REGULAR MEETING OF THE ANNUITY AND PENSION BOARD
EMPLOYES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE
789 N. WATER ST. (Employes' Retirement System)
TUESDAY, JUNE 27, 2023 – 9:00 A.M.

Special Notice: The meeting will be held remotely via video conference. Instructions on how to observe the meeting will be available on ERS's website (www.cmers.com) prior to the meeting.

Please note and observe the following remote attendance etiquette to ensure a smooth and productive meeting:

• In order to cut down on background noise, participants in the meeting should put their phones on mute when they are not participating.
• At the start of the meeting, the Chairman will announce the names of the members of the Board present on the call, as well as anyone else who will be participating.
• Please request to be recognized by the Chairman if you would like to speak.
• Those participating on the call should identify themselves whenever they speak, and should ensure that the other participants on the call can hear them clearly.

REGULAR MEETING

I. Approval of Minutes.

A. Regular Meeting Held May 23, 2023.

II. Chief Investment Officer Report.

A. Approval of Statement of Investment Policy Update.

III. Investment Committee Report.

A. Approval of Loomis Sayles Guideline Waiver.
B. Approval of Asset Allocation Mix.
C. Approval of Real Estate Manager Structure.

IV. Administration & Operations Committee Report.

Please be advised that the Administration & Operations Committee may vote to convene in closed session on the following item (IV.A.), as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Administration & Operations Committee may then vote to reconvene in open session following the closed session.

A. Approval of Wells Fargo Contract.

Please be advised that the Administration & Operations Committee may vote to convene in closed session on the following item (IV.B), as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Administration & Operations Committee may then vote to reconvene in open session following the closed session.

B. Discussion and Approval of Actuary Contract.

V. New Business.

A. Presentation by Pat Beckham and Larry Langer of Cavanaugh Macdonald and Acceptance of 2023 Actuarial Valuation Report.
B. Retirements, Death Claims, and Refunds (May).
C. Conference Requests – June 2023 Board Meeting.

VI. Medical Reports.

A. All Duty & Ordinary Disability Applications & Re-examinations (June).

Please be advised that the Annuity and Pension Board may vote to convene in closed session on the following item (VI.B.), as provided in Section 19.85(1)(f), Wisconsin State Statutes, for considering financial, medical, social or personal histories or disciplinary data of specific persons, preliminary consideration of specific personnel problems or the investigation of charges against specific persons except where par. (b) applies which, if discussed in public, would be likely to have a substantial adverse effect upon the reputation of any person referred to in such histories or data, or involved in such problems or investigations.

B. Disability Findings – Benjean Lara.

VII. Unfinished Business.

A. Pending Legal Opinions and Service Requests Report.
B. Pending Legislation Report.

Please be advised that the Annuity and Pension Board may vote to convene in closed session on the following item (VII.C.), as provided in Section 19.85(1)(g), Wisconsin State Statutes, to confer with legal counsel concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Board may then vote to reconvene in open session following the closed session.

C . Executive Director's Report – Inventory of ERS Projects.

VIII. Informational.

Please be advised that the Annuity and Pension Board may vote to convene in closed session on the following item (VIII.A.), as provided in Section 19.85(1)(g), Wisconsin State Statutes, to confer with legal counsel concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Board may then vote to reconvene in open session following the closed session.

A. Pending Litigation Report.
B. Conferences.
C. Class Action Income 2023 YTD.
D. Minutes of the Investment Committee Meeting Held June 8, 2023.
E. Report on Bills.
F. Deployment of Assets.
G. Securities Lending Revenue and Budget Report.
H. Preliminary Performance Report and Asset Allocation.

MEETING REMINDERS

SPECIAL ADMINISTRATION & OPERATIONS COMMITTEE MEETING

TUESDAY, JULY 18, 2023 – 9:00 A.M.
789 N. WATER ST.

SPECIAL LEGISLATIVE COMMITTEE MEETING (COMMITTEE OF THE WHOLE)e

MONDAY, JULY 24, 2023 – 9:00 A.M.
789 N. WATER ST.

REGULAR MEETING OF THE ANNUITY AND PENSION BOARD

TUESDAY, JULY 25, 2023 – 9:00 A.M.
789 N. WATER ST.

I.

APPROVAL OF MINUTES

A. Regular Meeting Held May 23, 2023.

EMPLOYES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE
ANNUITY AND PENSION BOARD

Minutes of the Regular Meeting
held May 23, 2023 via teleconference during COVID-19

The meeting was called to order at 9:04 a.m.

Board Members Present:	Matthew Bell, Chair Deborah Ford Timothy Heling Tom Klusman Rudolph Konrad Aycha Sawa
Board Members Not Present:	Molly King (excused) Nik Kovac (excused)
Retirement System Staff Present:	Jerry Allen, Executive Director Melody Johnson, Deputy Director Daniel Gopalan, Chief Financial Officer David Silber, Chief Investment Officer Erich Sauer, Deputy Chief Investment Officer Dave Walters, Senior Pension Investment Analyst Thomas Courtright, Pension Investment Analyst Gust Petropoulos, Deputy Director – Disability Mary Turk, Business Operations Analyst Jan Wills, Board Stenographer

Others Present: Patrick McClain, City Attorney's Office; Terry Siddiqui, DS Consulting, Inc., six members of the public called in to the meeting.

Regular Meeting.

Approval of Minutes.

Regular Meeting Held April 25, 2023. It was moved by Mr. Heling, seconded by Mr. Konrad, and unanimously carried, to approve the minutes of the Regular Meeting Held April 25, 2023.

Chief Investment Officer Report. As a matter of information, Board members received the May 23, 2023 Performance Update. Mr. Sauer noted the Fund as of April 30, 2023, had a value of $5.64 billion. He said the Fund had a return of 0.6% in April, which underperformed the blended benchmark by approximately 25 basis points. Mr. Sauer commented the primary relative performance drivers were Manager Selection where Real Estate detracted 10 basis points, and seven of 11 Active Public Equity Mandates underperformed, which detracted 11 basis points. He added the Fund has outperformed the benchmark in the one-, five, 10-, 15- and 20-year periods.

Mr. Sauer remarked as of May 22, 2023, the Fund was down -0.4% month-to-date for May, which brought the year-to-date return to up 3.5%, and the Fund value to $5.62 billion. He noted 10 out of the Fund's 16 active mandates are outperforming, year-to-date. Mr. Sauer stated the Fixed Income asset class is outperforming its benchmark year-to-date. He said year-to-date the Fund has seen a gain in the value of investments of $199.1 million, paid benefits and expenses of $163.7 million, and received contributions of $114.4 million.

Mr. Silber then noted there has been more cash activity in the last few months than is typically seen in normal market environments. As a matter of information, Mr. Silber referenced the "2023 Estimated Monthly Cash Flows" document included within the Board package. Mr. Silber commented that all the investment managers are listed and if a positive number is shown, money was taken from a manager and if a negative number is shown, money was added to the manager to invest. He said the most money was withdrawn from Public Equity managers to pay benefits and to push the allocation below its 44% target. Mr. Silber said money was also removed from the Absolute Return allocation. He said this initiative was started at the end of 2022 to reduce the Fund's exposure to Absolute Return. Mr. Silber said Absolute Return was overweight at the start of 2023, but is now underweight the current target. He noted the large negative numbers showing up this month and last month represent increases into Fixed Income to push the allocation closer to its current target. Mr. Silber remarked that they are trying to position the portfolio to better pivot to whatever strategic asset allocation mix is selected at the June 8 Investment Committee meeting. He noted all of the mixes that are being considered support a 7.5% discount rate over the next 30 years, but the ones being focused on push the Public Equity allocation below its current 44% target and raise the Fixed Income allocation above its current 23% target. Mr. Silber said all these actions will enhance the Fund's liquidity position, which had stress on it last year, when the stock and bond markets both went down. He added if there would be a prolonged downturn, the Fund will now be in a much better liquidity position. Mr. Silber mentioned the upcoming June 8 Investment Committee meeting when Phase 3 of the ALM Study will be discussed to determine a new strategic asset allocation. He said Callan will also discuss the Real Estate portfolio and will make a recommendation on how to address the Real Estate allocation now that there is a fifth Real Estate manager, selected from the interviews that took place at the April Investment Committee meeting.

Investment Committee Report. Mr. Klusman noted that at its May 4 meeting, Callan presented phase 2 of the Asset Liability study. He stated that after some discussion, the Committee expressed its intention to focus on the four mixes in Callan's presentation that are expected to lower the Fund's volatility and increase the Fund's Fixed Income allocation compared to the Fund's current strategic asset allocation targets. Mr. Klusman stated Callan will present phase 3 of the study on June 8, and the Committee will have the opportunity to select a new strategic asset allocation policy at that time. He said the Committee also approved a guideline change to the Fund's investment managed by UBS Hedge Fund Solutions. Mr. Klusman said the guideline change will allow UBS to increase the percentage of investments into vehicles with liquidity terms of between two and three years from 10% to 20%. He noted the guideline change became necessary as a result of the Committee's decision last year to reduce the Fund's target allocation to UBS from 7% to 4%. Mr. Klusman said that Staff presented due diligence reports on Mesirow Financial, BlackRock, and Polen Capital Management. He commented that Staff also presented the 1st Quarter Performance Update. Mr. Klusman concluded that the Investment Committee recommended approval of the Approval of UBS Hedge Fund Solutions Guideline Change.

Approval of UBS Hedge Fund Solutions Guideline Change. It was moved by Mr. Klusman, seconded by Mr. Konrad, and unanimously carried, to approve the Approval of UBS Hedge Fund Solutions Guideline Change.

New Business.

Approval of Policy Decision of Joint and Survivor Actuarial Factors for Optional Forms of Benefits. Mr. Allen noted this was a holding item and Board members received a copy of a request for a City Attorney's legal opinion on the subject. He noted at the last meeting, the Board requested a City Attorney's opinion as to whether or not there were any legal issues under the Charter associated with having separate tables for General City as opposed to Public Safety. He said it was also necessary to see if there were any equity issues with having only one table for people who have survivors and for those who do not have survivors. He said the actuary has the ability to provide tables for both groups. He said Mr. McClain will present the opinion at one of the next two Board meetings. Mr. Allen also noted Mr. Langer the actuary will be present at the June Board meeting.

Retirements, Death Claims, and Refunds (April). Mr. Allen presented the following activity for the months of April 2023.

Active Death Benefits reported	$0.00
Deferred Death	$9,974.89
Deferred Death-Member Only Refund	$0.00
Ordinary Death Benefits reported	$50,617.41
Retired Death Benefits reported	$10,943.23
Survivor Death – Termination Benefits reported	$6,378.63
Refund of Member Contributions paid	$129,378.97

It was moved by Ms. Sawa, seconded by Mr. Heling, and unanimously carried, to approve the Retirements, Death Claims, and Refunds (April 2023).

Conference Requests – May 2023 Board Meeting. Staff presented the Conference Requests this month.

David Silber	2023 Roundtable for Consultants & Institutional Investors
Sponsor:	Institutional Investor
Location:	Chicago, IL
Date(s):	October 3-5, 2023
Estimated Cost:	$1,300.00

David Silber	2023 USLF Annual Meeting
Sponsor:	ProLogis
Location:	Phoenix, AZ
Date(s):	October 25-27, 2023
Estimated Cost:	$1,300.00

It was moved by Mr. Heling, seconded by Ms. Sawa, and unanimously carried, to approve the Conference Requests – May 2023 Board Meeting.

Medical Reports.

All Duty & Ordinary Disability Applications & Re-examinations (May). Staff presented certifications (May 2023) of the Fire and Police Medical Panel Physicians and the Medical Council relative to Duty & Ordinary Disability Retirement benefits as follows:

Police – Re-examinations – Duty	Recommendation
Dwight Copeland	Approval

Fire – Re-examinations – Duty	Recommendation
Maurya Lomen	Approval
William Soderbeck	Approval

Fire –Applications – Ordinary	Recommendation
Jack Stainback	Approval

GC – Applications – Duty	Recommendation
Ibrahim Dais	Denial

GC – Applications – Ordinary	Recommendation
Tomeka Cole	Denial
Ibrahim Dais	Approval

GC – Re-examinations – Duty	Recommendation
Gordon Mathews	Approval

GC – Re-examinations – Ordinary	Recommendation
Kevin Cole	Approval

It was moved by Mr. Konrad, seconded by Mr. Klusman, and unanimously carried, to approve the Duty & Ordinary Disability Applications & Re-examinations (May).

Disability Findings – Benjean Lara. Mr. Klusman asked if this would be a closed session item and Mr. Allen stated there is a closed session exemption for litigation for the Board to receive legal counsel, but in this instance, legal counsel for the Board has written a brief which the Board members received a copy of. He noted for legal counsel for the Board to be present without opposing counsel in closed session, would be unfair to the applicant from a due process standpoint. Mr. Allen said for that reason, the Board would not be able to go into closed session. Mr. Allen said the exception did not fit so the Board could not go into closed session. Mr. Konrad commented that there is another exception in the Public Meetings law for deliberating in the context of judicial, after-judicial, or quasi-judicial hearing. Mr. Konrad stated this could be held over to next month's meeting and get an opinion on whether or not the exception for deliberation allows the Board to discuss this in closed session, even when counsel is not present. He commented that counsel would not be present in a deliberation anyway. Mr. Konrad stated they have to discuss whether to remand this and it has to be discussed to see if the decision conforms with the ordinance. Mr. Bell asked Board members if they would like to hold over this item and all Board members were in agreement to hold this item over. As a matter of transparency, Mr. Bell stated he worked with Mr. Lara many years ago on the south side, but does not know him personally. Mr. Bell said he has not been following the case, but did not see it as affecting his fiduciary responsibility as Board member and Chairman. Mr. Bell also mentioned knowing Officer Rivera who was mentioned in the report. Mr. Bell reiterated this item will be held over for closed session at the June 27th Board Meeting.

Unfinished Business.

Pending Legal Opinions and Service Requests Report. Mr. McClain stated that Mr. Allen had mentioned that the City Attorney's office is putting together the legal opinion for dual actuarial tables and that is in process. Mr. McClain said he had no further comments for this report.

Pending Legislation Report. Mr. Allen noted there is nothing to report on in this Legislation Report, but that there is pending legislation in the Legislature.

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It was moved by Mr. Klusman and seconded by Mr. Konrad and unanimously carried, to convene in closed session by the following roll call vote: AYES: Mses. Ford and Sawa; Messrs. Bell, Heling, Klusman, and Konrad. NOES: None.

The Board convened in closed session at 9:36 a.m.

The Board reconvened in opened session at 10:08 a.m.

Executive Director's Report – Inventory of ERS Projects. As a matter of information, Staff presented a report on the ERS projects and updated the Board on ERS activities, a copy of which is on file with the ERS. Discussion ensued.

Informational.

Please be advised that the Annuity and Pension Board may vote to convene in closed session on the following item, as provided in Section 19.85(1)(g), Wisconsin State Statutes, to confer with legal counsel concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Board may then vote to reconvene in open session following the closed session.

1) Pending Litigation Report.
2) Conferences.
3) Class Action Income 2023 YTD.
4) Adjusted Quarterly Cost Basis of Equity.
5) Minutes of the Administration & Operations Committee Meeting Held April 18, 2023.
6) Minutes of the Investment Committee Meeting Held April 20, 2023.
7) Minutes of the Investment Committee Meeting Held May 4, 2023.

The following is a list of activities since the last Board meeting, copies sent with meeting notice and attached to minutes:

8) Report on Bills.
9) Deployment of Assets.
10) Securities Lending Revenue and Budget Report.
11) Preliminary Performance Report and Asset Allocation.

There being no further business to come before the meeting, it was moved by Mr. Klusman and seconded by Mr. Konrad, to adjourn the meeting.

Mr. Bell adjourned the meeting at 10:10 a.m.

Bernard J. Allen
Secretary and Executive Director

NOTE: All proceedings of the Annuity and Pension Board Meetings and related Committee Meetings are recorded. All recordings and material mentioned herein are on file in the office of the Employes' Retirement System, 789 N. Water Street, Suite 300.)

II.

CHIEF INVESTMENT OFFICER REPORT

A. Approval of Statement of Investment Policy Update.

Milwaukee Employes' Retirement System - June 27, 2023

Fund as of May 31, 2023

***Fund value of $5.53b.**

***Fund return of -1.4% in May, gross of fees, underperformed by approximately 50bp**

***Primary Relative Perf. Drivers:**
Style Bias -47bp
Primarily Value. Small and International also detracted.

***Fund has underperformed the benchmark in YTD and 1-year periods, while outperforming in 5-, 10-, 15- and 20-year periods.**

June Update (as of 6/15/23)

***Fund return 2.8% MTD**
***Fund return 5.4% YTD**
***Fund value $5.69b**

***10 out of 16 active mandates outperforming YTD.**

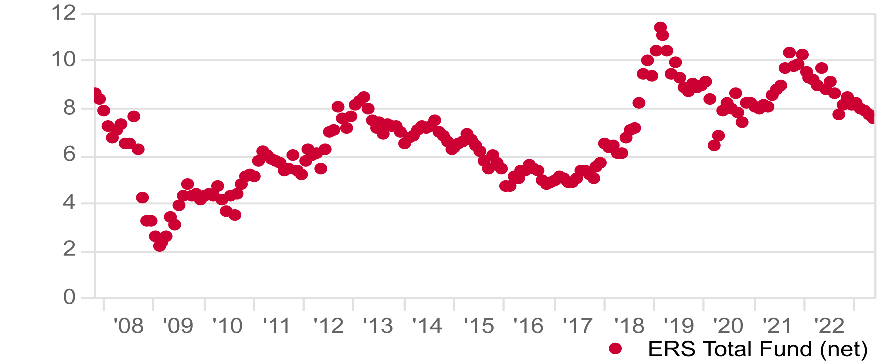
***Fixed Income asset class outperforming its benchmark YTD.**

***Investment Change: $304.7m**
***Benefits & Expenses: 202.7m**
***Contributions: 116.9m**

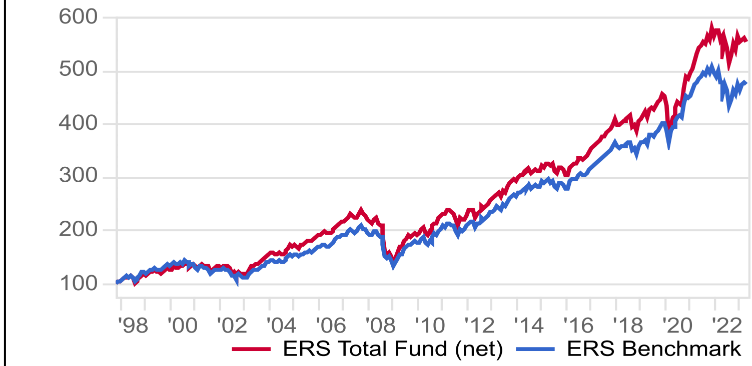
Monthly Withdrawals:

To be discussed at meeting

Total Fund - 10-Year Rolling Returns
11/28/1997 to 05/31/2023



Growth of $100 - Total Fund & ERS Benchmark
11/28/1997 to 05/31/2023



Return Data

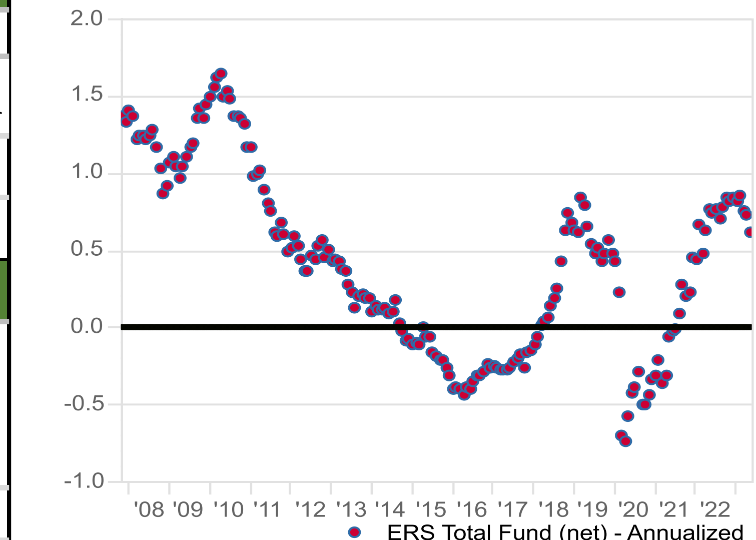
Source Data: Monthly Return

	1 Month	YTD	1 Year	5 Year	10 Year	15 Year	20 Year
Total Fund (net)	-1.4	2.5	-1.6	6.6	7.5	6.3	7.5
ERS Benchmark	-0.9	4.2	-1.0	5.8	6.9	5.9	7.0

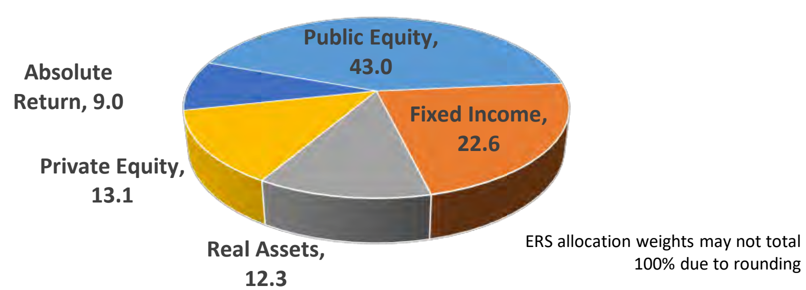
Total Fund - 20-Year Risk & Return Data

	Return	Std Dev	Tracking Error	Info Ratio (arith)	Sharpe Ratio	Alpha	Beta
Total Fund (net)	7.5	10.2	2.5	0.2	0.6	-0.1	1.1
ERS Benchmark	7.0	9.1	--	--	0.6	0.0	1.0

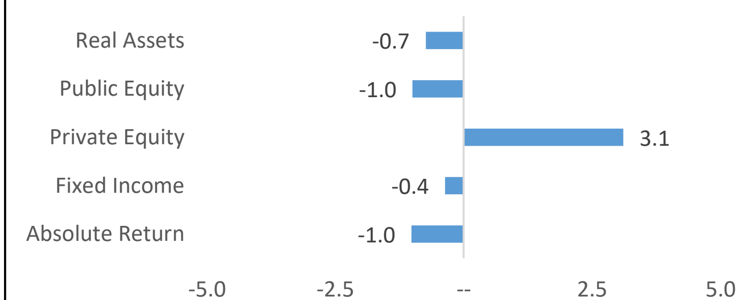
Total Fund - 10-Year Rolling Excess Returns
11/28/1997 to 05/31/2023



ERS Allocation as of May 31, 2023

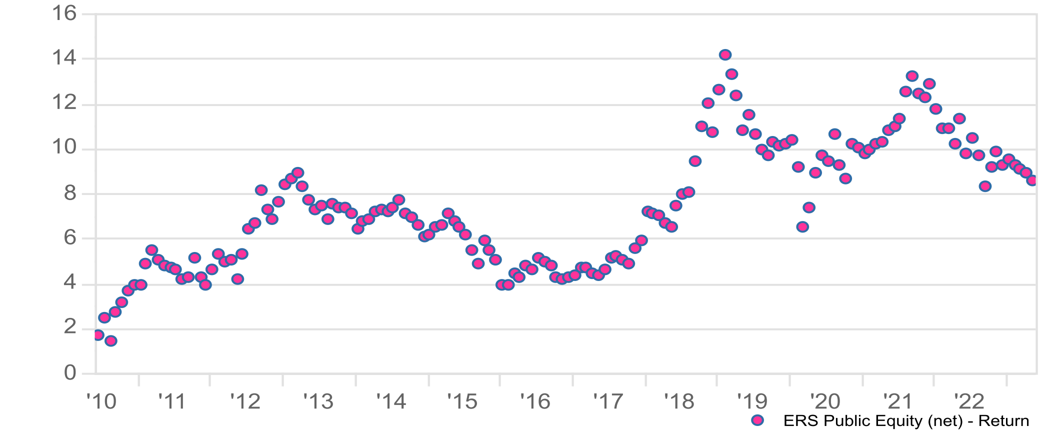


Asset Allocation vs Policy as of May 31, 2023

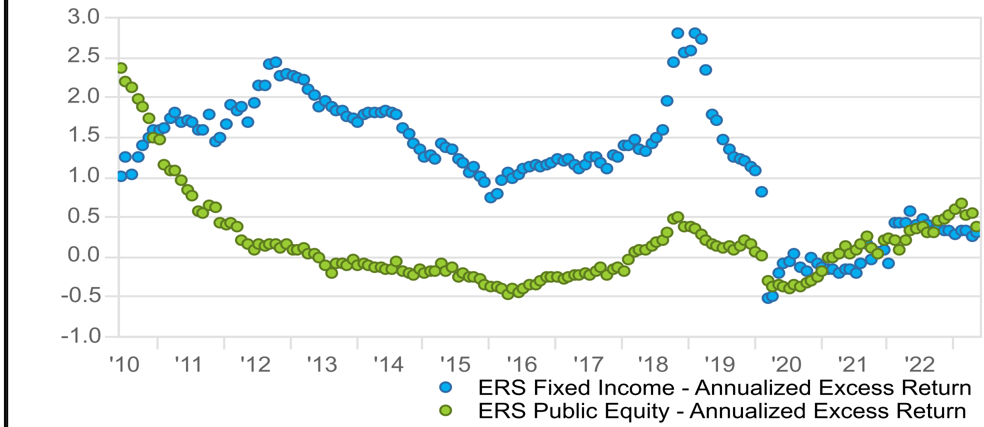


Milwaukee Employes' Retirement System - June 27, 2023

Public Equity - 10-Year Rolling Returns
06/30/2000 to 05/31/2023



Asset Class - 10-Year Rolling Excess Returns
06/30/2000 to 05/31/2023



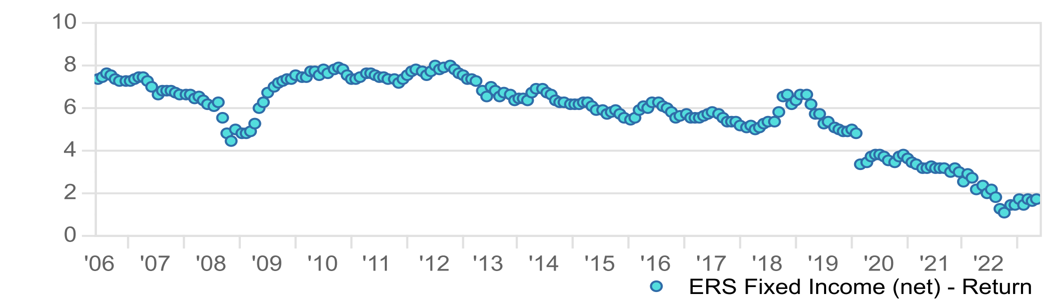
Return Data

	1 Month	YTD	1 Year	5 Year	10 Year	15 Year	20 Year
Public Equity	-2.2	5.4	0.4	6.9	8.9	6.9	8.5
Public Equity (net)	-2.2	5.3	0.0	6.5	8.6	6.5	8.1
Public Equity Benchmark	-1.2	7.0	0.3	6.3	8.2	6.4	7.9
MSCI ACWI IMI NR USD	-1.2	7.0	0.3	6.3	7.7	5.6	8.1

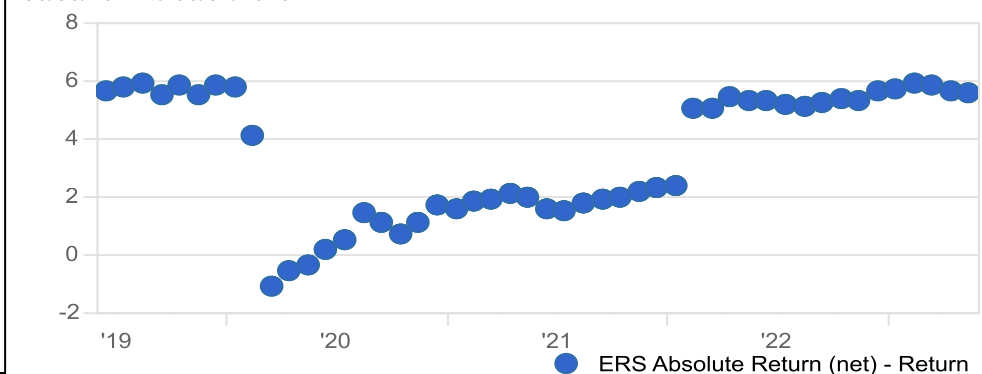
Risk Adjusted Returns (6/30/14 - 05/31/23)

	Return	Std Dev	Sharpe Ratio	Max Drawdown
Public Equity (net)	7.2	15.6	0.4	-25.3
Fixed Income (net)	1.4	6.4	0.1	-13.6
Absolute Return (net)	5.5	9.8	0.5	-27.1

Fixed Income - 10-Year Rolling Returns
06/28/1996 to 05/31/2023



Absolute Return - 5-Year Rolling Returns
06/30/2014 to 05/31/2023



Return Data

	1 Month	YTD	1 Year	5 Year	10 Year	15 Year	20 Year
Fixed Income	-1.2	3.0	-0.9	1.1	1.8	3.8	4.3
Fixed Income (net)	-1.2	3.0	-1.0	1.0	1.7	3.7	4.2
Bbg US Agg Bond TR USD	-1.1	2.5	-2.1	0.8	1.4	2.7	3.0

Return Data

	1 Month	YTD	1 Year	3 Year	5 Year	7 Year
Absolute Return (net)	0.3	1.6	5.6	15.0	5.5	5.5
90-Day T-Bill + 3%	0.7	3.3	7.0	4.4	4.6	4.4

STATEMENT OF INVESTMENT POLICY
Updated June~~February~~ 2023

THE EMPLOYES' RETIREMENT
SYSTEM OF THE CITY OF MILWAUKEE

789 N. Water Street, 3rd Floor
Milwaukee, WI 53202
(414) 286-3557

Individual manager guidelines are updated upon Annuity and Pension Board Approval

TARGET ALLOCATIONS

The Board has determined that the following asset allocation policy is appropriate for the Fund. This allocation policy will be reviewed periodically and may be modified, if appropriate, in light of changes in the structure or goals of the Fund.

Public Equity	**Target**	**Minimum**	**Maximum**
Domestic Equity			
Passive Large Cap	6.9~~7.8~~%		
Active Large Cap	4.4~~5.0~~%		
Active Mid/Small Cap	6.2~~7.0~~%		
Total Domestic Equity	**17.5~~19.8~~%**	**13.5~~15.8~~%**	**21.5~~23.8~~%**
Total International Equity	**13.7~~15.4~~%**	**10.7~~12.4~~%**	**16.7~~18.4~~%**
Total Global Equity	**7.8~~8.8~~%**	**3.8~~4.8~~%**	**11.8~~12.8~~%**
Total Public Equity	**39%~~44%~~**	**34~~39~~%**	**44~~49~~%**
Fixed Income			
Cash	1%	0%	2.0%
Passive Fixed Income	7.2~~5.5~~%		
Core Opportunistic Fixed Income	20.8~~16.5~~%		
Total Fixed Income	**29~~23~~%**	**17.5%***	**32~~26~~%**
Real Assets			
Private Real Estate	**9.7%**		
Public Diversified Real Assets	**3.3%**	**1.3%**	**5.3%**
Total Real Assets	**13%**	**10%**	**16%**
Private Equity	**12~~10~~%**	**9~~7~~%**	**17~~15~~%**
Absolute Return	**7~~10~~%**	**4~~7~~%**	**12~~15~~%**
Total	**100%**		

*Fixed Income Minimum range lowered on an Interim basis to 17.5% in November 2022 for the purpose of providing Staff with additional flexibility to make monthly benefit payments to beneficiaries. Absent further action, the Minimum Fixed Income range will revert back to 26~~20~~% on January 31, 2024.

TOTAL FUND

OBJECTIVES AND GUIDELINES

Investment Objectives

Time Horizon	Performance Standard: Universe	Performance Standard: Index
Less than one market cycle (rolling 3-year periods).	Rank in upper 50% of a Peer Group [1]	
One market cycle (rolling 5-year periods).	Rank in upper 40% of a Peer Group.[1]	Exceed the return on a benchmark Index by 1%.[2] Have volatility of +/- 2.5% tracking error to the benchmark Index.[2]

Investment Guidelines

- The investment guidelines governing each asset class/manager will together constitute the Total Fund guidelines.
- The Board is responsible for the overall asset allocation of the Fund. Each manager will be responsible for adhering to the guidelines for its portion of Fund assets only.

1 As measured by a universe of similarly managed funds.
2 As measured by a composite index designed to track the target asset allocation.

From: / To:	1/1/00 – 4/30/06	5/1/06 – 6/30/08	7/1/08 – 9/30/10	10/1/10– 12/31/12	1/1/13 – 12/31/13	1/1/14 – 12/31/14	1/1/15 – 12/31/15	1/1/16 – 6/30/16	7/1/16 – 12/31/16	1/1/17 – 3/31/18	4/1/18 – 12/31/18	1/1/19 – 12/31/19	1/1/20 – 3/31/21	4/1/21 – 3/31/22	4/1/22- 9/30-22	10/1/22 – 6/30/23	7/1/23 – Present
ACWI IMI (net)	-	-	-	-	-	-	-	56%	56%	55%	50%	47%	43%	44%	44%	44%	39%
Bloomberg U.S. Agg.	30%	28%	28%	28%	28%	28%	28%	25%	22%	22%	25%	25%	26%	23%	23%	23%	29%
NFI-ODCE (1 Qtr Arrears)		-	-	-	-	-	7%	7%	7%	7%	7.7%	7.7%	7.7%	9.1%	9.1%	9.7%	9.7%
90-Day T-bill + 3%	-	-	-	-	-	-	5%	5%	8%	8%	9%	9%	10%	10%	10%	10%	7%
Russell 3000 + 2% (1 Qtr Arrears)			-	-	-	-	-	-	-	-	-	-	10%	10%	10%	10%	12%
15% Bloomberg U.S. TIPS / 30% S&P Global Infrastructure / 15% S&P Global Natural Resources / 25% FTSE EPRA/NAREIT Developed / 15% Bloomberg Commodity Total Return								-	-	-	-	-	-	-	3.9%	3.3%	3.3%
35% Barclays TIPS / 20% S&P Global Infrastructure / 20% Global Natural Resources / 10% FTSE EPRA/NAREIT Developed / 15% Bloomberg Commodity Total Return							-	-	3%	3%	3.3%	3.3%	3.3%	3.9%	-	-	-
Russell 3000 + 3% (1 Qtr Arrears)			-	-	2%	2%	2%	4%	4%	5%	5%	8%	-	-	-	-	-
40% ACWI / 40% Barclays TIPS / 20% Bloomberg Commodity Total Return				-	-	-	-	3%	-	-	-	-	-	-	-	-	-
Russell 3000	50%	45%	45%	33%	31%	31%	28%	-	-	-	-	-	-	-	-	-	-
MSCI EAFE (net)	15%	20%	20%	22%	22%	22%	20%	-	-	-	-	-	-	-	-	-	-
ACWI (net)	-	-	-	-	-	10%	10%	-	-	-	-	-	-	-	-	-	-
NCREIF (NPI 1 Qtr Arrears)		-	7%	7%	7%	7%	-	-	-	-	-	-	-	-	-		-
MSCI World (net)	-	-	-	10%	10%	-	-	-	-	-	-	-	-	-	-	-	-
NCREIF (NPI)	5%	7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

STATEMENT OF INVESTMENT POLICY
Updated June 2023

THE EMPLOYES' RETIREMENT
SYSTEM OF THE CITY OF MILWAUKEE
789 N. Water Street, 3rd Floor
Milwaukee, WI 53202
(414) 286-3557

Individual manager guidelines are updated upon Annuity and Pension Board Approval

TARGET ALLOCATIONS

The Board has determined that the following asset allocation policy is appropriate for the Fund. This allocation policy will be reviewed periodically and may be modified, if appropriate, in light of changes in the structure or goals of the Fund.

Public Equity	**Target**	**Minimum**	**Maximum**
Domestic Equity			
Passive Large Cap	6.9%		
Active Large Cap	4.4%		
Active Mid/Small Cap	6.2%		
Total Domestic Equity	**17.5%**	**13.5%**	**21.5%**
Total International Equity	**13.7%**	**10.7%**	**16.7%**
Total Global Equity	**7.8%**	**3.8%**	**11.8%**
Total Public Equity	**39%**	**34%**	**44%**
Fixed Income			
Cash	1%	0%	2.0%
Passive Fixed Income	7.2%		
Core Opportunistic Fixed Income	20.8%		
Total Fixed Income	**29%**	**17.5%***	**32%**
Real Assets			
Private Real Estate	**9.7%**		
Public Diversified Real Assets	**3.3%**	**1.3%**	**5.3%**
Total Real Assets	**13%**	**10%**	**16%**
Private Equity	**12%**	**9%**	**17%**
Absolute Return	**7%**	**4%**	**12%**
Total	**100%**		

*Fixed Income Minimum range lowered on an Interim basis to 17.5% in November 2022 for the purpose of providing Staff with additional flexibility to make monthly benefit payments to beneficiaries. Absent further action, the Minimum Fixed Income range will revert back to 26% on January 31, 2024.

TOTAL FUND

OBJECTIVES AND GUIDELINES

Investment Objectives

Time Horizon	Performance Standard: Universe	Performance Standard: Index
Less than one market cycle (rolling 3-year periods).	Rank in upper 50% of a Peer Group [1]	
One market cycle (rolling 5-year periods).	Rank in upper 40% of a Peer Group.[1]	Exceed the return on a benchmark Index by 1%.[2] Have volatility of +/- 2.5% tracking error to the benchmark Index.[2]

Investment Guidelines

- The investment guidelines governing each asset class/manager will together constitute the Total Fund guidelines.
- The Board is responsible for the overall asset allocation of the Fund. Each manager will be responsible for adhering to the guidelines for its portion of Fund assets only.

1 As measured by a universe of similarly managed funds.
2 As measured by a composite index designed to track the target asset allocation.

From: / To:	1/1/00 – 4/30/06	5/1/06 – 6/30/08	7/1/08 – 9/30/10	10/1/10– 12/31/12	1/1/13 – 12/31/13	1/1/14 – 12/31/14	1/1/15 – 12/31/15	1/1/16 – 6/30/16	7/1/16 – 12/31/16	1/1/17 – 3/31/18	4/1/18 – 12/31/18	1/1/19 – 12/31/19	1/1/20 – 3/31/21	4/1/21 – 3/31/22	4/1/22- 9/30-22	10/1/22 – 6/30/23	7/1/23 – Present
ACWI IMI (net)	-	-	-	-	-	-	-	56%	56%	55%	50%	47%	43%	44%	44%	44%	39%
Bloomberg U.S. Agg.	30%	28%	28%	28%	28%	28%	28%	25%	22%	22%	25%	25%	26%	23%	23%	23%	29%
NFI-ODCE (1 Qtr Arrears)		-	-	-	-	-	7%	7%	7%	7%	7.7%	7.7%	7.7%	9.1%	9.1%	9.7%	9.7%
90-Day T-bill + 3%	-	-	-	-	-	-	5%	5%	8%	8%	9%	9%	10%	10%	10%	10%	7%
Russell 3000 + 2% (1 Qtr Arrears)			-	-	-	-	-	-	-	-	-	-	10%	10%	10%	10%	12%
15% Bloomberg U.S. TIPS / 30% S&P Global Infrastructure / 15% S&P Global Natural Resources / 25% FTSE EPRA/NAREIT Developed / 15% Bloomberg Commodity Total Return								-	-	-	-	-	-	-	3.9%	3.3%	3.3%
35% Barclays TIPS / 20% S&P Global Infrastructure / 20% Global Natural Resources / 10% FTSE EPRA/NAREIT Developed / 15% Bloomberg Commodity Total Return							-	-	3%	3%	3.3%	3.3%	3.3%	3.9%	-	-	-
Russell 3000 + 3% (1 Qtr Arrears)			-	-	2%	2%	2%	4%	4%	5%	5%	8%	-	-	-	-	-
40% ACWI / 40% Barclays TIPS / 20% Bloomberg Commodity Total Return				-	-	-	-	3%	-	-	-	-	-	-	-	-	-
Russell 3000	50%	45%	45%	33%	31%	31%	28%	-	-	-	-	-	-	-	-	-	-
MSCI EAFE (net)	15%	20%	20%	22%	22%	22%	20%	-	-	-	-	-	-	-	-	-	-
ACWI (net)	-	-	-	-	-	10%	10%	-	-	-	-	-	-	-	-	-	-
NCREIF (NPI 1 Qtr Arrears)		-	7%	7%	7%	7%	-	-	-	-	-	-	-	-	-		-
MSCI World (net)	-	-	-	10%	10%	-	-	-	-	-	-	-	-	-	-	-	-
NCREIF (NPI)	5%	7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

III.

INVESTMENT COMMITTEE REPORT

A. Approval of Loomis Sayles Guideline Waiver.
B. Approval of Asset Allocation Mix.
C. Approval of Real Estate Manager Structure.

Memorandum

To: CMERS Investment Committee
From: Erich Sauer, CFA, CAIA
Date: June 8, 2023
Re: Loomis Sayles Guideline Waiver

Attached you will find a request from Loomis Sayles for a guideline waiver. Our guidelines require Loomis to sell asset backed securities downgraded below Baa3/BBB- within 90 days. Loomis is requesting a waiver to this guideline with respect to one specific security that was recently downgraded. The waiver would only apply to the security mentioned in Loomis' request.

As explained in their memo, the security in question is an asset-backed security with a collateral pool of airplanes. The airplanes are all currently leased, and Loomis has a favorable view of the security given the valuation, and their outlook for the travel industry.

The amount of the security that Loomis holds in our portfolio is small, with a value of approximately $130,000 or 0.04% of the portfolio. The guideline waiver would not give Loomis the ability to add to the position – only to continue to hold what is already in the portfolio. Both ERS Staff and Callan are comfortable with this request, and recommend approval of the guideline waiver for this position.

Stephanie S. Lord, CFA, CIC
Vice President
Senior Relationship Manager

slord@loomissayles.com
630.581.5054 cell

LOOMIS SAYLES & COMPANY, L.P.

May 22, 2023

Mr. Jerry Allen
City of Milwaukee ERS
789 North Water Street
Suite 300
Milwaukee, WI 53202

Re: Downgrade Notice
City of Milwaukee Employees Retirement System (Z422N3)

Dear Mr. Allen,

On 5/16/23, S&P downgraded WAAV 2017-1A A 144A 3.844 11/15/42 (Security ID 94353WAA3) from BBB- to BB and current ratings are NR/BB/NR. The guidelines state the account may not hold asset-backed securities (excl. corp bond sinkers) unless rated at least Baa3/BBB-. Client must be notified of downgrades within 3 business days, provide weekly updates thereafter, and sell within 90 days.

We are requesting an extension to hold this security indefinitely as we have no intention of selling the bond based on the fundamentals of the credit and valuation.

As of 5/16/23:

Security ID	Security Name	Shares	Market value	% of total
94353WAA3	WAAV 2017-1A A 144A 3.844 11/15/42	164,174.07	129,827.06	0.04

Below is some additional detail from our Research Department:

S&P just downgraded Class A of aircraft ABS WAAV 2017-1A from BBB to BB. We have $38 million MV exposure to the Class A. We continue to keep our internal rating at “bbb”, recommend to continue to hold the bonds if allowed by investment guidelines and adding on possible weaknesses from forced selling at LRR1 level (below 80). Class A is currently rated BB/BBB+ by SP & KBRA.

Performance of Aircraft ABS WAAV 2017-1A has improved significantly over last 12 months. During COVID over 20% aircraft collateral were off lease sitting on the ground. Servicer/Issuer has managed portfolio actively, with recovery of airtravel, servicer successfully placed or sold all off-lease aircraft. Currently all aircraft are on lease aside from one aircraft with lease expiring in six months, which has already been placed with another airline.

LTV of Class A of WAAV 2017-1A (73%) is in-line with other BBB rated Class A of Aircraft ABS. S&P just affirmed Class A of WAAV 2019-1 at BBB+ with similar LTV. Analytics: At price of 79, Class A of WAAV 17-A is +665/10.25%/4.3Yr, which is attractive at BBB and still fair at BB.

Stephanie S. Lord, CFA, CIC
Vice President
Senior Relationship Manager

slord@loomissayles.com
630.581.5054 cell

LOOMIS SAYLES & COMPANY, L.P.

S&P's downgrade on Class A is mostly driven by limited principal payment Class A has received, mostly due to high servicer/maintenance expense. When aircrafts sitting on the ground get put back to work, it will incur significant transition cost and maintenance expense to get ready to deliver to airlines.

Please feel free to contact me with any questions.

Best regards,

Stephanie S. Lord, CFA
Senior Relationship Manager

Callan

June 8, 2023

City of Milwaukee Employes' Retirement System

2023 Asset-Liability Study

Phase III – Final Asset-Liability Results

John P. Jackson, CFA
Senior Vice President

Michael Joecken
Senior Vice President

Jason Ellement, FSA, CFA
Senior Vice President

Adam Lozinski, CFA
Senior Vice President

2023 Asset-Liability Schedule

Phase I: Asset Mix Alternatives

- Socialize Callan 2023 Capital Market Assumptions
- Consider Potential Alternative Asset Mixes
- Determine Actuarial Discount Rate Going Forward
- Scheduled Completion: **February 9, 2022**

Phase II: Preliminary Asset - Liability Results

- Analyze alternative asset mixes
- Review asset-liability results
- Scheduled completion: **May 5, 2023**

Phase III: Final Asset - Liability Results

- Review asset-liability results
- Determine appropriate asset allocation
- Scheduled completion: **June 8, 2023**

Goal of the Study

- The goal of this asset-liability study is to establish a long-term strategic asset allocation target for the City of Milwaukee Employes' Retirement System pension fund (the "Fund").
- An appropriate asset allocation will depend on the Fund's investment objectives.
  - Minimize costs over the long run (long-term goal)
  - How much return generation (from beta and alpha) is necessary to lower costs and/or improve funded status?
- Investment solution is an optimal balance between sustainable funded status volatility and minimization of costs over the long run.
- Asset allocation will vary by the unique circumstances of the Fund.
- No "one-size-fits-all" solution exists.

Callan 2023 – 2032 Capital Market Assumptions

Asset Class	Index	10-Year Expected Return	30-Year Expected Return	Standard Deviation
Equities				
Broad U.S. Equity	Russell 3000	7.35%	7.95%	18.05%
Large Cap U.S. Equity	S&P 500	7.25%	7.75%	17.75%
Small/Mid Cap U.S. Equity	Russell 2500	7.45%	8.25%	22.15%
Global ex-U.S. Equity	MSCI ACWI ex USA	7.45%	8.20%	21.25%
Developed ex-U.S. Equity	MSCI World ex USA	7.24%	7.75%	20.15%
Emerging Market Equity	MSCI Emerging Markets	7.45%	8.50%	25.70%
CMERS Public Equity	Custom Blend[1]	7.56%	8.17%	18.46%
Fixed Income				
Core Fixed Income	Bloomberg Barclays Aggregate	4.25%	4.65%	4.10%
TIPS	Bloomberg Barclays TIPS	4.00%	4.35%	5.30%
High Yield	Bloomberg Barclays High Yield	6.25%	6.40%	11.75%
Bank Loans	S&P/LSTA Leveraged Loan Index	6.10%	6.05%	9.70%
EMD	EMBI Global Diversified	5.85%	6.05%	10.65%
CMERS Fixed Income	Custom Blend[2]	5.06%	5.34%	5.06%
Alternatives				
Core Real Estate	NCREIF ODCE	5.75%	6.50%	14.20%
Private Equity	Cambridge Private Equity	8.50%	9.15%	27.60%
Absolute Return	Callan Hedge FoF Database	5.55%	5.65%	8.45%
Commodities	Bloomberg Commodity	3.50%	3.65%	18.00%
Liquid Real Assets	Custom Blend[3]	6.08%	6.49%	9.83%
Cash Equivalents	90-Day T-Bill	2.75%	2.90%	0.90%
Inflation	CPI-U	2.50%	2.35%	1.60%

1 - 44% Large Cap US Equity / 11% Small/Mid Cap US Equity / 34% Non-US Equity / 11% Emerging Markets Equity
2 - 60% Core Fixed Income / 36% High Yield / 4% Cash
3 - 50% Large Cap US Equity / 35% TIPS / 15% Commodities

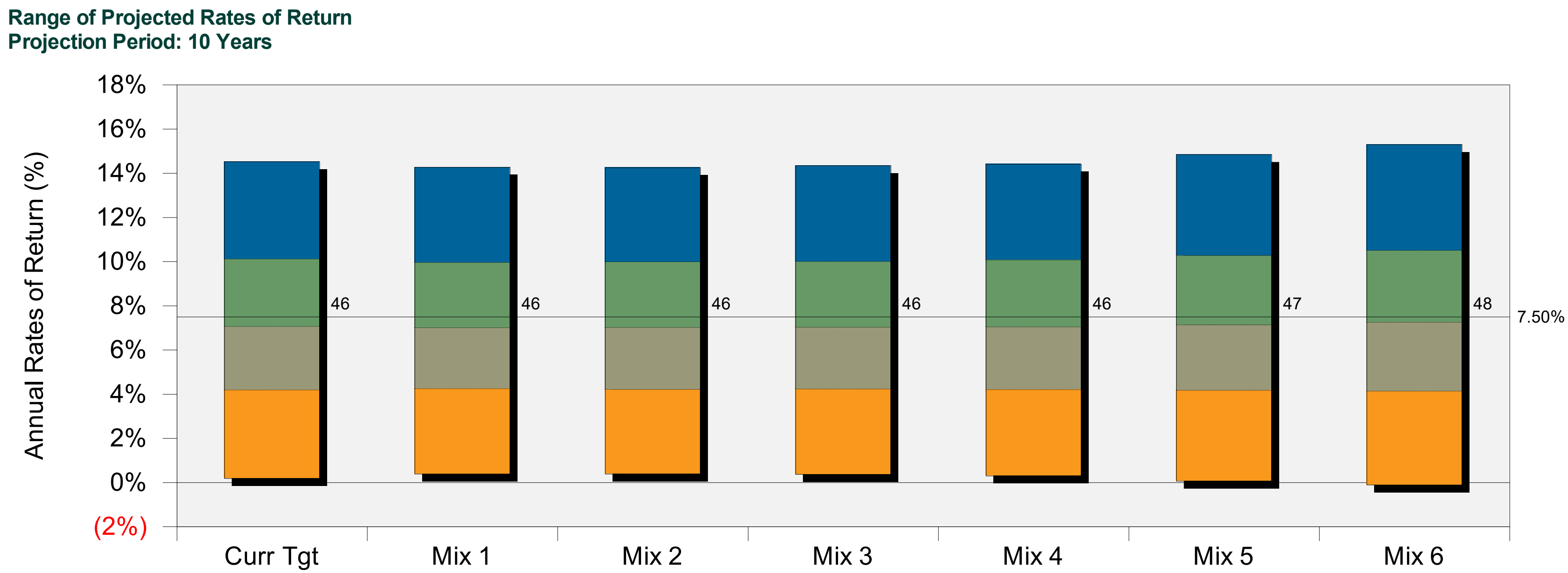
- Capital market expectations represent passive exposure (beta only) with the exception of privately-traded classes
  - All return projections are net of fees

Alternative Asset Mixes

				Alternative Asset Mixes						Change Relative to Target					
	Target	Min	Max	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
Public Equity	44.00%			39.00%	40.00%	39.00%	42.00%	44.00%	45.00%	-5.00%	-4.00%	-5.00%	-2.00%	0.00%	1.00%
Fixed Income	23.00%			28.99%	27.99%	27.99%	25.99%	23.00%	20.00%	5.99%	4.99%	4.99%	2.99%	0.00%	-3.00%
- Core	13.75%			18.05%	16.76%	16.86%	16.32%	13.75%	11.88%	4.30%	3.01%	3.11%	2.57%	0.00%	-1.88%
- High Yield	8.25%			9.94%	10.23%	10.13%	8.67%	8.25%	7.13%	1.69%	1.98%	1.88%	0.42%	0.00%	-1.13%
- Cash	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Real Assets	13.00%			13.00%	14.00%	14.00%	14.01%	14.00%	14.00%	0.00%	1.00%	1.00%	1.01%	1.00%	1.00%
- Liquid Real Assets	3.30%	3.30%	3.30%	3.30%	3.30%	3.30%	3.30%	3.30%	3.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
- Private Real Estate	9.70%	9.70%	10.70%	9.70%	10.70%	10.70%	10.71%	10.70%	10.70%	0.00%	1.00%	1.00%	1.01%	1.00%	1.00%
Private Equity	10.00%	10.00%	14.00%	12.00%	11.00%	12.00%	11.00%	12.00%	14.00%	2.00%	1.00%	2.00%	1.00%	2.00%	4.00%
Absolute Return	10.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-3.00%
	100.00%			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30-Year Expected Return	7.55%			7.50%	7.50%	7.52%	7.54%	7.64%	7.75%	-0.05%	-0.04%	-0.03%	0.00%	0.10%	0.21%
10-Year Expected Return	7.05%			7.01%	7.01%	7.02%	7.04%	7.13%	7.23%	-0.05%	-0.05%	-0.03%	-0.01%	0.08%	0.18%
Standard Deviation	12.93%			12.51%	12.55%	12.61%	12.76%	13.33%	13.90%	-0.42%	-0.38%	-0.32%	-0.17%	0.40%	0.97%
Public & Private Equity	54%			51%	51%	51%	53%	56%	59%						
Fixed Income + Absolute Return	33%			36%	35%	35%	33%	30%	27%						
Core / Fixed Income	60%			62%	60%	60%	63%	60%	59%						
Illiquid Investments	30%			29%	29%	30%	29%	30%	32%						

- The above table illustrates six alternative mixes:
  - 10-year return expectations range from 7.00% to 7.25%
  - 30-year return expectations range from 7.50% to 7.75% (a 0.5% increase over a 30-year horizon)
- Alternative asset mixes shift 2-5% capital to private real estate and private equity and reduce Absolute Return by 3.0%
- Mixes 1-4 reduce risk while Mixes 5-6 increase risk

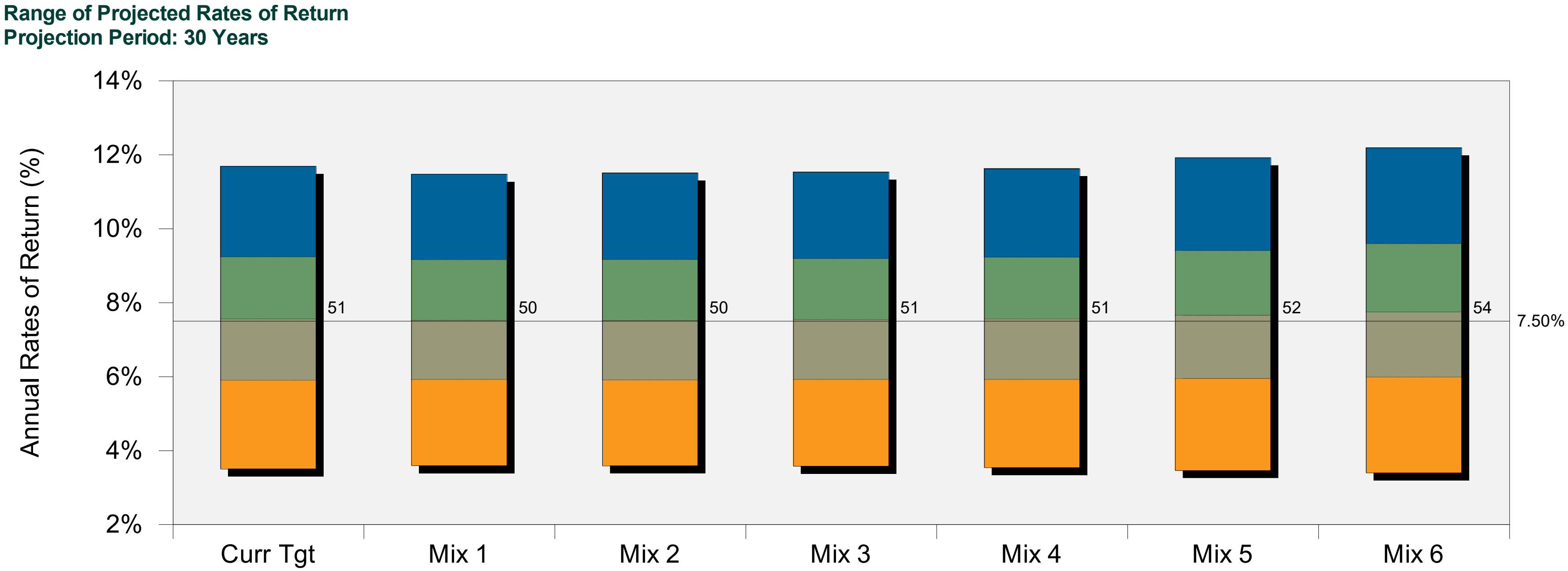
10-Year Returns



	Curr Tgt	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
5th Percentile	14.52%	14.27%	14.25%	14.35%	14.41%	14.85%	15.30%
25th Percentile	10.09%	9.94%	9.97%	9.99%	10.05%	10.26%	10.49%
Median	7.05%	7.01%	7.01%	7.02%	7.04%	7.13%	7.23%
75th Percentile	4.17%	4.23%	4.20%	4.21%	4.19%	4.16%	4.12%
95th Percentile	0.19%	0.39%	0.38%	0.37%	0.30%	0.07%	(0.10%)
Prob > 7.50%	46.1%	45.7%	45.6%	45.8%	45.9%	46.9%	47.9%

- Probability of meeting the 7.5% investment return assumption over 10 years ranges from 45.7% to 47.9%

30-Year Returns



	Curr Tgt	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
5th Percentile	11.69%	11.47%	11.51%	11.54%	11.62%	11.92%	12.19%
25th Percentile	9.23%	9.15%	9.16%	9.18%	9.22%	9.40%	9.58%
Median	7.55%	7.50%	7.50%	7.52%	7.54%	7.64%	7.75%
75th Percentile	5.89%	5.91%	5.90%	5.91%	5.92%	5.94%	5.98%
95th Percentile	3.50%	3.59%	3.59%	3.58%	3.54%	3.46%	3.40%
Prob > 7.50%	50.8%	50.1%	50.1%	50.5%	50.9%	52.3%	54.0%

- Over a longer horizon, all the portfolios are expected to meet the 7.5% investment return assumption
- Probability of meeting 7.5% ranges from 50.1% to 54.0%

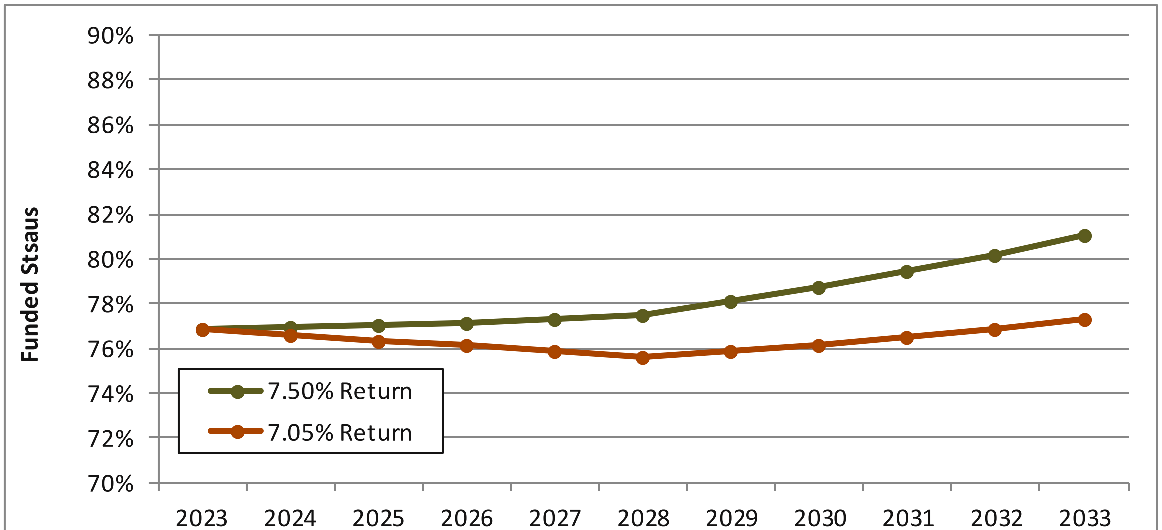
Actuarial Liability Model

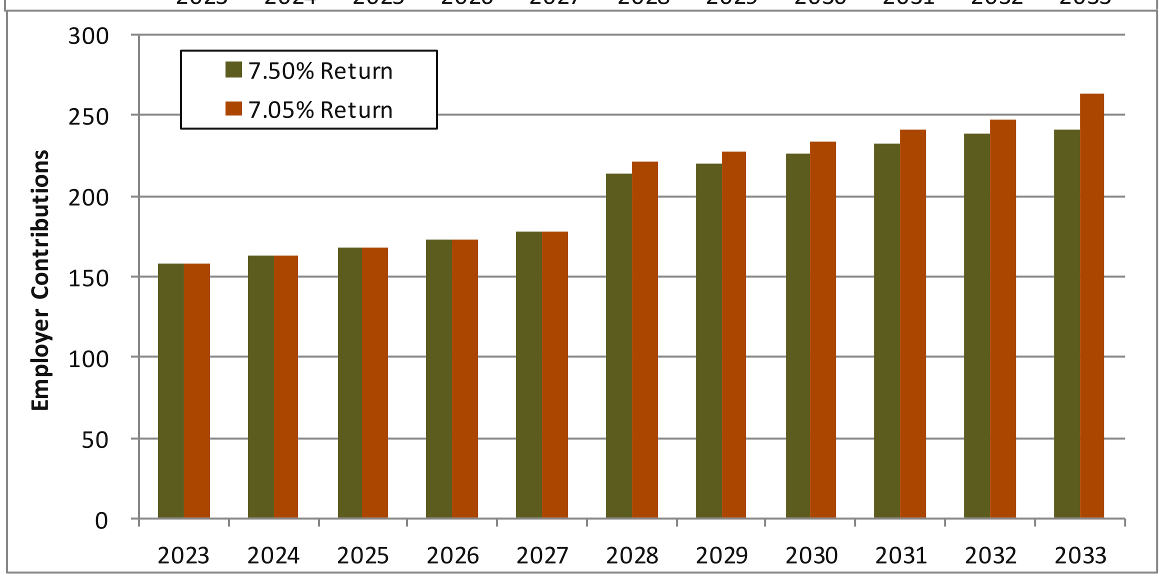
- Callan and Cavanaugh Macdonald utilize the same actuarial software
  - Cavanaugh Macdonald supplied Callan with the programming code for liability modelling
- Callan reflected the 5-year stabilization funding policy
  - First reset occurs 1/1/2023 – 1/1/2028
  - 2023 – 2028 Employer Rate = 27%

