.27	0.27
62	0.27	0.27
63	1.00	1.00
64	1.00	1.00
65	1.00	1.00

Rate of Termination: The table below shows the assumed rates of termination.

Years of Service	Rate
0	0.030
1	0.025
2	0.017
3	0.015
4	0.014
5	0.014
6	0.013
7	0.010
8	0.009
9	0.009
10	0.009
11	0.008
12	0.007
13	0.006
14 +	0.006



Actuarial Methods and Assumptions as of December 31, 2023

Rate of Disability: The rate at which members are assumed to become disabled under the provisions of the Fund. The rates assumed are as follows:

<u>Attained Age</u>	<u>Rates</u>
20-24	0.0002
25-29	0.0004
30-34	0.0007
35-39	0.0015
40-44	0.0026
45-49	0.0032
50-54	0.0042
55-59	0.0042
60-64	0.0043

Of the participants who become disabled in the future, the following distribution of disability types is assumed:

Duty Disability:	40%
Occupational Disease Disability:	10%
Ordinary Disability:	50%

Economic Assumptions

Investment Return: 6.75 percent per year, compounded annually, net of investment expenses. The 6.75 percent assumption is composed of a 2.25 percent inflation assumption and a 4.50 percent real rate of return assumption.

General Inflation: 2.25 percent per year, compounded annually.

This assumption serves as the basis for the determination of annual increases in pension and the pensionable salary cap for Tier 2 members.

Wage Inflation and Payroll Growth: 3.50 percent per year, compounded annually.

Actuarial Methods and Assumptions as of December 31, 2023

Future Salary Increases: The assumed base rate of individual salary increase is 3.50 percent per year (underlying wage inflation assumption), plus an additional percentage based on the following service scale:

Years of Service*	Base Rates	Wage Inflation	Total Rates
0	0.00%	3.50%	3.50%
1	38.50%	3.50%	42.00%
2	4.00%	3.50%	7.50%
3	3.50%	3.50%	7.00%
4	3.50%	3.50%	7.00%
5	3.50%	3.50%	7.00%
6-9	0.00%	3.50%	3.50%
10	4.00%	3.50%	7.50%
11-14	0.00%	3.50%	3.50%
15	4.00%	3.50%	7.50%
16-19	0.00%	3.50%	3.50%
20	4.00%	3.50%	7.50%
21-24	0.00%	3.50%	3.50%
25	4.00%	3.50%	7.50%
26-29	0.00%	3.50%	3.50%
30	4.00%	3.50%	7.50%

* Includes increases at 12 and 18 months of service.

Asset Value: The Actuarial Value of Assets is smoothed by using a five-year phase-in of each year's unexpected investment gains and losses.

Expenses: Statutory funding projections include an explicit administrative expense assumption of \$4,260,337 for plan year end December 31, 2023, increased by 2.25% per year.

Projection Assumptions

Active Population: Active members who terminate, retire, become disabled, or die during the year are replaced by new entrants such that the number of active members remains level during the projection period based on the most recent actuarial valuation. The number of active members as of the valuation at December 31, 2023 is 11,850.

New Entrant Profile: The entry age of future new entrants, which is summarized below, is based on the profile of current active members hired over the last five years with



Actuarial Methods and Assumptions as of December 31, 2023

one or more years of service as of December 31, 2023. These members were hired from January 1, 2019 through December 31, 2022.

Entry Age	Number
Under 20	0
20 to 25	568
25 to 30	561
30 to 35	358
35 to 40	181
40 to 55	1

Approximately 68% of the new entrants are assumed to be male.

New Entrant Pay:

Based on the most recent employment contract, new entrants were assumed to earn \$56,040 for the plan year ending December 31, 2023, and \$57,444 for the plan year ending December 31, 2024. This amount does not include duty availability pay. The new entrant pay for members hired after 2023 is assumed to increase by the wage inflation assumption of 3.50% plus duty availability pay after two years, increased by CPI compounded.

New Entrant Pay Increases:

Pay for a specific new entrant is assumed to increase in the future by the wage inflation and the service based increases disclosed in this actuarial valuation.

