Park Employees' Annuity and Benefit Fund of Chicago

Actuarial Valuation and Review as of December 31, 2022

This report has been prepared at the request of the Board of Trustees to assist in administering the Fund. The measurements shown in this actuarial valuation may not be applicable for other purposes.

Segal

Segal

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June 5, 2023

Board of Trustees
Park Employees' Annuity and Benefit Fund of Chicago
3500 S. Morgan St. Suite 400
Chicago, Illinois 60609

Dear Board Members:

We are pleased to submit this annual Actuarial Valuation and Review as of December 31, 2022. It summarizes the actuarial data used in the valuation, establishes the net pension liability under Governmental Accounting Standards Board (GASB) Statement No. 67 and the funding requirements for the fiscal year ending December 31, 2023, and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Park Employees' Annuity and Benefit Fund of Chicago.

Asset and Membership Data

The census information and financial information on which our calculations were based was prepared by the Fund staff. That assistance is gratefully acknowledged. We have not subjected the census data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

Plan Changes

Effective August 6, 2021, House Bill 417, or Public Act 102-0263 (P.A. 102-0263) was signed into law. The newly-enacted legislation created a new tier of participant benefits beginning on January 1, 2022. The new tier applies to participants hired on or after January 1, 2022, or participants hired on or after January 1, 2011, who made an irrevocable election to participate in the new tier between January 1, 2022, and April 1, 2022. See the plan provisions section of this report for details.

Actuarial Assumptions and Methods

The actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the Fund's actuary. The assumptions and methods used for the December 31, 2022, actuarial valuation were based on an experience analysis covering the five-year period ending December 31, 2017, and were adopted by the Board, effective for the December 31, 2018, valuation. These actuarial assumptions and methods comply with the parameters set by the Actuarial Standards of Practice and the parameters for disclosure in GASB Statement No. 67. The investment return assumption is based on the Fund being invested according to the target asset allocation in the Investment Policy Statement. To the extent that the liquidation of assets to pay benefit payments and expenses requires a shift in investment allocation to more liquid, lower return asset classes, a lower discount rate may be required in the future. On May 19, 2022, the Board of Trustees approved a decrease in the investment return assumption to 7.00% for the December 31, 2022, valuation.

Funding Adequacy

The current funding policy of the Fund, adopted by the Board, is to have contributions sufficient to amortize the unfunded actuarial accrued liability over the 30-year period ending December 31, 2042. However, the actual amount of employer contributions each year is set by statute. P.A. 102-0263 also included provisions that updated the method and amount of employer contributions. Under P.A. 102-0263, employer contributions are now the sum of employer normal cost plus a 35-year closed-period amortization of the unfunded actuarial accrued liability as of December 31, 2022, phased in from 2020 to 2023.

The Board is in the process of reviewing the funding policy in light of the enactment of P.A. 102-0263 and current model practice with respect to actuarial funding policies for public sector retirement plans.

This report includes the following schedules for the Actuarial and Financial sections of the Annual Comprehensive Financial Report, which were prepared by Segal:

- Actuarial
  - Active Member Valuation Data
  - Retirees and Beneficiaries Added to and Removed from Rolls
  - Solvency Test
  - Analysis of Financial Experience
- Financial
  - Schedule of Changes in Employer’s Net Pension Liability
  - Schedule of Employer’s Net Pension Liability
  - Schedule of Employer Contributions

Limitation of Actuarial Measurements

The measurements shown in this actuarial valuation may not be applicable for other purposes. 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; and changes in plan provisions or applicable law.

Qualifications

The actuarial calculations were directed under my supervision. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in my opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.

Sincerely,

Matthew A. Strom, FSA, MAAA, EA
Senior Vice President and Actuary

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Section 1: Actuarial Valuation Summary

Purpose

This report has been prepared by Segal to present a valuation of the Park Employees' Annuity and Benefit Fund of Chicago (the Fund) as of December 31, 2022. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Fund, as outlined in 40 ILCS 5/12 and administered by the Board;
- The characteristics of covered active participants, inactive vested participants, and retired participants and beneficiaries as of December 31, 2022, provided by Fund staff;
- The assets of the Fund as of December 31, 2022, provided by Fund staff;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

Valuation Highlights

The following key findings were the result of this actuarial valuation:

1. Under the employer contribution provisions contained in P.A. 102-0263, the Fund is now projected to remain solvent and reach a goal of 100% funding by 2057. A 40-year projection of the Fund's financial status is shown in Exhibit V.
2. The funded ratio based on the actuarial value of assets over the actuarial accrued liability as of December 31, 2022, is 31.5%, compared to 32.0% as of December 31, 2021. This ratio is a measure of funded status, and its history is a measure of funding progress. Using the fair value of assets, the funded ratio as of December 31, 2022, is 28.8%, compared to 34.2% as of December 31, 2021. These measurements are not necessarily appropriate for assessing the sufficiency of Fund assets to cover the estimated cost of settling the Fund's benefit obligation or the need for or the amount of future contributions.
3. Employer contributions to the Fund are mandated by statute and target 100% funding of the total actuarial accrued liability of the Fund over a 35-year period ending December 31, 2057. The Board's funding policy used to develop an actuarially determined contribution (ADC) is calculated on a level percentage of pay basis and is based on a closed 30-year period, which ends on December 31, 2042. For the fiscal year beginning January 1, 2023, the ADC based on the Board's funding policy is $77,592,063. Based on the employer contributions set in statue, the employer has budgeted $56,874,515, for the fiscal year beginning January 1, 2023. Compared to the ADC, the contribution deficiency is $20,717,548.
4. We have calculated the statutorily-required employer contribution for the fiscal year beginning January 1, 2024, to be $59,609,491.
5. For the year ended December 31, 2022, Segal has determined that the asset return on a fair value basis was −10.6%. After gradual recognition of investment gains and losses under the actuarial smoothing method, the actuarial rate of return was 4.3%. This represents an experience loss when compared to the assumed rate of 7.25% that was in effect for the year ending December 31, 2022. As of December 31, 2022, the actuarial value of assets ($399.6 million) represents 109.2% of the fair value ($365.8 million).
6. The portion of deferred investment gains and losses recognized in the calculation of the December 31, 2022, actuarial value of assets resulted in a loss of $11,524,107. Additionally, the demographic and liability experience resulted in a $1,166,351 net loss.
7. The total unrecognized investment loss as of December 31, 2022, is $33,710,791. This investment loss will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of investment gains derived from future experience. This implies that earning the assumed rate of investment return of 7.00% per year (net of investment expenses) on a fair value basis will result in investment gains on the actuarial value of assets in the next few years. Therefore, if the actual fair value return is equal to the assumed 7.00% rate and all other actuarial assumptions are met, the contribution requirements would increase over the next few years.
8. As mentioned above, the current method used to determine the actuarial value of assets yields an amount that is 109.2% of the fair value of assets as of December 31, 2022. Guidelines in Actuarial Standard of Practice No. 44 (Selection and Use of Asset Valuation Methods for Pension Valuations) recommend that asset values fall within a reasonable range around the corresponding fair value. We believe the actuarial asset method currently complies with these guidelines.

9. When measuring pension liability for GASB purposes, the same actuarial cost method (Entry Age method) that is used for funding purposes is used to determine the Total Pension Liability. In large part due to the funding changes included in P.A. 102-0263, as of December 31, 2022, the GASB blended discount rate calculation results in the same discount rate (7.00%) as used for plan funding purposes. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report will not differ from the actuarial accrued liability (AAL) measure for funding. We note that the same is true for the normal cost component of the annual plan cost for funding and financial reporting.
10. The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan's fiduciary net position. The Plan's fiduciary net position is equal to the fair value of assets. The NPL as of December 31, 2022, is $903,171,435, which was based on a discount rate of 7.00%, compared to the NPL as of December 31, 2021, of $797,333,323, which was based on a discount rate of 7.25%.
11. This actuarial report as of December 31, 2022, is based on financial data as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the cost of the plan, while increases in asset values (in excess of expected) will decrease the cost of the plan.

Summary of Key Valuation Results

	2024	2023	2022
Contributions for fiscal year beginning:			
Expected employer contributions provided by the Fund	$59,609,491	$56,874,515	$52,036,900
Actuarially determined contribution requirement	--	$77,592,063	71,021,948
Actual employer contributions	--	--	67,128,978
Funding elements for fiscal year beginning:			
Employer normal cost, including administrative expenses		$7,405,215	$6,390,769
Fair value of assets		365,845,448	414,658,650
Actuarial value of assets		399,555,117	388,163,499
Actuarial accrued liability		1,269,016,883	1,211,991,973
Unfunded actuarial accrued liability		869,461,766	823,828,474
Funded ratio (based on actuarial value of assets)		31.49%	32.03%
GASB information:			
Long-term expected rate of return		7.00%	7.25%
Municipal bond index		3.72%	2.06%
Single equivalent discount rate		7.00%	7.25%
Total pension liability		$1,269,016,883	$1,211,991,973
Plan fiduciary net position		365,845,448	414,658,650
Net pension liability		903,171,435	797,333,323
Plan fiduciary net position as a percentage of total pension liability		28.83%	34.21%
Demographic data for plan year beginning:			
Number of retired participants and beneficiaries		2,745	2,752
Number of vested former participants		173	169
Number of active participants		2,818	2,694
Total salary supplied by the Fund		$134,679,715	$131,000,642
Average salary		47,793	48,627

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal (“Segal”) relies on a number of input items. These include:

- **Plan of benefits**: Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.