January 1, 2023 Actuarial Valuation	Estimated
Actuarial Accrued Liability	$7,063M
Market Value of Assets	$5,427M
Actuarial Value of Assets	$5,748M
Market Funded Status (MVA/AL)	76.8%
Actuarial Funded Status (AVA/AL)	81.4%
2022 Employer Contribution ($)	$88M
2022 Employer Contribution (%)	15.21%

Key Assumptions	Actuarial Assumption	Callan 10-year Expectation	Callan 30-year Expectation
Investment Return	7.50%	7.05%	7.55%
Price Inflation	2.50%	2.50%	2.35%

Expected Return Projection Over 10 Years

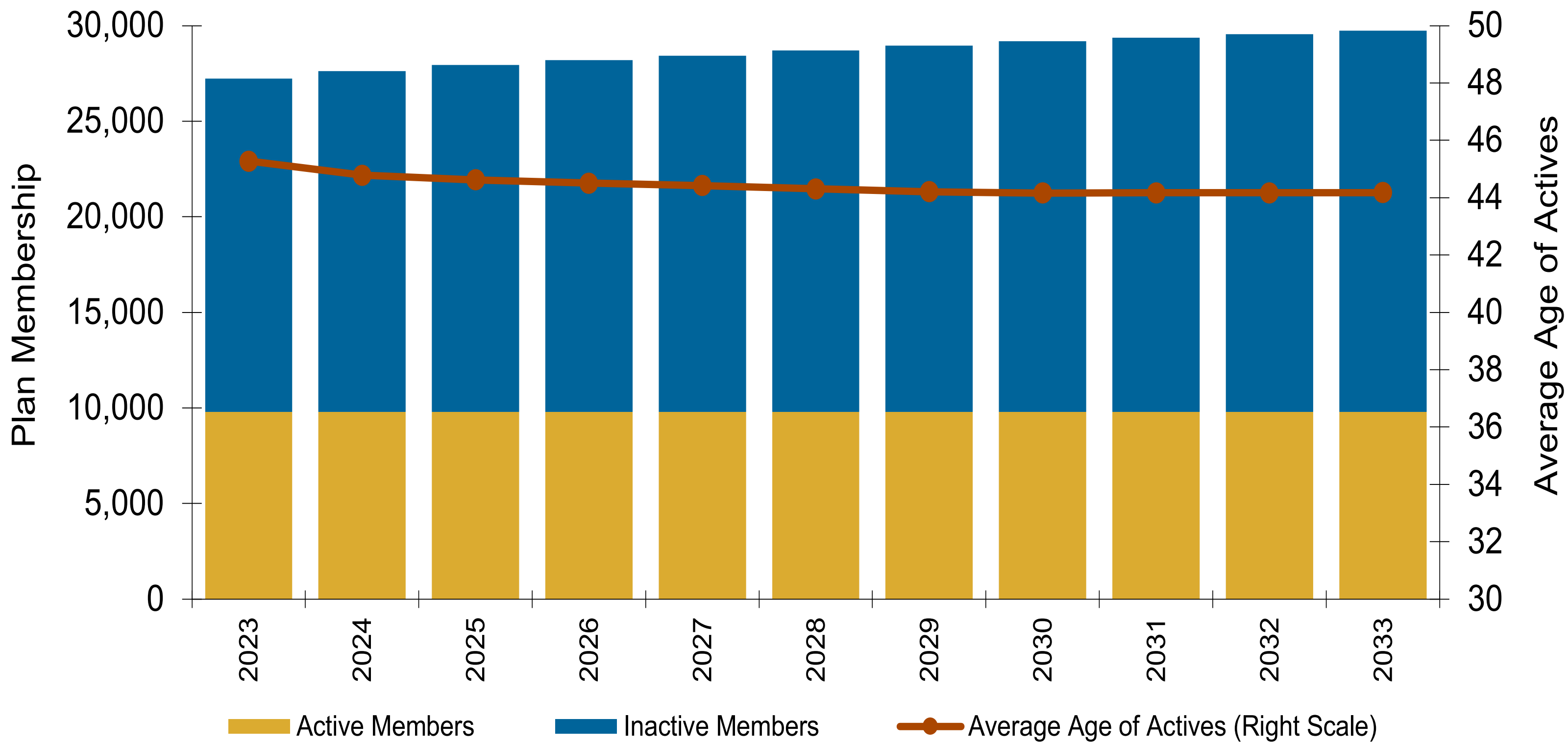




- A return difference of 0.45% results in a funded status that is 4% lower at the end of 10 years
  - All liability projections reflect a 7.5% investment return assumption

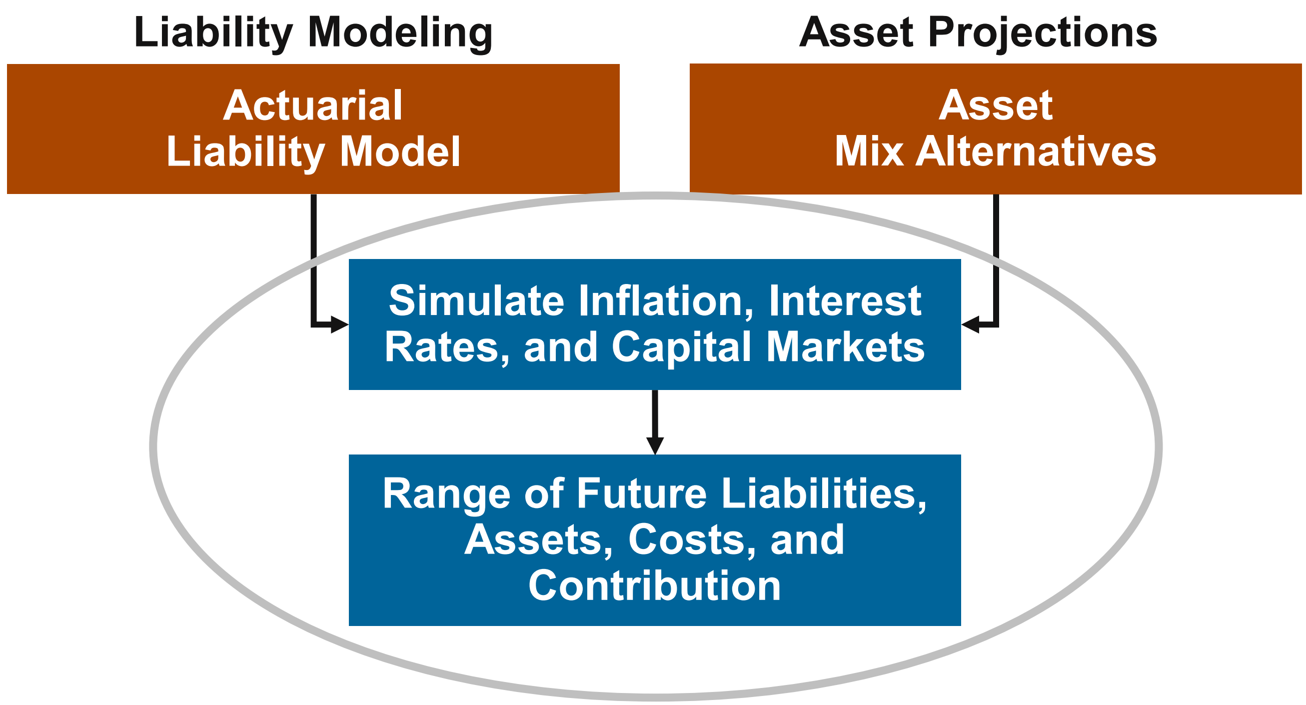
- Relative to the assumed 7.5% rate, the employer contributions for the current target, based on Callan's 10-year return expectation, are higher in the 2028 – 2032 stabilization period and the 2033 – 2037 stabilization period

Active Plan Membership



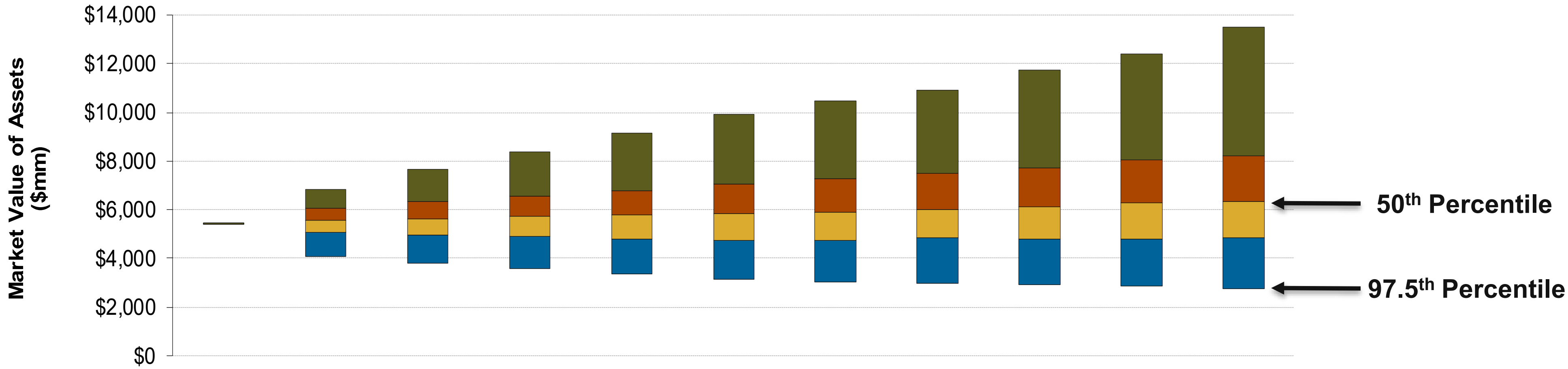
- Plan is assumed to stay open
  - Future new hires replace exits due to retirement, death, disability, and withdrawal
  - A constant active membership implies 0% workforce growth
- Average age of active members is 44 - 45 years

Simulate Financial Condition



- Generate 2,000 simulations per year, per asset mix to capture possible future economic scenarios and their effect on the portfolio
- The simulation results are then ranked from highest to lowest to develop probability distributions

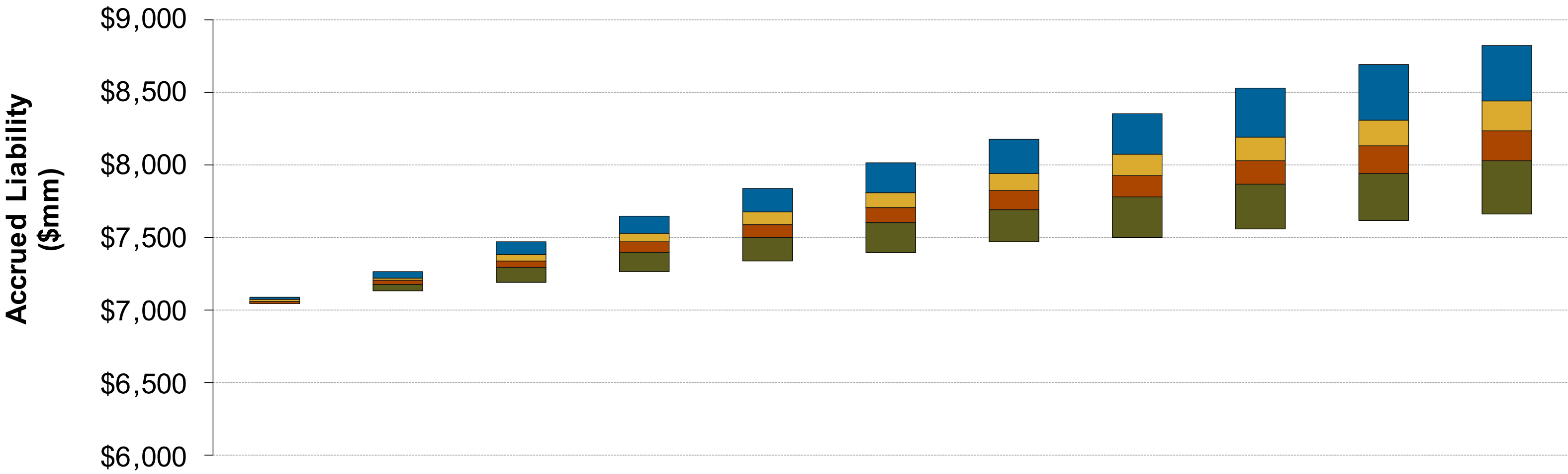
Market Value of Assets (Current Target)



Percentile	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
2.5th	$5,427	$6,833	$7,654	$8,396	$9,149	$9,954	$10,457	$10,930	$11,731	$12,418	$13,509
25th	5,427	6,040	6,320	6,548	6,763	7,071	7,290	7,475	7,744	8,040	8,229
50th	5,427	5,559	5,647	5,744	5,789	5,823	5,928	6,011	6,149	6,262	6,352
75th	5,427	5,088	4,980	4,925	4,810	4,768	4,764	4,859	4,787	4,826	4,847
97.5th	5,427	4,080	3,811	3,575	3,353	3,149	3,046	2,993	2,946	2,879	2,771
Range		2,753	3,843	4,821	5,796	6,805	7,411	7,938	8,785	9,539	10,738

- The expected outcome is the 50th percentile
  - There is a 50% chance that asset values will be above the value shown and a 50% chance that asset values will be below the value shown
  - Expected 10-Year annualized growth in assets is 1.6% per year
- The worse-case scenario is the 97.5th percentile
  - E.g., There is a 1-in-40 chance (2.5% probability) that the 1/1/2033 market value of assets will be $2.771B or less

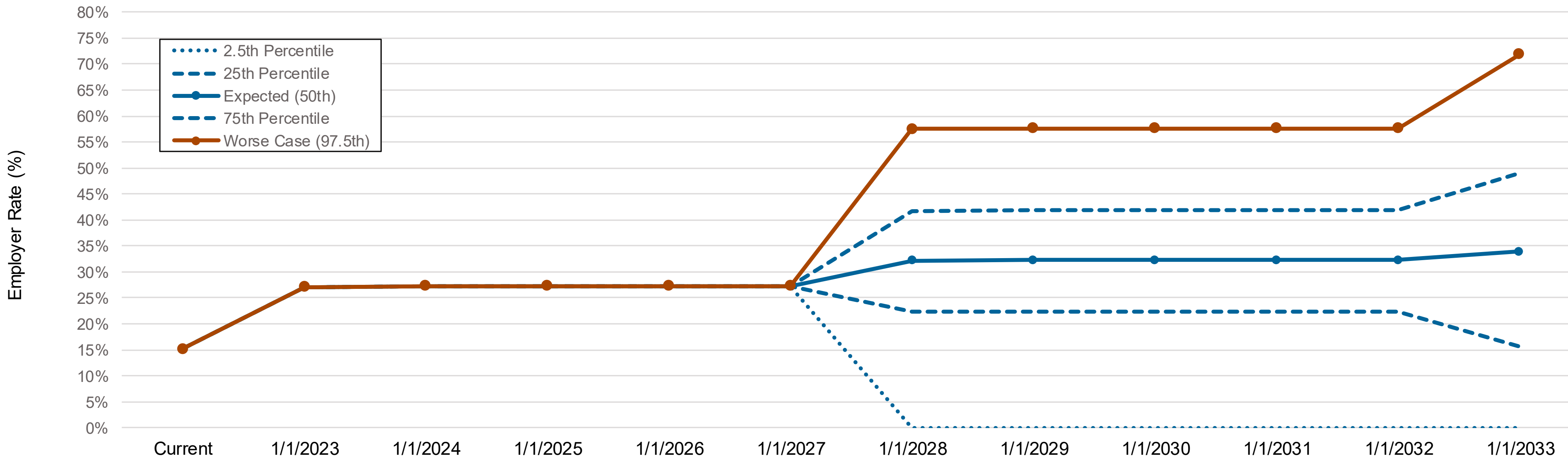
Actuarial Accrued Liability



Percentile	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
97.5th	$7,063	$7,271	$7,464	$7,651	$7,836	$8,010	$8,181	$8,351	$8,519	$8,688	$8,822
75th	7,063	7,226	7,381	7,528	7,673	7,813	7,943	8,066	8,192	8,312	8,436
50th	7,063	7,204	7,336	7,466	7,587	7,701	7,817	7,927	8,030	8,126	8,226
25th	7,063	7,180	7,292	7,398	7,502	7,598	7,684	7,778	7,861	7,942	8,024
2.5th	7,063	7,133	7,200	7,267	7,336	7,390	7,464	7,503	7,560	7,614	7,661
Range	0	138	265	384	500	619	717	848	959	1,074	1,161

- Plan liabilities are increasing over the next 10 years
  - Liabilities increase with ongoing benefit accrual, interest cost and are reduced by benefit payments
  - Expected 10-Year annualized growth in liability is 1.5% per year
  - Investment return assumption = 7.5% in all scenarios and years

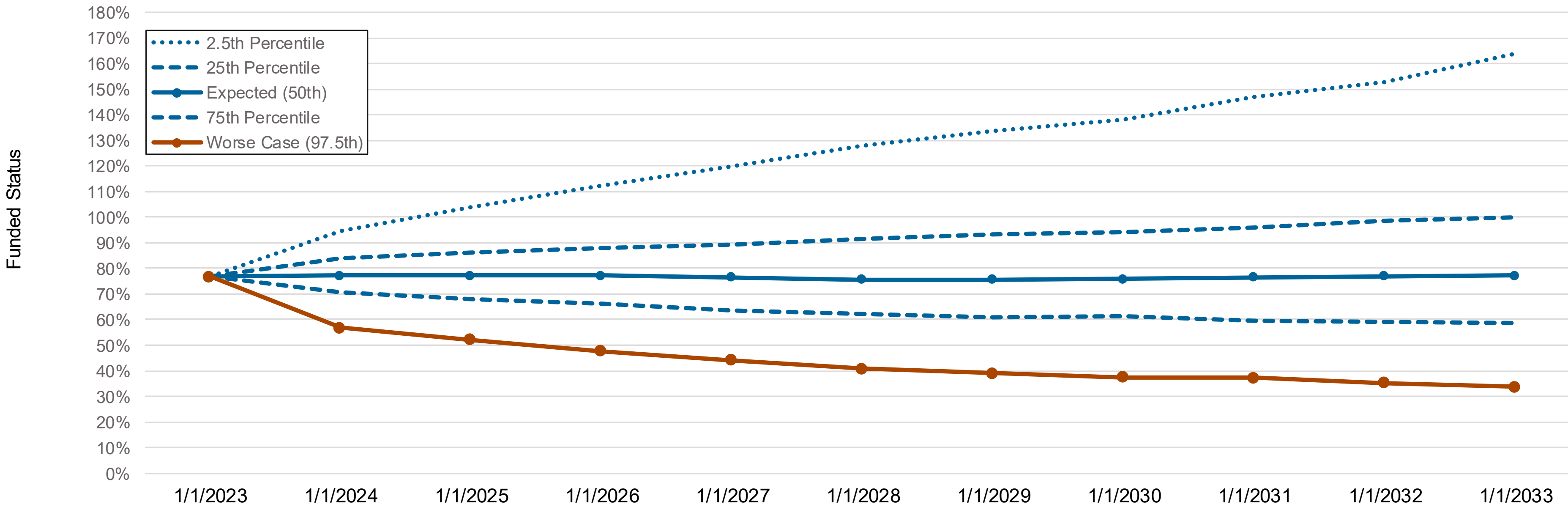
Employer Rate (Current Target)



		2023 - 2027 Stabilization Period					2028 - 2032 Stabilization Period					2033-2037 Stabilization Period
	Current	**1/1/2023**	**1/1/2024**	**1/1/2025**	**1/1/2026**	**1/1/2027**	**1/1/2028**	**1/1/2029**	**1/1/2030**	**1/1/2031**	**1/1/2032**	**1/1/2033**
Worse Case (97.5th)	15.2%	27%	27%	27%	27%	27%	58%	58%	58%	58%	58%	72%
75th Percentile	15.2%	27%	27%	27%	27%	27%	42%	42%	42%	42%	42%	49%
Expected (50th)	15.2%	27%	27%	27%	27%	27%	32%	32%	32%	32%	32%	34%
25th Percentile	15.2%	27%	27%	27%	27%	27%	22%	22%	22%	22%	22%	16%
2.5th Percentile	15.2%	27%	27%	27%	27%	27%	0%	0%	0%	0%	0%	0%

- Employer rate is expected to increase to 27% for the next stabilization period
- Investment performance during the five-year period (2023 – 2027) will be a primary driver of the employer rate in future stabilization periods
  - The employer rate for 2028 – 2032 is expected to increase to 32% but could spike as high as 58%
  - The employer rate for 2033 – 2037 is expected to increase to 34% but could spike as high as 72%

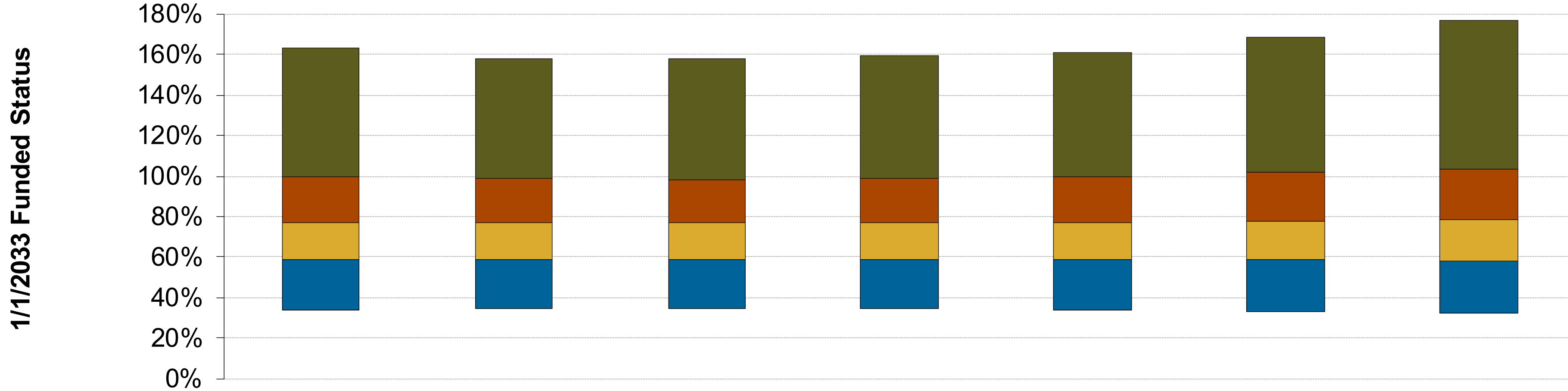
Projected Funded Status (Current Target)



	1/1/2023	1/1/2024	1/1/2025	1/1/2026	1/1/2027	1/1/2028	1/1/2029	1/1/2030	1/1/2031	1/1/2032	1/1/2033
2.5th Percentile	76.8%	95%	104%	112%	120%	128%	134%	138%	147%	153%	164%
25th Percentile	76.8%	84%	86%	88%	89%	92%	93%	94%	96%	99%	100%
Expected (50th)	76.8%	77%	77%	77%	76%	76%	76%	76%	77%	77%	77%
75th Percentile	76.8%	71%	68%	66%	64%	62%	61%	61%	60%	59%	59%
Worse Case (97.5th)	76.8%	57%	52%	48%	44%	41%	39%	37%	37%	35%	34%

- Funded status is expected to be flat over the next 10 years
  - An expected return of 7.05% relative to an assumed investment return of 7.5% is a headwind

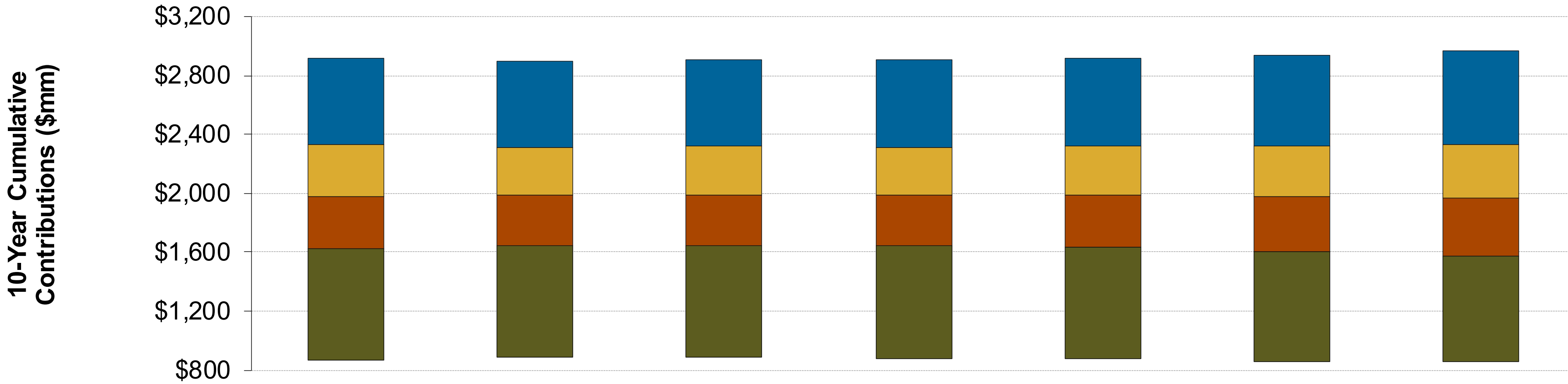
10-Year Projected Funded Status



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
2.5th	164%	158%	158%	159%	161%	169%	177%
25th	100%	99%	99%	99%	99%	102%	104%
50th	77.2%	77.0%	77.0%	77.0%	77.1%	77.8%	78.7%
75th	59%	59%	59%	59%	59%	59%	58%
97.5th	33.7%	34.6%	34.5%	34.4%	34.1%	33.1%	32.2%
Expected Return	7.05%	7.01%	7.01%	7.02%	7.04%	7.13%	7.23%
Standard Deviation	12.93%	12.51%	12.55%	12.61%	12.76%	13.33%	13.90%

- Funded Status = Market Value of Assets / Actuarial Liability
  - 1/1/2023 Funded Status = 76.8%
- More aggressive mixes (Mixes 5 and 6) are expected to have a higher funded status but will have a lower funded status in a worse-case scenario

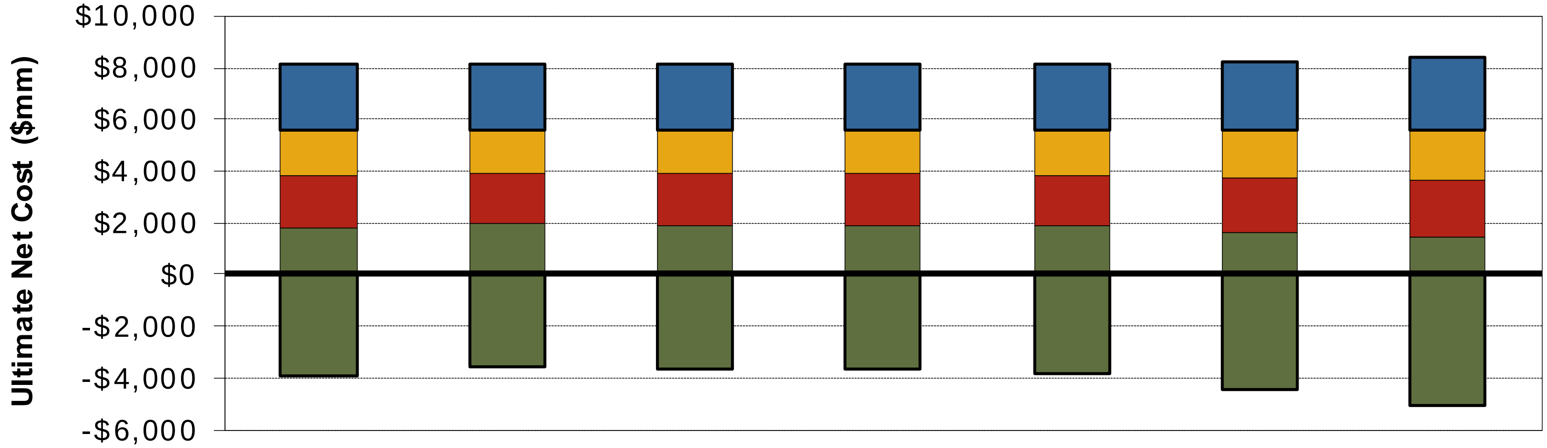
2023-2032 Cumulative Employer Contributions



Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
97.5th	$2,920	$2,900	$2,906	$2,909	$2,917	$2,942	$2,966
75th	2,327	2,316	2,318	2,317	2,322	2,325	2,330
50th	1,982	1,993	1,990	1,990	1,986	1,976	1,964
25th	1,623	1,647	1,643	1,641	1,633	1,606	1,577
2.5th	870	885	885	877	874	861	855
Expected Return	7.05%	7.01%	7.01%	7.02%	7.04%	7.13%	7.23%
Standard Deviation	12.93%	12.51%	12.55%	12.61%	12.76%	13.33%	13.90%

- Above chart illustrates total employer contributions over 2023 – 2032
  - Expected contributions vary slightly across mixes
- More aggressive mixes are expected to result in lower employer contributions but result in higher contributions in a worse-case scenario

Ultimate Net Cost (UNC)

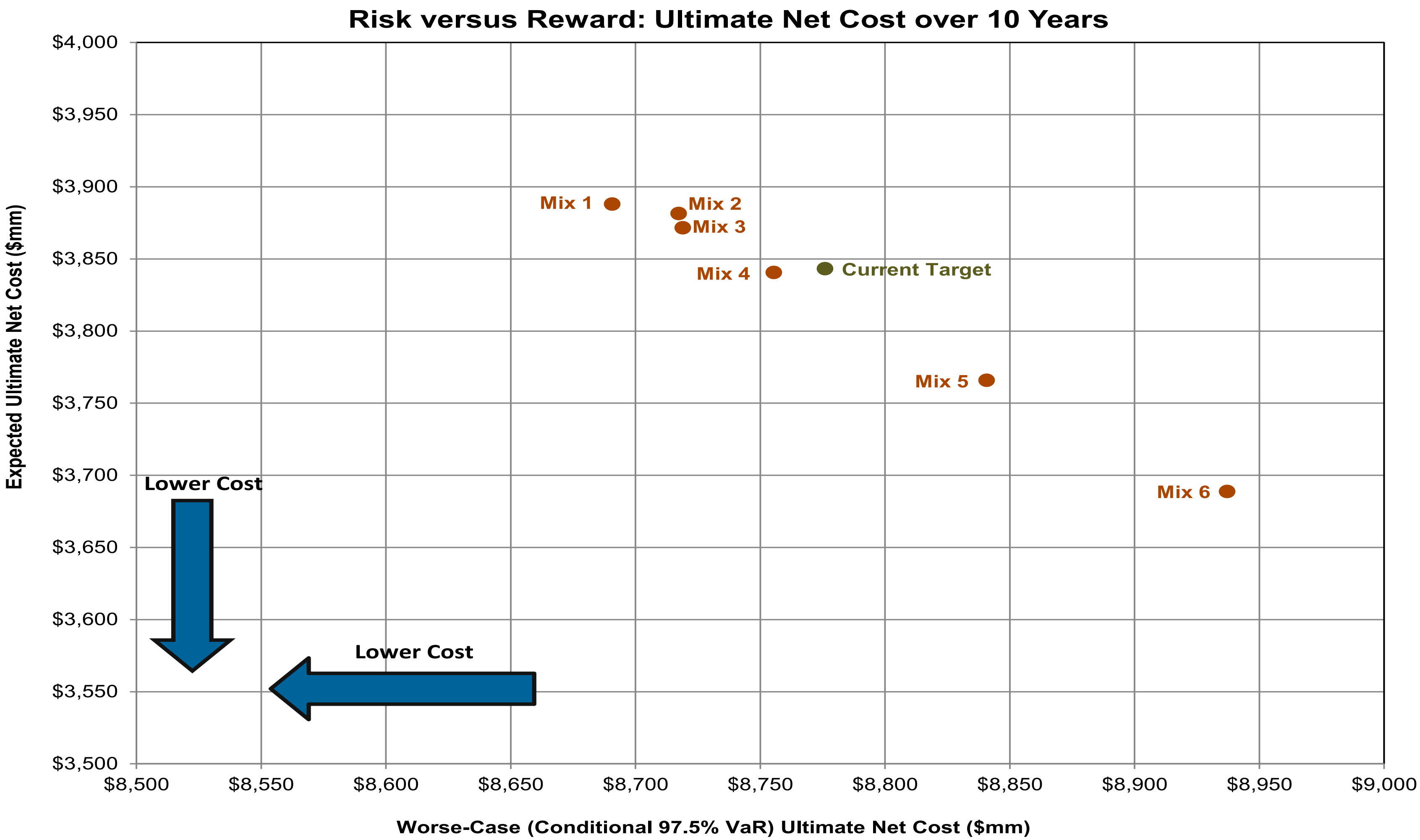


Percentile	Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
Conditional VaR *	$8,776	$8,691	$8,717	$8,719	$8,755	$8,841	$8,937
97.5th	$8,154	$8,096	$8,115	$8,119	$8,164	$8,256	$8,357
75th	5,618	5,570	5,598	5,579	5,601	5,593	5,594
50th	3,843	3,888	3,882	3,872	3,841	3,766	3,689
25th	1,808	1,944	1,919	1,914	1,860	1,664	1,461
2.5th	-3,909	-3,594	-3,658	-3,653	-3,842	-4,421	-5,099
Expected Return	7.05%	7.01%	7.01%	7.02%	7.04%	7.13%	7.23%
Standard Deviation	12.93%	12.51%	12.55%	12.61%	12.76%	13.33%	13.90%

** A measurement of "tail risk". Conditional VaR is the weighted average of losses beyond the 97.5th percentile*

- UNC = 10-Year Cumulative Contributions + 1/1/2033 Unfunded Actuarial Liability
  - UNC captures what is expected to be paid over 10 years plus what is owed at the end of the 10 year period
  - Negative numbers indicate the plan is in a surplus position at 1/1/2033
- More aggressive mixes lower UNC in the expected case but result in a greater UNC in a worse case scenario

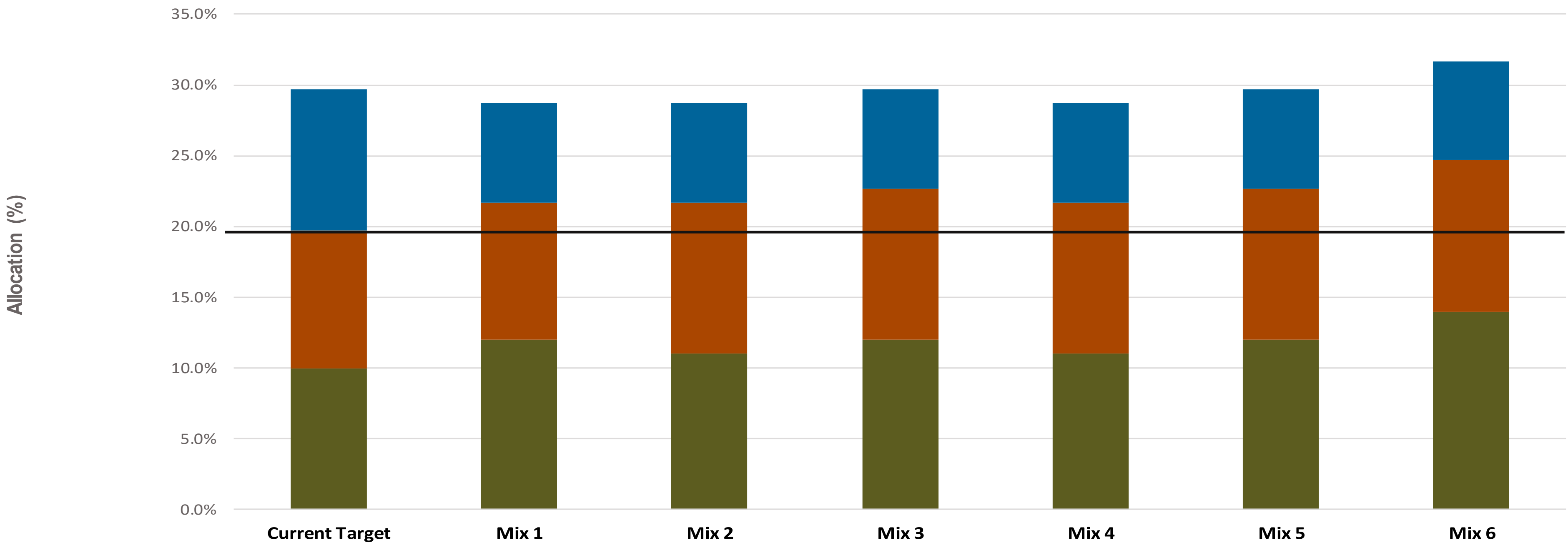
Ultimate Net Cost Graph



- Mixes 1-3 are expected to cost more but reduce worse case cost
- Mix 4 has similar expected cost as the Target but reduces worse case cost
- Mixes 5-6 are expected to reduce cost but increase worse case cost

Liquidity Analysis

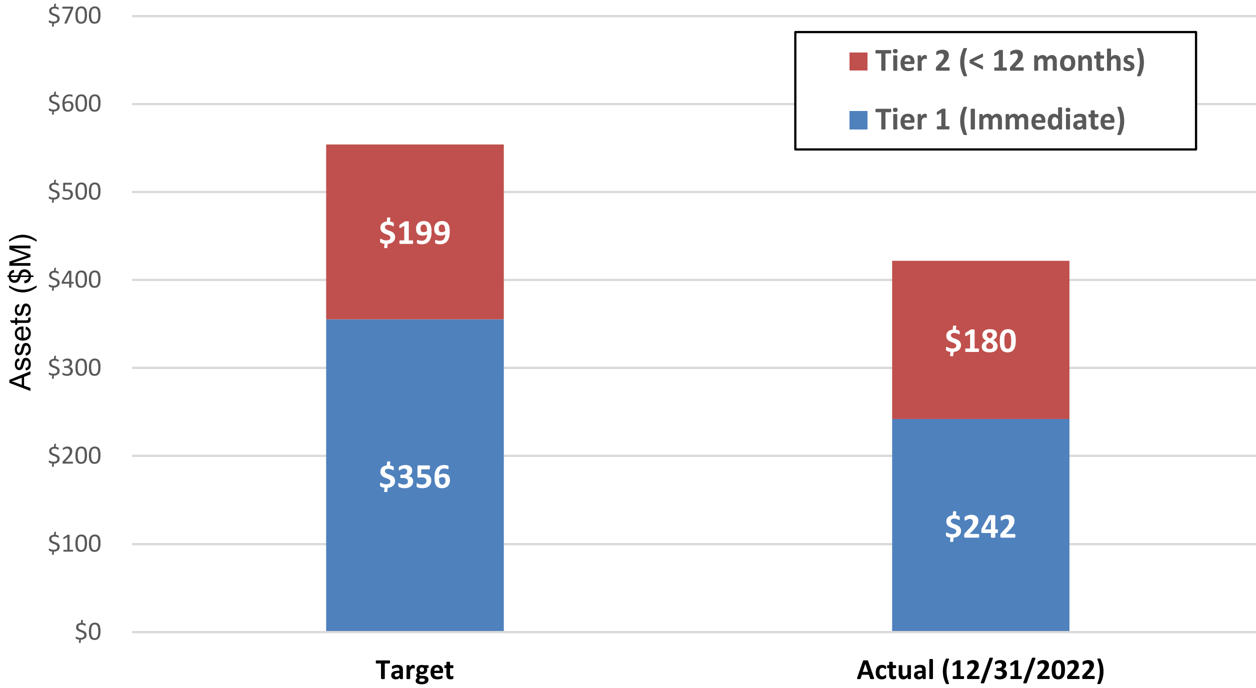
Illiquid Investments



	Current Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
Private Equity	10.0%	12.0%	11.0%	12.0%	11.0%	12.0%	14.0%
Private Real Estate	9.7%	9.7%	10.7%	10.7%	10.7%	10.7%	10.7%
Absolute Return	10.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Illiquid Investments	19.7%	21.7%	21.7%	22.7%	21.7%	22.7%	24.7%
Increase Relative to Target		2.0%	2.0%	3.0%	2.0%	3.0%	5.0%
Core Fixed Income	14%	18%	17%	17%	16%	14%	12%

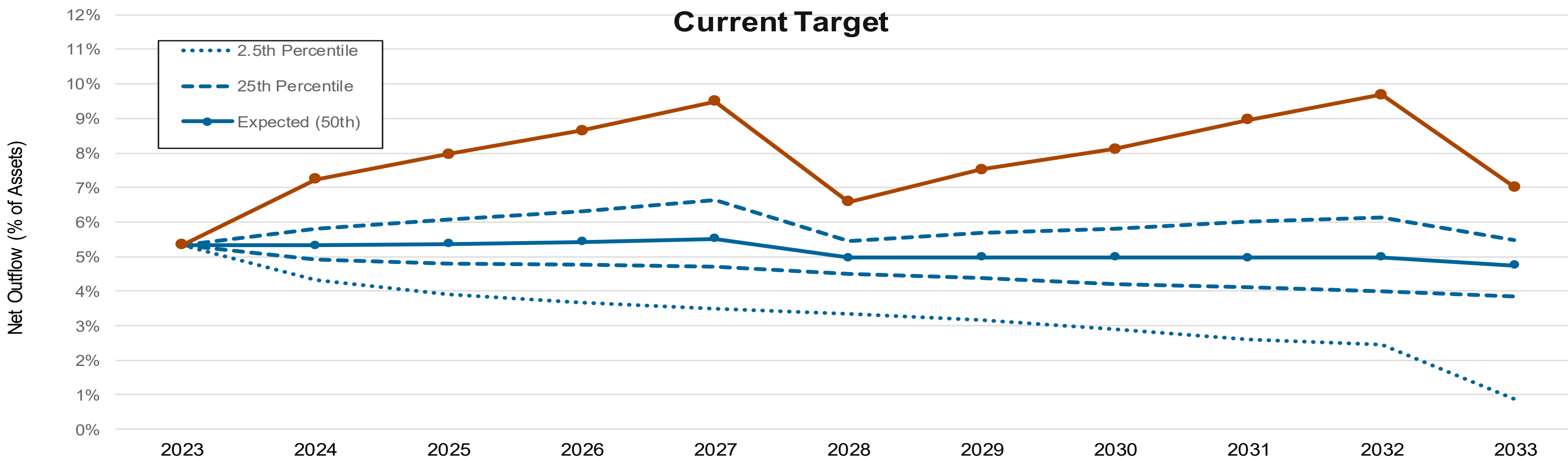
- All the alternative asset mixes consider increasing illiquid investments - private equity and private real estate - by 2-5%
  - Absolute return is also illiquid but the main concern is private equity and private real estate which can take many years to wind down
- Core fixed income assets may be liquidated to meet benefit payments in a distressed environment
  - Core fixed increases in Mixes 1 - 4

Marketable Bonds



- A liquidity buffer of marketable bonds is currently maintained in order to meet benefit payments in a distressed environment
  - Tier 1 (Immediate) includes a 1.0% strategic allocation to cash and a 5.5% target to US government bonds (totaling 6.5% of assets)
  - Tier 2 (< 12 months) is drawing from the more liquid securities within the two active core plus managers – Reams and Loomis

Liquidity Needs for Current Target



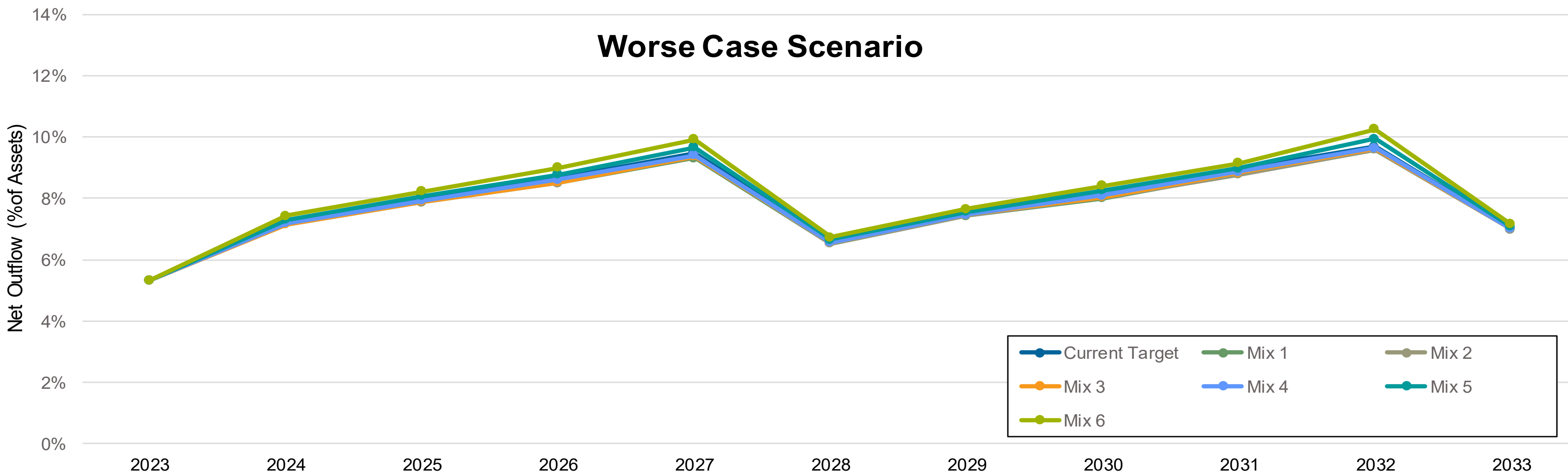
	2023 - 2027 Stabilization Period					2028 - 2032 Stabilization Period					2033-2037 Stabilization Period
	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
Worse Case (97.5th)	5.3%	7.2%	8.0%	8.7%	9.5%	6.6%	7.5%	8.1%	9.0%	9.7%	7.0%
75th Percentile	5.3%	5.8%	6.1%	6.3%	6.6%	5.5%	5.7%	5.8%	6.0%	6.1%	5.5%
Expected (50th)	5.3%	5.3%	5.4%	5.4%	5.5%	5.0%	5.0%	5.0%	5.0%	5.0%	4.8%
25th Percentile	5.3%	4.9%	4.8%	4.8%	4.7%	4.5%	4.4%	4.2%	4.1%	4.0%	3.9%
2.5th Percentile	5.3%	4.3%	3.9%	3.7%	3.5%	3.3%	3.2%	2.9%	2.6%	2.4%	0.9%

- Net Outflow (NOF) = Expected Benefit Payments + Admin Expenses – Employer and Employee Contributions
- Liquidity needs are moderate - high
  - NOF / Assets < 7% is typically manageable and should not impact asset allocation (green).
  - 7% < NOF / Assets < 10% may warrant careful monitoring and could impact asset allocation (yellow)
  - NOF / Assets > 10% has high liquidity needs and may preclude all illiquid investments (red)

< 7%
7 - 10%
> 10%

- Liquidity needs are expected (50th) to be manageable. In a worse case scenario, net outflow approaches 10% just before each of the reset points (2028 and 2033)

Liquidity Needs for Alternative Mixes



	2023 - 2027 Stabilization Period					2028 - 2032 Stabilization Period					2033-2037 Stabilization Period
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Current Target	5.3%	7.2%	8.0%	8.7%	9.5%	6.6%	7.5%	8.1%	9.0%	9.7%	7.0%
Mix 1	5.3%	7.2%	7.9%	8.5%	9.3%	6.5%	7.4%	8.0%	8.8%	9.6%	7.0%
Mix 2	5.3%	7.2%	7.9%	8.5%	9.4%	6.5%	7.5%	8.1%	8.8%	9.6%	7.0%
Mix 3	5.3%	7.2%	7.9%	8.5%	9.4%	6.6%	7.5%	8.1%	8.8%	9.6%	7.0%
Mix 4	5.3%	7.2%	7.9%	8.6%	9.4%	6.6%	7.5%	8.1%	8.9%	9.7%	7.0%
Mix 5	5.3%	7.3%	8.1%	8.8%	9.7%	6.7%	7.6%	8.3%	9.0%	9.9%	7.1%
Mix 6	5.3%	7.4%	8.2%	9.0%	9.9%	6.7%	7.7%	8.4%	9.1%	10.3%	7.2%

- The above chart shows worse case results for net outflow as a percentage of assets for all the asset mixes
- Aggressive mixes (5 and 6) have higher liquidity needs in a worse case scenario

< 7%
7 - 10%
> 10%

Liquidity Stress Test (Worse Case Scenario)

	Current Target	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5	Mix 6
Worse Case Financial Position [1]							
Market Value of Assets	4,517	4,516	4,516	4,517	4,516	4,517	4,521
- Liquid Assets	3,140	3,185	3,185	3,140	3,185	3,140	3,051
- Illiquid Assets	1,377	1,331	1,331	1,377	1,331	1,377	1,470
Actuarial Accrued Liability	7,063	7,063	7,063	7,063	7,063	7,063	7,063
Worse Case Funded Status	64%	64%	64%	64%	64%	64%	64%
Annual Cash Flows							
Benefit Payments & Expenses (B&E)	491	491	491	491	491	491	491
Contributions (e'er & e'ee)[2]	195	195	195	195	195	195	195
Private Equity Capital Calls[3]	100	100	100	100	100	100	100
Portfolio Income	165	175	177	176	172	168	160
Total Net Outflow	232	222	219	221	224	229	237
- as a % of liquid assets	7.4%	7.0%	6.9%	7.0%	7.0%	7.3%	7.8%
Target Marketable Bonds (MB)	458	570	551	551	513	458	402
Marketable Bonds / Net Outflow	2.0	2.6	2.5	2.5	2.3	2.0	1.7

1 - Worse Case scenario is based on the 97.5th percentile for each asset mix. Appraisal smoothing is applied to private equity and private real estate.

2 - Assumes employer contribution increases to $165M in 2024

3 - Capital commitments to private equity expected to average approcimately $100M per year. Distributions are not reflected.

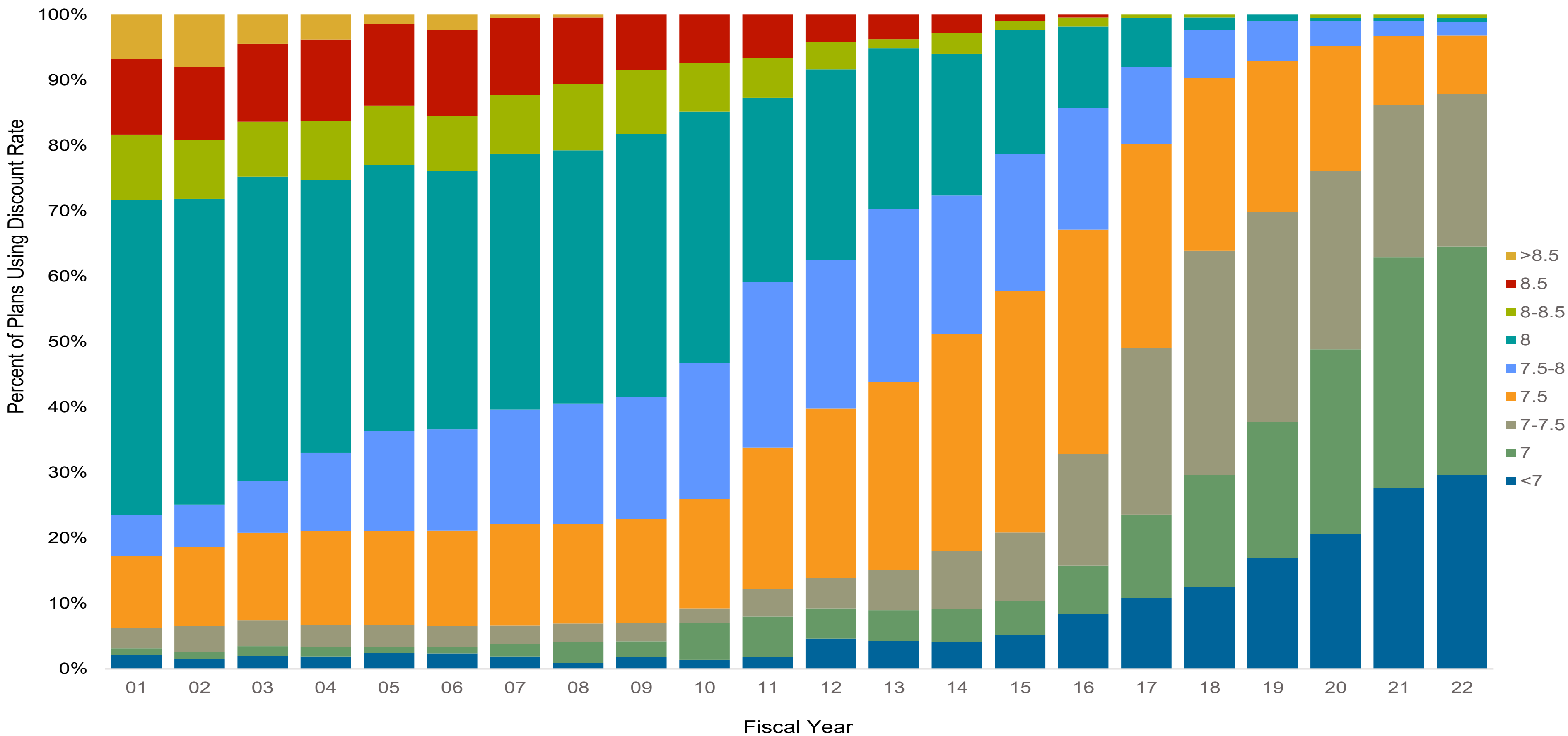
- The current target is expected to cover 2.0 years worth of net outflows after accounting for investment losses in a worse case scenario
- Mixes 1-4 have higher fixed income allocations than the current target and could cover more than 2.3 years of outflows

Summary of Asset-liability Results

Factor	Description
Return Objective	• 7.5% investment return assumption • All asset mixes are expected to achieve 7.5% over the next 30 years
Time Horizon	• Indefinite. Plan is open.
Liquidity Needs	• Liquidity needs are expected (50th) to be manageable • In a worse case scenario, net outflow approaches 10% just before each of the reset points (2028 and 2033) • Very illiquid assets are currently ~19.7% of portfolio – 9.7% in core real estate and 10% in private equity
Contribution Risk	• Rates are “stabilized” over 5 year periods but may experience a large increase/(decrease) at the end of a cycle if actuarial losses/(gains) materially accumulate during the five year stability period
Risk Tolerance	• Risk tolerance is the ability and willingness to take risk • Consider worse case results for funded status, cumulative contributions and ultimate net cost
Liability Growth	• Plan is accruing • Annualized growth is 1.5% per year
Funded Status	• Plan is underfunded • 1/1/2023 Funded status = 76.8%

Appendix

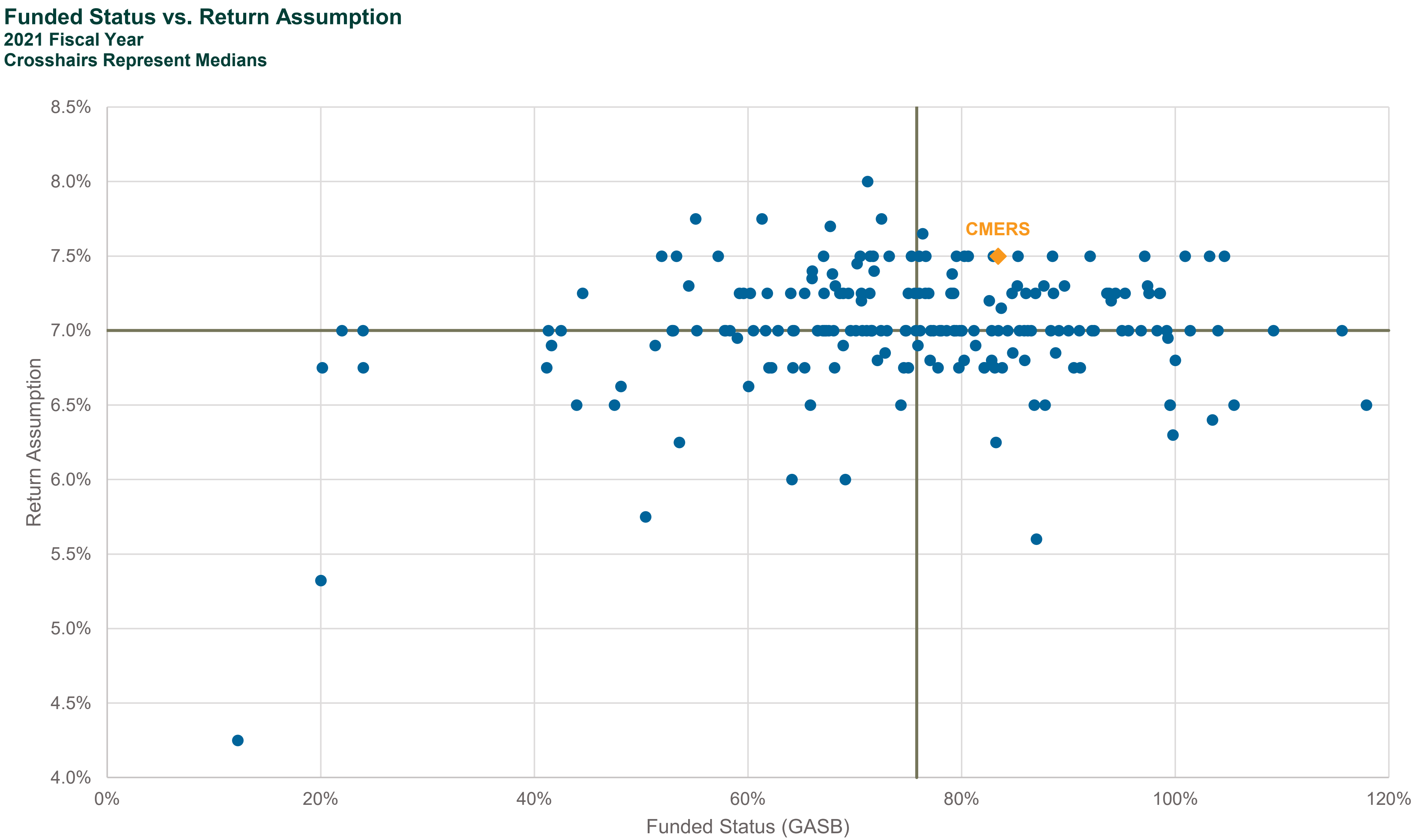
Public Fund Actuarial Discount Rates



- Industry consensus has trended toward lower return expectations, leading to a steady decline in actuarial discount rates over the last 20 years
- The 2022 median actuarial discount rate is 7.0%
  – The median discount rate may increase in 2023 when the survey is updated. Industry forward-looking return expectations have increased across the board in 2023.

Source: Public Plans Database

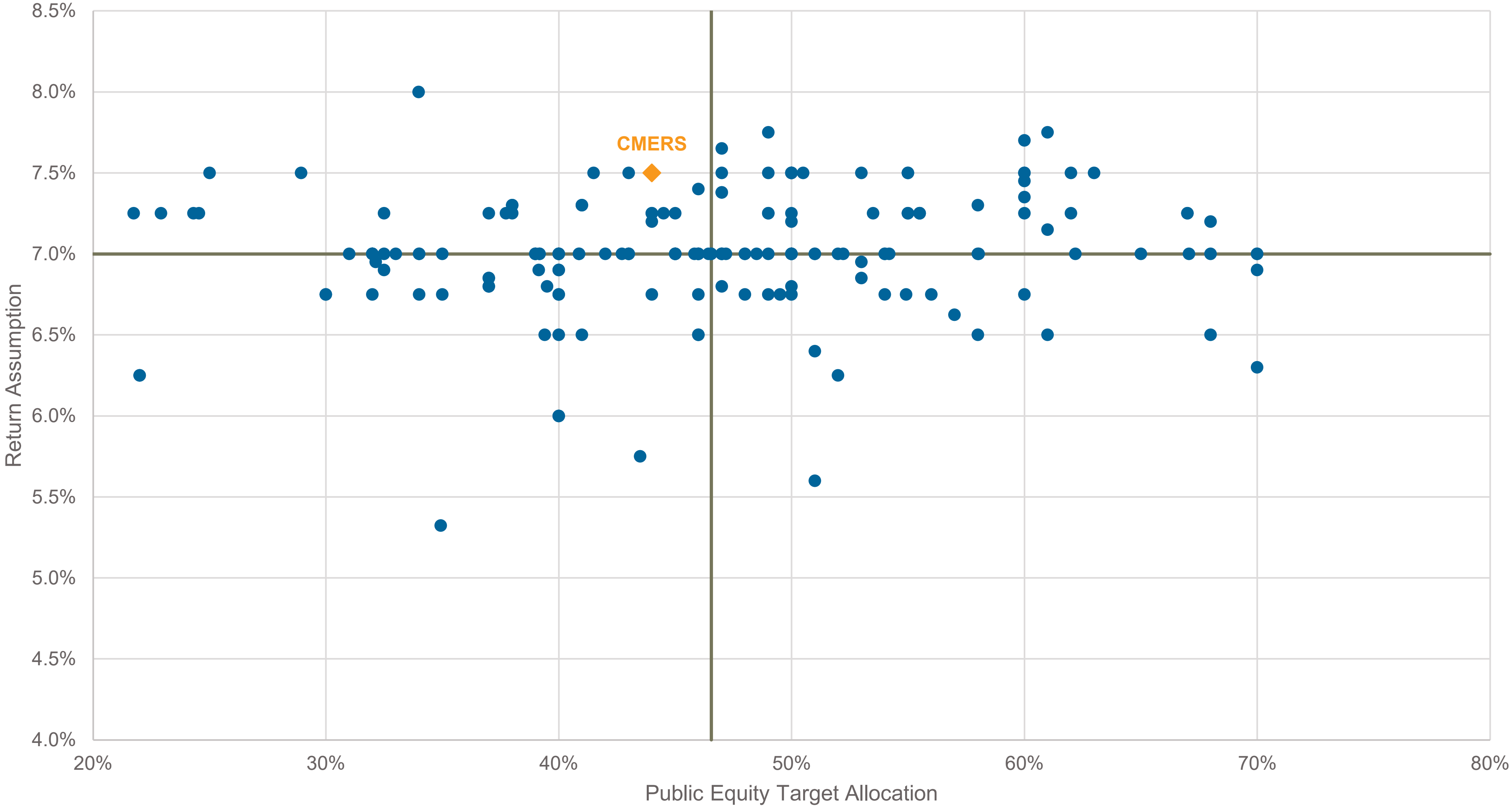
Comparison of Funded Status and Return Assumption



Source: Public Plans Database. 2021 represents the most current data available in the database.