The projections assume a pay cap of \$125,773.73 for plan year 2024, increasing by 1.125% per year after plan year 2024. The annual increase of 1.125% per year is based on 50% of the CPI-U increase which is assumed to be 2.25% per year.

Other Assumptions

Marital Status:

It is assumed that 75% of active members have an eligible spouse. The male spouse is assumed to be three years older than the female spouse. No assumption is made about other dependents.

Reciprocal Service:

No assumption for reciprocal service.

Benefit Service:

Exact fractional years of service are used to determine the amount of benefit payable.

Decrement Timing:

All decrements are assumed to occur mid-year.

Decrement Relativity:

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.



Actuarial Methods and Assumptions as of December 31, 2023

Decrement Operation:	Turnover decrements do not operate after member reaches retirement eligibility for a minimum annuity formula benefit.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Pay Increase Timing:	Beginning of the (fiscal) year.
Tax Levy Loss:	No tax levy loss is assumed
Health Insurance Premium Subsidies:	Current recipients of the \$55 per month for non-Medicare and \$21 per month for Medicare health insurance premium subsidy were identified in the data provided by the PABF staff. The subsidies for current recipients are assumed to continue during the recipient's lifetime. The valuation assumes 65 percent of future retirees (i.e., current actives) eligible for the subsidy will receive it in the future and 5 percent of eligible current retirees not currently receiving the subsidy will receive it in the future.

APPENDIX 5

SUMMARY OF PROVISIONS OF THE FUND AS OF DECEMBER 31, 2023

Summary of Principal Eligibility and Benefit Provisions

As of December 31, 2023

PARTICIPANTS

An employee in the police department of the City of Chicago appointed and sworn or designated by law as a peace officer with the title of policeman, policewoman, chief surgeon, police surgeon, police dog catcher, police kennelman, police matron, and members of the police force of the police department.

SERVICE

In computing service rendered by a police officer, the following periods shall be counted, in addition to all periods during which he performed the duties of his position, as periods of service for annuity purposes only: All periods of (a) vacation; (b) leave of absence with pay; (c) military service; (d) disability for which the police officer receives disability benefit. The calculation of service is based on a day-to-day basis for most purposes. For the purpose of calculating benefits under the Dominant Formula, one year of Service is credited for a year in any portion of which a police officer is compensated.

RETIREMENT

Eligibility

Attainment of age 50 with at least 10 years of service.

For participants who first became members on or after January 1, 2011, attainment of age 55 with at least 10 years of service. Participants may retire at attainment of age 50 with 10 years of service with a reduced benefit.

Mandatory

Effective in plan year 2003, retirement is mandatory for a participant who has attained age 63.

Accumulation Annuity

At age 50 or more, with 10 or more years of service, the employee is entitled to an annuity based on the sums accumulated for age and service annuity plus 1/10 of the sum accumulated from the contributions by the City for the age and service annuity for each completed year of service after the first 10 years. At age 50 or more with 20 or more years, the employee is entitled to an annuity based on all sums accumulated.

Formula Minimum Annuity

While there are several alternative formulas available with 20 or more years of service, the Dominant Formula is 50% of highest average salary (including duty availability pay) in 48 consecutive months within the last 10 years of service plus 2.5% for each year or fraction of service over 20 years, limited to 75% of average salary.



Summary of Principal Eligibility and Benefit Provisions As of December 31, 2023

Mandatory Retirement Minimum Annuity

A police officer who is required to withdraw from service due to attainment of mandatory retirement age who has less than 20 years of service credit may elect to receive an annuity equal to 30% of average salary for the first 10 years of service, plus 2% of average salary for each completed year of service in excess of 10, to a maximum of 48% of average salary. This benefit qualifies for post-retirement increases.

Post-Retirement Increase

A retiree with at least 20 years of service or receiving a mandatory retirement minimum annuity, receives an increase of 3% of the original annuity, starting on the first of the month following the first anniversary of his retirement or the first of the month following attainment of age 55, whichever is later, and shall not be subject to a maximum increase.

For participants who first became members on or after January 1, 2011, increases are equal to the lesser of 3.00% and 50% of CPI-U of the original benefit, commencing at age 60.