- **Participant data**: An actuarial valuation for a plan is based on data provided to the actuary by the Fund staff. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.

- **Assets**: The valuation is based on the fair value of assets as of the valuation date, as provided by the Fund staff. The Fund staff uses an “actuarial value of assets” that differs from fair value to gradually reflect year-to-year changes in the fair value of assets in determining the contribution requirements.

- **Actuarial assumptions**: In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results that does not mean that the previous assumptions were unreasonable.

- **Modeling**: Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Deterministic cost projections are based on a proprietary forecasting model. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the direction of the supervising actuary.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the Board. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the Fund.
- If the Board is aware of any event or trend that was not considered in the valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of Fund's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.
- The measurements shown in this actuarial valuation may not be applicable for other purposes. 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; and changes in plan provisions or applicable law.

As Segal has no discretionary authority with respect to the management or assets of the Fund, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Fund.

Section 2: Actuarial Valuation Results

A. Membership Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive members, retirees and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A, B, and C.

A historical perspective of how the member population has changed over the past ten valuations can be seen in this chart.

Member Population: 2013 – 2022

Census Date (December 31)	Active Members	Vested Terminated Members*	Retired and Beneficiaries**	Ratio of Actives to Retirees and Beneficiaries
2013	3,076	148	2,904	1.06
2014	2,973	147	2,891	1.03
2015	3,063	145	2,876	1.07
2016	3,114	149	2,870	1.09
2017	3,543	150	2,876	1.23
2018	3,187	145	2,854	1.12
2019	3,132	147	2,843	1.05
2020	2,890	158	2,775	1.04
2021	2,694	169	2,752	1.08
2022	2,818	173	2,745	1.04

** Excludes terminated members due a refund of employee contributions.*

*** Excludes QILDROs*

Active Members

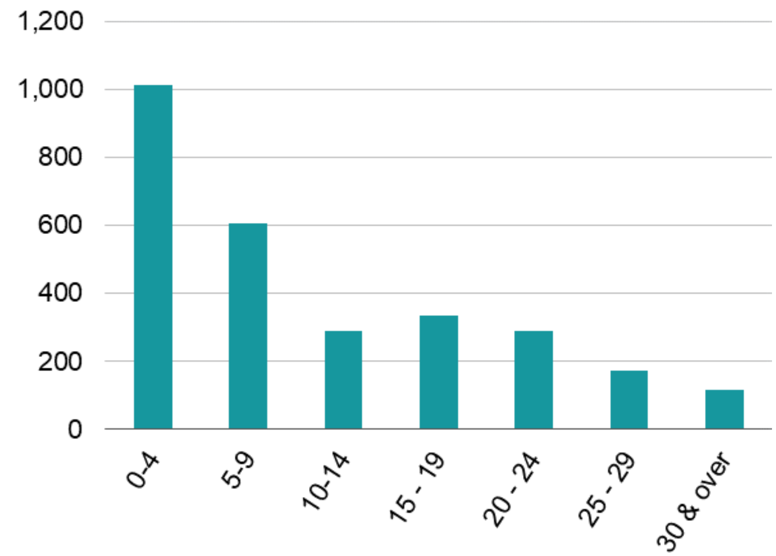
Plan costs are affected by the age, years of service and payroll of active members. In this year's valuation, there were 2,818 active members with an average age of 43.2, average years of service of 10.8 years, and average salary of $47,793. The 2,694 active participants in the prior valuation had an average age of 43.8, average years of service of 11.6 years, and average salary of $48,627.

These graphs show a distribution of active members by age and by years of service.

Distribution of Active Members as of December 31, 2022

Actives by Age

Actives by Years of Service



Inactive Members

In this year's valuation, there were 173 members with a vested right to a deferred or immediate vested benefit.

In addition, there were 5,092 members entitled to a return of their employee contributions.

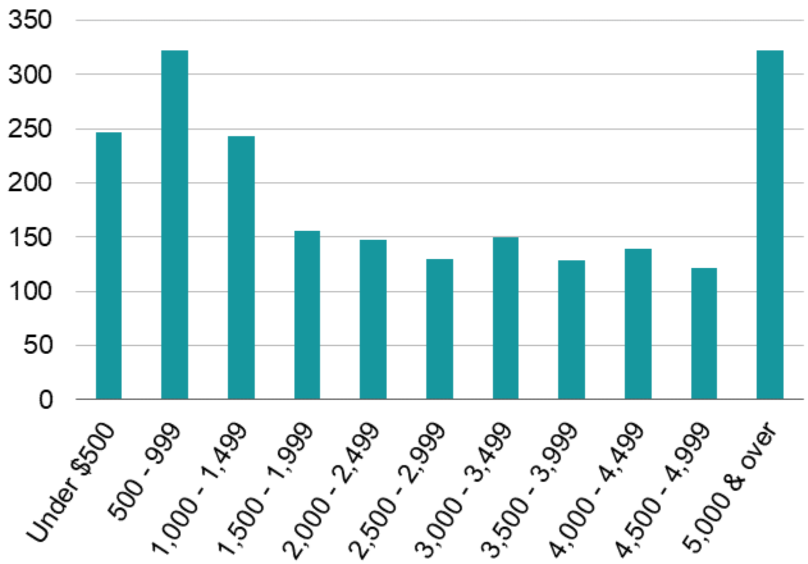
Retirees and Beneficiaries

As of December 31, 2022, 2,106 retirees, 631 beneficiaries, and 8 dependent children were receiving total monthly benefits of $6,707,750. For comparison, in the previous valuation, there were 2,104 retirees, 639 beneficiaries, and 9 dependent children receiving monthly benefits of $6,531,098.

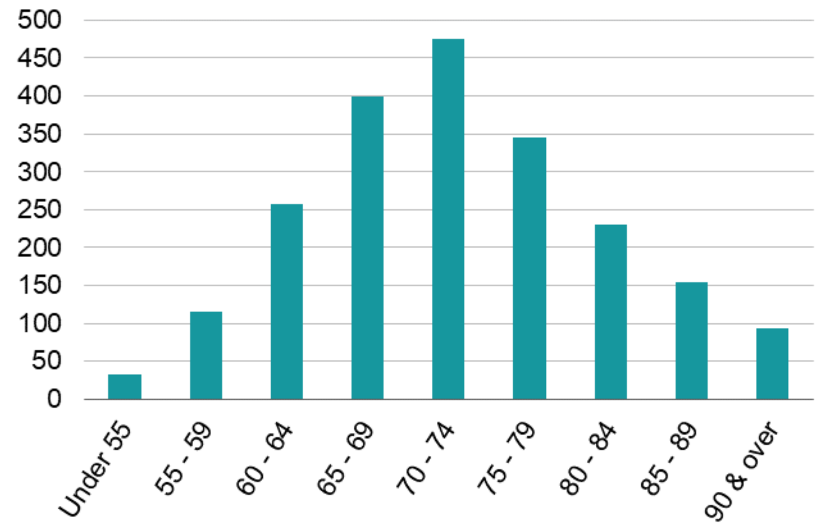
These graphs show a distribution of the current retirees and beneficiaries based on their monthly amount and age.

Distribution of Retirees as of December 31, 2022

Retirees by Monthly Amount



Retirees by Age



B. Financial Information

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to fair value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize fair value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value. The chart shows the determination of the actuarial value of assets as of the valuation date.