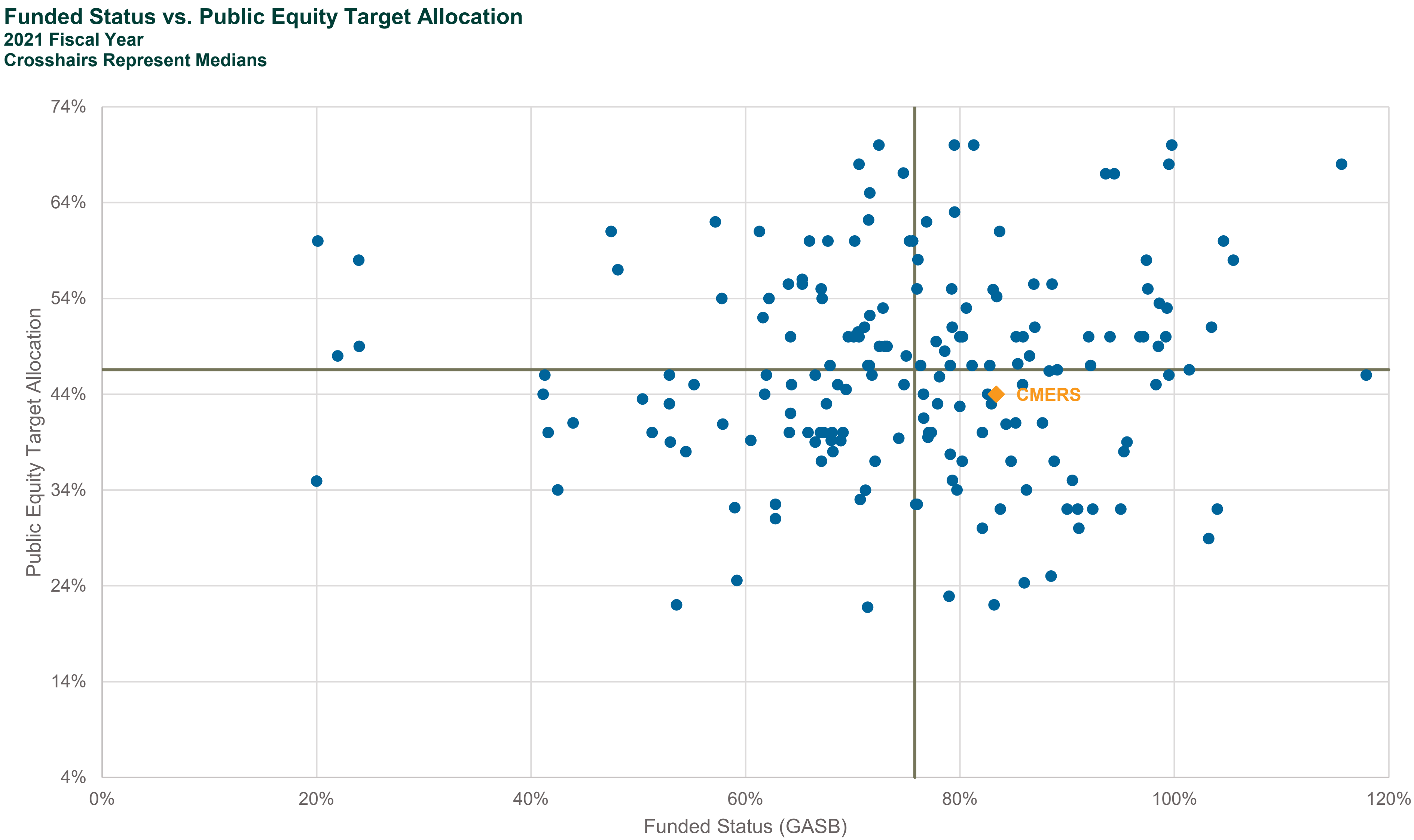
Comparison of Public Equity Target Allocation and Return Assumption

Public Equity Target Allocation vs. Return Assumption
2021 Fiscal Year
Crosshairs Represent Medians



Source: Public Plans Database. 2021 represents the most current data available in the database.

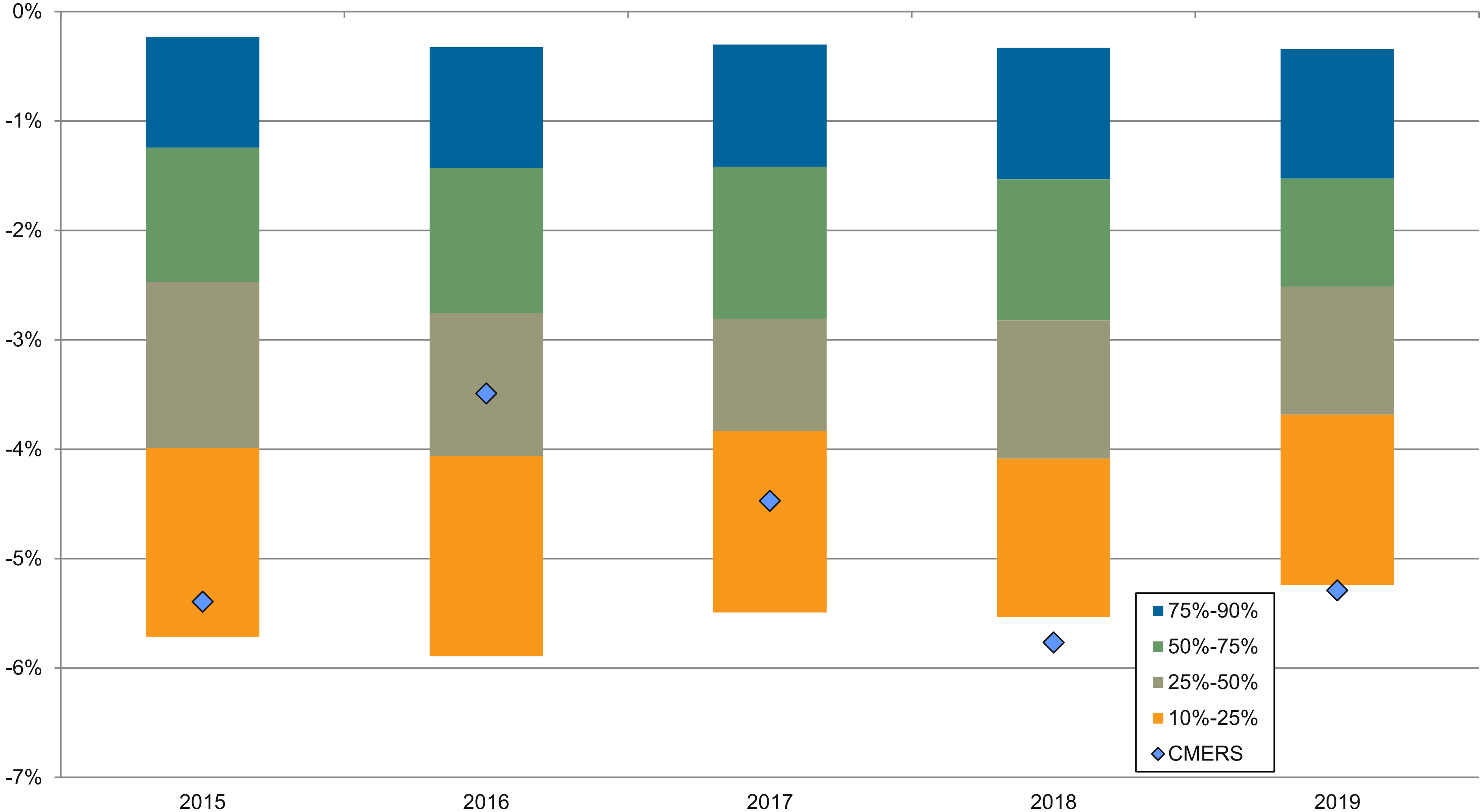
Comparison of Funded Status and Public Equity Target Allocation



Source: Public Plans Database. 2021 represents the most current data available in the database.

Public Fund Net Flows

Range of Net Flows Among Plans by Fiscal Year
Limited Responses for all Plans After 2019



Source: Public Plans Database. Data for all plans was limited after 2019 so we did not include the data after that point.

2023 – 2032 Correlations

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Global Equity	1.00																
2	Large Cap US Equity	0.93	1.00															
3	Small/Mid Cap US Equit	0.93	0.88	1.00														
4	Developed ex-US Equity	0.92	0.73	0.79	1.00													
5	Emerging Market Equity	0.93	0.79	0.83	0.89	1.00												
6	Private Equity	0.84	0.79	0.77	0.76	0.75	1.00											
7	CMERS Fixed Income	0.67	0.64	0.61	0.61	0.60	0.47	1.00										
8	Core US Fixed	0.00	0.02	-0.02	0.00	-0.04	-0.09	0.56	1.00									
9	High Yield	0.80	0.75	0.74	0.73	0.75	0.61	0.88	0.09	1.00								
10	Cash Equivalents	-0.09	-0.06	-0.08	-0.10	-0.10	0.00	0.00	0.15	-0.09	1.00							
11	CMERS RA	0.59	0.58	0.54	0.51	0.52	0.64	0.43	0.16	0.43	-0.01	1.00						
12	Core Real Estate	0.46	0.44	0.42	0.42	0.41	0.55	0.33	0.14	0.31	0.00	0.98	1.00					
13	CMERS Liquid RA	0.88	0.94	0.83	0.69	0.75	0.75	0.68	0.14	0.74	-0.04	0.61	0.46	1.00				
14	TIPS	-0.09	-0.07	-0.08	-0.09	-0.11	-0.11	0.36	0.70	0.02	0.12	0.10	0.09	0.13	1.00			
15	Commodities	0.21	0.20	0.20	0.20	0.20	0.20	0.15	-0.04	0.20	-0.02	0.25	0.18	0.45	0.00	1.00		
16	Hedge Funds	0.70	0.67	0.63	0.63	0.63	0.48	0.64	0.29	0.60	-0.04	0.39	0.28	0.71	0.20	0.23	1.00	
17	Inflation	0.00	-0.02	0.02	0.00	0.03	0.06	-0.11	-0.23	0.00	0.05	0.20	0.20	0.13	0.25	0.35	0.05	1.00

Important Disclosures

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Past performance is no guarantee of future results.

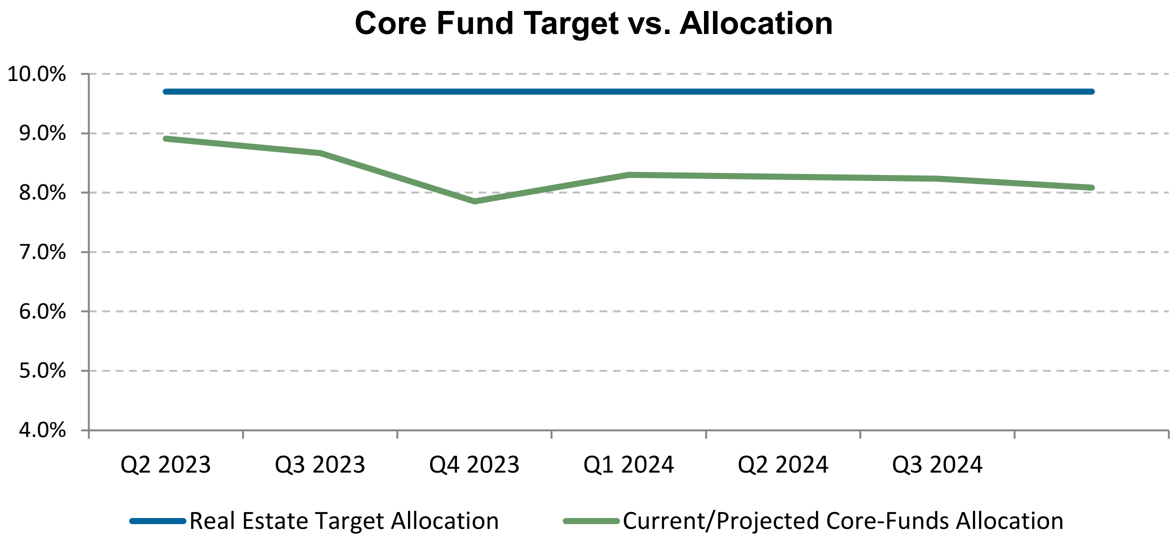
CMERS’ Structure Review and New Manager Allocation

CMERS' Portfolio Guidelines/Constraints	
Manager Concentration	<35%
Single Sector	35% to 40%

- Purpose:
  - Maintain compliance with portfolio guidelines
  - Allocate capital to a new Core Fund

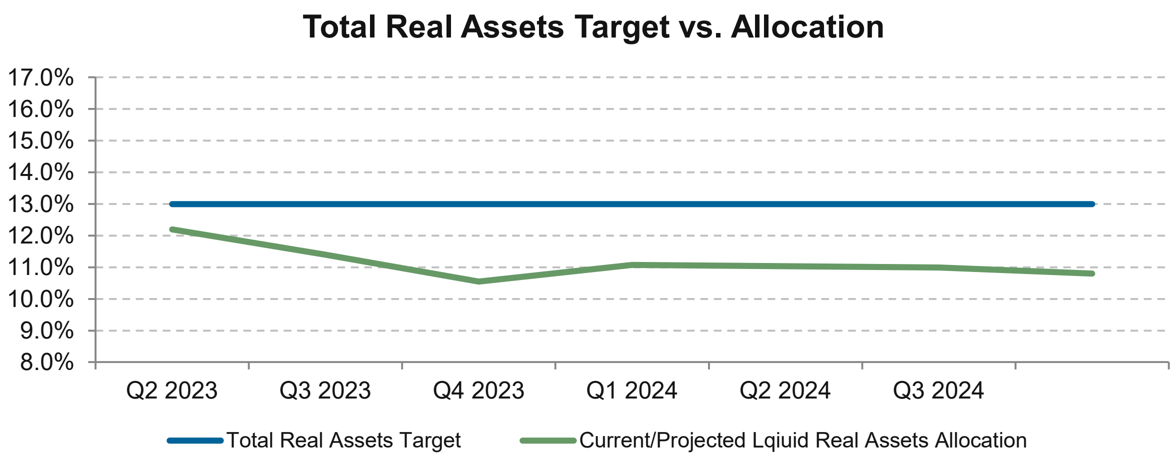
1Q2023 Core Fund Portfolio Allocation vs Target

Assumptions utilized



Callan Growth Rates 10-year Projection	
Total Plan (A/L Return)	5.94%
Core-Real Estate^	PREA (NPI) Forecast
Non-Core - Funds*	Wind Down

PREA (NPI) Forecast	
2023	-5.3%
2024	4.5%
2025	6.4%



- 1Q23 Real Estate allocation is 9.1%
- Total Real Assets is 12.2% (including Liquid Diversified Real Assets 3.0%)

*Non-Core Funds represent <.2% of the portfolio and will be carried at a flat value

^Due to appraisal lag and depreciation occurring in core real estate, Callan Real Assets team utilizes the PREA Forecast when modeling three year or shorter time periods

1Q2023 Core Fund Portfolio Allocation

			Property Type Diversification				
	1Q23	1Q23	1Q23	1Q23	1Q23	1Q23	1Q23
	NAV	% of Portfolio	Office	Multifamily	Retail	Industrial	Other
JPM SPF	**$136,658,727**	**27.5%**	**22.9%**	**26.6%**	**17.3%**	**30.6%**	**2.6%**
MS Prime	**$156,580,219**	**31.1%**	**19.3%**	**25.0%**	**8.3%**	**30.8%**	**16.6%**
LaSalle Property	**$116,731,030**	**23.0%**	**10.0%**	**35.0%**	**11.0%**	**26.0%**	**18.0%**
Prologis Logistics	**$92,055,126**	**18.3%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**0.0%**
ODCE Value Weight			***20.8%***	***29.3%***	***10.1%***	***31.4%***	***8.4%***
Portfolio Total	$502,025,102		***14.6%***	***23.2%***	***9.9%***	***42.3%***	***10.0%***

- 42% Industrial allocation represents concentration risk and outside the preferred target of (35% - 40%)

4Q2023 Core Fund Portfolio Allocation

	1Q23	4Q23	4Q23	Property Type Diversification			
				4Q23	4Q23	4Q23	4Q23
	Actual Weight	Target Weight	Office	Multifamily	Retail	Industrial	Other
JPM SPF	2.5%	*2.5%*	22.9%	**26.6%**	**17.3%**	**30.6%**	**2.6%**
MS Prime	2.8%	*2.7%*	19.3%	**25.0%**	**8.3%**	**30.8%**	**16.6%**
LaSalle Property	2.1%	*2.3%*	10.0%	**35.0%**	**11.0%**	**26.0%**	**18.0%**
Prologis Logistics	1.6%	*1.3%*	0.0%	**0.0%**	**0.0%**	**100.0%**	**0.0%**
New Fund	0.0%	*0.9%*	0.0%	**0.0%**	**0.0%**	**0.0%**	**100.0%**
ODCE Value Weight			***20.8%***	***29.3%***	***10.1%***	***31.4%***	***8.4%***
Total	8.9%	*9.7%*	***13.7%***	***22.1%***	***9.4%***	***35.9%***	***18.8%***

- Make commitment to new Core Fund
- Projected sector exposure will be within approved guidelines
- Total real estate target may change subject to results of A/L Study

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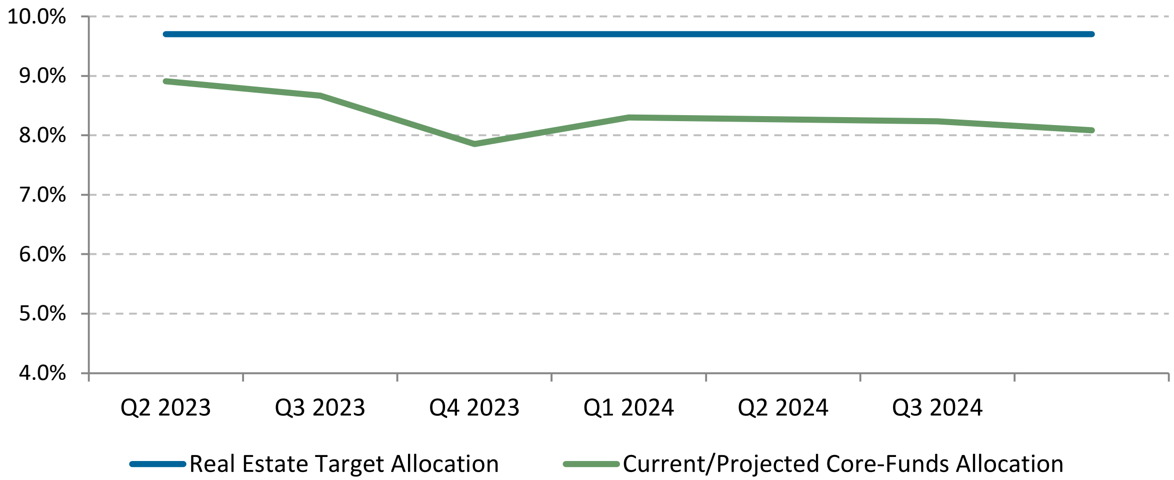
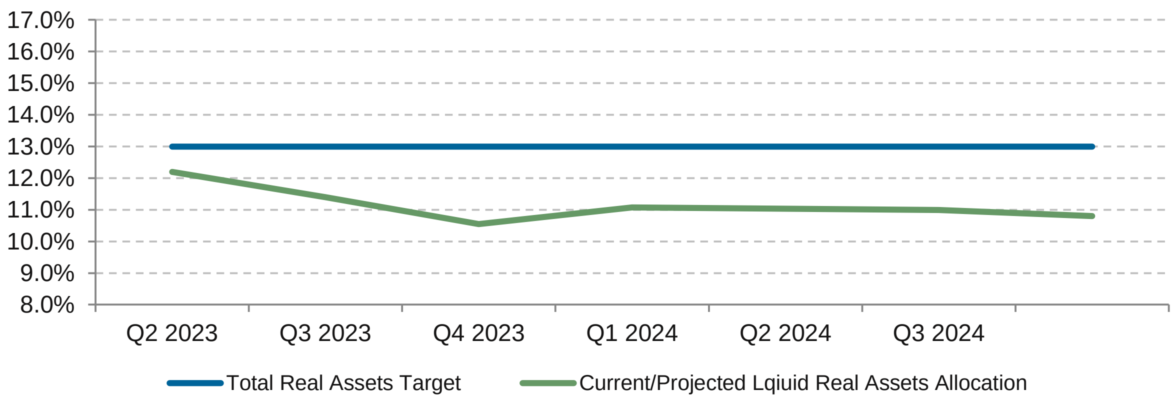
1Q2023 Core Fund Portfolio Allocation vs Target

Assumptions utilized





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1Q2023 Core Fund Portfolio Allocation

	1Q23	1Q23	1Q23	Property Type Diversification 1Q23	1Q23	1Q23	1Q23
	NAV	% of Portfolio	Office	Multifamily	Retail	Industrial	Other
JPM SPF	**$136,658,727**	**27.5%**	**22.9%**	**26.6%**	**17.3%**	**30.6%**	**2.6%**
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Portfolio Total	$502,025,102		***14.6%***	***23.2%***	***9.9%***	***42.3%***	***10.0%***

- 42% Industrial allocation represents concentration risk and outside the preferred target of (35% - 40%)

4Q2023 Core Fund Portfolio Allocation

	1Q23	4Q23	4Q23	Property Type Diversification			
				4Q23	4Q23	4Q23	4Q23
	Actual Weight	Target Weight	Office	Multifamily	Retail	Industrial	Other
JPM SPF	2.5%	*2.5%*	22.9%	**26.6%**	**17.3%**	**30.6%**	**2.6%**
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LaSalle Property	2.1%	*2.3%*	10.0%	**35.0%**	**11.0%**	**26.0%**	**18.0%**
Prologis Logistics	1.6%	*1.3%*	0.0%	**0.0%**	**0.0%**	**100.0%**	**0.0%**
New Fund	0.0%	*0.9%*	0.0%	**0.0%**	**0.0%**	**0.0%**	**100.0%**
ODCE Value Weight			***20.8%***	***29.3%***	***10.1%***	***31.4%***	***8.4%***
Total	8.9%	*9.7%*	***13.7%***	***22.1%***	***9.4%***	***35.9%***	***18.8%***

- Make commitment to new Core Fund
- Projected sector exposure will be within approved guidelines
- Total real estate target may change subject to results of A/L Study

IV.

ADMINISTRATION & OPERATIONS COMMITTEE REPORT

Please be advised that the Administration & Operations Committee may vote to convene in closed session on the following item (IV.A.), as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Administration & Operations Committee may then vote to reconvene in open session following the closed session.

A. Approval of Wells Fargo Contract.

Please be advised that the Administration & Operations Committee may vote to convene in closed session on the following item (IV.B), as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Administration & Operations Committee may then vote to reconvene in open session following the closed session.

B. Discussion and Approval of Actuary Contract.

V.

NEW BUSINESS

A. Presentation by Pat Beckham and Larry Langer of Cavanaugh Macdonald and Acceptance of 2023 Actuarial Valuation Report.
B. Retirements, Death Claims, and Refunds (May).
C. Conference Requests – June 2023 Board Meeting.

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Results of the January 1, 2023 Actuarial Valuation for the City of Milwaukee Employes' Retirement System

Larry Langer, Patrice Beckham and Aaron Chochon
June 27, 2023

Purpose of an Actuarial Valuation

Performed Annually as of January 1

- Update previous valuation with calendar 2022 events
- Comment on calendar 2022 events which impacted the January 1, 2023 valuation
- Includes Funding and GASB Results

Funding Results

- Employer Contribution for period ended January 31, 2024
- Funded Ratios as of January 1, 2023
- UAAL (Unfunded Actuarial Accrued Liability) as of January 1, 2023
- Unless otherwise noted, this presentation focuses on Funding Results

GASB 67/68

- Accounting results as prescribed by the Governmental Accounting Standards Board for Pensions (67/68)
- Pension Expense and Net Pension Liability are analogous to Contribution and UAAL

Purpose of the Actuarial Valuation

- Section 36-15-15 of the Milwaukee City Charter requires the Actuary and Pension Board to "….prepare an annual valuation of the assets and liabilities of the funds of the retirement system". The primary purposes of performing a valuation are to:
  - estimate the liabilities for future benefits expected to be paid by the System;
  - determine the employer contribution rate required to fund the System on an actuarial basis and compare that rate to the Stable Contribution Policy;
  - disclose certain asset and liability measures, including the funded ratio;
  - assess and disclose the key risks associated with funding the System;
  - monitor any deviation between actual plan experience and experience projected by the actuarial assumptions, and
  - analyze and report on any significant trends in contributions, assets and liabilities over the past several years.

Actuarial Valuation Process
Reserve Funding

Builds funds during working careers.

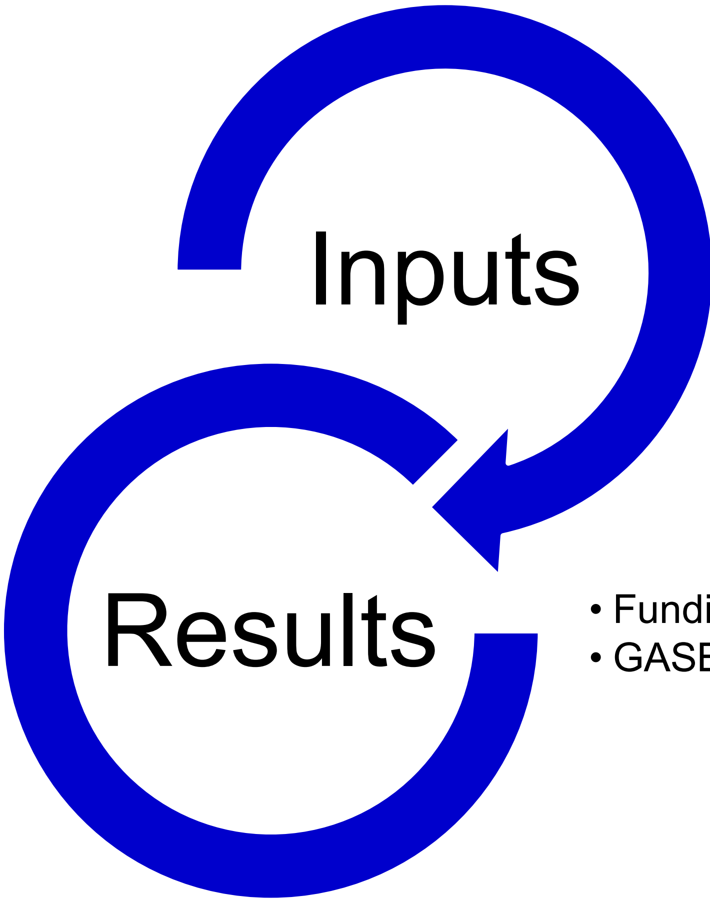
Investment returns help pay for benefits.

Actuarial valuation is mathematical model of financial future of system.

Actuarial cost method’s goal is level contributions as percent of payroll.

Contribution equity among generations of active members and taxpayers.

Actuarial Valuation Process



- Member Data
- Asset Information
- Benefit Provisions
- Assumptions
- Actuarial Methods

- Funding Results
- GASB 67/68

The valuation process can be viewed as a budgeting process. Like a budget, we make use of information we know as of a certain date and using assumptions we estimate what we think will happen in the future.

To the right are the inputs and results of the valuation process.

Member Data, Asset Information and Benefit Provisions are provided by Staff. Thank you!!

Assumptions and Actuarial Methods will vary depending on the purpose of the calculation. Unless prescribed elsewhere, these are determined by the Board of Trustees, with input from the actuary and other professionals.

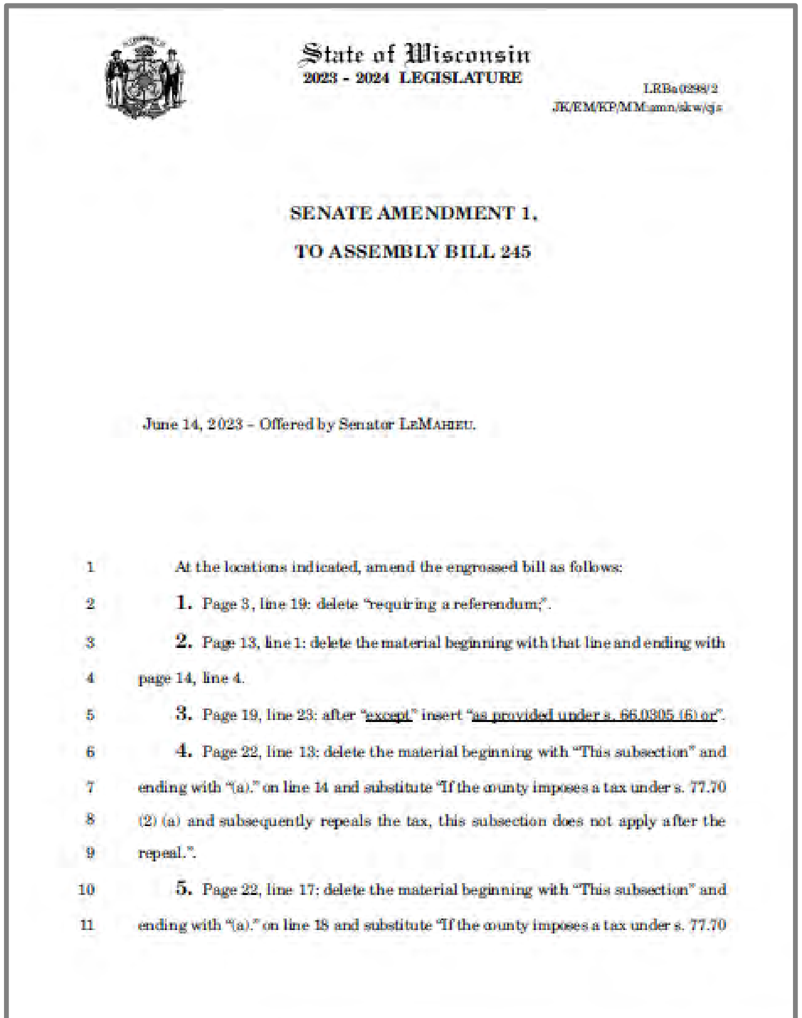
Stable Contribution Policy

- Adopted by the Common Council on April 30, 2013. Contribution rate set for each group: Policemen, Firemen, and General Employees of the Combined Fund, and is applicable for the subsequent five-year period following the Experience Study performed by the actuary.

- The current actuarial contribution rates under the Stable Employer Contribution Policy in effect for calendar years 2023 though 2027 are:
  - General Employees: 18.47%
  - Policemen: 46.49%
  - Firemen: 45.84%.

- January 1, 2022 results are used to monitor the impact of the Stable Employer Contribution Policy on the System's funding and anticipate possible adjustments when the rate is reset for calendar years 2023 through 2027.

The Impact of Proposed Legislation is Not Reflected in These Results



State of Wisconsin
2023 - 2024 LEGISLATURE

LRBa0298/2
JK/EM/KP/MM:amn/skw/cjs

SENATE AMENDMENT 1,
TO ASSEMBLY BILL 245

June 14, 2023 – Offered by Senator LeMahieu.

At the locations indicated, amend the engrossed bill as follows:

1. Page 3, line 19: delete "requiring a referendum;".

2. Page 13, line 1: delete the material beginning with that line and ending with page 14, line 4.

3. Page 19, line 23: after "except" insert "as provided under s. 66.0305 (6) or".

4. Page 22, line 13: delete the material beginning with "This subsection" and ending with "(a)." on line 14 and substitute "If the county imposes a tax under s. 77.70 (2) (a) and subsequently repeals the tax, this subsection does not apply after the repeal.".

5. Page 22, line 17: delete the material beginning with "This subsection" and ending with "(a)." on line 18 and substitute "If the county imposes a tax under s. 77.70

- Provisions affecting CMERS includes:
  - CMERS is closed effective January 1, 2024 to new hires
  - UAAL as of January 1, 2024 is amortized over 30 years
  - Investment return is prescribed to be no higher than that used by WRS
- CMC will work with CMERS Staff to determine the impact if legislation is enacted

Events During Calendar 2022 Which Impacted the January 1, 2023 Actuarial Valuation Results

Plan Experience

- Market return for Calendar 2022 of -6.49%, as reported by Northern Trust, was less than the 7.50% assumption; Return on an actuarial basis was 7.6% due to scheduled recognition of previous deferred asset gains
- Contributions under the Stable Contribution policy were $76.6 million lower than the ADEC (Actuarially Determined Employer Contribution) primarily due to the reduction in the investment return to 7.50% for the January 1, 2019 actuarial valuation

Assumption Changes

- At the February 27, 2023 Board meeting, the following was adopted:
  - Change Retiree Mortality, Other Mortality, Retirement, Termination, Disability, Duty-related disability and Salary increases
  - Maintain 7.50% investment return assumption

Funding Policy Changes

- At the February 27, 2023 Board meeting, the following was adopted:
  - Adoption of many amortization period policies, including increasing Gain/Loss Amortization period from 15 to 20 years
  - Continuation of the Stable Employer Contribution Policy with the understanding that rates can be updated before the 2028 reset for changes in assumptions or plan provisions.
  - Stable rates presented at the March 28, 2023 Board meeting based on preliminary assets. Final assets were $400,000 higher and would not have impacted rates; final admin expenses would have slightly increased rate.

Impact of Events during Calendar 2022 on the January 1, 2023 Actuarial Valuation Results

Funded Ratio	• The Funded Ratio decreased from 83.4% to 82.7% • The Market Value Funded Ratio decreased from 93.5% to 78.2% primarily due to asset returns
UAAL	• Combined Fund UAAL increased from \$1.19 billion to \$1.31 billion; \$1.18 billion was expected • Actual contributions being less than actuarial was the primary reason for the increase, along with assumption changes and demographic experience; investment return on a smoothed basis decreased the UAAL
Employer Contribution	• The Stable Employer Contributions Rates increased to 18.47%, 46.49% and 45.84% from 7.48%, 25.22% and 26.83% respectively for General, Policemen and Firemen as a result of the reset • The actuarially determined rate increased from 26.68% to 28.09%, primarily due to actual contributions being less than actuarial
Future Results	• The UAAL is likely to increase while the funded ratio decreases as recent market returns are recognized • The Stable Employer Contribution Rates reflect this decrease due to 2022 returns as well as projected returns expected to be less than 7.50% over the near term

Projected Contribution Under Stable Employer Contribution Policy

	2023	2024	2025	2026	2027
1) City of Milwaukee					
a) General	$35,067	$35,768	$36,483	$37,213	$37,957
b) Police	68,121	69,483	70,873	72,290	73,736
c) Fire	28,592	29,164	29,747	30,342	30,949
d) Total City	$131,780	$134,415	$137,103	$139,845	$142,642
2) Non-City Employers					
a) Water Dept	$3,594	$3,666	$3,739	$3,814	$3,890
b) School Board	26,204	26,728	27,263	27,808	28,364
c) Milwaukee Technical College	0	0	0	0	0
d) Sewerage Commission	4,249	4,334	4,421	4,509	4,599
e) Veolia	134	137	140	143	146
f) Wisconsin Center District	1,259	1,284	1,310	1,336	1,363
g) Housing Authority	1,282	1,308	1,334	1,361	1,388
h) Total Non-City	$36,722	$37,456	$38,205	$38,969	$39,748
3) Total System (1d) + (2h)	$168,502	$171,871	$175,308	$178,814	$182,390

A breakdown of the projected dollar contributions is above. Amounts shown are as of January 1 of each year. Interest at 7.50% per year is added for contributions made after January 1.

Change in Funded Ratio during Calendar 2022

	Funded Ratio Based On	
	Actuarial Value of Assets	Market Value of Assets
January 1, 2022 Funded Ratio	83.4%	93.5%
- Expected Change	0.5%	1.1%
- Actual Contributions Versus Actuarial Contributions	(0.5%)	(0.5%)
- Investment Experience	0.0%	(15.3%)
- Demographic Experience	(0.4%)	(0.3%)
- Assumption Changes	(0.3%)	(0.3%)
- Other Experience	0.0%	0.0%
- Total change	(0.7%)	(15.3%)
January 1, 2023 Funded Ratio	82.7%	78.2%

- On an Actuarial Basis, the Funded Ratio decrease 0.7% primarily due to demographic experience and assumptions changes resulting from the experience review recommendations adopted at the February 27, 2023 Board meeting. Stable rates below ADEC resulted in the Funded Ratio not increasing.

- On a Market Value basis, the funded ratio decreased 15.3% due to investment returns.

Change in Funded Ratio From January 1, 2018 to January 1, 2023

	Funded Ratio Based On	
	Actuarial Value of Assets	Market Value of Assets
January 1, 2018 Funded Ratio	89.9%	92.7%
- Expected Change	0.9%	1.8%
- Actual Contributions Versus Actuarial Contributions	(2.9%)	(3.0%)
- Investment Experience	2.1%	(6.0%)
- Demographic Experience	(2.1%)	(2.0%)
- Assumption Changes	(6.9%)	(7.1%)
- Change in Actuary	1.7%	1.8%
- Other Experience	0.0%	0.0%
- Total change	(7.2%)	(14.5%)
January 1, 2023 Funded Ratio	82.7%	78.2%

- On an Actuarial Basis, the Funded Ratio decreased 7.2% primarily due to assumption changes – specifically the reduction in the investment return assumption to 7.50% implemented with the January 1, 2019 valuation. Investment and Demographic experience offset each other. Actuarial contributions were expected to increase the funded ratio by 0.9%, but actual contributions made reduced the funded ratio by 2.9%, for a net decrease of 2.0%.

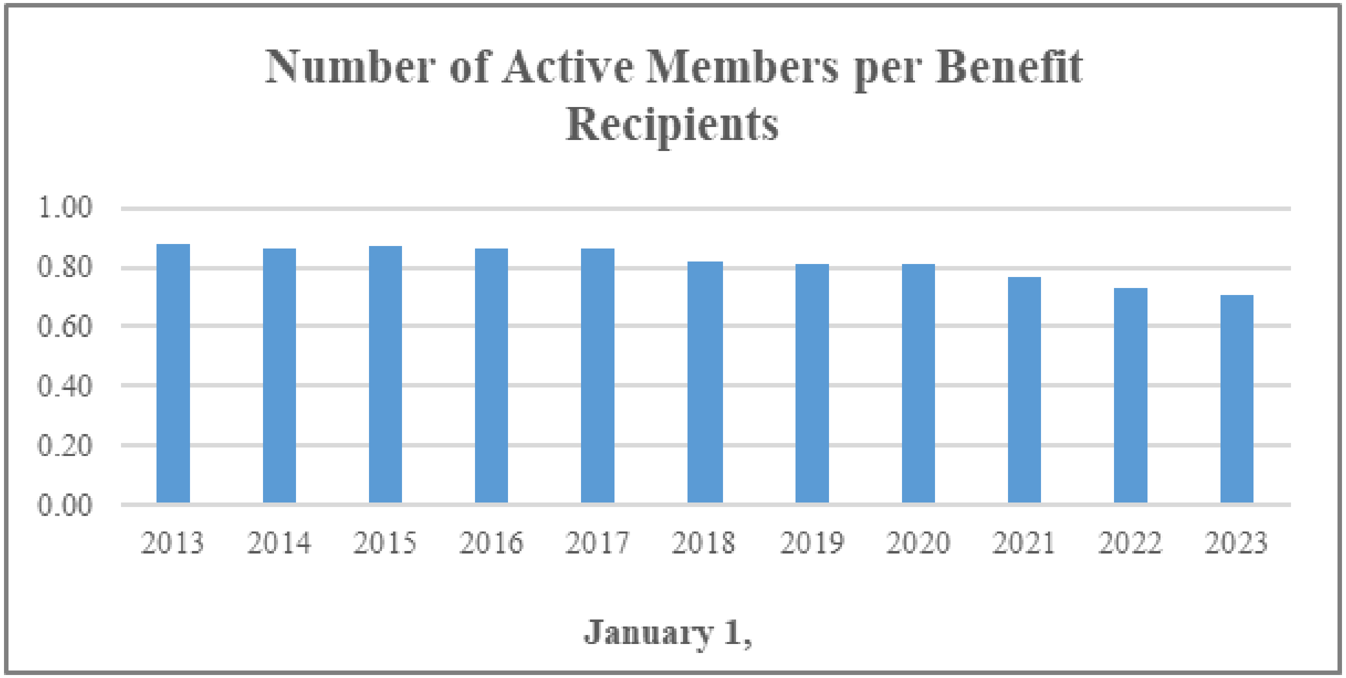
- On a Market Value basis, the funded ratio decreased 14.5% due to assumptions changes – specifically the reduction in the investment return assumption to 7.50% implemented with the January 1, 2019 valuation. Investment experience decreased the funded ratio by an 6.0%. Actuarial contributions were expected to increase the funded ratio by 1.8%, but actual contributions made reduced the funded ratio by 3.0%, for a net decrease of 1.2%.

Comparative Summary of Census Data

	January 1, 2023	January 1, 2022	% Change
Membership Data			
a. Active Members			
(i) Count			
- General Employees	7,509	7,768	(3.3%)
- Policemen	1,592	1,631	(2.4%)
- Firemen	699	695	0.6%
- Total	9,800	10,094	(2.9%)
(ii) Total Estimated Payroll			
- General Employees	$390,258,000	$369,306,000	5.7%
- Policemen	146,653,000	148,844,000	(1.5%)
- Firemen	62,373,000	61,201,000	1.9%
- Total	$599,284,000	$579,351,000	3.4%
b. Retirees, Beneficiaries and Disabled Members			
(i) Number	13,853	13,758	0.7%
(ii) Total Annual Benefits	$451,053,000	$434,381,000	3.8%
(iii) Average Annual Benefit	$32,560	$31,573	3.1%

Additional summaries of census information submitted for the valuation can be found in the report.

Historical Census Data



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Active	10,714	10,675	10,964	10,982	11,083	10,845	10,851	10,974	10,567	10,094	9,800
In-Pay	12,109	12,468	12,580	12,746	12,872	13,181	13,355	13,543	13,636	13,747	13,842
Act/In-Pay	0.88	0.86	0.87	0.86	0.86	0.82	0.81	0.81	0.77	0.73	0.71

Since 2017, CMERS has experienced a 12% reduction in active headcount. This creates pressure on the contribution rate due to lower covered payroll.

Comparative Summary of Assets and Liabilities

	January 1, 2023	January 1, 2022	% Change
Assets and Liabilities			
a. Asset Values (includes contributions receivable)			
(i) Actuarial Value of Assets (AVA)	$5,847,404,000	$5,734,986,000	2.0%
(ii) Market Value of Assets (MVA)	$5,525,958,000	$6,431,356,000	(14.1%)
b. Actuarial Accrued Liability (AAL)	$7,067,109,000	$6,875,927,000	2.8%
c. Funded Status			
(i) Unfunded AAL (Based on AVA)	$1,219,705,000	$1,140,941,000	6.9%
(ii) Funded Ratio (Based on AVA)	82.74%	83.41%	(0.8%)
(iii) Unfunded AAL (Based on MVA)	$1,541,151,000	$444,571,000	246.7%
(iv) Funded Ratio (Based on MVA)	78.19%	93.53%	(16.4%)

- Like other public funds with January 1 valuation dates, the market value of assets decreased.
- Liabilities grew more than expected due to adopted assumption changes and plan experience
- The above resulted in higher-than-expected UAAL and lower-than-expected Funded Ratios.

Market Value of Assets

1. Market Value of Assets as of January 1, 2022	$	6,431,356
2. Transfer of Assets as of January 1, 2022	$	0
3. Contributions During Year		
a. Member	$	32,204
b. Employer		121,571
c. Total	$	153,775
4. Disbursements During Year		
a. Monthly Annuities	$	452,407
b. Refunds		5,211
c. Administrative Expenses		7,181
d. Total	$	464,799
5. Investment Return (net of Investment Expenses)	$	(594,374)
6. Market Value of Assets as of December 31, 2022 (1) + (2) + (3c) - (4d) + (5)	$	5,525,958
7. Rate of Return, as Reported by Northern Trust (ERS' Custodian)		(6.49%)

Investment experience during 2022 was unfavorable.

Note the amount of contributions relative to disbursements. It is common in a mature plan for contributions to be less than disbursements, with investment returns making up the difference.

Over 99% of the assets are in the Combined Fund.

Actuarial Value of Assets

1. Actuarial Value of Assets as of January 1, 2022	$	5,734,986
2. Transfer of Assets as of January 1, 2022	$	0
3. Contributions During Year		
a. Member	$	32,204
b. Employer		121,571
c. Total	$	153,775
4. Disbursements During Year		
a. Monthly Annuities	$	452,407
b. Refunds		5,211
c. Administrative Expenses		7,181
d. Total	$	464,799
5. Investment Return (net of Investment Expenses)	$	423,442
7. Actuarial Value of Assets as of December 31, 2022 (1) + (2) + (3c) - (4d) + (5)	$	5,847,404
8. Estimated Rate of Return		7.60%

Return during 2022 was above the 7.50% assumed rate of return. As a result, the funded ratio using the actuarial value of assets increased.

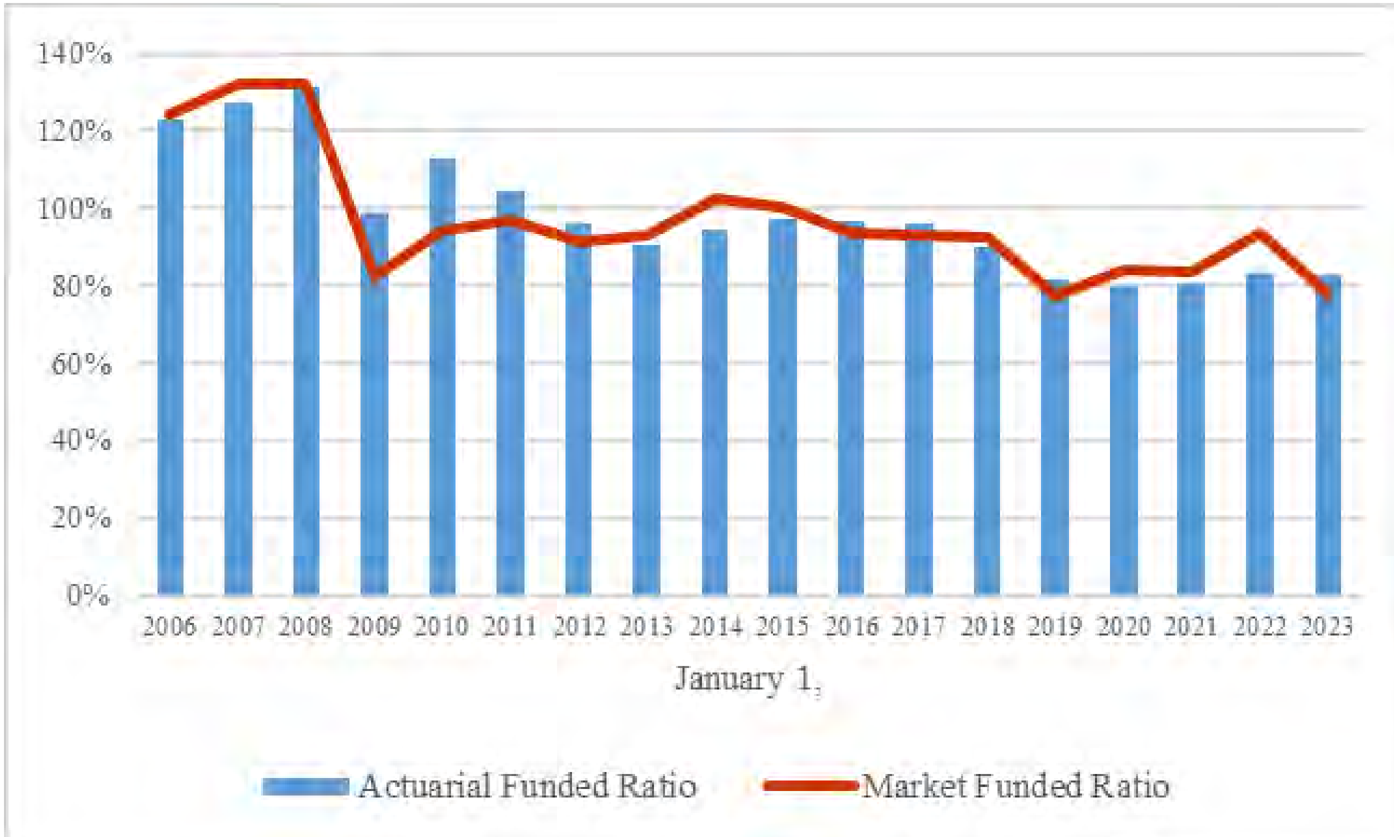
Note the amount of contributions relative to disbursements. It is common in a mature plan for contributions to be less than disbursements, with investment returns and accumulated assets making up the difference.

Over 99% of the assets are in the Combined Fund.

Historical Asset Returns

Returns on an actuarial basis are smoother than on a market basis, which results in contribution stability when the stable contribution policy is set. Note that before 2010, a 10% corridor was used, resulting in more volatility. Use of an asset smoothing method is almost universal for public plans

Historical Funded Ratio



The funded ratio in the 2023 valuation decreased on a market value basis, largely due to unfavorable investment experience during the prior year.

Comparative Summary of Contributions

	January 1, 2023	January 1, 2022	% Change
Employer Contribution Rates (Combined Fund)			
a. General Employees			
(i) Stable Contribution Policy Rate	18.47%	7.48%	146.9%
(ii) Actuarial Determined Rate	19.08%	15.86%	20.3%
(iii) Market-Based Actuarial Determined Rate	22.07%	8.28%	166.5%
b. Policemen			
(i) Stable Contribution Policy Rate	46.49%	25.22%	84.3%
(ii) Actuarial Determined Rate	44.70%	44.70%	0.0%
(iii) Market-Based Actuarial Determined Rate	51.20%	27.07%	89.1%
c. Firemen			
(i) Stable Contribution Policy Rate	45.84%	26.83%	70.9%
(ii) Actuarial Determined Rate	45.19%	47.91%	(5.7%)
(iii) Market-Based Actuarial Determined Rate	51.76%	29.82%	73.6%
Total Employer Contribution (All Funds)	Due 01/31/2024	Due 01/31/2023	
(i) Annual Cost	$182,453,000	$88,121,000	107.0%
(ii) As a % of Covered Payroll	30.45%	15.21%	100.2%

Stable Contribution Policy Rates increased due to the reset presented March 28, 2023. The Market-Based Actuarial Determined Rate increased due to market returns less than expected.

Contribution Requirements for FY 2023 by Group and Fund as of January 31, 2024

Fund	General Employees	Policemen	Firemen	Total
Combined Fund	$ 77,638,339	$ 73,672,934	$ 30,922,129	$ 182,233,402
Retirement Fund	0	0	0	0
Duty Disability Fund	0	0	0	0
Heart & Lung Fund	N/A	N/A	0	0
Combined Retirement & Disability Fund	180,000	40,000	0	220,000
Total Contribution	$ 77,818,339	$ 73,712,934	$ 30,922,129	$ 182,453,402
Covered Compensation	$ 390,258,000	$ 146,653,000	$ 62,373,000	$ 599,284,000
Total Contribution as a Percentage of Covered Compensation	19.94%	50.26%	49.58%	30.45%

Almost all the contributions to ERS are for the Combined Fund.

Contributions for the Combined Fund are based on the Stable Employer Contribution Policy

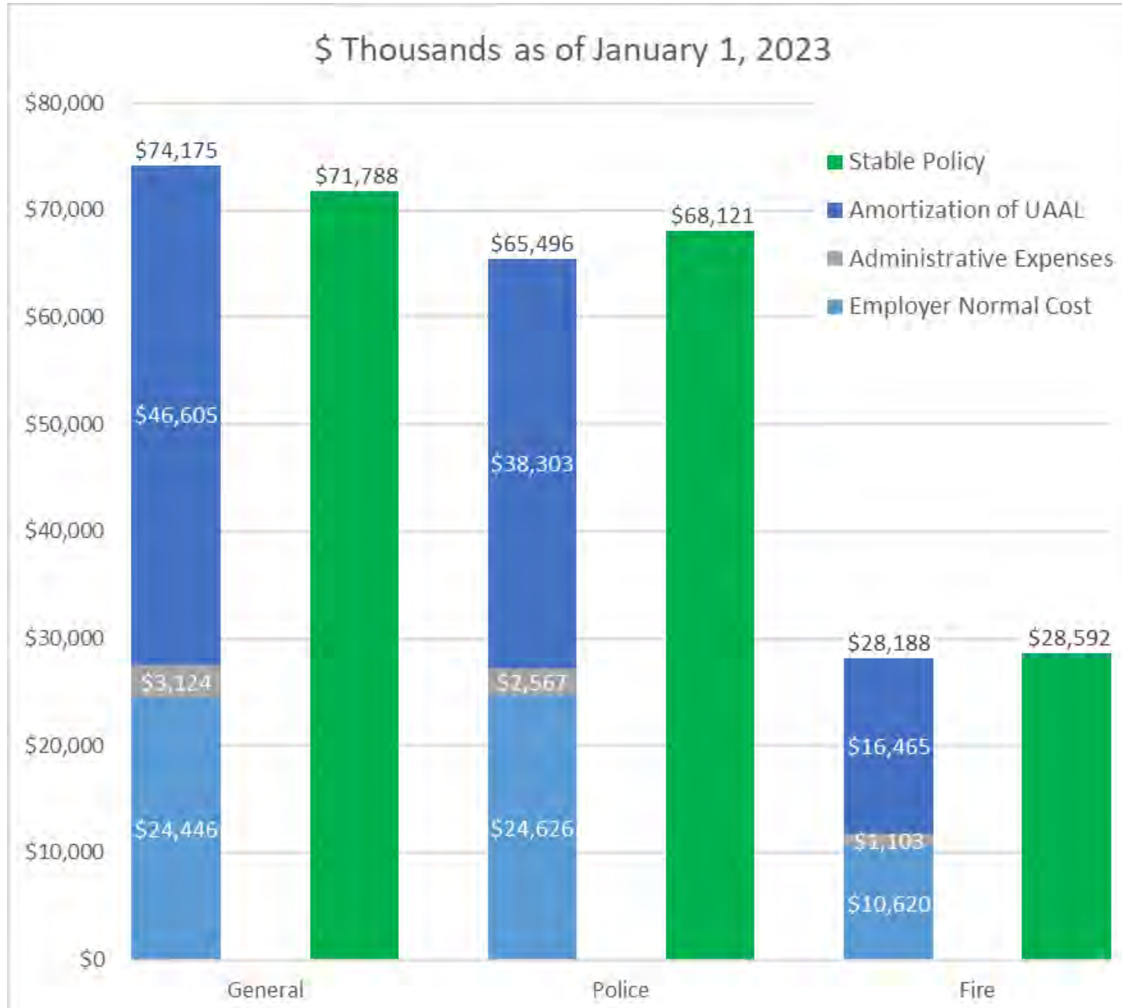
Note that for the other Funds, as deferred investment losses are reflected in future valuations, the actuarial determined employer contributions will increase absent favorable experience.

Comparison of Stable Employer Contribution to Actuarially Determined Employer Contribution (ADEC)

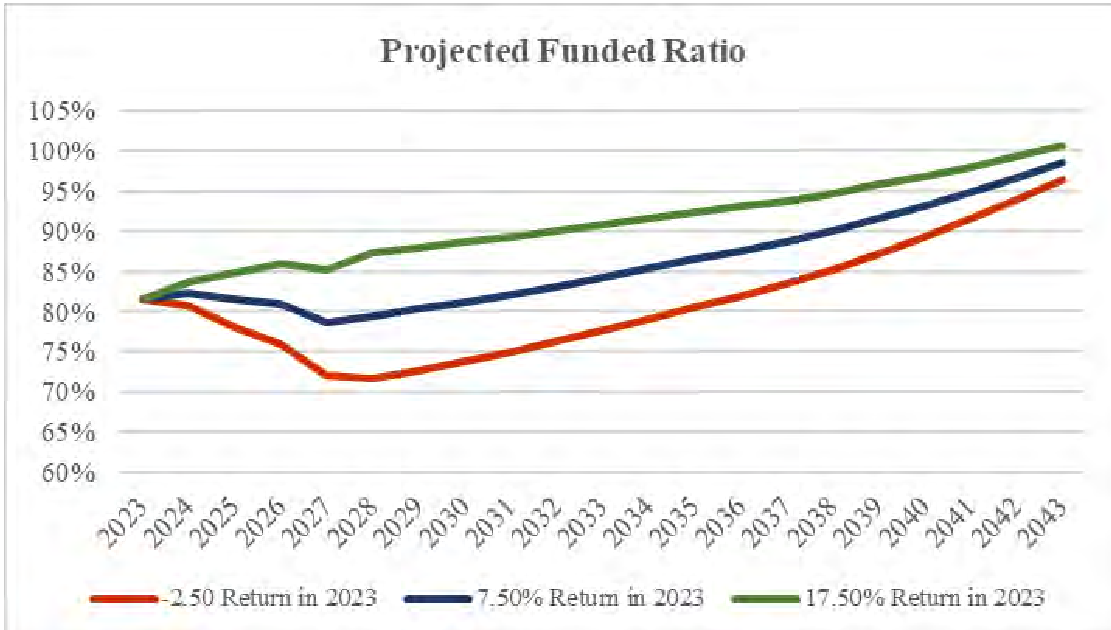
A comparison of the ADEC to the Stable Employer Contribution is shown to the right.

The ADEC is composed of 3 parts:

- The Employer Normal Cost is the Employer cost of the benefits accruing during the year.
- Administrative expenses is the estimated amount for 2023
- The amortization of the unfunded actuarial accrued liability (UAAL) is this year's payment towards the UAAL.

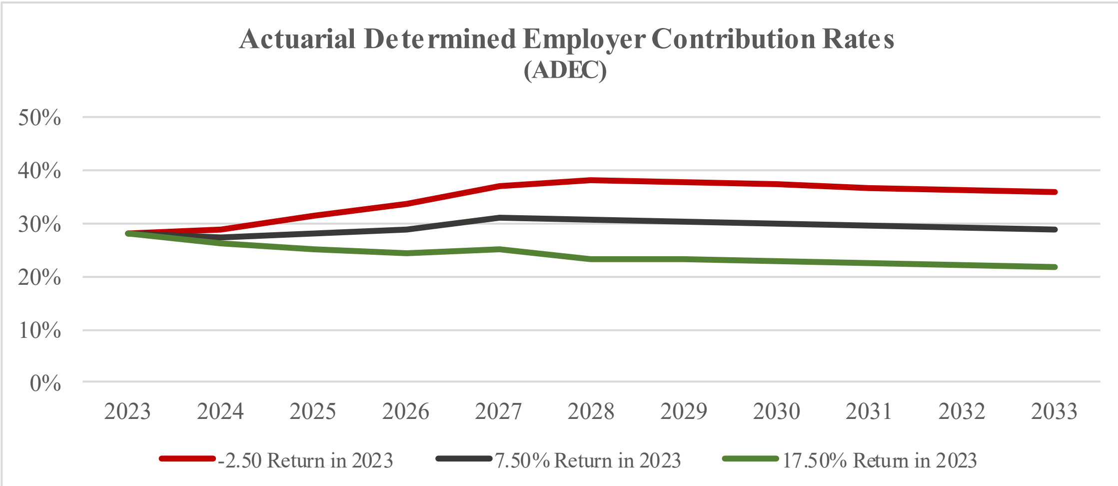


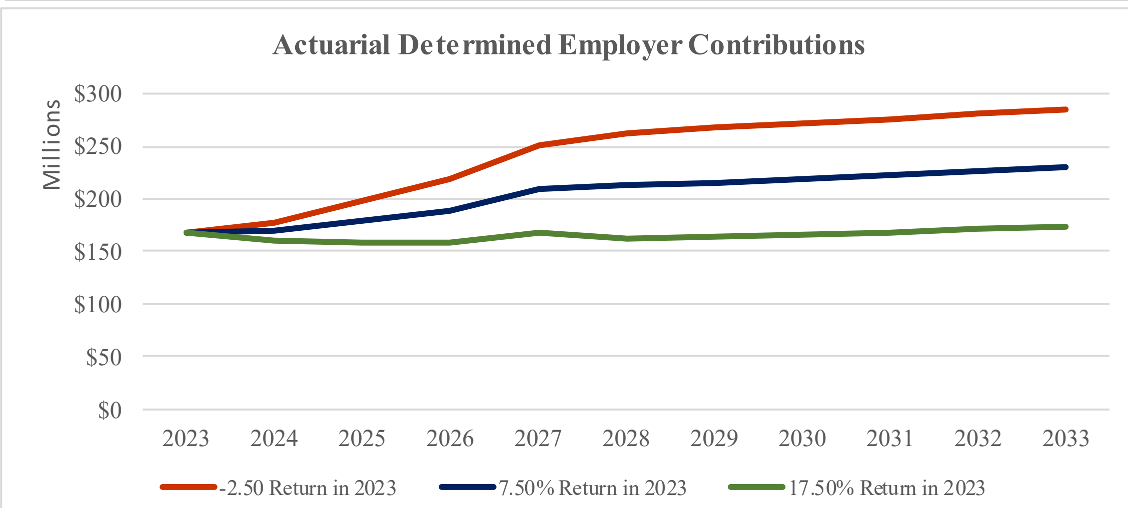
Projected Combined Fund Funded Ratio:
Based on FYE 2023 returns of 7.50%, -2.50% and 17.50%



- The graphs to the left contains projections of the Funded Ratio under alternate investment returns in FYE 2023 and 7.50% thereafter.
- Under the five-year asset smoothing, the impact of returns that differ from the 7.50% return assumption is phased in over five years.
- This means that the full impact of the 2022 return will not be fully reflected until the January 1, 2027 actuarial valuation, and the ADEC is projected to increase even if 7.50% is achieved and funding is based on the ADEC instead of the Stable Contribution Policy.
- While we typically anticipate the funded ratio will increase by one percent or so each year, as we reflect the 2022 returns the funded ratio is expected to decline before eventually increasing to 100%.

Projected Combined Fund ADEC:
Based on FYE 2023 returns of 7.50%, -2.50% and 17.50%





- The graphs to the left contains projections of the ADEC under alternate investment returns in FYE 2023 and 7.50% thereafter.
- Under the five-year asset smoothing, the impact of returns that differ from the 7.50% return assumption is phased in over five years.
- This means that the full impact of the 2022 return will not be fully reflected until the January 1, 2027 actuarial valuation, and the ADEC is projected to increase if 7.50% is achieved.
- The Stable Employer Contribution Rates reflect the full impact of the Calendar 2022 returns as well as returns that are expected to be less than the 7.50% return assumption over the next five years.