Summary of Principal Eligibility and Benefit Provisions

As of December 31, 2023

Minimum Annuity

Beginning with the monthly annuity payment due on January 1, 2016, the fixed and granted monthly annuity payment for any policeman who retired from the service before January 1, 2016, at age 50 or over with 20 or more years of service, and for any policeman who retired from service due to termination of disability and who is entitled to an annuity on January 1, 2016, shall be no less than 125% of the Federal Poverty Level.

For participants who first became members on or after January 1, 2011, the member is entitled to an annuity based on an accrual rate of 2.5% of the final average salary for each fraction of service. Maximum is 75% of the final average salary. Final average salary is calculated using salary from the eight highest consecutive years within the last 10 years of service prior to retirement. Pensionable salary is limited to \$106,800 in 2011, increased by the lesser of 3% and one-half of the annual unadjusted percentage increase in the Consumer Price Index-U (but not less than zero) as measured in the preceding 12-month period ending with the September preceding the November 1, which is the date that the new amount will be calculated and made available to the pension funds.

For participants who first became members on or after January 1, 2011, who retire after age 50 but before age 55 is attained, the member is entitled to an annuity based on an accrual rate of 2.5% of the final average salary for each fraction of service, reduced by one half of one percent per month for retirement prior to age 55, subject to a maximum benefit of 75%.

Reversionary Annuity

A member, prior to retirement, may elect to reduce his own annuity, and provide a reversionary annuity, to begin upon the officer's death, for the officer's spouse.

SURVIVOR INCOME BENEFITS PAYABLE ON DEATH

Death in Service (Non-Duty):

Generally, a money-purchase benefit is provided, based on total salary deductions and City contributions. However, if a policeman dies in service after December 31, 1985, with at least 1.5 years of service, the widow's annuity is the greater of (a) 30% of the annual maximum salary attached to the classified civil service position of a first class patrolman at the time of his death (without dollar limit) or (b) 50% of the benefit accrued by the policeman at date of death.

The lifetime benefit is payable until death.



Summary of Principal Eligibility and Benefit Provisions As of December 31, 2023

Death in Service (Duty Related)

Compensation Annuity

75% of the member's salary attached to the civil service position that would ordinarily have been paid to such member as though in active discharge of his duties at the time of death payable until the date the policeman would have attained age 63.

Supplemental Annuity

Payable for life and is equal to the difference between the money purchase annuity for the spouse and an amount equal to 75% of the annual salary (including all salary increases and longevity raises) the police officer would have been receiving when he attained age 63 if the police officer had continued in service at the same rank last held in the department.

Death after Retirement

If a police officer retires on or after January 1, 1986, and subsequently dies, the widow's annuity is 40% before 1988 and 50% on and after January 1, 1988, of the retired policeman's annuity at the time of death (without dollar limit).

Maximum Annuity

\$500 a month (after discount for age difference) under both the accumulation method and the old formula method. There is no dollar limit on the 30%, 40%, or 50% benefit.

Minimum Annuity

The minimum widow's annuity shall be no less than 150% of the Federal Poverty Level.

For participants who first became members on or after January 1, 2011, widow benefits are equal to 66-2/3% of the officer's earned annuity at the date of death. Automatic increases to the annuity are equal to the lesser of 3.00% and 50% of CPI-U, commencing when the survivor reaches age 60, and applied to the original granted retirement annuity.

CHILDREN'S ANNUITIES

Eligibility

Payable at death of the policeman to all unmarried children less than 18 years of age.

Benefit

10% of the annual maximum salary of a first class patrolman during widow (widower) life, 15% otherwise.



Summary of Principal Eligibility and Benefit Provisions

As of December 31, 2023

Payable Until	Age 18. If the child is disabled, benefit is payable for life or as long as such disablement exists.
Family Maximum	60% (non-duty death) or 100% (duty death) of the salary that would ordinarily been paid to the policeman, if he had been in the active discharge of his duties.
Parent's Annuities Eligibility	Payable to a dependent parent at the death of a policeman who is in either active service, or receiving a disability benefit, or on leave of absence, or in receipt of an annuity granted after 20 years of service, or waiting to start receiving an annuity granted for 20 years of service. The benefit is only payable if there are no surviving spouses or children eligible for benefits.
Benefit	18% of the current salary attached to the rank at separation from service.
Payable until	Death of the dependent parent.