Determination of Actuarial Value of Assets for Fiscal Years Ended December 31

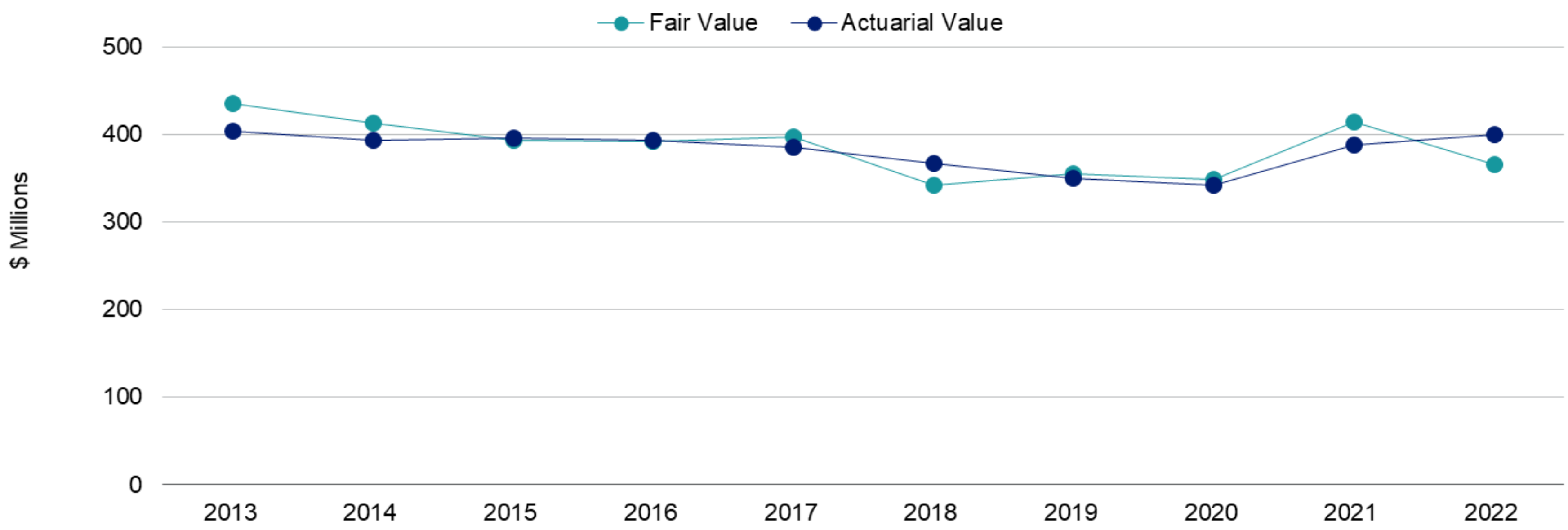
			2022		2021	
1	Actuarial value of assets as of prior valuation date			$388,163,499		$342,131,743
2	Employer and employee contributions and other income			79,798,831		95,576,714
3	Benefits and expenses			84,842,140		82,320,856
4	Expected investment income			27,959,034		25,285,076
5	Total investment income, including income for securities lending			−43,769,893		53,108,277
6	Investment gain/(loss): **(5) − (4)**			−71,728,927		27,823,201
7	Expected actuarial value of assets: **(1) + (2) − (3) + (4)**			411,079,224		380,672,677
8	Calculation of recognized return	Original Amount*	Percent Recognized		Percent Recognized	
	(a) Year ended December 31, 2022	−$71,728,927	20%	−$14,345,785	--	--
	(b) Year ended December 31, 2021	27,823,201	20%	5,564,640	20%	$5,564,640
	(c) Year ended December 31, 2020	4,006,341	20%	801,268	20%	801,268
	(d) Year ended December 31, 2019	26,879,470	20%	5,375,894	20%	5,375,894
	(e) Year ended December 31, 2018	−44,600,621	20%	−8,920,124	20%	−8,920,124
	(f) Year ended December 31, 2017	23,345,719	0%	0	20%	4,669,144
	(g) Total recognized return			−11,524,107		7,490,822
9	Actuarial value of assets as of current valuation date: **(7) + (8g)**			$399,555,117		$388,163,499

* *Total return minus expected return on actuarial value*

Both the actuarial value and fair value of assets are representations of the fund's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the fair value of assets. The actuarial asset value is significant because the Fund's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

The chart shows the change in the actuarial value of assets versus the fair value over the past ten valuation dates.

Actuarial Value of Assets vs. Fair Value of Assets as of December 31



C. Actuarial Experience

To calculate the actuarially determined contribution requirement, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience. If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total loss is $12,916,977; $11,524,107 from investment losses and $1,392,870 in losses from all other sources. The net experience variation from individual sources other than investments was 0.11% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

Actuarial Experience for Year Ended December 31, 2022

1	Net loss from investments*	−$11,524,107
2	Net loss from administrative expenses	−226,519
3	Net loss from other experience	−1,166,351
4	Net experience loss: **(1) + (2) + (3)**	−$12,916,977

* *Details on the next page*

Investment Experience

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Fund's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets for the year ended December 31, 2022, was 7.25%. The actual rate of return on an actuarial basis for the year ended December 31, 2022, was 4.26%.

Since the actual return for the year was less than the assumed return, the Fund experienced an actuarial loss during the fiscal year ended December 31, 2022, with regard to its investments.

This chart shows the gain/(loss) due to investment experience.

Investment Experience

1	Actual return	$16,434,927
2	Average value of assets	385,641,845
3	Actual rate of return: **(1) ÷ (2)**	4.26%
4	Assumed rate of return	7.25%
5	Expected return: **(2) x (4)**	27,959,034
6	Actuarial loss: **(1) − (5)**	−$11,524,107

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the fair value investment return for the last ten valuation years, including five-year and ten-year averages.

Investment Return

Fiscal Year Ended December 31	Fair Value**	Actuarial Value*
2013	16.9%	6.5%
2014	6.9%	10.4%
2015	1.9%	8.2%
2016	8.4%	8.0%
2017	14.2%	10.0%
2018	−5.1%	5.4%
2019	17.0%	6.6%
2020	9.3%	8.0%
2021	14.6%	9.4%
2022	−11.0%	4.3%
Average Returns		
Last 5 years	4.4%	6.7%
Last 10 years	6.9%	7.7%

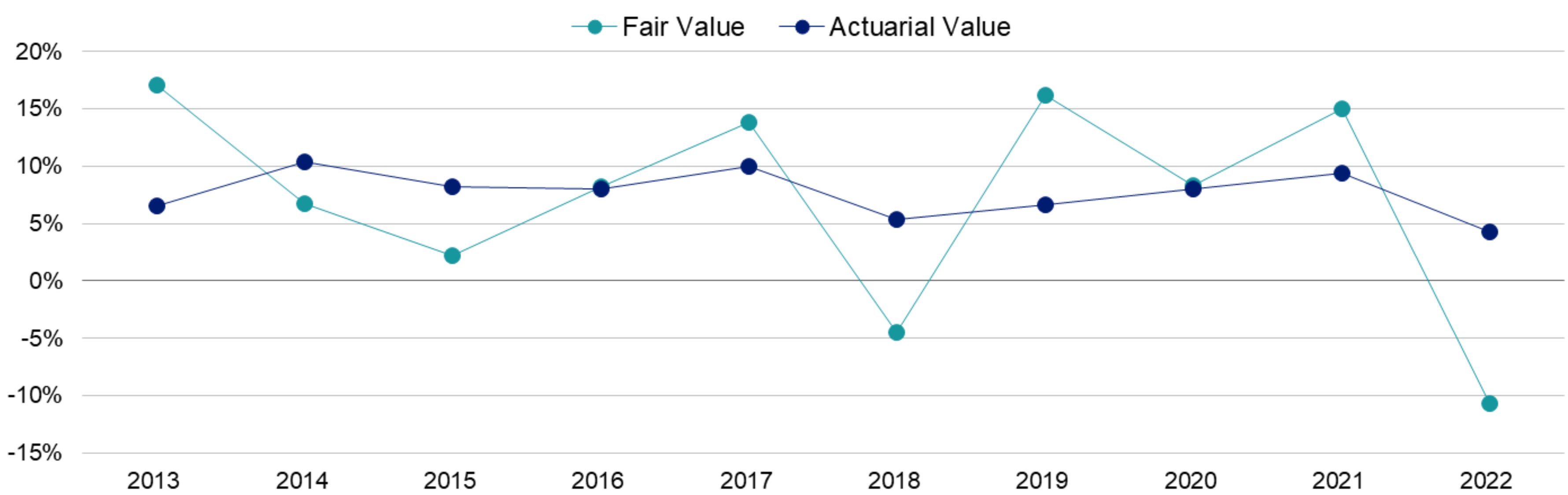
* *As determined by Segal*

** *As determined by Investment Consultant*

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the fair value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling the actuarially required contribution.

This chart illustrates how this leveling effect has actually worked over the years 2013 - 2022.

Fair Value and Actuarial Rates of Return for Years Ended December 31



Administrative Expenses

Administrative expenses for the year ended December 31, 2022, totaled $2,002,020 compared to the assumption of $1,722,354. This resulted in a loss of $226,519 for the year when adjusted for timing.

Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements, and
- salary increases different than assumed.

The net loss from this other experience for the year ended December 31, 2022, amounted to $1,166,351, which is 0.11% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the Fund for the year ended December 31, 2022, is shown in the chart below.

Experience Due to Changes in Demographics for Year Ended December 31, 2022

1	Turnover	−$2,452,944
2	Active Retirement	−4,562,715
3	Experience among retired members and beneficiaries related to mortality	4,668,049
4	Salary/service increase for continuing actives	−794,581
5	Other	1,975,840
6	Net Loss	−$1,166,351

D. Development of Employer Costs

At the discretion of the Board, the actuarial valuation includes the calculation of a funding policy benchmark contribution amount referred to as the actuarially determined contribution. The amount of actuarially determined contribution is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the projected payroll for active members to determine the actuarially determined contribution of 55.19% of payroll.

The actuarially determined contribution is calculated on a level percentage of pay basis and is based on a closed 30-year period, which ends on December 31, 2042. As of January 1, 2023, there are 20 years remaining on the amortization period. The Board is in the process of reviewing the funding policy in light of the enactment of P.A. 102-0263 and current model practice with respect to actuarial funding policies for public sector retirement plans.

The chart compares this valuation's actuarially determined contribution with the prior valuation.

Actuarially Determined Contribution

		Year Beginning January 1			
		2023		2022	
		Amount	% of Payroll	Amount	% of Payroll
1	Total normal cost*	$18,511,656	13.17%	$17,019,445	12.52%
2	Administrative expenses	2,009,201	1.43%	1,722,354	1.27%
3	Expected employee contributions*	−13,115,642	−9.33%	−12,351,030	−9.09%
4	Employer normal cost: **(1) + (2) + (3)**	7,405,215	5.27%	6,390,769	4.70%
5	Employer normal cost, adjusted for timing*	7,658,563	5.45%	6,617,040	4.87%
6	Actuarial accrued liability	1,269,016,883		1,211,991,973	
7	Actuarial value of assets	399,555,117		388,163,499	
8	Unfunded/(overfunded) actuarial accrued liability: **(6) − (7)**	869,461,766		823,828,474	
9	Payment on unfunded actuarial accrued liability	69,933,500	49.74%	64,404,908	47.38%
10	Actuarially determined contribution, adjusted for timing*: **(5) + (9)**	77,592,063	55.19%	71,021,948	52.24%
11	Projected payroll	$140,585,920		$135,940,548	

** Recommended contributions are assumed to be paid at the middle of every month.*

The actuarially determined contribution as of January 1, 2023, is based on all the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

The chart reconciles the actuarially determined contribution from the prior valuation to the amount determined in this valuation.