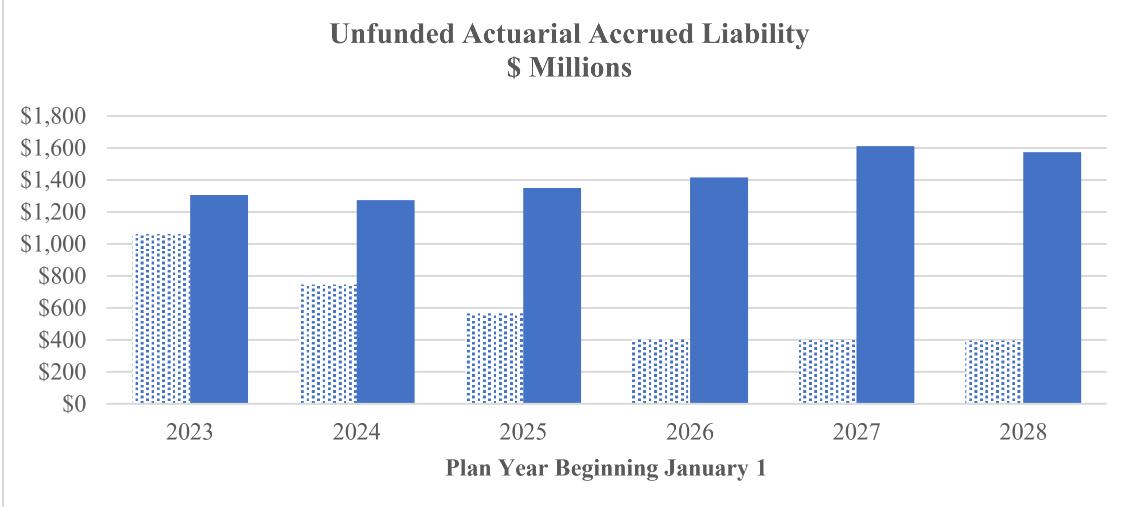
What a Difference a Year Makes

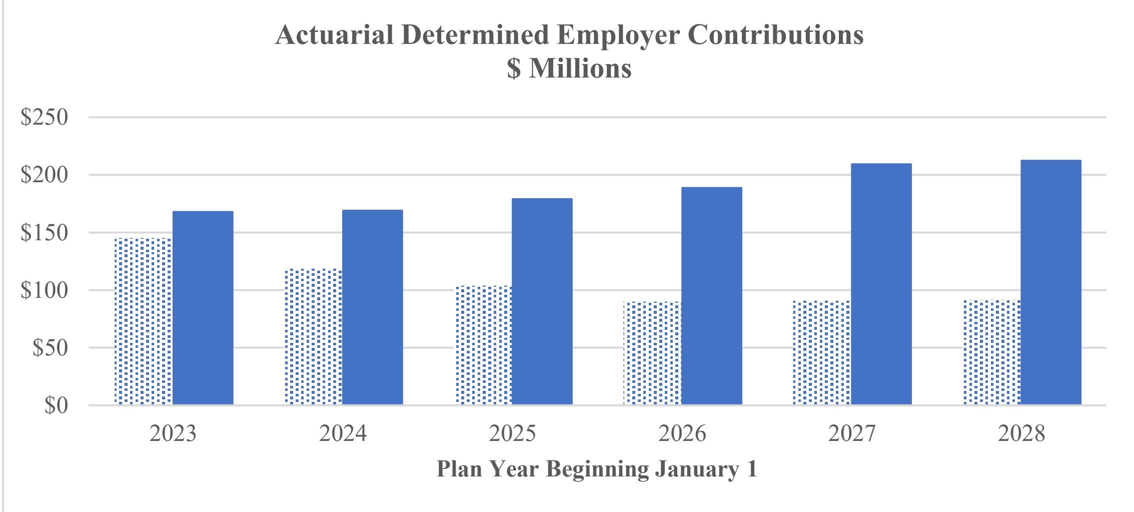
The faded number to the right are based on the January 1, 2022 Actuarial Valuation; the darker numbers are based on the January 1, 2023 Actuarial Valuation. Both projections are based on all assumptions being met.

The primary difference in the projections are market returns for calendar 2022. Other experience had much less impact. The higher projected UAAL in the 2023 actuarial valuation results in higher ADECs.

The purpose here is a reminder that results can be quite volatile with positive results like we saw with the January 1, 2022 results and not so positive with the January 1, 2023 results.

This volatility is why we perform actuarial valuations every year.





Key Takeaways

As noted in our actuarial valuation reports since 2019, we anticipated significant increases in the Stable Employer Contribution Rates primarily due to the reduction in the assumed rate of return of 7.50%.

Returns in 2022 for CMERS, like many Funds, were much lower than expected which puts upward pressure on future contributions.

The process used to develop the Stable Employer Contribution Policy frontloads the 2022 return and expected returns that are less than expected.

The Stable Employer Contribution Rates can be revisited if expectations in assumptions or changes in plan provisions are needed. We will continue to monitor the policy as in the past.

As noted in the projections, the funded ratio is projected to likely decline over the next few years.

Actuarial Certification

The results were prepared under the direction of actuaries who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about them.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and 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.

Larry Langer, ASA, EA, MAAA, FCA
Principal and Consulting Actuary

Patrice A. Beckham, FSA, EA, MAAA, FCA
Principal and Consulting Actuary

Aaron Chochon, ASA, EA, MAAA, FCA
Consulting Actuary

Questions?

Thank you!

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Employes' Retirement System of the City of Milwaukee

Actuarial Valuation Report Prepared as of January 1, 2023

June 8, 2023

www.CavMacConsulting.com

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Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

June 8, 2023

Annuity and Pension Board
Employes' Retirement System of the City of Milwaukee
789 North Water Street, Suite 300
Milwaukee, WI 53202

Members of the Board:

At your request, we performed an actuarial valuation of the Employes' Retirement System of the City of Milwaukee (referred to as "ERS" or "System") as of January 1, 2022. The report has been prepared in accordance with Section 36-15-15 of the Milwaukee City Charter (MCC). The major findings of the valuation are contained in this report, which reflects the benefit and funding provisions in place on January 1, 2022. The benefit provisions remain unchanged from the prior valuation. However, several changes to the set of actuarial assumptions and methods were adopted by the Board on February 27, 2023 based on the results of the Experience Study based on calendar years 2017 through 2021. These changes, and their impact on the current valuation results, are discussed in further detail in the Executive Summary of this report.

The valuation was based on the actuarial assumptions and methods adopted by the Annuity and Pension Board, as specified by the Charter. An amendment to the MCC was adopted by the Common Council on April 30, 2013 to establish the Stable Employer Contribution Policy. Under that Policy, an actuarial contribution rate is separately calculated for three groups: Policemen, Firemen, and General Employees of the Combined Fund, and is applicable for the subsequent five-year period. These rates are established every five years following the Experience Study, performed by the actuary. The actuarial determined employer contribution rates under the Stable Contribution Policy have been recalculated since the prior valuation for Policemen, Firemen, and General Employees. The current employer contribution rates under the Stable Contribution Policy are 46.49%, 45.84% and 18.47% of covered payroll, respectively, through December 31, 2027. These rates were presented at the March 28, 2023 Board meeting and are based on the results of the January 1, 2023 actuarial valuation, including the actuarial assumptions and methods adopted by the Board on February 27, 2023.

The primary purposes of the valuation report are to determine the actuarial contribution rate, to describe the current financial condition of ERS, and to analyze changes in such condition. Use of this report for any other purposes, or by anyone other than ERS and its auditors, may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. The attached pages should not be provided without a copy of this cover letter. Because of the risk of misinterpretation of actuarial results, you should ask Cavanaugh Macdonald Consulting (CMC) to review any statement you wish to make on the results contained in this report. CMC will not accept any liability for any such statement made without prior review.

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In preparing our report, we relied, without audit, on information (some oral and some in writing) supplied by ERS staff. This information includes, but is not limited to, statutory provisions, member data and financial information. Although reviewed for reasonableness and consistency with the prior valuation, these elements have not been audited by CMC and we cannot certify as to the accuracy and completeness of the data supplied. The valuation results depend on the integrity of this information. If any of the information is inaccurate or incomplete, our results may be different and our calculations may need to be revised. Sometimes assumptions are made to interpret membership data that is imperfect. The valuation is also based on benefit and contribution provisions as presented in this report. If you have reason to believe that the plan provisions are incorrectly described, that important plan provisions relevant to this valuation are not described, or that conditions have changed since the calculations were made, you should contact the authors of this actuarial report prior to relying on this information.

The Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C. We believe that these assumptions are appropriate and reasonable and also comply with all applicable Actuarial Standards of Practice (ASOPs). We certify that all costs and liabilities have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the plan and reasonable expectations) and which, in combination, offer the best estimate of anticipated experience affecting the plan. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions.

In order to prepare the results in this report, we have utilized appropriate actuarial models that were developed to measure liabilities and develop actuarial costs. These models include tools that we have produced and tested, along with commercially available valuation software that we have reviewed to confirm the appropriateness and accuracy of the output. In utilizing these models, we develop and use input parameters and assumptions about future contingent events along with recognized actuarial approaches to develop the necessary results. Future actuarial results may differ significantly from the current results 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) and changes in plan provisions or applicable law. Due to the limited scope of this assignment, CMC has not performed an analysis of the potential range of such future measurements.

Actuarial computations presented in this report are for purposes of evaluating the funding of the Plan and determining an actuarial contribution rate. Actuarial computations for purposes of fulfilling financial accounting requirements under Governmental Accounting Standard Number 67 and 68 are provided in separate reports. The calculations in the enclosed report have been made on a basis consistent with our understanding of the Plan's funding requirements and goals. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualifications Standards to render the actuarial opinions contained in this report. In addition, this report has been prepared in accordance with all applicable Actuarial Standards of Practice. We are available to answer questions about it or to provide additional information, as needed.

Respectfully submitted,

Patrice Beckham

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

Aaron Chochon, ASA, EA, FCA, MAAA
Senior Actuary

Introduction and Background

The law governing the Employes' Retirement System (ERS) requires the Actuary and Pension Board to "….prepare an annual valuation of the assets and liabilities of the funds of the retirement system" (Section 36-15-15 of the Milwaukee City Charter (MCC)). Cavanaugh Macdonald Consulting, the Actuary, has completed the eighty-fifth annual actuarial valuation of the ERS as of January 1, 2023. The primary purposes of performing a valuation are to:

- estimate the liabilities for future benefits expected to be paid by the System;
- determine the employer contribution rate required to fund the System on an actuarial basis and compare that rate to the Stable Contribution Policy;
- disclose certain asset and liability measures, and the funded status, as of the valuation date;
- assess and disclose the key risks associated with funding the System;
- monitor any deviation between actual plan experience and experience projected by the actuarial assumptions, and
- analyze and report on any significant trends in contributions, assets and liabilities over the past several years.

Stable Contribution Policy

An amendment to the MCC was adopted by the Common Council on April 30, 2013 to establish the Stable Employer Contribution Policy. Under that Policy, an actuarial contribution rate is separately calculated for three groups: Policemen, Firemen, and General Employees of the Combined Fund, and is applicable for the subsequent five-year period. The Policy is designed to:

(a) Fully fund all current costs for active members, determined under the funding method, which is irrespective of the funded status of the System. The result is that the Employer Normal Cost is always funded; and

(b) Liquidate the unfunded actuarial accrued liability (UAAL), if any, over the amortization period adopted by the Board and based on methodology specified in the MCC. Effective with the January 1, 2019 actuarial valuation, the Board adopted a 25-year closed period to amortize the existing UAAL. At each subsequent valuation date, any changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 15-year period and any changes to the UAAL arising from changes in assumptions will be amortized over a closed 25-year period. Effective with the January 1, 2023 actuarial valuation, future changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 20-year period. If the UAAL is negative, all prior bases will be eliminated, and the surplus will be amortized over an open 25-year period. Changes to the UAAL arising from changes to plan provisions will be amortized over various periods, depending on the nature of the change and which participants are affected. Finally, changes to the UAAL arising from contributions to the Combined Fund which are above or below the adopted Stable Employer Contribution Policy rates will be amortized over a closed 5-year period.

These rates are established every five years following the completion of the Experience Study performed by the actuary. The actuary establishes these contribution rates based on the most recent actuarial assumptions adopted by the Annuity and Pension Board of the ERS and the actuarial methods specified in the Charter. The rates are established in conformity with applicable Actuarial Standards of Practice and result in a funded status at the end of the five years that is at least actuarially equivalent to the expected funded status if contributions were based on the recalculation of the employer contribution rates annually under the same assumptions and methods.

The employer contribution rates under the Stable Employer Contribution Policy that will go into effect this year have been calculated and the results were presented during the Board's March 28, 2023 meeting. These results were based on: (i) the new demographic assumptions adopted by the Board, (ii) the new UAAL amortization schedule, (iii) the final January 1, 2023 actuarial liabilities, and (iv) the preliminary January 1, 2023 asset balances. The employer contribution rates under the Stable Employer Contribution Policy for calendar years 2023 through 2027 are as follows:

- General Employees: 18.47%
- Policemen: 46.49%
- Firemen: 45.84%

Just as we have anticipated and discussed since 2019, the new employer contribution rates represent a significant increase over the contribution rates that were in effect during 2017-2022 (7.48% for General, 25.22% for Policemen and 26.83% for Firemen). Since our analysis in March 2023, we have received the System's final asset balances as of January 1, 2023. The final asset balance in the Combined Fund was adjusted upward by $387,000, or less than 0.01%. This very small change is unlikely to change the Stable Employer Contribution Policy rates.

Events Impacting the January 1, 2023 Valuation:

- Experience Study: Every five years, the System's Actuary performs and Experience Study to assess the appropriateness of the current set of actuarial assumptions and methods. The most recent study was performed in 2022, which analyzed actuarial experience during the five-year period ending December 31, 2021. As a result of the 2022 Experience Study, several changes to the demographic actuarial assumptions were recommended and adopted by the Board, as well as proposed changes to the UAAL amortization method. The key assumption changes include:
  - Mortality assumption: For General employees, move to Pub-2010 Below Median General Mortality Table with one-year age setback for males and two-year set forward for females. For Policemen and Firemen, move to Pub-2010 Median Public Safety Mortality Tables with one-year age set forward for males and females. Future mortality improvements are modeled using SOA Scale MP-2021.
  - Retirement: Lower early retirement rates for General Employees and adjust normal retirement rates for males and females to better fit experience. Increase retirement rates for Police and Fire to better reflect actual experience.
  - Termination: Move to service-based assumption for both General as well as Policemen and Firemen.
  - Disability: Lower the disability assumption for all groups to partially reflect the observed experience.
  - Duty-Related Disability: 20% for General and Non-union Police and Fire. 60% for MPA Police and 75% for MPFFA Fire. No disabilities are assumed to be eligible for 90% benefit.
  - Salary Increase: Move to service-based assumption for both General Employees as well as Policemen and Firemen, with 3.0% general wage increase assumption.
  - Future Service Accruals: Active members are assumed earn a full year of service each year in the future.

  In addition to the assumption changes, the Board also adopted the following changes to the UAAL amortization schedule:
  - Future changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 20-year period instead of a closed 15-year period.
  - If the UAAL is negative, all prior bases will be eliminated, and the surplus will be

amortized over an open 25-year period.
- o Changes to the UAAL arising from changes to plan provisions will be amortized over various periods, depending on the nature of the change and which participants are affected.
- o Changes to the UAAL arising from contributions to the Combined Fund which are above or below the adopted Stable Employer Contribution Policy rates will be amortized over a closed 5-year period.

The overall impact of these assumption and method changes was an increase to the actuarial accrued liability of $23.5 million, and an increase to the actuarially determined employer contribution rate of 0.21% of pay.

- Investment Experience: There was unfavorable investment experience on the market value of assets during calendar year 2022, resulting in a return on assets of -6.49% as reported by Northern Trust. However, due to the asset smoothing method the return on the actuarial value of assets was 7.60%, which is above the assumed rate of return of 7.50%. This resulted in a small actuarial gain on assets.

- Liability Experience: Liability gains (losses) result from actual experience that is more (less) favorable than anticipated based on the actuarial assumptions. Overall, there was unfavorable experience during 2022 for the System's liabilities, as expressed by a larger actuarial accrued liability than expected. The largest source of unfavorable experience was more members retiring than expected during 2022.

- As part of Cavanaugh Macdonald Consulting's transition as the System's new retained actuary in 2019, a review of the actuarial assumptions used in the 2018 valuation was performed. In our professional judgment, a reduction to the investment return assumption was necessary in order to comply with applicable actuarial standards of practice. Our recommendation to lower the investment return assumption from 8.00% in calendar years 2018 through 2022 and 8.25% thereafter to 7.50% for all years was adopted by the Board and reflected in the January 1, 2019 valuation. This resulted in a significant increase in the actuarially determined contribution rate. The employer contribution rates, which are reset every five years under Stable Contribution Policy, had just been reset in 2018 in concurrence with the completion of the experience study and subsequent adoption of a new set of assumptions. The timing of the reduction to the investment return assumption in the January 1, 2019 valuation was "off cycle" from the regular experience study. As a result, the Stable Contribution Policy rate was much lower than the actuarially determined contribution rate for 2022 which impacted the System's funded ratio.

- In total, the size of the active membership declined from 10,094 to 9,800 (2.9%) during 2022, which also impacted the total covered payroll. The actuarial assumption reflects an expectation that covered payroll will increase 2.0% per year. As a result, the dollar amount of the unfunded actuarial accrued liability payments increases by 2.0% each year. To the extent actual increases in the covered payroll do not occur as expected, it results in a higher unfunded actuarial accrued liability contribution rate.

- The Global Pension Settlement (GPS) provides that members enrolled through June 28, 2000, must provide written consent to the ERS in order to be eligible for the benefit enhancements of GPS. Members enrolled after June 28, 2000 are automatically participants in the Combined Fund. Since the January 1, 2022 valuation, twelve individuals who were eligible for ERS benefits as of June 28, 2000 – and who had not previously consented to GPS – have now consented. As a result, assets will be transferred from the non-consenter funds in which these members previously participated to the Combined Fund.

Fiscal Impact of Events

***Actual Rate of Return for 2022*:** There was unfavorable investment experience on the market value of assets during calendar year 2022, resulting in a return on assets of -6.49% as reported by Northern Trust. However, due to the asset smoothing method the return on the actuarial value of assets was 7.60%, which is above the assumed rate of return of 7.50%. As a result, the unfunded actuarial accrued liability decreased by $4.8 million and the actuarial employer contribution rate decreased by 0.18% of pay for the Combined Fund. Due to the unfavorable investment experience on the market value of assets during 2022, the net deferred investment gain of $696 million in last year's valuation is now a net deferred investment loss of $321 million. Absent offsetting favorable experience in the future, this experience will decrease the funded ratio and increase the actuarial contribution rate as it flows through the asset smoothing method.

***Liability Experience*:** The purpose of conducting an actuarial valuation of a retirement system is to estimate the costs and liabilities for the benefits provided by the system, to determine the annual level of contributions required to support these benefits and, finally, to analyze the system's actual experience as it compares with the actuarial assumptions used in the valuation. The costs and liabilities reported in the valuation depend not only upon the dollar amount of the benefits to be paid, but also upon factors such as mortality rates, termination rates, and retirement rates. The net liability experience for the System during 2022 was an actuarial loss of $25 million. The most significant source of the net unfavorable liability experience during 2022 was more members retiring than anticipated by the actuarial assumptions.

Stable Contribution Rate Policy: As discussed earlier, largely due to lowering the investment return assumption in the 2019 valuation, there was a significant difference between the stable policy contribution rate and the actuarial determined employer contribution rate for 2022 for all three membership groups. This difference resulted in employer contributions that were $76.6 million less than the actuarially determined employer contribution. As a result, the unfunded actuarial accrued liability did not decline as scheduled in the amortization table (see Table 11).

GPS Consenters during 2022: There were twelve individuals who elected to participate in the Combined Fund during 2022. They represent about 5% of the total non-consenters. Due to the small number of individuals who consented and the associated liability, this did not have a significant impact on the valuation results.

A summary of the changes to the unfunded actuarial accrued liability for the Combined Fund only from the January 1, 2022 valuation to the January 1, 2023 valuation is shown in the table below:

Combined Fund	($ in millions)	
Unfunded Actuarial Accrued Liability (UAAL) as of 01/01/2022	$	1,190.9
- Expected Change in UAAL		(7.5)
- Actual Contributions Versus Actuarial Contributions		76.6
- Investment Experience		(11.6)
- Demographic Experience		29.3
- Assumption Changes		23.5
- Other Experience		5.1
Unfunded Actuarial Accrued Liability (UAAL) as of 01/01/2023	$	1,306.3

A summary of the changes to the actuarially determined employer contribution rate for the Combined Fund only from the January 1, 2022 valuation to the January 1, 2023 valuation is shown in the table below:

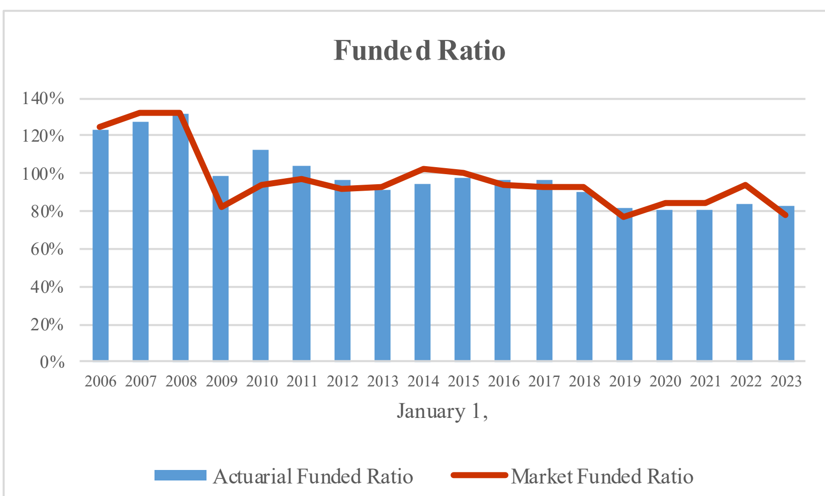
Combined Fund	Rate
Actuarial Determined Employer Rate as of 01/01/2022	26.68%
- Change in Employer Normal Cost Rate	(0.26%)
- Actual Contributions Versus Actuarial Contributions	1.22%
- Investment Experience	(0.18%)
- Demographic Experience	0.47%
- Payroll Growth Rate Lower than Expected	0.03%
- Assumption Changes	0.21%
- Other Experience	(0.08%)
Actuarial Determined Employer Rate as of 01/01/2023	28.09%

As a result of the resetting the Stable Employer Contribution Policy rates, the gap between the actuarial determined rate as of January 1, 2023 and the Stable Employer Contribution Policy rates has decreased dramatically. A summary of the employer contribution rates for all three groups for the current and prior valuations is shown in the table below.

	1/1/2023	1/1/2022
General:		
a. Actuarial Determined Rate	19.08%	15.86%
b. Stable Contribution Policy	18.47%	7.48%
c. Difference	0.61%	8.38%
Policemen:		
a. Actuarial Determined Rate	44.70%	44.70%
b. Stable Contribution Policy	46.49%	25.22%
c. Difference	(1.79%)	19.48%
Firemen:		
a. Actuarial Determined Rate	45.19%	47.91%
b. Stable Contribution Policy	45.84%	26.83%
c. Difference	(0.65%)	21.08%

Funded Ratio

As was discussed earlier, the funded ratio (actuarial assets divided by actuarial liability) in the 2023 valuation was negatively impacted by actual experience during 2022 that was unfavorable for the System's actuarial liabilities. This experience was partially offset by positive experience on the System's actuarial value of assets. The new set of assumptions adopted by the Board also increased the Systems' actuarial liabilities by about $23 million. Overall, the funded ratio decreased from 83.4% in the 2022 valuation to 82.7% in the 2023 valuation. Due to the negative return on the market value of assets, the funded ratio on a market value basis decreased significantly from 93.5% in the prior valuation to 78.2% in the current valuation. The following graph shows the historical funded ratio using both the market value and actuarial value of assets.



Note that the funded ratio does not necessarily indicate whether or not additional funding is needed, nor does it indicate whether or not the plan has sufficient funds to settle all current obligations.

A number of factors impact the funded ratio from year to year. The major drivers of the change in the funded ratio from the January 1, 2022 valuation to the January 1, 2023 valuation are shown in the following table on both an actuarial value and market value basis.

	Funded Ratio Based On	
	Actuarial Value of Assets	Market Value of Assets
January 1, 2022 Funded Ratio	83.4%	93.5%
- Expected Change	0.5%	1.1%
- Actual Contributions Versus Actuarial Contributions	(0.5%)	(0.5%)
- Investment Experience	0.0%	(15.3%)
- Demographic Experience	(0.4%)	(0.3%)
- Assumption Changes	(0.3%)	(0.3%)
- Other Experience	0.0%	0.0%
- Total change	(0.7%)	(15.3%)
January 1, 2023 Funded Ratio	82.7%	78.2%

Summary of Key Valuation Results

This report, prepared as of January 1, 2023, presents the results of the eighty-fifth annual valuation of the System. The principal results of the valuation, reflecting the Stable Contribution Funding Policy and contribution amounts as of January 31, 2024, are summarized below:

Fund	General Employees	Policemen	Firemen	Total
Combined Fund	$ 77,638,339	$ 73,672,934	$ 30,922,129	$ 182,233,402
Retirement Fund	0	0	0	0
Duty Disability Fund	0	0	0	0
Heart & Lung Fund	N/A	N/A	0	0
Combined Retirement & Disability Fund	180,000	40,000	0	220,000
Total Contribution	$ 77,818,339	$ 73,712,934	$ 30,922,129	$ 182,453,402
Covered Compensation	$ 390,258,000	$ 146,653,000	$ 62,373,000	$ 599,284,000
Total Contribution as a Percentage of Covered Compensation	19.94%	50.26%	49.58%	30.45%

Key Takeaways

- Several changes to the actuarial assumptions and methods have been adopted as a result of the 2022 Experience Study, which analyzed the System's actuarial experience during the five-year period from January 1, 2017 through December 31, 2021. The overall impact of these assumption and method changes was an increase to the actuarial accrued liability of $23.5 million, and an increase to the actuarially determined employer contribution rate of 0.21% of pay.

- The employer contribution rates under the Stable Employer Contribution Policy have been reset as part of the 2022 Experience Study. The employer contribution rates for calendar years 2023 through 2027 are 18.47% of pay for General, 46.49% of pay for Policemen and 45.84% of pay for Firemen. Just as we have anticipated and discussed since 2019, the new employer contribution rates represent a significant increase over the contribution rates that were in effect during 2017-2022 (7.48% for General, 25.22% for Policemen and 26.83% for Firemen).

- Due to the negative investment return on the market value of assets during 2022, the net deferred investment gain (market value of assets greater than actuarial value) of $696 million in last year's valuation is now a net deferred investment loss of $321 million in the current valuation. Absent offsetting favorable experience in the future, this experience will decrease the funded ratio and increase the actuarial contribution rate as it flows through the asset smoothing method. While this will have a negative impact on future valuation results, other actuarial experience may offset the impact of the deferred investment losses.

- The shortfall between the actuarially determined contribution and the stable contribution policy for 2022 resulted in an increase in the unfunded actuarial accrued liability of $76.6 million, which was then amortized over 20 years. This increased the UAAL contribution in the current valuation by 1.22%.

A typical retirement plan faces many different risks. The term "risk" is most commonly associated with an outcome with undesirable results. However, in the actuarial world risk can be translated as uncertainty. The actuarial valuation process uses many actuarial assumptions to project how future contributions and investment returns will meet the cash flow needs for future benefit payments. Of course, we know that actual experience will not unfold exactly as anticipated by the assumptions and that uncertainty, whether favorable or unfavorable, creates risk. Actuarial Standard of Practice Number 51 defines risk as the potential of actual future measurements to deviate from expected results due to actual experience that is different than the actuarial assumptions. Risk evaluation is an important part of managing a defined benefit plan. Please see the Risk Considerations section of this report for an in-depth discussion of the specific risks facing CMERS.

We conclude this executive summary by presenting comparative statistics and actuarial information from both the January 1, 2022 and January 1, 2023 valuations.

Summary of Principal Results

	January 1, 2023	January 1, 2022	% Change
1. Membership Data			
a. Active Members			
(i) Count			
- General Employees	7,509	7,768	(3.3%)
- Policemen	1,592	1,631	(2.4%)
- Firemen	699	695	0.6%
- Total	9,800	10,094	(2.9%)
(ii) Total Estimated Payroll			
- General Employees	$390,258,000	$369,306,000	5.7%
- Policemen	146,653,000	148,844,000	(1.5%)
- Firemen	62,373,000	61,201,000	1.9%
- Total	$599,284,000	$579,351,000	3.4%
b. Retirees, Beneficiaries and Disabled Members			
(i) Number	13,853	13,758	0.7%
(ii) Total Annual Benefits	$451,053,000	$434,381,000	3.8%
(iii) Average Annual Benefit	$32,560	$31,573	3.1%
2. Assets and Liabilities			
a. Asset Values (includes contributions receivable)			
(i) Actuarial Value of Assets (AVA)	$5,847,404,000	$5,734,986,000	2.0%
(ii) Market Value of Assets (MVA)	$5,525,958,000	$6,431,356,000	(14.1%)
b. Actuarial Accrued Liability (AAL)	$7,067,109,000	$6,875,927,000	2.8%
c. Funded Status			
(i) Unfunded AAL (Based on AVA)	$1,219,705,000	$1,140,941,000	6.9%
(ii) Funded Ratio (Based on AVA)	82.74%	83.41%	(0.8%)
(iii) Unfunded AAL (Based on MVA)	$1,541,151,000	$444,571,000	246.7%
(iv) Funded Ratio (Based on MVA)	78.19%	93.53%	(16.4%)
3. Employer Contribution Rates (Combined Fund)			
a. General Employees			
(i) Stable Contribution Policy Rate	7.48%	7.48%	0.0%
(ii) Actuarial Determined Rate	19.08%	15.86%	20.3%
(iii) Market-Based Actuarial Determined Rate	22.07%	8.28%	166.5%
b. Policemen			
(i) Stable Contribution Policy Rate	25.22%	25.22%	0.0%
(ii) Actuarial Determined Rate	44.70%	44.70%	0.0%
(iii) Market-Based Actuarial Determined Rate	51.20%	27.07%	89.1%
c. Firemen			
(i) Stable Contribution Policy Rate	26.83%	26.83%	0.0%
(ii) Actuarial Determined Rate	45.19%	47.91%	(5.7%)
(iii) Market-Based Actuarial Determined Rate	51.76%	29.82%	73.6%
4. Total Employer Contribution (All Funds)	Due 01/31/2024	Due 01/31/2023	
(i) Annual Cost	$182,453,000	$88,121,000	107.0%
(ii) As a % of Covered Payroll	30.45%	15.21%	100.2%

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SECTION II: SCOPE OF THE REPORT

This report presents the actuarial valuation of the Employes' Retirement System of the City of Milwaukee as of January 1, 2023. This valuation was prepared at the request of the System's Pension and Annuity Board. The report is based on the plan provisions, actuarial assumptions and actuarial methods in effect as of January 1, 2023.

Please pay particular attention to our cover letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in the previous section. Section III summarizes the membership data as of the valuation date. Section IV describes the assets and investment experience of the System. Sections V discloses the obligations (liabilities) of the System and Section VI includes the calculation of contributions for the current fiscal year. Section VII discloses key maturity measurements and discusses the key risks facing the funding of the System.

This report includes several appendices:

- Appendix A — Schedules of valuation data classified by various categories of members.
- Appendix B — A summary of the current benefit structure, as determined by the provisions of governing law on the valuation date.
- Appendix C — A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D — A glossary of actuarial terms.

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TABLE 1

Member Counts by Vested Status

	1/1/2023			1/1/2022
Number of Members	**Vested**	**Non-Vested**	**Total**	**Total**
Active				
- General Employees	5,059	2,450	7,509	7,768
- Policemen	1,384	208	1,592	1,631
- Firemen	524	175	699	695
- Total Active Members	**6,967**	**2,833**	**9,800**	**10,094**
Inactive				
- Deferred Retirees			3,578	3,363
- Refunds Payable			2,382	2,149
- Total Inactive Members			**5,960**	**5,512**
Benefit Recipients				
- Combined Fund				
General Employees			9,761	9,717
Policemen			2,670	2,615
Firemen			1,411	1,415
- Combined Fund Subtotal			13,842	13,747
- Retirement Fund			11	11
- Duty Disability Funds				
General Employees			0	0
Policemen			0	0
Firemen			0	0
- Duty Disability Funds Subtotal			0	0
- Firemen's Heart & Lung Fund			0	0
- Total Benefit Recipients			**13,853**	**13,758**
Total Membership			**29,613**	**29,364**

Note: Members are vested once they attain four years of service.

TABLE 2

Member Counts by Consent Status

	1/1/2023 Membership		
Number of Members	**Consenters**	**Others**	**Total**
Active			
- General Employees	7,476	33	7,509
- Policemen	1,591	1	1,592
- Firemen	699	0	699
- Total Active Members	**9,766**	**34**	**9,800**
Inactive			
- Deferred Retirees	3,392	186	3,578
- Refunds Due	2,380	2	2,382
- Total Inactive Members	**5,772**	**188**	**5,960**
Benefit Recipients			
- Combined Fund	13,842	NA	13,842
- Retirement Fund	NA	11	11
- Duty Disability Funds			
General Employees	0	0	0
Policemen	0	0	0
Firemen	0	0	0
- Duty Disability Funds Subtotal	0	0	0
- Firemen's Heart & Lung Fund	0	0	0
- Total Benefit Recipients	**13,842**	**11**	**13,853**
Total Membership	**29,380**	**233**	**29,613**

Notes: (1) In addition to the above, there are members who have separated from service without vested rights to either a pension or a refund of accumulated contributions. There is no current actuarial liability for such individuals, and their membership will be terminated if they do not return to active service within five years of their date of separation from ERS covered employment.

(2) Active members who worked fewer than 100 hours in the prior year, but who have not officially terminated employment are included in the count of inactives in Table 1 and Table 2. These members are not assumed to earn additional service in future years.

TABLE 3

Member Data Summary

	1/1/2023	1/1/2022
Projected Annual Earnings		
- General Employees	$ 390,258,000	$ 369,306,000
- Policemen	146,653,000	148,844,000
- Firemen	62,373,000	61,201,000
- Total Projected Annual Earnings	**$ 599,284,000**	**$ 579,351,000**
Average Projected Earnings		
- General Employees	$ 51,972	$ 47,542
- Policemen	$ 92,119	$ 91,259
- Firemen	$ 89,232	$ 88,059
Annual Benefit Payments Currently Being Made		
- Combined Fund	$ 450,787,045	$ 434,137,398
- Retirement Fund	$ 266,087	$ 243,510
- Duty Disability Funds		
General Employees	$ 0	$ 0
Policemen	0	0
Firemen	0	0
- Duty Disability Funds Subtotal	$ 0	$ 0
- Firemen's Heart & Lung Fund	$ 0	$ 0
- Total Benefit Payments	**$ 451,053,132**	**$ 434,380,908**

Notes: (1) "Projected Annual Earnings" represents the expected earnable compensation for the year following the valuation date.

(2) "Annual Benefit Payments Currently Being Made" equals 12 times the full December monthly payment. The amounts shown include all amounts payable by the ERS and have been reduced by workers' compensation offsets for members who are currently repaying a workers' compensation award.

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In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is January 1, 2023. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System, which are generally in excess of assets. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the System's assets and liabilities.

Market Value of Assets

The current market value represents the "snapshot" or "cash-out" value of System assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance during the year. Table 4 summarizes the change in the market value of assets from January 1, 2022 to January 1, 2023.

Actuarial Value of Assets

Neither the market value of assets, representing a "cash-out" value of System assets, nor the book values of assets, representing the cost of investments, may be the best measure of the System's ongoing ability to meet its obligations.

To arrive at a suitable value of assets for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. Under the asset smoothing methodology, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five-year period.

Table 5 shows the development of the actuarial value of assets (AVA) as of the valuation date.

TABLE 4

Market Value of Assets
(Dollars in thousands)

	Global Combined Fund	Retirement Fund	Combined Retirement Fund	General Employees' Duty Disability Fund	Employers' Reserve Fund	Securities Lending Fund	Total
1. Market Value of Assets as of January 1, 2022	$ 6,367,898	$ 13,433	$ 7,267	$ 122	$ 42,081	$ 555	$ 6,431,356
2. Transfer of Assets as of January 1, 2022	$ 3,398	$ (2,667)	$ (717)	$ (14)	$ 0	$ 0	$ 0
3. Contributions During Year							
a. Member	$ 32,202	$ 0	$ 2	$ 0	$ 0	$ 0	$ 32,204
b. Employer	81,519	0	52	0	40,000	0	121,571
c. Total	$ 113,721	$ 0	$ 54	$ 0	$ 40,000	$ 0	$ 153,775
4. Disbursements During Year							
a. Monthly Annuities	$ 452,308	$ 52	$ 47	$ 0	$ 0	$ 0	$ 452,407
b. Refunds	5,185	0	26	0	0	0	5,211
c. Administrative Expenses	6,628	0	0	0	0	553	7,181
d. Total	$ 464,121	$ 52	$ 73	$ 0	$ 0	$ 553	$ 464,799
5. Investment Return (net of Investment Expenses)	$ (593,792)	$ (893)	$ (544)	$ (9)	$ (1,342)	$ 2,206	$ (594,374)
6. Market Value of Assets as of December 31, 2022 (1) + (2) + (3c) - (4d) + (5)	$ 5,427,104	$ 9,821	$ 5,987	$ 99	$ 80,739	$ 2,208	$ 5,525,958
7. Rate of Return, as Reported by Northern Trust (ERS' Custodian)							(6.49%)

TABLE 5
Actuarial Value of Assets
(Dollars in thousands)

1.	Market Value of Assets Available for Benefit Payments on January 1, 2022*	$	6,388,720
2.	Contributions During 2022**		113,775
3.	Benefit Payments and Administrative Expenses During 2022**		(464,246)
4.	Expected Investment Income at 7.50% on (1), (2) and (3)		466,249
5.	Expected Market Value of Assets on January 1, 2023	$	6,504,498
6.	Market Value of Assets Available for Benefit Payments on January 1, 2023*	$	5,443,011
7.	Excess/(Shortfall) of Investment Income		
	a. Year Ending 12/31/22: (6) - (5)	$	(1,061,487)
	b. Year Ending 12/31/21		699,388
	c. Year Ending 12/31/20		4,009
	d. Year Ending 12/31/19		532,533
8.	Deferral of Excess/(Shortfall) of Investment Income		
	a. Year Ending 12/31/22 (80.0%)	$	(849,190)
	b. Year Ending 12/31/21 (60.0%)		419,633
	c. Year Ending 12/31/20 (40.0%)		1,604
	d. Year Ending 12/31/19 (20.0%)		106,507
	e. Total	$	(321,446)
10.	Preliminary Actuarial Value of Assets on January 1, 2023 (6) - (8e)	$	5,764,457
11.	Employers' Reserve Fund and the Securities Lending Fund on January 1, 2023	$	82,947
12.	Final Actuarial Value of Assets on January 1, 2023 (10) + (11)	$	5,847,404
13.	Total Market Value of Assets on January 1, 2023	$	5,525,958
14.	Actuarial Value Divided by Market Value (12) ÷ (13)		105.9%
15.	Estimated Rate of Return		7.6%

* Excludes the Employers' Reserve Fund and the Securities Lending Fund.
** Excludes contributions, benefit payments and expenses from the Employers' Reserve Fund and the Securities Lending Fund.

TABLE 6
Historical Asset Returns

Beginning with the January 1, 2019 valuation, the investment return assumption is 7.50%. The table below provides a history of the rate of return on the actuarial value and market value of assets. Note that the System utilized a 10% asset corridor prior to 2009, which impacted the calculation of the actuarial value of assets and, therefore, the return on the actuarial value of assets. Rates of return on a market value basis are provided by the System's custodian, Northern Trust.

Year	Actuarial Value of Assets	Market Value of Assets
2003	10.46%	27.34%
2004	9.49%	12.61%
2005	15.34%	8.46%
2006	11.83%	15.13%
2007	10.17%	7.21%
2008	(17.88%)	(30.84%)
2009	22.62%	23.30%
2010	1.34%	13.86%
2011	(0.09%)	(1.43%)
2012	0.43%	13.88%
2013	12.85%	19.29%
2014	9.91%	5.09%
2015	7.00%	0.54%
2016	8.33%	8.83%
2017	9.09%	16.38%
2018	5.33%	(2.91%)
2019	6.94%	18.44%
2020	9.22%	6.62%
2021	11.76%	18.89%
2022	7.60%	(6.49%)
Average*	7.29%	7.87%
Max	22.62%	27.34%
Min	(17.88%)	(30.84%)
Range	40.50%	58.18%

Note: Rates of return on Actuarial Value of Assets prior to 2018 were provided by the prior actuary.
* Average is calculated on a geometric basis.

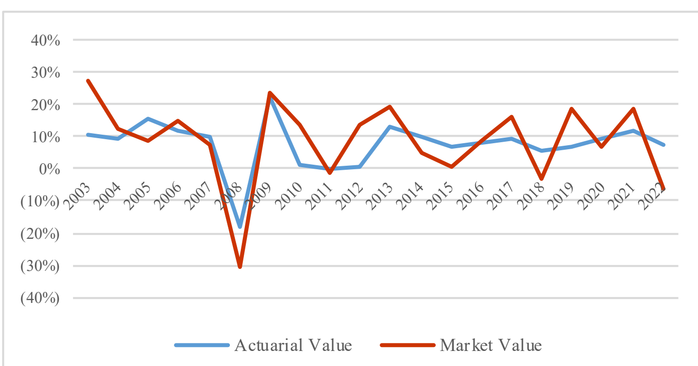


TABLE 7

Allocation of Assets Among Funds
(Dollars in thousands)

As part of the financial statements, the System provides a breakdown of the total market value of assets by Fund. The Employer Reserve Fund and Security Lending Fund are valued at market value for actuarial purposes and earmarked for specific purposes other than directly funding the benefits of the System's members. The actuarial value of assets is determined in total and then adjusted by subtracting the Employer Reserve Fund and Security Lending Fund. The remaining actuarial value of assets is then allocated to each Fund based on its portion of the total market value.

Fund	Market Value		Actuarial Value	
1. Combined Fund	$	5,427,104	$	5,747,610
2. Employers' Reserve Fund	$	80,739	$	80,739
3. Retirement Fund	$	9,821	$	10,401
4. General Employees' Duty Disability Fund	$	99	$	105
5. Fire & Police Duty Disability Fund	$	0	$	0
6. Firemen's Heart & Lung Fund	$	0	$	0
7. Combined Retirement & Disability Fund	$	5,987	$	6,341
8. Securities Lending Fund	$	2,208	$	2,208
9. Total All Funds	$	5,525,958	$	5,847,404

Note: Values shown include January 31, 2023 contributions receivable.

TABLE 8
Allocations Between Non-Consenters Who Consented to GPS During 2022 and Those Who Did Not
(Dollars in thousands)

The Global Pension Settlement (GPS) provides that members enrolled through June 28, 2000 must provide written consent to the ERS in order to be eligible for the benefit enhancements of GPS. Members enrolled after June 28, 2000 are automatically participants in the Combined Fund. Since the January 1, 2022 valuation, twelve individuals who were eligible for ERS benefits as of June 28, 2000 – and who had not previously consented to GPS – have now consented.

GPS provides that the market value of the assets in the funds for Non-Consenters be divided among Consenters and Non-Consenters. The division is based on the actuarial accrued liability covered by each fund under the pre-GPS plan provisions. The required division of assets for members who consented during 2022 was calculated as of January 1, 2022. As a result, assets will be transferred from the non-consenter Funds in which these members previously participated to the Global Combined Fund, as shown below.

	Allocation of 1/1/2022 Market Value of Assets in Funds for Non-Consenters in Proportion to 1/1/2022 Actuarial Accrued Liability			Allocation of 1/31/2023 Employer Contribution to Funds for Non-Consenters in Proportion to 1/1/2022 Covered Compensation		
Fund	Consenters in 2022	Others	Total (Audited)	Consenters in 2022	Others	Total
1. Retirement Fund	$ 1,804	$ 11,629	$ 13,433	$ 0	$ 0	$ 0
2. General Employees' Duty Disability Fund	49	73	122	0	0	0
3. Fire & Police Duty Disability Fund	0	0	0	0	0	0
4. Firemen's Heart & Lung Fund	0	0	0	0	0	0
5. Combined Retirement & Disability Fund	26	7,241	7,267	0	50	50
6. Total Funds for Non-Consenters	$ 1,879	$ 18,943	$ 20,822	$ 0	$ 50	$ 50

Notes: (i) January 1, 2022 assets allocated to members who consented to Global Settlement during 2022 are transferred to the Combined Fund as of January 1, 2022.
(ii) January 31, 2023 Employer Contributions allocated to members who consented to Global Settlement during 2022 are credited to the Combined Fund instead of to the funds for non-consenters.

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of the System's assets as of the valuation date, January 1, 2023. In this section, the discussion will focus on the commitments (future benefit payments) of the System, which are referred to as its liabilities.

Table 9 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries.

The liabilities summarized in Table 9 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes the measurement of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

All liabilities reflect the benefit provisions in place as of January 1, 2023.

Actuarial Accrued Liability

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

(1) that which is attributable to the past and

(2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability." The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost." Table 9 contains the calculation of actuarial accrued liability for the System. The Entry Age Normal actuarial cost method is used to develop the actuarial accrued liability.

TABLE 9
Actuarial Accrued Liability by Agency
(Dollars in thousands)

	General City*	Water Department	School Board	Milwaukee Technical College	Sewerage Commission	Veolia	Wisconsin Center District	Housing Authority	Policemen	Firemen	Total
1. Present Value of Future Benefits for Active Members											
a. Retirement Benefits	487,998	48,842	310,322	0	58,285	4,780	11,793	19,973	874,945	364,383	2,181,321
b. Withdrawal Benefits	34,345	3,598	23,970	0	4,997	0	1,171	1,240	16,102	4,601	90,024
c. Disability Benefits	7,807	824	5,106	0	989	15	234	290	22,553	37,754	75,572
d. Death Benefits	5,547	636	3,456	0	719	37	166	227	4,275	2,433	17,496
Total	535,697	53,900	342,854	0	64,990	4,832	13,364	21,730	917,875	409,171	2,364,413
2. Present Value of Future Normal Costs	147,116	15,661	95,585	0	18,349	337	4,730	5,213	305,043	146,194	738,228
3. Actuarial Accrued Liability (AAL) for Active Members (1) - (2)	388,581	38,239	247,269	0	46,641	4,495	8,634	16,517	612,832	262,977	1,626,185
4. Present Value of Future Benefits for Inactive Members											
- Members with Deferred Benefits	56,245	3,302	53,624	0	3,665	420	2,345	3,118	46,947	10,365	180,031
- Members with Refunds Payable	1,524	139	2,450	0	57	0	51	36	271	54	4,582
- Retirees, Beneficiaries and Disabled Members	1,240,088	104,813	553,247	14,003	147,409	61,835	14,917	47,376	2,025,540	1,047,083	5,256,311
Total	1,297,857	108,254	609,321	14,003	151,131	62,255	17,313	50,530	2,072,758	1,057,502	5,440,924
5. Total Actuarial Accrued Liability (3) + (4)	1,686,438	146,493	856,590	14,003	197,772	66,750	25,947	67,047	2,685,590	1,320,479	7,067,109

* Includes Elected Officials and Redevelopment Authority

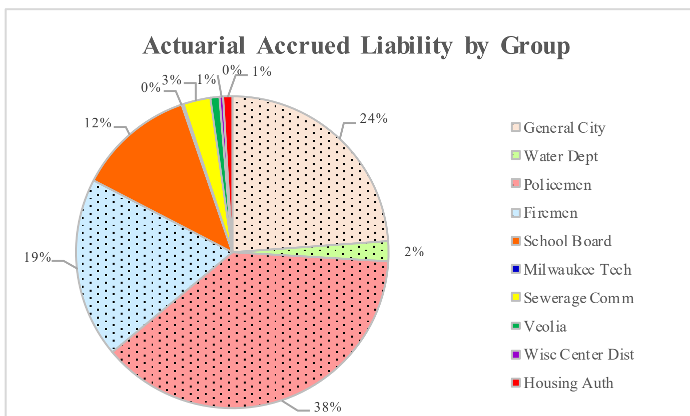


TABLE 10

Funded Status on Actuarial and Market Value by Fund

(Dollars in thousands)

Fund	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	Market Value of Assets (MVA)	Unfunded Actuarial Accrued Liability Based on AVA (UAAL)	Unfunded Actuarial Accrued Liability Based on MVA (UAAL)	Percent Funded Based on AVA	Percent Funded Based on MVA
1. Combined Fund	$ 7,053,868	$ 5,747,610	$ 5,427,104	$ 1,306,258	$ 1,626,764	81.5%	76.9%
2. Employers' Reserve Fund	0	80,739	80,739	(80,739)	(80,739)	N/A	N/A
3. Retirement Fund	5,193	10,401	9,821	(5,208)	(4,628)	200.3%	189.1%
4. General Employees' Duty Disability Fund	4	105	99	(101)	(95)	2625.0%	2475.0%
5. Fire & Police Duty Disability Fund	0	0	0	0	0	N/A	N/A
6. Firemen's Heart & Lung Fund	0	0	0	0	0	N/A	N/A
7. Combined Retirement & Disability Fund	8,044	6,341	5,987	1,703	2,057	78.8%	74.4%
8. Securities Lending Fund	0	2,208	2,208	(2,208)	(2,208)	N/A	N/A
9. Total All Funds	$ 7,067,109	$ 5,847,404	$ 5,525,958	$ 1,219,705	$ 1,541,151	82.7%	78.2%

TABLE 11

Reconciliation of Unfunded Actuarial Accrued Liability

The table below provides a reconciliation of the unfunded actuarial accrued liability in the prior valuation to the current valuation for the Combined Fund.

Combined Fund	($ in thousands)	
UAAL as of 01/01/2022	$	1,190,869
- Expected Change in UAAL		(7,536)
- Actual Contributions Versus ADEC		76,566
- Investment Experience		(11,581)
- Demographic Experience		29,321
- Assumption Changes		23,479
- Other Experience		5,140
UAAL as of 01/01/2023	$	1,306,258

TABLE 12

Actuarial Balance Sheet
As of January 1, 2023

The valuation balance sheet shows the assets and liabilities of ERS (in total, all groups and all Funds). The items shown in the balance sheet are present values actuarially determined as of the current valuation date.

ASSETS				
Actuarial Value of Assets			$	5,847,404,000
Unfunded Actuarial Accrued Liability				1,219,705,000
Present Value of Future Normal Costs			$	738,228,000
Total Assets			$	7,805,337,000
LIABILITIES				
Present Value of Future Benefits				
Active members				
Retirement	$	2,181,321,000		
Withdrawal		90,024,000		
Disability		75,572,000		
Death		17,496,000		
Total			$	2,364,413,000
Inactive members				184,613,000
Retirees, disabilities and beneficiaries				5,256,311,000
Total Liabilities			$	7,805,337,000

TABLE 13

Calculation of Actuarial Gain/(Loss)

The overall actuarial gain/(loss) is comprised of both a liability gain/(loss) and an actuarial asset gain/(loss). Each of these represents the difference between the expected and actual values as of January 1, 2023.

Liabilities	
1. Actuarial Accrued Liability as of January 1, 2022	$6,875,927,000
2. Normal Cost for Plan Year Ending December 31, 2022	90,333,000
3. Benefit Payments During December 31, 2022	(457,618,000)
4. Interest on (1), (2) and (3) at 7.50%	505,619,000
5. Assumption Changes	23,479,000
6. Expected Actuarial Accrued Liability as of January 1, 2023	$7,037,740,000
7. Actuarial Accrued Liability as of January 1, 2023	$7,067,109,000
Assets	
8. Actuarial Value of Assets as of January 1, 2022	$5,734,986,000
9. Contributions for Plan Year Ending December 31, 2022	153,775,000
10. Benefit Payments and Administrative Expenses During December 31, 2022	(464,799,000)
11. Interest on (8), (9) and (10) at 7.50%	418,671,000
12. Expected Actuarial Value of Assets as of January 1, 2023	$5,842,633,000
13. Actuarial Value of Assets as of January 1, 2023	$5,847,404,000
Gain / (Loss)	
14. Liability Gain/(Loss) (6) - (7)	($29,369,000)
15. Asset Gain/(Loss) (13) - (12)	$4,771,000
16. Total Gain/(Loss) (14) + (15)	($24,598,000)

TABLE 14

Expected Benefit Payments

Year End	Current Inactives	Current Actives	Total
2023	$455,178,000	$16,578,000	$471,756,000
2024	457,236,000	27,413,000	484,649,000
2025	458,525,000	37,995,000	496,520,000
2026	459,729,000	49,183,000	508,912,000
2027	460,070,000	61,830,000	521,900,000
2028	460,035,000	76,021,000	536,056,000
2029	459,734,000	90,384,000	550,118,000
2030	458,207,000	104,212,000	562,419,000
2031	456,279,000	118,405,000	574,684,000
2032	453,292,000	133,468,000	586,760,000
2033	449,983,000	149,992,000	599,975,000
2034	445,140,000	166,656,000	611,796,000
2035	439,746,000	181,972,000	621,718,000
2036	433,506,000	197,063,000	630,569,000
2037	426,884,000	211,877,000	638,761,000
2038	418,746,000	226,082,000	644,828,000
2039	409,974,000	240,845,000	650,819,000
2040	400,362,000	255,282,000	655,644,000
2041	389,730,000	269,033,000	658,763,000
2042	378,442,000	283,793,000	662,235,000

Note: Cash flows are the expected future non-discounted payments to current members. These numbers exclude refund payouts to current non-vested inactive members and assume all actuarial assumptions are met in the future, including the retirement assumption.

TABLE 15

Schedule of Funding Progress
(Dollars in thousands)

Valuation as of January 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Covered Payroll	UAAL as a Percentage of Covered Payroll
2008	$ 5,192,000	$ 3,958,061	$ 0	131.2%	$ 532,412	0.0%
2009	4,076,297	4,113,089	36,792	99.1%	536,558	6.9%
2010	4,814,402	4,269,324	0	112.8%	553,846	0.0%
2011	4,641,425	4,447,548	0	104.4%	538,218	0.0%
2012	4,404,635	4,587,915	183,280	96.0%	525,181	34.9%
2013	4,259,889	4,689,814	429,925	90.8%	523,738	82.1%
2014	4,580,729	4,831,689	250,960	94.8%	521,651	48.1%
2015	4,797,437	4,935,482	138,045	97.2%	529,939	26.0%
2016	4,899,155	5,065,141	165,986	96.7%	535,802	31.0%
2017	5,055,700	5,259,300	203,600	96.1%	583,950	34.9%
2018	5,233,486	5,819,762	586,276	89.9%	577,118	101.6%
2019	5,219,184	6,400,901	1,181,717	81.5%	581,663	203.2%
2020	5,285,205	6,597,457	1,312,252	80.1%	596,386	220.0%
2021	5,440,867	6,745,299	1,304,432	80.7%	586,369	222.5%
2022	5,734,986	6,875,927	1,140,941	83.4%	579,351	196.9%
2023	5,847,404	7,067,109	1,219,705	82.7%	599,284	203.5%

Note: Information prior to 2019 is from the prior actuary.

An amendment to the Milwaukee City Charter was adopted by the Common Council on April 30, 2013 to establish the Stable Employer Contribution Policy. Under that Policy, an actuarial contribution rate is separately calculated for three groups: Policemen, Fireman, and General Employees of the Combined Fund, and is applicable for the subsequent five-year period. The Policy is designed to:

(a) Fully fund all current employer normal costs for active members, determined under the current funding method, which is irrespective of the funded status of the System. The result is that the Employer Normal Cost is always funded; and

(b) Liquidate the unfunded actuarial accrued liability (UAAL), if any, over the amortization period adopted by the Board and based on methodology specified in the MCC. Effective with the January 1, 2019 actuarial valuation, the Board adopted a 25-year closed period to amortize the existing UAAL. At each subsequent valuation date, any changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 15-year period and any changes to the UAAL arising from changes in assumptions will be amortized over a closed 25-year period. Effective with the January 1, 2023 actuarial valuation, future changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 20-year period. If the UAAL is negative, all prior bases will be eliminated, and the surplus will be amortized over an open 25-year period. Changes to the UAAL arising from changes to plan provisions will be amortized over various periods, depending on the nature of the change and which participants are affected. Finally, changes to the UAAL arising from contributions to the Combined Fund which are above or below the adopted Stable Employer Contribution Policy rates will be amortized over a closed 5-year period.

These rates are established every five years following the Experience Study, performed by the actuary. The actuary establishes these rates based on the actuarial assumptions adopted by the Annuity and Pension Board of the ERS and the actuarial methods specified in the Charter. The rates are established in conformity with applicable Actuarial Standards of Practice and result in a funded status at the end of the five years that is at least actuarially equivalent to the expected funded status if contributions were based on the redevelopment of the employer contribution rates annually under the same assumptions and methods. The current stable contribution rates apply for the calendar years 2023 through 2027.

The actuarially determined employer contribution consists of the employer portion of the normal cost, an allocation for administrative expense and a payment on the unfunded actuarial accrued liability. The employer normal cost is the employer's portion of the cost of benefits for active members, allocated to the current year, after reducing for the member contributions. The unfunded actuarial accrued liability payment is the contribution made in order to pay off the unfunded actuarial accrued liability over the scheduled amortization period.

The exhibits in this Section show the calculation of the actuarially determined employer contribution for the current valuation. As discussed above, although the actuarial contribution rate is determined in the valuation, the actual employer contributions to ERS are derived from the Employer Stable Contribution Policy, set out in the Milwaukee City Charter.

TABLE 16

Normal Cost by Group

Total – All Funds
(Dollars in thousands)

	General Employees	Policemen	Firemen	Total
1. Retirement Benefits	$26,834	$31,138	$11,725	$69,697
2. Withdrawal Benefits	14,312	1,525	513	16,350
3. Disability Benefits	1,061	2,027	2,638	5,726
4. Death Benefits	693	222	110	1,025
5. Total Normal Cost	$42,900	$34,912	$14,986	$92,798
6. Projected Payroll	$390,258	$146,653	$62,373	$599,284
7. Normal Cost Rate	10.99%	23.81%	24.03%	15.48%
8. Member Contribution Rate	(4.70%)	(7.00%)	(7.00%)	(5.50%)
9. Employer Normal Cost Rate	6.29%	16.81%	17.03%	9.98%

TABLE 17A

Amortization of Unfunded Actuarial Accrued Liability (UAAL)

Combined Fund
(Dollars in thousands)

The tables below provide the calculation of the new amortization base and the amortization schedule for the current year's valuation for the Combined Fund.

Calculation as of:	1/1/2023	1/1/2022
(a) Unfunded Actuarial Accrued Liability	$ 1,306,258	$ 1,190,869
(b) Prior Years' Outstanding Bases	1,183,333	1,334,661
(c) Assumption Changes	22,502	0
(d) New Amortization Base: (a) - (b) - (c)	100,423	(143,792)
(e) New Amortization Payment	$ 7,902	$ (13,495)

Amortization Base	Date Established	Original Amount	Outstanding Balance as of January 1, 2023	Remaining Amortization Period	Annual Payment*
2019 Initial UAAL Base	1/1/2019	$ 1,204,699	$ 1,191,816	21	$ 91,271
2020 Experience Base	1/1/2020	142,702	129,874	12	14,213
2021 Experience Base	1/1/2021	1,814	1,712	13	177
2022 Experience Base	1/1/2022	(143,792)	(140,069)	14	(13,765)
2023 Assumption Changes	1/1/2023	22,502	22,502	25	1,575
2023 Experience Base	1/1/2023	100,423	100,423	20	7,902
Total			**$ 1,306,258**		**$ 101,373**

* Reflects beginning of year timing.

TABLE 17B

Amortization of the Unfunded Actuarial Accrued Liability (UAAL)

Retirement Fund
(Dollars in thousands)

The tables below provide the calculation of the new amortization base and the amortization schedule for the current year's valuation for the Retirement Fund.

Calculation as of:	1/1/2023	1/1/2022
(a) Unfunded Actuarial Accrued Liability	$ (5,208)	$ (7,128)
(b) Prior Years' Outstanding Bases	N/A	(5,027)
(c) New Amortization Base: (a) - (b)	N/A	(2,101)
(d) New Amortization Payment	$ (365)	$ (197)

Amortization Base	Date Established	Original Amount	Outstanding Balance as of January 1, 2023	Remaining Amortization Period	Annual Payment*
2023 Experience Base	1/1/2023	(5,208)	(5,208)	25	(365)
Total			**$ (5,208)**		**$ (365)**

* Reflects beginning of year timing.

TABLE 17C

Amortization of the Unfunded Actuarial Accrued Liability (UAAL)

General Employees Duty Disability Fund
(Dollars in thousands)

The tables below provide the calculation of the new amortization base and the amortization schedule for the current year's valuation for the General Employees Duty Disability Fund.

Calculation as of:	1/1/2023	1/1/2022
(a) Unfunded Actuarial Accrued Liability	$ (101)	$ (98)
(b) Prior Years' Outstanding Bases	N/A	(80)
(c) New Amortization Base: (a) - (b)	N/A	(18)
(d) New Amortization Payment	$ (7)	$ (2)

Amortization Base	Date Established	Original Amount	Outstanding Balance as of January 1, 2023	Remaining Amortization Period	Annual Payment*
2023 Experience Base	1/1/2023	(101)	(101)	25	(7)
Total			**$ (101)**		**$ (7)**

* Reflects beginning of year timing.

TABLE 17D

Amortization of the Unfunded Actuarial Accrued Liability (UAAL)

Combined Retirement & Disability Fund
(Dollars in thousands)

The tables below provide the calculation of the new amortization base and the amortization schedule for the current year's valuation for the Combined Retirement & Disability Fund.

Calculation as of:	1/1/2023	1/1/2022
(a) Unfunded Actuarial Accrued Liability	$ 1,703	$ (66)
(b) Prior Years' Outstanding Bases	(25)	1,449
(c) Assumption Changes	596	0
(d) New Amortization Base: (a) - (b) - (c)	1,132	(1,515)
(e) New Amortization Payment	$ 89	$ (142)

Amortization Base	Date Established	Original Amount	Outstanding Balance as of January 1, 2023	Remaining Amortization Period	Annual Payment*
2019 Initial UAAL Base	1/1/2019	$ 1,836	$ 1,816	21	$ 139
2020 Experience Base	1/1/2020	280	255	12	28
2021 Experience Base	1/1/2021	(657)	(620)	13	(64)
2022 Experience Base	1/1/2022	(1,515)	(1,476)	14	(145)
2023 Assumption Changes	1/1/2023	596	596	25	42
2023 Experience Base	1/1/2023	1,132	1,132	20	89
Total			**$ 1,703**		**$ 89**

* Reflects beginning of year timing.