DUTY DISABILITY BENEFIT

Eligibility	Disabling condition incurred in the performance of duty.
Benefit	75% of salary at the time the disability is allowed plus \$100.00 per month for each unmarried child less than age 18, (total amount of child's benefits shall not exceed 25% of salary). Beginning January 1, 2000, after seven years of payment, the benefit shall not be less than 60% of the current salary attached to the rank held by the policemen at the time of disability. Payable to employee's age 63 or by operation of law, whichever is later. Salary deductions are contributed by the City.

OCCUPATIONAL DISEASE DISABILITY BENEFIT

Eligibility	Heart attack or any disability heart disease after 10 years of service.
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Summary of Principal Eligibility and Benefit Provisions As of December 31, 2023

Benefit 65% of salary attached to the rank held by the police officer at the time of his or her removal from the police department payroll with a minimum after 10 years of 50% of the current salary attached to the rank. Each natural or legally adopted unmarried child of the officer under the age of 18 is entitled to a benefit of \$100 per month. This benefit is not terminated at age 18 if the child is then dependent by reason of physical or mental disability. Salary deductions are contributed by the City.

ORDINARY DISABILITY BENEFIT

Eligibility Disabling condition other than duty or occupational related.

Benefit 50% of salary at the time of injury, payable for a period not more than 25% of service (excluding any previous disability time) rendered prior to injury, nor more than five years. Disability shall cease at age 63. Salary deductions are contributed by the City.

DEATH BENEFIT

Eligibility Payable upon the death of a police officer whose death occurs while in active service; on authorized leave of absence; within 60 days of receipt of salary; while receiving duty or ordinary disability benefit; occurring within 60 days of termination of such benefit; or occurring on retirement while in receipt of annuity and separation was effective after 20 years of service. This benefit is payable to beneficiaries or, if none, to estate.

Benefit

Death in Service:	AGE AT DEATH	BENEFIT
	49 and under	\$12,000
	50-62	\$12,000 less \$400 for each year by which age at death exceeds 49
Death after Retirement:	AGE AT DEATH	BENEFIT
	50 and over	\$6,000

If death results from injury incurred in performance of duty before retirement on annuity, the benefit payable is \$12,000 regardless of the attained age.



Summary of Principal Eligibility and Benefit Provisions As of December 31, 2023

REFUNDS

Policemen	Without regard to service and under age 50, or with less than 10 years of service and under age 57 at withdrawal: a refund of all salary deductions together with 1.5% simple interest until the date of withdrawal.
For Spouse's Annuity	Upon retirement, an unmarried policeman will receive a refund of contributions for spouse's annuity, accumulated at 3% compounded annually.
Of Remaining Amounts	If at death of a retired policeman the total member contributions paid while active exceed the total retirement benefits paid to date of death, the difference is payable.

CONTRIBUTIONS

Salary Deductions	Employee	7 %	
	Spouse	1½%	
	Annuity Increase	½%	
		9 %	
City Contributions ¹	Employee	9-5/7%	
	Spouse	2%	
	Annuity Increase	½%	Unallocated
		12-3/14%	

¹ Credited to Participant's Accumulation Annuity and Widow's Annuity Account

In addition to the above contributions, a contribution is made to support the Death Benefit. Policemen contribute \$2.50 per month. City contributes a total of \$224,000 for all policemen.

Prior to 2015, the total City contribution was generated by a tax equal to double the contributions by the policemen to the Fund two years prior to the year of the tax levy.

Under P.A. 99-0506, City contributions are equal to \$420 million in payment year 2016, \$464 million in payment year 2017, \$500 million in payment year 2018, \$557 million in payment year 2019, and \$579 million in payment year 2020. For payment years after 2020, the City is required to make level percent of pay contributions for plan years 2020 through 2055 which, along with member contributions and investment earnings, are expected to generate a projected funded ratio of 90% by plan year end 2055.