Reconciliation of Actuarially Determined Contribution from January 1, 2022 to January 1, 2023

Actuarially Determined Contribution as of January 1, 2022	$71,021,948
Effect of expected change in amortization payment due to payroll growth	1,610,122
Effect of plan changes	241,667
Effect of change in administrative expense assumption	296,661
Effect of change in other actuarial assumptions	1,989,302
Effect of contributions less than the recommended contribution	338,318
Effect of investment losses	886,890
Effect of other gains and losses on accrued liability	107,195
Effect of net other changes	1,099,960
Total change	6,570,115
Actuarially Determined Contribution as of January 1, 2023	$77,592,063

E. Risk

Since the actuarial valuation results are dependent on a given set of assumptions and data as of a specific date, there is a risk that emerging results may differ significantly as actual experience differs from the assumptions.

This report does not contain a detailed analysis of the potential range of future measurements, but does include a brief discussion of some risks that may affect the Fund. Upon request, a more detailed assessment of the risks can be provided to enable a better understanding of the risks specific to this Fund.

Investment Risk (the risk that returns will be different than expected)

Since the Plan's assets are much larger than contributions, investment performance may create significant volatility in contribution requirements. For example, if the actual return on the fair value of assets for the next Plan Year were 1% different from the assumed (either higher or lower), the projected unfunded actuarial liability would change by 0.5%, or about $4.1 million and the actuarially determined contribution requirements would increase or decrease by approximately $0.3 million.

The fair value rate of return over the last 10 years has ranged from a low of −11.0% to a high of 17.0%, with an average of 6.9%.

Longevity Risk (the risk that mortality experience will be different than expected)

The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the Plan's funding policy and actuarially determined contribution requirement.

Contribution Risk

The Plan's funding policy contribution requires payment of the Employer's normal cost and an amortization payment according to a schedule sufficient to pay down unfunded actuarial liability over time. If the Plan's funding policy contribution were adhered to, contribution risk would be negligible.

Employer contribution requirements are set by statute and were increased with the enactment of P.A. 102-0263, effective August 6, 2021. Employer contributions to the Fund under P.A. 102-0263 target 100% funding of the total actuarial accrued liability of the Fund over a 35-year period ending December 31, 2057. Under this revised approach, if employer contribution requirements are adhered to, contribution risk would also be negligible.

Demographic Risk (the risk that participant experience will be different than assumed)

Examples of this risk include:

- Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply.
- More or less active participant turnover than assumed.
- Individual salary increases higher or lower than assumed.

Actual Experience Over the Last 10 years and Implications for the Future

Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

- The investment gain/(loss) for a year has ranged from a gain of $37 million to a loss of $45 million.
- The non-investment gain/(loss) for a year has ranged from a gain of $5 million to a loss of $9 million.
- The funded percentage on the actuarial value of assets has ranged from a low of 28.74% to a high of 45.53%.

Section 3: Supplemental Information

Exhibit A – Table of Fund Coverage

	Year Ended December 31		
Category	**2022**	**2021**	**Change From Prior Year**
Active members in valuation:			
Number	2,818	2,694	+4.6%
Average age	43.2	43.8	−0.6
Average years of service	10.8	11.6	−0.8
Total salary supplied by the Fund	$134,679,715	$131,000,642	+2.8%
Average salary	47,793	48,627	−1.7%
Total active vested members with at least 10 years of service	1,219	1,254	−2.8%
Vested terminated members	173	169	+2.4%
Non-vested terminated members eligible for a return of contributions	5,092	4,999	+1.9%
Service retirees:			
Number in pay status*	2,106	2,104	+0.1%
Average age	72.7	72.6	+0.1
Average monthly benefit	$2,715	$2,634	+3.1%
Beneficiaries			
Number in pay status	639	648	−1.4%
Average age	79.0	79.4	−0.4
Average monthly benefit	$1,550	$1,526	+1.6%
Total number of members	10,828	10,614	+2.0%

* Excluding QILDROS

Exhibit B – Participants in Active Service as of December 31, 2022 By Age, Years of Service, and Average Payroll provided by the Fund

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	374	358	16							
	$21,130	$20,800	$28,502							
25 – 29	279	155	117	7						
	$31,969	$29,096	$35,275	$40,318						
30 – 34	292	104	114	62	12					
	$43,613	$35,826	$48,882	$46,882	$44,166					
35 – 39	312	99	68	60	68	17				
	$50,108	$38,189	$53,401	$58,596	$54,518	$58,748				
40 – 44	277	78	60	34	52	45	8			
	$57,233	$38,274	$67,523	$64,705	$62,193	$61,598	$76,339			
45 – 49	272	69	58	31	42	33	35	4		
	$59,677	$40,482	$57,520	$73,770	$73,648	$66,028	$64,327	$73,083		
50 – 54	305	53	48	37	53	54	43	16	1	
	$60,955	$34,952	$62,745	$61,729	$56,541	$65,668	$72,447	$107,112	$71,332	
55 – 59	314	72	45	32	36	50	41	27	11	
	$55,577	$29,524	$55,076	$56,670	$59,852	$64,219	$74,649	$67,343	$71,746	
60 – 64	217	36	35	13	28	33	38	20	9	5
	$55,814	$34,843	$47,954	$50,163	$53,468	$67,069	$60,445	$73,601	$75,383	$73,810
65 – 69	116	15	20	12	15	21	11	8	6	8
	$53,297	$31,446	$47,177	$51,687	$59,519	$51,732	$56,869	$65,545	$70,705	$74,207
70 & Over	60	4	9	8	5	11	12	4	3	4
	$51,116	$14,825	$39,957	$44,809	$52,131	$59,994	$57,646	$73,938	$52,136	$56,267
Total	2,818	1,043	590	296	311	264	188	79	30	17
	$47,793	$29,727	$50,248	$57,161	$59,056	$63,129	$67,299	$77,424	$70,654	$69,869

Exhibit C – History of Active Member Valuation Data

Actuarial Valuation Date	Active Members	Percent Increase	Annual Salaries	Percent Increase	Average Salary	Percent Increase
2013	3,076	0.75%	$115,617,428	1.48%	$37,587	0.72%
2014	2,973	(3.35%)	120,376,477	4.12%	40,490	7.72%
2015	3,063	3.03%	126,294,812	4.92%	41,232	1.83%
2016	3,114	1.67%	124,502,908	(1.42%)	39,982	(3.03%)
2017	3,543	13.78%	134,258,328	7.84%	37,894	(5.22%)
2018	3,187	(10.05%)	129,923,175	(3.23%)	40,767	7.58%
2019	3,132	(1.73%)	136,105,381	4.76%	43,456	6.60%
2020	2,890	(7.73%)	135,162,943	(0.69%)	46,769	7.62%
2021	2,694	(6.78%)	131,000,642	(3.08%)	48,627	3.97%
2022	2,818	4.60%	134,679,715	2.81%	47,793	(1.72%)

Average Increase/(Decrease)						
Last 5 years		-4.34%		0.11%		4.81%
Last 10 years		-0.58%		1.75%		2.61%

Exhibit D – Reconciliation of Member Data

	Active Members	Inactive Members	Retirees	Beneficiaries	Total
Number as of December 31, 2021	2,694	5,168	2,104	648	10,614
New participants	456	N/A	N/A	N/A	456
Terminations	(153)	153	-	-	-
Retirements	(74)	(24)	98	N/A	-
New disabilities	-	-	N/A	N/A	-
Died with beneficiary	(9)	(1)	(36)	46	-
Died without beneficiary	(3)	-	(60)	(55)	(118)
Refunds	(111)	(26)	-	-	(137)
Rehires	18	(18)	-	-	-
Data adjustments	-	13	-	-	13
Number as of December 31, 2022	2,818	5,265	2,106	639	10,828

Exhibit E – Schedule of Pensioners and Beneficiaries Added to and Removed from Rolls

	Added to Rolls		Removed from Rolls		Rolls – End of Year			
Fiscal Year	Number	Annual Allowances	Number	Annual Allowances	Number*	Annual Allowances	% Increase in Avg. Annual Allowances	Average Annual Allowances
2013	147	$4,594,883	147	$2,788,285	2,888	$66,967,839	2.8	$23,188
2014	126	4,085,581	138	2,781,597	2,876	68,271,823	2.4	23,738
2015	94	1,823,238	106	2,271,591	2,864	67,823,470	-0.7	23,681
2016	126	5,283,834	133	2,711,190	2,857	70,396,114	4.0	24,640
2017	107	3,628,199	104	1,952,677	2,860	72,071,636	2.3	25,200
2018	135	5,446,939	153	2,967,901	2,842	74,550,674	4.1	26,232
2019	128	4,578,087	140	3,174,168	2,830	75,954,593	2.3	26,839
2020	80	3,824,254	146	3,171,408	2,764	76,607,439	3.3	27,716
2021	91	4,194,340	112	2,428,607	2,743	78,373,172	3.1	28,572
2022	109	4,563,266	115	2,443,435	2,737	80,493,003	2.9	29,409