TABLE 18

Comparison of Stable Contribution Policy to the Actuarial Determined Rate for Combined Fund
(Dollars in thousands)

	General Employees	Police	Fire	Total
1. Active Members	$ 7,476	$ 1,591	$ 699	$ 9,766
2. Covered Compensation	$ 388,673	$ 146,529	$ 62,373	$ 597,575
3. Normal Cost				
a. Total	$ 42,699	$ 34,883	$ 14,986	$ 92,568
b. Estimated Member Contributions	18,253	10,257	4,366	32,876
c. Employer Normal Cost (a) - (b), not less than zero	$ 24,446	$ 24,626	$ 10,620	$ 59,692
4. Projected Administrative Expenses	$ 3,124	$ 2,567	$ 1,103	$ 6,794
5. Active Actuarial Accrued Liability	$ 744,365	$ 611,779	$ 262,977	$ 1,619,121
6. Assets				
a. Actuarial Value	$ 143,834	$ 118,214	$ 50,815	$ 312,863
b. Market Value	$ (3,514)	$ (2,888)	$ (1,241)	$ (7,643)
(Net of Inactive Liabilities)				
7. Unfunded Actuarial Accrued Liability				
a. Actuarial Value	$ 600,531	$ 493,565	$ 212,162	$ 1,306,258
b. Market Value	$ 747,879	$ 614,667	$ 264,218	$ 1,626,764
(5) - (6)				
8. Amortization of UAAL				
a. Actuarial Value	$ 46,605	$ 38,303	$ 16,465	$ 101,373
b. Market Value	$ 58,200	$ 47,832	$ 20,561	$ 126,593
9. Annual Contribution Payable January 1, 2023				
a. Actuarial Value	$ 74,175	$ 65,496	$ 28,188	$ 167,859
b. Market Value	$ 85,770	$ 75,025	$ 32,284	$ 193,079
(3c) + (4) + (8)				
10. Employer Rate as of January 1, 2023 based on				
a. Stable Contribution Policy Rate	18.47%	46.49%	45.84%	28.20%
b. Actuarial Determined Rate	19.08%	44.70%	45.19%	28.09%
c. Market-Based Actuarial Determined Rate	22.07%	51.20%	51.76%	32.31%

TABLE 19

Allocation of 2023 Contribution to Agencies for Combined Fund

Group	Active Members	Covered Compensation	Employer Rate**	Dollar Amount Payable*** Jan 1, 2023	June 1, 2023	July 1, 2023	Aug 1, 2023	Sept 1, 2023	Oct 1, 2023	Nov 1, 2023	Dec 1, 2023	Jan 31, 2024
General City*	3,094	$189,858,237	18.47%	$35,066,816	$36,139,588	$36,358,049	$36,577,830	$36,798,940	$37,021,387	$37,245,178	$37,470,322	$37,924,701
Water Department	317	19,456,264	18.47%	3,593,572	3,703,507	3,725,894	3,748,417	3,771,076	3,793,872	3,816,806	3,839,878	3,886,442
School Board****	3,628	141,870,904	18.47%	26,203,556	27,005,181	27,168,425	27,332,656	27,497,880	27,664,102	27,831,329	27,999,567	28,339,100
Milwaukee Technical College	0	0	18.47%	0	0	0	0	0	0	0	0	0
Sewerage Commission	237	23,007,220	18.47%	4,249,434	4,379,434	4,405,907	4,432,540	4,459,334	4,486,290	4,513,409	4,540,692	4,595,754
Veolia	8	726,441	18.47%	134,174	138,279	139,115	139,956	140,802	141,653	142,509	143,370	145,109
Wisconsin Center District	92	6,814,269	18.47%	1,258,595	1,297,098	1,304,939	1,312,827	1,320,763	1,328,747	1,336,779	1,344,860	1,361,168
Housing Authority	100	6,938,899	18.47%	1,281,615	1,320,822	1,328,806	1,336,839	1,344,920	1,353,050	1,361,229	1,369,458	1,386,065
Policemen	1,591	146,528,664	46.49%	68,121,176	70,205,154	70,629,538	71,056,488	71,486,019	71,918,146	72,352,885	72,790,252	73,672,934
Firemen	699	62,373,331	45.84%	28,591,935	29,466,626	29,644,749	29,823,949	30,004,232	30,185,605	30,368,075	30,551,648	30,922,129
Total	9,766	$597,574,229		$168,500,873	$173,655,689	$174,705,422	$175,761,502	$176,823,966	$177,892,852	$178,968,199	$180,050,047	$182,233,402

* Includes Elected Officials and Redevelopment Authority
** Rates apply to Covered Compensation as of the beginning of the year, then credited with interest to payable date.
*** Actual contribution requirement will be adjusted for the actual payment date of the contribution.
**** Breakdown of contributions for MPS by normal cost and past service portion as follow:

Payable at:	Jan 1, 2023	June 1, 2023	July 1, 2023	Aug 1, 2023	Sept 1, 2023	Oct 1, 2023	Nov 1, 2023	Dec 1, 2023	Jan 31, 2024
Normal Cost	8,241,577	8,493,705	8,545,049	8,596,703	8,648,669	8,700,950	8,753,547	8,806,461	8,913,251
Past Service Portion	17,961,979	18,511,476	18,623,376	18,735,953	18,849,211	18,963,152	19,077,782	19,193,106	19,425,849
Total	26,203,556	27,005,181	27,168,425	27,332,656	27,497,880	27,664,102	27,831,329	27,999,567	28,339,100

TABLE 20

Allocation of 2024 Contribution to Agencies for Combined Fund

Group	Estimated Active Members	Estimated Covered Compensation	Employer Rate**	Dollar Amount Payable***								
				Jan 1, 2024	June 1, 2024	July 1, 2024	Aug 1, 2024	Sept 1, 2024	Oct 1, 2024	Nov 1, 2024	Dec 1, 2024	Jan 31, 2025
General City*	3,094	$193,655,402	18.47%	$35,768,153	$36,862,380	$37,085,210	$37,309,387	$37,534,919	$37,761,815	$37,990,082	$38,219,729	$38,683,196
Water Department	317	19,845,389	18.47%	3,665,443	3,777,577	3,800,412	3,823,385	3,846,497	3,869,749	3,893,141	3,916,675	3,964,170
School Board*****	3,628	144,708,322	18.47%	26,727,627	27,545,284	27,711,793	27,879,309	28,047,837	28,217,384	28,387,956	28,559,559	28,905,883
Milwaukee Technical College	0	0	18.47%	0	0	0	0	0	0	0	0	0
Sewerage Commission	237	23,467,364	18.47%	4,334,422	4,467,022	4,494,025	4,521,191	4,548,521	4,576,016	4,603,678	4,631,507	4,687,670
Veolia	8	740,970	18.47%	136,857	141,044	141,897	142,755	143,618	144,486	145,359	146,238	148,011
Wisconsin Center District	92	6,950,554	18.47%	1,283,767	1,323,040	1,331,038	1,339,084	1,347,179	1,355,323	1,363,516	1,371,758	1,388,392
Housing Authority	100	7,077,677	18.47%	1,307,247	1,347,239	1,355,383	1,363,576	1,371,819	1,380,112	1,388,455	1,396,848	1,413,787
Policemen	1,591	149,459,237	46.49%	69,483,599	71,609,257	72,042,129	72,477,618	72,915,739	73,356,509	73,799,943	74,246,058	75,146,394
Firemen	699	63,620,798	45.84%	29,163,774	30,055,959	30,237,645	30,420,429	30,604,318	30,789,319	30,975,438	31,162,682	31,540,572
Total	9,766	$609,525,713		$171,870,889	$177,128,802	$178,199,532	$179,276,734	$180,360,447	$181,450,713	$182,547,568	$183,651,054	$185,878,075

* Includes Elected Officials and Redevelopment Authority

** Rates apply to Covered Compensation as of the beginning of the year, then credited with interest to payable date.

*** Actual contribution requirement will be adjusted for the actual payment date of the contribution.

**** The amounts shown above are estimates of the employer contribution requirements due by January 31, 2025. The actual employer contribution requirements due by January 31, 2025 will be based on the results of the January 1, 2024 actuarial valuation, which is scheduled to be approved at the June 2024 Board meeting.

To the extent that an employer wishes to contribute before the report is approved, the amounts above can serve as a guide. To the extent that the amount contributed is less than the final contribution requirements, the employer will be billed for the remainder, which is to be paid by the end of the year. To the extent that the amount already contributed is more than the required contribution, the employer will receive a credit, with interest, to the contribution for next year.

***** Breakdown of contributions for MPS by normal cost and past service portion as follow:

Payable at:	Jan 1, 2024	June 1, 2024	July 1, 2024	Aug 1, 2024	Sept 1, 2024	Oct 1, 2024	Nov 1, 2024	Dec 1, 2024	Jan 31, 2025
Normal Cost	8,406,409	8,663,580	8,715,951	8,768,638	8,821,644	8,874,970	8,928,618	8,982,591	9,091,517
Past Service Portion	18,321,218	18,881,704	18,995,842	19,110,671	19,226,193	19,342,414	19,459,338	19,576,968	19,814,366
Total	26,727,627	27,545,284	27,711,793	27,879,309	28,047,837	28,217,384	28,387,956	28,559,559	28,905,883

TABLE 21

Determination of Employer Contribution to Retirement Fund
(Dollars in thousands)

	General Employees	Policemen	Firemen	Total
1. Active Members	8	0	0	8
2. Covered Compensation	$ 312	$ 0	$ 0	$ 312
3. Normal Cost				
a. Total	$ 38	$ 0	$ 0	$ 38
b. Estimated Member Contributions	17	0	0	17
c. Employer Normal Cost (a) - (b), not less than zero	$ 21	$ 0	$ 0	$ 21
4. Projected Administrative Expenses	$ 0	$ 0	$ 0	$ 0
5. Active Actuarial Accrued Liability	$ 1,513	$ 0	$ 0	$ 1,513
6. Assets				
a. Actuarial Value	$ 6,721	$ 0	$ 0	$ 6,721
b. Market Value	$ 6,141	$ 0	$ 0	$ 6,141
(Net of Inactive Liabilities)				
7. Unfunded Actuarial Accrued Liability				
a. Actuarial Value	$ (5,208)	$ 0	$ 0	$ (5,208)
b. Market Value	$ (4,628)	$ 0	$ 0	$ (4,628)
(5) - (6)				
8. Amortization of UAAL				
a. Actuarial Value	$ (365)	$ 0	$ 0	$ (365)
b. Market Value	$ (319)	$ 0	$ 0	$ (319)
9. Annual Contribution Payable January 31, 2024				
a. Actuarial Value	$ 0	$ 0	$ 0	$ 0
b. Market Value	$ 0	$ 0	$ 0	$ 0
(3c) + (4) + (8), with interest to 01/31/2024				

TABLE 22

Determination of Employer Contribution to Duty Disability Fund
(Dollars in thousands)

	General Employees	Policemen	Firemen	Total
1. Active Members	8	0	0	8
2. Covered Compensation	$ 312	$ 0	$ 0	$ 312
3. Normal Cost				
a. Total	$ 0	$ 0	$ 0	$ 0
b. Estimated Member Contributions	0	0	0	0
c. Employer Normal Cost (a) - (b), not less than zero	$ 0	$ 0	$ 0	$ 0
4. Projected Administrative Expenses	$ 0	$ 0	$ 0	$ 0
5. Active Actuarial Accrued Liability	$ 4	$ 0	$ 0	$ 4
6. Actuarial Value of Assets	$ 105	$ 0	$ 0	$ 105
7. Unfunded Actuarial Accrued Liability (5) - (6)	$ (101)	$ 0	$ 0	$ (101)
8. Amortization of UAAL	$ (7)	$ 0	$ 0	$ (7)
9. Annual Contribution Payable January 31, 2024 (3c) + (4) + (8), with interest to 01/31/2024	$ 0	$ 0	$ 0	$ 0

TABLE 23

Determination of Employer Contribution to Heart and Lung Fund
(Dollars in thousands)

	Amount
1. Active Members	0
2. Covered Compensation	$ 0
3. Normal Cost	
a. Total	$ 0
b. Estimated Member Contributions	0
c. Employer Normal Cost (a) - (b), not less than zero	$ 0
4. Projected Administrative Expenses	$ 0
5. Active Actuarial Accrued Liability	$ 0
6. Actuarial Value of Assets	$ 0
7. Unfunded Actuarial Accrued Liability (5) - (6)	$ 0
8. Full Funding Limit (3) + (4) + (7), not less than zero, with interest to 01/31/2024	$ 0
9. Annual Contribution Payable January 31, 2024	$ 0

TABLE 24

Allocation of 2023 Contribution to Agencies for the Retirement, Duty Disability and Heart & Lung Funds

Group	Active Members	Covered Compensation	Fund Retirement	Fund Duty Disability	Fund Heart & Lung	January 31, 2024 Total Due	January 31, 2024 % of Pay
General City	1	$51,925	$0	$0	$0	$0	0.00%
Water Department	0	0	0	0	0	0	0.00%
School Board	7	260,469	0	0	0	0	0.00%
Milwaukee Technical College	0	0	0	0	0	0	0.00%
Sewerage Commission	0	0	0	0	0	0	0.00%
Veolia	0	0	0	0	0	0	0.00%
Wisconsin Center District	0	0	0	0	0	0	0.00%
Housing Authority	0	0	0	0	0	0	0.00%
Policemen	0	0	0	0	0	0	0.00%
Firemen	0	0	0	0	0	0	0.00%
Total	8	$312,394	$0	$0	$0	$0	0.00%

Note: Redevelopment Authority members are included in the General City group.

TABLE 25

Determination of Employer Contribution to Combined Retirement and Disability Fund
(Dollars in thousands)

	General Employees	Policemen	Firemen	Total
1. Active Members	25	1	0	26
2. Covered Compensation	$ 1,273	$ 124	$ 0	$ 1,397
3. Normal Cost				
a. Total	$ 163	$ 29	$ 0	$ 192
b. Estimated Member Contributions	69	9	0	78
c. Employer Normal Cost (a) - (b), not less than zero	$ 94	$ 20	$ 0	$ 114
4. Projected Administrative Expenses	$ 0	$ 0	$ 0	$ 0
5. Active Actuarial Accrued Liability	$ 4,494	$ 1,053	$ 0	$ 5,547
6. Assets				
a. Actuarial Value	$ 3,114	$ 730	$ 0	$ 3,844
b. Market Value	$ 2,827	$ 663	$ 0	$ 3,490
(Net of Inactive Liabilities)				
7. Unfunded Actuarial Accrued Liability				
a. Actuarial Value	$ 1,380	$ 323	$ 0	$ 1,703
b. Market Value	$ 1,667	$ 390	$ 0	$ 2,057
(5) - (6)				
8. Amortization of UAAL				
a. Actuarial Value	$ 72	$ 17	$ 0	$ 89
b. Market Value	$ 95	$ 22	$ 0	$ 117
9. Annual Contribution Payable January 31, 2024				
a. Actuarial Value	$ 180	$ 40	$ 0	$ 220
b. Market Value	$ 204	$ 45	$ 0	$ 249
(3c) + (4) + (8), with interest to 01/31/2024				

TABLE 26

Allocation of 2023 Contribution to Employee Groups for Combined Retirement and Disability Fund

Group	Active Members	Covered Compensation	Fund: Combined Retirement & Disability	Fund: Heart & Lung	January 31, 2024 Total Due	January 31, 2024 % of Pay
General City	8	$492,613	$69,667	$0	$69,667	14.14%
Water Department	0	0	0	0	0	0.00%
School Board*	16	709,923	100,400	0	100,400	14.14%
Milwaukee Technical College	0	0	0	0	0	0.00%
Sewerage Commission	0	0	0	0	0	0.00%
Veolia	0	0	0	0	0	0.00%
Wisconsin Center District	0	0	0	0	0	0.00%
Housing Authority	1	70,233	9,933	0	9,933	14.14%
Policemen	1	124,277	40,000	0	40,000	32.19%
Firemen	0	0	0	0	0	0.00%
Total	26	$1,397,046	$220,000	$0	$220,000	15.75%

Note: Redevelopment Authority members are included in the General City group.
* Breakdown of contributions for MPS by normal cost and past service portion are as follows:

Payable at:	January 31, 2024
Normal Cost	54,764
Past Service Portion	45,636
Total	100,400

TABLE 27

Contribution Requirements for FY 2023 by Group and Fund

Amounts shown are calculated as of January 31, 2024. Actual contribution requirements will be adjusted for the actual payment date of the contribution.

Fund	General Employees	Policemen	Firemen	Total
Combined Fund	$ 77,638,339	$ 73,672,934	$ 30,922,129	$ 182,233,402
Retirement Fund	0	0	0	0
Duty Disability Fund	0	0	0	0
Heart & Lung Fund	N/A	N/A	0	0
Combined Retirement & Disability Fund	180,000	40,000	0	220,000
Total Contribution	$ 77,818,339	$ 73,712,934	$ 30,922,129	$ 182,453,402
Covered Compensation	$ 390,258,000	$ 146,653,000	$ 62,373,000	$ 599,284,000
Total Contribution as a Percentage of Covered Compensation	19.94%	50.26%	49.58%	30.45%

Note: Reflects the Stable Contribution Policy for the Combined Fund.

Actuarial Standards of Practice are issued by the Actuarial Standards Board and are binding on credentialed actuaries practicing in the United States. These standards generally identify what the actuary should consider, document and disclose when performing an actuarial assignment. In September, 2017, Actuarial Standard of Practice Number 51, *Assessment and Disclosure of Risk in Measuring Pension Obligations*, (ASOP 51) was issued as final with application to measurement dates on or after November 1, 2018. This ASOP, which applies to funding valuations, actuarial projections, and actuarial cost studies of proposed plan changes, was first applicable for the January 1, 2019 actuarial valuation for the Employes' Retirement System of the City of Milwaukee (System).

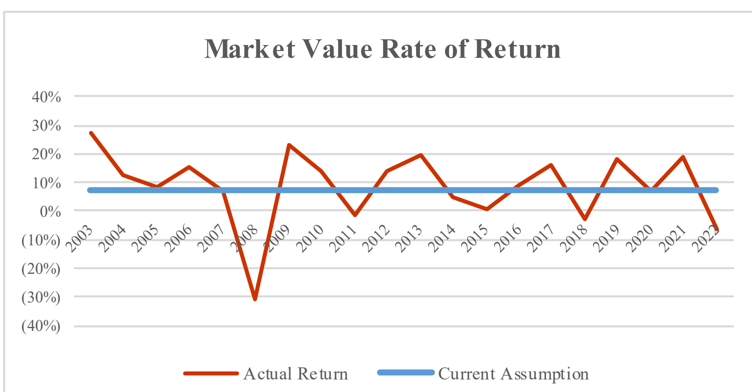
While actuarial assumptions allow for a projection of how future contributions and investment returns will meet the cash flow needs for future benefit payments, actual experience will not unfold exactly as anticipated by the assumptions. In this section, we discuss some of the risk factors that can have a significant impact – positive or negative – on the actuarial projection of liability and contribution rates.

There are a number of risks inherent in the funding of a defined benefit plan. These include:

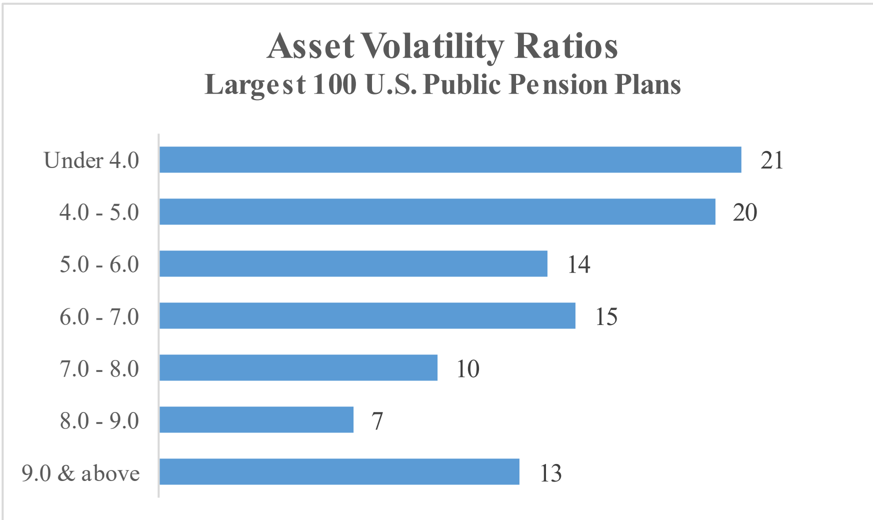
- economic risks, such as investment return and inflation;
- demographic risks such as mortality, payroll growth, aging population, and retirement ages;
- contribution risk like volatility making it difficult for the plan sponsor to fund the plan; and
- external risks such as the regulatory and political environment (not included in ASOP 51).

The last two are not risks that the actuary must opine on under ASOP 51.

The most significant risk factor for most plans is investment return because of the volatility of the returns and the size of plan assets compared to payroll (see Table 28). A perusal of historical rates over 10-20 years reveals that the actual return each year is rarely close to the average return over the same period. This is an expected result given the underlying capital market assumptions and the asset allocation. However, the valuation is a measurement based on a single investment return, usually around the median of the distribution of returns. The magnitude of variations in investment returns and the short timeframe in which they occur makes the management of this risk very challenging. See the chart below for the historical rates of return over the past 19 years.

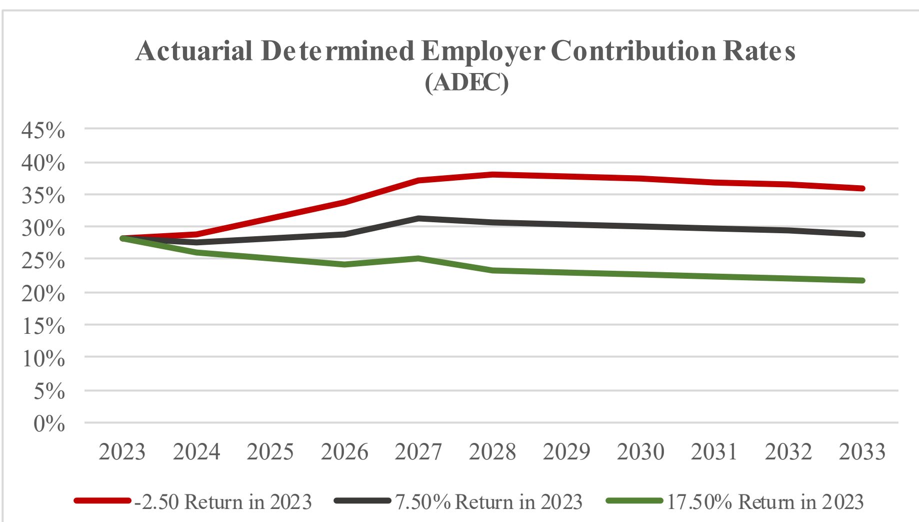


The size of the plan assets relative to covered payroll, sometimes referred to as the asset volatility ratio, is an important indicator of the contribution risk for the System. The higher this ratio, the more sensitive a plan's contribution rate is to investment return volatility. In other words, it will be harder to recover from investment losses with increased contributions because of the magnitude of the increase. In the January 1, 2023 valuation, the asset volatility ratio was 9.22. Due to ERS' maturity, the asset volatility ratio is higher than the ratio for most large public plans, as shown in the following chart.



Note: Reflects most recent available data, compiled by the Center for Retirement Research at Boston College.

This metric means the same investment experience would move the actuarially determined contribution more significantly for CMERS as compared to most other public plans. For example, a return that is 10% lower than assumed (or -2.50%) equates to an actuarial loss of about $553 million, or 92% of payroll. Given the asset volatility ratio and the amortization period of 20 years for actuarial gains and losses, an increase of 7.52% in the contribution rate, or about $45 million, over the next 20 years would be required to compensate for an investment return that is 10% below the assumed rate of return.



The Stable Contribution Policy was designed to create stability in the actual employer contribution rates by avoiding annual adjustments that are the result of actuarial experience different than anticipated by the actuarial assumptions over the stable “five-year” period. The stable contribution rate is usually set after the regular Experience Study is performed every five years and is set at a rate that results in the System being at the same funded ratio as if the projected actuarial contribution rates were made. However, if changes to the actuarial assumptions are made “off cycle” or a significant decline in the financial markets were to occur without a subsequent rebound, it could create a situation where the actual contributions to the System under the Stable Contribution Policy are much lower than the actuarially determined amounts. If this were to occur, as happened in 2019, the System’s funded status could be negatively impacted for a number of years. The difference between the actuarial contribution rate and the stable contribution policy rate each year results in an increase in the unfunded actuarial accrued liability and a corresponding increase in the UAAL contribution rate and actuarial contribution rate. If this persists for a period of years, it can result in a large adjustment to the contribution rate under the Stable Contribution Policy when the reset occurs.

Although we would expect this to happen infrequently, it could be problematic if the employers’ resources are limited and such contribution increases cannot managed.

A key demographic risk for all retirement systems, including CMERS, is improvements in mortality (longevity) greater than anticipated. While the mortality assumption used in the valuation reflects some improvement in mortality experience and this assumption is evaluated and refined in each experience study, the risk arises because there is a possibility of some sudden shift, perhaps from a significant medical breakthrough that could rapidly improve mortality rates and increase liabilities. Likewise, there is some possibility of a significant public health crisis that could result in a significant number of additional deaths in a short time period, as experienced with the COVID-19 pandemic. This type of event is also significant, although more easily absorbed. While either of these events could happen, it represents a relatively small probability and thus represents much less risk than the volatility associated with investment returns.

Finally, the unfunded actuarial accrued liability is amortized as a level percentage of payroll. The underlying assumption used in developing the payment schedule assumes an increasing payroll over time which is dependent on a stable employment level, i.e., active member count remains the same. When payroll does not grow as expected, the UAAL contribution rate will be higher than expected even if the dollar amount of the payment is the same as scheduled. The assumption for the anticipated increase in covered payroll has been declining and is currently 2.0%. A lower assumed growth in the covered payroll reduces this risk for the System’s funding.

As plan demographics change over time, along with the funded status, the risk factors may also change. The following exhibits summarize certain historical information that provide an indication as to how key risk metrics have changed over time.

TABLE 28

Historical Asset Volatility Ratios
(Dollars in thousands)

As a retirement system matures, the size of the market value of assets increases relative to the covered payroll of active members, on which the System is funded. The size of the plan assets relative to covered payroll, sometimes referred to as the asset volatility ratio, is an important indicator of the contribution risk for the System. The higher this ratio, the more sensitive a plan's contribution rate is to investment return volatility. In other words, it will be harder to recover from investment losses by increasing contributions. In the January 1, 2023 valuation, the asset volatility ratio was 9.22. Therefore, underperforming the investment return assumption by 10.00% (i.e., earn -2.50% for one year) is equivalent to about $553 million, or 92% of payroll, and would ultimately result in a 7.52% increase to the ADEC, or about $45 million.

ERS is a very mature system as is evident by the fact this is the eighty-fourth valuation of the System. Therefore, this metric has held fairly stable over this entire period where often the trend is an increasing AVR as the System becomes more mature and its funding improves (assets grow more rapidly than covered payroll). However, investment experience and a declining active membership over the last few years has caused the AVR to fluctuate recently.

Actuarial Valuation Date	Market Value of Assets	Covered Payroll	Asset Volatility Ratio	Increase in ADC with a Return 10% Lower than Assumed*
1/1/2010	$4,020,640	$553,846	7.26	5.92%
1/1/2011	4,322,384	538,218	8.03	6.55%
1/1/2012	4,197,264	525,181	7.99	6.52%
1/1/2013	4,375,197	523,738	8.35	6.81%
1/1/2014	4,949,534	521,651	9.49	7.74%
1/1/2015	4,953,150	529,939	9.35	7.63%
1/1/2016	4,752,308	535,802	8.87	7.24%
1/1/2017	4,886,669	583,950	8.37	6.83%
1/1/2018	5,396,527	577,118	9.35	7.63%
1/1/2019	4,950,881	581,663	8.51	6.94%
1/1/2020	5,557,077	596,386	9.32	7.60%
1/1/2021	5,649,734	586,369	9.64	7.86%
1/1/2022	6,431,356	579,351	11.10	9.06%
1/1/2023	5,525,958	599,284	9.22	7.52%

* The impact on the Actuarial Determined Contribution (ADC) reflects a 20-year amortization of the actuarial gain/loss and no asset smoothing.

TABLE 29

RATIO OF ACTIVE TO RETIREE COUNT

The payment on the unfunded actuarial accrued liability is calculated anticipating covered payroll increases each year in the future. To the extent actual payroll does not meet the assumed rate of increase (currently 2.0%), a higher rate of pay is necessary to collect the same dollar amount of payment on the unfunded actuarial accrued liability. A reduction in the number of active members usually restricts the growth of covered payroll. ERS has experienced a 16% decline in the active membership over the past 13 years which can create more volatility (risk) on the contributions to fund the System.

Valuation Date January 1	Active Count	In-Pay Count	Active/ In-Pay
2010	11,664	11,178	1.04
2011	11,247	11,542	0.97
2012	10,767	11,937	0.90
2013	10,714	12,109	0.88
2014	10,675	12,468	0.86
2015	10,964	12,580	0.87
2016	10,982	12,746	0.86
2017	11,083	12,872	0.86
2018	10,845	13,181	0.82
2019	10,851	13,355	0.81
2020	10,974	13,543	0.81
2021	10,567	13,636	0.77
2022	10,094	13,747	0.73
2023	9,800	13,842	0.71

Note the ratio of active members to benefit recipients is not as critical for ERS as it is for, say, Social Security. The Plan has been funded, in advance, precisely for this reason and those assets exist to help pay the benefits of members. It is, however, a sign of the maturity of the System.

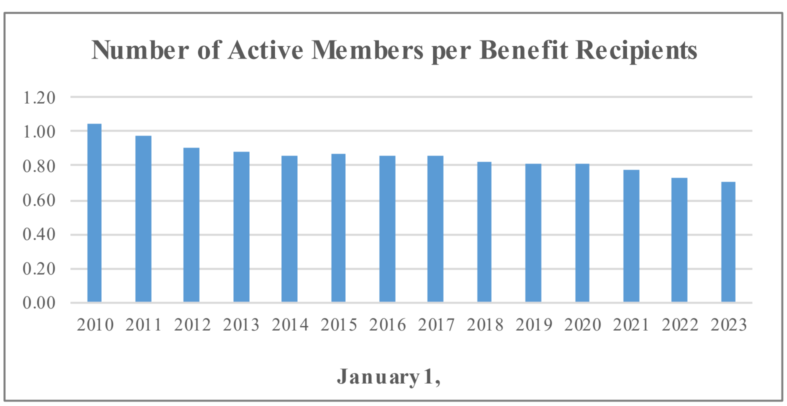


TABLE 30

HISTORICAL CASH FLOWS
(Dollars in thousands)

Plans with large negative cash flows generally experience increased sensitivity to investment return volatility. Cash flows, for this purpose, are measured as contributions minus benefit payments. If the System has negative cash flows and then experiences returns below the assumed rate, there are fewer assets to be reinvested to earn the higher returns that often follow. Negative cash flows can also impact the System's asset allocation and is a consideration in setting the investment policy of the system. CMERS has a relatively high negative cash flow so this metric should be closely monitored. The higher the net cash flow is as a percentage of the market value of assets, the greater the risk to the System's funding.

Year End	Market Value of Assets (MVA)	Contributions	Benefit Payments and Expenses	Net Cash Flow	Net Cash Flow as a Percent of MVA
12/31/2009	$4,020,640	$95,992	$255,014	($159,022)	(3.96%)
12/31/2010	4,322,384	35,699	271,710	(236,011)	(5.46%)
12/31/2011	4,197,264	52,675	285,565	(232,890)	(5.55%)
12/31/2012	4,375,197	138,968	302,439	(163,471)	(3.74%)
12/31/2013	4,949,534	122,157	334,858	(212,701)	(4.30%)
12/31/2014	4,953,150	116,507	342,569	(226,062)	(4.56%)
12/31/2015	4,752,308	121,751	347,888	(226,137)	(4.76%)
12/31/2016	4,886,669	110,013	351,303	(241,290)	(4.94%)
12/31/2017	5,396,527	116,018	385,331	(269,313)	(4.99%)
12/31/2018	4,950,881	115,251	400,707	(285,456)	(5.77%)
12/31/2019	5,557,077	129,022	416,104	(287,082)	(5.17%)
12/31/2020	5,649,734	119,852	436,331	(316,479)	(5.60%)
12/31/2021	6,431,356	122,621	451,989	(329,368)	(5.12%)
12/31/2022	5,525,958	153,775	464,799	(311,024)	(5.63%)

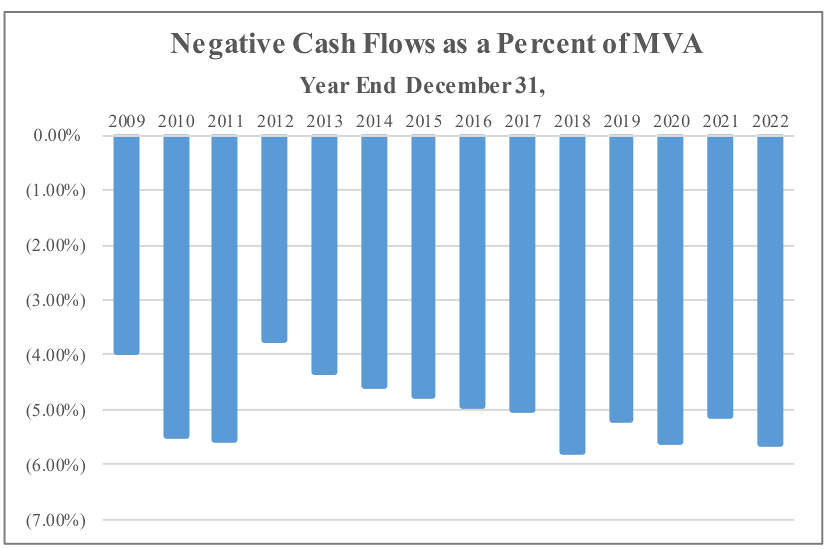


TABLE 31

LIABILITY MATURITY MEASUREMENTS

(Dollars in thousands)

Most public sector retirement systems have been in operation for many years. As a result, they have aging plan populations, and in some cases declining active populations, resulting in an increasing ratio of retirees to active members and a growing percentage of retiree liability. With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the system since it is more difficult to restore the system financially after losses occur when there is comparatively less payroll over which to spread the cost.

Actuarial Valuation Date	Retiree Liability (a)	Total Actuarial Accrued Liability (b)	Retiree Percentage (a / b)
1/1/2010	$2,637,961	$4,269,324	61.8%
1/1/2011	2,835,309	4,447,548	63.7%
1/1/2012	2,987,922	4,587,915	65.1%
1/1/2013	3,121,007	4,689,814	66.5%
1/1/2014	3,254,212	4,831,689	67.4%
1/1/2015	3,344,604	4,935,482	67.8%
1/1/2016	3,462,308	5,065,141	68.4%
1/1/2017	3,512,367	5,259,300	66.8%
1/1/2018	3,993,493	5,819,762	68.6%
1/1/2019	4,491,023	6,400,901	70.2%
1/1/2020	4,682,004	6,597,457	71.0%
1/1/2021	4,907,245	6,745,299	72.8%
1/1/2022	5,106,118	6,875,927	74.3%
1/1/2023	5,256,311	7,067,109	74.4%

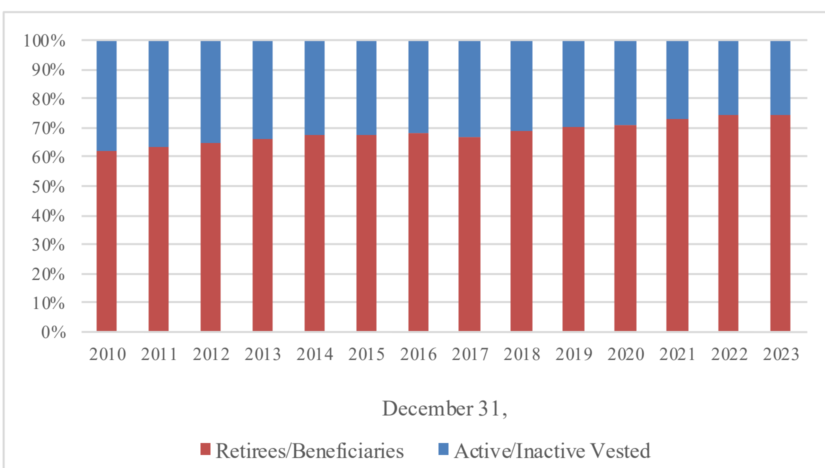


TABLE 32

Comparison of Valuation Results for the Combined Fund Under Alternate Investment Return Assumptions
(Dollars in thousands)

This exhibit compares the key January 1, 2023 valuation results for the Combined Fund under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the System. Note that only the investment return assumption is changed, as identified in the heading below. All other assumptions are unchanged for purposes of this analysis.

Investment Return Assumption	6.50%	7.00%	7.50%	8.00%	8.50%
Contributions					
- Total Normal Cost	$116,280	$103,536	$92,568	$83,119	$74,954
- Member Contributions	(32,876)	(32,876)	(32,876)	(32,876)	(32,876)
- Employer Normal Cost	$83,404	$70,660	$59,692	$50,243	$42,078
- Projected Administrative Expenses	$6,794	$6,794	$6,794	$6,794	$6,794
- Unfunded Actuarial Accrued Liability	$146,926	$124,057	$101,373	$78,845	$56,460
Total Employer Contribution	$237,124	$201,511	$167,859	$135,882	$105,332
Actuarial Determined Employer Rate	39.68%	33.72%	28.09%	22.74%	17.63%
Actuarial Value of Assets	$5,747,610	$5,747,610	$5,747,610	$5,747,610	$5,747,610
Actuarial Accrued Liability	7,881,599	7,448,397	7,053,868	6,693,679	6,364,122
Unfunded Actuarial Accrued Liability	$2,133,989	$1,700,787	$1,306,258	$946,069	$616,512
Funded Ratio	72.9%	77.2%	81.5%	85.9%	90.3%

Note: All other assumptions are unchanged for purposes of this sensitivity analysis.

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MEMBER DATA RECONCILIATION

January 1, 2022 to January 1, 2023

The number of members included in the valuation, as summarized in the table below, is in accordance with the data submitted by the System for members of the valuation date.

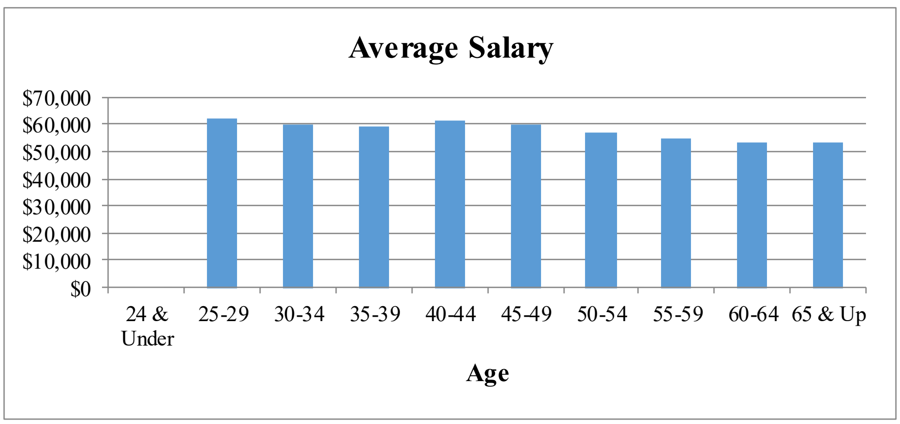
	Active Members	Refund Payable	Deferred Vested	Benefit Recipients: Disabled Members	Benefit Recipients: Retirees	Benefit Recipients: Beneficiaries	Total
Participants as of January 1, 2022	10,094	2,149	3,363	493	11,218	2,047	29,364
New Participants	1,165	144	52	0	0	142	1,503
Return to Work	96	(53)	(43)	0	0	0	0
Terminations							
- Refunded	(195)	(343)	(90)	0	0	0	(628)
- Refund Payable	(484)	484	0	0	0	0	0
- Deferred Vested	(496)	0	496	0	0	0	0
Service Retirements							
- Annuity	(347)	0	(168)	0	515	0	0
- Lump Sum	(12)	0	(13)	0	0	0	(25)
Disabilities							
- Duty-Related	0	0	0	0	0	0	0
- Non Duty-Related	(4)	0	(2)	6	0	0	0
Deaths	(17)	(2)	(14)	(15)	(386)	(166)	(600)
Benefit Payments Stopped	0	0	0	0	0	(1)	(1)
Reached Service Retirement Conversion Age	0	0	0	(21)	21	0	0
Data Adjustments	0	3	(3)	3	(3)	0	0
Participants as of January 1, 2023	9,800	2,382	3,578	466	11,365	2,022	29,613

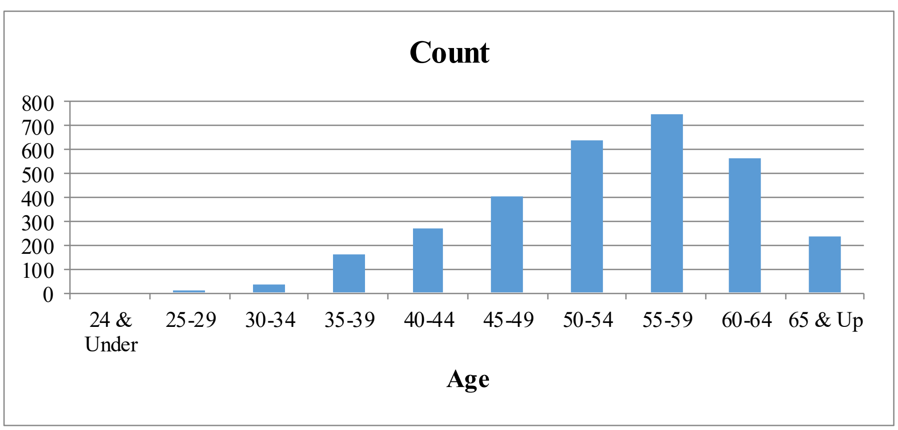
Notes: Duty disabled members who have reached their conversion age are included in the Retirees count.
Refund Payable counts include beneficiaries and estates that are owed a lump sum benefit as of January 1, 2023.

SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

General Employees – Tier 1

	Count			Reported FY 2022 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	0	0	0	$ 0	$ 0	$ 0
25-29	1	0	1	61,751	0	61,751
30-34	19	15	34	1,176,003	855,425	2,031,428
35-39	86	80	166	5,798,692	4,040,139	9,838,831
40-44	124	144	268	8,322,530	8,114,826	16,437,356
45-49	197	208	405	13,501,603	10,667,339	24,168,942
50-54	305	331	636	19,852,555	16,286,905	36,139,460
55-59	364	385	749	22,739,147	18,036,548	40,775,695
60-64	247	318	565	16,159,028	14,035,641	30,194,669
65 & Up	100	138	238	6,727,961	5,870,532	12,598,493
Total	1,443	1,619	3,062	$ 94,339,270	$ 77,907,355	$ 172,246,625

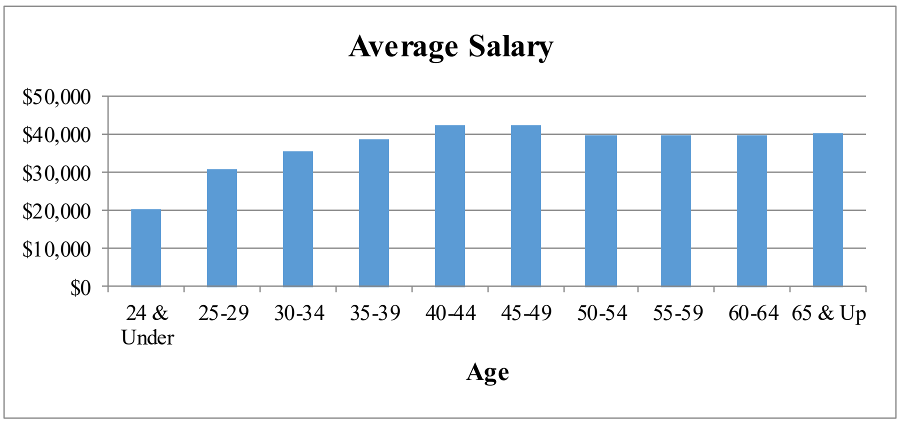


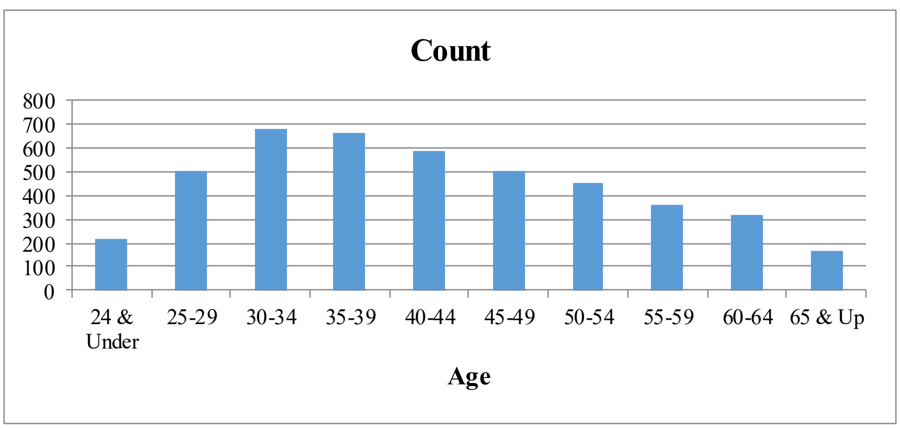


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

General Employees – Tier 2

	Count			Reported FY 2022 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	97	118	215	$ 2,271,822	$ 2,119,036	$ 4,390,858
25-29	203	299	502	7,008,499	8,484,371	15,492,870
30-34	274	403	677	11,227,919	12,701,080	23,928,999
35-39	258	406	664	11,322,552	14,194,339	25,516,891
40-44	238	351	589	12,084,386	12,714,066	24,798,452
45-49	200	305	505	9,867,411	11,436,128	21,303,539
50-54	198	257	455	9,013,411	8,968,447	17,981,858
55-59	164	197	361	7,517,266	6,795,240	14,312,506
60-64	154	161	315	7,289,912	5,193,673	12,483,585
65 & Up	76	88	164	4,019,052	2,561,605	6,580,657
Total	1,862	2,585	4,447	$ 81,622,230	$ 85,167,985	$ 166,790,215

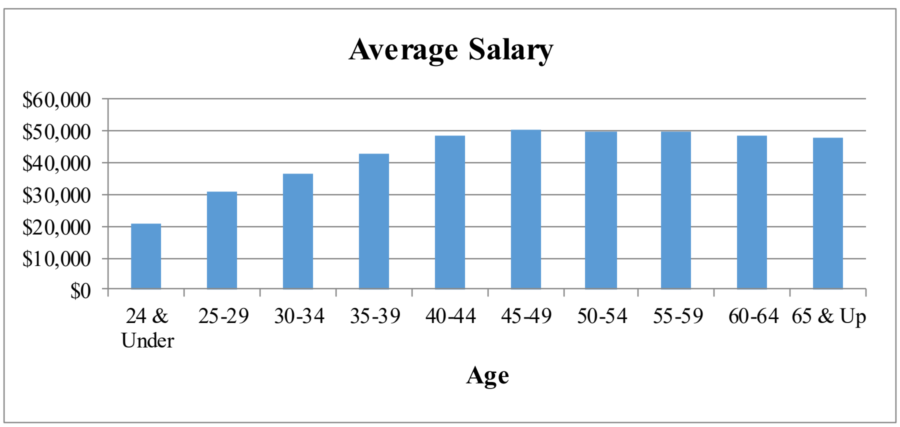


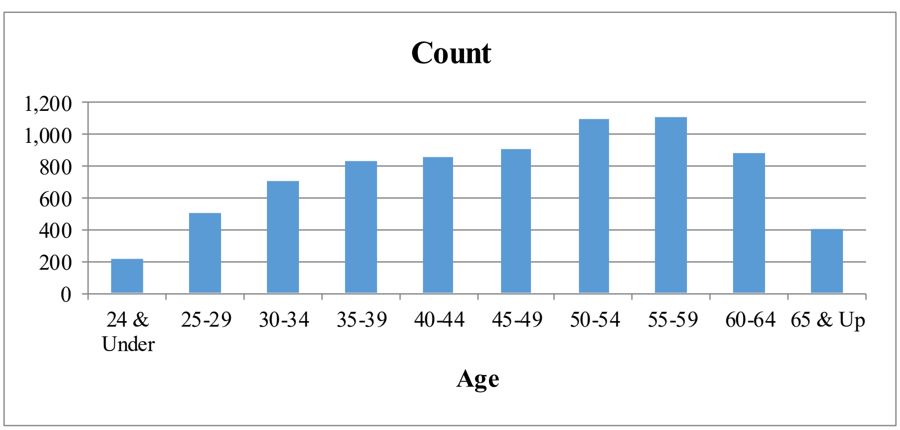


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

General Employees – Total

	Count			Reported FY 2022 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	97	118	215	$ 2,271,822	$ 2,119,036	$ 4,390,858
25-29	204	299	503	7,070,250	8,484,371	15,554,621
30-34	293	418	711	12,403,922	13,556,505	25,960,427
35-39	344	486	830	17,121,244	18,234,478	35,355,722
40-44	362	495	857	20,406,916	20,828,892	41,235,808
45-49	397	513	910	23,369,014	22,103,467	45,472,481
50-54	503	588	1,091	28,865,966	25,255,352	54,121,318
55-59	528	582	1,110	30,256,413	24,831,788	55,088,201
60-64	401	479	880	23,448,940	19,229,314	42,678,254
65 & Up	176	226	402	10,747,013	8,432,137	19,179,150
Total	3,305	4,204	7,509	$ 175,961,500	$ 163,075,340	$ 339,036,840

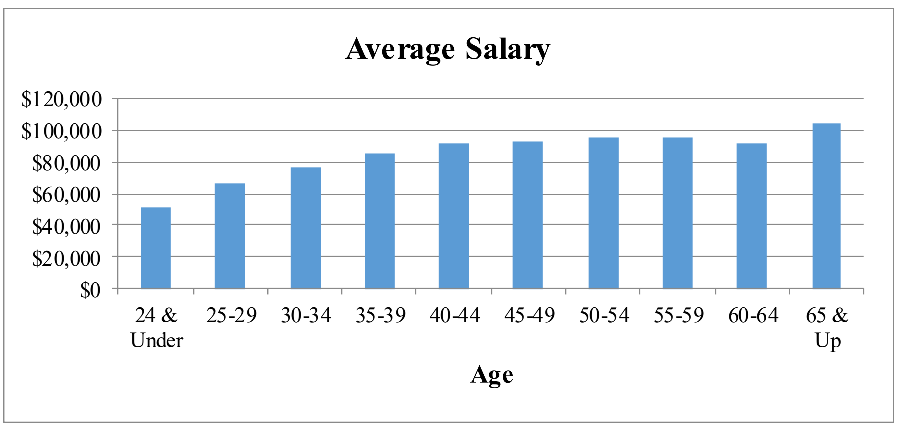


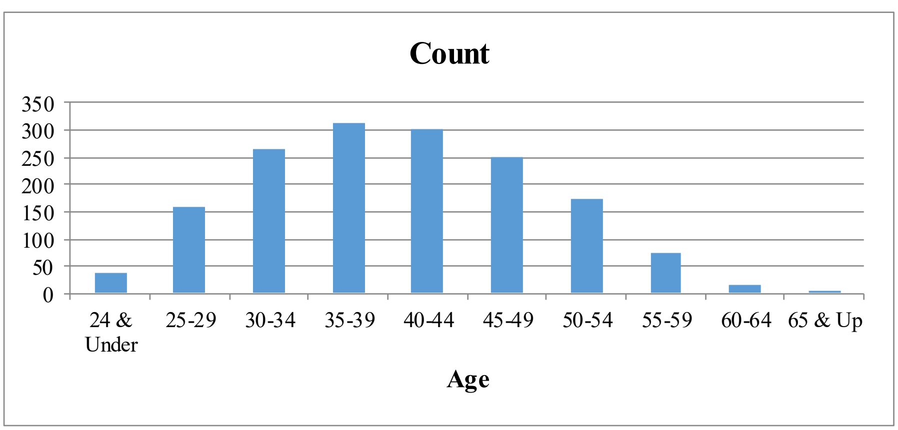


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Policemen

	Count			Reported FY 2022 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	27	12	39	$ 1,458,793	$ 525,411	$ 1,984,204
25-29	131	29	160	8,742,114	1,800,191	10,542,305
30-34	226	40	266	17,618,598	2,827,169	20,445,767
35-39	267	45	312	22,602,102	3,972,608	26,574,710
40-44	239	62	301	21,886,521	5,784,652	27,671,173
45-49	217	33	250	20,103,243	3,099,977	23,203,220
50-54	145	27	172	13,771,977	2,516,933	16,288,910
55-59	64	11	75	6,016,360	1,092,756	7,109,116
60-64	14	1	15	1,271,733	104,657	1,376,390
65 & Up	1	1	2	116,091	90,765	206,856
Total	1,331	261	1,592	$ 113,587,532	$ 21,815,119	$ 135,402,651

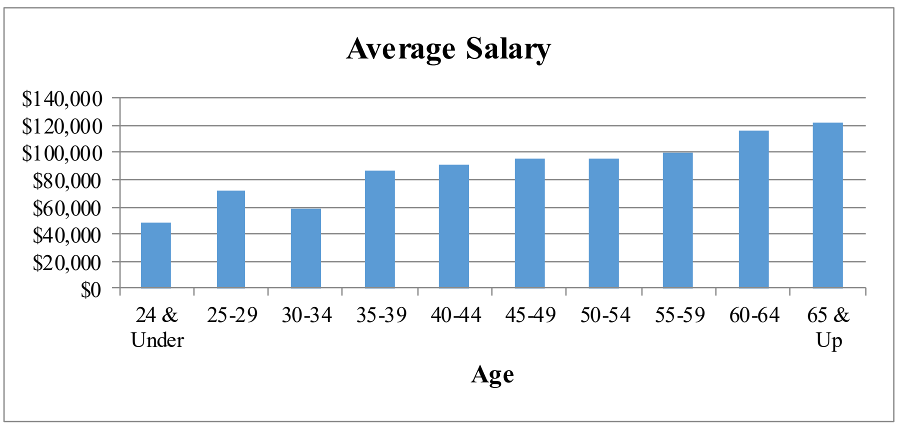


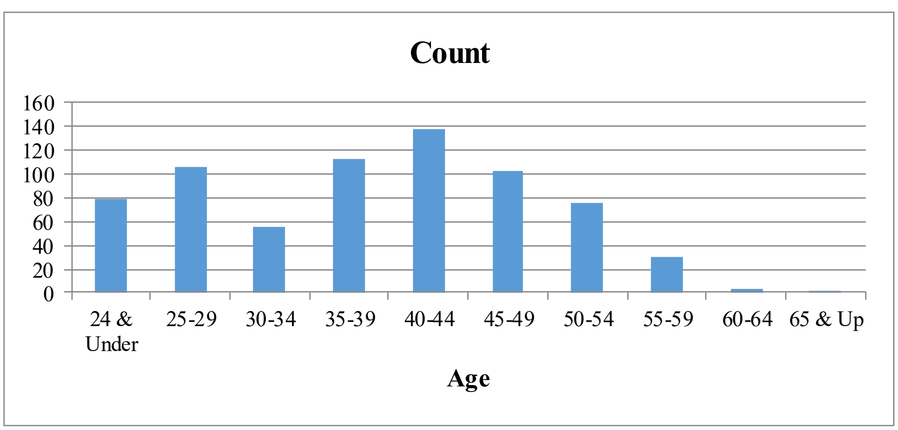


SUMMARY OF ACTIVE MEMBERS
as of January 1, 2023

Firemen

	Count			Reported FY 2022 Earnings		
Age	Male	Female	Total	Male	Female	Total
24 & Under	58	20	78	$ 2,803,919	$ 913,420	$ 3,717,339
25-29	96	10	106	6,768,674	790,751	7,559,425
30-34	51	4	55	3,013,971	232,561	3,246,532
35-39	106	6	112	9,195,006	487,990	9,682,996
40-44	132	5	137	12,089,378	435,707	12,525,085
45-49	100	2	102	9,509,164	190,652	9,699,816
50-54	74	1	75	7,055,621	139,279	7,194,900
55-59	29	1	30	2,906,372	101,104	3,007,476
60-64	3	0	3	346,624	0	346,624
65 & Up	1	0	1	121,406	0	121,406
Total	650	49	699	$ 53,810,135	$ 3,291,464	$ 57,101,599



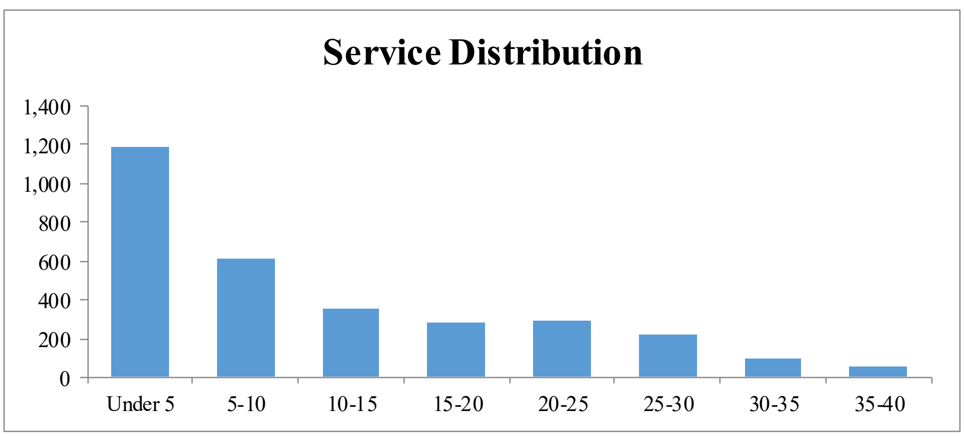


DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

General City*

	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	53	0	0	0	0	0	0	0	53
25-29	180	11	0	0	0	0	0	0	191
30-34	190	58	14	0	0	0	0	0	262
35-39	181	107	51	22	0	0	0	0	361
40-44	149	114	64	50	17	0	0	0	394
45-49	140	83	45	55	58	19	1	0	401
50-54	118	90	68	58	91	67	16	1	509
55-59	85	60	50	49	77	83	36	12	452
60-64	69	57	41	34	37	41	34	19	332
65 & Up	25	32	17	18	11	11	14	20	148
Total	1,190	612	350	286	291	221	101	52	3,103

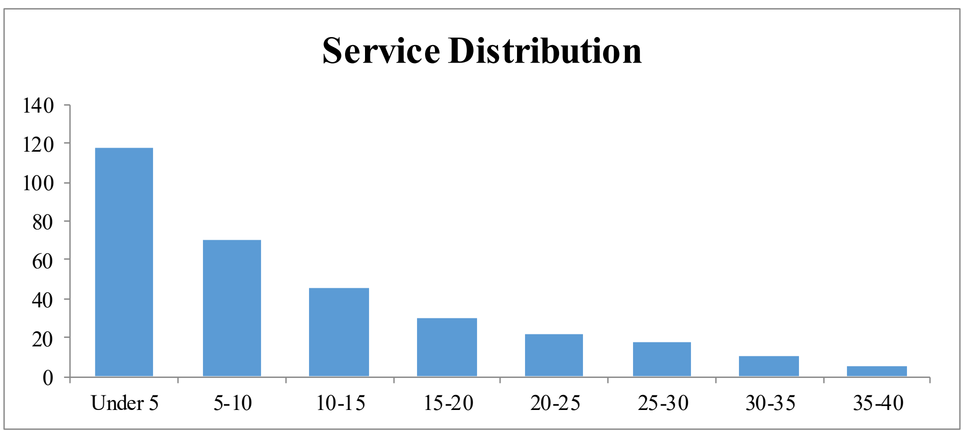
* Includes Elected Officials, General Employees of the City of Milwaukee, and Redevelopment Authority



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

Water Department

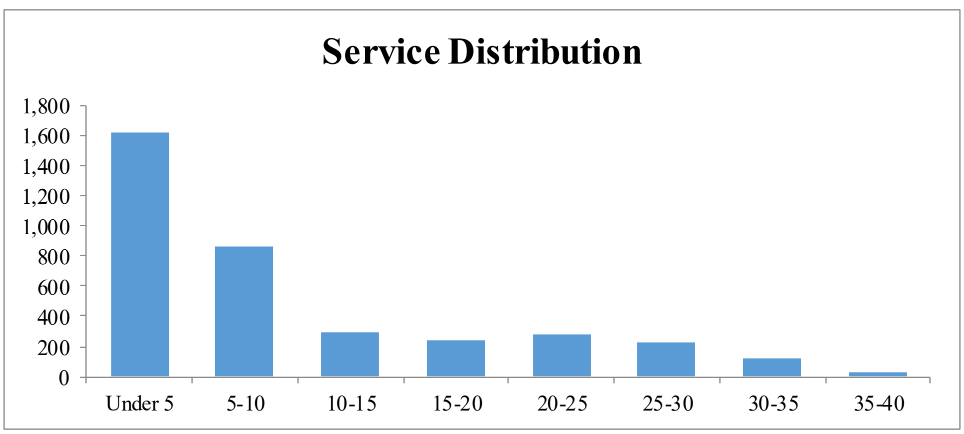
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
	Service								
24 & Under	3	0	0	0	0	0	0	0	3
25-29	21	2	0	0	0	0	0	0	23
30-34	23	8	1	0	0	0	0	0	32
35-39	18	14	3	1	0	0	0	0	36
40-44	10	15	5	5	2	1	0	0	38
45-49	15	11	9	7	7	1	0	0	50
50-54	12	7	9	7	6	2	4	0	47
55-59	9	9	11	7	5	9	4	0	54
60-64	3	3	7	2	2	4	2	4	27
65 & Up	3	1	0	1	0	1	0	1	7
Total	117	70	45	30	22	18	10	5	317