Summary of Principal Eligibility and Benefit Provisions As of December 31, 2023

**"PICK UP" OF EMPLOYEE
SALARY DEDUCTIONS**

Beginning January 1, 1982, the employee contributions were "picked up" by the employer. The W-2 salary is therefore reduced by the amount of contribution. For pension purposes, the salary remains unchanged. Income tax will be paid when a refund or annuity is received. For the purpose of benefits, refunds or contributions, these contributions will be treated as employee contributions.

SALARY CAP AND COLA DEVELOPMENT FOR MEMBERS HIRED ON OR AFTER JANUARY 1, 2011

Year Ending	CPI-U	½ CPI-U	COLA	Maximum Annual Pensionable Earnings
2011			3.00%	\$106,800.00
2012	3.90%	1.95%	1.95%	\$108,882.60
2013	2.00%	1.00%	1.00%	\$109,971.43
2014	1.20%	0.60%	0.60%	\$110,631.26
2015	1.70%	0.85%	0.85%	\$111,571.63
2016	0.00%	0.00%	0.00%	\$111,571.63
2017	1.50%	0.75%	0.75%	\$112,408.42
2018	2.20%	1.10%	1.10%	\$113,644.91
2019	2.30%	1.15%	1.15%	\$114,951.83
2020	1.70%	0.85%	0.85%	\$115,928.92
2021	1.40%	0.70%	0.70%	\$116,740.42
2022	5.40%	2.70%	2.70%	\$119,892.41
2023	8.20%	4.10%	3.00%	\$123,489.18
2024	3.70%	1.85%	1.85%	\$125,773.73

Summary of Principal Eligibility and Benefit Provisions As of December 31, 2023

Health Insurance Premium Subsidies

Pursuant to the court order *Underwood, et al. v. City of Chicago, et al.*, the PABF provides retiree health insurance premium subsidies to certain eligible annuitants.

To be eligible for the PABF paid subsidy, the annuitant must meet the following eligibility requirements to receive partial reimbursement for healthcare costs:

- 1) Annuitant must have retired on or after August 23, 1989;
- 2) Annuitant must have been hired prior to April 4, 2003; and
- 3) Annuitant must have either:
 - a) Participated in a group healthcare plan for which the Fund offers to deduct health insurance premiums from monthly annuities in accordance with the 1983 and 1985 amendments to the Illinois Pension Code Statutes (currently either the Blue Cross/Blue Shield plans sponsored by the City of Chicago; the Aetna plans sponsored by the Labor Benefits Association; or the United American Insurance Co. plans sponsored by the Chicago Police Sergeants' Association);
 - OR
 - b) For the period between January 1, 2017, and December 31, 2019, participated in any health insurance plan and paid their healthcare insurance premiums themselves, either through an account on which the annuitant is named or an account established for the benefit of the annuitant.

Eligible annuitants are entitled to receive a health insurance premium subsidy payable from the PABF for the lifetime of the employee annuitant in the amount of \$55 per month if the annuitant is not receiving Medicare benefits or \$21 per month if the annuitant is receiving Medicare benefits.

APPENDIX 6

LEGISLATIVE CHANGES 2014 THROUGH 2023

Legislative Changes 2014 through 2023

2014 Session

No legislative changes.

2015 Session

No legislative changes.

2016 Session

P.A. 99-0506

- Approved and effective May 30, 2016.
- Changes the funding policy.
 - For payment years 2016 through 2020, specifies the amount for the City of Chicago's required annual contribution to the Fund as follows: \$420 million in payment year 2016, \$464 million in payment year 2017, \$500 million in payment year 2018, \$557 million in payment year 2019 and \$579 million in payment year 2020.
 - Beginning in payment year 2021, the City's total required contribution to the Fund shall be an amount that is equal to the normal cost of the fund, plus an amount sufficient to bring the total assets of the fund up to 90% of the total actuarial liabilities of the fund by payment year 2055 (instead of 2040).
- Changes the actuarial cost method to entry age normal.
- Includes provisions for funding from any proceeds received by the City in relation to the operation of a casino within the City.
- Provides a mechanism to enforce funding through a mandamus action.
- Creates a new minimum retirement annuity provision equal to 125% of the federal poverty level for certain persons.