* *Does not include child beneficiaries receiving a pension.*

Exhibit F – Summary Statement of Income and Expenses on a Fair Value Basis at Fiscal Year Ended December 31

	2022		2021	
Net position at value at the beginning of the year		$414,658,650		$348,294,515
Contribution income:				
Employer contributions	$67,128,978		$83,349,261	
Employee contributions	12,669,678		12,226,998	
Less administrative expenses	−2,002,020		−1,718,012	
Net contribution income		77,796,636		93,858,247
Securities leading income		26,381		19,175
Other income		175		455
Investment income:				
Interest, dividends and partnership income	$4,197,404		$7,325,279	
Asset appreciation	−46,219,499		47,381,030	
Less investment expenses	−1,774,179		−1,617,207	
Net investment income		−43,796,274		53,089,102
Total income available for benefits		$34,026,918		$146,966,979
Less benefit payments:				
Benefits and refunds	−$82,840,120		−$80,602,844	
Net benefit payments		−$82,840,120		−$80,602,844
Change in reserve for future benefits		−$48,813,202		$66,364,135
Net position at fair value at the end of the year		$365,845,448		$414,658,650

Exhibit G – Summary Statement of Fund Assets at Fiscal Year Ended December 31

	2022		2021	
Accounts receivable		$25,739,286		$14,230,714
Investments, at fair value:				
Collective investment funds	$122,855,973		$127,783,646	
Bonds	22,761,976		25,851,555	
Common and preferred stocks	45,264,238		52,485,719	
Real estate	28,903,944		32,743,837	
Private equity partnerships	21,157,955		24,296,348	
Hedged equity	26,852,038		29,066,132	
Infrastructure	49,440,352		37,319,370	
Mutual funds	0		20,423,662	
International equity	14,942,971		24,580,477	
Short-term investments	3,191,964		21,486,428	
Total investments at fair value		335,371,411		396,037,174
Invested securities lending collateral		16,345,710		16,779,808
Prepaid annuity benefits		5,747,640		5,528,333
Furniture and fixtures, net		1,458,161		124,839
Prepaid expenses		80,149		53,168
Total assets		$384,742,357		$432,754,036
Less accounts payable:				
Accounts payable	−$457,928		−$398,104	
Accrued benefits and member contributions payable	−795,732		−886,252	
Securities lending collateral	−16,345,710		−16,779,808	
Unclaimed Checks	−1,067,367			
Lease Liability	−230,172			
Deferred rent	0		−31,222	
Total accounts payable		−$18,896,909		−$18,095,386
Net position at fair value		$365,845,448		$414,658,650
Net position at actuarial value		$399,555,117		$388,163,499

Exhibit H – Development of the Fund Through December 31, 2022

Fiscal Year Ended December 31	Employer Contributions	Employee Contributions	Net Investment Return*	Administrative Expenses	Benefit Payments	Actuarial Value of Assets at End of Year
2013	$15,707,814	$10,732,730	$26,107,300	$1,367,443	$68,335,967	$404,292,435
2014	11,225,438	10,831,434	39,408,258	1,458,831	70,536,042	393,762,692
2015	30,588,976	12,368,636	31,067,518	1,533,700	70,602,016	395,652,106
2016	30,890,241	12,246,115	30,432,110	1,537,699	74,077,876	393,604,997
2017	20,920,614	13,675,292	37,038,766	1,682,136	78,138,027	385,419,506
2018	27,638,402	12,125,457	19,651,105	1,501,039	76,526,820	366,806,612
2019	27,682,089	12,664,855	22,886,182	1,528,861	78,550,449	349,960,428
2020	33,939,927	12,634,900	26,564,866	1,598,370	79,370,008	342,131,743
2021	83,349,261	12,226,998	32,776,353	1,718,012	80,602,844	388,163,499
2022	67,128,978	12,669,678	16,435,102	2,002,020	82,840,120	399,555,117

* *On an actuarial basis, net of investment, and includes other income.*

Exhibit I – Development of Unfunded Actuarial Accrued Liability

		Plan Year Ended December 31			
		2022		2021	
1	Unfunded actuarial accrued liability at beginning of year		$823,828,474		$848,233,901
2	Normal cost at beginning of year, including administrative expenses		18,741,799		18,541,658
3	Total contributions		79,798,656		95,576,259
4	Interest				
	(a) Unfunded actuarial accrued liability and normal cost	$61,086,345		$62,841,228	
	(b) Total contributions	2,618,136		3,135,787	
	(c) Total interest: **(4a) − (4b)**		$58,468,209		59,705,441
5	Expected unfunded actuarial accrued liability: **(1) + (2) − (3) + (4c)**		$821,239,826		$830,904,741
6	Changes due to (gain)/loss from:				
	(a) Investments	$11,524,107		−$7,490,822	
	(b) Demographics and other	1,392,870		414,555	
	(c) Total changes due to (gain)/loss: **(6a) + (6b)**		$12,916,977		−$7,076,267
7	Assumption changes		34,344,151		0
8	Plan changes		960,812*		0
9	Unfunded actuarial accrued liability at end of year: **(5) + (6c) + (7) + (8)**		$869,461,766		$823,828,474

* Impact due to the 119 Tier 2 participants that made an irrevocable election to participate in Tier 2a.

Exhibit J – Definition of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners:	The single-sum value of lifetime benefits to existing pensioners. This sum takes into account life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund's assets earn more than projected, salary increases are less than 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, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
Actuarially Equivalent:	Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: a. Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) b. Multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and c. Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive 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 be provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	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, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Fund's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	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 assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: a. Investment return - the rate of investment yield that the Fund will earn over the long-term future; b. Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; c. Retirement rates - the rate or probability of retirement at a given age; d. Turnover rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; e. Salary increase rates - the rates of salary increase due to inflation and productivity growth.
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore 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. See Open Amortization Period.
Covered Payroll:	Calculated as follows: Total employee contributions less estimated total death benefit contributions, divided by the effective employee contribution rate.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the Actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes calculate a market funded ratio, using the fair value of assets (MVA), rather than the AVA.
GASB:	Governmental Accounting Standards Board.
GASB 67 and GASB 68:	Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Investment Return:	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL):	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. 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 with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Plan Fiduciary Net Position:	Fair value of assets.
Total Pension Liability (TPL):	The actuarially accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

Section 4: Reporting Information

Exhibit I – Summary of Actuarial Valuation Results

	The valuation was made with respect to the following data supplied to us:		
1	Pensioners as of the valuation date (including 631 beneficiaries and 8 dependent children)		2,745
2	Members inactive as of the valuation date with vested rights		173
3	Members active as of the valuation date		2,818
	Fully vested	1,219	
	Not vested	1,599	
4	Other non-vested inactive members as of the valuation date		5,092
	The actuarial factors as of the valuation date are as follows:		
5	Employer normal cost, including administrative expenses		$7,405,215
6	Actuarial accrued liability		$1,269,016,883
	Retirees and beneficiaries	$853,075,017	
	Inactive members with vested rights	28,669,114	
	Active members	387,272,752	
7	Actuarial value of assets ($365,845,448 at fair value)		399,555,117
8	Unfunded actuarial accrued liability: **(6) − (7)**		869,461,766
9	Funded ratio: **(8) ÷ (7)**		31.5%

Exhibit I – Summary of Actuarial Valuation Results *(continued)*

Actuarially Determined Contribution Split by Tier

		Total		Tier 1		Tier 2		Tier 2a	
		Amount	**% of Payroll**	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**	**Amount**	**% of Payroll**
1	Total normal cost	$18,511,656	13.17%	$12,637,520	16.11%	$4,066,997	9.02%	$1,807,138	10.59%
2	Administrative expenses*	2,009,201	1.43%	1,946,401	2.48%	47,617	0.11%	15,183	0.09%
3	Expected employee contributions	−13,115,642	−9.33%	−7,118,252	−9.07%	−4,101,116	−9.10%	−1,896,275	−11.12%
4	Employer normal cost: **(1) + (2) + (3)**	7,405,215	5.27%	7,465,669	9.51%	13,498	0.03%	-73,953	−0.43%
5	Employer normal cost, adjusted for timing**	7,658,563	5.45%	7,721,085	9.84%	13,960	0.03%	-76,483	−0.45%
6	Actuarial accrued liability	1,269,016,883		1,229,351,921		30,075,225		9,589,737	
7	Actuarial value of assets	399,555,117							
8	Unfunded actuarial accrued liability: **(6) − (7)**	869,461,766							
9	Payment on unfunded actuarial accrued liability	69,933,500	49.74%						
10	Actuarially determined contribution, adjusted for timing**: **(5) + (9)**	77,592,063	55.19%						
11	Estimated employer contributions provided by the Fund***	56,874,515							
12	Projected payroll	140,585,920		78,463,368		45,050,788		17,071,764	

* *Administrative expenses are allocated by % of accrued liability.*

** *Recommended contributions are assumed to be paid at the middle of every month.*

*** *The Park District has been absorbing 3% losses on tax collections, however, the Park District is not guaranteed to do so in the future.*

Exhibit II – Comparison of Employer Contribution to Actuarially Determined Contribution