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

School Board

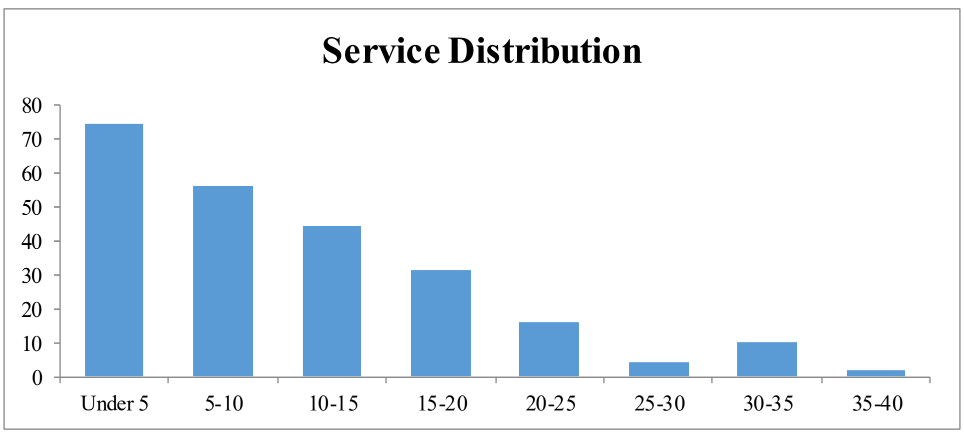
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	148	1	0	0	0	0	0	0	149
25-29	234	25	0	0	0	0	0	0	259
30-34	270	100	3	1	0	0	0	0	374
35-39	225	129	22	3	0	0	0	0	379
40-44	187	115	36	22	13	0	0	0	373
45-49	148	118	38	39	33	15	1	0	392
50-54	139	112	58	51	61	46	12	0	479
55-59	119	90	56	67	72	80	54	8	546
60-64	102	103	56	34	67	60	43	12	477
65 & Up	44	63	20	19	34	22	12	9	223
Total	1,616	856	289	236	280	223	122	29	3,651



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

Sewerage Commission

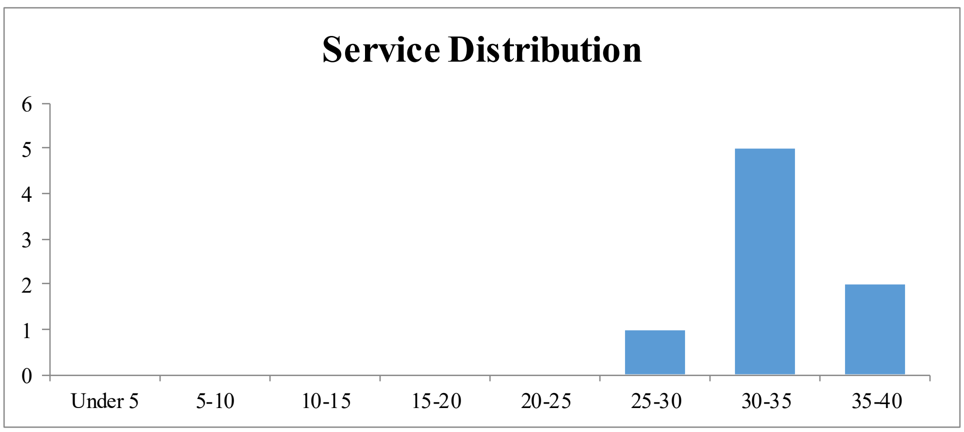
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	5	0	0	0	0	0	0	0	5
25-29	16	2	0	0	0	0	0	0	18
30-34	17	11	2	0	0	0	0	0	30
35-39	15	13	12	2	0	0	0	0	42
40-44	6	9	11	1	0	0	0	0	27
45-49	8	7	9	12	2	0	0	0	38
50-54	4	3	5	8	3	1	1	0	25
55-59	2	6	3	3	2	3	3	0	22
60-64	1	3	1	4	6	0	5	1	21
65 & Up	0	2	1	1	3	0	1	1	9
Total	74	56	44	31	16	4	10	2	237



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

Veolia

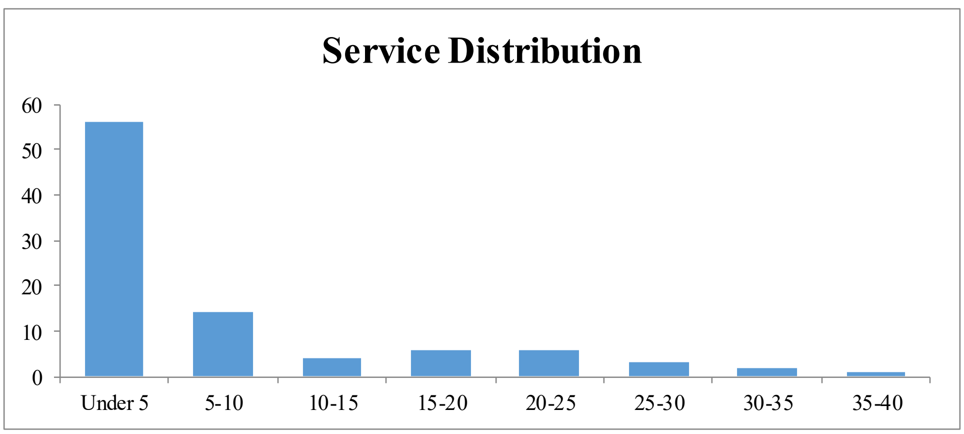
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	1	1	0	2
60-64	0	0	0	0	0	0	3	0	3
65 & Up	0	0	0	0	0	0	1	2	3
Total	0	0	0	0	0	1	5	2	8



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

Wisconsin District Center

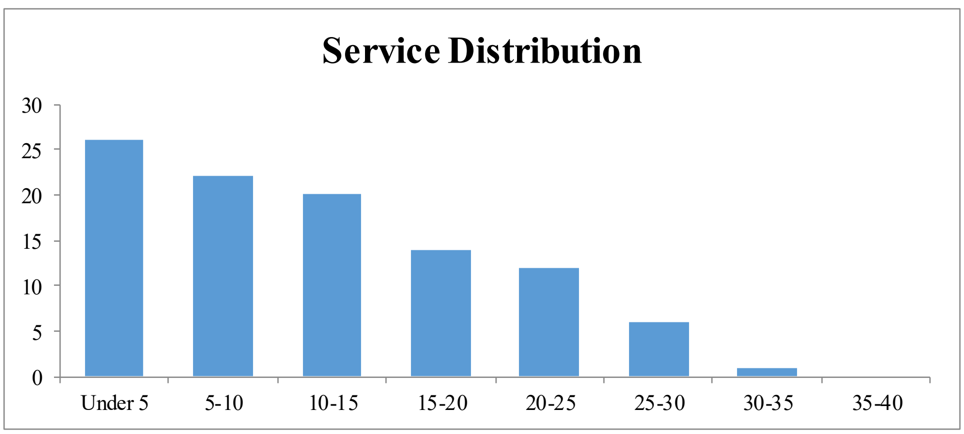
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	4	0	0	0	0	0	0	0	4
25-29	8	1	0	0	0	0	0	0	9
30-34	6	2	1	0	0	0	0	0	9
35-39	5	1	0	0	0	0	0	0	6
40-44	8	0	0	2	1	0	0	0	11
45-49	5	4	1	2	2	0	0	0	14
50-54	7	2	1	0	1	2	0	0	13
55-59	5	2	0	1	1	1	1	0	11
60-64	2	2	0	1	0	0	1	0	6
65 & Up	6	0	1	0	1	0	0	1	9
Total	56	14	4	6	6	3	2	1	92



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

Housing Authority

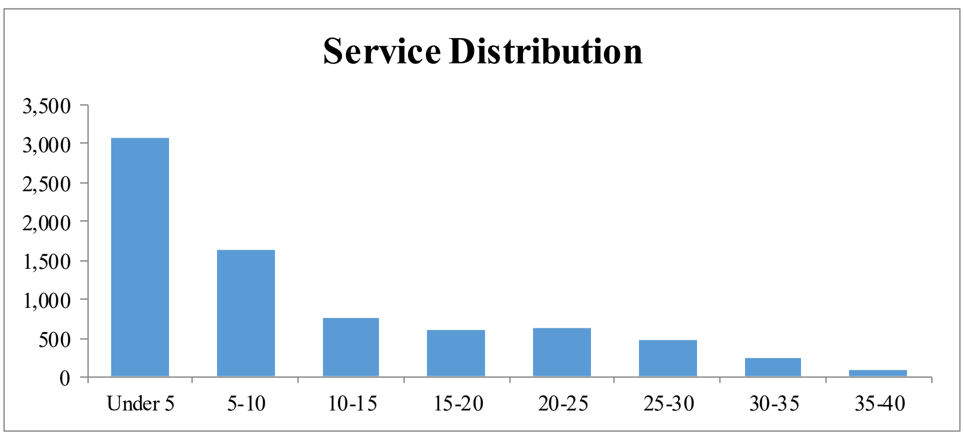
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	1	0	0	0	0	0	0	0	1
25-29	3	0	0	0	0	0	0	0	3
30-34	2	2	0	0	0	0	0	0	4
35-39	3	1	1	1	0	0	0	0	6
40-44	7	4	3	0	0	0	0	0	14
45-49	2	6	1	5	1	0	0	0	15
50-54	4	4	2	3	4	0	1	0	18
55-59	3	1	8	1	5	5	0	0	23
60-64	1	4	3	3	2	1	0	0	14
65 & Up	0	0	2	1	0	0	0	0	3
Total	26	22	20	14	12	6	1	0	101



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

General Employees – Total

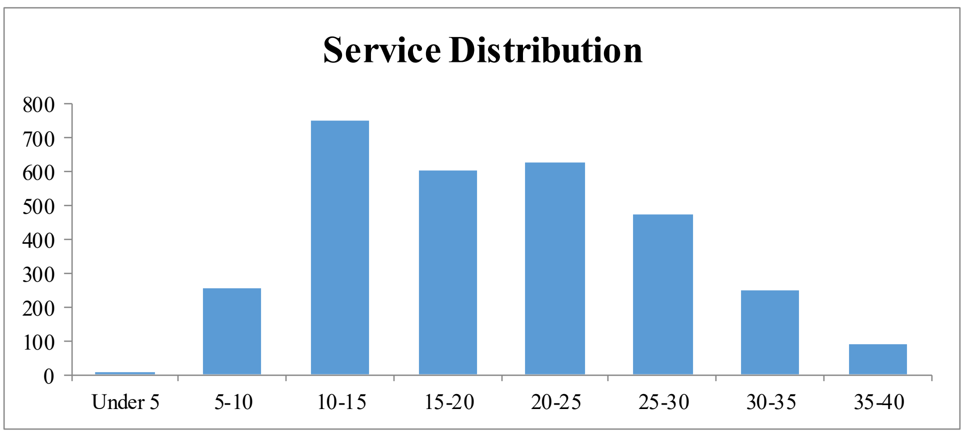
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	214	1	0	0	0	0	0	0	215
25-29	462	41	0	0	0	0	0	0	503
30-34	508	181	21	1	0	0	0	0	711
35-39	447	265	89	29	0	0	0	0	830
40-44	367	257	119	80	33	1	0	0	857
45-49	318	229	103	120	103	35	2	0	910
50-54	284	218	143	127	166	118	34	1	1,091
55-59	223	168	128	128	162	182	99	20	1,110
60-64	178	172	108	78	114	106	88	36	880
65 & Up	78	98	41	40	49	34	28	34	402
Total	3,079	1,630	752	603	627	476	251	91	7,509



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

General Employees – Tier 1

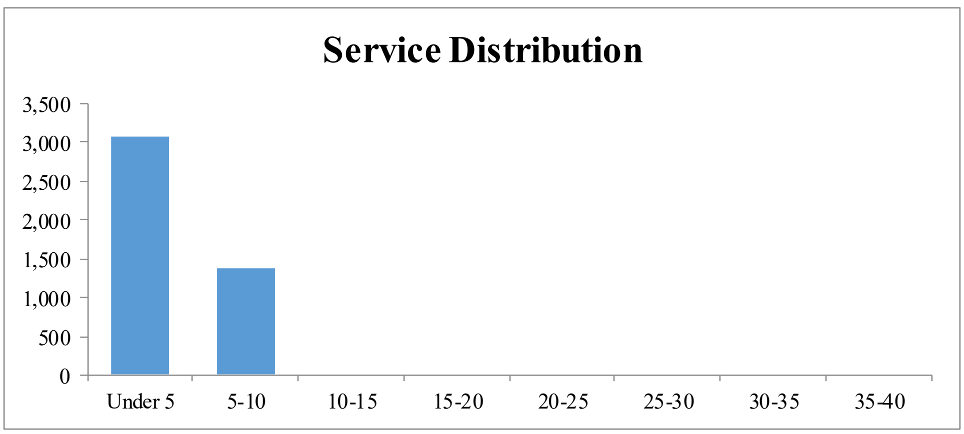
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	0	0	0	0	0	0	0	0	0
25-29	0	1	0	0	0	0	0	0	1
30-34	1	11	21	1	0	0	0	0	34
35-39	0	48	89	29	0	0	0	0	166
40-44	2	33	119	80	33	1	0	0	268
45-49	1	41	103	120	103	35	2	0	405
50-54	2	45	143	127	166	118	34	1	636
55-59	0	30	128	128	162	182	99	20	749
60-64	1	34	108	78	114	106	88	36	565
65 & Up	0	12	41	40	49	34	28	34	238
Total	7	255	752	603	627	476	251	91	3,062



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

General Employees – Tier 2

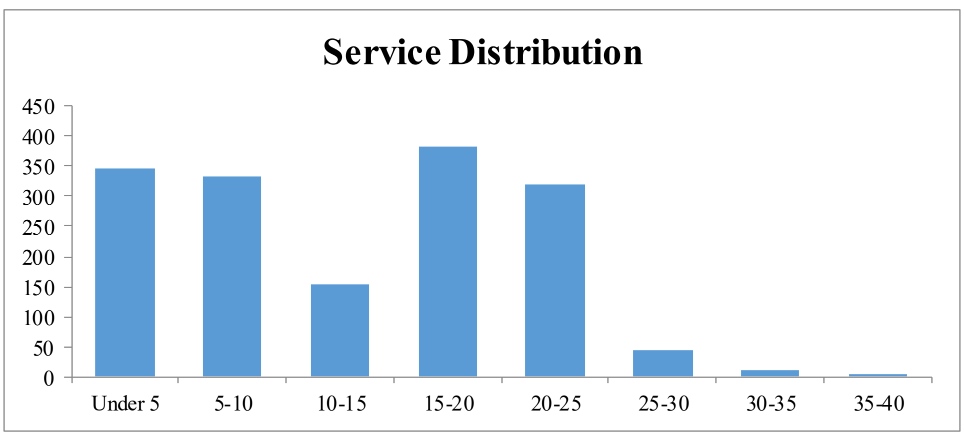
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	214	1	0	0	0	0	0	0	215
25-29	462	40	0	0	0	0	0	0	502
30-34	507	170	0	0	0	0	0	0	677
35-39	447	217	0	0	0	0	0	0	664
40-44	365	224	0	0	0	0	0	0	589
45-49	317	188	0	0	0	0	0	0	505
50-54	282	173	0	0	0	0	0	0	455
55-59	223	138	0	0	0	0	0	0	361
60-64	177	138	0	0	0	0	0	0	315
65 & Up	78	86	0	0	0	0	0	0	164
Total	3,072	1,375	0	0	0	0	0	0	4,447



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

Policemen

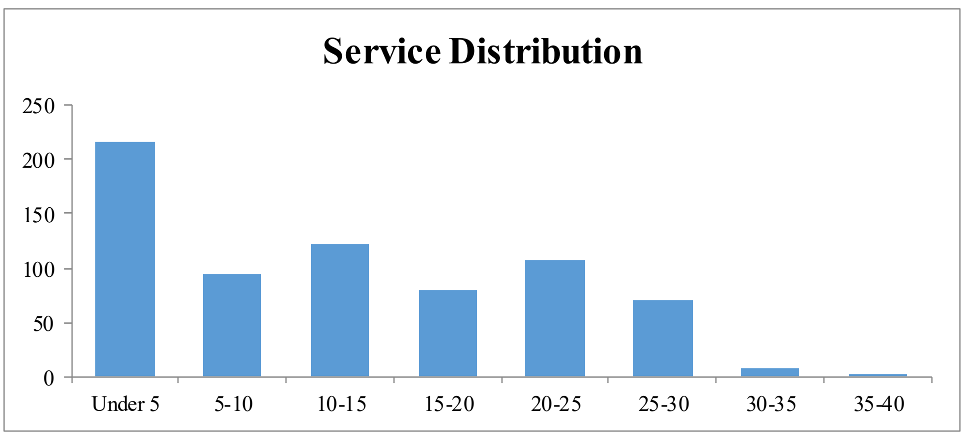
Age	Service: Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	39	0	0	0	0	0	0	0	39
25-29	111	49	0	0	0	0	0	0	160
30-34	101	109	43	13	0	0	0	0	266
35-39	50	103	64	87	8	0	0	0	312
40-44	25	47	29	136	62	2	0	0	301
45-49	19	13	10	91	107	10	0	0	250
50-54	2	6	6	35	98	20	5	0	172
55-59	0	3	2	16	38	12	4	0	75
60-64	0	1	0	2	6	2	3	1	15
65 & Up	0	0	0	1	0	0	1	0	2
Total	347	331	154	381	319	46	13	1	1,592



DISTRIBUTION OF ACTIVE MEMBERS
as of January 1, 2023

Firemen

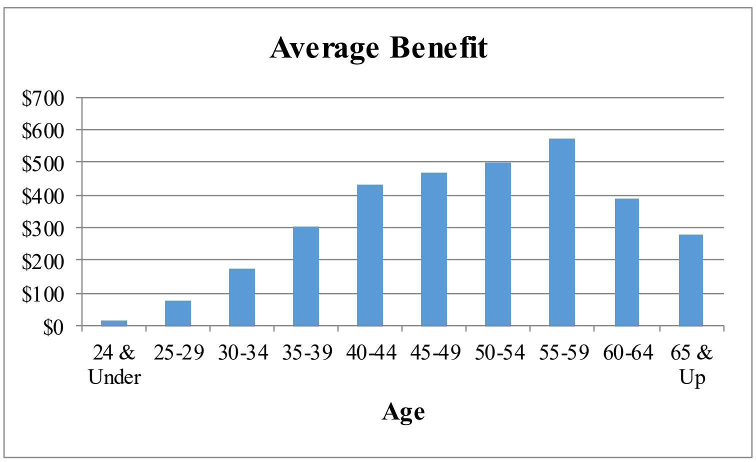
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Total
24 & Under	78	0	0	0	0	0	0	0	78
25-29	55	51	0	0	0	0	0	0	106
30-34	43	9	3	0	0	0	0	0	55
35-39	22	14	38	38	0	0	0	0	112
40-44	11	14	49	11	39	13	0	0	137
45-49	3	5	18	19	33	24	0	0	102
50-54	3	1	12	7	27	25	0	0	75
55-59	1	0	2	4	8	8	7	0	30
60-64	0	0	0	0	0	1	1	1	3
65 & Up	0	0	0	0	0	0	0	1	1
Total	216	94	122	79	107	71	8	2	699

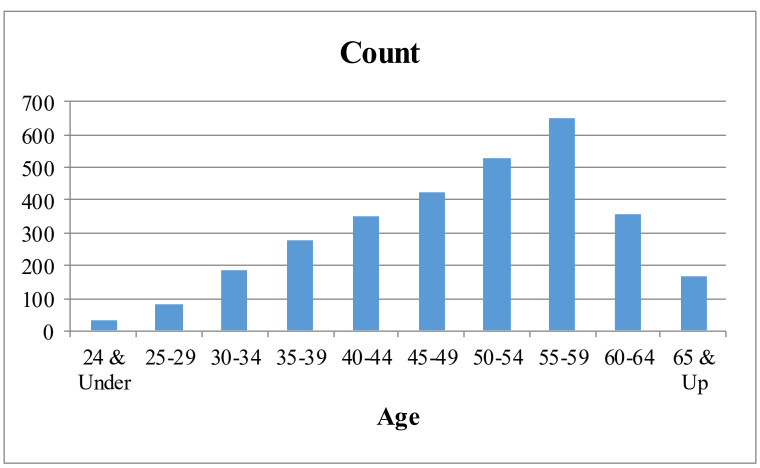


SUMMARY OF INACTIVE VESTED MEMBERS
as of January 1, 2023

General Employees

	Count			Estimated Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
24 & Under	12	18	30	$ 240	$ 197	$ 437
25-29	32	51	83	2,307	4,032	6,339
30-34	72	114	186	14,206	18,072	32,278
35-39	98	180	278	31,230	53,363	84,593
40-44	139	214	353	70,974	80,959	151,933
45-49	175	251	426	87,583	112,019	199,602
50-54	218	313	531	131,138	134,473	265,611
55-59	253	396	649	166,795	205,678	372,473
60-64	137	221	358	59,036	80,059	139,095
65 & Up	69	101	170	23,620	23,826	47,446
Total	1,205	1,859	3,064	$ 587,129	$ 712,678	$ 1,299,807

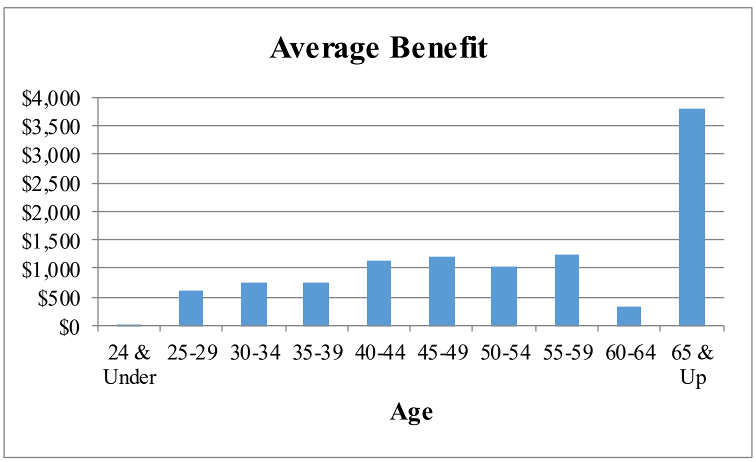


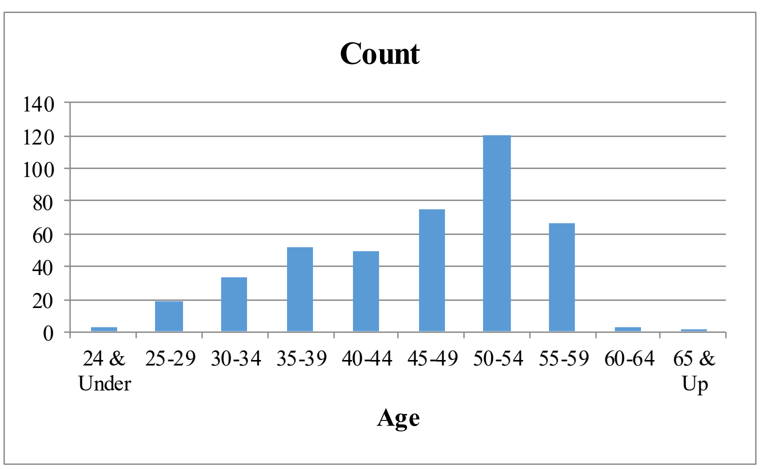


SUMMARY OF INACTIVE VESTED MEMBERS
as of January 1, 2023

Policemen

	Count			Estimated Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
24 & Under	2	1	3	$ 20	$ 1	$ 21
25-29	15	4	19	8,647	3,000	11,647
30-34	29	4	33	22,113	2,300	24,413
35-39	39	13	52	31,339	7,089	38,428
40-44	36	14	50	42,959	13,496	56,455
45-49	57	18	75	75,447	15,601	91,048
50-54	89	31	120	97,572	27,487	125,059
55-59	49	18	67	60,443	23,227	83,670
60-64	3	0	3	1,038	0	1,038
65 & Up	1	0	1	3,795	0	3,795
Total	320	103	423	$ 343,373	$ 92,201	$ 435,574

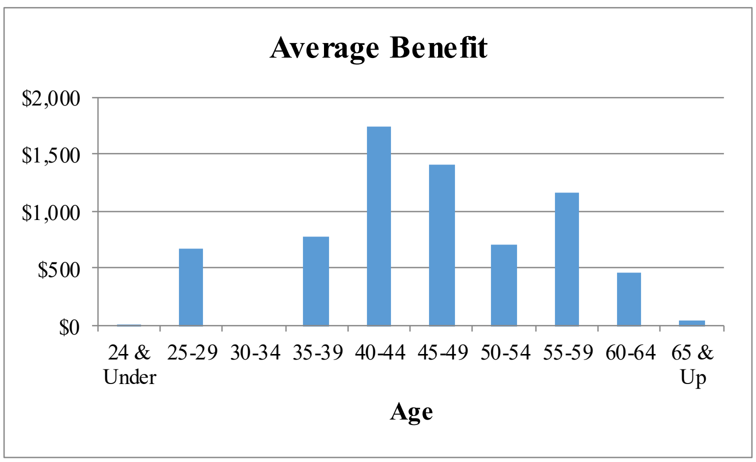


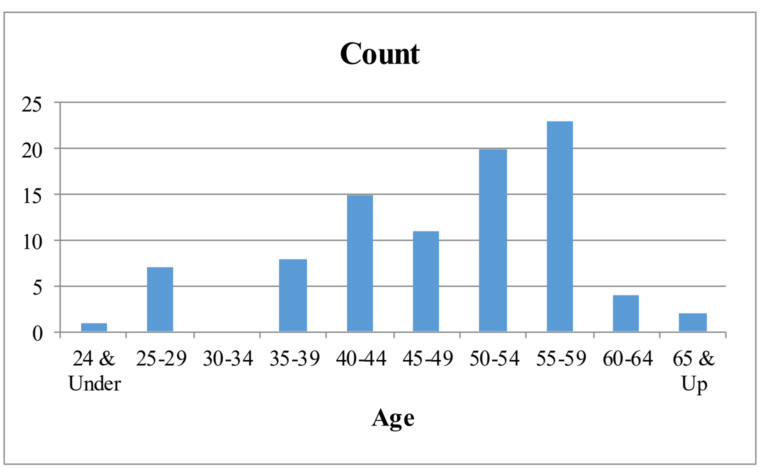


SUMMARY OF INACTIVE VESTED MEMBERS
as of January 1, 2023

Firemen

	Count			Estimated Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
24 & Under	1	0	1	$ 4	$ 0	$ 4
25-29	6	1	7	4,068	704	4,772
30-34	0	0	0	0	0	0
35-39	7	1	8	6,225	9	6,234
40-44	14	1	15	22,438	3,559	25,997
45-49	11	0	11	15,431	0	15,431
50-54	18	2	20	14,008	31	14,039
55-59	22	1	23	25,423	1,479	26,902
60-64	4	0	4	1,826	0	1,826
65 & Up	2	0	2	81	0	81
Total	85	6	91	$ 89,504	$ 5,782	$ 95,286



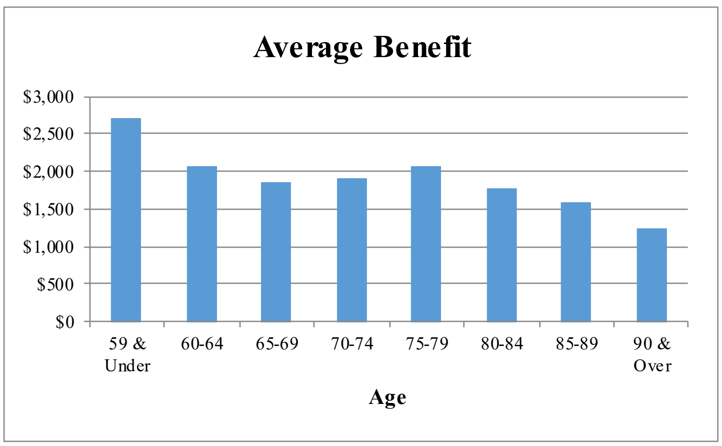


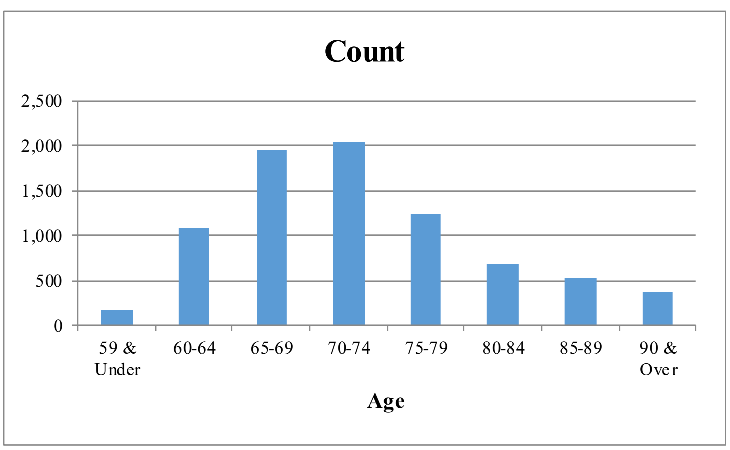
SUMMARY OF RETIRED MEMBERS
as of January 1, 2023

General Employees

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	79	86	165	$ 230,673	$ 214,532	$ 445,205
60-64	516	572	1,088	1,223,646	1,014,010	2,237,656
65-69	911	1,036	1,947	2,139,765	1,464,221	3,603,986
70-74	1,005	1,033	2,038	2,366,475	1,511,064	3,877,539
75-79	627	621	1,248	1,704,201	865,257	2,569,458
80-84	295	400	695	770,976	459,477	1,230,453
85-89	212	310	522	532,818	297,810	830,628
90 & Over	130	251	381	301,395	176,664	478,059
Total	3,775	4,309	8,084	$ 9,269,949	$ 6,003,035	$ 15,272,984

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



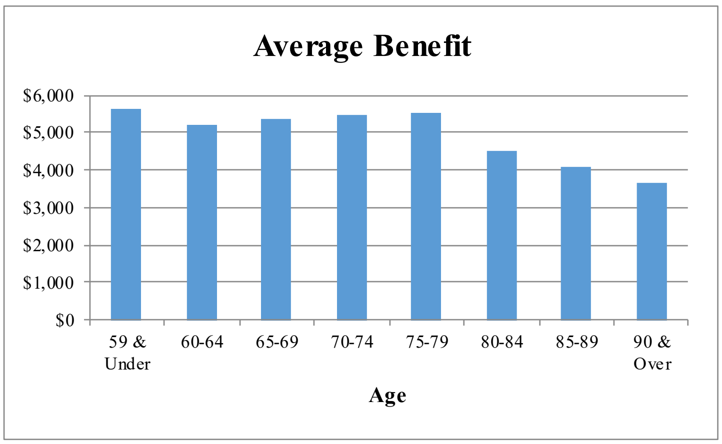


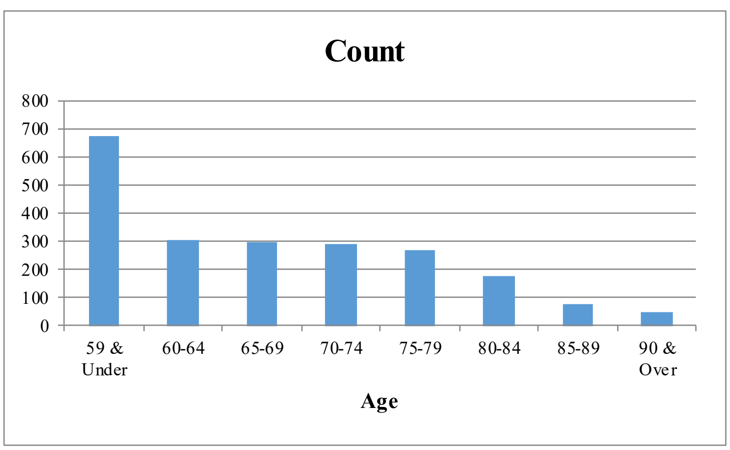
SUMMARY OF RETIRED MEMBERS
as of January 1, 2023

Policemen

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	544	132	676	$ 3,058,941	$ 764,237	$ 3,823,178
60-64	252	55	307	1,312,851	285,393	1,598,244
65-69	257	42	299	1,368,889	227,182	1,596,071
70-74	257	33	290	1,420,874	170,811	1,591,685
75-79	261	10	271	1,448,904	44,297	1,493,201
80-84	173	1	174	780,658	3,986	784,644
85-89	76	0	76	309,728	0	309,728
90 & Over	50	2	52	185,164	5,069	190,233
Total	1,870	275	2,145	$ 9,886,009	$ 1,500,975	$ 11,386,984

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



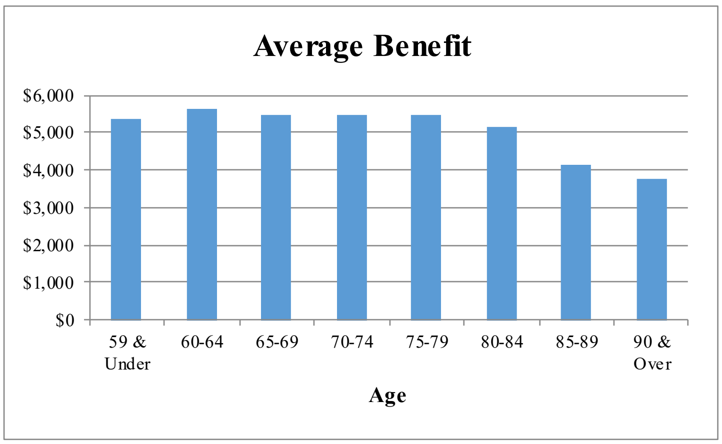


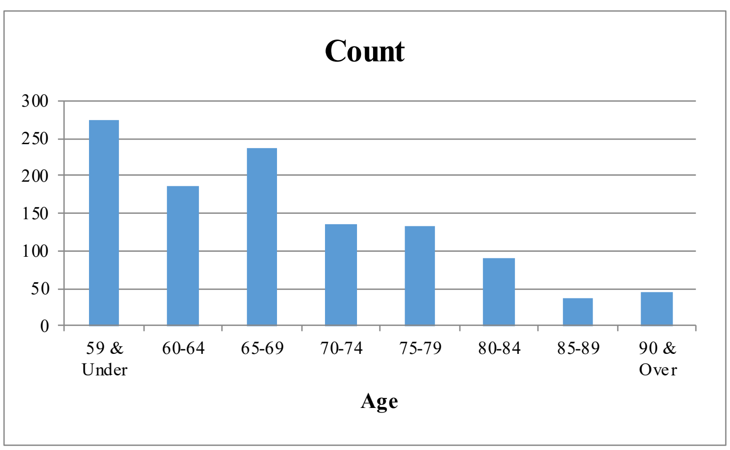
SUMMARY OF RETIRED MEMBERS
as of January 1, 2023

Firemen

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	257	16	273	$ 1,372,563	$ 85,048	$ 1,457,611
60-64	169	17	186	948,374	96,728	1,045,102
65-69	226	12	238	1,249,436	52,191	1,301,627
70-74	129	6	135	710,690	24,569	735,259
75-79	133	0	133	725,105	0	725,105
80-84	89	0	89	456,951	0	456,951
85-89	38	0	38	157,918	0	157,918
90 & Over	43	1	44	160,714	4,165	164,879
Total	1,084	52	1,136	$ 5,781,751	$ 262,701	$ 6,044,452

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



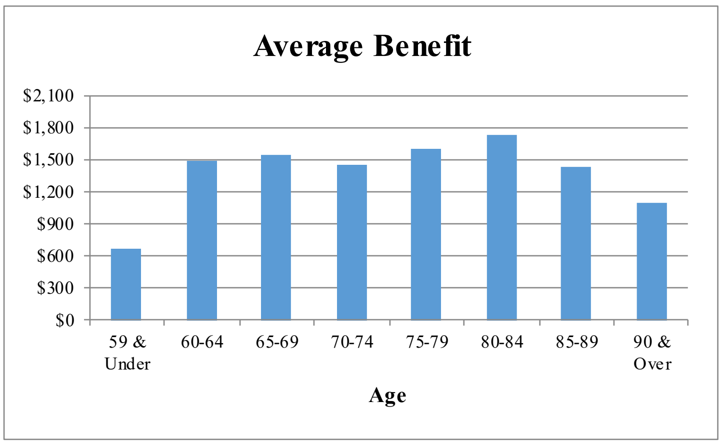


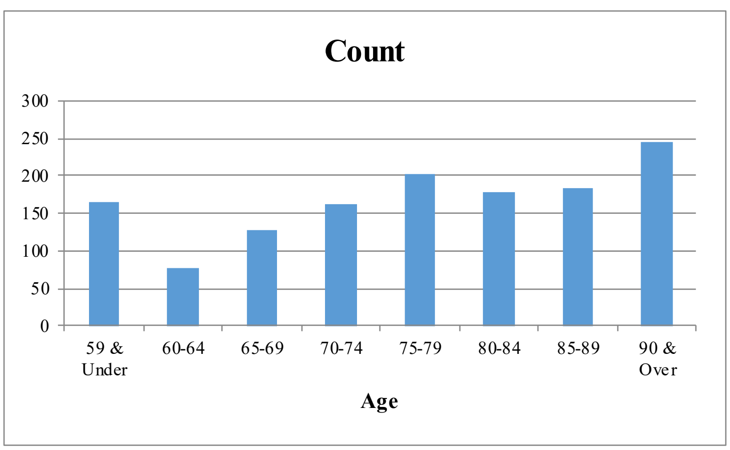
SUMMARY OF BENEFICIARIES
as of January 1, 2023

General Employees

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	67	99	166	$ 36,371	$ 73,973	$ 110,344
60-64	15	62	77	12,012	101,695	113,707
65-69	26	102	128	26,742	170,081	196,823
70-74	27	135	162	24,292	210,769	235,061
75-79	31	170	201	26,851	295,265	322,116
80-84	15	162	177	12,424	294,383	306,807
85-89	14	170	184	11,917	252,672	264,589
90 & Over	29	215	244	16,422	250,686	267,108
Total	224	1,115	1,339	$ 167,031	$ 1,649,524	$ 1,816,555

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



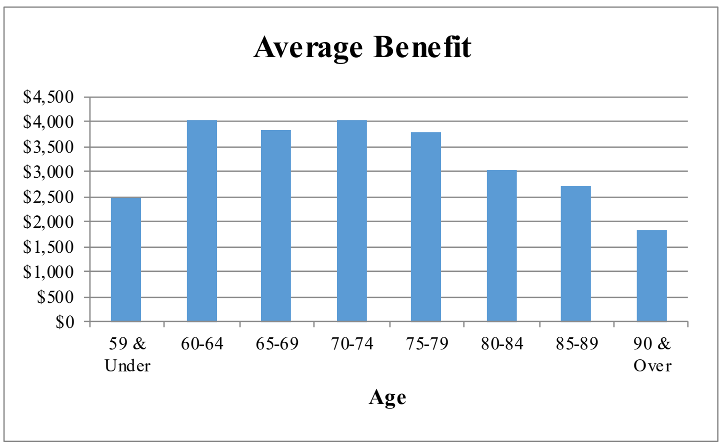


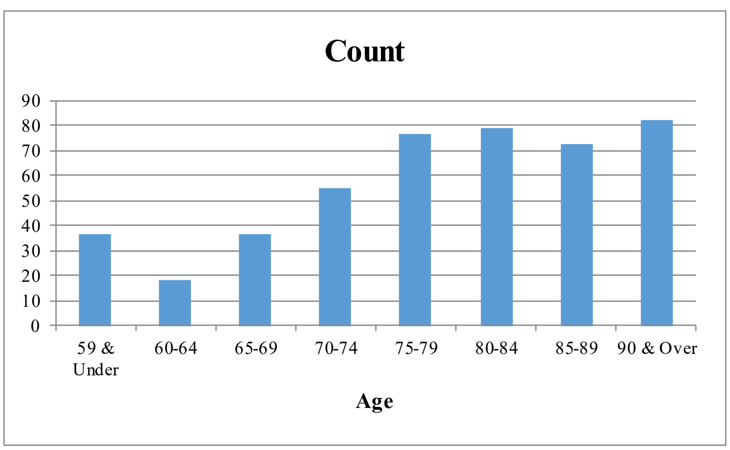
SUMMARY OF BENEFICIARIES
as of January 1, 2023

Policemen

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	6	31	37	$ 7,146	$ 83,727	$ 90,873
60-64	0	18	18	0	72,095	72,095
65-69	4	33	37	6,617	135,491	142,108
70-74	2	53	55	4,679	217,196	221,875
75-79	1	76	77	3,667	287,697	291,364
80-84	0	79	79	0	238,608	238,608
85-89	0	73	73	0	196,145	196,145
90 & Over	1	81	82	1,120	146,872	147,992
Total	14	444	458	$ 23,229	$ 1,377,831	$ 1,401,060

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



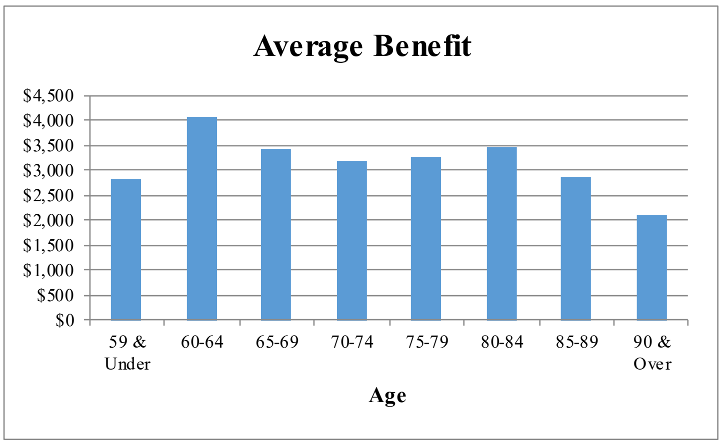


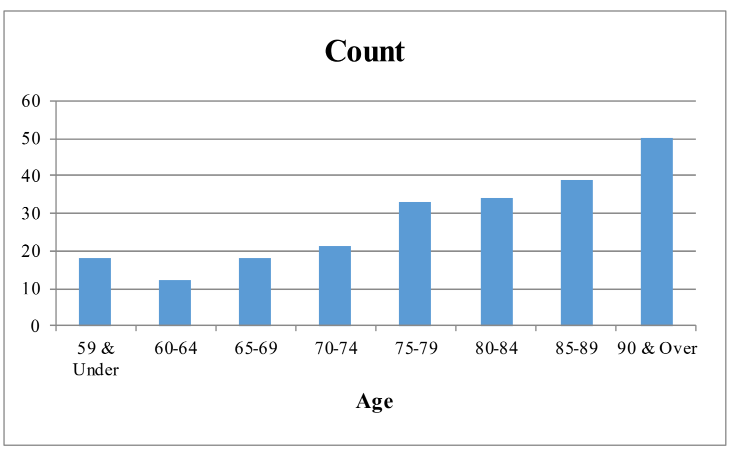
SUMMARY OF BENEFICIARIES
as of January 1, 2023

Firemen

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
59 & Under	6	12	18	$ 7,299	$ 43,346	$ 50,645
60-64	1	11	12	1,995	46,807	48,802
65-69	0	18	18	0	61,646	61,646
70-74	0	21	21	0	66,588	66,588
75-79	0	33	33	0	107,226	107,226
80-84	0	34	34	0	117,242	117,242
85-89	0	39	39	0	111,558	111,558
90 & Over	0	50	50	0	105,743	105,743
Total	7	218	225	$ 9,294	$ 660,156	$ 669,450

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



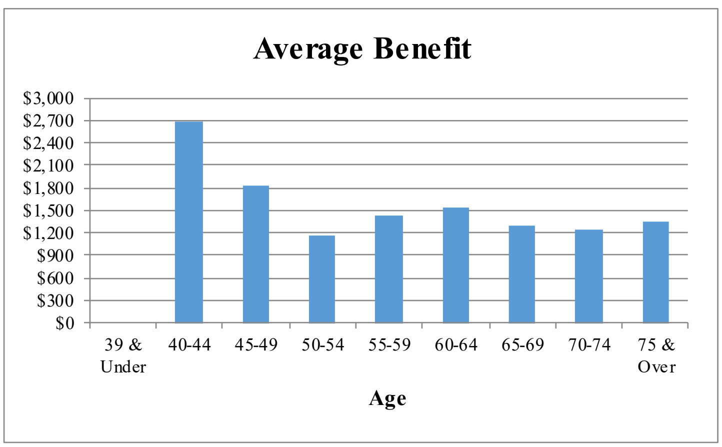


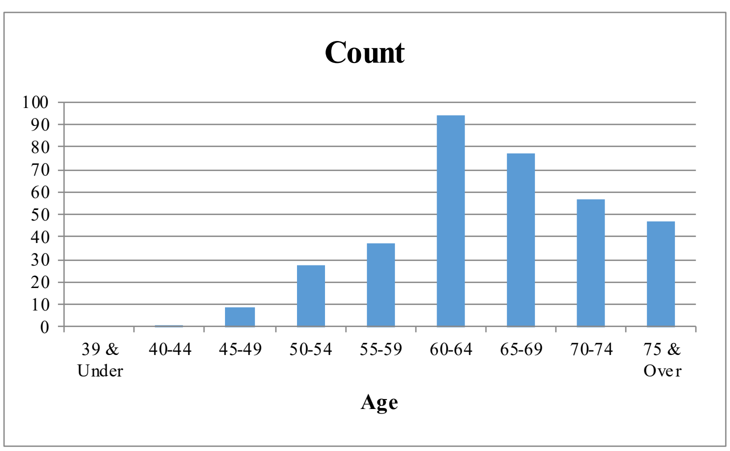
SUMMARY OF DISABLED MEMBERS
as of January 1, 2023

General Employees

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
39 & Under	0	0	0	$ 0	$ 0	$ 0
40-44	1	0	1	2,684	0	2,684
45-49	4	5	9	6,348	10,008	16,356
50-54	12	15	27	16,601	15,036	31,637
55-59	17	20	37	29,114	24,070	53,184
60-64	50	44	94	99,434	46,161	145,595
65-69	32	45	77	56,196	43,777	99,973
70-74	23	34	57	33,853	37,493	71,346
75 & Over	28	19	47	47,967	15,733	63,700
Total	167	182	349	$ 292,197	$ 192,278	$ 484,475

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



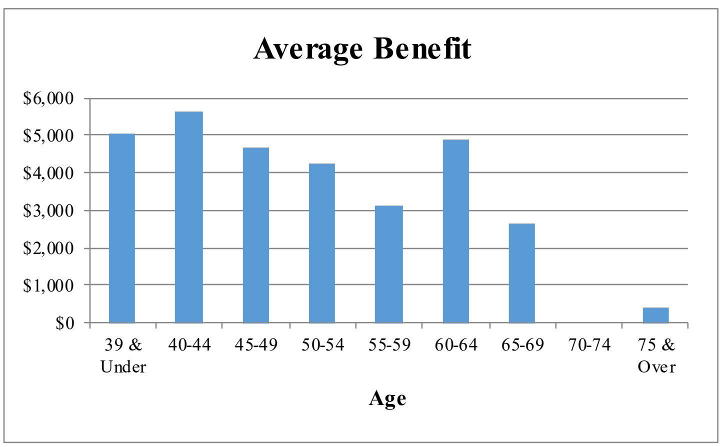


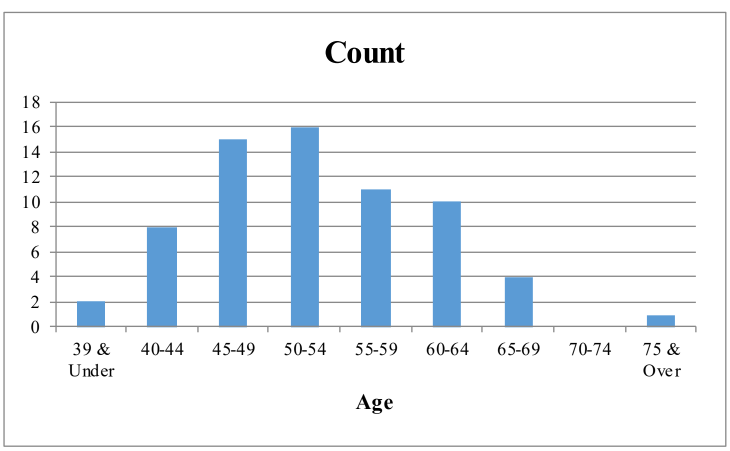
SUMMARY OF DISABLED MEMBERS
as of January 1, 2023

Policemen

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
39 & Under	2	0	2	$ 10,071	$ 0	$ 10,071
40-44	5	3	8	28,464	16,406	44,870
45-49	12	3	15	58,013	12,401	70,414
50-54	7	9	16	28,989	39,321	68,310
55-59	8	3	11	18,313	15,824	34,137
60-64	6	4	10	32,165	16,622	48,787
65-69	3	1	4	9,104	1,498	10,602
70-74	0	0	0	0	0	0
75 & Over	1	0	1	433	0	433
Total	44	23	67	$ 185,552	$ 102,072	$ 287,624

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.



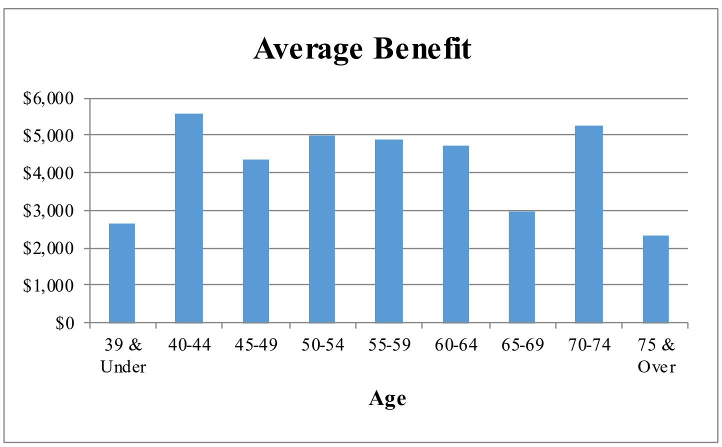


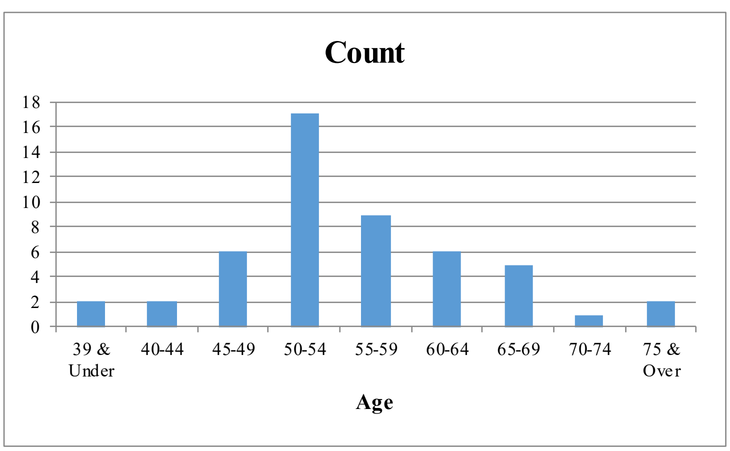
SUMMARY OF DISABLED MEMBERS
as of January 1, 2023

Firemen

	Count			Monthly Benefits		
Age	Male	Female	Total	Male	Female	Total
39 & Under	2	0	2	$ 5,327	$ 0	$ 5,327
40-44	2	0	2	11,190	0	11,190
45-49	6	0	6	26,149	0	26,149
50-54	16	1	17	79,448	5,216	84,664
55-59	9	0	9	44,044	0	44,044
60-64	4	2	6	19,031	9,187	28,218
65-69	2	3	5	6,228	8,503	14,731
70-74	1	0	1	5,245	0	5,245
75 & Over	2	0	2	4,609	0	4,609
Total	44	6	50	$ 201,271	$ 22,906	$ 224,177

Note: The counts shown are for members who are receiving benefits as of January 1, 2023. Benefit amounts are the full December monthly payment and have been reduced for any workers' compensation offsets.





SUMMARY OF BENEFIT PROVISIONS

A summary of the main benefit provisions of the Retirement System and of the sources of revenue from which benefits are paid is presented in the following digest. Items in parentheses in the text are the provisions applicable to law enforcement officers.

Eligibility for Membership

Membership is optional for all Employees that were in service as of January 1, 1938. New Employees are automatically members as a condition of employment. Membership is optional for elected officials. Note that unless specifically stated, elected officials follow the same rules as General Employees.

Additionally, effective January 1, 2014, there are two tiers of benefits. Tier 1 is for General Employees enrolled prior to January 1, 2014, and all Fire and Police Employees. Tier 2 is for General Employees enrolled on or after January 1, 2014.

Participation in the Combined Fund

On January 19, 2001 the Combined Fund was created and was retroactive to January 1, 2000. Individuals who participate in the Combined Fund may be eligible for certain benefit enhancements which are described in this Summary of Plan Provisions. Members who enroll in the ERS after June 28, 2000, and their eligible survivors, are automatically participants in the Combined Fund. Members enrolled in the ERS on or before June 28, 2000, and their eligible survivors, participate in the Combined Fund provided that the members consented in writing to the Global Pension Settlement. Eligible survivors of members or retirees who died on or before June 28, 2000 participate in the Combined Fund provided that the eligible survivors consented in writing to the Global Pension Settlement. Members or survivors whose benefit payments ceased prior to January 1, 2000, are not eligible for benefits from the Combined Fund.

Creditable Service

Creditable service equals prior service plus membership service. Prior service includes service as an employee prior to January 1, 1938, or prior to an amendment which made the employee eligible for membership in the ERS. Membership service means service as an employee since last becoming a member, on account of which contributions are made.

- For most Employees, 2080 hours of service constitute one year of creditable service. For prevailing wage Employees (carpenters and other tradespeople) 2000 hours constitute one year. For members employed by the school board for a 10-month school year, 1600 hours of service constitute a year of creditable service. After July 2006, for members serving as firefighters, 2590 hours of service constitutes one year of creditable service. After September 2016, for members serving as firefighters, 2756 hours of service constitutes one year of creditable service.

- Under certain conditions creditable service may be granted for periods of absence due to military service.

- For purposes of computing the service retirement allowance only, creditable service is granted for periods of eligibility for a duty disability retirement allowance.

- No more than one year of creditable service is granted for service in a single calendar year.

Imputed Service

Imputed service credit may be granted, under specified conditions, to members who consented to the Global Pension Settlement. Imputed service credit is used to calculate the amount of certain benefits, but is not used to determine eligibility for any kind of benefit. An individual may be eligible for one or more types of imputed service credit.

Eligibility for Imputed Service Credit

Only individuals participating in the Combined Fund can become eligible for the following types of imputed service credit.

a) Imputed military service credit: The member must have been active in the armed forces of the United States of America prior to his or her enrollment in the ERS, and must have been honorably discharged. A member must be described as in 36-04-1-c. An individual eligible for imputed military service credit must apply for the credit.

b) Imputed fire and police service credit: The member must be described as in 36-04-4-a. The member must have been in active ERS service as a fireman or policeman as of January 1, 2000, and must also retire from ERS service as a fireman or policeman, or die while a fireman or policeman eligible for protective survivorship option benefits. To be eligible, the member must retire or die as a policeman or fireman and must have attained the minimum service retirement requirements as outlined in 36-05-1.

c) Imputed service credit under the dissolution of the Firemen and Policemen's Survivorship Fund, (the "Fund"): The member must be described as in 36-04-4-b. The member must have been a policeman who was an active member of the "Fund" as of January 1, 2000. If the policeman was in active ERS service as of January 1, 2000, he must either retire as a policeman on a service retirement allowance at the minimum service retirement age of 57 or after completing 25 years of creditable service as a fireman or policeman; or he must retire on a policeman's duty disability retirement allowance and subsequently convert to a service retirement allowance. If the policeman was retired on a duty disability retirement allowance as of January 1, 2000, then he must subsequently convert to a service retirement allowance.

Benefits Affected by Imputed Service Credit

a) Imputed military service credit and/or imputed fire and police service credit: The amount of the service retirement allowance, the conversion service retirement allowance, protective survivorship option benefits, and the extended life duty disability retirement allowance are affected. If the eligible individual is also entitled to a 5% Lump Sum Bonus, and/or an 8.6% Dissolution Bonus that is based on the affected benefit, then the imputed service credit is included in calculating the base for the bonus payment(s).

b) Imputed service credit under the dissolution of the Firemen and Policemen's Survivorship Fund: The amount of the service retirement allowance and the conversion service retirement allowance are affected. If the service retirement allowance is affected, then the imputed service credit is included in calculating the base for the 5% Lump Sum Bonus.

See the benefit descriptions later in this summary for further details on how imputed service credit is used.

Amount of Imputed Service Credit

a) Imputed military service credit: A period of eligible military service consists of a period of at least 90 consecutive days of active service in the armed forces of the United States prior to enrollment in the ERS. Total eligible military service equals the sum of all periods of eligible military service. Imputed military service credit equals one-third of the member's total eligible military service, to a maximum of three years of imputed military service credit.

b) Imputed fire and police service credit: For policemen and firemen with 20 years of creditable service as a fireman or policeman - 1.5 years. For firemen with less than 20 years of creditable service as a fireman or policeman: 1.5 years times the full years of creditable fire and police service, divided by 20.

c) Imputed service credit under the dissolution of the Firemen and Policemen's Survivorship Fund: 2 years.

Seasonal Service

Seasonal service credit may be granted under specified conditions to certain General City Employees. Seasonal service credit is used to calculate the amount of certain benefits but is not used to determine eligibility for any kind of benefit.

Eligibility for Seasonal Service Credit

In order to be eligible for seasonal service credit, a member must be a General City employee with five or more years of City service credit, and a member of one of the groups as outlined in 36-04-1-d.

Benefits Affected by Seasonal Service Credit

Seasonal service credit affects the amount of the service retirement allowance, the conversion service retirement allowance and protective survivorship option benefits. If the eligible individual is also entitled to a 5% Lump Sum Bonus that is based on the affected benefit, then the seasonal service credit is included in calculating the base for the bonus payment.

Amount of Seasonal Service Credit

Seasonal service is based on the hours worked as a City Labor-Seasonal employee and/or Playground Laborer-Seasonal employee (MPS), but limited to one year of additional service credit.

Qualifying for an ERS Benefit

Rules regarding qualifying time are encapsulated in the ERS Board Rules & Regulations, XV.G. The rules have been adopted and applied prospectively for enrollments prior to 1995, 1995 to 2001 and post 2001. All members are fully vested after attaining four years of qualifying time.

Earnable Compensation

The annual regular base salary that would be payable to a member if he or she worked the full normal working time for his or her position as described in 36-02-12. Earnable compensation for the calendar year preceding retirement may also include special pays as negotiated in labor agreements such as longevity in rank pay, (limited) variable shift assignment pay, police liaison officer pay, and/or certification pay for policemen; and emergency medical technician pay for firemen. Earnable compensation for school board Employees represented by Local 950, OEIU, also includes site differential pay.

Final Average Salary

a) For General Employees, final average salary means the average annual earnable compensation computed on the 3 years of creditable service preceding retirement, death or separation from service during which earnable compensation was the highest.
b) For policemen and firemen, final average salary means the average annual earnable compensation computed on the year of creditable service preceding retirement, death or separation from service during which earnable compensation was the highest.
c) For members converting from a duty disability retirement allowance to a service retirement allowance, the service retirement allowance is computed on the basis of the current compensation of the member's position at the service retirement date.

Service Retirement

Eligibility for Service Retirement

For Tier 1 Benefits (applicable to General Employees enrolled prior to January 1, 2014 and all Fire and Police Employees), eligibility for service retirement is as defined under 36-05-01 as follows:

a) A service retirement allowance is payable to any member who elects to retire after attaining the minimum service retirement age, which is age 60 for General Employees and age 57 for policemen and firemen.

b) General Employees that have attained age 55 and completed 30 years of qualifying time are eligible for service retirement.

c) Policemen who participate in the Combined Fund are eligible for service retirement at any age after attaining 25 years of fire or police qualifying time, if they were hired prior to December 20, 2015.

d) Policemen who participate in the Combined Fund, who have attained age 50 are eligible for service retirement after completing 25 years of police qualifying time, if they were hired on/after December 20, 2015.

e) Firemen who participate in the Combined Fund, who have attained age 49 and completed 22 years of fire or police qualifying time, are eligible for service retirement, if they were hired prior to July 30, 2016.

f) Firemen who participate in the Combined Fund, who have attained age 52 and completed 25 years of fire qualifying time, are eligible for service retirement, if they were hired on/after July 30, 2016.

g) Policeman and firemen who are not participants in the Combined Fund are eligible for service retirement after attaining age 52 and completing 25 years of fire or police qualifying time.

For Tier 2 Benefits (applicable to General Employees enrolled on or after January 1, 2014), eligibility for service retirement is as defined under 36-05-01 as follows:

a) A service retirement allowance is payable to any member who elects to retire after attaining the minimum service retirement age, which is age 65 for General Employees.

b) General Employees that have attained age 60 and completed 30 years of qualifying time are eligible for service retirement.

<u>Amount of Service Retirement Allowance</u>

The amount of a member's service retirement allowance under 36-05-01 is equal to the following:

a) For General Employees, enrolled prior to January 1, 2014, 2% of final average salary for each year of creditable service, imputed military service, or seasonal service limited to 70% of final average salary. For General Employees, enrolled on or after January 1, 2014, 1.6% of final average salary for each year of creditable service, imputed military service, or seasonal service limited to 70% of final average salary.

b) For firemen enrolled prior to March 1, 1989, and policemen enrolled prior to July 1, 1989, and who were in active service on or after January 1, 1995, 2.5% of final average salary for each year of creditable service or imputed service (of any kind).

c) For firemen enrolled after February 28, 1989, and policemen enrolled after June 30, 1989, 2.5% of final average salary for each year of creditable service or imputed military service, limited to 90% of final average salary, plus 2.5% of final average salary for each year of imputed fire and police service or imputed service under the dissolution of the Firemen and Policemen's Survivorship Fund.

d) For elected officials enrolled prior to January 1, 2014, 2.6% of final average salary for each year of creditable service as an elected official for years before 1996, limited to 70% of the final average salary; from 1996 forward the rate of accrual for creditable service, imputed military service, or seasonal service is 2.5% except for the mayor, who will have an accrual rate of 2.0%, limited to 70% of the final average salary, except for elected officials who were enrolled prior to 2014 and are first elected to office on or after January 1, 2014, in which case their accrual rate is 2% for each year if they contribute 5.5% of their earnable compensation, or 2.5% for each year if they contribute 7% of their earnable compensation. For elected officials enrolled on or after January 1, 2014, 1.6% of final average salary for each year of creditable service as an elected official limited to 70% of the final average salary.

<u>Funds Charged with Service Retirement Allowance</u>

For individuals participating in the Combined Fund, service retirement allowance payments are charged to the Combined Fund. For all other individuals, the service retirement allowance is charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member enrolled on or after February 1, 1996.