P.A. 99-0905

- Approved and effective November 29, 2016.
- Specifies the manner of calculating the Tier 2 surviving spouse's annuity for Tier 2 policemen who die in service with at least 1 1/2 years of service.
- Specifies the manner of computing duty-death benefits for Tier 2 surviving spouses and provides that Tier 2 duty-death benefits are not payable where the death is the result of an intervening cause.
- Includes provisions for a minimum surviving spouse's annuity equal to 125% of the federal poverty level.

Legislative Changes 2014 through 2023

- Increases the Tier 1 automatic annual increase in retirement annuity for persons born after December 31, 1954 but before January 1, 1966.
- Amends the State Mandates Act to require implementation without reimbursement.

2017 Session

P.A. 100-0334

- Approved and effective August 25, 2017.
- States a person otherwise entitled to a survivor benefit and who has been convicted of a felony in connection with the service rendered by the member, is not eligible for such survivor benefit, if such conviction was after the effective date.
- It further states for participants that first become members after the effective date the change is a condition of employment.

2018 Session

P.A. 100-1148

- Approved and effective December 10, 2018.
- Technical correction related to filing copies of the report as required by Section 3.1 of the General Assembly Organizational Act and with the State Government Report Distribution Center for the General Assembly.

2019 Session

P.A. 100-1173

- Approved and effective June 1, 2019.
- Denied service credit applications for safety or investigative work filed between 1992 and 2008 may be reconsidered by the board.

P.A. 100-0387

- Approved and effective August 16, 2019.
- Adds provisions to felony convictions entered on or after January 1, 2019. Also states that applicants of duty or occupational disease disability retirements who are denied benefits and who challenge and prevail may seek litigation expense recovery.

2020 Session

P.A. 101-0633

- Approved and effective June 5, 2020.

Legislative Changes 2014 through 2023

- Includes COVID-19 as a cause of eligibility for ordinary death benefits and certain annuities related to death in the line of duty for a policeman who was exposed to and contracted COVID-19 on or after March 9, 2020 and on or before December 31, 2020.

2021 Session

P.A. 101-0653

- Approved and effective February 26, 2021
- Extended the dates for which COVID-19 is included as a cause of eligibility for certain annuities related to death in the line of duty.

P.A. 102-0125

- Approved and effective July 23, 2021
- Made changes to provisions concerning credit for service while on a leave of absence from the police department and assigned or detailed to perform safety or investigative work.

2022 Session

P.A. 102-0806

- Approved and effective May 13, 2022
- Offsets disability and death benefits paid by the pension fund by any compensation as temporary total disability, permanent total disability, a lump sum settlement award, or other payment under the Workers' Compensation Act or the Workers' Occupational Diseases Act as a result of the policeman's secondary employment for any injury resulting in disability.
- Provides that the calculation of compensation received by the policeman or beneficiary shall not take into consideration any benefits received under the Line of Duty Compensation Act.

P.A. 102-0884

- Approved and effective May 13, 2022
- Beginning January 1, 2023, the minimum widow's annuity changed from 125% of the Federal Poverty Level to 150% of the Federal Poverty Level.

2023 Session

P.A. 103-0002

- Approved and effective May 10, 2023
- Establishes a presumption that a member who became disabled as a result of exposure to and contraction of COVID-19 from March 9, 2020 to June 30, 2021 was injured in the line of duty and is entitled to receive a duty disability benefit; applied retroactively to March 9, 2020. This presumption does not apply if the member was on a leave of absence from his or her employment or otherwise not required to report for duty for a period of 14 or more consecutive days immediately prior to the date of contraction of COVID-19. A member who had previously been denied a duty disability benefit that would otherwise be entitled to a duty disability benefit under the amendatory Act shall be entitled to a retroactive duty disability benefit.