Fiscal Year Ended December 31	Actuarially Determined Contribution (ADC)*	Actual Contributions	Percentage Contributed
2013	$41,834,857	$15,707,814	37.5%
2014	35,307,186	11,225,438	31.8%
2015	36,273,994	30,588,976	84.3%
2016	37,130,268	30,890,241	83.2%
2017	45,253,238	20,920,614	46.2%
2018	50,929,734	27,638,402	54.3%
2019	61,887,790	27,682,089	44.7%
2020	67,297,212	33,939,927	50.4%
2021	70,492,027	83,349,261	118.2%
2022	71,021,948	67,128,978	94.5%
2023	77,592,063	- -	- -

* *Prior to 2015, this amount was referred to as the Annual Required Contribution (ARC)*

Exhibit III – Schedule of Funding Progress

Valuation Date (December 31)	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) − (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll* [(b) − (a)] / (c)
2013	$404,292,435	$888,023,364	$483,730,929	45.53%	$117,781,596	410.70%
2014	393,762,692	900,840,617	507,077,925	43.71%	118,987,507	426.16%
2015	395,652,106	910,260,360	514,608,254	43.47%	122,382,584	420.49%
2016	393,604,997	1,005,493,093	611,888,096	39.15%	121,126,918	505.16%
2017	385,419,506	1,039,279,444	653,859,938	37.09%	135,315,008	483.21%
2018	366,806,612	1,142,297,965	775,491,353	32.11%	133,112,100	582.59%
2019	349,960,428	1,170,602,980	820,642,552	29.90%	139,204,051	589.52%
2020	342,131,743	1,190,365,644	848,233,901	28.74%	138,942,498	610.50%
2021	388,163,499	1,211,991,973	823,828,474	32.03%	134,515,373	612.44%
2022	399,555,117	1,269,016,883	869,461,766	31.49%	136,917,648	635.03%

* *Not less than zero*

Exhibit IV – Solvency Test at December 31

	2022	2021	2020	2019	2018
1 Actuarial accrued liability (AAL)					
a. Active member contributions	$170,509,528	$175,568,599	$174,600,431	$173,843,745	$164,316,381
b. Retirees and beneficiaries	853,075,017	814,929,192	795,731,449	789,231,586	778,565,525
c. Active and inactive members (employer financed)	245,432,338	221,494,182	220,033,764	207,527,649	199,416,059
d. Total	$1,269,016,883	$1,211,991,973	$1,190,365,644	$1,170,602,980	$1,142,297,965
2 Actuarial value of assets	399,555,117	388,163,499	342,131,743	349,960,428	366,806,612
3 Cumulative portion of AAL covered					
a. Active member contribution	100.0%	100.0%	100.0%	100.0%	100.0%
b. Retirees and beneficiaries	26.8%	26.1%	21.1%	22.3%	26.0%
c. Active and inactive members (employer financed)	0.0%	0.0%	0.0%	0.0%	0.0%

	2017	2016	2015	2014	2013
1 Actuarial accrued liability (AAL)					
a. Active member contributions	$173,903,043	$172,808,623	$173,241,768	$169,952,178	$171,065,449
b. Retirees and beneficiaries	706,084,520	694,881,116	625,396,307	625,641,580	621,827,982
c. Active and inactive members (employer financed)	159,291,881	137,803,354	111,622,285	105,246,859	95,129,933
d. Total	$1,039,279,444	$1,005,493,093	$910,260,360	$900,840,617	$888,023,364
2 Actuarial value of assets	385,419,506	393,604,997	395,652,106	393,762,692	404,292,435
3 Cumulative portion of AAL covered					
a. Active member contribution	100.0%	100.0%	100.0%	100.0%	100.0%
b. Retirees and beneficiaries	30.0%	31.8%	35.6%	35.8%	37.5%
c. Active and inactive members (employer financed)	0.0%	0.0%	0.0%	0.0%	0.0%

Exhibit V – Projection of Contributions, Liabilities, and Assets

Based on the results of the December 31, 2022, actuarial valuation, we have projected valuation results for a 40-year period (the "projection period") commencing with Fiscal Year 2023.

For purposes of the projections, all assets, contributions, and benefit payments have been included. Our projections of contributions, liabilities, and assets are based on the actuarial assumptions, membership data and benefit provisions that were used for the regular actuarial valuation.

In order to determine projected contributions, liabilities, and assets, certain calculations needed to be made that are not normally required in a regular actuarial valuation. Benefit payout requirements, actuarial liabilities, and payroll were estimated over the projection period from 2023 through 2062 by projecting the membership of the Fund over the projection period, taking into account the impact of new entrants into the Fund over the projection period.

To make the required projections, assumptions needed to be made regarding the age and salary distribution of new entrants as well as the size of the active membership of the Fund. The assumptions regarding the profile of new entrants to the Fund were based on the recent experience of the Fund with regard to new entrants. The size of the active membership of the Fund was assumed to remain constant over the projection period. The results of our projections are shown on the following pages.

For purposes of this projection, budgeted supplemental contributions for future years are included, if applicable. It reflects a budgeted employer contribution of $56.9 million and no supplemental contribution for 2023.

Plan provisions for Tier 2a are effective January 1, 2022, per HB 417 legislation. Tier 1 and 2 member contributions are 9% and Tier 2a member contributions are 11% for Fiscal Year 2021 and thereafter. Employer Contributions are Employer Normal Cost plus a 35-year closed period amortization of unfunded actuarial accrued Liability as of December 31, 2023.

Exhibit V – Projection of Contributions, Liabilities, and Assets *(continued)*

Fiscal Year	Employee Contributions	Employer Contributions	Payroll	Normal Cost	Benefit Payouts	Estimated Expenses	Total Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability	Funded Ratio
2022							$1,269,016.9	$399,555.1	$869,461.8	31.5%
2023	$13,115.6	$56,874.5	$140,585.9	$18,511.7	$86,755.1	$2,072.1	1,287,864.1	404,951.8	882,912.3	31.4%
2024	13,093.3	59,609.5	139,132.7	18,177.4	88,194.6	2,144.6	1,306,182.9	406,131.0	900,051.9	31.1%
2025	13,110.3	61,136.6	138,193.0	17,926.7	89,658.6	2,219.7	1,324,000.7	406,227.3	917,773.3	30.7%
2026	13,146.8	62,802.1	137,532.5	17,714.6	91,223.3	2,297.4	1,341,219.3	400,573.2	940,646.0	29.9%
2027	13,188.3	64,845.3	136,966.0	17,476.2	92,811.3	2,377.8	1,357,744.4	409,250.8	948,493.6	30.1%
2028	13,245.6	66,071.8	136,606.3	17,265.7	94,785.4	2,461.0	1,373,158.0	418,177.0	954,981.0	30.5%
2029	13,284.4	67,270.9	136,071.9	17,004.3	96,749.2	2,547.1	1,387,338.3	427,333.4	960,004.9	30.8%
2030	13,342.9	68,514.2	135,755.6	16,801.1	98,669.6	2,636.3	1,400,306.1	436,760.5	963,545.7	31.2%
2031	13,408.9	69,772.7	135,525.4	16,611.5	100,818.3	2,728.5	1,411,754.9	446,150.4	965,604.5	31.6%
2032	13,479.1	71,045.9	135,367.7	16,425.4	102,702.3	2,824.0	1,421,856.1	455,587.3	966,268.8	32.0%
2033	13,560.6	72,347.0	135,340.0	16,250.1	104,507.3	2,922.9	1,430,608.6	465,174.9	965,433.7	32.5%
2034	13,658.3	73,670.8	135,481.4	16,083.8	106,390.2	3,025.2	1,437,847.0	474,866.0	962,981.0	33.0%
2035	13,749.9	75,019.9	135,560.0	15,906.1	108,033.6	3,131.1	1,443,701.1	484,923.2	958,777.9	33.6%
2036	13,860.1	76,412.5	135,850.1	15,758.3	109,874.5	3,240.7	1,447,901.4	495,223.6	952,677.9	34.2%
2037	13,950.9	77,814.3	135,919.0	15,569.0	108,607.2	3,354.1	1,453,505.0	508,985.3	944,519.7	35.0%
2038	14,082.0	79,268.3	136,408.1	15,439.8	110,042.7	3,471.5	1,457,876.7	523,744.2	934,132.5	35.9%
2039	14,207.3	80,739.0	136,829.3	15,290.3	111,148.4	3,593.0	1,461,250.1	539,918.3	921,331.8	36.9%
2040	14,353.3	82,250.9	137,478.1	15,171.3	112,026.0	3,718.7	1,463,824.0	557,902.2	905,921.8	38.1%
2041	14,512.4	83,810.9	138,292.6	15,082.1	112,563.9	3,848.9	1,465,925.8	578,232.7	887,693.1	39.4%
2042	14,698.9	85,426.9	139,401.5	15,046.0	112,851.8	3,983.6	1,467,838.3	601,414.7	866,423.6	41.0%
2043	14,898.8	87,071.6	140,679.7	15,023.7	112,732.6	4,123.0	1,469,984.0	628,107.5	841,876.5	42.7%
2044	15,129.5	88,774.0	142,290.7	15,062.5	112,522.6	4,267.3	1,472,538.9	658,737.6	813,801.3	44.7%
2045	15,365.7	90,516.7	143,978.1	15,122.7	111,829.0	4,416.7	1,476,054.9	694,123.4	781,931.5	47.0%
2046	15,638.6	92,284.3	146,070.8	15,223.7	111,293.7	4,571.3	1,480,479.1	734,492.1	745,987.0	49.6%