Ordinary Disability Retirement Allowance

Eligibility for Ordinary Disability Retirement Allowance

A member who the medical council certifies is mentally or physically incapacitated for further performance of duty that such incapacity is likely to be permanent and that such member should be retired, is eligible for the ordinary disability retirement allowance. The ordinary disability allowance is not payable if the member qualifies for the duty disability allowance.

Amount of Ordinary Disability Retirement Allowance

Imputed service credit and seasonal service credit are not used in any part of the calculation of the Ordinary Disability Retirement Allowance. The "service retirement allowance" referred to below is calculated based on creditable service only.

a) For General Employees, 90% of the service retirement allowance based on creditable service to date of disability retirement, but no less than 25% of final average salary, provided such amount does not exceed 90% of the retirement allowance payable had the member continued in service to the minimum service retirement age.

b) For policemen and firemen hired after January 1, 1971, who have 5 years of service, 25% of final average salary plus 2% thereof for each year of creditable service in excess of 5 years up to a maximum of 50% of final average salary.

c) For policemen and firemen hired before January 1, 1971, the greater of the benefit described in (a), or the benefit described in (b).

d) The benefit is payable for life while the member remains disabled, except that for General Employees with less than 10 years of qualifying time, the duration is limited to one-fourth (1/4) of the period of the service accrued to the date of disability.

e) Members receiving benefits for life may elect reduced benefits under an optional form of payment in order to provide a death benefit to a designated beneficiary.

Funds Charged with Ordinary Disability Retirement Allowance

Ordinary disability retirement allowance payments are charged to the Combined Fund if the eligible individual is a participant in the Combined Fund. Otherwise, the allowance is charged to (i) the Retirement Fund, if the member's enrollment date is before February 1, 1996, and (ii) the Combined Retirement and Disability Fund, if the member's enrollment date is on or after February 1, 1996.

Duty Disability Retirement Allowance

Eligibility for Duty Disability Retirement Allowance

If a member becomes permanently and totally incapacitated for duty as a result of the performance of his duty, and his mental or physical incapacitation is medically certified, such member is eligible for a duty disability retirement allowance. Unless the member is beyond his/her conversion age, in which case the member would be eligible for an extended lifetime Duty Disability benefit. The medical certification is made by the Medical Council for General Employees, for members of the MPA enrolled after June 28, 2005, and for members of the MPFFA enrolled after December 13, 2005 with disability based on a mental injury. For all other members, the medical certification is made by the Medical Panel, except as indicated below. There are certain diseases that are considered presumptive for purposes of duty disabilities.

All new duty disability applications are reviewed by the Medical Council effective June 19, 2016 for MPA members, effective January 1, 2016 for MPSO members, and effective July 29, 2016 for MPFFA members.

Effective July 14, 2015, a new state law was enacted related to duty disability benefits for mental injuries (section 62.624 Wis. Stat.). The ERS may only provide a duty disability benefit for a mental injury if the following criteria are met:

a) The mental injury resulted from a situation of greater dimensions than the day-to-day mental stresses and tension and post-traumatic stress that all similarly situated Employees must experience as part of the employment, ***and***

b) The employer certifies that the mental injury is a duty-related injury.

Only if a duty-related mental injury has occurred, can the duty disability application be forwarded to the Medical Panel or Medical Council for the examination and requisite certification.

Amount of Duty Disability Related Benefits

Imputed service credit and seasonal service credit are not used when calculating a duty disability retirement allowance. Imputed service credit or seasonal service credit is used when calculating the conversion service retirement allowance referred to in paragraphs (a) - (c) below. Eligibility for imputed military service credit depends upon the date of the conversion, not upon the date of the duty disability retirement.

a) For General Employees, the duty disability retirement allowance equals 75% of the member's final average salary. Members receive the allowance, while disability continues, until the later of age 65, or for a period of 5 years, at which time they convert to a service retirement allowance. General Employees receiving duty disability benefits may elect reduced benefits under an optional form of payment in order to provide a death benefit to a designated beneficiary.

b) For firemen and policemen, the duty disability retirement allowance is 75% of the current annual salary for the position held by the member at retirement, plus $40 per month for each child younger than age 18 (up to a maximum of 20% of the member's salary). In certain cases of extreme disability, when approved by a panel of physicians, the disability allowance will be 90% of such salary. Duty disability benefits paid to firemen on account of heart and lung disease are at the 75% level. In the event of the death of a policeman or fireman receiving a 75% or 90% disability allowance, 70% or 75%, respectively, of the amount of the member's allowance shall be paid to the member's spouse during her lifetime.

The 90% duty disability allowances are payable for life. For policemen enrolled on or after January 1, 1990, and firemen enrolled on or after December 17, 1989, the 75% duty disability allowances are payable until the earlier of attainment of age 57, or completion of 25 years of service and attainment of age 52, at which time the member must either convert to a service retirement allowance or irrevocably elect to receive a recalculated duty disability allowance, referred to as an extended life duty disability allowance, as described in (c), below. Different conversion age requirements apply to policemen enrolled prior to January 1, 1990, and firemen enrolled prior to December 17, 1989, as discussed in (d), below. A fireman or policeman who becomes duty disabled on or after his conversion age may choose between a service retirement or extended life duty disability retirement.

c) The extended life duty disability allowance referred to in (b), above, equals the lesser of the conversion service retirement allowance, or 75% of the current annual salary, provided further that the benefit will not be less than 57% of current annual salary for a fireman, or 60% of current annual salary for a policeman. "Current annual salary" here refers to the salary at the conversion age, for the position held by the member at the time of injury. The extended life duty disability allowance is payable for life and, unlike the duty disability allowance, is a fixed amount that does not change after the conversion age, notwithstanding any cost of living adjustments. Firemen or policemen receiving extended life duty disability benefits may elect reduced benefits under an optional form of payment in order to provide a death benefit to a designated beneficiary. Their spouses are not eligible to receive the 70% benefit payable to surviving spouses of firemen and policemen who die while in receipt of the 75% duty disability benefit.

d) For policemen enrolled prior to January 1, 1990, and firemen enrolled prior to December 17, 1989, the conversion age determination depends upon the member's enrollment date and whether or not the member signed the DeBraska II release form.

Under Charter Ordinance 980130 Substitute 2 (DeBraska I), duty disabled firemen and policemen who retired on duty disability before October 17, 1992, have a conversion age equal to the greater of the conversion age in effect when they were enrolled, or the conversion age in effect at the time of their disability retirement.

Under Charter Ordinance 000789 (DeBraska II), duty disabled firemen and policemen who signed the DeBraska II release form are subject to the following conversion requirements: (i) members retired on duty disability prior to February 8, 1972, will receive duty disability benefits for life; (ii) members enrolled prior to February 8, 1972, who are either policemen who retired on duty disability on or after August 1, 1985, or firemen who retired on duty disability on or after March 1, 1984, will have a conversion age of 63; (iii) members enrolled on or after February 8, 1972, who retired on duty disability on or after October 17, 1992, will not be required to convert to service retirement prior to the conversion age requirements that were in effect when they enrolled; and (iv) for all other members who signed the DeBraska II release form, there is no difference between the conversion requirements of Charter Ordinance 980130 Substitute 2, and Charter Ordinance 000789. In general, only members who were duty disabled prior to January 1, 2001 were given the opportunity to sign the DeBraska II release form.

Under the Charter Ordinance (which reflects the Rehrauer decision) firemen and policemen who retire (or previously retired) on duty disability and who did not sign the DeBraska II release form will convert at the highest conversion age agreed upon during their employment (Section 36-05-3). Members who enrolled prior to February 8, 1972, who are either policemen who retired on duty disability on or after November 1, 1976, or firemen who retired on duty disability on or after October 1, 1977, will receive duty disability for life if they did not sign the DeBraska II release form, and will have a conversion age of 63 if they did sign the DeBraska II release form.

Funds Charged with Duty Disability Related Benefits

a) For participants in the Combined Fund, duty disability benefits paid to members, benefits paid to survivors of members who die while duty disabled, child allotment payments, conversion service retirement benefits, and extended life duty disability benefits are paid from the Combined Fund.

b) For General Employees who do not participate in the Combined Fund, duty disability benefits, and survivor benefits paid to beneficiaries of General Employees who elect an optional form of payment and die while disabled, are paid from (i) the General Employees Duty Disability Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member's enrollment date is on or after February 1, 1996.

c) For members who do not participate in the Combined Fund, benefits paid after conversion to either a service retirement allowance or an extended life disability benefit are charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member's enrollment date is on or after February 1, 1996.

Ordinary Death Benefit

Eligibility and Amount of Ordinary Death Benefit

a) In the event of death of a member while in service, a death benefit equal to the sum of the member's accumulated contributions, plus if the member has one or more years of active service, one-half his final average salary is payable to the designated beneficiary. Optional forms of payment of such benefit to the beneficiary are provided. If the member had elected a protective survivorship option – and duty death benefits are not payable – such option will become effective and the ordinary death benefit will not be payable. If a duty death benefit is payable the ordinary death benefit will not be paid.

b) Unless the member elects an optional death benefit, the death benefit subsequent to retirement is the amount remaining, if any, of the member's contributions with interest to retirement less the sum of the allowance payments made prior to the member's death.

Funds Charged with Ordinary Death Benefits

Ordinary death benefits paid on behalf of a participant in the Combined Fund are charged to the Combined Fund. Otherwise, ordinary death benefits are charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member's enrollment date is on or after February 1, 1996.

Protective Survivorship Option

Eligibility and Amount of Protective Survivorship Option

Firemen may elect a Protective Survivorship Option (PSO) during the 6 months that precede the earlier of attainment of age 49 and completion of 22 years of qualifying time as a fireman or policeman, or age 52 and 25 years of qualifying time as a fireman or policeman, or age 57. Policemen may elect a Protective Survivorship Option (PSO) during the 6 months that precede the earlier of attainment of age 57, or completion of 25 years of qualifying time as a policeman or fireman. Firemen and policemen who fail to elect a PSO during the eligible period are deemed to have elected an Option 2 PSO with the spouse as the named beneficiary.

General Employees who enrolled prior to January 1, 2014, may elect a PSO during the 6 months that precede the earlier of attainment of age 60 or completion of 30 years of qualifying time and attainment of age 55. General Employees who enrolled on or after January 1, 2014, may elect a PSO during the 6 months that precede the earlier of attainment of age 65, or completion of 30 years of qualifying time and attainment of age 60.

Firemen and policemen are allowed to reselect a PSO if they marry, or divorce, and to select a different option and/or beneficiary at retirement, if they wish. As of June 5, 2012, General Employees may also reselect a PSO if they marry, or divorce, or select a different option and/or beneficiary at retirement.

The PSO may be canceled if the joint annuitant predeceases the member before retirement; or if the member is divorced from the joint annuitant before retirement.

Under a PSO, if a member eligible to retire on a service retirement allowance dies prior to retirement, benefits begin to the named beneficiary just as if the member retired under such option immediately prior to his or her death, except that imputed service credit arising from the dissolution of the Firemen and Policemen’s Survivorship Fund will not be used in the calculation of the PSO benefit. If a fireman eligible for PSO coverage dies prior to age 49, benefits for the named beneficiary will be deferred until the date the fireman would have attained age 49. Imputed military service, imputed fire and police service, and seasonal service credit may be used in the calculation of the deferred PSO benefit.

In all cases where the requirements are met for both a PSO benefit and a duty death benefit, the duty death benefit will be payable in lieu of the PSO.

Funds Charged with PSO Benefits

PSO benefits for participants in the Combined Fund are charged to the Combined Fund. Benefits for individuals who do not participate in the Combined Fund are charged to (i) the Retirement Fund if the member’s enrollment date is prior to February 1, 1996, and (ii) the Combined Retirement and Disability Fund if the member’s enrollment date is on or after February 1, 1996.

Duty Death Benefits

Eligibility and Amount of Duty Death Benefits

In the event the member's death occurs in the performance of his duty, a lump sum payment equal to the member's accumulated contributions, plus an annuity of 60% of such deceased member's final average salary will be paid to one of the following (payable in this order):

- The member's surviving spouse
- The member's children until their 21st birthday
- The member's dependent parents
- Death of a fireman that is due to heart or lung disease is considered a duty death.

Funds Charged with Duty Death Benefits

Benefits payable to participants in the Combined Fund are charged to the Combined Fund. Heart & Lung duty death benefits payable to individuals who are not participants in the Combined Fund are charged to the Heart & Lung Fund. Duty death benefits (other than Heart & Lung) payable to individuals who are not participants in the Combined Fund are charged to (i) the Retirement Fund for members whose enrollment dates are prior to February 1, 1996; and (ii) the Combined Retirement and Disability Fund for members whose enrollment dates are on or after February 1, 1996.

Member Contributions

Member contribution rates are the following percentages of annual salary:

General Employees	5.5% (tier 1 – enrolled prior to January 1, 2014) 4.0% (tier 2 – enrolled on or after January 1, 2014)
Firemen and Policemen-	7.0%
Elected Officials	7.0% (tier 1 – enrolled prior to January 1, 2014 and elected to an office prior to January 1, 2014; if enrolled prior to January 1, 2014, and elected or the first time to an office on or after January 1, 2014, and employee was paying contributions prior to being elected, employee pays contributions at the rate they were paying prior to becoming an elected official; if enrolled prior to January 1, 2014, and elected or the first time to an office on or after January 1, 2014, and employer was picking up contributions on behalf of the employee prior to being elected, employer pays 7.0%) 4.0% (tier 2 – enrolled on or after January 1, 2014)

Under state law, per 2011 Wisconsin Act 10, participating employers are no longer permitted to make contributions on the member’s behalf (with the exception of contractually agreed upon arrangements).

Member contributions made for or by participants in the Combined Fund are credited to the Combined Fund. Member contributions made for or by individuals who are not participants in the Combined Fund are credited to (i) the Retirement Fund for members whose enrollment dates are prior to February 1, 1996; and (ii) the Combined Retirement and Disability Fund for members whose enrollment dates are on or after February 1, 1996.

Pension Escalators

Several different pension escalators are paid by the ERS as listed and described under section 36-05-1(h). They are as follows:

- Fire and Police $50 Escalator

  Eligible Groups and Amounts

  a) Firemen in Local 215 who retired under a service retirement allowance between March 1, 1990, and December 31, 1992; members of the Milwaukee Police Association (MPA) who retired under a service retirement allowance between January 1, 1990, and December 31, 1992; members of the Milwaukee Police Supervisors Organization who retired under a service retirement allowance between January 1, 1991, and December 31, 1992; and firemen in Local 215 or members of the MPA who elect a deferred retirement allowance after separating from service between January 1, 1993, and December 31, 1994, with 25 years of service; are eligible for a pension escalator which increases their allowance by $50 per month on the 4th, 7th, and 10th anniversary of retirement.

  b) Members who both retired on duty disability and converted from duty disability to service retirement during the eligibility period are eligible for the escalators on the 4th, 7th, and 10th anniversaries of their conversion dates.

  c) The surviving spouses of eligible retirees, or of members who died during the eligibility period, are eligible provided that the member elected an optional benefit at retirement – or elected a protective survivorship option (PSO) prior to retirement – with the spouse as beneficiary. The member's surviving spouse receives increases on the member's 4th, 7th, and 10th anniversary of retirement (or spouse's retirement date in the case of a PSO) with the amount of the escalator adjusted to reflect the option elected by the member.

  Funds Charged with Duty Death Benefits

  Fire and Police $50 escalators paid to participants in the Combined Fund are charged to the Combined Fund.

  Fire and Police $50 escalators paid to individuals who are not participants in the Combined Fund are charged to the Retirement Fund.

- January 1996 Catch-up COLA for pre-October, 1987 Retirees

  Eligible Group

  a) General Employees that attained the minimum service retirement age and retired with a service retirement allowance prior to October 1, 1987, or who retired on a duty disability allowance and converted to a service retirement allowance prior to October 1, 1987.

  b) Firemen and policemen who retired prior to October 1, 1987, who became eligible to retire on service retirement at age 57, or after attaining age 52 and completing 25 years of service. Also, firemen and policemen who retired on a duty disability allowance and converted to a service retirement allowance prior to October 1, 1987.

c) Surviving spouses of eligible retirees, or of members who elected a PSO and died prior to October 1 1987, after naming their spouse as the designated beneficiary under Option 2, Option 3, or Option 4 with a percentage to the beneficiary.

Timing and Amount of Increase

The catch-up COLA was a permanent increase in the ERS monthly benefit which was granted effective January 1, 1996. The increase was an amount equal to (i) the total ERS benefit in payment, multiplied by the greater of (ii) the total percentage change in the cost of living for each full calendar month between the 8th anniversary of service retirement and October 1, 1995, and (iii) the total percentage change required to bring the member's allowance to 60% of its full inflation adjusted value considering inflation for the period from retirement to October 1, 1995. The percentage change in the cost of living was measured by the increase in the CPI-U, U.S. Cities, as reported by the U.S. Department of Labor, Bureau of Labor Statistics.

When the catch-up COLA was calculated, the factor was not applied to supplemental, pass through benefits, which are paid by the ERS but are not a liability of the ERS. These pass through benefits, which appear on the pension payroll data supplied to the actuary, are part of an old guaranteed minimum program. The ERS is a paying agent for these benefits, but is reimbursed by the City for all such payments.

Funds Charged

Catch-up COLA amounts paid to participants in the Combined Fund are charged to the Combined Fund. Catch-up COLA amounts paid to individuals who are not participants in the Combined Fund are charged to the Retirement Fund.

- 2% Escalator for pre-1993 Retirees

Eligible Group

a) General Employees that attained the minimum service retirement age and retired with a service retirement allowance prior to January 1, 1993, or who retired on a duty disability allowance and converted to a service retirement allowance prior to January 1, 1993.

b) Firemen and policemen who retired prior to January 1, 1993, who became eligible to retire on service retirement at age 57, or after attaining age 52 and completing 25 years of service. Also, firemen and policemen who retired on a duty disability allowance and converted to a service retirement allowance prior to January 1, 1993.

c) Surviving spouses of eligible members who elected Option 3 with the spouse as the beneficiary, or of members who died prior to January 1, 1993 after electing an Option 3 PSO with the spouse as the beneficiary.

Timing and Amount of Increase

The first increase occurs with the later of the January 1996 installment or the installment next following the 8th anniversary of the member's service retirement date (or the 8th anniversary of the surviving spouse's retirement date in the case of a PSO). Thereafter, increases occur annually on the anniversary of the first increase.

The first increase is 2% of the total ERS benefit in payment. That is, the monthly benefit to which the increase is applied includes $50 fire and police escalators, and the January, 1996 catch-up COLA amount, if any, but it excludes supplemental pass through payments, if any. Increases after the first are also 2%, and are compounded -- that is, they are applied to the total ERS benefit in payment, including all prior increases, and again, excluding any supplemental pass through payments. (The benefit initially payable to an eligible spouse upon the member's death includes 50% of any increases in payment at the member's death.)

Funds Charged

2% escalators paid to participants in the Combined Fund are charged to the Combined Fund. 2% escalators paid to individuals who are not participants in the Combined Fund are charged to the Retirement Fund.

- CPI Escalator for post-1992 Fire and Police Retirees who don't Participate in the Combined Fund and Pre-2000 CPI Escalator for post-1992 Fire and Police Retirees who do Participate in the Combined Fund

Eligible Group

a) Firemen and policemen in active service on or after January 1, 1993, who become eligible to retire on service retirement at age 57 or after attaining age 52 and completing 25 years of service.

b) Firemen and policemen who retire on either a 75% Fire & Police duty disability benefit or a Heart & Lung duty disability benefit (i) between January 1, 1993, and December 31, 1994, and thereafter convert to service retirement; or (ii) on or after January 1, 1995, and who are eligible to elect between service retirement and extended life duty disability benefits at their conversion age.

c) Police in active service on or after January 1, 1995, who separate with 25 years of service and elect a deferred retirement allowance.

d) Surviving spouses of eligible members who elect Option 2 or 3, or who elect Option 4 with a percentage to the spouse, or who elect a PSO with a percentage to the spouse.

Timing and Amount of Increase

For members who retired on service retirement between January 1, 1993, and December 31, 1994; or who retired on duty disability between January 1, 1993, and December 31, 1994, and later convert to service retirement; and for eligible surviving spouses of members who died prior to retirement between January 1, 1993, and December 31, 1994, with PSO coverage in effect; the first increase occurs for March of the year following the first full calendar year of service retirement. For all others, the first increase occurs one full year after the member's service retirement date. Thereafter, increases occur annually on the anniversary of the first increase.

The monthly benefit is increased by an amount equal to (i) the total allowance for the preceding December (including all prior increases), multiplied by the lesser of (ii) 3%, and (iii) the increase in the CPI-U, U.S. Cities Average, for the calendar year preceding the increase. (The benefit initially payable to an eligible spouse upon the member's death includes a proportionate share of any increases in payment at the member's death, based on the option elected.)

Funds Charged

Benefits payable to participants in the Combined Fund are charged to the Combined Fund. For individuals who are not participants in the Combined Fund: (i) benefits are charged to the Retirement Fund for members whose enrollment dates are prior to February 1, 1996; and (ii) benefits are charged to the Combined Retirement and Disability Fund for members whose enrollment dates are on or after February 1, 1996.

- Post-1999 CPI Escalator for post-1992 Fire and Police Retirees who Participate in the Combined Fund

Eligible Group

The eligible group is restricted to individuals who were firemen and policemen who retired on duty disability between October 17, 1992, and December 31, 1992; or who were in active service on or after January 1, 1993, who either retire as firemen or policemen, or who die in active service as firemen or policemen; and their eligible surviving spouses. The types of benefits that receive the CPI escalator include:

a) The service retirement allowance and ordinary disability retirement allowance.

b) Benefits paid to members after the duty disability conversion age: the conversion service retirement allowance or the extended life duty disability retirement allowance.

c) Benefits paid to members after separation from service: the deferred retirement allowance, early retirement allowance, involuntary separation allowance, or the ERS allowance paid under the County transfer or State reciprocity provisions.

d) The spouse survivor allowance paid to the surviving spouse of an eligible member who elects Option 2 or 3, or who elects Option 4 with a percentage to the spouse, or who elects a PSO with a percentage to the spouse.

e) The fire and police or heart & lung duty disability surviving spouse allowance.

f) The duty death surviving spouse allowance.

Timing and Amount of Increases that occur after 1999

a) The first post-1999 increase occurs the later of March 2000 and March of the year following the first full calendar year of retirement for: members who retired on service retirement or ordinary disability between January 1, 1993, and December 31, 1994; or who convert to service retirement after a period of duty disability which commenced between January 1, 1993, and December 31, 1994; or who separated from service between January 1, 1993, and December 31, 1994, and subsequently retire on a deferred, early, involuntary separation, or County transfer/ State reciprocity allowance; eligible spouse survivors of such members, including PSO spouse survivors when the member died between January 1, 1993, and December 31, 1994; duty death surviving spouses of members who died between January 1, 1993, and December 31, 1994; and duty disability surviving spouses where both the member's duty disability retirement date and duty disabled death date were between January 1, 1993, and December 31, 1994.

b) The first post-1999 increase occurs the later of the year 2000 anniversary or the first anniversary of the member's date of death for: duty disability surviving spouses where the member's duty disability death date is on or after January 1, 1995.

c) For all others, the first post-1999 increase occurs the later of the year 2000 anniversary or the first anniversary of the member's retirement or pre-retirement death. (Note: this group includes members who retired on duty disability between October 17, 1992, and December 31, 1994, who subsequently elect an extended life duty disability retirement allowance, and members who retired on duty disability between October 17, 1992, and December 31, 1992, who subsequently convert to service retirement.)

Thereafter, increases occur annually on the anniversary of the first post-1999 increase.

The monthly benefit is increased by an amount equal to (i) the total allowance for the preceding December (including all prior increases), multiplied by the lesser of (ii) 3%, and (iii) the increase in the CPI-U, U.S. Cities Average, for the calendar year preceding the increase. If the member retired on duty disability between October 17, 1992, and December 31, 1992, and subsequently converts to service retirement, then the 2nd, 3rd, and 4th increases will not be less than 1.5%, and the 5th and subsequent increases will not be less than 2%. (The benefit initially payable to an eligible spouse upon the member's death includes a proportionate share of any increases in payment at the member's death, based on the option elected.)

Funds Charged

The CPI escalator is charged to the Combined Fund.

- 2% Guarantee for Fire and Police CPI Escalator for Participants in Combined Fund

  The eligible group is restricted to firemen and policemen who retire on service retirement, their spouse survivors, and PSO spouse survivors. In addition, firemen members of Local 215 and policemen members of the MPA must have been in active service on or after January 1, 1998; policemen members of the MPSO must have been in active service on or after January 1, 1999; and non-represented firemen and policemen must have been in active service on or after January 1, 2000. The benefit is a guarantee that the CPI Escalator will not be less than 2% per annum.

- 2% Escalator for post-1992 General Employee Retirees who do Not Participate in Combined Fund

  Eligible Group

  a) General Employees who retire on a service retirement allowance on or after January 1, 1993 who have either (i) attained age 60, or (ii) completed 30 years of service and attained age 55.
  b) General Employees receiving a duty disability retirement allowance who convert to service retirement on or after January 1, 1993.
  c) Spouses of eligible members who either elect Option 3 at retirement with the spouse as beneficiary, or who die after electing an Option 3 PSO with the spouse as beneficiary.

  Timing and Amount of Increase

  The first increase occurs with the installment next following the 8th anniversary of the member's service retirement or conversion to service retirement date (or the 8th anniversary of the surviving spouse's retirement date in the case of a PSO). Thereafter, increases occur annually on the anniversary of the first increase.

  Each increase is 2%, and increases after the first are compounded -- that is, they are applied to the total benefit in payment, including all prior increases. (The benefit initially payable to an eligible spouse upon the member's death includes 50% of any increases in payment at the member's death.)

  Funds Charged

  For members whose enrollment dates are prior to February 1, 1996, the 2% escalator for post-1992 general employee retirees is paid from the Retirement Fund. For members whose enrollment dates are on or after February 1, 1996, the 2% escalator for post-1992 general employee retirees is paid from the Combined Retirement and Disability Fund.

- Post-1999 1.5% / 2% Escalator for General Employee Retirees and for Pre-1993 Fire and Police Retirees who Participate in the Combined Fund

  Eligible Group

  The eligible group includes (i) pre-1993 retirees and surviving spouses who are not eligible for either the 2% Escalator for pre-1993 retirees, or the Post-1999 CPI Escalator for post-1992 fire and police retirees; and (ii) post-1992 general employee retirees and their surviving spouses. The types of benefits that receive the 1.5%/2% escalator include:

a) The service retirement allowance and ordinary disability retirement allowance for all members, and the duty disability retirement allowance for General Employees.
b) Benefits paid to members after the duty disability conversion age: the conversion service retirement allowance for all members or the extended life duty disability retirement allowance for fire and police.
c) Benefits paid to members after separation from service: the deferred retirement allowance, early retirement allowance, involuntary separation allowance, or the ERS allowance paid under the County transfer or State reciprocity provisions.
d) The spouse survivor allowance paid to the surviving spouse of an eligible member who elects Option 2 or 3, or who elects Option 4 with a percentage to the spouse, or who elects a PSO with a percentage to the spouse.
e) The fire and police or heart & lung duty disability surviving spouse allowance.
f) The duty death surviving spouse allowance.

Timing and Amount of Increases that occur after 1999

a) The first post-1999 increase occurs for January 2000 for eligible Option 2 and 4 spouse survivors of members retired on a service retirement allowance or a conversion service retirement allowance - and for eligible Option 2 and 4 PSO spouse survivors - when the member's date of retirement or pre-retirement death was prior to January 1988.
b) The first post-1999 increase occurs the later of the year 2000 anniversary or the 2nd anniversary of the member's date of death for: duty disability surviving spouses of firemen and policemen.
c) For all others, the first post-1999 increase occurs the later of the year 2000 anniversary or the 2nd anniversary of the member's retirement or pre-retirement death.

Thereafter, increases occur annually on the anniversary of the first increase.

All increases for the group described in paragraph (a) are 2% increases. For paragraphs (b) and (c), an increase which takes effect on the 2nd, 3rd, or 4th anniversary is a 1.5% increase. An increase which takes effect on the 5th or subsequent anniversary is a 2% increase. Increases after the first one are compounded -- that is, they are applied to the total benefit in payment, including all prior increases. (The benefit initially payable to an eligible spouse upon the member's death includes the spouse's proportionate share of any increases in payment at the member's death, based on the option elected.)

Tier 2 Employees receive an increase of 2% on the fifth anniversary of their retirement and on each anniversary that follows, but only for service retirement.

Fire and Police Survivorship Benefits Prior to the Global Pension Settlement

The survivors of firemen or policemen who die in active service or while in receipt of a disability allowance may be entitled to a survivorship benefit. The survivorship benefit is payable to the spouse of the deceased member provided the spouse has one or more eligible children in her care. Eligible children include unmarried children who are either under the age of 18, or are over age 18, but who suffer from a disability which commenced before the age of 18. The amount of the survivorship benefit for a death occurring in 2000 is $600 monthly for the spouse and one child or for two or more eligible children. If there is no surviving widow and only one child, the benefit is $300. Upon attainment of age 57, $300 is payable to the spouse for her lifetime. Benefits payable to a spouse cease on remarriage and benefits payable in respect of children cease on attainment of age 18 (unless disabled prior to age 18) or marriage. For member deaths that occurred prior to 2000 the monthly amount payable depends upon the plan provisions in effect at the member's death.

Fire and Police Survivorship Benefits for Survivors Participating in the Combined Fund

Survivors of firemen or policemen who died prior to 2000 while in active service or while retired on disability (and contributing to the Fire and Police Survivorship Fund) may be entitled to a survivorship benefit. The survivorship benefit is payable to the spouse of the deceased member provided the spouse has one or more eligible children in her care. For participants in the Combined Fund, the amount of the survivorship benefit for a death occurring prior to 2000 is $600 monthly for the spouse and one child under age 18, or for two or more children under age 18. If there is no surviving widow and only one child, the benefit is $300. The monthly amount payable to a disabled child over the age of 18 depends upon the plan provisions in effect at the member's death. Upon attainment of age 57, $300 is payable to the spouse for her lifetime. Benefits payable to a spouse cease on remarriage and benefits payable in respect of children cease on attainment of age 18 (unless disability commenced prior to age 18) or marriage.

Survivorship Benefits for Participants in the Combined Fund are charged to the Combined Fund.

Separation Benefits

Eligibility and Amounts

Should a member separate from service, and no other benefit is payable, such a member will possibly be entitled to one of the options outlined below. Additional eligibility information about Separation Benefits is provided under 36-05-6.

a) If the member has less than four years of creditable service, a refund of member contributions (not paid by the member's employer). Interest at 4.0% per annum on the 4%, 5.5%, or 7% member paid contributions is also payable.

b) If the member has four years of creditable service, a deferred allowance payable at the minimum service retirement age.

c) A refund of the member contributions and interest, including contributions paid on the member's behalf, is payable to (i) General Employees after 4 years of creditable service, or (ii) firemen or policemen after 10 years of creditable service.

d) If the member's service is involuntarily terminated, or the member terminates voluntarily after attaining age 55 and completing 15 years of creditable service, such member may elect to receive a deferred allowance at the minimum service retirement age, or an immediate allowance that is the actuarial equivalent of the deferred allowance.

e) If the member has 25 years of qualifying time as a fireman or policeman, and is not participating in the Combined Fund, a deferred allowance payable at age 52.

f) If the member is a fireman with 25 years of qualifying time as a fireman or policeman, had not attained age 49 at the date of separation from service, and is participating in the Combined Fund, a deferred allowance payable at age 52.

Imputed service credit and seasonal service credit are not used when calculating separation benefits.

Funds Charged with Separation Benefits

Benefits paid to participants in the Combined Fund are charged to the Combined Fund. Separation benefits paid to individuals not participating in the Combined Fund are charged to (i) the Retirement Fund if the member's enrollment date is prior to February 1, 1996, and (ii) the Combined Fund if the member's enrollment date is on or after February 1, 1996.

Lump Sum Bonus Payments

Under the Global Pension Settlement, various lump sum bonus payments may be made to eligible individuals participating in the Combined Fund. An individual may be eligible for one or more types of lump sum bonus payments.

Eligibility for Lump Sum Bonus Payments

Only individuals participating in the Combined Fund can become eligible for the following types of lump sum bonus payments. In addition, the following conditions apply to the individual lump sum bonuses.

a) 5% lump sum bonus: Members who are inactive as of January 1, 2000, will become eligible at the time that their deferred retirement allowance commences.

   Members in active service as of January 1, 2000, will become eligible when they first retire.

   If a member in active service as of January 1, 2000, dies prior to retirement and the member's surviving spouse is eligible for either a surviving spouse duty death benefit (including Heart & Lung duty death) or a PSO spouse survivor benefit then the surviving spouse is eligible for this bonus payment.

   Only one 5% lump sum bonus will be paid on account of an individual member. Thus, if a member receiving a duty disability retirement allowance receives a 5% lump sum bonus on account of the duty disability benefit, then the member will not be eligible for an additional 5% lump sum bonus at the time of conversion.

b) 8.6% lump sum bonus: A fireman or policeman in active service as of January 1, 2000, who (i) retires as a fireman or policeman on a service retirement allowance; or (ii) converts to service retirement or elects an extended life duty disability retirement allowance after retiring as a fireman or policeman on duty disability; (iii) attains age 63 while in receipt of an ordinary disability retirement allowance or a lifetime Fire & Police or Heart & Lung duty disability retirement allowance, is eligible for this bonus so long as the member did not receive 2 years of imputed service credit under the dissolution of the Firemen and Policemen's Survivorship Fund; (iv) or retires as a fireman or policeman on an extended life duty disability.

   If a fireman or policeman in active service as of January 1, 2000, dies prior to retirement and the member's surviving spouse is eligible for either a surviving spouse duty death benefit (including Heart & Lung duty death) or a PSO spouse survivor benefit then the surviving spouse is eligible for this bonus payment.

A fireman or policeman retired on disability as of January 1, 2000, who is also an active member of the Firemen and Policemen's Survivorship Fund as of January 1, 2000 - under age 57 at 1/1/2000, and made all required contributions to the Survivorship Fund – is eligible for this bonus if he (i) converts to service retirement or elects an extended life duty disability retirement allowance; or (ii) is ineligible to convert to service retirement and attains age 63 while in receipt of the disability retirement allowance; provided that he (iii) did not receive 2 years of imputed service credit under the dissolution of the Firemen and Policemen's Survivorship Fund.

Amount of Lump Sum Bonus Payments

Age factors are used in the 5% lump sum bonus and the 8.6% lump sum bonus calculations. The age factors for these bonus payments are contained in s. 36-05-11-a.

a) 5% lump sum bonus: For members who are either inactive or active as of January 1, 2000, who retire in the future, the bonus payment equals 5% times their initial annual retirement allowance times a factor based on attained age on the retirement date. The retirement allowance used in the bonus calculation is to be reduced for early retirement, if applicable, but is not to be reduced for any optional election the member might have made under s. 36-05-7.

   If a member in active service as of January 1, 2000 dies prior to retirement and the member's surviving spouse is eligible for this bonus payment, then the bonus will equal 5% times the spouse's initial annual benefit times a factor based on the spouse's attained age when the benefit commences.

b) 8.6% lump sum bonus: In the explanation that follows, whenever an annual allowance is used in calculating a bonus due to a member, the allowance used is the allowance that would be paid if the member did not elect an option under s. 36-05-7.

   For members who retire on service retirement: 8.6% times the annual service retirement allowance times a factor based on attained age at retirement.

   For surviving spouses who receive either a PSO benefit or a duty death benefit: 8.6% times the initial annual allowance payable to the spouse times a factor based on the spouse's attained age when the benefit commences.

   For a member who is retired on duty disability as of January 1, 2000 - or who retires on duty disability thereafter - and who is eligible to convert to service retirement: 8.6% times the annual conversion service retirement allowance earned as of the conversion age times a factor based on attained age at conversion.

   For a member who is retired on disability as of January 1, 2000 – or who retired on disability thereafter – who is ineligible to convert to service retirement, and who is age 63 or younger at the later of 1/1/2000 or the disability retirement date: 8.6% times the "hypothetical" annual conversion service retirement allowance earned at age 63 times the attained age factor for age 63. The "hypothetical" allowance is calculated as if the member were eligible to convert at age 63.

   For a member who retires on disability after January 1, 2000, who is older than age 63 at the disability retirement date: 8.6% times the annual disability allowance payable when the allowance commences times a factor based on the member's attained age at retirement.

Funds Charged

The 5% lump sum bonus and the 8.6% lump sum bonus are paid from the Combined Fund.

Benefits Not Valued

None.

Actuarial Methods

The method of financing the ERS is prescribed in Section 36.08 of the MCC.

Actuarial Cost Method

The method used to determine Normal Cost and Accrued Actuarial Liability (AAL) is the Individual Entry Age Normal Cost Method. The UAAL, under this method, is the AAL over the Actuarial Value of Assets. The total Employer contribution is the sum of the Employer portion of the Normal Cost (Total Normal Cost less expected member contributions) plus an amount to amortize the UAAL according to the Amortization Method.

If the Actuarial Value of Assets exceeds the sum of the AAL and the Employer portion of the Normal Cost, there is no Employer contribution required for that year.

Asset Values

Two asset values are used in this report. A description of each and a brief explanation of where they are used follows:

- **Market Value**

  The market value of assets is the value of investments if they were to be sold on the date valued. The market value of assets is used to develop the actuarial value of assets.

- **Actuarial Value**

  The actuarial value of the assets in the Employers' Reserve Fund and the Securities Lending Fund is equal to the market value of assets. These Funds are not available to pay the benefits for ERS members so they are excluded from the allocation of the actuarial value of assets to the various funds and groups and the resulting calculations of employer contributions. The actuarial value of assets for the remaining funds is a smoothed value of assets (see Table 7). The difference between (1) the expected return on the market value of assets at the beginning of the year, based on the investment return assumption and the net non-investment cash flows, and (2) the actual return on the market value of assets is smoothed equally over five years. As a result, there are five components of excess/shortfall returns to be smoothed each year.

Amortization Method

Closed layered amortization method with amortization payments for each base increasing by 2.00% per year. Effective with the January 1, 2019 actuarial valuation, the Board adopted a 25-year closed period to amortize the existing UAAL. At each subsequent valuation date, any changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 15-year period and any changes to the UAAL arising from changes in assumptions will be amortized over a closed 25-year period. Effective with the January 1, 2023 actuarial valuation, future changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 20-year period. If the UAAL is negative, all prior bases will be eliminated, and the surplus will be amortized over an open 25-year period. Changes to the UAAL arising from changes to plan provisions will be amortized over various periods, depending on the nature of the change and which participants are affected. Finally, changes to the UAAL arising from contributions to the Combined Fund which are above or below the adopted Stable Employer Contribution Policy rates will be amortized over a closed 5-year period.

Demographic assumptions are based on the experience investigation prepared as of December 31, 2021 and adopted by the Board of Trustees on September 28, 2022 for use beginning with the January 1, 2023 actuarial valuation. The set of economic assumptions was adopted by the Board of Trustees on February 27, 2023, for use in the January 1, 2023 actuarial valuation.

Investment Return Assumption: 7.50% per annum (net of investment expenses), compounded annually.

Inflation: 2.50% per annum.

Cost of Living Adjustments (COLA): For retirees whose COLA is defined as the lesser of 3.00% and CPI-U, the assumed COLA is 2.50% per annum.

Payroll Growth for UAAL amortization: UAAL amortization payments increase at 2.00% per annum.

Illustrative Rates of Salary Increase:

	Salary Increases*	
Service	General Employees	Firemen and Policemen
1	6.25%	18.00%
5	5.75	7.00
10	5.00	3.20
15	4.25	3.20
20	4.25	3.10
25	4.25	3.10
30	4.00	3.10
35	3.00	3.10
40	3.00	3.00

* Includes general wage increase assumption of 3.00%.

Annual increases of 2.50% per annum is assumed for Policemen, Firemen and General Employees on duty disability. The increases for duty disabled Firemen and Policemen affect both current duty disability benefits and future service retirement or extended life conversion benefits. The increases for General Employees affect only service retirement conversion benefits.

Mortality Assumptions:

a. Active Members: For General employees, Pub-2010 Below Median General Employee Mortality Table with a one-year age setback for males and a two-year age set forward for females, projected generationally using SOA Scale MP-2021.

For Policemen and Firemen, Pub-2010 Median Public Safety Employee Mortality Table with a one-year age set forward for males and females, projected generationally using SOA Scale MP-2021.

b. Healthy Retirees

For General employees, Pub-2010 Below Median General Retiree Mortality Table with a one-year age setback for males and a two-year age set forward for females, projected generationally using SOA Scale MP-2021.

For Policemen and Firemen, Pub-2010 Median Public Safety Retiree Mortality Table with a one-year age set forward for males and females, projected generationally using SOA Scale MP-2021.

c. Beneficiaries

For General employees, Pub-2010 Below Median Contingent Survivors Mortality Table with a one-year age setback for males and a two-year age set forward for females, projected generationally using SOA Scale MP-2021.

For Policemen and Firemen, Pub-2010 Median Contingent Survivors Mortality Table with a one-year age set forward for males and females, projected generationally using SOA Scale MP-2021.

d. Disabled Retirees

For General employees, Pub-2010 Non-Safety Disabled Retiree Mortality Table with a one-year age setback for males and a two-year age set forward for females, projected generationally using SOA Scale MP-2021.

For Policemen and Firemen, Pub-2010 Safety Disabled Retiree Mortality Table with a one-year age set forward for males and females, projected generationally using SOA Scale MP-2021.

Illustrative Rates of Termination:

	General Employees		Policemen	Firemen
Service	Male	Female		
1	15.00%	17.00%	4.00%	2.35%
5	9.00	10.50	2.50	1.75
10	4.50	6.75	1.25	1.00
15	4.00	4.00	0.85	0.50
20	3.00	2.75	0.85	0.50
25	1.00	2.50	0.00	0.00
30	0.00	0.00	0.00	0.00

All terminations are assumed to be involuntary.

Members who terminate vested are assumed to take a refund if it is more valuable than their deferred benefit. Regular interest credited on contribution account balances is assumed to be 4.0%.

Rates of Early and Normal Retirement:

General Employees

	Early Retirement		Normal Retirement			
	Tier 1	Tier 2	Tier 1		Tier 2	
Age	All	All	Males	Females	Males	Females
55	2%	2%	40%	32%		
56	2	2	20	25		
57	2	2	25	25		
58	2	2	25	25		
59	4	2	25	25		
60		2	25	20	40%	32%
61		2	25	20	25	20
62		2	25	25	25	25
63		2	25	20	25	20
64		4	25	20	25	20
65			27	27	27	27
66			20	27	20	27
67			27	27	27	27
68			27	30	27	30
69			27	30	27	30
70			100	100	100	100

Policemen and Firemen

Age	Firemen	Policemen	Age	Firemen	Policemen
42		40%	53	22%	40%
43		40	54	22	40
44		40	55	30	40
45		40	56	30	40
46		40	57	30	40
47		40	58	30	25
48		40	59	40	25
49	22%	40	60	40	25
50	22	40	61	50	25
51	22	40	62	50	50
52	22	40	63	100	100

Illustrative Rates of Disability:

	Disability Rates		
Age	General Employees	Firemen	Policemen
20	0.040%	0.250%	0.024%
25	0.040	0.250	0.024
30	0.040	0.250	0.096
35	0.040	0.254	0.148
40	0.041	0.302	0.180
45	0.049	0.486	0.192
50	0.082	0.898	0.196
55	0.167	1.580	0.200
60	0.333	0.000	0.000
65	0.600	0.000	0.000

Elected officials are assumed to become disabled at the same rate as General Employees.

Duty Disabilities:

		Percentage of Duty Disabilities Assumed		
Employee Group	Percentage of Disabilities Incurred in the Performance of Duty	Eligible For The 90% Benefit	Under The Heart & Lung Law	Assumption Adopted January 1
General Employees	20.0%	N/A	N/A	2023
Police other than MPA	20.0%	0.0%	N/A	2023
MPA enrolled on or before 4/18/2005	60.0%	0.0%	N/A	2023
MPA enrolled after 4/18/2005	60.0%	0.0%	N/A	2023
Fire other than MPFFA	20.0%	0.0%	0.0%	2023
MPFFA enrolled on or before 10/3/2005	75.0%	0.0%	0.0%	2023
MPFFA enrolled after 10/3/2005	75.0%	0.0%	0.0%	2023

Upon reaching their service conversion date, 100% of Policemen and Firemen who become duty disabled are assumed to convert to a service retirement benefit.

Marriage Assumption and Duty Disability Child Allotments:

It is assumed that female spouses are three years younger than males. In absence of evidence to the contrary, it is assumed that 85% of General Employees and 95% of Policemen and Firemen are married, with dependent children, described by the following table:

Member's Age at Death or Disability	Number of Dependent Children	Age of Youngest Child
20	0.0	-
25	1.5	1
30	2.5	2
35	2.5	5
40	2.5	8
45	2.0	11
50	1.5	14
55	1.0	15
60 and Over	0.0	-

The percentage of retiring employees assumed to elect option 3, the subsidized 50% option, is 25% for males and 15% for females. The percentage of General Employees assumed electing the 100% PSO option before retirement is 40% for males and 15% for females. For Firemen and Policemen, 95% are assumed to elect the 100% PSO option before retirement.

Duty Deaths:

The following percentages of deaths in active service are assumed to incur in the performance of duty:

General Employees:	5%
Police & Fire:	10%. In addition, amongst firemen, 25% of duty deaths are assumed to occur under the Heart and Lung Law.

Imputed Military Service:

The following percentages of eligible members are assumed to earn 1 year of imputed military service credit:

General Employees:	10%
Police:	13%
Fire:	13%

These percentages are based on troop strength statistics from the Department of Defense website. (Adopted 1/1/2003)

Seasonal Service Credit: The following percentages of eligible members are assumed to receive one year of seasonable service credit:

Member's Union or Bargaining Group	Percentage with Seasonal Service	Assumption Adopted January 1
District Council 48, AFSCME	27.09%	2005
Fire Equipment Dispatchers Local 494, IBEW	0.00%	2006
Electrical Group Local 494, IBEW	31.00%	2006
Machine Shop Local 494, IBEW	12.00%	2005
Bridge Operators Local 195, IBEW	28.57%	2005
Joint 129/48 Local 139, IOUE & DC48	100.00%	2005
Machinists Local 510, IAM	5.00%	2005
Sanitation Local 61, LIUNA	98.06%	2005
TEAM (Techs, Eng, Archs of Milw)	5.00%	2005
MBCTC (Bricklayers, Carpenters, Cement Masons, Painters, Iron Workers)	10.00%	2005
Police Sworn Management, Police Civilian Management, Managers, Elected Officials (except mayor)	3.13%	2005
Non-represented in the Police Department and General City non-represented	5.00%	2005

Miscellaneous

Future Service Accrual: Active members are assumed to accrue a full year of service in each future year (adopted 1/1/2023).

Annualized Compensation: For active members, their prior year reported compensation amount is annualized based on their Future Service Accrual and further increased by a leap year adjustment factor of 1.0034 (26.089285 ÷ 26).

Deemed Inactives: Active members who worked less than 100 hours in the prior year, but who have not officially terminated employment are treated as Inactives. These members are not assumed to earn additional service credit in future years.

Decrement Timing: All withdrawals, deaths, disabilities, and retirements are assumed to occur mid-year.

Liability for Inactive Members: The data provided for inactive members does not contain all the elements to calculate the member's deferred benefit. The deferred benefit amounts for these members are estimated using the member's life-to-date earnings and assumed salary increases. For terminated members who are missing a termination date on their record, it is assumed that they terminated at age 35. The actuary is collecting data so that future members' deferred benefits can be estimated.

Administrative Expenses: Based on the most recent fiscal year end.

Normal Cost: Normal cost rate reflects the impact of new entrants during the year.

Changes Since Prior Valuation: Every five years, the System's Actuary performs and Experience Study to assess the appropriateness of the current set of actuarial assumptions and methods. The most recent study was performed in 2022, which analyzed actuarial experience during the five-year period ending December 31, 2021. As a result of the 2022 Experience Study, several changes to the demographic actuarial assumptions were recommended and adopted by the Board, as well as proposed changes to the UAAL amortization method. The key assumption changes include:

- Mortality assumption: For General employees, move to Pub-2010 Below Median General Mortality Table with one-year age setback for males and two-year set forward for females. For Policemen and Firemen, move to Pub-2010 Median Public Safety Mortality Tables with one-year age set forward for males and females. Future mortality improvements are modeled using SOA Scale MP-2021.
- Retirement: Lower early retirement rates for General Employees and adjust normal retirement rates for males and females to better fit experience. Increase retirement rates for Police and Fire to better reflect actual experience.
- Termination: Move to service-based assumption for both General as well as Policemen and Firemen.
- Disability: Lower the disability assumption for all groups to partially reflect the observed experience.
- Duty-Related Disability: 20% for General and Non-union Police and Fire. 60% for MPA Police and 75% for MPFFA Fire. No disabilities are assumed to be eligible for 90% benefit.
- Salary Increase: Move to service-based assumption for both General Employees as well as Policemen and Firemen, with 3.0% general wage increase assumption.
- Future Service Accruals: Active members are assumed earn a full year of service each year in the future.

In addition to the assumption changes, the Board also adopted the following changes to the UAAL amortization schedule:

- Future changes to the UAAL arising from actual experience that is different than assumed will be amortized over a closed 20-year period instead of a closed 15-year period.
- If the UAAL is negative, all prior bases will be eliminated, and the surplus will be amortized over an open 25-year period.
- Changes to the UAAL arising from changes to plan provisions will be amortized over various periods, depending on the nature of the change and which participants are affected.
- Changes to the UAAL arising from contributions to the Combined Fund which are above or below the adopted Stable Employer Contribution Policy rates will be amortized over a closed 5-year period..

Note that the first definitions given are the "official" definitions of the term. For some terms there is a second definition, in italics, which is the unofficial definition.

Actuarial Accrued Liability (AAL): The portion of the Present Value of Projected Benefits (PVFB) allocated to past service. Also difference between (i) the actuarial present value of future benefits, and (ii) the present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability." *The amount of money that should be in the fund. The funding target.*

Actuarial Assumptions: Estimates of future plan experience with respect to rates of mortality, disability, retirement, investment income and salary increases. Demographic ("people") assumptions (rates of mortality, separation, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic ("money") assumptions (salary increases and investment income) consist of an underlying rate appropriate in an inflation- free environment plus a provision for a long-term average rate of inflation. *Estimates of future events used to project what we know now- current member data, assets, and benefit provisions – into an estimate of future benefits.*

Actuarial Cost Method: A mathematical budgeting procedure for allocating the dollar amount of the Present Value of Projected Benefits (PVFB) between the normal costs to be paid in the future and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Methods: The collective term for the Actuarial Cost Method, the Amortization Payment for UAAL Method, and the Asset Valuation Method used to develop the contribution requirements for the Retirement System. *The funding policy*.

Actuarial Equivalent: Benefits whose actuarial present values are equal.

Actuarial Present Value: The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuarial Value of Assets (AVA): A smoothed value of assets which is used to limit contribution volatility. Also known as the funding value of assets. *Smoothed value of assets.*

Amortization Payment for UAAL: Payment of the unfunded actuarial accrued liability by means of periodic contributions of interest and principal, as opposed to a lump sum payment. The components of the amortization payment for UAAL includes:

- Amortization Period Length – Generally amortization periods of up to 15 to 25 years (and certainly not longer than 30). Similar to a mortgage, the shorter the amortization period, the higher the payment and the faster the UAAL is paid off.

- Amortization payment increases – Future payments can be level dollar, like a mortgage, or as a level percent of pay. Most Retirement Systems amortize UAAL as a level percent of pay which when combined with the employer normal cost that is developed as a level percent of pay can result in contributions that are easier to budget.

- Amortization type – An amortization schedule can be closed or open. A closed amortization schedule is similar to a mortgage – at the end of the amortization period the UAAL is designed to be paid off. An open amortization period is similar to refinancing the UAAL year after year.

- Amortization schedule – UAAL can be amortized over a single amortization period, or it can be amortized over a schedule.

The amortization payment for UAAL can be thought of as the UAAL mortgage payment.

Asset Valuation Method: The components of how the actuarial value of assets is to be developed. CMERS uses a five-year smoothing of asset gains and losses, which is the most commonly used method.

Experience Gain (Loss): A measure of the difference between actual experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used. *The experience Gain (Loss) represents how much the actuary missed the mark in a given year.*

Funded Ratio: The percent of the actuarial accrued liabilities covered by the actuarial value of assets. Also known as the funded status. *The ratio of how much money you actually have in the fund to the amount you should have in the fund.*

Normal Cost: The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." An amortization payment toward the unfunded actuarial accrued liability is paid in addition to the normal cost to arrive at the total contribution in a given year. *The cost of benefits accruing during the year.*

Present Value of Future Normal Cost (PVFNC): The portion of the Present Value of Projected Benefits (PVFB) allocated to future service. *The value in today's dollars of the amount of contribution to be made in the future for benefits accruing for members in the Retirement System as of the valuation date.*

Present Value of Future Benefits (PVFB): The projected future benefit payments of the plan are discounted into today's dollars using an assumed rate of investment return assumption to determine the Present Value of Future Benefits (PVFB) of the Retirement System. The PVFB is the discounted value of the projected benefits promised to all members as of a valuation date, including future pay and service for members which has not yet been earned. *If the Retirement System held assets equal to the PVFB and all the assumptions were realized, there would be sufficient funds to pay off all the benefits to be paid in the future for members in the Retirement System as of the valuation date.*

Reserve Account: An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability (UAAL): The difference between the actuarial accrued liability (AAL) and actuarial value of assets (AVA). The UAAL is sometimes referred to as "unfunded accrued liability." *Funding shortfall, or prefunded amount if negative.*

Valuation Date: The date that the actuarial valuation calculations are performed as of. *Also known as the "snapshot date".*

Board Report - May 2023

Retirements

Retirement Type	Retirement SubType	Last Name	First Name	Retirement Date	Option	Department
Regular	Deferred	KOHLHOFF	RICHARD	4/23/2018	MAX	MILWAUKEE PUBLIC SCHOOLS
Regular	Deferred	WROTEN	ELOISE	1/13/2020	MAX	CITY OF MILWAUKEE
Regular	Deferred	SHERWIN	ANTHONY	5/30/2022	MAX	CITY OF MILWAUKEE
Regular	Service	ALEXANDER	LARRY	3/15/2023	MAX	MILWAUKEE PUBLIC SCHOOLS
Regular	Deferred	GIL	JOE	3/17/2023	MAX	CITY OF MILWAUKEE
Regular	Service	KRAUSS	PATRICIA	4/1/2023	75	MILWAUKEE PUBLIC SCHOOLS
Regular	Involuntary Separation	PAPIA	JOHN	4/11/2023	MAX	DPW-WATER-DISTRIBUTION
Regular	Deferred	GENKE	KIM	4/12/2023	75	DPW - INFRASTRUCTURE
Regular	Service	GRYCOWSKI	DAVID	4/15/2023	100	DEC
Regular	Service	HUBBARD	CARLA	4/15/2023	MAX	MILWAUKEE PUBLIC SCHOOLS
Regular	Service	TAPER	JOSEPHINE	4/19/2023	MAX	MILWAUKEE PUBLIC SCHOOLS
Regular	Service	JONES	BRENT	4/21/2023	50	FIRE - FIREFIGHTING
Regular	Deferred	HUNDT	STEVEN	4/22/2023	MAX	MPD - ADMINISTRATION
Regular	Service	RITTER	OLAF	4/22/2023	100	MILWAUKEE PUBLIC SCHOOLS
Regular	Deferred	SAAVEDRA	HILDA	4/24/2023	100	MILWAUKEE PUBLIC SCHOOLS
Regular	Service	ASHLEY	KENDRICK	4/28/2023	50	FIRE - FIREFIGHTING
Regular	Deferred	ROBERTSON-HAUSER	CARRIE	4/29/2023	MAX	DPW
Regular	Service	FUCHS	WILLIAM	4/29/2023	100	DPW-INFRASTRUCTURE-ADMIN
Regular	Service	MCHENRY	ARLISIA	4/29/2023	MAX	COMMON COUNCIL - CITY CLERK
Regular	Service	MCLEMORE	ELIZABETH	4/29/2023	100	MILWAUKEE PUBLIC SCHOOLS
Regular	Service	PANFIL	YVETTE	4/29/2023	MAX	MILWAUKEE POLICE DEPARTMENT
Regular	Service	POLZIN	ROBERT	4/29/2023	MAX	DPW-INFRASTRUCTURE-ELECTRICAL
Regular	Service	SINGBEIL	TIMOTHY	4/29/2023	100	DPW-WATER-DISTRIBUTION
Regular	Service	YAKLICH	PAUL	4/29/2023	52	DPW-OPS-FLEET SERVICES
Regular	Service	COFFEY	DAVID	4/30/2023	100	FIRE - FIREFIGHTING
Regular	Service	MARCHESE	PAUL	4/30/2023	100	MILWAUKEE POLICE DEPARTMENT
Regular	Service	MORGAN	DAVID	4/30/2023	75	FIRE - FIREFIGHTING
Regular	Service	BROWN	KENNETH	5/1/2023	MAX	CITY OF MILWAUKEE

Board Report - May 2023

Deaths

Type	Last Name	First Name	Death Date	Payment Date	Amount
Deferred Death	STEIN	STEVEN	3/9/2023	5/31/2023	$ 20,599.47
Ordinary Death	BENNING	GREGORY	3/17/2023	5/31/2023	$ 45,414.31
Ordinary Death	SHINE	MARY	3/12/2023	5/31/2023	$ 40,606.57
Retiree Death-Termination	BASTIAN	ANTHONY	3/18/2023	5/31/2023	$ 889.24
Retiree Death-Termination	BAUER	CAROL	4/15/2023	5/31/2023	$ 213.78
Retiree Death-Termination	FRASER	PRISCILLA	3/23/2023	5/31/2023	$ 580.72
Retiree Death-Termination	HAMMER	DAVID	2/28/2023	5/31/2023	$ 361.50
Retiree Death-Termination	INGRAM	CLARENCE	3/28/2023	5/31/2023	$ 758.66
Retiree Death-Termination	MARTIN	JOHN	4/12/2023	5/31/2023	$ 512.52
Retiree Death-Termination	MATIAS	JUANITA	4/9/2023	5/31/2023	$ 44,984.98
Retiree Death-Termination	MISKO	PETER	4/16/2023	5/31/2023	$ 158.13
Retiree Death-Termination	PALLAN	RICHARD	1/17/2023	5/31/2023	$ 704.86
Retiree Death-Termination	PANIAGUA	JOSE	3/27/2023	5/31/2023	$ 1,264.44
Retiree Death-Termination	PELLOWSKI	RICHARD	1/15/2023	5/31/2023	$ 1,440.47
Retiree Death-Termination	STANZ	JOHANNA	4/22/2023	5/31/2023	$ 1,382.89
Surv Death-Termination	BRUZAN	ARLINE	4/22/2023	5/31/2023	$ 621.72
Surv Death-Termination	BURNS	TINA	4/15/2023	5/31/2023	$ 401.90
Surv Death-Termination	FRASER	PRISCILLA	3/23/2023	5/31/2023	$ 222.58
Surv Death-Termination	LEWANDOWSKI	MICHAEL	2/14/2023	5/31/2023	$ 181.70
Surv Death-Termination	POZNANSKI	LOUISE	1/9/2023	5/31/2023	$ 1,168.14
Surv Death-Termination	REMM	MARY JANE	4/11/2023	5/31/2023	$ 450.33
Surv Death-Termination	SCHMADL	JOAN	4/17/2023	5/31/2023	$ 1,832.50
Surv Death-Termination	SKIBA	DOLORES	3/14/2023	5/31/2023	$ 1,524.96
Surv Death-Termination	THOMAS	JAMES	3/10/2023	5/31/2023	$ 423.19
					$ 166,699.56
Retiree Death-Cont Opt	ALLEN	CHRISTOPHER	4/8/2023	5/1/2023	
Retiree Death-Cont Opt	BOTELLO	JOSE	3/23/2023	5/1/2023	
Retiree Death-Cont Opt	BRUNER	RONALD	5/7/2023	5/1/2023	
Retiree Death-Cont Opt	CHRISMAN	GERALD	4/21/2023	5/1/2023	
Retiree Death-Cont Opt	DELGADO	RICARDO	5/15/2023	5/1/2023	
Retiree Death-Cont Opt	ERKINS	JOHN	5/4/2023	5/1/2023	
Retiree Death-Cont Opt	GRECHOWIAK	HAROLD	4/22/2023	5/1/2023	

Type	Last Name	First Name	Death Date	Payment Date	Amount
Retiree Death-Cont Opt	GRINKER	RICHARD	5/2/2023	5/1/2023	
Retiree Death-Cont Opt	ZIOLKOWSKI	RONALD	4/12/2023	5/1/2023	

Board Report - May 2023 **Withdrawals**

Type	Last Name	First Name	Payment Date		Amount
Administrative Withdrawal	AMELL	RACHEL	5/31/2023	$	1,000.87
Administrative Withdrawal	DYESS	LIANDRA	5/31/2023	$	2,303.76
Administrative Withdrawal	HARKIN	KEVIN	5/31/2023	$	82.84
Administrative Withdrawal	HUFF-JOHNSON	AYOKA	5/31/2023	$	2,862.04
Administrative Withdrawal	TAYLOR	DERIC	5/31/2023	$	1,440.28
Full Refund	ANDERSON	KRISTIE	5/31/2023	$	5,305.78
Full Refund	BAILEY	CHER	5/31/2023	$	9,229.00
Full Refund	BARNES	QUEEN	5/31/2023	$	22,350.66
Full Refund	BURKS	KAHALA	5/31/2023	$	397.03
Full Refund	CRUMP	LYNNETTE	5/31/2023	$	2,148.34
Full Refund	DANIELS	LAKEIA	5/31/2023	$	3,950.80
Full Refund	GREENE	ALBERT	5/31/2023	$	8,001.44
Full Refund	JONES	GWENDOLYN	5/31/2023	$	18,795.45
Full Refund	LLOYD	ALLAN	5/31/2023	$	7,160.86
Full Refund	NELSON	KIMBERLY	5/31/2023	$	3,608.71
Full Refund	PRESBERRY	AVEN	5/31/2023	$	3,307.54
Full Refund	RAMIREZ	AQUANIA	5/31/2023	$	2,400.20
Full Refund	WETZEL	DAMIAN	5/31/2023	$	7,799.30
Member Only Refund	BELL	LATUNYA	5/31/2023	$	1,234.63
Member Only Refund	BIEDRZYCKI	EMMA	5/31/2023	$	1,206.75
Member Only Refund	BLANK	JENNIFER	5/31/2023	$	4,520.78
Member Only Refund	BOWERS	JASMINE	5/31/2023	$	248.46
Member Only Refund	BRELOVE	JOHNNY LEE	5/31/2023	$	887.86
Member Only Refund	CARRINGTON	CANDICE	5/31/2023	$	848.48
Member Only Refund	CLASSEY	GLENN	5/31/2023	$	2,767.87
Member Only Refund	DIGGS	MAURICE	5/31/2023	$	1,186.86
Member Only Refund	FERGUSON	CARLEESHA	5/31/2023	$	799.22
Member Only Refund	GREEN	DANIELLE	5/31/2023	$	634.70
Member Only Refund	HARRIS	ALBERT	5/31/2023	$	2,981.30

Type	Last Name	First Name	Payment Date		Amount
Member Only Refund	HOLIFIELD	NAFESHIA	5/31/2023	$	467.44
Member Only Refund	JACKSON	CHASITY	5/31/2023	$	1,345.10
Member Only Refund	JACKSON	KEYANA	5/31/2023	$	1,130.53
Member Only Refund	JOHNSON	KENDRA	5/31/2023	$	2,109.30
Member Only Refund	KORNWOLF	MICHAEL	5/31/2023	$	3,988.33
Member Only Refund	LEVY	CHRISTOPHER	5/31/2023	$	2,702.52
Member Only Refund	MARRERO	DEONNA	5/31/2023	$	560.03
Member Only Refund	MAYS	COURTNEY	5/31/2023	$	4,851.27
Member Only Refund	PANAHI	SAMIRA	5/31/2023	$	1,200.77
Member Only Refund	PARKS	LATRICE	5/31/2023	$	765.28
Member Only Refund	PAYNE	GORDON	5/31/2023	$	437.70
Member Only Refund	PICKETT	BENITA	5/31/2023	$	2,152.02
Member Only Refund	REYNA	CECILIA	5/31/2023	$	2,007.03
Member Only Refund	STALTER	CURTIS	5/31/2023	$	335.27
Member Only Refund	SUAREZ	YUBANIA	5/31/2023	$	641.02
Member Only Refund	WASHINGTON	LISA	5/31/2023	$	3,720.91
Member Only Refund	WHITE	ALTHEA	5/31/2023	$	6,350.78
Member Only Refund	WILLIAMS	LADONNA	5/31/2023	$	1,158.03
Member Only Refund	WILLIAMS	LARRY	5/31/2023	$	2,347.10
Member Only Refund	WINTERS	SHAINQUA	5/31/2023	$	1,719.64
Member Only Refund	ZETTING	MICHAEL	5/31/2023	$	4,288.90
				$	**163,740.78**

Conference Requests – June 2023 Board Meeting

Erich Sauer	2023 Public Funds Conference
Sponsor:	Pensions & Investments
Location:	Scottsdale, AZ
Date(s):	September 19-20, 2023
Estimated Cost:	$1,250.00

VI.