Legislative Changes 2014 through 2023

P.A. 103-0582

- Approved and effective December 8, 2023
- Grants an annual 3% non-compounded cost-of-living adjustment (COLA) to all Tier 1 Chicago Police retirees who reach age 55 with 20 years of service. Any member born on or after January 1, 1966 and who qualifies for a minimum annuity and has not received an initial increase as of January 1, 2023 is entitled to receive the initial increase on the latest of (1) January 1, 2023, (2) the first anniversary of the date of retirement, or (3) the attainment of age 55.

APPENDIX 7

GLOSSARY OF TERMS

Glossary of Terms

<i>Actuarial Accrued Liability (“AAL”)</i>	The difference between the Actuarial Present Value of Future Benefits, and the Actuarial Present Value of Future Normal Costs.
<i>Actuarial Assumptions</i>	Assumptions about future plan experience that affect costs or liabilities, such as: mortality, withdrawal, disablement and retirement; future increases in salary; future rates of investment earnings; future investment and administrative expenses; characteristics of members not specified in the data, such as marital status; characteristics of future members; future elections made by members; and other items.
<i>Actuarial Cost Method</i>	A procedure for allocating the Actuarial Present Value of Future Benefits between the Actuarial Present Value of future Normal Costs and the Actuarial Accrued Liability.
<i>Actuarial Equivalent</i>	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
<i>Actuarial Present Value (“APV”)</i>	The amount of funds required to provide a payment or series of payments in the future. It is determined by discounting the future payments with an assumed interest rate and with the assumed probability each payment will be made.
<i>Actuarial Present Value of Future Benefits (“APVFB”)</i>	The Actuarial Present Value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits and inactive, nonretired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
<i>Actuarial Valuation</i>	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB Statement No. 67, such as the Funded Ratio and the Actuarially Determined Contribution (“ADC”).
<i>Actuarial Value of Assets (“AVA”)</i>	The value of the assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio or contribution requirement.

Glossary of Terms

<i>Actuarially Determined Contribution (“ADC”)</i>	The employer’s periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and Amortization Payment.
<i>Amortization Method</i>	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the rate at which total covered payroll of all active members is assumed to increase.
<i>Amortization Payment</i>	That portion of the plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
<i>Amortization Period</i>	The period used in calculating the Amortization Payment.
<i>Closed Amortization Period</i>	A specific number of years that is reduced by one each year, and declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc.
<i>Employer Normal Cost</i>	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
<i>Equivalent Single Amortization Period</i>	For plans that do not establish separate amortization bases (separate components of the UAAL), this is the same as the Amortization Period. For plans that do establish separate amortization bases, this is the period over which the UAAL would be amortized if all amortization bases were combined upon the current UAAL payment.
<i>Experience Gain/Loss</i>	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two actuarial valuations. To the extent that actual experience differs from that assumed, Unfunded Actuarial Accrued Liabilities emerge, which may be larger or smaller than projected. Gains are due to favorable experience; e.g., the assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, losses are the result of unfavorable experience; i.e., actual results that produce Unfunded Actuarial Accrued Liabilities which are larger than projected.

Glossary of Terms

<i>Funded Ratio</i>	The ratio of the Actuarial Value of Assets to the Actuarial Accrued Liability.
<i>GASB</i>	Governmental Accounting Standards Board.
<i>GASB Statement No. 67 and GASB Statement No. 68</i>	These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. GASB Statement No. 68, which replaced GASB Statement No. 27 effective with the fiscal year ending June 30, 2015, sets the accounting rules for the employers that sponsor or contribute to public retirement systems. GASB Statement No. 67, which replaced GASB Statement No. 25 effective with fiscal year ending June 30, 2014, sets the rules for the systems themselves.
<i>Normal Cost</i>	The annual cost assigned, under the Actuarial Cost Method, to the current plan year.
<i>Open Amortization Period</i>	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.
<i>Unfunded Actuarial Accrued Liability</i>	The difference between the Actuarial Accrued Liability and Actuarial Value of Assets.
<i>Valuation Date</i>	The date as of which the Actuarial Present Value of Future Benefits are determined. The benefits expected to be paid in the future are discounted to this date.