Exhibit V – Projection of Contributions, Liabilities, and Assets *(continued)*

Fiscal Year	Employee Contributions	Employer Contributions	Payroll	Normal Cost	Benefit Payouts	Estimated Expenses	Total Actuarial Liability	Actuarial Value of Assets	Unfunded Actuarial Liability	Funded Ratio
2047	$15,903.4	$94,102.2	$148,089.4	$15,349.6	$110,545.5	$4,731.3	$1,486,122.1	$780,451.0	$705,671.1	52.5%
2048	16,191.4	95,947.6	150,350.1	15,515.5	109,649.8	4,896.9	1,493,264.6	832,590.7	660,674.0	55.8%
2049	16,500.5	97,803.3	152,815.1	15,710.9	108,825.3	5,068.2	1,501,969.7	891,296.7	610,673.0	59.3%
2050	16,811.2	99,654.6	155,293.1	15,913.5	107,795.5	5,245.6	1,512,566.7	957,232.0	555,334.6	63.3%
2051	17,139.7	101,491.0	157,978.5	16,145.9	106,926.7	5,429.2	1,525,053.3	1,030,732.7	494,320.6	67.6%
2052	17,475.1	103,279.9	160,708.8	16,390.8	106,092.6	5,619.3	1,539,539.3	1,112,243.7	427,295.6	72.2%
2053	17,820.1	104,980.0	163,529.1	16,651.1	105,122.0	5,815.9	1,556,322.5	1,202,378.3	353,944.2	77.3%
2054	18,187.9	106,518.9	166,572.2	16,939.9	104,241.9	6,019.5	1,575,500.4	1,301,495.9	274,004.5	82.6%
2055	18,567.3	107,753.8	169,721.9	17,246.2	103,185.7	6,230.2	1,597,441.6	1,410,097.6	187,344.0	88.3%
2056	18,968.8	108,330.5	173,095.7	17,578.3	102,203.3	6,448.2	1,622,290.9	1,528,104.9	94,186.0	94.2%
2057	19,387.7	103,198.8	176,633.3	17,935.2	101,140.6	6,673.9	1,650,361.4	1,650,361.4	0.0	100.0%
2058	19,825.6	6,019.9	180,385.2	18,318.6	100,113.8	6,907.5	1,681,869.8	1,681,869.8	0.0	100.0%
2059	20,283.2	6,224.7	184,326.1	18,725.5	99,005.3	7,149.3	1,717,166.4	1,717,166.4	0.0	100.0%
2060	20,756.2	6,445.9	188,444.4	19,154.9	97,794.1	7,399.5	1,756,646.9	1,756,646.9	0.0	100.0%
2061	21,252.0	6,679.7	192,802.1	19,610.2	96,826.0	7,658.5	1,800,380.2	1,800,380.2	0.0	100.0%
2062	21,763.4	6,923.6	197,289.5	20,081.5	96,173.1	7,926.5	1,848,354.8	1,848,354.8	0.0	100.0%

Exhibit VI – Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions:	The information and analysis used in supporting each assumption that has a significant effect on this actuarial valuation is shown in the Experience Review dated October 25, 2018. Current data is reviewed in conjunction with each annual valuation. The economic assumptions, including the investment return assumption, were evaluated separately and modified by the Board of Trustees on May 19, 2022 based on analysis presented at the Board of Trustees meeting on May 19, 2022. See presentation for details.
Mortality Rates:	
Healthy Post-retirement Mortality	110% of PubG-2010 Healthy Annuitant Table, with mortality improvements projected generationally using scale MP-2017.
Pre-retirement	110% of PubG-2010 Healthy Employee Table, with mortality improvements projected generationally using scale MP-2017.
	The mortality tables specified above were determined to contain provisions appropriate to reasonably reflect future mortality improvement, based on a review of mortality experience as of the most recent experience study date.

Termination Rates:

Select and ultimate termination rates are based on recent experience of the Fund. Ultimate rates applicable for members with eight or more years of service are shown for sample ages in the table on the next page. Select rates are as follows:

Years of Service	Rate (%)
0 – 0.99	17.5
1 –1.99	13.0
2 – 2.99	13.0
3 – 3.99	12.5
4 – 4.99	12.5
5 – 5.99	10.0
6 – 6.99	10.0
7 – 7.99	10.0

Ultimate rates:

Age	Rate (%)
20	7.0
25	7.0
30	6.0
35	4.0
40	4.0
45	4.0
50	3.0
55	3.0

Retirement Rates:

For employees first hired prior to January 1, 2011, rates of retirement for each age from 50 to 75 based on the recent experience of the Fund were used. Sample rates are shown below.

	Rate (%)	
Age	<30 Years of Service	30+ Years of Service
50	2.5	30.0
55	2.0	20.0
60	5.0	5.0
65	15.0	15.0
70	20.0	20.0
75	100.0	100.0

For employees first hired on or after January 1, 2011, but before January 1, 2022, rates of retirement for each age from 62 to 75 were used. Sample rates are shown below

Age	Rate (%)
62	50.0
65	20.0
67	50.0
70	20.0
75	100.0

Retirement Rates *(continued)*:

For employees first hired on or after January 1, 2022, rates of retirement for each age from 60 to 75 were used. Sample rates are shown below

Age	Rate (%)
60	50.0
65	20.0
67	50.0
70	20.0
75	100.0

Salary Increases:	Assumed salary increases are based on the recent experience of the Fund were used. Rates are shown below.

Years of Service	Rate (%)
0 – 0.99	20.00
1 – 1.99	7.50
2 – 2.99	5.00
3 – 3.99	3.50
4 - 4.99	3.50
5+	2.75

Valuation of Inactive Vested Participants:	The liability for an inactive member is equal to his or her existing account balance, or, if the participant has at least 10 years of service, twice the existing account balance.
Unknown Data for Participants:	Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.
Spouse:	75% of members are assumed to be married and female spouses are assumed to be two years younger than males.
Disability Benefit Valuation:	Disability benefits are valued in normal cost by annualizing the actual monthly disability payment amounts for the month prior to the valuation date.
Investment Return:	7.00% per year, net of investment expenses
Inflation:	2.50% per year
Payroll Growth:	2.50% per year
Administrative Expenses:	Equal to actual expenses for the prior year, increased by 3.5% each year.
Actuarial Value of Assets:	The actuarial value of assets was determined by smoothing unexpected gains and losses over a period of 5 years. The gain or loss for a year is calculated as the total investment income on the fair value of assets, minus expected investment return on the prior actuarial value of assets. The final actuarial value is equal to the expected actuarial value plus (or minus) 20% of the calculated gain (or loss) in the prior 5 years.

Actuarial Cost Method:	Entry Age Normal. Under this method, a normal cost is calculated for each employee that is the level annual contribution as a percent of pay required to be made from the employee's date of hire for as long as he/she remains active so that sufficient assets will be accumulated to provide his/her benefit. The accrued liability is the difference between the present value of all future benefits and the present value of all future normal costs.

Exhibit VII – Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Membership:	Any person employed by the Chicago Park District in a position requiring service for 6 months or more in a calendar year is required to become a member of the Fund as a condition of employment.
Employee Contributions:	All members of Tier 1 and Tier 2 are required to contribute 9% of salary to the Fund as follows: 7% for the retirement pension, 1% for the spouse's pension, and 1% for the automatic increases in the retirement pension. All members of Tier 2a are required to contribute 11% of salary to the Fund as follows: 9% for the retirement pension, 1% for the spouse's pension, and 1% for the automatic increases in the retirement pension. In addition, all employees are required to contribute $3.60 per month toward the cost of the single sum death benefit.
Tiers:	Tier 1: First hired before January 1, 2011. Tier 2: First hired on or after January 1, 2011. Tier 2a*: First hired on or after January 1, 2022. *119 Tier 2 participants made an irrevocable election to participate in the new tier.

Retirement Pension:	a. Eligibility – An employee may retire at age 50 with at least 10 years of service or at age 60 with 4 years of service. If retirement occurs before age 60, the retirement pension is reduced ¼ of 1% of each month that the age of the member is below 60. However, there is no reduction if the employee has at least 30 years of service. b. Amount – The retirement pension is based on the average of the 4 highest consecutive years of salary within the last 10 years. For an employee who withdraws from service on or after December 31, 2003, the amount of the retirement pension is 2.4% of highest average salary for each year of service. The maximum pension payable is 80% of the highest annual salary. An employee who was a participant before July 1, 1971 is entitled to the pension provided under the money purchase formula if it provides a greater pension than that provided under the above fixed benefit formula. An employee who first becomes a participant on or after January 1, 2011 is subject to the following provisions: 1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period. 2. For 2022, the annual salary is limited to $119,892.41. Limitations for future years shall automatically be increased by the lesser of 3% or one-half the percentage change in the Consumer Price Index-U during the preceding calendar year. 3. A participant is eligible to retire with unreduced benefits after attainment of age 67 with at least 10 years of service credit. However, a participant may elect to retire at age 62 with at least 10 years of service credit and receive a retirement annuity reduced by ½ of 1% for each month that the age of the member is below 67. An employee who first becomes a participant on or after January 1, 2022 or elects Tier 2a is subject to the following provision: A participant is eligible to retire with unreduced benefits after attainment of age 65 with at least 10 years of service credit. However, a participant may elect to retire at age 60 with at least 10 years of service credit and receive a retirement annuity reduced by ½ of 1% for each month that the age of the member is below 65; otherwise, the same as Tier 2.