MEDICAL REPORTS

A. All Duty & Ordinary Disability Applications & Re-examinations (June).
B. Disability Findings – Benjean Lara.

MERITS	CITY OF MILWAUKEE EMPLOYES' RETIREMENT SYSTEM	Page Number:	1 OF 2
	Medical Panel Approvals Report	DATE RAN :	06/15/2023
Approved by Executive Director	Pension Board Meeting Date 06/27/2023	TIME RAN :	10:51

Case Number	Name	Title	Employer	Case Type	Case Sub-Type	DOCTOR DECISION City	Union	Third	Disability Date	Comments
1063	ADAMSKI, NICHOLAS	FIREFIGHTER	FIRE	DD 75%	Re-Examination	Approved	Approved		04/23/2013	
130	VAN ROO, SCOTT	FIRE LIEUTENANT	FIRE	DD 75%	Re-Examination	Approved	Approved		02/01/2021	Exempt from Re-Exam
1249	KIELPINSKI, JOHN	FIRE LIEUTENANT	MFD	DD 75%	Re-Examination	Approved	Approved		10/27/2015	
1055	TESCH, MARK	PARAMEDIC	MFD	DD 75%	Re-Examination	Approved	Approved		12/08/2012	
684	ASHWORTH, MARK	HEAVY EQUIPMENT OPERATOR	MILWAUKEE FIRE DEPT	DD 75%	Re-Examination	Approved	Approved		07/01/2021	
1205	PENDERGAST, MICHAEL	POLICE OFFICER	MPD	DD 75%	Re-Examination	Approved	Approved		09/11/2014	
113	HLAVINKA, CHRISTIAN	POLICE OFFICER	POLICE	DD 75%	Re-Examination	Approved	Approved	Pending	06/23/2005	
1091	KUJAWA, JOEL	POLICE SERGEANT	POLICE	DD 75%	Re-Examination	Approved	Approved		09/01/2019	
580	LEWIS, JASMINE	POLICE OFFICER	POLICE	DD 75%	Re-Examination	Approved	Approved		08/02/2007	Exempt from Re-Exam
989	SCHMIDT, JUSTINE	DETECTIVE	POLICE	DD 75%	Re-Examination	Approved	Approved		04/14/2012	

Number of Cases: 10

MERITS	CITY OF MILWAUKEE EMPLOYES' RETIREMENT SYSTEM	Page Number:	1 OF 1
	Medical Council Approvals Report	DATE RAN :	06/12/2023
	Board Meeting: 06/27/2023	TIME RAN :	07:31

Name	Title	Employer	CaseType	Case Sub-Type	Disability Date	Medical Council Meeting Date	In Person Exam Waiver
BRATEL, BRAD	WATER FIELD SUPERVISOR	DPW	Duty Disability 75%	Application	12/02/2022	06/09/2023	
COLE, CAMILLE	SENIOR HUMAN RESOURCES	HACM	Ordinary Disability	Re-Examination	09/23/2019	06/09/2023	

Number of Cases: 2

This report includes all GC disabilities; all ordinary disabilities; Fire duty disabilities with an application date on/after July 29, 2016; Police MPA duty disabilities with an application date on/after June 19, 2016; and Police MPSO duty disabilities with an application date on/after January 1, 2016.

VII.

UNFINISHED BUSINESS

A. Pending Legal Opinions and Service Requests Report.
B. Pending Legislation Report.

Please be advised that the Annuity and Pension Board may vote to convene in closed session on the following item (VII.C.), as provided in Section 19.85(1)(g), Wisconsin State Statutes, to confer with legal counsel concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Board may then vote to reconvene in open session following the closed session.

C. Executive Director’s Report – Inventory of ERS Projects.

June 27, 2023 Board Meeting

PENDING LEGAL OPINIONS AND SERVICE REQUESTS REPORT

PART 1. LEGAL OPINIONS - OFFICE OF CITY ATTORNEY

05/04/23 **Optional Joint and Survivor Benefits**

Pension Board has requested a legal opinion on whether it has administrative discretion to determine whether to adopt a combined set of actuarial tables applying to both General City and Public Safety employees and separate sets tables for each employment class and further for beneficiaries eligible for cost of living adjustments distinct from those beneficiaries who are not so eligible.

PART 2. LEGAL OPINIONS - OUTSIDE LEGAL COUNSEL

None.

PART 3. SERVICE REQUESTS - OFFICE OF CITY ATTORNEY

12/16/21 **Contract for Banking Services**

ERS staff requests assistance of legal counsel in drafting and negotiating a contract for banking services with vendor.
10/12/22 ERS received proposed Second Amendment to extend current banking services agreement with Wells Fargo Bank.
10/25/22 Contract extension approved by Pension Board. City Attorney's Office continues negotiations with Wells Fargo for a new banking services agreement.
03/14/23 Third Amendment to extend current banking services agreement with Wells Fargo received from City Attorney's Office.
03/28/23 Third Amendment (extension) approved by Pension Board.
06/13/23 Received from City Attorney's Office the proposed Fourth Amendment to extend current banking services agreement as negotiations continues with Wells Fargo Bank.
06/21/23 On A&O Committee agenda.
06/27/23 On Pension Board agenda.

01/04/23 **Internal Audit Services**

City Attorney's Office asked to assist ERS staff with the drafting of a Request for Proposal for internal audit services, and to negotiate a contract for services with selected vendor.
01/31/23 Second request for legal services forwarded to the City Attorney's Office.
02/28/23 Third request to City Attorney's Office for assistance in drafting RFP as well as negotiate contract for internal audit services.
03/01/23 Received edits to RFP from City Attorney's Office.

06/01/23 **Second Amendment to Professional Actuarial Services**

City Attorney to review terms of the Second Amendment with Cavanaugh Macdonald Consulting, LLC for professional actuarial services.
06/13/23 Received proposed Second Amendment from the City Attorney's Office.
06/21/23 On A&O Committee agenda.
06/27/23 On Pension Board agenda.

PART 4. SERVICE REQUESTS - OUTSIDE LEGAL COUNSEL

03/27/23 **Mesirow Financial Private Equity Fund**

ERS investment staff requests assistance from legal counsel in negotiating contract terms and a Limited Partnership Agreement with Mesirow Financial as it relates to investment Private Equity Fund IX.
03/27/23 City Attorney Office approves referral of this matter to outside legal counsel – Reinhart Boerner Van Deuren SC.
06/02/23 Reinhart completed its legal review and negotiations to the LPA and Side Letter.
06/08/23 Approved by the Investment Committee pursuant to Board Rule VII.G.2.b.

04/25/23 **Real Estate Investment Manager**

ERS requests legal assistance in the reviewing of various legal documents and subsequent negotiations as it relates to a private real estate investment.
04/16/23 City Attorney's Office approves referral of this matter to Reinhart Boerner Van Deuren SC.

June 27, 2023 Board Meeting

PENDING LEGISLATION REPORT

PART 1. PENDING CHARTER ORDINANCES FOR COMMON COUNCIL ACTION

None.

PART 2. PENDING CHANGES TO THE RULES & REGULATIONS

None.

PART 3. PENDING LEGISLATIVE COMMITTEE REFERRALS

Pension Contribution Offset

12/13/16 ERS requested legal guidance on whether the 5.8% pension contribution offset for public safety employees pursuant to recent labor contract settlements or interest arbitration, is includable as “salary” for adjusting duty disability retirement allowance.
02/16/17 City Attorney issued a legal opinion advising that since members receiving a duty disability retirement allowance have not paid the member contributions, they are not entitled to the 5.8% pension contribution offset.
02/27/17 Opinion referred to Legislative Committee for consideration on whether the pension contribution offset received by general city and protective service members should be included in the calculation of the Conversion to Service Retirement and Extended Life retirement allowances.
07/31/17 Committee recommended this matter be held pending resolution of litigation.

VIII.

INFORMATIONAL

Please be advised that the Annuity and Pension Board may vote to convene in closed session on the following item (VIII.A.), as provided in Section 19.85(1)(g), Wisconsin State Statutes, to confer with legal counsel concerning strategy to be adopted by the body with respect to litigation in which it is or is likely to become involved. The Board may then vote to reconvene in open session following the closed session.

A. Pending Litigation Report.
B. Conferences.
C. Class Action Income 2023 YTD.
D. Minutes of the Investment Committee Meeting Held June 8, 2023.
E. Report on Bills.
F. Deployment of Assets.
G. Securities Lending Revenue and Budget Report.
H. Preliminary Performance Report and Asset Allocation.

June 27, 2023 Board Meeting

PENDING LITIGATION REPORT

Part 1. ERS Litigation through the City Attorney

MPA and Kurt Lacina v. City of Milwaukee, et al; Case Nos. 2023AP000301; and 2022CV001965
Kurt Lacina alleges his DDRA was wrongfully offset by a worker's compensation permanent partial disability award by defendants.
See prior Reports for case history
- 02/17/23 Notice of Appeal filed by defendants. Awaiting delinquent court reporter transcript.

Sandrah Crawford v. City of Milwaukee ERS, et al; Case No. 2022CV007800
Member requests judicial review of Pension Board's denial of duty disability retirement benefits.
See prior Reports for case history
- 01/25/23 Defendants' Notice of Retainer and Answer filed with court.
- **05/23/23** Administrative Record filed by defendants.
- **05/26/23** Briefing Order Issued. Petitioner's brief due 06/26/23; Respondent's brief due 07/26/23; Petitioner's reply brief due 08/09/23.

Frank Vrtochnick, et al v. City of Milwaukee, et al; Case No. 2023CV003007
Plaintiff alleges the City and the ERS breached the Milwaukee Police Association 2013-2016 collective bargaining agreement and Chapter 36 of the Milwaukee City Charter as it pertains to the inclusion of the 5.8% pension offset in the member's "base salary" for purposes of calculating the duty disability retirement allowance. The plaintiff seeks to have this current litigation classified as a *Class Action to include all other similarly-situated employees hired prior to October 3, 2011 and represented by the Milwaukee Police Association*.
See prior Reports for case history
- **05/18/23** Notice of Retainer and Answer filed with court by defendants.

Part 2. ERS Administrative Appeal Hearings through the City Attorney

Jason Rodriguez; Administrative Case No. 1443

- Hearing stayed pending outcome of Appellant's state workers compensation (WC) appeal hearing. First WC appeal hearing held May 10, 2022. Second WC appeal hearing expected to occur in August or September, 2023.

Benjean Lara; Administrative Case Nos. 1488, 1489 and 1490

See prior Reports for case history

- 03/14/23 Hearing Examiner decision recommending reversal of Board's decision.
- 04/04/23 Respondent's Brief and Appellant's Brief to Annuity and Pension Board received; Findings and parties' briefs will be presented to the Board at its June 27, 2023 meeting.

Albert Greene Jr; Administrative Case Nos. 1511 and 1512

See prior Reports for case history

- Appeal voluntarily withdrawn by the Appellant.

James Gentry; Administrative Case No. 1522

- Hearing requested. Pending scheduling.

Part 3. Notice of Claim filed with ERS

None.

Part 4. ERS Litigation through Outside Legal Counsel

None.

Client Conferences 2023

Board Meeting: June 27, 2023

DATE(S)	CONFERENCE(S) / LOCATION(S)	SPONSOR(S)
August 23 – 24, 2023 10:30 am – 1:30 pm	“Callan College” on Alternative Investments Virtual	Callan Associates
September 11, 2023	Baird Advisors’ 23rd Annual Institutional Investors Conference Kohler, WI	Robert W. Baird & Company
September 26 – 28, 2023 10:30 am – 1:30 pm	“Callan College” Introduction to Investments Virtual	Callan Associates
October 25 – 26, 2023	2023 USLF Annual Meeting Phoenix, AZ	Prologis
October 26, 2023 10:00 am – 12:30 pm	2023 October Regional Workshop Chicago, IL	Callan Associates
November 1 – 2, 2023	The Alternatives Summit New York, NY	Goldman Sachs
December 5 – 6, 2023	Apogem’s 2023 Annual Meeting Miami, FL	Apogem Capital

Trustee Conferences 2023-2024

Board Meeting: June 27, 2023

DATE(S)		
July 16 – 18, 2023	ALTSCHI Chicago, IL	Markets Group
July 18 – 20, 2023	Wharton Investment Programs: Alternative Investment Strategies San Francisco, CA	International Foundation of Employee Benefit Plans
July 24 – 25, 2023	Certificate of Achievement in Public Plan Policy (CAPPP): Pensions Part I Chicago, IL	International Foundation of Employee Benefit Plans
July 24 – 26, 2023	Pension Bridge Private Equity Exclusive 2023 Chicago, IL	with.Intelligence
July 25 – 27, 2023	Institutional Investor Week Newport, RI	Institutional Investor
July 26 – 27, 2023	Certificate of Achievement in Public Plan Policy (CAPPP): Pensions Part II Chicago, IL	International Foundation of Employee Benefit Plans
August 20 – 22, 2023	Public Pension Funding Forum Chicago, IL	NCPERS
September 11 – 13, 2023	CII Fall 2023 Conference Long Beach, CA	Council of Institutional Investors
September 12, 2023	9th Annual Great Plains Institutional Forum Minneapolis, MN	Markets Group
September 19 – 20, 2023	2023 Public Funds Conference Scottsdale, AZ	Pensions & Investments
September 20 – 21, 2023	Investment Basics – Certificate Series Course Las Vegas, NV	International Foundation of Employee Benefit Plans
September 30 – October 1, 2023	Certificate of Achievement in Public Plan Policy (CAPPP): Pensions Part I Boston, MA	International Foundation of Employee Benefit Plans

Trustee Conferences 2023-2024

Board Meeting: June 27, 2023

DATE(S)	CONFERENCE(S) / LOCATION(S)	SPONSOR(S)
October 3 – 5, 2023	2023 Roundtable for Consultants & Institutional Investors Chicago, IL	Institutional Investor
October 10 – 11, 2023	Pension Bridge Alternatives 2023 New York, NY	with.Intelligence
October 21 – 22, 2023	NCPERS Accredited Fiduciary (NAF) Program Las Vegas, NV	NCPERS
October 22 – 25, 2023	Financial, Actuarial, Legislative and Legal Conference (FALL) Las Vegas, NV	NCPERS
November 14, 2023	Fixed Income & Credit – Reassessing Income and Diversification Chicago, IL	Pensions & Investments
January 21 – 22, 2024	Pension Communications Summit Washington, DC	NCPERS
January 22 – 24, 2024	Legislative Conference Washington, DC	NCPERS
January 22 – 24, 2024	Visions, Insights, & Perspectives (VIP) Americas Carlsbad, CA	Institutional Real Estate, Inc.
May 5 – 8, 2024	Milken Institute 2024 Global Conference Beverly Hills, CA	Milken Institute
May 18 – 19, 2024	NCPERS Accredited Fiduciary (NAF) Program and Trustee Educational Seminar (TEDS) Seattle, WA	NCPERS
May 19 – 22, 2024	Annual Conference & Exhibition (ACE) Seattle, WA	NCPERS
September 9 – 11, 2024	CII Fall 2024 Conference Brooklyn, NY	Council of Institutional Investors

Upcoming Due Diligence Meetings

Date	Manager(s)	Team
August or September, 2023	Reams (Indianapolis, IN)	Erich & Dave W.
August or September, 2023	Apogem (Richmond, VA)	Erich & Tom

Class Action Income 2023 YTD

Asset Description	Date(s)		Amount
Allergan, Inc.	1/11/2023	$	82
USA Technologies, Inc.	2/13/2023	$	10,120
JP Morgan Chase Bank	3/23/2023	$	568
The Bank of New York Mellon	5/12/2023	$	428
Nine Bank Settlement - Foreign Exchange Benchmark Rates	5/4/2023	$	6,101
Array Biopharma, Inc.	5/23/2023	$	2,363
Total Class Action Income Received in 2023 YTD		**$**	**19,661**

EMPLOYES' RETIREMENT SYSTEM OF THE CITY OF MILWAUKEE
ANNUITY AND PENSION BOARD

Minutes of the Investment Committee Meeting
held June 8, 2023 via teleconference

The meeting was called to order at 9:00 a.m.

Committee Members Present:	Matthew Bell Deborah Ford Timothy Heling Molly King Thomas Klusman, Chair Rudy Konrad Aycha Sawa
Committee Members Not Present:	Nik Kovac (excused)
ERS Staff Present:	Jerry Allen, Executive Director David Silber, Chief Investment Officer Erich Sauer, Deputy Chief Investment Officer Dave Walters, Pension Investment Analyst – Sr. Thomas Courtright, Pension Investment Analyst Jan Wills, Board Stenographer

Other present: Jason Ellement, Munir Iman, John Jackson, Adam Lozinski, Callan; Larry Langer, Cavanaugh Macdonald; Bryant Ferguson, Reinhart; Travis Gresham, Patrick McClain, City Attorney's Office; Terry Siddiqui, DS Consulting, Inc.; one member of the public called in.

Mr. Klusman advised that the Investment Committee may vote to convene in closed session on the following item as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Investment Committee may then vote to reconvene in open session following the closed session.

Approval of Mesirow Private Equity Fund IX, L.P. Side Letter. As a matter of information, Committee members received the Execution Version of the Mesirow Private Equity Fund IX, L.P. Side Letter. It was moved by Ms. Sawa, and seconded by Mr. Konrad to convene in closed session. The motion carried by the following roll call vote: AYES: Mses. Ford, King, and Sawa; Messrs. Bell, Heling, Klusman, and Konrad. NOES: None.

The Committee convened in closed session at 9:02 a.m.

The Committee reconvened in open session at 9:08 a.m.

It was moved by Ms. King, seconded by Mr. Bell, and unanimously carried, to approve the Approval of Mesirow Private Equity Fund IX, L.P. Side Letter.

Approval of Loomis Sayles Guideline Waiver. As a matter of information, Committee members received a memo from Mr. Sauer and the Loomis Sayles Guideline Waiver memo. Mr. Sauer said we have a guideline with Loomis that they are required to sell any asset-backed securities downgraded below Baa3/BBB- within 90 days following the downgrade. He noted that Loomis is requesting a waiver with respect to one specific security. Mr. Sauer said this was an asset-backed security where the collateral pool is a pool of airplanes which are currently leased. He commented that Loomis has a favorable outlook on this security because of their outlook on the travel industry and Loomis would like to continue to hold it, rather than selling it at a depressed price. Mr. Sauer noted that the security is a small part of the portfolio at $130,000 or 0.04%. He said the guideline is just being waived for this specific security and Loomis would be required to sell any other downgraded securities per the guidelines. Mr. Sauer said the ERS Staff and Callan are comfortable with the request and recommend approval. It was moved by Mr. Konrad, seconded by Mr. Heling, and unanimously carried, to approve the Approval of Loomis Sayles Guideline Waiver.

Callan 2023 Asset-Liability Study Phase 3 Presentation. As a matter of information, Committee members received the Callan 2023 Asset-Liability Study Phase 3 Presentation booklet. Mr. Jackson stated they have the updated asset liability results and a series of alternatives for consideration. Mr. Ellement discussed Phase 3 of the Final Asset – Liability Results and said the goal of the asset-liability study is to establish a long-term strategic asset allocation target for the Employes' Retirement System pension fund. He noted they would focus on Mixes 1 through 4 which have an expected 7% return over 10 years and 7.5% over 30 years. The topics Mr. Ellement presented to the Committee included the 2023-2032 Capital Market Assumptions, Alternative Asset Mixes from Mix 1 through Mix 6, 10- and 30- Year Returns, Actuarial Liability Model, Expected Return Projection Over 10 Years, Active Plan Membership, Market Value of Assets (Current Target), Actuarial Accrued Liability, Employer Rate (Current Target), Projected Funded Status (Current Target), 10-Year Projected Funded Status, 2023-2032 Cumulative Employer Contributions, and Ultimate Net Cost and Graph. Mr. Ellement concluded with a Liquidity Analysis and presented the topics of Illiquid Investments, Marketable Bonds, Liquidity Needs for Current Target, Liquidity Needs for Alternative Mixes, Liquidity Stress Test (Worse Case Scenario), and a Summary of Asset-liability Results. Discussion ensued.

Approval of Asset Allocation Mix. It was moved by Mr. Bell, seconded by Ms. King, and unanimously carried, to approve Asset Allocation Mix 1 for the Approval of Asset Allocation Mix.

The Chair called for a break at 10:29 a.m.

The Chair resumed the meeting at 10:35 a.m.

Mr. Klusman said the Callan Real Estate Presentation is marked for closed session, but it will begin in open session and can go into closed session if necessary.

Mr. Klusman advised that the Investment Committee may vote to convene in closed session on the following item as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Investment Committee may then vote to reconvene in open session following the closed session.

The Committee did not convene in closed session as noticed.

Callan Real Estate Presentation. As a matter of information, Committee members received the Callan Real Estate Presentation booklet. Mr. Iman provided a Market Overview to the Committee. He discussed the topics of Real Asset Returns As of March 31, 2023, U.S. Private Real Estate Market Trends, and Office Market Conditions. Mr. Iman also provided a Portfolio Summary for the Committee and talked about the Real Estate Objectives and Purpose, the Significant Progress Made in Repositioning the Portfolio, Real Estate Portfolio Diversification, Portfolio Returns Are Above Benchmark, Returns by Style, and Conclusions and Recommendations. Discussion ensued.

Callan Real Estate Structure Review and New Manager Allocation Presentation. As a matter of information, Committee members received the Callan Real Estate Structure Review and New Manager Allocation document. Mr. Iman stated the purpose of the review and new manager allocation is to maintain compliance with portfolio guidelines and allocate capital to a new Core Fund. He discussed the First Quarter 2023 Core Fund Portfolio Allocation vs. Target as well as the First Quarter and Fourth Quarter Core Fund Portfolio Allocations. Discussion ensued.

Approval of Real Estate Manager Structure. It was moved by Mr. Konrad, seconded by Ms. Sawa, and unanimously carried, to approve the Approval of Real Estate Manager Structure.

Chief Investment Officer Report. Mr. Silber noted Staff will begin getting the directions out to implement the approval items from today. He said by month's end, the Committee will be able to see progress on how the stock and bond allocations have changed in the portfolio. Mr. Silber said the Fund's value as of June 7, 2023, is slightly above $5.6 billion with the year-to-date return around 4%, net of fees. He noted that the Fund is underperforming the benchmark year-to-date, but still outperforming over the long term. Mr. Silber said year-to-date, about seven stocks in the S&P 500 are up 60%-70%, while the remaining 493 stocks in the S&P 500 would have a return in the low single digits if they comprised their own index. Mr. Silber said Private Equity is playing into the relative returns, saying that almost all of the Q4 Private Equity statements are in, but Private Equity has not started rebounding yet like the stock market has.

It was moved by Mr. Bell and seconded by Mr. Konrad to adjourn the meeting.

There being no further business, Mr. Klusman adjourned the meeting at 11:12 a.m.

Bernard J. Allen
Secretary and Executive Director

NOTE: All proceedings of the Annuity and Pension Board Meetings and related Committee Meetings are recorded. All recordings and material mentioned herein are on file in the office of the Employes' Retirement System, 789 N. Water Street, Suite 300.)

Fiscal Year **City of Milwaukee** *As of:* **2023-05-31**

2023 **Departmental**

Department **Appropriation Budget Balances**

Employes' Retirement System

	Budget	2023-3	2023-4	2023-5	Year to Date Expended	Life to Date Commitments	Remaining Budget
Regular Departmental Appropriations:							
Employee Salaries & Wages	3,749,620.00	-	-	-	-	-	3,749,620.00
Base Pay-Salary & Wage	-	441,026.52	280,873.43	289,726.61	1,537,349.51	-	(1,537,349.51)
Overtime Premium	-	400.47	240.25	210.40	1,053.36	-	(1,053.36)
Non-Worked Compensation	-	8,860.45	(32.00)	(32.00)	8,796.45	-	(8,796.45)
Time Paid Not Worked	-	68,583.22	54,151.46	44,479.11	306,699.51	-	(306,699.51)
Employee Salaries & Wage	$ 3,749,620.00	518,870.66	335,233.14	334,384.12	$ 1,853,898.83	$ -	$ 1,895,721.17
Fringe Benefits Applied	1,687,329.00	-	-	-	-	-	1,687,329.00
Fringe Benefits Applied	-	224,570.71	143,020.75	147,528.79	782,818.39	-	(782,818.39)
Applied Employee Benefits	$ 1,687,329.00	224,570.71	143,020.75	147,528.79	$ 782,818.39	$ -	$ 904,510.61
Operating Expenditures	15,910,400.00	-	-	-	-	-	15,910,400.00
Office Supplies	-	154.42	768.12	965.66	4,078.89	-	(4,078.89)
Magazines,Subscription	-	287.80	125.21	1,594.19	2,318.09	-	(2,318.09)
Postal and Mailing Services	-	11,753.55	11,438.90	21,306.19	55,761.70	-	(55,761.70)
Electricity	-	3,146.13	3,110.83	2,921.68	12,521.44	-	(12,521.44)
Films & Other Educational Item	-	-	-	-	998.00	-	(998.00)
Other Operating Supply	-	5,886.00	-	15,168.60	21,054.60	-	(21,054.60)
Building Rental	-	48,647.41	36,804.03	36,808.03	222,556.70	-	(222,556.70)
Printing & Dupl Machine Rental	-	3,168.96	3,026.61	1,169.82	8,819.82	8,640.00	(17,459.82)
Consulting	-	119,409.59	40,635.00	-	153,736.55	-	(153,736.55)
Medical,Surgical & Lab	-	13,149.23	10,893.03	10,870.83	51,316.40	-	(51,316.40)
Administrative Charges	-	144,133.37	27,911.63	66,463.75	285,073.11	-	(285,073.11)
Other Professional Services	-	75,000.00	794,903.01	480,434.25	1,255,058.53	-	(1,255,058.53)
Systems Support	-	51,999.50	27,864.00	48,100.50	179,952.50	-	(179,952.50)
IT Infrastructure	-	-	-	-	88,883.66	-	(88,883.66)
Infrastructure	-	583.30	617.30	551.67	2,356.30	-	(2,356.30)
Telephone, Communications	-	11,739.14	5,687.27	4,000.01	27,659.47	-	(27,659.47)
Bldgs-Machinery & Equip Repair	-	-	-	-	4,209.29	-	(4,209.29)
Travel & Subsistence	-	2,863.62	3,511.25	5,337.50	14,404.50	-	(14,404.50)
Equipment Repair (Parts & Labo	-	-	-	-	218.29	-	(218.29)
Printing Services	-	1,879.96	1,132.01	72.52	3,660.71	-	(3,660.71)
Insurance-Non Health	-	-	-	-	13,800.00	-	(13,800.00)
Other Misc Services	-	315.30	268.47	1,715.13	15,913.80	-	(15,913.80)
Operating Expenditures	$ 15,910,400.00	494,117.28	968,696.67	697,480.33	$ 2,424,352.35	$ 8,640.00	$ 13,477,407.65
All Equipment	2,036,000.00	-	-	-	-	-	2,036,000.00
Computer Server & Components	-	-	-	-	6,328.76	-	(6,328.76)
Total Equipment	$ 2,036,000.00	-	-	-	$ 6,328.76	$ -	$ 2,029,671.24
Total Regular Class	$ 23,383,349.00	1,237,558.65	1,446,950.56	1,179,393.24	$ 5,067,398.33	$ 8,640.00	$ 18,307,310.67
Other Departmental Appropriations:							
Pol Pension Lump-Sum Sup Cont	10,000.00	-	-	-	10,000.00	-	-
PABF Payroll	24,000.00	1,981.14	1,489.99	-	9,023.93	-	14,976.07
Group Life Insurance Premium	4,200,000.00	325,149.15	326,006.79	331,854.10	1,659,448.00	-	2,540,552.00
Retiree's Benefit Adjustment	25,000.00	3,441.89	1,881.12	1,881.12	7,862.43	-	17,137.57
Other Classes	$ 4,259,000.00	330,572.18	329,377.90	333,735.22	$ 1,686,334.36	$ -	$ 2,572,665.64
Total Dept Appropriations	$ 27,642,349.00	1,568,130.83	1,776,328.46	1,513,128.46	$ 6,753,732.69	$ 8,640.00	$ 20,879,976.31

Manager Mix Report

Account Name/ Account Number	Cash/ % of acount	Short Term/ % of acount	Equity/ % of acount	Fixed/ % of acount	R.E. and Other/ % of acount	Pendings/ % of acount	Total Market Value/ % of consolidation
MILWAUKEE-CASH ACCOUNT	0.00	51,368,159.01	0.00	0.00	0.00	0.00	51,368,159.01
2605491	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.92%
MILWAUKEE-THE NORTHERN TRS	0.00	0.00	205,211,380.80	0.00	0.00	0.00	205,211,380.80
2605496	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	3.66%
MILWAUKEE-ERS EXPENSE FUND	0.00	293,082.94	0.00	0.00	0.00	0.00	293,082.94
2605504	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.01%
MILWAUKEE-PABF BENEFIT PAYMENT	0.00	2,510.81	0.00	0.00	0.00	0.00	2,510.81
2610128	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MILWAUKEE-DFA INTERNATIONAL	0.00	0.00	173,353,897.50	0.00	0.00	0.00	173,353,897.50
2619838	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	3.09%
MILWAUKEE-EARNEST -SL	0.00	2,368,527.50	104,440,531.40	0.00	0.00	0.00	106,809,058.90
2630942	0.00%	2.22%	97.78%	0.00%	0.00%	0.00%	1.90%
MILWAUKEE - UBS A&Q	0.00	0.00	0.00	0.00	337,053,958.40	0.00	337,053,958.40
2637239	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	6.01%
MILWAUKEE-DFA	0.00	0.00	177,871,882.60	0.00	0.00	0.00	177,871,882.60
2637848	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	3.17%
MILWAUKEE-BAIRD	0.00	27,386,472.75	0.00	57,663,454.38	0.00	-1,947,159.33	83,102,767.80
2674604	0.00%	32.95%	0.00%	69.39%	0.00%	-2.34%	1.48%
MILWAUKEE-CASTLEARK	0.00	702,160.59	83,179,720.85	0.00	0.00	135,237.23	84,017,118.67
2697782	0.00%	0.84%	99.00%	0.00%	0.00%	0.16%	1.50%
MILWAUKEE - BLACKROCK R1000V	0.00	0.00	201,420,205.60	0.00	0.00	0.00	201,420,205.60
4472746	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	3.59%
MILWAUKEE-LOOMIS SAYLE	7,978,201.07	0.00	3,986,234.33	324,558,986.00	0.00	316,204.06	336,839,625.40
CME01	2.37%	0.00%	1.18%	96.35%	0.00%	0.09%	6.01%
MILWAUKEE-BRANDES INT'L EQUITY	8,731,510.36	0.00	324,766,830.10	0.00	1,900,423.76	-1,341,484.10	334,057,280.10
CME03	2.61%	0.00%	97.22%	0.00%	0.57%	-0.40%	5.96%
MILWAUKEE-REAMS	138,293,846.90	0.00	0.00	653,307,670.10	9,382,195.63	-255,829,690.00	545,154,022.50
CME04	25.37%	0.00%	0.00%	119.84%	1.72%	-46.93%	9.72%
MILWAUKEE-BLAIR	3,668,859.82	0.00	236,519,769.50	0.00	928,796.81	0.00	241,117,426.20
CME05	1.52%	0.00%	98.09%	0.00%	0.39%	0.00%	4.30%

Manager Mix Report

Account Name/ Account Number	Cash/ % of acount	Short Term/ % of acount	Equity/ % of acount	Fixed/ % of acount	R.E. and Other/ % of acount	Pendings/ % of acount	Total Market Value/ % of consolidation
MILWAUKEE-MFS	2,447,555.93	0.00	213,591,039.80	0.00	412,657.80	0.00	216,451,253.50
CME12	1.13%	0.00%	98.68%	0.00%	0.19%	0.00%	3.86%
MILWAUKEE-POLEN	0.00	2,403,497.56	126,439,411.80	0.00	0.00	0.00	128,842,909.30
2644553	0.00%	1.87%	98.13%	0.00%	0.00%	0.00%	2.30%
MILWAUKEE - PRINCIPAL DRA -SL	0.00	0.00	166,130,103.90	0.00	0.00	0.00	166,130,103.90
2677436	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	2.96%
MILWAUKEE-BLACKROCK GLOBAL-SL	0.00	0.00	270,791,223.80	0.00	0.00	0.00	270,791,223.80
2683493	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	4.83%
MILWAUKEE- AQR-SL	0.00	0.00	92,618,553.00	0.00	0.00	0.00	92,618,553.00
4468331	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	1.65%
MILWAUKEE-APTITUDE / 4479682	0.00	0.00	0.00	0.00	157,638,357.10	0.00	157,638,357.10
4479682	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	2.81%
MILWAUKEE - DFA US LCV	471,627.80	0.00	143,499,206.30	0.00	0.00	0.00	143,970,834.10
CME15	0.33%	0.00%	99.67%	0.00%	0.00%	0.00%	2.57%
MILWAUKEE-REAL ESTATE	0.00	0.00	0.00	0.00	512,385,330.62	-921,762.88	511,463,567.72
MULTIPLE	0.00%	0.00%	0.00%	0.00%	100.18%	-0.18%	9.12%
MILWAUKEE-PRIVATE EQUITY	0.00	0.00	0.00	0.00	717,571,027.00	0.00	717,571,027.00
MULTIPLE	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	12.80%
MILWAUKEE - BLACKROCK US G-SL	0.00	0.00	0.00	317,381,199.30	0.00	0.00	317,381,199.30
MULTIPLE	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	5.66%

Manager Mix Report

Account Name/ Account Number	Cash/ % of acount	Short Term/ % of acount	Equity/ % of acount	Fixed/ % of acount	R.E. and Other/ % of acount	Pendings/ % of acount	Total Market Value/ % of consolidation
Total for consolidation	**161,591,601.88**	**84,524,411.16**	**2,523,819,991.28**	**1,352,911,309.78**	**1,743,757,917.12**	**-259,588,655.02**	**5,607,016,575.95**
% for consolidation	**2.88%**	**1.51%**	**45.01%**	**24.13%**	**31.10%**	**-4.63%**	**100.00%**

Employes' Retirement System
Securities Lending Income and Expenses: 2023
As of MAY 31, 2023

Date	Income From Lending	Fees (Amounts Expended)	Administrative Transfers (Amounts Expended)	Balance
Balance 12-31-22				**$791,432.47**
Quarter 1 Totals	$207,243.48	$40,423.69	$792,000.00	$166,252.26
04/05/23	$567.67	$0.00	$0.00	$166,819.93
04/17/23	$74,964.17	$14,885.09	$0.00	$226,899.01
05/03/23	$770.43	$0.00	$0.00	$227,669.44
05/15/23	$80,468.23	$16,087.03	$0.00	$292,050.64
Current Totals	**$364,013.98**	**$71,395.81**	**$792,000.00**	**$292,050.64**

Note: Expenses for Board Travel/Education, Computer Equipment, Publications and Consulting are now paid from the Operations/Management account

MERS PERFORMANCE ESTIMATES
May 31, 2023

Account	2022 Return	1st Quarter 2023	Apr 2023	May 2023	YTD Thru 5/31/23
Northern Trust S&P 500 Index	-18.10%	7.49%	1.56%	0.44%	9.65%
S&P 500	-18.11%	7.50%	1.56%	0.43%	9.65%
Difference	0.01%	-0.01%	0.00%	0.01%	0.00%
BlackRock Russell 1000 Value Index	-7.54%	1.02%	1.51%	-3.85%	-1.40%
Russell 1000 Value	-7.54%	1.01%	1.51%	-3.86%	-1.43%
Difference	0.00%	0.01%	0.00%	0.01%	0.03%
DFA US Large Cap Value	-4.95%	1.12%	1.24%	-4.77%	-2.51%
Russell 1000 Value	-7.54%	1.01%	1.51%	-3.86%	-1.43%
Difference	2.59%	0.11%	-0.27%	-0.91%	-1.08%
Polen	-37.54%	14.15%	0.00%	4.67%	19.48%
S&P 500	-18.11%	7.50%	1.56%	0.43%	9.65%
Difference	-19.43%	6.65%	-1.56%	4.24%	9.83%
Earnest	-15.13%	4.68%	-1.30%	-1.95%	1.31%
Russell MidCap	-17.32%	4.06%	-0.53%	-2.79%	0.61%
Difference	2.18%	0.62%	-0.77%	0.84%	0.70%
CastleArk	-27.99%	5.14%	-1.58%	-1.12%	2.32%
Russell 2000 Growth	-26.36%	6.07%	-1.16%	0.02%	4.86%
Difference	-1.63%	-0.93%	-0.42%	-1.14%	-2.54%
DFA US Small Cap Value	-1.67%	0.83%	-1.78%	-3.46%	-4.39%
Russell 2000 Value	-14.48%	-0.66%	-2.49%	-1.97%	-5.04%
Difference	12.81%	1.49%	0.71%	-1.49%	0.65%
Brandes	-6.88%	11.24%	2.84%	-3.78%	10.08%
MSCI EAFE	-14.45%	8.47%	2.82%	-4.23%	6.81%
Difference	7.57%	2.77%	0.02%	0.45%	3.27%
William Blair	-28.99%	8.57%	1.33%	-1.70%	8.15%
MSCI ACWI ex US	-15.57%	7.00%	1.81%	-3.54%	5.09%
Difference	-13.42%	1.57%	-0.48%	1.84%	3.06%
DFA Int'l Small Cap Value	-9.75%	6.53%	2.35%	-5.47%	3.07%
MSCI EAFE Small Cap	-21.39%	4.92%	2.01%	-4.18%	2.56%
Difference	11.64%	1.61%	0.34%	-1.29%	0.51%
AQR	-20.81%	5.88%	-0.63%	-2.49%	2.60%
MSCI EM	-20.09%	3.96%	-1.13%	-1.68%	1.05%
Difference	-0.72%	1.92%	0.50%	-0.81%	1.55%
BlackRock Global Alpha Tilts	-16.81%	7.57%	1.38%	-1.62%	7.29%
MSCI ACWI	-18.36%	7.31%	1.44%	-1.07%	7.68%
Difference	1.55%	0.26%	-0.06%	-0.55%	-0.39%
MFS	-18.15%	8.45%	0.91%	-1.02%	8.33%
MSCI ACWI	-18.36%	7.31%	1.44%	-1.07%	7.68%
Difference	0.22%	1.14%	-0.53%	0.05%	0.65%
BlackRock Gov't Bond Index	-12.31%	3.19%	0.53%	-1.14%	2.55%
Bloomberg Gov't Bond	-12.32%	2.98%	0.53%	-1.14%	2.35%
Difference	0.01%	0.21%	0.00%	0.00%	0.20%
Reams	-11.39%	4.03%	0.57%	-1.02%	3.56%
Bloomberg US Aggregate	-13.01%	2.96%	0.61%	-1.09%	2.46%
Difference	1.62%	1.07%	-0.04%	0.07%	1.10%
Loomis Sayles	-12.21%	3.29%	0.54%	-1.40%	2.39%
Bloomberg US Aggregate	-13.01%	2.96%	0.61%	-1.09%	2.46%
Difference	0.80%	0.33%	-0.07%	-0.31%	-0.07%
UBS	8.91%	0.93%	0.61%	0.45%	2.00%
SOFR + 4%	4.90%	2.08%	0.68%	0.76%	3.56%
Difference	4.01%	-1.15%	-0.07%	-0.31%	-1.56%
Aptitude	[redacted]	0.18%	0.21%	0.11%	0.50%
SOFR + 4%		2.08%	0.68%	0.76%	3.56%
Difference		-1.90%	-0.47%	-0.65%	-3.06%
Principal	-5.88%	1.28%	1.12%	-4.56%	-2.25%
Blended Benchmark	-5.06%	1.11%	1.11%	-5.27%	-3.15%
Difference	-0.82%	0.17%	0.01%	0.71%	0.90%
Baird	-1.80%	1.32%	0.44%	0.02%	1.79%
Bloomberg Govt/Credit 1-3 Year	-3.69%	1.51%	0.34%	-0.31%	1.54%
Difference	1.89%	-0.19%	0.10%	0.33%	0.25%
Total MERS	**-6.49%**	**3.33%**	**0.58%**	**-1.36%**	**2.51%**

The calculation for the Fund's total rate of return is based on the Modified Dietz method. Although periodic cash flows (i.e., contributions, redemptions) are not time weighted, they are accounted for in the Fund's total rate of return. Therefore, this estimated rate of return may vary slightly from the rate of return reported by the custodian.

The returns shown are gross of fees (except Total MERS, DFA International Small Cap Value, William Blair International Growth, AQR, Principal, UBS, and Aptitude)

ACTUAL ALLOCATIONS

May 31, 2023

		Target		Market Value	Allocation
EQUITY					
Public Equity					
Domestic					
Passive Large Cap Equity	Northern Trust (S&P 500)	3.89%	$	205,211,381	3.71%
	BlackRock (Russell 1000 Value)	3.89%	$	201,420,206	3.64%
	Sub-Total Passive Large Cap Equity	7.78%	$	406,631,586	7.36%
Active Large Cap Equity	Polen (S&P 500)	2.19%	$	128,842,909	2.33%
	DFA (Russell 1000 Value)	2.78%	$	143,970,834	2.61%
	Sub-Total Active Large Cap Equity	4.97%	$	272,813,743	4.94%
Active Mid/Small Cap Equity	Earnest Partners (Russell MidCap)	2.00%	$	106,809,059	1.93%
	CastleArk (Russell 2000 Growth)	1.61%	$	84,017,119	1.52%
	DFA (Russell 2000 Value)	3.44%	$	177,871,883	3.22%
	Sub-Total Active Mid/Small Cap Equity	7.05%	$	368,698,060	6.67%
Total Domestic		19.80%	$	1,048,143,390	18.97%
International					
Active International Equity	Brandes (MSCI EAFE)	5.80%	$	334,057,280	6.05%
	William Blair (MSCI ACWI ex US)	4.41%	$	241,117,426	4.36%
	DFA (MSCI EAFE Small Cap)	3.20%	$	173,353,897	3.14%
	AQR (MSCI EM)	1.99%	$	92,618,553	1.68%
Total International		15.40%	$	841,147,157	15.22%
Global					
Active Global Equity	BlackRock (MSCI ACWI)	4.84%	$	270,791,224	4.90%
	MFS (MSCI ACWI)	3.96%	$	216,451,253	3.92%
Total Global		8.80%	$	487,242,477	8.82%
Total Public Equity		**44.00%**	**$**	**2,376,533,024**	**43.01%**
Private Equity					
	Abbott Capital (Russell 3000 Quarter Lag + 2%)	3.50%	$	310,586,175	5.62%
	Mesirow (Russell 3000 Quarter Lag + 2%)	3.50%	$	271,874,037	4.92%
	Neuberger Berman (Russell 3000 Quarter Lag + 2%)	1.50%	$	51,919,561	0.94%
	Apogem (Russell 3000 Quarter Lag + 2%)	1.50%	$	90,131,138	1.63%
Total Private Equity		**10.00%**	**$**	**724,510,911**	**13.11%**
TOTAL EQUITY (Public Equity + Private Equity)		**54.00%**	**$**	**3,101,043,935**	**56.12%**
FIXED INCOME & ABSOLUTE RETURN					
Fixed Income					
Cash		1.00%	$	51,663,753	0.93%
Passive Fixed Income	BlackRock (Bloomberg US Government)	5.50%	$	317,381,199	5.74%
Active Fixed Income	Reams (Bloomberg US Aggregate)	9.90%	$	545,154,023	9.87%
	Loomis Sayles (Bloomberg US Aggregate)	6.60%	$	336,839,625	6.10%
	Sub-Total Active Fixed Income	16.50%	$	881,993,648	15.96%
Total Fixed Income		**23.00%**	**$**	**1,251,038,600**	**22.64%**
Absolute Return					
	Aptitude (SOFR + 4%)	3.00%	$	157,804,875	2.86%
	UBS (SOFR + 4%)	7.00%	$	338,575,184	6.13%
Total Absolute Return		**10.00%**	**$**	**496,380,059**	**8.98%**
TOTAL FIXED INCOME & ABSOLUTE RETURN		**33.00%**	**$**	**1,747,418,659**	**31.62%**
REAL ASSETS					
Private Real Estate - Core	JP Morgan (NFI-ODCE)	3.23%	$	134,565,445	2.44%
	Morgan Stanley (NFI-ODCE)	3.23%	$	156,580,219	2.83%
	LaSalle (NFI-ODCE)	1.62%	$	116,731,187	2.11%
	Prologis (NFI-ODCE)	1.62%	$	92,055,126	1.67%
	Sub-Total Private Real Estate - Core	9.70%	$	499,931,976	9.05%
Private Real Estate - Non-Core	Non-Core Real Estate (NFI-ODCE)	0.00%	$	11,531,591	0.21%
Public Real Assets	Principal (Blended Benchmark)	3.30%	$	166,130,104	3.01%
TOTAL REAL ASSETS		**13.00%**	**$**	**677,593,672**	**12.26%**
TOTAL ERS			**$**	**5,526,056,266**	**100.00%**

Total City Reserve Fund	**R. W. Baird**	**83,102,768**

6/16/2023

PROJECTED TARGET ALLOCATIONS

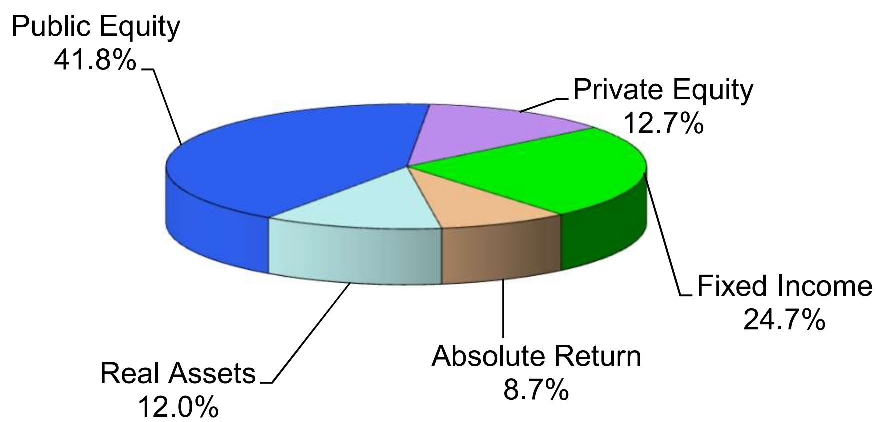
Jun 15, 2023

		Target		Market Value	Allocation
EQUITY					
Public Equity					
Domestic					
Passive Large Cap Equity	Northern Trust (S&P 500)	3.89%	$	204,501,328	3.60%
	BlackRock (Russell 1000 Value)	3.89%	$	200,553,097	3.53%
	Sub-Total Passive Large Cap Equity	7.78%	$	405,054,425	7.12%
Active Large Cap Equity	Polen (S&P 500)	2.19%	$	128,201,054	2.25%
	DFA (Russell 1000 Value)	2.78%	$	143,993,964	2.53%
	Sub-Total Active Large Cap Equity	4.97%	$	272,195,017	4.79%
Active Mid/Small Cap Equity	Earnest Partners (Russell MidCap)	2.00%	$	106,843,053	1.88%
	CastleArk (Russell 2000 Growth)	1.61%	$	84,450,192	1.49%
	DFA (Russell 2000 Value)	3.44%	$	182,850,661	3.22%
	Sub-Total Active Mid/Small Cap Equity	7.05%	$	374,143,907	6.58%
Total Domestic		19.80%	$	1,051,393,349	18.49%
International					
Active International Equity	Brandes (MSCI EAFE)	5.80%	$	334,695,088	5.89%
	William Blair (MSCI ACWI ex US)	4.41%	$	238,293,851	4.19%
	DFA (MSCI EAFE Small Cap)	3.20%	$	172,923,252	3.04%
	AQR (MSCI EM)	1.99%	$	99,134,290	1.74%
Total International		15.40%	$	845,046,481	14.86%
Global					
Active Global Equity	BlackRock (MSCI ACWI)	4.84%	$	264,018,527	4.64%
	MFS (MSCI ACWI)	3.96%	$	215,760,841	3.79%
Total Global		8.80%	$	479,779,368	8.44%
Total Public Equity		**44.00%**	**$**	**2,376,219,197**	**41.79%**
Private Equity					
	Abbott Capital (Russell 3000 Quarter Lag + 2%)	3.50%	$	310,586,175	5.46%
	Mesirow (Russell 3000 Quarter Lag + 2%)	3.50%	$	271,874,037	4.78%
	Neuberger Berman (Russell 3000 Quarter Lag + 2%)	1.50%	$	51,919,561	0.91%
	Apogem (Russell 3000 Quarter Lag + 2%)	1.50%	$	90,131,138	1.59%
Total Private Equity		**10.00%**	**$**	**724,510,911**	**12.74%**
TOTAL EQUITY (Public Equity + Private Equity)		**54.00%**	**$**	**3,100,730,108**	**54.53%**
FIXED INCOME & ABSOLUTE RETURN					
Fixed Income					
Cash		1.00%	$	88,527,203	1.56%
Passive Fixed Income	BlackRock (Bloomberg US Government)	5.50%	$	316,429,953	5.57%
Active Fixed Income	Reams (Bloomberg US Aggregate)	9.90%	$	641,062,712	11.27%
	Loomis Sayles (Bloomberg US Aggregate)	6.60%	$	359,134,787	6.32%
	Sub-Total Active Fixed Income	16.50%	$	1,000,197,499	17.59%
Total Fixed Income		**23.00%**	**$**	**1,405,154,656**	**24.71%**
Absolute Return					
	Aptitude (SOFR + 4%)	3.00%	$	157,804,875	2.78%
	UBS (SOFR + 4%)	7.00%	$	338,575,184	5.95%
Total Absolute Return		**10.00%**	**$**	**496,380,059**	**8.73%**
TOTAL FIXED INCOME & ABSOLUTE RETURN		**33.00%**	**$**	**1,901,534,715**	**33.44%**
REAL ASSETS					
Private Real Estate - Core	JP Morgan (NFI-ODCE)	3.23%	$	134,565,445	2.37%
	Morgan Stanley (NFI-ODCE)	3.23%	$	156,580,219	2.75%
	LaSalle (NFI-ODCE)	1.62%	$	116,731,187	2.05%
	Prologis (NFI-ODCE)	1.62%	$	92,055,126	1.62%
	Sub-Total Private Real Estate - Core	9.70%	$	499,931,976	8.79%
Private Real Estate - Non-Core	Non-Core Real Estate (NFI-ODCE)	0.00%	$	11,379,762	0.20%
Public Real Assets	Principal (Blended Benchmark)	3.30%	$	172,273,590	3.03%
TOTAL REAL ASSETS		**13.00%**	**$**	**683,585,328**	**12.02%**
TOTAL ERS			**$**	**5,685,850,152**	**100.00%**

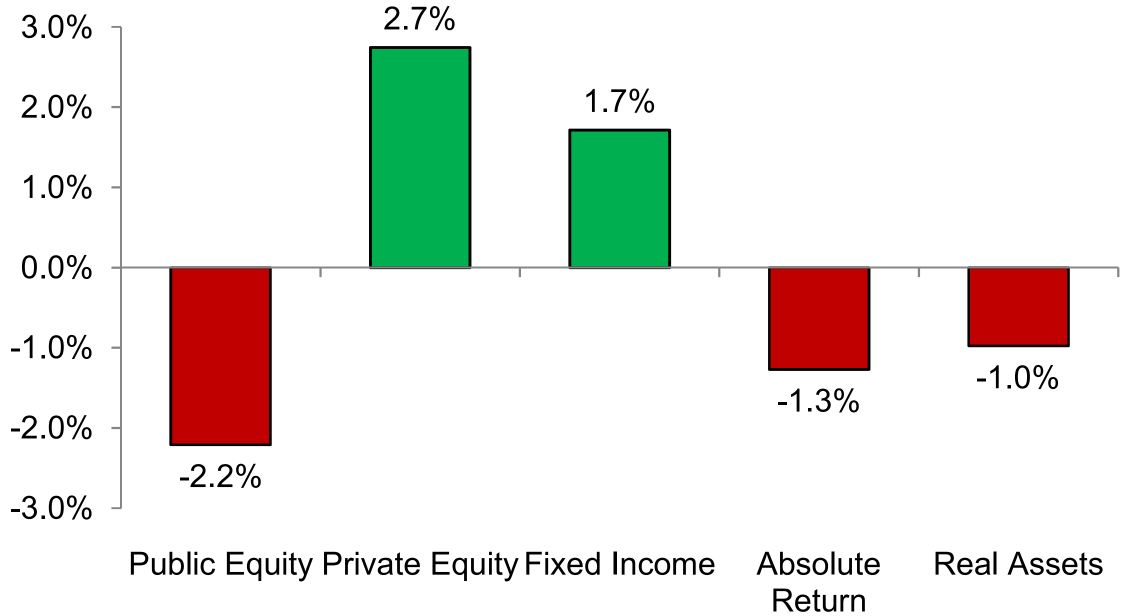
Total City Reserve Fund	**R. W. Baird**	**83,128,479**

PROJECTED VERSUS POLICY ALLOCATIONS

Asset Mix Using Projected Balances



Asset Allocation vs. Current Policy Benchmark



YTD Market Value Change

December 31, 2022 Market Value including City Reserve & PABF Accounts			$ 5,550,112,010
Monthly Cash Outflows thru	June 15, 2023		
Retiree Payroll Expense		$ (190,723,572)	
PABF Payroll Expense		$ (18,453)	
Expenses Paid		$ (7,591,055)	
GPS Benefit Payments		$ (4,385,199)	
Sub-Total Monthly Cash Outflows			$ (202,718,279)
Monthly Cash Inflows thru	June 15, 2023		
Contributions		$ 116,861,321	
PABF Contribution		$ 19,456	
Sub-Total Monthly Contributions			$ 116,880,777
Capital Market Gain/(Loss)			$ 304,704,123
Value including City Reserve & PABF Accounts as of	June 15, 2023		$ 5,768,978,631
Less City Reserve Account[1]			$ 83,128,479
Less PABF Fund[2]			$ 2,516
Net Projected ERS Fund Value as of	June 15, 2023		$ 5,685,847,636

1 The City Reserve Account balance equals the market value currently held in the Baird account.

2 PABF Fund balance equals the market value currently held in the PABF account.

6/16/2023

2023 ESTIMATED MONTHLY CASH FLOWS
Revised 6/16/2023
(in 000's)

	12/31/2022	1/31/2023	2/29/2023	3/31/2023	4/30/2023	5/31/2023	6/30/2023	7/31/2023	8/31/2023	9/30/2023	10/31/2023	11/30/2023
Beginning Cash Account Balance												
Townsend Cash Account	5,435	-	-	-	-	-						
Cash Contribution Account	-	-	-	-	-	-						
Milwaukee Cash Account	17,447	80,926	44,668	55,372	44,788	51,099						
Total Cash Available	22,883	80,926	44,668	55,372	44,788	51,099						
Less: Estimated Cash Needs for non-Investment Outflows	39,500	39,500	39,500	39,500	39,500	39,500						
Cash Available for Other Outflows	(16,617)	41,426	5,168	15,872	5,288	11,599						

	Jan-2023	Feb-2023	Mar-2023	Apr-2023	May-2023	Jun-2023	Jul-2023	Aug-2023	Sep-2023	Oct-2023	Nov-2023	Dec-2023	Total 2023
For Monthly Cash Outflows of:													
Retiree Payroll Expense	(39,141)	(39,561)	(39,102)	(38,290)	(39,016)	(39,503)	(39,599)	(39,695)	(39,792)	(39,888)	(39,985)	(40,083)	(473,654)
Normal Retirement Payroll	(38,011)	(38,140)	(38,215)	(38,049)	(38,308)	(38,404)	(38,500)	(38,596)	(38,693)	(38,789)	(38,886)	(38,984)	(461,576)
Retiree Lump Sum Payments	(1,130)	(1,421)	(886)	(241)	(708)	(1,099)	(1,099)	(1,099)	(1,099)	(1,099)	(1,099)	(1,099)	(12,078)
Real Estate Capital Calls	-	-	-	(43)	-	-	-	-	-	-	-	-	(43)
Private Equity Capital Calls	(826)	(1,620)	(11,248)	(3,017)	(13,730)	(11,176)	-	-	-	-	-	-	(41,616)
Expenses Paid through City	(1,949)	(1,554)	(1,410)	(566)	(2,112)	(835)	(1,949)	(1,949)	(1,949)	(1,949)	(1,949)	(1,949)	(20,120)
PABF Payroll	(2)	(12)	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(25)
Sub-Total Monthly Cash Outflows	**(41,917)**	**(42,747)**	**(51,761)**	**(41,917)**	**(54,859)**	**(51,515)**	**(41,549)**	**(41,645)**	**(41,742)**	**(41,838)**	**(41,935)**	**(42,033)**	**(535,458)**
For Monthly Cash Inflows:													
Sponsoring Agency and Employee Contribution	2,514	2,483	3,470	2,779	2,530	2,536	2,542	3,823	2,555	2,561	2,568	2,574	32,936
Real Estate Distributions	2,400	42	11,651	345	251	153	-	-	-	-	-	-	14,842
Private Equity Distributions	235	3,647	9,453	2,389	3,376	5,158	-	-	-	-	-	-	24,259
Miscellaneous Income	164	315	277	218	213	269	80	80	80	80	80	80	1,936
Security Lending Transfer	792	-	-	-	-	-	-	-	-	-	-	-	792
City and Agency Required Contribution	101,853	-	-	-	-	-	-	-	-	-	-	-	101,853
PABF Inflow	2	2	14	1	-	1	1	1	1	1	1	1	26
Sub-Total Monthly Cash Inflows	**107,961**	**6,489**	**24,865**	**5,733**	**6,370**	**8,117**	**2,623**	**3,904**	**2,636**	**2,642**	**2,649**	**2,655**	**176,644**
Net Monthly Cash Inflows/(Outflows) Before Withdrawals	66,043	(36,258)	(26,896)	(36,184)	(48,489)	(43,398)	(38,926)	(37,741)	(39,106)	(39,196)	(39,286)	(39,377)	(358,813)
Net Monthly Cash Surplus (Need)	**49,426**	**5,168**	**(21,728)**	**(20,312)**	**(43,201)**	**(31,799)**	**(38,926)**	**(37,741)**	**(39,106)**	**(39,196)**	**(39,286)**	**(39,377)**	**(296,077)**
Monthly Cash Withdrawals (Additions)													
AQR													
BlackRock Global Alpha Tilts				9,900		24,000							
BlackRock Russell 1000 Value Index					3,000	12,600							
BlackRock US Government Bond Index				(50,000)	(44,000)								
Brandes			12,500	12,900	14,300	20,800							
CastleArk						5,300							
Dimensional Fund Advisors US Large Cap					4,500	9,100							
Dimensional Fund Advisors International				6,800	7,500	10,700							
Dimensional Fund Advisors US Small Cap						11,700							
Earnest						6,700							
Loomis Sayles			5,100			(20,000)							
MFS	(36,000)			8,200	8,900	13,300							
Northern Trust S&P 500 Index				6,000	15,600	12,600							
Polen			4,000	4,600	5,000	7,700							
Principal													
Reams			7,000	(47,000)		(94,000)							
UBS A&Q	28,000			75,000	20,000								
Goldman/Aptitude						(6,262)							
William Blair			9,000	9,100	10,100	14,800							
Sub-Total Monthly Cash Withdrawals	**(8,000)**	**-**	**37,600**	**35,500**	**44,900**	**29,038**							
Estimated Month-End Cash Balance													
Cash Available	41,426	5,168	15,872	15,188	1,699	(2,761)							
Estimated Cash Needs for non-Investment Outflows	39,500	39,500	39,500	39,500	39,500	39,500							
Total Cash Estimated on Hand For Next Month	80,926	44,668	55,372	54,688	41,199	36,739							