Post-Retirement Increase:	Section 1 An employee retiring at age 60 or over, or an employee with 30 or more years of service, is entitled to automatic annual increases of 3% of the originally granted pension following one year's receipt of pension payments. In the case of an employee with less than 30 years of service who retires before age 60, the increases begin following the later of attainment of age 60 and receipt of one year's pension payments. Automatic annual increases (AAI) in the retirement annuity for employees who first became a participant on or after January 1, 2011 are equal to the lesser of 3% or one-half the annual change in the Consumer Price Index-U, whichever is less, based on the originally granted retirement annuity.
Surviving Spouse's Pension:	A surviving spouse is entitled to a pension upon the death of an employee while in service or on retirement. If the surviving spouse is age 60 or over and the employee or retiree had at least 20 years of service, the minimum surviving spouse's pension is 50% of the deceased employee's or retired employee's pension at the date of death. If the age of the surviving spouse is less than 60, the pension is reduced ½ of 1% for each month the surviving spouse is under age 60. If the employee had less than 20 years of service, the surviving spouse is entitled to a pension under the money purchase formula, taking into account employee and employer contributions toward the surviving spouse's pension. Surviving spouse's pensions are subject to annual increases of 3% per year based on the current amount of pension. For employees who first become a participant on or after January 1, 2011, the initial survivor's annuity is equal to 66 2/3% of the participant's earned retirement annuity at the date of death, subject to automatic annual increases of the lesser of 3% or one-half of the increase in the Consumer Price Index-U during the preceding calendar year, based on the originally granted survivor's annuity.
Children's Pension:	Unmarried children of a deceased employee under the age of 18 are entitled to a children's pension. If either parent is living, the pension is $100.00 per month. If no parent survives, the pension for each child is $150.00 per month. The total amount payable to a spouse or children may not exceed 60% of the employee's final salary.
Single Sum Death Benefit:	A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is as follows: $3,000 benefit during the first year of service, $4,000 benefit during the second year of service, $5,000 benefit during the third year of service, $6,000 benefit during the fourth through ninth year of service, and $10,000 benefit if death occurs after ten or more years of service. Upon the death of a retired member with ten or more years of service, the $10,000 maximum benefit is reduced to $6,000 if death occurs during the first year of retirement. Thereafter, it is reduced by $1,500 for each year or fraction of a year while on retirement, but shall not be less than $3,000.

Ordinary Disability Benefit:	An ordinary disability benefit is payable after eight consecutive days of absence for illness without pay. The amount of the benefit is 45% of salary. The benefit is payable for a period not to exceed ¼ of the length of service or five years, whichever is less.
Occupational Death Benefit:	Upon disability resulting from an injury incurred while on duty, an employee is entitled to a disability benefit of 75% of salary from the first day of absence without pay. The benefit is payable during the period of disability until the employee attains age 65 if disability is incurred before age 60, or for a period of five years if disability is incurred after age 60.
Refunds:	An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions. The refund is payable to any employee who withdraws before age 55, regardless of the length of service. It is also payable to an employee who withdraws between age 55 and 60 with less than 10 years of service, and to an employee who withdraws after age 60 with less than 5 years of service. An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the spouse's pension, without interest.
Plan Year:	January 1 through December 31. Prior to December 31, 2012, the plan year was July 1 through June 30.
Employer Contributions:	Per HB 417 establishing Public Act 102-0263.

Section 5: GASB 67 Information

Exhibit 1 – Net Pension Liability

The components of the Net Pension Liability of the Fund at December 31, 2022, were as follows:	
Total Pension Liability	$1,269,016,883
Plan Fiduciary Net Position	365,845,448
Net Pension Liability	903,171,435
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	28.83%

Actuarial assumptions. The Total Pension Liability was determined by an actuarial valuation as of December 31, 2022, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.50%
Salary increases	Service-based ranging from 20.00% to 2.75%
Single equivalent discount rate	7.00%, net of pension plan investment expense, including inflation
Cost of living adjustments	3% of original benefit for employees who first became a participant before January 1, 2011; the lesser of 3% and 1/2 of CPI of original benefit for employees and beneficiaries of employees who first became a participant on or after January 1, 2011; 3% compounded for beneficiaries of employees who first became a participant by January 1, 2011.

For healthy annuitants, mortality rates were based on 110% of PubG-2010 Healthy Annuitant Table, with mortality improvements projected generationally using scale MP-2017. For active participants, mortality rates were based on 110% of PubG-2010 Healthy Employee Table, with mortality improvements projected generationally using scale MP-2017.

The actuarial assumptions used in the December 31, 2022, valuation were based on the results of an experience study for the five-year period ending December 31, 2018 and a recent review of the investment return assumption.

Discount rate: The discount rate used to measure the Total Pension Liability was 7.00%. The projection of cash flows used to determine the discount rate assumed member contributions will be made at a 9% contribution rate for Tier 1 and Tier 2, and 11% for Tier 2a, for 2022 and thereafter.

Employer contributions will be made per statute. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions and contributions from future plan members that are intended to fund the service costs of future plan members and their beneficiaries are not included. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. The projected benefit payments were discounted at the expected long-term rate of return (7.00%). No projected benefit payments were discounted at the municipal bond index (3.72%, based on the Bond Buyer 20-GO Municipal Bond Index as of December 31, 2022).

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability of the Fund, calculated using the discount rate of 7.00%, as well as what the Fund's Net Pension Liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate:

	1% Decrease (6.00%)	**Current Discount Rate (7.00%)**	**1% Increase (8.00%)**
Net Pension Liability as of December 31, 2022	$1,050,647,873	$903,171,435	$780,128,597

Exhibit 2 – Schedules of Changes in Net Pension Liability

	2022	2021
Total Pension Liability		
Service cost	$17,019,445	$60,952,502
Interest	86,100,373	51,017,625
Change of benefit terms	960,812	0
Differences between expected and actual experience	2,969,970	846,816
Changes of assumptions	32,814,430	−1,097,662,261
Benefit payments, including refunds of employee contributions	−82,840,120	−80,602,844
Net change in Total Pension Liability	57,024,910	−1,065,448,162
Total Pension Liability – beginning	1,211,991,973	2,277,440,135
Total Pension Liability – ending (a)	1,269,016,883	1,211,991,973
Plan Fiduciary Net Position		
Contributions – employer	67,128,978	83,349,261
Contributions – employee	12,669,678	12,226,998
Net investment income	−43,796,274	53,089,102
Benefit payments, including refunds of employee contributions	−82,840,120	−80,602,844
Administrative expense	−2,002,020	−1,718,012
Other	26,556	19,630
Net change in Plan Fiduciary Net Position	−48,813,202	66,364,135
Plan Fiduciary Net Position– beginning	414,658,650	348,294,515
Plan Fiduciary Net Position– ending (b)	365,845,448	414,658,650
Fund’s Net Pension Liability – ending (a) – (b)	903,171,435	797,333,323
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	28.83%	34.21%
Covered payroll	$136,917,648	$134,515,373
Fund’s Net Pension Liability as percentage of covered payroll	659.65%	592.75%

Exhibit 3 – Schedule of Employer Contribution – Last Ten Fiscal Years

Fiscal Year Ended December 31	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency (Excess)	Covered-Payroll	Contributions as a Percentage of Covered Payroll
2013	$41,834,857	$15,707,814	$26,127,043	$117,781,596	13.34%
2014	35,307,186	11,225,438	24,081,748	118,987,507	9.43%
2015	36,273,994	30,588,976	5,685,018	122,382,584	24.99%
2016	37,130,268	30,890,241	6,240,027	121,126,918	25.50%
2017	45,253,238	20,920,614	24,332,624	135,315,008	15.46%
2018	50,929,734	27,638,402	23,291,332	133,112,100	20.76%
2019	61,887,790	27,682,089	34,205,701	139,204,051	19.89%
2020	67,297,212	33,939,927	33,357,285	138,942,498	24.43%
2021	70,492,027	83,349,261	−12,857,234	134,515,373	61.96%
2022	71,021,948	67,128,978	3,892,970	136,917,648	49.03%

Notes to Exhibit 3

Valuation date	Actuarially determined contribution amount is determined as of December 31, with appropriate interest to the middle of the year.
Methods and assumptions used to establish "actuarially determined contribution" for the fiscal year ended December 31, 2022:	
Actuarial cost method	Entry Age Actuarial cost method
Amortization method	20-year closed, level percentage of payroll amortization
Asset valuation method	5-year smoothed fair value
Actuarial assumptions:	
Investment rate of return	7.25%, net of investment expense
Projected salary increases	Service-based ranging from 20.00% to 2.75%
Mortality	For healthy annuitants, mortality rates were based on 110% of PubG-2010 Healthy Annuitant Table, with mortality improvements projected generationally using scale MP-2017. For active participants, mortality rates were based on 110% of PubG-2010 Healthy Employee Table, with mortality improvements projected generationally using scale MP-2017.
Cost of living adjustments	3% of original benefit for employees who first became a participant before January 1, 2011; the lesser of 3% and 1/2 of CPI of original benefit for employees and beneficiaries of employees who first became a participant on or after January 1, 2011; 3% compounded for beneficiaries of employees who first became a participant by January 1, 2011.
Other assumptions:	Same as those used in the December 31, 2022, actuarial funding valuations based on the results of an experience study for the five-year period ending December 31, 2018.

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